

# MAC-MAQ

Meteorology And Climate - Modeling for Air Quality

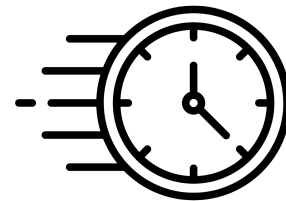
## Conference

September 13-15, 2023

### Abstracts Due Today!

Submit your abstract now! Don't miss your chance to showcase your work at the upcoming MAC-MAQ conference.

As a MAC-MAQ Speaker, you'll have the opportunity to share your knowledge with a diverse audience of conference attendees. This is a chance to connect with peers, establish new connections, and gain valuable insights on meteorology for air quality applications research.



[Submit your abstract here](#)

*Friendly Reminder: please note that speakers will need to reserve all three conference dates until the programming schedule is finalized. Additionally, we kindly request that speakers plan to attend the conference in-person. If you have any questions, please contact the Conference Manager, Olivia Schlanger at [oschlanger@ucdavis.edu](mailto:oschlanger@ucdavis.edu).*

### Main Conference Topics

#### M3: Merging Measurements & Models

Session Chairs: [Brad Pierce](#) and [Carl Malings](#)

Measurements provide real-world data to validate and constrain models, while models offer a framework for situating often sparse or intermittent measurements within a broader context. This session highlights work integrating measurements and models for physical and chemical processes in the atmosphere as they relate to air quality. A range of measurement types are considered, including in-situ and remote sensing measurements from surface, airborne, and satellite platforms. A variety of methods for measurement integration are also considered, including data assimilation, data fusion (including machine learning approaches), and use of measurements for model evaluation and validation.

**Unique/Extreme Events and their Impacts on  
Meteorology and Air Quality**

**Session Chairs:** [Susan O'Neill](#) and [Karin Ardon-Dryer](#)

Unique or extreme events such as wildfires, stratospheric ozone intrusions, dust storms, cold air pools, and pandemics can have notable and sometimes dramatic impacts on meteorology and air quality. Further, while typically episodic and unique in nature, climatological projections have them occurring more frequently and the enormity of their impact, spatially, temporally, and in terms of creating hazardous conditions, affect millions of lives. In this session we invite abstracts that probe the underlying physics and chemistry of extreme events with the goal of understanding their impact on air quality and meteorology. Possible topics include, but are not limited to, recent high-impact wildfires, pandemics, and other notable events such as dust storms, stratospheric ozone intrusions, and cold air pools.

## Meteorology-Chemistry Coupling, Feedbacks, and Interactions

**Session Chairs:** [Heather Holmes](#) and [Maryam Abdi-Oskouei](#)

In this session, we invite submissions from the latest observational and modeling studies with the focus on advancing our understanding of meteorology and atmospheric chemistry as a coupled system. Relevant topics include but are not limited to: (1) Coupled meteorology and chemistry feedbacks across scales (e.g., land-atmosphere coupling, PBL mixing, cloud microphysics, dynamics, etc.), (2) Studies designed to investigate meteorology and air quality interactions across multiple pollutant species (e.g., aerosols and reactive gases), (3) Biogenic emissions and their impacts on regional and global air quality, (4) Combined effects of meteorology and chemistry and their associated broader societal impact (e.g., health burden, environmental justice, etc.).

## Breakthrough Innovations in Atmospheric and Air Quality Modeling

**Session Chairs:** [Siyuan Wang](#) and [Sebastian Eastham](#)

As new challenges emerge in air quality modeling and forecasting, innovative techniques offer exciting opportunities to advance our understanding of the complex interactions between air quality, meteorology, and the climate system. Meanwhile we are facing a growing need to provide tools which can rapidly and reliably inform both the public and policy makers of the ways in which air quality might change, responding to questions of environmental justice and compounding environmental stressors. This session focuses on innovative techniques in atmospheric and air quality modeling, such as trustworthy artificial intelligence/machine learning, physics-infused machine learning, new approaches to model-data fusion, GPU-accelerated computing, and cloud computing.

## Composition and Operational Forecasting from Daily to Seasonal Scales

**Session Chairs:** [Yang Zhang](#) & [Daniel Tong](#)

This session invites submissions on producing atmospheric composition forecasting from daily to sub-seasonal to seasonal scales. This includes development and implementation of both research and operational deterministic air quality forecasting systems, ensemble approaches for probabilistic air quality forecasting, chemical data assimilation, bias correction, machine-learning and other techniques to improve initialization, emission, physical and chemical processes, and post-processing of air quality forecasting systems to improve forecasting skill and decision-making support.

## Modeling of Processes Across Multiple Scales

Session Chairs: [Louisa Emmons](#) and [Petra Klein](#)

The linkages between the atmosphere's constituents and meteorology are dependent on the level of knowledge and methodology used to represent chemical and physical processes within the models. These processes are sometimes scale-dependent, with different scales necessitating different approaches. They may also be scale independent, applicable to all resolutions and modeling domains. In this session, we focus on new modeling systems and process representations that span all scales of atmospheric modeling. A particular focus is on fundamental processes - those which have a key influence on the predicted state of the atmosphere, yet may be addressed through novel process representation.

Submit your work here

## Attention Students!

*Calling all undergraduate and graduate students, masters students, and post-docs*

Don't miss the chance to showcase your research at the MAC-MAQ Poster Competition. This is a great opportunity to enhance your presentation skills and receive constructive feedback while competing for a monetary prize.

Submit your research now and gain valuable practice in presenting your findings to a wider audience.



### Eligibility Criteria

Entrants must be undergraduate, graduate, masters, or PhD students (*maximum 4 years after highest degree earned.*)

Participants must attend the conference in-person.

Posters must be based on MAC-MAQ 2023 program

Posters will be evaluated during the conference by a select panel of judges. Each poster will be awarded scores based on four main categories, with each category valued up to 5 points, resulting in a total possible score of 20 points.

### Broader Impacts & Innovation

- Does the research demonstrate broader societal impact?
- Does this research have the potential to make a novel contribution to the overall field?

### Visual Appeal of Poster Materials

- Are the components of the poster organized in a logical flow?
- Is there a good balance of visuals, text and white space?

### Communication

- Are the outcomes, conclusions, implications, and uncertainties or limitations of the research clearly communicated?
- Can the presenter respond to in-depth questions about the work?

topics.

Only one poster (abstract) per person can be entered into the competition.

#### Overall Presentation

- How well does the presenter engage the audience?
- Is the presentation free of jargon and accessible to a cross-disciplinary audience?

[Submit a poster abstract](#)

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Questions? Contact the Conference Manager, Olivia Schlanger at [oschlanger@ucdavis.edu](mailto:oschlanger@ucdavis.edu).



UC Davis Air Quality Research Center | Bainer Hall - MAE, One Shields Ave. , Davis, CA 95616

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