

BREAKING THE CLOUD PARAMETERIZATION DEADLOCK
Progress on the cloud parameterization problem has been slow. The authors advocate a new approach that is very promising, but also an expensive computational...



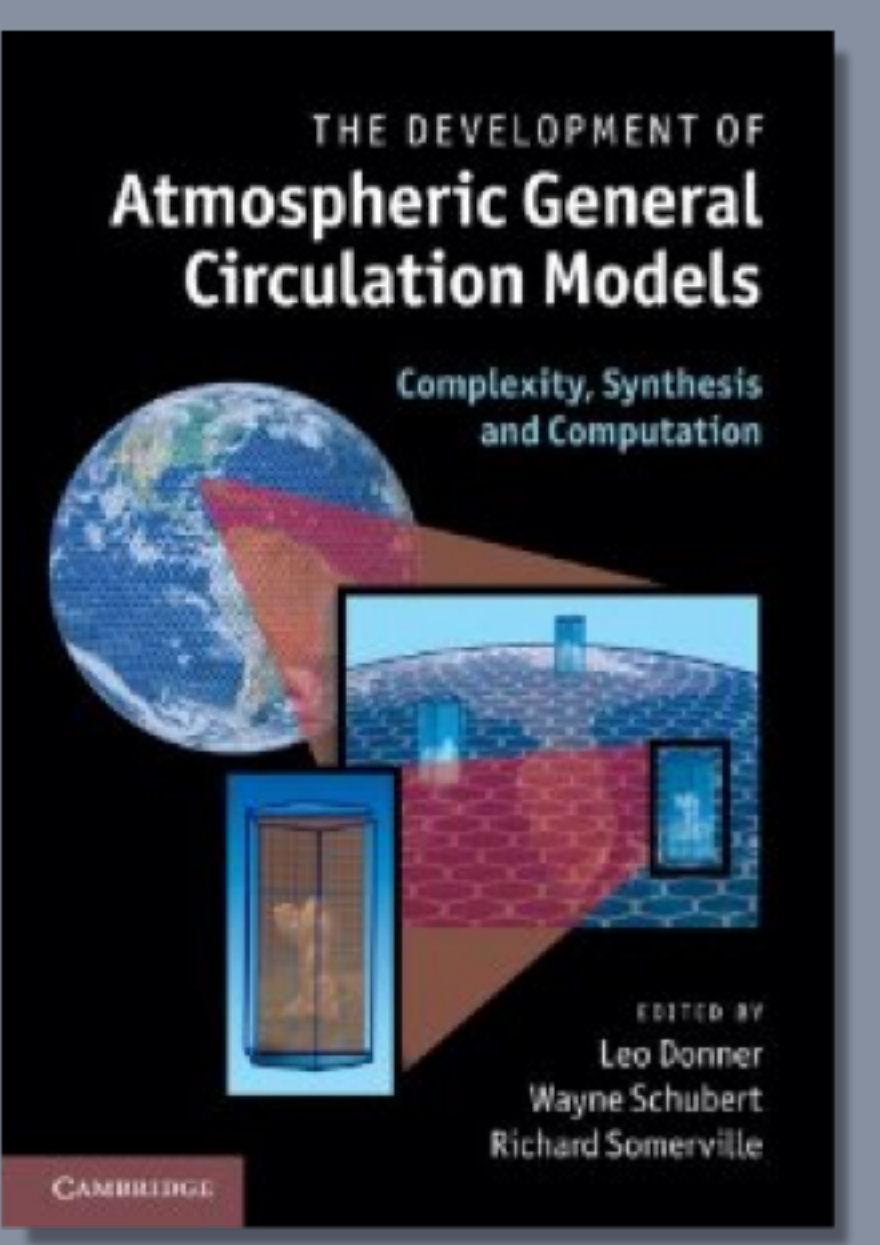
July 2006
A new STC is awarded!



Knowledge Transfer



JAMES
JOURNAL OF ADVANCES IN MODELING EARTH SYSTEMS



Education & Diversity

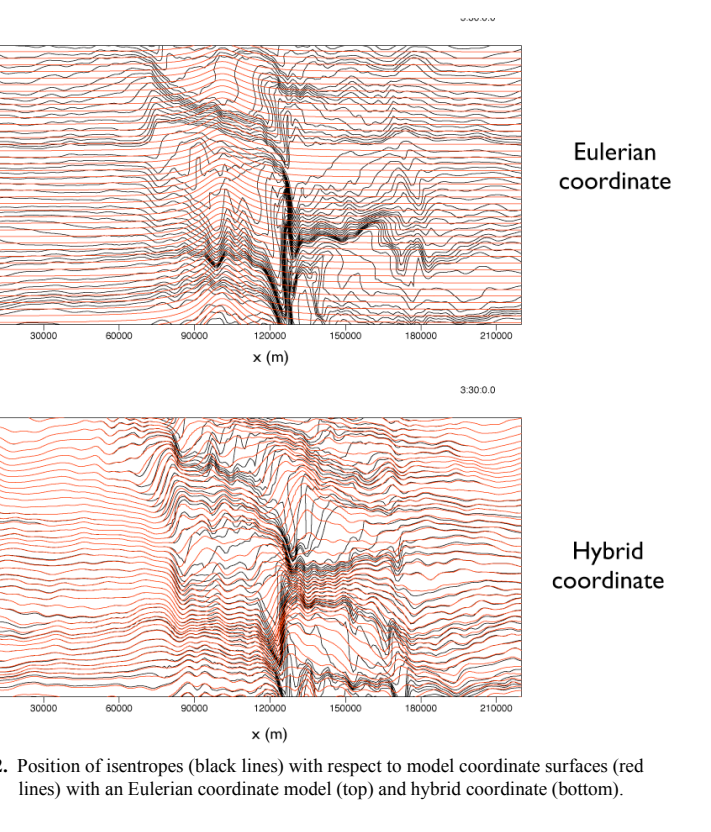
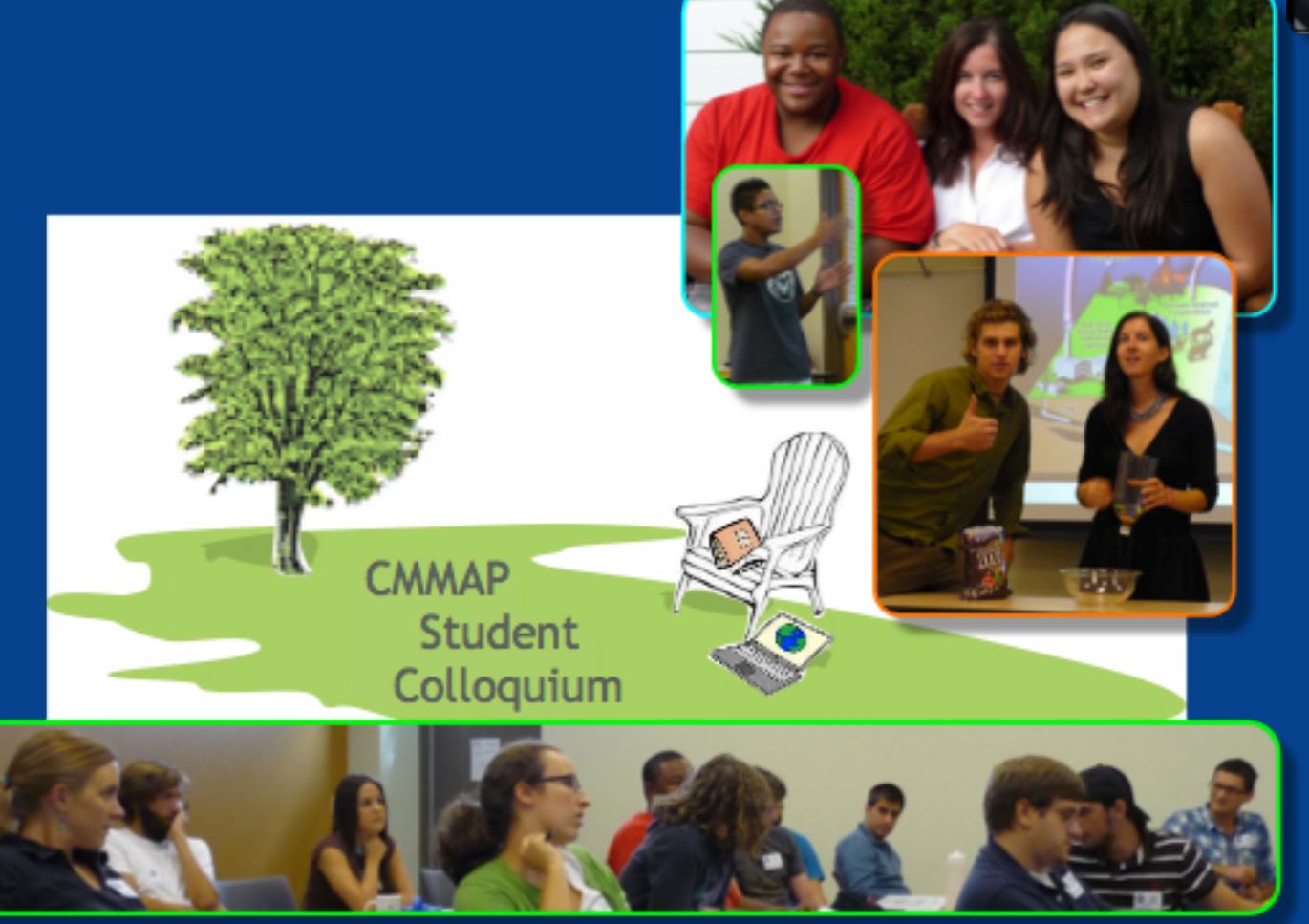


Figure 1. Tracer transport: Eulerian vs. hybrid coordinate.

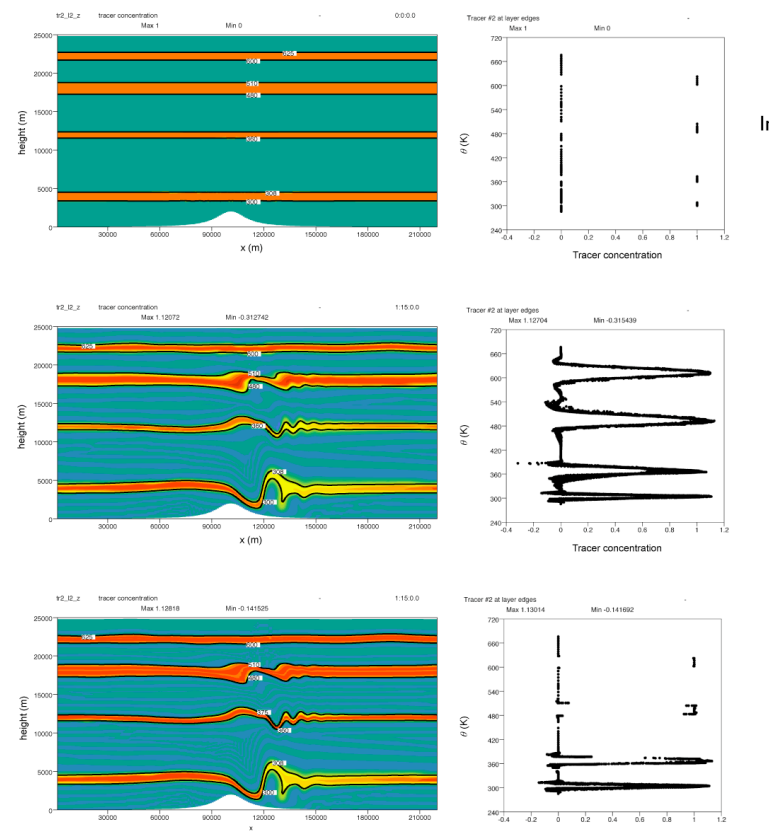


Figure 2. Position of isopycnal surfaces with respect to model coordinate surfaces and their relation to a surface coordinate.

Research

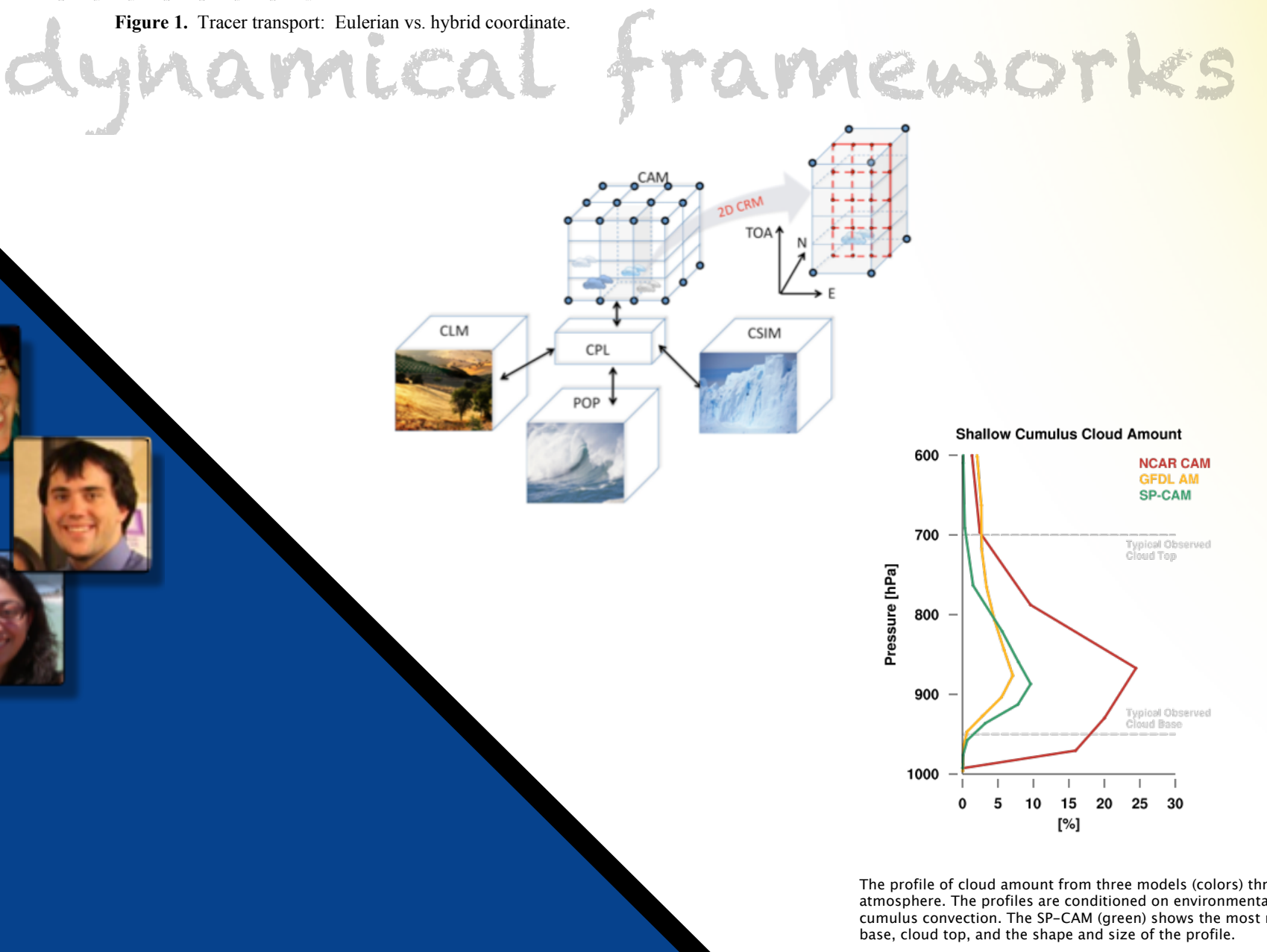


Figure 3. Tracer transport: Eulerian vs. hybrid coordinate.



Through the years

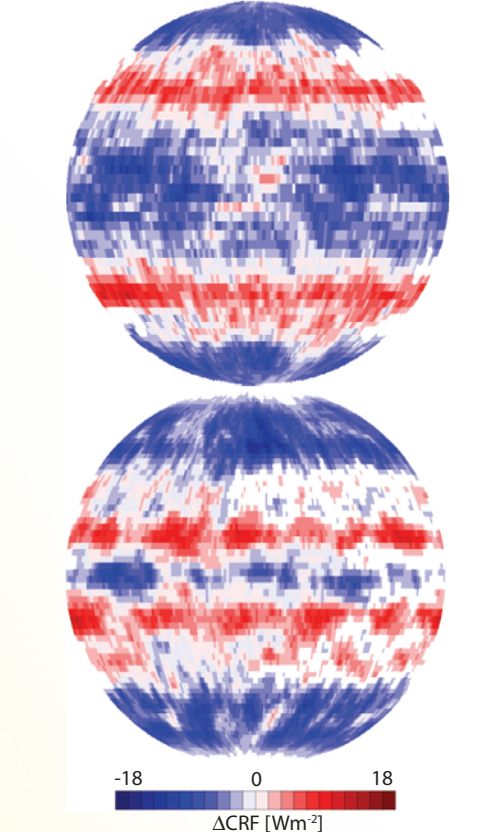


Figure 4. Cloud effects on climate from the NCAR CAM3 (above) and GFDL AM2 (below) general circulation models. Red indicates a positive cloud effect whereas clouds change to enhance climate warming. Blue indicates a negative cloud effect. Permission Granted! Credit Brian Medeiros, UCLA

cyberinfrastructure

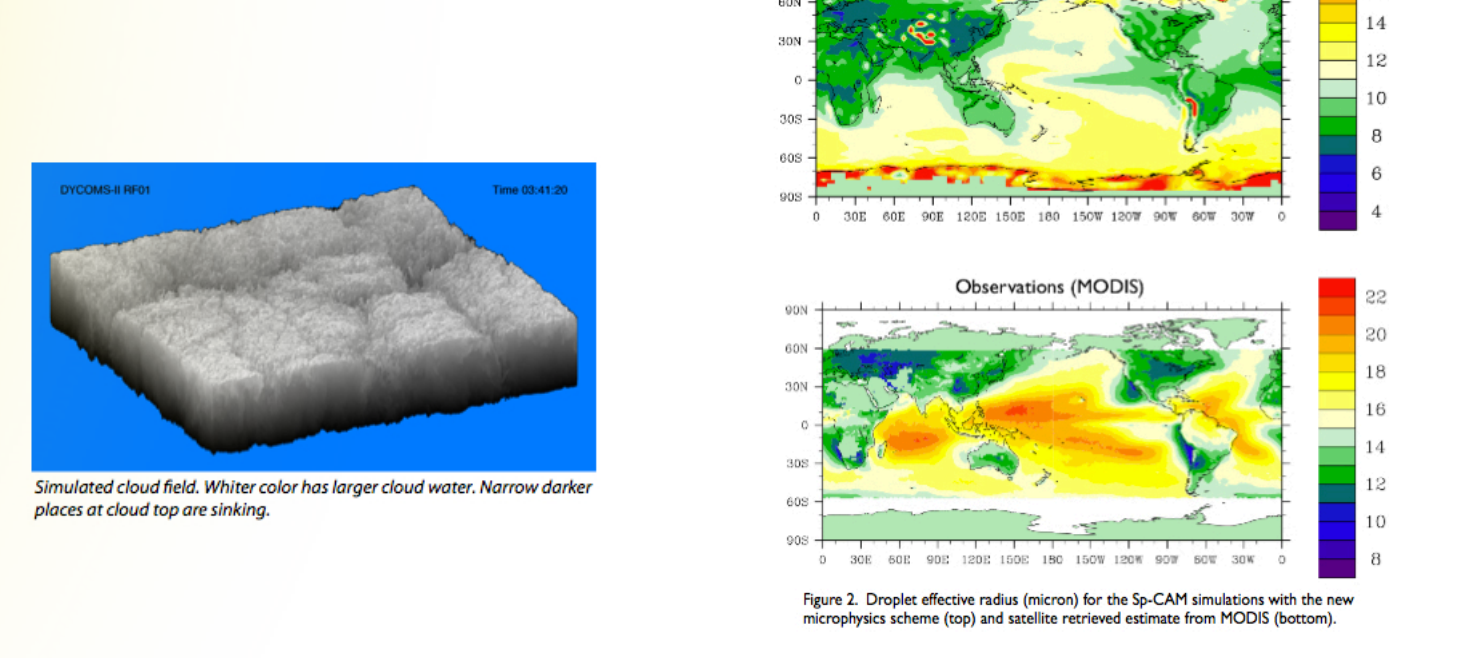


Figure 5. Annual mean solar cloud effect. The top panel shows the annual mean cloud fraction. The bottom panel shows the annual mean solar radiation. The color scale indicates the magnitude of the effect. Permission Granted! Credit Brian Medeiros, UCLA

July 2011
Five more years!

physical processes

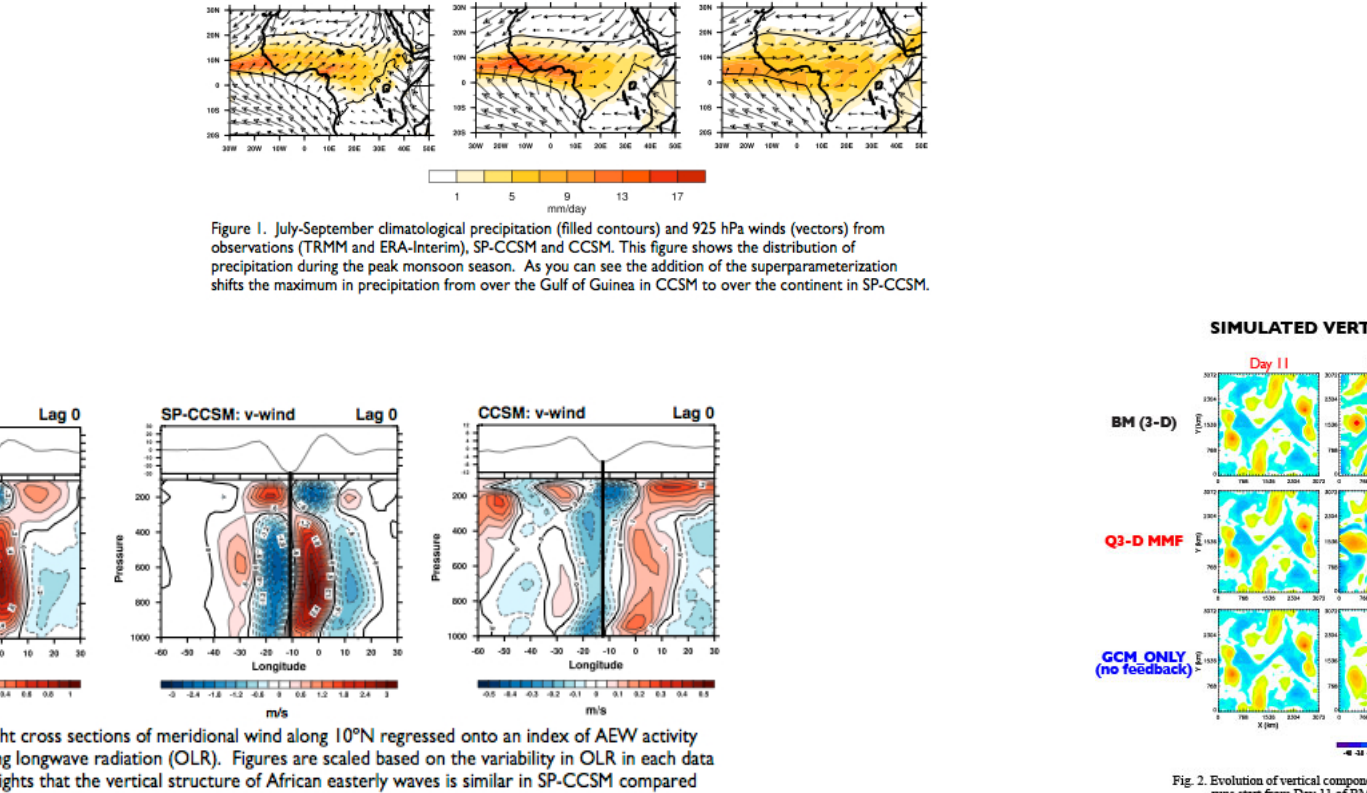


Figure 6. Simulated vertical component of vorticity. The top panel shows the vorticity profiles. The bottom panel shows the vorticity profiles. Permission Granted! Credit Brian Medeiros, UCLA

land surface

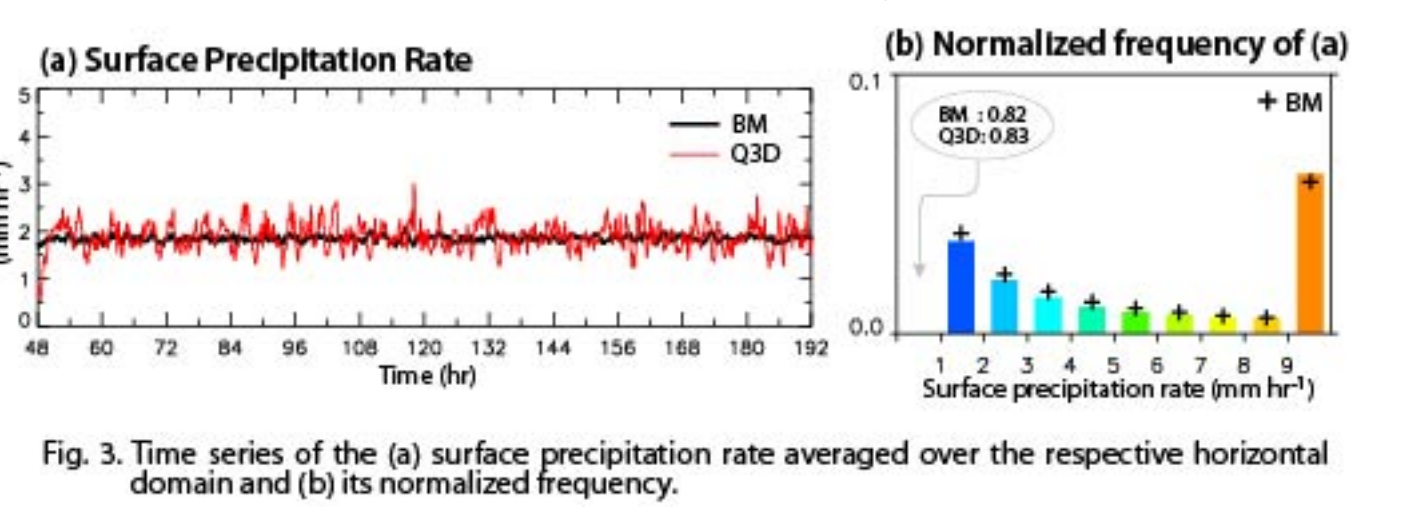


Figure 7. Time series of (a) surface precipitation rate averaged over the respective horizontal domain and (b) its normalized frequency.

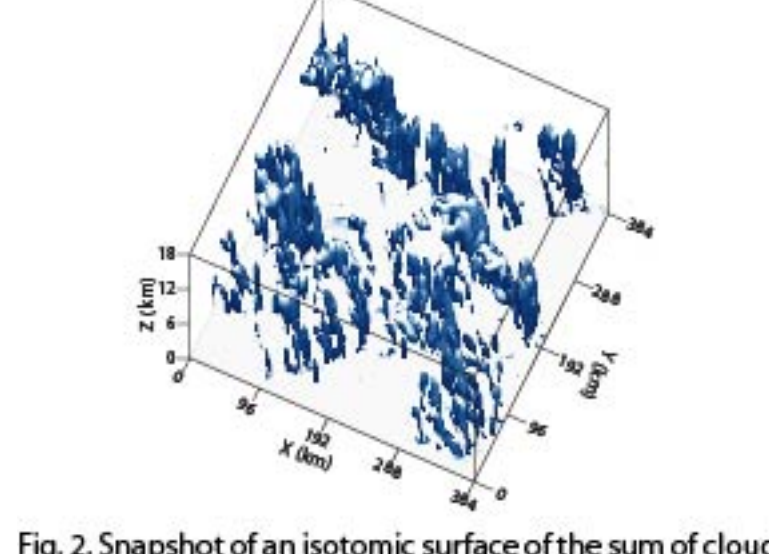


Figure 8. Snapshot of an isotropic surface of the sum of cloud water and ice mixing ratios obtained from BM.

coupled models & climate change

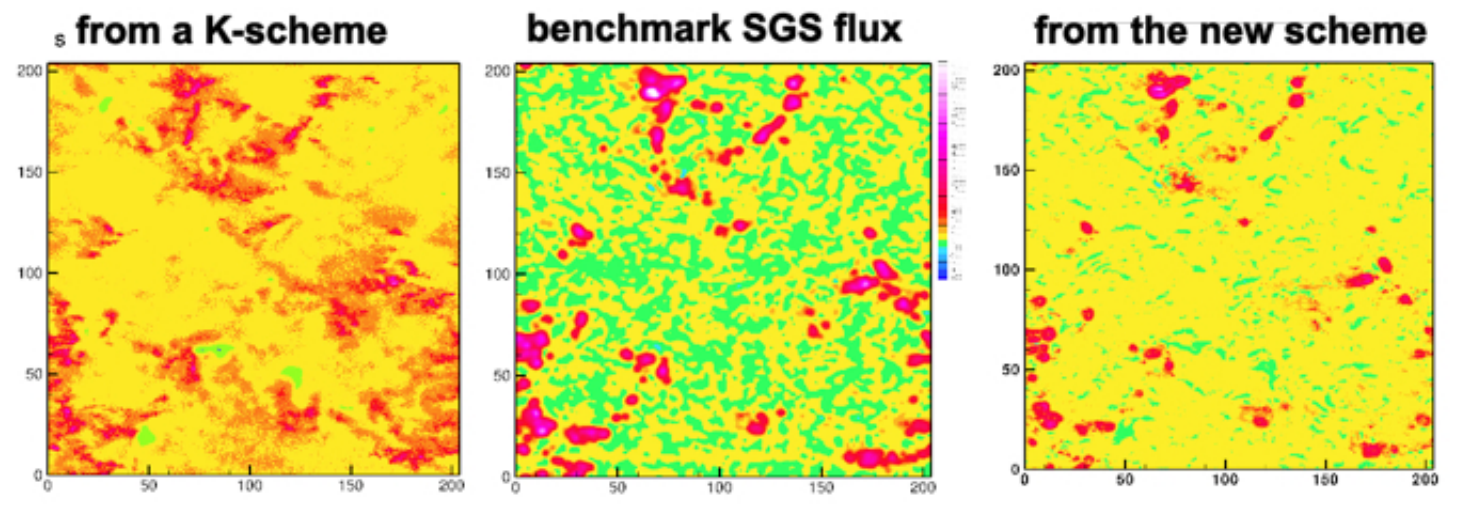


Figure 9. Comparison of cloud fields from a K-scheme, benchmark SGS flux, and a new scheme. The top panel shows the cloud fields. The bottom panel shows the cloud fields. Permission Granted! Credit Brian Medeiros, UCLA

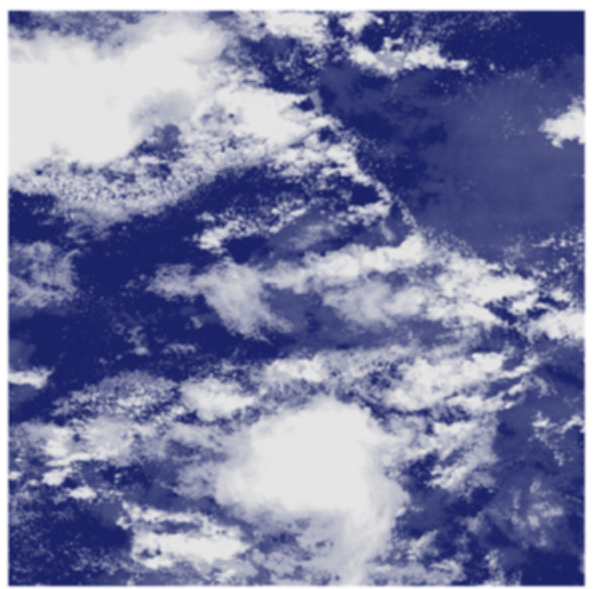


Figure 10. Simulated cloud field from a high-resolution 3D cloud-resolving model simulation. White spots indicate ice clouds.

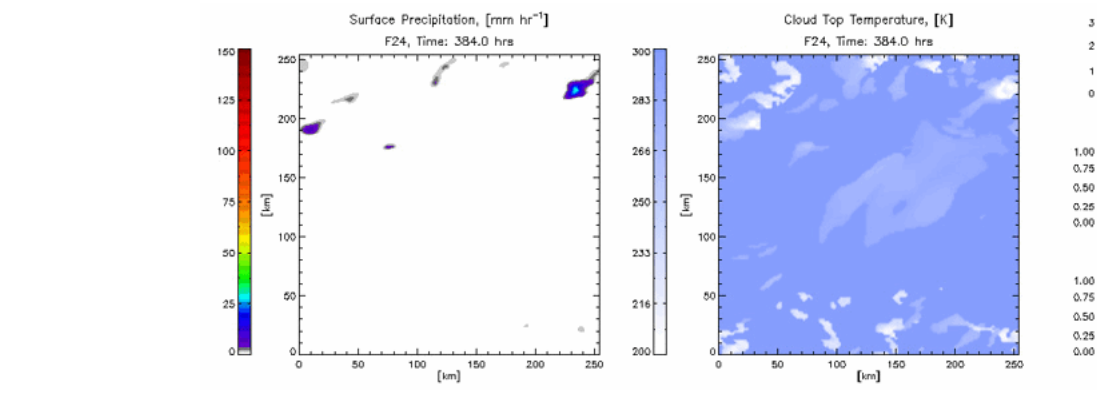
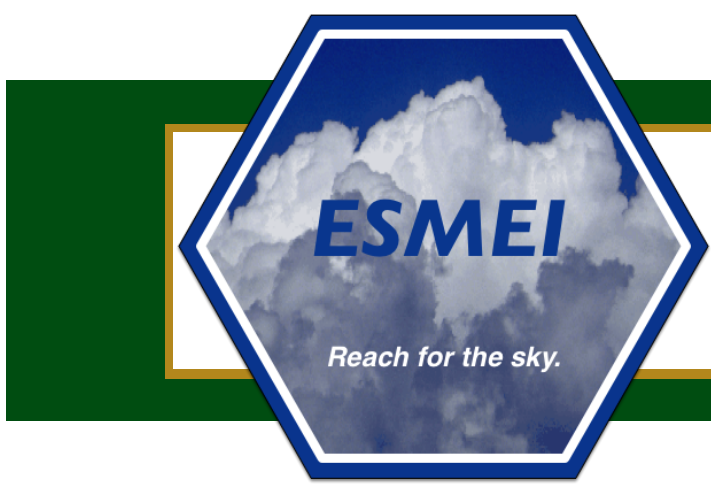


Figure 11. Comparison of observations and model results for cloud fraction and liquid fraction. The top panel shows the cloud fraction. The bottom panel shows the liquid fraction. Permission Granted! Credit Brian Medeiros, UCLA

CMMAP's legacy:
An Institute is born.

clouds and climate



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