Theme 4:
Model and Basic Issues

rapporteurs:
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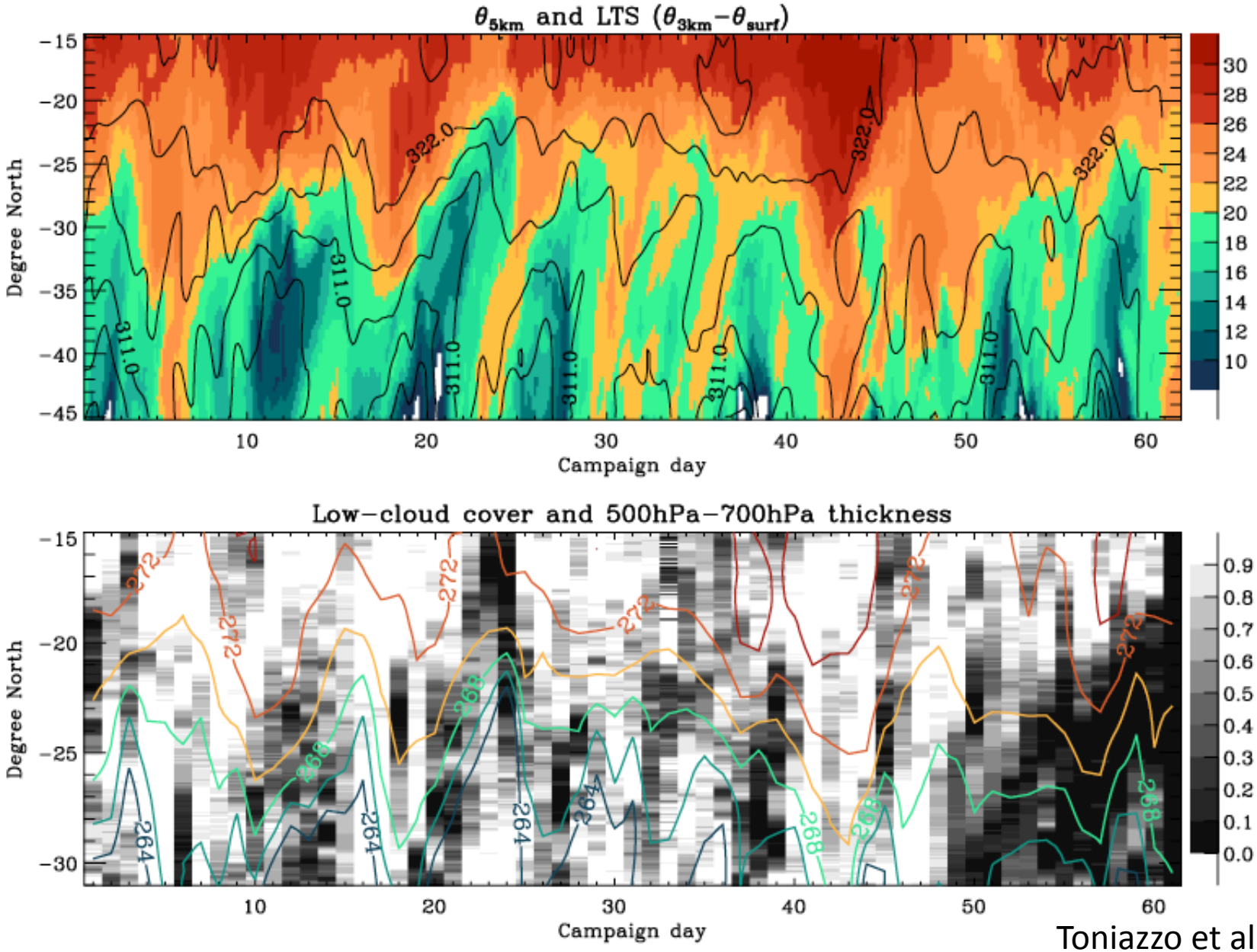
3rd VOCALS meeting: March 23, 2011

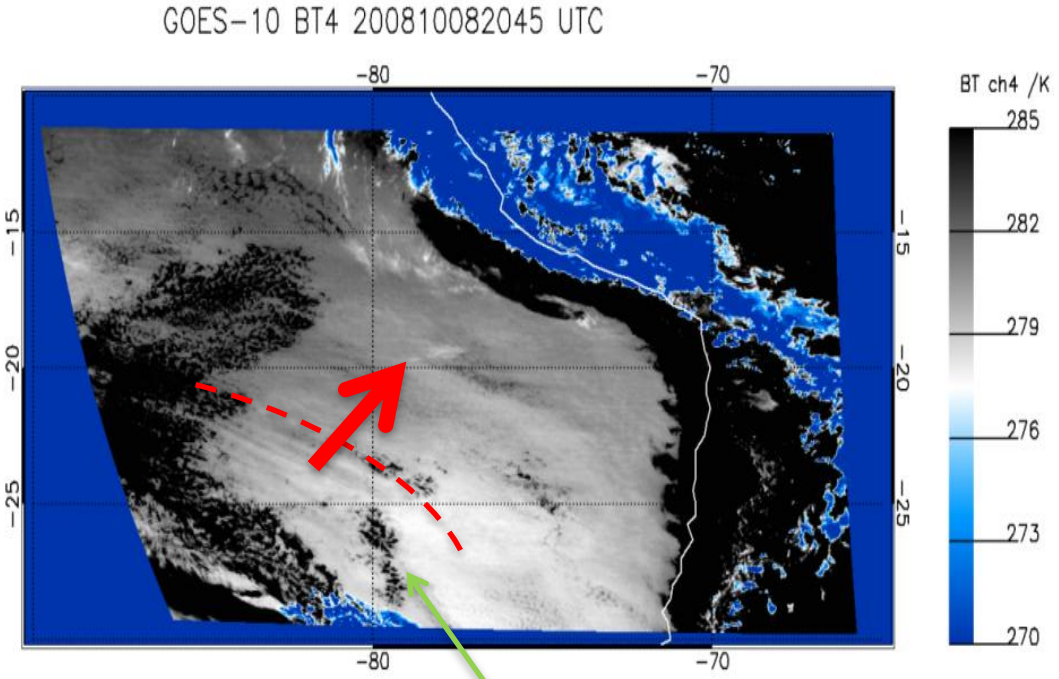
large scale free troposphere effect on clouds

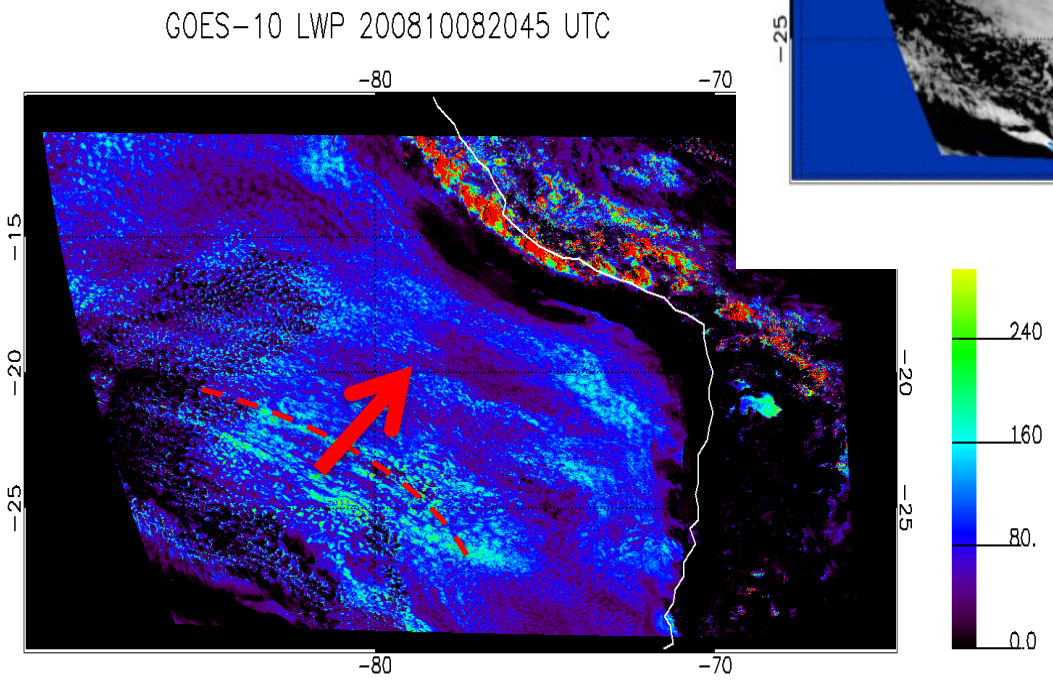


Toniazzo et al. 2010

gravity waves affect clouds

- new mechanism





POCs formed behind the wave crest

Grant Allen et al.

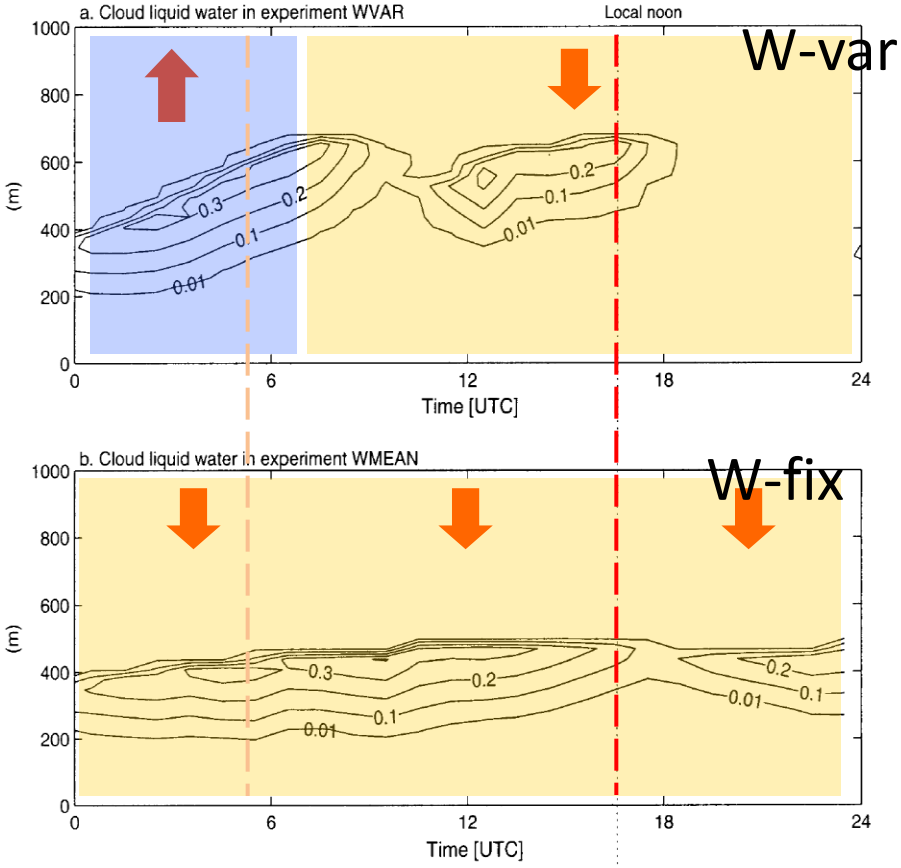
test if upsidence wave is observed in cloud diurnal cycle

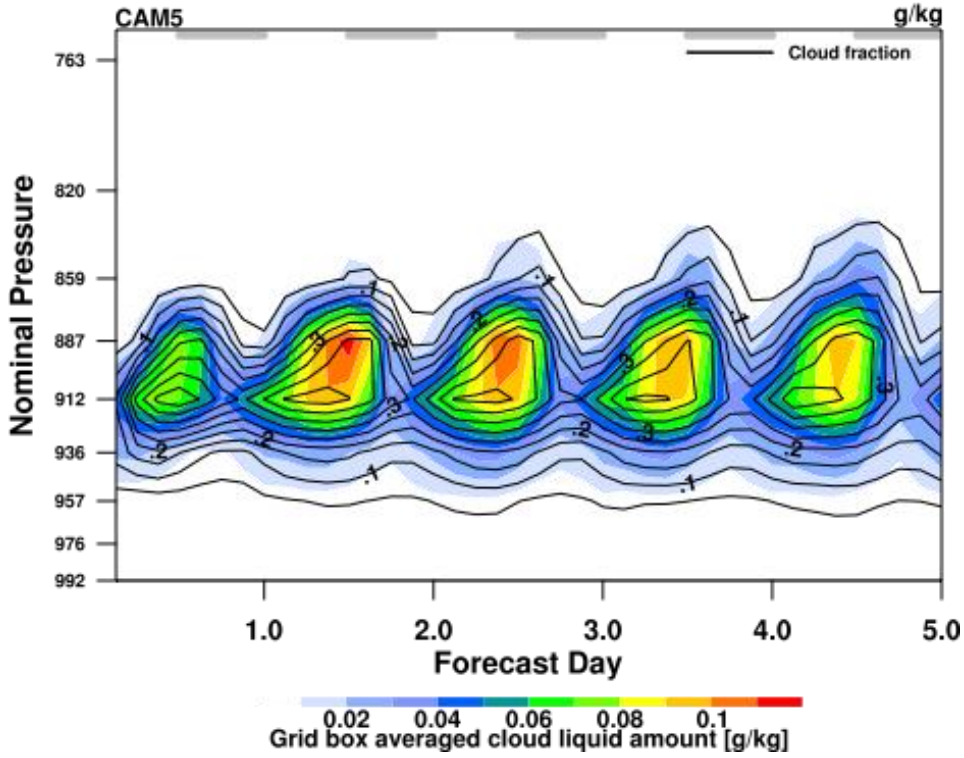
- timing, 85 vs. 75° W
- cloud properties, boundary layer height
- Can it be distinguished from background observed variability and local solar forcing?

diurnal cycle: for model & cloud verification

MM5-1D Simulation

CAM-5 Forecast



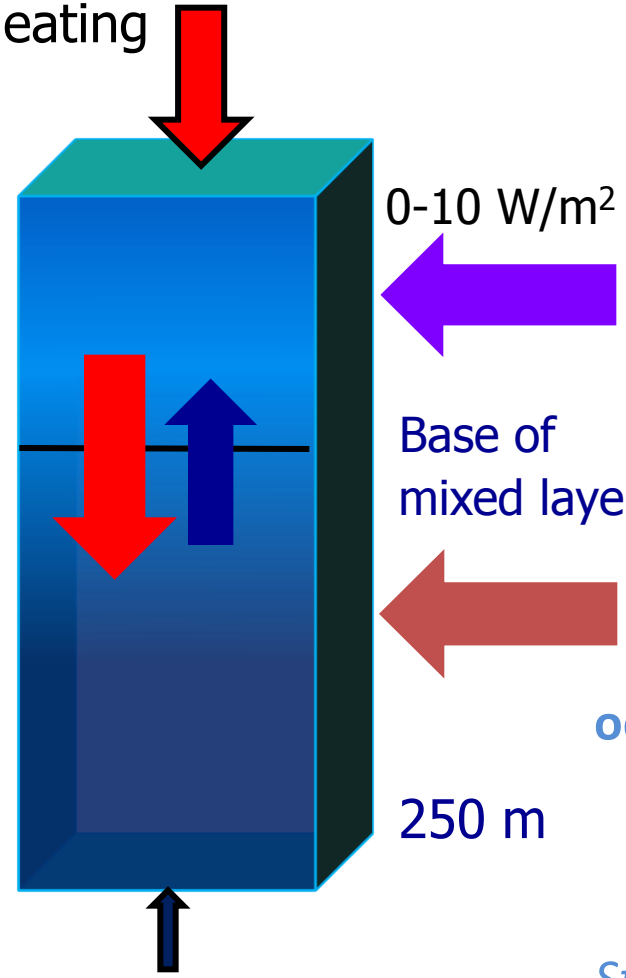


Garreaud and Muñoz 2004

Brian Medeiros

heat balance & ocean cooling

>40 W/m^2 surface flux heating

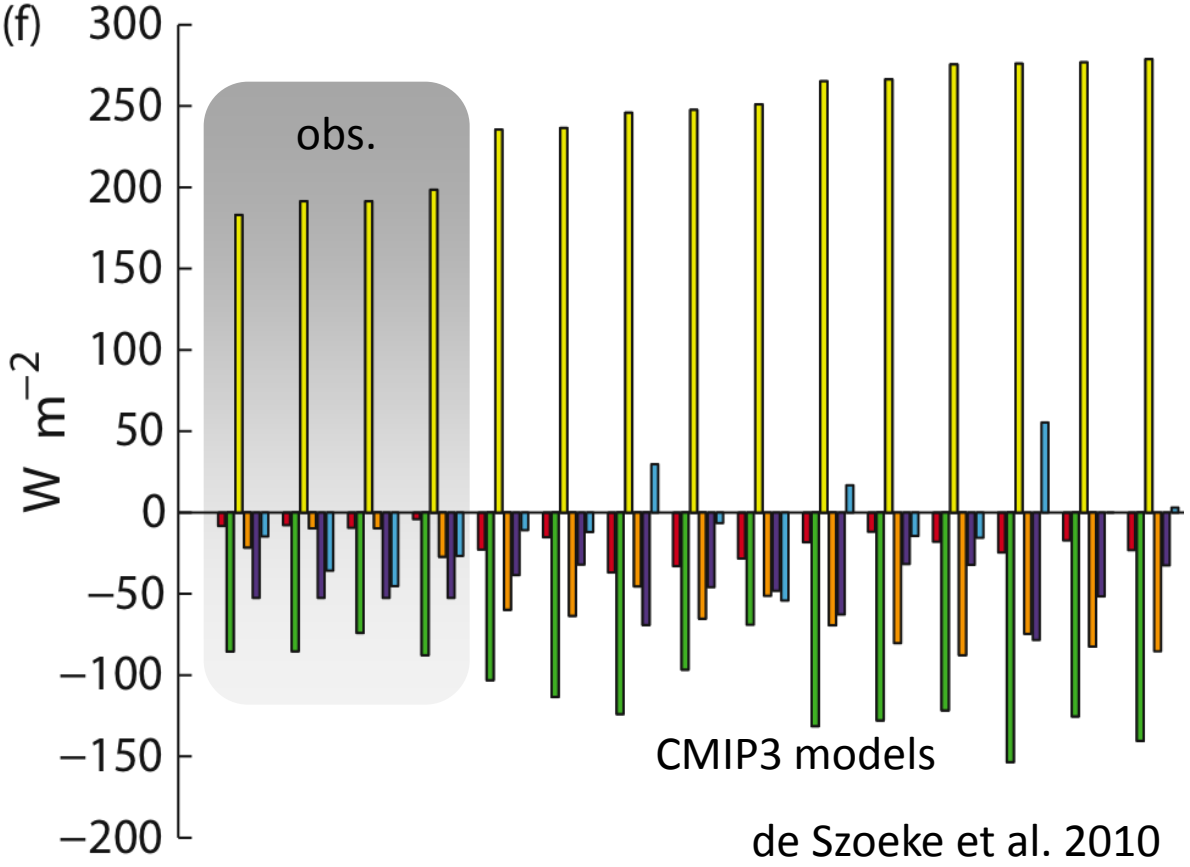


0-10 W/m^2

Base of mixed layer

250 m

<1 W/m^2 vertical advection and mixing

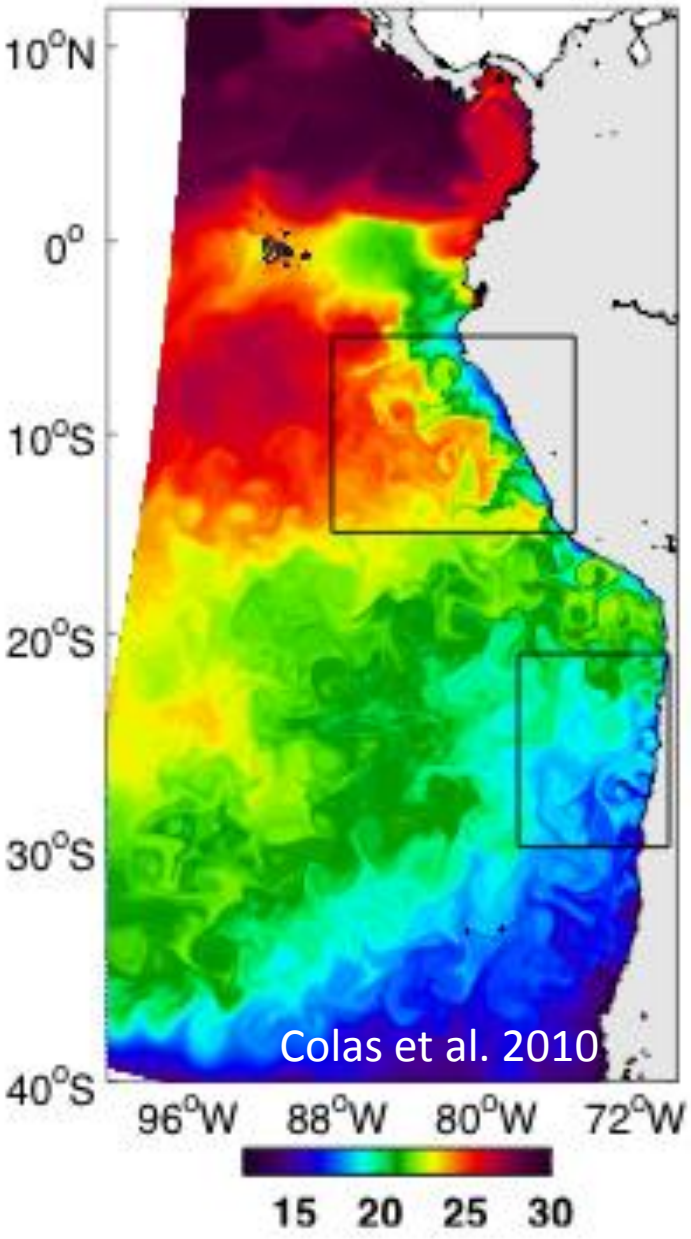


de Szoeke et al. 2010

ocean cooling = Ekman and geostrophic transport, mixing, salt fingering, eddy flux divergence

Standard accounting among models and measurements: control surfaces, source or flux units

eddy and turbulent advection

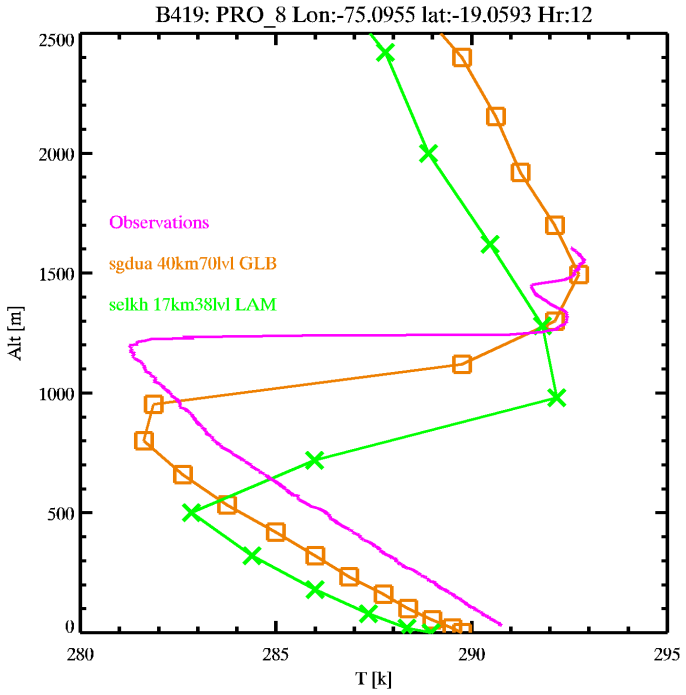


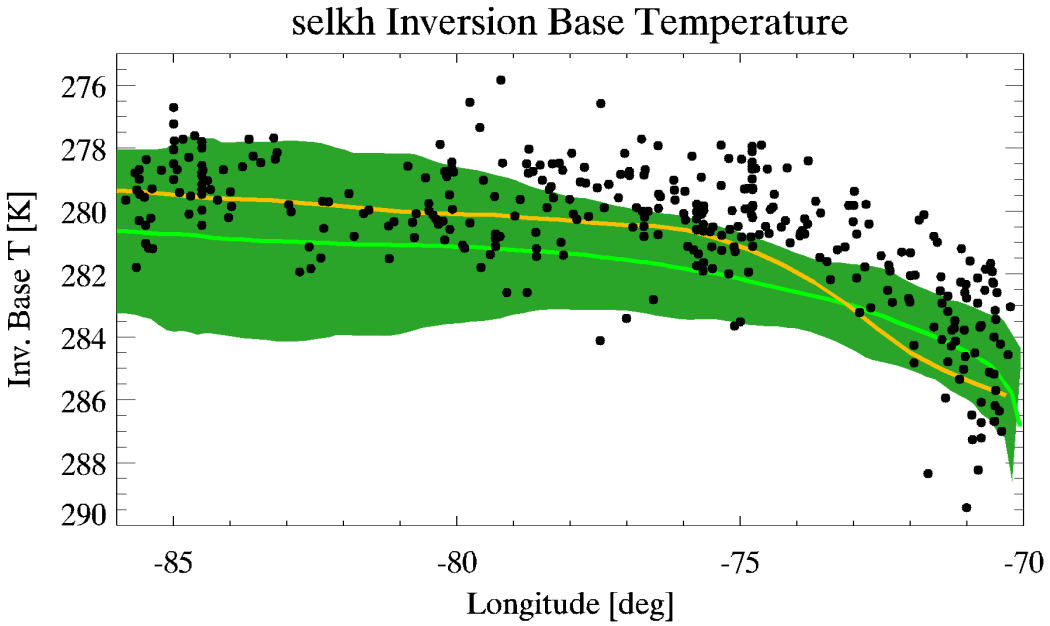
salt fingers (Farrar)

vertical mixing

“stratofogulus” low coastal cloud error

- Paul Barrett resolution studies testing BL using Met Office Model





Paul Barrett

Theme 4: Model and Basic Issues

- Large-scale free-tropospheric control of cloud properties.
  - synoptic, teleconnections, gravity waves
- Observational test of upsidence wave influence on cloud diurnal cycle.
- Model verification of diurnal cycle
- Upper ocean heat budget.
  - Compare eddy census to heat/salt flux or source.
  - What properties do we compare, how do we budget?
- Model bias in inversion height near coast.
  - fidelity of trajectory analysis