NOAA Air Resources Laboratory
Quarterly Activity Report
FY2011 Quarter 1
(October – December 2010)

Contents

DISPERSION AND BOUNDARY LAYER

1. Volcanic Ash Workshop

Barbara Stunder participated in the workshop on Ash Dispersal Forecast and Civil Aviation in Geneva, Switzerland, October 18-20. The workshop brought together many meteorologists and geologists with the broad aim of improving the quality of volcanic ash transport and dispersion forecasts and the communication between meteorologists and geologists. The results presented from a "benchmark" simulation that was run before the meeting by 10 different modeling groups (10 models, including HYSPLIT) show roughly similar results. Scientists with observation capabilities in satellite sensors, infrasound, lidar, and radar were present. A final report is in progress. Barbara.Stunder@noaa.gov

2. HYSPLIT Volcanic Ash Modeling

Barbara Stunder gave a presentation on ARL's HYSPLIT volcanic ash dispersion modeling at a Federal Aviation Administration (FAA) public meeting. Representatives from several airlines attended, as well as representatives from the U.S. Volcanic Ash Advisory Centers (VAAC). Originally FAA's intent was to get feedback on NextGen (Next Generation Air Transportation System) performance requirements, but the focus was more on feedback in general given new guidance products issued by the VAAC (London) last spring for Eyjafjallajokull.

Barbara Stunder gave a presentation on the HYSPLIT Volcanic Ash Dispersion Modeling in support of the U.S. Volcanic Ash Advisory Centers (VAAC) at the Annual Interagency Weather Research Review and Coordination Meeting in Boulder, Colorado. The presentation summarized the new capabilities going in to operations at NCEP and the current related ARL work.

Barbara Stunder provided initial training to a few Senior Duty Meteorologists (SDMs) and a NESDIS satellite analyst in the Washington Volcanic Ash Advisory Center on the HYSPLIT volcanic ash upgrade in the works at the National Center for Environmental Prediction (NCEP). Valuable feedback was received, and some additional modifications will be made. The SDMs are now running the new version for comparison with the production version for real eruptions and other operational runs such as the Regional Specialized Meteorological Center (RSMC) radiological monthly test. Implementation is tentatively planned for February 2010. Barbara.Stunder@noaa.gov

3. ARL/Harvard Collaboration

The second test of the Best Airborne Turbulence (BAT) probe in the Massachusetts Institute of Technology's Wright Brothers Wind Tunnel was highly successful. It yielded a wealth of data under strongly controlled conditions free of airplane-induced flow distortion, but in a spacious environment far from walls, floor, and roof at airspeeds actually used during operational data flights. ATDD scientists have been analyzing these data to characterize the BAT probe's accuracy in measuring the airspeed and the incident angles of flow relative to its hemispherical head. A publication reporting the results is anticipated to be submitted for review in the next quarter. ed.dumas@noaa.gov, R. Dobosy, D. Senn, B. Baker

4. Ocotillo Wind Farm

ATDD scientists traveled to the Duke Ocotillo Wind Farm, Big Spring, Texas to install a SODAR and establish a spectral measurement capability for the 30-meter tower. The Remtech PA0 SODAR was installed in close proximity to the 30-meter tower; 30-minute profiles are being collected. Typical measurement heights reach 250 meters with 10 meter resolution. Communications with the SOADR allow ATDD to continuously monitor acquired profiles from the measurement platform. A Netbook computer was installed at the 30-meter tower to conduct spectral observations from the multiple wind systems on the 30-meter tower. Winds and temperature measurements at 32 hertz are acquired from the tower's five RM Young sonic anemometers (located at 2.99, 8.50, 14.75. 20.99, and 27.39 m heights). These data are stored on the Netbook and downloaded to ATDD in Oak Ridge, TN. Will.pendergrass@noaa.gov

5. Extreme Turbulence Probe

Two Extreme Turbulence (ET) probes that had been deployed in the Florida Keys during the summer remained in the field until early December. Although the 2010 hurricane season was very active, the storms for the most part stayed out in the Atlantic and had no impact in the U.S. As a result, the probes were only affected by Tropical Storm Bonnie, which produced moderate winds. One probe had power problems due to bird droppings accumulating on the solar panels. A more advanced type of solar controller, installed on this system in September, helped somewhat but did not entirely solve the power issues. The issues that were encountered during the 2010 deployments will be helpful in improving the probes for future deployments. Richard.Eckman@noaa.gov, Tom Strong, Roger Carter, Shane Beard, Randy Johnson

6. Weather/Hurricane In situ Sea Surface Probe (WHISSP) Project

Four WHISSP balloons were launched from Tybee Island, GA, two on December 4th and two on December 5th. The four balloons were designated by the serial number of the WISDOM sonde carried by the balloon. The lift for the balloons was -60g, -180g, -300g, and -420g, in order. The negative sign indicates that the weight of the ballast hose attached to the balloon is that many grams heavier than the net lift of the balloon. In each launch each balloon lifted its ballast hose entirely out of the water and rose to a higher altitude than the planned height of 150 feet. Several days after the launches, the balloon sondes were still reporting but the messages had errors and only portions of each message could be read. Additional work needs to be done to determine the cause of the difficulty in receiving sonde data and what caused the ballast hose to lift out of the water and for the balloons to ascend to a higher altitude. Although the actual launch of the balloons went smoothly, the balloons needed to be transported to the launch area by foot; about a quarter of a mile from the building where they were inflated. Randy.Johnson@noaa.gov

7. Big Southern Butte Fire Weather Research

Data from the sonic anemometers, SODARS, radar profiler, INL mesonet, and WRF model data collected by FRD as part of the Big Southern Butte field study were compiled into one database and loaded onto an external hard drive. The hard drive was returned to the Missoula Fire Laboratory of the U.S. Forest Service, who led the study, and merged with the database they

are assembling as part of their fire model development studies. dennis.finn@noaa.gov, Rick Eckman, Jason Rich

8. DOE Wind Energy Forecast Improvement Study

A quality assurance study of the FRD SODARS, slated for deployment during next year's wind energy forecast improvement project, was conducted. This study included inter-comparisons between the Atmospheric Systems Corporation (ASC) mobile miniSODAR and Radian SODAR (the two current candidates for deployment), the permanent Idaho National Laboratory (INL) ASC miniSODAR, the wind speed and direction measurements from the nearby Grid 3 meteorological tall tower, and the nearby INL radar profiler. dennis.finn@noaa.gov, R. Carter

9. HRRR Collaboration Project with ESRL

FRD continues to download a subset of the output from the ESRL High Resolution Rapid Refresh (HRRR) model. The subset covers southeastern Idaho and surrounding states at the native 3 km horizontal grid spacing used in HRRR. Both the HRRR forecasts and those from in-house WRF forecasts at 4 km grid spacing are being compared with observations from the NOAA/INL Mesonet. So far, HRRR appears to systematically under predict wind speeds whereas the in-house WRF forecasts over predict them to some extent. In December, ESRL created a second subset of HRRR output covering a region in Texas. This covers the area in which ATDD is conducting wind-energy studies with Duke Energy and will allow them to compare the model forecasts with their observations. Richard.Eckman@noaa.gov, W. Pendergrass (ATDD)

10. Consequence Assessment

Kip Smith, Walt Schalk, and James Wood participated in the Nevada National Security Site's, (NNSS) Quarterly Emergency Response Organization Drill and then the Full Scale Exercise. Kip and James participated as members of the Consequence Assessment Team (CAT) and provided weather data and forecasts, produced dispersion plots and provided advice to the Nevada National Security Site Emergency Response Organization. Kip was the lead CAT member and trainer and James participated as a trainee. Walt participated as a Controller/Evaluator of the CAT for this exercise. SORD provides meteorological data, dispersion modeling, and consequence assessment expertise to the NNSS. Kip.Smith@noaa.gov

Kip Smith, Ray Dennis, Rick Lantrip, and Walt Schalk participated in an Emergency Response seminar/workshop with NNSS personnel (Feds and contractors) and representatives from the state, county, and local emergency response community, local and federal law enforcement, and Hospitals. A general scenario was provided where each group discussed their actions and responsibilities in such an event. Several communications issues were identified and work has begun to correct them before the actual field exercise in April. Walter.W.Schalk@noaa.gov

11. Weather Services for Nevada National Security Site Experiments

Walt Schalk has been working with Principal Investigators from two different National Laboratories to develop a requirements document for weather support for two upcoming experiments in spring, 2011. Support will include special point forecasting, weather surveillance (primarily wind direction and speed, and lightning), and radiosonde and balloon releases. Walter.W.Schalk@noaa.gov

AIR QUALITY

12. ARL to Organize 3rd IWAQFR

ARL staff participated in the 2nd International Workshop on Air Quality Forecasting Research (IWAQFR), held in Quebec City, Canada. The purpose of having annual workshops is to provide a venue for the discussion of science issues and advancements related to air quality forecasting. Sponsors of the IWAQFR are NOAA, Environment Canada, and the World Meteorological Organization. The 3rd Workshop will be organized by NOAA/ARL and held in the Washington, DC region in Winter 2011. Pius.Lee@noaa.gov

13. Community Modeling and Analysis System

Members of ARL's Air Quality Forecasting team attended and provided oral and poster presentations at the 9th Annual Community Modeling and Analysis System (CMAS) Conference held October 11, 2010 in Chapel Hill, NC. The following presentations were provided:

Oral presentations

- Rick Saylor: Investigating Differences in Ozone Production from CB05 and CBMIV Versions of the NAQFC
- Daniel Tong: Modeling volcanic and marine emissions for Hawaii air quality forecast
- Daewon Byun: Modeling Air Quality Impact of the Deepwater Horizon Oil Spill in the Gulf of Mexico
- TianFeng Chai: Assimilation of MODIS Aerosol Optical Depth for Improving CMAQ PM2.5 Simulation
- Yunsoo Choi: Evaluation of Modeled Ozone Biases Using Satellite Data and Surface Measurements
- Hyun-Cheol Kim: Assessment of impact of fire emissions during the Second Texas Air Quality Study in summer 2006 with satellite fire observations

Poster Presentations

- Mo Dan: Modeling chemical composition of wind-blown dust particles and comparison with speciated PM measurements in the United States
- Pius Lee: Development of National Air Quality Forecasting Capability at 4 km horizontal resolution for the CONUS
- Yunhee Kim: Impacts of photo-excited NO2 chemistry on ozone SIPs (State Implementation Plans) in complex terrain
- Manuel Santiago: Using Smog Chamber Data to Improve the Understanding of SOA Formation

For more information about these conferences and ARL's presentations see: http://www.cmascenter.org/conference/archive.cfm Rick.Saylor@noaa.gov

14. American Association for Aerosol Research Conference

Rick Saylor presented a paper at the 29th Annual Conference of the American Association for Aerosol Research on October 27, 2010, in Portland, OR. The paper, entitled "Investigation of the Seasonal Biases of $PM_{2.5}$ Concentrations from the Community Multiscale Air Quality Model",

presented the approach and initial results for a long-term investigation comparing fine particulate concentrations as predicted by the Community Multiscale Air Quality (CMAQ) model with measurements in an effort to understand the reasons for winter over predictions and summer under predictions of $PM_{2.5}$ concentrations from CMAQ. Over time the investigation will hopefully lead to reduced seasonal biases in the model as the representation of important physical and chemical processes controlling fine particulate concentrations are improved in CMAQ. Rick.Saylor@noaa.gov

15. Second HYSPLIT Dioxin Workshop in Mexico City

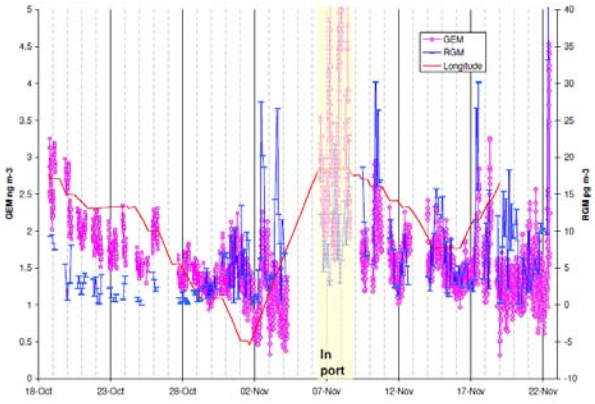
Mark Cohen co-led a workshop with Paul Bartlett of St. Peter's College that was held in Mexico City for about 15 Mexican government scientists of the National Institute of Ecology (INE) and the Ministry of Environment and Natural Resources (Semarnat). The workshop was a part of a series of workshops to train the scientists on the use of the HYSPLIT model to simulate the fate and transport of polychlorinated dibenzo-p-dioxins and furans (PCDD/F) (aka "dioxin"). The workshop was sponsored by the Commission for Environmental Cooperation (CEC) and was the 2nd workshop related to this project. Mark participated in the workshop remotely via Go-To-Meeting. A third workshop is scheduled for February, 2011. Mark.Cohen@noaa.gov

16. HYSPLIT Mercury Modeling

Mark Cohen met with David Schmeltz and Tim Sharac of the EPA's Clean Air Markets Division to discuss a collaborative project involving analysis of data from the Atmospheric Mercury Network (AMNet). AMNet is an emerging network of speciated ambient mercury measurement sites. ARL is contributing data to AMNet from each of its five mercury monitoring sites (Beltsville, Grand Bay, Canaan Valley, Allegheny Portage, Mauna Loa). ARL's HYSPLIT model and the HYSPLIT-Hg module are being used to examine source-receptor relationships in an attempt to interpret and understand the spatial and temporal variations in AMNet data. Mark shared methodologies and examples for running back-trajectories using HYSPLIT and analyzing the results using clustering and grid-frequency approaches. Mark.Cohen@noaa.gov

17. GEOTRACES Atmospheric Mercury Measurements

Steve Brooks provided atmospheric mercury sensors and guidance to the recently completed first leg of the multi-year GEOTRACES cruise. The initial cruise in the South Atlantic ended in late November 2010. Dr. Melanie Witt from Oxford University operated the on-board atmospheric mercury sensors. At first, the data appears fairly typical with gaseous elemental mercury averaging close to its southern hemispheric background of ~1.2 ng m^{-3}, and reactive gaseous mercury averaging an unremarkable ~7 pg m^{-3}. However, there is an interesting correlation between mercury and longitude (see graph at right). In the coming weeks, back trajectories and synoptic conditions will be studied to characterize the East-West gradient that was measured during the cruise. The second leg of the GEOTRACES cruise is



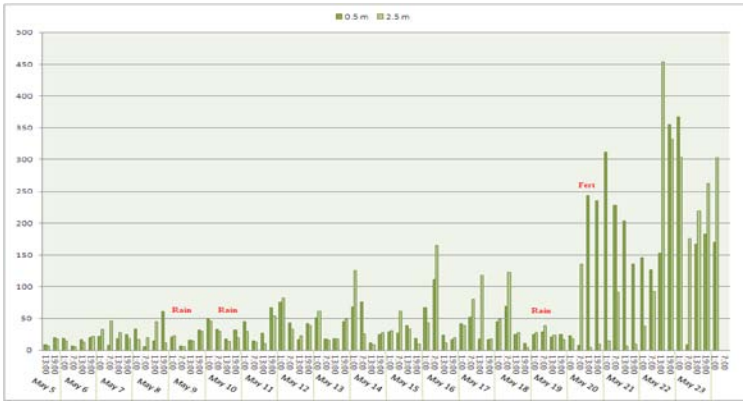
scheduled for February 2011 in the Tropical Atlantic. steve.brooks@noaa.gov

18. Mercury-in-biota Research

Steve Brooks is collaborating in a new mercury-in-biota research program being done in partnership with the Fish and Wildlife Service (FWS) in Canaan Valley, WV. The FWS has concluded that in the Appalachian region mercury levels in sparrows and Carolina wrens are elevated and potentially causing reproductive problems. Previous studies have shown that these birds consume large numbers of orb-weaving spiders and that orb-weaving spiders generally have elevated mercury levels. In March, Brooks and collaborators will begin collecting orb-weaving spiders around vernal ponds in the upslope forests and collecting *w*ood frog egg masses from these same ponds. They will look for correlations between mercury levels in frog eggs and in the surrounding spiders. From previous studies at Canaan Valley, scientists have determined that mercury levels in pond water depend on the size and shading of the individual pond. In coming years, the study may expand to include bird sampling.
steve.brooks@noaa.gov

19. Research at the Nexus of Air Quality and Climate Change (CalNex 2010)

Analysis of the ammonia flux dataset from ATDD's contribution to the CalNex 2010 field study is ongoing. Fluxes were measured with annular denuders and a cavity-ring down spectrometer at 0.5 and 2.5 m over a maize field adjacent to a dairy farm in Stanislaus County, CA. Ammonia concentrations measured with annular denuders in May are shown in the figure at left. As expected, concentrations decreased during periods of precipitation on May 9, 10, and 19. Concentrations increased substantially after the field was fertilized with urea on May 20. The cavity-ring down system operated in June and initial comparisons with denuder data are shown in the table below. Ammonia concentrations from annular denuders were consistently greater than those measured with the cavity-ring down analyzer (Picarro). We continue to investigate possible reasons for these differences; however one contributing factor may be the cavity-ring down analyzer's relatively slow equilibration time (10-15 min). In recent discussions with colleagues in academia, we learned that the equilibration effect has been a challenge for their ammonia measurements as well.
latoya.myles@noaa.gov, M. Heuer



June Concentration Comparison			
Technique (ug m-3)	*Mean*	*StdDev*	*Max*
Picarro @ 0.5 m	10.62	12.10	89.11
Picarro @ 2.5 m	13.07	17.16	123.84
Denuder @ 0.5 m	25.04	40.02	192.11
Denuder @ 2.5 m	28.79	45.63	206.52

20. Nitrogen Presentations at the Amercian Geophysical Union Fall Meeting
At the Fall 2010 meeting of the American Geophysical Union in San Francisco, CA, ARL scientists presented several posters on ARL's nitrogen research. Winston Luke's poster discussed the results of ARL's measurements of reactive nitrogen species in the April-May 2009 Study of Houston Atmospheric Radicals Program (SHARP). The poster compared and contrasted results from SHARP with those from the 2006 TexAQS-II Radical and Aerosol Measurement Project (TRAMP) study. Winston.Luke@noaa.gov

LaToya Myles and Mark Heuer presented two ammonia-nitrogen posters: "Air-surface exchange of ammonia at an agricultural site in the northern San Joaquin Valley during CalNex" and "Estimating ammonia volatilization and deposition from fertilized vegetation." Both were well-received. Interest in ATDD's application of cavity-ring down spectroscopy for measuring ammonia fluxes generated great interest among colleagues in attendance. latoya.myles@noaa.gov, M. Heuer

21. Interagency Monitoring of Protected Visual Environments (IMPROVE)
Marc Pitchford chaired the IMPROVE Carbon Trends Workshop in Stevenson, WA that featured twelve presentations on the assessment of carbonaceous fine particulate matter ($PM_{2.5}$) data from the remote areas IMPROVE and urban area Chemical Speciation Network (CSN) monitoring sites. IMPROVE has over 20 years of data at about 20 locations and 9 years of data about 100 locations that were used to assess spatial and temporal trends. Use of CSN urban data allowed urban – rural ratios and differences to be assessed. Many of the presentations included analysis of the uncertainties, artifacts and discontinuities associated with the data sets and their effects on the use and interpretation of results of the data. Following the presentations, the group discussed what should be done to better understand the currently available data and to improve the quality of future carbonaceous $PM_{2.5}$ data collected by the IMPROVE and CSN programs. Marc.Pitchford@noaa.gov

Marc Pitchford chaired the day and a half-long IMPROVE Steering Committee meeting in Stevenson, WA. The meeting included presentations that reviewed last year's operational performance and plans for next year regarding the monitoring network, analytical laboratories, quality assurance audit activities and data archive and distribution web system. Marc.Pitchford@noaa.gov

CLIMATE

22. Boundary Layer Mixing Heights
Ally Zhang and Dian Seidel, along with colleagues Chris Golaz (Geophysical Fluid Dynamics Lab), Andy Jacobson (Earth System Research Lab), and Brian Madeiros and Sungsu Park (National Center for Atmospheric Research) established a collaborative research project focusing on the climatology of planetary boundary layer mixing heights over Europe and the U.S. Initial work has focused on identifying a suitable definition of mixing height for application to radiosonde observations and model simulations. Dian.Seidel@noaa.gov

23. International Assessments

Dian Seidel agreed to serve as contributing author to the Intergovernmental Panel on Climate Change's Fifth Assessment Report (AR5), contributing a section on changes the width of the tropical belt. She also provided expert review of "Twenty Questions and Answers About the Ozone Layer: 2010 Update", a public information document that will accompany the 2010 WMO/UNEP ozone assessment. Dian.Seidel@noaa.gov

24. New Staff

Dr. James S. Wang, a National Research Council Senior Associate, joined ARL's Climate Variability and Change Analysis group in Silver Spring. Dr. Wang will be working on a project to understand long-term changes in the tropical cold point tropopause. Dian.Seidel@noaa.gov

25. VIIRS Land Team Meeting

Tilden Meyers attended the Visible Infrared Imager Radiometer Suite (VIIRS) Land Team meeting October 5 - 6 at the University of Maryland in College Park. Discussions focused on developing a strategy for validation activities for satellite derived products including but not limited to surface temperature, broadband albedo, and the Normalized Difference Vegetation Index. Tilden presented how observations from both the Climate Reference Network (CRN) and the Surface Energy Budget Network stations could be used to support these activities. He also presented observations from recent airplane inter-comparison studies with the University of Tennessee Space Institute in Tullahoma, to address questions about site representativeness and spatial variability. Discussions focused on getting more direct involvement of NESDIS/STAR personnel into the validation planning and activity. Tilden.Meyers@noaa.gov

26. U.S. Climate Reference Network

The Atmospheric Turbulence and Diffusion Division field crew made a total of 48 separate Climate Reference Network (CRN) site visits this quarter in Alabama, Colorado, Nevada, New York, North Carolina, Oregon, Pennsylvania, Virginia, Washington, West Virginia, and Wyoming. mark.e.hall@noaa.gov

27. CRN Winter Precipitation Testbed

Bruce Baker and John Kochendorfer attended a meeting in Boulder, CO with participants from NCAR and Canada. Topics of discussion were adjustments to the CRN winter precipitation testbed for this upcoming winter inter-comparisons; development of the initial purpose, objectives, and experimental methodology for the World Meteorological Organization solid precipitation intercomparison; and a thorough review of an ATDD co-authored draft journal article for the Bulletin of the American Meteorological Society on "How Well Are We Measuring Snow?" john.kochendorfer@noaa.gov, bruce.baker

28. Aircraft Flights Over CRN sites

Aircraft measurements of temperature and radiation were conducted by ATDD scientists, in collaboration with the University of Tennessee Space Institute (UTSI) Aviation Systems and Flight Research Department in Tullahoma, TN. Flights were made over the CRN site in Crossville, TN, and NOAA/ATDD's Chestnut Ridge research tower (CHESS) near Oak Ridge, TN,

on November 17-19, and December 2-3, 2010. Comparisons were made in the surface temperature measured at the tower and by MODIS (on board TERRA and AQUA Satellites). The preliminary comparison shows good agreement between the observations. Based on these results more flights will be planned for various CRN sites in 2011.
praveena.krishnan@noaa.gov, E. Dumas, C.B. Baker, T.P. Meyers and J. Kochendorfer

29. U.S. Historical Climatological Network – Modernization

FRD continues to assist ATDD in the daily quality control of the Historical Climate Network – Modernization (HCN-M) program. There are 79 HCN-M stations, 17 stations located in Alabama and 62 stations located in Arizona, Colorado, New Mexico, and Utah. As part of FRD's quality control process, a summary of instrumentation problems is submitted monthly to ATDD. Overall, the stations continue to perform rather well. (Jason.Rich@noaa.gov)

ARL 1st Quarter Publications List

Published:

Sun, B., A. Reale, **D. J. Seidel**, and D. C. Hunt (2010), Comparing radiosonde and COSMIC atmospheric profile data to quantify differences among radiosonde types and the effects of imperfect collocation on comparison statistics, *Journal of Geophysical Research*, 115, D23104, doi:10.1029/2010JD014457.

Thorne, P. W., Lanzante, J. R., Peterson, T. C., **Seidel, D. J**. and Shine, K. P. (2010), Tropospheric temperature trends: history of an ongoing controversy published on-line in Wiley Interdisciplinary Reviews: Climate Change,.2(1), 66-88. doi: 10.1002/wcc.80.

Myles, L., Kochendorfer, J., Heuer, M.W., and Meyers, T.P. (2010). Measurement of trace gas fluxes over an unfertilized agricultural field using the flux-gradient technique. *Journal of Environmental Quality*. 39, 1-7, DOI: 10.2134/jeq2009.0386.

Xiao, X., D. S. Cohan, **D. W. Byun, and F. Ngan** (2010), Highly nonlinear ozone formation in the Houston region and implications for emission controls, *Journal of Geophysical Research*, 115, D23309, doi:10.1029/2010JD014435.

Saylor, R.D., E.S. Edgerton, B.E. Hartsell, K. Baumann, and A. D. Hansen (2010). Continuous gaseous and total ammonia measurements from the southeastern aerosol research and characterization (SEARCH) study. *Atmospheric Environment*, 44, 4994-5004.

Luke W.T., P. Kelly, B.L. Lefer, J. Flynn, B. Rappengluck, M. Leuchner, J. E. Dibb, L.D. Ziemba, C. H. Anderson, and M. Buhr (2010) Measurements of primary trace gases and NOy composition in Houston, Texas, *Atmospheric Environment*, Volume: 44 Issue: 33 Pages: 4068-4080

Ngan, F., D. W. Byun (2010) Classification of Weather Patterns and Associated Trajectory Analysis of High Ozone Episodes in Houston during the 2005/2006 TexAQS-II. *Journal of Applied Meteorology and Climatology*, published On-Line November 2010.

J. Schaum, **M. Cohen**, S. Perry, **R. Artz, R. Draxler**, J. Frithsen, D. Heist, M. Lorber, and L. Phillips (2010) Screening Level Assessment of Risks Due to Dioxin Emissions from Burning Oil from the BP Deep Water Horizon Gulf of Mexico Spill, *Environmental Science and Technology,* 44, Issue 24, 9383–9389, 2010.

Accepted:

A manuscript entitled "Net ecosystem exchange, evapotranspiration and canopy conductance in a riparian forest" by **J. Kochendorfer**, E.G. Castillo, E. Haas, W.C. Oechel and K.T. Paw U was accepted for publication in *Agricultural and Forest Meteorology*.

A paper entitled "An integrated WRF/HYSPLIT modeling approach for the assessment of $PM_{2.5}$ source regions over Mississippi Gulf Coast Region" was accepted by *Air Quality, Atmosphere, & Health*. **L. Myles, W. Pendergrass, and C.A. Vogel** serve as co-authors of the paper, which is a result of the collaboration between ATDD and Jackson State University's Trent Lott Geospatial and Visualization Research Center.

Submitted and under journal review:

"Radiosonde Balloon Drift Climatology" by **Dian J. Seidel**, Bomin Sun, Michael Pettey, Anthony Reale, under review by *Journal of Geophysical Research*.

"Climatological Characteristics of Arctic and Antarctic Surface-Based Inversions" by Yehui Zhang, **Dian J. Seidel** Jean-Christophe Golaz , and Clara Deser, Robert A. Tomas was submitted to *Journal of Climate*.

"Energy exchange and evapotranspiration over two temperate semi-arid grasslands in North America" by **P. Krishnan, T.P. Meyers**, R.L. Scott, L. Kennedy and **M. Heuer** was submitted to *Agricultural and Forest Meteorology*.

Awards, Honors, Recognition

- Dian Seidel was awarded the 2010 OAR Dr. Daniel L. Albritton Outstanding Science Communicator Award, recognizing outstanding achievement in communicating the meaning and value of NOAA-related science and research to non-scientific audiences.
- Betty Wells won the OAR Employee of the Year award for Administrative and Technical Support. The award recognizes NOAA Research employees who have made outstanding contributions to the promotion of excellence in the operations or programs of NOAA Research during the last calendar year.
- LaToya Myles was selected as an honoree of *The Root* 100, an exclusive list that honors one hundred individuals, aged 25-45, who represent the new generation of emerging and established leaders in the African-American community. She is described as a "rising star in the environmental science and atmospheric chemistry." *The Root* is an online publishing subsidiary of *The Washington Post*.

- Mark Hall and his team were recognized by NOAA for their exemplary efforts meeting the Regional United States Climate Reference Network performance measure by installing 50 stations in FY10 for a total of 60 installed in the southwest pilot region.