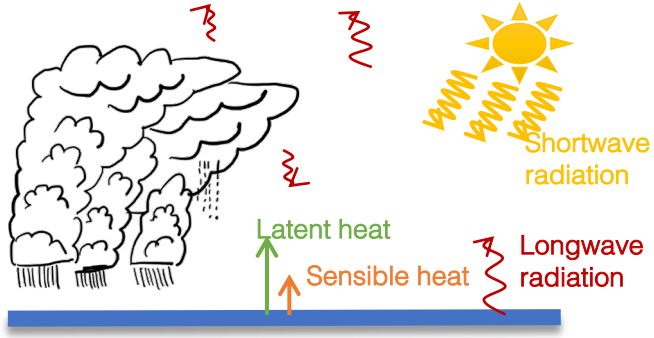
RCEMIP Update



Themes:

1. Clouds & climate sensitivity
2. Convective self-aggregation
3. Robustness of RCE state

- 30 models: LES, CRM, GCRM, GCM, SCM → Thank you to the 41 scientists who contributed, from 29 institutions across 8 countries!
- Special collection across AGU journals: Using Radiative-Convective Equilibrium to Understand Convective Organization, Clouds, and Tropical Climate
  - Stauffer and Wing (2022): Properties, Changes, and Controls of Deep-Convecting Clouds in RCE
  - Sokol and Hartmann (2022): Congestus Mode Invigoration by Convective Aggregation in Simulations of RCE
  - Matsugishi and Satoh (2022): Sensitivity of the Horizontal Scale of Convective Self-Aggregation to Sea Surface Temperature in RCE…
  - Reed et al. (2021): Using Radiative Convective Equilibrium to Explore Clouds and Climate in the Community Atmosphere Model
  - Bourdin et al. (2021): Dependence of Climate Sensitivity on the Given Distribution of Relative Humidity
  - Pope et al. (2021): Cloud-Radiation Interactions and Their Contributions to Convective Self-Aggregation
  - Becker and Wing (2020): Understanding the Extreme Spread in Climate Sensitivity within RCEMIP
  - Wing et al. (2020): Clouds and Convective Self-Aggregation in a Multimodel Ensemble of Radiative-Convective Equilibrium Simulations
  - Jenney et al. (2020): Understanding the Response of Tropical Ascent to Warming Using an Energy Balance Framework
  - Mol et al. (2019): Surface Moisture Exchange Under Vanishing Wind in Simulations of Idealized Tropical Convection
  - ….and more! 20 papers currently in the collection.
  - ALL papers using RCE encouraged, not limited to RCEMIP!
- Data publicly available at http://hdl.handle.net/21.14101/d4beee8e-6996-453e-bbd1-ff53b6874c0e (Thanks DKRZ!)
  - All are encouraged to make use of this unique dataset

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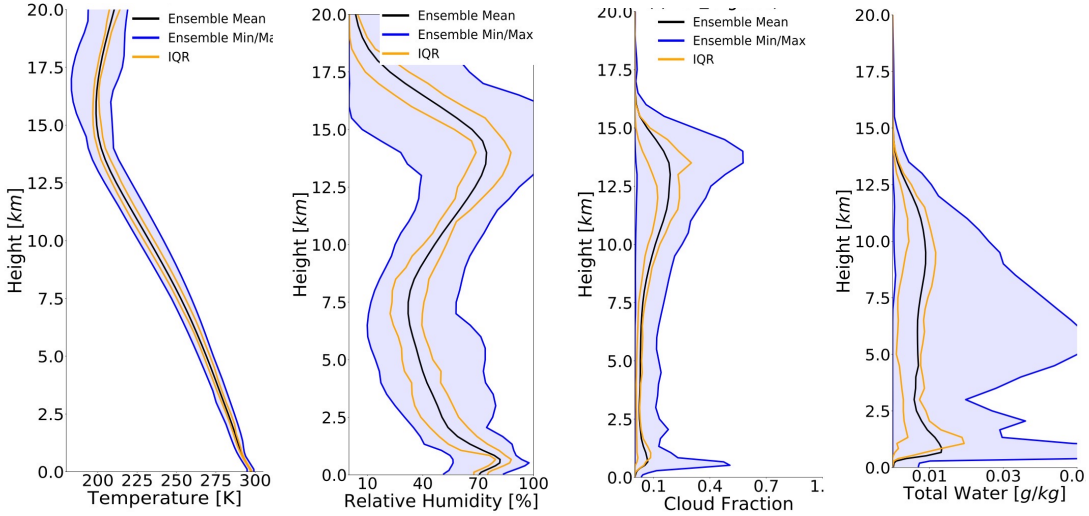
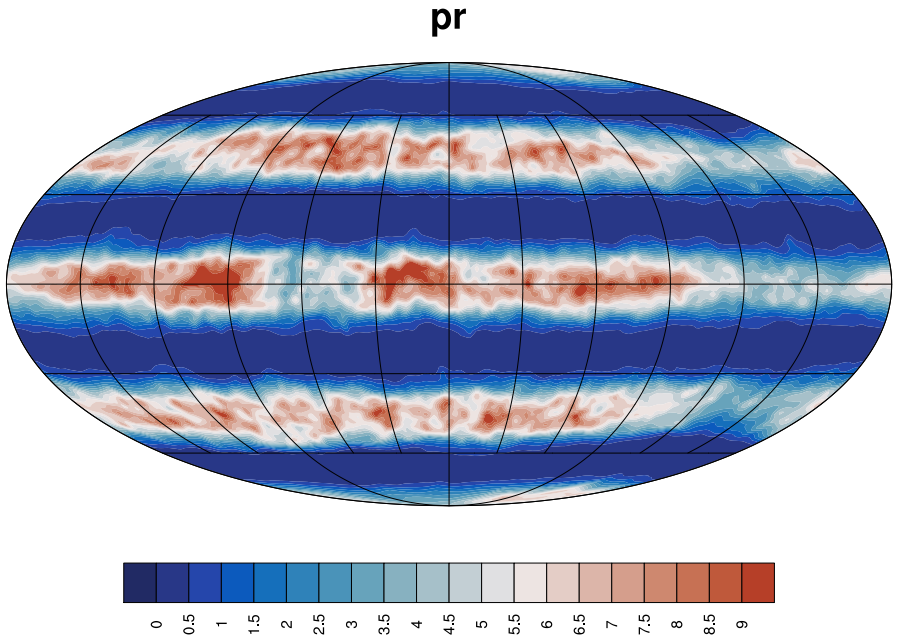


Phase I Protocol: RCE

- Two sets of domains: Small & Large
- Three simulations with uniform SST: 295K, 300K, 305K
- Uniform insolation
- No rotation
- Full physics
- Convection is pretty unconstrained

- *Next Step: Phase II Mock-Walker Simulations*
- *Contact Allison Wing (awing@fsu.edu) if you are interested in contributing to Phase II.*
- *http://myweb.fsu.edu/awing/rcemip.html*



Phase II Protocol: Mock-Walker

- Protocol currently being defined
- Large domain only
- Provide an external constraint on the structure of convection
- Sinusoidal SST boundary conditions
- 4 simulations:
  - <SST> = 300K, medium ∇SST
  - <SST> = 305K, small ∇SST
  - <SST> = 305K, medium ∇SST
  - <SST> = 305K, large ∇SST