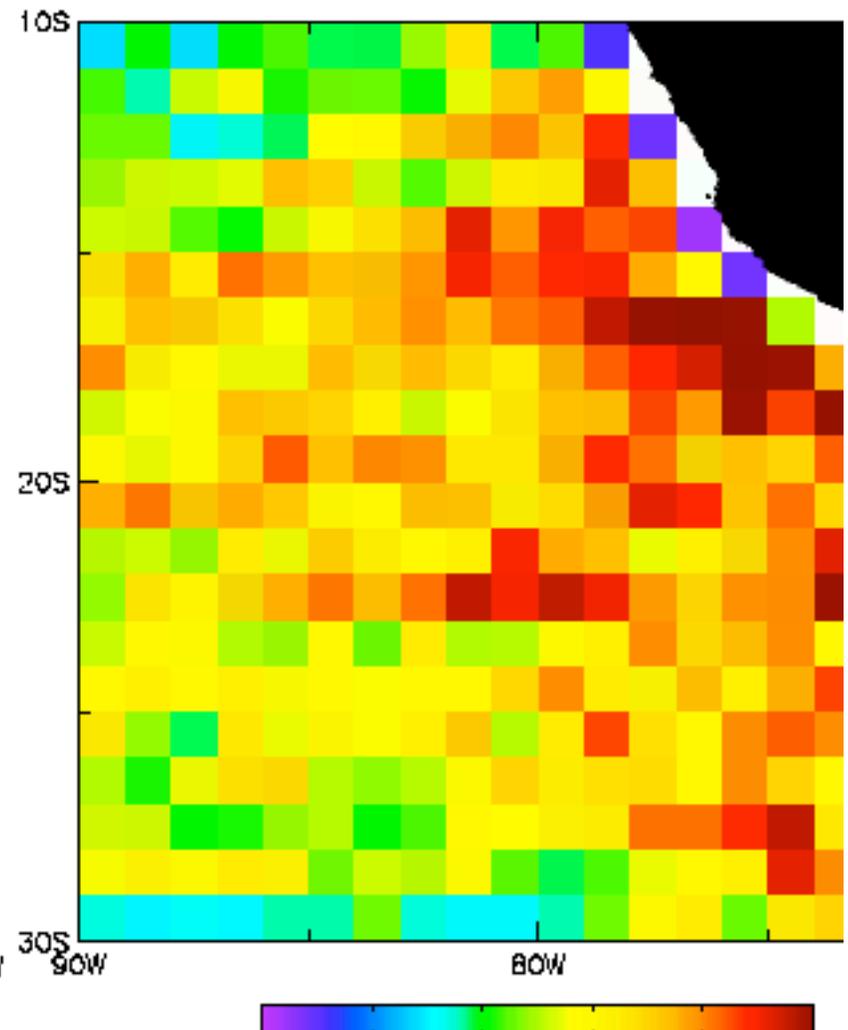
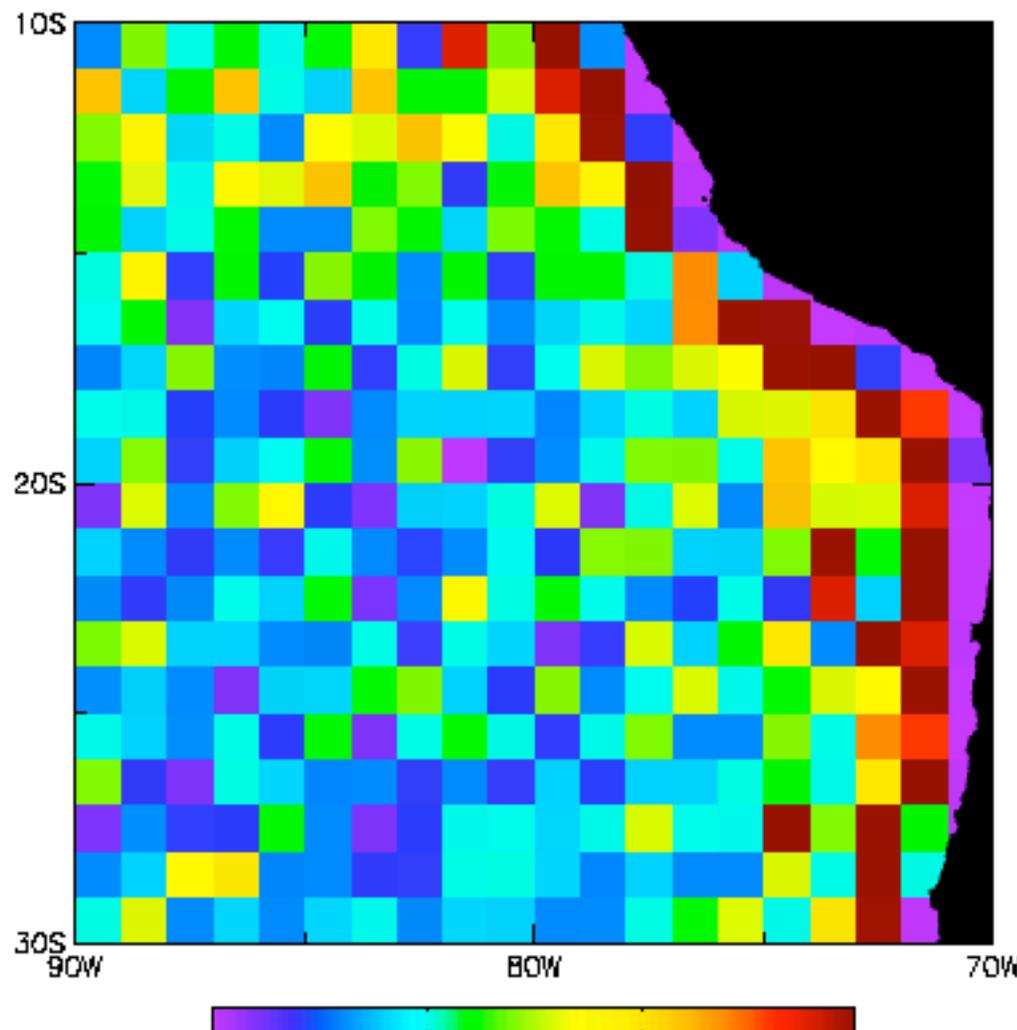


Genesis and Census of VOCALS Eddies

14 October 1992 - 3 January 2007, lifetimes ≥ 4 weeks

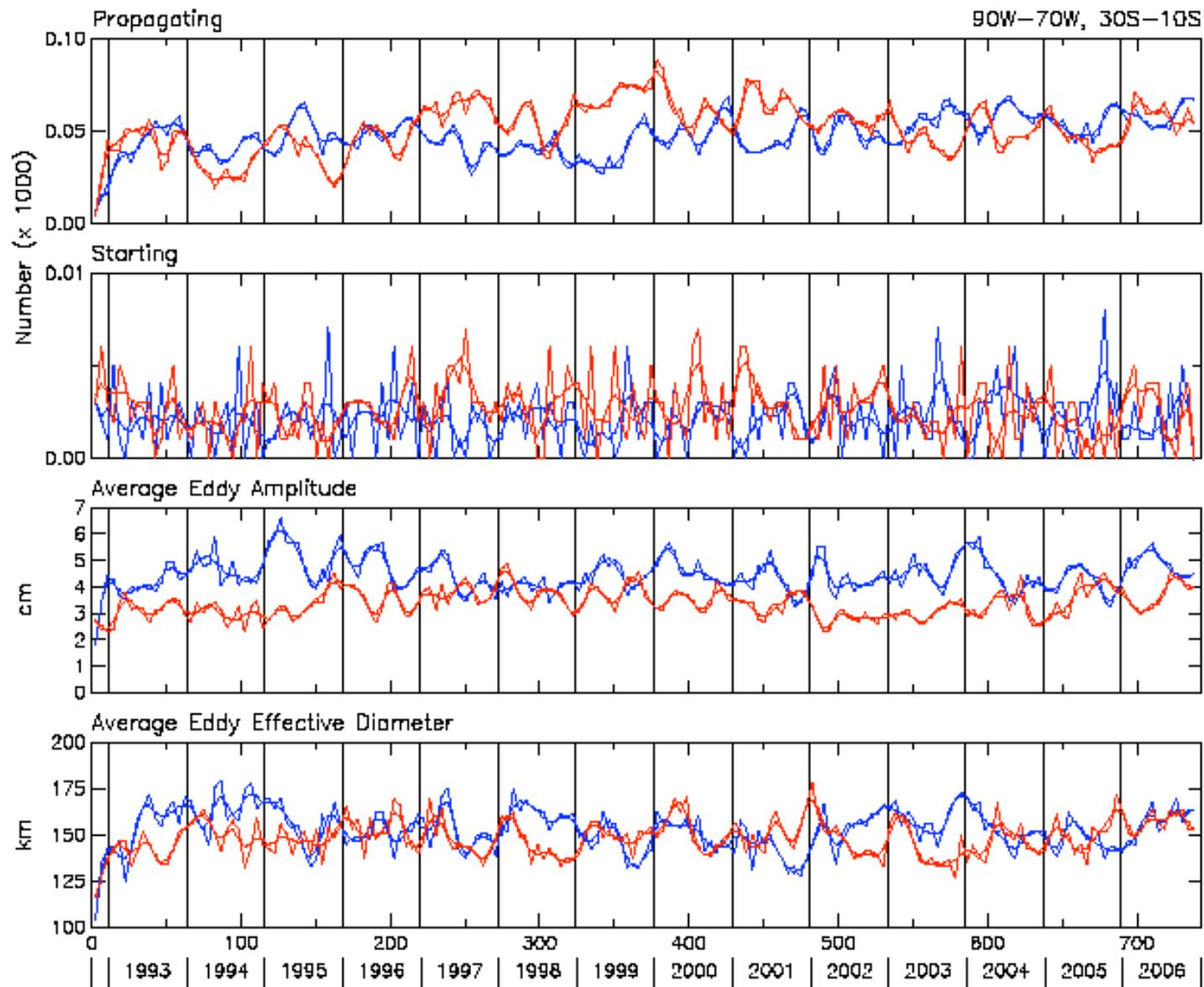
Genesis Locations

14-Year Census



Time Series of VOCALS Eddy Characteristics

Lifetimes ≥ 8 weeks

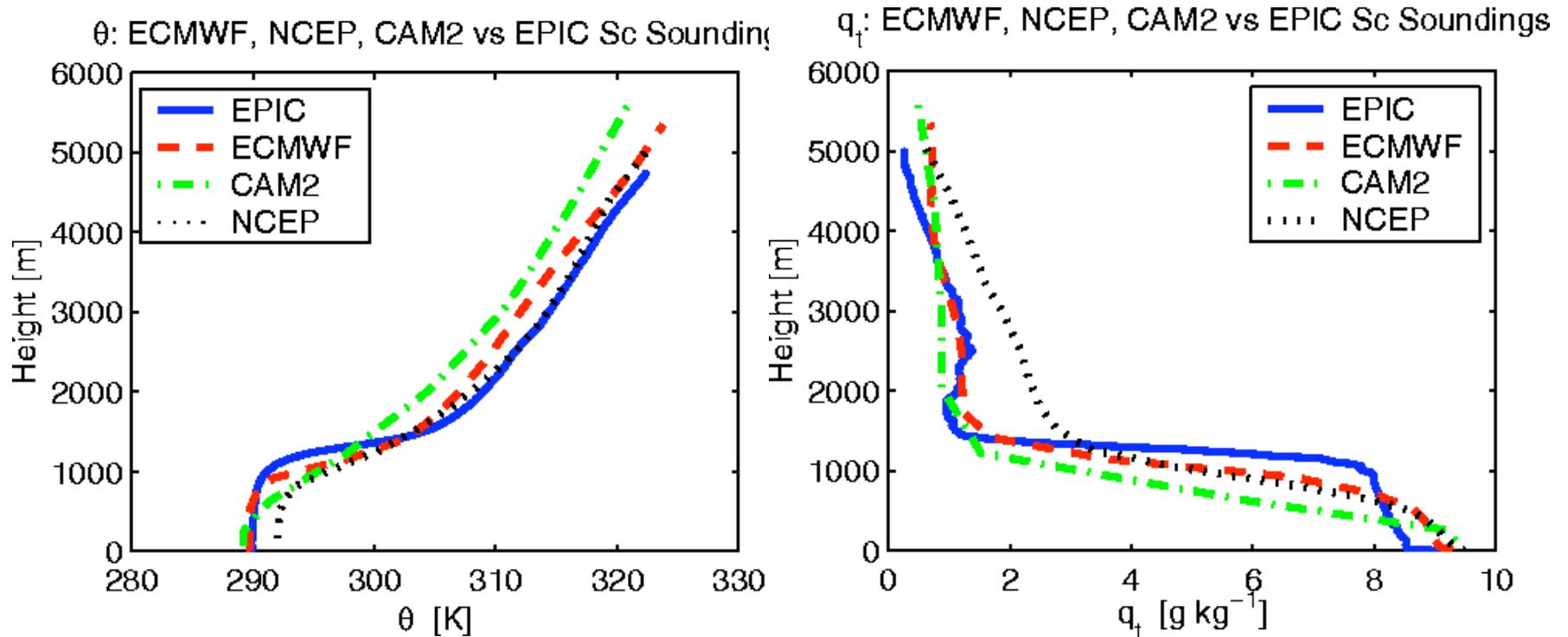


PreVOCA

- **GOAL:** To critically **assess** the ability of global/ regional models (atmospheric, chemical transport...) to predict/ simulate VOCALS region
- **WHY?** Learn about model forecast support for REx etc.
- **WHAT?** Hindcasts for October 2006
- **NOT:** An intercomparison; participants use their forecast/analysis
- **Target date for completion: Summer 08**

Model	Vertical Levels	Horizontal Resolution (km)
COAMPS	45	81; 27
COLA RSM	28	50
IPRC Reg_CM (IRAM)	28	~25
PNNL (WRF-Chem)	44	45; 15
U. Chile (WRF)	43	45
ECMWF oper. 3-12h forecast	91	~25
ECMWF 5-day forecast	91	~40
ECMWF coupled fcst ensemble	62	~125
NCEP oper. 12-36h forecast	64	~38
UKMO oper. 12-36h forecast	50	
GMAO GEOS-5 DAS	72	~56
LMDZ	38	50

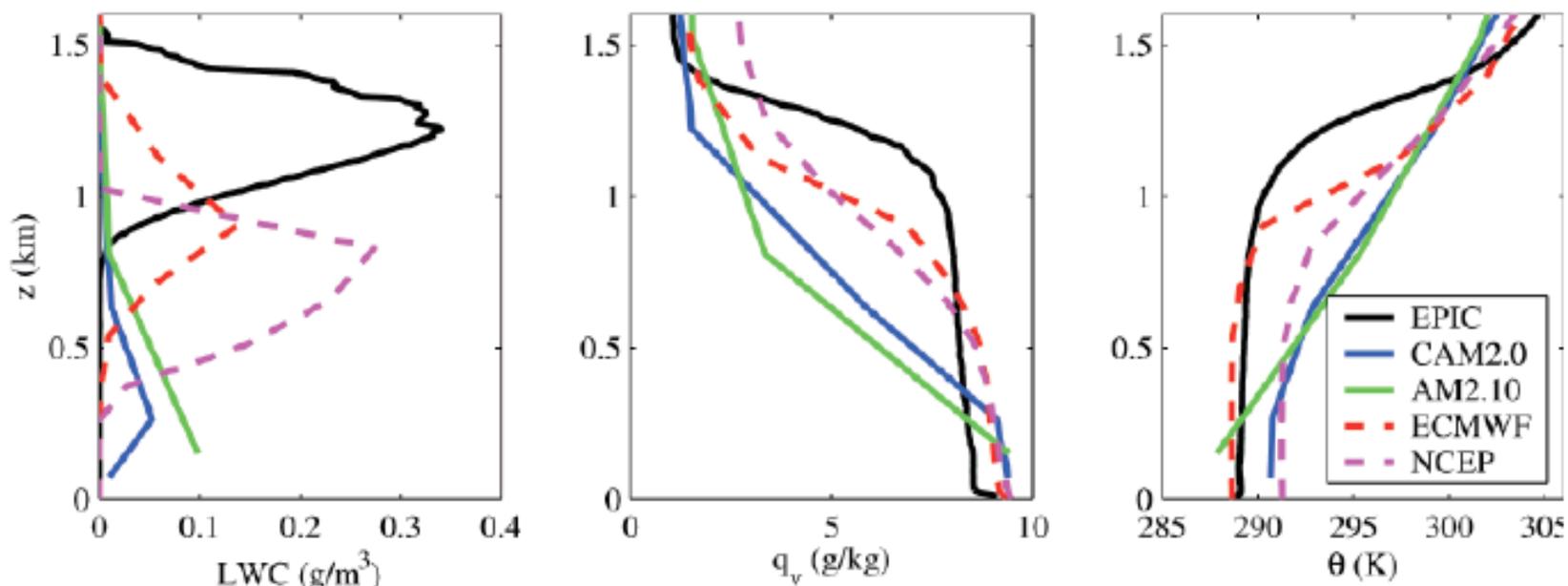
Comparison of 6-day mean 20S 85W profiles with models



(Peter Caldwell, UW)

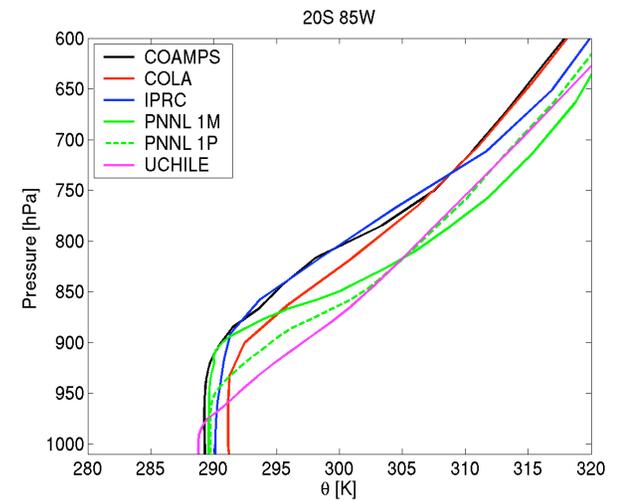
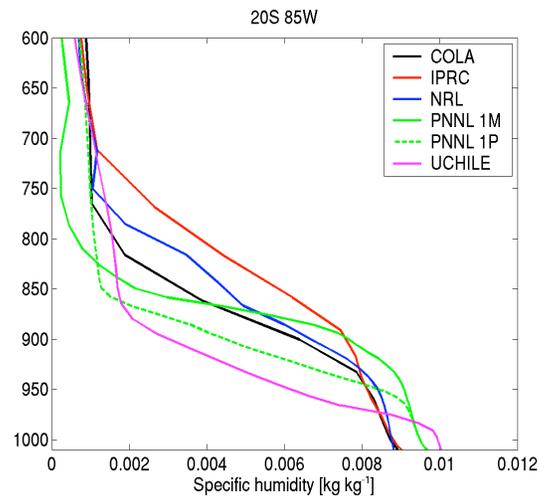
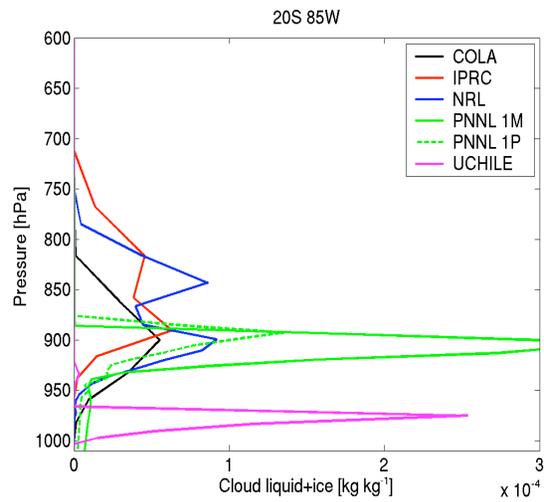
- All models (esp CAM) have too shallow a PBL.
- CAM2 LWC all in lowest 3 levels (70-630 m).
- Observed LWC mainly at 800-1300 m.

SEP stratocumulus in GCMs

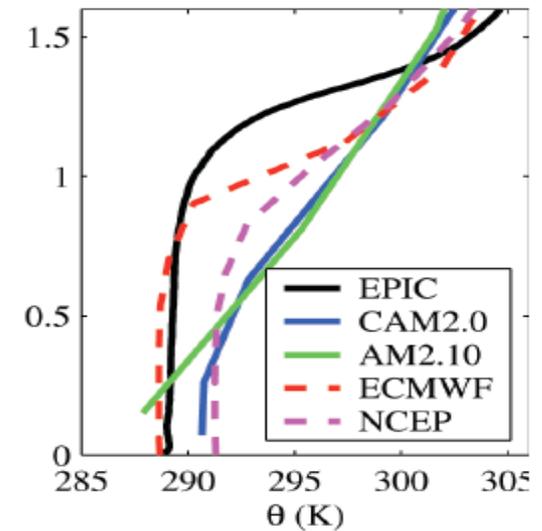
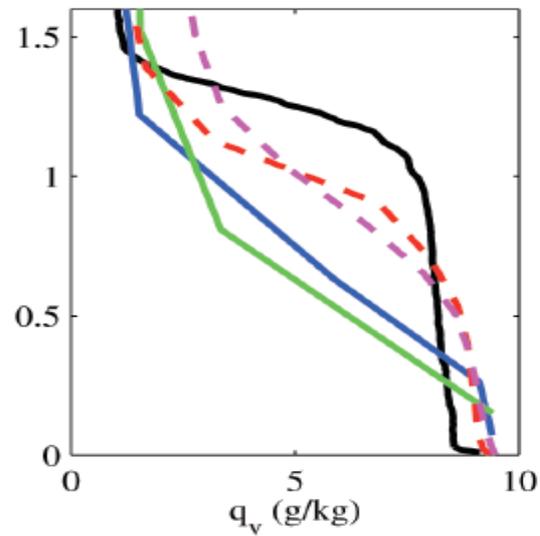
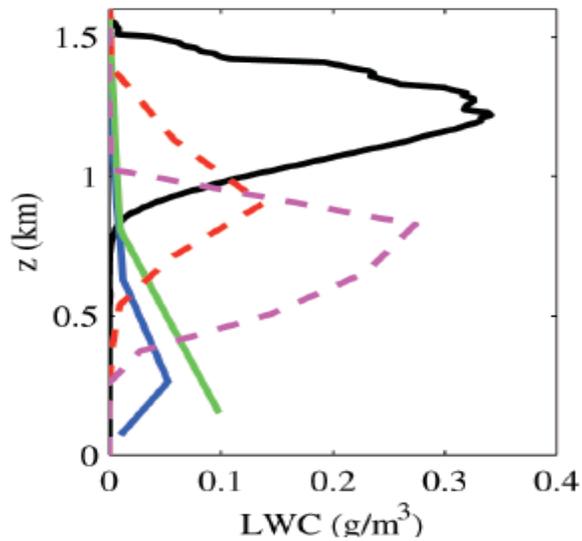


Poor representation of the vertical structure of stratocumulus-topped boundary layers – improved parameterization central to improved global models

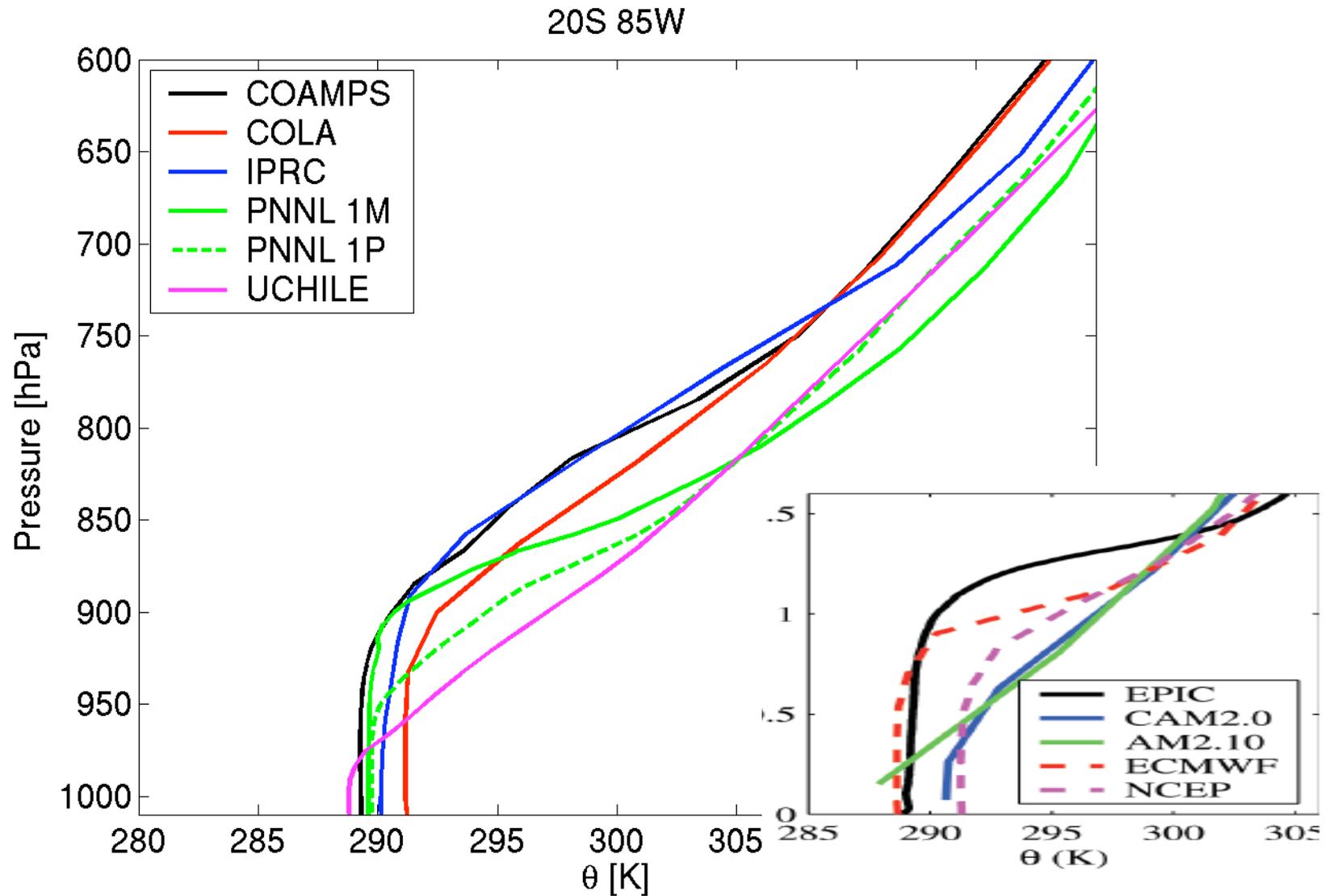
PreVOCA: Regional Models



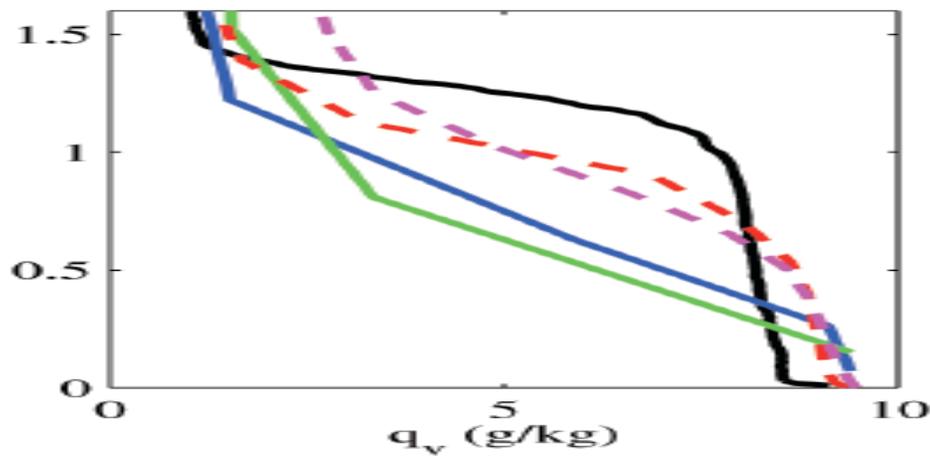
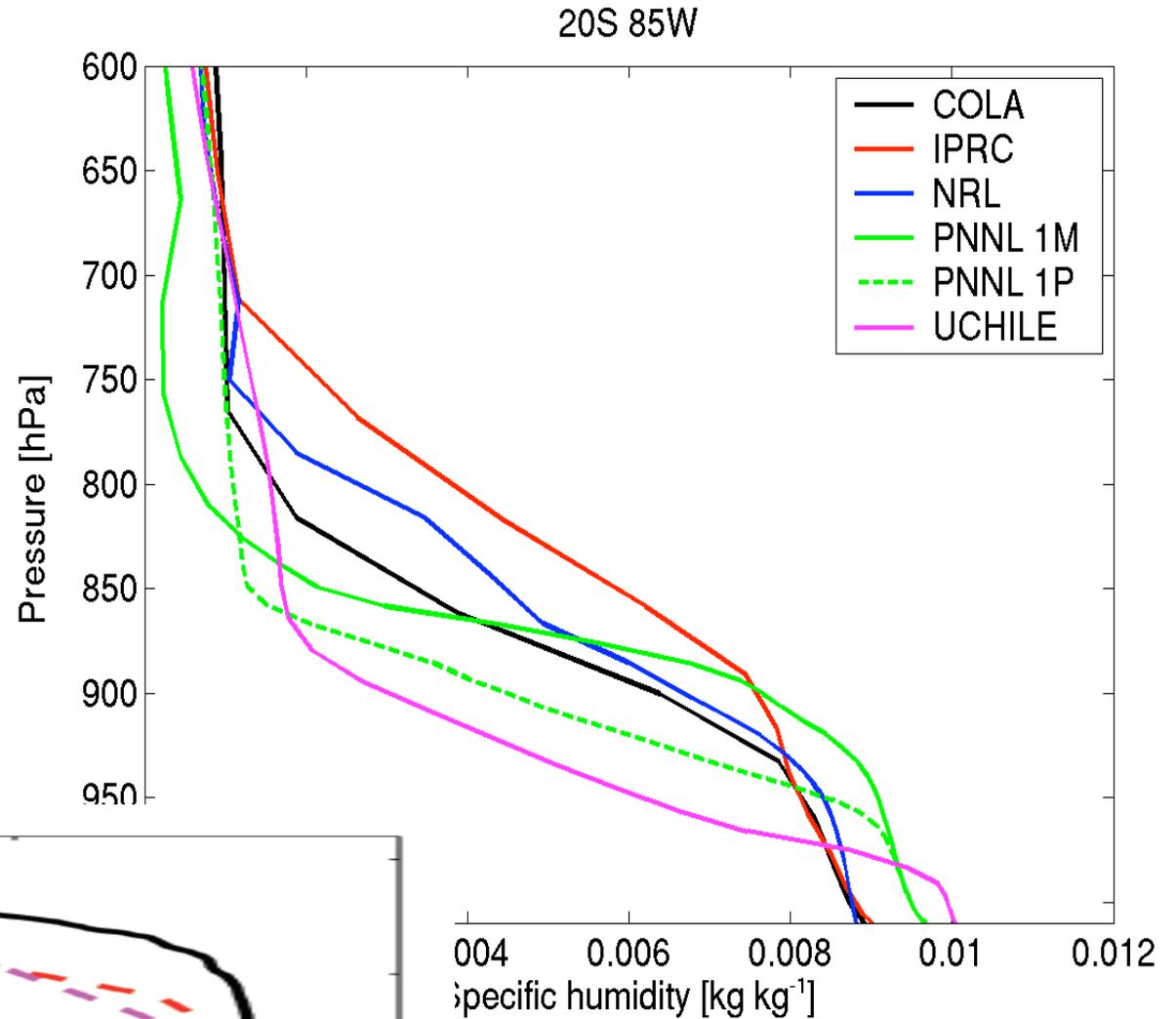
EPIC Models



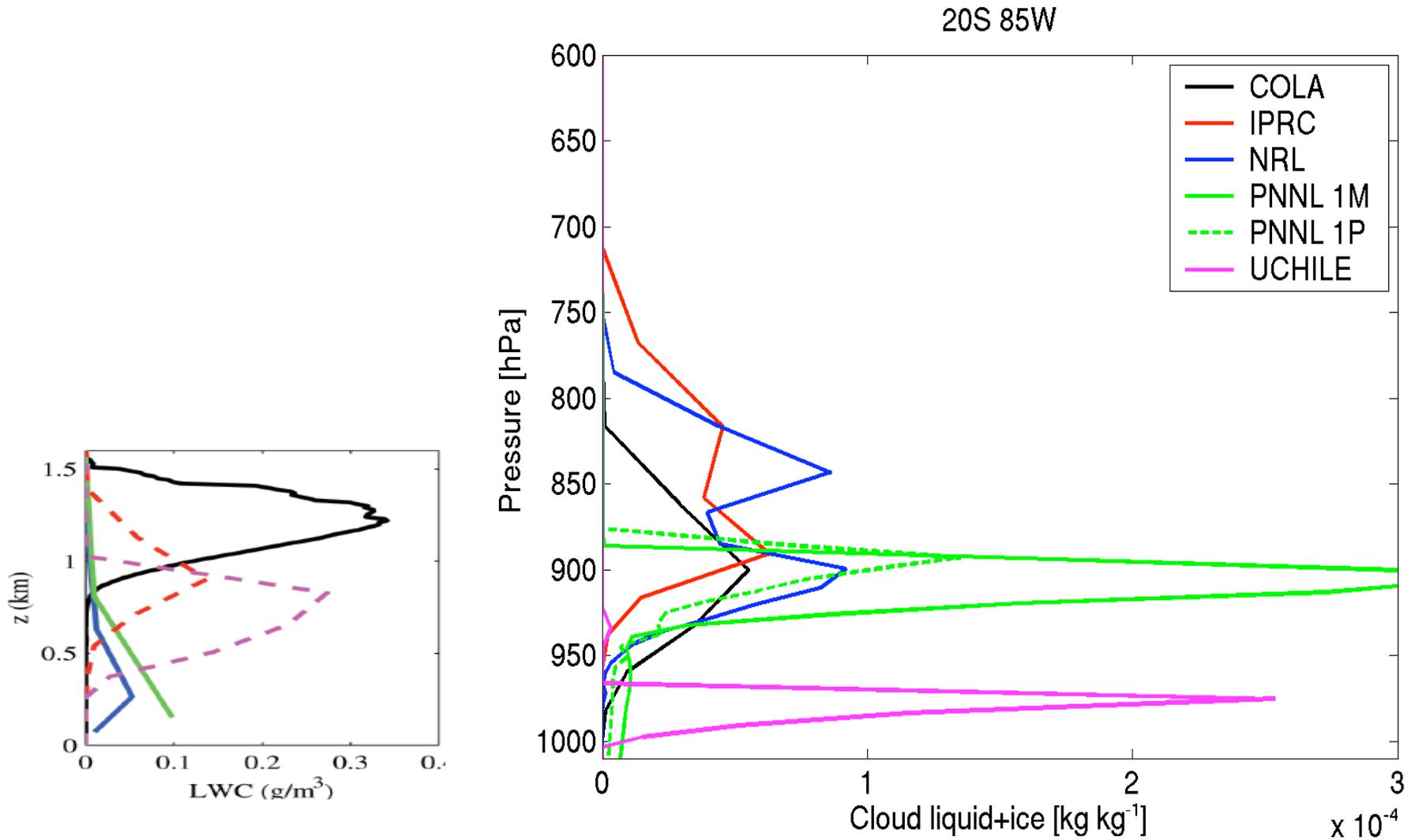
Vertical Pot Temp Profiles



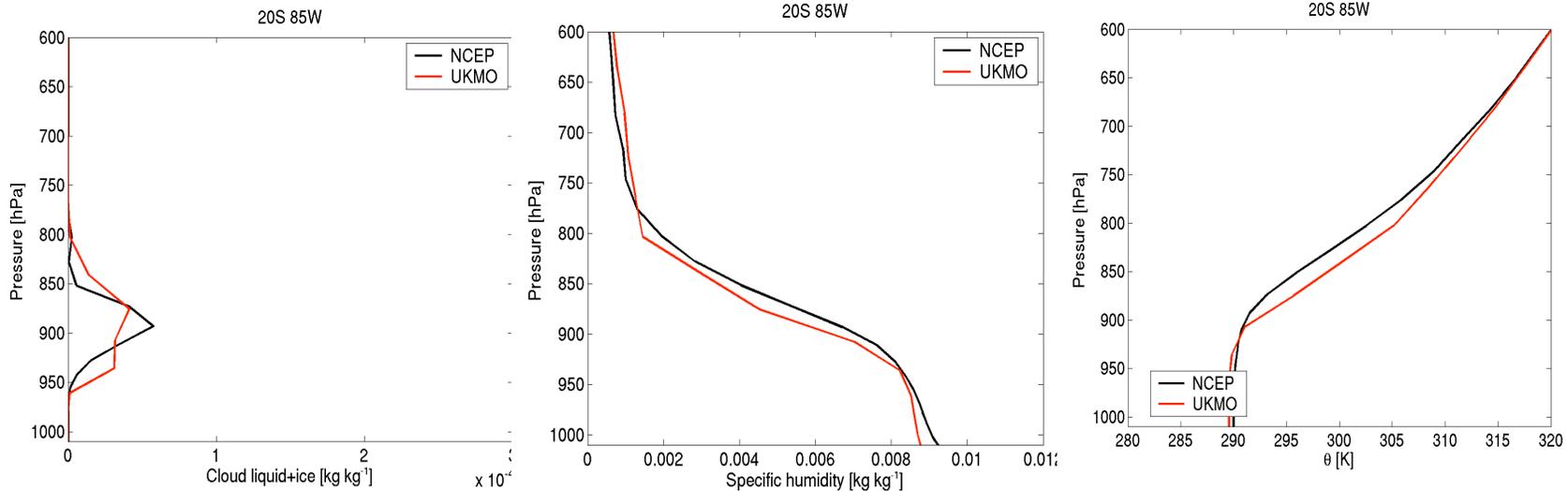
Vertical Specific Humidity Profiles



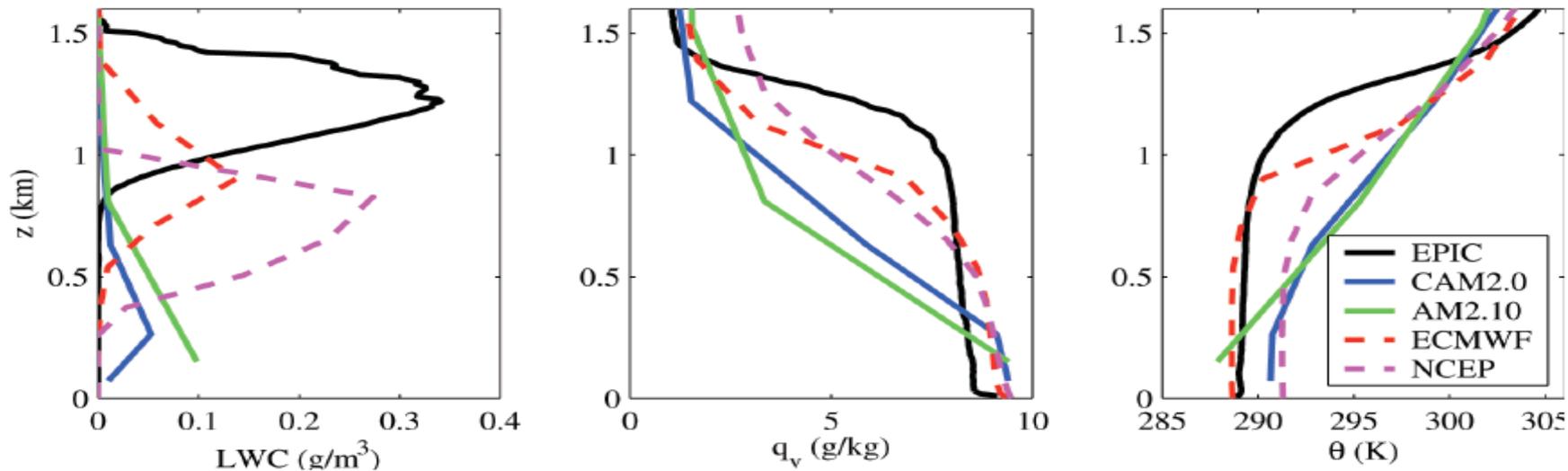
Liquid Water Content Profiles



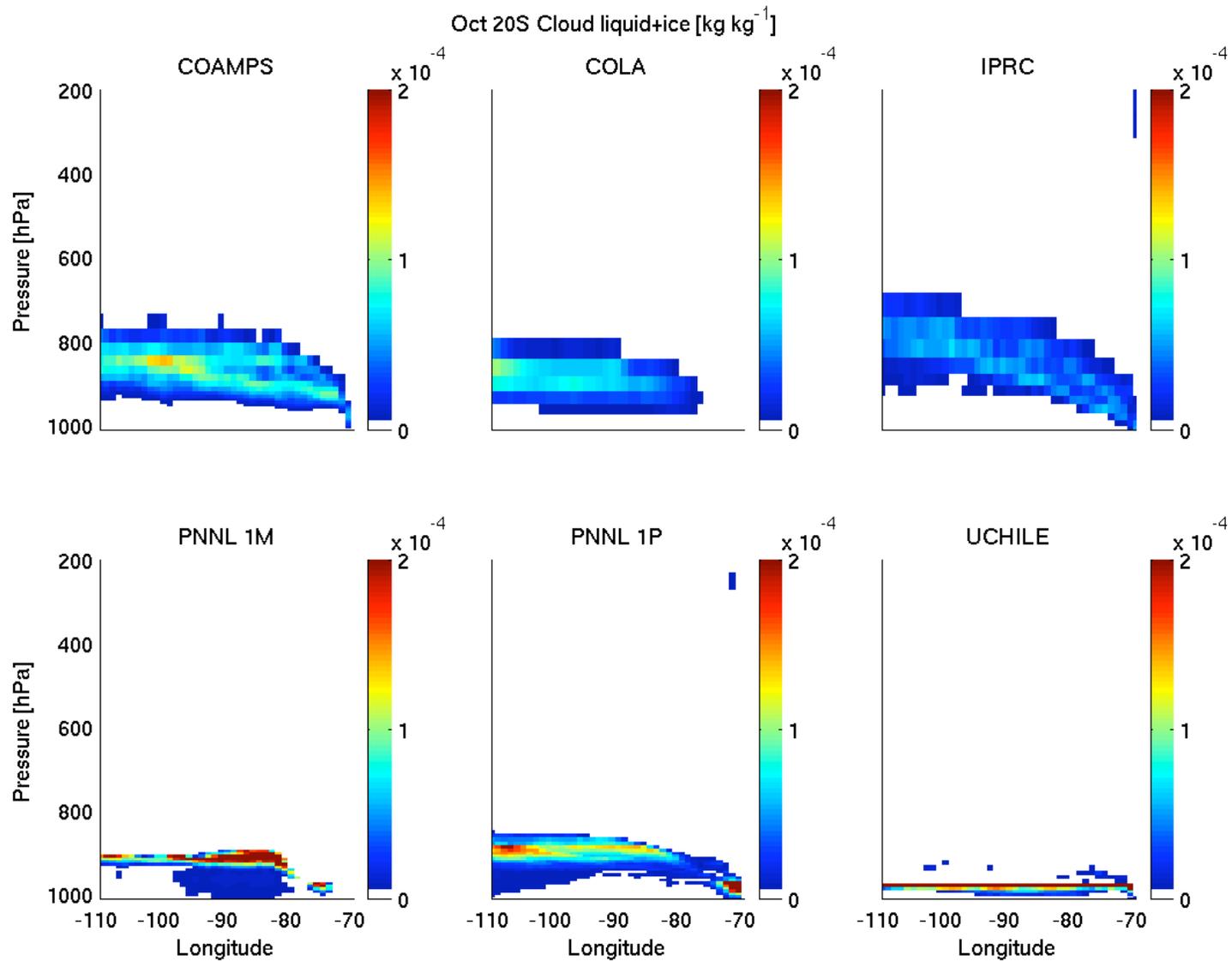
PreVOCA: Global Models



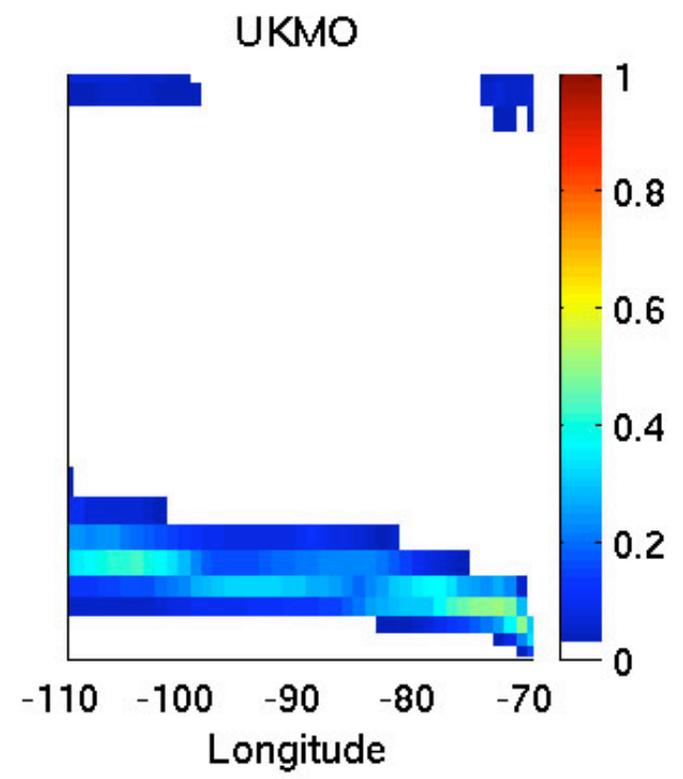
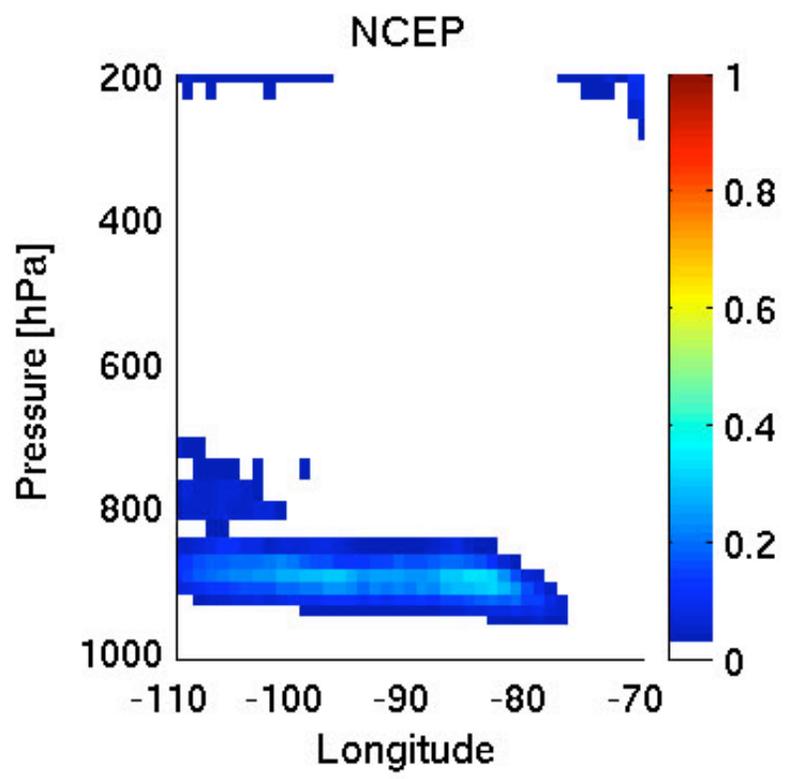
EPIC Models

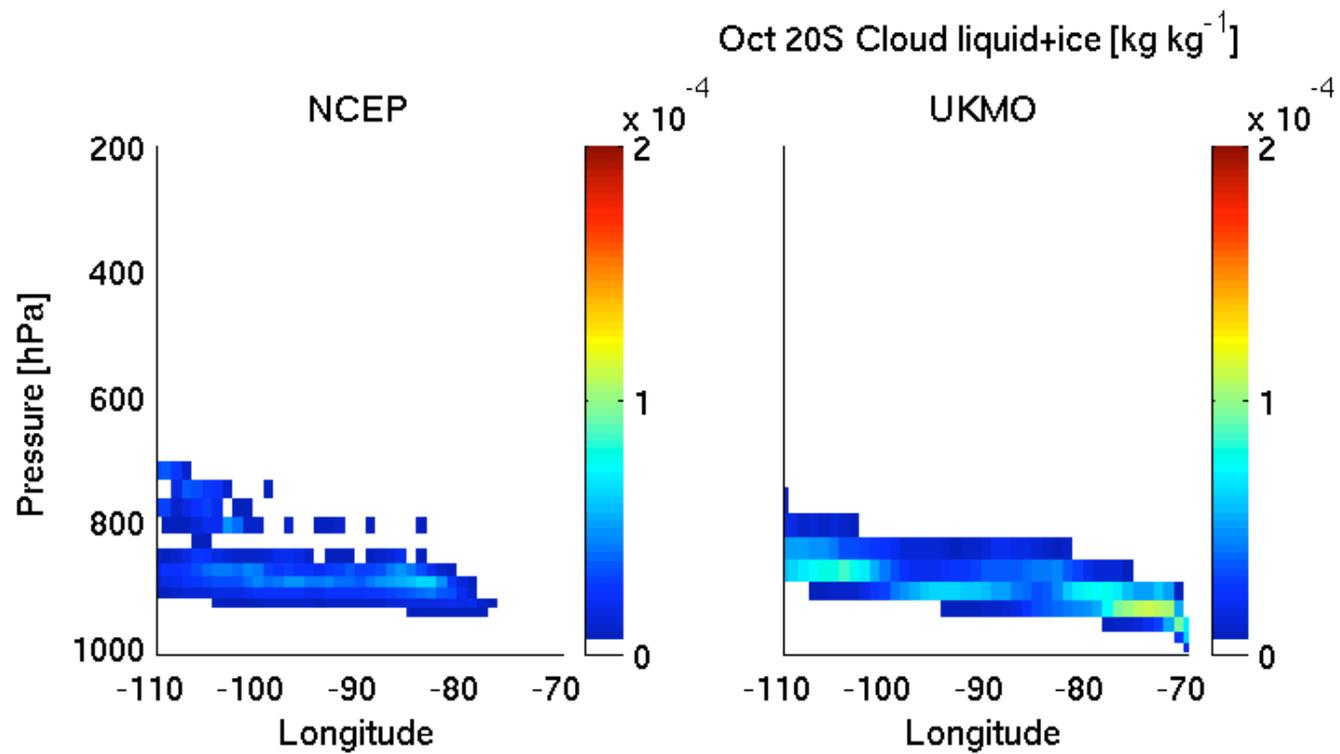


PreVOCA Regional Models Cloud Liquid Water and Ice

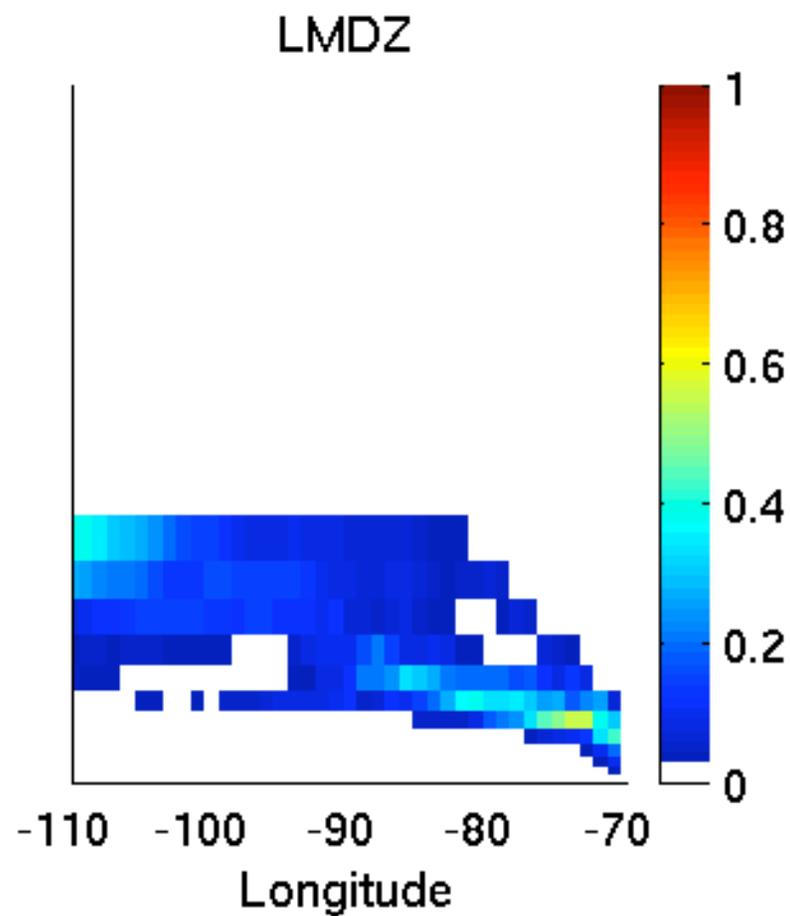
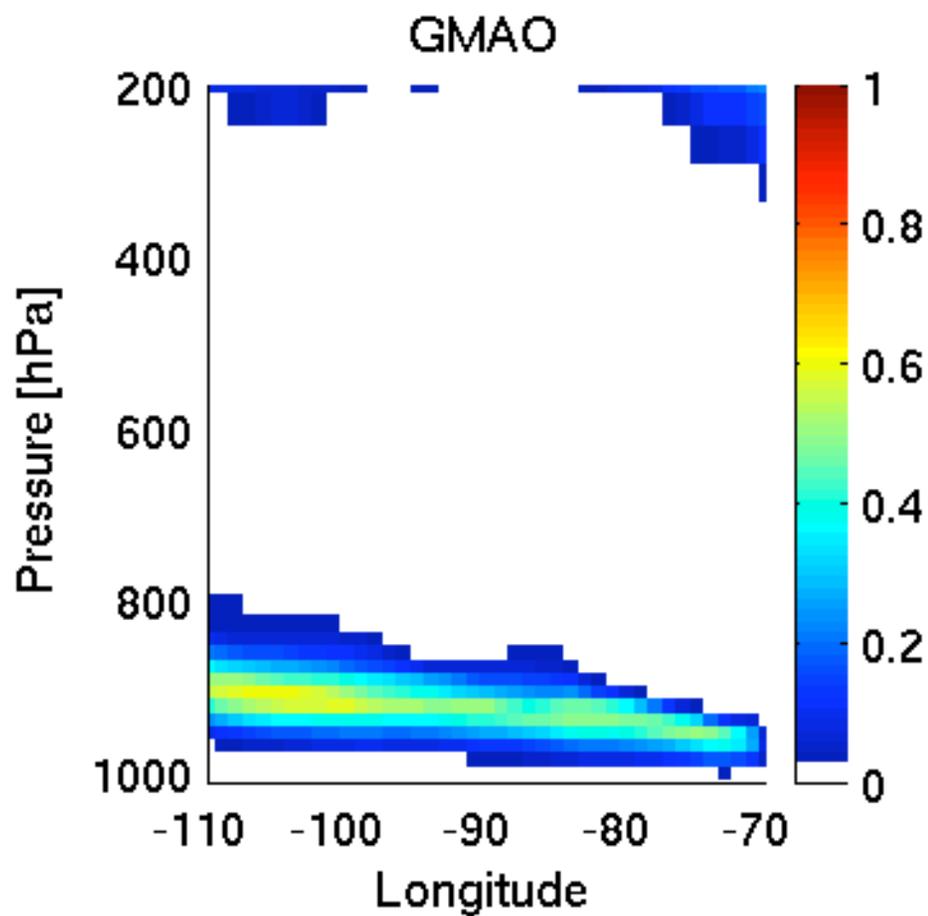


Oct 20S Cloud fraction

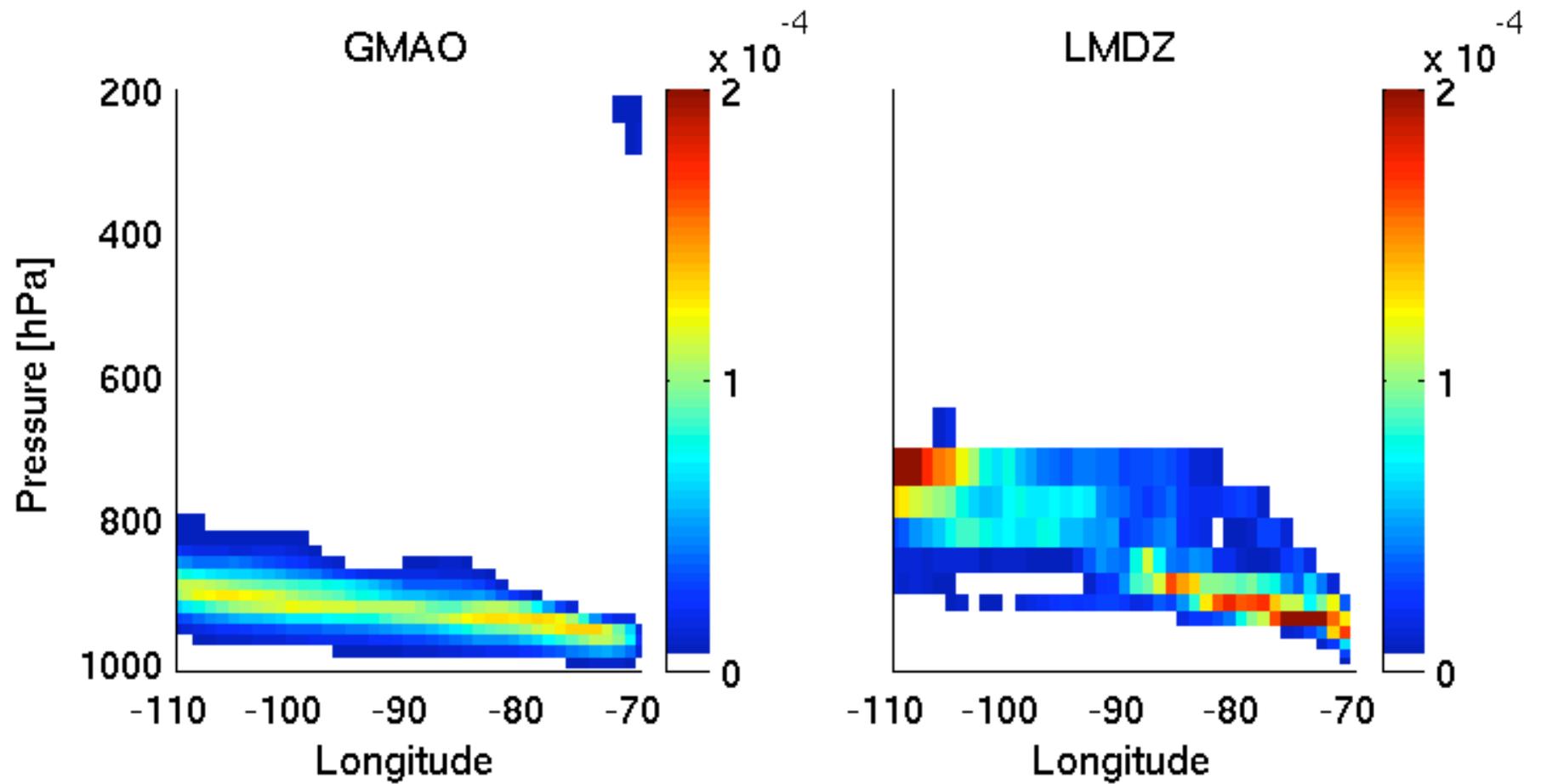




Oct 20S Cloud fraction

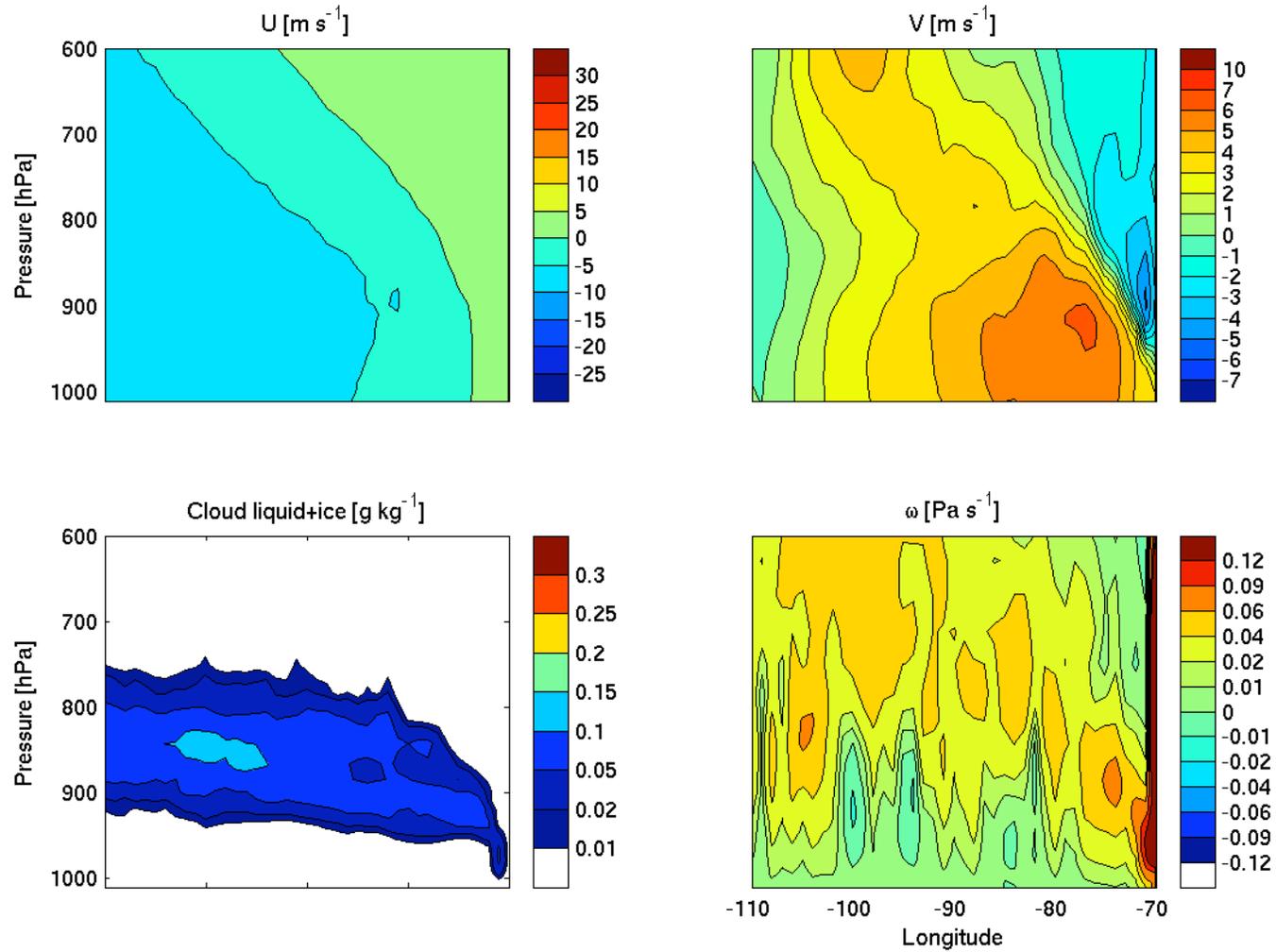


Oct 20S Cloud liquid+ice [kg kg^{-1}]



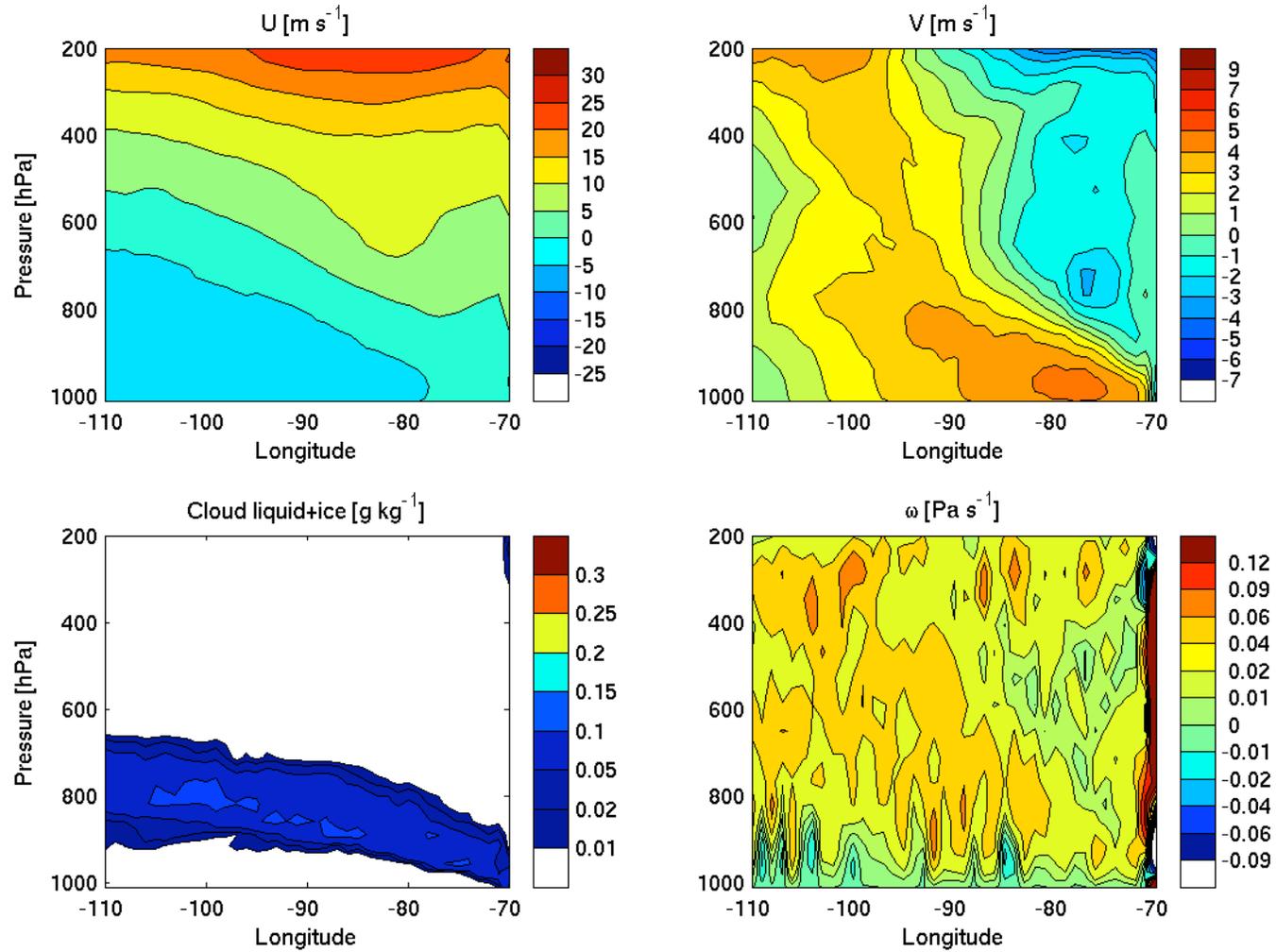
NRL 20S October mean

20S Oct 2006 NRL



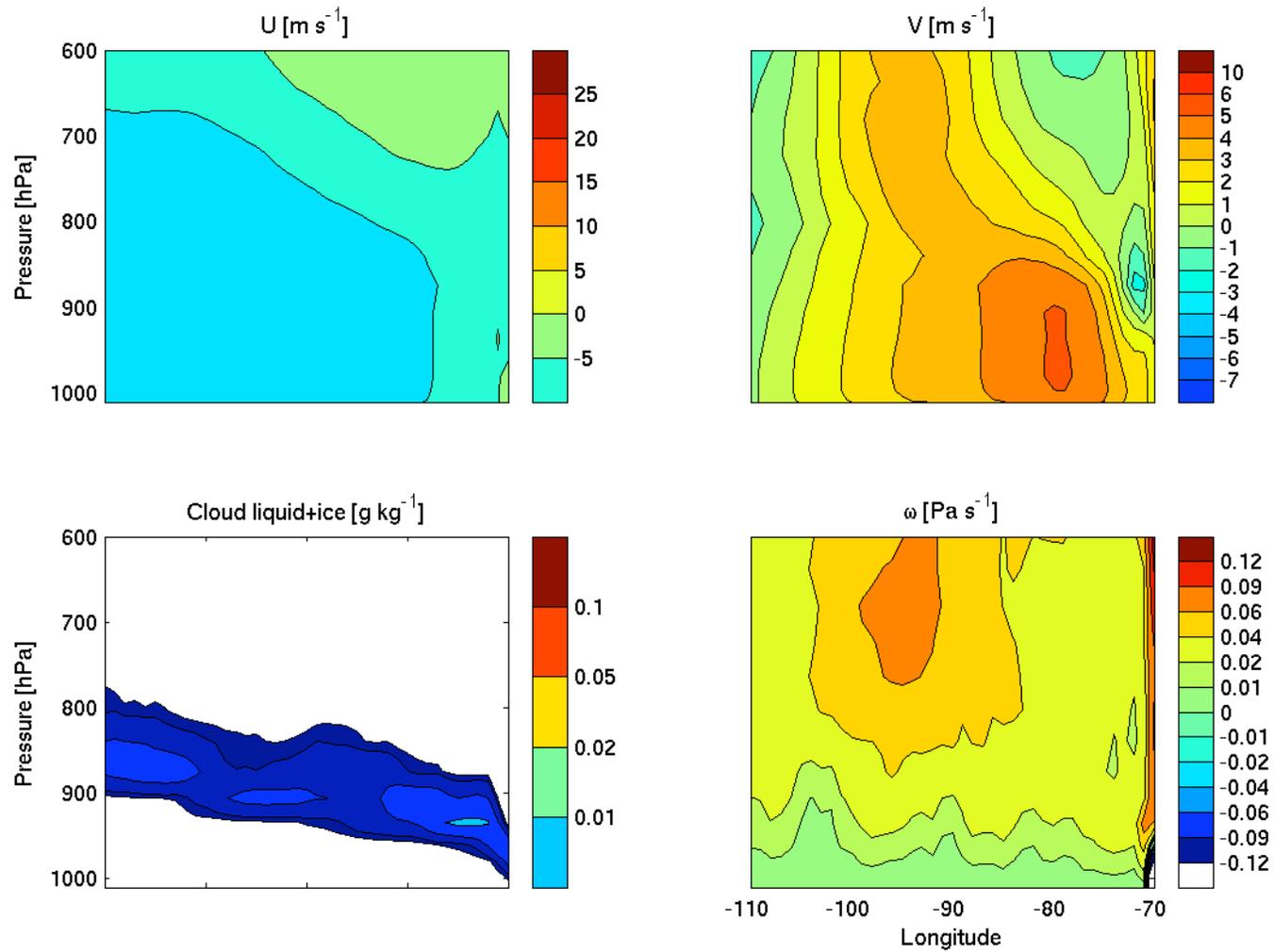
NRL 20S October mean

20S Oct 2006 IPRC



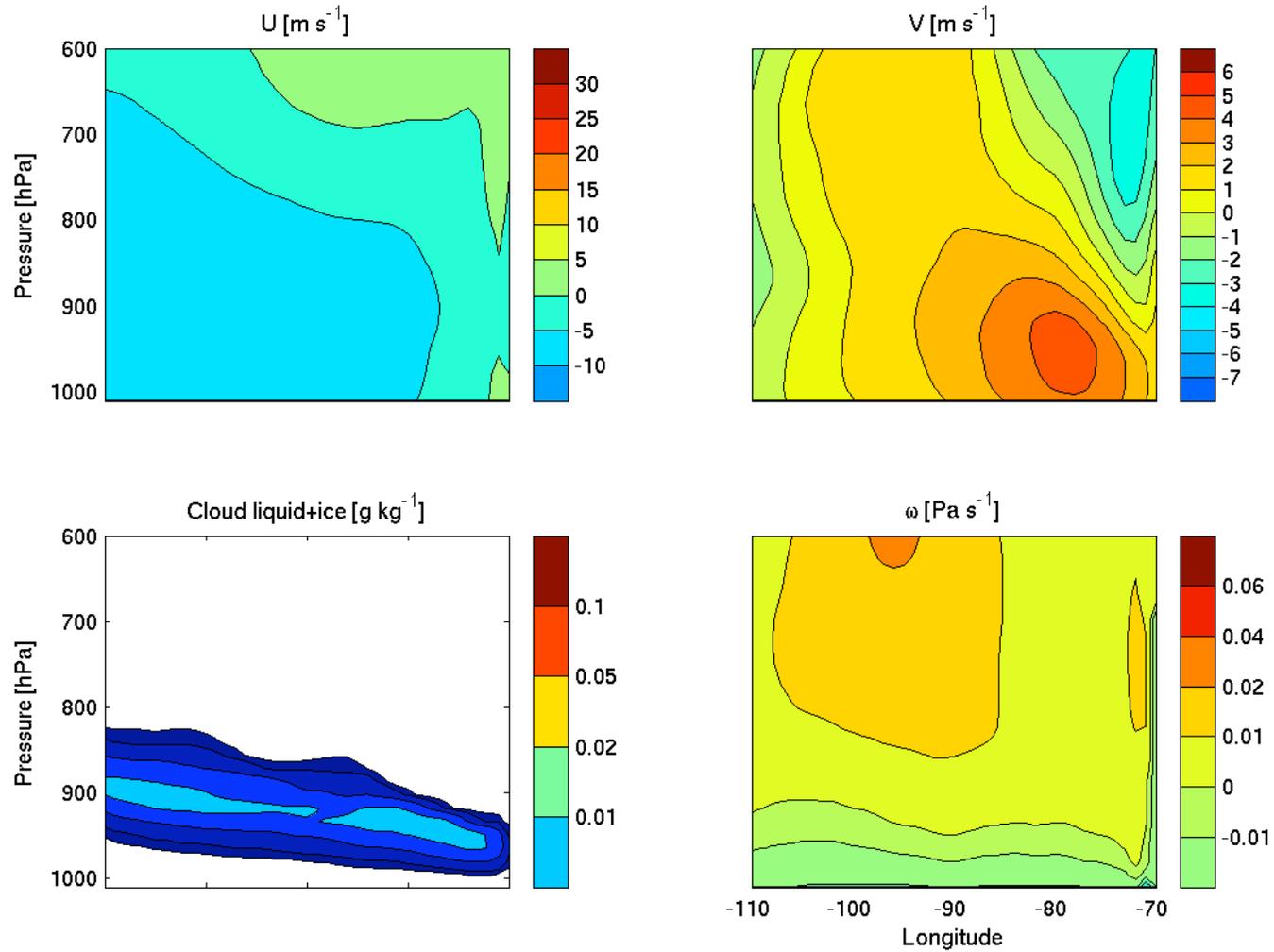
UKMO 20S October mean

20S Oct 2006 UKMO



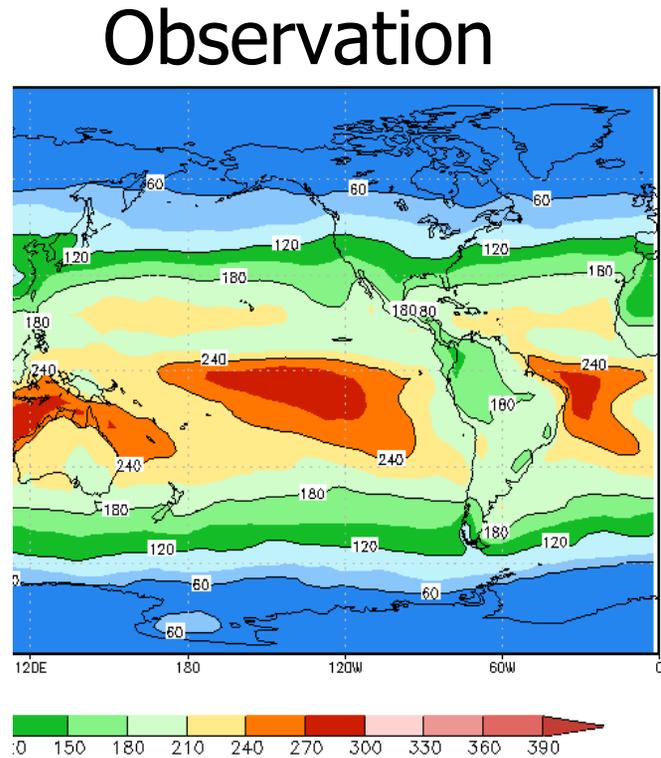
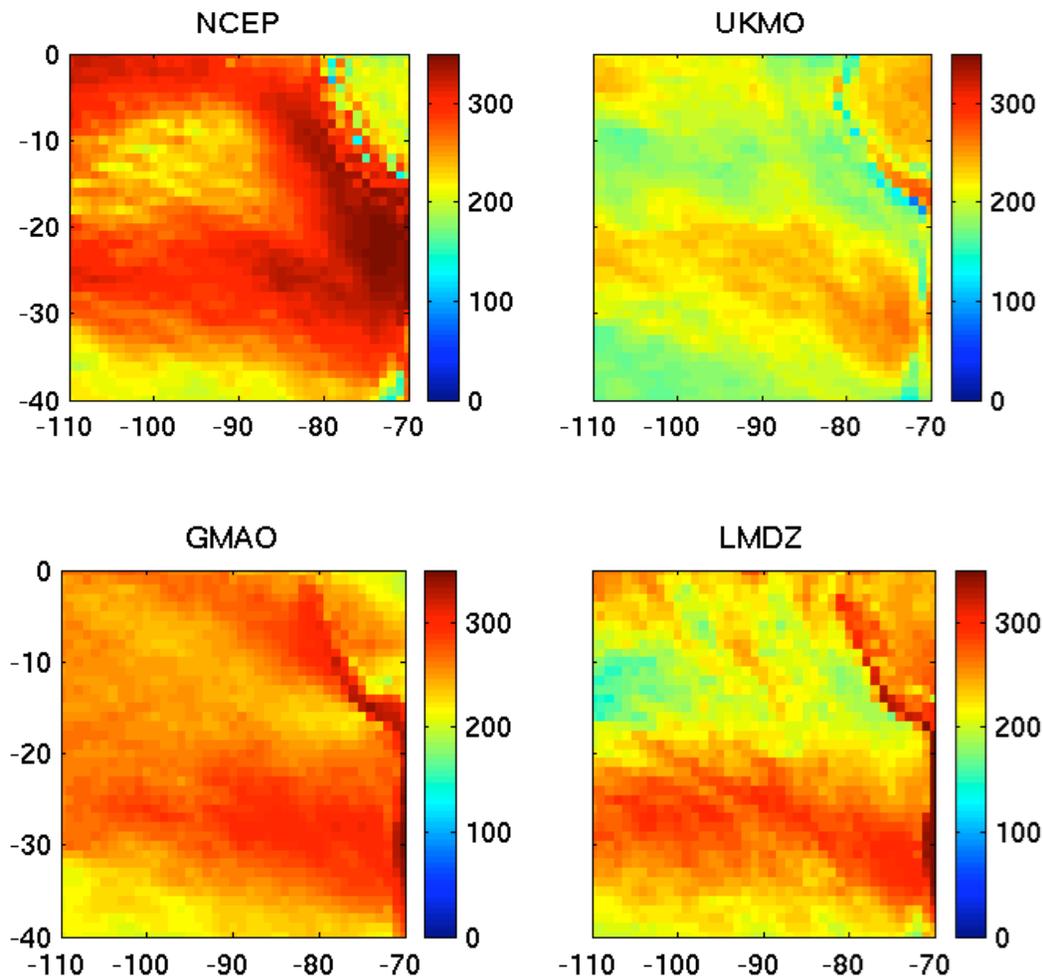
GMAO 20S October mean

20S Oct 2006 GMAO



Short Wave Radiation at the Surface

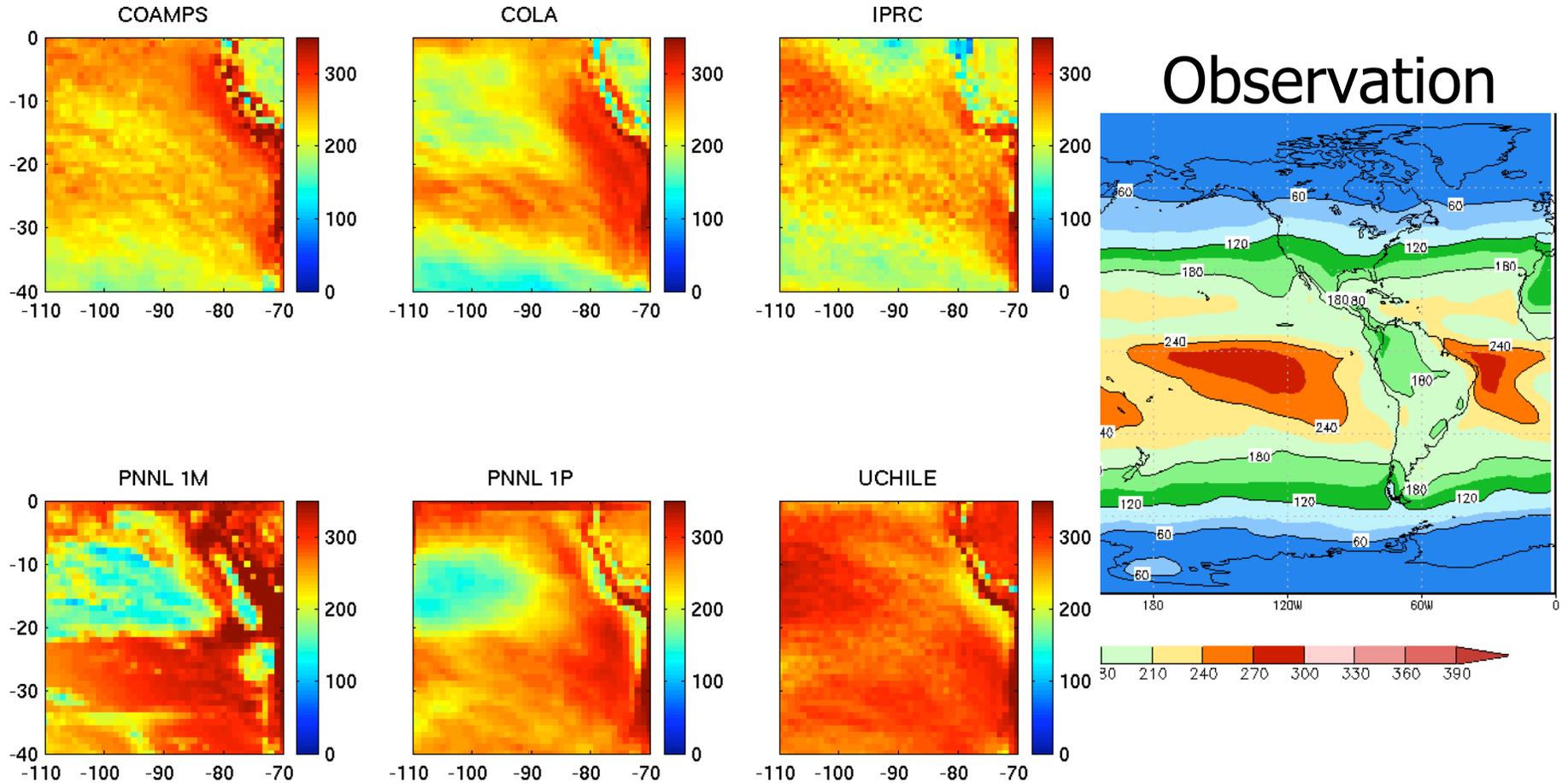
October mean GCMs



Short Wave Radiation at the Surface

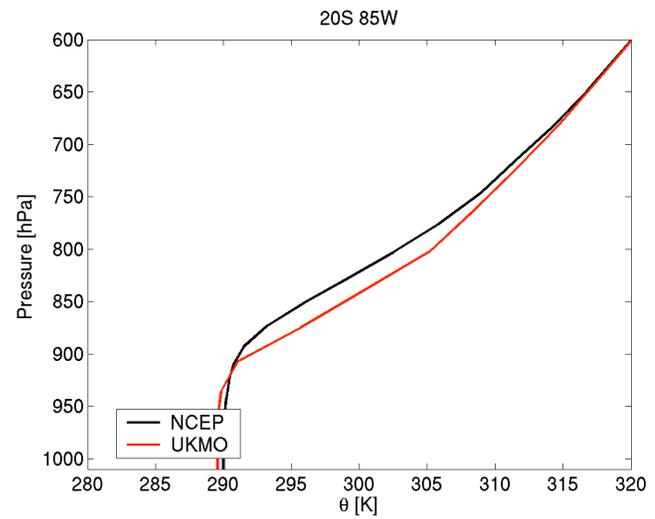
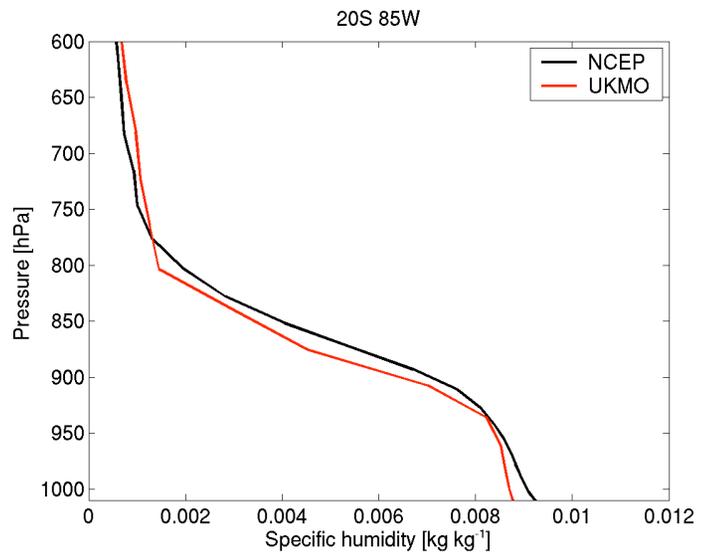
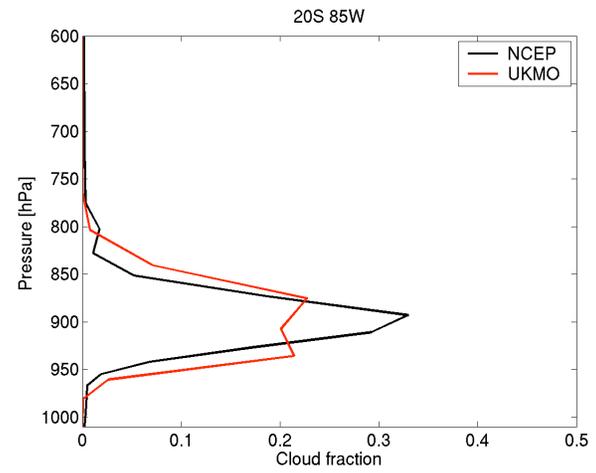
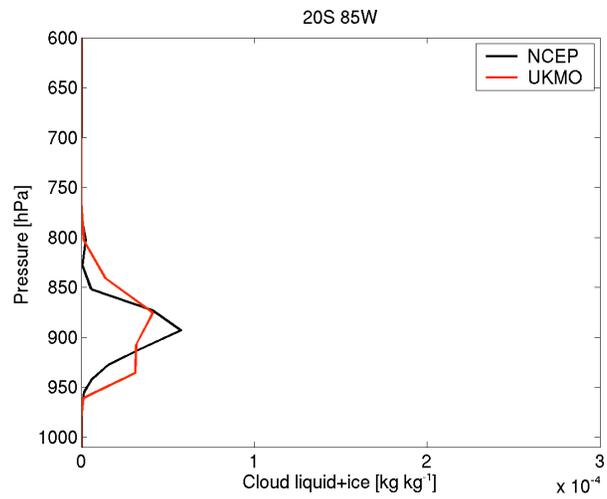
October mean Regional Models

October SW, sfc net downward [W m^{-2}]



Summary

- So far, 6 regional models and 4 global models
- Large variations in profiles from different models
- Substantial differences in the downward heat flux at the surface



PreVOCA Regional Models

Short Wave Flux at the Surface

October SW, sfc net downward [W m^{-2}]

