Science, Service, and Leadership

The material presented below includes membership on NOAA boards & committees and other federal, interagency, and state committees; service to international research organizations, professional societies and journals, and universities; membership in professional societies; reviewer and editorship of journals; and invited talks and lectures by ARL scientists. Also included are HYSPLIT trainings and forums provided by ARL staff. The period covered is 2010 - 2015.

Membership on NOAA Boards & Committees and Other Federal, Interagency, or State Committees

Barbara Stunder:
Science Team Leader for the NOAA Volcanic Ash Working Group
Member of the Federal Emergency Management Administration, Federal Radiological Preparedness Coordinating Committee

Dian Seidel:
Chair, Council of NOAA Fellows
Member, Working Group for the GCOS Reference Upper Air Network; Co-Chair of the SPARC Stratospheric Temperature Trends Activity; and Director, American Institute of Physics

Rick Saylor:
Member, NOAA Aerosols and Climate Fact Sheet Working Group (2015); Reviewer, NOAA Joint Polar Satellite System-Proving Ground Risk Reduction Program (April 2015)
Member, Steering Committee (and NOAA Representative to) the Interagency Monitoring of Protected Visual Environments (IMPROVE) Network

LaToya Myles:
Co-chair, NOAA Ecosystem Research Committee
Steering Committee Member, 5th Annual Hypoxia Research Coordination and Mississippi River Diversion Ecosystem Modeling Workshop, led by NOAA's National Ocean Service
Executive Board Member, NOAA Graduate Sciences Program Alumni
Member, NOAA Ecosystem Services Team

Julian Wang:
Advisory Board Member to NOAA Center of Atmospheric Science at Howard University, 2008-2013
Advisory Board Member to NOAA Cooperative Remote Sensing Science and Technology Center at City College of New York, 2007-2012

Mark Cohen:
Supervisor/Mentor for Intern, NOAA Hollings Scholarship Program, 2014-15
Supervisor/Mentor for Intern, NOAA Five-Colleges Internship Program, 2010
Member, NOAA Library Advisory Council, 2010-2013

Rick Artz:
Member, National Atmospheric Deposition Program Executive Committee.
Member, NADP Network Operations Subcommittee
Member, Committee on Environment and Natural Resources Air Quality Research Subcommittee – Participant in cross-government discussions concerning air quality research

Kirk Clawson:
Working Group Member, ANSI-ANS 3.11-2015 development team.
Member, Department of Energy Meteorological Coordinating Council.

Walt Schalk:
Chairman, Department of Energy Meteorological Coordinating Council, Emergency Management Issues - Special Interest Groups

Will Pendergrass:
Chair: Interagency Nuclear Safety Review Panel / Meteorology Working Group

Winston Luke:
Member, National Atmospheric Deposition Program Network Operations Subcommittee.

Richard Eckman:
Member, DOE Idaho National Laboratory, Monitoring & Surveillance Committee, 2010-present
Chairman, DOE Idaho National Laboratory, Monitoring & Surveillance Committee, 2012

Pius Lee:
Principal Investigator in the NASA Air Quality Applied Sciences Team research program.

Bruce Baker:
Chairman, American Meteorological Society Committee on Meteorological Observations and Instrumentation.
Program Chairman for the 18th Symposium on Meteorological Observations and Instrumentation
Member, Cooperative Institute for Climate and Satellites Executive Board

Service to International Research Organizations

Bruce Baker:
Vice President, WMO Committee on Instruments and Observations

Member, WMO International Organizing Committee for the Solid Precipitation Intercomparison Experiment

John Kochendorfer:
Subject Matter Expert, deputy chair of the Data Analysis Team, and chair of the Quantification of Uncertainty team for the World Meteorological Organization, Solid Precipitation Intercomparison Experiment.

Rick Saylor:
A Workshop Coordinator for the 3rd (2011) and the 7th (2015) International Workshop on Air Quality Forecasting Research

Rick Artz:
Member, International Air Quality Advisory Board of the International Joint Commission between the U.S. and Canada.
Chairman, WMO Global Atmosphere Watch Precipitation Chemistry Science Advisory Group.
Steering Committee Member and a Workshop Coordinator for the 3rd (2011) and the 7th (2015) International Workshop on Air Quality Forecasting Research.
Member, US-Canada Air Quality Committee – Contributor to the generation of reports to Governments concerning air quality issues affecting the US and Canada. This committee was formed in 1991 as a consequence of the formation of the North American Free Trade Agreement

Ariel Stein:
Chair, WMO Science Advisory Group on Total Atmospheric Deposition (since October 2015)
A Workshop Coordinator for the 7th (2015) International Workshop on Air Quality Forecasting Research

Winston Luke:
Advisor and NOAA Representative, Asia Pacific Mercury Monitoring Network

Mark Cohen:
Invited Session Chair; Atmospheric Mercury; 11th International Conference on Mercury as a Global Pollutant (ICMGP); Edinburgh, Scotland, 2013.

Pius Lee:
A Workshop Coordinator for the 3rd (2011) and the 7th (2015) International Workshop on Air Quality Forecasting Research

Tianfeng Chai:
Member, European Centre for Medium-Range Weather Forecasts Copernicus Services External Evaluation Experts

Service to Professional Societies and Journals

Dian Seidel:
Chair, of the American Meteorological Society's Committee on Environmental Responsibility (2011-2013).

Tilden Meyers:
Editorial Board for the journals - Boundary Layer Meteorology and Agricultural and Forest Meteorology. Guest Editor for the journal- Advances in Water Resources

Barbara Stunder:
Reviewer for the journals - Atmospheric Environment, Journal of Applied Meteorology and Climatology, JGR-Atmospheres, and American Geophysical Union Books.

Youhua Tang:
Reviewer for the journals - Journal of Geophysical Research – Atmospheres, Geophysical Research Letter, Atmospheric Environment, Atmospheric Chemistry and Physics, and Journal of Atmospheric Chemistry

Pravenna Krishnan:
Reviewer for the journals - Agricultural and Forest Meteorology, Agricultural Systems, Archives of Agronomy and Soil Science, Asia-Pacific Journal of Atmospheric Sciences, Atmosphere, Dynamics of Atmospheres and Oceans, Earth-Science Reviews, Global Change Biology, Geophysical Research Letters, International Journal of Environmental and Waste Management, Journal of Climatology, Journal of Applied Meteorology and Climatology, Journal of Geophysical Research –Atmospheres, Journal of Earth System Science, Journal of Solar Terrestrial Physics, Meteorology and Atmospheric Physics, Plos One, and Editorial board of the International Scholarly Research Notices-Meteorology

Youhua Tang:
Reviewer for the journals - Journal of Geophysical Research – Atmospheres, Geophysical Research Letter, Atmospheric Environment, Atmospheric Chemistry and Physics, Journal of Atmospheric Chemistry

Glenn Rolph:
Reviewer for the journals - Journal of Air & Waste Management Association; Journal of Environmental Radioactivity, and Journal of Applied Meteorology and Climatology and reviewer for the U.S. Department of Agriculture Small Business Innovative Research Grants

Rick Saylor:
Reviewer for the journals - Environmental Science and Technology, Atmospheric Pollution Research, Environmental Monitoring and Assessment, Aerosol and Air Quality Research, Atmospheric Environment, Atmospheric Chemistry and Physics, and the Journal of the Air and Waste Management Association

Richard Artz:
Reviewer for the journals - Atmospheric Environment and Atmospheric Chemistry & Physics

Fantine Ngan:
Reviewer for the journals - Journal of Geophysical Research, Journal of Applied Meteorology and Climatology, Environmental Science & Technology, Electronic Journal of Operational Meteorology, Atmospheric Research, Atmospheric Environment, Atmospheric Chemistry and Physics, Advances in Atmospheric Science

Winston Luke:
Reviewer for the journals - Atmospheric Environment, Atmospheric Chemistry and Physics, Journal of Geophysical Research, and for the National Science Foundation

Mark Cohen:
Reviewer for the journals - Nature Geoscience, Environmental Science and Technology, Journal of Geophysical Review - Atmospheres, Atmospheric Environment, Atmospheric Chemistry and Physics, Journal of the Air and Waste Management Association, Atmosphere, and Air Quality, Atmosphere and Health

Ron Dobosy:
Reviewer for the journals - Journal of Atmospheric and Oceanic Technology (AMS), Meteorological Applications (Wiley), Weather and Forecasting, as well as reviewer for NSF proposals and the DOE Small Business Innovative Research proposals

Alice Crawford:
Reviewer for the Journal of Geophysical Research- Atmospheres

Pius Lee:
Reviewer for the Journal of Geophysical Research, Atmospheric Environment, Environmental Science and Technology, Atmosphere, and Journal for Air and Waste Management Association

Richard Eckman:
Reviewer for the journals - Atmospheric Environment and Boundary-Layer Meteorology

Walt Schalk:
Contributor/Writer for the American Nuclear Society Standards Committee on the ANS/ANSI-3.11-2015, Determining Meteorological Information at Nuclear Facilities

Service to Universities

Rick Saylor:
Advisor to Dr. Barry Baker, National Research Council Research Associate Program (November 2014-October 2015); PhD Committee Member for Barry Baker, Department of Physics, University of Maryland-Baltimore County (2014-2015)

Richard Eckman:
Ph.D Committee Member, Department of Atmospheric Science, University of Wyoming (2008-2012)

Ron Dobosy:
Personnel Manager of the ORAU Research Group at the Oak Ridge Associated Universities.

Memberships in Professional Societies

American Geophysical Union

Rick Artz
Tianfeng Chai (2010-2012)
Ron Dobosy
Tilden Meyers
Julian Wang
Steve Fine
LaToya Myles
Melissa Free
Will Pendergrass
HyunCheol Kim
Rick Saylor
John Kochendorfer
Ariel Stein
Praveena Krishnan
Daniel Tong
Temple Lee
Winston Luke
Min Huang
Xinrong Ren
Pius Lee

American Meteorological Society

Bruce Baker
Tilden Meyers
Will Pendergrass
Tianfeng Chai (2010-2013)
Glenn Rolph
Kirk Clawson
Walt Schalk
Julian Wang
Ron Dobosy
Ed Dumas- elected President of the AMS Smoky Mountain chapter (2010 & 2015)
Dian Seidel (Chair AMS Committee on Environmental Responsibility 2011-2013)
Barbara Stunder
Steve Fine
Tim Wilson
John Kochendorfer
Praveena Krishnan
Temple Lee
Alice Crawford
Pius Lee
Kip Smith
Richard Eckman

American Association for the Advancement of Science

Rick Saylor

American Association for Aerosol Research

Rick Saylor

American Chemical Society

Mark Cohen
Winston Luke
LaToya Miles

American Institute of Aeronautics and Astronautics

Ed Dumas

Association of Unmanned Vehicle System International

Ed Dumas
Bruce Baker

Earth Science Women's Network

LaToya Myles

National Organization of Black Chemists & Chemical Engineers

LaToya Myles

Federally Employed Women

LaToya Myles (Seas and Skies Chapter)
Gabrielle Land (Oak Ridge Chapter)

Alpha Zeta

Kirk L. Clawson

European Geosciences Union

Tianfeng Chai (2013)

National Eagle Scout Association

Kirk L. Clawson

Sigma Xi- Scientific Research Society

Kirk L. Clawson
LaToya Myles

World Meteorological Organization

Richard Artz, Chairman WMO, Global Atmosphere Watch Precipitation Chemistry Science Advisory Group (through 2015)
Ariel Stein, Chairman WMO, Global Atmosphere Watch Total Atmospheric Deposition Science Advisory Group (beginning 2016)
Bruce Baker, WMO International Organizing Committee for Solid Precipitation Intercomparison
John Kochendorfer, Vice President of WMO Committee on Instruments and Observations

Invited Talks/Lectures

Barbara Stunder:
Oral presentation: HYSPLIT volcanic ash dispersion modeling R&D, NOAA NWS NCEP operations, and transfer to operations at the WMO 7th International Workshop on Volcanic Ash in Anchorage, AK (2015)

Xinrong Ren:
Invited Seminar; Atmospheric oxidation chemistry and ozone production: Results from SHARP; University of Maryland, College Park, MD; 2012
Invited Lecture; Airborne OH reactivity measurements and comparison with calculations: Results from the DC3 Study; International Symposium; Mainz, Germany; 2014

Praveena Krishnan:
Oral presentation: Comparison of land surface temperature measurements at NOAA CRN sites with airborne and satellite observations at the American Geophysical Union Fall Meeting, 2011.

Glenn Rolph:
Invited presentation “Use of the ALOHA source term model to enhance the NOAA HYSPLIT atmospheric dispersion model” at the annual meeting of the Association for the Prevention of Contamination of the Air and Soil (APCAS), Sherbrooke, Quebec, Canada, 2014

Rick Saylor:
“Particle Dry Deposition Algorithms in Air Quality Models: Old, New and Future” 7th International Workshop on Air Quality Forecasting Research (2015)
“Response of total NH3 to reductions in atmospheric levels of SO2 and NOx: An analysis of data from SEARCH” American Association of Aerosol Research Annual Meeting (2014)
“Secondary Organic Aerosol Precursor Concentrations and Fluxes from an Isoprene Emission Dominated Forest Canopy” International Aerosol Modeling Algorithms Conference, University of California, Davis, Dec 3-6, 2013.
“An investigation of secondary organic aerosol precursors and formation processes in and above deciduous forest canopies” 31st Annual Conference of the American Association for Aerosol Research, Minneapolis, MN, October 8-12, 2012.
“Identifying the causes of seasonal biases of PM2.5 concentrations in CMAQ simulations”, 30th Annual Conference of the American Association for Aerosol Research, Orlando, Florida, October 3-7, 2011.
Air Quality Forecasting Research at the NOAA Air Resources Laboratory, Advances in Texas Air Quality: A tribute to Dr. Daewon Byun, University of Houston, Houston, TX, April 19, 2011.
R. D. Saylor, B. Wang, Y. Kim, A. Stein, P. Lee, T. Chai, D. Tong, H. Kim, Y. Choi, F. Investigation of the Seasonal Biases of PM2.5 from the Community Multiscale Air Quality Model, American Association for Aerosol Research Annual Conference, Portland, Oregon, Oct 25-29, 2010.
Investigating Differences in Ozone Production from CB05 and CBMIV Versions of the NAQFC, 9th Annual Community Modeling and Analysis System Conference, University of North Carolina at Chapel Hill, Oct 11-14, 2010.

Richard Artz:
Invited lecture on Current and Potential Satellite Data Applications for the Air Resources Laboratory Air Quality, Dispersion, and Deposition Programs, NOAA NESDIS/STAR/JPSS Annual Science Team Meeting, 2015.
Invited lecture on the WMO GAW Precipitation Chemistry Science Advisory Group Activities, International meeting of the WMO Global Atmosphere Watch Program, Geneva, Switzerland, 2013.

Ariel Stein:
Invited Speaker: “Sulfate aerosol formation and oxidation pathways: sensitivity to the choice of chemical mechanism employed in simulations” American Chemical Society, Middle Atlantic Regional Meeting, May 31-June 2, 2012.
Invited lecture Environmental Engineering Master Program (Interunivesitario en Ingenieria Ambiental) teaching the graduate course entitled “Contaminacion Atmosferica: Origen, Tratamiento y Control”, at the Universidad Internacional de Andalucia in Huelva, Spain. Annually from 2011 - 2016.

LaToya Myles:
“Impacts of Air Quality on Marine and Coastal Ecosystems,” NOAA Environmental Cooperative Science Center Seminar Series, Florida A&M University School of the Environment, Tallahassee, FL, 2015.
“Air Quality and Ecosystem Research,” Elise B. Newell Seminar Series, Apalachicola Bay National Estuarine Research Reserve, Eastpoint, FL, 2015.
“Sources and Sinks: Ammonia Flux in Agricultural Ecosystems,” Fall Meeting of the American Geophysical Union, San Francisco, CA, 2013.
“What goes up must come down: Emission and deposition of trace gases,” Ignite@AGU2012, San Francisco, CA, 2012.
“A delicate balance: Ammonia in the atmosphere and biosphere,” Reactive Nitrogen Coordination Network: Impacts of Excess Reactive Nitrogen in the Environment on Human Health Workshop, Bethesda, MD, 2012.

"Ammonia Air-Surface Exchange: From the Biosphere to the Atmosphere and Back Again," NOAA Educational Partnership Program Education & Science Forum, Tallahassee, FL, 2012.

Winston Luke:
Invited Lecture - "Collaborative Measurements of Air Quality" at the Exploratorium Pier 15 for the NOAA-Exploratorium Vision Council Meeting, La Jolla, California; 2014
Invited Lecture – "Atmospheric Mercury Measurements and Modeling at NOAA's
Air Resources Laboratory (ARL)" at the Asia Pacific Mercury Monitoring Network program meeting, Hanoi, Vietnam; 2014
Invited Lecture – "Atmospheric Mercury Research at NOAA's Air Resources Laboratory" at the East Asia Mercury Monitoring Workshop; Taipei, Taiwan, 2012

Mark Cohen:
Invited Course Developer/Lecturer- Back Trajectory Workshop, a one-day, hands-on, computer-modeling short-course; 12th International Conference on Mercury as a Global Pollutant (ICMGP); Jeju, South Korea, 2015.
Invited Presentation- Modeling the Atmospheric Transport and Deposition of Mercury to the Great Lakes; 12th International Conference on Mercury as a Global Pollutant (ICMGP); Jeju, South Korea, 2015.
Invited Presentation- Evaluating the HYSPLIT-Hg Atmospheric Mercury Model Using Ambient Monitoring Data; 10th International Conference on Mercury as a Global Pollutant (ICMGP); Halifax, Nova Scotia, 2011.
Invited Briefing- Atmospheric Mercury; U.S. Dept of Justice; 2012.
Invited Presentation- Transport and Deposition of Mercury to the Great Lakes; IJC International Air Quality Advisory Board; 2012.
Invited Presentations- Atmospheric Mercury; several presentations, to numerous visitors to ARL, including NWS Leadership, OAR Leadership, Congressional Representatives, and others; College Park, MD, 2012-2015.
Invited Presentation- Atmospheric Mercury: Links between Modeling and Monitoring; Asian-Pacific Mercury Monitoring Network Workshop; College Park, MD; 2013.
Invited Presentation; Modeling the Atmospheric Transport and Deposition of Mercury to the Great Lakes; 11th International Conference on Mercury as a Global Pollutant (ICMGP); Edinburgh, Scotland, 2013.
Invited Presentation; Mercury Overview [and] Modeling the Atmospheric Transport and Deposition of Mercury to the Great Lakes; White House Office of Science and Technology Policy, Committee on Environment, Natural Resources and Sustainability, Air Quality Research Subcommittee; Washington D.C.; 2014.
Invited Presentation; The HYSPLIT Model; Exposure Science for the 21st Century; Interagency Task Force; Webinar for Agency representatives throughout the country; 2015.

Alice Crawford:
Invited lecture – "NOAA ARL: HYSPLIT and Satellite Observations, Volcanic ash forecasting and other applications" at the Cooperative Institute for Climate and Satellites Science Meeting 2015
College Park, MD

Tianfeng Chai:
Provided a talk titled "Inverse modeling with HYSPLIT Lagrangian dispersion model" at the University of Maryland, College Park Sep. 11, 2015

Pius Lee:
Invited speaker to a planning committee for a DISCOVER-AQ type campaign in Seoul, Korea 2014
Invited Seminar Speaker for the Center for Spatial Information Science and Systems, George Mason University, VA, 2015.
Invited Seminar Speaker for the Physics Department, University of Maryland, Baltimore County, 2013 and 2014.
Invited Speaker for the Annual Mid-Atlantic Regional and Management Association Conference, Charlottesville, VA (2013).

Richard Eckman:
Provided a seminar on the Upgrade of NOAA's Dispersion Modeling for Idaho National Laboratory Site Applications, DOE Facility Managers Meeting, Idaho Falls, ID, 2011
Barry Baker:
Provided a presentation 'Improving the Nocturnal Wind Speed Bias and Daytime Ozone Prediction using a Dynamic Bulk Critical Richardson Number" to the Community Modeling and Analysis System Conference 2015

Tilden Meyers:
Invited Speaker to the NSF Hydrologic-Atmospheric Community Workshop., 3 September 2014, Colorado School of Mines and Technology, Golden, CO, 2014
Invited Speaker to the Third COSMOS workshop, Tucson, AZ, USA, 10-12 December 2012, The Role of Ameriflux and CRN with COSMOS
Invited Speaker to Purdue University, March 2013, Advances and Current Gaps in our Understanding of the Carbon and Water Budgets in the Mid-western U.S.
Invited Speaker and Moderator for "Developing a Coordinated National Soil Moisture Network", NOAA's National Weather Service National Training Center, Kansas City, MO, November 13-14th, 2013
Invited speaker for NASA/USDA Evapotranspiration Workshop on April 5-7, 2011 at the Hilton Silver Spring. MD.

HyunCheol Kim:
Invited presentation, Evaluation of modeled surface ozone biases as a function of cloud cover fraction, 1st International Workshop on SLCP in Asia: Chemistry-climate modeling and its applications, Seoul, Korea, 2015
Invited presentation, Mid-latitude cyclogenesis and regional air quality in the United States, 92nd American Meteorological Society Annual Meeting, New Orleans, LA, 2012
Invited presentation, UH-IMAQF Air Quality Forecast System, Advances in Texas Air Quality conference, Houston, TX, 2011

Jason Rich:
Formal presentation, "Tornado and high wind climatology of the Idaho National Laboratory" Idaho National Laboratory, February 5, 2014

Brad Reese:
Presented the HYSPLIT Decision Support Tool to the Idaho National Laboratory Monitoring and Surveillance Committee in 2011. The presentation included a demonstration of the Tool.

Daniel Tong:
Invited talk, "Emission forecasting for the National Air Quality Forecasting in the United States" at a 2011 workshop on near real-time data application in air quality forecasting held in Hanghzhou, China. The workshop was organized by the World Meteorological Organization as part of the Global Atmosphere Watch/Urban Research Meteorology and Environment pilot projects.

Bruce Baker:
Presented "How do we Maintain Sustainable High-Quality Climate Observation Networks That can Answer the Question: How Has the Climate Changed Over the Past Fifty Years?" at the 45th Canadian Meteorological and Oceanographic Society Meeting in Victoria, BC June 2011.

John Kochendorfer:
Presented two talks, "NCAR; Field Estimates of Sonic Anemometer Angle of Attack Errors" and "Windshield Efficacy at the NOAA/FAA/NCAR Winter Precipitation Testbed" at the 45th Canadian Meteorological and Oceanographic Society Meeting in Victoria, BC June 2011.
Presented a talk entitled, "The measurement of leaf litter water content in a deciduous forest", at the 30th Conference on Agricultural and Forest Meteorology in Boston, MA (2012). The talk was on the importance of litter moisture in the carbon cycle in deciduous forests, and it described new field techniques developed at ATDD to monitor litter moisture and litter respiration.

HYSPLIT Trainings/Forums

In addition to the examples of in-person trainings and instruction provided below, ARL developed and maintains on-line tutorials on the use of the HYSPLIT model that are available via the internet, at http://www.ready.noaa.gov/HYSPLIT_Tutorials.php. These on-line tutorials comprehensively cover the use of the HYSPLIT model and are updated as the model evolves.

2010
Mark Cohen began a series of HYSPLIT trainings for scientists in the EPA's Clean Air Markets Division on the use of HYSPLIT to analyze and interpret air pollution measurement data. The trainings have taken place in several stages over the years 2010-2015 and were given at NOAA, at EPA, and through virtual means (e.g., Go-to-Meeting). As a result of this assistance, EPA scientists have developed internal systems that use HYSPLIT extensively in the analysis of air pollution data.

2011
Mark Cohen provided a series of HYSPLIT trainings to scientists at Texas Christian University (TCU) to show them how HYSPLIT and HYSPLIT-Hg could be used to help interpret and understand patterns of fish mercury contamination in Texas and nearby states. Numerous in-person and virtual sessions were involved and included hand's on instruction on both trajectory and dispersion simulations and integrating HYSPLIT outputs with GIS applications. The sessions started in the fall of 2010 and continued through the first several months of 2012.

2012
Glenn Rolph and Roland Draxler traveled to the NWS Weather Forecast Office in Wilmington, NC in April, 2012 and gave a one day training workshop on the use of the currently available web-based HYSPLIT model designed for use by weather forecasters during emergency response events. This training included a background on the HYSPLIT model and its use for emergency response applications, such as smoke from industrial fires, wild fires, and prescribed burns, as well as its use for releases of radioactive materials into the air. The presentation was well received by the forecasters, and several indicated that they will be contacting their local emergency managers to let them know of the products they can now produce for them using the web-based HYSPLIT system.

Mark Cohen created and provided customized, advanced training to a group of HYSPLIT users, including scientists from the Red Cliff Band and the Bad River Band of Lake Superior Chippewa. The hand's-on training was provided through a series of two-way, Go-to-Meeting interactive sessions. Numerous topics were covered, including the use of scripts, advanced analysis of meteorological data, use of HYSPLIT outputs with GIS systems, and use/display of emissions inventories. These Native American groups have been concerned with mercury contamination of fish in their territory. As a result, they have collected atmospheric mercury measurements. The training was provided to show them how to use HYSPLIT to provide insights into where the mercury that they measured in the air was coming from.

ARL created a Forum (https://hysplitbbs.arl.noaa.gov/) for HYSPLIT Dispersion Model users to communicate questions, problems, and ideas for upgrades. Since the Forum was established in November 2012, there have been 710 postings and 300 participants who have posted questions.

2013
Mark Cohen provided a series of HYSPLIT trainings to scientists at Florida State University to support their use of the model in several research projects. Trainings included topics in meteorological analysis, scripting, back-trajectories, dispersion, GIS-integration, and other areas. The hands-on training has primarily been provided through two-way, Go-to-Meeting sessions. These trainings began in 2012 and continue through the present.

Mark Cohen provided a series of HYSPLIT trainings to scientists at the USGS to help them use HYSPLIT in a project analyzing climate patterns in the U.S. Southwest. The assistance began in 2013 and carried into 2014, and was largely provided through "virtual" modes, e.g., Go-to-Meeting.

2014

ARL staff provided training on the new HYSPLIT/ALOHA web interface to NWS forecasters through a series of webinars to each NWS region. The training provided a background of the HYSPLIT/ALOHA integration, the web interface, and how to interpret the results. ARL scientists answered HYSPLIT specific questions. Feedback provided by the NWS coordinators indicated that the webinars were well attended and the interest was high.

Glenn Rolph gave a webinar to NWS Southern Region forecasters that provided them with background material and a demonstration of the HYSPLIT improvised nuclear device (IND) simulation. The IND simulation was added to the modeling tools available to the forecasters on the HYSPLIT web server and was to be used by the forecasters during a Federal Emergency Management Agency IND exercise.

Glenn Rolph and Roland Draxler travelled to New York and gave a 2-day HYSPLIT training to representatives from the New York State Department of Environmental Conservation, the New York State Department of Health, and the New York State Division of Homeland Security and Emergency Services in Albany, NY. The first day of training was a condensed version of a 3-day HYSPLIT workshop, which ARL hosts in Maryland each year on the use of the PC version and how to interpret the results. The second day focused on the web-based HYSPLIT model and its use for emergency response applications, such as smoke from large industrial and wild fires. Glenn and Roland also gave a demonstration of the enhanced version of HYSPLIT designed for the National Weather Service forecast offices that includes the chemical and nuclear dispersion modules. A representative from the Albany NWS forecast office, Kevin Lipton, gave a short presentation on the use of HYSPLIT during a major fire in Albany in 2012, and discussed the office's capabilities for providing support during major incidents.

Mark Cohen provided a series of Go-to-Meeting tutorials for a group of scientists at Rutgers University and the Bayer Corporation on the use of HYSPLIT for various air pollution applications. Extensive instruction was given regarding trajectories and dispersion, including the use of scripting to carry out analyses.

2015

Glenn Rolph and Ariel Stein traveled to the Oak Ridge National Laboratory (ORNL) and provided HYSPLIT training to several ORNL employees. The training placed an emphasis on deposition, input meteorological data, and the puff versus the particle calculation methods. The ORNL employees are involved in a project that integrates the HYSPLIT transport and dispersion model with the Cloud Rise Module of the Defense Land Fallout Interpretive Code (DELFIC), which is headed by Dr. Vincent Jodoin. DELFIC had been using a rather simple Gaussian plume model to transport the nuclear material. With ARL's assistance, they are incorporating a more sophisticated dispersion model (HYSPLIT) into DELFIC.

Mark Cohen developed and taught an invited, one-day short-course on the use of HYSPLIT at the 12th International Conference on Mercury as a Global Pollutant (ICMGP) in Jeju, South Korea. The course was "hands-on" and the participants learned how to use tools in the HYSPLIT modeling suite to analyze air pollutant measurement data. Instruction was provided for HYSPLIT's Graphical User Interface (GUI) and also for HYSPLIT-related scripting on Windows, MAC, and Linux platforms. Participants learned about meteorological data to run HYSPLIT, how to run back-trajectories, and methods to analyze data using the back-trajectory results (e.g., trajectory frequency maps).

Mark Cohen gave one-day training to faculty and students at the University of Maryland (UMD) on the use of HYSPLIT. The hands-on training involved installation of the model on Windows, MAC, and Linux platforms; running the modeling suite from the GUI; and numerous scripting applications. Subsequent to

that initial training, ARL scientists have provided additional assistance on the use of HYSPLIT to support several different UMD research projects.

Mark Cohen gave customized trainings to scientists at the Desert Research Institute and Clarkson University regarding the use of HYSPLIT in their research projects. The Clarkson collaboration has continued into 2016.