



FRD ACTIVITIES REPORT

April – June 2010



RESEARCH PROGRAMS

ET Probe

Preparations for deploying Extreme Turbulence (ET) probes during the 2010 hurricane season were disrupted by uncertainty in funding levels for this fiscal year. It was not until June that FRD was notified of the final funding level for the program, which ended up being about 2/3 of what was originally anticipated. As a result, FRD will be deploying only two probes during the hurricane season rather than the five originally planned. The probes have received several upgrades based on experience gained during last year's deployments, including less noisy power supplies and bird spikes to deter perching birds. Both of the deployment sites are offshore navigation lights located in the Florida Keys. A two-person team from FRD will be traveling to the Keys in late July to deploy the probes.

(Richard.Eckman@noaa.gov , Roger Carter, Tom Strong, Shane Beard, Randy Johnson)

Cheaperclipper

Funding has been received for this project. A seven foot diameter polyurethane balloon has been ordered for initial testing. (Randy.Johnson@noaa.gov)

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. The number of HCN-M stations has increased to 49 with 17 stations located in Alabama and 32 stations across Arizona, Colorado, New Mexico, and Utah. As part of FRD's quality control process, a summary of instrumentation problems is submitted monthly to ATDD. Several different quality control products can be viewed on the FRD HCN-M website, which is found at <http://www.noaa.inel.gov/crn/crn.htm>. FRD also conducted 10 annual maintenance visits (AMVs) on western stations in the network. Overall, the stations continue to perform rather well.

(Jason.Rich@noaa.gov and Neil Hukari)

Big Southern Butte Fire Weather Research

Deployment of instrumentation for the Big Southern Butte field study began in June. This study is being conducted by the Forest Service to develop a database for testing and improving wind models in complex terrain for wild fire applications. FRD and Washington State University (WSU) are providing support for the field study.

FRD deployed four sonic anemometers at existing INL mesonet sites in support of the project during the first week of June. Data collection began at the time of installation and will continue until the end of the

project in October. FRD will also provide a complete record of all Weather Research Forecast (WRF) model runs for southeast Idaho to the Forest Service for the duration of the project. The plans call for 2-3 intensive measurement periods during high wind events at which time additional instrumentation will be deployed. During these intensive measurement periods, FRD will also deploy a radar profiler and two sodars upwind of the butte to characterize the approach flow. These will be supplemented by two additional sodars furnished by the Forest Service and WSU. (Dennis.Finn@noaa.gov , Shane Beard, Tom Strong, Rick Eckman)

HRRR Collaboration with ESRL

As part of collaboration with the Global Systems Division at ESRL, FRD is planning on obtaining output from the High Resolution Rapid Refresh (HRRR) forecast model. This model runs hourly at 3 km horizontal grid spacing over the Continental U.S. FRD is interested in obtaining a subset of the model output covering Southeast Idaho. These high-resolution forecasts are potentially useful for FRD's partnership with the INL, including using the output to provide dispersion forecasts based on the HYSPLIT model. Additionally, the output will be useful as part of a potential wind-energy study at the INL. (Richard.Eckman@noaa.gov)

JU03 Urban Plume Dispersion

The paper 'Analysis of urban atmosphere plume concentration fluctuations' was accepted for publication at the journal Boundary-Layer Meteorology (DOI:10.1007/s10546-010-9510-3). (Dennis.Finn@noaa.gov)

Miscellaneous

As part of a reach-back effort, FRD became involved in a NOAA Continuity of Operations (COOP) drill related to a simulated terrorist nuclear device detonation in a Midwestern city. NOAA staff involved in the drill requested support from ARL, and the request was routed to FRD because it was late in the day on the East Coast. The ARL HYSPLIT model did not have a source-term algorithm for such a release at the time, so the model was used to generate plume trajectories for several different altitudes above the ground. As a result of the drill, a nuclear-device source term algorithm is now being added to HYSPLIT. (Richard.Eckman@noaa.gov)

NOAA/IDAHO NATIONAL LABORATORY (INL) METEOROLOGICAL RESEARCH PARTNERSHIP

Emergency Operations Center (EOC)

Team C participated in an EOC drill on 19 May. The drill scenario involved a spill of brucella bacteria within an Idaho Falls INL laboratory room. The FRD dispersion model was run once for a release from the building and current weather conditions were provided for a NARAC model run by the EOC Hazard Assessment Specialist.

A quarterly assessment specialist drill took place on 27 May. It involved a small accident with radioactive material at the Advanced Mixed Waste Treatment Project. The amount of material involved was too small to require the use of any of FRD's dispersion modeling tools.

On 9 June FRD staff participated in the INL Annual EOC Exercise. The scenario involved an accident within a nuclear material storage area at the Material & Fuels Complex. This event was one that had been identified in planning scenarios for the INL, so FRD's dispersion decision support tool already included a source term for the event. Modeling results indicated the hazard area was relatively close to the release point. FRD was not able to use its new HYSPLIT tool for this exercise, because this release scenario has not yet been added to the new tool. (Richard.Eckman@noaa.gov and Randy Johnson)

INL Hazardous Weather Alert System

Hazardous weather occurrences picked up during the spring after a rather uneventful winter. Eleven weather statements were issued during the most recent three months compared to only two during the previous quarter. Spring storms increased winds and brought occasional severe thunderstorms. Six of the statements were issued for lightning while the other 5 statements were issued due to high winds. The local Pocatello National Weather Service Forecast Office does not issue lightning alerts but does issue warnings for high wind. Pocatello NWS did eventually issue warnings for two of the high wind events after coordination with FRD meteorologists but did not issue any warnings for the other three events. (Jason.Rich@noaa.gov and Neil Hukari)

Transport and Dispersion Modeling

The beta version of the INL-EOC HYSPLIT software system for the mapping of airborne radiological plumes was formally released for use in the EOC on June 1. Work is already underway on some major revisions including providing additional features to the user. Chief among these are the utilization of KML output files and providing a complete library of all the preconfigured radiological release scenarios. The latter will be accomplished by developing a program that will enable the user to revise existing scenarios or create new ones. Work on developing a comprehensive Software Quality Assurance (SQA) plan and a User's Guide for the new software was begun. (Dennis.Finn@noaa.gov and Brad Reese)

FRD largely completed modeling work for the INL's Advanced Test Reactor (ATR) Life Extension Program. This involved running the MDIFF dispersion model using archived data from the NOAA/INL Mesonet spanning 2004-2008 and then computing concentration statistics for the entire five-year period. The model output and a draft report were delivered to INL in early June. This information will be used as part of the re-licensing procedure for the reactor. (Richard.Eckman@noaa.gov and Neil Hukari)

FRD was involved in a separate ATR activity related to elevated radiation levels detected in the reactor's stack emissions. Although the elevated levels were not a safety issue, FRD was asked to conduct a series of dispersion modeling runs to compute on-site doses. The runs were completed relatively quickly using the same MDIFF configuration as for the ATR Life Extension Program. (Richard.Eckman@noaa.gov)

NOAA/INL Mesoscale Meteorological Network (Mesonet)

FRD is continuing an effort to locate, document, and make available historical meteorological data from the INL. Meteorological data in some form has been recorded at the INL since about 1950. It has been recorded in a variety of formats at different times. This quarter, five additional data sets were recovered from old computer tapes. The file formats have been documented and the data sets copied to CDs so they are readily available. The effort is now being directed towards finding someone that can read several old magneto-optical disks that may contain additional data. (Roger.Carter@noaa.gov)

In conjunction with the spring semi-annual maintenance and calibration procedure for the INL mesonet, all of the data loggers were upgraded to a new communications protocol. This requires considerably less start up overhead and allows data collections to begin within a few minutes of a system reboot or restart instead of the 20 to 25 minutes of startup required by the old protocol. (Roger.Carter@noaa.gov, Randy, Brad, Shane, Tom)

INL Renewable Energy Proposal

DOE has issued orders to investigate the development of renewable-energy power production at its facilities spread across the U.S. A preliminary study indicated INL has the largest wind-energy production potential of all the DOE laboratories. As a result, FRD is talking with INL on conducting a more detailed study of both the wind and solar energy potential at the INL site. This study would rely on data from the NOAA/INL Mesonet together with some modeling to account for terrain effects. The Mesonet already has instrumentation to measure total solar radiation, but additional equipment would need to be purchased to separately measure direct and diffuse solar radiation. At this point the renewable-energy study is still in the proposal stage. (Kirk.Clawson@noaa.gov and Rick Eckman)

Miscellaneous

With the upcoming retirement of Neil Hukari at the end of July, FRD is continuing to train personnel and create job procedures and checklists for his position as lead duty NOAA/INL weather forecaster and head Mesonet QC manager. With the training and procedures expected to be complete in July, FRD is expecting a smooth transition after his departure. Neil has been the NOAA/INL duty forecaster for over 25 years.

Jason Rich represented FRD in a booth at the INL Safety and Health Fair on May 18, 2010. Jason handed out NOAA/INL weather safety information and met with a number of clients during the event.

OTHER ACTIVITIES

Papers

Finn, D, K.L. Clawson, R.G. Carter, J.D. Rich, M. Leach, and C. Biltoft, 2010: Analysis of urban atmosphere plume concentration fluctuations. (Accepted at Boundary-Layer Meteorology; DOI:10.1007/s10546-010-9510-3)

Clawson, K.L., 2010: NOAA HYSPLIT and emergency response. EMISIG Annual Meeting, May 3, 2010, Las Vegas NV.

Safety

At the April staff meeting the employees completed an ergonomics quiz and received a handout on “A Walking Program Built for You”.

May’s staff meeting included a video by Coastal Video Communication on “Lawn Care Hazards”.

At the June staff meeting the employees viewed “Wasps and Spiders” by Digital 2000, Inc.

In April Debbie Puccinelli with the INL began an ergonomic assessment of all FRD office work stations. Debbie submitted evaluations of most of the work stations (some employees were out of the office during her visit) and the remaining employees will be assessed in the 4th quarter. Employees' ergonomic supplies and equipment are currently in the procurement process.

An office evacuation/shelter in place drill was completed in May.

Training

In June Tom Strong and Shane Beard completed fork lift training provided by the INL. This training is required every three years.

All FRD employees and contractors completed the Annual Security Briefing for Un-Cleared Employees, ES&H Awareness Refresher, and Counterintelligence training in June. This is an annual requirement by DOE-ID for work at the INL.

Kirk Clawson and Donna Davis completed the Federal IT Accessibility Initiative 508 Universe, GSA SmartPay, and Government Ethics training in June. These requirements were due to the government wide Convenience Check program being transferred from NOAA Finance to the NOAA Acquisitions & Grants Office.

Travel

Kirk Clawson to Las Vegas, NV, May 2-6, to attend and give presentations at the DMCC and EMISIG Meetings.

Tom Strong and Shane Beard to various locations in Utah, Arizona, New Mexico, and Colorado, June 20–July 2, to complete HCN-M AMV duties.

Miscellaneous

Jason Rich attended a weather case study review at the Pocatello NWS on April 28th. The case study was on a severe weather event that occurred across southeast Idaho.

Jason Rich answered a question from the Ask a Scientist program sponsored by the Post Register newspaper in Idaho Falls. The questions and answers appear in a midweek edition of the paper. The latest question involved the difference between hail and sleet.