

Contents

MARINE AND TERRESTRIAL GEOLOGY AND GEOPHYSICS

- 1 Antarctic seismology programs, J. Derr
- 3 Cambrian magmatic rocks of the Ellsworth Mountains, West Antarctica, M.N. Rees, E.I. Smith, D.L. Keenan, and E.M. Duebendorfer
- 5 A Jurassic prehnite vein intruding the Permian–Triassic boundary at Graphite Peak, Antarctica, G.J. Retallack
- 7 Permian coprolites from Graphite Peak, Antarctica, G.J. Retallack and E.S. Krull
- 10 Neogene paleosols of the Sirius Group, Dominion Range, Antarctica, G.J. Retallack and E.S. Krull
- 14 Geologic studies in the Prince Albert Mountains, D.H. Elliot, T.H. Fleming, C. Conaway, and P. Braddock
- 15 Stratigraphy and depositional environments of Permian postglacial rocks exposed between the Byrd and Nimrod Glaciers, G.S. Szablewski and J.L. Isbell
- 17 Search for anthropogenic cesium-137 in a soil profile in Beacon Valley, southern Victoria Land, G. Faure, J.A. Sipp, and G. Lee
- 18 The Dais layered intrusion: A new discovery in the Basement Sill of the McMurdo Dry Valleys, B.D. Marsh and M.J. Zieg
- 20 Global climate change and the paleoecology of echinoderm populations at Seymour Island, Antarctica, R.B. Aronson and D.B. Blake

METEORITE STUDIES

- 23 Meteorite studies: Terrestrial and extraterrestrial applications, 1997, M.E. Lipschutz
- 25 Meteorite recovery and reconnaissance in the Allan Hills–David Glacier and Darwin Glacier regions, 1996–1997, R.P. Harvey and J.W. Schutt

GLACIAL GEOLOGY

- 29 A new mechanism for diatom emplacement and concentration in glacial deposits, T.B. Kellogg, L.H. Burckle, D.E. Kellogg, and J.L. Fastook
- 31 Beryllium-10 in sediments beneath the west antarctic ice sheet: Hypotheses and assumptions, R. Scherer, A. Aldahan, and G. Possnert
- 32 Diatoms in subglacial sediments yield clues regarding west antarctic ice-sheet history and ice-stream processes, R. Scherer and S. Tulaczyk
- 34 High-resolution diatom record in bioturbated antarctic sediments, C. Sjunneskog and R. Scherer
- 37 Replication of accelerator mass spectrometry carbon-14 dates on the acid-insoluble fraction of Ross Sea surface sediments, J.T. Andrews, A.J.T. Jull, and A. Leventer

LAND-ICE STUDIES

- 39 Studies of the west antarctic ice sheet, 1996–1997, C.R. Bentley, M.D. Stenoien, S. Shabtaie, C. Liu, and N. Lord

- 41 Surface velocity and strain rates at the onset of ice stream D, West Antarctica, R.A. Bindschadler, X. Chen, and P.L. Vornberger
- 44 Visible examination of Siple Dome, West Antarctica, shallow cores, R.B. Alley, M.K. Spencer, and D.E. Voigt
- 46 Glaciochemical studies at Siple Dome, West Antarctica, during the 1996–1997 season, K.J. Kreutz, P.A. Mayewski, M.S. Twickler, S.I. Whitlow, and L.D. Meeker
- 48 Characterization of wind-generated snow surface features on the Ross Ice Shelf, Antarctica, J. Stewart, D.A. Braaten, and C. Bennett
- 50 Characterization of snow accumulation variability on the Ross Ice Shelf, Antarctica, D.A. Braaten

OCEAN STUDIES

- 53 Initiation and evolution of pancake ice in a wave field, G.H. Leonard, H.H. Shen, and S.F. Ackley
- 55 Describing the composition of sea-ice cores and the development of the antarctic sea-ice cover, M.O. Jeffries
- 57 Deep coastal oceanography from McMurdo Sound to Marguerite Bay, S.S. Jacobs
- 59 Modeling tides in the Weddell and Scotia Seas, L. Padman and R. Robertson
- 61 Global modeling of particle-reactive chemical species in the oceans: Thorium-230 advection and flux to sediment, G.M. Henderson, C. Heinze, and R.F. Anderson

**DEEP OCEAN VENTILATION
THROUGH ANTARCTIC INTERME-
DIATE LAYERS**

- 65 **Deep Ocean Ventilation Through Antarctic Intermediate Layers: The DOVETAIL program**, R.D. Muench
- 67 **Surface ice-drifters in the Weddell–Scotia Confluence for the DOVETAIL program**, D.G. Martinson
- 69 **Modeling deep ocean ventilation in the Weddell–Scotia Confluence**, D.M. Holland and D.G. Martinson
- 72 **Export of Weddell Sea water along and over the South Scotia Ridge**, A.L. Gordon, M. Visbeck, and B. Huber
- 74 **Tracer oceanography in the Weddell–Scotia Confluence during NBP 97-5**, M. Mensch, W.M. Smethie, Jr., and P. Schlosser

MARINE BIOLOGY

- 79 **AESOPS (Antarctic Environment Southern Ocean Process Study) Process I Study: Winter-spring transition**, W.O. Smith, Jr., A-M White, S. Polk, and S. Mathot
- 81 **Bacterivory and herbivory play key roles in the fate of Ross Sea production**, D.A. Caron, D.J. Lonsdale, and M.R. Dennett
- 84 **Quantitative estimation of the phlorotannin content of three antarctic brown macroalgae**, C.D. Amsler, J.B. McClintock, D. Tedeschi, K.H. Dunton, and B.J. Baker
- 85 **Detection of ultraviolet radiation induced DNA damage in microbial communities of Gerlache Strait**, W.H. Jeffrey, R.V. Miller, and D.L. Mitchell

- 88 **Epipelagic communities in the northwestern Weddell Sea: Results from high-resolution trawl surveys**, R.S. Kaufmann and K.L. Smith, Jr.
- 90 **Evaluation of the functional role of suberitenones A and B from the sponge *Suberites* sp. found in McMurdo Sound, Antarctica**, B.J. Baker, T.L. Barlow, and J.B. McClintock
- 92 **Effects of feeding conditions on sodium pump (Na⁺,K⁺-ATPase) activity during larval development of the antarctic sea urchin *Sterechinus neumayeri***, P.K.K. Leong and D.T. Manahan
- 94 **Feeding and energetic costs of larval development in the antarctic sea urchin *Sterechinus neumayeri***, A.G. Marsh and D.T. Manahan
- 96 **Fishes from the southern and western Ross Sea**, J.T. Eastman
- 98 **The loss of hemoglobin and/or myoglobin affects cardiac ultrastructure in antarctic fishes**, K.M. O'Brien and B.D. Sidell
- 101 **Quantification of myoglobin and myoglobin mRNA in heart ventricle of antarctic fishes**, T.J. Moylan and B.D. Sidell
- 103 **Patterns of nest attendance and relief in Adélie penguins, *Pygoscelis adeliae***, T.L. Bucher and C.M. Vleck
- 105 **Reproductive endocrinology of free-living Adélie penguins at Torgersen Island, Antarctica**, C.M. Vleck and T.L. Bucher
- 107 **Factors regulating population size and colony formation of Adélie penguins in the Ross Sea**, D.G. Ainley
- 108 **Population ecology of Weddell seals (*Leptonychotes weddellii*) in McMurdo Sound, Antarctica, 1995–1997**, T.S. Gelatt and D.B. Siniff

- 111 **Increased energy requirements for humans residing in Antarctica: A proposed model**, H.L. Reed and H. LeMar
- 112 **Association between the Polar T₃ Syndrome and the Winter-Over Syndrome in Antarctica**, L.A. Palinkas, H.L. Reed, and N. Do
- 114 **Measuring metabolic change in humans residing in Antarctica: A thyroxine supplement placebo control trial**, K.R. Reedy and H.L. Reed

**ANTARCTIC MARINE LIVING
RESOURCES PROGRAM**

- 117 **The U.S. Antarctic Marine Living Resources (AMLR) program: 1996–1997 field season activities**, J.E. Martin, R.P. Hewitt, and R.S. Holt
- 119 **Distribution of volume backscattering strength near Elephant Island in the 1997 austral summer**, R.P. Hewitt and D.A. Demer
- 122 **Phytoplankton distribution and its relationship to different water zones characterized by physical oceanographic parameters, January to February 1997**, O. Holm-Hansen, C.D. Hewes, J. Maturana, L. Rios, and G. Gonzalez-Rodas
- 124 **Inorganic nutrient concentrations, January to February 1997**, J. Maturana, N. Silva, C.D. Hewes, and O. Holm-Hansen
- 126 **Variability of pH in the upper water column**, J.M. Hernandez-Ayon, A. Zirino, and O. Holm-Hansen
- 128 **Krill demography in the Elephant Island area, January to March 1997**, V. Loeb

MEDICINE

- 131 **Salps and other macrozooplankton collected from January to March 1997**, V. Loeb, K. Puglise, and D. Outram
- 135 **Midsummer 1997 in the Elephant Island area—A month of warm surface waters and calm winds**, A.F. Amos, A.R. Wickham, and C.C. Rowe
- 137 **Fur seal and penguin studies at Seal Island and Cape Shirreff, Livingston Island, Antarctica, 1996–1997 austral summer**, W.T. Cobb
- 156 **Photosynthetic rhythmicity in an antarctic microbial mat and some considerations on polar circadian rhythms**, C.S. Cockell and L.J. Rothschild
- 158 **Characteristics of streams in the Garwood Valley, McMurdo Dry Valleys**, N. Booth, D. Kasmer, and D. Mc-Knight
- 160 **A comparison of two separate visits to the Alph River system with the Onyx River system**, D. Kasmer, N. Booth, and D. McKnight
- 187 **Chlorine-containing gases in Antarctica**, M.A.K. Khalil and R.A. Rasmussen
- 190 **Lidar observations of stratospheric aerosol and temperatures at McMurdo Station during 1996**, G. Di Donfrancesco, A. Adriani, and F. Cairo

AERONOMY AND ASTROPHYSICS

PALMER LONG-TERM ECOLOGICAL RESEARCH

- 139 **Palmer LTER: Annual sea son October 1996 to March 1997**, K.S. Baker, W.A. Kozlowski, M. Vernet, J.L. Jones, L.B. Quetin, R.M. Ross, R.C. Smith, and W.R. Fraser
- 143 **Palmer LTER: Annual January cruise for 1997 (PD97-1)**, R.M. Ross and K.S. Baker
- 146 **Underway semicontinuous measurements of surface ocean carbon dioxide concentrations**, C.J. Carrillo and D.M. Karl
- 148 **A cross-site study of microbial ectoenzyme activities and regulation: Preliminary results from the Palmer Long-Term Ecological Research component**, S.P. Donachie, L.M. Tupas, C.J. Carrillo, D.M. Karl, and J.R. Christian
- 151 **Stable interannual successional patterns of phytoplankton communities in the coastal waters off Palmer Station, Antarctica**, M.A. Moline, B.B. Prézelin, and O. Schofield

TERRESTRIAL BIOLOGY

- 155 **Impacts of ultraviolet-B radiation and regional warming on antarctic vascular plants**, T.A. Day, C.T. Ruhland, and F. Xiong

ENVIRONMENTAL RESEARCH

- 163 **Measurement of combustion effluent aerosols from Amundsen–Scott South Pole Station**, A.D.A. Hansen
- 165 **PM₁₀ source apportionment at McMurdo Station, Antarctica**, D.H. Lowenthal, J.C. Chow, and D.M. Mazzer
- 167 **Clean-air monitoring at Amundsen–Scott South Pole Station, 1996–1997**, R. Ramos and J. Peterson

LOWER ATMOSPHERE STUDIES

- 171 **Antarctic automatic weather stations: 1995–1996**, R.E. Holmes, C.R. Stearns, and G.A. Weidner
- 174 **Antarctic automatic weather stations: 1996–1997**, C.R. Stearns, R.E. Holmes, and G.A. Weidner
- 178 **Nonhydrostatic numerical simulation of antarctic katabatic wind events**, T.R. Parish, L.D. Oolman, and J.J. Cassano
- 181 **Ross Island area wind field**, C.R. Stearns
- 182 **On the reflectivity and radiation budget of antarctic sea ice**, G. Wendler, B. Moore, D. Dissing, and J. Kelley
- 185 **Solar radiation processes in the east antarctic sea-ice**

- 193 **A southern high-latitude geomagnetic index: AES-80**, C.G. MacLennan, P. Ballatore, M.J. Engebretson, and L.J. Lanzerotti
- 195 **Long-period hydromagnetic waves at very high geomagnetic latitudes**, L.J. Lanzerotti, A. Shono, H. Fukushima, C.G. MacLennan, and L.V. Medford
- 197 **Multistation and conjugate observations of ultra-low-frequency substorm signatures at very high latitudes**, J.L. Posch, M.J. Engebretson, and R.L. Arnoldy
- 200 **Conjugate magnetic sub storm occurred deep in both the southern and northern polar caps**, V.O. Papitashvili, C.R. Clauer, B.A. Belov, and O.A. Troshichev
- 202 **All-sky imager observation of aurora and airglow at South Pole Station**, M. Ejiri, M. Okada, and S. Okano
- 203 **High-resolution infrared spectroscopy at South Pole and McMurdo Stations**, T.M. Stephen, J.R. Olson, R. Van Allen, and F.J. Murcray

SUPPORT AND SERVICES

- 205 **Antarctic Marine Geology Research Facility, 1995–1996 and 1996–1997**, T.R. Janecek
- 207 **The Antarctic Meteorological Research Center: 1997**, C.R. Stearns and J.T. Young

209 **Antarctic geodesy and mapping**, J.L. Mullins, L.D. Hothem, and C.A. Hallam

REPRINTS FROM THE 1997
ONLINE ISSUES OF *ANTARCTIC
JOURNAL* SEPTEMBER THROUGH
DECEMBER

213 **GLACIAL GEOLOGY—Diatoms in a South Pole ice core: Serious implications for the age of the Sirius Group**, D.E. Kellogg and T.B. Kellogg

219 **GLACIAL GEOLOGY—Recycled marine microfossils in glacial tills of the Sirius Group at Mount Fleming: Transport mechanisms and pathways**, A.P. Stroeven, M.L. Prentice, and J. Kleman

225 **LAND-ICE STUDIES—Glaciological delineation of the dynamic coastline of Antarctica**, R.S. Williams, Jr., J.G. Ferrigno, C. Swithinbank, B.K. Lucchitta, B.A. Seekins, and C.E. Rosanova

228 **LAND-ICE STUDIES—Antarctica and sea-level change**, R.B. Alley

230 **SUPPORT AND SERVICES—The National Museum of Natural History**, W.E. Moser and J.C. Nicol

234 **MARINE AND TERRESTRIAL GEOLOGY AND GEOPHYSICS—Initial results of geologic investigations in the Shackleton Range and southern Coats Land nunataks, Antarctica**, F.E. Hutson, M.A. Helper, I.W.D. Dalziel, and S.W. Grimes

237 **OCEAN STUDIES—Laboratory observations of ice-floe processes made during long-term drift and collision experiments**, S. Frankenstein and H. Shen