

## **David Adams**

Professor Titular A, Universidad Nacional Autónoma de México

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After Ph.D. in Atmospheric Sciences and a postdoc at UCSD, I became faculty at INPA/UEA in Manaus Brazil and then at the UNAM in Mexico City. My research line includes Atmospheric Convection and Thermodynamics and the use of GPS Meteorology, particularly in tropical and sub-tropical regions.

*Session: Convection*

*Presentation Title: The Shallow-to-Deep Convective Transition: A Modeling Challenge*

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## **Kiran Alapaty**

Associate Director of Science, US EPA

[alapaty.kiran@epa.gov](mailto:alapaty.kiran@epa.gov)

Kiran is a part-time researcher advancing convective cloud representations at all spatial scales and aerosol impacts on clouds and radiation. The Multi-Scale Kain-Fritsch (MSKF) scheme is the state-of-the-art science filling a big void in the convective cloud modeling.

*Poster Title: Precipitation Partitioning Across Grey Zone Scales Using Scale-Aware Cloud Formulations: Impacts of Aerosols*

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## **Stefano Alessandrini**

Project Scientist, NCAR

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Stefano Alessandrini is a scientist at the National Center for Atmospheric Research (NCAR), Boulder, Colorado. His main research areas of interest are wind and solar energy probabilistic forecasting, application of air pollution models, environmental physics, turbulence and mesoscale modelling. He has published more than 30 articles regarding probabilistic forecasting of renewable energies and stochastic Lagrangian particle models. He earned his Laurea MS in Physics with Summa Cum Laude from the University of Milano, Italy in 1996 and he received his PhD at the University of Piemonte Orientale, Italy in 2011 with a topic regarding Lagrangian particle models. Before joining NCAR, he has worked for 12 years in Italy at the Ricerca sul Sistema Energetico (RSE) a public research centre carrying out research activities on mesoscale modelling and probabilistic forecasting of renewable energies.

*Session: Model Evaluation Using Meteorological and Chemical Observations*

*Presentation Title: A novel ensemble design for fine particulate matter probabilistic predictions and quantification of their uncertainty*

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## **Aaron Alexander**

Graduate Student Researcher, University of California, Davis

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G. Aaron Alexander is a graduate student pursuing my Ph.D. in Civil and Environmental Engineering at the University of California, Davis with Dr. Holly Oldroyd. From 2013-2017, he was an undergraduate student at the University of Nevada, Reno, where he worked with Dr. Heather Holmes in the ATAQ Lab. His research interests are tied to the interactions between the atmosphere and the earth's surface. Specifically, he is interested in how the earth's surface couples with the atmosphere, and influence energy partitioning, near surface meteorology, planetary boundary layer dynamics, water availability, and decision making processes that revolve around this area. When not working on research, Aaron is active with AMS through helping to plan the annual student conference.

*Session: Complex Terrain and Coastal Zone Meteorology*

*Presentation Title: Implications of Soil Moisture on Modeled Land-Atmosphere Interactions over Heterogenous Terrain*

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## **Wayne Angevine**

Research Scientist, CIRES and NOAA CSL

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Wayne Angevine conducts research in modeling for air quality and renewable energy applications.

*Session: BL Parameterizations*

*Presentation Title: Scale-aware tests of the MYNN-EDMF PBL, shallow cumulus, and chemical mixing scheme with a novel framework*

*Session: Data Assimilation & Inverse Modeling*

*Presentation Title: Errors in top-down estimates of emissions using a known source*

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## **K. Wyat Appel**

Research Physical Scientist, U.S. EPA

[appel.wyat@epa.gov](mailto:appel.wyat@epa.gov)

K. Wyat Appel is a research physical scientist with the EPA's Office of Research and Development (ORD) in Research Triangle Park, NC. Mr. Appel has a B.S. in Meteorology and a M.S. in Atmospheric Science, both from North Carolina State University. He began his career in air quality working for the North Carolina Division of Air Quality's Attainment and Planning Branch before joining ORD in 2004. His primary area of research is the evaluation of multi-scale (hemispheric, regional, and fine-scale) meteorological and air quality models, with a focus on operational, diagnostic and dynamic evaluation techniques. Other areas of interest include the study of the impact of meteorological model performance on air quality model performance and model evaluation tool development. He has over 30

publications in the areas of air quality model development and evaluation and has presented his research at numerous national and international conferences.

*Session: Model Evaluation Using Meteorological and Chemical Observations*

*Presentation Title: Regional and hemispheric evaluation of the new Community Multiscale Air Quality Model (CMAQ) version 5.3*

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## **Robert Arthur**

Postdoctoral Researcher, Lawrence Livermore National Laboratory

[arthur7@llnl.gov](mailto:arthur7@llnl.gov)

Robert (Bobby) Arthur is a third-year postdoc at LLNL, where he focuses on atmospheric boundary layer simulations for wind energy and other applications. Prior to joining LLNL, Bobby received a his PhD in Civil & Environmental Engineering from Stanford, where he was awarded the Stanford Graduate Fellowship and the Centennial Teaching Assistant Award. At Stanford, he was a member of the Environmental Fluid Mechanics Laboratory, where he studied coastal oceanography, specifically internal waves and turbulent mixing. Bobby also had a brief postdoctoral stint with Tina Chow at UC Berkeley, where he made the switch from ocean to atmospheric modeling.

*Poster Title: Ongoing improvements to surface-layer turbulence modeling in the Weather Research and Forecasting model*

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## **Marina Astitha**

Assistant Professor, University of Connecticut

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Dr. Astitha is an Assistant Professor with Civil and Environmental Engineering at the University of Connecticut and the Associate Director of the Environmental Engineering program. Dr. Astitha has 13 years of experience in atmospheric numerical modeling systems from regional to global scales with 25 peer-reviewed articles and more than 90 national/international conference presentations. She is leading the Atmospheric Modeling and Air Quality Group since joining the University in 2013. The group currently consists of PhD and undergraduate students in Environmental Engineering conducting research on: a) comprehension and prediction of extreme weather events; b) uncertainties and complex error interactions in atmospheric and air quality modeling systems; c) anthropogenic activities that alter the atmospheric and aquatic environment. In addition, Dr. Astitha is the Team Leader of the "Forecasting" Thematic Area for the Eversource Energy Center (EEC) at the University of Connecticut since November 2017.

*Session: Model Evaluation Using Meteorological and Chemical Observations*

*Presentation Title: Seasonality and Trends of Modeled PM<sub>2.5</sub> using WRF-CMAQ using Empirical Mode Decomposition*

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## **Barry Baker**

Post-Doc, CICS-MD; George Mason University; NOAA ARL

[barry.baker@noaa.gov](mailto:barry.baker@noaa.gov)

Scientist at NOAA ARL developing dust emission schemes, the MONET verification software and Earth System Models

*Session: Modeling of Processes Across Global and Regional Scales*

*Presentation Title: Forecasting Dust Emissions from Regional to Global Scale using Satellite Data In NOAA FV3*

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## **Hannah Barnes**

Research Scientist, NOAA ESRL

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Dr. Hannah C Barnes is an expert in radar observations, convection, and cloud microphysical processes (i.e. the processes that create and modify precipitation particles). Previously she has studied convection using space-borne radars, ground-based scanning radars operating at numerous frequencies, and vertical profiling radars. She has also participated as a radar scientist in two field campaigns and has used radar data to evaluate numerical simulations. Her current work investigates whether the performance of the Weather, Research and Forecasting (WRF) model can be improved over the tropical Indian Ocean if estimates of hydrometeor number concentrations are added to the Grell-Freitas Cumulus parameterization scheme.

*Session: Convection*

*Presentation Title: Current Developmental Activity on the Grell-Freitas Cumulus Parameterization Including the Addition of Number Concentrations and Storm Motion*

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## **Mary Barth**

Senior Scientist, NCAR

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Dr. Mary Barth received her B.S. in Chemical Engineering (University of Colorado) in 1985 and Ph.D. in Atmospheric Sciences (University of Washington) in 1991. She is a Senior Scientist in NCAR's Atmospheric Chemistry Observations and Modeling (ACOM) Laboratory and Mesoscale and Microscale Meteorology (MMM) Laboratory. Throughout her career, Dr. Barth's research focus has been on interactions between clouds and chemistry through modeling and analysis of observations. She is co-leading the Deep Convective Clouds and Chemistry project, a Coordinated Cloud Chemistry Study, and development of a model independent chemistry module.

*Session: Modeling of Processes Across Global and Regional Scales*

*Presentation Title: Atmospheric Acidity and the Role of Clouds on Air Quality*

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## **Megan Bela**

Research Scientist, Cooperative Institute for Research in Environmental Sciences (CIRES) University of Colorado / NOAA ESRL Chemical Sciences Division

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Megan Bela earned a BS in Environmental Engineering and a MS in Environmental Fluid Mechanics and Hydrology from Stanford University. She then worked in Brazil as a Fulbright Scholar at the University of Sao Paulo, and as research scientist at the National Institute for Space Research. She completed her PhD in Atmospheric and Oceanic Sciences from the University of Colorado. In 2016, she joined NOAA and is currently a research scientist in the Chemical Sciences Division.

*Poster Title: Emissions, Transport, and Chemistry of Smoke from Western U.S. Wildfires*

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## **Tomás Rafael Bolaño Ortiz**

Postdoctoral Researcher, Facultad Regional Mendoza (FRM) Universidad Tecnológica Nacional (UTN) - Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)

[tomas.bolano@frm.utn.edu.ar](mailto:tomas.bolano@frm.utn.edu.ar)

Tomás Rafael Bolaño Ortiz currently is postdoctoral researcher at Group of Atmospheric and Environmental Studies in Mendoza Regional Faculty of National Technological University. Tomás does research in atmospheric science, atmospheric modeling, Snow Darkening Effect, Light-absorbing particles and Aerosol Indirect Effects. [Orcid.org/0000-0002-0033-6001](https://orcid.org/0000-0002-0033-6001)

*Poster Title: Effect of biomass burning on Light-Absorbing Particles (LAP) vs. snow albedo reduction on Central Andes: the analysis of WRF-Chem modeling*

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## **David Carruthers**

Director, Cambridge Environmental Research Consultants (CERC)

[David.Carruthers@cerc.co.uk](mailto:David.Carruthers@cerc.co.uk)

David Carruthers is a director of CERC and has been involved since its inception in 1986. His scientific expertise is in the fine scale structure of the atmospheric boundary layer, atmospheric processes and dispersion. He has overall responsibility for the development of CERC software including the Atmospheric Dispersion Modelling System (ADMS) and CERC's urban modelling systems. He is a member of the UK Department of Environment - Air Quality Expert Group (AQEG).

*Session: LES, CFD, and Urban Canopy Modeling*

*Presentation Title: Modeling airflow and air quality at high resolution in urban environments using fast semi-analytic methods*

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## **Shu-Hua Chen**

Professor, University of California Davis

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Professor Shu-Hua Chen was born in Nantou, Taiwan. She received her B.S. degree in Atmospheric Science from National Taiwan University, Taiwan and her M.S. and Ph.D. degrees in Atmospheric Science from Purdue University, IN. Shu-Hua was a postdoctoral researcher at National Center for Atmospheric Research in Boulder, CO for almost 2 years. She was there to help develop the Weather Research and Forecasting (WRF) model. In 2001, Shu-Hua joined the Department of Land, Air, and Water Resources at University of California, Davis. Her major research interest areas include aerosol-cloud-radiation, data assimilation, cloud physics, orographic rainfall, hurricanes, and regional climate change.

*Poster Title: Evaluating the impact of assimilating aerosol optical depth observations on dust forecasts over North Africa and the East Atlantic using different data assimilation methods*

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## **Jodie Clark**

Research Associate, Center of Applied Atmospheric Research and Education, San Jose State University

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Jodie Clark is a Research Associate out of CAARE SJSU. During the 2016 CABOTS field campaign, she worked onsite at the Bodega Bay coastal site launching near-daily ozonesondes. This dataset was used to complete her Masters Thesis, identifying Stratospheric Intrusions above Northern/Central California and to identify/quantify impacts on surface O<sub>3</sub> concentrations at Bodega Bay and within the Sacramento non-attainment zone. Since then she has expanded the research to examine the impacts of wildfires on the low-level O<sub>3</sub> concentrations and to gain a better understanding of the links between stratospheric intrusion events and wildfire development, both influencing surface O<sub>3</sub>. Proposed future work is to analyze Ozone Source Apportionment methods for Sunland Park, NM to assist in non-attainment issues.

*Session: Complex Terrain and Coastal Zone Meteorology*

*Presentation Title: The Impacts of Wildland Fires and Lower Troposphere Ozone in relation to Air Quality during CABOTS 2016*

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## **Olivia Clifton**

ASP Postdoctoral Fellow, NCAR

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Olivia Clifton is currently an Advanced Study Program (ASP) postdoctoral fellow at the National Center for Atmospheric Research where she is a part of Mesoscale and Microscale Meteorology and Atmospheric Chemistry Observations and Modeling. Olivia earned her PhD at Columbia University where she was NSF Graduate Research Fellow working with Dr. Arlene Fiore in the Department of Earth and Environmental Science at Lamont-Doherty Earth Observatory.

*Session: LES, CFD, and Urban Canopy Modeling*

*Presentation Title: Modeling variations in ozone dry deposition – what is important for ozone pollution?*

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## **Yuyan Cui**

Air Pollution Specialist, California Air Resources Board

[Yuyan.Cui@arb.ca.gov](mailto:Yuyan.Cui@arb.ca.gov)

Yu Yan Cui was a research scientist at the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder, and now she is an air pollution specialist at Research Division of California Air Resources Board.

*Session: Data Assimilation & Inverse Modeling*

*Presentation Title: Top-down N2O emission estimation in California using tower measurements and an inverse modeling technique*

*Poster Title: Evaluation of PBLH simulated by WRF using a new LiDAR network in California*

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## **Jimmy Dudhia**

Project Scientist, NCAR

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Ph. D. Meteorology, 1984 Imperial College, London; Research Associate, Penn State University, 1985-1989; Visitor, Associate Scientist, then Project Scientist, MMM Lab, NCAR 1989-present. Worked on physical parameterizations and dynamics in MM5 and WRF models as well as on community model support team.

*Session: BL Parameterizations*

*Presentation Title: Modeling Subgrid Transport*

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## **Henk Eskes**

Dr., KNMI

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The research of Dr Eskes focuses on the composition of the atmosphere. He is an expert on atmospheric chemistry modelling, chemical data assimilation and satellite observations of trace gases in the atmosphere. Henk Eskes is strongly involved in the Copernicus Atmosphere Monitoring Service (CAMS), implemented by ECMWF, and was involved in the European research projects MACC and GEMS preparing for the CAMS operational service. He is currently the coordinator of the CAMS validation contract, leading a consortium of 14 partners. He is also product lead for the NO<sub>2</sub> product of TROPOMI on the Sentinel-5P satellite and involved in the preparation for Sentinels 4 and 5.

*Session: Model Evaluation Using Meteorological and Chemical Observations*

*Presentation Title: CAMS Forecast and Reanalysis Evaluation using Chemical Observations*

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## **Jiwen Fan**

Senior Earth Scientist, Pacific Northwest National Laboratory

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Dr. Jiwen Fan is a Senior Earth Scientist at Pacific Northwest National Laboratory (PNNL). She received her Ph.D. degree in 2007 from Texas A&M University. Her research experience and interests encompass atmospheric chemistry and aerosols, clouds, convection, and extreme storms. Her primary focus was aerosol-cloud interactions, with some major contribution to improving physical understanding of the complex aerosol interactions with cloud microphysics and dynamics. Her current work includes (1) physical factors impacting severe storms, particularly under the context of urbanization, wildfires, dust, etc., (2) understanding meso-scale convective systems (MCSs) and improving global model capability in simulating MCS phenomena, (3) development of 3-moment cloud microphysics parameterizations, and (4) impacts of marine aerosol and dust on orographic mixed-phase clouds.

*Session: Aerosol Direct & Indirect Feedbacks and Aerosol Aware Microphysics*

*Presentation Title: Substantial Convection and Precipitation Enhancements by Ultrafine Aerosol Particles*

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## **Kai Fan**

Graduate student, Laboratory for Atmospheric Research, Department of Civil and Environmental Engineering, Washington State University, Pullman, WA.

[kai.fan@wsu.edu](mailto:kai.fan@wsu.edu)

Kai Fan is a Ph.D student in Washington State University. His research is about air quality modeling and air quality forecasting by machine learning approaches.

*Session: Composition and Operational Forecasting from Daily to Seasonal Scales*

*Presentation Title: A Machine Learning Approach for Ozone Forecasting and its Application for Kennewick, WA*

*Poster Title: Exploring future climate effects on northwestern US air quality*

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## **Christina Feng Chang**

PhD student, University of Connecticut

[christina.feng\\_chang@uconn.edu](mailto:christina.feng_chang@uconn.edu)

BS in Environmental Engineering from the University of Connecticut and currently 2nd year PhD student in Environmental Engineering

*Session: New and Innovative Modeling Techniques: Machine Learning, New Computation Methods/GPUs, Exposure Estimate Improvement, Data Simulation*

*Presentation Title: Using Machine Learning to Assess Parameters Associated with Harmful Algal Blooms and Hypoxia for Lake Erie*

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## **Ana Carla Fernandez Valdes**

Graduate student, Washington State University

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I did my Bachelor studies on Meteorology. I have participated in two workshops in the International Center for Theoretical Physics (ICTP) in Italy. In 2017, I obtained a Master degree in Earth Sciences from the UNAM Mexico and now I am pursuing my Doctoral studies at WSU under the supervision of Dr. Yunha Lee working on WRF-Chem for urban areas to analyze the effect of urban land use on meteorology and air quality conditions.

*Session: LES, CFD, and Urban Canopy Modeling*

*Presentation Title: Effects of urban land use on meteorology and atmospheric chemistry in Pacific Northwest urban areas.*

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## **Gonzalo Ferrada**

Ph.D. student, The University of Iowa

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I started my Ph.D. in the Chemical and Biochemical Engineering program of The University of Iowa in August 2016. I have a Bachelor's degree in Meteorology from the University of Valparaiso (Chile) and a Master's degree also in Meteorology from the National Institute for Space Research (Brazil). My research focus is modeling of fire-related parameterizations and fire emissions on chemistry-transport models, specifically with smoke plume rise estimations based on remote sensing. I am currently participating in NASA's ORACLES and NOAA's FIREX-AQ field experiments.

*Session: Model Evaluation Using Meteorological and Chemical Observations*

*Presentation Title: On the evaluation of air quality forecasts during the ORACLES 2018 campaign*

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## **Johannes Flemming**

Principal Scientist, European Centre for Medium-Range Weather Forecasts

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Johannes Flemming is a Principal Scientist in the development section of the Copernicus Atmosphere Monitoring Service (CAMS) at ECMWF. Johannes's role is to coordinate the development of components on atmospheric composition in the Integrated Forecasting System (IFS) that are used for CAMS. The development of these components is carried out in collaboration between external partners such as KNMI and Météo-France, as well as the CAMS development section and the research department at ECMWF. Johannes is also responsible for the transition of the CAMS developments to their application in the operational CAMS Near-Real-Time forecasting system.

Johannes studied meteorology in Berlin and completed his doctoral thesis (summa cum laude) on the topic of data assimilation of air quality observations in a regional model. He started working at ECMWF in 2004 working in the HALO, GEMS and series of MACC projects, and since 2015 in CAMS.

*Session: Plenary*

*Presentation Title: Forecasting atmospheric composition at the European Centre for Medium-Range Weather Forecasts : Achievements and challenges of the global CAMS system.*

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## **Robert Fovell**

Professor, University at Albany SUNY

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Robert Fovell is professor of Atmospheric Sciences at University at Albany and Professor Emeritus of Atmospheric Sciences at UCLA, and focuses on mesoscale meteorology, numerical weather prediction, tropical cyclones, and wind forecasting.

*Session: Complex Terrain and Coastal Zone Meteorology*

*Presentation Title: Diagnosing and Mitigating Errors in Boundary Layer Structure*

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## **Saulo Freitas**

Sr. Scientist, USRA/GESTAR - NASA/GSFC

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Sr. Scientist at Global Modeling and Assimilation Office, NASA/GSFC, Greenbelt, MD, USA

*Poster Title: Assessing the Goddard Earth Observing System model in non-resolved to convection-permitting regimes*

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## **Kemal Gurer**

Staff Air Pollution Specialist, California Air Resources Board

[kemal.gurer@arb.ca.gov](mailto:kemal.gurer@arb.ca.gov)

Dr. Gurer has been conducting research at California Air Resources Board (CARB) in meteorological modeling to use in air quality studies over 20 years.

*Poster Title: A Comparison of MPAS and WRF Meteorological Models in California: 2013 Winter and 2016 Summer Case Studies*

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## **Jennifer Hegarty**

Staff Scientist, AER

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My research interests include NWP, synoptic meteorology; air quality analysis and modeling, satellite remote sensing, and dispersion modeling. As a staff scientist at AER, I am currently supporting studies involving air quality analysis and modeling and retrieval algorithm development for NASA satellite instruments such as TES and AIRS. I am also working with scientists at AER and the University of Miami to enhance surface wind analyses over the oceans with CYGNSS data. In addition to my career at AER, I have taught meteorology at Northern Essex Community College, been a researcher at the University of New Hampshire, and worked for Ontar Corporation. I have a BS in Meteorology from the University of Massachusetts at Lowell; an MS in Meteorology from Pennsylvania State University; and a PhD in Earth and Environmental Sciences from the University of New Hampshire.

*Poster Title: Using WRF-STILT to Determine the Relative Contributions of US and Mexican Emissions to High Ozone Events in El Paso, Texas*

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## **Chu-Chun Huang**

Postdoctoral scholar, UC Davis

[cchuang@ucdavis.edu](mailto:cchuang@ucdavis.edu)

Chu-Chun Huang is currently a postdoctoral scholar, with an extensive experience using the WRF model to study impacts of aerosol-cloud-radiation interactions on convective cloud systems.

*Session: Aerosol Direct & Indirect Feedbacks and Aerosol Aware Microphysics*

*Presentation Title: The Comparison of Dust-Radiation versus Dust-Cloud Interactions on the Development of a Modeled Mesoscale Convective System over North Africa*

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## **Adele Igel**

Assistant Professor, UC Davis

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Adele Igel is currently an assistant professor in the Department of Land, Air and Water Resources, specializes in cloud physics and atmospheric modeling. Igel completed her Ph.D. in atmospheric science at Colorado State University (CSU) and was a postdoctoral researcher at CSU before joining the UC Davis faculty in 2016.

*Session: Aerosol Direct & Indirect Feedbacks and Aerosol Aware Microphysics*

*Presentation Title: An Investigation of Proposed Aerosol Indirect Effect Mechanisms in Deep Convection*

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## **Derek Jensen**

Staff Scientist, Lawrence Livermore National Laboratory

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PhD in environmental fluid dynamics from the University of Utah followed by a postdoctoral appointment at Lawrence Livermore National Laboratory where I worked on source-term estimation algorithms for atmospheric applications. Since joining the lab as a staff scientist, I have applied data science and machine learning to a wide range of atmospheric applications.

*Session: Data Assimilation & Inverse Modeling*

*Presentation Title: Leveraging deep learning hyperparameter tuning frameworks for intelligent WRF ensembles*

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## **Yiqin Jia**

Atmospheric Modeler, Bay Area Air Quality Management District

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Yiqin Jia is an Atmospheric Modeler at the Bay Area Air Quality Management District. She has 22 years of experience in mesoscale meteorological and air quality model applications and evaluations. She has been involved with various projects at the District including the modeling of air toxics, fine and ultrafine particulate matter and ozone to support various District programs such as the Community Air Risk Evaluation Program, the Wood-Burning Rule, Assembly Bill 617, and the preparation of Clean Air Plans. Prior to working for the District, she studied the impacts of biodiesel fuels on air quality and human health and prepared the annual meteorological modeling for the Western Regional Air Partnership. She was a consulting research meteorologist in Science Systems and Applications Inc., working at NASA Goddard Space Flight Center (GSFC), where she managed, maintained and applied the PSU/NCAR mesoscale model for the atmospheric studies. She won the Outstanding Achievement Award from NASA GSFC Mesoscale Atmospheric Processes Branch in 2001. She is familiar with many meteorological and air quality models including WRF, MM5, CAMx, CMAQ, and CALMET/CALPUFF. She holds two M.S. degrees, one in Geophysics from the University of Kansas and the other in Atmospheric Dynamics from the Institute of Atmospheric Physics, Chinese Academy of Sciences.

*Poster Title: Abnormal Spatial Patterns in Fine Grid WRF and CMAQ Simulations*

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## **Pedro Jimenez**

Project Scientist, NCAR

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Dr. Jimenez Munoz has more than 16 years of experience with mesoscale models including the Weather Research and Forecasting (WRF) model. His experience with mesoscale models goes beyond a user perspective having developed parameterizations to improve the model performance. His background with the WRF model includes, 1) analyzing the impacts that the aerosol-cloud-radiation system exerts in the surface shortwave irradiance, 2) understanding fire-atmosphere interactions, and, 3) understanding

the surface wind behavior over complex terrain and the influence of the turbulent mixing within the atmospheric boundary layer.

*Session: BL Parameterizations*

*Presentation Title: Accounting for vertical and horizontal turbulent mixing in a three-dimensional planetary boundary layer parameterization*

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## **Christoph Keller**

Research Scientist, NASA GMAO / USRA

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Dr. Christoph Keller's research is focused on improving the representation of reactive trace gases in atmospheric models. He uses the GEOS-Chem chemistry module within the GEOS Earth System model to simulate and better understand the evolution of air pollutants such as ozone and nitrogen dioxide. He uses atmospheric observations to further improve model constraints, in particular emissions. He also develops new methods to emulate processes relevant to atmospheric chemistry based on machine learning.

Keller is the principal developer of the GEOS composition forecast (GEOS-CF) model. He developed and actively maintains the Harvard-NASA Emissions Component (HEMCO).

*Poster Title: Atmospheric chemistry modeling using machine learning*

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## **Gaige Hunter Kerr**

PhD Candidate, Department of Earth & Planetary Sciences, Johns Hopkins University

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I am a fifth year PhD candidate from Johns Hopkins interested in meteorology, air quality (with an emphasis on ozone and particulate pollutions), and using detailed computer models to better the community's understanding of the large-scale meteorological drivers. During my PhD I've used a variety of tools (in-situ observations, remote sensing products, and simulations of NASA's Global Modeling Initiative CTM and GEOS-Chem) to answer questions regarding the meteorology that drives pollution events.

*Poster Title: What causes the observed surface ozone-temperature relationship? Effect of the eddy-driven jet on surface-level transport*

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## **Mike Kleeman**

Professor, UC Davis

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Michael Kleeman has been a member of the Civil and Environmental Engineering Department at UC Davis for 20 years. His research interests include modeling and measurements of urban and regional air quality.

*Session: Aerosol Direct & Indirect Feedbacks and Aerosol Aware Microphysics*

*Presentation Title: Effects of GHG mitigation strategies on future California climate*

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## **Rajesh Kumar**

Project Scientist, National Center for Atmospheric Research (NCAR), Boulder, CO, USA

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Rajesh Kumar is a project scientist with the National Center for Atmospheric Research (NCAR), Boulder, Colorado, USA. His research focuses on air quality that is one of the most important socioeconomic and environmental concern around the world today. He synergistically integrates ground- and satellite-based air quality monitoring with atmospheric composition and modeling capabilities to address a number of air quality issues including transport and transformation of air pollution, the relative importance of local and foreign emissions, deterministic and probabilistic air quality predictions, aerosol-climate interactions, heterogeneous atmospheric chemistry, chemistry-climate interactions, projection of future air quality, and impact of air quality for public health and food security.

*Poster Title: High Resolution Air Quality Forecasting systems for India and the United States*

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## **David Lary**

Professor - Physics, University of Texas at Dallas

David Lary's work is in the area of Applied Physics with a focus on remote sensing from robotic aerial vehicles and satellites, Machine Learning, BigData, with societal applications. His education was completed in England, a First Class Double Honors B.Sc. in Physics and Chemistry from King's College London (1987) with the Sambrooke Exhibition Prize in Natural Science, and a Ph.D. in Physical Chemistry from the University of Cambridge, Churchill College

[David.Lary@utdallas.edu](mailto:David.Lary@utdallas.edu)

*Session: New and Innovative Modeling Techniques: Machine Learning, New Computation Methods/GPUs, Exposure Estimate Improvement, Data Simulation*

*Presentation Title: Machine Learning for Air Quality Applications*

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## **Yunyao Li**

Postdoc Associate, University of Maryland

[liyunyao@terpmail.umd.edu](mailto:liyunyao@terpmail.umd.edu)

Dr. Yunyao Li is a Post-doctoral Associate at the University of Maryland at College Park. She received her Ph.D. in Atmospheric Science in 2018. Her Ph.D. research focuses on deep convective transport and wet scavenging of trace gases. After graduating she started to work as a postdoc doing research on data assimilation.

*Session: Convection*

*Presentation Title: Improvement of parameterized convective transport and wet scavenging of trace gases in the WRF-Chem model*

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## **Yi-Chin (Karry) Liu**

Air Pollution Specialist, California Air Resource Board

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Dr. Yi-Chin Liu is an air pollution specialist at California Air Resources Board. Her research focuses on: (1) climate extremes, variability and change in California, (2) tropical cyclone genesis and intensification, and (3) cumulus scheme parameterization in the General Circulation Model.

*Session: Complex Terrain and Coastal Zone Meteorology*

*Presentation Title: Diablo Winds in the Bay Area California: Their climatology, extremes, and behavior*

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## **Brian McDonald**

Research Scientist, NOAA Earth System Research Laboratory, Chemical Sciences Division, Boulder, CO USA Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO USA

[brian.mcdonald@noaa.gov](mailto:brian.mcdonald@noaa.gov)

Dr. McDonald is a research scientist at the Cooperative Institute of Research in Environmental Sciences (CIRES) at the University of Colorado working at the NOAA Earth System Research Laboratory in Boulder, CO. Prior to arriving in Colorado, he received his Ph.D. in Environmental Engineering and Master's in Public Policy from the University of California, Berkeley. His expertise is on developing emission inventories of energy and urban systems, assessments of air quality trends, and regional air quality modeling.

*Session: Model Evaluation Using Meteorological and Chemical Observations*

*Presentation Title: WRF-Chem Modeling of Summertime Ozone during the Long Island Sound Tropospheric Ozone Study*

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## **Jeffrey Mirocha**

Atmospheric Scientist, Lawrence Livermore National Laboratory

[mirocha2@llnl.gov](mailto:mirocha2@llnl.gov)

Jeff Mirocha is an atmospheric scientist at Lawrence Livermore National Laboratory with a background in boundary-layer meteorology and numerical simulation methods. Jeff's research areas include large-eddy simulation, modeling flow over complex terrain, and multiscale atmospheric simulation, with a focus on renewable energy. Dr. Mirocha holds B.S. and B. A. degrees in Geography and Mathematics from Arizona State University, and M.S. and Ph.D. degrees in Astrophysical, Planetary and Atmospheric Sciences from the University of Colorado at Boulder.

*Session: Modeling of Processes Across Global and Regional Scales*

*Presentation Title: Toward the integration of atmosphere and wind plant physics and simulation techniques: An overview of the DOE's Mesoscale-Microscale Coupling project*

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## **Andrea Molod**

Research Physical Scientist, NASA

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*Session: Composition and Operational Forecasting from Daily to Seasonal Scales*

*Presentation Title: Near Real-Time Sub/Seasonal Prediction of Aerosol at NASA Global Modeling and Assimilation Office*

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## **Mike Moran**

Research Scientist, Environment and Climate Change Canada

[mike.moran@canada.ca](mailto:mike.moran@canada.ca)

Dr. Moran is a research scientist with Environment and Climate Change Canada (ECCC) in Toronto, Ontario. He holds degrees in mathematics, meteorology, and atmospheric science, and he has over 35 years of experience in the development, evaluation, and application of regional dispersion and air-quality models. Much of his work at ECCC has focused on modelling acid deposition, photochemical oxidants, and aerosols. He led the development of two ECCC air-quality models, AURAMS and GEM-MACH, and he is ECCC's lead scientist for operational air-quality forecasting.

*Session: Composition and Operational Forecasting from Daily to Seasonal Scales*

*Presentation Title: Routine Multi-model Performance Analysis over North America for Three Operational Air Quality Forecast Systems*

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## **Holly J. Oldroyd**

Assistant Professor, University of California, Davis

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Dr. Holly J. Oldroyd has held an appointment as Assistant Professor of Water Resources in the Department of Civil and Environmental Engineering at the University of California, Davis since 2016, and has a faculty affiliation with the Tahoe Environmental Research Center (TERC) at Incline Village. She holds a Ph.D. in Civil and Environmental Engineering from École Polytechnique Fédérale de Lausanne (EPFL, Switzerland), and BS and MS Degrees in Mechanical Engineering from the University of Utah. She studies a wide range of turbulent transport in environmental flows and in particular, land-atmosphere interactions over mountainous terrain. She is also involved in a wide range of educational-outreach and mentoring programs, including the Society of Women Engineers, AvenueE, UC Davis First-Gen, and the TERC Youth Science Institute. Recently, she was awarded the NSF-CAREER award to continue her research on land-atmosphere interactions in the Sierra-Nevada Mountains.

*Session: Complex Terrain and Coastal Zone Meteorology*

*Presentation Title: Daytime, anabatic winds over a steep Alpine slope: Turbulence structure and modeling implications*

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## **Maria Teresa Pay**

Post-doc researcher, Barcelona Supercomputing Center

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Dr. Maria Teresa was born in Murcia, Spain, April 20th, 1982. She got her B.S. in Chemical Engineering (University of Murcia, Jun 2006) and PhD in Environmental Engineering with the Degree of European Doctor and the Special Doctoral Award (Technical University of Catalonia, Nov 2011). Her research focuses on understanding the origin of air pollution by estimating the contribution from different sources to the air and evaluating its effects climate and health. Her core area of expertise is air pollution. She is also a modeller with large experience in cutting-edge High-Performance Computing and operational forecasting. After her PhD at the Barcelona Supercomputing Center (BSC, Spain), she moved to the École Polytechnique (France, 2013-2015) as a Postdoctoral Researcher where she delved into the use of models to find out the origin of pollution from meteorology to emissions. Since 2015, she works at BSC where she serve as Researcher in competitive projects. Her work has resulted in 25 peer-reviewed papers (100% in Q1; 7 as first author; h-index: 11; citations: 465; source: scopus), 10 chapters in books/proceedings/reports, and 64 contributions to conferences/workshops (90% oral). In the air quality community, She is a member of 3 international scientific committees, she have organized an international workshop and 2 international training courses. Since 2015, she is a Lecturer at the Division of Statistics (University of Barcelona) in Environmental and Life Sciences.

*Poster Title: Evaluation of the online multiscale MONARCH model to forecast air quality over Europe*

*Poster Title: Source apportionment modelling to unravel the origin of tropospheric ozone peaks over southwestern Europe*

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## **Gabriele Pfister**

Scientist, National Center for Atmospheric Research

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My general research is in studying the composition of the troposphere using satellite and in-situ observations (e.g. aircraft and ground-based measurements taken during field campaigns) in conjunction with regional and global atmospheric models, addressing the links between local pollution processes and regional and global pollution. Some of my current research topics include e.g. quantifying the contribution of different emission sectors to air pollution (focus on Colorado and South Korea), the long-range transport of pollution and how it impacts regional and local air quality, or the degradation of air quality due to wildfires.

*Poster Title: Evaluation of AQ models: what we miss with limited information*

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## **William Porter**

Assistant Professor, University of California, Riverside

[william.porter@ucr.edu](mailto:william.porter@ucr.edu)

Dr. William Porter is an assistant professor in the Department of Environmental Sciences at the University of California, Riverside. His research focuses on the application of numerical models and statistical tools to explore the relationships between policy, climate, and air quality, as well as their impacts on human and natural systems.

*Session: Modeling of Processes Across Global and Regional Scales*

*Presentation Title: Defining environmental parameter domains for secondary organic aerosol formation*

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## **Juli Rubin**

Physical Scientist, U.S. Naval Research Laboratory, Remote Sensing Division

[juli.rubin@nrl.navy.mil](mailto:juli.rubin@nrl.navy.mil)

Dr. Juli Rubin is a Physical Scientist at the U.S. Naval Research Laboratory Remote Sensing Division where she works on research and development of operational aerosol forecasting systems with a focus on ensemble systems, including ensemble data assimilation methods.

*Session: Data Assimilation & Inverse Modeling*

*Presentation Title: Navy Ensemble Aerosol Forecasting and Data Assimilation*

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## **Pablo Saide**

Assistant Professor, UCLA

[saide@atmos.ucla.edu](mailto:saide@atmos.ucla.edu)

Pablo is an atmospheric chemist with a research focus on the development and application of sophisticated regional computer models. With these models he studies highly relevant topics related to air quality, severe weather, and climate change. Pablo is also interested in applying his expertise and developed the first effective air quality forecasting system for Santiago de Chile, one of the most polluted cities in South-America. Pablo is currently a researcher National Center for Atmospheric Research

*Session: Data Assimilation & Inverse Modeling*

*Presentation Title: A biomass burning smoke prediction system including near-real time constraints on emissions over the Western U.S.*

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## **Amit Sharma**

POSTDOC, Laboratory for Atmospheric Research, Washington State University

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Dr. Sharma completed his PhD on Numerical modeling of tropospheric ozone over the Indian region using WRF-Chem model at Indian Institute of Technology, Madras (India) in December 2018. It involved examining the impact of utilizing different recent anthropogenic emission inventories and chemical mechanisms in the model on tropospheric ozone over India. The configuration of emission inventory and chemical mechanism best suited for the Indian region was used to derive crop loss estimates (for wheat and rice) due to ozone exposure over India. The work was mostly done in collaboration with Max Planck Institute for Chemistry, Mainz (Germany). Currently Dr. Sharma is working as a Postdoc at Washington State University (Pullman) where one of his focus is to investigate wildfire specific events over Western US using WRF-Chem model.

*Poster Title: Interactions between meteorology and chemistry during wildfire season over Western US*

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## **Hyeyum (Hailey) Shin**

Project Scientist I, NCAR

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Hyeyum (Hailey) Shin received her B. S. (2008) and Ph. D. (2013) in Atmospheric Sciences from Yonsei University (YSU), Seoul, South Korea. Currently, she is a project scientist working at National Center for Atmospheric Research/Research Applications Laboratory. Before joining NCAR/RAL, she worked at NOAA/Geophysical Fluid Dynamics Laboratory as a project scientist (Feb 2016 - March 2019) and at NCAR/Advanced Study Program as a postdoctoral fellow (Nov 2013 - Jan 2016).

Her general research goals are to advance our understanding of the role of boundary layer turbulence in meso-scale and large-scale circulations, and to improve its representation in weather and climate models. Specifically, she has evaluated and developed planetary boundary layer (PBL) parameterization schemes for a wide range of horizontal resolution, from O(100 m) to O(100 km), using multiple atmospheric modeling frameworks: atmospheric general circulation models (AGCM), regional models, and large-eddy simulations (LES).

*Session: BL Parameterizations*

*Presentation Title: Evaluation of PBL Parameterizations in WRF at Subkilometer Grid Spacings: Turbulence Statistics in the Dry Convective Boundary Layer*

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## **Sam Silva**

Research Assistant, Massachusetts Institute of Technology

[samsilva@mit.edu](mailto:samsilva@mit.edu)

Sam Silva is a PhD Candidate in Atmospheric Physics and Chemistry at MIT, with an expected graduation date of spring-summer 2019.

*Session: New and Innovative Modeling Techniques: Machine Learning, New Computation Methods/GPUs, Exposure Estimate Improvement, Data Simulation*

*Presentation Title: A Deep Learning Parameterization for Ozone Dry Deposition Velocities*

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## **Xia Sun**

Postdoctoral Researcher, University of Nevada, Reno. Atmospheric Science

[emsunxia@gmail.com](mailto:emsunxia@gmail.com)

Xia Sun is a now postdoc working in the Atmospheric Turbulence and Air Quality (ATAQ) Lab led by Dr. Heather Holmes. Her research interests include land-atmosphere exchange, meteorology modeling, and air quality modeling

*Session: Model Evaluation Using Meteorological and Chemical Observations*

*Presentation Title: Challenges in simulating high air pollution concentrations during persistent cold air pool events*

*Poster Title: Simulation of the land-atmosphere exchange during persistent cold air pool events in Salt Lake Valley, Utah*

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## **Gregory Thompson**

Project Scientist III, NCAR-RAL

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B.S. Penn State Univ (1990); M.S. Colorado State Univ (1993); PhD Univ. Colorado (2016).

Associate/Project Scientist at NCAR's Research Applications Laboratory since 1993 and primary author of a microphysics scheme in WRF.

*Session: Aerosol Direct & Indirect Feedbacks and Aerosol Aware Microphysics*

*Presentation Title: Medium Complexity Aerosol Treatment Coupled with Clouds/Precipitation/Radiation in a USA Operational NWP Model*

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## **Craig Tierney**

Senior Solution Architect, NVIDIA

[ctierney@nvidia.com](mailto:ctierney@nvidia.com)

Craig Tierney is a Senior Solution Architect at NVIDIA supporting high performance computing (HPC) and deep learning (DL). His focus includes the architecture of GPU based systems to maximize HPC and DL performance and scalability as well as large scale data management and application optimization. Prior to joining NVIDIA, Craig spent over 15 years providing high performance computing architecture and computational science support to NOAA and several other government and educational organizations including DOE, DOD, NASA and Stanford University. Craig holds a Ph.D. in Aerospace Engineering Sciences from the University of Colorado at Boulder.

*Session: New and Innovative Modeling Techniques: Machine Learning, New Computation Methods/GPUs, Exposure Estimate Improvement, Data Simulation*

*Presentation Title: AI for Science: Deep Learning for improved Satellite Observations and Numerical Modeling*

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## **Paul Ullrich**

Associate Professor, University of California Davis

[pauullrich@ucdavis.edu](mailto:pauullrich@ucdavis.edu)

Dr. Paul Ullrich is an associate professor of regional and global climate modeling in the Department of Land, Air and Water Resources at the University of California, Davis. He holds a Ph.D. in Atmospheric Science from the University of Michigan and a M.Math from the University of Waterloo. His research is focused on use-inspired climate data production and analysis, and climate data evaluation.

*Session: Modeling of Processes Across Global and Regional Scales*

*Presentation Title: A review of recent advances in climate modeling across scales*

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## **William Vance**

Air Pollution Specialist, CARB

[william.vance@arb.ca.gov](mailto:william.vance@arb.ca.gov)

William Vance is an Air Pollution Specialist at the California Air Resources Board. Recent work is focused on air quality measurements in the San Joaquin Valley and data analysis and interpretation. Dr. Vance has worked on a wide variety of topics ranging from the nonlinear dynamics of chemical reaction systems to the interactions of aloft and ground level pollutants.

*Poster Title: Micro-Pulse LiDAR Measurements of the Mixed Layer Height in the San Joaquin Valley*

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## **William Vizuete**

Associate Professor, University of North Carolina - Chapel Hill

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Dr. Vizuete is an associate professor in the Environmental Sciences and Engineering department in the Gillings School of Public Health. In his research Dr. Vizuete seeks novel environmental engineering solutions to solve public health problems associated with air quality.

*Session: Plenary*

*Presentation Title: Connecting Ozone Exceedances in Houston TX to Variability in Emissions and Meteorology: Implications for Federal Attainment*

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## **Benjamin Wagman**

Postdoctoral Research Staff Member, Lawrence Livermore National Laboratory

[wagman1@llnl.gov](mailto:wagman1@llnl.gov)

Benjamin Wagman is a climate modeler currently working as a postdoctoral scientist at Lawrence Livermore National Laboratory, where he is researching how atmospheric black carbon from firestorms affects global climate. Benjamin's other interests include cloud radiative feedbacks and uncertainty quantification.

*Poster Title: How would a regional nuclear war affect the global climate?*

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## **Jeffrey Weil**

Research Scientist, NCAR

[weil@ucar.edu](mailto:weil@ucar.edu)

Dr. Jeffrey Weil is a research scientist at the National Center for

Atmospheric Research (NCAR) and has many years of experience in atmospheric transport and dispersion modeling. This includes: modeling and measurement of dispersion, buoyant plumes and puffs, dispersion in wakes and canopies, model evaluation, laboratory experiments, dense gas cloud dynamics and dispersion, and Lagrangian particle dispersion modeling (LPDM). Under support from the Army Research Office, he developed LPDMs driven by parameterized atmospheric boundary layer (ABL) winds and turbulence or velocity fields from large-eddy simulations (LESs). The LPDM-LES effort has now been extended to a two-particle model (L2PDM) for predicting concentration fluctuations in the ABL. As a member of the American Meteorological Society (AMS), Dr. Weil chaired the committees on: 1) boundary layers and turbulence, and 2) meteorological aspects of air pollution. With the AMS and EPA, he promoted the use of state-of-the-art science to improve the physics and performance of applied dispersion models, in particular the EPA regulatory model AERMOD for industrial source applications. Dr. Weil chaired the AMS-EPA Regulatory Model Improvement Committee (AERMIC) which developed AERMOD.

*Session: LES, CFD, and Urban Canopy Modeling*

*Presentation Title: Large-Eddy Simulation and Lagrangian Two-Particle Modeling of Mean and Fluctuating Concentrations in the Atmospheric Boundary Layer*

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## **Anthony Wexler**

Distinguished Professor and Director, UC Davis

[aswexler@ucdavis.edu](mailto:aswexler@ucdavis.edu)

Dr. Wexler obtained his BS in Engineering Physics at UC Berkeley, MS in Mechanical Engineering at MIT and PhD in Mechanical Engineering at Caltech. His research interests relate to atmospheric aerosols, modeling their behavior, measuring their properties and understanding their health effects.

*Session: New and Innovative Modeling Techniques: Machine Learning, New Computation Methods/GPUs, Exposure Estimate Improvement, Data Simulation*

*Presentation Title: A Mass-Conserving Machine Learning Algorithm for Atmospheric Chemistry*

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## **David Wiersema**

Graduate Student Researcher, University of California, Berkeley

[wiersema@berkeley.edu](mailto:wiersema@berkeley.edu)

Doctoral candidate in the Department of Civil and Environmental Engineering at University of California, Berkeley. Fellow in the Lawrence Graduate Scholars Program at Lawrence Livermore National Laboratory.

*Session: LES, CFD, and Urban Canopy Modeling*

*Presentation Title: Analyzing and improving turbulence characterization in a multiscale atmospheric model of transport and dispersion through an urban area*

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## **Jian-Bin Wu**

Associate Professor, 3Clear Technology Co.,Ltd

[wujianbin83@126.com](mailto:wujianbin83@126.com)

Air Quality Model Development

*Session: Composition and Operational Forecasting from Daily to Seasonal Scales*

*Presentation Title: Development of Air Quality Modeling and Forecast over China*

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## **Yuzhong Zhang**

Postdoctoral Fellow, Harvard University

[yuzhongzhang@seas.harvard.edu](mailto:yuzhongzhang@seas.harvard.edu)

I am a postdoctoral fellow at Harvard University. My research interest is to use satellite and surface observations to interpret the emission and sink of atmospheric methane.

*Poster Title: Empirical estimation of posterior emission flux errors*

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## **Zhan Zhao**

Air Pollution Specialist, California Air Resources Board

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Dr. Zhan Zhao is an air pollution specialist at the Regional Air Quality Modeling Section of California Air Resources Board. She leads the meteorological aspects of the climate change projects, as well as conducts in-house Weather Research and Forecasting (WRF) model simulations to support the development of the State Implementation Plans (SIPs) for California. She got her Ph.D. degree from the

Department of Land, Air, and Water Resources at University of California, Davis in 2009. Prior to joining ARB, she worked as a postdoctoral researcher at the Scripps Institution of Oceanography for two years.

*Poster Title: Assessment of Climate change impact over California for wintertime using dynamic downscaling with a bias correction technique*