



NOAA ARL Monthly Activity Report



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Highlights

1. Sky Imagers Commercially Available. Automatic measurement of high cloud remains a problem for newly automated meteorological observing systems. The problem has been solved with the development of the new Total Sky Imager (TSI) by Chuck Long, as a product of SRRB research. The first shipment of the commercial version of TSI has been received from the manufacturer--Yankee Environmental Systems, Inc. The instruments will be deployed at four SURFRAD stations in the coming year as part of cooperative research with NASA-Langley on EOS satellite validation. A platform has already been built at Table Mountain for the first unit. (John Augustine, 303 497 6415)

General

The topics presented here are sorted according to their contribution to the NOAA Strategic Plan . . .

Sustain Health Coasts: 9, 21

Short-term Forecasting and Warnings: 1, 2, 3, 5, 7, 19, 26, 27, 28, 29, 32, 33, 34, 35, 36

Seasonal to Interannual: 12, 13, 14, 15

Decadal to Centennial: 4, 6, 8, 10, 11, 16, 17, 18, 20, 22, 23, 24, 25, 37

Crosscutting: 30, 31, 36

Silver Spring

2. Atmospheric Effects of Wild-fire Smoke. ARL has provided smoke forecasts for South East Asia for a considerable period, through its linkages with the World Meteorological Organization. Recent work has evaluated the accuracy of predictions from the Hysplit 4 model, using remotely sensed aerosol indexes from the NASA Total Ozone Mapping System (TOMS) for the 1998 Mexican fires.

Fire source locations were provided from the NOAA/National Environmental Satellite and Data Information Services (NESDIS) staff who analyzed GOES, POES and DMSP satellite infrared image channels to determine hot spot locations. The U.S. Forest Service provided daily information on the number of acres burning for a particular location. Using this information, source emissions of total particulate and PM 2.5 μm particles were estimated for input into Hysplit 4 for real-time forecasts.

The uncertainty in emissions is considerable; hence emission rates were refined by comparing Hysplit predictions to satellite observations. For the Mexican forest fires occurring in May 1998, the higher emissions rates were used for the dense forest being burned, while for the Florida fires, lower emission rates agreed

best to simulate the less intense under-story burning. (jeff.mcqueen@noaa.gov, roland.draxler@noaa.gov, glenn.rolph@noaa.gov, and barbara.stunder@noaa.gov)

ARL is anticipating a large involvement in a new program addressing the effects of forest fires in southeast Asia. The work will couple with activities by the USEPA and the Australian Bureau of Meteorology. Strong linkages with the World Meteorological Organization's Global Atmosphere Watch are being generated. (bruce.hicks@noaa.gov)

3. *Volcanoes.* VAFTAD forecasts were issued for two eruptions of Guagua Pichincha, four of Soufriere Hills, and one of Popocatepetl in January 1999. (barbara.stunder@noaa.gov)

4. *The Long Range Transport and Deposition of Toxic Substances.* Work continues on using the HYSPLIT model to estimate deposition to the Great Lakes, in support of the IJC's International Air Quality Advisory Board (IAQAB). Additions to HYSPLIT_4, including vapor/particle partitioning, hydroxyl radical reactions, and several alternative deposition algorithms have now been completed and extensively tested. Work in the near future will involve additional modifications and development of methodologies to allow cadmium to be simulated. Simulations to support estimates of transport of PCDD/F and Atrazine to the Great Lakes have now begun. Attempts are being made to perform computations on a number of PC's (\$ 300 MHZ), operating independently, including six remote machines at EPA's National Exposure Research Laboratory (RTP). Unfortunately, problems with the remote operation of the RTP computers persist.

The work will soon be extended to mercury, in a program in collaboration with the Commission for Environmental Cooperation. Methodologies for modeling mercury with the HYSPLIT model will be developed and will be applied to estimate deposition to the Gulf of Maine. Other receptors of interest may also be studied. Inventories for the U.S. and Canada will be used as inputs, and the results of the modeling will be compared against ambient measurements. (mark.cohen@noaa.gov)

5. *COAMPS Data and Hysplit.* A program has been written to convert meteorological data files from the Navy's COAMPS model to ARL packed format. The data will be used to compare Kuwait oil fires smoke dispersion using Navy and ECMWF data fields. The program used to examine meteorological profiles from data files in ARL format was generalized to support the new Navy data. In addition some changes were required to Hysplit to support the COAMPS Z* normalized terrain following coordinate system. (roland.draxler@noaa.gov)

6. *AIRMoN-wet.* The field test of alternative sample preservation methods has been completed. The early conclusion is that thymol does indeed preserve precipitation samples from the degradation caused by biological activity, but with considerable hassle for the laboratory technicians. The quality assurance program continues; an article will be submitted for publication following a considerable period of data analysis performed in conjunction with our colleagues at CSIRO in Melbourne. (richard.artz@noaa.gov)

Rick Artz, Mark Nilles from USGS, and Rona Birnbaum from EPA have been working over the past year to update and replace much of the hardware in the national precipitation chemistry monitoring programs. Progress is slow due to the usual funding problems, but the drumbeat is getting louder. An attempt will be made to coordinate our needs with the National Weather Service to make use of whatever all-weather rain gauge is selected to replace existing equipment at the NWS Automated Surface Observation Stations.

In addition, efforts will be made to develop a new generation of precipitation chemistry gauge based on existing equipment in the field in U.S., Canadian, European, and Australian national programs. Present systems are labor intensive and plagued with problems stemming from aging electronic components. (richard.artz@noaa.gov)

7. Tampa Bay Region Atmospheric Chemistry Experiment (BRACE). Substantial ARL involvement is anticipated in the BRACE program, now being planned, particularly through the use of the Twin Otter in the fall of 2000 and late spring of 2001 to measure trace gas chemistry over metropolitan Tampa/St. Petersburg and adjacent areas. The Florida Department of Environmental Protection is strongly promoting aircraft mercury measurements during the experiments and seeks input regarding the collection of ground based deposition measurements of the usual nitrogen and sulfur species, as well as a number of other trace gases and elemental mercury.

A second program to measure hazardous air pollutants (HAP) in the region (primarily heavy metals and persistent organic compounds) is also being discussed. The Tampa Bay Estuary Program is organizing the HAP program. (richard.artz@noaa.gov)

8. RAMS Forecasts to Drive Chesapeake Bay Wave and Oceanographic Models. Fine-grid ARL-RAMS forecast products are being coupled with NOS oceanographic and wave models to generate a new capability to forecast waves and water depths along shipping channels in the Bay. A six-month project review was held by NOS in January and a summary of accomplishments presented. Work is progressing, with considerable attention being given to the selection of optimal computer platforms for running the models involved. A CPU/simulation ratio 4 CPU min/1-hr forecast is expected for the Bay domain, using a 4 km grid.

A series of wave observations is available for testing the models, obtained from the July 1998 wave experiment in which ARL collaborated with Sea Grant investigators of the University of Maryland. In this case the focus has been on RAMS 4a 2 km (100x200 grid points) simulations. RAMS 4a was installed on the Alaskan Research Super Computer (ARSC) Cray T3E. Unfortunately, transfer speeds between Silver Spring and ARSC were very slow (~1200 kb/sec) which makes debugging and testing difficult.

Comparisons of velocity predictions against data from ten observing sites in the region show that RAMS generally underpredicts the strong up-bay southerly flow often observed in the summer. RAMS simulations offshore more closely predict the southerly flow, hence potential errors are larger along the bay coastal interface than further inland or offshore. Details are available at (<http://www.arl.noaa.gov/ready/waves.html>). (jeff.mcqueen@noaa.gov; Jay Titlow, NASA/LRC; Weiqi Lin, University of Maryland, HPL)

The Chesapeake Bay web page (<http://www.arl.noaa.gov/ready/chbmdl.html>) has been linked to the current meteorology page of READY and links to wave and wind forecasts for the Bay region have been added. (glenn.rolph@noaa.gov)

9. Updated Relation Between El Nino and Global Air Temperature. The relation between El Nino and global atmospheric temperature is being examined for the 41-year period 1958-1998, a period 12 years longer than the period originally studied. The correlation coefficient between sea surface temperature and tropical (30S-30N) 850-300 mb temperature 1½ seasons later is 0.67. The relation with surface temperature is not as good (maximum correlation of 0.52), showing why the relation was first recognized from radiosonde data.

The lag increases, and the magnitude of the correlation decreases, with distance from the equator, the maximum correlation only 0.34 in the north temperate zone and 0.17 in the north polar zone. (Jim Angell, 301 713 0295, x127)

10. *Air Stagnation in the U.S.* An atlas of air stagnation climatology (1948-1998) for the United States has been prepared and is now ready to be published in the NOAA Atlas series. (julian.wang@noaa.gov)

11. *Chapman Conference Update.* The proposed AGU Chapman conference on Water Vapor in the Climate System in Fall 1999 has been approved by AGU. Becky Ross met with AGU meetings staff to discuss possible site locations and other issues. (rebecca.ross@noaa.gov)

Boulder

12. *Central UV Calibration Facility (CUCF).* The CUCF continues to calibrate instruments from many of the nation's measurement networks. Three 1000W Quartz-Halogen lamps were recalibrated in the horizontal position in January using CUCF's horizontal lamp transfer system. These lamps are used for the field audits of the Brewer spectroradiometers of the EPA UV Monitoring Network, for the calibrations of rotating shadow band systems, and for the field calibration of the U1000 spectroradiometer at Table Mountain Test Facility (TMTF).

The CUCF computed 1997 erythema calibration factors (ECF) for the instruments used at TMTF. Two manufacturers are represented -- Yankee Scientific Systems (YES) and Solar Light (SL). The ECF's of the YES instruments showed change of less than 3% -- within 2 σ of zero. The ECF's of the SL instruments decreased by 2.5%, also within 2 σ of zero. The ECF's depend on zenith angle and total ozone. The difference between modeled and measured values for 1997 is less than 2% for solar zenith angles from 0 to 40E.

The installation of the fiber optic cable at TMTF began on January 23 and 24. The installation of this line is the result of diligent and persistent efforts over the past two years. The Army Reserves have begun to trench the cable between four research buildings located at the government property which includes the TMTF site. At present 350 ft of the 7500 ft cable has been trenched. The fiber optic cable will be connected to a US West T1 digital cable line. This line will enable internet access at TMTF and will bypass the current unstable phone lines currently in place for retrieving the data and will also significantly increase data retrieval rates. (Patrick Disterhoft, 303 497 6355 and Kathleen Lantz, 303 497 7280)

13. *Effects on UV Radiation.* Progress continues on SRRB's study of stratospheric aerosol and corresponding effects on ozone profile retrievals and UV radiation. Monthly solar radiation intensity data were received from the University of Arizona at Tucson and are being used in conjunction with earlier solar radiation measurements at the same site to create an aerosol optical depth record extending from 1956 to the present. (Amy Stevermer, 303 497 6417)

14. *Photochemical Activity and Ultraviolet Radiation (PAUR).* AVHRR Pathfinder data from NOAA/NESDIS were used to obtain aerosol optical depth information over the Mediterranean region for use in the upcoming PAUR experiment. This experiment seeks to obtain valuable information on the interactions of Saharan dust aerosol and atmospheric radiation in the Mediterranean. (Amy Stevermer, 303 497 6417)

15. Umkehr Observations. Umkehr observations are used to retrieve ozone profiles up to 45 km from observations of UV at different wavelengths. A morning or afternoon Umkehr observation sequence consists of zenith-sky Dobson measurements at 12 selected solar zenith angles ranging from 60-90 degrees. Ozone profiles are retrieved from these observations with a fairly complex mathematical retrieval algorithm. Some of the historical Umkehr records date back to 1958. The statistical and scientific value of these data sets that have been faithfully collected at about 20 stations is that they are long-term and continuous, some having a length of over 40 years. Therefore, these data have been used to derive ozone trends and to study natural variations in atmospheric ozone vertical distribution before the advent of satellite observations which started in 1979. They have also been used as ground truth to uncover drifts in satellite observations. However, the record exhibits occasional "shifts" associated with a change of an instrument or a new calibration. Some stations' data contain numerous shifts and others contain only a few. As a result, the retrieved ozone profile record will contain shifts as well. Traditionally, these shifts are identified in statistical trend analysis models and are simultaneously corrected by the model. However, it seems more appropriate to correct the measurements leading to one cohesive profile data set of retrieved data, because analysts using the current profile data might use different correction methods; consequently, imparting their degree of subjectivity in their analysis. In the present work we have examined some aspects of a method of analysis to correct Umkehr measurements taken at 12 solar zenith angles for intermittent shifts in the data.

Results of the method depend greatly on the significance of the shift detection and the noise introduced to the Umkehr record by the shift correction. Each station's Umkehr record has to be carefully assessed to properly distinguish between natural variations in ozone and the calibration shifts. Since an Umkehr ozone profile retrieval depends on a measure of total ozone, and total ozone information is embedded in Umkehr measurement itself, corrections for all 12 Umkehr solar zenith angles constituting the measurement have to be done consistently with total ozone. Because of the nature of the Umkehr phenomenon, all Umkehr values at the 12 solar zenith angles are inter-related. Our current analysis work has led to some limited success; the one dimensional approach we had followed by correcting shifts of time plots of individual solar zenith angle values appears to be insufficient and a two dimensional procedure needs to be considered. At this time we cannot predict the degree of success that this effort will reach, but it is well worth a try.

The ultimate goal of this effort is the production of a corrected historical data set to be co-archived with the original data in the World Ozone and Ultraviolet Data Center for future users. Hopefully, the data set will be free from flaws that seriously impact on the quality of retrieved ozone profiles. (Irina Petropavlovskikh and David Theisen, 303 497 6083)

Oak Ridge

16. Polar Sunrise and Atmospheric Mercury. Polar sunrise at Barrow occurred on January 23 and was followed by a single mercury depletion event that began on January 29 and continued for roughly three days, during which ambient mercury levels fell 90%. Back air mass trajectories (ARL HYSPLIT4 trajectory program) were completed for the 1998 data and indicated that Russian territories might be the prime source regions for high mercury concentrations at Barrow. (brooks@atdd.noaa.gov; meyers@atdd.noaa.gov; Steve Lindberg -- ORNL)

17. Arctic Transitions in the Land-Atmosphere System (ATLAS). Data processing and analysis from the 1998 Alaska field season were completed. Aircraft transects yielded areal-averaged daytime growing-season carbon dioxide fluxes averaged $-0.13 \text{ mgCO}_2\text{m}^{-2}\text{s}^{-1}$ (a sink) with strong correspondence to fixed tower fluxes

and strong correlation to surface water cover fraction in the aircraft flux footprint area. (brooks@atdd.noaa.gov)

18. Terrestrial Carbon Program. For a number of years, routine measurements have been made of the rate of transfer of atmospheric CO₂ to the forest near Oak Ridge, TN. 1997 flux data have now been reprocessed, updating and re-checking acceptance and rejection criteria. Attempts are being made to implement the CANOAK model using climate data from 1981 to 1998. Efforts are focusing on trying to examine the year-to-year variability in net ecosystem exchange and evapotranspiration based on climate factors. Values range from 450 to 625 g C m⁻² year⁻¹. (baldocchi@atdd.noaa.gov)

19. Dynamical/Photochemical Modeling. Work on completing the LESchem (Large-Eddy Simulator with chemistry) model is nearing an end. The model is based on RAMS. To make LESchem a truly coupled model, the chemistry equations are solved for each RAMS time step, with RAMS handling all of the trace gas boundary conditions, and the advection and diffusion of each trace species. The above simulation was submitted again using a time step size of 1 second. Of course, a time step size this small meant the model would require 30 hours to simulate only 10 minutes. However, the smaller time step did not help, and this simulation crashed in the chemistry solver only 85 seconds beyond the previous crash. It was observed that negative concentrations in the output were still a problem which tended to amplify in time. Plus, a negative concentration at the bottom surface for a gas with a deposition boundary condition results in that gas having an emission source at the surface. Since the negative concentrations were at least two orders of magnitude smaller than the positive concentrations, and were apparently causing problems, it was decided that code would be added to set all negative trace gas concentrations to zero before going into the chemistry solver each time step. This violates conservation of mass, but more work will be done shortly to determine how significantly. The good news is that at the end of January, through careful array space allocation (*i.e.*, by keeping over-dimensioned array space to a minimum), the coupled LESchem model was able to fit within 300 MB of RAM on a PC for a simulation using a 50×50×41 grid with 45 trace species. (herwehe@atdd.noaa.gov)

20. NSF Multi-User Environmental Research Aircraft. The new ATDD-designed and fabricated Mobile Flux Platform system for the Sky Arrow 650 ERA was forwarded to the Iniziativa Industriali Italiane aircraft factory in Rome, for installation and completion of FAA tests prior to aircraft certification. The aircraft is due for delivery in the U.S. in April and will be used in the ATLAS 1999 field study. (brooks@atdd.noaa.gov)

21. Coastal Meteorology and Dispersion. A more detailed examination of the PBL depth at Cape Canaveral was performed in January after some interesting characteristics were seen in the Long-EZ MVP measurements. The Long-EZ measurements showed large spatial variations in PBL depth, particularly when comparing the depth just offshore with that inland towards Orlando. However, the variations in PBL depth were not consistent from day to day. In fact, the daytime PBL over the sea was sometimes deeper than that over the land. Attempts are being made to relate these differences in PBL depth to the overall synoptic flow. (eckman@atdd.noaa.gov)

Research Triangle Park

22. CALPUFF Training. At the request of the EPA Office of International Activities (OIA), technical assistance is being provided to train scientists in Krakow, Poland, on how to use air quality modeling for

developing plans to reduce air quality impacts. The EPA/OIA has been providing instruction to Krakow on how to install, operate and maintain a six-station air quality monitoring system. Krakow now has nearly five years of high-grade air quality measurements including SO₂, CO, O₃ and fine particulate (less than 10 microns in size). The primary pollutant impacts appear to result mostly from use of coal for home heating and from automobile emissions. The pollutant impacts are exacerbated by multi-day stagnation episodes which are frequent during the winter season, and by the regional transport of pollutants from a large industrial area (Katowice) to the west of Krakow. Given the rugged terrain, frequent periods of near-calm winds, and interest in addressing inter-regional transport, the CALMET/CALPUFF modeling system was selected as a pragmatic means for characterizing transport and dispersion of pollutants for this area of Poland. The CALMET meteorological processor has a highly developed diagnostic wind model CALPUFF for characterizing the time and space varying meteorological conditions. In December 1998, an 18-month training effort was initiated with an eight-day introductory course on the processing of terrain and land use data and meteorological data. The seven students (members of local and national pollutant control agencies) are now extending the examples taught during the course to cover two complete months (June and December 1997) for two cities in Poland (Krakow and Zakopane). Whereas there are broad hills that affect the air flow in the Krakow area, Zakopane is more like a village located within a deep narrow valley. During 1999, a series of visits (trips from Poland to US and visa versa) will be conducted as the students expand the model applications to better characterize the air pollution impacts for the two cities. The project is scheduled for completion by June 2000. (John Irwin, 919 541 5682)

23. Modeling Stomatal Response to Atmospheric Humidity. Our latest developments in land-surface modeling for improving simulation of surface fluxes in meteorology models (MM5) and dry deposition in atmospheric chemistry models (CMAQ) include refinement of the stomatal parameterization. In particular, we have been studying the effect of air humidity on stomatal response. The tendency of stomata to partially close in response to dryer air is well known. The effect of this partial closure is especially evident in field measurements of ozone dry deposition which show consistently lower deposition velocities in the afternoon when relative humidity is lowest, than during morning hours. We have experimented with several functions for describing the dependence of stomatal conductance on air humidity. Our conclusion is that the optimal form of this function depends on the type of stomatal model. For the fully empirical model we are currently using, a linear function of relative humidity at the leaf surface seems to be best. However, for the semi-empirical coupled stomatal-photosynthesis models, a linear dependence on transpiration flux seems optimal. The difference is that the photosynthesis models have an additional implicit dependence on humidity. Jonathan Pleim presented a poster describing this work at the 13th Symposium on Boundary Layers and Turbulence at the 1999 Annual Meeting of the American Meteorological Society in Dallas, TX. (Jonathan Pleim, 919 541 1336)

24. Models-3/CMAQ. The first training session for the Models-3/Community Multi-scale Air Quality (CMAQ) modeling system was held January 19-21, 1999. Thirteen attendees, eleven presenters and additional support personnel contributed to the success. All aspects of Models-3/CMAQ were included except the emissions which will be the subject of the next training session. Only local attendees from Research Triangle Park were included in these two training sessions. Dates have not yet been set for additional training, but there is a waiting list. Priority will be given to individuals representing institutions which have Models-3/CMAQ installed. (Sharon LeDuc, 919 541 1335)

On January 14, a tour of the supercomputing center and a Models-3/CMAQ demonstration in the scientific visualization laboratory were given to Dr. Norine Noonan, EPA Assistant Administrator for Research and

Development. On February 17, a similar tour and demonstration will be given to Peter Robertson, Acting EPA Deputy Administrator, and to Romy Diaz, EPA Assistant Administrator for Administration and Resources Management, both of whom were accompanied by Norine Noonan. These two events provided excellent opportunities to acquaint the top EPA leadership with the NOAA/ARL Division's capabilities and its recent noteworthy achievement in the form of Models-3/CMAQ. (Frank Schiermeier, 919 541 4542)

25. *PM₁₀ Modeling for Southwestern Asia.* A method successfully used for predicting dust injections from the Sahara Desert (Marticorena, et al, 1997) has been adapted to provide an algorithm of PM₁₀ dust emissions for southwestern Asia. The application of this work will be as a module in estimating PM₁₀ ground dust concentrations in 1990 and 1991 in Kuwait and Saudi Arabia. Aerial photography and soil photographs in Kuwait made it possible to relate local surface information to larger scale surficial and geomorphic features in Kuwait. Then larger-scale geomorphic/soil features mapped for the surface of Kuwait were correlated with geomorphic and soil maps of Iraq and the Arabian Peninsula. These surface feature maps then were used to produce maps of threshold friction velocity. Photographs of the surface obtained in Kuwait and Saudi Arabia were used to verify the predicted surficial roughness conditions for several locations.

A well tested function was used to relate friction velocity and threshold friction velocity to soil mass movement. PM₁₀ dust vertical fluxes were estimated using a ratio of vertical flux of PM₁₀ dust to the horizontal flux of soil mass movement. This ratio was a function of surface sediment texture. Samples of surface soils from Kuwait and Saudi Arabia were provided to Gillette by the US Army Center for Health Promotion and Preventive Medicine. Textures of all sampled soils were quite close to "sand" texture and consequently only one ratio was used for all soils in the source areas of the area. The model domain is for Kuwait, Iraq, part of Syria, Saudi Arabia, the United Arab Emirates and Oman. (Dale Gillette, 919 541 1883)

Idaho Falls

26. *INEEL Meteorological Monitoring Network.* At the suggestion of the State of Idaho INEEL Oversight Program, we are working with Lockheed Martin Idaho to include Pressurized Ionization Chambers (PIC) operated by Lockheed Martin in the INEEL meteorological monitoring network. PICs located at Central Facilities building 690 and the Experimental Field Station were connected to data loggers that are radio linked to the FRD office. The data from these will now be available to all INEEL users. Other PICs may be included in the future. (roger.carter@noaa.gov)

27. *New DOE Tower.* Work is proceeding cooperatively with the State of Idaho, the DOE, and the INEEL site contractor to establish a new meteorological tower as part of the FRD 31-tower MESONET. The site chosen is Atomic City, the nearest INEEL border community that climatological models predict would be affected by an accidental on-site radiological release. This site has been ignored in the past because of its small population and agency budget constraints. However, joint efforts to overcome budget constraints have resulted in the ability to install a new tower in this new protection zone. (kirk.clawson@noaa.gov)

28. *AFTAC Tracer Experiment.* Approval has been given to release di-isopropyl methylphosphonate (DIMP) from the FRD tracer test center on the INEEL. DIMP will be released simultaneously with SF₆ to test a new analysis process developed by the USAF for antiproliferation and antiterrorism purposes. The series of tests is slated to begin in early May. The tests will involve two of our mobile SF₆ analyzers. (kirk.clawson@noaa.gov)

29. Next Symposium on Meteorological Observations and Instrumentation. Efforts are now underway to organize and host the 11th Symposium on Meteorological Observations and Instrumentation (11th SMOI) which will be held in January 2001, in conjunction with the 81st Annual Meeting of the American Meteorological Society. The AMS Measurements Committee, chaired by Jerry Crescenti, met during the 79th Annual Meeting of the AMS in Dallas. Some of the issues to be highlighted in the 11th SMOI will include: new and developing measurement technologies, meteorological measurements over the ocean, quality assurance and quality control issues on remote sensors, long-term turbulent flux measurements, humidity and precipitation measurements and their importance to water management, and measurement networks. Several joint sessions are being planned with other conferences such as Radar, Integrated Observing Systems, and Education. Anyone interested in participating on the program committee organizing the SMOI should contact Jerry Crescenti for details. In addition, the Measurements Committee is also organizing a one-day short course on meteorological instruments and observing techniques. The focus of the course is on the basics of *in situ* monitoring and will be oriented towards undergraduate and graduate students. This course is being organized in response to the lack of an instrument curriculum at most universities with meteorology programs. (jerry.crescenti@noaa.gov)

30. More Hits on Idaho Environmental Monitoring Web Site. The Idaho Environmental Monitoring web site (<http://oversite.inel.gov>) continues to become more visible and popular with the communities of southeastern Idaho. In January, more than 3000 hits were recorded on the server hosting this web site. This is an order of magnitude more than for the preceding month. The increased public awareness is due in part to links from other popular web sites that serve southeastern Idaho. The greatest use occurs during weekdays, when people are commuting. In addition, use of the web site increases during storm events (snow, severe cold). Enhancements to the web site are anticipated over the next several months to make it more interactive with the public. (jerry.crescenti@noaa.gov, brad.reese@noaa.gov, and Bill Behymer, bill@noaa.inel.gov)

31. FRD Employee Association. Efforts have been underway for several months to establish an FRD Employee Association. Roger Carter, Jerry Crescenti, and Shane Beard (with advice from Kirk Clawson) served on the constitutional committee, the Christmas Party committee, and the officer nominating committee. The constitution was approved by unanimous consent during the Christmas party and election of officers was held in January. Tom Watson was elected as president and Jerry Sagendorf was elected as Secretary/Treasurer. Tim Crawford, as FRD Director, will serve as an ex officio member and Kirk Clawson will fill the slot of Past President on the executive committee. (kirk.clawson@noaa.gov)

32. DOE Emergency Operations Center Support. FRD staff have organized to spread the DOE EOC emergency response commitment among FRD staff. The DOE EOC is staffed on an as needed basis (emergencies and drills) through pager notification by approximately 20 personnel in addition to two FRD employees. The EOC duty shifts are rotated on a weekly basis between four teams, but FRD heretofore has not fully participated. Each FRD meteorologist has been given a pager and will respond to EOC staffing requests during her/his week on duty. Four other FRD staff members have been paired with a meteorologist and supplied with a pager. Each supporting staff member will rotate EOC response duty in the same manner. (kirk.clawson@noaa.gov)

The EOC is currently conducting a series of training exercises relating to the transportation of radioactive waste at the INEEL. The first of these exercises involving NOAA personnel was conducted on January 20. Jerry Sagendorf and Randy Johnson represented NOAA during this session. (jerry.sagendorf@noaa.gov)

33. Aspirator Status Alarm. FRD has designed and built a prototype aspirator malfunction alarm to monitor the status of the aspirator fans located on MESONET towers. This alarm monitors the current being delivered to the fan motor and generates an alarm when the current increases above the standard for a good motor. The circuit is inexpensive and delivers an isolated alarm signal to the datalogger if any of the aspirator motors appear to have failed. This circuit has been installed at one station and will be monitored over the next few years to determine the practicality of this approach. Eastern Idaho Technical College (EITC) students helped in building the prototypes and installing this system. (randy.johnson@noaa.gov)

Las Vegas

34. Cloud-to-Ground (CG) Lightning Study Project. Negotiations with DOE Nevada Operations Office (DOE/NV) have begun to provide funding to replace the SORD managed and operated Nevada Test Site (NTS) lightning detection system. The present system was installed in 1986 and needs to be replaced. (Darryl Randerson, 702 295 1231)

35. Hazardous Materials (HAZMAT) Spills Center (HSC) Mission. During January, emphasis was placed on upgrading meteorological sensors on the 24-m tower at the HSC. Eight Handar ultrasonic wind sensors were installed between the 0.25-m and 24-m levels and most have been calibrated and certified operational. Work is scheduled for completion by February 15 so as to support a project at the HSC in March. (Ray Livsey, 702 295 1241, and Bob Kullen)

36. SORD Web News. Wind profiler data are now available. The time-relevant data from the HSC and Yucca Flat vertical wind profilers are now being processed and plotted every half hour. The plots are presented on the internal (<http://www.sord.nv.doe.gov>) and external (<http://www.sordx.nv.doe.gov>) web servers. The plots generated show the wind speed and direction for the 6000' and 14000' data sets for twelve hours of data. In addition, an NCAR graphics package was used to generate contours for the wind speeds. The temperatures reported by each profiler are also charted. (Rick Holmes, 702 295 1252, and Jim Sanders, 702 295 2348)

37. NTS Climatology. Many requests for climatological data for the NTS were satisfied during January 1999. These requests included recent and historical precipitation records for the NTS, weather records for individual MEDA stations for various time periods during 1998, and new copies of SORD's complete historical data record of all MEDA stations through 1998 on CD-ROM. An additional request accommodated for winds aloft, average conditions over the NTS during the spring-time for high altitude experiments to be conducted by Los Alamos National Laboratory and the Air Force. (Doug Soule', 702 295 1266)