

PRESIDENT'S MESSAGE

Building on the Past and Present as the NWA Continues into the 21st Century

In my previous newsletter article, I stated that my primary goal for the NWA was to, "...embrace a revised vision/strategic plan/goals and objectives that truly reflect an association ready for the challenges of the 21st Century." The strategic plan was last revised in 1996 and it is time to update it and extend it for at least ten years. The NWA Strategic Planning Committee chaired by the immediate-past president, Dr. Jim Moore, has accepted that challenge, but every NWA member can and should be involved. Your NWA Council would appreciate submissions from all members. Please send recommendations and comments to the NWA office via regular mail or e-mail to: NatWeaAsoc@aol.com. You are also most welcome to submit comments directly to NWA officers, councilors and committee chairpersons. Their address information was in the last Newsletter and is also on the NWA Web site.

Involvement of members has always been and will continue to be most important for the success of the NWA. This was stated by the NWA founder and first president, Jerry LaRue, in his President's Message in the first *National Weather Digest*, November 1976. Jerry stated, "No organization of this kind can be successful without the interest and, more importantly, the active assistance and help of its membership. The NWA has created a great deal of interest and has been fortunate in attracting members who have pitched in and helped where and when needed. This kind of dedication by the membership will, of course, be necessary not only next year but in future years if the organization is to grow and be influential."

The bylaws of the NWA state that the primary purpose of the NWA is two-fold: (a) to provide a medium for all persons interested in weather, hydrometeorology, climate, forecasting, observations, observational systems, and related research and development and the publishing of letters, pamphlets, periodicals and papers concerning activities in the above mentioned fields, and (b) to provide information, publications, materials and seminars that will promote forecasting, analysis, observations, training and education in the meteorological disciplines. These objectives are still very important and are being

expanded on. We have recently expanded the mediums for exchange of member news, correspondence, technical reports and articles by adding an Electronic Journal to the NWA Web site. The first technical article has been received and will soon be published on the Web. We are still in need of more correspondence, member news and short or long articles for the monthly newsletter. The volunteer editors will certainly appreciate your submissions at anytime.

On page 2 of this newsletter is the annual call for nominations for **NWA Awards**. Please give this opportunity some thought and encourage others to do the same. Part of the NWA mission is to promote excellence in operational meteorology and related activities. The Awards program helps us to accomplish that mission.

I am most happy to report to you that we will soon begin a college scholarship program. Our Vice President, Dick Livingston and a number of our Councilors are working out the details. The impetus came from a generous donation of over \$23,000 from the estate of Dr. Arthur C. Pike. Dr. Pike died of cancer in November 1988 at the age of 49 and left a large estate, which has taken years to final distribution. Mr. Pike received a bachelor's degree and a master's degree, both from the University of Chicago, and a master's degree from Cambridge University, England. He received a doctorate in atmospheric science from the University of Miami in 1971. From 1966-1981, he held a succession of research and forecasting positions at the National Center for Atmospheric Research in Boulder, Colo., the Institute of Marine and Atmospheric Science at the University of Miami, the National Hurricane Center, and at stations of the National Environmental Satellite Service in Coral Gables and Honolulu, Hawaii. During that period he also taught at the University of California at Los Angeles and at the University of Miami. In 1981, he took his last teaching position at Jackson State University where he was a professor of meteorology. He then resumed his lifelong interest in the study of tropical storms in 1983, when he returned to the National Hurricane Center.

To best honor our deceased member, Dr. Arthur C. Pike, the scholarship program will be set up to assist students involved in tropical meteorology.

Plan now to attend the 25th Anniversary celebration of your NWA and see page 6 for other meeting opportunities.

- Rod Scofield

NWA AWARDS PROGRAM 2000

The National Weather Association began its award program in 1977 to provide deserved recognition to those individuals involved in operational activities. The Awards Program recognizes the professional as well as the volunteer. The emphasis is on the people who perform the day-to-day jobs of providing meteorological information and weather support services to the public. Names of previous winners and additional award information are available on the NWA Web site (www.nwas.org).

Award Categories are:

Operational Achievement Individual Award: The award is presented to an NWA member who has made a significant contribution to operational meteorology (e.g., an accurate/timely forecast for one or more significant weather events or for long-period achievement).

Operational Achievement Group Award: The award is presented to a group of two or more individuals for a significant contribution to operational meteorology. **At a minimum, a majority of the group (greater than 50%) must be NWA members.**

T. Theodore Fujita Research Achievement Award: This award is presented to an NWA member whose research has made a significant contribution to operational meteorology.

Walter J. Bennett Public Service Award: This award is presented to an individual or organization directly assisting the meteorological community in providing weather-related information to the public. Individuals and organizations in the meteorological profession are **ineligible** for this award.

Public Education Award: This award is presented to an individual or organization providing significant contributions to increase the public's weather awareness.

Broadcaster of the Year Award: This award is presented to an NWA member Radio or Television weathercaster, or other member of the broadcast media, whose activities have significantly contributed to the development and presentation of weather information to the public service.

Aviation Meteorology Award: This award is presented to an individual or group to recognize significant contributions to aviation meteorology, such as impact of operational forecasts on aviation operations, and advances in aviation meteorology including research in detection and forecasting of aviation hazards.

Local Chapter Award: This award is presented to a Local Chapter of the NWA whose activities have significantly increased awareness of the weather and of the NWA in their local area.

The Larry R. Johnson Special Award: This award is presented to an individual or a group to recognize unique events or extraordinary accomplishments, which significantly contributed to operational meteorology.

Member of the Year Award: This award is presented to an NWA member who has made significant contributions to the organization over a period of time.

Narrative nominations (no more than two pages) with additional comments or endorsements should be forwarded by 30 June 2000, to:

NWA Awards Committee

Andrew Horvitz, Chairperson

6704 Wolke Court

Montgomery, AL 36116-2134 USA

Although there is no rigid time requirement for the awards, the Committee prefers that the accomplishment, if not on a continuing basis, occur within 18 months prior to the nominations. Winners will be honored at the NWA Annual Meeting Awards Luncheon, 17 October 2000 in Silver Spring, MD.

NWA SOL HIRSCH EDUCATION FUND GRANTS

The NWA Education Committee needs help from all members to spread the word to teachers in grades K-12 that \$500 grants are available annually from the NWA to help improve the education of their students in meteorology. The teachers selected will be able to use the funds to take an accredited course in atmospheric sciences, attend a relevant workshop or conference, or purchase scientific materials or equipment for the classroom. Three grants or more are possible in 2000 thanks to the many members who have contributed to this fund in honor of Sol Hirsch who retired in 1992 after being the NWA Executive Director for 11 years. **Applications can be obtained from the NWA Education Committee, 3809 Clarks Lane Suite 007, Baltimore MD 21215, from the NWA office or the NWA Web site (www.nwas.org). Completed applications are due to the Education Committee by 1 August 2000.**

MEMBER NEWS

WELCOME to a new corporate member!

The Weather Network/MeteoMedia of 1 Robert Speck Parkway, Suite 1600, Mississauga, Ontario, L5N 4N2 Canada. Internet Web site: www.theweathernetwork.com

Point of Contact: Ron Bianchi, V.P. of Meteorology; tel: (905) 566-9511 ext 268; fax: (905) 566-7012; e-mail: rbianchi@on.pelmorex.com

Judson E. "Jay" Prater, Jr. is moving gradually northward again. He is transferring to Nashville, TN to become Managing Meteorologist at WSMV - TV4 (NBC). He has been the chief weathercaster at WAFF-TV in Huntsville, AL and previously was in Birmingham, AL at WVTM. He has earned Radio and TV Weathercaster Seals of Approval from the AMS and NWA and is active in the NWA Broadcast Meteorology Committee, chairing that committee from 1995-98. He was also an NWA Councilor 1996-97.

TORNADOES HIT ANOTHER BIG CITY ***What other myths should be destroyed?***

Tornadoes hit downtown Fort Worth, Texas, shortly after 6 p.m. local time on Tuesday, 28 March 2000 and also hit south Arlington and Grand Prairie. On 3 May 1999, probably the largest tornadoes to hit a big city plowed through Oklahoma City, Oklahoma.

Hopefully now, after recent events in many big cities such as Fort Worth, Oklahoma City, Nashville, and even earlier events such as in Worcester, Massachusetts (June 1953), the myth that tornadoes don't hit big metropolitan areas is destroyed. The only hasty generalization that should be made, if any, is that in the United States, severe weather can occur anywhere at anytime.

Severe weather awareness and continuing education on severe weather impacts, the warning systems, and protective actions to take are important to every person in the nation. In the two articles that follow, weather awareness and continuing education are stressed. The first article appeared in *The Dallas Morning News* about the Fort Worth tornado event. The story was brought to my attention by one of our NWA past-presidents, Joe Schaefer. The second article (pages 4-5), summarizes a presentation made at the 1999 NWA Annual Meeting in Biloxi, MS. In that article, myths about severe weather warnings are also destroyed. The articles are presented as food for thought in our own continuing education and to use in our education outreach efforts. - Exec. Dir.

History sounds storm warning you can't miss

By Steve Blow / The Dallas Morning News 03/31/2000

If your roof was just ripped off, maybe you should be forgiven for anything you might say. But there was a comment I heard several times after Tuesday's storm that kind of rankled me.

With a sense of indignation, people would say:

"We had no warning!"

Excuse me?

You were expecting an engraved announcement, perhaps?

No warning?

We had two days of warnings about that storm! Weather folks were talking on Sunday about a big storm looming. By Monday night, they were almost predicting the hour it would roll through. I don't know what sort of warning people expect. We're so overwarned about everything else these days, maybe they expect a bright red sticker to show up on the front door: Caution! Cuidado! Achtung! All hell to break loose at 6:22 p.m.

I think a couple of factors create this false expectation that tornadoes are preceded by a nice, courteous warning.

Making noise

First, cities love to put up those warning sirens. They make disaster planners feel all warm and fuzzy inside. And admit it, they are dramatic and exciting. But that doesn't mean the sirens are going to wail an hour before a tornado arrives on your street. If you're lucky, you might get a few minutes of warning. Often, tornadoes come and go before the official siren sounder even knows it.

Our second sense of false security comes from the TV weather folks. They all love to brag about their Super-Duper Doppler Storm-Stopper Radar Systems. Don't fall for it. That's mostly about ratings. There's no such thing as "precision" radar. The TV weather gurus were obsessing Tuesday night over some sort of "signature couplet" radar pattern in northern Tarrant County while a real, live tornado was pounding downtown Fort Worth.

No injuries were reported in the signature couplet.

But let's not make the weather forecasters the bad guys here. They are the heroes. They gave us all the warning we could expect about a dangerous storm.

At some point, our safety becomes our responsibility. When the sky turns green and funky, it's time to get to a safe place - not stand in the yard with a video camera, for heaven's sake.

Survivors' story

I kind of got religion about this many years ago when I wrote a fifth anniversary story on the terrible tornado that hit Wichita Falls in 1979. It was one of the best stories I ever wrote. And why do I say that? Because I didn't write it.

In talking to survivors, I realized that nothing was more powerful than their own words. So I just let them tell the story. And one message came through loud and clear: If you take cover in time, your chances of surviving a tornado are very, very good.

If you don't, well

In Wichita Falls, I talked to a lovely woman who couldn't decide whether to remain in her gift shop as the storm approached. At the last minute, she decided to run for shelter in a more substantial building nearby.

She waited too long.

The tornado hit as she ran. She managed to wrap herself around a metal sign pole. She described how the storm literally sucked the air in and out of her lungs. Flying debris pounded her unmercifully. She watched as a piece of sheet metal sailed by, cutting off her leg in one swift slice.

I got religion.

Tuesday night, as the storm rolled into Dallas County, I was cleaning out a space in the hall closet. I wasn't scared, just ready.

No warning about tornadoes?

I got my warning 16 years ago.

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Ed., Dave Freeman, chairperson of the NWA Broadcast Meteorology Committee, invited Dr. Sorensen to the NWA Annual Meeting Broadcaster's Workshop to give ideas on how to get the public to react timely and properly to severe weather warnings. Text from slides used in that presentation follows —

HUMAN RESPONSE TO WARNINGS

Presented at the NWA 1999 Annual Meeting

by Dr. John H. Sorensen
Oak Ridge National Laboratory

Need to Shed Preconceived Ideas about Warning Response

- You predict weather based on science
- You should issue warnings based on science

Warning Response Research

- Started in the 1950's
- Driven by the shadow of nuclear war
- If we sound the sirens, what will people do?
- Series of studies - tornado, hurricane, flood, explosion, and alien invasions
- **Major findings** (*when warnings occur*)
 - People seek more information
 - People converge on event

Warning Myth Number 1

- **People panic when warned about a hazard**
 - “We didn't issue a warning because we did not want to scare the public and cause them to panic”
 - **Panic has never occurred in response to a natural disaster warning**
 - Panic does occur in other emergencies - clear sign of threat, a narrow window of escape, not everyone will escape

Warning Myth Number 2

- People will be confused if you give them too much information (KISS)
 - Not selling them toothpaste
 - **People are information starved**
 - **People want detailed information**
 - **People want to hear it often**
 - People turn to other sources if they perceive they are not getting enough information
 - CNN viewers increase by 5-10x (*when warnings occur*)

Warning Myth Number 3

- Warnings should be given by a single spokesperson
 - There is no one single public
 - **There is not one person who is credible to all publics**
 - **Need mix:** officials, scientists, broadcasters
 - Need multiple means of dissemination

Warning Myth Number 4

- Cry wolf
 - *It's a fable and does not occur except in the basement of psychology buildings*
 - **People will respond to warnings even if they have had false alarms**
 - **Non-response is largely shaped by perceived risk**

Warning Myth Number 5

- People remember different siren signals

Most people don't have enough experience hearing siren signals and some siren signals sound very similar.

Warning Response Process

To achieve significant response, each person has to:

Hear

Understand

Believe

Personalize

Confirm

Respond

Warning Response Process Factors Working For and Against

- | | |
|----------------------|-----------------------------|
| • <u>For</u> | • <u>Against</u> |
| — Visual cues | — No visual cues |
| — Family and network | — Living alone and isolated |
| — Female | — Male |
| — Younger | — Elderly |
| — Majority | — Minority |
| — High SES | — Low SES |
| — Non-fatalistic | — Fatalistic |

You can't change these!

What Can You Do to Increase Response?

- Manipulate content of warning messages
- Manipulate the style of warning messages
- Improve the message format
- Manipulate the warning source
- Use multiple channels for dissemination
- Issue frequent detailed messages
- Develop an intensive and ongoing public education program

Message Content

- A description of the hazard and impacts
- The current and predicted location of the impacts
- What actions to take
- When to take those actions
- Sources of information

Message Style

- **Clear:** Worded in a manner that people understand
- **Specific:** Contains precise information
- **Accurate:** Even minor errors may cause problems
- **Certain:** Is authoritative and confident
- **Consistent:** Explains basis for change in information

Message Format

- Text - Pre-scripted
- Graphics
 - Pictures
 - Graphics
 - Video
- Models
- Real-time data
- GIS

Hurricane Warnings Have Significantly Improved

- From better science: 24-hour strike probability accuracy increasing 1.1% per year
- From better warning delivery
 - Integration of science and dissemination
 - Content and style
 - Better format - graphics
- Time to disseminate information

Fast Onset Events

- Tornado and flash flood
- Science of warning improving
- People still get no or “poor” warnings for many major events
- Dissemination of warnings beginning to improve with Real-time data, Models, GIS, technology

Warning Effectiveness

Nighttime 15 min. notification rates (%)

<u>System</u>	<u>Direct</u>	<u>With Informal*</u>
10db siren	36	46
20db siren	45	57
Tone Alert	69	80
10db siren/ tone alert (TA)	80	88
Enhanced TA	90	95
10db siren/ enhanced TA	94	97

* warnings passed by relatives, friends and neighbors

Conclusions

- Hurricanes warnings
 - Major progress in integrating prediction & warning
 - Lead times both beneficial and detrimental
- Tornado and flash flood still problematic
- Nighttime warnings
 - Tone alert radios are essential
 - Best technical solution is SAME enabled TV
- Even new technologies will not reach some “publics”

About the Author: Dr. John H. Sorensen is a Senior Research Staff Member at Oak Ridge National Laboratory and Director of the Emergency Management Center. His research has focused on emergency planning and the impacts of hazard and risk on human systems. He has written extensively on public response to emergency warnings, protective action planning, and individual and organizational behavior in disasters. He has led projects related to emergency and crisis management for DOD, FEMA, EPA, NRC and DOE. He has participated in post disaster studies for the National Academy of Sciences and the National Weather Service. The Emergency Management Center is currently conducting work on the Chemical Stockpile Emergency Preparedness Program, the NBC Medical Training Program and the Chemical Safety and Hazard Investigation Board Support Program. Information on the Oak Ridge National Laboratory Emergency Management Center can be found on the Internet at <http://emc.ornl.gov>. Additional information is available from The Natural Hazards Research and Applications Information Center at the University of Colorado <http://www.colorado.edu/hazards>

MEETINGS OF INTEREST

• **National Symposium on the Great Plains Tornado Outbreak of 3 May 1999: *Opening a Crosscutting Dialog on Successes, Failures, and Challenges for the Future*, April 30 - May 3, 2000 Westin Hotel and Resort, Oklahoma City, Oklahoma.** National Weather Association is a cosponsor. A block of rooms has been reserved at the Westin Hotel in Oklahoma City. Conference room rates are \$70.00 for both single and double rooms, to which is added 9.375% Oklahoma State Hotel Tax. When contacting the hotel (phone 405-235-2780; fax 405-272-0369), mention the "May 3rd Symposium" to receive the conference rate. The deadline for abstract submission is past. Abstracts will be published on the web and made available at the Symposium. **Register in advance for this free symposium on the Internet at:**

<http://parker.gcn.ou.edu/~kkd/may3.htm>

• **Second Southwest Weather Symposium, September 21 & 22, 2000, Tucson, Arizona.** The Second Southwest Weather Symposium will be held Thursday and Friday, 21 and 22 September 2000 in Tucson, Arizona. The symposium will be cosponsored by the National Weather Service, the University of Arizona, Department of Atmospheric Sciences, and COMET. The American Meteorological Society and the National Weather Association are cooperating organizations.

The purpose of the symposium is to bring together operational forecasters, academic professors, researchers, and climatologists who are interested in the weather and climate of the southwest U.S. and northwestern Mexico. The symposium will provide a forum for presentation and discussion of work that considers midlatitude, subtropical, and tropical weather and precipitation systems that affect the southwest U.S. and northern Mexico. Because of the wide range of climate zones in this region, i.e., arid deserts to forested high mountains, the breadth of relevant topics is large. Regardless of the topics presented, the symposium emphasis will be upon studies relevant to all temporal scales of operational analysis and forecasting. The two-day symposium will include invited talks, oral and poster presentations, and open discussions. Detailed information about the symposium can be found on the Internet at:

<http://www.atmo.arizona.edu/swws/swws.html>

Abstracts should be submitted electronically via the symposium Web page no later than 15 June 2000.

• **Air Weather Association Reunion, 20 -24 Sept 2000, Las Vegas, Nevada.** The AWA along with the Air Weather Reconnaissance Association and many other US Air Force weather squadron alumni associations will hold a reunion at the Imperial Palace Hotel in Las Vegas from 20-24 September. Further information is on the AWA Web site at: <http://www.airweaassn.org>.

• 25TH NWA ANNUAL MEETING UPDATE

The National Weather Association's 25th Annual Meeting will be held at the Holiday Inn Silver Spring Conference Center, 8777 Georgia Avenue, Silver Spring, Maryland, 20910. The theme will be "***Celebrating 25 Years of Success in the NWA***". The Annual Meeting Coordinator is Steve Harned, National Weather Service Forecast Office, Raleigh, NC, (919) 515-8209, ext. 222, Stephen.Harned@noaa.gov. The Program Chairperson is Gail Hartfield, NWSFO, Raleigh, NC, (919) 515-8209, ext 420, Gail.Hartfield@noaa.gov or gailhs@mindspring.com. **ABSTRACT SUBMISSION: *The deadline for submission of abstracts is June 1st, 2000.*** Abstracts can be sent via electronic mail to the Program Chairperson at Gail.Hartfield@noaa.gov. Please write "NWA Abstract" in the subject box. The abstract may be included within the body of the e-mail or as an attachment. *Please include the following information in the e-mail correspondence:* full abstract title, author(s) and affiliation(s)/address(es) [designate which author(s) will be giving the presentation and whether poster or oral presentation is preferred], audio/visual requirements including software (e.g., PowerPoint, Corel, Internet access) and equipment (e.g., laptop PC, overhead projector), and list the primary contact with their e-mail address. **Abstracts may also be sent via an Internet online form at: www.nwas.org/2000abstracts.html.** Simply fill out the form *in its entirety* (you may cut-and-paste your abstract from your word processor into the form), and click on the "Submit Query" button at the bottom of the form.

If you will be unable to submit your abstract via e-mail or the online form, please contact Gail Hartfield.

For information on exhibits, accommodations, registration and the overall meeting program, please contact the NWA office at Tel/FAX: (334) 213-0388 or e-mail: NatWeaAsoc@aol.com. The meeting agenda will be posted on the NWA home page (<http://www.nwas.org>) in August 2000 and printed in the NWA Newsletter.

HOTEL INFORMATION: The main conference hotel will be the **Holiday Inn**, 8777 Georgia Ave, Silver Spring, MD. A block of rooms has been reserved at discount rates: \$115.00 single/double, \$99.00 for seniors (65 and older). To reserve a room, please call the hotel direct at (301) 589-0800 and mention "NWA Annual Meeting 2000." Make your reservations before 23 September 2000. A small block of rooms has also been reserved at the **Town Center Hotel**, 8727 Colesville Road, Silver Spring, MD. Discount rates are: \$75.00 single/double, \$59 for seniors (65 and older). To reserve a room, please call the hotel direct at (301) 589-5200 and mention "NWA Annual Meeting 2000." Make reservations before 23 September.

Additional information to include individual registration forms will be available in later Newsletters and on the NWA Web site (www.nwas.org). **Plan now to attend this 25th Anniversary celebration!**

JOB CORNER

(Ed: The NWA lists job openings free from equal opportunity employers for the benefit of members. See the NWA Web site <http://www.nwas.org> or call the NWA office at (334) 213-0388 for possible short notice listings.) There was not enough space in this Newsletter to repeat all job announcements. A complete listing is on the NWA Web site.

AON CORPORATION in Chicago has an excellent career opportunity available for a METEOROLOGIST. Aon Corporation is a family of Brokerage, Consulting and Consumer Insurance Companies providing innovative solutions for diverse businesses, financial institutions, governments, insurance organizations and individuals worldwide. We are located in Chicago within the heart of the Loop and close to all transportation. In this meteorologist position you will assist in the development and use of computer models to simulate the occurrence of severe weather phenomena such as hurricanes and tornadoes and estimate financial losses due to the associated property damage. Support our real-time monitoring service by obtaining, compiling and disseminating, to clients, information on developing weather events. Provide marketing/business development support. Qualifications: Masters in Meteorology or BS with work experience in related field. Strong computer skills, including MS Office Products. Some programming experience desirable. Good communication skills. Aon offers: Competitive Compensation, Great Benefits, Continuing Education & Training, Tremendous Potential with a Growing Worldwide Organization. Please send resume to: Judy Yablonski, Aon Technical Recruiter, 123 N. Wacker 14th floor, Chicago, IL 60606; Tel: (312) 701-4946; Fax: (312) 701-3290; Judy_Yablonski@asc.aon.com. For more information about Aon Corporation, visit our website at www.aon.com

WEATHER.COM Associate Director of Core Weather Components One of the top web sites in the world, weather.com in Atlanta, Georgia, is looking for a top notch candidate with both technical expertise and meteorological data experience. This individual will be responsible for coordination with the weather.com IT team for the ingest of raw weather data, and preparing this data for use by product teams. You will have the opportunity to work with the meteorology team, project managers, and IT organizations for both weather.com and The Weather Channel. We are looking for a professional to translate this knowledge into an exciting and meaningful user experience for our web site. Responsibilities also include: Budget and resource allocation; hiring and training staff members; sourcing, negotiating and implementing the ingest of nontraditional weather data; and working with both weather.com and The Weather Channel organizations. Requirements include: 5-7 years business experience; online/Internet environment experience; extensive background in meteorological data, budgeting, good people management and communication skills; Bachelor Degree in Computer Science or related field; Masters in technology, business or meteorology preferred. If you are interested in this exciting opportunity, send your resume today to: JOBS@WEATHER.COM or fax to (770) 226-2959.

GENERAL SCIENCES CORPORATION (GSC) General Sciences Corporation, a subsidiary of Science Applications International Corporation (SAIC), has immediate openings at its Greenbelt, Maryland location for: 1) SCIENTIFIC APPLICATION PROGRAMMER - GSC #462-NWA To support the NASA Seasonal-to-Interannual Prediction Project (NSIPP) at the Goddard Space Flight Center. The successful candidate will support ocean data assimilation and coupled forecast studies on a parallel computing architecture, by preparing ocean observations for assimilation into an ocean model, and for validation of the resulting products; helping with the implementation, tests and routine runs of the assimilation software; developing graphics and data analysis software. Applicants should have at least one year's experience programming with FORTRAN 90 under a UNIX environment, experience with shell programming, with running ocean models, with analyzing both model and observational data, and a

basic knowledge of statistics. M.S. in Meteorology, Oceanography, or related disciplines, Applied Mathematics, or Computer Science. With requisite experience and background, applicants with a B.S. will be considered as well. 2) SCIENTIFIC APPLICATION PROGRAMMER - GSC #463-NWA To support the NASA Seasonal-to-Interannual Prediction Project (NSIPP) at the Goddard Space Flight Center. The successful candidate will be responsible for retrieving and maintaining atmosphere, ocean, and land surface observational data bases for model forcing, initialization, assimilation, and validation. Applicants should have at least one year's experience programming with FORTRAN 90 and with C under a UNIX environment, and experience with shell programming. Experience in analyzing atmospheric and/or oceanographic observations is also required. M.S. in Meteorology, Oceanography, or related disciplines, Applied Mathematics, or Computer Science. With requisite experience and background, applicants with a B.S. will be considered as well. 3) SCIENTIFIC PROGRAMMER/ANALYST - GSC #515-NWA To support the Data Assimilation Office of NASA Goddard Space Flight Center to carry out and analyze global data assimilation and general circulation model (GCM) experiments to study variability on a wide range of time scales. The candidate should have a M.S. in Meteorology or related discipline, and experience in handling large data sets. Required programming skills include Unix and Fortran, and graphical display programs such as GRADS. A strong background in multi variate data analysis techniques is desirable. Qualified candidates should send their resume along with job number to: General Sciences Corporation, 4600 Powder Mill Road Suite 400, Beltsville, MD 20705; FAX (301) 931-3797; or e-mail: resumes@gsc.saic.com To learn more about GSC, please visit www.saic-gsc.com An Affirmative Action Employer.

TRW, INC. has immediate openings for meteorologists and engineers with Space Weather Models background and experience. Qualifications desired are a B.S. in Meteorology/Atmospheric Sciences or Engineering or equivalent military training (NCO/officer in operations). For further information contact: Kevin Starr, TRW Weather Operations, 1408 Fort Crook Road, South Bellevue, NE 68005; e-mail: Kevin.Starr@afwa.af.mil

NORTH CAROLINA DIVISION OF AIR QUALITY Air Quality Meteorologist. The North Carolina Division of Air Quality, part of the Department of Environment & Natural Resources, has an opening for an experienced Air Quality meteorologist in its Raleigh headquarters. Major responsibilities include air quality modeling for attainment planning; operational ozone forecasting during the NC May through September ozone season; and operation, maintenance and data management for a network of meteorological sensors (including two atmospheric profilers). The successful candidate will have a degree in meteorology with a year's experience as a meteorologist and working knowledge of meteorological and air quality models. In addition, our ideal candidate needs a basic understanding of the chemistry of ozone in the troposphere and the impact of meteorological conditions on ozone chemistry and behavior. Excellent computer skills and a working knowledge of Unix operating systems are essential. Complete details, including application procedures and contact information, are available from the North Carolina Office of State Personnel. You must complete a PD-107 (Application for Employment) to be considered for this position. Complete applications must be received by 4:30 P.M. on May 5, 2000. Contact Person: Frank Dalton, Environment Nat Res, Division Of Air Quality, 1641 Mail Service Center, Raleigh, NC 27699-1641; Tel: (919) 715-8606

DELTA AIR LINES has an immediate opening:

The Meteorology Department at Delta Air Lines is currently accepting resumes for the position of Aviation Meteorologist. The position is located at Delta's headquarters in Atlanta, GA. Responsibilities: Analyze and forecast surface and upper air weather systems at major hub cities worldwide. Provide weather support to dispatchers, pilots and other airline operations. Must be able to work rotating shift hours and function under pressure deadlines. Requirements: B.S. or M.S. in Meteorology or equivalent military training. Prefer a minimum two years recent aviation forecasting experience. Possess excellent oral and

written communication skills. Ability to converse in Spanish is beneficial but not mandatory. Delta offers competitive pay with excellent benefits and is an equal opportunity employer. Please include reference number ELMINWAMETC0 on all correspondence. You may submit your resume via e-mail (delta.careers@delta-air.com), fax: 404-773-6034, or mail: Delta Air Lines, Leadership Recruitment - Dept. 970, PO Box 20562, Atlanta, GA 30320

ACCU WEATHER, INC. offers career opportunities with the world's leading and most diversified commercial weather service. **You will have exciting opportunities to handle all types of weather forecasting for major business, media and government organizations.** These include on-air broadcasting for radio stations; creative presentation of weather graphics; preparation of television and newspaper forecasts; snow and ice warning services; worldwide forecasting for agriculture; specialized forecasts for the transportation industry, utilities, businesses and resorts; computer applications and many others. You will work with some of the nation's leading forecast meteorologists in our new state-of-the-art Global Forecast Center, interacting with a staff of 350 employees. **Our facility provides our 93 forecast meteorologists with tools and computer technology unavailable elsewhere.** Applicants need to be articulate and productive with outstanding forecasting and communication skills. Through progressive advancement, forecasters can become on-air meteorologists in major radio and television markets, or become involved in computer operations, graphic design, new product development or customer relations. **AccuWeather also has positions available on their computer staff for meteorologists with programming experience.** AccuWeather offers competitive salaries and an extensive benefits package including health insurance, 401K and profit sharing plans, life insurance and disability income. If you are an enthusiastic, hard working forecaster interested in employment in a dynamic growing company which offers superior opportunity for advancement, send a detailed resume to: David H. Dombek, Director of Forecaster Hiring, AccuWeather, Inc., 385 Science Park Road, State College PA 16803; Fax: (814) 231-0621; e-mail: resume@accuwx.com.

This just in at press time -- please see complete announcement on NWA Web site <http://www.nwas.org>

THE WEATHER CHANNEL Atlanta, GA. The Weather Channel has an exciting opportunity for a Spanish/English or Portuguese/English Weather Anchor ready for a challenging career. Interested candidates, please send your resume to jobs@weather.com or fax to (770) 226-2959. Reference: PPG706 Weather Anchor.

NATIONAL WEATHER ASSOCIATION
6704 WOLKE COURT
MONTGOMERY AL 36116-2134

WEATHERDATA, INCORPORATED If you love weather and enjoy interacting with clients that take your work seriously, this is the opportunity for you. WeatherData, Incorporated, located in the center of "Tornado Alley", is interested in hiring Forecast Assistants. This is an entry-level position utilizing your graphic skills while sharpening your forecasting skills. You will work with experienced meteorologists, attend training seminars and map discussions while learning the requirements of WeatherData's clients. A degree in Meteorology or the equivalent is required. Attention to detail, flexibility, and the ability to focus on customer needs while meeting crucial deadlines are essential. Weekend, night and/or early morning work may be required to support this 24 hour a day, 7 day per week operation. WeatherData offers excellent salaries and benefits including, 401(k), profit sharing and relocation. If you like to be challenged, and enjoy communicating weather information to end-users, don't let this opportunity pass you by. Send a cover letter and resume to: WeatherData, Incorporated, Attn: Sharol Youngers, Manager of Business Administration, 245 N. Waco, Ste. 310, Wichita, KS 67202.

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GOES-L TO LAUNCH ON 3 MAY 2000

NOAA GOES-L is scheduled for launch from Cape Canaveral, Florida, pad 36A at 2:27 a.m. (EDT), 3 May. It will be renamed GOES-11 once reaching geostationary orbit. After testing, it will be stored on orbit ready to replace GOES-10 or GOES-8. April 1st was the 40th Anniversary of the Launch of the First Weather Satellite (TIROS).