

Workshop

Tropical Climatology and Meteorology, from the Hadley and Monsoonal Circulation to Deep Convection and Biosphere-Atmospheric Interactions

January 20th - 24th, 2025

Instituto de Ciencias de la Atmósfera y Cambio Climático, UNAM

This workshop will enhance the understanding of tropical climate and meteorology and their connection to atmospheric convection. It will be accomplished through a series of seminars and courses. Topics will cover from global to local scales, including Hadley circulation, monsoon regimes, convective storms, and their interactions with soil and vegetation. Participants will attend seminars focusing on fundamental scientific issues that are central to the study of the tropics. Additionally, they will engage in two-day intensive courses where they will conduct data analysis and modeling activities relevant to tropical studies. To receive a diploma, participants should attend all activities and present a group project.

Topics

- Convection and its organization
- Modern theories of monsoons
- Focus on the North American Monsoon
- Monsoons and climate modeling (seasonal forecasts and CMIP6 models)
- Tropical waves

Directors

David K. Adams, ICAyCC-UNAM

Simona Bordoni, University of Trento

Speakers

- Adrian Tompkins, ICTP
- Simona Bordoni, University of Trento
- Spencer Hill, City College of New York
- Cuauhtémoc Turrent, CICESE
- David Adams, ICAyCC-UNAM
- Christian Domínguez, ICAyCC-UNAM
- Alejandro Jaramillo, ICAyCC-UNAM
- Arturo Quintanar, ICAyCC-UNAM
- Jorge Zavala, ICAyCC-UNAM

Live broadcast



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<https://www.facebook.com/ICAyCCUNAM>



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Monday, January 20th, 2025

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8:45 am	Introduction to Workshop Jorge Zavala, David Adams, Adrian Tompkins
9:00-10:00 am	Introduction to Thermodynamics Simona Bordoni
10:00-11:00 am	Introduction to Thermodynamics/Atmospheric Stability Simona Bordoni
11:00-11:30 am	Coffee Break
11:30 am -12:30 pm	Introduction to Atmospheric Convection Adrian Tompkins
12:30-1:30 pm	Deep Convection in the Deep Tropics and North American Monsoon David Adams
1:30-3:00 pm	Lunch Break
3:00-4:00 pm	Physical mechanisms associated with North American Monsoon climate variability Cuauhtemoc Turent
4:00-5:00 pm	Introduction to tropical general circulation and the global monsoons Spencer Hill



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Tuesday, January 21th, 2025

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9:00-10:00 am	Modern theories of monsoons/ITCZ Simona Bordoni / Spencer Hill
10:00-11:00 am	Modern theories of monsoons/ITCZ Simona Bordoni / Spencer Hill
11:00-11:30 am	Coffee Break
11:30 am -12:30 pm	Introduction to tropical waves and their importance for extreme events Alejandro Jaramillo
12:30-1:30 pm	Influence of inverted troughs on the formation of mesoscale convective systems during the North American Monsoon Christian Dominguez
1:30-3:00 pm	Lunch Break
3:00-4:00 pm	The role of vegetation in monsoon dynamics and precipitation recycling Arturo Quintanar
4:00-5:00 pm	Theories for past and future monsoon rainfall changes Spencer Hill



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Wednesday, January 22th, 2025

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9:00-10:00 am	Parameterization of convection in NWP and climate models Adrian Tompkins
10:00-11:00 am	Parameterization and convective aggregation Adrian Tompkins
11:00-11:30 am	Coffee Break
11:30 am -12:30 pm	Monsoons in NEXTGEMS k-scale global models, initial results Simona Bordoni
12:30-1:30 pm	Delayed monsoon onsets in future climates Simona Bordoni
1:30-3:00 pm	Lunch Break
3:00-4:00 pm	Interannual variability in extreme daily monsoon rainfall Spencer Hill
4:00-5:00 pm	Variability of precipitation in the Grijalva subbasin Jorge Zavala



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