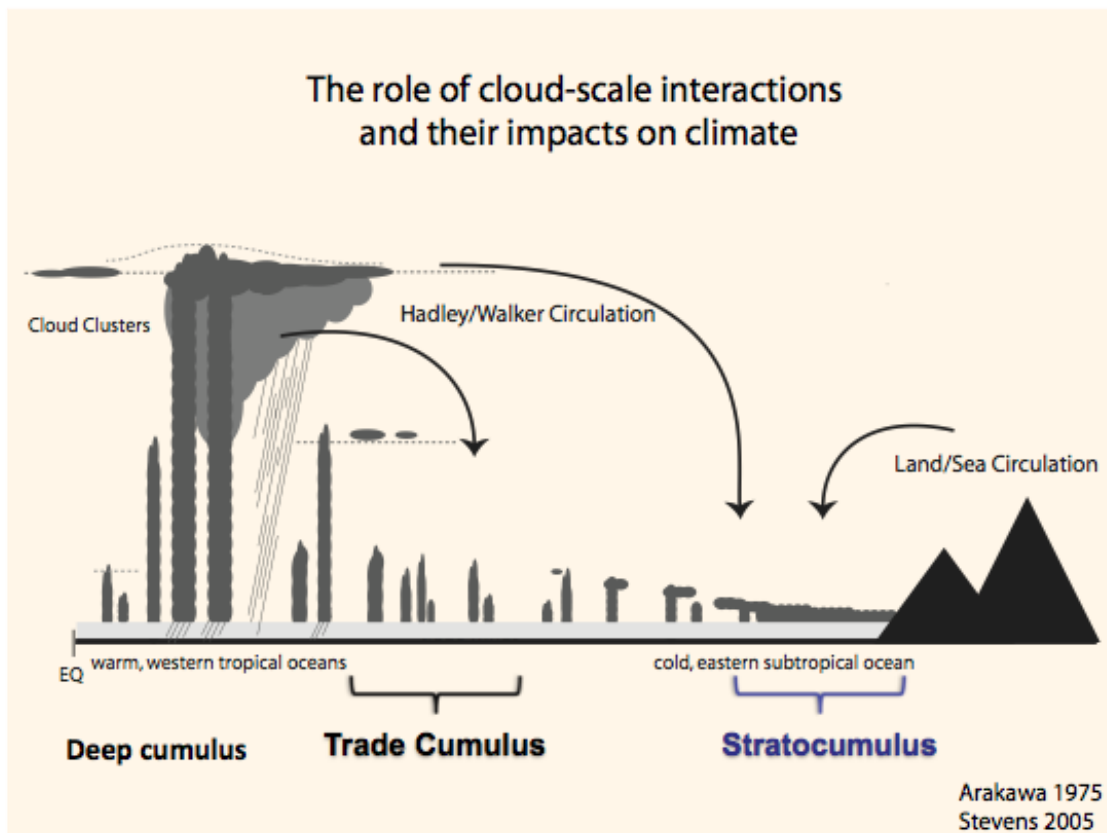
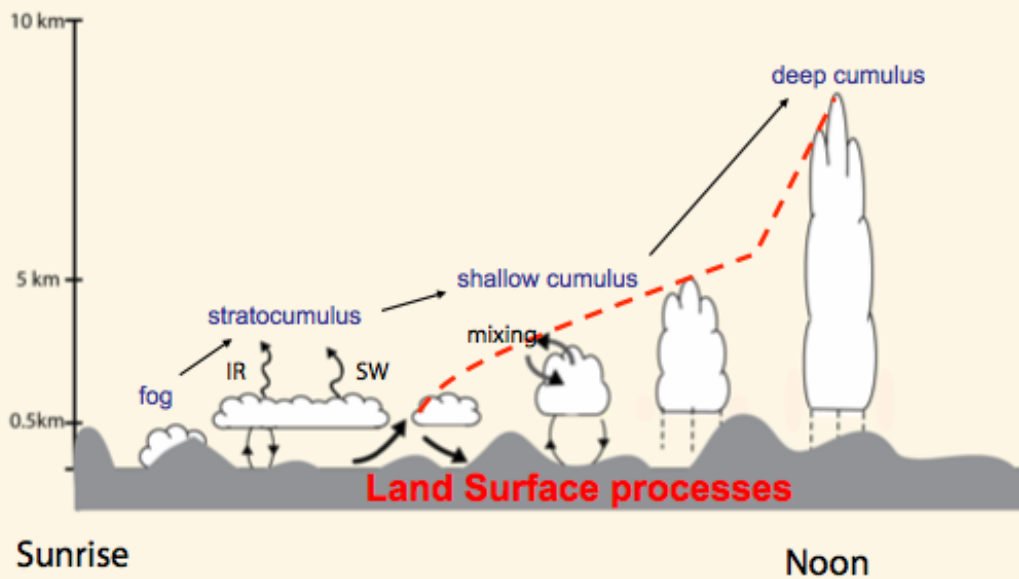


Research Interests

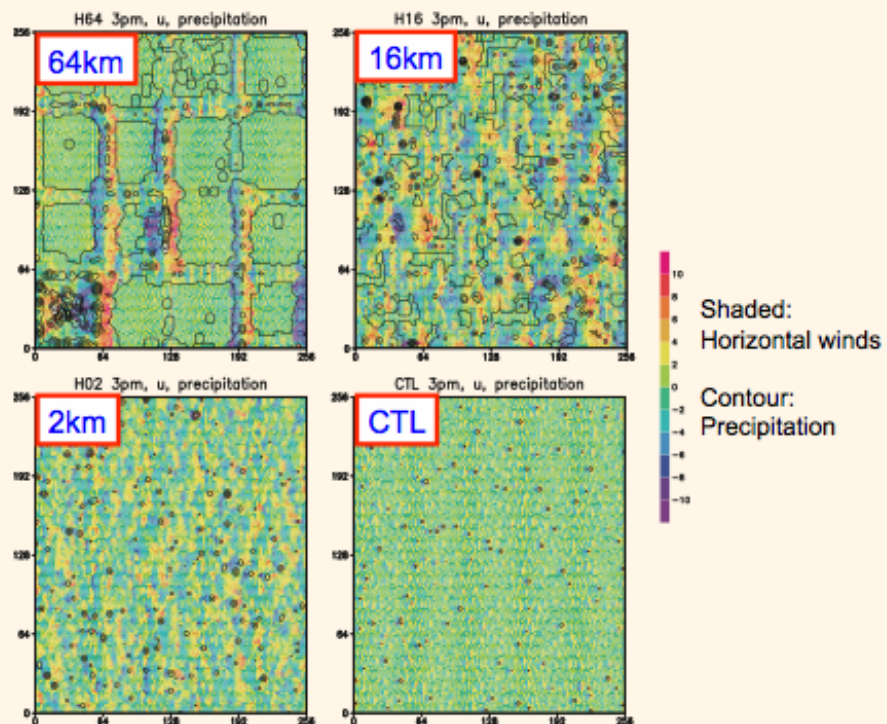
- Boundary layers, cloud dynamics, moist convection and their role in climate
- Representation of cloud-scale interactions in the large-scale models
- Numerical modeling of the atmosphere
- Land-atmosphere interactions



Transitional convection of diurnal cycle over land: Interactions among land surface processes, topography effects and convection



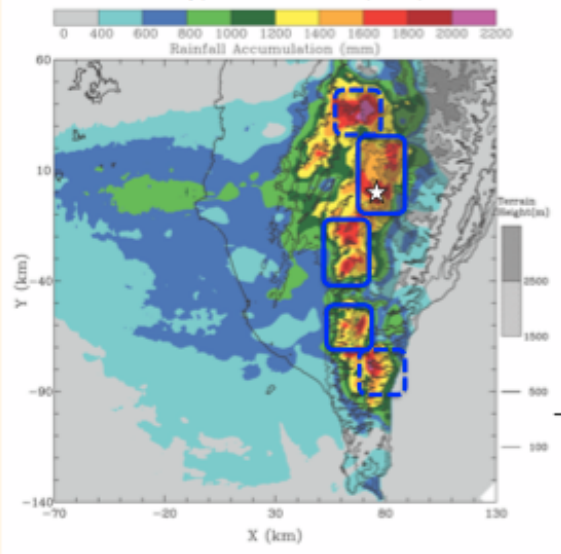
The role of land surface fluxes heterogeneity on precipitation



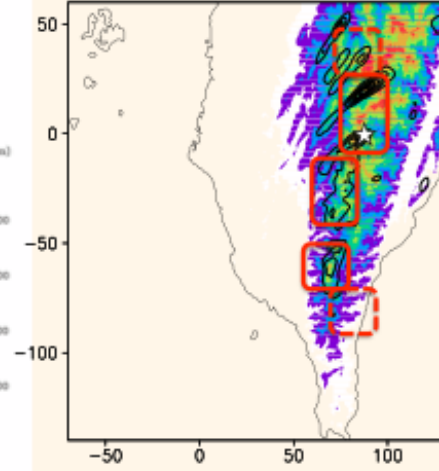
The role of complex topography on local circulation and precipitation

Radar derived typhoon Morakot precipitation

Idealized simulations with only South Westerly flow



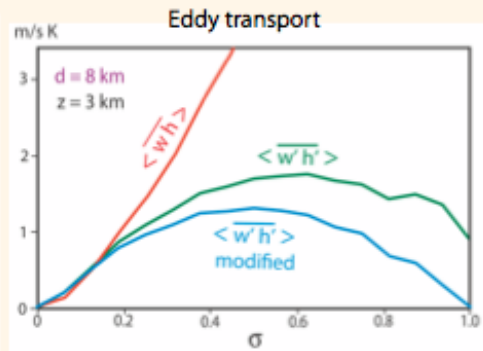
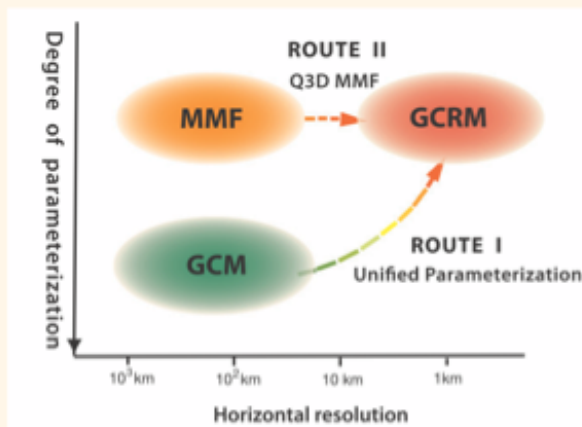
1km z SW u=20 m/s ave(t=3,t=6hr),
contour:precipitation mm/hr



Adopted from Yu et al 2013

Toward model unification with the unified parameterization

Unified parameterization provides a framework for processes across the scales



$$\overline{w'h'} = (1 - \sigma)^2 (\overline{w'h'})_E,$$

$$\lambda(1 - \sigma)^3 - \sigma = 0, \text{ and}$$

$$\lambda = (\overline{w'h'})_E / \delta w \delta h.$$