RESOURCE LISTING FOR WEATHER AND CLIMATE INSTRUCTION

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Adapted by

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1. INTRODUCTION AND SCOPE

This document is intended to assist those who teach weather and climate at any level from pre-school through introductory college level courses, by listing some of the available instructional resources.

While an effort was made to select easily obtainable materials, some materials may not be available everywhere or may have become obsolete. This list is for informational purposes only and inclusion of an item on the list by no means represents an endorsement of that product. Some good source materials may have been neglected inadvertently.

Permission is hereby granted for the reproduction of portions or all of this document for non-commercial educational use in schools on the condition that this source is acknowledged.

This information is also available on the web at http://www.nssl.noaa.gov/resources/

2. CAREER GUIDANCE MATERIAL

The American Meteorological Society (AMS) provides career guidance information to individuals contemplating a career in the atmospheric and oceanic sciences. Many of these materials are also available from the University Corporation for Atmospheric Research (UCAR). School counselors should be made aware of these materials.

AMS on web: www.ametsoc.org

UCAR on web: www.ucar.edu/edu/

•A Career Guide for the Atmospheric Sciences

Updated in 2000, the guide describes the nature of the atmospheric sciences and career opportunities. Single copies free.

Online at www.ametsoc.org/AMS/AtmosCareers/

- •The Changing Atmosphere Challenges and Opportunities American Meteorological Society (AMS) and University Corporation for Atmospheric Research (UCAR), 24 pp. Single copies free.
- •1998 Curricula in the Atmospheric, Oceanic, Hydrologic, and Related Sciences

This book is published jointly by the American Meteorological Society (AMS) and University Corporation

for Atmospheric Research (UCAR). It lists accredited institutions in the U.S. and Canada which have academic programs granting degrees from the bachelor to doctoral level. It also includes departments, course names, faculty members, and thesis titles. Order from the AMS (\$40 includes shipping and handling).

•How to Be a Meteorologist

World Meteorological Organization (WMO), WMO #257, 16 pp. A career pamphlet. Single copies \$5.00. www.wmo.ch.

The AMS sponsors several undergraduate awards and scholarships in the atmospheric sciences. Check the *Bulletin of the American Meteorological Society* for eligibility criteria, or contact the AMS for information and application forms at:

American Meteorological Society 45 Beacon Street Boston, MA 02108-3693 Phone: (617) 227-2425 Fax:(617) 742-8718 Web: www.ametsoc.org

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 Padar Pottections: Soul of a Storm Video (24

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 electronicallytransmitted 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@unitdata.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 202009-1171

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 weatherrelated 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/codef/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 Mesonetwork (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

4. AUDIOVISUAL MATERIALS

Weather and climate concepts can be presented effectively using visuals in many different formats, such as videos, slides, and posters. Examples of atmospheric phenomena reinforce the learning process.

Selected address lists of audio-visual suppliers can be found in the annual issue of the National Science Teachers Association's (NSTA) *Science Education Suppliers Supplement*, a supplement to *The Science Teacher* and other NSTA publications. For information, contact the NSTA at 1840 Wilson Blvd., Arlington, VA 22201-3000. Other indexes and reference sources of educational audiovisual materials include several indexes published by the National Information Center for Educational Media (NICEM):

- •*Film and video finder*, 1991, Third edition, Medford, NJ, 3 volumes. ISBN 0-937458-20-0.
- •Audiocasette and compact disc finder, 1993, Third edition, Medford, NJ, 1419 pp. ISBN 0-937458-22-7.
- •Klisz, A.M., (editor), 1994: *The video source book.* 16th edition, Gale Research, Detroit, MI, 2 volumes, 3988 pp. ISSB 0748-0881; ISBN 0-8103-85368 (set).

•AAAS publications (Section 3).

•Annual guides produced by Educators Progress Service, Randolph, WI (Section 3).

4.1. VIDEOCASSETTES

Title	Source	Date	Length (minutes)	Cost
<u>A</u>				
After The Warming, Episode One: The Fata	al Flower			
	Ambrose Video Publishing Co.	1990	56	
After The Warming, Episode Two: Secret C				
	Ambrose Video Publishing Co.	1990	56	
The Atmosphere In Motion	United Learning	1995	21	
The Atmosphere, Climate And Weather	CLEARVUE/eav	_	48	\$70.00
The Awesome Power: Floods	NOAA-NWS	1988	17	
<u>B</u>				
Behind The Scenes Weathercast	United Learning	1995	6	
Bill Nye (each tape has 2 shows + poster)	C C			
Earth's Seasons, Climates	Disney Educational Productions	1998	52	\$49.95
Storms, Fluids	Disney Educational Productions	1998	52	\$49.95
Water Cycle, Oceanography	Disney Educational Productions	1998	52	\$49.95
Waves, Wind	Disney Educational Productions	1998	52	\$49.95
Atmosphere, Flight	Disney Educational Productions	1998	52	\$49.95
Blown Away: Tornadoes	USA Teleproductions	1996	22	
Bringing Home The Weather	Weather Channel	_	48	
<u>c</u>				
Can We Control The Weather?	McGraw-Hill Text Films	_	25	
The Chase	BVE Productions, Inc.	_	42	\$23.90
Chase Highlights 98	William Reid	1998	60	\$19.95
The Chasers Of Tornado Alley	Prairie Pictures	_	48	\$19.95
Chase To Live 6-15-91	Gene Rhoden	1992	40	
Chasing El Niño	NOVA	_	60	\$29.95
Chasing The Wind	Plano, Texas TV Network	1991	27	
Climate & Seasons	Schlessinger Video	1998	_	\$29.95
The Climate Puzzle	PBS-TV	_	55	•
Climate, Weather, And People	Hawkhill Associates	1997	172	
Clouds: Messengers Of The Weather	Educational Filmstrip and Video	1997	50	
Clouds & Precipitation	Coronet Films & Video	1985	15	
Clouds And What They Mean	CLEARVUE/eav	_	15	\$65.00
Cracking The Ice Age	NOVA/PBS-TV*	1998	60	\$29.95
Cyclone!	National Geographic*	1998	50	+
<u>D</u>				
Danger's Edge (Hurricanes)	Weather Channel	1991	25	
The Deadliest Storm	KSNW-TV, Wichita, KS	1991	91	
Deadly Waters: Flood Of '94	Historic Publications	_	40	\$23.00
			10	Ψ <u>2</u> 0.00

Drought And Flood: Two Faces Of One Coir	ı			
-	Films for the Humanities&Science	1990	18	
Dynamic Earth	The Learning Channel		52	\$34.95
E	aathar Cuala			
Earth Science for Children: All About the We	Schlessinger Science Library	2000	23	\$29.95
Earth Science in Action: The Water Cycle	Schlessinger Science Library	2000	23	\$39.95
Electrical Skies	Joel Hartless	1998	15	\$24.95
El Niño: Drought To Deluge	Weather Channel	1992	30	4-
El Niño & The Link Between Oceans, Atmos				
	CLEARVUE/eav	_	22	\$70.00
End of the Golden Weather	Bonneville Worldwide Entertain.	1998	_	\$19.95
The Enemy Wind (tornadoes)	Weather Channel	1992	25	
Everyday Weather: Hurricanes	SUNY-Brockport & Weather Ch.	1986	24	
Everyday Weather: The Sense Of Weather	SUNY-Brockport & Weather Ch.	1989	29	
Everyday Weather: Thunderstorms SUNY-E		1987	29	
Eye of the Storm: Hurricanes	Weather Channel	-	48	
Eyewitness: Weather	Dorling Kindersley Video	1996	13	
<u>F</u>				
Five Great Weather Disasters	Weather Channel	1997	50	
Flash to Bang	United Learning	1995	19	* ~~~~
Flood!	NOVA/PBS-TV*	1998	60 50	\$29.95
Flood: Raging Planet	Teacher's Video Company	1998	50	\$29.95
Force Four (Hurricanes)	Weather Channel	1990	23	¢22.00
Forty-six Tornadoes	Berger Productions	_	-	\$33.00
<u>G</u> Global Climate	National Geographic Television	1998	_	\$99.00
Global Warming: Future Quest	Hawkhill Associates, Inc.	-	30	\$99.00 \$84.55
Global Winds	Coronet Film & Video	1985	15	ψ04.00
The Great Chicago Flood	Explorer*	1998	30	\$29.95
Great New Jersey Coastal Storm Of the 20t				<i>4</i> -0.00
	G. Hoffman	_	90	\$24.00
Greenhouse Effect: Is It Hot Enough For Yo				•
	PBS-TV	_	55	
<u>H</u>				
Hands-on Weather/Weather Experiments	United Learning	1998	19	\$79.95
Hands-on Weather 2/More Weather Experir				
	United Learning	1999	19	\$79.95
The Hidden Dangers: Low-Water Crossing	NOAA-NWS	1996	20	
The Hugo Video Scrapbook	WSOC-TV, Charlotte, NC	1989	60	
Hurricane	NOAA/NWS	1984	29	\$00.05
Hurricane!	NOVA/PBS-TV	1998	60 50	\$29.95
Hurricane Andrew: The Awful Howl	Steve Wackholder Richard Horodner	_	50 45	\$25.00
Hurricane Emily Hurricanes Fran & Bertha	Richard Horodner	—	45 50	\$24.95 \$23.00
Hurricane Hunters	WRIN-TV	_ 1996	50 50	φ23.00
Hurricane Iniki	Historic Publications	-	56	\$28.00
Hurricane '95	BVE Productions Inc.	_	60	\$23.90
Hurricane Opal	Steve Wackholder	_	50	\$25.00
Hurricanes: Earth's Greatest Storm Scott R		1991	20	<i>\\</i> 20.00
Hurricanes: It's Not Just Another Storm	FEMA/Videx Corp.	1991	20	
Hurricane Strikes	Jim Leonard	_	_	\$25.00
Hurricane: The Unseen Tragedy	Dept. of Planning & Natural Resou	rces, U.S. Virg	gin Islands	
		1990	30	
A Hurricane: Through The Eyes Of Children	How the WeatherWorks	1992	42	\$99.95
Hurricanes: The Greatest Storm On Earth	WGN-TV	1994	22	
The Hyrodologic Cycle: Water In Motion	CLEARVUE/eav	-	20	\$80.00
<u>I</u>				
In the Bear's Cage	Jack Corso	_	120	\$34.95
Investigating Weather	United Learning	1997	80	
It Sounded Like A Freight Train	WGN-TV, Chicago	1991	22	

It Sounded Like A Freight Train	WGN-TV, Chicago	1992	22	
<u>J</u>				
The Job Of A Meteorologist	United Learning	1995	19	
<u>K</u>				
Killer Tornadoes	Mdacy Enterprise Group., Inc.	1996	90	
Killer Weather	TLC and Discovery Channels	1998	55	\$29.95
<u>L</u>				
Last Chance Chase Video	William Reid	-	_	\$27.90
Lightning	NOVA/PBS-TV*	1998	60	\$29.95
Lightning Safety 101	National Lightning Safety Institute	1999	58	
The Long Hot Winter	Weather Channel	-	48	
<u>M</u>				
Mr. Wizard's World: Air & Water Wizardry	NASA	-	44	
<u>N</u>				
NASA: Airmen And The Weather	Ferde Grofe Films	1998	-	\$29.95
Nashville, Tennessee Tornado Survivors/In	-			
	A&E	1998	50	\$19.95
Nashville Tornado	WTUV-TV, Nashville, Tennessee	1998	22	
Natural Disasters	CBS Eyewitness*	1998	35	\$29.95
Nature's Fury	National Geographic*	1998	50	\$29.95
Nature's Rage	Readers Digest	1997	120	\$29.95
<u>o</u>				
Ocean Blue: Water And Weather	Films for the Humanities&Science	1996	20	
Oceans, Weather And Climate	CLEARVUE/eav	_	15	\$70.00
Oklahoma City Tornadoes	KWTV, Channel 9, Oklahoma City	1998	44	
Our Sea Of Clouds	How the WeatherWorks	1992	16	\$89.95
<u>P</u>				
The Palm Sunday Tornadoes: 30 Years Lat	er			
	WSJV-TV, Elkhart, Indiana	1995	22	
Planet Earth: Climate Puzzle	Teacher's Video Company -		58	
Polar Weather	Ambrose Video	1998	-	\$99.95
PROFS: Flash Floods At Cheyenne, Wyo.	NOAA/NWS-ERL	1986	11	
PROFS: Severe Weather Highlights	NOAA-ERL	1987	18	
<u>R</u>				
Radar Reflections: Soul Of A Storm AMS/Pi	roject Atmosphere	1994	24	
Raging Planet: Avalanche	Discovery Channel ⁺	1998	50	\$29.95
Raging Planet: Flood	Discovery Channel ⁺	1998	27	\$29.95
Raging Planet: Hurricane	Discovery Channel* ⁺	1998	27	\$29.95
Raging Planet: Lightning	Discovery Channel* ⁺	1998	27	\$29.95
Raging Planet: Tidal Wave	Discovery Channel ⁺	1998	50	\$29.95
Raging Planet: Tornado	Discovery Channel* ⁺	1998	27	\$29.95
The Restless Sky	NASA	1989	16	
The Return Of The Child: The Effects Of El	Niño			
	Films for the Humanities&Science	1990	26	
Rain Or Shine: Understanding Weather	CLEARVUE/eav	_	15	\$70.00
Romancing The Storm	Legendary Storms Video	_	60	\$34.95
<u>S</u>				
Savage Skies: Fire And Rain	Teacher's Video Company	1998	55	\$29.95
Savage Skies: Monsters Of The Deep	Teacher's Video Company	1998	57	\$29.95
Savage Skies: Riders On The Storm	Teacher's Video Company	1998	60	\$29.95
Savage Skies: The Winter's Tale	Teacher's Video Company	1998	58	\$29.95
Severe Storms	Scott McPartland	_	30	\$20.00
Secrets Of The Tornado (2 videos)	Environmental Films	1999	120	\$49.95
Secrets Of The Unknown: Tornadoes	MPI-Home Video	1989	30	
Severe Weather	United Learning	1995	15	
Severe Weather Safety	United Learning	1996	24	
Severe Weather Safety: Watch For The Wa	-			
-	United Learning	1996	25	
Sky On Fire	The Weather Channel*	1998	38	\$29.95
Space Science in Action: Earth's Atmosphe		1999	23	\$39.95
Spencer, South Dakota Tornado	Bill Reid	1998	60	\$19.95
				•

Storm Alarti Hurrigana In Hawaii	Ochu Civil Defence/UT)/	1004	10	
Storm Alert: Hurricane In Hawaii	Oahu Civil Defense/HTV	1994	18	¢00.00
Storm Chase Highlights	Jim Leonard Dave Oliver	_	_	\$28.00 \$26.95
Storm Spotter's Video Field Guide				\$20.95
Storms	Lucerne Media	1992	24	© 04.05
Stormwatcher	Gene Rhoden	-	45	\$31.95
Storm Watcher	Texas Severe Storm Association	-	30	\$27.90
Stormwatcher: A Video Spotters Guide	Gene Rhoden	1994	90	
Survival In A Winter Storm	Local Civil Defense	-	27	
<u>I</u> Target Targedo: The Seience Of Starg Cha	aina			
Target Tornado: The Science Of Storm Cha	The Weather Channel		45	¢оо ос
		-	45	\$29.95
Tell Me Why - Water And Weather	Tell Me Why Sales Company	1997	13	¢70.00
Telling the Weather	National Geographic Television	1998	-	\$79.00
10 Inches Of Partly Cloudy	WGN-TV, Chicago	1993	22	
Terrible Tuesday	NOAA-NWS	1984	24	
Thunderstorms: Nature's Fury	Scott Resources, Inc.	1991 Duri	20	
Tornado	Environment Canada & Crown Vide			
Torredol		1987	25	
Tornado!	NOVA/PBS-TV*	1998	60	\$20.05
Tornado Alert: What You Need To Know	Films for the Humanities&Science	-	45	\$89.95
Tornado Alive	Tornado Alive	1986	-	*
Tornado Alley	The History Channel*	1998	50	\$29.95
Tornado Chasers	A&E*	1998	50	\$29.95
Tornadoes!!	Norman Berger Productions	-	-	\$32.95
Tornadoes: The Entity	Teacher's Video Company	1998	60	\$29.95
Tornado! Hurricane! Flood!: Wonders Of W				
	Discovery Channel*	1998	60	\$29.95
Tornado -The Science Of Storm Chasing	The Weather Channel*	1998	45	\$29.95
Tornado Spotters Training Guide	NOAA-NWS	1988	22	
Tornado Video Classics	Tornado Project	1992	120	
Tornado Video Classics	Tornado Project	1992	39	
Tornado Video Classics	Tornado Project	1992	22	
Tornado Video Classics III	Tornado Project	1996	120	
Tornado Warning 2	Cressen, TX	-	-	\$34.90
Torrents of Death	The History Channel*	1998	50	\$29.95
Twister	NOAA Films Loan	-	27	
Twister	Warner Brothers*	1998	113	\$29.95
Twister Chaser 1996	William Reid	1996	60	\$19.95
Twister: Fury on the Plain	Twister	-	60	\$18.95
<u>U</u>				
Understanding Weather	Discovery Channel* ⁺		54	\$34.95
The Unforgiving Sky (Water/drought)	Weather Channel	1991	23	
<u>v</u>				
Violent Side of Nature	Scott McPartland	-	60	\$30.00
Violent Storms	Coronet	-	15	
<u>W</u>				
Warming Warning	Media Guild	1985	52	
War And Weather	Ambrose Video	1998	-	\$99.95
Water Vapor: The Unseen Weather AMS/Pr		-	16	
Weather	CBS Eyewitness*	1998	35	\$29.95
Weather: A View From Space, Vol 1: El Nin				
	Space/Earth Science Technologies	1999	17	\$19.95
Weather Chronicles	Chip Taylor Communications	-	30	\$29.95
Weather Class With Dr. Neil Frank Lucerne	-	1992	30	
Weather And Climate	Troll Associates	1996	88	
Weather: Come Rain, Come Shine Nationa		1998	-	\$79.00
Weather Dynamics	Barr Films	1990	20	
Weather For Children Series, K-4				
All About Meteorology	Schlessinger Science Library	2000	23	\$29.95
All About Rain, Snow, Sleet and Hail	Schlessinger Science Library	2000	23	\$29.95
All About Climate & Seasons	Schlessinger Science Library	2000	23	\$29.95

All About Wind and Clouds	Schlessinger Science Library	2000	23	\$29.95
Weather Forecasting	International Video Network	1996	14	
Weather Fundamentals Series, Grades 5-8				
Climate & Seasons	Schlessinger Science Library	2000	23	\$29.95
Clouds	Schlessinger Science Library	2000	23	\$29.95
Hurricanes & Tornadoes	Schlessinger Science Library	2000	23	\$29.95
Meteorology	Schlessinger Science Library	2000	23	\$29.95
Rain & Snow	Schlessinger Science Library	2000	23	\$29.95
Wind	Schlessinger Science Library	2000	23	\$29.95
Weather Geokit (3 tapes)	National Geographic Television	1998	_	\$199.00
Weather's Greatest Disasters-Superstorms	C .			
	Crocus Entertainment, Inc. 1990		30	
Weather Problems And The Environment	Lucerne Films	1992	12	
Weather Report Girl Part 1	Right Stuf	_	_	\$24.99
Weather Safe Training Tape	United Learning, Sealls	1996	20	
Weather Systems	Tell Me Why Sales Co.	1994	40	\$39.99
Weather Systems (Spanish)	Tell Me Why Sales Co.	1996	40	
Weather Systems In Motion	Coronet	1985	15	
Weather Watchers	Instructional Video	1996	8	
When Lightning Strikes	WGN-TV, Chicago	1992	22	
Which Way Weather	Bo Peep Productions	1995	15	
Why Planes Crash (Downbursts)	CBS-TV	1988	12	
Without Warning: Galveston Hurricane	Weather Channel	_	48	
Wonders Of Weather: Deserts	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Forecasting	Ambrose Video	1996	100	
Wonders Of Weather: Hurricane	Ambrose Video	1997	100	
Wonders Of Weather: Lightning	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Mystery Of Fog	Ambrose Video	1996	100	
Wonders Of Weather: Rain and Flood	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Snow	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Signs In The Sky	Ambrose Video	1996	100	
Wonders Of Weather: Splendor In The Sky	Ambrose Video	1996	100	
Wonders Of Weather: Things That Fall	Ambrose Video	1998	100	\$99.99
Wonders Of Weather: Tornado	Ambrose Video	1997	100	
Wonders Of Weather: The Weather Machin	e			
	Ambrose Video	1996	100	
Wonders Of Weather: Wind And Waves	Ambrose Video	1996	100	
Wonders Of Weather (6 tapes)	Ambrose Video	1998	_	\$495.00
The Wrath Of Typhoon Omar	Jim Leonard	_	_	\$24.95
Y				
Year In Review	The Weather Channel*	1995	50	
Year In Review	The Weather Channel*	1996	50	
*Available from Teacher's Discovery	*Available from	Teacher's Vi	deo Company	

4.2. ADDRESSES FOR VIDEO DISTRIBUTORS

Berger Productions 1740 View Point Terrace P.O. Box 935 Cannon Beach, FL 97110-0935 Phone: (800) 433-7396

BVE Productions, Inc. P.O. Box 2249 Livonia, MI 48151-2249 Phone: (800) 632-1700

Chip Taylor Communications 15 Spollett Drive Derry, NH 08038-5728 Phone: (800) 867-2447 Coronet/MTS Film and Video 108 Wilmot Road Deerfield, IL 60015

Jack Corso P.O. Box 650 Harrison, NY 10528

EBE Encyclopedia Britannica Education Corp. Films and Video 425 North Michigan Avenue Chicago, IL 60611 Phone: (800) 621-3900 Environmental Films The Tornado Project Box 302 St. Johnsbury, VT 05819

Films for the Humanities & Science P.O. Box 2053 Princeton, NY 08543-5126

Joel Hartless P.O. Box 778 Joshua, TX 76058 Phone: (888) 405-0073

Hawkhill Associates, Inc. 125 E. Gilman St. P.O. Box 1029 Madison, Wisconsin 53701-1029 Phone: (800) 422-4295

Historic Publications P.O. Box 21497 Charleston, NC 29413-1496

G. Hoffman P.O. Box 1341 Beach Haven, NJ 08008 Phone: (609) 492-3815

Richard Horodner 10423 S.W. 153 Street Miami, FL 33157

How the WeatherWorks 301 Creek Valley Lane Rockville, MD 20850 Phone: (301) 762-7669 Phone: (orders only) 1-800-8CLOUD9

KWTV Channel 9 7401 North Kelley Oklahoma City, OK 73111 Phone: (405) 843-6641

Legendary Storms Video Kill Devil Hills, NC 27948 Phone: (919) 261-3881

Jim Leonard P.O. Box 720283 Norman, OK 73070

McGraw-Hill Films 330 West 42nd Street New York, NY

Scott McPartland 63-127 Fitchett Street Rego Park, NY 11374

NASA

Lyndon B. Johnson Space Center Photographic Technical Laboratory Audiovisual Office, Code JL-13 Houston, TX 77058 National Lightning Safety Institute P.O. Box 778 Louisville, CO 80027-0778 Phone: (303) 666-8817 Fax: (303) 666-8786 Email: rkithil@ix.netcom.com Web: www.lightningsafety.com

National Severe Storms Laboratory (NSSL) 1313 Halley Circle Norman, OK 73069 Web: www.nssl.noaa.gov

Dave Oliver P.O. Box 3372 Amarillo, TX 79116 Phone: (800) 383-1010

Prairie Pictures P.O. Box 122020 Arlington, TX 76012

William Reid 5920 Pat Avenue Woodland Hills, CA 91367

Gene Rhoden 611 Ridgedale Drive Richardson, TX 75080

Space/Earth Science Technologies www.sest.com

Teacher's Discovery Phone: (888) 977-2436 Fax: (602) 860-8650

Teacher's Video Company Phone: (800) 262-8837 Fax: (602) 860-8650

Texas Severe Storm Association P.O. Box 122222 Arlington, TX 76012

Tornado Alive Box 111 Minneapolis, MN 55440

Tornado Warning 2 P.O. Box 309-w Cressen, TX 76035

Twister P.O. Box 461-T New York, NY 10023

Steve Wackholder 1501 NE 191st. Street #407 North Miami Beach, FL 33179

Wards Modern Learning Aids P.O. Box 302 Rochester, NY 14603 United Learning, Inc. 633 W. Howard Street P.O. Box 48718 Niles, IL 61714-0718 Phone: (800) 424-0362

WGBH-TV P.O. Box 2284 South Burlington, VT 05407-2284

4.3. SLIDES

Sets of 35-mm slides are available from the following sources. Many sets have an accompanying teacher manual, and some have an audiocassette to use the slide set in an automatic or filmstrip mode. This listing does not include slide sets for instructors who adapt a text for classroom use; they are available from book sales representatives or publishers.

•Cloud Types

Ward's Natural Science Establishment, Inc. 5100 West Henrietta Road P.O. Box 92912 Rochester, NY 14692-9012

•The Everyday Weather Project

Six slide sets plus narrative audiocassettes from the State University of New York at Brockport:

- 1. Sensing and Analyzing the Weather
- 2. Weather Systems
- 3. Weather Forecasting
- 4. Weather Satellites
- 5. Weather Radar
- 6. Hazardous Weather: Hurricanes

•A Look at the Tornado and Other Local Storms

A 63-slide program produced by the National Disaster Preparedness Program, National Weather Service, 1982, Catalog #A08135.

National Audiovisual Center Order Section General Services Administration Washington, DC 20409

Meteorology

Five meteorology slide sets have been prepared by: JLM Visuals Grafton, WI 53024

Natural Hazards

17 slide sets depicting natural hazards around the world have been prepared by NGDC. Each set of 20 slides

covers one of the following topics: Earthquakes, hurricanes, landslides, tsunamis, typhoons, and volcanoes. Costs are \$18 to \$40 per set. Teachers may order sets of multiple-choice questions (with answers) free of charge, from:

National Geophysical Data Center (NGDC) NOAA, Code E/GCI 325 Broadway Boulder, CO 80303 (303) 497-6277

•The Stories Clouds Tell

Scenes that appear in the text reference by M.A. LeMone in Section 5.1 are available for \$49.95 from:

Project Atmosphere American Meteorological Society 1701 K Street, N.W., Suite 300 Washington, DC 20006-1509

•Storm Spotter Slide Sets

36 slides with transcript are available from:

Gene Rhoden 611 Ridgedale Richardson, TX 75080

Stormwatcher

Four slide sets on severe weather are available from:

Tim Marshall 4041 Bordeaux Circle Flower Mound, TX 75028-7050

•Urban Climate

An 80-slide set is available from:

Fred Bartenstein Dayton Climate Project City Manager's Office P.O. Box 22 Dayton, OH 45410

4.4. OVERHEAD TRANSPARENCIES

Sets of ready-to-use transparencies are available for weather-related subjects. This list does not include transparency sets tailored to a given textbook and furnished by the book publisher.

•Earth Science on File

A loose-leaf ring binder with line diagrams for instructional purposes. Permission is granted to copy, except if the resulting work is to be sold. It contains a section titled 'Air and Oceans.' Facts on File, Inc. 460 Park Avenue South

New York, NY 10016

4.5. WALL CHARTS AND POSTERS

Large, multicolored wall charts and posters can be integrated into teaching weather units and purchased at a modest cost. Most show examples of cloud types.

•The Atmosphere

55 by 33-inch poster compiled by K. Foley, \$14.50. ISBN 90-72167-01-5.

•The Global Climate

54 by 34-inch poster compiled by M. Tankee and J. V. Gulike, 1989, \$14.50. ISBN 90-72167-03-1.

One or both of these posters are available through the AMS; discounts for groups of 10 copies or more. Published by Mirage Publishing in The Netherlands.

American Meteorological Society 45 Beacon Street Boston, MA 02108-3693 Phone: (617) 227-2425 Web: www.ametsoc.org

•Clouds: A Guide to the Sky

A.L. Rangno, 3rd Edition, 1989, \$9.00. Available from two sources:

Sky Guide P.O. Box 30027 Greenwood Station

Seattle, WA 98103-0027 Phone: (206) 782-8485

Wind and Weather Mendocino, CA 95460

•Cloud Chart Collection

Developed by How the WeatherWorks and the National Weather Association. The set of three 12 by 24-inch posters is available at \$11.00 from two sources:

How the WeatherWorks 301 Creek Valley Lane Rockville, MD 20850 Phone: (301) 762-7669 Web: www.weatherworks.com •Overhead Transparency Manual

Contains 20 overhead transparencies with the same graphics as the *Mirage Wall Chart* in the next section.

•USA Today/AMS Transparency Set

Project Atmosphere (AMS) and USA Today produced a 30-transparency set from *The Weather Book* by Jack Williams. Available from:

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

National Science Teachers Association 1742 Connecticut Ave., N.W. Washington, DC 202009-1171

Cloud Charts

Cloud Charts, Inc. P.O. Box 29294 Richmond, VA 23233

C.C. Marketing P.O. Box 1122 Glen Allen, VA 23080 Phone: (804) 262-7481

•Electrifying

Poster of lightning flash striking a large city. \$4.95 + s & h Teacher's Discovery Phone: (888) 977-2436

•The Environment Chart

55 by 31-inch poster with 42 color photos.

For Spacious Skies 54 Webb Street Lexington, MA 02173

•Hurricane Posters

Colorful posters of various hurricanes. The Weather Catalog PO Box 22617 Charleston, SC 29413-2617

•Lightning Danger!

16 by 20-inch poster of lightning striking a nearby tree, and short text on lightning safety rules.

National Severe Storms Laboratory, NOAA 1313 Halley Circle Norman, OK 73069

 National Oceanic and Atmospheric Administration (NOAA) 'NOAA cloud chart.'
 'Natural hazard watch and warning' (NOAA/PA 86001). 'Explanation of the daily weather map.'

Superintendent of Documents Washington, DC 20418

•Power, Speed, Danger, Beauty Poster of lightning flash striking the ground in Colorado. \$10 postpaid; discount for multiple copies.

Ken Langford Random Video Productions 16385 West 8th Avenue Golden, CO 80401 Phone: (303) 278-9441 •Tornadoes A series of three posters on tornadoes: 'Fujita F-scale Color Set' 'Close Encounters Set' 'Fujita F-scale Black and White Set' The Tornado Project Box 302 St. Johnsbury, VT 05819 Web: www.tornadoproject.com

•World Meteorological Organization Cloud Sheet American Meteorological Society 45 Beacon Street Boston, MA 02108-3693 Phone: (617) 227-2425 Web: www.ametsoc.org

5. **PRINTED MATERIALS**

A limited number of popular weather and climate books are usually available at local bookstores. Many textbooks can be ordered and purchased from bookstores catering to colleges. University and public libraries have numerous popular meteorology books and periodicals. Participating libraries within the Federal Depository system are sources of numerous weather-related government publications and climatological data. Weatherwise magazine has many interesting articles and features. Pertinent articles also appear in *The Physics Teacher, The Science Teacher, The Earth Scientist, Science Scope,* and *Science and Children.* These articles contain useful information for demonstration, experiments, and other learning experiences for preschool through college. *Science and Children* contains a section "Geography and Weather" by H.M. Mogil and H.T. Collins. Reviews of pertinent books appear in *Science Books and Films* under "Earth Science."

5.1. GENERAL INTEREST - Adult Level

The following books target the adult non-technical reader and would not necessarily be considered textbooks. These general interest books may either focus on one area in the atmospheric sciences, or they may be sufficiently broad, and explain weather phenomena. Some books document interesting historical weather events or the history of meteorology. Many are attractive books, and contain photographs, diagrams, and other visual features.

<u>A</u>

- Acid Rain in Europe-Counting the Cost
 - ApSimon, H., D. Pearce, and E. Ozdemiroglu, editors, 1997. Earthscan Publications, London, xii + 190 pp., ISBN 1-85383-443-2. £19.95.
- Alabama's Weather (The Complete Guide To...) Evans, Carol Muse, Seacoast Publishing, Inc., 112 pp. \$10.95.
 - \$10.95. Dhanas
 - Phone: (205) 979-2909
- All About Lightning
 - Uman, M.A., 1986. Dover Publishing Inc., New York, 192 pp., ISBN 0-486-25237-X. \$5.95.
- The Amateur Meteorologist: Exploration and Investigations Mogil, H.M., 128 pp., How the WeatherWorks, 301 Creek Valley Lane, Rockville, MD 20850. \$6.95.
- The Atmospheric Sciences: Entering the Twenty-First Century National Research Council, National Academy Press, 364 pp. \$47.95. Web discount price \$38.36 Phone: (888) 624-8373

Web: books.nap.edu/catalog/6021.html

Atmosphere, Weather and Climate

- Barry, R.G., and R.J. Chorley, 1998. Routledge. Hard cover: ISBN 0-415160197, \$40.00. Paperback: ISBN 0-415160197, \$100.00.
- Atmospheric Halos
 - Tape, W., 1994. American Geophysical Union, Washington, DC 20009, 143 pp., ISBN 0-87590-834-9. \$40.00.
- The Audubon Society Field Guide to North American Weather Ludlum, D.M., 1991. Alfred A. Knopf, New York, 656 pp., ISBN 0-679-40851-7. \$18.00.

<u>B</u>

Blizzards & Snowstorms of Washington, D.C.: Photo History 1888 to 1993

Historic Enterprises, P.O. Box 2786, Merrifield, VA 22116-2786, \$19.95.

- Braving the Elements: The Stormy History of American Weather
 - Laskin, D., 1997. Anchor Books, ISBN 0-38546956-X. \$12.95.

<u>C</u>

Climate, Change and Risk

Downing, T.E., and A.A. Olsthoorn, editors, 1998. Routledge, ISBN 0-41517311. \$115.00.

- Climate Process and Change Bryant, E., 1997. Cambridge University Press, xvi + 209 pp. Hard cover: ISBN 0-5251-48189-9, \$59.95. Paperback: ISBN 0-521-48440-5, \$22.95.
- The Climate and Weather of Florida

Henry, J.A., K. Portier, and J. Coyne, 1998. Pineapple Press. Hard cover: ISBN 1-56164036-0, \$27.95. Paperback: ISBN 1-5614037-9, \$17.95.

The Climate of Fear: Why We Shouldn't Worry About Global Warming

1998. Cato Institute, ISBN 1-882577655. \$9.95.

Climates and Weather Explained

Linacre, E., and B. Geerts, 1997. Routledge, London, x + 431 pp. Hard cover: ISBN 0-415-12519-7, £87.93. Paperback: ISBN 0-415-12520-0, £27.96.

Compete Idiot's Guide to the Weather

1998. Alpha Books. ISBN 0-028627091, \$16.95.

Complete Weather

- Engelbert, P., 1997. UXL Publishing, ISBN 0-810397887-0. \$64.95.
- Crazy Weather

McNichols, C.L., 1994. University of Nebraska Press, ISBN 0-80328319-2. \$7.95.

<u>D</u>

Decade-to-Century-Scale Climate Variability and Change: A Science Strategy

National Research Council, 1998. National Academy Press, ISBN 0-52163332X. \$39.00.

Dick Goddard's Weather Guide and Almanac for Northeast Ohio Goddard, D., 1998. Gray and Company, ISBN 1-886228124. \$13.95. Does the Weather Really Matter-The Social Implications of Climate Change Burroughs, W.J., 1997. Cambridge University Press, xi + 230 pp., ISBN 0-521-56126-4. \$24.95. E Earth from Above: Using color-coded satellite images to examine the global environment. Parkinson, C.L., 1997: University Science Books, 175 pp., ISBN 0-935702-41-5. \$24.00. Economic Value of Weather and Climate Forecasts Katz, R.W., and A.H. Murphy, editors, 1997. Cambridge University Press, xv + 222 pp., ISBN 0-521-43420-3. \$49.95. El Niño: Stormy Weather for People and Wildlife Arnold, C., 1998. Clarion Books, ISBN 0-395776023, \$16.00. F Facts on File Dangerous Weather Series Allaby, M. Facts on File Publishing. -Air: The Nature of Atmosphere and Climate, 1992, 208 pp., ISBN 0-8160-2525-8. -Blizzards, 1997, ISBN 0-81603518-0, \$24.95. -A Chronology of Weather, 1997, ISBN 0-816035210, \$24.95. -Dangerous Weather: Includes A Chronology of Weather, Tornadoes, Hurricanes, Blizzards, Floods, Droughts, 1998, ISBN 0-816035156, \$149.70. -Droughts, 1998, ISBN 0-81603519-9, \$24.95. -Floods, 1997, ISBN 0-81603520-2, \$24.95. -Hurricanes, 1997, ISBN 0-81603516-4, \$24.95. -Tornadoes, 1997, ISBN 0-81603517-2, \$24,95, The Farm Weather Handbook Schwanz, L.H., 1997. Lessiter Publications, ISBN 0-94407907-5. \$24.95. A Field Guide to the Atmosphere Schaefer, V.J., and J.A. Day, 1981. Houghton Mifflin Co., Boston, 359 pp., ISBN 0-395-24080-8. Floods and Droughts: The New Zealand Experience Mosley, P., and C.P. Pearson, 1997. New Zealand Hydrological Society, Wellington, New Zealand, vii + 206 pp., ISBN 0-473-047135-7. NZ\$29.90. Florida Hurricanes and Tropical Storms Williams, J.M., and I.W. Duedall, 1997. University of Florida Press, 148 pp., ISBN 0-8130-1515-4. Florida's Hurricane History Barnes, Jay, 1999. University of North Carolina Press, 320 pp, \$19.95. Phone: (800) 848-6224 Fodor's World Weather Guide Pearce, E.A., and C.G. Smith, 1998. Random House, ISBN 0-375703497. \$17.95. G Global Warming: The Complete Briefing Houghton, J.T., 1997. Cambridge University Press, xiii + 251 pp., ISBN 0-521-62932-2. \$22.95.

Glossary of Weather and Climate Geer, I.W., 1996. American Meteorological Society, Boston, 272 pp., ISBN 1-878220-21-7. Great Blizzards of New York City Historic Enterprises, P.O. Box 2786, Merrifield, VA 22116-2786. \$26.95. The Great Flood of 1993 Changnon, S.A., editor, 321 pp., Westview Press, ISBN 0-8133-2619-2. \$65.00. The Handy Weather Answer Book Lyons, W.A., 1996. Visible Ink Press, 397 pp., ISBN 0-78761034-8. \$16.95. Phone: (800) 776-6265 The Heat is On: The Climate Crisis, the Cover-Up, the Prescription Gelbspan, R., 1998. Perseus Books, ISBN 0-738200255. \$13.00. Historical Perspectives on Climate Change Fleming, J.R., 1998. Oxford University Press, ISBN 0-195078705. \$45.00. The History of Weather Williams, J.T., 1998. Nova Science Pub., ISBN 1-560726229. \$16.95. How the Weather Really Works Financial Book Partners, ISBN 0-Bros, P., 1994. 96277694-7. \$34.00. How Weather Works & Why Lynott, R.E., 1994. Gadfly Press, 8925 SW Homewood, Portland, OR 97225, 144 pp., ISBN 0-6180771-7. \$40.00. How Weather Works (How It Works) De Millo, R., 1994. Ziff Davis Press, ISBN 1-56276228-1. \$19.95. Human Impacts on Weather and Climate Cotton, W.R., and R.A. Pielke, 1995. Cambridge University Press. Hard cover: ISBN 0-52149592-X, \$64.95. Paperback: ISBN 0-52149929-1, \$25.95. Hurricanes! Chaston, P.R., 1996. Chaston Scientific, Inc., P.O. Box 758, Kearney, MO 64060. ISBN 0-9645172-2-1. \$29.00 Phone: (816) 628-4770 Email: chaston111@aol.com Hurricanes-Their Nature and Impacts on Society Pielke, R.A., Jr., and R.A. Pielke, Sr., 1997. John Wiley & Sons, Inc., xviii + 279 pp., ISBN 0-471-97354-8, \$79.95. In the Shadow of the Tornado Giko Publishing, P.O. Box 2175W, Norman, OK 73070-2178, 170 pp., ISBN 0-9649527-1-8. \$14.95. Web: members.aol.com/gilcopub Instant Weather Forecasting Watts, A., 1996. Sheridan House, ISBN 0-92448697-X. \$7.95. International Marine's Weather Predicting Simplified: How to Read Weather Charts and Satellite Images Carr, M., 1999. McGraw-Hill, ISBN 0-070120315. \$25.95. Iowa Weather American World Geographic Publishing, ISBN 1-56037058-0. \$14.95.

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<u>N</u> National Audubon Society First Field Guide: Weather

Kahl, J.D.W., 1998. Scholastic Inc., 159 pp., ISBN 0-590-05488-0. \$10.95. 0 Our Changing Planet: How Volcanoes, Earthquakes. Tsunamis, and Weather Shape Our Planet Scholastic Paperbacks Trade, 1996. ISBN 0-59047651-3. Part of Scholastic Voyages of Discovery, Natural History series. \$19.95. People Chase Twisters and Other Amazing Facts About Violent Weather (I Didn't Know That) Petty, K., and P. Roberts, 1998. Copper Beech Books, ISBN 0-76130715-X. Hard cover-\$19.90; paperback-\$10.01. Professor Fergus Fahrenheit and His Wonderful Weather Machine Groth-Fleming, C., and D. Weller, 1994. Simon and Schuster (Juvenile), ISBN 0-67187047-5. \$14.00. Punxsutawney Phil and His Weather Wisdom Mourtan, J.S., 1998. Literary Publications, ISBN 0961781963. \$11.95. Q Questions and Answers About Weather Craig, M.J., and L. Ebert, 1996. Scholastic Paperbacks Hard cover: ISBN 0-60609774-0, \$10.60. Trade. Paperback: ISBN 0-5904112-X, \$5.99. R Rain (Sequences of Earth and Space) Ruiz, A.L., and L. Rizo, 1997. Sterling Publishing, ISBN 0-80699333-2. \$12.95. Reading Weather: Where Will You Be When the Storm Hits? Woodmencey, J., and T. Telander, 1998. Falcon Press Pub. Co., ISBN 1560446625, \$6.95, **Rivers and Oceans** Taylor, B., 1993. Kingfisher Books, New York, 32 pp., ISBN 1-85697-939-3. Part of Young Discoverers series. <u>s</u> Science in the Air (How and Why Science) 1998. World Bank, ISBN 0716671115. \$22.01. The Sierra Club Book of Weatherwisdom McVey, V., 1991. Sierra Club Books, San Francisco, 104 pp., ISBN 0-316-56431-2. Sky (National Geographic Nature Library) Delano, M.F., 1998. National Geographic Society, ISBN 0-79227047-9. Sky and Weather Ward, A., 1993. Franklin Watts, New York, 32 pp., ISBN 0-531-14176-43. Part of Project Science series. Snow Bianchi, J., and F.B. Edwards, 1992. Firefly Books, Buffalo, 48 pp., ISBN 0-921285-09-4. Snowflake Bentley: Man of Science and God, the Story of an Ingenious Vermonter Stoddard, G.M., 1985. The New England Press, Shelburne, VT, 125 pp., ISBN 0-933050-31-3. Stormy Weather (Ready-To-Read) Wigand, M., and B. Goldberg, 1997. Simon Spotlight Books, ISBN 0-68981259-0. \$3.99.

Sun, Snow, Stars, Sky Anholt, C., and L. Anholt, 1995. Viking Childrens Books, ISBN 0-67086196-0. \$13.99. <u>T</u> Teaching You About Weather With Stories That Rhyme Story Time Stories That Rhyme, ISBN 1-56820148-6. \$7.95. Tell Me Why Rain Is Wet (Whiz Kids) Willis, S., 1999. Franklin Watts, ISBN 0-531118320. \$20.01. Thomas and the Weather (My First Thomas Lift-the-Flap Board Books) Tawdry, W., W. Tawdry, and R. Davies, 1998. Random House Children's Publishing, ISBN 0-67989004-1. \$4.99. Tornado Kramer, S., 1992. Carolrhoda, Minneapolis, 48 pp., ISBN 0-87614-660-4. Part of Nature in Action series. Tornado Lampton, C., 1991. Millbrook, Brookfield, CT, 64 pp., ISBN 1-56294-032-5. Part of Disaster! series. U Unit About Weather Deweese, R., and J. Moore, 1994. Evan-Moor Corporation, ISBN1-557997279-7. \$5.95. W Wacky Weather (How It Works) Malam, J., and M. Foster, 1998. Simon & Schuster, ISBN 0-68981189-6. \$14.00. Watching Weather (Accidental Scientist) Murphree, T., and M.K. Miller, 1998. Exploratorium, ISBN 0-80504522. \$12.95. Watching the World's Weather Burroughs, W.J., 1992. Cambridge University Press, 196 pp., ISBN 0-521-34342-9. Water Twist, S.M., 1992. Garrett Educational, Ada, OK, 25 pp., ISBN 0-9444833-72-0. Part of Threads series. Water (Against the Elements) Richardson, H., and M. Saunders, 1998, Copper Beech Books, ISBN 0-761308016. \$22.40. Water Up, Water Down: The Hydrologic Cycle Twist, S.M., 1993. Carolrhoda Books, Minneapolis, 47 pp., ISBN 0-87614-695-7. Part of Earth Watch series. Weather Baker, S., and R. Hatfield, 1998. Childs Play International Limited, ISBN 0-85953929-6, \$14,99, Weather Chanko, P., 1997. Scholastic Paperbacks Trade, ISBN 0-59010730-5. Part of Science Emergent Readers series. \$10.01. Weather Davies, K., and W. Oldfield, 1992. Steck-Vaughn, Austin, TX, 32 pp., ISBN 0-8114-3007-3. Part of Starting Science series. Weather Farndon, J., and J. Bendall-Brunello, 1998. Dk Pub. Merchandise, ISBN 0-78942853. \$5.95. Weather Getzoff, M., and S.T. Hall, 1996. Troll Communications, ISBN 0-81673607-3. Part of Troll First-Start Science

series. \$7.89.

Weather Kierein, T., 1994. National Geographic Society, 10 pp., Part of set 10 of National ISBN 0-7922-2782-4. Geographic Action Book series. Weather is packaged as a two-book pop-up set with African Animal Giants. \$34.00. Weather Kerrod, R., 1997. Lorenz Books, ISBN 1-85967189-6. Part of Learn About series. \$7.95. Weather Kerrod, R., 1998. Gareth Stevens, ISBN 1-8836820886. Part of Young Scientist Concepts and Projects series. \$22.60. Weather 1997. Readers Digest, ISBN 0-89577975-7. Part of Reader's Digest Explores Science & Nature series. \$24.95. Weather Saunders-Smith, G., 1998, Pebble Books, \$13,25 each. -Clouds, ISBN 156-657774. -Lightning, ISBN 1560657790. -Rain, ISBN 156066657782. -Sunshine, ISBN 1560657804. Weather (Accelerated Reading Program Grades 1-2) Cutting, B, 1996. Wright Group, ISBN 0-78025242-X. \$7.00. Weather Around You (Geography Starts Here) Royston, A., 1998. Raintree/Steck Vaughn, ISBN 0-81725115-4. \$22.11. Weather Channel -Hurricanes, Hood, S., 1998, Simon Spotlight, ISBN 0689820178. \$3.99. -Lightning! And Thunderstorms, Graf, M., 1998, ISBN 0689820186, \$3.99. -The Sun, Barkan, J., 1999, ISBN 0689820208, Aladdin Paperbacks, \$3.99. Weather and Climate Mason, J., 1991. Silver Burdett Press, Englewood Cliffs, NJ, 48 pp., ISBN 0-382-23225-4. Part of Our World series. Weather and Climate Silverstein, A., V. Silverstein, and L.S. Nunn, 1998. Twenty First Century Books, ISBN 0-761332235. Part of Science Concepts Series. \$23.40. Weather and Climate Taylor, B., 1995. Kingfisher Books, New York, 32 pp., ISBN 1-85697626-2. Part of Young Discoverers series. \$13.90. Weather: Drama of the Heavens (Discoveries) Chaboud, R., 1996. Harry N. Abrams, ISBN 0-81092878-7. \$12.95. Weather Everywhere Casey, D., and J. Gilmore, 1995. Simon and Schuster (Juvenile), ISBN 0-02717777-7. \$15.00. Weather Explained: A Beginner's Guide to the Elements Elsom, D.M., 1997. Henry Holt & Company, ISBN 0-80504875-8. Part of Your World Explained series. \$18.95. Weather Forecaster Taylor-Cork, B., 1992. Gloucester Press, New York, 32 pp., ISBN 0-531-17267-8. Part of Expert series.

The Weather Genie Laurie, J., 1998. Nature Pub. House, ISBN 9578741790. \$8.95. Weather: An Introduction to Clouds, Storms, and Weather Patterns 1998. Waterford Press, ISBN 1-889903302. Part of Pocket Naturalist series. \$7.95. The Weather and Its Secrets 1998. Readers Digest, ISBN 0-762100842. \$20.01 Weather (Let's Investigate Science) Kerrod, R., and T. Evans, 1994. Marshall Cavendish Corporation, ISBN 1-85435630-5. \$25.64. Weather (Little Princess Board Books) Ross, T., 1995. Red Wagon, ISBN 0-15200320-7. \$6.00. Weather (Nature Company Guides) Burroughs, W.J., R. Crowder, T. Robertson, and E. Vallier-Talbot, 1996. Time Life Education, ISBN 0-80949374-8. \$29.95. Weather: The Nature Company Journals Time Life Education, ISBN 0-80949380-2. \$14.95. Weather and Other Facts About Weather (You'd Never Believe It. But) Taylor, H., and S. Sweet, 1999. Copper Beech Books, ISBN 0-761332537. \$21.90. Weather: Poems (An I Can Read Book) -Hopkins, L.B., and M. Hall, 1994. Harpercollins Juvenile Books, ISBN 0-06021463-5. \$14.95. -Hopkins, L.B., and M. Hall, 1994. Harpercrest, ISBN 0-06021462-7. \$14.89. Weather Report Merk, A., 1994. Rourke Publishing Group. \$14.60 each. -Clouds, ISBN 0-86593389-8, -Rain, Snow, and Ice, ISBN 0-86593390-1. -Storms, ISBN 0-86593386-3. -Studying Weather, ISBN 0-86593385-5. -Weather Signs, ISBN 0-86593388-X. -The Weather and Us, ISBN 0-86593387-1. Weather and Seasons (Bip Quiz Series) MacKenzie, F., 1995. Sterling Publications, ISBN 0-80690937-4. \$2.95. The Weather Sky McMillan, B., 1996. Demco Media. Hard cover: ISBN 0-60610025-3, \$12.75. Paperback: ISBN 0-37448266-7, \$6.95. Weather Walkabout Pluckrose, H., 1994. Childrens Press. Hard cover: ISBN 0-51608123-3, \$17.60. Paperback: ISBN 0-51640123-8, \$4.95. Weather Watch Steele, P., 1991. -Wind, ISBN 0531-11024-9. -Storms, ISBN 0531-11026-5. -Heatwave, ISBN 0531-11023-0. -Frost, ISBN 0531-11025-7. Weather Watch (First Science) Rowe, J., and M. Perham, 1996. Childrens Press. Hard cover: ISBN 0-51608142-X, \$19.90. Paperback: ISBN 0-51648142-8, \$4.95. Weather Words and What They Mean

Gibbons, G., 1990. Holiday House, New York, 30 pp., ISBN 0-8234-0805-1. Weather (Young Scientist Concepts and Projects) Kerrod, R., 1998. Gareth Stevens, ISBN 0-83682088-6. \$21.27. What Is Weather Owen, A., A. Owen, and M. Ashwell, 1999. Rigby Interactive Library. \$19.22 each. -Rain, ISBN 1-575727897. -Snow. ISBN 1-575727900. -Sunshine, ISBN 1-575727919. -Watching the Weather, ISBN 1-575727927. -Wind, ISBN 1-575727935. What's the Weather Roffey, M., 1995. McClelland and Stewart, ISBN 0-33359234-4. \$9.99. Why Can't I See the Wind?: First Questions and Answers About Weather 1994, Time Life Education, ISBN 0-783508911-3. Part of Time-Life Library of First Questions and Answers series. \$14.95. Why Does Lightning Strike? Questions Children Ask About the Weather Martin, T., and C. Bingham, 1996. Dk Publishing, ISBN 0-78941123-7. Part of Why Books series. \$9.95. Why Do We Have Wind and Rain? -Lewellyn, C., and A. Lewis, 1995. Barrons Juveniles. Hard cover: ISBN 0-81206508-5, \$9.95. Paperback: ISBN 0-81209279-1, \$4.95. -Lewellyn, C., 1995. Demco Media, ISBN 0-60608907-1. \$10.60. Wild Weather (Hello Reader) -Blizzards, Hopping, L.J., and J. Wheeler, 1999. Cartwheel Books, ISBN 0-59039730-3. \$3.99. -Hurricane -Hopping, L.J., 1995. Demco Media, ISBN 0-

5.3. REFERENCE BOOKS

60608384-7. \$9.05.

This list contains books which may be found in reference collections of libraries.

•Aviation Weather

Lester, P.F., 1995. Jeppesen Sanderson, 402 pp., ISBN 0-88487-178-9. \$45.95.

- •Aviation Weather and Weather Services Gleim, I.N., 1998. Gleim Publications, ISBN 0-917539931. \$18.95.
- •Calculating the Weather: Meteorology in the 20th Century Nebeker, F., 1995. Academic Press, International Geophysics series, Volume 60, ISBN 0-12515175-6. \$59.95.
- •Enclyclopedia of Climate and Weather, Volumes 1 & 2 Schneider, S.H., 1996. Oxford University Press, 928 pp., ISBN 0-19-509485-9. \$195.00.

•Gale Research, Inc. Datasets -Storm Data for the U.S., 1970-1974, 1975-1979.

-Hopping, L.J., and J. Wheeler, 1995. Cartwheel Books, ISBN 0-59046378-0. \$3.50. -Lightning, Hopping, L.J., and J. Wheeler, 1999. Scholastic Paperbacks, ISBN 0-59052285X. \$20.01. -Tornadoes, Hopping, L.J., and J. Wheeler, 1994. Scholastic Paperbacks Trade. Hard cover: ISBN 0-60606881-3, \$9.60. Paperback: ISBN 0-59046338-1, \$3.99. Wild, Wet and Windy Llewellyn, C, 1998. Candlewick Press, ISBN 0-763606308. \$4.99. Wind Blows (What Happens When) Butler, D., 1995. Raintree/Steck Vaughn, ISBN 0-81724153-1. \$21.40. Wind and Weather: Climates, Clouds, Snow, Tornadoes, and How Weather Is Predicted Onish, L., 1995. Scholastic Paperbacks Trade, ISBN 0-59047646-7. Part of Scholastic Voyages of Discovery, Natural History series. \$19.95. Wind, What Makes You Move? Grazzini, F., C. Carrer, and T. Wise, 1996. Kane/Miller Book Publishing Company, ISBN 0-91629167-7, \$11.95. The Wonder of Weather Freier, G.D., 1999. Gremmercy, ISBN 0-517201941. \$7.99. Y Yeah, But Do I Need an Umbrella?: Weather Made Simple Atkins, B., 1994. Renaissance Publications, ISBN 0-93664518-0. \$8.95. You Are the Weather

- Horn, R., 1997. Distributed Art Publishing, ISBN 3-93114145-4. \$45.00.
 - -Climate Normals for the U.S., Base 1951-1980, 1st edition, 711 pp., ISBN 0-8103-1025-2.
 - -Climates of the States, 1985, 2 volumes, 1572 pp., ISBN 0-8103-1042-2.
 - *-The Weather Almanac,* 1997, 8th edition, 855 pp., ISBN 0-81035522-1. \$135.00.

-Weather of the U.S. Cities, Ruffner, and F.E. Bair, 1985, 2 volumes.

•Glossary of Meteorology

Huschke, R.E., editor, 1959. American Meteorological Society, Boston, 658 pp.

•Glossary of Weather and Climate

Geer, I., 1996. American Meteorological Society. Hard cover: ISBN 1-87822019-5, \$29.95. Paperback: ISBN 1-87822021-7, \$21.95.

•Handbook of Applied Meteorology Houghton, D.D., editor, 1985. John Wiley and Sons, New York, 1461 pp., ISBN 0-471-08404-2. Available from American Meteorological Society, Boston. Meteorological and Geoastrophysical Abstracts

 Current abstracts are indexed from domestic and foreign sources covering meteorology, climatology, hydrology, glaciology, and environmental sciences.
 Meteorological and Geoastrophysical Abstracts c/o Inforonics, Inc.,
 550 Newtown Road/POB 458
 Littleton, MA 01460
 Phone: (508) 486-8976
 Fax: (508) 486-0027

- Meteorological Glossary Lewis, R.P.W., editor, 6th edition, 1991. Her Majesty's Stationary Office, 335 pp. Available through Unipub, Lanham, MD. ISBN 0-11-400363-7.
- •Significant Tornadoes, 1880-1989 Environmental Films, St. Johnsbury, VT, two-volume set, 1245 pp., ISBN 1-879363-00-7.

•Traveler's Weather Guide

Mogil, H.M., 1990. Narrative and tabular climatic information for 150 cities. Available from How the Weatherworks, 301 Creek Valley Lane, Rockville, MD 20850.

- •Weather Almanac: A Reference Guide to Weather, Climate, and Air Quality in the United States and Its Key Cities Wood, R.A., 7th Edition, 1996. Gale Research, ISBN 0-81036980-X. \$130.00.
- •Weather America: The Latest Detailed Climatological Data for Over 4,000 Places--With Rankings Garwood, A.N., 1996. Toucan Valley Publications, ISBN 1-88492560-X. \$99.95.
- •Weather of United States Cities

Wood, R.A., 5th Edition, 1996. Gale Research, ISBN 0-81035525-6. \$210.00.

•World Weather Extremes Riordan, P., 1994. Diane Publishing Company, ISBN 0-78811537-5. \$35.00.

5.4. ACTIVITIES AND LABORATORY EXERCISE MANUALS FOR K-12

This section contains printed material describing demonstrations, experiments, and other student activities. Some of the sources are reference books which are aimed toward the teacher and include prepared lesson plans.

•The Amateur Meteorologist: Explorations and Investigations Mogil, H.M., and B.G. Levine, 1993. Contains hands-on experiments for students in Grades 6-8 to undertake at home. Library edition: ISBN 0-531-11045-1, \$17.95. Paperback: ISBN 0-531-159696-6, \$6.95.

How the Weatherworks, 301 Creek Valley Lane, Rockville, MD 20850. Phone: (301) 762-7669

 American Meteorological Society
 A series of activities in teacher guides have been prepared by Project Atmosphere of the AMS.

45 Beacon Street, Boston, MA 02108-3693 Phone: (617) 227-2425 Web: www.ametsoc.org

•Articles with student activities:

- Adridge, M., B. Lary, and G.H. Krockover, 1989: Introducing isolines. *The Science Teacher*, **56**, 31-33. Presents an activity with three cork boards which describes isopleth analysis procedures.
- Gonski, R., 1992: School weather network A cooperative effort. *Bulletin of the American Meteorological Society*, **73**, 628--630. Discussion of the development, maintenance, and use of a statewide school weather network, using 7th grade students.
- Knorr, T.P., 1984: Weather or not to teach junior high meteorology. *The Science Teacher*, **51**, 62-64. Presents a weather map activity with white sheet metal boards for a weekly weather map sequence; weather information is from The Weather Channel.

- Mogil, H.M., and H.T. Collins, 1989: Hurricanes. Science and Children, **27**, 41-44.
- Mogil, H.M., and H.T. Collins, 1989: Seasons. Science and Children, 27, 37-40.
- Mogil, H.M., and H.T. Collins, 1989: Mountain meteorology. *Science and Children*, **27**, 29-33.

Mogil, H.M., and H.T. Collins, 1989: Oceans. Science and Children, 27, 17-24.

- Atmospheric Detectives. Atlas 2 Teacher's Guide with Activities NASA, 1992. NASA-EP-285/11-92, Washington, DC, 28 pp.
- •Calendar Activity

Winrich, R.A., 1990. Aerospace Education Services Project, NASA Lewis Research Center, Cleveland, OH, 22 pp.

- •Dr. Fred's Weather Watch Bortz, F., 2000. McGraw-Hill, New York, 98 pp., ISBN 0-07-134799-2. \$11.95.
- •Earth: A Creative, Hands-on Approach to Science Baker, W., and A. Haslam, 1993. Aladdin Books, New York, 48 pp., ISBN 0-689-71662-1.
- •Earth's Mysterious Atmosphere: Atlas 1 Teacher's Guide with Activities NASA, 1991. NASA-EP-282/11-91, Washington, DC, 77 pp.
- •Earth Science for Every Kid: 101 Easy Experiments That Really Work Van Cleave, J.P., 1991. John Wiley and Sons, New York, 231 pp., ISBN 0471-54389-6.

•Experimenting with Air and Water Ward, A.M., 1993. Part of Experimenting With series. Batsford, North Pomfret, VT, 48 pp., ISBN 0-8521-9774-8. An activity book for 8-13 year olds.

- •Great Explorations in Math and Science (GEMS). Curricula for global climate change and acid rain are sold by the GEMS program at: Lawrence Hall of Science, University of California, Berkeley, CA 94720. Phone: (510) 642-7771
- •The Kid's Book of Weather Forecasting Breen, M., and K. Friestad, 2000. Williamson Publishing, Charlotte, VT, 140 pp., ISBN 1-885593-39-2. \$12.95.
- •A Look at Weather: Activities for the Primary Student Winrich, R.A., 1988. Aerospace Education Services Project, NASA Lewis Research Center, Cleveland, OH, 31 pp. Illustrations, maps, and forms.
- Making and Using Your Own Weather Station
 Tannenbaum, B., and H.F. Tannenbaum, 1989. Franklin
 Watts, New York, 111 pp., ISBN 0-531-10675-6.
- Mariner's Weather Handbook
 Dashew, Steve, and Linda Dashew. Beowulf Publishing, 594 pp. \$69.95. CD-ROM included.
 Phone: (800) 421-3819
- 175 More Science Experiments to Amuse and Amaze Your Friends Cash, T., S. Parker, and B. Taylor, 1990. Random House, New York, 172 pp. ISBN 0-679-80390-4.

•Passport to Weather and Climate

Teacher's Guide Pack (64 pages), copy masters of student worksheets and oversize poster. Teacher's Resource Kit includes above plus: 60 min Teacher Resource Video with activity demos by master teachers, animations of hurricanes, tornadoes, El Nino, and more, preview of programs showing People, Places, and Processes. Two Live From the Storm episodes (2 videos). Produced in association with NOAA, NASA, and UCAR.

Passport to Knowledge, passporttoknowledge.com P.O. Box 1587, Morristown, NJ 07962-1587

•Project Earth Science: Meteorology

The Weather Channel, 1999, 59 pp. plus 16-page activity book, two posters, and mobile cutout. Free. Collection of weather activities covering most aspects of weather essentials and general aspects of severe weather. Produced in association with the American Red Cross. 1-800-471-5544

•Project Earth Science: Meteorology

Smith, P.S., and B. A. Ford, 1994, 233 pp., ISBN 0-87355-123-0. A resource guide which contains readings and activity materials for middle school (Grades 5-10) earth science teachers. One of four guides being prepared in NSTA Project Earth Science series. National Science Teachers Association, 1742 Connecticut Avenue, N.W., Washington, DC 20009.

- •Puddle Jumpers: Fun Weather Projects for Kids Gillis, J.S., and P. Delmonte, 1996. Storey Communications, ISBN 0-8826938-9. \$9.95.
- •The Science Book of Weather Ardley, N., 1992. Gulliver Books, San Diego, 29 pp., ISBN 0-15-200624-9.
- •175 Science Experiments to Amuse and Amaze Your Friends Walpole, B., 1988. Random House, New York, 172 pp., ISBN 0-394-89991-1.
- •Science Experiments Index for Young People Pllger, M.A., 1988. Libraries Unlimited, Inc., Englewood, CO, 239 pp., ISBN 0-87287-671-3. 239 pp.
- •Science Projects About Weather 'Ready-To-Go Activities, Games, Literature Selections, Poetry, and Everything You Need for A Complete Theme Unit,' 1997. SRA, ISBN 0-02686670-6. \$89.00.
- •Simple Weather Experiments with Everyday Materials Mandell, M., 1991. Sterling, 128 pp., ISBN 0-8069-7296-3.
- •Student Activities in Meteorology (SAM) Gardner, R., and D. Webster, 1994. Enslow Publications, ISBN 0-89490533-3. \$18.95.
- Teacher's Weather Sourcebook: Information, Ideas and Activities
 Konvicka, T., 1994. Teacher Ideas Press, ISBN 1-563084880. \$25.00.
- •Two Suns and a Green Sky: 22 Out-of-This-World Weather Models and Experiments Baker, T.R., 1994. McGraw-Hill, ISBN 0-07005143-7. \$12.95.
- The Weather Classroom. A Complete Workbook for Understanding Meteorology, Climatology, and the Environment Moore, K.W., 1992. The Weather Channel, 300 Interstate North Parkway, Atlanta, GA 30339, 76 pp., ISBN 1-882227-00-X.
- •Weather Forecasting: A Young Meteorologist's Guide Ramsey, D., 1990. Tab Books, 146 pp.
- •Weather In the Lab Baker, T.R., 1993. TAB Books, Blue Ridge Summit, PA, 145 pp., ISBN 0-8306-4307-9.
- •Weather Quiz Deck 1999. Scientific American Knowledge Cards. \$9.95 Phone: (800) 227-1428

- •The Weather Report Graf, M., 1989. Fearon Teacher Aids, Belmont, CA, 160 pp., ISBN 0-8224-7511-1.
- •Weather (Science Projects) Olade, C., and C. Fairclough, 1998. Raintree/Steck Vaughn, ISBN 0-817249494. \$24.26.
- •Weather Station: Activity Fun Pack 1998. Dk Pub. Merchandise, ISBN 0-789430061. \$5.95.

•Weather Study Under a Newspaper Umbrella

Mogil, H.M., 1989. Curriculum suggestions involving the newspaper and television in geography and weather studies. Additional information about supplementary classroom activities and training workshops. How the Weatherworks, 301 Creek Valley Lane, Rockville, MD 20850. Phone: (301) 762-7669

•Weather Watch

Wyatt, V.,	1990.	Addi	son-We	sley Pub	lishing Co.,	Inc.,
Reading,	MA	95	рр.,	ISBN	0-201-154	04-8.

5.5. TEXTBOOKS

- Applications of Weather Radar Systems: A Guide to Uses of Radar Data in Meteorology and Hydrology
 C.G. Collier, 1996. John Wiley and Sons, Part of Wiley-Prazis Series in Atmospheric Physics, ISBN 0-47196013-6. \$125.00.
- •The Atmosphere: An Introduction to Meteorology Lutgens, F.K., E.J. Tarbuck, and D. Tasa, 1997. Prentice Hall, 7th Edition, ISBN 0-13742974-6. \$60.67.
- Atmosphere, Weather, and Climate Barry, R.G., and R.J. Chorley, 1998: Routledge. Hard cover: ISBN 0-41516019-7, \$55.01. Paperback: ISBN 0-41516020-0, \$22.01.
- •Economic Value of Weather and Climate Forecasts Katz, R.W., and A.H. Murphy, 1997. Cambridge University Press, ISBN 0-52143420-3. \$49.95.
- •Essentials of Weather Moran, J.M., and M.D. Morgan, 1994. Prentice Hall, ISBN 0-02383831-0. \$50.00.
- Images in Weather Forecasting: A Practical Guide for Interpreting Satellite and Radar Imagery Bader, M.J., G.S. Forbes, J.R. Grant, R. Lilley, and A.J. Waters, 1997. Cambridge University Press, 523 pp., ISBN 0-52162915-2. \$59.95.

 Meteorology: The Atmosphere and the Science of Weather Moran, J.M., M.D. Morgan, and P.M. Pauley, 1996.
 Prentice Hall. Book: ISBN 0-13266701-0, \$60.52. Study Guide: ISBN 0-02383345-9. \$23.74.

Meteorology Today

- -Meteorology Today: An Introduction to Weather, Climate, and the Environment Ahrens, C.D., 1994. West Information Publishing Group, ISBN 0-31402779-3. \$66.95.
 - -Meteorology Today for Scientists and Engineers: A Technical Companion Book Stull, R.B., 1995. West Publishing Company, 355 pp., ISBN 0-314-06471-0.
- •Mid-Latitude Weather Systems Carlson, T., 1994. Unwin Hyman, ISBN 0-4510930-2. \$45.00.
- Radar for Meteorologists, Third Ed. Rinehart Publishing, PO Box 6124, Grand Forks, ND 58206-6124
- •A World of Weather: Fundamentals of Meteorology. Second Edition

Nese, J.M., and L.M. Grenci, editors, 1998. Kendall/Hunt Publishing, 539 pp., ISBN 0-7872-357784. \$52.95.

5.6. GOVERNMENT PUBLICATIONS

Current National Weather Service public service posters, pamphlets, and other materials on natural disaster preparedness are available in several forms. Updated lists are available on the web or from: Customer Service Core National Weather Service Headquarters, NOAA 1325 East-West Highway, Room 14360 Silver Spring, MD 20910 Phone: (301) 713-0090 Web: www.nws.noaa.gov/om/nwspub.htm

Publication	No.	Web
Aviation A pilot's guide to aviation weather services Aviation modernization	93056 94051	www.nws.noaa.gov/om/pilot.htm

ASOS guide for pilots (Booklet) Key to aerodrome forecast (TAF) & aviation routine weather repo	96052	www.nws.noaa.gov/om/asosbook.htm) (Card) noaa.gov/oso/oso1/oso12/document/guide.shtml
	www.iiw5.	noaa.gov/0s0/0s0//os0//os0/2/document/guide.shtml
<u>Dust storms</u> Dust storm driving safety (Wallet card)	82002	www.nws.noaa.gov/om/duststrm.htm
Flash floods and floods		
Red Cross Poster–Are You Ready for a Flood or a Flash Flood?	*92062	
Flash flood (Wallet card)	77014	www.nws.noaa.gov/om/flashfld.htm
Flash floods and floods The awesome power! The hidden danger–Low water crossing	92050 96074	www.nws.noaa.gov/om/ffbro.htm www.nws.noaa.gov/oh/tt2/xwater/index.shtml
Red Cross–Are you ready for a flood or flash flood? –English	90074 92059	www.redcross.org/disaster/safety/floods.html
Red Cross–Are you ready for a flood or flash flood? – Spanish	92060	www.redcross.org/disaster/safety/floodsn.html
River and flood program (Hydrologic services program)	94059	www.redoross.org/disdster/sdrety/noodspri.nim
Hazards and preparedness		
FEMA's emergency preparedness materials catalog	92054	
SKYWARN decal	92051	
<u>Heat waves</u>		
Heat wave	85001	www.nws.noaa.gov/om/heatwave.pdf
Red Cross–Are you ready for a heat wave? - English	94052	
www.redcross.org/disaster/safety/heat.html Red Cross–Are you ready for a heat wave? - Spanish	94056	
www.redcross.org/disaster/safety/heatwspn.html		
<u>Hurricanes</u>		
Atlantic hurricane names	-	www.nhc.noaa.gov/aboutnames.html
Atlantic hurricane tracking map–8 1/2" by 11"	96071 96072	www.nhc.noaa.gov/gifs/track_chart.gif (or .pdf)
Atlantic hurricane tracking map–17" by 22" Hawaiian hurricane safety measures with Central Pacific tracking		
	85002	
Hurricane! A familiarization booklet	*91001	www.nws.noaa.gov/om/hurfam.pdf
Pacific hurricane names	_	www.nhc.noaa.gov/aboutnames.html
Hurricanes Unleashing nature's fury	94050	www.nws.noaa.gov/om/hurrbro.htm (or hurr.pdf)
Pacific hurricane tracking map-12" by 24"	96073	
Red Cross–Are you ready for a hurricane? -English	94053	www.redcross.org/disaster/safety/hurrican.html
Red Cross–Are you ready for a hurricane? - Spanish	94054	www.redcross.org/disaster/safety/hurrspn.html
Red Cross Poster–Are you ready for a hurricane? (English/Spa		
	94055	
Survival in a hurricane (Wallet card) - English	70027	www.nws.noaa.gov/om/hurricne.htm
Survival in a hurricane (Wallet card) - Spanish	85006	www.nws.noaa.gov/om/hurrspan.htm
<u>Marine</u> Marine and a middle to an arise a middle (Darahlar)	00050	
Mariner's guide to marine weather services (Booklet)	92056	www.nws.noaa.gov/om/marine2.htm
Safe boating weather tips Tsunami: The Great Wave	94058	www.nws.noaa.gov/om/safeboat.htm www.nws.noaa.gov/om/tsunami.htm
	-	www.nws.noaa.gov/on/tsunanii.nim
<u>Natural hazards</u> FEMA's Emergency Preparedness Materials Catalog	92054	
Natural hazard watch & warning poster - English	86001	www.nws.noaa.gov/om/nh-mastr.htm
Natural hazard watch & warning poster - Spanish	86001	www.nws.noaa.gov/om/nh-massp.htm
	00001	
<u>NOAA</u> A change in the National Weather Service	93059	
National Centers for Environmental Prediction	96051	
NOAA Brochure	92501	
NOAA Weather Radio brochure	96070	www.nws.noaa.gov/nwr/nwrback.htm (or nwr.pdf)
NOAA Weather Radio decal	96053	
NOAA Weather Radio frequency pamphlet	94061	
Severe thunderstorms		
Advanced spotter's field guide	92055	www.nws.noaa.gov/om/advspg.pdf

Basic spotters' field guide Owlie Skywarn - Watch out storms ahead	97050 82004	www.nws.noaa.gov/om/basicspot.pdf www.crh.noaa.gov/mkx/owlie/owlie.htm
Red Cross Poster–Are you ready for a thunderstorm? (Englis		
Red Cross–Are you ready for a thunderstorm? (Spanish)	93052	
Spotter ID card	93060	
Thunderstorms and lightning The underrated killers	92053	www.nws.noaa.gov/om/trwbro.htm (or tstorm.pdf)
Tornadoes		
Red Cross–Are you ready for a tornado?	92057	www.redcross.org/disaster/safety/tornados.html
Red Cross–Are you ready for a tornado? (Spanish)	92058	www.redcross.org/disaster/safety/tornaspn.html
Red Cross Poster-Are you ready for a tornado? (English/Spa	nish)	
	*92061	
Tornadoes Nature's most violent storms	92052	www.nws.noaa.gov/om/tornado.htm (or tornado.pdf)
Tornado safety tips (Como protegerse en caso de tornado (W	allet card)	
	85005	
Winter storms		
Red Cross–Are you ready for a winter storm?	91003	www.redcross.org/disaster/safety/winter.html
Red Cross–Are you ready for a winter storm? (Spanish)	91004	www.redcross.org/disaster/safety/wintrspn.html
Red Cross Poster-Are you ready for a winter storm? (English	n/Spanish) 9 [.]	1005
Winter storms The deceptive killers	91002	www.nws.noaa.gov/om/wntrstm.htm
* Available only from your local Red Cross chapter	# Text only	available at www.nws.noaa.gov/om.nwspub.htm

•National Weather Service, NOAA

Owlie Skywarn series of severe weather booklets. Reports to the Nation, Our changing planet: El niño and climate prediction. Spring 1994, UCAR and NOAA, 24 pp.

Reports to the Nation: Our changing planet. Fall 1997, UCAR and NOAA, 24 pp.

For these and other reports, a free NOAA school information service letter can be obtained from: NOAA Public Affairs Office, Room 6013, HCHB, U.S. Dept. of Commerce, Washington, DC 20230

Ozone

A free booklet on atmospheric ozone is available from: NOAA Office of Global Programs, 1100 Wayne Avenue, Room 1225, Silver Spring, MD 20910

•Superintendent of Documents

A listing of low-cost government publications applicable to weather is available free of charge by writing to: Weather, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

5.7. WEATHER-RELATED PERIODICALS

•Bulletin of the American Meteorological Society

Official bulletin of the AMS. Contains announcements of meetings, book reviews, articles, conference schedules, and position statements on educational affairs. ISSN 0003-0007.

American Meteorological Society, 45 Beacon Street, Boston, MA 02108-3693. Phone: (617) 227-2425

Web: www.ametsoc.org

Stormtrack

Bimonthly black-and-white magazine about storm chasing, primarily of tornadic storms on the U.S. plains states. Tim Marshall, 4041 Bordeaux Circle, Flower Mound, TX 75028-7050. \$15.00 per year.

Web: www.stormtrack.org

•Weather

A non-technical weather-oriented magazine with color photos, published monthly by the Royal Meteorological Society, 104 Oxford Road, Reading, Berkshire RG1 7LL, England. ISSN 0043-1656. £30 per year. Email: execsec@royal-met-soc.org.uk

•Weather Bulletin

A non-technical black-and-white quarterly magazine emphasizing severe weather in Texas and nearby states. Texas Severe Storms Association, P.O. Box 122222, Arlington, TX 76012. \$14.00 per year. Web: www.tessa.org

•Weatherwise

Bimonthly color non-technical magazine about the weather, directed toward the layperson, and ideal for teachers and students. In addition to informative articles, it has features such as simple experiments, reviews of

5.8. OTHER SCIENCE PERIODICALS

audiovisuals, and an annual summary of weather events across the U.S. and Canada. Heldref Publications, 1319 18th Street N.W., Washington, DC 20036-1802. ISSN 0043-1672. \$29.00 per year. Web: www.heldref.org/ww/ww/html

•American Red Cross

General Supply Division, 7401 Lockport Place, Lorton, VA 22079

•Current Science Weekly Reader Corp., 200 First Stamford Place, P.O. Box 120023, Stamford, CT 06912-0023 Phone: (800) 446-3355 Web: weeklyreader.com/features/cs/html

•Earth

Published bimonthly. ISSN 1056-148X. Kalmbach Publishing Company, 21027 Crossroads Circle, Waukesha, WI 53187. Phone: (414) 796-8776

•GLOBE offLINE

Quarterly journal of GLOBE program. Web: www.globe.gov

•Natural Hazards Observer

Institute of Behavioral Science #6, University of Colorado, Campus Box 482, Boulder, CO 80308 Web: www.Colorado.EDU/hazards/

Science

Published weekly by the AAAS. ISSN 0036-8075.American Association for the Advancement of Science,1333 H Street, N.W., Washington, DC 20005-4792.Phone:(202) 326-6670Web:www.aaas.org

Science News

 Published weekly.
 ISSN 0036-8423.

 1719 N Street N.W., Washington, DC 20036.

 Phone:
 (202) 785-2255

•Scientific American

Published monthly. In addition to occasional weatherrelated articles, features such as 'The Amateur Scientist' may be of interest. 415 Madison Avenue, New York, NY 10017.

Phone: (800) 333-1199

Past issues on meteorology can be obtained from: W.H. Freeman and Company, 660 Market Street, San Francisco, CA 94104

5.9. INSTRUCTIONAL PERIODICALS

Several publications from educational organizations occasionally contain weather- information directed toward the classroom teacher. They include articles, lab or demonstration hints, and book and software reviews.

•Earth Notes

Published quarterly for educators for Grades K-6. Provides a forum for the exchange of ideas in elementarylevel environmental education.

Environmental Protection Agency, Public Information Center, 401 M Street, S.W., Washington, DC 20460. Phone: (202) 290-7751

•The Earth Scientist

The National Earth Science Teachers Association (NESTA) publishes The Earth Scientist 4 times a year. Each issue specializes in geology, astronomy, meteorology, or oceanography. Recent weather articles of 4 to 8 pages in length were on the topics of lightning, lightning safety, heat waves, microbursts, weather forecast mesoscale convective terms. systems, supercell thunderstorms, multiple-vortex tornadoes, lightning, sprites, and hail.

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

•National Science Teachers Association (NSTA)

The national professional organization of science teachers publishes a series of periodicals for teachers.

1742 Connecticut Ave., NW, Washington, DC 20009 Phone: (202) 328-5800 Fax:(202) 328-0974

Science and Children

8 issues a year for elementary and middle-school teachers.

Science Scope

6 issues a year for middle and high school science teachers.

The Science Teacher

9 issues a year for junior and senior high school science teachers.

The Journal of College Science Teaching 6 issues a year for undergraduate college science teachers.

•The Physics Teacher

Published monthly from September to May for middleschool and secondary-school science teachers.

American Association of Physics Teachers (AAPT), 5112 Berwyn Road, College Park, MD 20740-4100.

Science Activities

5.10. WEATHER ALMANACS AND CALENDARS

Almanacs and calendars containing weather and climate information can be informative and stimulate interest in weather. Some calendars are distributed nationally and usually provide listings of significant weather events that have occurred in various areas of the country. National weather statistics and topics are given in capsulated form. Calendars distributed locally may have more daily information pertinent to the region, such as daily records or extreme temperatures, precipitation, and sunrise and sunset times. A complete listing of these local weather calendars is not provided.

•Accord Calendars (2000)

Weather Guide wall calendar	\$8.95
Weather Whys and Wonders desk calendar	\$7.95

Accord Publishing Ltd., 1407 Larimer Square, Suite 206, Denver, CO 80202-1723. Phone: (303) 595-3839

•Bob Ryan's Weatherwise Guide and Almanac

WRC-TV 4, 4001 Nebraska Avenue, N.W., Washington, DC 20016.

Published quarterly for K-12 teachers, on biological, physical, and behavioral sciences. Includes descriptions of experiments and projects, features on products, computers, and book reviews..

Heldref Publications, 1319 18th Street N.W., Washington, DC 20036-1802. Phone: (800) 365-9753 Web: www.heldref.org

•Environment Canada Fifth House Publishers. Phone: (800) 360-8826.

- Minnesota Weatherguide/Environment Calendar
 Freshwater Foundation at Spring Hill Center, 725 County Road 6, Wayzata, MN 55391.
- •Royal Meteorological Society Calendar 104 Oxford Road, Reading, Berkshire RG1 7LL, England. Email: execsec@royal-met-soc.org.uk
- •Vermont Life Weather Calendar Alan C. Hood and Company, 0-93690647-7. \$9.95.
- •Washington DC Weather Calendar D.C. Chapter of the American Meteorological Society, P.O. Box 13567, Silver Spring, MD 20911-3557.
- •2000 Weather Calendar St. Martins Press, ISBN 0-789302071. \$11.95.
- •The Weather Channel The Weather Channel, 300 Interstate North Parkway, Atlanta, GA 30339. Web: www.weather.com

6. INSTRUMENTS AND OTHER EQUIPMENT

Since meteorology is an observational science, instruments play an important role in gathering information about the atmosphere. Weather stations can be built and outfitted with weather instruments, but they typically are expensive, so price comparisons should be made prior to purchase. Catalogues and price lists may be obtained from reputable scientific supply houses. Selected updated address lists of suppliers of scientific and instructional equipment can be found in the annual issue of the *Science Education Suppliers Supplement* and other publications from the National Science Teachers Association (NSTA):

1742 Connecticut Avenue, N.W., Washington, DC 20009-1171.

Phone: (202) 328-5800

Before purchasing weather instruments, the following references should be read:

- Snow, J.T., and S.B. Harley, 1987: Basic meteorological observations for schools: Temperature. *Bulletin of the American Meteorological Society*, **68**, 486-496.
- Snow, J.T., and S.B. Harley, 1988: Basic meteorological observations for schools: Rainfall. *Bulletin of the American Meteorological Society*, **69**, 497-507.
- Snow, J.T., M.E. Akridge, and S.B. Harley, 1989: Basic meteorological observations for schools: Surface winds. *Bulletin of the American Meteorological Society*, **70**, 493-508.
- Snow, J.T., M.E. Akridge, and S.B. Harley, 1992: Basic meteorological observations for schools: Atmospheric pressure. *Bulletin of the American Meteorological Society*, 73, 781-794.
- Virgo, S.E., 1976: Some simply made and inexpensive meteorological instruments. *Weather*, **31**, 404-411.

6.1. WEATHER KITS

To aid teachers with limited experience in weather instrumentation, several supply companies package sets of instruments and other instruction materials which can be used as a self-contained kit for weather study. Some teachers create their own weather kits from an assortment of materials, or augment the kits with additional instruments.

Suggested components for a weather kit are a thermometer, maximum/minimum thermometer, soil thermometer, anemometer, rain gauge, sling psychrometer, radio-meter, sundial, barometer, barographs, and thermograph. Other desirable features include an atmosphere chart, a good book, weather log, and five-day weather watch.

•Beginner's Pack

Barometer, maximum/minimum thermometer, radio-meter, rain gauge, wind meter, cloud chart, weather guide, and weather log. \$88.00 plus \$5.50 shipping.

•BoxTopics: Storms and Weather Forecasting

Pullouts, flip cards, stickers, and activity book. \$34.95.

1997, Briarpatch, P.O. Box 604, Short Hills, NJ 07079.

•Children's Pack

Five-day weather watcher, radiometer, sundial, cloud chart, tornado tube, weather information cloud chart, and weather activity book. \$25.00 plus \$5.00 shipping.

Wind and Weather, The Albion Street Water Tower, P.O. Box 2320, Mendocino, CA 95460. Phone: (800) 922-9463

•Storm Watch

Book and air balance forecasting station. \$14.95.

•Water Watch Kit

Book, rain gauge, and acid rain test kit. \$14.95.

•Weather Guide Photo Anthology I & II

Postcard collection of photos from Weather Guide Calendars. \$6.95 for both volumes.

Accord Publishing Ltd., 1407 Larimer Square, Suite 206, Denver, CO 80202-1723

Phone: (303) 595-3839

•Weather Watcher Kit

Maximum/minimum thermometer, 2-inch rain gauge, and handbooks. \$16.90. Fisher Scientific Phone: (800) 621-4769

6.2. WEATHER INSTRUMENT & SCIENCE EQUIPMENT SUPPLIERS

Several companies only supply weather instruments for professional purposes or the serious amateur. Usually, instruments obtained from these supply houses are of high quality and may be expensive. Other companies have instruments for a range of disciplines and educational institutions. They stock some instruments for the home and school. These instruments usually suffice for beginners and the more casual weather observer. In addition, some suppliers have instructional materials, as in other sections of this publication. Companies usually will furnish catalogs on request. Some models and teaching aids are also offered. American Weather Enterprises P.O. Box 1383 Media, PA 19063

Beckley-Cardy 917 Hickory Lane Mansfield, OH 44901-8105

Carolina Biological Supply Co. 2700 York Road Burlington, NC 27215-5551

Central Scientific (CENCO) 11222 Melrose Avenue Franklin Park, IL 60131 Phone: (800) 262-3626 Fax: (708) 451-0231

Clearvue 6465 North Avondale Avenue Chicago, IL 60631-1996 Phone: (800) 253-2788 Fax: (800) 444-9855 Web: www.clearvue.com

Cloud Chart, Inc. P.O. Box 21298 Charleston, SC 29413 Phone: (843) 577-5268

Davis Instruments 3465 Diablo Avenue Hayward, CA 94545-2778 Phone: (800) 678-3669 Fax: (510) 670--0589 Email: info@davisnet.com

Delta Education P.O. Box 3000 Nashua, NH 03061-3000 Phone: (800) 442-5444 Fax: (800) 282-9560 Web: www.delta-ed.com

Edmund Scientific 101 East Gloucester Pike Barrington, NJ 0800 Product information: (609) 573-6879 Orders: Phone: (609) 547-8800 Fax: (609) 573-6295

ETA

620 Lakeview Parkway Vernon Hills, IL 60061-1838 Phone: (800) 445-5985 Fax: (800) ETA--9326 Web: www.etauniverse.com

Fisher Scientific Co. 4901 West LeMoyne Street Chicago, IL 60651 Phone: (800) 621-4769 Forestry Suppliers, Inc. P.O. Box 8397 205 West Rankin Street Jackson, MS 39284-8397 Phone: (800) 647-5368 Fax: (800) 543-4203 Web: www.forestry-suppliers.com

Frey Scientific Co. 905 Hickory Lane Mansfield Lane Mansfield, OH 44905 Phone: (800) 225-FREY

H & R Corporation 401 East Erie Avenue Philadelphia, PA 19134

Hubbard Scientific P.O. Box 104 Northbrook, IL 60065 Phone: (800) 221-9884 (312) 272-7810

Nasco Science 901 Janesville Avenue Fort Atkinson, WI 53538-0901 Phone: (800) 558-9595 Fax: (414) 563-8296

Nasco West 1524 Princeton Avenue Modesto, CA 95352-3837 Phone: (209) 529-6957 Fax: (209) 529-2239

Northeast Discount Weather Catalog Viking Instruments, Inc. 524 Main Street South Weymouth, MA 02190 Fax: (781)331-9040 Orders: (800) 325-0360

NovaLynx Corp. (Division of Qualimetrics, Inc.) WeatherMeasure and Weathertronics P.O. Box 240 Grass Valley, CA 95945-0240 Phone: (916) 477-5226 Fax: (916) 477-8339

PGC Scientifics 9161 Industrial Court Gaithersburg, MD 20877 Phone: (800) 424-3300 (301) 840-1111 Fax: (301) 9990-0740

Radio Shack One Tandy Center Fort Worth, TX 76102

Robert E. White Instruments, Inc. 34 Commercial Wharf Boston, MA 02110 Phone: (800) 992-3045 Schoolmasters Science 745 State Circle Box 1941 Ann Arbor, MI 48106 Phone: (800) 521-2832 Fax: (800) 654-4321 Email: schscience@aol.com Web: www.schoolmasters.com

Science Associates 31 Airpark Road Box 320 Princeton, NJ 08542

Science Kit and Boreal Laboratories 777 East Park Drive Tonawanda, NY 14150 Phone: (800) 828-7777

Simerl Instruments 238 West Street Annapolis, MD 21401 Phone: (301) 849-8667

Teacher's Video Company P.O. Box SCE-4455 Scottsdale, AZ 85261 Phone: (800) 262-8837 Fax: (602) 860-8560 Web: www.teachtsp.com

Tom Snyder Productions 80 Coolidge Hill Road Watertown, MA 02172-2817 Phone: (800) 342-0236 Fax: (617) 926-6222 Web: www.teachtsp.com

Storm Tech P.O. Box 474 Hales Corners, WI 53130

Taylor Scientific Instrument 95 Glenn Bridge Road Arden, NC 28704 Viking Instruments The Northeast Discount Weather Catalog 532 Pond Street South Weymouth, MA 02190 Phone: (800) 325-0360

VWR Scientific Products P.O. Box 5229 Buffalo Grove, IL 60089 Phone: (800) 727-4368 Fax: (800) 676-2540 Email: sarwel@sargentwelch.com Web: www.sargentwelch.com

Ward's Natural Science Establishments, Inc. 5199 West Henrietta Road P.O. Box 92912 Rochester, NY 14692-9012 Phone: (716) 359-2502 (800) 962-2660

Weatherwise Affects 440 Middlesex Road Tyngsboro, MA 01879 Phone: (978) 649-8387 Email: wxaffects@aol.com Web: www.weatheraffects.com

Weatherwise Books and Instruments Main Street New London, NH 03527

How the WeatherWorks 301 Creek Valley Lane Rockville, MD 20850 Phone: (301) 762-7669 Phone: (orders only) 1-800-8CLOUD9

Wind and Weather P.O. Box 2320 Mendocino, CA 95460 Phone: (707) 937-0323

7. **COMPUTER/INTERNET**

7.1. WEATHER AND CLIMATE ON THE WEB

Current weather data can be obtained on the web. Electronic media are rapidly expanding and changing, so keeping track of updates and address changes for favorite weather web sites is suggested. Since the income of many providers comes from the timeliness of the information, time

lags are introduced before data access is opened to the public. These delays may range from 15 minutes to an hour or more until the information is considered too old to be of commercial value. While this list is not exhaustive, most addresses link to related sites.

Climate Change Climate Prediction Center Colorado Climate Center El Niño/La Niña NOAA National Climatic Data Center National Weather Service UCAR Environmental News Network Environmental Protection Agency Climate Summaries for Cities and States Human Dimension of Climate/Meteorological Hazard www.fragilecolonies.com/mglantz National Climatic Data Center, NOAA Worldwide Weather Events of 1991-2000

AccuWeather **CNN** Weather Forecast Systems Laboratory, NOAA NCAR - UNIDATA NWS - Interactive Weather Information Network **Oklahoma Weather Roundup** Pennsylvania State University Purdue University - UNISYS Texas A & M University The Weather Underground, University of Michigan University of Wisconsin USA Today Weather Page The Weather Channel Weather Links WGN-TV, Chicago Wind Profilers

Federal Emergency Management Agency (FEMA) Building Performance Assessment Team Hazardous Weather and Flood Guide Taking Shelter From the Storm Weather Information for Kids

NASA Education Marshall Space Flight Center Satellites - Weather Spaceflight Meteorology Group

Climate

www.cip.ogp.noaa.gov www.cpc.noaa.gov ulysses.atmos.colostate.edu

www.elnino.noaa.gov ibis.grdl.noaa.gov/SAT/near_rt/enso/topex_97.html www.cpc.noaa.gov/products/analysis_monitoring/impacts/enso.html www.esig.ucar.edu/un/index.html www.enn.com/specialreports/climate/ www.epa.gov/globalwarming/ www.cdc.noaa.gov/USclimate www.ncdc.noaa.gov/ www.ncdc.noaa.gov/ol/reports/weather-events.html

Current U.S. Weather

www.accuwx.com www.cnn.com/WEATHER/index.html www.fsl.noaa.gov/docs/wthr/fsl-weather.html www.rap.ucar.edu/weather/ weather.gov/ wwwcaps.ou.edu/wx/ www.ems.psu.edu/wx/ weather.unisys.com/ www.met.tamu.edu/weather.shtml cirrus.sprl.umich.edu/wxnet/ www.ssec.wisc.edu/data/ www.usatoday.com/weather/ www.weather.com cirrus.sprl.umich.edu/wxnet/servers.html www.wgntv.com www-dd.fsl.noaa.gov/online.html

Federal Agencies (Except NOAA)

www.fema.gov www.fema.gov/mit/bpat/ www.fema.gov/library/toc.doc www.fema.gov/saferoom/ www.fema.gov/kids

www.nasa.gov www.hq.nasa.gov/office/codef/education www1.msfc.nasa.gov/ www.hg.nasa.gov/office/pao/History/weathsat.html spaceflight.nasa.gov/realdata/weather/

Tropical Rainfall Measuring Mission (TRMM) National Center for Atmospheric Research (NCAR) Atmospheric Technology Division COMET MM5 Computer Model Photo Archive Time Time Zone Conversions Water Information – USGS Univ. Corp. for Atmospheric Research (UCAR) USGS Real-time Streamflow and Lake Level Data

All Foreign Weather Agencies (World Meteorological Organization) Australia Brazil (Portuguese) Canada Canadian Meteorological Centre Canadian Storm Chasers Environment Canada (English and French) Montréal (French) Finland France (French) Hungary (Hungarian) Indonesia Spain (Spanish) Worldwide 5-day Forecasts

 Alberta, Canada Lightning (Fire Weather)
 www.gov.

 Children's Lightning Safety
 www.gov.

 Sabrina Harwood
 www.azst

 Kids' Safety Essay
 www.strik

 Global Atmospherics, Inc.
 www.glat

 Lightning Safety Group Recommendations
 www.glat

 Lightning Strike and Electric Shock Survivors International, Inc.
 ...

National Lightning Safety Institute Optical Transient Detector Sprites and Jets Striking Images Univ. of Illinois at Chicago - Medical/Dr. Cooper

American Meteorological Society (AMS) Blue Hill Observatory Careers in Atmospheric Science COMET COMET – Meteorological Education DataStreme - University of Wisconsin Dictionary of Science (Academic Press) GLOBE Glossary of Weather How the WeatherWorks Jobs for Meteorologists One Sky, Many Voices Project Oakfield, Wisconsin Tornado SkyMath: Making Mathematical Connections Tornadoes: Going Around in Circles trmm.gsfc.nasa.gov/ www.ncar.ucar.edu/ www.atd.ucar.edu www.comet.ucar.edu rain.mmm.ucar.edu/mm5/pages/simple.html www.dir.ucar.edu/iss/dmc/ time.gov atm.geo.nsf.gov/ieis/time.html water.usgs.gov/droplet www.ucar.edu water.usgs.gov/public/realtime.html

Foreign Weather

www.wmo.ch www.bom.gov.au www.cbn.net.id/commerce/bmg/

www.cmc.ec.gc.ca/indexe.html www.interlog.com/~jmckay/chaser.htm www.msc-smc.ec.gc.ca/index_e.cfm www.meteo.org/ www.geo.fmi.fi www.meteo.fr www.met.hu www.cbn.net.id/commerce/bmg/ www.inm.es weather.yahoo.com

<u>Lightning</u>

www.gov.ab.ca/env/forests/fpd/ld.html

www.azstarnet.com/~anubis/zaphome.htm www.strikingimages.com/safety.htm www.glatmos.com www.glatmos.com/lightinfo/recommendations.html ttional, Inc. www.mindspring.com/~lightningstrike www.lightningsafety.com wwwghcc.msfc.nasa.gov/otd.html elf.gi.alaska.edu www.strikingimages.com

www.uic.edu:80/~macooper/cindex.htm

Meteorological Education Sites

www.ametsoc.org/AMS/amsedu/index.html www.bluehill.org www.ametsoc.org/AMS/AtmosCareers/ comet.ucar.edu meted.ucar.edu www.meteor.wisc.edu/~hopkins/ams/ www.harcourt.com/dictionary www.globe.gov www.weather.com/glossary/wx_glossary_a.html www.weatherworks.com bluesky.ecas.ou.edu/~sstrum/wxcomps.html groundhog.sprl.umich.edu cimss.ssec.wisc.edu/oakfield/cs1.htm www.unidata.ucar.edu/staff/blynds/Skymath.html whyfiles.news.wisc.edu/013tornado/ University of Illinois Weather and Atmosphere Curriculum The Weather World 2010 Project Weather (various exhibits) USA Today Weather Page The Weather Channel World Meteorological Organization

American Assoc. for the Advancement of Science American Geophysical Union (AGU) American Meteorological Society (AMS) Local AMS Chapters National Weather Association (NWA) Local NWA Chapters Stormtrack Magazine World Meteorological Organization (WMO)

All Meteorology Colleges and Universities in World Arizona State University Colorado State University Bill Gray's Atlantic Seasonal Hurricane Forecast Florida State University Georgia Institute of Technology Harvard University Iowa State University Jackson State University Lyndon State College Massachusetts Institute of Technology Northern Illinois University Ohio State University - Daily Severe Weather Log Oregon State University Pennsylvania State University Purdue University Saint Louis University State University of New York at Albany Texas A & M University University of Alabama at Huntsville University of Arizona University of California at Los Angeles University of Chicago University of Georgia University of Hawaii University of Illinois University of Maryland University of Miami University of Michigan University of Oklahoma University of Utah University of Washington University of Wisconsin University of Wyoming

Children's Disaster Safety Community Hurricane Preparedness Coping With Floods Disaster Recovery FEMA (see also subjects under Federal) athena.wednet.edu/curric/index.html ww2010.atmos.uiuc.edu www.learner.org/exhibits/weather www.usatoday.com/weather/ www.weather.com/education/index.html www.wmo.ch/web/etr/etrp98.html

Meteorological and Science Organizations

www.aaas.org www.agu.org www.ametsoc.org/AMS/ www.ametsoc.org/AMS/amschaps/index.html www.nwas.org www.nwas.org/chapters.html www.storm-track.com/ www.wmo.ch

Meteorology at U.S. Universities

www.ugems.psu.edu/~owens/WWW_Virtual_Library/metschool.html saguaro.la.asu.edu/geography www.cira.colostate.edu typhoon.atmos.colostate.edu/forecasts/ www.met.fsu.edu www.eas.gatech.edu/eas.html www-as.harvard.edu www.public.iastate.edu/~wxintro/atmos.html santa.jsums.edu apollo.lsc.vsc.edu www-eaps.mit.edu taiga.geog.niu.edu/main.html asp1.sbs.ohio-state.edu/text/wxascii/sels/WWUS60.KMKC www.orst.edu:80/mc/coldep/oceatm/atmsci.htm www.met.psu.edu wxp.eas.purdue.edu www.eas.slu.edu/index.html www.atmos.albanv.edu www.met.tamu.edu www.gi.alaska.edu www.atmo.arizona.edu www.atmos.ucla.edu geosci.uchicago.edu cacimbo.ggy.uga.edu lumahai.soest.hawaii.edu atmos.uiuc.edu www.metolab3.umd.edu/meteorology.html www.rsmas.miami.edu/msc/index.html aoss.engin.umich.edu rossby.metr.ou.edu/~som www.met.utah.edu www.atmos.washington.edu www.meteor.wisc.edu www-das.uwyo.edu

Natural Hazards

www.redcross.org/disaster/masters meted.ucar.edu/hurrican/chp/index.htm www.ag.ndsu.nodak.edu/flood/home.htm www.binomial.com www.fema.gov/mit/ Natural Hazards Center - Univ. of Colorado Natural Hazards Centre - Australia Project Safeside www.colorado.edu/hazards www.es.mq.edu.au/NHRC/ www.weather.com/safeside

NOAA-By Organization

NOAA Research Labs Atlantic Oceanographic and Meteorological Lab. www.aoml.noaa.gov Environmental Technology Laboratory Forecast Systems Laboratory Great Lakes Environmental Research Lab. National Severe Storms Laboratory Pacific Marine Environmental Laboratory Space Environment Laboratory National Environmental Satellite, Data, and Information Service National Climatic Data Center National Weather Service Alaska Region **Central Region Climate Prediction Center** Eastern Region Forecast Offices' Internet Addresses National Operational Hydrologic Research Ctr. Southern Region Storm Prediction Center **Tropical Prediction Center** Western Region NOAA Publications of the National Weather Service

Current Weather Data – Official Archive Fire Weather Jobs – NOAA (incl. student) Jobs – Student

History of the NWS

Hurricane – Frequently Asked Questions Hurricane Information Lightning, Severe Weather (and Wildfire) Modernization Natural Hazard Statistics - Summary NOAA Weather Radio NWS Publications - Listing Outreach – NWS Owlie Skywarn Weather Book for Kids Overpasses Are Not Tornado Shelters Publications of NWS - Listing Radar Sites - University of Oklahoma Satellites – Weather Severe Weather Sites

StormReady Thunderstorm Awareness www.etl.noaa.gov www.fsl.noaa.gov www.glerl.noaa.gov www.nssl.noaa.gov www.pmel.noaa.gov www.sel.noaa.gov/today.html www.ncdc.noaa.gov www.nws.noaa.gov www.alaska.net/~nwsar www.crh.noaa.gov nic.fb4.noaa.gov www.rdc.noaa.gov/~ohb/W/WN0000.html www.wrh.noaa.gov/wrhg/nwspage.html www.nohrsc.nws.gov www.srh.noaa.gov/wfo/html/srwfo.html www.spc.noaa.gov www.nhc.noaa.gov www.wrh.noaa.gov www.noaa.gov www.nws.noaa.gov/om/nwspub.htm

NOAA-By Subject

weather.gov www.ncdc.noaa.gov www.spc.noaa.gov/fire/ www.rdc.noaa.gov/~hrmo/jobs.htm ohrm.doc.gov/jobs/ www.rdc.noaa.gov/~hrmo/jobs.htm www.usajobs.opm.gov/b4.htm www.nws.noaa.gov/pa/special/history/ www.nws.noaa.gov/er/mhx/historyg.htm yoopr.wrlx.noaa.gov/er/rlx/museum/museum.html 205.156.54.206/er/gyx/timeline.html www.aoml.noaa.gov/hrd/tcfag/tcfagHED.html www.nhc.noaa.gov www.nwstc.noaa.gov/d.HMD/Lightning/Ltng_home.htm www.nws.noaa.gov/modernize www.nws.noaa.gov/om/hazstat.htm www.nws.noaa.gov/nwr/index.html www.nws.noaa.gov/nwspub.html www.nws.noaa.gov/om/reachout/ www.crh.noaa.gov/mkx/owlie/owlie.htm www.srh.noaa.gov/oun/papers/overpass.html www.nws.noaa.gov/nwspub.html wwwcaps.ou.edu/~kbrews/88D.html 140.90.207.25:8080/EBB/ml/education.html www.spc.noaa.gov www.nws.noaa.gov/om/svrawar/svrwx.htm www.nssl.noaa.gov www.nssl.noaa.gov/hazard/ www.nws.noaa.gov/stormready/ www.nws.noaa.gov/om/svrawar.htm

Weather Radio-NOAA Winter Weather Awareness

Colorado State University

Sea Surface Temperatures

Tommy's Weathercam List

Fermi Laboratories

Snow and Avalanches

Topographic Maps

The Tornado Project

Weatherwise Magazine

Today's Space Weather

Auroras

Others www.geo.mtu.edu/weather/aurora/ Bermuda Biological Station for Research www.bbsr.edu/~norm/whatsup.gif Downbursts and Microbursts **Downbursts** www-frd.fsl.noaa.gov/mab/microburst/ Microburst Handbook www.nssl.noaa.gov/~doswell/microbursts/Handbook.html Great Lakes Temperatures www.glerl.noaa.gov/cw/cwdata/lct/glsea.gif Jarrrel, Texas Tornado Photos www.pulse.net/storm/Jarrell.htm Satellite Data

> www.cira.colostate.edu/ramm/rmsdsol/main.html www.fnoc.navy.mil www.rsmas.miami.edu/images.html www.csac.org www.sel.noaa.gov/today.html www.rt66.com/~ozone/cam.htm

fermi.jhuapl.edu/states/states.html www.tornadoproject.com www.weatherwise.org

www.nws.noaa.gov/nwr/index.html

www.nws.noaa.gov/om/winter/

7.2. DATA SETS ON ELECTRONIC MEDIA

Naval Meteorology & Oceanography Command

Large amounts of weather and climate data can be stored on DC-ROM disks. For example, one CD-ROM produced by the National Climatic Data Center (NCDC) holds climate data for over 6000 stations, which is equivalent to 250,000 pages of printed text. Graphics packages and the driving software are included with some disks. Data exports are available so that the user can export the data from the disk to produce individual usable files on diskettes. Articles describing meteorological data storage are the following:

- Mass, C.F., H.J. Edmon, H.J. Friedman, N.R. Cheney, and E.E. Recker, 1987: The use of compact discs for the storage of large meteorological and oceanographic datasets. Bulletin of the American Meteorological Society, **68**, 1556-1558.
- Mass, C.F., 1993: The application of compact discs (CD-ROM) to the atmospheric sciences and related fields: An update. Bulletin of the American Meteorological Society, 68, 1556-1558.
- Ross, T.F, 1994: NCDC's CD-ROM products and on-line services. Preprints of the Third Symposium on Education, Nashville, TN, American Meteorological Society, Boston, J1-J4.
- Towheed, S.S., 1993: NASA space and earth science data on CD-ROM. NSSDC WDC-A-R&S 93-01, National Space Science Data Center, Greenbelt, MD, 29 pp.

Government CD-ROMs

•Climate Data from National Climatic Data Center (NCDC) NCDC Climate Services Branch, Federal Building, 151 Patton Avenue, Asheville NC 28801-5001. Phone: (704) 271-4800 Email: orders@ncdc.noaa.gov

Web: www.ncdc.noaa.gov •International Station Meteorological Climate Summary Contains climatic data for 640 and 5800 secondary stations worldwide. Version 2.0 issued in June 1992. •Marine Climatic Atlas of the World

Contains global historical marine data. Included are air and sea temperature, wind speed, sea-level pressure, wave height, gale winds, superstructure icing, and wind/current roses.

National Climate Information Disk

Version 1.0 contains monthly temperature, precipitation, and Palmer drought index data for the 344 climatological divisions of the U.S. covering 1895-1989.

Geophysical Data

Data base containing worldwide marine geophysical data are available from:

National Geophysical Data Center, 3253 Broadway, Boulder, CO 80303.

Phone: (303) 497-6338

•Joint Education Initiative

A set of three CD-ROMs for DOS or Macintosh for \$35 contains lessons, developed by teachers on a range of subjects, including the "Geophysics of North America."

Bill Johnson, 3433 A.V. Williams Building, University of Maryland, College Park, MD 20742. Phone: (301) 405-2324

Snowcover Data

CD-ROMs containing airborne and satellite snow data for portions of the U.S. and southern Canada for 1990 and 1991 are at:

National Operational Hydrologic Remote Sensing Center, Office of Hydrology, National Weather Service, 6301 34th Avenue South, Room 112, Minneapolis, MN 55450-2985. Phone: (612) 725-3258

Commercial CD-ROMs

- •CLEARVUE/eav
 - -The El Niño, \$35.00
 - -Everything Weather, \$70.00
 - -Learning About Weather & Climate, \$75.00
 - -Sky Works, \$40.00.
 - -Team Xtreme: Operation Weather Disasters, \$55.00
 - -Understanding Weather & Climate, \$60.00
 - -Weather: Air In Action, \$50.00.
 - -Weather Science Explorer, \$60.00.
 - -The World's Weather, \$90.00.

•Everything Weather

1997. Climate maps, tracking tools, dramatic videos. ISBN 6-30442210-5. \$39.99.

The Weather Channel, 300 Interstate North Parkway, Atlanta, GA 30339. Web: www.weather.com

•Water Vapor Weather Satellite Imagery

Three volume VHS or CD-ROM of: I – El Nino 1997, II – Nor'Easters 1998, III – Hurricanes 1998. \$19.95 each or Space/Earth Science Technologies

7.3. INSTRUCTIONAL SOFTWARE

Selected updated address lists of software suppliers is in the annual *Science Education Suppliers Supplement* to *The Science Teacher* and other publications of the NSTA.

- National Science Teachers Association, 1742 Connecticut Ave., N.W., Washington, DC 20209-1171.
- •Any Weather

1998. RCA Records, ISBN 6-305172331. \$16.98.

•Climate and Weather/Our Town Data Base

Grades 4-12. Sunburst Communications, 101 Castleton Street, Pleasantville, NY 10570.

•Discovery Works Weather and Climate 1997. SIM Publishing, ISBN 6-30429502-2. \$24.99.

•Earth Science

Videodisk, \$395.00, Grades 4 to 12. Optical Data, 30 Technology Drive, Warren, NJ 07060.

•Everything Weather

1997. Climate maps, tracking tools, dramatic videos. ISBN 6-30442210-5. \$39.99.

The Weather Channel, 300 Interstate North Parkway, Atlanta, GA 30339.

Web: www.weather.com

•Five Star Forecast

Disk, manual, and workbook, \$59. Part of MECC's Science Inquiry Collection including 'Weather maker' and 'Forecaster.'

68 North Shore Drive Seaford, DE 19973

•Weather and Climate

Interactive CD-ROM for grades 5-9. Includes teacher's guide. Mac and Windows compatible. \$49.95 (or 5 for \$199.95) Discovery Channel School.

Phone: 1-888-892-3484

Web: Click on "school" at discovery.com

•World climate

Global climatic change data.

Chadwyck-Healey, Inc., 1101 King Street, Alexandria, VA 22314. Phone: (800) 752-0515

ne: (800) 752-0515 (703) 683-4890

•World climate

Climatic data for 2000 stations worldwide for \$295.

WeatherDisc Associates, Inc., 4584 N.E. 89th, Seattle, WA 98115. Phone: (206) 524-4314

or

Dr. Cliff Mass, Dept. of Atmospheric Science (AK40), University of Washington, Seattle, WA 98195. Phone: (206) 685-0910

MECC-Minnesota Education Computing Corporation, 3490 Lexington, Avenue North, St. Paul, MN 55126.

•Forecasting the Weather

Double-sided disk, backup, worksheets, and manual, \$59.95, Grades 6 to 9.

MCE Division of Lawrence Productions, MCE, Inc., P.O. Box 458, Galesburg, MI 49053.

Inclement Weather

1998. World Domination Records, ISBN 6-305044708. \$15.98.

•More Weather

1998, ISBN 6-304794851. \$17.98.

•Weather

1997. Two disks, backup, manual, \$49.95, Grades 3 - 8. -Forecasting the weather.

- -Temperature, humidity, air pressure, and wind.
- -The weather station.

Orange Cherry, Box 390, Pound Ridge, NJ 10576-0390.

The Weather

1997. Book and CD-ROM. Smithmark Publishing, ISBN 0-76519109-1. \$14.98.

•Weather

1998. World Book Multimedia, ISBN 0-716672367. \$14.95. •Weather: A View From Space, Vol. 1: El Nino 1997

1999. Space/Earth Science Technologies, www.sest.com, \$19.95

•Weather Academy

Two disks, backup, student workbook and manual, and additional materials, \$99, Grades 5 to 8.

Focus Media, 839 Stewart Ave., Garden City, NY 11530.

•Weather In Action

Two disks, backup, and manual, \$395.00, Grades 4 to 9. National Geographic Society, Educational Services, 17th and M Streets, N.W., Washington, DC 20036. Phone: (800) 368-2728

•The Weather Tracker's Kit: Explore the Changing Forces of Nature 1995. Book and CD-ROM. Running Press, ISBN 1-56138641-3. \$29.95.

8. DATA SOURCES

Weather observations at numerous stations can be accessed nearly realtime with a computer and modem. Other weather data sources include radio and television broadcasts. Some climatological data can be obtained in electronic format, such as computer files or databases on diskette, tape, or CD-ROM; much of this is not free.

8.1. CURRENT WEATHER INFORMATION

Current weather observations from weather observation stations operated by the National Weather Service can be obtained from several sources that do not require computers. The following list includes media involved with dissemination of current weather information, forecasts, and special weather advisories, watches, and warnings.

•Hurricane Hotline

Recorded telephone messages are activated when a tropical storm or hurricane threatens. These messages identify areas affected by the watch or warning, location of the storm, forecasted movement, wind speeds, and tidal effects. There is a cost of 50 cents for the first minute, and 45 cents for each additional minute. The average call costs 85 cents.

Atlantic:(900) 410-NOAA or (900) 410-6622.Pacific:(900) 410-CANE or (900) 410-2263.

•Marine Weather Radio

Weather observations, charts, warnings, advisories, and other information are broadcast on various marine weather radio frequencies for shipping interests. Stations operated by NOAA are part of an international network of marine weather radio stations. For marine interests, phone service is operated by BOAT/U.S. Weather Watch at (900) 933-BOAT--this is a toll call. A list of stations and frequencies operated on the Atlantic, Pacific, Gulf of Mexico, and Great Lakes is provided in a publication available from the Superintendent of Documents, Washington, DC 20418.

8.2. CLIMATOLOGICAL INFORMATION

Canada

Canadian climate data can be obtained from two sources:

Canadian Government Publishing Center Ottawa, Ontario Canada K1A 0S9

Phillips, D.W., D.W. Gullett, and M.S. Webb, 1988: Handbook on climate data sources of the Atmospheric Environment Service, 3rd edition. Canadian Climate Center, Downsview, Ontario, Environment Canada, 326 pp. Essentially all meteorological data collected in the United States are archived by the National Climatic Data Center (NCDC), an agency of NOAA in Asheville, NC. Climatic data can be obtained from governmental sources, either through publications in libraries or certain government offices.

•NOAA Weather Radio

The expanded NOAA Weather Radio network of over 425 FM stations is operated by the National Weather Service (NWS) and provides continuous weather information. Stations operate at seven high FM-band frequencies:

162.400 Mhz	162.425 Mhz
162.450 Mhz	162.475 Mhz
162.500 Mhz	162.525 Mhz
162.550 Mhz	161.650 Mhz
161.775 Mhz	163.275 Mhz

NOAA Weather Radio broadcasts are also available from touch-tone telephones; select a local broadcast at: (900) 884-NOAA (900) 884-6622

A listing of NOAA Weather Radio stations in the U.S. can be obtained from:

-Local National Weather Service offices.

-Customer Service, National Weather Service, NOAA, 1325 East-West Highway, Room 14360, Silver Spring, MD 20910. Phone (301) 713-0090.

-Web: www.nws.noaa.gov/nwr/nwr.htm

•The Weather Channel

This cable television channel continuously broadcasts weather programming from Atlanta, Ga. An educational segment entitled 'The Weather Classroom' is broadcast daily, and covers a wide variety of topics. Teachers may videotape this segment at no charge for use in their classrooms.

•Federal Sources of Climate Data

Publications related to weather and climate, including publications in this section, can be found at many of the 1370 sites across the country. For more information about this program and the location of the nearest Depository, contact your local library or:

Federal Depository Library Program U.S. Government Printing Office Superintendent of Documents, Stop SM Washington, DC 20402 •National Climatic Data Center (NCDC)

The following publications are available:

-Daily Weather Maps (weekly)

-Storm Data (monthly)

-Mariners Weather Log (quarterly)

-Weekly Weather and Crop Bulletin

-Weekly Climate Bulletin

-Local Climatic Data for individual stations (monthly and annual)

-Climatological Data for individual states (monthly and annual)

-Hourly Precipitation Data for individual states (monthly) -Climates of the United States

-Monthly Climatological Data for the World (monthly) -Monthly and Seasonal Weather Outlook (semimonthly)

Federal Building 151 Patton Avenue Asheville NC 28801-5001 Phone: (704) 271-4800 Fax:(704) 271-4876 Web: www.ncdc.noaa.gov

•NOAA Library and Information Services Division

Central Library Washington Science Center-4 6009 Executive Blvd. Rockville, MD 20852 Circulation: (301) 443-8330 Reference: (301) 443-8332 Interlibrary Ioan: (301) 443-8333

•Regional Climate Centers

Six centers have climatic databases for the states in their region. These centers will respond to requests for regional climate information.

High Plains Climate Center

Colorado, Kansas, Nebraska, North Dakota, South Dakota, Wyoming. Lincoln, NE 68583-0728 Web: hpccsun.unl.edu Phone: (402) 472-5206 (402) 472-6706

Midwest Climate Center

Indiana, Illinois, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio, Wisconsin. Champaign, IL Web: mcc.sws.uiuc.edu Phone: (217) 244-1488 (217) 344-8226

Northeast Regional Climate Center

Connecticut, Delaware, Maine, Maryland, Massachusetts, New Jersey, New Hampshire, New York, Pennsylvania, Rhode Island, Vermont, West Virginia. Ithaca, NY 14853 Web: met-www.cit.cornell.edu Phone: (607) 255-1749 (607) 255-1751

Southeast Regional Climate Center

Alabama, Florida, Georgia, North Carolina, South Carolina, Virginia. Chapel Hill, NC 27599 Web: http://www.sercc.com/ Phone: (919) 843-9721

Southern Regional Climate Center

Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, Texas. Baton Rouge, LA 70803-4105 Web: maestro.srcc.lsu.edu/srcc.html Phone: (225) 388-5021

Western Regional Climate Center

Arizona, California, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington. Reno, NV 89506-0220 Web: wrcc.sage.dri.edu/ Phone: (702) 677-3139 (702) 677-3106

9. PROFESSIONAL ORGANIZATIONS

Weather

American Meteorological Society (AMS) 45 Beacon Street Boston, MA 02108-3693 Phone: (617) 227-2425 Web: www.ametsoc.org/AMS

Canadian Meteorological and Oceanographic Society (CMOS) 151 Slate Street Ottawa, Ontario, Canada

National Weather Association (NWA) 6704 Wolke Court Montgomery, AL 36116-2134 Phone: (334) 213-0388 Web: www.nwas.org

World Meteorological Organization (WMO) 41, Avenue Giuseppe-Motta Case postale no. 2300 CH-1211 Geneva 2 Switzerland Web: www.wmo.ch

General Science

American Association for the Advancement of Science (AAAS) 1333 H Street, N.W. Washington, DC 20005-4792 Phone: (202) 326-6670 Web: www.aaas.org

American Geophysical Union (AGU) 2000 Florida Avenue, N.W. Washington, DC 20009 Phone: (202) 939-3223 Web: www.agu.org

American Water Resources Association (AWRA) 5410 Grosvenor Lane, Suite 220 Bethesda, MD 20814-2192 (301) 493-8600

Education

American Association of Physics Teachers (AAPT) 5112 Berwyn Road College Park, MD 20740-4100

National Association of Geology Teachers (NAGT) Geology Department Western Washington University 576 High Street Bellingham, WA 98225-9080

National Earth Science Teachers Association (NESTA) Science Department #14 Lansing Community College 430 Capitol Avenue Lansing, MI 48901

National Science Teachers Association (NSTA) 1742 Connecticut Avenue, N.W. Washington, DC 20009-1171 Phone: (202) 328-5800

Many states have their own science teacher organizations that hold conventions and publish periodicals. Contact the state education department for further information.

10. Additional Resource Contacts

American Meteorological Society AERAs

The American Meteorological Society (AMS) established a national network of teachers identified as Atmospheric Education Resource Agents (AERA). A partnership of scientists, educators, government, and industry focuses on attracting young students into continued study of science, mathematics, and technology. 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 Phone: (202) 466-6070

National Weather Service WCMs

The National Weather Service (NWS) has established a national network of Warning and Coordination Meteorologists (WCM) at each forecast office. A current listing that identifies the WCM for your city can be obtained from:

Customer Service National Weather Service, NOAA 1325 East-West Highway, Room 14360 Silver Spring, MD 20910 Phone: (301) 713-0090 Fax:(301) 713-1598 Email: Linda.Kremkau@noaa.gov Web: www.nws.noaa.gov/om/

NWS Stations: www.wrh.noaa.gov/wrhq/nwspage.html.

Alabama

Birmingham	
Web:	www.srh.noaa.gov/bmx/
WCM:	Brian Peters
Phone:	205-664-3010
Mobile	
Web:	www.srh.noaa.gov/mob/
WCM:	Gary Beeler
Phone:	334-633-6443

Alaska

Anchorage	
Web:	www.alaska.net/~nwsfoanc/
WCM:	David Goldstein
Phone:	907-266-5117
<u>Fairbanks</u>	
Web:	www.faiwsfo.org/
WCM:	John Lingaas
Phone:	907-458-3712
<u>Juneau</u>	
Web:	www.alaska.net/~jnufo/
WCM:	Aimee Devaris
Phone:	907-790-6803
<u>Kodiak</u>	
Web:	www.ptialaska.net/~wsoadq

Palmer	
WCM:	
Web:	

Phone:

Bruce 7	Turner
wcatwo	.gov
907-74	5-4212

Arizona Flagstaff

riagstan	
Web:	nimbo.wrh.noaa.gov/Flagstaff/
WCM:	Tyree Wilde
Phone:	520-556-9161
<u>Phoenix</u>	
Web:	www.phx.noaa.gov
WCM:	David Runyun
Phone:	602-379-4611
Tucson	
Web:	nimbo.wrh.noaa.gov/Tucson/twc.html
WCM:	Paul Flatt
Phone:	520-670-5156

Arkansas

Little Rock Web: www.srh.noaa.gov/lzk/ WCM: John Robinson Phone: 501-834-9102

California Eureka

Eureka	
Web:	www.wrh.noaa.gov/Eureka/
WCM:	John Lovegrove
Phone:	707-443-6484
Los Angeles	
Web:	www.nwsla.noaa.gov
WCM:	Tim McClung
Phone:	805-988-6610
Sacramento	
Web:	www.wrh.noaa.gov/Sacramento/
WCM:	Kathy Hoxsie
Phone:	916-979-3041
<u>San Diego</u>	
Web:	www.wrh.noaa.gov/Sandiego/nws.html
WCM:	Ed Clark
Phone:	858-297-2107
San Franciso	<u>20</u>
Web:	www.nws.mbay.net/home.html
WCM:	Charles Morrill
Phone:	831-656-1725
San Joaquin	Valley
Web:	www.wrh.noaa.gov/Hanford/main.htm
WCM:	Dan Gudgel
Phone:	559-584-0583
orado	
Denver/Bould	<u>der</u>
Web:	www.crh.noaa.gov/den/
WCM:	Robert Glancy

 Web:
 www.crh.noaa.gov/den

 WCM:
 Robert Glancy

 Phone:
 303-494-3210

 Grand Junction

 Web:
 www.crh.noaa.gov/gjt/

 WCM:
 James Pringle

 Phone:
 970-243-7007

Colo

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Air Pollution Control Association 440 Fifth Avenue Pittsburgh, PA 15213

American Geological Institute (AGI) National Center for Earth Science Education 4220 King Street Alexandria, VA 22302 Phone: (703) 379-2480

Bureau of Science Education New York State Education Department Albany, NY 12234

Climate Protection Institute 5833 Balmoral Drive Oakland, CA 94619 Phone: (510) 451-0905

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The Everyday Weather Project National School Weather Project State University of New York College at Brockport Brockport, NY 14420

Federal Aviation Administration (FAA) U.S. Department of Transportation Washington, DC 20591

For Spacious Skies 54 Webb Street Lexington, MA 02173 National Center for Atmospheric Research (NCAR) P.O. Box 3000 Boulder, CO 8307-3000 Web: www.ucar.edu

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The Weather Channel Educational Services 300 Interstate North Parkway Atlanta, GA 30339 Web: www.weather.com

Weather Modification Association P.O. Box 8116 Fresno, CA 93727-8116 Phone: (209) 436-3486

Powers of Nature Exhibit

Powers of Nature travels to large museums during its tour over the next several years. It has realtime data, and many portions that are interactive. While the exhibit includes earthquakes and volcanoes, the largest portion is on weather. This traveling exhibit was produced by the Franklin Institute. The following is the remaining schedule of openings:

•October 2000 Museum of Science	Boston
•April 2001 Museum of Science and Industry	Chicago

11. ABBREVIATIONS

AAAS	American Association for the Advancement of Science
AAPT	American Association of Physics Teachers
AERA	Atmospheric Education Resource Agent for the AMS
AGU	American Geophysical Union
AMS	American Meteorological Society
CMOS	Canadian Meteorological and Oceanographic Society
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
ISBN	International Standard Book Number
ISSN	International Standard Serial Number
NAGT	National Association of Geology Teachers
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research
NCDC	National Climatic Data Center
NESTA	National Earth Science Teachers Association
NOAA	National Oceanic and Atmospheric Administration
NSSL	National Severe Storms Laboratory
NSTA	National Science Teachers Association
NWA	National Weather Association
NWS	National Weather Service
NWSFO	National Weather Service Forecast Office
UCAR	University Corporation for Atmospheric Research
WMO	World Meteorological Organization