NOAA Air Resources Laboratory
Quarterly Activity Report
FY2012 Quarter 2
(January – March, 2012)

Contents

DISPERSION AND BOUNDARY LAYER

1. Web-based HYSPLIT Application for NWS Weather Forecast Offices
A HYSPLIT web site, which National Weather Service (NWS) Weather Forecast Offices (WFOs) use to run the model for dispersion events in their area, was installed at the NOAA CIO's Web Operations Center (WOC) for internal testing by ARL in March. This web site, currently available to WFOs on the ARL web server, is being ported to the WOC server to provide them with a 24/7 supported system to run the HYSPLIT model for local emergencies that require dispersion modeling support. It is estimated that an operational version will be available to the WFOs by the end of April or early May. Glenn.Rolph@noaa.gov

2. New HYSPLIT Product Code
In support of the NWS Aviation Services Branch and international requirements, Barbara Stunder developed computer code to produce a radiological advisory product. Discussions within the NWS National Centers for Environmental Prediction (NCEP) as to when this product can be scheduled for implementation are ongoing. Following implementation, when the NCEP Senior Duty Meteorologist runs the HYSPLIT dispersion model to predict the downwind radiological plume location, and concentrations, if the amount of radiation released is known, the new product will be sent to the NWS Meteorological Watch Offices which are responsible for issuing Radiological Cloud SIGMET (aviation warning). Barbara.Stunder@noaa.gov

3. Comparison between STILT and HYSPLIT Models
A detailed comparison of the performance of the Stochastic Time-Inverted Lagrangian Transport (STILT) model and the HYSPLIT model was conducted for the Cross-Appalachian Tracer Experiment (CAPTEX) and Across North America Tracer Experiment (ANATEX) using the North American Regional Reanalysis data and the Weather Research Forecasting data as the meteorological data driving the simulations. As expected, given that the STILT code is based on HYSPLIT, the two simulations had similar performances. However, for some cases the STILT model outperformed HYSPLIT. An in-depth investigation was conducted of the causes of this difference and it was found that the STILT simulation uses a variable Lagrangian time scale that depends on the stability conditions of the atmosphere. This parameterization was implemented in HYSPLIT resulting in a very noticeable improvement in the model performance. This research is part of a collaborative effort between the Earth System Research Laboratory's Global Systems Division, Atmospheric and Environmental Research, and ARL. ariel.stein@noaa.gov

4. Invited Lecturer in Huelva, Spain
Ariel Stein was an invited lecturer of the Master Interunivesitario en Ingenieria Ambiental (Master in Environmental Engineering) teaching the graduate course entitled "Contaminacion Atmosferica: Origen, Tratamiento y Control" (Atmospheric Pollution: Origin, Treatment and Control), at the Universidad Internacional de Andalucia in Huelva, Spain. Dr. Stein's lecture covered general topics ranging from general circulation in the atmosphere to local transport and dispersion of pollutants. He introduced the use of the HYSPLIT model and showed several examples of it applications. This graduate course is taught every year since 2006 and is considered one of the top courses in Spain regarding environmental pollution and air quality. ariel.stein@noaa.gov

5. Best Aircraft Turbulence Probe

As part of the collaboration with Harvard University to study carbon emissions in the Arctic, ARL Atmospheric Turbulence and Diffusion Division (ATDD) researchers tested a Best Aircraft Turbulence (BAT) probe at the Massachusetts Institute of Technology's (MIT) Wright Brothers Wind Tunnel. The result suggested significant influence of that probe's large central port. Wageningen University (WUR) in the Netherlands flies a Sky Arrow airplane with a BAT probe having a small central port and generally cleaner port design than the probe that ATDD researchers tested at MIT. Ron Dobosy and Ed Dumas participated, by invitation of Olaf Vellinga of WUR, in evaluating data from WUR's calibration flights in the Netherlands. These data yielded the cleanest patterns that the researchers have seen in BAT-probe calibration flights. The findings have been submitted to the Journal of Atmospheric and Oceanic Technology. ATDD will compare the WUR results with those from upcoming flights with ATDD's wind-tunnel-characterized BAT probe in efforts to improve the probe's design. Ron.dobosy@noaa.gov, Ed Dumas

6. Collaboration with Duke Energy

David Senn (ATDD) fabricated and tested a teather-sonde power supply for future meteorological studies at the Duke Energy Ocotillo Wind Farm. The power supply was tested by powering an ozone analyzer. The power supply ran the analyzer for more than six hours and was considered a success. Also, David and Randy White designed and tested an improved green AC backup for the solar powered instruments at the Ocotillo Wind Farm. The system provides emergency backup in the event that a long series of overcast days depletes the charge in the batteries. In such cases the AC power supply switches on to provide site power and slowly recharge the batteries. With the return of adequate sunshine, the AC power is switched off. During normal operation, the system draws no AC power. d.l.senn@noaa.gov, R. White

7. High Resolution Rapid Refresh Project

ARL's Field Research Division (FRD) continues to receive a subset of High Resolution Rapid Refresh (HRRR) output centered over Southeast Idaho but has also been receiving a second subset centered over Texas. The Texas subset was configured for wind-energy measurements collected by ATDD as part of their collaboration with Duke Energy. With FRD's involvement in NOAA's Wind Forecast Improvement Project (WFIP), there is now an opportunity to compare the Texas HRRR forecasts with data from the three WFIP stations. However, the original subset did not cover all the WFIP stations. The boundaries of this subset have now been adjusted to cover both the original ATDD station and all the WFIP stations. ATDD is using software originally developed for the Duke Energy collaboration to compare the WFIP wind observations with the HRRR forecasts. richard.eckman@noaa.gov, Dennis Finn, Will Pendergrass

8. High Performance Computing

Dr. Inanc Senocak and his graduate student, Danny George, from Boise State University have determined that the current structure of HYSPLIT is poorly suited for parallel computing utilized by GPUs and that improvements in computing efficiencies that might be gained with the utilization of GPU processing are relatively minimal. For most of the functions, much of the savings in time that might be realized by porting to GPUs are lost due to excessive copying requirements. Instead, Dr. Senocak and Danny George will proceed with developing a general purpose Lagrangian dispersion kernel that will be optimized for parallel processing with GPUs. This kernel could possibly be implemented in HYSPLIT and other geophysical dispersion models. dennis.finn@noaa.gov, Rick Eckman, Kirk Clawson, Roger Carter

9. High Desert Prairie Grass Study II

Preliminary plans were made to conduct an atmospheric dispersion study to re-measure the dispersion parameters determined by the 1956 Prairie Grass study. Since its completion in 1956, the results of the Prairie Grass study have been used as the basis of many, if not most, atmosphere dispersion calculations and model development. However, the results of recent dispersion experiments conducted at the Idaho National Laboratory (INL) differ from the Prairie Grass results. It may be that the dispersion over the high desert steppe of the INL is somewhat different than the Nebraska prairie where the Prairie Grass study was completed. If so, this should be accounted for in the models and calculations done for the INL and for other locations with similar land and meteorological conditions. The Field Research Division would conduct the study similar to Prairie Grass but using modern equipment and procedures. Due to budgetary constraints, the project would have to be spread over several years and designed carefully to use the available funding as efficiently as possible. Kirk.Clawson@noaa.gov

10. Transport and Dispersion Modeling

A formal protocol was adopted for testing all facets of the NOAA/INL Emergency Operation Center HYSPLIT implementation (EHY version 1.0). The protocol includes testing of: 1) all preconfigured scenarios in the library; 2) all possible combinations of selecting model configuration parameters to make sure the model will execute reliably; and 3) utilities and features such as printing, saving, sharing runs, and accessing old runs. The testing is being conducted by both meteorologists and non-meteorological staff with the goal to make the implementation as robust and user-friendly as possible regardless of the skill of the user. Progress was made on upgrading EHY version 1.0 to 1.1. Some preliminary work has been completed on version 2.0, which will include the ability to configure multiple sources and run plume animations, among other features.

Preliminary work was conducted on potentially adopting two additional meteorological models for EHY. One model would utilize the NOAA/INL mesonet data, a feature that is already incorporated into EHY, but the proposed additional model would provide for mass consistent flow. The other model would utilize mesonet observations to nudge Weather Research Forecast modeling.

A new server was set up for EHY. It utilizes a faster compiler and completes the HYSPLIT runs significantly faster - up to 10 times faster in some cases - than the previous server. dennis.finn@noaa.gov, Roger.Carter@noaa.gov, Brad Reese, Rick Eckman

11. Mesoscale Forecast Modeling

The FRD computer that had been running the Weather Research Forecasts (WRF) model for Southeast Idaho continuously for the past 5 years failed. Fortunately, a new WRF forecast system was nearly ready to go at FRD. The new system uses WRF-ARW version 3.3.1 and 3 km spacing for its horizontal grid. Another change is that the new forecasts go out 18 hours compared with 12 hours in the old system. Currently the Rapid Update Cycle (RUC) is used for initial and boundary conditions in the new WRF forecasts, but the Rapid Refresh (RAP) will be used once it becomes operational (scheduled for May 2012). As was true with the old WRF forecasts, the wind forecasts generated by the new system appear to be superior over Southeast Idaho to those from HRRR. richard.eckman@noaa.gov

12. Experiment Support on the Nevada National Security Site (NNSS)

Walt Schalk met with the Nevada National Security Site's (NNSS) National Center for Nuclear Security

Director and several Scientists. The discussion focused on meteorological support for experiments to be conducted on the NNSS during the remainder of Fiscal Year 2012. Walt developed and received approval on proposals to provide additional weather support for non-proliferation experiments. This support includes weather forecasts and data collection with radiosonde balloon launches and enhanced weather surveillance, such as a lightning watch, focused on the experiment location. These activities are necessary to provide data for use and analysis in the experiment, the safe execution of the experiment under given criteria, and for the safety of the personnel. walter.w.schalk@noaa.gov

13. Consequence Assessment for the NNSS

Kip Smith revised and Walt Schalk reviewed the ARL/SORD Consequence Assessment Team (CAT) Training Plan and Qualification. Kip presented the Training Plan and Qualification Card information to Rick Lantrip and James Wood who are in the beginning phases of training to become qualified consequence assessment team members in support of the NNSA/Nevada Site Office. Kip also developed several chemical accident scenarios to be used for CAT training. Training is anticipated to be completed by the end of September 2012. walter.w.schalk@noaa.gov and kip.smith@noaa.gov

Kip Smith, Rick Lantrip, and Walt Schalk participated in the full scale ~~venue~~ emergency response drill and the full scale emergency response exercise as the Consequence Assessment Team (CAT) for the NNSA Nevada Site Office. The drill was conducted on the Nevada National Security Site (NNSS). In this drill and exercise, Walt and Rick provided dispersion expertise, hazardous material plume projections, and weather data and forecasts. Kip was the CAT controller and evaluator for this drill. The drill was conducted to prepare for the full scale exercise. The drill involved a chemical substance that created a secondary and more dangerous chemical when it reacted with standing water. The SORD CAT was able to use basic chemical stoichiometry to determine the amount of the secondary chemical produced and use this information to provide additional plume concentration predictions. The SORD CAT also conducted numerous "what-if" scenario assessments and provided input for Protective Action Distance decisions. walter.w.schalk@noaa.gov and kip.smith@noaa.gov

14. Mesoscale Modeling over the NNSS

Walt Schalk finalized, submitted, and received approval for a proposal to provide weather data from the SORD MEDA mesonet for a project being conducted on the Nevada National Security Site (NNSS). The project included compiling, quality assuring, and distributing data from all but a few mesonet stations on a daily basis for a 30-day period. Walt completed this work in February and provided the data to the Principle Investigator at Lawrence Livermore National Laboratory which was used in part to compare to multiple local mesoscale prediction models. (walter.w.schalk@noaa.gov)

AIR QUALITY

15. Great Lakes Restoration Initiative

Work continued on the 2nd phase of a multi-year project to estimate the amounts and source-attribution for atmospheric mercury deposition to the Great Lakes. Activities included:

- Identifying, obtaining, and assembling additional ambient monitoring data in the Great Lakes and other regions to be used for extended model evaluation. Approximately 40 sites in the U.S. and Canada were identified with atmospheric mercury data for some or all of the year 2005. Requests for data were made and positive responses representing approximately 75% of the sites were obtained.

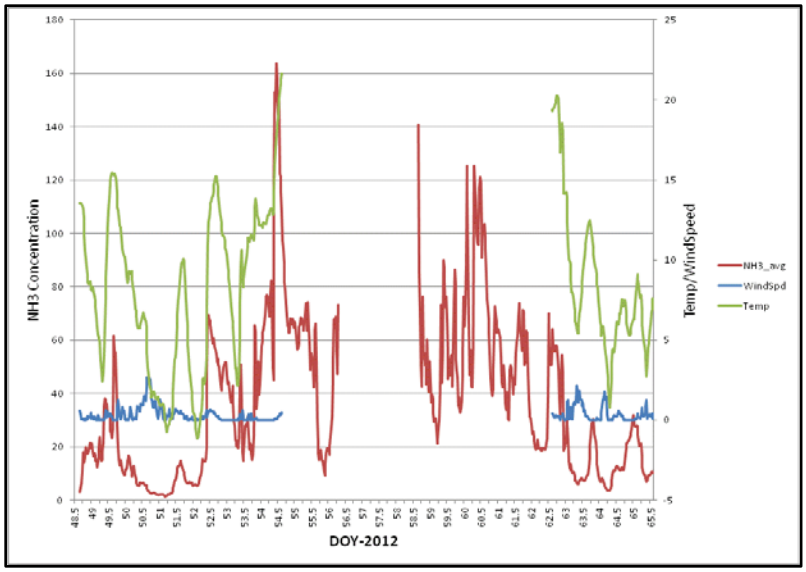
- Re-doing the baseline simulations using North American Regional Reanalysis (NARR) meteorological data. The original baseline analysis utilized NOAA-NCEP's Eta Data Assimilation System (EDAS) meteorological data, but it was determined that precipitation errors in the Great Lakes region during 2005 were significant in this dataset. The new simulations will be analyzed in the coming quarters to determine the impact of using NARR vs. EDAS meteorological data to drive the HYSPLIT-Hg model in this analysis.
- Conducting screening-level estimates of the sensitivity of the modeling results to selected parameters, assumptions, configurations, and model inputs. These are based on simulations at a subset of representative source locations, representing sources at all distances from the Great Lakes, i.e., local, regional, national, continental, and global. The results of these screening-level analyses will inform the choice of sensitivity elements to investigate more fully.
- Restoring all project files and the computational environment on a rebuilt machine after a serious system failure on the Linux workstation being used for this work.
  mark.cohen@noaa.gov

16. National Atmospheric Deposition Program

The National Atmospheric Deposition Program (NADP) site established in Mar Chiquita, Argentina became fully operational after a few delays related to customs and malfunctioning of the rain collector. A new sampling protocol is being tested at this site in order to save significant costs. Instead of having to ship plastic sample buckets back and forth, plastic bags are used to cover the inside of the bucket to collect the rainwater. The sample is then shipped to the NADP's Central Analytical Laboratory at the Illinois State Water Survey for chemical analysis. If successful, this new sample protocol will be considered for implementation at sites throughout the NADP networks.
ariel.stein@noaa.gov

17. Ammonia Air-Surface Exchange Study

ATDD began conducting ambient ammonia measurements at the University of Tennessee's East Tennessee Research and Education Center near Knoxville. ATDD scientists deployed a cavity ring-down spectrometer and annular denuder systems (ADS) to measure ambient ammonia at the cattle research facility. The spectrometer provides continuous ammonia concentrations while the ADS samples for a four-hour period each day. Ammonia concentrations from the spectrometer show good correlation with air temperature measurements (see figure on right). Measurements will continue through May 2012. latoya.myles@noaa.gov, M.W Heuer, and S. Klemenz



18. Mercury Deposition in Maryland
Steve Brooks (ATDD), along with Mark Castro (Univ. of Maryland), met with personnel at the USDA Beltsville Agricultural Research Station to coordinate mercury flux measurements near the ARL Beltsville mercury station. A proposal to the NSF Atmospheric Chemistry program was drafted to conduct mercury flux measurements upwind in western Maryland and downwind in Beltsville, MD, and to collect measurements of mercury species at ground level and above the boundary layer. Oxidized mercury exhibits daily midday peaks at Beltsville. These peaks are a combination of entrainment of mercury-rich air above the early morning boundary layer; in- situ oxidation of gaseous elemental mercury in the near surface air; surface exchange; advection; and any upwind sources. The proposal is to use three existing NADP Atmospheric Mercury Monitoring Network sites (Canaan Valley, Big Piney, and Beltsville) and airborne measurements to determine and model these fractional contributions to the observed daily peaks and infer their relative deposition rates to the adjacent Chesapeake Bay. steve.brooks@noaa.gov

19. Air Modeling and Data Support for Nevada National Security Site
Kip Smith completed the air quality modeling work for the Nevada National Security Site (NNSS) Air Quality Operating Permit. The Permit was revised recently because the emissions of new stationary sources of pollution exceeded a given threshold. The concentrations of the criteria pollutants (CO, NO_2, O_3, PM10, and SO_2) at receptors outside the NNSS, resulting from both non-explosive and explosive sources, were modeled using AERMOD (a modeling system that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain) and the Open Burn/Open Detonation Model, respectively. The modeling results were summarized and submitted to the State of Nevada. kip.smith@noaa.gov

Walt Schalk completed the annual data request to support the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) EPA compliance reporting for the Nevada National Security Site. Joint frequency distributions were provided to the Environmental Group parsed by wind direction, wind speed, and stability class for five MEDA (SORD mesonet) stations. These data are used to run the CAP88 (Clean Air Act Assessment Package-1988) computer model, a set of computer programs, databases and associated utility programs for estimating dose and risk from radionuclide emissions to air. walter.w.schalk@noaa.gov

CLIMATE

20. Artificial changes in long-term U.S. cloud cover datasets
In continuing work on changes in cloud cover in the U.S., Melissa Free compared results from several older cloud cover datasets with newer versions and with precipitation and diurnal temperature range data to identify inhomogeneities in reported total cloud cover. The work shows that artificial changes in reported cloud cover due to changes in reporting and archiving procedures for ground-based cloud observations at weather service and military stations may cause differences in U.S. mean trends in total cloud of almost 1% for some time periods. This information will be used in future efforts to produce an improved cloud dataset. melissa.free@noaa.gov

21. Studies of Upper-Air Climate Trend Uncertainties
James Wang, Dian Seidel, and Melissa Free prepared two papers on the general theme of identifying uncertainties in observational estimates of climate trends in the tropics. Both studies use all of the

available radiosonde data sets developed for climate analyses to comprehensively examine trends identified by other investigators. One paper, entitled "How well do we know recent climate trends at the tropical tropopause?" submitted to *J. Geophys. Res. – Atmospheres*, finds that cooling trends at the tropopause are more uncertain than previously reported and may not be statistically significant. The other paper, entitled "Reexamining the warming in the tropical upper troposphere: Models versus radiosonde observations" (currently undergoing internal review, in preparation for *Geophys. Res. Lett.),* attempts to repeat an earlier study that found climate models show a larger vertical amplification of tropospheric warming than do satellite observations. Our study using radiosonde data reaches a different conclusion - that there is no inconsistency between radiosonde observations and climate models on this issue. Both studies underscore the importance of accounting for observational uncertainty in assessing upper-air climate trends. dian.seidel@noa.gov

22. Climate Reference Networks

ATDD conducted a total of 45 climate site visits. The Climate Reference Network had 25 annual maintenance visits and five unscheduled maintenance visits. The Regional Climate Reference Network had 12 annual maintenance visits and one unscheduled maintenance visit. The Alabama Regional Climate Reference Network had two unscheduled maintenance visits.
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ARL 2st Quarter Publications

Published:

Anjaneyulu, Y., V.B.R.Dodla, C.V. Srinivas, **L. Myles, W.R. Pendergrass, C.A. Vogel**, H.P. Dasari, F. Tuluri, J.M. Baham, R. Hughes, C. Patrick, J. Young, and S. Swanier. (2012). Simulation of surface ozone pollution in the Central Gulf Coastal region during summer synoptic condition using WRF/Chem air quality model. Atmospheric Pollution Research 3, 55-71, doi:10.5094/APR.2012.005.

Barrett, Steven, Steve Yim, Christopher Gilmore, Lee Thomas Murray, Stephen Kuhn, Amos Tai, Robert Yantosca, **Daewon Byun, Fong Ngan**, Xiangshang Li, Jon Levy, Akshay Ashok, Jamin Koo, Hsin Min Wong, Olivier Dessens, Sathya Balasubramanian, Gregg Fleming, Matthew Pearlson, Christoph Wollersheim, Robert Malina, Sarav Arunachalam, Francis Binkowski, Eric Leibensperger, Daniel J. Jacob, Jim Hileman, and Ian Waitz (2012) Public Health, Climate and Economic Impacts of Desulfurizing Jet Fuel, Environ. Sci. Technology Published on-line in March 2012. doi: 10.1021/es203325a.

Chen, Bing, **Ariel F. Stein**, Nuria Castell, J.D. de la Rosa, A.M. Sanchez de la Campa, Yolanda Gonzalez-Castanedo, Roland R. Draxler. (2012) Modeling and surface observations of arsenic dispersion from a large Cu-smelter in southwestern Europe. Atmospheric Environment. Volume 49, March 2012, Pages 114–122. doi:10.1016/j.atmosenv.2011.12.014.

Denkenberger JS, CT Driscoll, BA Branfireun, CS Eckley, **M. Cohen**, and P. Selvendiran. (2012). A synthesis of rates and controls on elemental mercury evasion in the Great Lakes Basin. Environmental Pollution 161:291-298. doi:10.1016/j.envpol.2011.06.007

Draxler RR and **GD Rolph**. (2012). Evaluation of the Transfer Coefficient Matrix (TCM) approach

to model the atmospheric radionuclide air concentrations from Fukushima. Journal of Geophysical Research-Atmospheres 117:D05107. doi:10.1029/2011jd017205

The paper reports on a procedure developed and tested to provide operational plume forecasts in real-time by continuously updating the previous day's simulations as new meteorological data become available. Air concentrations for multiple emission scenarios can easily be tested to optimize model results as more measurement data become available. The model results showed a very high correlation for the I-131 particulate predictions (0.94) and a moderate correlation for the Cs-137 predictions (0.40) when compared with some long-range measurement data. This paper was also selected as an Editor's Highlight by JGR in March: http://www.agu.org/cgi-bin/highlights/highlights.cgi?action=show&doi=10.1029/2011JD017205&jc=jd

Gitelson, Anatoly A., Yi Peng, Jeffery G. Masek, Donald C. Rundquist, Shashi Verma, Andrew Suyker, John M. Baker, Jerry L. Hatfield, **Tilden Meyers**. (2012). Remote estimation of crop gross primary production with Landsat data. Remote Sensing of Environment. 121, 404–414. Published On-Line in March, 2012. doi: 10.1016/j.rse.2012.02.017.

Gu LH, WJ Massman, R. Leuning, SG Pallardy, **T. Meyers**, PJ Hanson, JS Riggs, KP Hosman, and B. Yang. (2012). The fundamental equation of eddy covariance and its application in flux measurements. Agricultural and Forest Meteorology 152:135-148. doi:10.1016/j.agrformet.2011.09.014

Hicks, Bruce B., W. J. Callahan, **W. R. Pendergrass III**, and **Ronald J. Dobosy** (2012). Urban Turbulence in Space and in Time. Journal of Applied Meteorology and Climatology, 51, 205–218, doi: 10.1175/jamc-d-11-015.1.

Krishnan, Praveena, Tilden P. Meyers, Russell L. Scott, Linda Kennedy, and **Mark Heuer** (2012) Energy exchange and evapotranspiration over two temperate semi-arid grasslands in North America. Agricultural and Forest Meteorology. 153, 31–44. doi:10.1016/j.agrformet.2011.09.017.

Myles, LaToya, Mark W. Heuer, Tilden P. Meyers, Zakiya J. Hoyett (2012) A comparison of observed and parameterized SO_2 dry deposition over a grassy clearing in Duke Forest. Atmospheric Environment 49, 212–218. doi:10.1016/j.atmosenv.2011.11.059.

Ngan, Fong, Daewon Byun, Hyuncheol Kim, Daegyun Lee, Bernhard Rappenglueck, and Arastoo Pour-Biazar (2012) Performance Assessment of Retrospective Meteorological Inputs for Use in Air Quality Modeling during TexAQS 2006. Atmospheric Environment. 54, 86–96. Published on-line in February 2012 doi.org/10.1016/j.atmosenv.2012.01.035.

Rasmussen, Roy, **Bruce Baker, John Kochendorfer, Tilden Meyers**, Scott Landolt, Alexandre P. Fischer, Jenny Black, Julie Theriault, Paul Kucera, David Gochis, Craig Smith, Rodica Nitu, **Mark Hall**, Steve Cristanelli, and Ethan Gutmann (2012). The NOAA/FAA/NCAR Winter Precipitation Test Bed: How Well Are We Measuring Snow? Expected in June, 2012 Issue of Bulletin of the American Meteorological Society. doi: 10.1175/BAMS-D-11-00052.1

Saylor, R. D. and **A.F. Stein**. (2012) Identifying the causes of differences in ozone production

from the CB05 and CBMIV chemical mechanisms, Geosciences Model Development, 5, 257-268, doi:10.5194/gmd-5-257-2012.

Tong, Daniel, Pius Lee, and **Rick D. Saylor**. (2012) New Directions: The need to develop process-based emission forecasting models. Atmospheric Environment 47, 560–561. doi:10.1016/j.atmosenv.2011.10.070

Wen, Deyong, John C. Lin, Dylan B. Millet, **Ariel Stein, Roland Draxler** (2012). A backward-time stochastic Lagrangian air quality model. Atmospheric Environment. 54, 373-386, Published on-line in February 2012. doi: 10.1016/j.atmosenv.2012.02.042

Wilson, T.B., T.P. Meyers, J. Kochendorfer, M. C. Anderson, and **M. Heuer** (2012). The effect of soil surface litter residue on energy and carbon fluxes in a deciduous forest. Journal of Agriculture and Forest Meteorology 161, 134–147, Published On-Line April, 2012. doi.org/10.1016/j.agrformet.2012.03.013

Wong, K. W., C. Tsai, B. Lefer, C. Haman, N. Grossberg, W.H. Brune, X. Ren, **W. Luke**, and J. Stutz. (2012). Daytime HONO vertical gradients during SHARP 2009 in Houston, TX, Atmospheric Chemistry & Physics, 12, 635-652. doi:10.5194/acp-12-635-2012.

Conference Presentations/Reports

Barbara Stunder (HQ) gave a presentation titled "The Need for An Evaluation Database for Volcanic Ash Dispersion Models" at the American Meteorological Society (AMS) annual meeting in New Orleans, LA.

Bruce Baker, Tilden Meyers, John Kochendorfer, Ron Dobosy, Ed Dumas, David Senn, and Chris Vogel gave the following presentations at the AMS annual meeting.

- *Error Estimate of Airborne Flux Measurement, Derived from a Wind-Tunnel test and an Atmospheric Case.* ron.dobosy@noaa.gov
- *Evaluation of Hub-Height Wind Speed from the ESRL/GSD High Resolution Rapid Refresh (HRRR).* will.pendergrass@noaa.gov
- *The Importance of Wind Shielding at the NOAA/FAA/NCAR Winter Precipitation Testbed.* john.kochendorfer@noaa.gov
- *Characterization of the Spatial Variability of Land Surface Temperature Around NOAA CRN Sites Using Airborne and Satellite Measurements.* john.kochendorfer@noaa.gov
- *The NOAA/FAA/NCAR Winter Precipitation Testbed "How Well are we Measuing Snow?"* john.kochendorfer@noaa.gov
- *Using Sonic Anemometers for Design and Testing of Windshields.* tilden.meyers@noaa.gov
- *Wind Tunnel Testing of an Aircraft Turbulence Probe.* ed.dumas@noaa.gov
- *Spectral Characteristics of Nearl*-Surface *Turbulent Flow Over West Texas Terrain*. chris.vogel@noaa.gov
- *Evaluation of NOAA's HRRR Model Forecase Hub*-Height Winds. will.pendergrass@noaa.gov

Rick Saylor (ATDD), Pius Lee (HQ), and Jim Meagher (ESRL) coauthored a workshop report entitled: "Summary of the 3rd International Workshop on Air Quality Forecasting Research: November 29, - December 1, 2011." This report has been accepted and is scheduled to be published in the American Geophysical Union's EOS on April 17th. pius.lee@noaa.gov

Steve Brooks (ATDD) gave a presentation on surrogate surfaces and gradient method mercury flux data conducted during the Grand Bay Mercury Study in 2011 at a meeting at Georgia Institute of Technology. From continuous ground-based monitoring using the modified Bowen ratio, gaseous elemental mercury (GEM) fluxes averaged a very low surface emission of 0.06 ± 0.08 ng $m^{-2}hr^{-1}$. Manual denuder gradient gaseous oxidized mercury (GOM) fluxes were conducted on all ten flight days, from approximately 11 a.m. to 3 p.m. While one measurement was indistinguishable from zero, the remaining nine showed GOM deposition of 0.48 ± 0.32 ng $m^{-2}hr^{-1}$. The surrogate surfaces measured an average deposition rate of 1.92 ± 0.32 ng $m^{-2}hr^{-1}$. Extrapolating flux results to an annual basis, the surrogate surfaces indicated a total annual dry deposition of 29 g $km^{-2}year^{-1}$. The GOM gradient fluxes indicated a total dry deposition of 4.2 g $km^{-2}year^{-1}$. The GEM gradient fluxes indicate a surface emission of 0.5 g $km^{-2}year^{-1}$. The wet deposition monitoring showed an annual wet deposition of 15 g $km^{-2}year^{-1}$. All these values are similar to estimates in recently published papers. steve.brooks@noaa.gov

Walt Schalk (SORD) planned and conducted two DOE Meteorological Coordinating Council (DMCC) conference calls. The significant topics of these calls were a review of an issue with wind speed data and X/Q (concentration) results from the MACCS2 model and planning for the Annual Meeting to be held on May 14, 2012 in Seattle, WA. In addition to several talks to be given by DMCC members, there will be a talk by someone from the University of Washington's Atmospheric Science Department and someone from the Pacific Northwest National Laboratory's Climate Group. The topics will include High-Resolution Regional Weather Data for the Pacific Northwest and Global Climate Change. walter.w.schalk@noaa.gov

Awards, Honors, Recognition

Dian Seidel (HQ) agreed to be on a standing NOAA roster of individuals to serve as Integrity Panel Review Chair in potential future inquiries regarding scientific and research misconduct under NOAA's new Scientific Integrity Policy.

Outreach

LaToya Myles (ATDD) presented a technical talk highlighting ATDD's recent ammonia studies at the 2012 NOAA Educational Partnership Program (EPP) Education and Science Forum at Florida A&M University in Tallahassee, FL. She also served as a reviewer for the NOAA 2012 EPP Undergraduate Scholarship applications and as a panelist for a Science, Technology, Engineering, and Math (STEM) Pathways with other scientists and managers from federal and state government.