

Recap of the 21st Conference on Atmospheric and Oceanic Fluid Dynamics and 19th Conference on Middle Atmosphere

The 21st Conference on Atmospheric and Oceanic Fluid Dynamics and 19th Conference on the Middle Atmosphere were held jointly in Portland, OR on June 26-30, 2017.

The Atmospheric and Oceanic Fluid Dynamics (AOFD) conference received 290 abstracts, consisting of presentations spanning theoretical, observational and modeling approaches focused on understanding fundamental dynamics that broadly impact Earth's and other planet's climate. A number of the sessions reflected core areas of AOFD research: Atmospheric and Oceanic General Circulation; Coupling between Moisture, Clouds, and Circulation; Troposphere-Stratosphere Coupling; Transport and Mixing; Atmosphere-Ocean-Ice Interactions; Mesoscale Ocean Dynamics; and Wave-Mean Interactions. New topics were introduced this year to reflect active and growing areas of research in the community: Planetary Atmospheres and Oceans, and Dynamics of Past and Future Climates. In addition, the conference featured colleagues who had a strong impact on the field. The Bernhard Haurwitz Lecture was presented by Professor Wayne Schubert (Colorado State University), who discussed "Potential Vorticity Aspects of Tropical Cyclones" on Wednesday evening. The meeting also recognized the accomplishments and contributions of Professor James McWilliams (UCLA) during a special session on "Submesoscale Oceanic Dynamics" on Thursday.

The Middle Atmosphere conference received 91 abstracts. The conference began with a special session about the unprecedented behavior of the quasi-biennial oscillation (QBO) in early 2016, which included an invited presentation by Peter Hitchcock, "The Disruption of QBO Westerlies by Shallow Easterly Jets". The first day also included sessions on QBO-related variability, change in the middle atmosphere, moisture in the middle atmosphere, as well as a middle atmosphere-focused poster session. Tuesday morning featured presentations about atmospheric observations and reanalyses, including an invited presentation by Thomas Birner, "Brewer-Dobson Circulation Inter-Comparison Based on Reanalyses and Models". The Tuesday afternoon program featured sessions on Stratosphere-Troposphere Dynamical Coupling and Transport & Mixing, held jointly with the 21st Conference on Atmospheric and Ocean Fluid Dynamics. Wednesday morning featured sessions on middle atmosphere-focused modeling, theory and circulation. Several further sessions addressed planetary waves and the stratospheric polar vortices, including upward coupling, downward coupling and theory. These sessions included an invited presentation by Mark Baldwin, "Arctic Amplification of Stratospheric Variability". The conference finished with two sessions related to sudden stratospheric warmings (SSWs), with an invited presentation by Alvaro de la Camara, "The Relevance of the Stratosphere State Prior to Sudden Stratospheric Warmings in WACCM".

Approximately 50 conference attendees participated in a formal women's luncheon, co-sponsored by AMS and CIRES. Participants networked and discussed the issues faced by women in Earth science careers.

Finally, a Town Hall Meeting was held on Tuesday and discussed "Simpler Models in CESM: Where We Are, and Where to Go from Here," led by Edwin Gerber, Aditi Sheshadri and Isla Simpson.

Both conferences have continued to recognize the importance of student contributions. Prizes were awarded to nine outstanding student presentations at the Atmospheric and Oceanic Fluid Dynamics conference:

- Chung-Yin Chang, Princeton University, "Exploring the Relations between the Strength of Global Entropy Cycle and Equator-to-Pole Temperature Gradient in an Idealized General Circulation Model"
- Kevin DallaSanta, CIMS/NYU, "The Circulation Response to Volcanic Eruptions: The Importance of Tropical Stratospheric Warming"
- Alexis Foussard, LMD, Paris, "Effect of Mesoscale Oceanic Eddies on Storm Tracks"
- Tsung-Lin Hsieh, Princeton University, "A Quasi-steady Baroclinic Eddy with Hypohydrostatic Convection"
- Wenwen Kong, UC Berkeley, "Testing the Role of Westerly Jet in the Termination of Meiyu"
- James O. H. Russell, North Carolina State University, "The Role of Convection in African Easterly Wave Dynamics"
- Jacob T. Seeley, UC Berkeley, "A New Paradigm for Tropical Anvil Clouds"
- Katherine M. Smith, University of Colorado, "Effects of Langmuir Turbulence on Upper Ocean Carbonate Chemistry"
- Xiyue Zhang, California Institute of Technology, "Sensitivities of Arctic Clouds to Climate Change".

Four outstanding student presentations were selected for the Middle Atmosphere conference:

- Jonathan Blufer, SUNY, “Using Elliptical and Zonal Mean Metrics to Examine Variability in Model Skill during the 7 January 2013 Sudden Stratospheric Warming Event”
- Olga Tweedy, Johns Hopkins University, “Response of Trace Gases to the Disrupted 2015–2016 Quasi-Biennial Oscillation”
- Etienne Dunn-Sigouin, LDEO/Columbia University, “Dynamics of Extreme Negative Planetary Wave Heat Flux Events in an Idealized Model”
- Zachary D. Lawrence, New Mexico Institute of Mining and Technology, “Characterizing Stratospheric Polar Vortex Variability with Computer Vision Techniques”

Conference Chairpersons:

Gang Chen & Andy Thompson (AOFD)

Natalia Calvo & Maggie Hurwitz (MA)