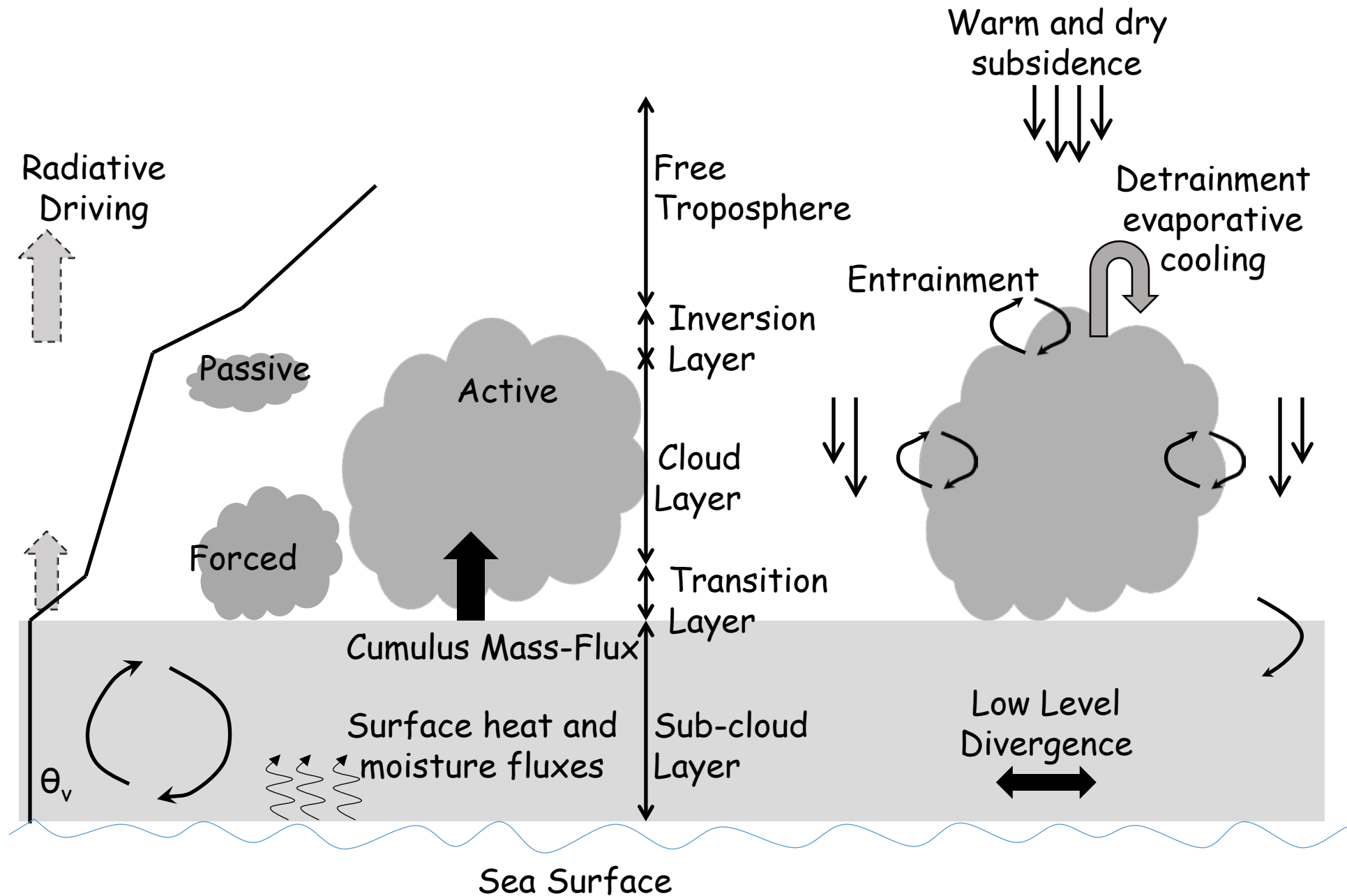


# Dynamics, Thermodynamics and Radiation of Cumulus Topped Marine Boundary Layers

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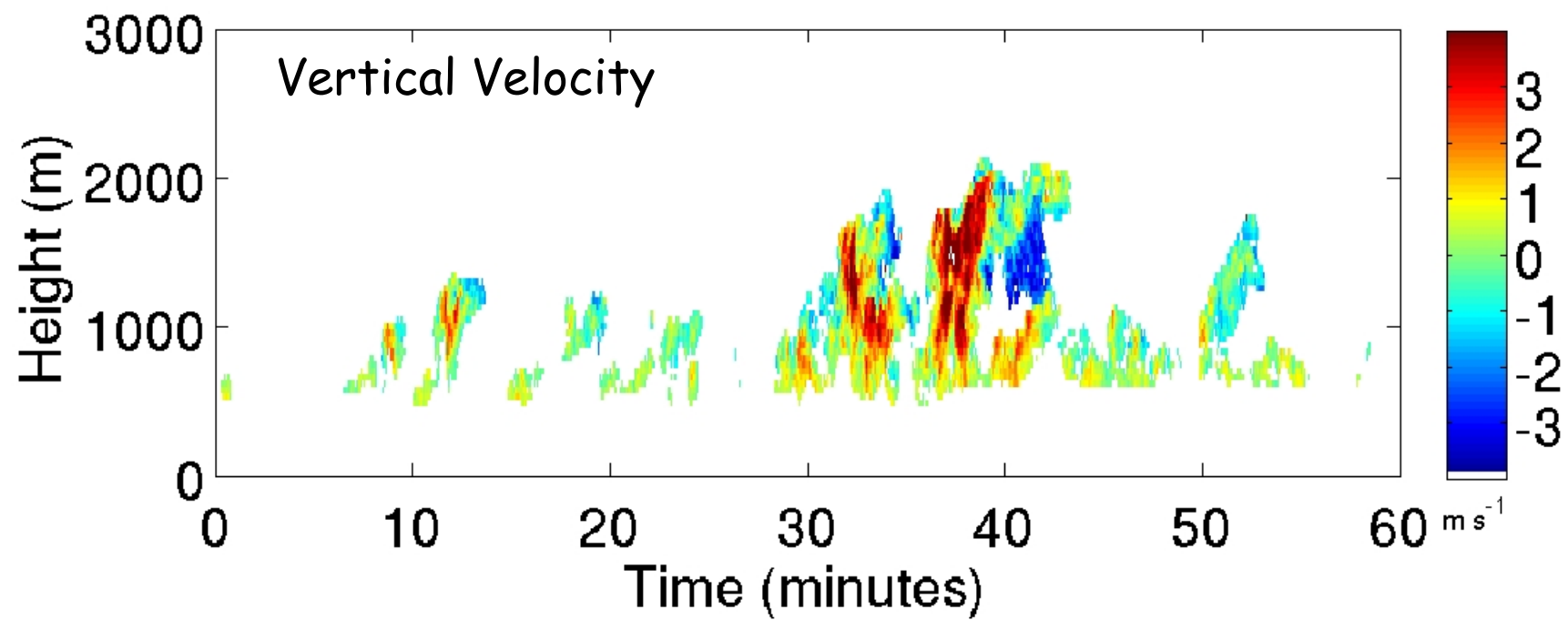
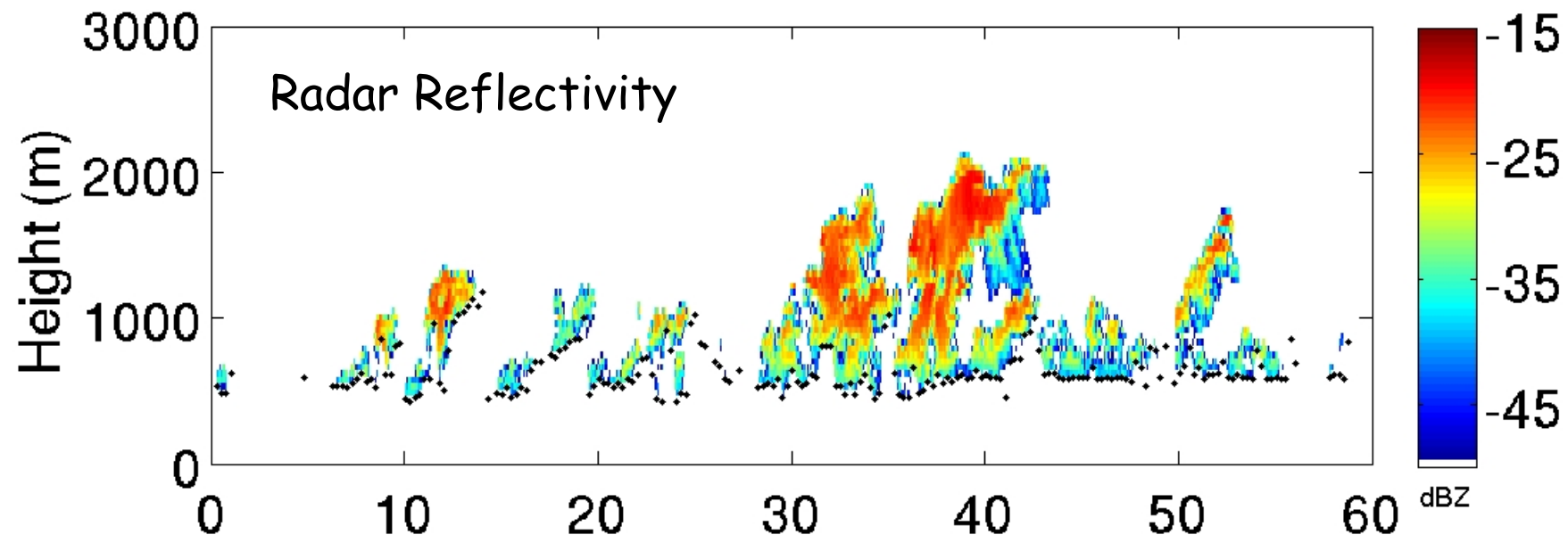


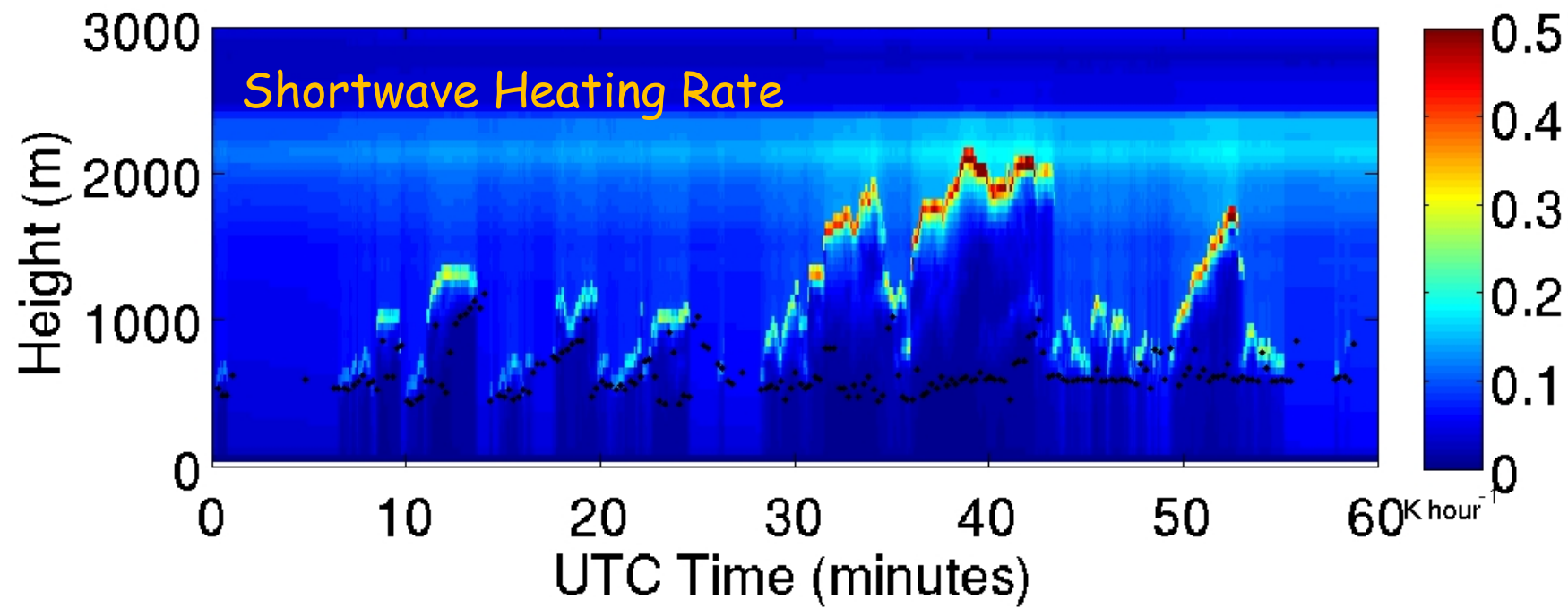
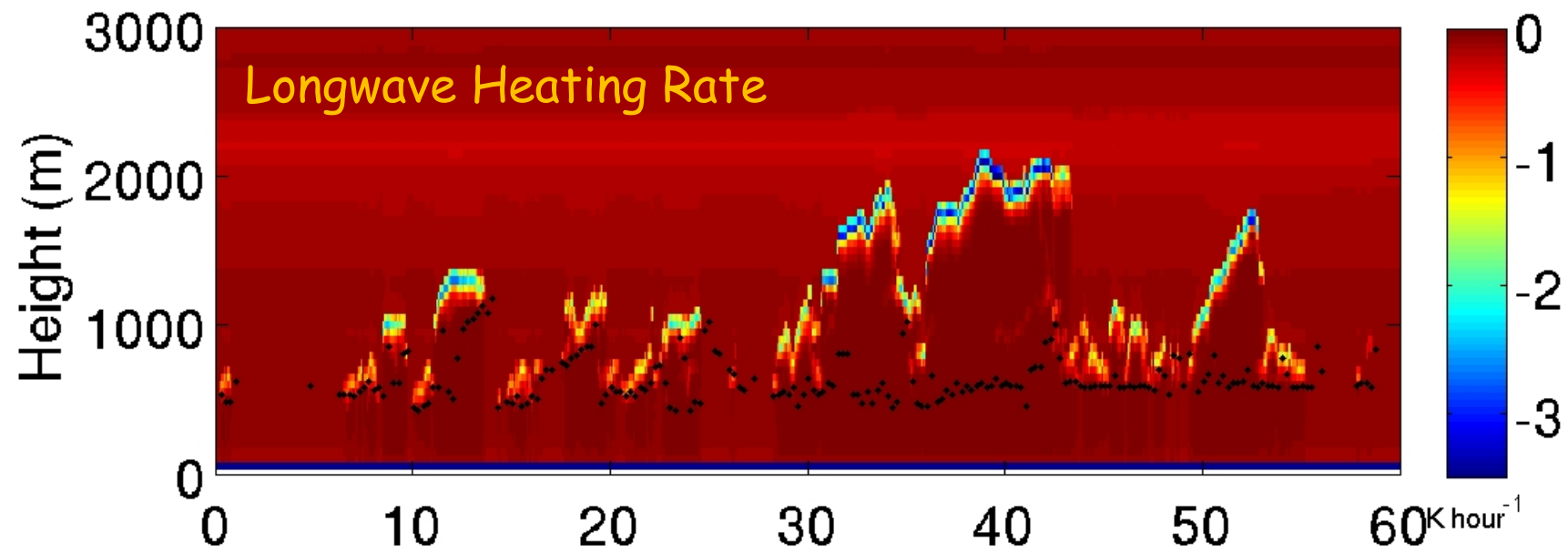
# Goal

- Characterize the dynamics, thermodynamic and radiative structure of cumulus topped marine boundary layers.
- Explore the similarities and differences between subtropical marine and tropical marine boundary layers

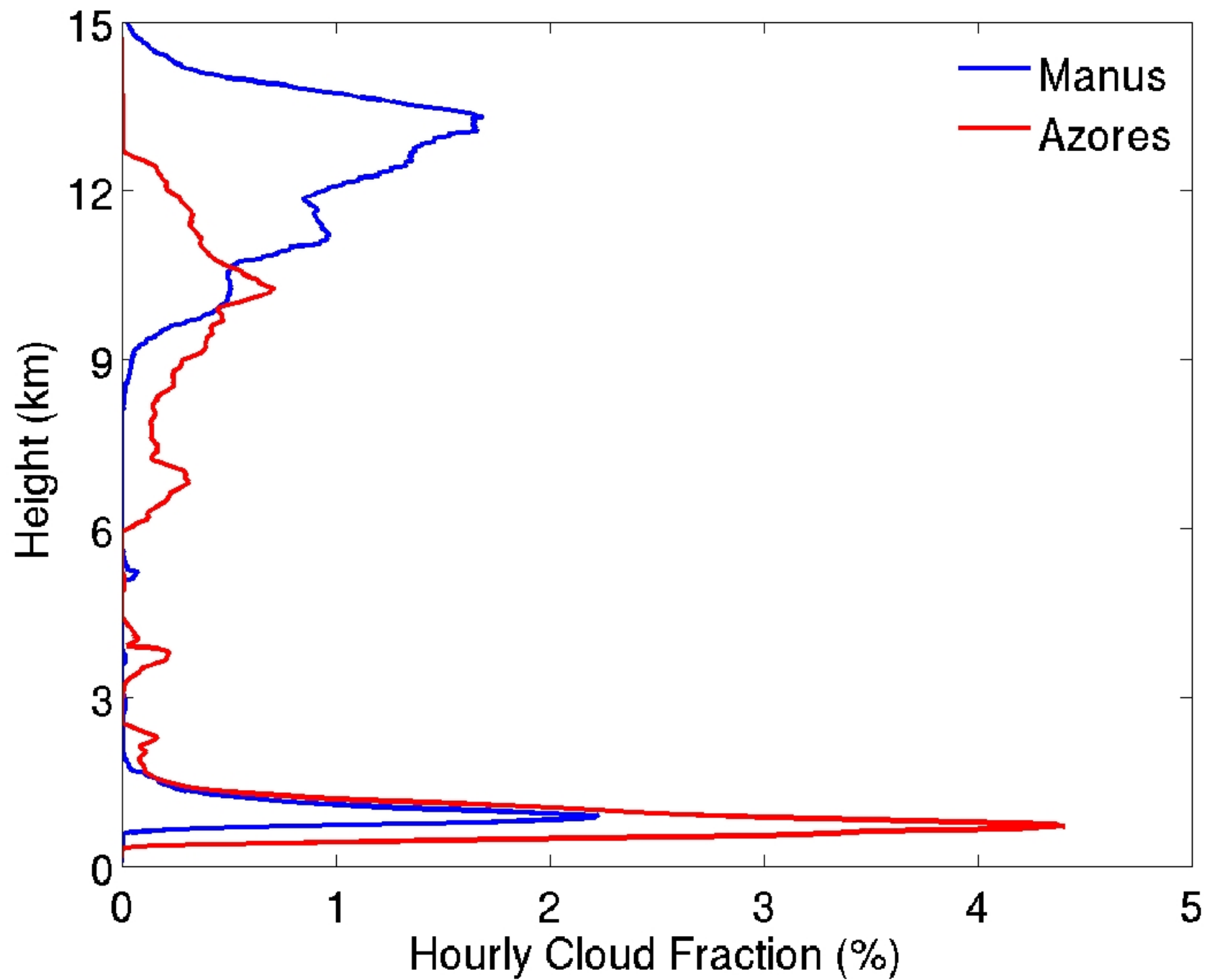
# Dataset

- 19 cases of shallow cumuli conditions at Manus Island
  - Location -- 2°N 147°E
  - Total -- 272 hours
  - Facility at the Eastern edge of the island - cases with westerly winds not considered.
- 14 cases of shallow cumuli conditions at Graciosa Island
  - Location - 39°N 28°W
  - 194 hours
  - Facility at the Northern edge of the island - cases with Southerly winds not considered.

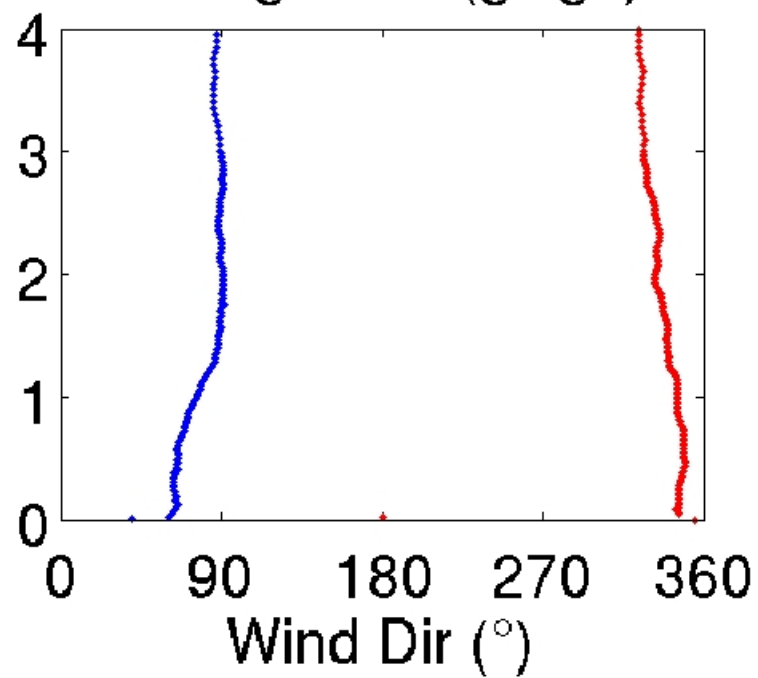
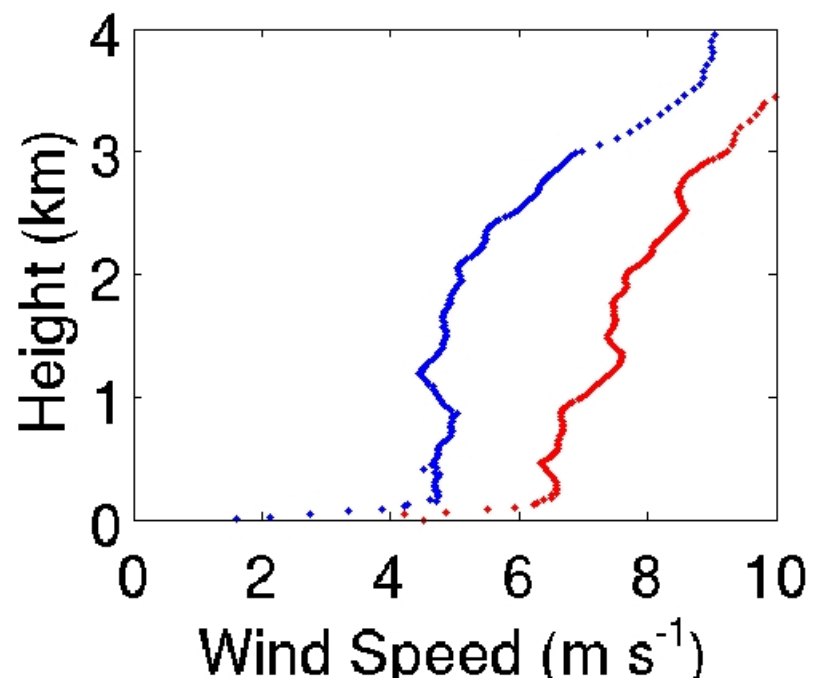
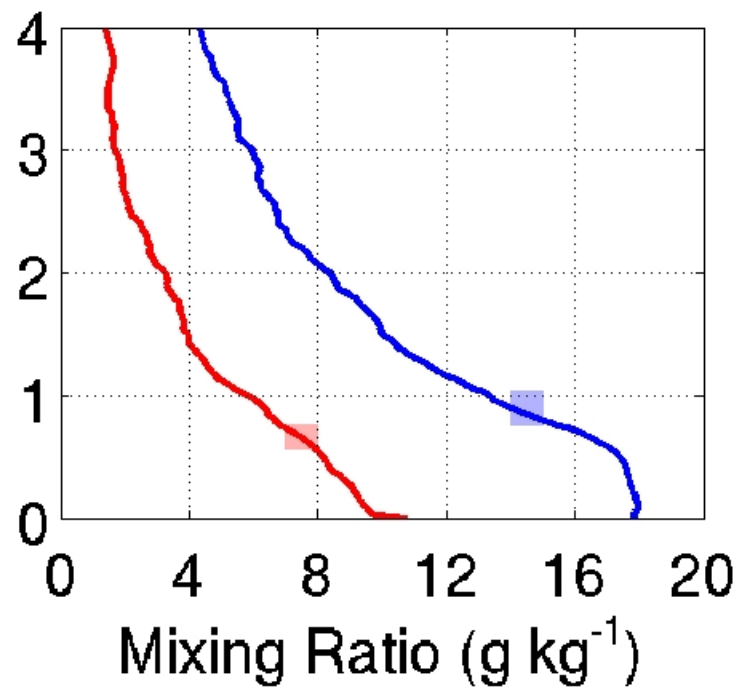
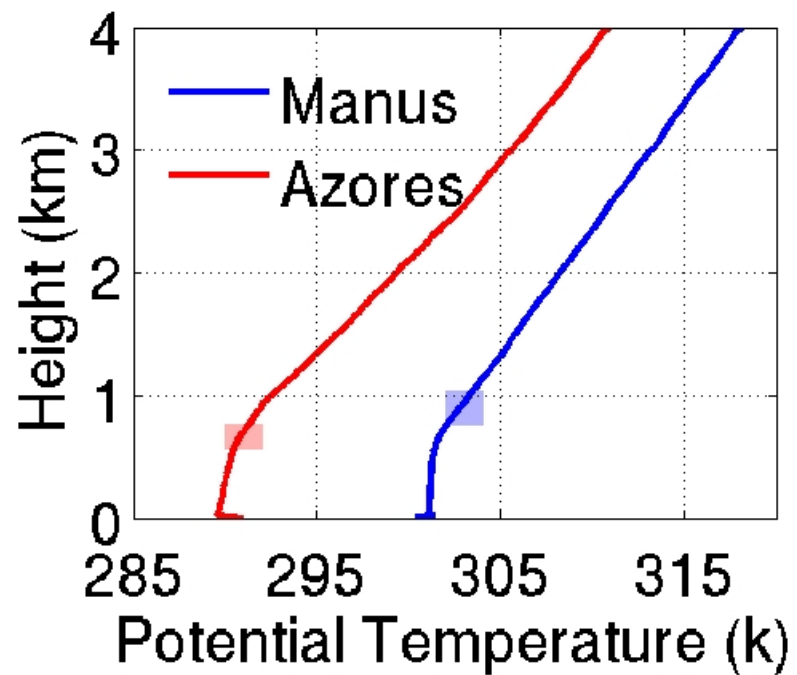




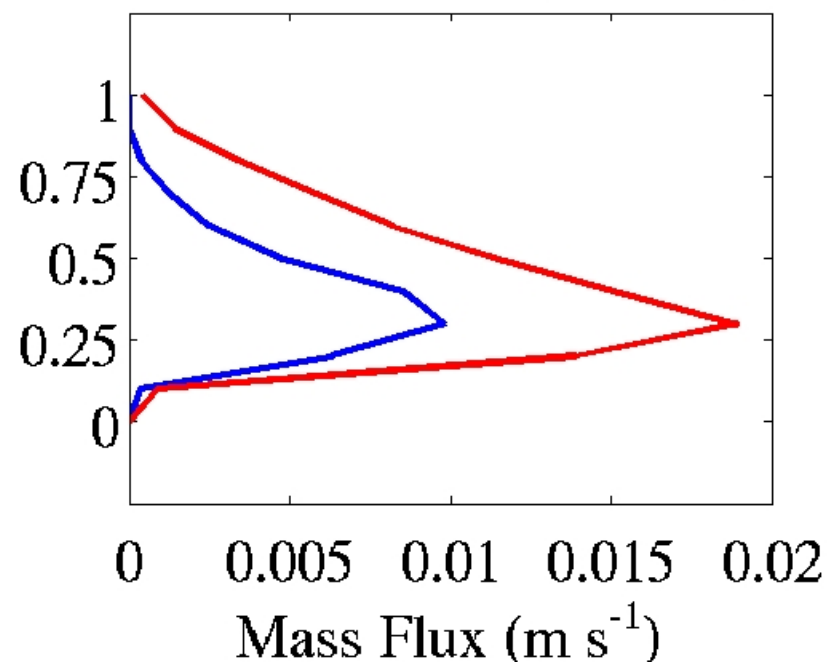
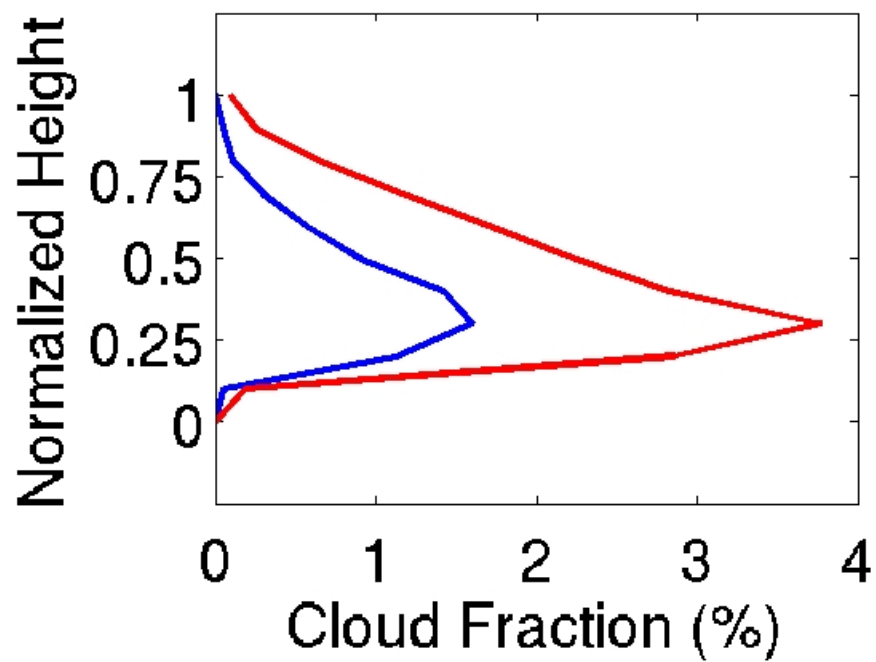
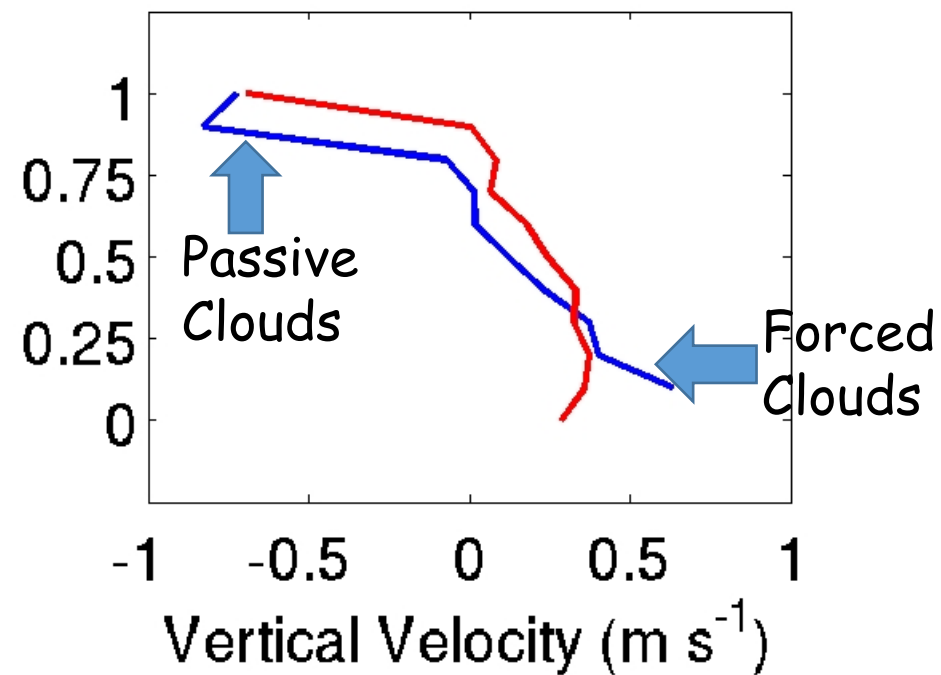
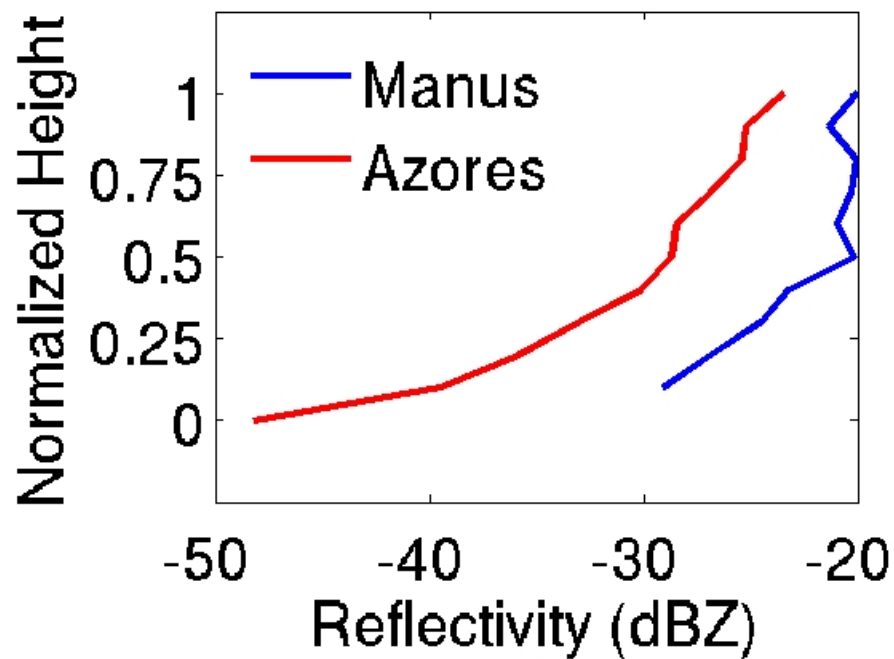
	<b>Azores</b>	<b>Manus</b>
<i>Cases</i>	14	19
<i>Hours</i>	194	272
<i>Cloud Layer Base Height (m)</i>	561	758
<i>Cloud Layer Top Height (m)</i>	746	1029
<i>Cloud Layer Thickness (m)</i>	184	271
<i>Column Water Vapor (cm)</i>	2.20	4.42
<i>ECMWF Sensible Heat Flux (<math>Wm^{-2}</math>)</i>	10.35	8.84
<i>ECMWF Latent Heat Flux (<math>Wm^{-2}</math>)</i>	82.80	120.03
<i>Large Scale Subsidence (<math>mb\ day^{-1}</math>)</i>	93.61	3.71

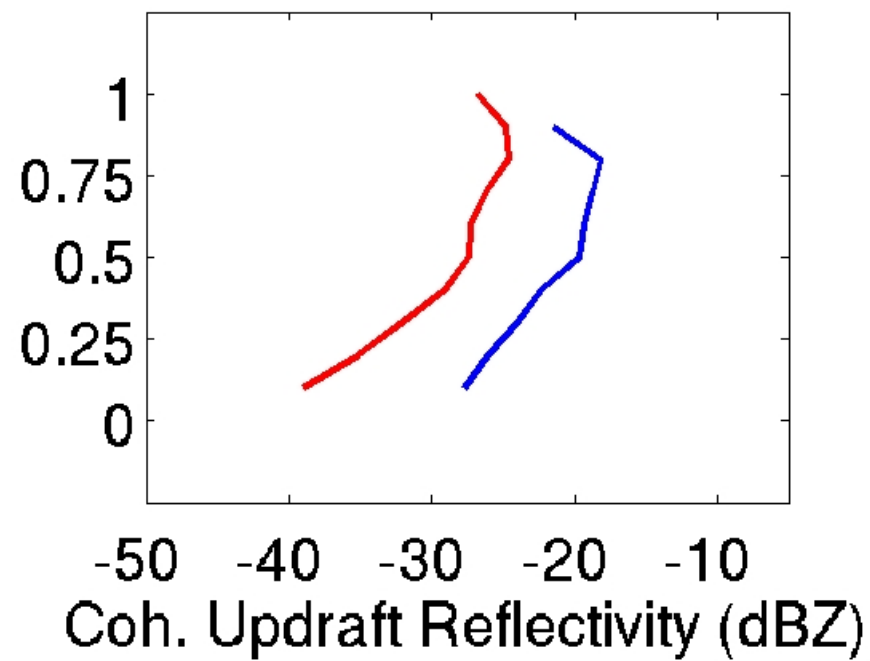
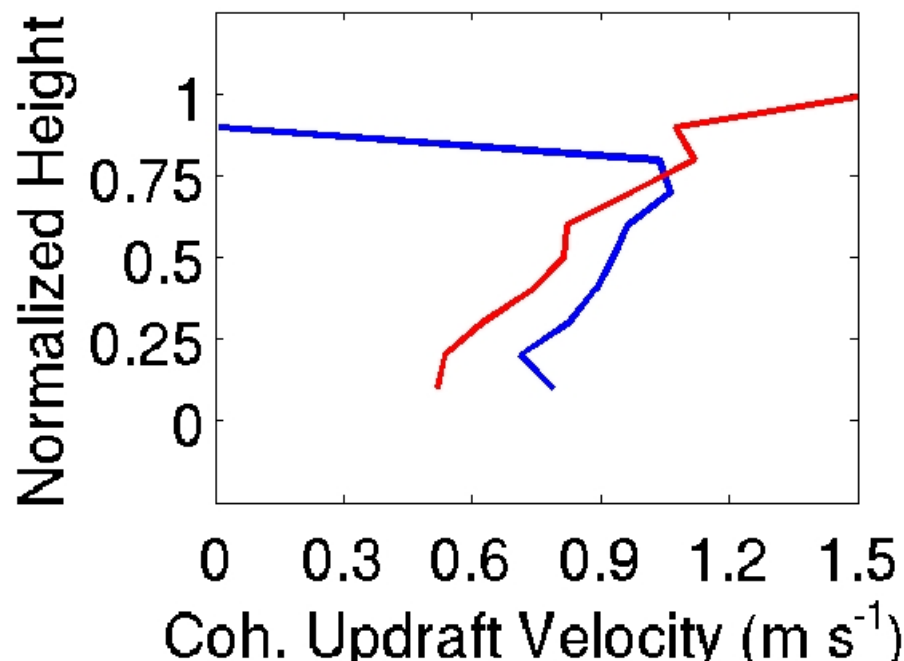
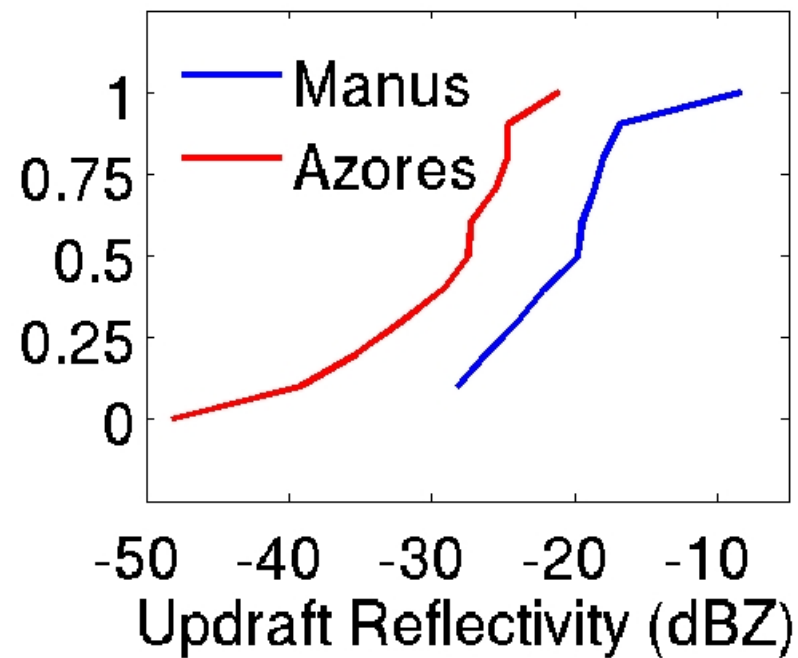
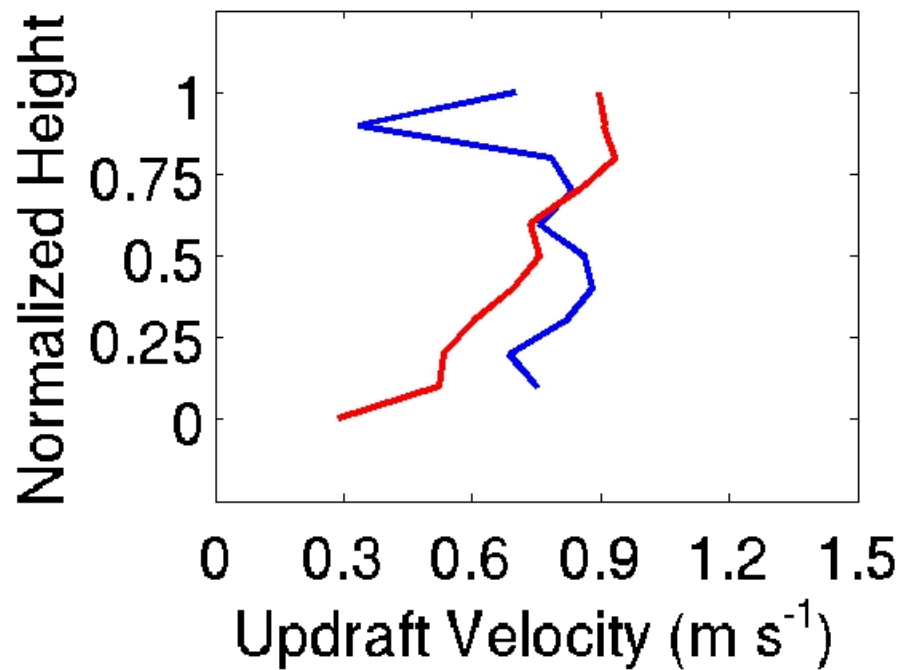






Manus has 22 soundings  
Azores has 33 soundings

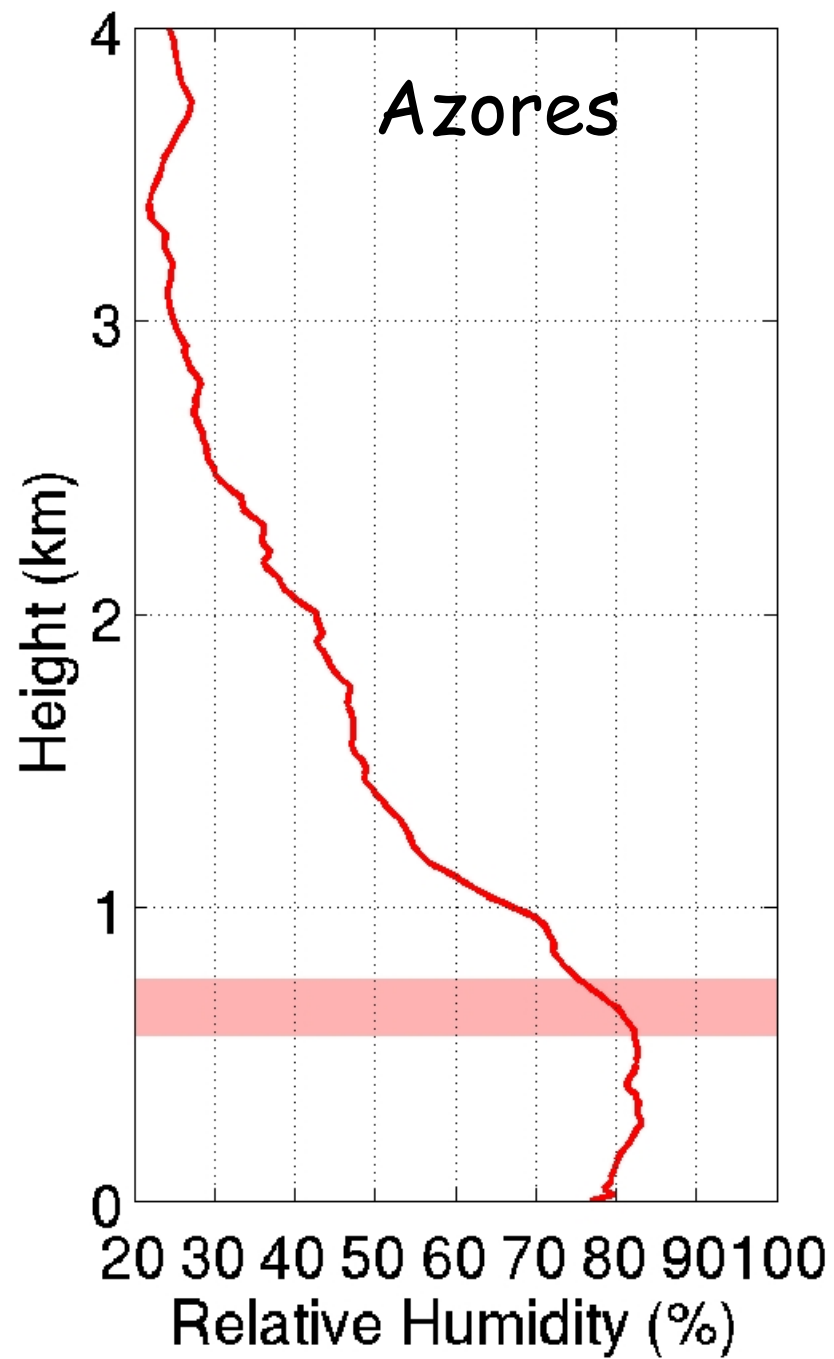
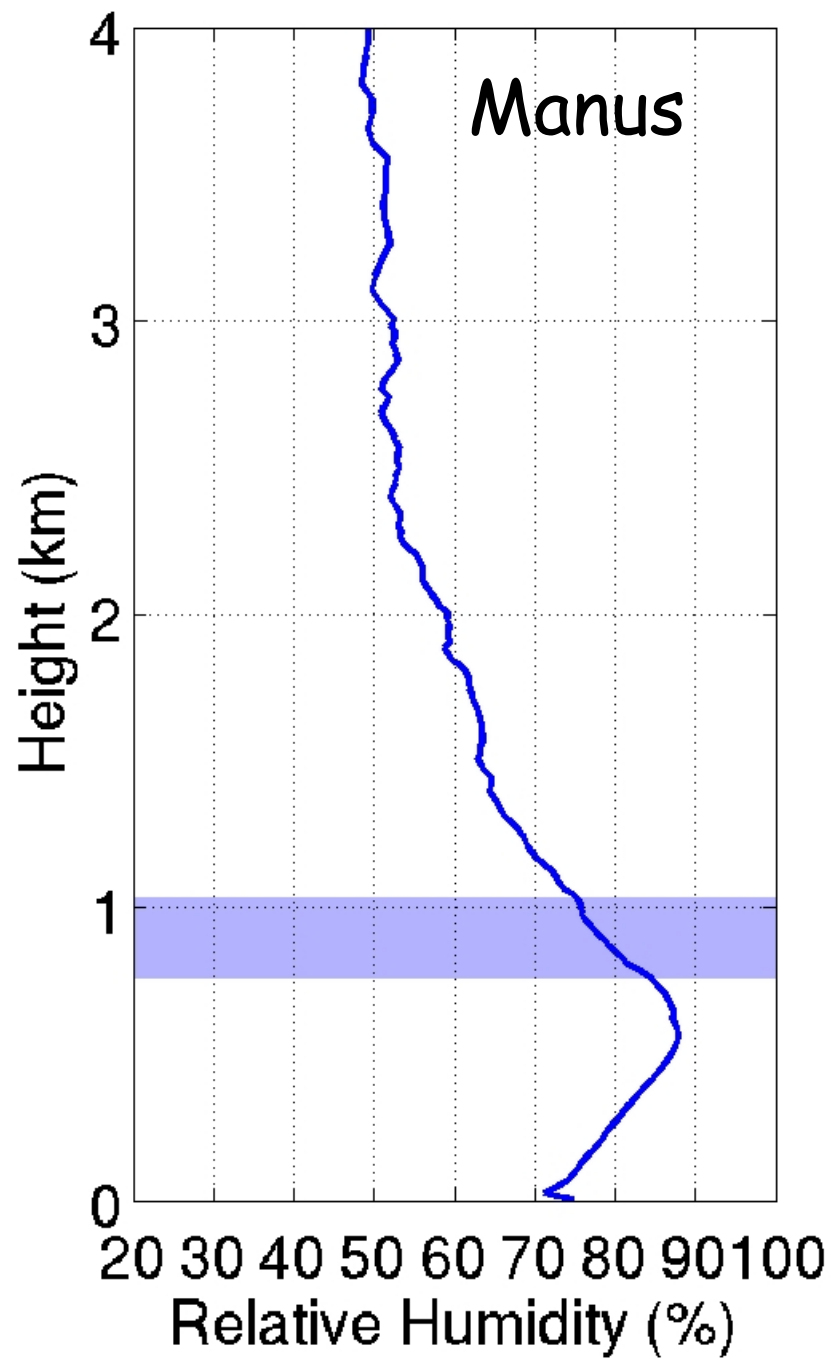




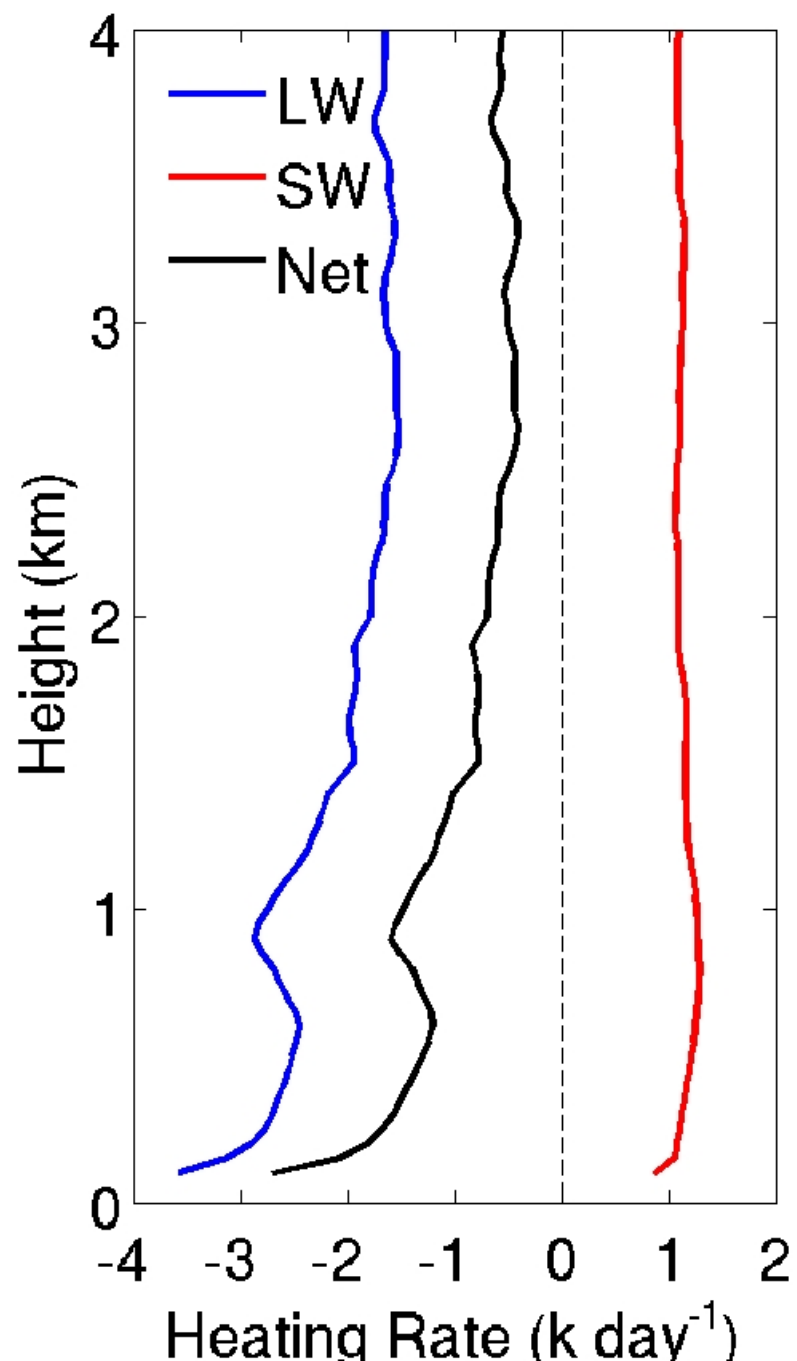
# Summary of findings (so far)

- On average cumulus topped boundary layer (CTBL) is deeper and has thicker clouds in the tropics than the subtropics.
- Drops in tropical cumuli are bigger than the sub-tropical cumuli.
- Cloud base updraft velocities are higher in the tropical cumuli than in the sub-tropical cumuli.

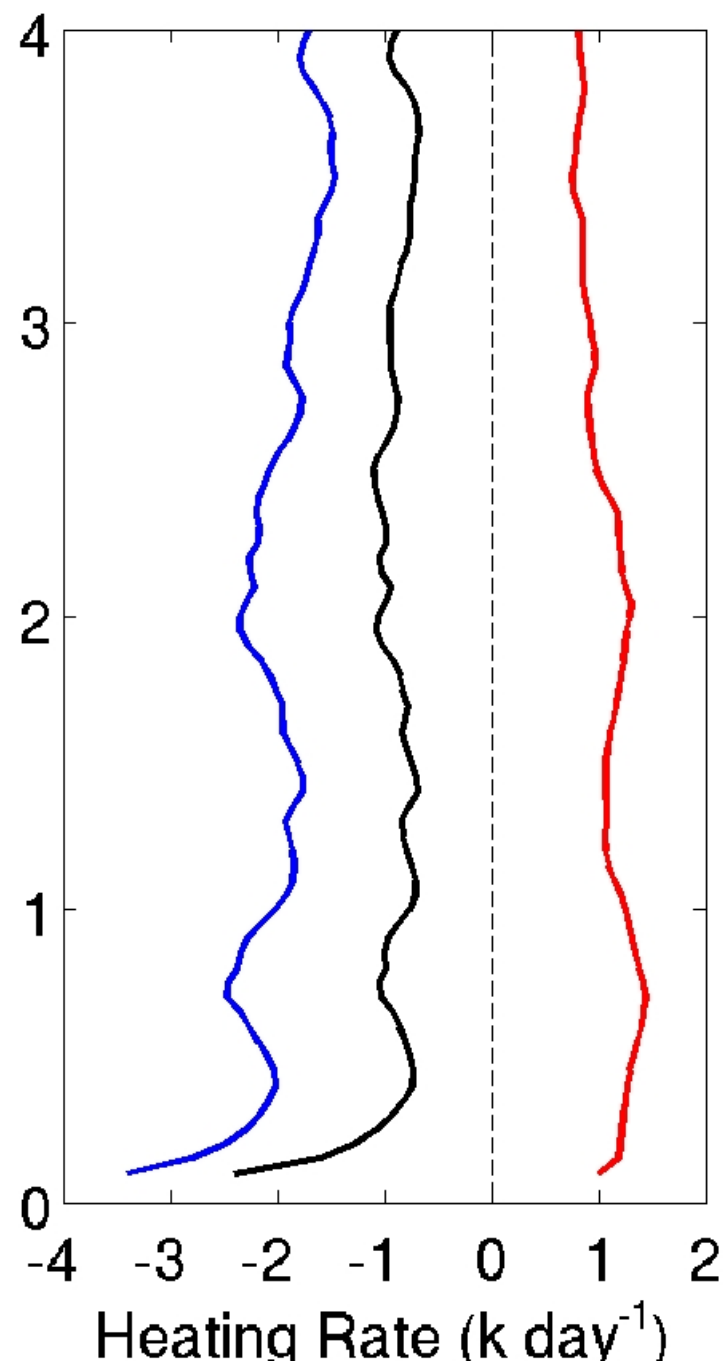
Thanks!

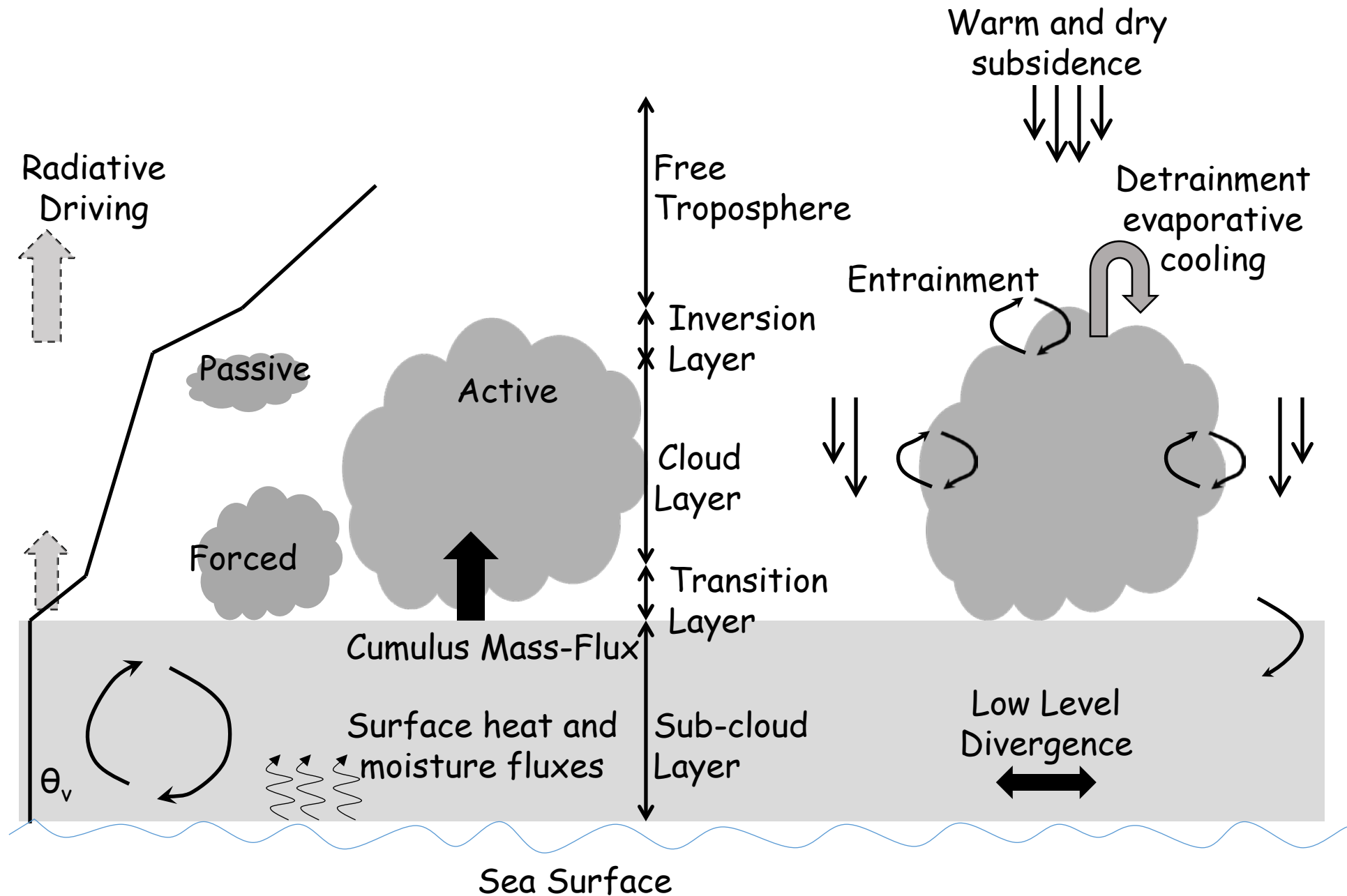


Manus

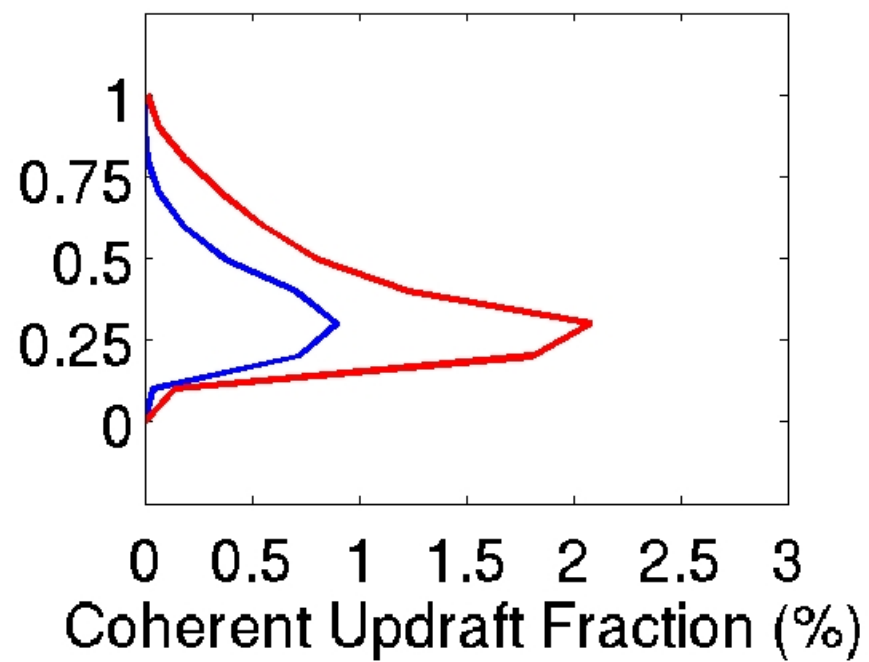
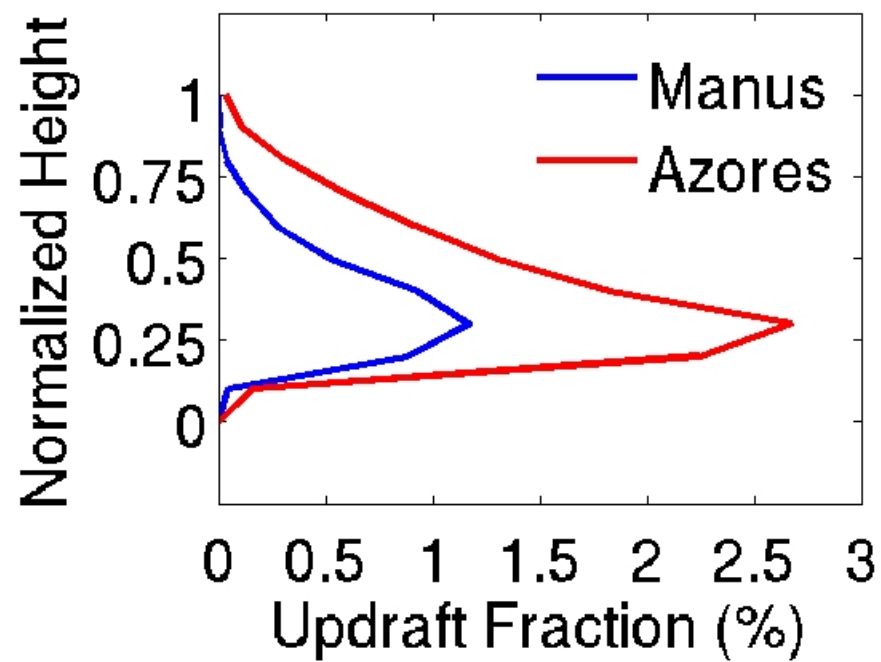
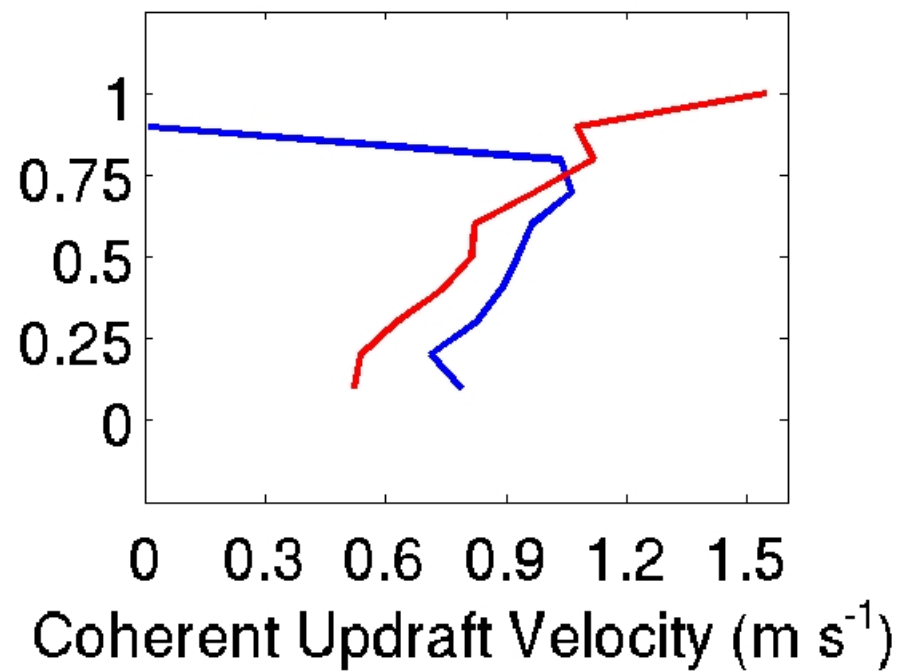
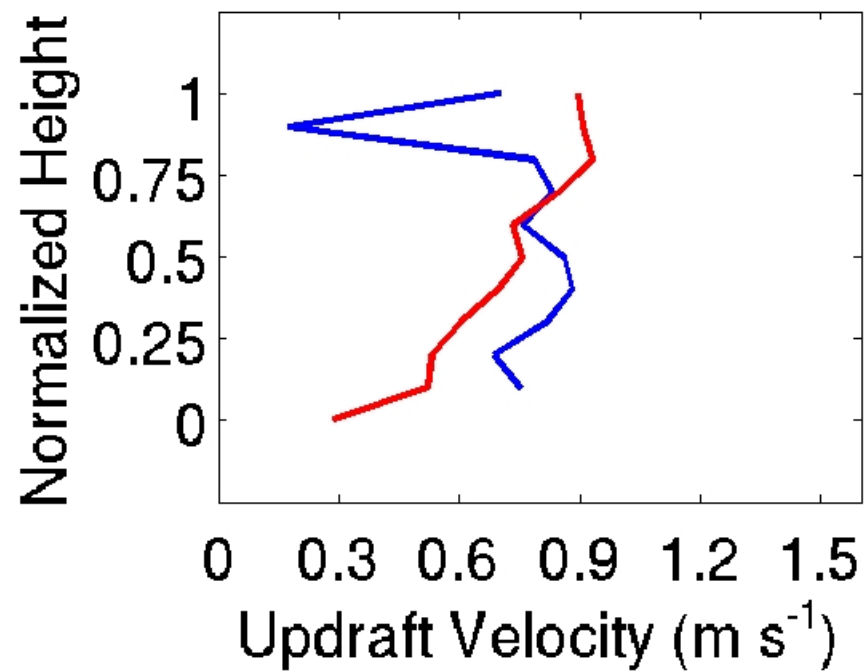


Azores









# General Conditions

	Azores	Manus
Cases	14	19
Hours	194	272
Cloud Base Height (m)	561	758
Cloud Top Height (m)	746	1029
Cloud Layer Thickness (m)	184	271

