Key: BT=Broader term
DF=Definition
NT=Narrower term
RT=Related term
SN=Scope note
TNR = item number
UF = Used For

3-D graphics
USE: graphics
TNR: 117

3-D imagery
USE: graphics
TNR: 119

abstracts
USE: documents
TNR: 120

accessing USGS data and products
USE: USGS information services
TNR: 122

acid deposition
UF: acid precipitation
acid rain
acid snow
BT: atmospheric deposition (chemical & particulate)
RT: atmospheric sciences
human impacts
DF: Acid deposition takes two forms: wet and dry deposition. Wet acid deposition occurs when sulfur dioxide and nitrogen oxides react in the atmosphere with water vapor. Dry deposition occurs when sulfur dioxide and nitrogen oxides react, but not with water. It settles out of the atmosphere as particles or gases. [<http://www.epa.gov/acidrain/ardhome.html>]
TNR: 124

acid precipitation
USE: acid deposition
TNR: 125

acid rain
USE: acid deposition
TNR: 126

acid snow
USE: acid deposition
TNR: 127

acoustic methods
BT: field inventory and monitoring
NT: sonar methods

DF: Study methods based on the analysis of sound waves in fluid media, such as air and water, and in the solid Earth (includes analysis of compressional waves in solids, e.g., seismic P-waves). [Adapted from Glossary of Geology, 4th ed.]
TNR: 130

activity books
USE: educational materials
TNR: 133

administrative and political boundaries
UF: geographic boundaries
governmental units
political boundaries
BT: culture and demographics
RT: cadastral and legal land descriptions
geography
SN: Use for datasets that contain boundary representations for political and administrative units and related information.
TNR: 135

Advanced Very High Resolution Radiometer (AVHRR)
USE: AVHRR
TNR: 140

aerial photographs
US+: aerial photography
images
TNR: 142

aerial photography
UF+: aerial photographs
aerial photos
air photos
orthoimagery
orthophotographs
BT: photography
RT: remote sensing
DF: Taking photographs from the air, such as a photograph of a part of the Earth's surface with a camera mounted in an aircraft. Usually involves taking strips of overlapping prints for mapping purposes. [Adapted from Glossary of Geology, 4th ed.]
TNR: 143

aerial photos
US+: aerial photography
images
TNR: 12

aeromagnetic maps
US+: aeromagnetic surveying
maps and atlases
TNR: 149

aeromagnetic surveying
  UF: magnetic surveying
  UF+: aeromagnetic maps
  BT: remote sensing
  RT: electromagnetic surveying
       geography
  DF: Electromagnetic survey made with an airborne radiometer. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 150

aeroradiometric surveying
  UF: gamma-ray spectrometric surveying
  BT: remote sensing
  RT: geography
  TNR: 153

age dating (fission-track)
  USE: fission-track dating
  TNR: 58

age dating (radiometric)
  USE: radiometric dating
  TNR: 155

age dating (tree ring)
  USE: tree ring analysis
  TNR: 59

agricultural water use
  UF: livestock water use
  BT: offstream water use
  NT: irrigation water use
  RT: hydraulic engineering
       hydrology
  DF: Water used for soil cultivation, crop production and livestock rearing.
  TNR: 157

agriculture and farming
  UF: farming
       horticulture
  BT: topics
  NT: aquaculture
  RT: soil chemistry
  DF: The science, art, and business of cultivating soil, producing crops, and raising livestock. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 161

air photos
  US+: aerial photography
       images
  TNR: 144

air pollution
  US+: atmospheric composition
        pollution
  TNR: 31

air temperature
  UF: temperature (air)
  BT: atmospheric properties
  RT: atmospheric sciences
  TNR: 167

airborne imaging
  USE: remote sensing
  TNR: 170

algae
  BT: organisms
  NT: calcareous nannoplankton
        diatoms
        dinoflagellates
  RT: algal blooms
        bacteria
        phycology
        protists
  DF: Group of unrelated simple organisms that contain chlorophyll and live in aquatic ecosystems. Formerly regarded as plants, algae are now classified as members of the kingdom Protoctista. The organisms formerly known as blue-green algae are now classified as bacteria. [Adapted from Dic. of Biology, 3rd ed., Oxford Univ., 1996]
  TNR: 171

algal blooms
  UF: brown tides
        red tides
  UF+: harmful algal blooms
  BT: ecological processes
  RT: algae
        hazards
        phycology
        population dynamics
  DF: Rapid increase in populations of algae and other phytoplankton that occur in water bodies. [Adapted from Dic. of Biology, 3rd ed., Oxford Univ., 1996]
  TNR: 176

algology
  USE: phycology
  TNR: 185

alien species
  USE: nonindigenous species
  TNR: 186

alluvial sedimentation

USE: sedimentation
TNR: 63

alluvial transport
USE: sediment transport
TNR: 64

alluvium
USE: unconsolidated deposits
TNR: 61

altimetry measurement
UF+: satellite altimetry
BT: geolocation measurement
RT: geography
DF: The measurement of altitudes with altimeters such as an aneroid barometer for determining height above ground or above mean sea level, based on the fall of atmospheric pressure accompanying an increase in altitude. [Adapted from Glossary of Geology, 4th ed.]
TNR: 188

amphibians
BT: vertebrates
RT: herpetology
DF: Vertebrates of the class Amphibia; cold-blooded tetrapods that breathe by means of gills in the early stages of life and by means of lungs in the later stages. [Glossary of Geology, 4th ed.]
TNR: 191

analog format
USE: non-digital format
TNR: 10

anatomy and physiology
UF: physiology
BT: life sciences
NT: endocrinology
histology
immunology
RT: plant and animal testing
therapeutic methods
DF: Identification and description of the body structures of living things, and the study of the functioning of living organisms and of their constituent tissues or cells. [Adapted from Encyclopedia Britannica, 2001]
TNR: 194

animal behavior
BT: population and community ecology
RT: ecology
migration (organisms)
migratory species
DF: Study of animals' actions or reactions in response to external or internal stimuli. [Adapted from American Heritage Dic. of the English Language, 4th ed.]

TNR: 201

animal distribution
USE: biogeography
TNR: 204

animal tagging
USE: plant and animal tagging
TNR: 101

animal testing
USE: plant and animal testing
TNR: 102

animal tracking
UF: tracking
BT: field sampling
RT: telemetry
wildlife biology
DF: Following footprints and other evidence in an area to document the presence and movements of an animal and its interactions within the landscape.
TNR: 783

animals
BT: organisms
NT: invertebrates
vertebrates
RT: wildlife
zoology
DF: Multicellular organism of the kingdom Animalia, differing from plants in certain typical characteristics such as capacity for locomotion, nonphotosynthetic metabolism, pronounced response to stimuli, restricted growth, and fixed bodily structure. [American Heritage Dic. of the English Language, 2001]
TNR: 206

animated graphics
USE: animations
TNR: 13

animations
UF: animated graphics
BT: graphics
DF: Moving diagrams or cartoons that are made up of a sequence of images displayed one after the other. [Computer Desktop Encyclopedia, 2001]
TNR: 210

annelids
USE: segmented worms
TNR: 211

anoxia
USE: oxygen content (water)

TNR: 213

anthracite resources
USE: coal resources
TNR: 215

anthropogenic contamination
UF: contaminants (anthropogenic)
environmental pollutants
pollutants
BT: pollution
NT: mercury contamination
pesticide and herbicide contamination
RT: biochemistry
ecology
ecotoxicology
natural contaminants
DF: Environmental disturbances caused by pollutants released by human activity.
TNR: 217

aquaculture
UF: fish farming
BT: agriculture and farming
RT: commercial fishery resources
fishery resources
DF: Culturing aquatic organisms for commercial purposes, either in artificial systems, for example tanks or channels, or in natural environments. [Adapted from Encyc. of Ecology & Environmental Management, 1998]
TNR: 165

aquatic biology
BT: life sciences
RT: aquatic ecosystems
benthic ecosystems
commercial fishery resources
ecology
estuarine ecosystems
fishery resources
freshwater ecosystems
inland fishery resources
macroinvertebrates
marine biology
marine ecosystems
marine fishery resources
migratory species
plankton
recreational fishery resources
shellfish
water quality
wetland ecosystems

SN: This term is to be used for the science of 'aquatic biology' and for biological studies in fresh and brackish water. For marine biological studies, use 'marine biology'.
TNR: 229

aquatic ecosystems
UF+: planktonic ecosystems
BT: ecosystems
NT: benthic ecosystems
estuarine ecosystems
freshwater ecosystems
marine ecosystems
RT: aquatic biology
coastal ecosystems
ecology
limnology
marine biology
DF: Ecological communities living entirely or primarily in or on water. [Adapted from Glossary of Geology, 4th ed.]
TNR: 230

arachnids
UF: spiders
BT: arthropods
RT: entomology
invertebrate zoology
DF: Any terrestrial chelicerates belonging to the class Arachnida, (such as spiders, scorpions, mites, and ticks), characterized by the presence of one pair of preoral appendages with two to three joints. [Glossary of Geology, 4th ed.]
TNR: 241

archaea
BT: organisms
RT: microbiology
DF: One of three kingdoms of living organisms, with Bacteria and Eukaryota. Archaeans include microbic inhabitants of some of the most extreme environments on the planet, such as thermal vents and hypersaline water, and are widely found elsewhere (for example, in the plankton of the open sea and the digestive tracts of animals). [Adapted from <http://www.ucmp.berkeley.edu/archaea/archaea.html>]
TNR: 244

archives (USGS)
USE: USGS libraries and archives
TNR: 245

arthropods
BT: invertebrates
NT: arachnids
crustaceans
horseshoe crabs
insects
trilobites

RT: invertebrate zoology
DF: Any one of a group of solitary marine, freshwater, and aerial invertebrates belonging to the phylum Arthropoda, characterized chiefly by jointed appendages and segmented bodies. [Glossary of Geology, 4th ed.]
TNR: 243

articles (publications)
USE: documents
TNR: 251

Ask-A services (USGS)
USE: USGS expertise services
TNR: 252

asthenosphere
BT: mantle (Earth)
RT: tectonophysics
DF: Layer or shell of the Earth below the lithosphere; part of the upper mantle. [Adapted from Glossary of Geology, 4th ed.]
TNR: 254

atlases
USE: maps and atlases
TNR: 256

atmospheric and climatic processes
UF: climate
weather
UF+: weather monitoring
weather observations
BT: biological and physical processes
NT: atmospheric circulation
atmospheric deposition (chemical & particulate)
climate change
droughts
ocean-atmosphere interaction
precipitation (atmospheric)
storms
RT: atmospheric properties
atmospheric sciences
meteorology
snow and ice cover
DF: Layer of gas, dust, and other particles blanketing the earth to an altitude of approximately 100 kilometers, and the long-term atmospheric conditions at a specific location or geographical area. [NaturalHazards.org <http://www.naturalhazards.org/>]
TNR: 169

atmospheric circulation
BT: atmospheric and climatic processes
RT: atmospheric sciences
water circulation
DF: Movement of atmospheric gases around the Earth.
TNR: 262

atmospheric composition
  UF+: air pollution
  BT: atmospheric properties
  NT: greenhouse gases
        ozone layer
  RT: atmospheric sciences
  DF: Mixture of gases that surrounds the Earth, being held thereto by gravity; consists by volume of 78% nitrogen, 21% oxygen, 0.9% argon, 0.03% carbon dioxide, and minute quantities of helium, krypton, neon, and xenon. [Glossary of Geology, 4th ed.]
  TNR: 263

atmospheric deposition (chemical & particulate)
  BT: atmospheric and climatic processes
  NT: acid deposition
  RT: atmospheric sciences
        precipitation (atmospheric)
  DF: Atmospheric deposition occurs when pollutants from man-made sources and from natural sources fall from the air on the land or water. [Air Pollution and Water Quality: Atmospheric Deposition Initiative Oceans and Coastal Protection Home Page, EPA <http://www.epa.gov/owow/oceans/airdep/air1.html>]
  TNR: 128

atmospheric properties
  BT: Earth characteristics
  NT: air temperature
        atmospheric composition
  RT: atmospheric and climatic processes
        atmospheric sciences
  TNR: 70

atmospheric sciences
  BT: Earth sciences
  NT: climatology
        meteorology
  RT: acid deposition
        air temperature
        atmospheric and climatic processes
        atmospheric circulation
        atmospheric composition
        atmospheric deposition (chemical & particulate)
        atmospheric properties
        droughts
        fires
        global change
        global warming
        greenhouse gases
        ocean temperature
        ocean-atmosphere interaction
        ozone layer
        precipitation (atmospheric)

DF: Systematized study of the composition, structure, and behavior of the atmosphere, the mixture of gases that surrounds the Earth, being held thereto by gravity. [Adapted from Glossary of Geology, 4th ed.]
TNR: 268

atomic absorption analysis
BT: chemical analysis
RT: biochemistry
geochemistry
DF: Techniques that involve the determination and measurement of atomic energy levels (spectrometry) and chemical identification based on how atoms absorb electromagnetic radiation. [Adapted from Glossary of Geology, 4th ed.]
TNR: 275

audio presentations
USE: audiovisual materials
TNR: 277

audio tape
UF: audiotape
BT: non-digital format
TNR: 279

audiotape
USE: audio tape
TNR: 280

audiovisual materials
UF: audio presentations
motion pictures
movies
videos
BT: object types
RT: graphics
images
TNR: 278

AVHRR
UF: Advanced Very High Resolution Radiometer (AVHRR)
UF+: AVHRR images
BT: infrared imaging
RT: geography
sea surface temperature
DF: Advanced Very High Resolution Radiometer: Broad-band, four or five channel scanner, sensing in the visible, near-infrared, and thermal infrared portions of the electromagnetic spectrum. [USGS Earth Resources Observation Systems (EROS) Data Center, <http://edcwww.cr.usgs.gov/glis/hyper/guide/avhrr>]
TNR: 141

AVHRR images
US+: AVHRR
images
TNR: 286

bacteria
  BT: organisms
  RT: algae
       microbiology
  DF: Unicellular, generally microscopic organisms having three typical forms: rod-shaped (bacillus), round (coccus), and spiral (spirillum). The cytoplasm of most bacteria is surrounded by a cell wall; the nucleus contains DNA but lacks the nuclear membrane found in higher plants and animals. [Concise Columbia Electronic Encyc, 1999]
  TNR: 177

bacteriology
  BT: microbiology
  RT: culturing (specimens)
       health and disease
  DF: Study of bacteria, especially in relation to medicine and agriculture. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 289

banding
  USE: plant and animal tagging
  TNR: 291

basement maps
  US+: bedrock geologic units
        maps and atlases
  TNR: 293

bathymetry
  UF: bathymetry data
       sea floor topography
       underwater contours
  BT: topography
  RT: geomorphology
       limnology
       ocean sciences
       sea floor characteristics
  DF: The data derived from the measurement of ocean depths and the charting of the topography of the ocean floor. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 295

bathymetry data
  USE: bathymetry
  TNR: 296

bathymetry measurement
  BT: geolocation measurement
  RT: geography
       sonar methods
  DF: Measurement of the ocean depths in order to determine the sea floor topography [Adapted from McGraw-Hill Dic. of Scientific and Technical Terms, 5th ed.]

TNR: 301

bedforms
BT: sedimentary rocks
RT: sedimentology
DF: Any deviations from a flat layer of sediments or sedimentary rocks, generated by the flow on the layer (bed) of an alluvial channel. [Adapted from Glossary of Geology, 4th ed.]
TNR: 302

bedrock geologic units
UF: geologic formations
UF+: basement maps
BT: stratigraphic sections
RT: stratigraphy
DF: Units of rock, usually solid, that underlie soil or other unconsolidated, superficial material. [Adapted from Glossary of Geology, 4th ed.]
TNR: 294

benthic ecosystems
BT: aquatic ecosystems
RT: aquatic biology
ecology
limnology
marine biology
DF: Ecosystems on the bottom or at the greatest depths of the ocean or other large body of water. [Adapted from Glossary of Geology, 4th ed.]
TNR: 235

beryllium isotope analysis
BT: light stable isotope analysis
DF: Method of age determination based on measurement of the activity of beryllium-10, used in dating deep-sea sediments, and in determining sedimentation rates. [Adapted from Glossary of Geology, 4th ed.]
TNR: 306

bibliographies
BT: object types
RT: documents
TNR: 308

bioaccumulation
UF: bioconcentration
BT: ecological processes
RT: ecology
ecotoxicology
DF: The accumulation of a substance, such as a toxic chemical, in various tissues of a living organism. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 309

biochemistry
UF: chemistry (life sciences)

BT: life sciences
RT: anthropogenic contamination
atomic absorption analysis
biogeochemical cycling
carbon cycling
carbon isotope analysis
chemical analysis
chromatography
DNA sequencing
electrophoresis
flow cytometry
food web
gas chromatography
isotopic analysis
light stable isotope analysis
liquid chromatography
mass spectroscopy
mercury contamination
neutron activation analysis
nutrient cycling
oxygen isotope analysis
particle-beam spectroscopy
pesticide and herbicide contamination
polymerase chain reaction
tritium analysis
DF: Study of the chemical substances and vital processes occurring in living organisms. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 311

biocide contaminants
USE: pesticide and herbicide contamination
TNR: 312

bioconcentration
USE: bioaccumulation
TNR: 310

biodiversity
UF: biological diversity
diversity (biological)
BT: population and community ecology
NT: ecosystem diversity
genetic diversity
species diversity
RT: biogeography
ecological competition
ecology
endangered species
endemic species
invasive species
life sciences
native species
nonindigenous species

DF: (a) The number and variety of organisms found within a specified geographic region. (b) The variability among living organisms on the earth, including the variability within and between species and within and between ecosystems. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 313

biogeochemical cycling
UF: biogeochemical functioning
biogeochemical processes
decomposition (organic)
organic decomposition
BT: ecological processes
NT: carbon cycling
nutrient cycling
RT: biochemistry
decomposers
ecology
geochemistry
DF: The cycling of chemical constituents through a biological system. [Glossary of Geology, 4th ed.]
TNR: 320

biogeochemical functioning
USE: biogeochemical cycling
TNR: 321

biogeochemical processes
USE: biogeochemical cycling
TNR: 322

biogeography
UF: animal distribution
distribution of animals
distribution of plants
distribution of species
plant distribution
species distribution
species geographic range
UF+: species distribution maps
BT: population and community ecology
RT: biodiversity
ecology
ecosystem monitoring
migration (organisms)
migratory species
population dynamics
wildlife population management
DF: The geographic distribution of organisms. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 205

biographies
USE: documents
TNR: 335

bioinformatics
  USE: biological informatics
  TNR: 336

biologic classifications
  USE: biologic names and classifications
  TNR: 33

biologic names and classifications
  UF: biologic classifications
  BT: terminologies and classifications
  RT: systematics and taxonomy
  TNR: 18

biological and physical processes
  BT: topics
  NT: atmospheric and climatic processes
        ecological processes
        fires
        geologic and hydrologic processes
        ocean processes
  TNR: 69

biological diversity
  USE: biodiversity
  TNR: 314

biological informatics
  UF: bioinformatics
  BT: information sciences
  RT: life sciences
  DF: Development and use of computer, statistical, and other tools in the collection, organization, dissemination, and use of information to solve problems in the life sciences. [USGS Center for Biological Informatics <http://biology.usgs.gov/cbi/about/#def>]
  TNR: 337

biological invasions
  US+: invasive species
        migration (organisms)
  TNR: 114

biological oceanography
  USE: marine biology
  TNR: 339

biological organisms
  USE: organisms
  TNR: 340

biological population management
  BT: natural resource management
  NT: fishery management

reintroduction (organisms)
wildlife population management
RT: ecosystem monitoring
population and community ecology
DF: Methods of monitoring and controlling all the organisms that constitute a specific group or occur in a specified habitat. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 341

biological productivity
BT: ecological processes
RT: ecology
life sciences
DF: The rate at which radiant energy and raw materials are used by producer organisms to form organic substances as food for consumer organisms. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 343

biological remediation
USE: bioremediation
TNR: 344

biological sciences
USE: life sciences
TNR: 7

biology
USE: life sciences
TNR: 346

bionomics
USE: ecology
TNR: 358

bioremediation
UF: biological remediation
revegetation
BT: remediation
RT: ecology
ecosystem monitoring
DF: Use of biological agents, such as bacteria or plants, to remove or neutralize contaminants, as in polluted soil or water. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 345

biosphere
USE: ecosystems
TNR: 361

biostratigraphy
BT: geologic history
RT: fossils
ichnofossils
paleontology

stratigraphy
DF: Element of stratigraphy that deals with the distribution of fossils in the stratigraphic record and the organization of strata into units on the basis of their contained fossils. [Glossary of Geology, 4th ed.]
TNR: 362

biota
BT: organism groupings (non-taxonomic)
RT: life sciences
DF: Combined flora and fauna of a region. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 365

biotelemetry
USE: telemetry
SN: Use another term with 'biotelemetry' to indicate the focus of the biological study, for example 'mammals'.
TNR: 367

bird banding
USE: plant and animal tagging
TNR: 369

birds
UF: shorebirds
waterfowl
BT: vertebrates
RT: ornithology
DF: Belonging to the class Aves: bipedal vertebrate chordates with feathers, wings and a beak. [Oxford University Press, 1996]
TNR: 370

bituminous coal resources
USE: coal resources
TNR: 374

blizzards
BT: storms
DF: Violent snowstorms with winds blowing at a minimum speed of 35 miles (56 kilometers) per hour and visibility of less than one-quarter mile (400 meters) for three hours. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 86

bolide impacts
US+: hazards
meteorites
TNR: 375

bolides
USE: meteorites
TNR: 377

books and book chapters

USE: documents
TNR: 378

borehole logging
BT: field inventory and monitoring
NT: borehole temperature logging
electrical resistivity logging
gamma-ray logging
RT: geophysics
stratigraphy
DF: A survey operation in which instruments are lowered into a borehole to measure the physical characteristics of the borehole environment and the borehole itself as a function of depth. [Adapted from Soc. Professional Well Log Analysts Glossary, <http://www.spwla.org/gloss/reference/glossary/glossw/glossw.htm>]
TNR: 379

borehole temperature logging
BT: borehole logging
RT: geophysics
DF: Method of recording the measured or computed physical temperature of the rock section encountered in a borehole, plotted as a continuous function of depth. [Adapted from Glossary of Geology, 4th ed.]
TNR: 380

botany
BT: life sciences
NT: palynology
phycology
RT: drilling and coring
ferns and fern allies
flowering plants
forest resources
gymnosperms
liverworts and hornworts
mosses
mycology
nonvascular plants
paleobotany
plants (organisms)
producers (organisms)
vascular plants
vegetation
DF: Science or study of plants. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 348

brachiopods
USE: bryozoans and brachiopods
TNR: 385

brown tides
USE: algal blooms
TNR: 179

bryozoans and brachiopods
  UF: brachiopods
  BT: invertebrates
  RT: invertebrate paleontology
       invertebrate zoology
  DF: Invertebrates belonging to the phylum Bryozoa or the phylum Brachiopoda.
  TNR: 386

budget (USGS)
  USE: USGS budget
  TNR: 387

building stone resources
  BT: nonmetallic resources
  RT: economic geology
       rocks and deposits
       sedimentology
  DF: Deposits of any rock suitable for use in construction. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 389

business and economics
  UF: commerce
       economics
  BT: culture and demographics
  RT: social sciences
  DF: Business is the activity of producing and distributing commodities, and economics is the investigation of the production, distribution, and consumption of goods and services. [Adapted from Dic. of Cultural Literacy, 2nd ed.]
  TNR: 391

business partners (USGS)
  USE: USGS partnerships
  TNR: 393

butterflies and moths
  UF: lepidoptera
       moths
  BT: insects
  RT: entomology
  DF: Insects belonging to the order Lepidoptera. Butterflies are small-bodied, active during daylight; moths are larger and nocturnal. Larvae undergo metamorphosis via a pupa (chrysalis) to the adult form. [Dic. of Biology, 3rd ed., Oxford Univ., 1996]
  TNR: 395

cadastral and legal land descriptions
  UF: land partitioning systems
       legal land descriptions
  UF+: cadastral maps
  BT: culture and demographics

RT: administrative and political boundaries
geography
social sciences
DF: Information in public records, surveys, or maps of the value, extent, and ownership of land as a basis of taxation. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 139

cadastral maps
US+: cadastral and legal land descriptions
maps and atlases
TNR: 398

calcareous nannoplankton
BT: algae
RT: micropaleontology
phycology
plankton
DF: Any of the chromatophore-bearing protists that normally produce coccoliths during some phase of their life cycle; also, in a broader sense, the morphologically diverse group of minute calcareous skeletal elements produced by coccolithophores. [Glossary of Geology, 4th ed.]
TNR: 173

camera tows
USE: underwater photography
TNR: 403

capturing (animals)
UF: trapping (animals)
BT: field sampling
RT: specimen collecting
zoology
DF: Collecting individual animals in the field by various methods in order to obtain information about the species or population and its ecology. Capturing methods are adapted to the habits and habitats of the target species and include both live trapping and kill trapping methods.
TNR: 405

carbon cycling
BT: biogeochemical cycling
RT: biochemistry
ecology
geochemistry
DF: Continued exchange and reactions of carbon in the biosphere, atmosphere and hydrosphere. [Glossary of Geology, 4th ed.]
TNR: 325

carbon isotope analysis
BT: light stable isotope analysis
RT: biochemistry
carbon-14 analysis
geochemistry

DF: Experimental determination of the proportion of a given stable carbon isotope (C12 or C13) in a sample.
TNR: 408

carbon-14 analysis
BT: radiometric dating
RT: carbon isotope analysis
geochronology
DF: Use of a naturally radioactive carbon isotope with atomic mass 14 and half-life 5,730 years to determine the age of ancient organic, geologic, or archaeological specimens. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 409

careers in science
USE: scientific careers
TNR: 410

carnivores
UF: predators
BT: consumers (organisms)
RT: ecology
zoology
DF: Any of various predatory, flesh-eating mammals of the order Carnivora, including the dogs, cats, bears, weasels, hyenas, and raccoons. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 412

cartographic data (digital)
USE: geospatial datasets
TNR: 415

cartography
UF: digital cartography
map making
mapmaking
mapping
BT: geography
RT: map coordinate systems
maps and atlases
DF: Science and art of making maps and charts and the study of maps and scientific documents and works of art. [Glossary of Geology, 4th ed.]
TNR: 417

catalogs and indexes
UF: indexes
lists of publications
metadata
BT: object types
RT: documents
USGS clearinghouses
TNR: 424

CD-ROM

USE: CDROM
TNR: 429

CDROM
UF: CD-ROM
BT: digital format
TNR: 430

cell biology
UF: cytology
BT: life sciences
RT: flow cytometry
molecular biology
DF: Branch of biology that deals with the formation, structure, and function of cells. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 349

checklists
BT: documents
TNR: 431

chemical analysis
UF: geochemical surveys
leaching (analytical method)
mineralogical analysis
BT: laboratory methods
NT: atomic absorption analysis
chromatography
DNA sequencing
electrophoresis
flow cytometry
mass spectroscopy
neutron activation analysis
particle-beam spectroscopy
polymerase chain reaction
x-ray diffraction
RT: biochemistry
geochemistry
DF: Investigation of the chemical composition and structure of substances. [Adapted from Columbia Electronic Encyc., 1999]
TNR: 276

chemical oceanography
USE: marine chemistry
TNR: 438

chemistry (Earth sciences)
USE: geochemistry
TNR: 23

chemistry (life sciences)
USE: biochemistry
TNR: 24

chloride concentration
  USE: salinity
  TNR: 115

chromatography
  BT: chemical analysis
  NT: gas chromatography
        liquid chromatography
  RT: biochemistry
        geochemistry
  DF: Any of various techniques for the separation of complex mixtures that rely on the differential affinities of substances for a gas or liquid mobile medium and for a stationary adsorbing medium through which they pass, such as paper, gelatin, or magnesia. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 434

chronostratigraphy
  USE: geologic history
  TNR: 441

circulation (lake)
  USE: lake circulation
  TNR: 442

circulation (ocean)
  USE: ocean circulation
  TNR: 1

circulation (water)
  USE: water circulation
  TNR: 2

classification schemes
  USE: terminologies and classifications
  TNR: 448

clay deposits
  BT: unconsolidated deposits
  RT: economic geology
        nonmetallic resources
        sedimentology
  DF: Deposits of soil containing a high percentage of fine particles and colloidal substances, becoming sticky and plastic when wet and forming hard lumps or clods when dry. [Glossary of Geology, 4th ed.]
  TNR: 450

clearinghouses (USGS)
  USE: USGS clearinghouses
  TNR: 451

cleavage (rock)
  USE: fracture (geologic)
  TNR: 452

climate
  USE: atmospheric and climatic processes
  TNR: 257

climate change
  UF: climatic change
        global climate change
  BT: atmospheric and climatic processes
  NT: desertification
  RT: climatology
        global change
        global warming
        greenhouse gases
  DF: Alterations in the characteristic weather of a region, particularly as regards temperature and precipitation, averaged over some significant interval of time. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 454

climatic change
  USE: climate change
  TNR: 455

climatology
  BT: atmospheric sciences
  RT: climate change
        desertification
        meteorology
        ocean circulation
        sea-level change
  DF: Study of the characteristic weather of a region, particularly as regards temperature and precipitation, averaged over some significant interval of time. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 274

coal bed methane resources
  USE: coalbed methane resources
  TNR: 459

coal resources
  UF: anthracite resources
        bituminous coal resources
        lignite resources
        subbituminous coal resources
  BT: nonrenewable energy resources
  RT: coalbed methane resources
        economic geology
  DF: Resources of a natural dark brown to black graphitelike material used as a fuel, formed from fossilized plants and consisting of amorphous carbon with various organic and some inorganic compounds. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 216

coalbed methane resources

UF: coal bed methane resources
methane resources (coalbed)
BT: natural gas resources
RT: coal resources
economic geology
DF: Resources of methane-rich gas generated and stored in coalbeds. [USGS Fact Sheet FS-019-97, <http://energy.usgs.gov/factsheets/Coalbed/coalmeth.html>]
TNR: 460

coastal ecosystems
BT: terrestrial ecosystems
RT: aquatic ecosystems
ecology
DF: Ecological communities within the strip of land of indefinite width that extends from the low-tide line inland to the first major change in landform features. [Adapted from Glossary of Geology, 4th ed.]
TNR: 239

coastal fisheries
USE: marine fishery resources
TNR: 80

coastal fishing
USE: marine fishery resources
TNR: 466

coelenterates
UF: corals
jellyfish
sea anemones
BT: invertebrates
RT: invertebrate zoology
reef ecosystems
DF: Any multicelled invertebrates belonging to the phyllum Coelenterata. Coelenterates exist both as free-swimming medusae (e.g., jellyfish) and as sedentary polyps. Polyps may be colonial (e.g., corals) or solitary (e.g., sea anemones). [Adapted from Dic. of Biology, 3rd ed., Oxford Univ., 1996]
TNR: 469

collection of specimens
USE: specimen collecting
TNR: 473

college programs (USGS)
USE: USGS college programs
TNR: 474

colloquia (USGS)
USE: USGS colloquia
TNR: 476

colonization (organisms)
USE: dispersal (organisms)

TNR: 478

coloring books
USE: educational materials
TNR: 480

coloring pages
USE: educational materials
TNR: 481

commerce
USE: business and economics
TNR: 392

commercial fishery resources
BT: fishery resources
RT: aquaculture
aquatic biology
ichthyology
marine biology
marine fishery resources
DF: The stock of fisheries where fish and other seafood resources are taken for the purpose of marketing them. [Adapted from Encyclopedia Britannica, 2001]
TNR: 227

commercial water use
BT: offstream water use
RT: hydraulic engineering
hydrology
DF: Use of water for motels, hotels, restaurants, office buildings, other commercial facilities, and institutions. [USGS Glossary of water-use terminology, <http://water.usgs.gov/watuse/wuglossary.html>]
TNR: 482

community ecology
BT: population and community ecology
RT: ecological competition
ecology
DF: A field of study concerning community-based ecological theory, temporal and spatial dynamics, and trophic interactions. [Adapted from Community Ecology journal, <http://www.terra.hu/comecol/>]
TNR: 483

community education (USGS)
USE: USGS lifelong learning programs
TNR: 484

computational methods
UF: mathematical methods
BT: methods
NT: image analysis
mathematical modeling
relative abundance analysis

spatial analysis
statistical analysis
topological analysis
visualization methods
TNR: 486
.. "Computer program : a set of instructions suitable for processing by a computer in the form of source code or executable code.(USGS Manual)
computer science
BT: information sciences
DF: Study of computers, including their design (architecture) and their uses for computations, data processing, and systems control. [Encyclopedia Britannica, 2001]
TNR: 495

coniferous forests ecosystems
USE: forest ecosystems
TNR: 497

conodonts
BT: invertebrates
RT: invertebrate paleontology
micropaleontology
DF: Members of an extinct group of small primitive fishlike chordates, preserved primarily in the form of their conelike teeth. Conodonts are the most widespread Paleozoic microfossils and are important for biostratigraphic indexing. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 499

conservation
USE: natural resource management
TNR: 500

consumers (organisms)
BT: organism groupings (non-taxonomic)
NT: carnivores
herbivores
omnivores
RT: ecology
zoology
DF: Organisms that are unable to manufacture food from nonliving matter but are dependent on the energy stored in other living things. [Adapted from Glossary of Geology, 4th ed.]
TNR: 414

contacts (geologic)
USE: geologic contacts
TNR: 503

contaminant transport
BT: ecological processes
RT: ecotoxicology
DF: Process of the dispersion of contaminants through air, water, and soil.
TNR: 949

contaminants (anthropogenic)
  USE: anthropogenic contamination
  TNR: 218

contaminants (natural)
  USE: natural contaminants
  TNR: 505

continental lithosphere
  BT: lithosphere
  RT: tectonophysics
  DF: That part of the lithosphere that is not consistently underlain by an asthenosphere and is above sea level. [Adapted from Encyclopedia Britannica, 2001]
  TNR: 506

continuing education (USGS)
  USE: USGS lifelong learning programs
  TNR: 508

contracts (USGS)
  USE: USGS contracts and grants
  TNR: 509

controlled fires
  UF: fires (controlled)
        managed fires
  BT: natural resource management
  RT: fires
  DF: Prescribed burns used to burn trees or brush that would fuel a large wildfire. [Federal Emergency Management Agency (FEMA), <http://www.fema.gov/kids/brenner.htm>]
  TNR: 511

controlled flooding
  UF: flooding (controlled)
        managed flooding
  BT: natural resource management
  RT: floods
  DF: The deliberate inundation of land or wetland, or an increase in river flow below dams, for restoration purposes, such as restoring ecosystem health, managing wildlife, improving water quality and quantity, and sediment transport.
  TNR: 514

controlled vocabularies
  UF: thesauri
  BT: terminologies and classifications
  DF: Established lists of standardized terminology for use in the indexing and retrieval of information. [National Library of Canada: Definitions, <http://www.nlc-bnc.ca/8/4/r4-282-e.html#contvocab>]
  TNR: 517

cooperative research & development agreements (CRADAs)
  USE: USGS cooperative research & development agreements (CRADAs)
  TNR: 519

cooperative research (USGS)
  USE: USGS partnerships
  TNR: 521

cooperators (USGS)
  USE: USGS partnerships
  TNR: 522

coordinate systems
  USE: map coordinate systems
  TNR: 523

coral reef ecosystems
  USE: reef ecosystems
  TNR: 22

corals
  USE: coelenterates
  TNR: 470

core (Earth)
  BT: Earth structure
  NT: inner core (Earth)
        outer core (Earth)
  RT: geophysics
  DF: Central zone or nucleus of the Earth's interior at a depth of 2900 km. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 524

core analysis
  BT: laboratory methods
  RT: drilling and coring
  SN: Intended for broad use for the analysis of all types of core samples. For example, analysis of core samples from a tree or ice mass as well as cores from geological strata or rocks. The combination of this term with other terms will convey the context of the activity.
  TNR: 528

core sampling
  USE: drilling and coring
  TNR: 530

coring
  USE: drilling and coring
  TNR: 93

correlation
  USE: regression analysis
  TNR: 532

CRADAs
  USE: USGS cooperative research & development agreements (CRADAs)
  TNR: 534

crenulation (geologic)
  USE: folding (geologic)
  TNR: 535

cross sections
  UF+: hydrographic sections
  BT: graphics
  DF: A diagram or drawing that shows features transected by a given plane. [Glossary of Geology, 4th ed.]
  TNR: 537

crust (Earth)
  BT: Earth structure
  NT: lithosphere
  RT: tectonophysics
  DF: Outermost layer or shell of the Earth, defined according to various criteria, including seismic velocity, density and composition. [Glossary of Geology, 4th ed.]
  TNR: 255

crustaceans
  BT: arthropods
  NT: ostracodes
  RT: invertebrate zoology
        shellfish
  DF: Anthropods belonging to the superclass Crustacea, characterized chiefly by the presence of two pairs of antennae on the head. [Glossary of Geology, 4th ed.]
  TNR: 247

cryology
  USE: glaciology
  TNR: 540

CTD measurement
  BT: field inventory and monitoring
  RT: limnology
        marine chemistry
        ocean sciences
  DF: Measurement method using an instrument composed of conductivity, temperature, and pressure sensors and used to measure conductivity and temperature (from which salinity can be calculated) as a function of depth in the ocean or other body of water [Adapted from Glossary of Geology, 4th ed.]
  TNR: 496

culture and demographics
  UF: demographics
        socioeconomics
  BT: topics
  NT: administrative and political boundaries

business and economics
cadastral and legal land descriptions
RT: geography
social sciences
DF: Information about the characteristics of human populations and population segments. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 138

culturing (specimens)
BT: laboratory methods
RT: bacteriology
microbiology
DF: Growing microorganisms or other living matter in a specially prepared nutrient medium. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 543

Curie temperature analysis
UF: temperature analysis (Curie)
BT: paleomagnetic analysis
RT: geophysics
DF: Analysis of rock specimens using the Curie temperature point which is the temperature a ferromagnetic material loses its permanent magnetism. [Adapted from Eric Weisstein's Treasure Trove of Physics, <http://www.treasure-troves.com/physics>]
TNR: 544

curriculum enrichment materials
USE: educational materials
TNR: 547

customer support (USGS)
USE: USGS customer support and user feedback
TNR: 548

cyclones
USE: hurricanes
TNR: 550

cytology
USE: cell biology
TNR: 197

data
USE: datasets
TNR: 552

data archives (USGS)
USE: USGS libraries and archives
TNR: 554

data downloading (USGS)
USE: USGS data downloading
TNR: 555

data management
  USE: information management methods
  TNR: 557

databases
  USE: datasets
  TNR: 559

Datasets
  UF: data
        databases
  UF+: streamflow data
        water-quality data
  BT: object types
  NT: geospatial datasets
        hydrographic datasets
        time series datasets
  RT: USGS libraries and archives
  TNR: 553
..DF Datasets: Database – a collection of interrelated data and information items stored together to serve one or more applications (USGS Survey Manual)

deciduous forest ecosystems
  USE: forest ecosystems
  TNR: 561

decision support methods
  BT: management methods
  RT: geographic information systems (GIS)
  SN: Includes protocols for discussion and mechanisms for facilitating communication among disparate groups as well as mechanical and technological aids to analysis and understanding.
  DF: Mathematical, analytical, and social procedures used to aid groups and individuals in the process of making decisions.
  TNR: 562

decomposers
  BT: organism groupings (non-taxonomic)
  RT: biogeochemical cycling
        ecology
        life sciences
  DF: Organisms, often bacteria or fungi, that feed on and break down dead plant or animal matter, thus making organic nutrients available to the ecosystem. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 327

decomposition (organic)
  USE: biogeochemical cycling
  TNR: 323

deep sea fisheries
  USE: marine fishery resources
  TNR: 81

deep sea fishing
  USE: marine fishery resources
  TNR: 563

demographics
  USE: culture and demographics
  TNR: 542

deposition (sediment)
  USE: sedimentation
  TNR: 564

depth-to maps
  US+: maps and atlases
        structure contours
  TNR: 567

desert ecosystems
  BT: terrestrial ecosystems
  RT: desertification
        ecology
  DF: Ecosystems in dry, often sandy regions of little rainfall, extreme temperatures, and sparse vegetation. [Adapted from American Heritage Dic. of the English Language,4th ed.]
  TNR: 569

desertification
  BT: climate change
  RT: climatology
        desert ecosystems
        ecology
        hazards
        land use change
  DF: The transformation of arable or habitable land to desert, as by a change in climate or destructive land use. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 458

developmental biology
  UF: embryology
  BT: life sciences
  RT: organism growth and development
  DF: Study of all aspects of development, from the genes and molecular events that control development to the structural changes that an organism undergoes as it develops. [Adapted from Dynamic Development: The Foundations of Developmental Biology, <http://www.ucalgary.ca/UofC/eduweb/virtualembryo/foundations_db.html>]
  TNR: 350

diagenesis
  BT: geologic and hydrologic processes
  RT: petrology
        sedimentology

DF: The process of chemical and physical change in deposited sediment during its conversion to rock. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 572

diagrams
USE: graphics
TNR: 573

diatoms
BT: algae
RT: micropaleontology
phycology
DF: Microscopic, single-celled plants of the class Bacillariophyceae, which grow in both marine and fresh water. Diatoms secrete walls of silica, called frustules, in a great variety of forms. [Glossary of Geology, 4th ed.]
TNR: 174

dictionaries
USE: glossaries
TNR: 574

digital application
BT: digital format
TNR: 576

digital audio
BT: digital format
TNR: 578

digital cartographic data
USE: geospatial datasets
TNR: 579

digital cartographic datasets
USE: geospatial datasets
TNR: 580

digital cartography
USE: cartography
TNR: 418

digital format
BT: physical formats
NT: CDROM
digital application
digital audio
digital image
digital text
digital video
DVD
magnetic disk
magnetic tape
videodisk

TNR: 577

digital image
BT: digital format
TNR: 586

digital text
BT: digital format
TNR: 587

digital video
BT: digital format
TNR: 588

dinoflagellates
BT: algae
RT: micropaleontology
phycology
DF: One-celled microscopic flagellated organisms, chiefly marine and usually solitary, with resemblances to both animal and plant kingdoms. [Glossary of Geology, 4th ed.]
TNR: 175

dinosaurs
BT: reptiles
RT: vertebrate paleontology
DF: Any of various extinct, often gigantic, carnivorous or herbivorous reptiles of the orders Saurischia and Ornithischia that were chiefly terrestrial and existed during the Mesozoic Era. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 589

directories
BT: object types
RT: documents
TNR: 591

disasters
USE: hazards
TNR: 592

disease
USE: health and disease
TNR: 596

disease (human)
USE: environmental health (human)
TNR: 598

disease vectors
BT: health and disease
RT: life sciences
DF: Organisms (as an insect) that transmit a pathogen from one organism to another. [Merriam-Webster's Medical Dic., 1997]

TNR: 600

dispersal (organisms)
UF: colonization (organisms)
BT: ecological processes
RT: ecology
life sciences
migration (organisms)
DF: Dissemination of offspring into areas having conditions favorable for their existence.
TNR: 479

dissertations
USE: documents
TNR: 601

dissolved oxygen
USE: oxygen content (water)
TNR: 77

distribution of animals
USE: biogeography
TNR: 1329

distribution of plants
USE: biogeography
TNR: 1328

distribution of species
USE: biogeography
TNR: 328

distribution services (USGS)
USE: USGS sales and distribution services
TNR: 602

diversity (biological)
USE: biodiversity
TNR: 315

DNA sequencing
UF: gene sequencing
BT: chemical analysis
RT: biochemistry
genetics
DF: Process of elucidating the nucleotide sequence of a gene. [Dic. of Biology, Oxford Univ. Press, 2000]
TNR: 1333

documents
UF: abstracts
articles (publications)
biographies
books and book chapters

dissertations
guidelines
journal articles
journals
memos
newsletters
pamphlets, brochures, and booklets
papers (publications)
planning reports
proceedings
published series
reports
serial publications
technical reports
text documents
theses
transcripts
workshop reports
yearbooks
BT: object types
NT: checklists
guidebooks
manuals
standards
RT: bibliographies
catalogs and indexes
directories
policies and regulations
TNR: 121

domestic water use
UF: public water supply
residential water use
BT: offstream water use
NT: drinking water use
RT: hydraulic engineering
hydrology
DF: Use of water for household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. [USGS Glossary of water-use terminology, <http://water.usgs.gov/watuse/wuglossary.html>]
TNR: 624

dowsing
USE: natural resource exploration
TNR: 628

drawings
USE: graphics
TNR: 630

drilling and coring
UF: core sampling
coring

UF+: ice core sampling
BT: field sampling
RT: botany
core analysis
geology
glaciology
well drilling
SN: Intended for broad use wherever coring is done. For example, taking a core sample from a tree or ice mass as well as a core from geological strata or rocks. The combination of this term with other terms will convey the context of the activity.
DF: Cutting into the subsurface, for example into underground strata or into a tree trunk, to remove material for examination.
TNR: 529

drinking water
USE: drinking water use
TNR: 625

drinking water use
UF: drinking water
BT: domestic water use
RT: water quality
TNR: 106

droughts
BT: atmospheric and climatic processes
RT: atmospheric sciences
hazards
DF: Extended periods of below average precipitation and depleted soil water storage. [NaturalHazards.org <http://www.naturalhazards.org/>]
TNR: 264

DVD
BT: digital format
TNR: 582

dynamic geology
USE: tectonic processes
TNR: 633

Earth characteristics
BT: topics
NT: atmospheric properties
Earth structure
geologic history
geologic structure
gravitational field (Earth)
land surface characteristics
magnetic field (Earth)
ocean characteristics
rocks and deposits
snow and ice cover
stratigraphic sections

topography
RT: Earth sciences
DF: Specifiable, definable or recognizable attributes of the Earth. [Adapted from Glossary of Geology, 4th ed.]
TNR: 261

Earth history
BT: geologic history
RT: geochemistry
geology
tectonophysics
SN: Use for discussions of the structural and compositional changes that the Earth has undergone. Apply to discussions of the whole Earth (or large sections of it) instead of to regional studies.
TNR: 640

Earth materials maps
US+: engineering geology
maps and atlases
TNR: 641

Earth Science Information Centers (ESICs)
USE: USGS Earth Science Information Centers (ESICs)
TNR: 647

Earth sciences
UF: geosciences
BT: sciences
NT: atmospheric sciences
geochemistry
geography
geology
geophysics
glaciology
hydrology
limnology
ocean sciences
paleontology
soil sciences
RT: Earth characteristics
natural resources
scientific careers
DF: All-embracing term for sciences related to the study of the Earth. [Glossary of Geology, 4th ed.]
TNR: 273

Earth structure
BT: Earth characteristics
NT: core (Earth)
crust (Earth)
mantle (Earth)
RT: geologic structure
structural geology
tectonic processes

tectonophysics
DF: Major interior structural features of the planet Earth.
TNR: 525

earthquake activity maps
US+: earthquake occurrences
maps and atlases
TNR: 660

earthquake epicenter maps
US+: earthquake probabilities
maps and atlases
TNR: 668

earthquake forecasting
USE: earthquake probabilities
TNR: 670

earthquake hazards
US+: earthquakes
hazards
TNR: 671

earthquake monitoring
USE: seismic networking
TNR: 672

earthquake occurrence maps
US+: earthquake occurrences
maps and atlases
TNR: 661

earthquake occurrences
UF+: earthquake activity maps
earthquake occurrence maps
earthquake seismology
ground motion maps
seismic hazard maps
shaking maps (seismic)
BT: earthquakes
RT: seismology
DF: Time, location, severity, and mechanism of earthquake events, including the frequency and history of events in a given area.
TNR: 659

earthquake prediction
USE: earthquake probabilities
TNR: 674

earthquake preparedness
BT: hazard preparedness
DF: Awareness of the consequences of earthquake events and actions to be taken before, during, or after events.
TNR: 675

earthquake probabilities
  UF: earthquake forecasting
       earthquake prediction
  UF+: earthquake epicenter maps
       seismicity distribution maps
  BT: risk assessment
  RT: earthquakes
       neotectonic processes
  DF: That aspect of seismology that deals with the physical conditions or indications that precede an earthquake, in order to predict the probability, size, time, and location of a quake.
  TNR: 669

earthquake seismology
  US+: earthquake occurrences
       seismology
  TNR: 662

earthquakes
  UF+: earthquake hazards
  BT: geologic and hydrologic processes
  NT: earthquake occurrences
  RT: earthquake probabilities
       hazards
       seismology
       tectonic processes
       tectonophysics
  DF: Sudden movement of the earth's crust caused by the release of stress accumulated along geologic faults or by volcanic activity. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 666

echinoderms
  BT: invertebrates
  RT: invertebrate zoology
  DF: Any solitary marine benthic (rarely pelagic) invertebrates, belonging to the phylum Echinodermata, characterized by radial symmetry, an endoskeleton formed of plates or ossicles composed of crystalline calcite, and a water-vascular system. Includes echinozoans, asterozoans, crinozoans, and homalozoans subphylums. [Glossary of Geology, 4th ed.]
  TNR: 678

echo sounding
  USE: sonar methods
  TNR: 692

ecologic succession
  USE: succession (biological)
  TNR: 679

ecological competition
  BT: ecological processes
  RT: biodiversity

community ecology
ecology
endangered species
DF: Simultaneous demand by two or more organisms for limited environmental resources, such as nutrients, living space, or light. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 319

ecological models
US+: ecological processes
models
TNR: 681

ecological processes
UF: environmental processes
UF+: ecological models
BT: biological and physical processes
NT: algal blooms
bioaccumulation
biogeochemical cycling
biological productivity
contaminant transport
dispersal (organisms)
ecological competition
ecosystem functions
eutrophication
extinction and extirpation
habitat alteration
migration (organisms)
pollination
succession (biological)
RT: ecology
population and community ecology
DF: Dynamic biogeochemical interactions that occur among and between biotic and abiotic components of the biosphere.
TNR: 182

ecology
UF: bionomics
BT: life sciences
RT: animal behavior
anthropogenic contamination
aquatic biology
aquatic ecosystems
benthic ecosystems
bioaccumulation
biodiversity
biogeochemical cycling
biogeography
biological productivity
bioremediation
carbon cycling
carnivores
coastal ecosystems

community ecology
consumers (organisms)
decomposers
desert ecosystems
desertification
dispersal (organisms)
ecological competition
ecological processes
ecosystem functions
ecosystem monitoring
ecosystems
ecotoxicology
endangered species
endemic species
estuarine ecosystems
eutrophication
extinction and extirpation
fires
food web
forest ecosystems
forest resources
freshwater ecosystems
global change
global warming
grassland ecosystems
habitat alteration
herbivores
human impacts
invasive species
land use change
long-term ecological monitoring
marine ecosystems
mercury contamination
migration (organisms)
migratory species
native species
nonindigenous species
nutrient cycling
omnivores
pesticide and herbicide contamination
plot sampling
pollinators
pollution
population and community ecology
population dynamics
producers (organisms)
reef ecosystems
remediation
shrubland ecosystems
succession (biological)
terrestrial ecosystems
tundra ecosystems
vegetation
waste treatment and disposal

wetland ecosystems
wetland functions
DF: Study of the relationships between organisms and their environment, including the study of communities, patterns of life, natural cycles, relationships of organisms to each other, biogeography, and population changes. [Glossary of Geology, 4th ed.]
TNR: 332

economic geology
BT: geology
RT: building stone resources
clay deposits
coal resources
coalbed methane resources
gas hydrate resources
gem resources
gold ores
gravel deposits
metallic ores
mineral resources
natural gas resources
nonmetallic resources
nonrenewable energy resources
nonrenewable resources
oil resources
oil sand resources
oil shale resources
sand deposits
soil resources
DF: Study and analysis of geologic bodies and materials that can be profitably used, including fuels, metals, nonmetallic minerals, and water; the application of geologic knowledge and theory to the search for and the understanding of mineral deposits. [Glossary of Geology, 4th ed.]
TNR: 690

economics
USE: business and economics
TNR: 14

ecosystem diversity
BT: biodiversity
DF: The variety of habitats and communities of different species that interact in a complex web of interdependent relationships, characterized by fluid "boundaries" between ecosystems and communities. [Adapted from Oceanus, <http://www.whoi.edu/oceanus/OceanusF95Diversity.html>]

TNR: 85

ecosystem functions
UF: ecosystem services
UF+: estuarine ecosystem functions
BT: ecological processes
NT: wetland functions
RT: ecology

DF: The collective life activities (e.g., feeding, growing, moving, excreting waste) of organisms in an ecosystem and the corresponding effects these natural activities have on the physical and chemical conditions of their environment. [Adapted from Biodiversity and Ecosystem Functioning: Maintaining Natural Life Support Processes, <http://www.esa.org/issues4.pdf>]
TNR: 684

ecosystem management
BT: natural resource management
RT: ecosystem monitoring
DF: Process of land-use decision making and land-management practice for ecosystem sustainability, based on an understanding of the spatial and temporal dynamics of the whole system and on the interplay of ecosystem structure and biological diversity. [Adapted from Ecological Principles and Guidelines for Managing the Use of Land, <http://www.esa.org/pao/esalanduse.htm>]

TNR: 50

ecosystem monitoring
BT: field inventory and monitoring
NT: long-term ecological monitoring
RT: biogeography
biological population management
bioremediation
ecology
ecosystem management
natural resource management
population and community ecology
relative abundance analysis
remediation
DF: Recording, evaluating and actively intervening over time in the interaction of living and nonliving elements in a specific environment.
TNR: 333

ecosystem services
USE: ecosystem functions
TNR: 693

ecosystems
UF: biosphere
BT: population and community ecology
NT: aquatic ecosystems
terrestrial ecosystems
wetland ecosystems
RT: ecology
habitats
DF: Ecological communities together with their environments, functioning as units. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 234

ecotoxicology
UF: environmental toxicology
toxicology

BT: life sciences
RT: anthropogenic contamination
bioaccumulation
contaminant transport
ecology
hazards
human impacts
mercury contamination
natural contaminants
pesticide and herbicide contamination
plant and animal testing
pollution
radon
therapeutic methods
toxic radionuclides (natural)
toxic trace elements (natural)
DF: Field of study which integrates the ecological and toxicological effects of chemical pollutants on populations, communities and ecosystems with the fate (transport, transformation and breakdown) of such pollutants in the environment. [Forbes & Forbes (1994). Ecotoxicology in Theory and Practice. Chapman & Hall Exotoxicology Series 2.]
TNR: 685

educational games
USE: educational materials
TNR: 696

educational materials
UF: activity books
coloring books
coloring pages
curriculum enrichment materials
educational games
instructional materials
learning web
lesson plans
paper models
teaching guides
teaching packets
BT: object types
RT: posters
TNR: 134

educational services (USGS)
USE: USGS educational services
TNR: 704

El Nino
USE: ocean-atmosphere interaction
TNR: 706

electrical resistivity logging
UF: resistivity sounding
BT: borehole logging

RT: electromagnetic surveying
stratigraphy
DF: Recording of electrical resistivity soundings, using an array of electrodes in boreholes, to determine depth to geological interfaces. [Adapted from Glossary of Geology, 4th ed.]
TNR: 381

electromagnetic surveying
UF: magnetic surveying
magnetotelluric sounding
BT: field inventory and monitoring
RT: aeromagnetic surveying
electrical resistivity logging
DF: Methods of imaging near-surface earth structures based on their electrical and magnetic response to natural or artificial electric fields. [see <http://www.geophys.washington.edu/SolidEarth/Magnetotellurics/overview.html>]
TNR: 1342

electron microscopy
BT: microscopy
NT: scanning electron microscopy
DF: Determining and identifying the structure of substances by using the electron microscope. [Glossary of Geology, 4th ed.]
TNR: 708

electrophoresis
BT: chemical analysis
RT: biochemistry
DF: Laboratory technique that uses the migration, under the influence of an electric field, of charged particles within a stationary liquid to study macromolecules. The liquid may be a normal solution or held upon a porous medium (e.g. starch, acrylamide gel, or cellulose acetate). The rate at which migration occurs varies according to the charge on the particle and also its size and shape. [Adapted from Dic. of Earth Sciences, Oxford Univ. Press 1999]

TNR: 1334

embryology
USE: developmental biology
TNR: 571

emergency management resources
USE: hazards
TNR: 711

employment opportunities (USGS)
USE: USGS employment and volunteer opportunities
TNR: 712

endangered species
BT: organism groupings (non-taxonomic)

RT: biodiversity
ecological competition
ecology
life sciences
DF: A species present in such small numbers that it is at risk of extinction. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 317

endemic species
BT: native species
RT: biodiversity
ecology
life sciences
DF: Plant and animal species that are native to and confined to a certain region. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 714

endocrinology
BT: anatomy and physiology
RT: health and disease
DF: Study of the glands and hormones of the body and their related disorders. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 198

energy sources (nonrenewable)
USE: nonrenewable energy resources
TNR: 715

energy sources (renewable)
USE: renewable energy resources
TNR: 719

engineering geology
UF+: Earth materials maps
engineering geology maps
geotechnical properties maps
rock mechanics maps
BT: engineering sciences
RT: geology
liquefaction
remediation
DF: Geology as applied to engineering practice, especially mining and civil engineering. [Glossary of Geology, 4th ed.]
TNR: 642

engineering geology maps
US+: engineering geology
maps and atlases
TNR: 723

engineering sciences
UF+: engineering seismology
BT: sciences

NT: engineering geology
hydraulic engineering
RT: instrument design and development
mining hazards
scientific careers
DF: Sciences applying scientific and mathematical principles to practical ends such as the design, manufacture, and operation of efficient and economical structures, machines, processes, and systems. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 593

engineering seismology
US+: engineering sciences
seismology
TNR: 726

entomology
BT: invertebrate zoology
RT: arachnids
butterflies and moths
insects
pollinators
DF: Scientific study of insects. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 729

environmental analysis
USE: environmental assessment
TNR: 731

environmental assessment
UF: environmental analysis
environmental impact assessment
BT: management methods
DF: Assessment to appraise the effect of a proposed project on the aggregate of social and physical conditions that influence a community or ecosystem. The assessment is often prepared to determine the need for a formal environmental impact statement. [Adapted from Glossary of Geology, 4th ed.]
TNR: 732

environmental hazards
USE: hazards
TNR: 733

environmental health (human)
UF: disease (human)
health (human)
human disease
human health
BT: health and disease
NT: human environmental safety
RT: human impacts
social sciences

toxic radionuclides (natural)
toxic trace elements (natural)
virology
DF: Effects of the environment on human health.
TNR: 599

environmental impact assessment
USE: environmental assessment
TNR: 25

environmental management
USE: natural resource management
TNR: 738

environmental planning
USE: natural resource management
TNR: 739

environmental pollutants
USE: anthropogenic contamination
natural contaminants
TNR: 219

environmental processes
USE: ecological processes
TNR: 683

environmental toxicology
USE: ecotoxicology
TNR: 16

eolian sediments
USE: unconsolidated deposits
TNR: 65

erosion
BT: geologic and hydrologic processes
RT: geomorphology
glaciology
hydrology
sedimentology
watershed management
DF: Mechanical destruction of the land and the removal of material (such as soil) by running water (including rainfall), waves and currents, moving ice, or wind. [Glossary of Geology, 4th ed.]
TNR: 740

ESICs
USE: USGS Earth Science Information Centers (ESICs)
TNR: 742

estuarine circulation
US+: estuarine ecosystems
water circulation

TNR: 444

estuarine currents
US+: estuarine ecosystems
water circulation
TNR: 445

estuarine ecosystem functions
US+: ecosystem functions
estuarine ecosystems
TNR: 694

estuarine ecosystems
UF+: estuarine circulation
estuarine currents
estuarine ecosystem functions
BT: aquatic ecosystems
RT: aquatic biology
ecology
DF: Ecological communities at the seaward ends or tidal mouths of rivers where fresh water meets seawater and where tidal effects are evident. [Adapted from Glossary of Geology, 4th ed.]
TNR: 236

eutrophication
BT: ecological processes
RT: ecology
limnology
oxygen content (water)
pollution
DF: Aging of a lake or slow-moving stream by biological enrichment of its water. The process can result in waters rich in mineral and organic nutrients that promote a proliferation of plant life, especially algae, which reduces the dissolved oxygen content and often causes the extinction of other organisms. [Adapted from Concise Columbia Electronic Encyclopedia, 1999 & American Heritage Dic. of the English Language, 4th ed.]
TNR: 686

exhibits (USGS)
USE: USGS exhibits and facility tours
TNR: 743

exotic species
USE: nonindigenous species
TNR: 745

expertise services (USGS)
USE: USGS expertise services
TNR: 746

exploration
USE: natural resource exploration
TNR: 747

exploration seismology
  US+: natural resource exploration
        seismology
  TNR: 748

extinction and extirpation
  UF: extirpation
  BT: ecological processes
  RT: ecology
        life sciences
  DF: Disappearance of species of living organisms. [Columbia Electronic Encyc., 1999]
  TNR: 687

extirpation
  USE: extinction and extirpation
  TNR: 749

facilities (USGS)
  USE: USGS facilities
  TNR: 750

facility tours (USGS)
  USE: USGS exhibits and facility tours
  TNR: 752

farming
  USE: agriculture and farming
  TNR: 162

faunal and floral census
  UF: floral census
  BT: laboratory methods
  RT: field inventory and monitoring
        microbiology
        micropaleontology
        microscopy
  SN: Use for microscopic examinations.
  TNR: 753

fax-on-demand (USGS)
  USE: USGS fax-on-demand services
  TNR: 755

ferns and fern allies
  BT: vascular plants
  RT: botany
  DF: Any of numerous flowerless, seedless vascular plants having roots, stems, and fronds and reproducing by spores. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 757

field centers (USGS)
  USE: USGS field centers

TNR: 759

field experiments
BT: field methods
DF: Deliberate arrangement of objects and events in the field so as to observe the behavioral response of natural systems or organisms.
TNR: 761

field inventory and monitoring
UF: field monitoring
field observation
reconnaissance
UF+: ocean current measurement
ocean monitoring
ocean wave measurement
precipitation measurements
rainfall measurements
river discharge monitoring
snowfall measurements
volcano monitoring
weather monitoring
weather observations
BT: field methods
NT: acoustic methods
borehole logging
CTD measurement
ecosystem monitoring
electromagnetic surveying
handheld field spectroscopy
seismic methods
streamflow monitoring
telemetry
tiltmeter measurement
video monitoring
vocalization methods
RT: faunal and floral census
SN: In general, this category excludes sampling programs in which materials are obtained in the field and brought back to a laboratory for study and analysis.
DF: Direct observation of processes, events, and objects in the natural setting.
TNR: 131

field methods
BT: methods
NT: field experiments
field inventory and monitoring
field sampling
geolocation measurement
DF: Investigative methods away from the laboratory and esp. outdoors, in which an investigator makes first hand observations and collects data and samples. [Adapted from Glossary of Geology, 4th ed.]
TNR: 762

field monitoring
  USE: field inventory and monitoring
  TNR: 763

field observation
  USE: field inventory and monitoring
  TNR: 764

field sampling
  UF: inventory
  UF+: fish inventories
  BT: field methods
  NT: animal tracking
        capturing (animals)
        drilling and coring
        plant and animal tagging
        plot sampling
        sexing (plants & animals)
        specimen collecting
        transect sampling
        trenching
        water sampling
  DF: Collection in the field of subsets of a population that, if properly selected, may be used to estimate the parameters of the population. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 406

field trip guidebooks
  USE: guidebooks
  TNR: 787

figures (illustrations)
  USE: graphics
  TNR: 788

film
  BT: non-digital format
  TNR: 789

fire preparedness
  US+: fires
        hazard preparedness
  TNR: 54

fires
  UF: fires (uncontrolled)
        wildfires
  UF+: fire preparedness
  BT: biological and physical processes
  RT: atmospheric sciences
        controlled fires
        ecology
        hazards
        human impacts

SN: Use for fires that occur naturally in open areas, such as forests or fields. For fires set as part of natural resource management, use 'controlled fires'.
DF: Combustion, marked by flames or intense heat, in natural settings, often ignited by lightning and human activities.
TNR: 513

fires (controlled)
USE: controlled fires
TNR: 512

fires (uncontrolled)
USE: fires
TNR: 790

fish
UF: fishes
UF+: fish inventories
BT: vertebrates
RT: ichthyology
DF: Cold-blooded aquatic vertebrates of the superclass Pisces, characteristically having fins, gills, and a streamlined body. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 792

fish farming
USE: aquaculture
TNR: 226

fish inventories
US+: field sampling
fish
TNR: 779

fishery management
BT: biological population management
TNR: 67

fishery resources
BT: renewable resources
NT: commercial fishery resources
inland fishery resources
marine fishery resources
recreational fishery resources
subsistence fishery resources
RT: aquaculture
aquatic biology
ichthyology
marine biology
overfishing
DF: The stock of anadromous, marine, and freshwater fish in fishing areas of commercial, subsistence, and recreational value.
TNR: 228

fishes
  USE: fish
  TNR: 793

fission-track dating
  UF: age dating (fission-track)
        fission-track method
  BT: laboratory methods
  RT: geochronology
        radiometric dating
  DF: Method of calculating an age in years, for micas, tektites, meteorites and other such materials, by determining the ratio of the spontaneous fission-track density to induced fission tracks. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 798

fission-track method
  USE: fission-track dating
  TNR: 799

flatworms
  BT: worms
  RT: invertebrate zoology
  DF: Any of various parasitic and nonparasitic worms of the phylum Platyhelminthes, such as a tapeworm or a planarian, characteristically having a soft, flat, bilaterally symmetrical body and no body cavity. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 800

flood preparedness
  US+: floods
        hazard preparedness
  TNR: 56

flooding (controlled)
  USE: controlled flooding
  TNR: 515

floods
  UF+: flood preparedness
  BT: geologic and hydrologic processes
  RT: controlled flooding
        hazards
        hydrology
        surface water (non-marine)
        watershed management
  DF: Overflowing by water of the normal confines of a stream or other body of water, or accumulation of water by drainage over areas which are not normally submerged. [Lo, Glossary of Hydrology, 1992]
  TNR: 516

floral census
  USE: faunal and floral census
  TNR: 754

flow cytometry
  BT: chemical analysis
  RT: biochemistry
       cell biology
  DF: Technique in which cells are tagged with a fluorescent dye and then directed single file through a laser beam. The intensity of fluorescence induced by the laser beam is proportional to the amount of DNA in the cells. [Concise Medical Dic., Oxford Univ. Press, 1998]
  TNR: 1331

flowering plants
  BT: vascular plants
  RT: botany
  DF: Angiosperms, plants with true flowers, in which the seeds, resulting from double fertilization, are enclosed in an ovary, comprising the fruit. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 803

fluid migration
  USE: groundwater flow
  TNR: 804

folding (geologic)
  UF: crenulation (geologic)
  BT: geologic structure
  RT: structural geology
       tectonic processes
  DF: Geologic structure consisting of a curve or bend of a planar element such as rock strata, bedding planes, foliation, or cleavage. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 536

foliation (geologic)
  BT: geologic structure
  RT: glaciation
       structural geology
       tectonic processes
  DF: Geologic structure consisting of a planar or layered arrangement of textural features in any type of rock and in glaciers. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 806

food chain
  USE: food web
  TNR: 807

food cycle
  USE: food web
  TNR: 809

food web
  UF: food chain
       food cycle

trophic level dynamics
trophic relationships
BT: nutrient cycling
RT: biochemistry
ecology
DF: Complex of interrelated food chains in an ecological community. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 808

foraminifera
USE: protists
DF: Protozoans belonging to the subclass Sarcodina, order Foraminifera, characterized by the presence of a test of one to many chambers composed of secreted calcite (rarely silica or argonite) or of agglutinated particles. [Glossary of Geology, 4th ed.]
TNR: 812

foreign species
USE: nonindigenous species
TNR: 814

forest ecosystems
UF: coniferous forests ecosystems
deciduous forest ecosystems
mixed forest ecosystems
taiga ecosystems
BT: terrestrial ecosystems
RT: ecology
forest resources
DF: Ecosystems in dense areas of trees, plants, and underbrush covering a large area. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 498

forest resources
UF: forestry
BT: renewable resources
RT: botany
ecology
forest ecosystems
SN: Use for timber and other resources of forests with economic value.
TNR: 817

forestry
USE: forest resources
TNR: 818

format
USE: physical formats
TNR: 819

fossils
BT: rocks and deposits
NT: ichnofossils

RT: biostratigraphy
micropaleontology
paleontology
trilobites
DF: Remains, traces or imprints of a plant or animal that have been preserved in the Earth's crust since some past geologic or prehistoric time; loosely, any evidence of past life. [Glossary of Geology, 4th ed.]
TNR: 635

fracture (geologic)
UF: cleavage (rock)
jointing (geologic)
BT: geologic structure
RT: structural geology
tectonic processes
DF: Geologic structure consisting of any surface within a geologic material across which there is no cohesion, including cracks, joints, and faults. [Glossary of Geology, 4th ed.]
TNR: 453

Frequently Asked Questions (FAQs)
USE: USGS customer support and user feedback
TNR: 823

freshwater (ground)
USE: groundwater
TNR: 824

freshwater (surface)
USE: surface water (non-marine)
TNR: 825

freshwater ecosystems
UF: lake ecosystems
pond ecosystems
spring ecosystems
stream ecosystems
UF+: river ecosystems
BT: aquatic ecosystems
RT: aquatic biology
ecology
groundwater
limnology
surface water (non-marine)
DF: Ecosystems in bodies of water that are not salty. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 237

fungi
BT: organisms
RT: mycology

DF: Eukaryotic organisms of the kingdom Fungi, which lack chlorophyll and vascular tissue and range in form from a single cell to a body mass of branched filamentous hyphae that often produce specialized fruiting bodies. The kingdom includes the yeasts, molds, smuts, and mushrooms. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 831

future time period
USE: projected time period
TNR: 832

game management
BT: wildlife population management
RT: wildlife biology
TNR: 834

game species
BT: organism groupings (non-taxonomic)
RT: vertebrate zoology
wildlife biology
DF: Species of wild animals, birds, or fish hunted for food or sport. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 835

gamma-ray logging
BT: borehole logging
RT: stratigraphy
DF: Recording of a radioactivity log curve of the intensity of broad-spectrum, undifferentiated natural gamma radiation emitted from the rocks in a cased or uncased borehole. [Adapted from Glossary of Geology, 4th ed.]
TNR: 382

gamma-ray spectrometric surveying
USE: aeroradiometric surveying
TNR: 154

gas chromatography
BT: chromatography
RT: biochemistry
geochemistry
DF: Chromatography in which the substance to be separated into its components is diffused along with a carrier gas through a liquid or solid adsorbent for differential adsorption. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 439

gas hydrate resources
BT: natural gas resources
RT: economic geology

DF: Resources of gas hydrate, a crystalline solid, whose building blocks consist of a gas molecule surrounded by a cage of water molecules. Many gases have molecular sizes suitable to form hydrate, including such naturally occurring gases as carbon dioxide, hydrogen sulfide, and several low-carbon-number hydrocarbons, but most marine gas hydrates that have been analyzed are methane hydrates. [USGS: Woods Hole Field Center: Gas Hydrate: what is it? <http://woodshole.er.usgs.gov/project-pages/hydrates/what.html>]
TNR: 836

gazetteers
USE: geographic names and classifications
TNR: 837

gem resources
BT: nonmetallic resources
RT: economic geology
mineralogy
DF: Deposits of unfashioned natural gem material. [Glossary of Geology, 4th ed.]
TNR: 839

gemology
USE: mineralogy
TNR: 840

gene sequencing
USE: DNA sequencing
TNR: 1335

genetic diversity
BT: biodiversity
DF: Variation in genes in a population pool that contributes to the ability of organisms to evolve and adapt to new conditions. [Adapted from Oceanus, <http://www.whoi.edu/oceanus/OceanusF95Diversity.html>]

TNR: 84

genetics
UF: heredity
BT: life sciences
RT: DNA sequencing
molecular biology
polymerase chain reaction
DF: Science that deals with the materials and processes of characteristics or features which are inheritable from generation to generation. [Adapted from Glossary of Geology, 4th ed.]
TNR: 351

geochemical anomaly maps
US+: geochemistry
maps and atlases
TNR: 842

geochemical processes

BT: geologic and hydrologic processes
RT: geochemistry
DF: Processes affecting the amount, distribution, or structure of chemical elements in air, water, soil, rocks, and minerals.
TNR: 843

geochemical surveys
USE: chemical analysis
TNR: 432

geochemistry
UF: chemistry (Earth sciences)
UF+: geochemical anomaly maps
BT: Earth sciences
NT: soil chemistry
water chemistry
RT: atomic absorption analysis
biogeochemical cycling
carbon cycling
carbon isotope analysis
chemical analysis
chromatography
Earth history
gas chromatography
geochemical processes
isotopic analysis
light stable isotope analysis
liquid chromatography
mass spectroscopy
metamorphism (geological)
neutron activation analysis
oxygen isotope analysis
particle-beam spectroscopy
tritium analysis
DF: Study of the distribution and amounts of chemical elements in minerals, ores, rocks, soil, water, and the atmosphere, and the study of the circulation of the elements in nature, on the basis of the properties of their atoms and ions. [Glossary of Geology, 4th ed.]
TNR: 650

geochronology
BT: geology
RT: carbon-14 analysis
fission-track dating
geologic time scales
radiometric dating
rubidium-strontium age analysis
stratigraphy
tree ring analysis
uranium-lead analysis
uranium-thorium analysis
DF: Science of dating and determining the time sequence of events in the history of the Earth. [Glossary of Geology, 4th ed.]
TNR: 845

geodata
  USE: geospatial datasets
  TNR: 846

geodesy
  BT: geophysics
  RT: geography
        land surveying
  DF: Science concerned with (a) the determination of the size and shape of the Earth and the precise location of points on its surface; (b) the gravitational field of the Earth and temporal variations such as Earth tides, polar motion, and rotation of the Earth. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 645

geographic boundaries
  USE: administrative and political boundaries
  TNR: 19

geographic coordinate systems
  USE: map coordinate systems
  TNR: 848

geographic information sciences
  USE: geography
  TNR: 849

geographic information system (GIS) datasets
  USE: geospatial datasets
  TNR: 850

geographic information systems (GIS)
  UF: GIS
  BT: information system design and development
  RT: decision support methods
        geography
        geolocation measurement
        geospatial datasets
        GPS measurement
        information management methods
        information sciences
        map coordinate systems
  SN: Use this term only for information that is about GIS and not for the use of GIS in applications and projects.
  DF: Computer program and associated databases that store, integrate, analyze, and process geospatial data. Data is usually organized in layers containing distinct classes of geographic entities, such as hydrologic, cultural, and topographic features. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 851

geographic names and classifications
  UF: gazetteers

place names
placenames
BT: terminologies and classifications
RT: maps and atlases
TNR: 838

geography
UF: geographic information sciences
BT: Earth sciences
NT: cartography
RT: administrative and political boundaries
aeromagnetic surveying
aeroradiometric surveying
altimetry measurement
AVHRR
bathymetry measurement
cadastral and legal land descriptions
culture and demographics
geodesy
geographic information systems (GIS)
geolocation measurement
GPS measurement
hyperspectral imaging
IFSAR
image analysis
infrared imaging
land surface characteristics
land surveying
land use change
LIDAR
map coordinate systems
microwave imaging
multispectral imaging
panchromatic imaging
radar imaging
remote sensing
SLAR
SMMR
spatial analysis
SSM/I
thermal imaging
topography
topological analysis
visible light imaging
DF: Study of all aspects of the Earth's surface including its natural and political divisions, the distribution and differentiation of areas and, often, human interactions with the environment. [Glossary of Geology, 4th ed.]
TNR: 422

geohistory
USE: geologic history
TNR: 855

geohydrology
  USE: hydrogeology
  TNR: 856

geolocation measurement
  UF: location measurement
        navigating
        orienteering
  BT: field methods
  NT: altimetry measurement
        bathymetry measurement
        GPS measurement
        land surveying
  RT: geographic information systems (GIS)
        geography
  DF: Methods for establishing a geographic location on the surface of the Earth.
  TNR: 190

geologic and hydrologic processes
  UF: hydrologic processes
        lithification
  BT: biological and physical processes
  NT: diagenesis
        earthquakes
        erosion
        floods
        geochemical processes
        glaciation
        groundwater flow
        heat flow (Earth)
        hydrothermal processes
        isostasy
        land subsidence
        landslides
        liquefaction
        metamorphism (geological)
        river discharge
        sediment transport
        sedimentation
        streamflow
        tectonic processes
        volcanic activity
        water circulation
  RT: geology
        hydrology
        tsunamis
  TNR: 446

geologic contacts
  UF: contacts (geologic)
  BT: stratigraphic sections
  NT: unconformities
  RT: stratigraphy

DF: Plane or irregular surface between two types or ages of rock; examples are faults, intrusive borders, bedding planes separating distinct strata, and unconformities. [Glossary of Geology, 4th ed.]
TNR: 504

geologic formations
USE: bedrock geologic units
TNR: 304

geologic hazards
USE: hazards
TNR: 875

geologic history
UF: chronostratigraphy
geohistory
BT: Earth characteristics
NT: biostratigraphy
Earth history
lithostratigraphy
RT: geologic time scales
geology
paleontology
paleoseismology
stratigraphy
DF: Record (and inferred reconstruction) of the origin and development of the Earth since its formation.
TNR: 363

geologic maps
US+: geology
maps and atlases
TNR: 878

geologic names and classifications
BT: terminologies and classifications
TNR: 879

geologic sections
USE: stratigraphic sections
TNR: 880

geologic structure
BT: Earth characteristics
NT: folding (geologic)
foliation (geologic)
fracture (geologic)
lineation (geologic)
structure contours
RT: Earth structure
stratigraphic sections
structural geology

DF: General disposition, attitude, arrangement, and relative positions of the rock masses of a region or area; the sum total of the structural features of an area, resulting from such deformational processes as faulting, folding, and igneous intrusion. [Glossary of Geology, 4th ed.]
TNR: 636

geologic time period
BT: time periods
RT: geologic time scales
SN: Also use an authoritative list recognized by the USGS to indicate the specific geologic time period(s) and/or use a range of prehistoric dates as the dates of coverage.
DF: Period of time extending from the end of the formative period of the Earth as a separate planetary body to the beginning of written history. [Glossary of Geology, 4th ed.]
TNR: 882

geologic time scales
BT: object types
RT: geochronology
geologic history
geologic time period
DF: Arbitrary chronologic arrangement or sequence of geologic events, used as a measure of the relative or absolute duration or age of any part of geologic time. [Glossary of Geology, 4th ed.]
TNR: 876

geologic units
USE: stratigraphic sections
TNR: 884

geological oceanography
USE: marine geology
TNR: 885

geology
UF+: geologic maps
subsurface maps
BT: Earth sciences
NT: economic geology
geochronology
geomorphology
hydrogeology
marine geology
mineralogy
petrology
sedimentology
stratigraphy
structural geology
volcanology
RT: drilling and coring
Earth history
engineering geology
geologic and hydrologic processes

geologic history
metamorphism (geological)
DF: Study of the planet Earth - the materials of which it is made, the processes that act on these materials, the products formed, and the history of the planet and its life forms since its origin. [Glossary of Geology, 4th ed.]
TNR: 651

geomagnetic field
USE: magnetic field (Earth)
TNR: 28

geomagnetics
USE: magnetic field (Earth)
TNR: 892

geomagnetism
USE: magnetic field (Earth)
TNR: 893

geomorphology
BT: geology
RT: bathymetry
erosion
land subsidence
land surface characteristics
landslides
topography
DF: Science that treats the general configuration of the Earth's surface; specifically the classification, description, nature, origin, and development of landforms and their relationships to underlying structures, and the history of geologic changes as recorded by these surface features. [Glossary of Geology, 4th ed.]
TNR: 888

geophysical maps
US+: geophysics
maps and atlases
TNR: 894

geophysics
UF+: geophysical maps
BT: Earth sciences
NT: geodesy
marine geophysics
seismology
tectonophysics
RT: borehole logging
borehole temperature logging
core (Earth)
Curie temperature analysis
gravitational field (Earth)
heat flow (Earth)
inner core (Earth)

isostasy
laboratory-induced magnetization analysis
magnetic field (Earth)
magnetic hysteresis analysis
magnetic susceptibility analysis
mantle (Earth)
metamorphism (geological)
natural remanent magnetization analysis
outer core (Earth)
paleomagnetic analysis
DF: Study of the Earth by quantitative physical methods. Basic divisions include solid-earth geophysics, physics of the atmosphere and hydrosphere, and solar-terrestrial physics. (It is sometimes used to include the instrumental study of the Moon and planets). [Glossary of Geology, 4th ed.]
TNR: 646

geosciences
USE: Earth sciences
TNR: 649

geospatial analysis
BT: spatial analysis
RT: image analysis
topological analysis
DF: Study of the distribution and association of Earth phenomena, including cultural and social concerns, that include singular or multiple processes operating in concert in some identified region. Geographic information systems and remote sensing are used to analyze multivariate geospatial data. [Adapted from http://www.weber.edu/Geosciences/Geospatial.html]

TNR: 1336

geospatial data
USE: geospatial datasets
TNR: 896

geospatial datasets
UF: cartographic data (digital)
digital cartographic data
digital cartographic datasets
geodata
geographic information system (GIS) datasets
geospatial data
GIS datasets
BT: datasets
RT: geographic information systems (GIS)
hydrographic datasets
TNR: 416

geostatistics
USE: statistical analysis

SN: Use a more specific 'statistical analysis' term or combine an Earth science or topic term with 'statistical analysis'.
TNR: 898

geotechnical properties maps
US+: engineering geology
maps and atlases
TNR: 724

geothermal resources
BT: renewable energy resources
RT: hydrogeology
volcanology
DF: Sources of power obtained by using heat from the Earth's interior, mostly from regions of active volcanism. [Encyclopedia Britannica, 1999-2001]
TNR: 721

geothermics
USE: heat flow (Earth)
TNR: 76

GIS
USE: geographic information systems (GIS)
TNR: 852

GIS datasets
USE: geospatial datasets
TNR: 897

glacial geology
USE: glaciology
TNR: 864

glaciation
BT: geologic and hydrologic processes
RT: foliation (geologic)
glaciology
snow and ice cover
DF: The geologic processes of glacial activity, including erosion and deposition, and the resulting effects of such action on the Earth's surface. [Glossary of Geology, 4th ed.]
TNR: 865

glaciers
USE: snow and ice cover
TNR: 899

glaciology
UF: cryology
glacial geology
BT: Earth sciences
RT: drilling and coring
erosion
glaciation

isostasy
snow and ice cover
DF: a) Study of all aspects of snow and ice; the science that treats quantitatively the whole range of processes associated with all forms of solid existing water. b) Study of existing glaciers and ice sheets, and of their physical properties. [Glossary of Geology, 4th ed.]
TNR: 541

global change
BT: topics
NT: global warming
RT: atmospheric sciences
climate change
ecology
ocean sciences
sea-level change
DF: Documenting, analyzing, and modeling the character of past and present environments and the geological, biological, hydrological, and geochemical processes involved in environmental change so that future environmental changes and impacts can be anticipated. [USGS Global Change Research, <http://geochange.er.usgs.gov/>]
TNR: 457

global climate change
USE: climate change
TNR: 456

global positioning measurement
USE: GPS measurement
TNR: 902

global warming
BT: global change
RT: atmospheric sciences
climate change
ecology
ocean sciences
DF: Increase in the average temperature of the earth's atmosphere, especially a sustained increase sufficient to cause climatic change. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 900

glossaries
UF: dictionaries
lexicons
BT: terminologies and classifications
TNR: 575

gold ores
BT: metallic ores
RT: economic geology
mineralogy

DF: Naturally occurring materials from which gold, a soft, heavy, yellow, isometric mineral, the native metallic element Au, can be profitably extracted. [Glossary of Geology, 4th ed.]
TNR: 904

governmental units
USE: administrative and political boundaries
TNR: 136

GPS measurement
UF: global positioning measurement
BT: geolocation measurement
RT: geographic information systems (GIS)
geography
DF: Measurement using the Global Positioning System, a system of satellites for identifying earth locations. By triangulation of signals from three of the satellites, a receiving unit can pinpoint its current location anywhere on earth to within a few meters. [Adapted from Computer Desktop Encyclopedia, 2001]
TNR: 861

grain-size analysis
UF: grainsize analysis
granulometry
particle-size analysis
BT: laboratory methods
NT: sieve-size analysis
RT: sedimentology
DF: Determination of the statistical proportions or distribution of particles of defined size fractions of a soil, sediment, or rock. [Glossary of Geology, 4th ed.]
TNR: 905

grainsize analysis
USE: grain-size analysis
TNR: 94

grants (USGS)
USE: USGS contracts and grants
TNR: 909

granulometry
USE: grain-size analysis
TNR: 906

graphics
UF: 3-D graphics
3-D imagery
diagrams
drawings
figures (illustrations)
illustrations
BT: object types
NT: animations

cross sections
graphs
RT: audiovisual materials
images
TNR: 118

graphs
UF+: seismic profiles
seismograms
BT: graphics
TNR: 911

grassland ecosystems
UF: mixed grass ecosystems
plains ecosystems
prairie ecosystems
short grass ecosystems
tall grass ecosystems
BT: terrestrial ecosystems
RT: ecology
DF: Ecosystems in areas, such as a prairies or meadows, of grass or grasslike vegetation. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 914

gravel deposits
BT: unconsolidated deposits
RT: economic geology
nonmetallic resources
sedimentology
DF: Unconsolidated mixture of rock fragments or pebbles [American Heritage Dic. of the English Language, 4th ed.]
TNR: 920

gravitational field (Earth)
UF: gravity
gravity field
UF+: gravity anomaly maps
BT: Earth characteristics
RT: geophysics
DF: Region associated with Earth's mass distribution that gives rise to forces of gravitational attraction. [Adapted from Glossary of Geology, 4th ed.]
TNR: 643

gravity
USE: gravitational field (Earth)
TNR: 921

gravity anomaly maps
US+: gravitational field (Earth)
maps and atlases
TNR: 922

gravity field
  USE: gravitational field (Earth)
  TNR: 923

gray water
  USE: wastewater use
  TNR: 924

greenhouse gases
  BT: atmospheric composition
  RT: atmospheric sciences
        climate change
        ozone layer
  DF: Atmospheric gases (carbon dioxide, methane, nitrous oxide, water vapor, and manmade gases such as chlorofluorocarbons) that allow radiation from the sun to reach the earth unimpeded and absorb infrared radiation from the Earth's surface, trapping the heat in the atmosphere. [Adapted from <http://www.eia.doe.gov/oiaf/1605/ggccebro/chapter1.html>]
  TNR: 271

grey water
  USE: wastewater use
  TNR: 926

grid coordinate systems
  USE: map coordinate systems
  TNR: 927

ground motion maps
  US+: earthquake occurrences
        maps and atlases
  TNR: 663

ground water
  USE: groundwater
  TNR: 928

ground-water flow
  USE: groundwater flow
  TNR: 95

ground-water quality
  USE: groundwater quality
  TNR: 96

groundwater
  UF: freshwater (ground)
        ground water
        water subsurface
  BT: water resources
  RT: freshwater ecosystems
        groundwater flow
        groundwater quality
        hydrogeology

DF: That part of the subsurface water that is in the zone of saturation, including underground streams. Loosely, all subsurface water as distinct from surface water. [Glossary of Geology, 4th ed.]
TNR: 240

groundwater flow
UF: fluid migration
ground-water flow
groundwater movement
UF+: groundwater flow modeling
BT: geologic and hydrologic processes
RT: groundwater
hydrogeology
DF: Movement, or flow, of water in the saturated zone in the subsurface where all interstices are filled with water under pressure greater than that of the atmosphere, whether naturally or artificially induced. [Adapted from Glossary of Geology, 4th ed.]
TNR: 805

groundwater flow modeling
US+: groundwater flow
mathematical modeling
TNR: 932

groundwater geology
USE: hydrogeology
TNR: 934

groundwater movement
USE: groundwater flow
TNR: 933

groundwater quality
UF: ground-water quality
BT: water quality
RT: groundwater
hydrology
water chemistry
DF: Fitness for use of that part of the subsurface water that is in the zone of saturation, including underground streams. [Adapted from Glossary of Geology, 4th ed.]
TNR: 931

guidebooks
UF: field trip guidebooks
BT: documents
TNR: 621

guidelines
USE: documents
TNR: 604

gymnosperms
BT: vascular plants

RT: botany
DF: Plants whose seeds are commonly in cones and never enclosed in an ovary. Includes cycad, ginkgo, pine, fir, and spruce. [Adapted from Glossary of Geology, 4th ed.]
TNR: 935

habitat alteration
UF: habitat destruction
habitat fragmentation
BT: ecological processes
RT: ecology
DF: Changes in the particular environments or places where organisms or species tend to live. [Adapted from Glossary of Geology, 4th ed.]
TNR: 688

habitat destruction
USE: habitat alteration
TNR: 936

habitat fragmentation
USE: habitat alteration
TNR: 937

habitats
BT: population and community ecology
RT: ecosystems
SN: Use in combination with terms from 'organisms' and 'organism groupings (informal)' to indicate the topic of the habitat of a species or group of species.
DF: Particular environments or places where organisms or species tend to live; a more locally circumscribed portion of the total environment. [Adapted from Glossary of Geology, 4th ed.]
TNR: 52

hand-held field spectroscopy
USE: handheld field spectroscopy
TNR: 97

handheld field spectroscopy
UF: hand-held field spectroscopy
BT: field inventory and monitoring
DF: Use of portable equipment to measure spectral reflectance of materials in the field.
TNR: 773

hardness (water)
USE: water hardness
TNR: 939

harmful algal blooms
US+: algal blooms
hazards
TNR: 180

hazard preparedness
  UF+: fire preparedness
        flood preparedness
        landslide preparedness
        tsunami preparedness
  BT: management methods
  NT: earthquake preparedness
  DF: Awareness of the consequences of hazards and actions to be taken in response before, during, or after hazards occur or are encountered.
  TNR: 53

hazards
  UF: disasters
        emergency management resources
        environmental hazards
        geologic hazards
  UF+: bolide impacts
        earthquake hazards
        harmful algal blooms
        meteor impacts
        meteorite impacts
  BT: topics
  RT: algal blooms
        desertification
        droughts
        earthquakes
        ecotoxicology
        fires
        floods
        human impacts
        landslides
        liquefaction
        mining hazards
        natural contaminants
        pollution
        social sciences
        storms
        tsunamis
        volcanic activity
  DF: Potential dangers from both natural processes (e.g., earthquakes, floods, and climate change) and human impacts on the environment.
  TNR: 183

health (human)
  USE: environmental health (human)
  TNR: 734

health and disease
  UF: disease
  BT: topics
  NT: disease vectors
        environmental health (human)
  RT: bacteriology
        endocrinology

histology
immunology
life sciences
parasitology
pathology
social sciences
SN: Covers both human and non-human health and disease topics. For human health and disease, use the narrower term 'environmental health (human)'.
TNR: 597

heat flow (Earth)
UF: geothermics
heatflow (Earth)
BT: geologic and hydrologic processes
RT: geophysics
DF: Conductive heat flow through the surface of the Earth. [Adapted from Glossary of Geology, 4th ed.]
TNR: 866

heatflow (Earth)
USE: heat flow (Earth)
TNR: 98

herbicide contaminants
USE: pesticide and herbicide contamination
TNR: 944

herbivores
BT: consumers (organisms)
RT: ecology
zoology
DF: Animals that feed chiefly on plants. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 501

heredity
USE: genetics
TNR: 48

herpetology
BT: vertebrate zoology
RT: amphibians
reptiles
DF: Scientific study of reptiles and amphibians. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 193

histology
BT: anatomy and physiology
RT: health and disease
DF: a) Anatomical study of the microscopic structure of animal and plant tissues. b) Microscopic structure of tissue. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 199

historic time period
  BT: time periods
  SN: This term should be used to indicate that the item has an historic time period associated with it, where that is a significant factor about the item. Also give a range of dates of coverage where this is known.
  DF: Period of time extending from the beginning of written history to the present.
  TNR: 946

horizontal datums
  USE: map coordinate systems
  TNR: 947

horseshoe crabs
  BT: arthropods
  RT: invertebrate zoology
  DF: Horseshoe crabs belong to a separate class, called Merostomata, of the phylum of Arthropods. Though they are called "crabs," they are, in fact, an ancient species that is most closely related to trilobytes that existed 544 million years ago. [Adapted from <http://www.horseshoecrab.org/nh/species.html>]
  TNR: 248

horticulture
  USE: agriculture and farming
  TNR: 163

human disease
  USE: environmental health (human)
  TNR: 26

human environmental safety
  UF: safety issues (human)
  BT: environmental health (human)
  RT: social sciences
  DF: Monitoring and managing potentially harmful factors in the environment for human safety.
  TNR: 736

human health
  USE: environmental health (human)
  TNR: 735

human impacts
  BT: topics
  NT: land use change
       mining hazards
       overfishing
       overgrazing
       pollution
       waste treatment and disposal
  RT: acid deposition
       ecology

ecotoxicology
environmental health (human)
fires
hazards
invasive species
land subsidence
social sciences
DF: Anthropogenic stress (or stress caused by human activity) on the natural environment. [EPA: Global Warming: Fundamentals <http://www.epa.gov/globalwarming/faq/fundamentals.html#q1>]
TNR: 129

hurricanes
UF: cyclones
typhoons
BT: storms
RT: meteorology
DF: a) Severe tropical cyclones originating in the equatorial regions of the Atlantic Ocean or Caribbean Sea or eastern regions of the Pacific Ocean, traveling north, northwest, or northeast from their point of origin, and usually involving heavy rains. b) A wind with a speed greater than 74 miles (119 kilometers) per hour, according to the Beaufort scale. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 551

hydraulic engineering
UF: hydraulics
UF+: hydraulic models
BT: engineering sciences
RT: agricultural water use
commercial water use
domestic water use
industrial water use
instream water use
irrigation water use
mining water use
offstream water use
power generation water use
wastewater use
water use
DF: Branch of engineering using the physical science and technology of the static and dynamic behavior of fluids. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 727

hydraulic models
US+: hydraulic engineering
models
TNR: 954

hydraulics
USE: hydraulic engineering
TNR: 955

hydroelectric power generation water use
  USE: power generation water use
  TNR: 956

hydrogeology
  UF: geohydrology
        groundwater geology
  UF+: hydrographic sections
  BT: geology
  RT: geothermal resources
        groundwater
        groundwater flow
        hydrothermal processes
        renewable energy resources
        water resources
  DF: Science that deals with subsurface waters and with related geologic aspects of surface waters. [Glossary of Geology, 4th ed.]
  TNR: 857

hydrographic datasets
  BT: datasets
  RT: geospatial datasets
  TNR: 9

hydrographic sections
  US+: cross sections
        hydrogeology
  TNR: 538

hydrologic maps
  US+: hydrology
        maps and atlases
  TNR: 957

hydrologic processes
  USE: geologic and hydrologic processes
  TNR: 862

hydrologic unit codes
  BT: terminologies and classifications
  TNR: 958

hydrology
  UF+: hydrologic maps
  BT: Earth sciences
  RT: agricultural water use
        commercial water use
        domestic water use
        erosion
        floods
        geologic and hydrologic processes
        groundwater quality
        hydrothermal processes
        industrial water use

instream water use
irrigation water use
limnology
marine water quality
meteorology
mining water use
nutrient content (water)
ocean sciences
offstream water use
oxygen content (water)
power generation water use
precipitation (atmospheric)
river discharge
river reaches
river systems
salinity
sediment transport
streamflow
streamflow monitoring
surface water (non-marine)
surface water quality
suspended material (water)
wastewater use
water circulation
water hardness
water pH
water properties
water quality
water resources
water sampling
water temperature
water use
wetland functions

DF: Science that deals with global water (both liquid and solid), its properties, circulation, and distribution, on and under the Earth's surface and in the atmosphere, from the moment of its precipitation until it is returned to the atmosphere through evapotranspiration or is discharged into the ocean. [Glossary of Geology, 4th ed.] In practice, the study of the oceans is considered to be ocean sciences (oceanography) and the study of the atmosphere is considered to be meteorology. [USGS Water-Supply Paper 1541-A, 1995]

TNR: 652

hydrosphere

USE: water resources

TNR: 960

hydrothermal processes

BT: geologic and hydrologic processes

RT: hydrogeology
hydrology

DF: Those processes associated with igneous activity that involve heated or superheated water, esp. alteration, space filling, and replacement. [Glossary of Geology, 4th ed.]

TNR: 867

hyperspectral imaging
BT: remote sensing
RT: geography
DF: Type of multispectral imaging that records many tens of bands of imagery at very narrow bandwidths. [Adapted from Glossary of Geology, 4th ed.]
TNR: 961

hypoxia
USE: oxygen content (water)
TNR: 962

hysteresis
USE: magnetic hysteresis analysis
TNR: 15

ice
USE: snow and ice cover
TNR: 964

ice core sampling
US+: drilling and coring
snow and ice cover
TNR: 531

ice storms
BT: storms
DF: Storms in which snow or rain freezes on contact, forming a coat of ice on the surfaces it touches. [American Heritage Dic. of the English Language, 4th. ed]
TNR: 87

ichnofossils
UF: trace fossils
BT: fossils
RT: biostratigraphy
paleontology
DF: Sedimentary structures consisting of a fossilized track, resulting from the life activities (other than growth) of an animal, such as a mark made by an invertebrate moving or resting on or in soft sediment. [Glossary of Geology, 4th ed.]
TNR: 820

ichthyology
BT: vertebrate zoology
RT: commercial fishery resources
fish
fishery resources
inland fishery resources
marine fishery resources
overfishing
recreational fishery resources

DF: Scientific study of fish. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 794

IFSAR
UF: Interferometric Synthetic Aperture Radar (IFSAR)
BT: remote sensing
RT: geography
TNR: 965

igneous rocks
BT: rocks and deposits
RT: petrology
DF: Rocks that solidified from molten or partly molten material, i.e. from a magma. [Glossary of Geology, 4th ed.]
TNR: 966

illustrations
USE: graphics
TNR: 910

image analysis
BT: computational methods
RT: geography
geospatial analysis
spatial analysis
DF: Pattern analysis of the shapes and textures of images to identify features and derive information about them.
TNR: 489

images
UF: pictures
UF+: aerial photographs
aerial photos
air photos
AVHRR images
Landsat images
LIDAR images
orthoimagery
orthophotographs
photographs
remote-sensing data
remote-sensing images
scientists-at-work photographs
BT: object types
RT: audiovisual materials
graphics
TNR: 166

immunology
BT: anatomy and physiology
RT: health and disease

DF: Study of the body's resistance to invasion by other organisms (i.e., immunity, the immune system, and the interaction of antigens with antibodies). [Adapted from Encyclopedia Britannica, 2001]
TNR: 200

in-stream water use
USE: instream water use
TNR: 973

indexes
USE: catalogs and indexes
TNR: 425

indigenous species
USE: native species
TNR: 975

industrial minerals
USE: mineral resources
TNR: 976

industrial water use
BT: offstream water use
RT: hydraulic engineering
hydrology
DF: Use of water for industrial purposes such as fabrication, processing, washing, and cooling, and includes such industries as steel, chemical and allied products, paper and allied products, mining, and petroleum refining. [USGS Glossary of water-use terminology, <http://water.usgs.gov/watuse/wuglossary.html>]
TNR: 978

informal education (USGS)
USE: USGS lifelong learning programs
TNR: 979

information centers (USGS)
USE: USGS information services
TNR: 980

information management methods
UF: data management
BT: management methods
RT: geographic information systems (GIS)
DF: Activities focused on scientific information creation, description, storage, and retrieval for evaluation and analysis.
TNR: 558

information sciences
BT: sciences
NT: biological informatics
computer science
RT: geographic information systems (GIS)
information system design and development

metadata development
scientific careers
DF: Sciences concerned with the gathering, manipulation, classification, storage, and retrieval of recorded knowledge. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 338

information services (USGS)
USE: USGS information services
TNR: 981

information system design and development
BT: topics
NT: geographic information systems (GIS)
metadata development
RT: information sciences
SN: Use for the design and development of information systems. Do not use for the general case where information systems are part of the activity.
TNR: 853

infrared imaging
BT: remote sensing
NT: AVHRR
RT: geography
DF: Producing images using the thermal infrared spectral band. [Adapted from Glossary of Geology, 4th ed.]
TNR: 287

inland fishery resources
BT: fishery resources
RT: aquatic biology
ichthyology
DF: The stock of fisheries located in inland water bodies, including lakes, ponds, streams, rivers, natural or artificial watercourses and reservoirs, and coastal lagoons and artificial water bodies. [Adapted from FAO Glossary, <http://www.fao.org/fi/glossary/default.asp>]
TNR: 795

inner core (Earth)
BT: core (Earth)
RT: geophysics
DF: Central part of the Earth's core, extending from a depth of about 5100 km to the center (6371 km) of the Earth; its radius is about one third of the whole core. [Glossary of Geology, 4th ed.]
TNR: 526

insects
BT: arthropods
NT: butterflies and moths
RT: entomology

DF: Any of numerous usually small arthropod animals of the class Insecta, having an adult stage characterized by three pairs of legs and a body segmented into head, thorax, and abdomen and usually having two pairs of wings. Insects include flies, crickets, mosquitoes, beetles, butterflies, and bees. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 249

instream water use
UF: in-stream water use
BT: water use
NT: power generation water use
wastewater use
RT: hydraulic engineering
hydrology
DF: Water that is used, but not withdrawn, from a surface or groundwater source. [USGS <http://water.usgs.gov/pubs/chapter11/chapter11B.html>]
TNR: 974

instructional materials
USE: educational materials
TNR: 697

instrument design and development
UF: scientific instruments
tool development
BT: topics
RT: engineering sciences
SN: Include the design and development of software for a particular instrument.
TNR: 728

interactive map servers (USGS)
USE: USGS map servers
TNR: 985

interagency programs (USGS)
USE: USGS interagency programs
TNR: 987

Interferometric Synthetic Aperture Radar (IFSAR)
USE: IFSAR
TNR: 41

international programs (USGS)
USE: USGS international programs
TNR: 989

internships (USGS)
USE: USGS internships
TNR: 991

introduced species
USE: nonindigenous species
TNR: 993

invader species
  USE: invasive species
  TNR: 994

invasive species
  UF: invader species
  UF+: biological invasions
  BT: nonindigenous species
  RT: biodiversity
        ecology
        human impacts
        life sciences
  DF: Those plants, animals, and microbes not native to a region which, when introduced either accidentally or intentionally, out-compete native species for available resources, reproduce prolifically, and dominate regions and ecosystems. [National Agricultural Library <http://www.invasivespecies.gov/>]
  TNR: 951

inventory
  USE: field sampling
  TNR: 780

invertebrate paleontology
  BT: paleontology
  RT: bryozoans and brachiopods
        conodonts
        invertebrate zoology
        invertebrates
        trilobites
  DF: Branch of paleontology dealing with fossil invertebrates. [Glossary of Geology, 4th ed.]
  TNR: 995

invertebrate zoology
  BT: zoology
  NT: entomology
  RT: arachnids
        arthropods
        bryozoans and brachiopods
        coelenterates
        crustaceans
        echinoderms
        flatworms
        horseshoe crabs
        invertebrate paleontology
        invertebrates
        mollusks
        ostracodes
        roundworms
        segmented worms
        shellfish
        sponges

worms
DF: Branch of biology that deals with animals, such as insects and mollusks, that lack backbones or spinal columns. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 730

invertebrates
BT: animals
NT: arthropods
bryozoans and brachiopods
coelenterates
conodonts
echinoderms
mollusks
sponges
worms
RT: invertebrate paleontology
invertebrate zoology
DF: Animals without a backbone, such as the mollusks, arthropods, and coelenterates. [Glossary of Geology, 4th ed.]
TNR: 207

irrigation water use
BT: agricultural water use
RT: hydraulic engineering
hydrology
DF: Provision of water to artificially sustain the growth of plants. [Adapted from Dic. of Cultural Literacy, 2nd ed.]
TNR: 160

isostasy
BT: geologic and hydrologic processes
RT: geophysics
glaciology
DF: Condition of equilibrium, comparable to floating, of the units of the lithosphere above the asthenosphere. [Glossary of Geology, 4th ed.]
TNR: 868

isotopic analysis
BT: laboratory methods
NT: light stable isotope analysis
radiometric dating
RT: biochemistry
geochemistry
DF: Experimental determination of the proportion of a given isotope (or isotopes) in a sample.
TNR: 998

jellyfish
USE: coelenterates
TNR: 471

jointing (geologic)
USE: fracture (geologic)

TNR: 822

journal articles
USE: documents
TNR: 605

journals
USE: documents
TNR: 606

K-12 programs (USGS)
USE: USGS K-12 programs
TNR: 999

keystone species
BT: organism groupings (non-taxonomic)
DF: Species that have a greater effect on their ecosystems and associated ecological processes than would otherwise be predicted from their relative abundance or biomass alone. This group includes species known as 'ecological engineers,' such as the gopher tortoise and the beaver, whose activities alter the habitat and, in doing so, modify the fates and opportunities of other species in that ecosystem. [Adapted from Ecological Principles and Guidelines for Managing the Use of Land, <http://www.esa.org/pao/esalanduse.htm>]
TNR: 92

kriging
BT: statistical analysis
DF: Statistical technique for interpolation which honors data points exactly and attempts to produce the best linear unbiased estimate. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1001

La Nina
USE: ocean-atmosphere interaction
TNR: 1002

laboratories (USGS)
USE: USGS laboratories
TNR: 1003

laboratory methods
BT: methods
NT: chemical analysis
core analysis
culturing (specimens)
faunal and floral census
fission-track dating
grain-size analysis
isotopic analysis
meristics
microscopy
paleomagnetic analysis
petrography

plant and animal testing
therapeutic methods
tree ring analysis
TNR: 433

laboratory-induced magnetization analysis
BT: paleomagnetic analysis
RT: geophysics
DF: Analysis of the magnetic field spontaneously induced in the laboratory in a volume of rock by the uniform action of an applied field. [Glossary of Geology, 4th ed.]
TNR: 1009

lake circulation
UF: circulation (lake)
BT: water circulation
RT: limnology
DF: The complete mixing of a lake or sea; generally it occurs when the waters are isothermal, often at the temperature of maximum density, [Glossary of Geology, 4th ed.]
TNR: 443

lake ecosystems
USE: freshwater ecosystems
TNR: 826

land partitioning systems
USE: cadastral and legal land descriptions
TNR: 399

land subsidence
UF+: land subsidence maps
BT: geologic and hydrologic processes
RT: geomorphology
human impacts
DF: Sudden sinking or gradual downward settling of land with little or no horizontal motion, caused by subsurface mining or the pumping of oil or ground water. [Adapted from Glossary of Geology, 4th ed.]
TNR: 948

land subsidence maps
US+: land subsidence
maps and atlases
TNR: 1010

land surface characteristics
BT: Earth characteristics
RT: geography
geomorphology
sea floor characteristics
DF: Specifiable, definable or recognizable attributes of the land surface. [Adapted from Glossary of Geology, 4th ed.]
TNR: 637

land surveying
  UF: surveying
  BT: geolocation measurement
  RT: geodesy
       geography
  DF: The measurement of dimensional relationships, as of horizontal distances, elevations, directions, and angles, on the earth's surface especially for use in locating property boundaries, construction layout, and mapmaking. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 847

land use and land cover
  BT: topics
  RT: land use classifications
  DF: The vegetation, water, natural surface, and cultural features on the land surface. [USGS Land Use and Land Cover (LULC) Data, <http://edcwww.cr.usgs.gov/glis/hyper/guide/1_250_lulc>]
  TNR: 49

land use change
  UF: urbanization
  BT: human impacts
  RT: desertification
       ecology
       geography
       social sciences
  DF: Effect of changing land use patterns on ecological systems.
  TNR: 570

land use characteristics
  USE: land use classifications
  TNR: 1012

land use classifications
  UF: land use characteristics
  UF+: land use maps
  BT: terminologies and classifications
  RT: land use and land cover
  SN: For the Anderson land-use and land-cover classification system, 1976, see <http://water.wr.usgs.gov/pnsp/circ1131/table1.html>.
  TNR: 1013

land use maps
  US+: land use classifications
        maps and atlases
  TNR: 1014

Landforms
  BT: land surface characteristics
  RT: geomorphology

Landsat images
  US+: images

multispectral imaging
TNR: 967

landslide inventory maps
US+: landslides
maps and atlases
TNR: 1016

landslide maps
US+: landslides
maps and atlases
TNR: 1017

landslide preparedness
US+: hazard preparedness
landslides
TNR: 57

landslide susceptibility assessment
UF: slope stability
UF+: landslide susceptibility maps
slope stability maps
BT: risk assessment
RT: landslides
DF: Estimation of the probability of occurrence and likely severity of landslides in a given area.
TNR: 1018

landslide susceptibility maps
US+: landslide susceptibility assessment
maps and atlases
TNR: 1019

landslides
UF: mudflows
slides (land)
UF+: landslide inventory maps
landslide maps
landslide preparedness
BT: geologic and hydrologic processes
RT: geomorphology
hazards
landslide susceptibility assessment
DF: General term covering a wide variety of mass-movement landforms and processes involving the downslope transport, under gravitational influence, of soil and rock material en masse. [Glossary of Geology, 4th ed.]
TNR: 869

leaching (analytical method)
USE: chemical analysis
TNR: 1337

learning web
USE: educational materials

TNR: 698

legal land descriptions
USE: cadastral and legal land descriptions
TNR: 400

lepidoptera
USE: butterflies and moths
TNR: 396

lesson plans
USE: educational materials
TNR: 699

lexicons
USE: glossaries
TNR: 903

libraries (USGS)
USE: USGS libraries and archives
TNR: 1023

lichens
BT: organisms
RT: mycology
phycology
DF: Thallophytic plant of the subdivision Lichenes that is composed of a fungus and an alga living in symbiotic relationship. [Glossary of Geology, 4th ed.]
TNR: 1024

LIDAR
UF: LIght Detection and Ranging (LIDAR)
UF+: LIDAR images
BT: remote sensing
RT: geography
DF: Remote sensing method of measuring atmospheric conditions including temperature and wind. LIDAR works by transmitting laser signals using all light ranges (ultraviolet, visible, infrared) and amplifying the light that is scattered back through an optical telescope and photomultiplier tube. [Computer Desktop Encyclopedia, 2001]
TNR: 1025

LIDAR images
US+: images
LIDAR
TNR: 1027

life sciences
UF: biological sciences
biology
BT: sciences
NT: anatomy and physiology
aquatic biology

biochemistry
botany
cell biology
developmental biology
ecology
ecotoxicology
genetics
marine biology
microbiology
molecular biology
morphology (biological)
mycology
parasitology
pathology
systematics and taxonomy
zoology

RT: biodiversity
biological informatics
biological productivity
biota
decomposers
disease vectors
dispersal (organisms)
endangered species
endemic species
extinction and extirpation
health and disease
invasive species
migration (organisms)
native species
natural resources
nonindigenous species
organism groupings (non-taxonomic)
organisms
paleontology
plant and animal tagging
renewable energy resources
renewable resources
scientific careers
sexing (plants & animals)

DF: Those branches of science that study all organisms, especially living ones. [Glossary of Geology, 4th ed.]

TNR: 196

life-long learning programs (USGS)
USE: USGS lifelong learning programs
TNR: 1028

lifelong learning programs (USGS)
USE: USGS lifelong learning programs
TNR: 1029

LIght Detection and Ranging (LIDAR)
USE: LIDAR

TNR: 1026

light stable isotope analysis
UF: light stable-isotope analysis
BT: isotopic analysis
NT: beryllium isotope analysis
carbon isotope analysis
oxygen isotope analysis
tritium analysis
RT: biochemistry
geochemistry
DF: Analysis applying stable (O, C, H and S) isotope geochemistry to the origin of rocks and ore deposits and to selected problems in other scientific endeavors of Earth Science. [Natural Resources Canada, <http://www.nrcan.gc.ca/gsc/mrd/labs/lsilab_e.html>]
TNR: 307

light stable-isotope analysis
USE: light stable isotope analysis
TNR: 1030

lignite resources
USE: coal resources
DF: Brownish-black coal that is intermediate in coalification between peat and subbituminous coal. [Glossary of Geology, 4th ed.]
TNR: 461

limnology
BT: Earth sciences
RT: aquatic ecosystems
bathymetry
benthic ecosystems
CTD measurement
eutrophication
freshwater ecosystems
hydrology
lake circulation
surface water (non-marine)
surface water quality
water resources
DF: Study of the physical, chemical, meteorological, biological, and ecological characteristics and interactions of all inland waters, such as pools, streams, bogs, ponds, lakes, rivers, and wetlands. [Glossary of Geology, 4th ed.]
TNR: 959

lineament maps
US+: lineation (geologic)
maps and atlases
TNR: 1033

lineaments
USE: lineation (geologic)
TNR: 1034

lineation (geologic)
  UF: lineaments
  UF+: lineament maps
  BT: geologic structure
  RT: structural geology
       tectonic processes
  DF: General, nongeneric term for a locally linear structure or fabric in a rock, e.g. flow lines, scratches, striae, slickensides or slickenfibers on a single surface; linear arrangements of components in sediments; or axes of folds. [Glossary of Geology, 4th ed.]
  TNR: 881

liquefaction
  BT: geologic and hydrologic processes
  RT: engineering geology
       hazards
  DF: a) Transformation of loosely packed sediment into a fluid mass preliminary to movement of a turbidity current by subaqueous slumping or sliding or in situ. b) In cohesionless soil, the transformation from a solid to a liquid state as a result of increased pore pressure and reduced effective stress. [Glossary of Geology, 4th ed.]
  TNR: 870

liquid chromatography
  BT: chromatography
  RT: biochemistry
       geochemistry
  DF: Process for separating components in a liquid phase from one another by passing them over a solid or liquid stationary phase where the components are separated by their differential mobility rates. [Glossary of Geology, 4th ed.]
  TNR: 440

lists of publications
  USE: catalogs and indexes
  TNR: 426

lithification
  USE: geologic and hydrologic processes
  TNR: 863

lithologic maps
  US+: maps and atlases
       rocks and deposits
  TNR: 1035

lithology
  USE: rocks and deposits
  TNR: 1036

lithosphere
  BT: crust (Earth)
  NT: continental lithosphere

oceanic lithosphere
RT: mantle (Earth)
rocks and deposits
tectonophysics
DF: Solid portion of the Earth, as compared with the atmosphere and the hydrosphere; it includes the crust and part of the upper mantle. [Glossary of Geology, 4th ed.]
TNR: 507

lithostratigraphy
BT: geologic history
RT: stratigraphy
DF: Element of stratigraphy that deals with the description and systematic organization of the rocks of the Earth's crust into distinctive named units based on the lithologic character of the rocks and their stratigraphic relations. [Glossary of Geology, 4th ed.]
TNR: 877

liverworts and hornworts
BT: nonvascular plants
RT: botany
mosses
DF: Simple green land plants with leaves and a stem and always without roots. They are members of the phyla Bryophyta, along with mosses.
TNR: 1038

livestock water use
USE: agricultural water use
TNR: 158

location measurement
USE: geolocation measurement
TNR: 858

long-term ecological monitoring
BT: ecosystem monitoring
RT: ecology
DF: Investigating ecological processes over long temporal and broad spatial scales. [US Long Term Ecological Research Network, <http://lternet.edu/>]
TNR: 695

macroinvertebrates
BT: organism groupings (non-taxonomic)
RT: aquatic biology
DF: Invertebrates large enough to be studied without a microscope. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1041

magnetic anomaly maps
US+: magnetic field (Earth)
maps and atlases
TNR: 1042

magnetic disk
  BT: digital format
  TNR: 583

magnetic field
  USE: magnetic field (Earth)
  TNR: 1043

magnetic field (Earth)
  UF: geomagnetic field
       geomagnetics
       geomagnetism
       magnetic field
       magnetosphere
  UF+: magnetic anomaly maps
  BT: Earth characteristics
  RT: geophysics
  DF: The magnetic field that surrounds the Earth which acts like a great spherical magnet. This magnetic field resembles, in general, the field generated by a dipole magnet located at the center of the Earth. [Adapted from NESDIS National Geophysical Data Center, <http://www.ngdc.noaa.gov/seg/potfld/faqgeom.shtml>]
  TNR: 644

magnetic hysteresis analysis
  UF: hysteresis
  BT: paleomagnetic analysis
  RT: geophysics
  DF: Property that a rock exhibits when its magnetization is nonreversible. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 963

magnetic surveying
  USE: aeromagnetic surveying
       electromagnetic surveying
  TNR: 152

magnetic susceptibility analysis
  BT: paleomagnetic analysis
  RT: geophysics
  DF: Analysis using the ratio of the electric polarization to the electric intensity in a polarized dialectic. [Glossary of Geology, 4th ed.]
  TNR: 1045

magnetic tape
  BT: digital format
  TNR: 584

magnetosphere
  USE: magnetic field (Earth)
  TNR: 1044

magnetotelluric sounding
  USE: electromagnetic surveying

TNR: 1343

malacology
USE: zoology
TNR: 1046

mammalogy
BT: vertebrate zoology
RT: mammals
DF: Scientific study of mammals. [Merriam-Webster Online Collegiate Dic. <http://www.m-w.com/>, 2001]
TNR: 1047

mammals
BT: vertebrates
RT: mammalogy
DF: Any of various warm-blooded vertebrate animals of the class Mammalia, including humans, characterized by a covering of hair on the skin and, in the female, milk-producing mammary glands for nourishing the young. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 1048

managed fires
USE: controlled fires
TNR: 75

managed flooding
USE: controlled flooding
TNR: 74

management methods
BT: methods
NT: decision support methods
environmental assessment
hazard preparedness
information management methods
natural resource management
risk assessment
TNR: 342

mantle (Earth)
BT: Earth structure
NT: asthenosphere
RT: geophysics
lithosphere
DF: Zone of the Earth below the crust and above the core, which is divided into the upper mantle and the lower mantle, with a transition zone in between. [Glossary of Geology, 4th ed.]
TNR: 656

manuals
UF: technical instructions
user guides
BT: documents

```
  TNR:  622

map coordinate systems
  UF:   coordinate systems
        geographic coordinate systems
        grid coordinate systems
        horizontal datums
        map projections
        vertical datums
  BT:   topics
  RT:   cartography
        geographic information systems (GIS)
        geography
  DF:   Numeric methods of representing locations on the earth's surface on
maps. [Adapted from Mathematics of Cartography: Mathematics Topics-Coordinate
System, <http://math.rice.edu/~lanius/pres/map/mapcoo.html>]
  TNR:  423

map making
  USE:  cartography
  TNR:  419

map projections
  USE:  map coordinate systems
  TNR:  1053

map sales (USGS)
  USE:  USGS sales and distribution services
  TNR:  1055

map servers (USGS)
  USE:  USGS map servers
  TNR:  1056

mapmaking
  USE:  cartography
  TNR:  420

mapping
  USE:  cartography
  TNR:  421

mapping centers (USGS)
  USE:  USGS mapping centers
  TNR:  1057

maps and atlases
  UF:   atlases
  UF+:  aeromagnetic maps
        basement maps
        cadastral maps
        depth-to maps
        Earth materials maps
        earthquake activity maps
```

earthquake epicenter maps
earthquake occurrence maps
engineering geology maps
geochemical anomaly maps
geologic maps
geophysical maps
geotechnical properties maps
gravity anomaly maps
ground motion maps
hydrologic maps
land subsidence maps
land use maps
landslide inventory maps
landslide maps
landslide susceptibility maps
lineament maps
lithologic maps
magnetic anomaly maps
paleotectonic maps
quadrangle maps
relief maps
rock mechanics maps
seismic hazard maps
seismic reflection survey maps
seismicity distribution maps
shaking maps (seismic)
slope stability maps
species distribution maps
subsurface maps
surficial geologic maps
tectonic maps
thickness maps
topographic maps
BT: object types
RT: cartography
geographic names and classifications
quadrangle names
TNR: 151

maps on demand (USGS)
USE: USGS maps on demand
TNR: 1067

marine biology
UF: biological oceanography
BT: life sciences
RT: aquatic biology
aquatic ecosystems
benthic ecosystems
commercial fishery resources
fishery resources
marine ecosystems
marine fishery resources
migratory species

ocean sciences
recreational fishery resources
reef ecosystems
whaling
DF: Study of marine fauna and flora. [Glossary of Geology, 4th ed.]
TNR: 231

marine chemistry
UF: chemical oceanography
ocean chemistry
water properties (marine)
BT: water chemistry
RT: CTD measurement
marine water quality
ocean characteristics
ocean salinity
ocean sciences
DF: Study of the ocean that deals with the composition, structure, properties, and reactions of matter, especially of atomic and molecular systems. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 844

marine ecosystems
BT: aquatic ecosystems
NT: reef ecosystems
RT: aquatic biology
ecology
marine biology
DF: Ecological communities living entirely or primarily in or on seawater. [Adapted from Glossary of Geology, 4th ed.]
TNR: 238

marine fishery resources
UF: coastal fisheries
coastal fishing
deep sea fisheries
deep sea fishing
reef fisheries
reef fishing
BT: fishery resources
NT: whaling
RT: aquatic biology
commercial fishery resources
ichthyology
marine biology
reef ecosystems
DF: The stock of fisheries located in seas and oceans.
TNR: 467

marine geology
UF: geological oceanography
BT: geology
RT: marine geophysics

ocean sciences
sea floor characteristics
side-scan sonar methods
DF: Study of the ocean that deals with the ocean floor and the ocean-continent border. [Glossary of Geology, 4th ed.]
TNR: 886

marine geophysics
BT: geophysics
RT: marine geology
ocean characteristics
ocean processes
ocean sciences
side-scan sonar methods
DF: Study of the ocean by quantitative physical methods. [Adapted from [Glossary of Geology, 4th ed.]
TNR: 895

marine water quality
UF: ocean water quality
BT: water quality
RT: hydrology
marine chemistry
ocean sciences
DF: Observed intrinsic characteristics of marine waters affecting their ability to support life or facilitate biological processes such as waste decomposition.
TNR: 1071

marsh ecosystems
USE: wetland ecosystems
TNR: 1073

marshland ecosystems
USE: wetland ecosystems
TNR: 1074

mass spectroscopy
BT: chemical analysis
RT: biochemistry
geochemistry
DF: Observation, recording, and measuring of a pattern of relative abundances of ions of different atomic or molecular mass within a sample. [Adapted from Glossary of Geology, 4th ed.]
TNR: 435

mathematical methods
USE: computational methods
TNR: 487

mathematical modeling
UF: modeling (mathematical)
numerical methods
UF+: groundwater flow modeling

streamflow modeling
  BT: computational methods
  NT: mathematical simulation
  RT: mathematical models
       spatial analysis
  DF: Creating mathematical expressions to represent a simplified view of real-world systems.
  TNR: 490

mathematical models
  UF: mathematical simulations
  BT: models
  RT: mathematical modeling
       mathematical simulation
  TNR: 1077

mathematical simulation
  BT: mathematical modeling
  RT: mathematical models
  DF: Representing a physical system by computer algorithms or models that imitate the behavior of the system; a simplified version of a situation in the real world. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 1076

mathematical simulations
  USE: mathematical models
  TNR: 91

media relations (USGS)
  USE: USGS media relations
  TNR: 1078

meetings (USGS)
  USE: USGS meetings
  TNR: 1080

memos
  USE: documents
  TNR: 607

mercury contamination
  BT: anthropogenic contamination
  RT: biochemistry
       ecology
       ecotoxicology
  DF: Biological disturbances caused by mercury compounds that have entered the environment.
  TNR: 221

meristics
  UF: morphometrics
  BT: laboratory methods
  RT: morphology (biological)
       systematics and taxonomy

DF: Method of determining the taxonomy of animals by counting and measuring body parts; can be used to distinguish between species which are closely related and to determine the influence of the environment on the organism [Adapted from Onedin Project, <http://www.aqualex.org/html/onedin/courses.html>]
TNR: 1005

metadata
USE: catalogs and indexes
TNR: 427

metadata development
BT: information system design and development
RT: information sciences
SN: Use for the development of metadata designs and applications. Do not use for the general case where metadata are part of the activity.
TNR: 982

metallic ores
UF: ore deposits (metallic)
BT: mineral resources
NT: gold ores
RT: economic geology
mineralogy
nonmetallic resources
DF: Naturally occurring materials from which metals of economic value can be profitably extracted. [Adapted from Glossary of Geology, 4th ed.]
TNR: 566

metamorphic rocks
BT: rocks and deposits
RT: metamorphism (geological)
petrology
DF: Any rock derived from pre-existing rocks by mineralogical, chemical, and/or structural changes, essentially in the solid state, in response to marked changes in temperature, pressure, shearing stress, and chemical environment, generally at depth in the Earth's crust. [Glossary of Geology, 4th ed.]
TNR: 1083

metamorphism (biological)
BT: organism growth and development
DF: Process involving marked or abrupt reorganization of an animal during post-embryonic development, such as the transformation of a larva into a succeeding stage of development and growth. [Glossary of Geology, 4th ed.]
TNR: 11

metamorphism (geological)
BT: geologic and hydrologic processes
RT: geochemistry
geology
geophysics
metamorphic rocks

DF: Process by which rocks are altered in composition, texture, or internal structure by extreme heat, pressure, and the introduction of new chemical substances. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 871

meteor impacts
US+: hazards
meteorites
TNR: 941

meteorite impacts
US+: hazards
meteorites
TNR: 942

meteorites
UF: bolides
meteors
UF+: bolide impacts
meteor impacts
meteorite impacts
BT: planetary bodies
SN: Use this term for 'meteors' as well as 'meteorites' since these terms are often interchanged without regard to the formal definitions. USGS is more likely to have information about 'meteorites' since these are objects found on the Earth.
DF: Meteorites are meteoroids (small objects in outer space) that make it all the way through the atmosphere and hit the Earth. [Santa Barbara News Press, D3, 012902]
TNR: 376

meteorology
BT: atmospheric sciences
RT: atmospheric and climatic processes
climatology
hurricanes
hydrology
ocean currents
ocean sciences
planetary sciences
storms
tornadoes
DF: Systematic study of short-term--that is, day-to-day variations in temperature, humidity, air pressure, wind, cloud cover, and precipitation, along with their causes. It provides the basis for weather forecasting. Meteorology is closely related to, but distinct from, climatology, which deals with weather conditions in a given area over an extended period of time (from a month to many millions of years). [Encyclopedia Britannica, 2001]
TNR: 269

meteors
USE: meteorites
TNR: 1084

methane resources (coalbed)
  USE: coalbed methane resources
  TNR: 464

methods
  NT: computational methods
        field methods
        laboratory methods
        management methods
        photography
        remote sensing
        videography
  SN: The methods facet represents the research, management, and data collection methods used by the USGS.
  TNR: 488

microbiology
  BT: life sciences
  NT: bacteriology
        virology
  RT: archaea
        bacteria
        culturing (specimens)
        faunal and floral census
        plankton
        producers (organisms)
        protists
  DF: Branch of biology that deals with microorganisms and their effects on other living organisms. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 290

microfiche
  BT: non-digital format
  TNR: 1087

microfilm
  BT: non-digital format
  TNR: 1088

micropaleontology
  BT: paleontology
  RT: calcareous nannoplankton
        conodonts
        diatoms
        dinoflagellates
        faunal and floral census
        fossils
        protists
  DF: Branch of paleontology that deals with the study of fossils too small to be observed without the aid of a microscope; the study of microfossils. [Glossary of Geology, 4th ed.]
  TNR: 821

microscope methods
  USE: microscopy
  TNR: 1089

microscopy
  UF: microscope methods
  BT: laboratory methods
  NT: electron microscopy
        optical microscopy
  RT: faunal and floral census
  DF: Laboratory methods using microscopes, instruments that produce enlarged images of small objects. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 709

microtomy
  BT: optical microscopy
  DF: Preparation of specimens with a microtome, an instrument used to cut a specimen into thin sections for microscopic examination. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
  TNR: 1091

microwave imaging
  BT: remote sensing
  NT: SMMR
        SSM/I
  RT: geography
        radar imaging
  DF: Passive remote sensing methods utilizing energy naturally reflected or radiated from the terrain in the approximate wavelength range from 1 mm to beyond 1 m. Active remote sensing is radar imaging. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 1092

migration (organisms)
  UF: seasonal migration
  UF+: biological invasions
  BT: ecological processes
  RT: animal behavior
        biogeography
        dispersal (organisms)
        ecology
        life sciences
        migratory species
  DF: Seasonal movement, or movement in response to environmental change, of populations of animals to more favorable environments. [Adapted from Dic. of Biology, Oxford Univ. Press, 2000]
  TNR: 203

migratory species
  BT: organism groupings (non-taxonomic)
  RT: animal behavior
        aquatic biology
        biogeography

ecology
marine biology
migration (organisms)
zoology
DF: Species changing location periodically, especially by moving seasonally from one region to another. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 17

mineral resources
UF: industrial minerals
minerals
BT: nonrenewable resources
NT: metallic ores
nonmetallic resources
RT: economic geology
mineralogy
DF: Mass of naturally occurring mineral material, e.g. metal ores or nonmetallic minerals, usually of economic value, without regard to mode of origin. [Glossary of Geology, 4th ed.]
TNR: 977

mineralogical analysis
USE: chemical analysis
TNR: 1339

mineralogy
UF: gemology
BT: geology
RT: gem resources
gold ores
metallic ores
mineral resources
x-ray diffraction
DF: Study of minerals: formation, occurrence, properties, composition and classification. [Glossary of Geology, 4th ed.]
TNR: 841

minerals
USE: mineral resources
TNR: 1095

mining and quarrying
UF: quarrying
BT: natural resource extraction
DF: Extracting metallic or nonmetallic mineral deposits (mining) from the Earth and building stone or other valuable nonmetallic constituent from a surficial mine (quarrying). [Adapted from Glossary of Geology, 4th ed.]
TNR: 1096

mining hazards
BT: human impacts
RT: engineering sciences
hazards

social sciences
waste treatment and disposal
DF: Damage resulting from mining, such as roof falls, fires and explosions, coal and rock waste, surface erosion, and contamination of the watershed, threatening human health and local ecosystems. [Adapted from Encyclopedia Britannica, 2001]
TNR: 943

mining water use
BT: offstream water use
RT: hydraulic engineering
hydrology
DF: Water use for the extraction of minerals occurring naturally, including solids, such as coal and ores; liquids, such as crude petroleum; and gases, such as natural gas. [USGS Glossary of water-use terminology, <http://water.usgs.gov/watuse/wuglossary.html>]
TNR: 1098

mixed forest ecosystems
USE: forest ecosystems
TNR: 815

mixed grass ecosystems
USE: grassland ecosystems
TNR: 915

modeling (mathematical)
USE: mathematical modeling
TNR: 43

models
UF: simulations
UF+: ecological models
hydraulic models
BT: object types
NT: mathematical models
physical models
TNR: 682

molecular biology
BT: life sciences
RT: cell biology
genetics
organism growth and development
DF: Study of the chemical structures and processes of biological phenomena at the molecular level. <http://www.britannica.com/eb/article?eu=54574&tocid=0>
TNR: 352

mollusks
BT: invertebrates
RT: invertebrate zoology
shellfish

DF: Solitary invertebrates belonging to the phylum Mollusca, characterized by a nonsegmented body that is bilaterally symmetrical and by a radially or biradially symmetrical mantle and shell. [Glossary of Geology, 4th ed.]
TNR: 996

morphology (biological)
BT: life sciences
RT: meristics
DF: a) Branch of biology that deals with the form and structure of animals and plants or their fossil remains; especially a study of the forms, relations, and phylogenetic development of organs apart from their functions. b) Features included in the form and structure of an organism or any of its parts. [Glossary of Geology, 4th ed.]
TNR: 353

morphometrics
USE: meristics
TNR: 42

mosses
BT: nonvascular plants
RT: botany
liverworts and hornworts
DF: Simple green land plants with leaves and a stem and always without roots. They are members of the phyla Bryophyta, along with liverworts and hornworts.
TNR: 1040

moths
USE: butterflies and moths
TNR: 397

motion pictures
USE: audiovisual materials
TNR: 282

movies
USE: audiovisual materials
TNR: 283

mudflows
USE: landslides
TNR: 1022

multispectral imaging
UF: thematic mapper
UF+: Landsat images
BT: remote sensing
RT: geography
DF: Acquiring optical images in more than one spectral band of the same physical area and in the same scale. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1015

multivariate statistical analysis
  BT: statistical analysis
  DF: Methods of statistical analysis that consider the simultaneous variation in two or more variables. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 1101

mycology
  BT: life sciences
  RT: botany
       fungi
       lichens
  DF: Branch of life sciences that deals with fungi. [Adapted from Merriam-Webster's Medical Dictionary, network ed., 1997]
  TNR: 354

native species
  UF: indigenous species
  BT: organism groupings (non-taxonomic)
  NT: endemic species
  RT: biodiversity
       ecology
       life sciences
       nonindigenous species
  DF: Species of animals or plants that originated in a particular place or region. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
  TNR: 318

natural contaminants
  UF: contaminants (natural)
       environmental pollutants
  BT: topics
  NT: toxic radionuclides (natural)
       toxic trace elements (natural)
  RT: anthropogenic contamination
       ecotoxicology
       hazards
       pollution
  DF: Pollutants from natural sources.
  TNR: 223

natural gas resources
  UF: petroleum resources (gas)
  BT: nonrenewable energy resources
  NT: coalbed methane resources
       gas hydrate resources
  RT: economic geology
  DF: a) Resources of hydrocarbons that exist as a gas or vapor at ordinary pressures and temperatures. b) Gaseous hydrocarbons trapped in the zone of ground-water saturation, under pressure from, and partially dissolved in, underlying water or petroleum [Glossary of Geology, 4th ed.]
  TNR: 465

natural remanent magnetization analysis
  UF: natural remnant magnetization analysis
  BT: paleomagnetic analysis
  RT: geophysics
  DF: Method of determining the age and deformation history of rocks using the fixed direction of the rock's magnetization in situ to indicate the relative positions of the geomagnetic poles for spatial reference. [Adapted from Glossary of Geology, 4th ed. and USGS Paleomagnetism Analysis <http://geology.cr.usgs.gov/capabilities/paleom/tech.html>]
  TNR: 1105

natural remnant magnetization analysis
  USE: natural remanent magnetization analysis
  TNR: 29

natural resource assessment
  BT: natural resource management
  DF: Estimation of the actual or potential value of natural materials and processes.
  TNR: 1049

natural resource exploration
  UF: dowsing
       exploration
       prospecting
  UF+: exploration seismology
       seismic exploration
  BT: topics
  DF: Search for deposits of useful minerals or fossil fuels, using geologic reconnaissance and both surface and underground investigations. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 629

natural resource extraction
  UF: resource extraction
  BT: topics
  NT: mining and quarrying
       well drilling
  DF: Removal of natural materials or properties (such as heat) for use.
  TNR: 632

natural resource management
  UF: conservation
       environmental management
       environmental planning
       resource conservation
       resource restoration
  BT: management methods
  NT: biological population management
       controlled fires
       controlled flooding
       ecosystem management
       natural resource assessment

remediation
water resource management
watershed management
RT: ecosystem monitoring
natural resources
population and community ecology
DF: Managing natural resources for sustainability and ecosystem health. [Adapted from Smith & Voinov, 1996 <http://kabir.umd.edu/AV/PUBS/BEIJ/Beijer.html>]
TNR: 164

natural resources
BT: topics
NT: nonrenewable resources
renewable resources
water resources
RT: Earth sciences
life sciences
natural resource management
DF: Material sources of wealth, such as timber, fresh water, or mineral deposits, that occur in a natural state and have economic value. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 691

navigating
USE: geolocation measurement
TNR: 859

nekton
BT: organism groupings (non-taxonomic)
DF: Collection of marine and freshwater organisms that can swim freely and are generally independent of currents, ranging in size from microscopic organisms to whales. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 116

nematodes
USE: roundworms
TNR: 1111

neotectonic processes
UF: neotectonics
BT: tectonic processes
RT: earthquake probabilities
structural geology
tectonophysics
DF: Tectonic processes associated with post-Miocene structures and structural history of the Earth's crust. [Adapted from Glossary of Geology, 4th ed.]
TNR: 677

neotectonics
USE: neotectonic processes
TNR: 1113

neutron activation analysis
  BT: chemical analysis
  RT: biochemistry
       geochemistry
  DF: Activiation analysis that identifies elements in a sample by irradiating the sample with neutrons inside a nuclear reactor in order to identify elements by their characteristic radiations. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 436

new mapping projects (USGS)
  USE: USGS news
  TNR: 1114

new projects (USGS)
  USE: USGS news
  TNR: 1116

news (USGS)
  USE: USGS news
  TNR: 1117

news releases
  UF: press releases
  BT: object types
  TNR: 1118

newsletters
  USE: documents
  TNR: 608

nitrogen content
  USE: nutrient content (water)
  TNR: 1120

non-digital format
  UF: analog format
       nondigital format
  BT: physical formats
  NT: audio tape
       film
       microfiche
       microfilm
       paper (material)
       slides (photographic)
       video tape
  TNR: 281

non-formal education (USGS)
  USE: USGS lifelong learning programs
  TNR: 1126

non-indigenous species

USE: nonindigenous species
TNR: 1127

non-native species
USE: nonindigenous species
TNR: 1128

non-renewable resources
USE: nonrenewable resources
TNR: 1129

non-vascular plants
USE: nonvascular plants
TNR: 68

nondigital format
USE: non-digital format
TNR: 1122

nonindigenous species
UF: alien species
exotic species
foreign species
introduced species
non-indigenous species
non-native species
BT: organism groupings (non-taxonomic)
NT: invasive species
RT: biodiversity
ecology
life sciences
native species
DF: Species not originating, growing, or produced in a certain place or region; not indigenous: [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 187

nonmetallic resources
UF: ore deposits (non-metallic)
BT: mineral resources
NT: building stone resources
gem resources
RT: clay deposits
economic geology
gravel deposits
metallic ores
sand deposits
DF: In economic geology, any rock or mineral mined for its nonmetallic value, such as stone, sulfur, gems, or salt. [Glossary of Geology, 4th ed.]
TNR: 390

nonrenewable energy resources
UF: energy sources (nonrenewable)
BT: nonrenewable resources

NT: coal resources
natural gas resources
oil resources
RT: economic geology
DF: Natural resources that are used for heat and power generation, including oil and natural gas, and coal, that are considered nonrenewable because of the millions of years needed to form fossil fuels.
TNR: 463

nonrenewable resources
UF: non-renewable resources
BT: natural resources
NT: mineral resources
nonrenewable energy resources
soil resources
RT: economic geology
DF: Natural resources with economic value that are slow to form and are destroyed by use. [Adapted from Random House College Dic., 1980]
TNR: 716

nonvascular plants
UF: non-vascular plants
BT: plants (organisms)
NT: liverworts and hornworts
mosses
RT: botany
DF: Plants without a vascular system or well differentiated roots, stems, and leaves. [Glossary of Geology, 4th ed.]
TNR: 1039

nuclear reactors (USGS)
USE: USGS nuclear reactors
TNR: 1133

nuclear waste repositories
USE: waste treatment and disposal
TNR: 1135

numerical methods
USE: mathematical modeling
TNR: 1075

nutrient balance
USE: nutrient cycling
TNR: 1136

nutrient content (water)
UF: nitrogen content
phosphorus content
BT: water properties
RT: hydrology
nutrient cycling
water chemistry

DF: Occurrence in water of substances required for the maintenance or growth of organisms. Usually applied to simple dissolved inorganic ions, but can also be applied to dissolved organic forms of nitrogen and phosphorus or to certain trace elements. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1121

nutrient cycling
UF: nutrient balance
BT: biogeochemical cycling
NT: food web
RT: biochemistry
ecology
nutrient content (water)
DF: Processing of nutrients through a biological system. [Adapted from Glossary of Geology, 4th ed.]
TNR: 326

object types
NT: audiovisual materials
bibliographies
catalogs and indexes
datasets
directories
documents
educational materials
geologic time scales
graphics
images
maps and atlases
models
news releases
policies and regulations
posters
software
speeches
terminologies and classifications
web portals
SN: The 'object types' facet represents the intellectual intent of the information objects, such as the fact that an item is a 'map' or contains a 'map'. To describe the physical format of the item, use terms from the 'physical formats' facet.
TNR: 285

observatories (USGS)
USE: USGS observatories
TNR: 1143

ocean characteristics
UF: oceans
UF+: ocean monitoring
BT: Earth characteristics
NT: ocean salinity
ocean temperature
sea floor characteristics

sea-level change
RT: marine chemistry
marine geophysics
ocean processes
ocean sciences
oceanic lithosphere
surface water (non-marine)
water resources
TNR: 79

ocean chemistry
USE: marine chemistry
TNR: 1145

ocean circulation
UF: circulation (ocean)
BT: ocean processes
RT: climatology
ocean currents
ocean sciences
tides
water circulation
DF: Large scale horizontal water motion within an ocean. [McGraw Hill Dic. of Scientific and Technical Terms, 5th ed.]
TNR: 1146

ocean current measurement
US+: field inventory and monitoring
ocean currents
TNR: 765

ocean currents
UF+: ocean current measurement
BT: ocean processes
RT: meteorology
ocean circulation
ocean sciences
tides
DF: Broadly, any current in the ocean - tidal or nontidal, permanent or seasonal, horizontal or vertical - characterized by regularity, either as a continuous stream flowing along a definable path, or less commonly of a cyclic nature. [Glossary of Geology, 4th ed.]
TNR: 1147

ocean monitoring
US+: field inventory and monitoring
ocean characteristics
TNR: 766

ocean processes
UF: oceans
BT: biological and physical processes
NT: ocean circulation
ocean currents

ocean waves
tides
RT: marine geophysics
ocean characteristics
ocean sciences
ocean-atmosphere interaction
surface water (non-marine)
TNR: 78

ocean salinity
BT: ocean characteristics
RT: marine chemistry
ocean sciences
salinity
DF: Concentration of dissolved salts in seawater. [Glossary of Geology, 4th ed.]
TNR: 1151

ocean sciences
UF: oceanography
physical oceanography
BT: Earth sciences
NT: paleoceanography
RT: bathymetry
CTD measurement
global change
global warming
hydrology
marine biology
marine chemistry
marine geology
marine geophysics
marine water quality
meteorology
ocean characteristics
ocean circulation
ocean currents
ocean processes
ocean salinity
ocean temperature
ocean waves
ocean-atmosphere interaction
sea floor characteristics
sea-level change
tides
tsunamis
underwater photography
DF: Study of the ocean, including its physical, chemical, biological and geologic aspects. [Glossary of Geology, 4th ed.]
TNR: 653

ocean temperature
UF: temperature (ocean)
BT: ocean characteristics

NT: sea surface temperature
RT: atmospheric sciences
ocean sciences
SN: Includes discussion and measures of both in situ and potential temperature.
DF: Distribution of heat in the oceans, including surface water, thermocline and mode waters, and deep waters.
TNR: 1152

ocean water quality
USE: marine water quality
TNR: 1072

ocean wave measurement
US+: field inventory and monitoring
ocean waves
TNR: 772

ocean waves
UF: water waves
UF+: ocean wave measurement
BT: ocean processes
NT: tsunamis
RT: ocean sciences
DF: Oscillatory movement of water in the ocean manifested by an alternate rise and fall of a surface in or on the water. [Glossary of Geology, 4th ed.]
TNR: 1153

ocean-atmosphere interaction
UF: El Nino
La Nina
BT: atmospheric and climatic processes
RT: atmospheric sciences
ocean processes
ocean sciences
DF: Interaction between the temperature of the surface layers of the oceans and the circulation of the lowest layer of the atmosphere, the troposphere. [Adapted from Encyclopedia Britannica, 2001]
TNR: 265

oceanic lithosphere
BT: lithosphere
RT: ocean characteristics
sea floor characteristics
tectonophysics
DF: That part of the lithosphere that is consistently underlain by an asthenosphere and is below sea level. [Adapted from Encyclopedia Britannica, 2001]
TNR: 1037

oceanography
USE: ocean sciences
TNR: 8

oceans
  USE: ocean characteristics
        ocean processes
  TNR: 1149

off-stream water use
  USE: offstream water use
  TNR: 1159

offstream water use
  UF: off-stream water use
  BT: water use
  NT: agricultural water use
        commercial water use
        domestic water use
        industrial water use
        mining water use
  RT: hydraulic engineering
        hydrology
  DF: Offstream water use involves the withdrawal or diversion of water from a source, treatment, distribution, and use; and the collection, treatment, and return flow of wastewater. [USGS <http://water.usgs.gov/pubs/chapter11/chapter11B.html>]
  TNR: 159

oil resources
  UF: petroleum resources (oil)
  BT: nonrenewable energy resources
  NT: oil sand resources
        oil shale resources
  RT: economic geology
  DF: Resources of naturally occurring complex liquid hydrocarbon, which after distillation and removal of impurities yields a range of combustible fuels, petrochemicals, and lubricants. [Glossary of Geology, 4th ed.]
  TNR: 717

oil sand resources
  BT: oil resources
  RT: economic geology
  DF: Petroleum resources contained in porous strata such as sandstone or unconsolidated sand. Term also applied to productive limestone and dolomite. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 1161

oil shale resources
  BT: oil resources
  RT: economic geology
  DF: Resources of kerogen-bearing, finely laminated brown or black sedimentary rock that will yield liquid or gaseous hydrocarbons on distillation. [Glossary of Geology, 4th ed.]
  TNR: 1162

omnivores
  BT: consumers (organisms)

RT: ecology
zoology
DF: Animals eating both animal and vegetable foods. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 502

ontogeny
USE: organism growth and development
TNR: 47

open houses (USGS)
USE: USGS open houses
TNR: 1163

optical microscopy
BT: microscopy
NT: microtomy
RT: petrography
DF: Microscopy using visible light for illumination. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1090

oral presentations
USE: speeches
TNR: 1166

ordering services (USGS)
USE: USGS sales and distribution services
TNR: 1167

ore deposits (metallic)
USE: metallic ores
TNR: 1082

ore deposits (non-metallic)
USE: nonmetallic resources
TNR: 1168

organic decomposition
USE: biogeochemical cycling
TNR: 324

organism groupings (non-taxonomic)
BT: topics
NT: biota
consumers (organisms)
decomposers
endangered species
game species
keystone species
macroinvertebrates
migratory species
native species
nekton

nonindigenous species
plankton
pollinators
producers (organisms)
shellfish
vegetation
wildlife
RT: life sciences
organisms
SN: Used for categories of living organisms that are not taxonomic and that include species from more than one taxonomic group.
TNR: 366

organism growth and development
UF: ontogeny
BT: topics
NT: metamorphism (biological)
RT: developmental biology
molecular biology
TNR: 46

organisms
UF: biological organisms
BT: topics
NT: algae
animals
archaea
bacteria
fungi
lichens
plants (organisms)
protists
viruses
RT: life sciences
organism groupings (non-taxonomic)
DF: Individual form of life, such as a plant, animal, bacterium, protist, or fungus; a body made up of organs, organelles, or other parts that work together to carry on the various processes of life. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 172

orienteering
USE: geolocation measurement
TNR: 860

ornithology
BT: vertebrate zoology
RT: birds
pollinators
DF: Scientific study of birds. [Merriam-Webster Online Collegiate Dic. <http://www.m-w.com/>, 2001]
TNR: 373

orthoimagery

US+: aerial photography
images
TNR: 145

orthophotographs
US+: aerial photography
images
TNR: 146

ostracodes
BT: crustaceans
RT: invertebrate zoology
DF: Aquatic crustaceans belonging to the subclass Ostracoda, characterized by a bivalve, generally calcified carapace with a hinge along the dorsal margin. [Glossary of Geology, 4th ed.]
TNR: 539

outer core (Earth)
BT: core (Earth)
RT: geophysics
DF: Outer or upper zone of the Earth's core, extending from a depth of 2900 km to 5100 km, and including the transition zone. [Glossary of Geology, 4th ed.]
TNR: 527

over-fishing
USE: overfishing
TNR: 99

over-grazing
USE: overgrazing
TNR: 100

overfishing
UF: over-fishing
BT: human impacts
RT: fishery resources
ichthyology
social sciences
wildlife biology
DF: Fishing (a body of water) to such a degree as to upset the ecological balance or cause depletion of fish. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 797

overgrazing
UF: over-grazing
BT: human impacts
TNR: 72

oxygen content (water)
UF: anoxia
dissolved oxygen
hypoxia

BT: water properties
RT: eutrophication
hydrology
water chemistry
TNR: 214

oxygen isotope analysis
BT: light stable isotope analysis
RT: biochemistry
geochemistry
DF: Experimental determination of the proportion of a given stable oxygen isotope in a sample.
TNR: 1031

ozone layer
UF: ozonesphere
BT: atmospheric composition
RT: atmospheric sciences
greenhouse gases
DF: Region of the upper atmosphere, between about 15 and 30 kilometers (10 and 20 miles) in altitude, containing a relatively high concentration of ozone that absorbs solar ultraviolet radiation in a wavelength range not screened by other atmospheric components. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 272

ozonesphere
USE: ozone layer
TNR: 1174

paleobotany
BT: paleontology
RT: botany
palynology
DF: Study of plant life of the geologic past. [Glossary of Geology, 4th ed.]
TNR: 384

paleoceanography
BT: ocean sciences
RT: paleontology
DF: Study of the physical, chemical, biologic, and geologic aspects of past oceans, as deduced from the geologic record. [Glossary of Geology, 4th ed.]
TNR: 1158

paleomagnetic analysis
BT: laboratory methods
NT: Curie temperature analysis
laboratory-induced magnetization analysis
magnetic hysteresis analysis
magnetic susceptibility analysis
natural remanent magnetization analysis
RT: geophysics

DF: Determination of the intensity and direction of the Earth's magnetic field in the geologic past using the natural remanent magnetization of Earth materials. [Adapted from Glossary of Geology, 4th ed.]
TNR: 546

paleontology
UF: paleozoology
phylogeny
taphonomy
BT: Earth sciences
NT: invertebrate paleontology
micropaleontology
paleobotany
vertebrate paleontology
RT: biostratigraphy
fossils
geologic history
ichnofossils
life sciences
paleoceanography
DF: Study of life in past geologic time, based on fossil plants and animals and including phylogeny, their relationships to existing plants, animals and environments, and the chronology of the Earth's history. [Glossary of Geology, 4th ed.]
TNR: 654

paleoseismology
BT: seismology
RT: geologic history
DF: The science of identifying, characterizing and dating past earthquakes in the geological record and the internal structure of fault zones. [Adapted from <http://www.usc.edu/dept/earth/research/paleoseis.html>]
TNR: 1179

paleotectonic maps
US+: maps and atlases
tectonic processes
TNR: 1059

paleozoology
USE: paleontology
TNR: 1175

palynology
BT: botany
RT: paleobotany
plants (organisms)
DF: Study of pollen of seed plants and spores of other embryophytic plants, whether living or fossil, including their dispersal and applications in stratigraphy and paleoecology. [Glossary of Geology, 4th ed.]
TNR: 383

pamphlets, brochures, and booklets
USE: documents

TNR: 609

panchromatic imaging
BT: remote sensing
RT: geography
DF: Capture of images by an optical imaging system sensitive to a single channel of radiation within a broadband wavelength. [Adapted from Interpretation of Optical Images: Virtual Science Center, <http://www.sci-ctr.edu.sg/ssc/publication/remotesense/opt_int.htm>]
TNR: 1180

paper (material)
BT: non-digital format
SN: Use for the format of documents that are available on paper; e.g., paper maps.
TNR: 1123

paper models
USE: educational materials
TNR: 700

papers (publications)
USE: documents
TNR: 30

parasitology
BT: life sciences
RT: health and disease
wildlife biology
DF: Study of organisms that grow, feed, and are sheltered on or in a different organism while contributing nothing to the survival of its host. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 355

particle-beam spectroscopy
BT: chemical analysis
RT: biochemistry
geochemistry
DF: Spectroscopy using beams of atoms or subatomic particles that have been accelerated by a particle accelerating device, aimed by magnets, and focused by a lens. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 437

particle-size analysis
USE: grain-size analysis
TNR: 907

partnerships (USGS)
USE: USGS partnerships
TNR: 1181

pathobiology
USE: pathology
TNR: 1182

pathology
  UF: pathobiology
  BT: life sciences
  RT: health and disease
       plant and animal testing
       therapeutic methods
  DF: Scientific study of the nature of disease and its causes, processes, development, and consequences. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 356

pedology (soils)
  USE: soil sciences
  TNR: 1183

personnel (USGS)
  USE: USGS personnel
  TNR: 1184

pesticide and herbicide contamination
  UF: biocide contaminants
       herbicide contaminants
  BT: anthropogenic contamination
  RT: biochemistry
       ecology
       ecotoxicology
  DF: Biological disturbances caused by the release of biological, physical, or chemical agents used to kill plants or animals into the environment. [Adapted from Concise Columbia Electronic Encyc., 1999]
  TNR: 222

petrography
  UF: thin section analysis
  BT: laboratory methods
  RT: optical microscopy
       petrology
       rocks and deposits
  DF: Use of optical microscopy for the description and classification of rocks.
  TNR: 1165

petroleum resources (gas)
  USE: natural gas resources
  TNR: 1104

petroleum resources (oil)
  USE: oil resources
  TNR: 1160

petrology
  BT: geology
  RT: diagenesis
       igneous rocks

metamorphic rocks
petrography
rocks and deposits
sedimentary rocks
DF: Study of the origin, occurrence, structure, and history of rocks, esp. igneous and metamorphic rocks. [Adapted from Glossary of Geology, 4th ed.]
TNR: 889

pH (water)
USE: water pH
TNR: 1187

phosphorus content
USE: nutrient content (water)
TNR: 1137

photo galleries (USGS)
USE: USGS exhibits and facility tours
TNR: 1189

photogrammetry
USE: remote sensing
TNR: 1190

photographs
US+: images
photography
TNR: 968

photography
UF: video methods
UF+: photographs
BT: methods
NT: aerial photography
underwater photography
RT: videography
DF: Art or process of producing images on a sensitized surface (as a film) by the action of radiant energy and especially light. [Merriam-Webster's Collegiate Dic. <http://www.m-w.com/cgi-bin/dictionary>, 2002]
TNR: 147

phycology
UF: algology
BT: botany
RT: algae
algal blooms
calcareous nannoplankton
diatoms
dinoflagellates
lichens
plankton
DF: Science or study of algae. [Merriam-Webster Online Collegiate Dic. <http://www.m-w.com/>, 2001]

TNR: 178

phylogeny
USE: paleontology
TNR: 1176

physical formats
UF: format
NT: digital format
non-digital format
SN: The 'physical formats' facet provides general terms for the physical formats of information objects. These include digital formats and non-digital formats. More specific formats, such as GIF and HTML, are not included in this thesaurus; it is assumed that specific formats will be documented in metadata by using MIME types and other detailed format descriptions. To describe the intellectual intent of the items, use terms from the 'object types' facet.
TNR: 581

physical models
BT: models
TNR: 1099

physical oceanography
USE: ocean sciences
TNR: 1157

physiology
USE: anatomy and physiology
TNR: 195

pictures
USE: images
TNR: 969

place names
USE: geographic names and classifications
TNR: 27

placenames
USE: geographic names and classifications
TNR: 854

plains ecosystems
USE: grassland ecosystems
TNR: 916

planetary bodies
BT: topics
NT: meteorites
RT: planetary sciences
SN: Use for extraterrestrial bodies.
TNR: 1085

planetary sciences
  UF: planetology
  BT: sciences
  RT: meteorology
       planetary bodies
       scientific careers
  DF: The study of the condensed matter of the solar system, including planets, satellites, asteroids, meteorites, and interplanetary material. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 594

planetology
  USE: planetary sciences
  TNR: 1192

plankton
  UF+: planktonic ecosystems
  BT: organism groupings (non-taxonomic)
  RT: aquatic biology
       calcareous nannoplankton
       microbiology
       phycology
  DF: Collection of small or microscopic organisms, including algae and protozoans, that float or drift in great numbers in fresh or salt water, especially at or near the surface, and serve as food for fish and other larger organisms. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 402

planktonic ecosystems
  US+: aquatic ecosystems
       plankton
  TNR: 233

planning reports
  USE: documents
  TNR: 610

plant and animal tagging
  UF: animal tagging
       banding
       bird banding
       radioisotope tagging
       tagging
  BT: field sampling
  RT: life sciences
  DF: Method of attaching a tag to an organism as long-term identification for study purposes. Tags are made of metal or other durable material on which is stamped an identification number that corresponds to a record about that individual. Often a mailing address is included, to which the tag may be returned by a finder.
  TNR: 292

plant and animal testing
  UF: animal testing

BT: laboratory methods
RT: anatomy and physiology
ecotoxicology
pathology
TNR: 1006

plant distribution
USE: biogeography
TNR: 329

plants (organisms)
BT: organisms
NT: nonvascular plants
vascular plants
RT: botany
palynology
vegetation
DF: Members of the vegetable group (plant kingdom) of living organisms. [Glossary of Geology, 4th ed.]
TNR: 1130

plate tectonics
USE: tectonic processes
TNR: 1193

plot sampling
BT: field sampling
RT: ecology
transect sampling
trenching
DF: Measuring small areas of land as subsets of a population that, if properly selected, may be used to estimate the parameters of the population. [Adapted from Glossary of Geology, 4th ed.] & [American Heritage Dic. of the English Language, 4th ed.]
TNR: 781

policies (USGS)
USE: USGS policies and regulations
TNR: 1194

policies and regulations
UF: regulations
BT: object types
RT: documents
USGS policies and regulations
TNR: 1139

political boundaries
USE: administrative and political boundaries
TNR: 137

pollination
BT: ecological processes
RT: pollinators

DF: Transfer of pollen from a flower's anther to a stigma, either of the same flower (self-pollination) or of a different flower of the same species (cross-pollination). Cross-pollination involves the action of a pollinating agent to effect transfer of the pollen. [Dic. of Biology, Oxford University Press, 2000]
TNR: 1327

pollinators
BT: organism groupings (non-taxonomic)
RT: ecology
entomology
ornithology
pollination
zoology
DF: Organisms which aid in the growth and distribution of plants by transferring pollen as a byproduct of their feeding activities.
TNR: 1169

pollutants
USE: anthropogenic contamination
TNR: 220

pollution
UF+: air pollution
soil pollution
water pollution
BT: human impacts
NT: anthropogenic contamination
RT: ecology
ecotoxicology
eutrophication
hazards
natural contaminants
social sciences
waste treatment and disposal
DF: Contamination of the environment as a result of human activities through the addition of substances or energy (e.g., heat) at a rate faster than it can be accommodated by dispersion, breakdown, recycling, or storage in some harmless form. [Adapted from Encyclopedia Britannica, 2001]
TNR: 224

polymerase chain reaction
BT: chemical analysis
RT: biochemistry
genetics
DF: Technique used to replicate a fragment of DNA so as to produce many copies of a particular DNA sequence for analysis. [Adapted from Dic. of Biology, Oxford Univ. Press, 2000]
TNR: 1332

pond ecosystems
USE: freshwater ecosystems
TNR: 827

population and community ecology
  UF: population energetics
  BT: topics
  NT: animal behavior
       biodiversity
       biogeography
       community ecology
       ecosystems
       habitats
       population dynamics
  RT: biological population management
       ecological processes
       ecology
       ecosystem monitoring
       natural resource management
       relative abundance analysis
  DF: Interactions of a single species (population) or an association of different species (community) occupying a particular region with their biotic and abiotic environments.
  TNR: 316

population dynamics
  BT: population and community ecology
  RT: algal blooms
       biogeography
       ecology
  DF: Aggregation of processes that determine the size and composition of any population. [McGraw Hill Dic. of Scientific and Technical Terms, 5th ed.]
  TNR: 184

population energetics
  USE: population and community ecology
  TNR: 1197

posters
  BT: object types
  RT: educational materials
  TNR: 703

power generation water use
  UF: hydroelectric power generation water use
       thermoelectric power generation water use
  BT: instream water use
  RT: hydraulic engineering
       hydrology
       renewable energy resources
  DF: Water that passes through a power plant for electric power generation. [Adapted from USGS <http://water.usgs.gov/pubs/chapter11/chapter11B.html>, 2002]
  TNR: 722

prairie ecosystems
  USE: grassland ecosystems
  TNR: 917

precipitation (atmospheric)
  UF: rain
       rainfall
       snow
       snowfall
  UF+: precipitation measurements
       rainfall measurements
       snowfall measurements
  BT: atmospheric and climatic processes
  RT: atmospheric deposition (chemical & particulate)
       atmospheric sciences
       hydrology
       storms
  DF: Water that falls to the surface from the atmosphere as rain, snow, hail, or sleet. [Glossary of Geology, 4th ed.]
  TNR: 266

precipitation measurements
  US+: field inventory and monitoring
       precipitation (atmospheric)
  TNR: 767

predators
  USE: carnivores
  TNR: 413

press relations (USGS)
  USE: USGS media relations
  TNR: 38

press releases
  USE: news releases
  TNR: 1119

price lists (USGS)
  USE: USGS sales and distribution services
  TNR: 1204

pricing and ordering (USGS)
  USE: USGS sales and distribution services
  TNR: 1205

proceedings
  USE: documents
  TNR: 611

producers (organisms)
  BT: organism groupings (non-taxonomic)
  RT: botany
       ecology
       microbiology

DF: Organisms that can form new organic matter from inorganic matter such as carbon dioxide, water, and soluble salts (e.g., most plants). [Adapted from the Glossary of Geology, 4th ed.]
TNR: 1170

product support (USGS)
USE: USGS product support
TNR: 1206

programs (USGS)
USE: USGS programs
TNR: 1208

projected time period
UF: future time period
BT: time periods
SN: This term should be used to indicate that the item has a projected (future) time period associated with it, where that is a significant factor about the item.
DF: A date that is beyond the present at the time that the projections are being made.
TNR: 833

prospecting
USE: natural resource exploration
TNR: 1106

protists
UF: foraminifera
protozoans
radiolaria
BT: organisms
RT: algae
microbiology
micropaleontology
DF: Any of the eukaryotic, unicellular organisms of the former kingdom Protista, which includes protozoans, slime molds, and certain algae. The protists now belong to the kingdom Protoctista, a new classification in most modern taxonomic systems. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 813

protozoans
USE: protists
TNR: 1210

public water supply
USE: domestic water use
TNR: 626

publication servers (USGS)
USE: USGS publication servers
TNR: 1212

published series
  USE: documents
  TNR: 612

quadrangle maps
  US+: maps and atlases
        topography
  TNR: 1060

quadrangle names
  BT: terminologies and classifications
  RT: maps and atlases
        topography
  TNR: 1214

quarrying
  USE: mining and quarrying
  TNR: 1097

radar imaging
  BT: remote sensing
  NT: SLAR
  RT: geography
        microwave imaging
  DF: An imaging method for detecting distant objects and determining their position, velocity, or other characteristics by analysis of very high frequency radio waves reflected from their surfaces. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
  TNR: 1215

radio telemetry
  USE: telemetry
  TNR: 1217

radioactive waste repositories
  USE: waste treatment and disposal
  TNR: 1218

radioisotope tagging
  USE: plant and animal tagging
  TNR: 1219

radiolaria
  USE: protists
  TNR: 1211

radiometric age determination
  USE: radiometric dating
  TNR: 1220

radiometric dating
  UF: age dating (radiometric)
        radiometric age determination
  BT: isotopic analysis

NT: carbon-14 analysis
rubidium-strontium age analysis
uranium-lead analysis
uranium-thorium analysis
RT: fission-track dating
geochronology
DF: Methods of age determination based on nuclear decay of naturally occurring radioactive isotopes. [Glossary of Geology, 4th ed.]
TNR: 156

radon
BT: toxic radionuclides (natural)
RT: ecotoxicology
DF: A colorless, radioactive, inert gaseous element formed by the radioactive decay of radium; health problems result from breathing air contaminated with radon gas. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 1224

rain
USE: precipitation (atmospheric)
TNR: 1200

rainfall
USE: precipitation (atmospheric)
TNR: 1201

rainfall measurements
US+: field inventory and monitoring
precipitation (atmospheric)
TNR: 768

rangeland ecosystems
USE: terrestrial ecosystems
TNR: 105

Rb-Sr age analysis
USE: rubidium-strontium age analysis
TNR: 1225

re-establishment (organisms)
USE: reintroduction (organisms)
TNR: 112

reaches (hydraulic)
USE: river reaches
TNR: 1226

reaches (streams)
USE: river reaches
TNR: 1228

real-time period
BT: time periods

SN: This term is to be used for datasets that are available on a real-time basis; that is, data from current observations and measurements.
DF: Time period designation for data that is available immediately after collection or generation, allowing influence on further processing of data. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1229

reclamation
USE: remediation
TNR: 1230

recolonization (organisms)
USE: reintroduction (organisms)
TNR: 111

reconnaissance
USE: field inventory and monitoring
TNR: 769

recreational fishery resources
UF: recreational fishing
sport fishing
BT: fishery resources
RT: aquatic biology
ichthyology
marine biology
DF: The stock of fish and other seafood resources in areas used for recreational fishing.
TNR: 796

recreational fishing
USE: recreational fishery resources
TNR: 89

red tides
USE: algal blooms
TNR: 181

reef ecosystems
UF: coral reef ecosystems
BT: marine ecosystems
RT: coelenterates
ecology
marine biology
marine fishery resources
DF: Ecosystems in ridges of rocks or ridges built by sedentary calcareous organisms, esp. corals, that stand above the surrounding deposited sediment and rise to or near the surface of a body of water. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1198

reef fisheries
USE: marine fishery resources
TNR: 82

reef fishing
  USE: marine fishery resources
  TNR: 1069

regression analysis
  UF: correlation
  BT: statistical analysis
  DF: Mathematical method of modeling the relationships among three or more variables. It is used to predict the value of one variable given the values of the others, represented as an equation that expresses the relationship. [Adapted from Computer Desktop Encyc., 2001]
  TNR: 533

regulations
  USE: policies and regulations
  TNR: 103

regulations (USGS)
  USE: USGS policies and regulations
  TNR: 1232

reintroduction (organisms)
  UF: re-establishment (organisms)
        recolonization (organisms)
  BT: biological population management
  DF: Human-facilitated return of organisms to environments previously occupied by those organisms.
  TNR: 110

relative abundance analysis
  BT: computational methods
  RT: ecosystem monitoring
        population and community ecology
  DF: Calculation of the relative abundances of individuals of one group (e.g., taxon) in comparison with the total number of individuals in all comparable groups in a certain area or volume. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 491

relief maps
  US+: maps and atlases
        topography
  TNR: 1061

remediation
  UF: reclamation
        restoration
  BT: natural resource management
  NT: bioremediation
  RT: ecology
        ecosystem monitoring
        engineering geology

DF: Methods for decontaminating, reclaiming, and restoring natural resources.
TNR: 360

remote sensing
UF: airborne imaging
photogrammetry
satellite imaging
space-borne sensing
UF+: remote-sensing data
remote-sensing images
satellite altimetry
BT: methods
NT: aeromagnetic surveying
aeroradiometric surveying
hyperspectral imaging
IFSAR
infrared imaging
LIDAR
microwave imaging
multispectral imaging
panchromatic imaging
radar imaging
thermal imaging
visible light imaging
RT: aerial photography
geography
seismic methods
telemetry
videography
SN: Remote sensing is used in this thesaurus to refer to methods that are solely or primarily used through airborne and space-borne deployment. Related methods (e.g., photography) that are used frequently on the ground, underwater, and from airplanes and satellites are not included as narrow terms of 'remote sensing'.
TNR: 148

remote video monitoring
USE: video monitoring
TNR: 1238

remote-sensing data
US+: images
remote sensing
TNR: 970

remote-sensing images
US+: images
remote sensing
TNR: 971

renewable energy resources
UF: energy sources (renewable)
BT: renewable resources

NT: geothermal resources
RT: hydrogeology
life sciences
power generation water use
volcanology
DF: Sources of energy that are used for heat and power generation that are constantly replaced, including solar, wind, water, and geothermal energy sources and conversion of biomass (material, vegetation, and agricultural waste) to fuel.
TNR: 718

renewable resources
BT: natural resources
NT: fishery resources
forest resources
renewable energy resources
RT: life sciences
DF: Natural resources with economic value, such as wood or solar energy, that are theoretically inexhaustible because they can or will be replenished naturally in a relatively short period of time. [Adapted from Dic. of Cultural Literacy, 2nd ed.]
TNR: 720

reports
USE: documents
TNR: 613

reptiles
BT: vertebrates
NT: dinosaurs
RT: herpetology
DF: Any of various cold-blooded, usually egg-laying vertebrates of the class Reptilia, such as snakes, lizards, crocodiles, turtles, or dinosaurs, having an external covering of scales or horny plates and breathing by means of lungs. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 590

residential water use
USE: domestic water use
TNR: 627

resistivity sounding
USE: electrical resistivity logging
TNR: 707

resource conservation
USE: natural resource management
TNR: 1109

resource extraction
USE: natural resource extraction
TNR: 1108

resource restoration

USE: natural resource management
TNR: 1110

restoration
USE: remediation
TNR: 1233

revegetation
USE: bioremediation
TNR: 359

riparian ecosystems
USE: wetland ecosystems
TNR: 1239

risk assessment
BT: management methods
NT: earthquake probabilities
landslide susceptibility assessment
DF: The identification of risk, the measurement of risk, and the process of prioritizing risks.
TNR: 1050

river discharge
UF+: river discharge monitoring
BT: geologic and hydrologic processes
RT: hydrology
river systems
surface water (non-marine)
TNR: 1240

river discharge monitoring
US+: field inventory and monitoring
river discharge
TNR: 770

river ecosystems
US+: freshwater ecosystems
river systems
TNR: 828

river reaches
UF: reaches (hydraulic)
reaches (streams)
BT: river systems
RT: hydrology
DF: a) Straight, continuous, or extended part of a river (stream), viewed without interruption (as between two bends) or chosen between two specified points. b) Length of a channel, uniform with respect to discharge, depth, area, and slope. c) Length of a channel for which a single gage affords a satisfactory measure of the stage and discharge. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1227

river systems
  UF+: river ecosystems
  BT: surface water (non-marine)
  NT: river reaches
  RT: hydrology
        river discharge
  DF: Rivers and all their tributaries. [Glossary of Geology, 4th ed.]
  TNR: 1241

rock composition
  USE: rocks and deposits
  TNR: 1243

rock mechanics maps
  US+: engineering geology
        maps and atlases
  TNR: 725

rocks and deposits
  UF: lithology
        rock composition
  UF+: lithologic maps
  BT: Earth characteristics
  NT: fossils
        igneous rocks
        metamorphic rocks
        sedimentary rocks
        unconsolidated deposits
  RT: building stone resources
        lithosphere
        petrography
        petrology
  SN: Use for major rock types and unconsolidated deposits. For deposits of economic value, see related terms.
  TNR: 638

roundworms
  UF: nematodes
  BT: worms
  RT: invertebrate zoology
  DF: Any of several worms of the phylum Nematoda, having unsegmented, cylindrical bodies, often narrowing at each end, and including parasitic forms such as the hookworm and pinworm. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 1112

rubidium-strontium age analysis
  UF: Rb-Sr age analysis
  BT: radiometric dating
  RT: geochronology
  DF: Determining of the age of a mineral or rock in years based on the ration of radiogenic strontium-87 to rubidium-87 and the known radioactive decay rate of rubidium-87. [Glossary of Geology, 4th ed.]
  TNR: 1221

safety issues (human)
  USE: human environmental safety
  TNR: 952

sales services (USGS)
  USE: USGS sales and distribution services
  TNR: 1244

salinity
  UF: chloride concentration
  BT: water properties
  RT: hydrology
        ocean salinity
        water chemistry
  DF: Concentration of naturally occurring soluble salts, such as common salt, sodium carbonate, sodium nitrate, potassium salts, and borax in water, soils, etc. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 1154

sand deposits
  BT: unconsolidated deposits
  RT: economic geology
        nonmetallic resources
        sedimentology
  DF: Depositions of a) detrital rock fragments or mineral particles smaller than a granule and larger than a coarse silt grain or b) loose aggregate of unlithified mineral or rock particles of sand size. [Glossary of Geology, 4th ed.]
  TNR: 1131

satellite altimetry
  US+: altimetry measurement
        remote sensing
  TNR: 189

satellite imaging
  USE: remote sensing
  TNR: 1234

scanning electron microscopy
  BT: electron microscopy
  DF: Use of an electron microscope in which a finely focused beam of electrons is electrically or magnetically moved across the specimen, again and again, and the reflected and emitted electron intensity is measured and displayed, sequentially building up an image with great depth of field. Useful for the examination of opaque objects. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 710

Scanning Multichannel Microwave Radiometer (SMMR)
  USE: SMMR
  TNR: 1245

school programs (USGS)
  USE: USGS K-12 programs
  TNR: 36

science centers (USGS)
  USE: USGS science centers
  TNR: 1246

science programs (USGS)
  USE: USGS science programs
  TNR: 1248

sciences
  NT: Earth sciences
        engineering sciences
        information sciences
        life sciences
        planetary sciences
        social sciences
  SN: The sciences facet represents major educational fields, fields of study, and professional expertise groupings within the USGS. Science terminology is used to categorize information by its fields of study. Index also by appropriate topic terms and terms from other facets.
  TNR: 347

scientific careers
  UF: careers in science
  UF+: scientists-at-work photographs
  BT: topics
  RT: Earth sciences
        engineering sciences
        information sciences
        life sciences
        planetary sciences
        social sciences
  TNR: 411

scientific instruments
  USE: instrument design and development
  TNR: 984

scientists-at-work photographs
  US+: images
        scientific careers
  TNR: 972

scrubland ecosystems
  USE: shrubland ecosystems
  TNR: 1250

sea anemones
  USE: coelenterates
  TNR: 472

sea floor characteristics
  UF: seafloor characteristics
  BT: ocean characteristics
  RT: bathymetry
       land surface characteristics
       marine geology
       ocean sciences
       oceanic lithosphere
  SN: Includes both large-scale structures as seamounts and rises and fine-scale variation in seafloor rocks and deposits.
  DF: Geomorphic features and geographic compositional and textural variation of the materials composing the ocean floor.
  TNR: 300

sea floor topography
  USE: bathymetry
  TNR: 297

sea surface temperature
  UF: temperature (sea surface)
  BT: ocean temperature
  RT: AVHRR
  SN: Includes temperature data obtained in situ or by remote sensing methods.
  DF: Observed temperature of surface ocean waters, typically encompassing the entire mixed layer but some observational methods may measure a much smaller depth range.
  TNR: 288

sea-level change
  BT: ocean characteristics
  RT: climatology
       global change
       ocean sciences
  SN: Includes both global (eustatic) sea-level and local (relative) sea-level variations.
  DF: Variation in the relative vertical position of land and ocean waters caused globally by changes in the distribution of ice masses and the shape of the oceans, and locally by the rate of uplift or subsidence of the land surface.
  TNR: 901

seafloor characteristics
  USE: sea floor characteristics
  TNR: 1325

search services (USGS)
  USE: USGS search services
  TNR: 1254

seasonal migration
  USE: migration (organisms)
  TNR: 1326

sections (geologic)
  USE: stratigraphic sections
  TNR: 1256

sections (stratigraphic)
  USE: stratigraphic sections
  TNR: 1257

sediment transport
  UF: alluvial transport
  BT: geologic and hydrologic processes
  RT: hydrology
        sedimentology
  DF: Phase of sedimentation that includes the movement by natural agents (such as flowing water, ice, wind, or gravity) of sediment or any loose material, either as solid particles or in solution, from one place to another on or near the Earth's surface. [Glossary of Geology, 4th ed.]
  TNR: 872

sedimentary rocks
  BT: rocks and deposits
  NT: bedforms
  RT: petrology
        sedimentation
        sedimentology
  DF: Rocks resulting from the consolidation of loose sediment that has accumulated in layers. [Glossary of Geology, 4th ed.]
  TNR: 303

sedimentation
  UF: alluvial sedimentation
        deposition (sediment)
  BT: geologic and hydrologic processes
  RT: sedimentary rocks
        sedimentology
  DF: Process of deposition of sediment; strictly, the act or process of depositing sediment by mechanical means from a state of suspension in air or water. [Glossary of Geology, 4th ed.]
  TNR: 565

sedimentology
  BT: geology
  RT: bedforms
        building stone resources
        clay deposits
        diagenesis
        erosion
        grain-size analysis
        gravel deposits
        sand deposits
        sediment transport
        sedimentary rocks
        sedimentation
        sieve-size analysis

trenching
DF: Scientific study of sedimentary rocks and the processes by which they were formed; the description, classification, origin and interpretation of sediments. [Glossary of Geology, 4th ed.]
TNR: 890

segmented worms
UF: annelids
BT: worms
RT: invertebrate zoology
DF: Any wormlike invertebrate belonging to the phylum Annelida, characterized by a segmented body with a distinct head and appendages. [Glossary of Geology, 4th ed.]
TNR: 212

seismic exploration
US+: natural resource exploration
seismic methods
TNR: 1107

seismic hazard maps
US+: earthquake occurrences
maps and atlases
TNR: 664

seismic imaging
USE: seismic methods
TNR: 1258

seismic methods
UF: seismic imaging
seismometry
UF+: seismic exploration
seismic profiles
seismograms
BT: field inventory and monitoring
NT: seismic networking
seismic reflection method
seismic refraction method
RT: remote sensing
seismology
TNR: 774

seismic networking
UF: earthquake monitoring
BT: seismic methods
RT: seismology
DF: Deploying, operating, and maintaining groups and arrays of instruments for detecting and describing local movements of the Earth.
TNR: 673

seismic profiles
US+: graphs
seismic methods

TNR: 912

seismic reflection method
UF+: seismic reflection survey maps
BT: seismic methods
RT: seismology
DF: Geophysical technique that produces images of the subsurface by bouncing sound waves off boundaries between different types of rock and deriving depth from the time interval of the returning signals. Seismic waves are generated from a source such as a vibrating device, explosives, or airguns (in water). [Adapted from <http://www.litho.ucalgary.ca/atlas/seismic.html> 2002]
TNR: 1260

seismic reflection survey maps
US+: maps and atlases
seismic reflection method
TNR: 1062

seismic refraction method
BT: seismic methods
RT: seismology
DF: Geophysical method that is based on the analysis of the times of arrival of signals from an initial ground movement generated by a source, recorded at a variety of distances. Data consists of a series of times versus distances, which are interpreted in terms of the depths to subsurface interfaces and the speeds at which motion travels through the subsurface within each layer. [Colorado Sch. of Mines, <http://www.mines.edu/fs_home/tboyd/GP311/MODULES/SEIS/NOTES/sintro.html> 2002]
TNR: 1261

seismicity distribution maps
US+: earthquake probabilities
maps and atlases
TNR: 676

seismograms
US+: graphs
seismic methods
TNR: 913

seismology
UF+: earthquake seismology
engineering seismology
exploration seismology
BT: geophysics
NT: paleoseismology
RT: earthquake occurrences
earthquakes
seismic methods
seismic networking
seismic reflection method
seismic refraction method

tectonic processes
tiltmeter measurement
tsunamis
volcanology
DF: Study of earthquakes, and of the structure of the Earth, by both natural and artificially generated seismic waves. [Glossary of Geology, 4th ed.]
TNR: 667

seismometry
USE: seismic methods
TNR: 1259

serial publications
USE: documents
TNR: 614

sewage disposal
USE: waste treatment and disposal
TNR: 1262

sexing (plants & animals)
BT: field sampling
RT: life sciences
DF: Determination of the sex of an individual organism for study purposes, such as for wildlife surveys.
TNR: 782

shaking maps (seismic)
US+: earthquake occurrences
maps and atlases
TNR: 665

shellfish
BT: organism groupings (non-taxonomic)
RT: aquatic biology
crustaceans
invertebrate zoology
mollusks
DF: Aquatic animals, such as mollusks and crustaceans, that have shells or shell-like exoskeletons. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 1171

shorebirds
USE: birds
TNR: 371

short grass ecosystems
USE: grassland ecosystems
TNR: 918

shrubland ecosystems
UF: scrubland ecosystems

BT: terrestrial ecosystems
RT: ecology
DF: Ecosystems in areas of land that are uncultivated and covered with sparse stunted vegetation. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 1251

Side-Looking Airborne Radar (SLAR)
USE: SLAR
TNR: 1264

side-scan sonar methods
BT: sonar methods
RT: marine geology
marine geophysics
DF: Producing images of the seafloor by capturing the backscatter of acoustical signals from pulsed sound waves. Each transmitted pulse acquires images in a narrow band of the seafloor perpendicular to the ship's track. Overlapping images are matched to produce a continuous representation of the area. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1263

sieve-size analysis
BT: grain-size analysis
RT: sedimentology
DF: Determination of the particle-size distribution in a soil, sediment, or rock by measuring the percentage of the particles that will pass through standard sieves of various sizes. [Glossary of Geology, 4th ed.]
TNR: 908

simulations
USE: models
TNR: 90

SLAR
UF: Side-Looking Airborne Radar (SLAR)
BT: radar imaging
RT: geography
DF: An airborne radar system in which a long, narrow, stabilized antenna, aligned parallel to the motion of an aircraft or satellite, projects radiation at right angles to the flight path. It collects extremely fine-resolution photography and mapping of the ground surface. [Glossary of Geology, 4th ed.]
TNR: 1216

slides (land)
USE: landslides
TNR: 3

slides (photographic)
BT: non-digital format
TNR: 1124

slope stability

USE: landslide susceptibility assessment
TNR: 1020

slope stability maps
US+: landslide susceptibility assessment
maps and atlases
TNR: 1021

SMMR
UF: Scanning Multichannel Microwave Radiometer (SMMR)
SMMR images
BT: microwave imaging
RT: geography
DF: Scanning Multichannel Microwave Radiometer (SMMR) is an imaging 5-frequency radiometer flown on the Seasat and Nimbus-7 earth satellites launched in 1978. It measures dual-polarized microwave radiances from the earth's atmosphere and surface, primarily for the purpose of deriving global and nearly all-weather measurements of sea surface temperature, wind speed, and atmospheric liquid water and water vapor.
[<http://podaac.jpl.nasa.gov:2031/SENSOR_DOCS/smmr.html>]
TNR: 1093

SMMR images
USE: SMMR
TNR: 1265

snow
USE: precipitation (atmospheric)
TNR: 1202

snow and ice cover
UF: glaciers
ice
UF+: ice core sampling
BT: Earth characteristics
RT: atmospheric and climatic processes
glaciation
glaciology
SSM/I
surface water (non-marine)
DF: Accumulated snow and glacier ice with special reference to its thickness. [Adapted from Jackson, 1997]
TNR: 639

snowfall
USE: precipitation (atmospheric)
TNR: 1203

snowfall measurements
US+: field inventory and monitoring
precipitation (atmospheric)
TNR: 1266

social sciences

BT: sciences
RT: business and economics
cadastral and legal land descriptions
culture and demographics
environmental health (human)
hazards
health and disease
human environmental safety
human impacts
land use change
mining hazards
overfishing
pollution
scientific careers
waste treatment and disposal
DF: a) Study of human society and of individual relationships in and to society. b) Scholarly or scientific discipline that deals with such study, generally regarded as including sociology, psychology, anthropology, economics, political science, and history. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 595

socioeconomics
USE: culture and demographics
TNR: 113

software
BT: object types
TNR: 1140

soil chemistry
BT: geochemistry
RT: agriculture and farming
soil resources
soil sciences
DF: Study of the distribution and amounts of chemical elements in the unconsolidated mineral or organic material on the immediate surface of the earth. [Adapted from Glossary of Geology, 4th ed.]
TNR: 20

soil pollution
US+: pollution
soil resources
TNR: 32

soil resources
UF+: soil pollution
BT: nonrenewable resources
RT: economic geology
soil chemistry
soil sciences
DF: Resources of unconsolidated mineral or organic material on the immediate surface of the Earth that serve as a natural medium for growth of land plants. [Adapted from Glossary of Geology, 4th ed.]

TNR: 1132

soil sciences
UF: pedology (soils)
BT: Earth sciences
RT: soil chemistry
soil resources
trenching
DF: Sciences dealing with soils as a natural resource of the Earth, including soil formation, classification and mapping; physical, chemical, biological and fertility properties of soils per se; and these properties in relation to the use of management of soils. [Glossary of Geology, 4th ed.]
TNR: 655

sonar depth-sounding
USE: sonar methods
TNR: 1267

sonar methods
UF: echo sounding
sonar depth-sounding
BT: acoustic methods
NT: side-scan sonar methods
RT: bathymetry measurement
DF: Use of transmitted and reflected underwater sound waves to detect and locate submerged objects or measure the distance to the floor of a body of water. [Glossary of Geology, 4th ed.]
TNR: 132

space-borne sensing
USE: remote sensing
TNR: 1235

spatial analysis
BT: computational methods
NT: geospatial analysis
RT: geography
image analysis
mathematical modeling
topological analysis
DF: Analytical techniques to determine the spatial distribution of a variable, the relationship between the spatial distribution of variables, and the association of the variables of an area. Spatial analysis is often referred to as modeling. It refers to the analysis of phenomena distributed in space and having physical dimensions (the location of, proximity to, or orientation of objects with respect to one another; relating to an area of a map as in spatial information and spatial analysis; referenced or relating to a specific location on the Earth's surface). [Computer Desktop Encyc., 2002]
TNR: 88

Special Sensor Microwave/Imager (SSM/I)
USE: SSM/I
TNR: 1268

species distribution
  USE: biogeography
  TNR: 330

species distribution maps
  US+: biogeography
        maps and atlases
  TNR: 331

species diversity
  BT: biodiversity
  DF: The number, types, and distribution of species within an ecosystem.
[Adapted from Oceanus,
<http://www.whoi.edu/oceanus/OceanusF95Diversity.html>]
  TNR: 83

species geographic range
  USE: biogeography
  TNR: 1330

specimen collecting
  UF: collection of specimens
  BT: field sampling
  RT: capturing (animals)
  DF: Taking of samples from the environment for study.
  TNR: 407

speeches
  UF: oral presentations
        talks
        testimony
  BT: object types
  RT: USGS meetings
  TNR: 1141

spiders
  USE: arachnids
  TNR: 242

sponges
  BT: invertebrates
  RT: invertebrate zoology
  DF: Many-celled aquatic invertebrate belonging to the phylum Porifera and
characterized by an internal skeleton composed most frequently of opaline
silica and less commonly of calcium carbonate. [Glossary of Geology, 4th ed.]
  TNR: 997

sport fishing
  USE: recreational fishery resources
  TNR: 1231

spring ecosystems
  USE: freshwater ecosystems
  TNR: 829

SSM/I
  UF: Special Sensor Microwave/Imager (SSM/I)
       SSM/I images
  BT: microwave imaging
  RT: geography
       snow and ice cover
  DF: Imaging technique relying on reception of naturally emitted microwave energy emitted from the surface of the earth or atmospheric phenomena. The microwave region of the electromagnetic spectrum ranges from about 300 MHz to 300 GHz (wavelengths from 1 meter to 1 mm). [Adapted from <http://www.nrlmry.navy.mil/~white/pages/intro.htm>]
  TNR: 1094

SSM/I images
  USE: SSM/I
  TNR: 1271

standards
  BT: documents
  RT: USGS standards development
  TNR: 623

standards development (USGS)
  USE: USGS standards development
  TNR: 1272

statistical analysis
  UF: geostatistics
  BT: computational methods
  NT: kriging
       multivariate statistical analysis
       regression analysis
       time series analysis
  TNR: 492

storms
  BT: atmospheric and climatic processes
  NT: blizzards
       hurricanes
       ice storms
       tornadoes
  RT: hazards
       meteorology
       precipitation (atmospheric)
  DF: Atmospheric disturbances manifested in strong winds accompanied by rain, snow, or other precipitation and often by thunder and lightning. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 267

stratigraphic sections
  UF: geologic sections
       geologic units
       sections (geologic)

sections (stratigraphic)
BT: Earth characteristics
NT: bedrock geologic units
geologic contacts
surficial geologic units
RT: geologic structure
stratigraphy
DF: Sequence of rock units found in a given region either at the surface (such as a sea cliff, stream bank, or road cut) or below it (as in a drilled well or mine shaft; a local geologic column. [Adapted from Glossary of Geology, 4th ed.]
TNR: 305

stratigraphy
BT: geology
RT: bedrock geologic units
biostratigraphy
borehole logging
electrical resistivity logging
gamma-ray logging
geochronology
geologic contacts
geologic history
lithostratigraphy
stratigraphic sections
surficial geologic units
unconformities
DF: a) Science of rock strata, concerned not only with the original succession and age relations of rock strata but also with their form, distribution, lithologic composition, fossil content, geophysical and geochemical properties. b) Science dealing with all rock bodies forming the Earth's crust. [Glossary of Geology, 4th ed.]
TNR: 364

stream current
USE: streamflow
TNR: 1278

stream current monitoring
USE: streamflow monitoring
TNR: 1279

stream ecosystems
USE: freshwater ecosystems
TNR: 830

stream flow
USE: streamflow
TNR: 1280

stream flow monitoring
USE: streamflow monitoring
TNR: 1281

stream gage monitoring
  USE: streamflow monitoring
  TNR: 1282

stream-flow monitoring
  USE: streamflow monitoring
  TNR: 1283

stream-gage monitoring
  USE: streamflow monitoring
  TNR: 1284

streamflow
  UF: stream current
        stream flow
  UF+: streamflow data
        streamflow modeling
  BT: geologic and hydrologic processes
  RT: hydrology
        streamflow monitoring
        surface water (non-marine)
        water circulation
        watershed management
  DF: Movement of surface runoff traveling in a stream whether or not it is affected by diversion or regulation. [Adapted from Glossary of Geology, 4th ed.]
  TNR: 447

streamflow data
  US+: datasets
        streamflow
  TNR: 1242

streamflow modeling
  US+: mathematical modeling
        streamflow
  TNR: 45

streamflow monitoring
  UF: stream current monitoring
        stream flow monitoring
        stream gage monitoring
        stream-flow monitoring
        stream-gage monitoring
  BT: field inventory and monitoring
  RT: hydrology
        streamflow
  TNR: 775

structural geology
  BT: geology
  RT: Earth structure
        folding (geologic)
        foliation (geologic)

fracture (geologic)
geologic structure
lineation (geologic)
neotectonic processes
structure contours
tectonic processes
tectonophysics
DF: Branch of geology that deals with the form, arrangement, and internal structure of rocks, and especially with the description, representation, and analysis of structures, chiefly on a moderate to small scale. (The subject is similar to tectonics, but the latter is generally used for the broader regional or historical phases). [Glossary of Geology, 4th ed.]
TNR: 657

structure contours
UF+: depth-to maps
thickness maps
BT: geologic structure
RT: structural geology
DF: Two-dimensional portrayals of structural surfaces such as formation boundaries or faults. [Adapted from Glossary of Geology, 4th ed.]
TNR: 568

subbituminous coal resources
USE: coal resources
TNR: 462

subject gateways
USE: web portals
TNR: 1285

subsistence fishery resources
BT: fishery resources
DF: The stock of fisheries where fish and other seafood resources are caught and are shared and consumed directly by the families and their kin, rather than being bought and sold at the next larger market. [Adapted from FAO (1998): Guidelines for the routine collection of capture fishery data. FAO Fish. Tech. Pap, 382: 113 p.; <http://www.fao.org/fi/glossary/default.asp>]
TNR: 66

subsurface maps
US+: geology
maps and atlases
TNR: 887

succession (biological)
UF: ecologic succession
BT: ecological processes
RT: ecology

DF: Gradual process of change in the number of individuals of each species in a community and by the establishment of new species which may gradually replace the original inhabitants. [Adapted from McGraw Hill Dic. of Scientific and Technical Terms, 5th ed.]
TNR: 680

surface water (non-marine)
UF: freshwater (surface)
BT: water resources
NT: river systems
RT: floods
freshwater ecosystems
hydrology
limnology
ocean characteristics
ocean processes
river discharge
snow and ice cover
streamflow
surface water quality
SN: All non-marine waters on the surface of the Earth, including fresh, brackish, and salt water.
TNR: 802

surface water quality
BT: water quality
RT: hydrology
limnology
surface water (non-marine)
water chemistry
TNR: 1286

surficial geologic maps
US+: maps and atlases
surficial geologic units
TNR: 1063

surficial geologic units
UF+: surficial geologic maps
BT: stratigraphic sections
RT: stratigraphy
DF: Rock units found in a given region at the surface (such as a sea cliff, stream bank, or road cut). [Adapted from Glossary of Geology, 4th ed.]
TNR: 1276

surveying
USE: land surveying
TNR: 1287

suspended material (water)
BT: water properties
RT: hydrology
water chemistry

DF: Material such as clay, silt and sand that is supported and carried by the water and not in contact with the bottom of the water body. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1288

symposia (USGS)
USE: USGS symposia
TNR: 1289

systematics and taxonomy
UF: taxonomy
BT: life sciences
RT: biologic names and classifications
meristics
DF: Study and classification of the type and diversity of organisms and their relationships. (The terms taxonomy and systematics are usually distinguished, the latter having broader connotation, but they may also be used more or less synonymously). [Glossary of Geology, 4th ed.]
TNR: 357

tagging
USE: plant and animal tagging
TNR: 6

taiga ecosystems
USE: forest ecosystems
TNR: 816

talks
USE: speeches
TNR: 1269

tall grass ecosystems
USE: grassland ecosystems
TNR: 919

taphonomy
USE: paleontology
TNR: 1177

taxonomy
USE: systematics and taxonomy
TNR: 1291

teaching guides
USE: educational materials
TNR: 701

teaching packets
USE: educational materials
TNR: 702

technical instructions
USE: manuals

TNR: 1051

technical reports
USE: documents
TNR: 615

technical support (USGS)
USE: USGS technical support
TNR: 1292

technology transfer (USGS)
USE: USGS technology transfer
TNR: 1294

tectonic maps
US+: maps and atlases
tectonic processes
TNR: 1064

tectonic processes
UF: dynamic geology
plate tectonics
tectonics
UF+: paleotectonic maps
tectonic maps
BT: geologic and hydrologic processes
NT: neotectonic processes
RT: Earth structure
earthquakes
folding (geologic)
foliation (geologic)
fracture (geologic)
lineation (geologic)
seismology
structural geology
tectonophysics
volcanic activity
DF: Series of actions and changes relating to, causing, or resulting from structural deformation of the earth's crust. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 634

tectonics
USE: tectonic processes
TNR: 1296

tectonophysics
BT: geophysics
RT: asthenosphere
continental lithosphere
crust (Earth)
Earth history
Earth structure
earthquakes

lithosphere
neotectonic processes
oceanic lithosphere
structural geology
tectonic processes
volcanology
DF: Branch of geophysics that deals with the forces responsible for movements in, and deformation of, the Earth's crust. [Glossary of Geology, 4th ed.]
TNR: 658

telemetry
UF: biotelemetry
radio telemetry
BT: field inventory and monitoring
RT: animal tracking
remote sensing
DF: Transmitting data captured by instrumentation and measuring devices to a remote station where it is recorded and analyzed. For example, data from a weather satellite is telemetered to earth. [Computer Desktop Encyc., 2001]
TNR: 368

temperature (air)
USE: air temperature
TNR: 168

temperature (ocean)
USE: ocean temperature
TNR: 1155

temperature (sea surface)
USE: sea surface temperature
TNR: 1253

temperature (water)
USE: water temperature
TNR: 1297

temperature analysis (Curie)
USE: Curie temperature analysis
TNR: 545

terminologies and classifications
UF: classification schemes
terminology schemes
BT: object types
NT: biologic names and classifications
controlled vocabularies
geographic names and classifications
geologic names and classifications
glossaries
hydrologic unit codes
land use classifications
quadrangle names

TNR: 449

terminology schemes
USE: terminologies and classifications
TNR: 34

terrestrial ecosystems
UF: rangeland ecosystems
BT: ecosystems
NT: coastal ecosystems
desert ecosystems
forest ecosystems
grassland ecosystems
shrubland ecosystems
tundra ecosystems
RT: ecology
wetland ecosystems
DF: Ecological communities together with their environments, functioning as units, living or growing on land. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 468

testimony
USE: speeches
TNR: 1270

text documents
USE: documents
TNR: 616

thematic mapper
USE: multispectral imaging
TNR: 1100

therapeutic methods
BT: laboratory methods
RT: anatomy and physiology
ecotoxicology
pathology
DF: Methods of restoring health with remedial agents or treatments.
TNR: 1007

thermal imaging
BT: remote sensing
RT: geography
DF: Remote sensing methods studying chemical and/or physical changes in materials as a function of temperature, i.e. the heat evolved or absorbed during such changes. [Adapted from Glossary of Geology, 4th ed.]
TNR: 1236

thermoelectric power generation water use
USE: power generation water use
TNR: 1199

thesauri
  USE: controlled vocabularies
  TNR: 518

theses
  USE: documents
  TNR: 617

thickness maps
  US+: maps and atlases
        structure contours
  TNR: 1065

thin section analysis
  USE: petrography
  TNR: 1186

tidal waves
  USE: tsunamis
  TNR: 1300

tides
  BT: ocean processes
  RT: ocean circulation
        ocean currents
        ocean sciences
  DF: Rhythmic, alternate rise and fall of the surface (or water level) of the ocean and of bodies of water connected with the ocean, such as estuaries and gulfs, occurring twice a day over most of the Earth and resulting from the gravitational attraction of the Moon and, to a lesser degree the Sun, acting unequally of different parts of the rotating Earth. [Glossary of Geology, 4th ed.]
  TNR: 1148

tiltmeter measurement
  BT: field inventory and monitoring
  RT: seismology
        volcanology
  DF: Measuring slight changes in the tilt of the Earth's surface, usually in relation to a liquid-level surface or to the rest position of a pendulum. Used in volcanology and in earthquake seismology. [Glossary of Geology, 4th ed.]
  TNR: 776

time periods
  NT: geologic time period
        historic time period
        projected time period
        real-time period
  SN: The time period terms are to be used to indicate the general time period covered by the item, where that is a significant factor about the item.
  TNR: 883

time series analysis
  BT: statistical analysis
  RT: time series datasets
  DF: Statistical analysis of a series of data collected at regular intervals of time, producing a frequency distribution in which the independent variable is time. [Glossary of Geology, 4th ed.]
  TNR: 1274

time series datasets
  BT: datasets
  RT: time series analysis
  TNR: 560

tool development
  USE: instrument design and development
  TNR: 51

topics
  NT: agriculture and farming
       biological and physical processes
       culture and demographics
       Earth characteristics
       global change
       hazards
       health and disease
       human impacts
       information system design and development
       instrument design and development
       land use and land cover
       map coordinate systems
       natural contaminants
       natural resource exploration
       natural resource extraction
       natural resources
       organism groupings (non-taxonomic)
       organism growth and development
       organisms
       planetary bodies
       population and community ecology
       scientific careers
       water properties
       water quality
       water supply and demand
  SN: The topics facet represents the themes/subjects/ topics of the information objects that are not otherwise represented by the terms in the sciences and methods facets.
  TNR: 401

topographic maps
  US+: maps and atlases
        topography
  TNR: 1066

topography

UF+: quadrangle maps
relief maps
topographic maps
BT: Earth characteristics
NT: bathymetry
RT: geography
geomorphology
quadrangle names
DF: a) General configuration of a land surface or any part of the Earth's surface, including its relief and the position of its natural and man-made features. b) Natural or physical surface features of a region, considered collectively as to form; the features revealed by the contour lines of a map. [Glossary of Geology, 4th ed.]
TNR: 299

topological analysis
BT: computational methods
RT: geography
geospatial analysis
spatial analysis
DF: Topological analysis is the mathematical study of properties of objects which are preserved through deformations, twistings, and stretchings.) Spatial objects like circles and spheres are treated as objects in their own right, and knowledge of objects is independent of how they are "represented" or "embedded" in space. [Adapted from <http://mathworld.wolfram.com/Topology.html>]
TNR: 493

tornadoes
BT: storms
RT: meteorology
DF: Rotating columns of air ranging in width from a few yards to more than a mile and whirling at destructively high speeds, usually accompanied by funnel-shaped downward extensions of a cumulonimbus cloud. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 1275

tours (USGS)
USE: USGS exhibits and facility tours
TNR: 35

toxic radionuclides (natural)
BT: natural contaminants
NT: radon
RT: ecotoxicology
environmental health (human)
DF: Harmful presence of a type of atom specified by its atomic number, atomic mass, and energy state, such as carbon 14, that exhibits radioactivity. [Adapted from American Heritage of the English Language, 4th ed.]
TNR: 1102

toxic trace elements (natural)
BT: natural contaminants

RT: ecotoxicology
environmental health (human)
TNR: 1103

toxicology
USE: ecotoxicology
TNR: 225

trace fossils
USE: ichnofossils
TNR: 71

tracking
USE: animal tracking
TNR: 5

transcripts
USE: documents
TNR: 618

transect sampling
BT: field sampling
RT: plot sampling
trenching
DF: Systematic method of collecting field data by recording observations or collecting specimens along a vector or measured course across the environment.
TNR: 784

trapping (animals)
USE: capturing (animals)
TNR: 1341

tree ring analysis
UF: age dating (tree ring)
BT: laboratory methods
RT: geochronology
DF: Use of the evidence of the recent past revealed in tree rings to study historical trends and to date events in climatology, ecology, geomorphology, hydrology, and anthropology. [Adapted from <http://www.ltrr.arizona.edu/research.html>]
TNR: 1008

trenching
BT: field sampling
RT: plot sampling
sedimentology
soil sciences
transect sampling
TNR: 785

trilobites
BT: arthropods
RT: fossils

invertebrate paleontology
DF: Any of numerous extinct marine arthropods of the class Trilobita, of the Paleozoic Era, having a segmented body divided by grooves into three vertical lobes and found as fossils throughout the world. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 250

tritium analysis
BT: light stable isotope analysis
RT: biochemistry
geochemistry
TNR: 1032

trophic level dynamics
USE: food web
TNR: 810

trophic relationships
USE: food web
TNR: 811

tsunami preparedness
US+: hazard preparedness
tsunamis
TNR: 55

tsunamis
UF: tidal waves
UF+: tsunami preparedness
BT: ocean waves
RT: geologic and hydrologic processes
hazards
ocean sciences
seismology
DF: Series of catastrophic ocean waves generated by earthquakes, volcanic eruptions, or landslides beneath the sea. [Concise Columbia Electronic Encyc., 1999]
TNR: 874

tundra ecosystems
BT: terrestrial ecosystems
RT: ecology
DF: Ecosystems of treeless areas between the icecap and the tree line of Arctic regions, characterized by a permanently frozen subsoil that supports low-growing vegetation such as lichens, mosses, and stunted shrubs. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 1299

typhoons
USE: hurricanes
TNR: 953

unconformities
BT: geologic contacts

RT: stratigraphy
DF: Surfaces between successive strata representing a missing interval in the geologic record of time, and produced either by an interruption in deposition or by the erosion of depositionally continuous strata followed by renewed deposition. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 1277

unconsolidated deposits
UF: alluvium
eolian sediments
BT: rocks and deposits
NT: clay deposits
gravel deposits
sand deposits
TNR: 60

underwater contours
USE: bathymetry
TNR: 298

underwater photography
UF: camera tows
BT: photography
RT: ocean sciences
TNR: 404

uranium-lead analysis
BT: radiometric dating
RT: geochronology
TNR: 1222

uranium-thorium analysis
BT: radiometric dating
RT: geochronology
TNR: 1223

urbanization
USE: land use change
TNR: 1011

user feedback (USGS)
USE: USGS customer support and user feedback
TNR: 1301

user guides
USE: manuals
TNR: 1052

user services (USGS)
USE: USGS user services
TNR: 1302

USGS
NT: USGS budget

```
        USGS contracts and grants
        USGS facilities
        USGS news
        USGS organization
        USGS personnel
        USGS policies and regulations
        USGS programs
        USGS user services
  SN:   This facet provides a category structure for representing the
programs and policy descriptions of the USGS.
  TNR:  1304

USGS budget
  UF:   budget (USGS)
  BT:   USGS
  TNR:  388

USGS clearinghouses
  UF:   clearinghouses (USGS)
  BT:   USGS information services
  RT:   catalogs and indexes
        USGS search services
  TNR:  428

USGS college programs
  UF:   college programs (USGS)
  BT:   USGS educational services
  TNR:  475

USGS colloquia
  UF:   colloquia (USGS)
  BT:   USGS meetings
  TNR:  477

USGS contracts and grants
  UF:   contracts (USGS)
        grants (USGS)
  BT:   USGS
  NT:   USGS cooperative research & development agreements (CRADAs)
        USGS technology transfer
  TNR:  510

USGS cooperative research & development agreements (CRADAs)
  UF:   cooperative research & development agreements (CRADAs)
        CRADAs
  BT:   USGS contracts and grants
  RT:   USGS partnerships
  TNR:  520

USGS customer support and user feedback
  UF:   customer support (USGS)
        Frequently Asked Questions (FAQs)
        user feedback (USGS)
  BT:   USGS user services
```

```
  NT:   USGS product support
        USGS technical support
  TNR:  549

USGS data downloading
  UF:   data downloading (USGS)
  BT:   USGS information services
  TNR:  556

USGS divisions
  BT:   USGS organization
  TNR:  1306

USGS Earth Science Information Centers (ESICs)
  UF:   Earth Science Information Centers (ESICs)
        ESICs
  BT:   USGS information services
  RT:   USGS sales and distribution services
  TNR:  648

USGS educational services
  UF:   educational services (USGS)
  BT:   USGS user services
  NT:   USGS college programs
        USGS internships
        USGS K-12 programs
        USGS lifelong learning programs
        USGS meetings
  TNR:  705

USGS employment and volunteer opportunities
  UF:   employment opportunities (USGS)
        volunteer opportunities (USGS)
  BT:   USGS personnel
  TNR:  713

USGS exhibits and facility tours
  UF:   exhibits (USGS)
        facility tours (USGS)
        photo galleries (USGS)
        tours (USGS)
  BT:   USGS user services
  NT:   USGS open houses
  TNR:  744

USGS expertise services
  UF:   Ask-A services (USGS)
        expertise services (USGS)
  BT:   USGS information services
  TNR:  253

USGS facilities
  UF:   facilities (USGS)
  BT:   USGS
```

```
  NT:   USGS field centers
        USGS laboratories
        USGS mapping centers
        USGS nuclear reactors
        USGS observatories
        USGS science centers
        USGS visitor centers
  TNR:  751

USGS fax-on-demand services
  UF:   fax-on-demand (USGS)
  BT:   USGS information services
  TNR:  756

USGS field centers
  UF:   field centers (USGS)
  BT:   USGS facilities
  TNR:  760

USGS information services
  UF:   accessing USGS data and products
        information centers (USGS)
        information services (USGS)
  BT:   USGS user services
  NT:   USGS clearinghouses
        USGS data downloading
        USGS Earth Science Information Centers (ESICs)
        USGS expertise services
        USGS fax-on-demand services
        USGS libraries and archives
        USGS map servers
        USGS media relations
        USGS publication servers
        USGS sales and distribution services
        USGS search services
  TNR:  123

USGS interagency programs
  UF:   interagency programs (USGS)
  BT:   USGS programs
  TNR:  988

USGS international programs
  UF:   international programs (USGS)
  BT:   USGS programs
  TNR:  990

USGS internships
  UF:   internships (USGS)
  BT:   USGS educational services
  TNR:  992

USGS K-12 programs
  UF:   K-12 programs (USGS)
```

```
        school programs (USGS)
  BT:   USGS educational services
  TNR:  1000

USGS laboratories
  UF:   laboratories (USGS)
  BT:   USGS facilities
  TNR:  1004

USGS libraries and archives
  UF:   archives (USGS)
        data archives (USGS)
        libraries (USGS)
  BT:   USGS information services
  RT:   datasets
        USGS search services
  TNR:  246

USGS lifelong learning programs
  UF:   community education (USGS)
        continuing education (USGS)
        informal education (USGS)
        life-long learning programs (USGS)
        lifelong learning programs (USGS)
        non-formal education (USGS)
  BT:   USGS educational services
  TNR:  485

USGS map servers
  UF:   interactive map servers (USGS)
        map servers (USGS)
  BT:   USGS information services
  RT:   USGS mapping centers
        USGS maps on demand
  TNR:  986

USGS mapping centers
  UF:   mapping centers (USGS)
  BT:   USGS facilities
  RT:   USGS map servers
        USGS maps on demand
  TNR:  1058

USGS maps on demand
  UF:   maps on demand (USGS)
  BT:   USGS sales and distribution services
  RT:   USGS map servers
        USGS mapping centers
  TNR:  1068

USGS media relations
  UF:   media relations (USGS)
        press relations (USGS)
        USGS press relations
```

```
  BT:   USGS information services
  TNR:  1079

USGS meetings
  UF:   meetings (USGS)
  BT:   USGS educational services
  NT:   USGS colloquia
        USGS symposia
        USGS workshops
  RT:   speeches
  TNR:  1081

USGS news
  UF:   new mapping projects (USGS)
        new projects (USGS)
        news (USGS)
        what's new (USGS)
  BT:   USGS
  TNR:  1115

USGS nuclear reactors
  UF:   nuclear reactors (USGS)
  BT:   USGS facilities
  TNR:  1134

USGS observatories
  UF:   observatories (USGS)
  BT:   USGS facilities
  TNR:  1144

USGS offices
  BT:   USGS organization
  TNR:  1311

USGS open houses
  UF:   open houses (USGS)
  BT:   USGS exhibits and facility tours
  TNR:  1164

USGS organization
  BT:   USGS
  NT:   USGS divisions
        USGS offices
        USGS partnerships
        USGS regional organization
        USGS teams
  TNR:  1305

USGS partnerships
  UF:   business partners (USGS)
        cooperative research (USGS)
        cooperators (USGS)
        partnerships (USGS)
  BT:   USGS organization
```

```
  RT:   USGS cooperative research & development agreements (CRADAs)
  TNR:  394

USGS personnel
  UF:   personnel (USGS)
  BT:   USGS
  NT:   USGS employment and volunteer opportunities
  TNR:  1185

USGS policies and regulations
  UF:   policies (USGS)
        regulations (USGS)
  BT:   USGS
  RT:   policies and regulations
  TNR:  1195

USGS press relations
  USE:  USGS media relations
  TNR:  37

USGS product support
  UF:   product support (USGS)
  BT:   USGS customer support and user feedback
  TNR:  1207

USGS programs
  UF:   programs (USGS)
  BT:   USGS
  NT:   USGS interagency programs
        USGS international programs
        USGS science programs
        USGS standards development
  TNR:  1209

USGS publication servers
  UF:   publication servers (USGS)
  BT:   USGS information services
  TNR:  1213

USGS regional organization
  BT:   USGS organization
  TNR:  1312

USGS sales and distribution services
  UF:   distribution services (USGS)
        map sales (USGS)
        ordering services (USGS)
        price lists (USGS)
        pricing and ordering (USGS)
        sales services (USGS)
  BT:   USGS information services
  NT:   USGS maps on demand
  RT:   USGS Earth Science Information Centers (ESICs)
  TNR:  603
```

USGS science centers
  UF: science centers (USGS)
  BT: USGS facilities
  TNR: 1247

USGS science programs
  UF: science programs (USGS)
  BT: USGS programs
  TNR: 1249

USGS search services
  UF: search services (USGS)
  BT: USGS information services
  RT: USGS clearinghouses
       USGS libraries and archives
  TNR: 1255

USGS standards development
  UF: standards development (USGS)
  BT: USGS programs
  RT: standards
  TNR: 1273

USGS symposia
  UF: symposia (USGS)
  BT: USGS meetings
  TNR: 1290

USGS teams
  BT: USGS organization
  TNR: 1313

USGS technical support
  UF: technical support (USGS)
  BT: USGS customer support and user feedback
  TNR: 1293

USGS technology transfer
  UF: technology transfer (USGS)
  BT: USGS contracts and grants
  TNR: 1295

USGS user services
  UF: user services (USGS)
  BT: USGS
  NT: USGS customer support and user feedback
       USGS educational services
       USGS exhibits and facility tours
       USGS information services
  RT: USGS visitor centers
  SN: The user services facet contains terms to describe types of services provided by the USGS. For the most part, these are generic terms and not the names of specific services.

TNR: 1303

USGS visitor centers
UF: visitor centers (USGS)
BT: USGS facilities
RT: USGS user services
TNR: 1308

USGS workshops
UF: workshops (USGS)
BT: USGS meetings
TNR: 1309

vascular plants
BT: plants (organisms)
NT: ferns and fern allies
flowering plants
gymnosperms
RT: botany
DF: Plants with a well-developed conductive system and structural differentiation. The majority of visible terrestrial plants are vascular. [Glossary of Geology, 4th ed.]
TNR: 758

vegetation
BT: organism groupings (non-taxonomic)
RT: botany
ecology
plants (organisms)
DF: Plants of an area or a region. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 1172

vertebrate paleontology
BT: paleontology
RT: dinosaurs
vertebrates
DF: Branch of paleontology dealing with fossil vertebrates. [Glossary of Geology, 4th ed.]
TNR: 1178

vertebrate zoology
BT: zoology
NT: herpetology
ichthyology
mammalogy
ornithology
RT: game species
vertebrates
DF: Branch of biology that deals with the fishes, amphibians, reptiles, birds, and mammals, all of which are characterized by a segmented spinal column and a distinct well-differentiated head. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 945

vertebrates
  BT: animals
  NT: amphibians
       birds
       fish
       mammals
       reptiles
  RT: vertebrate paleontology
       vertebrate zoology
  DF: Subphylum of the Chordata characterized by an internal skeleton of cartilage or bone, and by specialized organization of the anterior end of the animal; the front of the body is a head that bears organs of sight, smell, taste, and hearing, and the front of the central nervous system is a brain. [Glossary of Geology, 4th ed.]
  TNR: 192

vertical datums
  USE: map coordinate systems
  TNR: 1054

video disk
  USE: videodisk
  TNR: 104

video methods
  USE: photography
       video monitoring
  TNR: 1191

video monitoring
  UF: remote video monitoring
       video methods
  BT: field inventory and monitoring
  RT: videography
  TNR: 777

video tape
  UF: videotape
  BT: non-digital format
  TNR: 1125

videodisk
  UF: video disk
  BT: digital format
  TNR: 585

videography
  BT: methods
  RT: photography
       remote sensing
       video monitoring
  TNR: 1086

videos
  USE: audiovisual materials
  TNR: 284

videotape
  USE: video tape
  TNR: 39

virology
  BT: microbiology
  RT: environmental health (human)
        viruses
  DF: Study of viruses and viral diseases. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 737

viruses
  BT: organisms
  RT: virology
  DF: Simple submicroscopic parasites of plants, animals, and bacteria that often cause disease and that consist essentially of a core of RNA or DNA surrounded by a protein coat. Unable to replicate without a host cell, viruses are typically not considered living organisms. [American Heritage Dic. of the English Language, 4th ed.]
  TNR: 1173

visible light imaging
  BT: remote sensing
  RT: geography
  TNR: 1237

visitor centers (USGS)
  USE: USGS visitor centers
  TNR: 1314

visualization
  USE: visualization methods
  TNR: 1316

visualization methods
  UF: visualization
  BT: computational methods
  TNR: 494

vocalization methods
  BT: field inventory and monitoring
  RT: wildlife biology
  DF: Series of methods used to (a) record sonograms (sound spectrogram) of animal sounds which are analyzed to identify the presence of species in an area and to determine distinct sound patterns within a species, e.g., mating calls, danger alerts; (b) attract species to an area for inventory or monitoring by playing recorded animal sounds or mimicking them.
  TNR: 778

volcanic activity
  UF: volcanism
  UF+: volcano monitoring
  BT: geologic and hydrologic processes
  RT: hazards
       tectonic processes
       volcanology
  SN: See Also "volcanoes" as a type of named geographic feature. Use GeoRef Thesaurus for more specific terms for volcanic activity.
  DF: Eruptions during which gases, ash, and lava (molten rock) escape from vents in the Earth's crust.
[<http://interactive2.usgs.gov/glossary/index.asp>]
  TNR: 873

volcanism
  USE: volcanic activity
  TNR: 40

volcano monitoring
  US+: field inventory and monitoring
       volcanic activity
  TNR: 771

volcanology
  BT: geology
  RT: geothermal resources
       renewable energy resources
       seismology
       tectonophysics
       tiltmeter measurement
       volcanic activity
  DF: Branch of geology that deals with volcanism, its causes and phenomena. [Glossary of Geology, 4th ed.]
  TNR: 891

volunteer opportunities (USGS)
  USE: USGS employment and volunteer opportunities
  TNR: 1307

waste repositories
  USE: waste treatment and disposal
  TNR: 1317

waste treatment
  USE: waste treatment and disposal
  TNR: 73

waste treatment and disposal
  UF: nuclear waste repositories
       radioactive waste repositories
       sewage disposal
       waste repositories
       waste treatment
  BT: human impacts

RT: ecology
mining hazards
pollution
social sciences
wastewater use
DF: Disposal of waste from all human activity, physical, social, industrial and nuclear, in sewage systems, landfills, open dumps and underground, and by recycling. [Adapted from Concise Columbia Electronic Encyc., 1999]
TNR: 950

wastewater
USE: wastewater use
TNR: 1318

wastewater use
UF: gray water
grey water
wastewater
BT: instream water use
RT: hydraulic engineering
hydrology
waste treatment and disposal
DF: Water that is reused after release from a wastewater treatment plant. [Adapted from <http://water.usgs.gov/pubs/chapter11/chapter11B.html>]
TNR: 925

water balance
USE: water budget
TNR: 109

water budget
UF: water balance
BT: water supply and demand
DF: Estimate of the size of future water resources in an aquifer, catchment area, or geographical region, which involves an evaluation of all the sources of supply or recharge in comparison with all known discharges or extractions. [Adapted from Dic. of Earth Sciences, Oxford University Press, 1999]
TNR: 108

water chemistry
BT: geochemistry
NT: marine chemistry
RT: groundwater quality
nutrient content (water)
oxygen content (water)
salinity
surface water quality
suspended material (water)
water hardness
water pH
water properties
water quality

water sampling
water temperature
DF: Study of the distribution and amounts of chemical elements in water. [Adapted from Glossary of Geology, 4th ed.]
TNR: 21

water circulation
UF: circulation (water)
UF+: estuarine circulation
estuarine currents
BT: geologic and hydrologic processes
NT: lake circulation
RT: atmospheric circulation
hydrology
ocean circulation
streamflow
SN: Use 'ocean circulation' for water circulation in the oceans. Use this term, 'water circulation' for all other situations that are not specifically covered by the narrower terms.
DF: The flow of water in a large area, usually in a closed pattern or gyre, due to wind over the surface or to varying densities of water, resulting from differences in salinity and water temperature. [Adapted from Glossary of Geology, 4th ed.]
TNR: 270

water demand
USE: water supply and demand
TNR: 1319

water hardness
UF: hardness (water)
BT: water properties
RT: hydrology
water chemistry
DF: Property of water causing formation of an insoluble residue when the water is used with soap, and forming a scale in vessels in which water has been allowed to evaporate. It is primarily due to the presence of ions of calcium and magnesium, but also to ions of other alkali metals, other metals (e.g. iron), and even hydrogen. [Glossary of Geology, 4th ed.]
TNR: 940

water pH
UF: pH (water)
BT: water properties
RT: hydrology
water chemistry
DF: Measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity. The pH scale commonly in use ranges from 0 to 14. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 1188

water pollution
US+: pollution

water resources
TNR: 1196

water properties
BT: topics
NT: nutrient content (water)
oxygen content (water)
salinity
suspended material (water)
water hardness
water pH
water temperature
RT: hydrology
water chemistry
water quality
TNR: 1138

water properties (marine)
USE: marine chemistry
TNR: 1150

water quality
UF+: water-quality data
BT: topics
NT: groundwater quality
marine water quality
surface water quality
RT: aquatic biology
drinking water use
hydrology
water chemistry
water properties
DF: Fitness of water for use, being affected by physical, chemical, and biological factors. [Glossary of Geology, 4th ed.]
TNR: 232

water resource management
BT: natural resource management
TNR: 1321

water resources
UF: hydrosphere
UF+: water pollution
BT: natural resources
NT: groundwater
surface water (non-marine)
RT: hydrogeology
hydrology
limnology
ocean characteristics
DF: General term referring to the occurrence, replenishment, movement, discharge, quantity, quality, and availability of water (non-marine). [Glossary of Geology, 4th ed.]
TNR: 930

```
water sampling
  BT:   field sampling
  RT:   hydrology
        water chemistry
  TNR:  786

water subsurface
  USE:  groundwater
  TNR:  929

water supply and demand
  UF:   water demand
  BT:   topics
  NT:   water budget
        water use
  TNR:  107

water temperature
  UF:   temperature (water)
  BT:   water properties
  RT:   hydrology
        water chemistry
  TNR:  1298

water use
  UF:   water utilities
  BT:   water supply and demand
  NT:   instream water use
        offstream water use
  RT:   hydraulic engineering
        hydrology
  TNR:  983

water utilities
  USE:  water use
  TNR:  1322

water waves
  USE:  ocean waves
  TNR:  1156

water-quality data
  US+:  datasets
        water quality
  TNR:  1320

waterfowl
  USE:  birds
  TNR:  372

watershed management
  BT:   natural resource management
  RT:   erosion
```

floods
streamflow
DF: Administration and regulation of the aggregate resources of a drainage basin for the production of water and the control of erosion, streamflow and floods. [Glossary of Geology, 4th ed.]
TNR: 741

weather
USE: atmospheric and climatic processes
TNR: 258

weather monitoring
US+: atmospheric and climatic processes
field inventory and monitoring
TNR: 259

weather observations
US+: atmospheric and climatic processes
field inventory and monitoring
TNR: 260

web gateways
USE: web portals
TNR: 1323

web portals
UF: subject gateways
web gateways
website gateways
BT: object types
TNR: 1142

website gateways
USE: web portals
TNR: 1324

well drilling
BT: natural resource extraction
RT: drilling and coring
DF: The process of making a circular hole with a drill or other cutting tool, for purposes such as blasting, exploration, prospecting, valuation, or obtaining oil, gas, or water. [Glossary of Geology, 4th ed.]
TNR: 631

wetland ecosystems
UF: marsh ecosystems
marshland ecosystems
riparian ecosystems
BT: ecosystems
RT: aquatic biology
ecology
terrestrial ecosystems

SN: More detailed terms for 'wetlands' can be selected from the FGDC Wetland Classification <http://fgdc.gov/standards/status/sub3_4.html> or they can be supplied as uncontrolled keywords.
TNR: 938

wetland functions
BT: ecosystem functions
RT: ecology
hydrology
TNR: 689

whaling
BT: marine fishery resources
RT: marine biology
DF: Business or practice of hunting, killing, and processing whales. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 1070

what's new (USGS)
USE: USGS news
TNR: 1310

wildfires
USE: fires
TNR: 791

wildlife
BT: organism groupings (non-taxonomic)
RT: animals
wildlife biology
DF: Animals living in a natural, undomesticated state. [Adapted from American Heritage Dic. of the English Language, 4th ed.]
TNR: 208

wildlife biology
BT: zoology
RT: animal tracking
game management
game species
overfishing
parasitology
vocalization methods
wildlife
wildlife population management
DF: Biology of mammals, birds, and fishes that are neither human nor domesticated. [Adapted from Merriam-Webster Online Collegiate Dic. <http://www.m-w.com/>, 2001]
TNR: 202

wildlife population management
BT: biological population management
NT: game management
RT: biogeography
wildlife biology

DF: Monitoring and control of wildlife as a sustainable natural asset.
TNR: 334

workshop reports
USE: documents
TNR: 619

workshops (USGS)
USE: USGS workshops
TNR: 1315

worms
BT: invertebrates
NT: flatworms
roundworms
segmented worms
RT: invertebrate zoology
DF: Any of various invertebrates, as those of the phyla Annelida, Nematoda, Nemertea, or Platyhelminthes, having a long, flexible, rounded or flattened body, often without obvious appendages. [American Heritage Dic. of the English Language, 4th]
TNR: 801

x-ray diffraction
BT: chemical analysis
RT: mineralogy
TNR: 1340

yearbooks
USE: documents
TNR: 620

zoology
UF: malacology
BT: life sciences
NT: invertebrate zoology
vertebrate zoology
wildlife biology
RT: animals
capturing (animals)
carnivores
consumers (organisms)
herbivores
migratory species
omnivores
pollinators
DF: Branch of biology that deals with animals and animal life, including the study of the structure, physiology, development, and classification of animals. [American Heritage Dic. of the English Language, 4th ed.]
TNR: 209