Global climate variability and modeling

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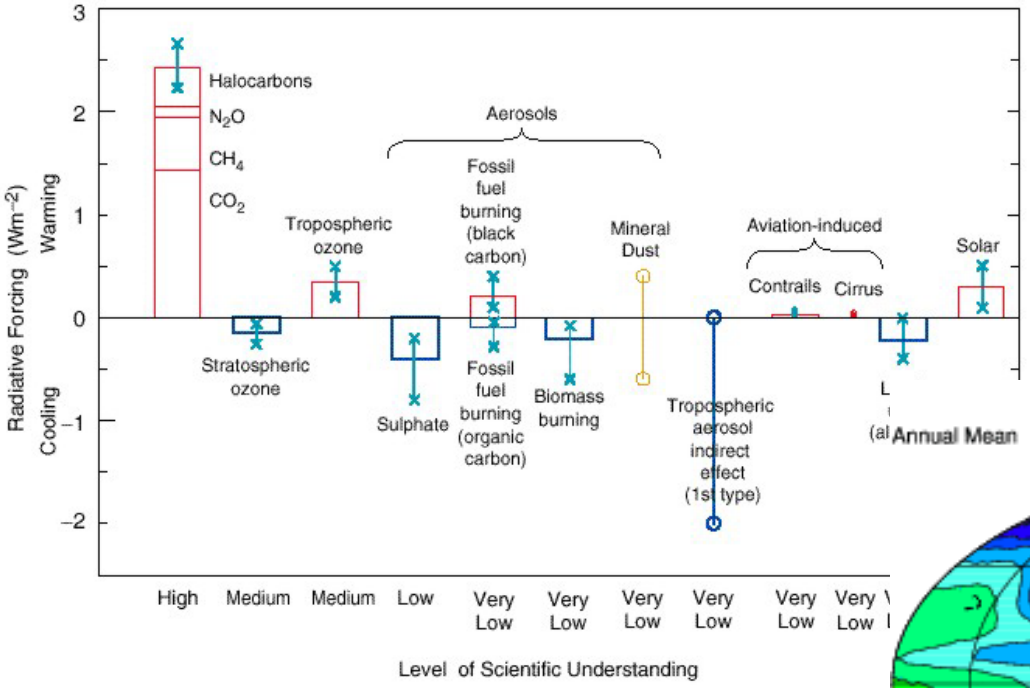
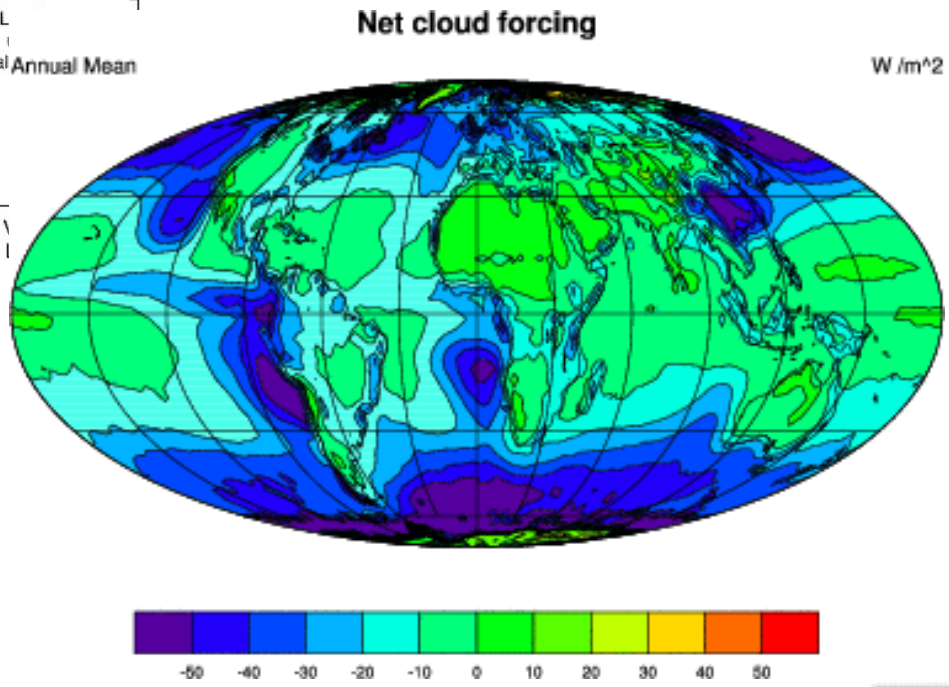
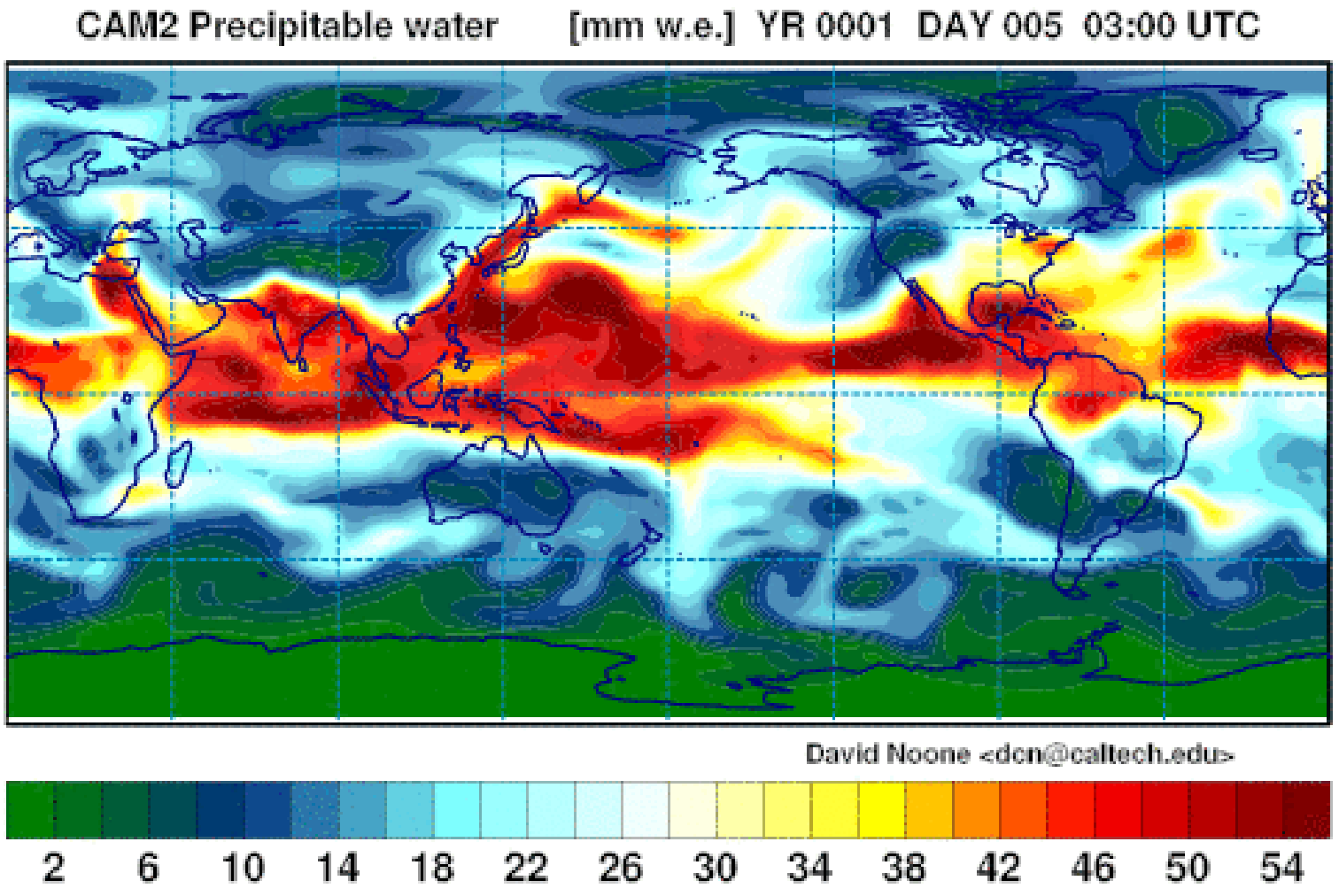
Radiative forcing of climate

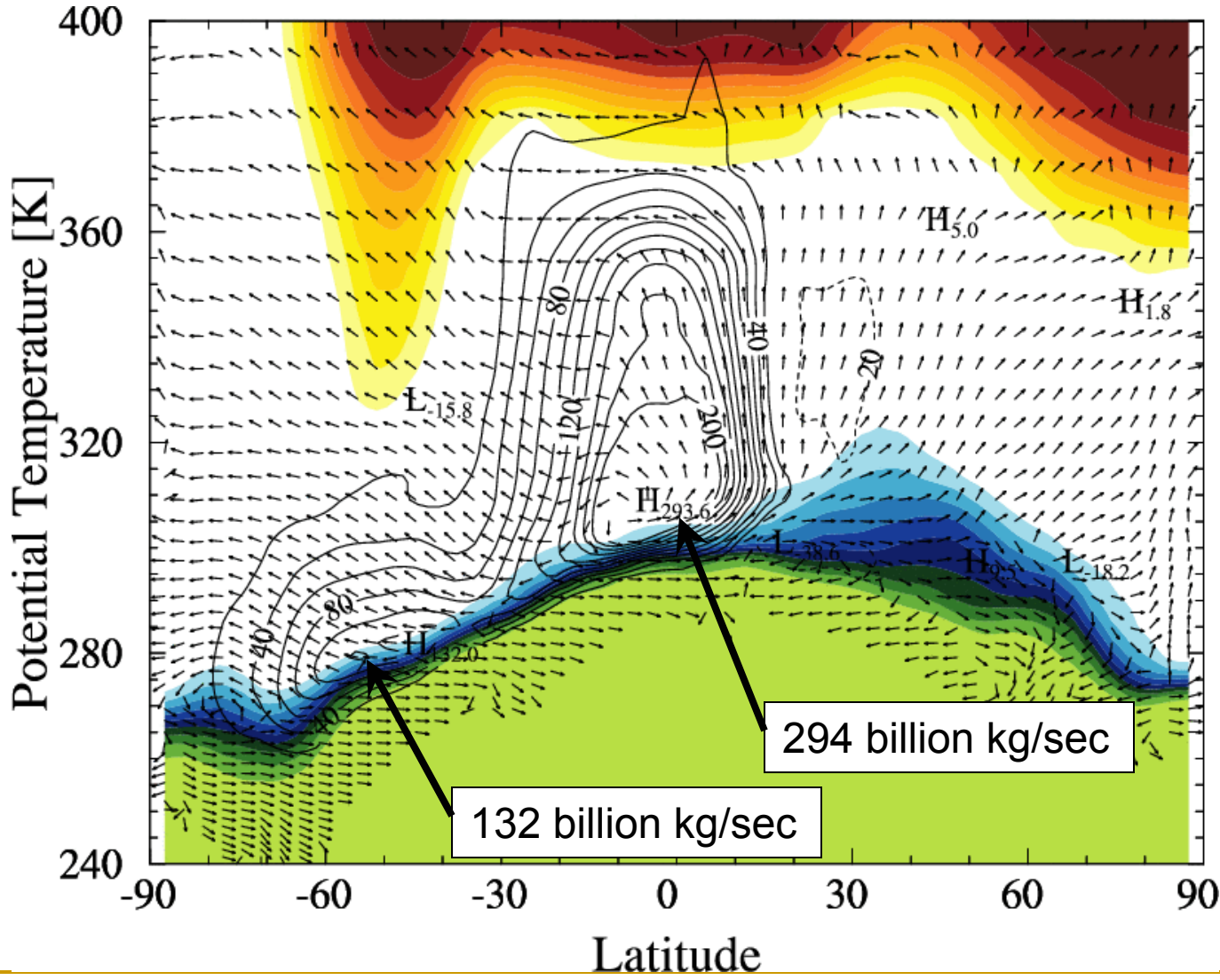




Climate simulation of atmospheric water



Large scale circulation (JULY)



Tropopause frequency

surface frequency

MUGCM, R21L9, 5 years

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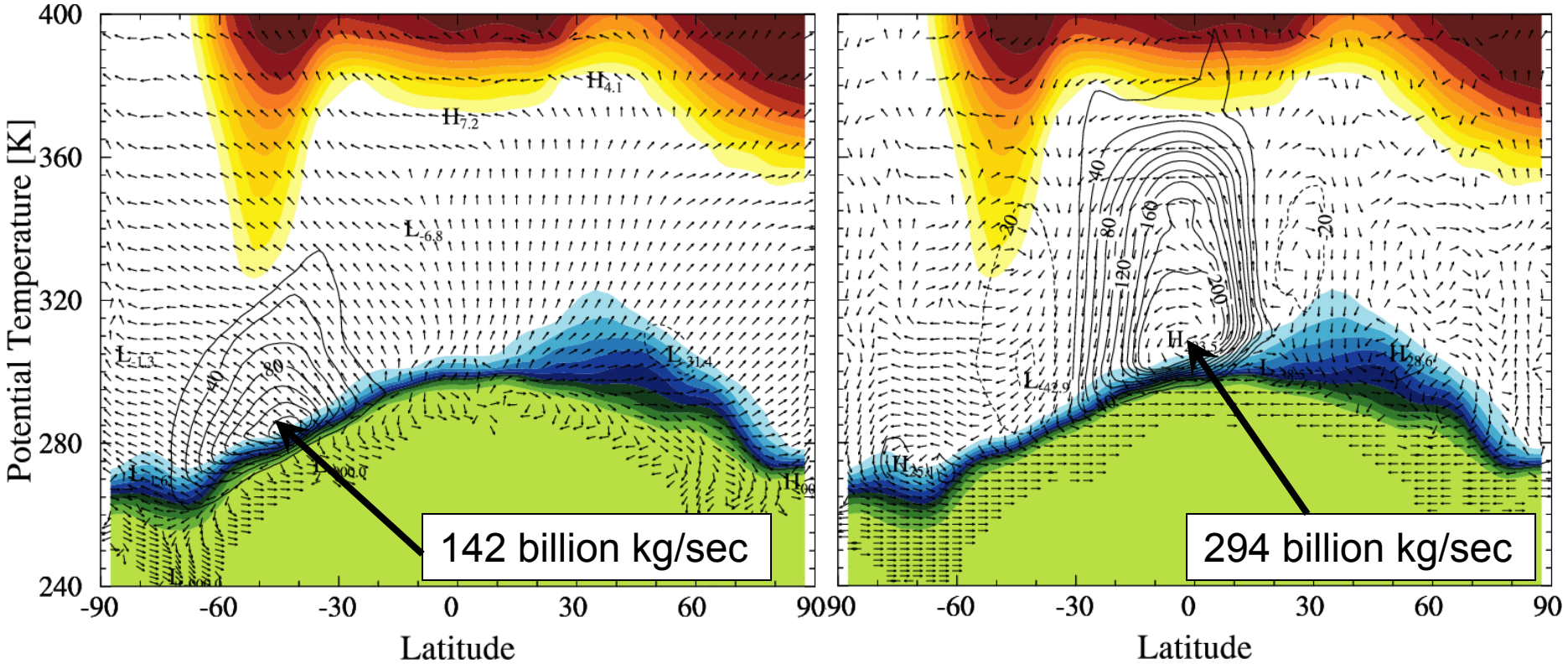
Transport of mass by mean and eddies

Perpetual July simulation (360 day average)



1. Eddies remove air mass from subtropics
2. Equatorward return flow below mean height of surface
3. Summer circulation very different

Understanding climate and water

- Understand climate change and variability with models of the earth system
- Large uncertainties in effects of clouds (particularly role of deep convection in the tropics)
- Need improved understanding of water in the atmosphere
- Water on surface (sea ice, soil water, snow) changes albedo and energy transfer to surface (and ocean!)

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