NOAA ARL Monthly Activity Report

April 2001

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Contents

Highlights

1. East Tennessee Ozone Study (ETOS). The East Tennessee Ozone Study (ETOS) is underway for the 2001 ozone season. Currently 16 ozone monitors have been deployed at existing ATDD regional meteorological monitoring stations. The additional ozone monitors installed by ATDD are designed to supplement the urban

regulatory stations operated by the regional air quality boards and by the State of Tennessee. The data are available in near real-time on the NOAA/ATDD web site at http://www.atdd.noaa.gov/easttnmap.htm .

Planning continues regarding flight paths for NOAA's Twin Otter research aircraft which will operate in the East Tennessee area from August 5 - 20. The focus of this sampling program is to define the regional scale of the high ozone levels previously observed in the East Tennessee Valley during the August time period. Flights will include both afternoon as well as nighttime flight tracks; the nighttime program is essential to define the scale of the high ozone levels observed as inflow in the East Tennessee region. (pendergrass@atdd.noaa.gov, White, Birdwell)

NOAA/ATDD has developed a Beowolf Linux cluster to conduct regional modeling simulations for the East Tennessee Valley. These simulations are currently conducted with the RAMS 4.3 meteorological model. The cluster is composed of 6 Intel Pentium III's running Linux 7.1. RAMS has been configured for two (60x60) grids of 32 km and 8km with initialization using the NCEP ETA40 forecast product. A 36 hour forecast run with RAMS is conducted for both 00Z and 12Z. The 36 hour forecast requires approximately 60 minutes to complete. ARL routines have been incorporated into RAMS to provide output data in the ARL packed binary format. The output files are transferred to NOAA/ARL for inclusion in the READY web site. Output data for the 8km grid can be viewed on the ARL READY site at http://www.arl.noaa.gov/ready/cmet.html. (pendergrass@atdd.noaa.gov)

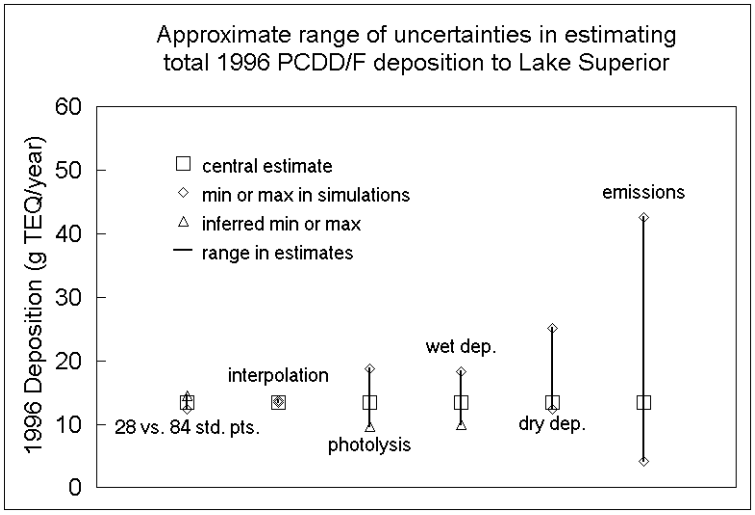
Silver Spring

2. Hysplit Version 4.5. After several months of testing, Hysplit version 4.5 is now available through READY and a PC executable download. The new version contains all the recent dynamic allocation enhancements and computational support for global latitude-longitude data grids. Previous versions of the model required input meteorological data to be on a conformal map projection. (roland.draxler@noaa.gov)

The netCDF NCEP/NCAR reanalysis archive of CDC has been restructured to permit HYSPLIT simulations from these data. The netCDF archive is available for public download through CDC. The data files are by variable and year. These have been restructured so that all variables required for a transport and dispersion calculation are together as one file per month. These global files require about 125 mb per month after repacking into ARL Hysplit compatible format. Currently data for 1978 through 1999 are available on-line through READY. (roland.draxler@noaa.gov)

Demo HYSPLIT-volcano Windows/PC-based CDs were delivered to the NWS (NCEP, Anchorage Volcanic Ash Advisory Center, and the Aviation Weather Center) for testing and evaluation. This is the first step in unifying the ARL dispersion modeling support to the NWS by adding to the HYSPLIT package a volcanic ash source term and an output graphic tailored for the aviation community. The PC-based system may ultimately be used as a backup at NCEP or integrated into operations at remote locations such as Anchorage. The next step will be to install the same capability on the NCEP operational computers. (barbara.stunder@noaa.gov)

3. Atmospheric Transport and Deposition of Dioxin to the Great Lakes. ARL has been actively involved in studies of the long-range transport of toxic air pollutants to the Great Lakes. Extensive uncertainty analysis has been performed in this work, and an example of the results is shown below. This figure shows the estimated uncertainty – relative to several different factors – in the model-simulated dioxin deposition to Lake Superior. It was found that the number of standard source locations used for the interpolation and the interpolation procedures themselves were not significant sources of uncertainty. For photolysis rate and the wet and dry deposition, the estimated uncertainties were approximately 50% on either side of the central estimate. Uncertainties in the emissions inventory, however, are the largest source of uncertainty, with a range of approximately a factor of three on either side of the central estimate.



The overall modeling system has been evaluated by comparison against ambient concentrations measurements and sediment-based deposition measurements. Very little ambient data suitable for model evaluation are available for PCDD/F. The results of the comparisons that were possible show that the model appears to be giving approximately the right magnitude of concentrations and deposition. However, if there is any trend in the comparisons, there may be a systematic under-prediction of concentrations and deposition. Based on the extensive sensitivity analyses performed in this work, it appears that the most likely cause of the under-prediction is that the emissions have been underestimated. That is, model changes alone do not appear able to explain the discrepancies between the predicted and measured values. Given the poor characterization of PCDD/F emissions in the U.S. and Canada, and the fact that a number of known, potentially significant source categories are still missing from the available inventories, this result was perhaps not surprising. (mark.cohen@noaa.gov)

4. The Atmospheric Transport and Deposition of Mercury. Work has continued on the long range transport and deposition of atmospheric mercury. Current activities include: (a) assembling and analyzing emissions inventory information from the USEPA, Environment Canada, and the literature for use in the modeling process; (b) evaluating meteorological datasets for possible use with the model; (c) assembling and analyzing available ambient monitoring data for use in model evaluation; and (d) configuring the HYSPLIT model to simulate Mercury. (mark.cohen@noaa.gov)

5. Comparison of Umkehr and Ozonesonde Trends. Ozone trends based on Umkehr and ozonesonde data have been compared for the period 1968-1990, prior to the Pinatubo eruptions, and for a short period thereafter. Based on linear least-squares regression, but omitting 1982, 1983 and 1984 because of the impact on ozone of the El Chichon eruption in 1982, both measurement systems show a significant decrease of ozone in the 16-24 km layer (low stratosphere) of north and south temperate zones, as well as North America, Europe and Japan. The low-stratospheric ozone trend for the average of the 15 sonde stations is -4.5 $\pm$ 1.8% per decade during 1968-1990, and for the 20 Umkehr stations -3.4 $\pm$ 1.1% per decade. In the 24-32 km layer for this period the sonde and Umkehr trends are -0.3 and -0.6% per decade, respectively, neither trend significant. In the 32-48 km layer (high stratosphere) above the reach of ozonesondes, the Umkehr data again show a significant ozone

decrease of -1.7 $\pm$ 1.2% per decade. Both sonde and Umkehr data indicate a highly significant tropospheric ozone increase of 5.8% per decade during 1968-1990.

In sharp contrast to the highly significant low-stratospheric ozone decrease prior to the Pinatubo eruption in 1991, during 1994-1998 the sondes and Umkehr indicate an ozone increase of 0.3 and 0.2% per decade, respectively, far from significant because of the shortness of this record (Pinatubo may have contaminated even the 1993 ozone data and 1999 Umkehr data are still embargoed at a few stations). It will be interesting to see if more years of data support this preliminary suggestion of a reversal in stratospheric ozone trend. (Jim Angell, 301 713 0295, x127)

6. Tropopause Workshop. In a related activity, Dian Seidel participated in a SPARC-sponsored workshop on the troposphere, held April 17-21 in Bad Toelz, Germany. Among the topics of discussion were: new paradigms for defining the tropopause; the variability of the tropopause spatially and temporally, from daily to decadal scales; the relative roles of stratospheric and tropospheric processes in determining the tropopause; mechanisms for dehydrating air in the tropical tropopause regions, to explain the very dry stratospheric conditions; the role of the tropopause in understanding ozone trends; and quantifying the two-way fluxes between the stratosphere and troposphere. (dian.seidel@noaa.gov)

7. Radiosonde Team Meeting. A team meeting was held on April 25 to plan for developing global radiosonde data products for monitoring climate change. The group included John Lanzante and Steve Klein from GFDL; Bill Murray and Chris Miller from OGP (which is funding this effort); Tom Peterson, Jay Lawrimore and Imke Durre from NCDC, who joined in via video teleconference from Asheville; and Melissa Free, Jim Angell and Dian Seidel of ARL. The team reviewed recent results from each research group, developed a one-year work plan, and discussed potential difficulties in creating datasets for near-real time monitoring of global upper-air temperature. (dian.seidel@noaa.gov)

Boulder

8. The Climate Reference Network and SURFRAD. The annual instrument exchanges for 2001 have been completed for two SURFRAD sites – Desert Rock and Goodwin Creek. At this year's instrument exchanges, two improvements will be made at all stations. The first is to install Eppley model 8-48 (black and white) pyranometers as the diffuse instruments. The advantage is that the new sensors have no offset owing to radiational cooling of the inner dome, which produces erroneous offsets of –10 to –20 W/m^2 during clear nights. This error is also present in daytime measurements, but its magnitude is difficult to quantify. Tentative permission has been granted by all SURFRAD station hosts to install Climate Reference Network stations at their locations. To do this, letters were sent to the local hosts, e.g., the Fort Peck Tribes (Fort Peck) and National Sedimentation Lab (Goodwin Creek), along with a generic lease document that has been approved by NOAA's legal team. All responses were positive, although some included suggested modifications to the lease agreement to fit their situation. (John Augustine, 303 497 6415)

9. Central UV Calibration Facility (CUCF). The CUCF has the responsibility for calibrating UV instruments that are used in the large USDA UV Monitoring Program. The program is managed by the National Radiation Environment Laboratory (NREL) at Colorado State University. The CUCF calibrates over 100 of the USDA/NREL instruments per year. Instruments calibrated include the U111 spectroradiometer, UV- Multi-Filter Shadowband Radiometers (UV-MFRSR), and UVB broadband radiometers. In addition, the CUCF calibrates sensors used in the smaller monitoring programs of NOAA, NSF, and others. The CUCF has direct ties to the National Institute of Standards and Technology (NIST). This past month, scientists from the Optics Division of the Physics Laboratory of NIST toured the CUCF laboratories. Discussion focused on future calibration of the 1000 W FEL-type lamps used in the CUCF facilities. (Patrick Disterhoft, 303-497-6355; Kathy Lantz, 303 497 7280)

10. Halifax 2001 Conference. SRRB visiting scientist, Professor Petr Chylek, has been organizing the Halifax 2001 Conference – The First International Conference on "Global Warming and The Next Ice Age" (co-sponsored by the American Meteorological Society and the Canadian Meteorological and Oceanographic Society). It will take place in Halifax, Nova Scotia, August 20-24, 2001.

The invited review talks will be presented by many top experts from different fields of climate change. The topics will include: ice core climate records, solar variability, surface and satellite temperature measurements, bore holes temperature records, climate of the polar regions, natural climate variability, NAO, ENSO, thermo-haline circulation, timing of the next ice age, paleoclimate, climate models and observations, and other climate related topics.

The list of invited speakers includes: Jim Hansen (NASA-GISS), Hartmut Grassl (Max-Planck, Hamburg),Thomas Karl (NOAA-NCDC), Andre Berger (Louvain, Belgium), J. R. Petit (Grenoble), Jim Hurrell (NCAR), Jim White (CU), William Gray (CSU), Judy Lean (NRL), George Kukla (LDEO-Columbia), Charles Perry (USGS), Lloyd Keigwin (WHOI), John Christy (UAH), Allyn Clarke (BIO), Richard Peltier (U Toronto), Roger Pielke (CSU), Betsy Weatherhead (NOAA-ARL), S. Thompson (OSU), Jerry North (TAMU), Jan Veizer (U Ottawa), and Mark Serreze (CU). Additional Conference information can be found on the website www.atm.dal.ca (Petr Chylek, 303 497 6500)

Oak Ridge

11. Spallation Neutron Source. The new Spallation Neutron Source facility being built at Oak Ridge will disrupt operations at the historical tower at the Walker Branch Watershed. A new tower site has been located. At this stage, NEPA documentation for the replicate forest meteorology and CO_2 flux research site and tower is nearly complete, with ORNL staff leading the effect. No problems have yet been encountered. Funding for the work, however, has not yet been provided, and ATDD scientists are becoming concerned about the possibility of missing yet another growing season at the new facility. (hosker@atdd.noaa)

12. Canaan Valley. A dry deposition instrument suite was installed at the Canaan Valley Air Quality Research and Monitoring station. The deposition studies now include both wet and dry mechanisms. Further, a number of instruments relating to surface energy balance studies were also installed. The full energy balance instrument suite is planned to be operational by mid-summer. Meetings were held with U. S. Fish and Wildlife staff, managers of the Canaan Valley National Wildlife Refuge, to discuss future collaborations for Canaan Valley area atmospheric studies. (vogel@atdd.noaa.gov)

13. Climate Reference Network. Procurement is under way for the hardware needed for the first 50 stations (plus spares), and temporary storage space has been arranged at Oak Ridge Associated Universities' warehouse. (hosker@atdd.noaa.gov, Meyers, Hall, Shifflett, Conger)

14. Dispersion in Traffic. At the recent International Conference on Urban Air Quality, Dr. J. Kukkonen of the Finnish Meteorological Institute offered access to recent roadside data for use in ROADWAY-2 evaluation. A 3-way collaboration between FMI, ATDD, and Univ of Herefordshire (Dr. R. Sokhi) was also discussed. FMI has already sent several recent papers and manuscripts based on the data set.

Analysis of ATDD's turbulence measurements in the wake behind a vehicle has commenced. There was confusion on determining the ambient wind relative to the moving van. Since the observation platform was towed behind the van, we are limited to considering the parallel (to the road) head wind cases in the analysis. (rao@atdd.noaa.gov and L. Gunter)

15. Italian National Research Council Sky Arrow, The Italian CNRC Sky Arrow made its first flight in early May of 2001. Data collected from the MFP system during the test flight have been sent to ATDD for analysis.

Initial inspection shows all channels of the MFP system to be performing well. Comparison testing of the NOAA and the LiCor –7500 InfraRed Gas Analysers (IRGAs) has also been completed. The data collected during the IRGA comparison are still under analysis. (dumas@atdd.noaa.gov, Brooks)

16. INSRP (Interagency Nuclear Safety Review Panel). NOAA/ATDD provides meteorological leadership of the Meteorology Panel of the Interagency Nuclear Safety Review Panel INSRP), a presidential advisory group set up to review safety documentation related to the use of radioisotopes in space missions. INSRP has been empaneled for NASA's Mars 2003 mission. An exploratory study is underway to estimate a reference ground-level exposure and dose for the severe hypothetical case of complete loss of Pu and Cm-244 during either pre-launch or launch phases of the mission. (pendergrass@atdd.noaa.gov)

17. Office of Naval Research Extreme Turbulence Probe. Precise turbulence measurement depends on absolute synchrony among data streams. The Extreme Turbulence (ET) Probe uses two A/D converters, each of which has a counter/timer (C/T) subsystem capable of sending a regular set of pulses. One unit has been wired such that each pulse from its C/T triggers a scan through the 16 channels it samples. Pulses come each millisecond. A full scan takes about 1/6 ms. Software has been developed to configure this unit and store the digital output, averaged and subsampled at 50 per second. The next step is to trigger the other unit from the first unit's C/T signal to ensure synchrony. This will enable storage of input from the 32 channels required for omni-directional sensing of turbulent wind in hurricane conditions. (dobosy@atdd.noaa.gov)

18. SURFRAD and ISIS. The standard operations of the ISIS Network continued. The regular processing of April ISIS level 1 and level 2 data is complete. Fifteen minute and hourly averaged data, flagged by QA/QC procedure have been transmitted to NCDC. Regular processing of SURFRAD data to match the GEWEX time records of energy balance systems installed in Ft. Peck, MT and the Bondville, IL also continued. All of these data are available via the Internet. (matt@atdd.noaa.gov)

19. Coastal Dispersion – the U.S. Air Force Model Validation Program. Surface concentrations for selected tracer test releases from Model Validation Program (MVP) field intensives 1-3 (conducted at Cape Canaveral, Florida, 1995-96) have been added to the MVP Data Archive. These new processed data provide fixed coordinate concentrations derived from the "Lagrangian" tracer observations gathered by mobile sensors mounted on measurement vans that were used to obtain transects of the plume by driving back and forth on roads downwind of the tracer releases. (rao@atdd.noaa.gov and Herwehe)

20. Exposure Wind Tunnel Relocated. A recirculating environmental test chamber capable of exposing up to eight samples of materials to constant concentrations of common air pollutants under conditions of constant temperature, humidity, and wind speed, was moved from a laboratory at Northwestern State University at Natchitoches, LA, to a new facility on the same campus. ATDD provided much of the design and system control work on this chamber when it was constructed in the late 1980s for the National Acid Precipitation Assessment Program at the USGS facility in Reston, VA, and then later assisted the US NPS in installing the chamber in Natchitoches in the mid-1990s. The chamber is still in regular use by NPS researchers, which is gratifying. (hosker@atdd.noaa.gov, White)

Research Triangle Park

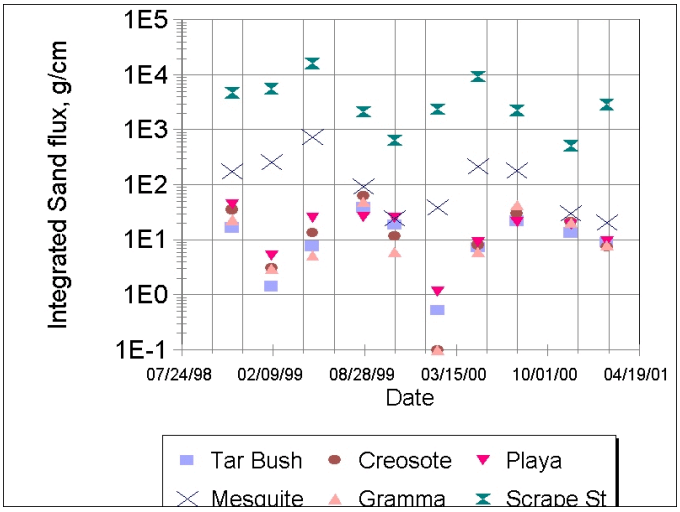
21. Improvements to the Internal Release of Multimedia Integrated Modeling System. Important functional and interface changes to the developmental Multimedia Integrated Modeling System (MIMS) have been made in preparation for the second internal release of MIMS at the end of May 2001. The order of development of enhancements reflect the priorities of internal users which were gathered by weighted voting. The principal enhancements include the ability to create, modify and apply chemical mechanisms in conjunction with other algorithms in MIMS, scripts are now allowed, export and import of program modules is enabled, a help utility has been added, an editor is established for defining environmental variables (definition of locations and values

using a standard name convention), a file structure has been defined such that output files go to a standard location, and an initial version of the Sparse Matrix Operator Kernel Emission (SMOKE) model system has been installed.

The chemical mechanism editor and SMOKE represent the first two key science component functionalities in MIMS. Chemical mechanisms will be basic in linking modeling components of many different model components for different media - initially air and hydrological models. The SMOKE processor holds the potential of being able to flexibly and quickly model and process any gridded environmental data, although it will be initially used for air quality applications. Plans are to include the Community Multi-scale Air Quality (CMAQ) modeling system and a basic hydrological model in MIMS before the first public release planned for November 2001. (William Benjey, 919 541 0821)

22. Neighborhood Scale Modeling. A modeling project to develop and investigate modeling air quality from urban to neighborhood scales is underway. The objective of this model investigation is to demonstrate the utility of model simulation for driving human exposure models for various air toxics and PM (particulate matter) pollutants. The framework for this effort is Models-3/CMAQ. Parameterizations based on the drag approach to account for the dynamic influence of urban morphological structures have recently been incorporated into the Gayno-Seaman PBL scheme in MM5, the meteorological model component for the CMAQ system. Numerical experiments (introducing 12 vertical layers below 100 m) to produce the meteorology at 1.3 km grid size are being conducted using a spatially homogeneous distribution of buildings of different heights and densities. Preliminary simulations show a decrease in wind speed and increase in TKE inside the urban canopy, findings also observed in measurements. Research plans include provisions for modeling using realistic urban morphological distributions, better land use databases, modified energy budgets, and further to examine the extent, role and influence of sub-grid scale flow fields due to the presence of the street canyons (and urbanization in general) on the air quality simulations. (Jason Ching, 919 541 4801, Avi Lacser, 919 541 1333)

23. Resuspension Studies in the Northern Chihuahuan Desert. Fieldwork on dust resuspension at the Jornada Experimental Range (JER) near Las Cruces, New Mexico, has been completed. This recent study is of how desert vegetation affects the resuspension of dust from desert lands. Measurements at 15 sites having typical vegetation of the northern Chihuahuan Desert show that dust emissions are strongest where Mesquite (Prosopis) is the dominant plant. The accompanying diagram shows that the means of sand emission measurements for Mesquite-dominated sites are higher for the two-and-a-half years of measurement than the mean emission rates for other kinds of vegetation. The other four means corresponding to different vegetation types are grouped by dominant plant type: Creosote, Tarbush, Gramma, Grass, and Playa vegetation. Intensive sampling is being done to monitor the net primary productivity (NPP) of vegetative growth at each site. A sixteenth site (Scrape Site) is completely stripped of vegetation and was scraped flat as a control site. It has been proposed that the reason for the much larger emission rates for the Mesquite sites is the presence of long, bare soil patches ("streets") that separate the Mesquite bushes. A desert resuspension model is now being constructed, based on past work on the fetch effect of resuspension along with the detailed measurements of wind parameters and threshold friction velocities necessary for resuspension. The model will eventually be generalized to other kinds of desert landscapes and vegetation types. (Dale Gillette, 919 541 1883)



Idaho Falls

24. Field dispersion studies – GAUNTLET. The GAUNTLET field study was held in April. FRD personnel first arrived in Dugway, Utah, at the West Desert Test Center on 02 April and stayed four weeks. Up to nine staff were simultaneously deployed. FRD's contribution to the experiment consisted of the atmospheric release, detection, and analysis of sulfur hexafluoride (SF_6). The experiment supported the NOAA program objective to improve the understanding of atmospheric processes with the specific goal of developing and enhancing local wind-field prediction capabilities.

A total of seven tracer tests were completed. Each SF_6 release, always from a 21-m stack, lasted four hours. Three tests were conducted during daylight hours, while four were nocturnal tests. Three mobile SF_6 analysis systems installed in SUV's were placed on three arcs, ranging in distance up to 90 km from the release point. Tracking of the SF_6 plume continued up to six hours after the release had ended. At the conclusion of each test, the data from the mobile analyzers were gathered and sent via FTP to the FRD server. Each of the operator's log books were scanned, saved as GIF files, and also sent to the server. The data were analyzed at FRD within 24 hours using new quality control procedures. Instrument problems were quickly noted and repaired before the succeeding test began, enabling us to greatly improve our field operation. (kirk.clawson@noaa.gov, and staff)

25. WAPEX. Wind vector estimates obtained from aircraft are often subject to several error sources because of the complex nature of measuring the parameters from which the vector is derived. Errors may be random or systematic (i.e., bias). Over the long-term, random errors usually average towards zero; however, these uncertainties add unwanted variance to wind measurements. Systematic errors can affect the mean wind vector both in magnitude and direction. A number of calibration coefficients are used in the determination of the mean wind based on probe geometry and aircraft attitude. These constants include temperature recovery factor, angle of attack constants, upwash factor, zero lift offset, adjustment to dynamic pressure, and pitch, roll, and heading offsets. A small error in one or more of these constants can result in a significant bias in the mean wind vector. To correct for these influences, a new methodology developed by R. Grossman of NCAR has been implemented. These corrections are being made to the WAPEX winds so that turbulent parameters such as the drag coefficient (C_D), friction velocity (u_*), and roughness length (z_o) can be related as functions of mean wind velocity. (jerry.crescenti@noaa.gov, Jeff French, and Tim Crawford)

26. CBLAST-Low. A cooperative effort between FRD and the University of Washington is being forged for the upcoming CBLAST-Low pilot study. A high-resolution infrared camera will be used to remotely acquire sea surface temperature (SST) measurements from the LongEZ. The camera will operate in two separate modes. The first mode will acquire an average SST measurement at a rate of 30 Hz. This measurement is an average of the infrared image composed of 256 by 256 pixels. In the second mode, the entire infrared image is acquired and stored once per second. This high resolution snap shot will help document the SST spatial variability. FRD and the University of Washington will work together in an attempt to link SST features to the sensible heat flux.

The Everest Interscience infrared temperature sensor used in past air-sea field studies is being outfitted with temperature control circuitry. This will remove a rather nasty temperature dependence of the Everest system.

Mounts for the remote sensor instrument pod are being reworked for the addition of a fourth laser altimeter. This laser will be oriented at 15° from the vertical and will be used to quantify the roughness of the sea surface under light-wind conditions. (jerry.crescenti@noaa.gov, Jeff French, and Tim Crawford).

27. Urban dispersion. Review of all sample data for the recent dispersion study in Salt Lake City has been completed. The review consisted of a full secondary verification process, manual inspection of the data and examination of time plots. All quality control data are now being scrutinized to provide information about the

precision and accuracy of the Automated Trace Gas Analysis Systems and the sampling method. The full report will be available next month. (debbie.lacroix@noaa.gov, Roger Carter)

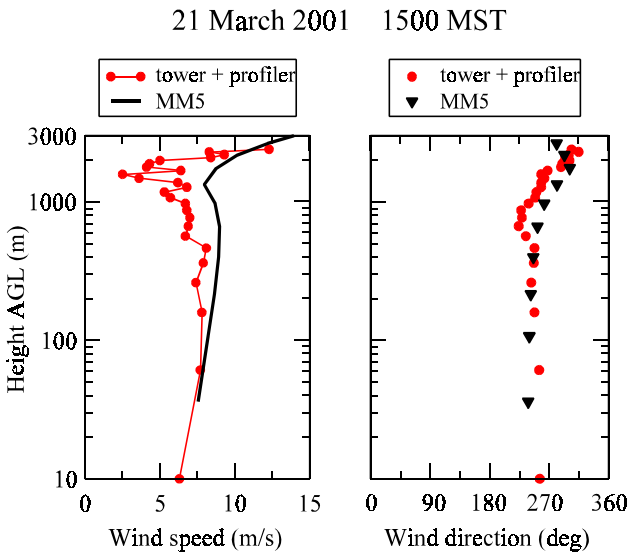
28. Model Validation Program (MVP). Further progress has been made in unscrambling aircraft data collected during the MVP session at Vandenberg Air Force base. A study of the coherence and phase relationships among several data channels revealed that the analog (*e.g.,* temperature, accelerometers) channels and GPS attitude angles are usually synchronized in time. The GPS positions and velocities, however, are normally shifted five seconds from the rest of the data. Since the onboard data acquisition system used the time tags from the GPS positions and velocities to archive all the data channels, the times stored in the raw data files are accurate for the positions and velocities but are five seconds off for the rest of the data channels. (richard.eckman@noaa.gov)

29. Emergency Operations Center (EOC) Support. A drill was conducted on April 19 to simulate a terrorist infiltration of the Power Burst Facility (PBF). NOAA personnel provided support to the INEEL planning bridge to forecast the location of a possible plume resulting from terrorist explosions at this facility. (jerry.crescenti@noaa.gov, Roger Carter)

A request has been received from DOE to provide cost estimates for a lightning detection system on the INEEL. There is considerable interest in being able to track lightning strikes on the INEEL during the peak range fire season which starts about 1 July, but the available budget is limited. We are looking into a number of possibilities including a network of low cost lightning sensors.

For the past several years, FRD has been collecting data from Pressurized Ionization Chambers (PIC) that are collocated with the meteorological towers of the INEEL Mesoscale Meteorological Network. The PICs measure direct gamma radiation. Some are owned by the State of Idaho and some by the INEEL. Due to a personnel change at the INEEL, we were unable to deliver the PIC data from the INEEL owned PICs to the Environmental Monitoring group for the past several months. We have now set up a new point of contact and automatic delivery of monthly data sets will begin again on May 5, 2001. (roger.carter@noaa.gov)

30. INEEL Support. Due to the lower than normal snow pack, the fire season this year is expected to again be quite active. The various organizations associated with INEEL are preparing for the upcoming season. One issue affecting FRD is the use of the high-volume radiation samplers collocated with the FRD Mesonet towers. Some of these samplers were activated during one of the wildfires last year. The problem is that these samplers are intended for use during a major reactor accident at INEEL. There is currently interest from the DOE in using the samplers more routinely for environmental monitoring during wildfires, when the expected radiation levels are close to background levels. This would be a significant change in mission for the samplers. More stringent quality-control procedures on both the samplers themselves and on the air filters would be required to successfully monitor radiation at such low levels. These procedures could be quite expensive, and they are currently not budgeted into FRD's support to INEEL. (richard.eckman@noaa.gov)



INEEL wind profile from MM5 compared with observations. The bottom two observations are from a tower, whereas the others are from a radar wind profiler.

As reported last month, seismic alarms at INEEL were accidentally set off on 22 March by personnel using plastic explosives at the site. FRD was asked to study the meteorology on this day and the previous day, when explosive had been used without incident. The FRD investigation was completed by the second week in April, and a written report was delivered to INEEL. The report was primarily based on observations from FRD's radar wind profiler and RASS system, together with MM5 mesoscale model simulations using a fine-resolution nested grid with 3 km horizontal spacing. The MM5 runs actually did quite well in simulating the wind profile. The figure above, for example, compares the simulated and observed winds at 1500 MST on 21 March. MM5 usually had a negative bias in its temperature predictions, although the model's boundary-layer depths were quite similar to the observed depths. (richard.eckman@noaa.gov)

Las Vegas

31. NOAA Cooperative Institute for Atmospheric and Terrestrial Applications (CIASTA). In a joint program between SORD and CIASTA, a mesoscale model is being run routinely for southern Nevada. The NV-RAMS model, 33-hour prediction package based on the 00z national data base, ran to completion over 90 percent of the time in April. Data are continuing to be renamed and saved daily, and backed up to CD's weekly. (Walt Schalk, 702 295 1262)

32. IMPROVE Steering Committee Meeting. ARL-SORD staff participated as chair of the IMPROVE Steering Committee at a meeting in Davis, CA (April 4th and 5th). The meeting included a half-day tour of the University of California Davis laboratory facilities for maintaining the particle sampling and analysis component of the 143-site IMPROVE Network. A report on the deployment status of the newest of the monitoring sites indicated that 13 sites are yet to be deployed. A possible breakthrough in finding an appropriate site at one of the most challenging locations in the network, Tuxedni Wilderness in Alaska, was announced at the meeting. The site would be very close to the wilderness on the western shore of the Cook Inlet, powered by wind-energy, and serviced by the family that lives in this otherwise unpopulated area. Much of the meeting concerned quality assurance activities, including the newly initiated independent quality assurance audit program sponsored by EPA, the two-day data quality assurance review that took place in February, and the role of the IMPROVE web page in disseminating quality assurance and operating protocol-related information. The web address is http://vista.cira.colostate.edu/improve/. For more information contact Marc Pitchford. (marc.pitchford@noaa.gov)