

Visit to NCAR

Ruby Leung visited the National Center for Atmospheric Research (NCAR) between June 26 and August 29 to work with collaborators at NCAR on developing a regional climate modeling capability using the Weather Research and Forecast (WRF) model. During her visit, Ruby also worked with Jimmy Dudhia, Bill Kuo, Bill Large, Phil Merilees, Joe Tribbia, and others at NCAR and Jim McWilliams of UCLA to develop strategies for using the WRF model for upscaling and downscaling climate research. Ruby's visit was supported by the NCAR Mesoscale and Microscale Meteorology (MMM) and Climate and Global Dynamics (CGD) Divisions and a PNNL LDRD project led by Tom Ackerman.

NOAA-GEWEX Americas Prediction Project Principal Investigators' Meeting and the Mountain Workshop

Ruby Leung attended the NOAA GEWEX Americas Prediction Project (GAPP) Principal Investigators' Meeting and the Mountain Workshop in Seattle, Washington, from July 21-24, 2003. She gave two plenary presentations (see Presentations/Publications) on the cold season hydrometeorology of the western United States and modeling of orographic effects.

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G-1 Test Flights

From August 10-15 at the Pasco, Washington, PNNL flight facility Rich Barchet, Bob Hannigan, Dick Hone, John Hubbe, Tom Jobson, Vic Morris, and John Schmelzer collaborated with visitors Paul Doskey and Mikhail Pekour from Argonne National Laboratory (ANL) to successfully flight-test a new fast-response isoprene sensor and eddy accumulation system developed at ANL. Three flights totaling 10.3 hours on two flying days enabled Paul Doskey and Mikhail Pekour to quantify the altitude dependence of the isoprene sensor and evaluate the performance of the eddy accumulation system. John Hubbe provided the eddy accumulation system with real-time output from the G-1 gust probe vertical velocity data channel. Tom Jobson operated the PNNL/ EMSL Proton-Transfer Reaction Mass Spectrometer to provide an independent fast-response measure of isoprene for comparison to the ANL instrument. Isoprene emissions were sampled from commercial poplar plantations in the Pasco, Washington, area and from mixed oak-conifer forests in western Oregon and central Washington.

Visit by Mr. Andreas Weigel

Mr. Andreas Weigel from the Swiss Federal Institute of Technology visited the laboratory on August 14-15 at the conclusion of his 6-month visiting scientist appointment at Stanford's Fluid Dynamics Laboratory. He presented a seminar entitled "The Daytime Atmosphere in a Steep and Narrow Alpine Valley" and had discussions with Stefan de Wekker, Jerome Fast, and Dave Whiteman, concerning mesoscale simulations of inversion breakup in Alpine valleys. Host: Dave Whiteman

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Short Course, Trento, Italy

Dave Whiteman was one of four instructors at a 1-week short course held from August 18-22 in Trento, Italy. The short course was the second in a series of courses presented as part of the Summer School of Mountain Meteorology (SSMM) organized by Dr. Dino Zardi (U. of Trento) and Dr. Rich Rotunno (National Center for Atmospheric Research, Boulder, Colorado). The topic of the SSMM 2003 was "Thermally Driven Winds in Mountainous Terrain." Dave gave a series of five lectures on the general principles and observations of diurnal mountain wind systems to about 45 students from various countries. Most of the students were Ph.D. candidates or scientists interested in broadening their understanding of mountain meteorology.

Visit by Dr. Georg Grell

Dr. Georg Grell (NOAA Forecast Systems Laboratory) gave a talk entitled "A Next Generation Air Quality Prediction Model Based on WRF" on August 27. He was invited to PNNL to discuss how the trace gas and aerosol modules of the PEGASUS model can be incorporated into the Weather Research and Forecast (WRF) model framework. The PEGASUS modules will be incorporated into WRF as part of a proposed LDRD project with Jim Barnard, Elaine Chapman, Richard Easter, Jerome Fast, Bill Gustafson, Jarek Nieoploca, Bruce Palmer, and Rahul Zaveri.

6th International Symposium on Tropospheric Profiling, Leipzig, Germany

Tom Ackerman and Dave Turner gave talks at the 6th International Symposium on Tropospheric Profiling (ISTP 2003) held from September 14-20, 2003, in Leipzig, Germany (see Presentations/Publications).

Max Planck Institute for Climate Research, Hamburg, Germany

Tom Ackerman gave a talk at the Max Planck Institute for Climate Research in Hamburg, Germany, on September 23 (see Presentations/Publications).

Presentations/Publications

- Ackerman, T. P.
"Climatology of Cloud and Radiation Properties Deduced from the ARM Ground-Based Instrumentation." Presented at the Max Planck Institute for Meteorology, September 23, 2003, Hamburg, Germany.
- Ackerman, T. P., J. M. Comstock, and D. D. Turner
"Measurements of Ice Supersaturation in the Upper Troposphere Using the ARM Raman Lidar." Presented at the 6th International Symposium on Tropospheric Profiling (ISTP 2003), September 14-20, 2003, Leipzig, Germany
- Disselkamp, R. S., K. M. Judd, T. R. Hart, C.H.F. Peden, G. J. Posakony, and L. J. Bond
"A Comparison Between Conventional and Ultrasound Mediated Heterogeneous Catalysis: Hydrogenation of 3-buten-1-ol Aqueous Solutions." *J. Catalysis* (in press).
- Fast, J. D., and W. E. Heilman
"The Effect of Lake Temperatures and Emissions on Ozone Exposure in the Western Great Lakes Region." *J. Appl. Meteor.* 42(9):1197-1217.
- Ghan, S. J., and D. R. Collins
"Use of In Situ Data to Test a Raman Lidar-Based Cloud Condensation Nuclei Remote Sensing Method." *J. Atmos. & Ocean. Technol.* (in press).
- Giorgi F., X. Bi, and Y. Qian
"Indirect vs. Direct Effects of Anthropogenic Sulfate on the Climate of East Asia as Simulated with a Regional Coupled Climate-Chemistry/Aerosol Model." *Climatic Change* 58(3):345-376.
- Leung, L. R.
"Investigations of the Hydroclimate of the Western U.S. Using a Regional Climate Model." Presented at the National Center for Atmospheric Research (NCAR) Mesoscale and Microscale Meteorology (MMM) Division Seminar, August 7, 2003, Boulder, Colorado.
- Leung, L. R.
"Modeling of Cold Season Hydrometeorological Processes in the Western Cordillera." Plenary presentation at the NOAA GEWEX Americas Prediction Program (GAPP) Mountain Workshop, July 24, 2003, Seattle, Washington.
- Leung, L. R.
"Orographic Effects on Cold Season Hydrometeorological Processes in the Western Cordillera." Plenary presentation at the NOAA GEWEX Americas Prediction Program (GAPP) Principal Investigators' Meeting, July 21-23, 2003, Seattle, Washington.

- Leung, L. R., J. McWilliams, and P. Merilees
 "Regional Climate Modeling in the CCSM. A Presentation to the Community Climate System Model (CCSM) Working Group Co-Chairs' Meeting, August 29, 2003, Boulder, Colorado.
- Menon, S., J.-L. Brenguier, O. Boucher, P. Davison, A. D. Del Genio, J. Feichter, S. Ghan, S. Guibert, X. Liu, U. Lohmann, H. Pawlowska, J. E. Penner, J. Quaas, D. L. Roberts, L. Schüller, and J. Snider
 "Evaluating Aerosol/Cloud/Radiation Process Parameterizations with Single Column Models and ACE-2 Cloudy Column Observations." *J. Geophys. Res.* (in press).
- Qian, Y., L. R. Leung, S. J. Ghan, and F. Giorgi
 "Regional Climate Effects of Aerosols Over China: Modeling and Observation." *Tellus B*, 55B(4):914-934.
- Sengupta, M., E. E. Clothiaux, T. P. Ackerman, S. Kato, and Q. Min
 "Importance of Accurate Liquid Water Path for Estimation of Solar Radiation in Warm Boundary Layer Clouds: An Observational Study." *Journal of Climate* 16(18):2997-3009.
- Turner, D. D.
 "Microphysical Properties of Single and Mixed-Phase Arctic Clouds Derived from AERI Observations." Presented at the 6th International Symposium on Tropospheric Profiling (ISTP 2003), September 14-20, 2003, Leipzig, Germany.
- Whiteman, C. D.
 "General Principles and Observations of Diurnal Wind Systems in Mountainous Terrain." Presented at the Summer School of Mountain Meteorology 2003, August 18-22, 2003, Trento, Italy.
 (Series of five lectures, available at www.unitn.it/convegna/ssmm_lecture.htm.)
- Whiteman, C. D.
 "Meteorological Explorations of Small Basins in the Rocky Mountains and Eastern Alps." Invited presentation at the Frontiers in Geoscience Colloquium Series, Los Alamos National Laboratory, September 4, 2003, Los Alamos, New Mexico.
- Zaveri, R. A., C. M. Berkowitz, L. I. Kleinman, S. R. Springston, P. V. Doskey, W. A. Lonneman, and C. W. Spicer
 "Ozone Production Efficiency and NO_x Depletion in an Urban Plume: Interpretation of Field Observations and Implications for Evaluating O₃-NO_x-VOC Sensitivity." *J. Geophys. Res.* 108(D14):4436, doi: 10.1029/2002JD003144, 2003.
- Zaveri, R. A., and L. K. Peters
 "An Overview of Atmospheric Chemistry and Aerosol Modeling at PNNL: Current Research and Future Directions." Presented at the Atmospheric Chemistry Seminar Series, Pacific Northwest National Laboratory, September 24, 2003, Richland, Washington.
- Zhong, S., X. Bian, and C. D. Whiteman
 "Time Scale for Cold-Air Pool Breakup by Turbulent Erosion." *Meteorologische Zeitschrift*, 12:47-50.