PCTS Workshop

From Spectroscopy to Climate: Radiative Constraints on the General Circulation

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Cooperative Institute for Modeling the Earth System
Princeton University

When: Monday, August 22 - Wednesday, August 24, 2022
Where: Princeton Center for Theoretical Sciences, Princeton University

Draft Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<tr>
<td>0830</td>
<td>Breakfast</td>
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<tr>
<td>0900</td>
<td>Fueglistaler / Welcome, Logistics &amp; Intro (40) Held (20) Thompson (20)</td>
<td>Koll (40) Wordsworth (20) Wijngarden (20)</td>
<td>Feldl (40) Jing Feng (10) Caballero (20)</td>
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<tr>
<td>1020</td>
<td>Coffee break</td>
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<td>1010 Coffee break</td>
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<td>1040</td>
<td>Shine (40) Yi Huang (20) Xianglei Huang (20)</td>
<td>Cronin (20) Ming (40) Zeyuan (10) Match (10)</td>
<td>1030 Panel discussion</td>
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<tr>
<td>1200</td>
<td>Discussion</td>
<td>Discussion</td>
<td>Adjourn (Lunch for those leaving later.)</td>
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<tr>
<td>1215</td>
<td>Lunch / Poster A</td>
<td>Lunch / Poster B</td>
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<td>1330</td>
<td>Hartmann (40) McKim (20)</td>
<td>DeSouza-Machado (40) Chiu (20)</td>
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<td>1430</td>
<td>Coffee break</td>
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<td>1450</td>
<td>Mlawer/Pincus (10) Freese (10) Liu (10) Jeevanjee (40)</td>
<td>Pu Lin (20) Pincus (20) Merlis (20)</td>
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<td>1550ish</td>
<td>Panel discussion</td>
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<td>1640</td>
<td>Reception @ PCTS</td>
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Posters: Celeste Tong, Yan-Ting Chen, Pryam Raghuraman, Clarissa Kroll, Han Huang, Jenny Chang, Youtong Zheng, Chenggong Wang, Osamu Miyawaki, Ilai Guendelman, Yan Xie
List of attendees and titles (as of July 21):

Jenny Chang, Eddy equilibration in the idealized models of extratropical troposphere
Yan-Ting Chen, A systematic examination of the spatial pattern of instantaneous CO2 radiative forcing
Christine Chiu, Cloud, aerosol, and precipitation - their radiative signatures and interactions with climate dynamics
Timothy Cronin, How well do we understand the Planck Feedback?
Nicole Feldl, An analytical model for local radiative feedbacks
Jing Feng, The importance of enhanced atmospheric emission in determining the clear-sky longwave feedback
Lyssa Freese, Antarctic Radiative and Temperature Responses to a Doubling of CO2
Ilai Guendelman, Planetary and Earth's atmospheric dynamics
Dennis Hartmann, Global Radiative Convective Equilibrium with a Slab 2 Ocean: SST Contrast, Sensitivity and Circulation
Isaac Held, TBA
Zeyuan Hu, Cloud-radiative effects strongly modify the strength of convective cooling in the TTL
Han Huang, Nonlinear coupling between longwave radiative climate feedbacks
Xianglei Huang, Studying climate through a spectral lens
Yi Huang, A decomposition of the atmospheric and surface contributions to the outgoing longwave radiation
Nadir Jeevanjee, Convection, Radiation, and Climate
Daniel Koll, An Analytical Model for the Clear-Sky Longwave Feedback
Clarissa Kroll, The impact of volcanic aerosol heating on convection and stratospheric ice
Pu Lin, Convective organization simulated in global ultra-high resolution model
Lei Liu, Can climate change be detected by long-term downwelling longwave radiance observations at Southern Great Plains?
Aaron Match, Understanding the response of the ozone layer to greenhouse gas forcing
Brett McKim, The spectroscopic and thermodin. origin of Earth's fixed tropopause temperature
Timothy Merlis, Radiation and Tropical Circulations
Alison Ming, Interannual variability of tropical lower stratospheric temperatures
Osamu Miyawaki, What mechanism controls the Arctic radiative cooling response?
Robert Pincus, TBA
Ram Ramaswamy, Short-Lived Radiative Species: From Spectral Properties to Climate Forcings
Jake Seeley, The water vapor window in hothouse climates
Keith Shine, A molecular-level look at how carbon dioxide exerts its radiative forcing
Celeste Tong, Seasonal and spatial variations of stratocumulus mesoscale structures
David Thompson, Changes in temperature persistence under climate change
Chenggong Wang, Nonconstant cloud feedbacks and its connection to SST
William van Wijngaarden, Effect of Scattering on Radiative Transfer
Robin Wordsworth, From the Schrödinger Equation to Climate Change: A Pedagogic Approach to Global Warming From First Principles
Yan Xie
Youtong Zheng, Physics of shallow clouds and climate