Welcome to the FSU Meteorology Graduate Program Virtual Open House!

Department of Earth, Ocean and Atmospheric Science
December 3, 2022
Agenda

A introduction to the EOAS Department & Meteorology program at FSU & overview of graduate student life here in Tallahassee

1. Welcome from the EOAS Department Chair – Prof. Bob Hart

2. EOAS Department and Meteorology Graduate Program Overview – Prof. Allison Wing
   • Center for Ocean-Atmospheric Prediction Studies (COAPS) - Prof. Mark Bourassa

3. Meteorology Faculty Member Introductions

4. Graduate Student Life – Fred Soster & Cansu Duzgun

5. Admissions and Assistantships – Prof. Zhaohua Wu

6. Q & A
At EOAS we continuously work to create an inclusive department that fully reflects the diverse community we serve. We seek to accomplish this by recruiting a diverse faculty, staff, and student body and promoting and strengthening under-represented groups within EOAS. Here, we build on an inclusive culture in which difference is welcomed and valued. We embrace the responsibility of providing and nurturing an affirming climate that supports and celebrates individual identities across a broad spectrum while ensuring equitable treatment. We strongly believe that different backgrounds, perspectives and experiences drive creativity and innovation, and deliver better results. At EOAS everyone is welcome!
Areas of research include:
- Synoptic & dynamic meteorology
- Mesoscale meteorology
- Tropical meteorology
- Hurricanes
- Atmospheric chemistry
- Climate variability and change
- Remote sensing
- Air quality
- Air-sea interaction

…and more!

15 Faculty
26 Master’s Students
17 PhD Students
Our graduate students come from backgrounds in
• Meteorology/atmospheric science
• Environmental science
• Physics
• Math
• Civil engineering
• And other fields!

Our graduate students take courses in
• Atmospheric dynamics
• Synoptic meteorology
• Climate
• Atmospheric physics
• Technical electives

And can choose from electives…
• Large-scale atmospheric circulations
• Waves and instabilities
• Linking weather and climate
• Dynamics of large-scale climate variability
• Mesoscale meteorology
• Tropical meteorology
• Marine meteorology
• Regional hydroclimatology
• Fundamentals of climate and global dynamics
• Extreme weather in a warming climate
• Atmospheric composition, chemistry, and climate
• Paleoclimate data, models, and theory

• Radiative transfer
• Cloud physics
• Satellite remote sensing
• Global biogeochemical cycles and global change
• Atmospheric convection
• Tropical rainfall
• Physics of the air-sea boundary layer

• Applied time series analysis
• Data analysis
• Dynamical weather prediction
Recent seminar topics include:

- “Anthropogenically-driven increases in extreme fire weather conditions and subsequent extreme precipitation events”
- “Combining physics and machine learning in the turbulence-convection parameterization of the CliMA climate model”
- “Interbasin SST as a predictor of seasonal Atlantic hurricane activity”
- “Extreme weather risks and decisions in society”
- “Severe Convective Storms: Local problems with global connections.”
- “Tropical cyclone frequency in the future: understanding the model uncertainty through the dynamics of seed vortices”
- “Heat extremes in a warming world”
- “Guiding Principles for Data Visualization for Analysis”
Our recent MS graduates have gone on to...
- National Weather Service
- NCEP Environmental Modeling Center
- Meteorologist for Commodities/Energy Trader
- Meteorology engineer/consultant for defense contractor
- Air quality dispersion modeler for environmental consulting company
- PhD programs

Our recent PhD graduates have gone on to scientific research positions at...
- NOAA Hurricane Research Division
- Storm Prediction Center
- Naval Research Lab
- Northern Gulf Institute
- Woods Hole Oceanographic Institution
- Other academic institutions
Virtual Building Tour
MAP ROOM: POWELL WEATHER OBSERVATORY
About COAPS

COAPS is a center of excellence performing interdisciplinary research in ocean-atmosphere-land-ice interactions to increase our understanding of the physical, social, and economic consequences of climate variability.

Established at the Florida State University in 1996 by the Florida Board of Regents.

Core objectives include:

• Producing peer-reviewed scientific research.
• Graduating well-qualified students in meteorology, oceanography, statistics, and the computer and information sciences.
• Providing high-quality data products and services to the public, private, and research communities.
COAPS has 73 people working on research grants totaling nearly $11.8 M/year in expenditures.

- 6 teaching faculty (also part of the Department of Earth, Ocean and Atmospheric Science)
- 28 research scientists and post-docs
- 24 graduate students
- 7 undergraduate students
- 9 administrative personnel

For people interested in interdisciplinary Earth Systems Science there are a lot of opportunities to draw on diverse expertise (similar to EOAS), but with more full-time researchers to work with.

Long Term Goals

- Maintain a Leadership Role in interdisciplinary ocean-atmospheric research
- Educate the next generation of earth system scientists
- Increase our Collaboration with universities, government agencies, and members of the private sector
Faculty Introductions
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Dr. Alyssa Atwood
- Tropical climate variability and change
- Paleoclimate data, models & theory
- Isotope geochemistry

Dr. Mark Bourassa
- Air-sea interaction and observing systems
- Remote sensing
- Boundary layer meteorology
- Tropical meteorology

Dr. Ming Cai
- Dynamics of global mass circulation
- Climate change
- Stratosphere-troposphere coupling

Dr. Jeff Chagnon
- Mid-latitude dynamics
- Numerical modeling
Faculty Introductions

Dr. Michael Diamond
- Clouds, aerosol, and precipitation
- Climate Change
- Earth’s albedo
- Marine cloud brightening

Dr. Henry Fuelberg
- Synoptic meteorology
- Meso-meteorology
- Lightning

Dr. Bob Hart
- Synoptic-dynamic meteorology
- Tropical cyclones
- Statistical and numerical weather prediction
- Tropical-extratropical interactions

Dr. Chris Holmes
- Atmospheric chemistry
- Climate change
- Atmosphere-surface interactions
- Air quality
- Fires & smoke
Faculty Introductions

Dr. Guosheng Liu
- Radiative transfer
- Satellite remote sensing and applications to forecasting and climate research

Dr. Vasu Misra
- Climate variability and predictability
- Tropical meteorology
- Monsoons

Dr. Sharon Nicholson
- Tropical meteorology
- African weather and climate

Dr. Rhys Parfitt
- Marine meteorology
- Mid-latitude climate variability
- Socioeconomic impacts of weather
Faculty Introductions

Dr. Philip Sura
- Stochastic-dynamical understanding of extreme climate events

Dr. Allison Wing
- Tropical cyclones
- Tropical convection and climate

Dr. Zhaohua Wu
- Atmospheric and climate dynamics
- Development of mathematical/physical analysis methods

New faculty member in radar and mesoscale/synoptic meteorology
We will study how clouds and aerosols affect past, present, and future climate changes using tools ranging from aircraft and satellite observations to numerical modeling at the cloud, regional, and global climate scales.
Asian Monsoon Climate Variability and Change: Climate modeling, observational studies, spanning subseasonal to secular timescales, extremes including Monsoon low pressure systems

Central American Monsoon: Low level jets, ITCZ, air-sea interaction, orographic impacts, mid-summer drought

Florida’s climate variability and change: Seasonal prediction, projections of future climate, hydrological applications, land cover and land use change, extremes including Atlantic TCs, heatwaves

Madden Julian Oscillation, Warm Pool, and Australian Monsoon: How are these inter-related; How are they changing in a future climate?

Other Miscellaneous topics: Analysis of diurnal variability, oceanic and continental convection

More information at: https://www.coaps.fsu.edu/vasu-misra/all-publications
Organization of tropical convection: Implications for climate and for hurricane development

And how this clustering affects climate variability by changing the flow of energy through the atmosphere.

We use cloud-resolving models, satellite observations, and hurricane hunter aircraft data to study how these "cloud-radiative feedbacks"...

Interactions between clouds, infrared cooling/heating, and air circulation help the clouds cluster.

...accelerate hurricane development.

We study what controls how tropical clouds clump together...
Zhaohua Wu’s Research Interests

Searching for Physical Origins of the Annual Cycles of SAT

Developing Innovative Data Analysis Methods

Finding Laws of Waves Propagation in a Varying Medium

Unlocking How Rapid Weather Variability Impacts Flu Epidemic

Diagnosing Spatiotemporally Local Tropical Waves

Building Weather/Climate Model Components

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Graduate Student Life

Graduate Student Representatives: Fred Soster & Cansu Duzgun
Admissions & Assistantships

Graduate Committee Chair
Prof. Zhaohua Wu

Graduate Academic Coordinator
Jimmy Pastrano
We hope this information session has provided a useful overview of the EOAS department, the Meteorology program, and life as a graduate student here in Tallahassee!

A recording of the presentations will be available at https://www.eoas.fsu.edu

We have time now for questions, but you can always contact us directly as well:

Graduate Committee Chair: Prof. Zhaohua Wu zwu@fsu.edu
Graduate Academic Coordinator: Jimmy Pastrano jpastrano@fsu.edu
Graduate Student Reps: Fred Soster fsoster@fsu.edu & Cansu Duzgun cduzgun@fsu.edu

- General Questions from Attendees
- Breakout Rooms for more Specific Questions:
  - Prof. Zhaohua Wu & Prof. Allison Wing
  - Jimmy Pastrano
  - Graduate Student Reps (Fred Soster & Cansu Duzgun)

Thank you for attending our virtual open house!