Radiosondes

Goals:

- Where is the turbulent water vapor? Is the water vapor layered, and if so, where are the layers (and what is their velocity)?

- Obtain vertical structure of temperature and water vapor, for modelling purposes.

- Comparisons to other instruments for a general understanding of the atmosphere above the site.

Summary of Launches

First launch - October 9, 1998

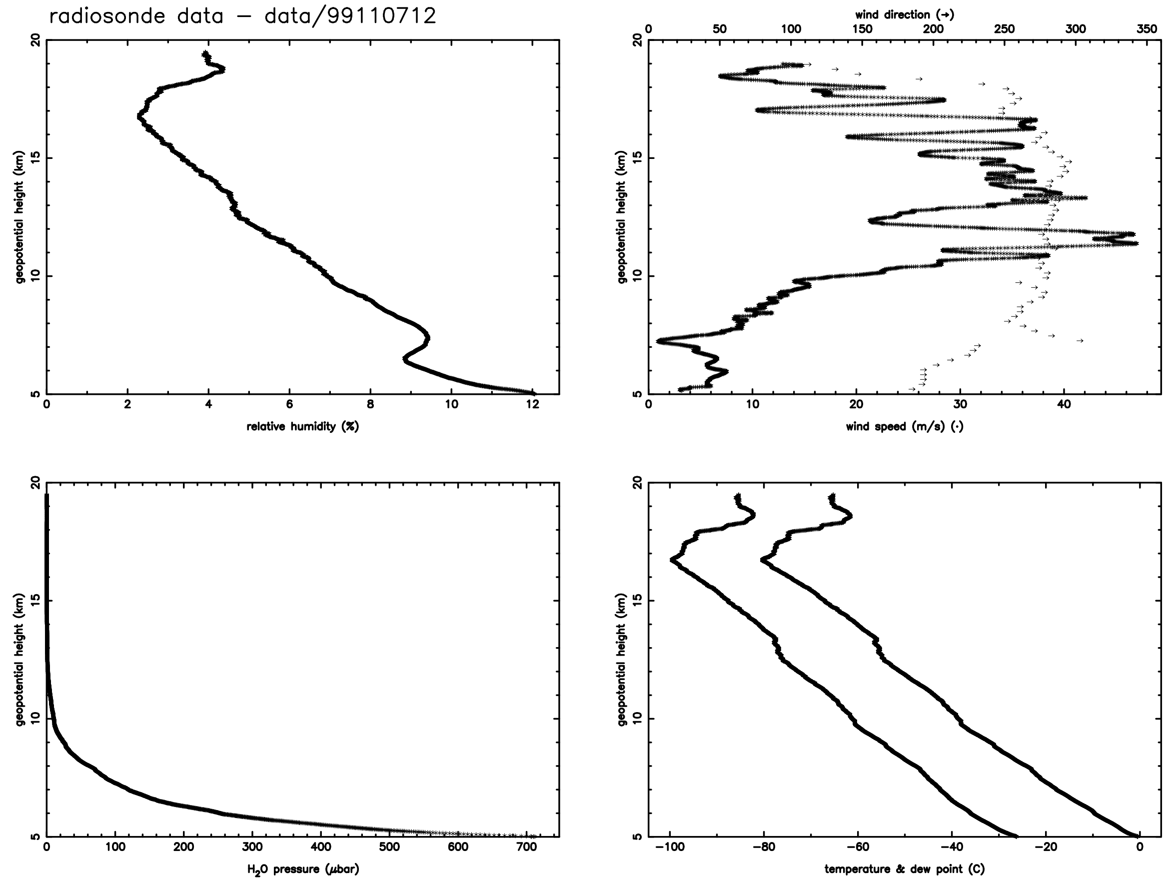
idea was to launch a few days every month or two (has not happened due to logistical difficulty).

9 launches in October 1998
10 launches in November 1998
18 launches in December 1998
1 launch in February 1999
3 launches in March 1999
35 launches in November 1999
76 launches total (not all produced good data)

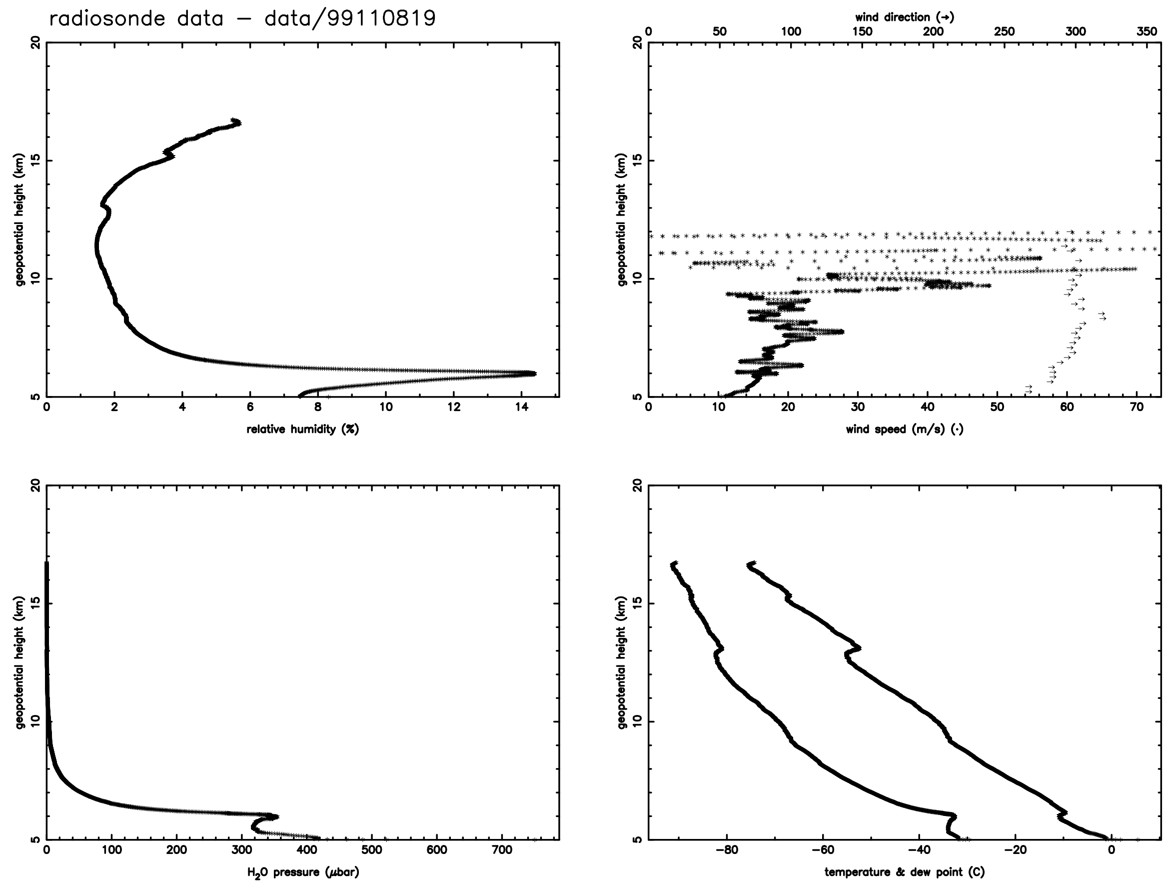
note no launches in winter!

most launches during daytime (except during Nov1999 campaign).

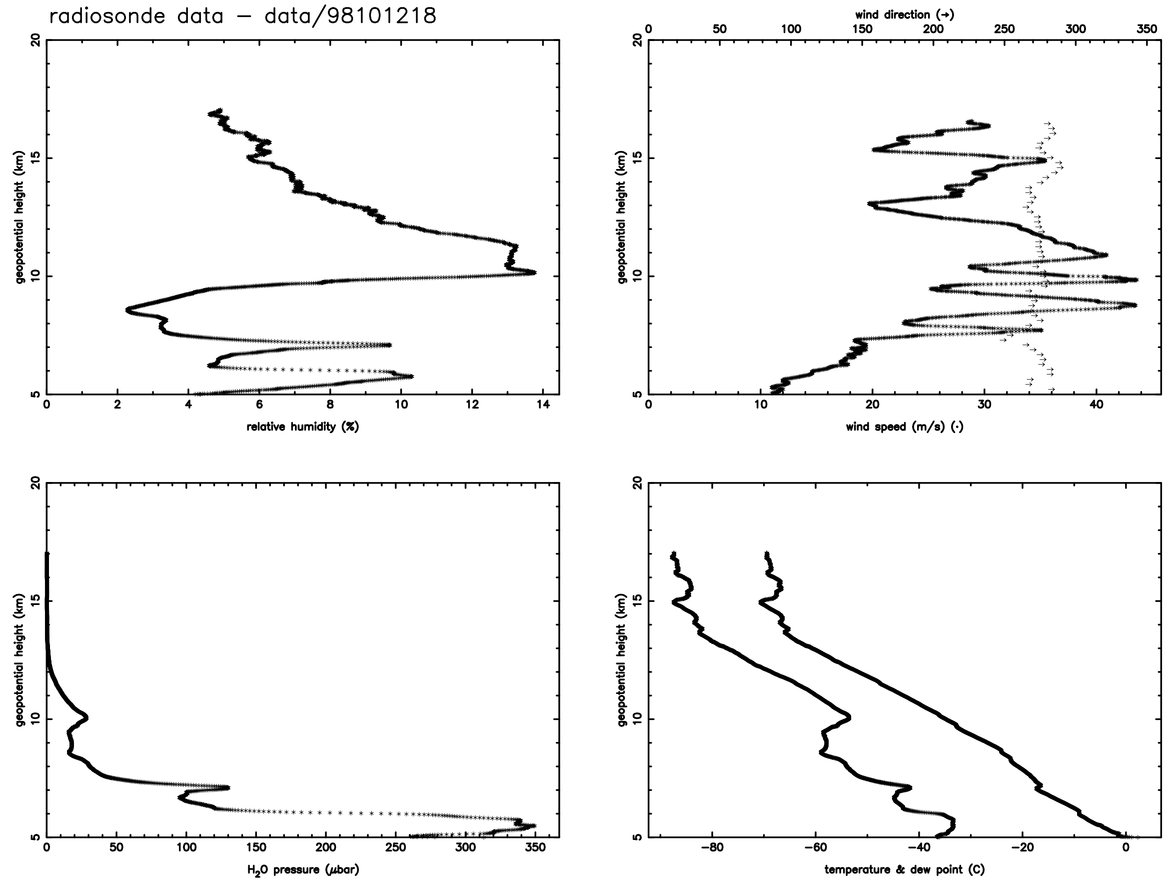
No Water Vapor Layer Example



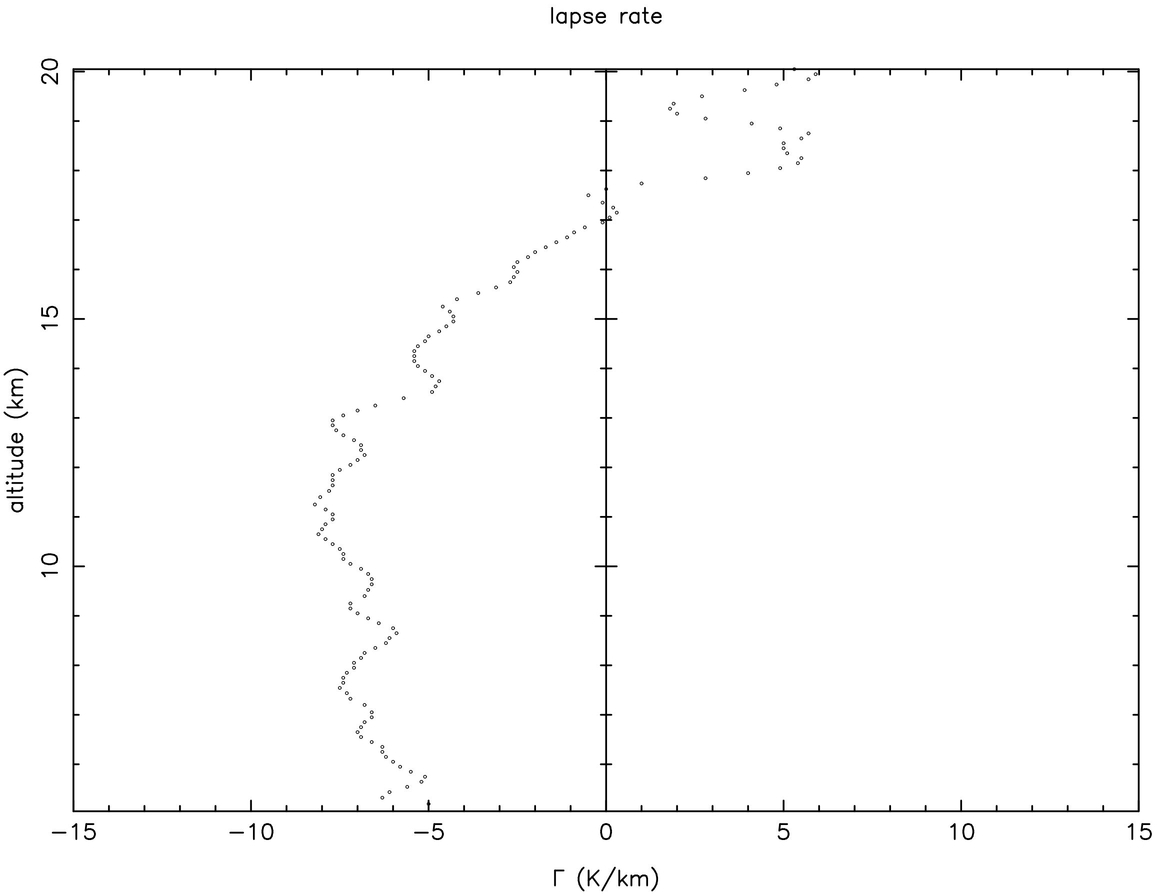
Single Water Vapor Layer Example



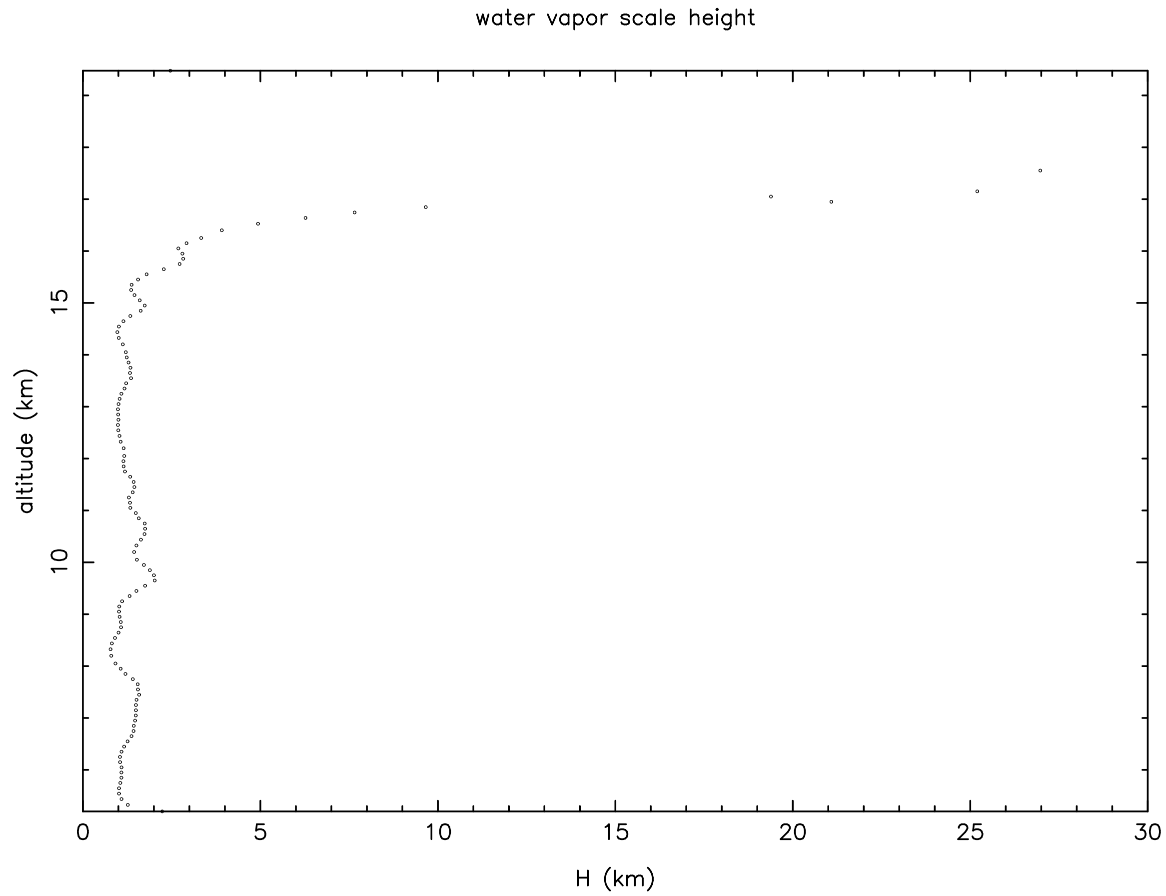
Multiple Water Vapor Layers Example



Atmospheric Bulk Structure - Temperature



Atmospheric Bulk Structure - Water Vapor Scale Height



Water vapor scale height in lower atmosphere = 1.4 km

Synthetic Atmospheres

Required inputs:

- Latitude (for tropopause height)
- altitude
- surface temperature
- total PWV
- water vapor scale height
- max altitude and level width
- cloud parameters
- excess water vapor amount, height, width

Synthetic Atmospheres - Example

for median August 1999 site conditions:

T_0 = -6.6 C; PWV = 0.4 mm

and using water vapor scale height = 1.4 km and appropriate temperature profile, the folllowing transmission results: