CONFERENCE PROGRAM  

WEDNESDAY, SEPTEMBER 11, 2019

7:00 AM  REGISTRATION AND BREAKFAST  in Conference Center Lobby
8:00 AM  OPENING REMARKS
8:05 AM  PLENARY TALK
Forecasting atmospheric composition at the European Centre for Medium-Range Weather Forecasts: Achievements and challenges of the global CAMS system.
Johannes Flemming, European Center for Medium-Range Weather Forecasts

8:55 AM  MODELING OF PROCESSES ACROSS GLOBAL TO REGIONAL AND LOCAL SCALES
Hosted by Katie Lundquist, Lawrence Livermore National Lab & Sue Haupt, National Center for Atmospheric Research
A review of recent advances in climate modeling across scales
Paul Ullrich, UC Davis
Toward the integration of atmosphere and wind plant physics and simulation techniques: An overview of the DOE's Mesoscale-Microscale Coupling project
Jeff Mirocha, Lawrence Livermore National Laboratory
Atmospheric Acidity and the Role of Clouds on Air Quality
Mary Barth, NCAR

10:00 AM  BREAK
Coffee and Refreshments in Lobby

10:20 AM  MODELING OF PROCESSES ACROSS GLOBAL TO REGIONAL AND LOCAL SCALES continued…
Forecasting Dust Emissions from Regional to Global Scale using Satellite Data In NOAA FV3
Barry Baker, CICS-MD & George Mason University & NOAA
Defining environmental parameter domains for secondary organic aerosol formation
William Porter, UC Riverside

11:05 AM  COMPOSITION AND OPERATIONAL FORECASTING FROM DAILY TO SEASONAL SCALES
Hosted by Christoph Keller, NASA Global Modeling and Assimilation Office, Georg Grell, National Oceanic and Atmospheric Administration, Maria Teresa Pay, Barcelona Super Computing Center
Routine Multi-model Performance Analysis over North America for Three Operational Air Quality Forecast Systems
Mike Moran, Environment and Climate Change Canada
Development of Air Quality Modeling and Forecast over China
Jian-Bin Wu, 3Clear Technology Co., Ltd
Near Real-Time Sub/Seasonal Prediction of Aerosol at NASA Global Modeling and Assimilation Office
Andrea Molod, NASA

12:05 PM  LUNCH
Provided by Magpie Caterers

1:00 PM  COMPOSITION AND OPERATIONAL FORECASTING FROM DAILY TO SEASONAL SCALES continued…
High Resolution Air Quality Forecasting systems for India and the United States
Rajesh Kumar, NCAR
A Machine Learning Approach for Ozone Forecasting and its Application for Kennewick, WA
Kai Fan, Laboratory for Atmospheric Research, Department of Civil and Environmental Engineering
1:45 PM  **BL PARAMETERIZATIONS**  
Hosted by Jimy Dudhia, National Center for Atmospheric Research & Jon Pleim, U.S. Environmental Protection Agency  
Modeling Subgrid Transport  
Jimy Dudhia, *National Center for Atmospheric Research*  
Evaluation of PBL Parameterizations in WRF at Subkilometer Grid Spacings: Turbulence Statistics in the Dry Convective Boundary Layer  
Hailey Shin, NCAR  
Accounting for vertical and horizontal turbulent mixing in a three-dimensional planetary boundary layer parameterization  
Pedro Jimenez, NCAR  
Scale-aware tests of the MYNN-EDMF PBL, shallow cumulus, and chemical mixing scheme with a novel framework  
Wayne Angevine, CIRES & NOAA CSL

3:15 PM  **BREAK**  
Coffee and Refreshments in Lobby

3:35 PM  **COMPLEX TERRAIN AND COASTAL ZONE METEOROLOGY**  
Hosted by Eric Pardyjak, University of Utah  
Implications of Soil Moisture on Modeled Land-Atmosphere Interactions over Heterogenous Terrain  
Aaron Alexander, UC Davis  
Daytime, anabatic winds over a steep Alpine slope: Turbulence structure and modeling implications  
Holly J. Oldroyd, UC Davis  
Diagnosing and Mitigating Errors in Boundary Layer Structure  
Robert Fovell, University at Albany SUNY

4:40 PM  **MINUTE MADNESS**  
Poster Presenters will have 1-minute 1-slide to share with audience about their poster.

5:00 PM  **WELCOME RECEPTION & POSTER DISCUSSIONS**  
Join us in the Lobby of the Conference Center for some light appetizers, drinks and great discussions on the poster displays and session topics.

---

Thank you to our generous sponsor

CALIFORNIA AIR RESOURCES BOARD
7:00 AM  REGISTRATION AND BREAKFAST  *in Conference Center Lobby*

8:00 AM  COMPLEX TERRAIN AND COASTAL ZONE METEOROLOGY continued…

  Hosted by Eric Pardyjak, University of Utah

  The Impacts of Wildland Fires and Lower Troposphere Ozone in relation to Air Quality during CABOTS 2016  
  Jodie Clark, San Jose State University

  Diablo Winds in the Bay Area California: Their climatology, extremes, and behavior  
  Yi-Chin Liu, California Air Resources Board

8:45 AM  LES, CFD, AND URBAN CANOPY MODELING

  Hosted by Katie Lundquist, Lawrence Livermore National Lab & Jon Pleim, U.S. Environmental Protection Agency

  Modeling variations in ozone dry deposition - what is important for ozone pollution?  
  Olivia Clifton, NCAR

  Large-Eddy Simulation and Lagrangian Two-Particle Modeling of Mean and Fluctuating Concentrations in the Atmospheric Boundary Layer  
  Jeff Weil, NCAR

  Analyzing and improving turbulence characterization in a multiscale atmospheric model of transport and dispersion through an urban area  
  David Wiersema, UC Berkeley

9:50 AM  BREAK

  Coffee and Refreshments in Lobby

10:20 AM  CONVECTION

  Hosted by Saulo Freitas, NASA Goddard Space Flight Center & Baode Chen, Shanghai Meteorological Service

  The Shallow-to-Deep Convective Transition: A Modeling Challenge  
  David Adams, Universidad Nacional Autanoma de Mexico

  Current Developmental Activity on the Grell-Freitas Cumulus Parameterization Including the Addition of Number Concentrations and Storm Motion  
  Hannah Barnes, NOAA ESRL

  Improvement of parameterized convective transport and wet scavenging of trace gases in the WRF-Chem model  
  Kenneth Pickering, University of Maryland

11:30 AM  LUNCH

  Provided by Magpie Caterers

12:30 PM  PLENARY: Connecting Ozone Exceedances in Houston TX to Variability in Emissions and Meteorology: Implications for Federal Attainment

  By, William Vizuete, University of North Carolina - Chapel Hill
1:25 PM  **AEROSOL DIRECT & INDIRECT FEEDBACKS AND AEROSOL AWARE MICROPHYSICS**  
Hosted by Shu-Hua Chen, UC Davis & Kiran Alapaty, US EPA  
Effects of GHG mitigation strategies on future California climate  
Mike Kleeman, UC Davis  
Substantial Convection and Precipitation Enhancements by Ultrafine Aerosol Particles  
Jiwen Fan, Pacific Northwest National Laboratory  
An Investigation of Proposed Aerosol Indirect Effect Mechanisms in Deep Convection  
Adele Igel, UC Davis

2:30 PM  **BREAK**  
Coffee and Refreshments in Lobby

2:50 PM  **AEROSOL DIRECT & INDIRECT FEEDBACKS AND AEROSOL AWARE MICROPHYSICS continued...**  
Medium Complexity Aerosol Treatment Coupled with Clouds/Precipitation/Radiation in a USA Operational NWP Model  
Gregory Thompson, NCAR-RAL  
The Comparison of Dust-Radiation versus Dust-Cloud Interactions on the Development of a Modeled Mesoscale Convective System over North Africa  
Chu-Chun Huang, UC Davis

3:35 PM  **MODEL EVALUATION USING METEOROLOGICAL AND CHEMICAL OBSERVATIONS**  
Hosted by Maria Teresa Pay, Barcelona Super Computing Center, Gabriele Pfister, National Center for Atmospheric Research & Stu McKeen, NOAA  
CAMS Forecast and Reanalysis Evaluation using Chemical Observations  
Henk Eskes, KNMI  
Regional and hemispheric evaluation of the new Community Multiscale Air Quality Model (CMAQ) version 5.3  
K. Wyatt Appel, US EPA  
Seasonality and Trends of Modeled PM2.5 using WRF-CMAQ using Empirical Mode Decomposition  
Marina Astitha, University of Connecticut  
WRF-Chem Modeling of Summertime Ozone during the Long Island Sound Tropospheric Ozone Study  
Brian McDonald, NOAA Earth System Research Laboratory  
Challenges in simulating high air pollution concentrations during persistent cold air pool events  
Xia Sun, University of Nevada, Reno
CONFERENCE PROGRAM

FRIDAY, SEPTEMBER 13, 2019

7:00 AM  REGISTRATION AND BREAKFAST  in Conference Center Lobby

8:00 AM  DATA ASSIMILATION AND INVERSE MODELING
          Hosted by Daven Henze, University of Colorado Boulder, Christoph Keller, NASA Global Modeling and Assimilation Office, Shu-Hua Chen, UC Davis, Ave Arellano, University of Arizona

          Navy Ensemble Aerosol Forecasting and Data Assimilation
          Juli Rubin, US Naval Research Laboratory, Remote Sensing Division

          Leveraging deep learning hyperparameter tuning frameworks for intelligent WRF ensembles
          Derek Jensen, Lawrence Livermore National Laboratory

          A biomass burning smoke prediction system including near-real time constraints on emissions over the Western U.S.
          Pablo Saide, UCLA

          Errors in top-down estimates of emissions using a known source
          Wayne Angevine, CIERES and NOAA CSL

          Top-down N2O emission estimation in California using tower measurements and an inverse modeling technique
          Yu YanCui, California Air Resources Board

9:45 AM  BREAK

10:05 AM  NEW AND INNOVATIVE MODELING TECHNIQUES: MACHINE LEARNING, NEW COMPUTATION METHODS/GPU’S, EXPOSURE ESTIMATE IMPROVEMENT, DATA SIMULATION
          Hosted by Daven Henze, University of Colorado Boulder, Christoph Keller, NASA Global Modeling and Assimilation Office, Eric Pardyjak, University of Utah, Ave Arellano, University of Arizona

          Using Machine Learning to Assess Parameters Associated with Harmful Algal Blooms and Hypoxia for Lake Erie
          Christina Feng Chang, University of Connecticut

          Machine Learning for Air Quality Applications
          David Lary, University of Texas, Dallas

          AI for Science: Deep Learning for improved Satellite Observations and Numerical Modeling
          Craig Tierney, NVIDIA

          A Deep Learning Parameterization for Ozone Dry Deposition Velocities
          Sam Silva, Massachusetts Institute of Technology

          A Mass-Conserving Machine Learning Algorithm for Atmospheric Chemistry
          Anthony Wexler, UC Davis, Air Quality Research Center

11:40 AM  CLOSING REMARKS  by Gabriele Pfister, NCAR

Poster Session Key

1  Modeling of Processes Across Global and Regional Scales
2  Model Evaluation Using Meteorological and Chemical Observations
3  Aerosol Direct & Indirect Feedbacks and Aerosol Aware Microphysics
4  Composition and Operational Forecasting from Daily to Seasonal Scales
5  New and Innovative Modeling Techniques: Machine Learning, New Computation Methods/GPUs, Exposure Estimate Improvement, Data Simulation
6  BL Parameterizations
7  Data Assimilation & Inverse Modeling
8  LES, CFD, and Urban Canopy Modeling
9  Complex Terrain and Coastal Zone Meteorology

Meteorology And Climate - Modeling for Air Quality Conference 2019
<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A novel ensemble design for fine particulate matter probabilistic predictions and quantification of their uncertainty</td>
<td>Rajesh Kumar, NCAR</td>
</tr>
<tr>
<td>Ongoing improvements to surface-layer turbulence modeling in the Weather Research and Forecasting model</td>
<td>Robert Arthur, Lawrence Livermore National Laboratory</td>
</tr>
<tr>
<td>Emissions, Transport, and Chemistry of Smoke from Western U.S. Wildfires</td>
<td>Megan Bela, Cooperative Institute for Research in Environmental Sciences (CIRES) University of Colorado / NOAA ESRL Chemical Sciences Division</td>
</tr>
<tr>
<td>Effect of biomass burning on Light-Absorbing Particles vs. snow albedo reduction on Central Andes: the analysis of WRF-Chem modeling</td>
<td>Tomas Rafael Bolano-Ortiz, National Technological University, Mendoza Regional Faculty - National Scientific and Technical Research Council</td>
</tr>
<tr>
<td>Evaluating the impact of assimilating aerosol optical depth observations on dust forecasts over North Africa and the East Atlantic using different data assimilation methods</td>
<td>Shu-Hua Chen, University of California, Davis</td>
</tr>
<tr>
<td>Evaluation of PBLH simulated by WRF using a new LiDAR network in California</td>
<td>Yuyan Cui, California Air Resources Board</td>
</tr>
<tr>
<td>Exploring future climate effects on northwestern US air quality</td>
<td>Kai Fan, Laboratory for Atmospheric Research, Department of Civil and Environmental Engineering, Washington State University</td>
</tr>
<tr>
<td>Effects of urban land use on meteorology and atmospheric chemistry in Pacific Northwest urban areas</td>
<td>Ana Carla Fernandez Valdes, Washington State University</td>
</tr>
<tr>
<td>Assessing the Goddard Earth Observing System model in non-resolved to convection-permitting regimes</td>
<td>Saulo Freitas, USRA/GESTAR - NASA/GSFC</td>
</tr>
<tr>
<td>A Comparison of MPAS and WRF Meteorological Models in California: 2013 Winter and 2016 Summer Case Studies</td>
<td>Kemal Gurer, California Air Resources Board</td>
</tr>
<tr>
<td>Using WRF-STILT to Determine the Relative Contributions of US and Mexican Emissions to High Ozone Events in El Paso, Texas</td>
<td>Jennifer Hegarty, AER</td>
</tr>
<tr>
<td>Atmospheric chemistry modeling using machine learning</td>
<td>Christoph Keller, NASA GMAO / USRA</td>
</tr>
<tr>
<td>What causes the observed surface ozone-temperature relationship? Effect of the eddy-driven jet on surface-level transport</td>
<td>Gaige Hunter Kerr, Department of Earth &amp; Planetary Sciences, Johns Hopkins University</td>
</tr>
<tr>
<td>Source apportionment modelling to unravel the origin of tropospheric ozone peaks over southwestern Europe</td>
<td>Maria Teresa Pay, Barcelona Supercomputing Center</td>
</tr>
<tr>
<td>Evaluation of the online multiscale MONARCH model to forecast air quality over Europe</td>
<td>Maria Teresa Pay, Barcelona Supercomputing Center</td>
</tr>
<tr>
<td>Evaluation of AQ models: what we miss with limited information</td>
<td>Gabriele Pfister, National Center for Atmospheric Research</td>
</tr>
<tr>
<td>Interactions between meteorology and chemistry during wildfire season over Western US</td>
<td>Amit Sharma, Laboratory for Atmospheric Research, Washington State University</td>
</tr>
<tr>
<td>Simulation of the land-atmosphere exchange during persistent cold air pool events in Salt Lake Valley, Utah</td>
<td>Xia Sun, University of Nevada, Reno</td>
</tr>
<tr>
<td>Micro-Pulse LiDAR Measurements of the Mixed Layer Height in the San Joaquin Valley</td>
<td>William Vance, California Air Resources Board</td>
</tr>
<tr>
<td>How would a regional nuclear war affect the global climate?</td>
<td>Benjamin Wagman, Lawrence Livermore National Laboratory</td>
</tr>
<tr>
<td>Empirical estimation of posterior emission flux errors</td>
<td>Yu Zhong Zhang, Harvard University</td>
</tr>
<tr>
<td>Assessment of Climate change impact over California for wintertime using dynamic downscaling with a bias correction technique</td>
<td>Zhan Zhao, California Air Resources Board</td>
</tr>
</tbody>
</table>
For questions about the UC Davis Air Quality Research Center Conference Programs, email Conference Staff at airqualityevents@ucdavis.edu