The AMS Short Course on Neural Network Applications to Environmental Sciences, sponsored by AMS and organized by the AMS Committee on Artificial Intelligence Applications to Environmental Science, will be held from 12–13 January 2002 preceding the 82nd AMS Annual Meeting in Orlando, Florida.

The course starts with the neural network (NN) tutorial, which does not require any prior familiarity with the technique. Its major topics include NN components, architectures, training, relationship to statistics, and regression technique. Numerous generic environmental NN applications will be introduced and discussed, many of which are closely related to the topic of this AMS meeting. Topics include NN applications for intelligent processing of observations, nonlinear multivariate data analysis, fast direct assimilation of satellite data, accurate retrieving geophysical information from satellite data, prediction, scene classification, discrimination between clouds and snow in satellite imagery, improving computational efficiency of numerical models, nonlinear time series analysis, data fusion, and so on. Many practical NN solutions developed and implemented by instructors for atmospheric and oceanic applications will be introduced. A practical approach to development of NN applications will be outlined. Some applications involving fuzzy logic will also be discussed. Computer demonstrations will enhance and illustrate the course. Interactive sessions will help students communicate closely with instructors and obtain advice about applications of NN to various projects.

For further information, contact Vladimir Krasnopolsky, Environmental Modeling Center, NWS/NCEP/NOAA (SAIC), 5200 Auth Rd., Camp Springs, MD 20746; telephone: 301-763-8000 ext. 7262; fax: 301-763-8545; e-mail: kvladimir@ncep.noaa.gov.


The AMS Short Course on The Fundamentals of Doppler and Polarimetric Weather Radar, sponsored by AMS and organized by the AMS Committee on Measurements, will be held from 12–13 January 2002 preceding the 82nd AMS Annual Meeting in Orlando, Florida.

This course reviews Doppler weather radar principles, its application to the observation of weather, and the quantitative measurement of meteorological parameters. The goal of this course is to develop an understanding of the theory, operation, and applications of meteorological radars. Focus is on meteorological phenomena, their radar signatures, and quantitative measurement of weather parameters. Extensive examples of weather phenomena are shown together with their radar signatures. The latest ad-
vances in polarimetric-Doppler weather radar technology are presented. The principals of clear air observation and fair weather phenomena will be discussed. This course is based on the textbook *Doppler Radar and Weather Observations*.

Who should attend? Meteorologists, weather forecasters, physicists, engineers, and other professionals who need to understand applications of Doppler weather radar. Although there is no specific prerequisite for this course, participants should have an understanding of elementary physics and mathematics.

The following topics will be covered in the course:
1) The principles of weather radar: History of radar development; electromagnetic waves; polarization; normal and anomalous propagation; pulsed-Doppler radar; signals received from point and distributed scatterers; attenuation due to stormy and fair weather; back scatter and attenuation across sections; hydrometeor size distributions; the radar equation; representations of echoes from moving and stationary scatterers; radar limitations (e.g., range and velocity ambiguities).
2) Weather signals: Signal statistics; echo coherency; the weather radar equation; angular and range weighting functions; resolution volume; the reflectivity factor; correlation of echoes in range and time.
3) Doppler spectra of weather signals: Discrete Fourier transform and window functions; Doppler spectra of weather echoes; relation between wind, reflectivity, and the Doppler spectrum; examples of Doppler spectra associated with various weather phenomena (e.g., tornadoes). 4) Weather signal processing: Spectral moments; estimation of reflectivity using range and time averaging; autocovariance and spectral processing to estimate mean Doppler velocity and spectrum width; signal processing for coherent polarimetric radar; performance of the estimators; examples of two-dimensional fields of reflectivity factors, radial velocity, and turbulence.
5) Considerations in the observation of weather: Spectrum width; wind shear and turbulence; antenna sidelobes; ground and sea clutter; techniques to extend unambiguous range and velocity; the effective width of a scanning beam; thunderstorm structure; wind estimation with two Doppler radars; severe local storms, mesoscale convective systems, and hurricanes.
6) Precipitation measurements: Single parameter techniques (e.g., using reflectivity factor $Z$ or specific differential phase $K_{dp}$) to estimate rain rate $R$; relations between $Z, R,$ and liquid water content; accuracy of rain measurements; two-parameter techniques to estimate rainfall; principles of radar polarimetry; improvements of rain measurements and identification of hail with polarimetric radar.
7) Observation of winds, storms, and related phenomena: Visual depiction of storm phenomena (e.g., tornadoes, microbursts) and their radar signatures; wind field estimation using single Doppler radar; weather hazards to aviation.
8) Observations of fair weather: Bragg scatter from irregularities in temperature and humidity; observations of wind, buoyancy waves (i.e., undular bores, solitary waves, etc.), and turbulence in clear air.
9) WSR-88D and TDWR applications: NEXRAD and TDWR specifications and applications, modes of operations, examples of displays and products, automatic detection of hazardous weather.

For further information, contact Dusan S. Zrnic (e-mail: zmnic@nssl.noaa.edu) or Richard J. Doviak (e-mail: Dick.Doviak@nssl.noaa.gov) at NOAA/NSSL and University of Oklahoma, Norman, Oklahoma.

**AMS Short Course on Verification of Climate Forecasts, 13 January 2002, Orlando, Florida**

The AMS Short Course on Verification of Climate Forecasts, organized by the AMS committee on Probability and Statistics, will be held 13 January 2002 preceding the 82nd AMS Annual Meeting in Orlando, Florida.

The short course will emphasize the newest methods for diagnostic verification of climate probability forecasts (from week two to multiseasonal that go beyond the limits of deterministic predictability), especially those based on ensemble methods, but also include segments on categorical forecasts and field verification. The short course will also cover, where appropriate, topics on signal detection theory and decision-model analysis of multimodel ensemble integrations.

This short course is intended for those who make climate predictions experimentally (including hindcasts) in the laboratory or operationally. The course is particularly timely because climate predictions are receiving increasing attention by decision-makers and the public. A luncheon will be provided.

For further information, contact Robert E. Livezey; telephone: 301-713-1867 ext. 182; e-mail: Bob.Livezey@noaa.gov.

**AMS Short Course on Land Surface–Climate Interaction, 13 January 2002, Orlando, Florida**

The AMS Short Course on Verification of Climate Forecasts, sponsored by AMS, will be held 13 January 2002 preceding the 82nd AMS Annual Meeting in Orlando, Florida.
Land surface–climate interaction is a new scientific field, and the results in this field have significant scientific implications. This course intends to present introductory knowledge for students and scientists who desire an introduction to the basic concepts and areas of studies in this field. The lectures include: Introduction of the development of land surface–climate interaction studies during the past two decades; Land surface modeling (main components in a land surface model); Land–atmosphere coupling (the methodologies and principles of land–atmosphere coupling); Photosynthesis processes and CO₂ flux transfer, dynamic vegetation modeling; development and application of remotely sensed data; application of land surface parameterizations in climate studies; and a tutorial class with PCs for students to practice using a land surface model.

The short course includes a luncheon and will be taught by Peter Cox (U.K. Meteorological Office), Forrest Hall (NASA/GSFC), Randy Koster (NASA/GSFC), Yongkang Xue (UCLA), and others.

For further information, contact Yongkang Xue (e-mail: yxue@geog.ucla.edu) or Randy Koster (e-mail: koster@janus.gsfc.nasa.gov).

AMS Short Course on QPF and QPE: Quantitative Precipitation Forecasting and Quantitative Precipitation Estimation, 13 January 2002, Orlando, Florida

The AMS Short Course on QPF and QPE: Quantitative Precipitation Forecasting and Quantitative Precipitation Estimation, sponsored by AMS and organized by the AMS committee on Hydrology, will be held 13 January 2002 preceding the 82nd AMS Annual Meeting in Orlando, Florida.

The course will focus on procedures for quantitative precipitation forecasting (QPF) and quantitative precipitation estimation (QPE) and will be presented and illustrated through case studies. The QPF presentation will focus on analyses of recent heavy rainfall events. The QPE presentation will include a presentation of operation rainfall estimation algorithms, case study examples and discussion of future QPE opportunities resulting from polarimetric upgrades of the WSR-88D radar network.

Who should attend? The course will be geared toward operational forecasters, those in the research community, and students.

For further information, contact Richard A. Fulton, NOAA/NWS Office of Hydrology, w/OHD12, 1325 East–West Hwy., Silver Spring, MD 20910; telephone: 301-713-0640 ext. 138; fax: 301-713-0963; e-mail: Richard.Fulton@noaa.gov; or Norman W. Junker, NOAA/NWS/NCEP, 5200 Auth Road, Camp Springs, MD 20746; telephone: 301-763-8076; fax: 301-763-8085; e-mail: norman.junker@noaa.gov.

AMS Weather Entrepreneur Workshop, 13 January 2002, Orlando, Florida

The AMS Weather Entrepreneur Workshop, sponsored by AMS and organized by the AMS Board on Private Sector Meteorology, will be held 13 January 2002 preceding the 82nd AMS Annual Meeting in Orlando, Florida.

It is recognized that every individual’s professional situation is different and is dependent upon that individual’s circumstances. No one plan covers all possible scenarios, but common, basic components for a successful foray into the weather entrepreneur world can be learned. Attendees will gain hands-on knowledge of how to succeed as a weather entrepreneur. Positive aspects of the field will be covered, as will the “reality checks.” Attendees should expect to be ready to interact with other attendees, speakers, and committee members. Selected reading materials may be recommended before the course is held.

Who should attend? Professional meteorologists, meteorology students, retirees from the weather field, or anyone interested in starting their own weather-related business. Active weather entrepreneurs will also benefit from attending.

The overall goal of this workshop will be to provide attendees with hands-on knowledge of how to succeed as a weather entrepreneur. The aim is for attendees to “learn then apply” the materials presented during the workshop.

The morning session will focus on training in the use of fundamental tools for starting up and sustaining a weather business. Tools addressed will include a business plan, marketing, and advertising. Following a luncheon, the afternoon session will focus on learning about small business programs available to the weather entrepreneur, accounting techniques, and ethical business practices. A panel of experienced weather entrepreneurs will discuss real-world examples of scenarios and the proper ethical responses.

For further information, contact Matthew J. Parker, Savannah River Technology Center, Bldg. 735-A, Aiken, SC 29808; telephone: 803-725-2805; e-mail: matt.parker@srs.gov.