

3. GENERAL INSTRUCTIONAL MATERIALS

American Meteorological Society (AMS)

The AMS has been involved with educational efforts at all levels, and with increasing public awareness of weather-related issues. The AMS web address is www.ametsoc.org.

•Current AMS Education Board leaders:

Dr. Susan Avery
CIRES (Cooperative Institute for Research in
Environmental Science)
Campus Box 449
University of Colorado
Boulder, CO 80309
Phone: (303) 492-7943

Dr. Kevin A. Kloesel, 2000 Chair
Oklahoma Climatological Survey
Sarkeys Energy Center, Suite 1210
100 East Boyd
Norman, OK 73019-1012
Phone: (405) 325-2541
Fax: (405) 325-2550

•Local chapters of the AMS

*Guide to Establishing School and Public Education
Activities*, (second edition), 1989, AMS, Boston, 21
pp.

Smith, D.R., and J.T. Snow, 1990: Guide to establishing
school and public education activities. *Bulletin of the
American Meteorological Society*, **71**, 1760-1766.

•Conference Reports on popular meteorological education

AMS, 1989: Preprints, Second International Conference
on School and Popular Meteorological and
Oceanographic Education. Crystal, VA, 171 pp.

AMS, 1993: Preprints, Third International Conference on
School and Popular Meteorological and
Oceanographic Education, Toronto, ON, 218 pp.

AMS, 1994: Preprints, Third Symposium on Education,
Nashville, TN, 161 pp.

AMS, 1995: Preprints, Fourth Symposium on Education,
Dallas, TX, 211 pp.

AMS, 1996: Preprints, Fifth Symposium on Education,
Atlanta, GA, 228 pp.

AMS, 1997: Preprints, Sixth Symposium on Education,
Long Beach, CA, 176 pp.

AMS, 1998: Preprints, Seventh Symposium on Education,
Phoenix, AZ, 194 pp.

AMS, 1999: Preprints, Eighth Symposium on Education,
Dallas, TX.

AMS, 2000: Preprints, Ninth Symposium on Education,
Long Beach, CA.

•Articles on meteorological education

Kern, E.L., J.T. Snow, and M.E. Akridge, 1993: Impact on
pre-college atmospheric education. *Bulletin of the
American Meteorological Society*, **74**, 655-660.

Passow, J.J., and D.R. Smith, 1991: A new front in
weather education. *Science Teacher*, **58**, 18-21.

Smith, D.R., J.T. Snow, T.C. Spangler, D.D. Houghton,
and I.W. Geer, 1992: Meeting report on the 1992 AMS
Symposium on Education. *Bulletin of the American
Meteorological Society*, **73**, 795-799.

Smith, D.R., L.M. Bastiaans, R.S. Weinbeck, M.J. Passow,
P.J. Smith, N.J. Rydell, H.P. Warthan, T.C. Spangler,
and A.E. MacDonald, 1994: Meeting report on the
Third AMS Symposium on Education. *Bulletin of the
American Meteorological Society*, **75**, 1241-1247.

Snow, J.T., and D.R. Smith, 1990: Report on the Second
International Conference on School and Popular
Meteorological and Oceanographic Education.
Bulletin of the American Meteorological Society, **71**,
190-198.

Thompson, O.E., 1986: Summary of the AMS Workshop
on meteorology as a unifying education strategy for
improving pre-college science, mathematics, and
technology education. *Bulletin of the American
Meteorological Society*, **67**, 426-428.

Ulanski, S.L., 1993: An analysis of the liberal arts in
introductory meteorology courses. *Bulletin of the
American Meteorological Society*, **74**, 2203-2209.

Walker, J.M., editor, 1985: Weather education.
Proceedings, First International Conference on School
and Popular Meteorological Education. Royal
Meteorological Society, Bracknell, Berkshire, England,
264 pp.

•Project Atmosphere

Project Atmosphere is an educational initiative of the AMS,
designed to foster improved atmospheric education in
grades K-12. A partnership of scientists, educators,
government, and industry focuses on attracting students
into continued study of science, mathematics, and
technology. One of the features of Project Atmosphere
has been the formation of the Atmospheric Education
Resource Agent (AERA) network. At least one master
teacher in each state has been selected to act as a
resource agent. A current listing can be obtained from:

Ira Geer
American Meteorological Society
Project Atmosphere
1200 New York Avenue, Suite 410
Washington, DC 20005

Additional background information on Project Atmosphere
and the AERA network:

Houghton, D.D., 1990: Editorial: American Meteorological
Society education initiatives. *Bulletin of the American
Meteorological Society*, **71**, 648.

Houghton, D.D., 1990: Editorial: American Meteorological Society education initiatives expansion. *Bulletin of the American Meteorological Society*, **72**, 1551.

Smith, D.R., and I.W. Geer, 1991: Establishment of the American Meteorological Society's Atmospheric Education Resource Agents (AERA) program. *Bulletin of the American Meteorological Society*, **72**, 612-15.

Smith, D.R., I.W. Geer, R.S. Weinbeck, and P.R. Chaston, 1991: Project Atmosphere: AMS/NOAA 1991 workshop for teachers. *Bulletin of the American Meteorological Society*, **72**, 1547-1550.

Smith, D.R., I.W. Geer, R.S. Weinbeck, and J.T. Snow, 1993: Project Atmosphere: AMS/NOAA 1992 workshop for teachers. *Bulletin of the American Meteorological Society*, **74**, 421-424.

Smith, D.R., I.W. Geer, R.S. Weinbeck, J.T. Snow, and W.H. Beasley, 1994: AMS Project Atmosphere - University of Oklahoma 1993 workshop for teachers. *Bulletin of the American Meteorological Society*, **75**, 95-100.

Project Atmosphere has produced or distributes educational materials on:

- Clouds
- Sunlight and Seasons
- Weather Radar: Detecting Precipitation
- Water Vapor and the Water Cycle
- Global Climates
- Hazardous Weather
- Radar Reflections: Soul of a Storm - Video (24 minutes).

•DataStreme

This major precollege teacher enhancement initiative involves a 13-week distance learning course, with the goal of training Weather Education Resource Teachers. Interested teachers should apply for selection as participants for either the spring or fall semesters. Participants must be pre-college teaching professionals who live near an area served by a Local Implementation Team, a cadre of professional meteorologists or master teachers who have participated in Project Atmosphere training. Selected participants receive graduate-level academic credit for the course on the study of the atmospheric environment through the use of electronically-transmitted weather data and learning materials, combined with Study Guide readings and investigations.

American Association for the Advancement of Science (AAAS)

AAAS is actively involved with all aspects of science, mathematics, and technology education. Position papers, reference, resource, and review materials have been produced to assist teachers at all grade levels and in many academic disciplines.

Directorate for Education & Human Resource Programs
AAAS
1333 H Street, N.W.

Washington, DC 20005-4792

Phone: (202) 326-6670

Fax: (202) 371-9849

Web: www.aaas.org

- AAAS prepares an annual reference guide to more than 2500 programs and educational organizations, including 200 museums and science-technology centers. *The Sourcebook for Science, Mathematics, and Technology Education* is published annually for \$12.95 (\$10.35 for members) from:

AAAS Books

Box 735, Dept. A55

Waldorf, MD 20604

Phone: (301) 645-5643.

- General book and software reviews, references, and announcements from the AAAS:

Science Books and Films. ISSN 0098-3422X. A bimonthly publication of AAAS, 1515 Massachusetts Avenue, N.W., Washington, DC 20005.

Science Books and Films' Best Books for Children 1988-91, 1992. AAAS Publication 92-30H, 300 pp. ISBN 0-87168-505-1.

The Best Books and A-V Materials for Children, 1988.

Compiled and edited by S.M. O'Connell, V.J. Montenegro, and K. Wolff. AAAS Publication 82-11, 335 pp. ISBN-0-87168-316-4.

- Project 2061 is a AAAS project intending to improve science, mathematics, and engineering education:

Physical and Information Sciences and Engineering: Report of the Project 2061 Phase I Physical and Information Sciences and Engineering Panel, Washington, DC, 41 pp.

Science for All Americans. A Project 2061 Report on Literacy Goals in Science, Mathematics, and Technology, 1989, 217 pp.

American Geological Institute

The American Geological Institute, through its National Center for Earth Science Education, has developed the following position statement concerning the teaching of earth science, including weather and climate:

National Center for Earth Science, 1991: *Earth Science Education for the 21st Century: A Planning Guide*. American Geological Institute, Alexandria, VA, 34 pp.

American Geological Institute

National Center for Earth Science Education

4220 King Street

Alexandria, VA 22302

Phone: (703) 379-2480

Educators Progress Service

The following materials are appropriate for instruction at the indicated grade levels. Free instructional material is at:

Educators Progress Service

214 Center Street

Randolph, WI 53956-1497
Phone: (414) 326-3126

Berger, J.L. (editor), 1993: *Educators Grade Guide to Free Video Tapes (40th edition)*. Educators Progress Service, 561 pp. ISBN 0-87708-255-3.

Diffor, J.C., and E.N. Diffor (editors), 1993: *Educators Guide to Free Filmstrips and Slides (45th edition)*. Educators Progress Service, 169 pp. ISBN 0-87708-252-9.

Haider, T.J. (editor), 1994: *Educators Grade Guide to Free Teaching Aids (40th edition) with Supplement by K.S. Nehmer*. Educators Progress Service. ISBN 0-87708-265-0.

Haider, T.J. (editor), 1993: *Educators Guide to Free Curriculum Materials (50th edition)*. Educators Progress Service, 384 pp. ISBN 0-87708-254-5.

Nehmer, K.S. (editor), 1994: *Guide to Free Computer Materials (12th edition)*. Educators Progress Service, 487 pp. ISBN 0-87708-261-8.

Parent, M.P. (editor), 1993: *Educators Guide to Free Materials (102nd edition)*. Educators Progress Service, 543 pp. ISBN 0-87708-250-2.

Staff editors, 1994: *Educators Guide to Free Science Materials (35th edition)*. Educators Progress Service, 289 pp. ISBN 0-87708-268-5.

Independent Study Courses

Several institutions offer independent study or correspondence courses in atmospheric and oceanic sciences. The introductory general-education courses have few prerequisites, and provide an opportunity for people to broaden their weather knowledge who do not have an opportunity to attend more traditional college-level courses. A listing of such courses is in the atmospheric sciences section of the index in:

National University Continuing Education Association, 1992: *The independent study catalog: A guide to continuing education through correspondence courses*. Fifth Edition, One Dupont Circle, Washington, DC, 281 pp. ISBN 1-56079-138-1.

Participating institutions include:

Ball State University, Muncie, IN 47306
Indiana University, Bloomington 47405
Oklahoma State University, Stillwater 74078
Pennsylvania State University, Univ. Park 16802
Portland State University, Portland, OR 97207
University of Arizona, Tucson 85719
University of Georgia, Athens 30602
University of Kansas, Lawrence 66045-2602
University of Missouri, Columbia 65211
University of Utah, Salt Lake City 84112
University of Washington, Seattle 98195
University of Wisconsin-Extension, Madison 53706
Weber State College, Ogden, UT 84408-4005.

National Center for Atmospheric Research (NCAR)

NCAR, with the support of the National Science Foundation, is actively involved with several educational projects. NCAR is part of a larger organization, the University Corporation for Atmospheric Research (UCAR). The NCAR and UCAR web address is www.ucar.edu.

•COMET

The Cooperative Program for Operational Meteorology, Education, and Training (COMET), is administered by UCAR and sponsored by the National Weather Service. COMET includes the development of computer-based learning modules through its Distance Learning Program. The computer-based training modules come in a variety of formats including laser disc, CD, and web training modules. A complete list can be found at: www.comet.ucar.edu/modules/. Order online (www.comet.ucar.edu/sales/) or contact Liz Lessard at 303-497-8475 or write care of UCAR/COMET, P.O. Box 3000, Boulder, CO 80307.

•NCAR Global Change Instruction Program

Modules have been developed by the NCAR Advanced Study Program for college-level interdisciplinary studies of global climatic change, and earth and environmental sciences. They cover earth science to include meteorology, and are for undergraduate non-science majors.

NCAR Information and Education Outreach Program
P.O. Box 3000
Boulder, CO 80307-8600

•SkyMath

A program under development with mathematics educators to enhance the teaching of mathematics and related disciplines at the junior high school level through the use of current weather information from UNIDATA.

UCAR/UNIDATA Program Center
P.O. Box 3000
Boulder, CO 80307-8600
Phone: (303) 497-8644
Web: www.unidata.ucar.edu/staff/blynds/Skymath.html

•UNIDATA

This program provides current weather information to member universities and subscribers

UCAR
P.O. Box 3000
Boulder, CO 80307-8600
Phone: (303) 497-8644
Email: support@unidata.ucar.edu

National Earth Science Teachers Association (NESTA)

NESTA is a nonprofit educational organization whose purpose is the advancement, stimulation, extension, improvement, and coordination of earth science education at all educational levels.

NESTA Membership (\$15.00)
P.O. Box 53213
Washington, DC 20009-3213

NESTA publishes *The Earth Scientist* four times a year. Each issue specializes in geology, astronomy, meteorology, or oceanography. It is edited by:

Jan Woerner
35201 Hollow Creek Drive
Yucaipa, CA 92399-5905

Many states also have both NSTA and NESTA organizations, and have publications. Contact NSTA or state education departments for more information.

National Science Teachers Association (NSTA)

NSTA is a professional organization of science teachers. In addition to the periodicals in Section 5, NSTA materials include *NSTA's Supplement of Science Education Suppliers*, which has addresses of audiovisual producers, publishers, and science equipment suppliers.

1742 Connecticut Ave., N.W.
Washington, DC 20209-1171

National Weather Association (NWA)

NWA is a nonprofit organization chartered to promote the interests of weather forecasting. The NWA annually awards Sol Hirsch Educational Grants to K-12 teachers to improve the education of students in meteorology. Information about the application process is at:

6704 Wolke Court
Montgomery, AL 36116-2134
Phone: (334) 213-0388
Email: NatWeaAsoc@aol.com
Web: www.nwas.org

Other Federal Agencies

Several Federal agencies have established education programs which provide teachers with resource materials in the form of audiovisual aids, lesson plans, activity booklets, and worksheets. Typically, these materials can be obtained at nominal cost from resource centers which may also produce newsletters or other information. Agencies with weather-related material are:

- Department of Agriculture
Global Change Programs Office, Room 60 LL
1621 North Kent Street
Arlington, VA 22209
Phone: (703) 235-9018
Fax: (703) 235-9046

- NASA
The NASA Educational Affairs Division has established a NASA Teacher Resource Center Network comprised of:
Teacher Resource Centers (TRCs).
Regional Teacher Resource Centers (RTRCs).
Central Operation of Resources for Educators (CORE).
Additional NASA education resources:
NASA Space Link.
NASA Select Television.
NASA Education Satellite Videoconferences.
Web: www.hq.nasa.gov/office/coddef/education.

- Universities Space Research Association (USRA)
USRA and NASA have atmospheric sciences at:
4950 Corporate Drive, Suite 100
Huntsville, AL 35806
Phone: (205) 895-0582
Fax: (205) 895-9222

Regional School Programs

Several innovative pre-college educational programs in atmospheric science have been developed by school districts. Some programs are affiliated with neighboring university departments or national organizations.

- EARTHSTORM
Earth-System Education for Science Teachers Using the Oklahoma Regional Mesonet (EARTHSTORM):
Oklahoma Climatological Survey
100 East Boyd, Suite 1210
Norman, OK 73019

- LEARN
Laboratory Experience in Atmospheric Research (LEARN) at NCAR:
P.O. Box 3000
Boulder, CO 80307-3000

- WEATHERWATCH
Dept. of Atmospheric Science
Marshak Hall, CCNY
138th Street at Convent Avenue
New York, NY 10031

- Florida EXPLORES
Experimental Program for Learning the Operations and Resources of Environmental Satellite (EXPLORES):
Dr. Paul Ruscher
Department of Meteorology
Florida State University
Tallahassee, FL 32306