Weather Report (2010/03/05)

During March, 5, there was no rain records at any of the rain gauges located at the field campaign. The clouds that were observed by CLA Meteorological Facilities were cumulus and stratocumulus with a base height of 540 m and cirrus with a base height of 9000 m. The total cloud cover started the day with 1/8, raised until 5/8 at 14:00 UTC and decreased to 1/8 in the end of the day. There was no convective activity registered near Alcântara during the whole day. So, the cirrus clouds observed were not associated to cumulunimbus.

The wind was driven by NE trade winds (Figure 1). During the morning the wind speed was almost null and started to increase in the early afternoon until 3.7 m/s at 16:00 UTC.

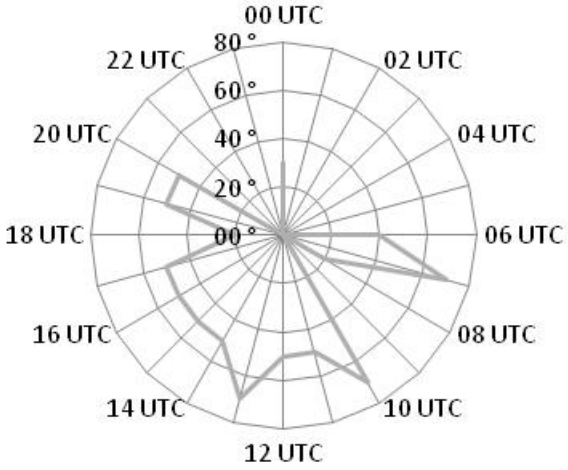


Figure 1 – Hourly wind direction for 2010/03/05.

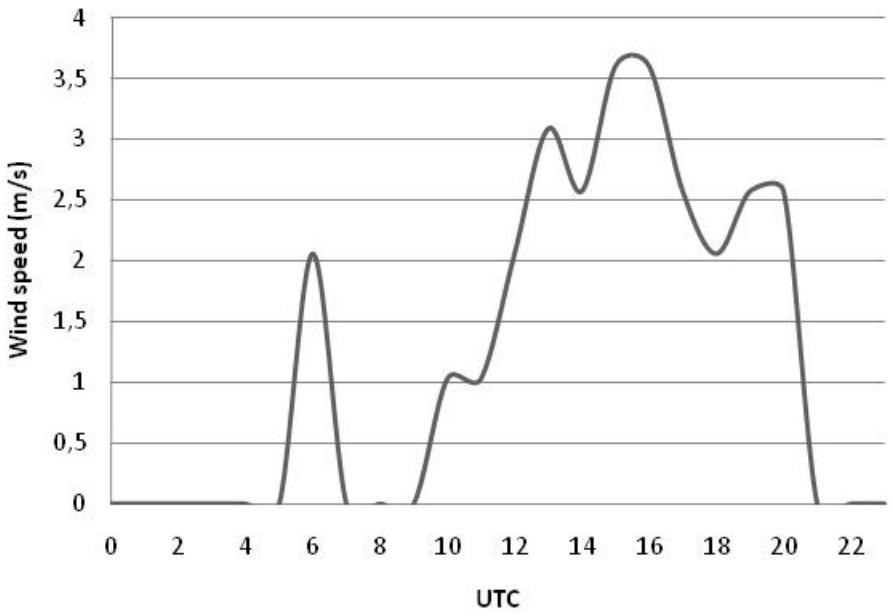


Figure 2 – Hourly wind speed for 2010/03/05.

The air temperature and mixing ratio daily variations are presented at Figure 3. The amplitude of air temperature was about 5 ºC with a minimum during the morning and a in the afternoon. The amplitude of mixing ratio variations was not too big, but we can easily note that within this range the mixing ratio varied a lot throughout the day. The variation of sea level pressure is presented at Figure 4.

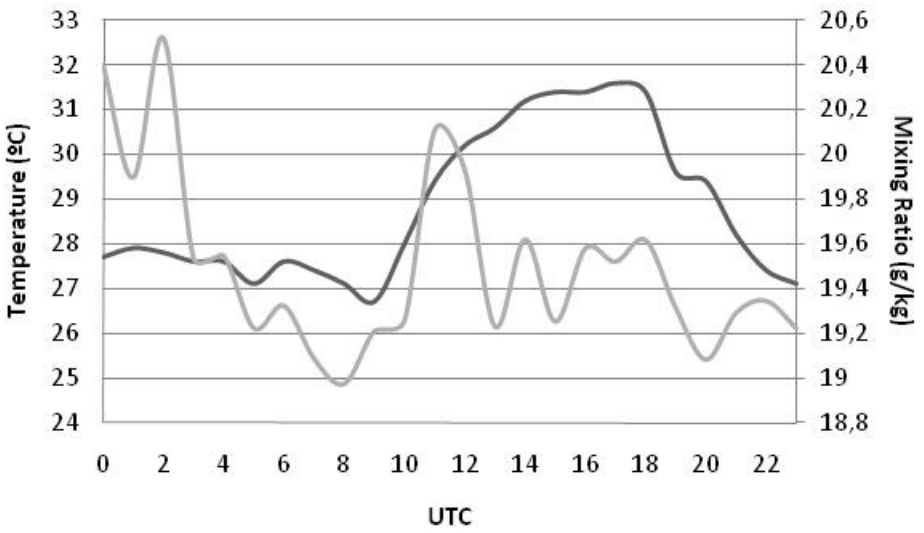


Figure 3 – Hourly temperature (black) and mixing ratio (grey) for 2010/03/05.

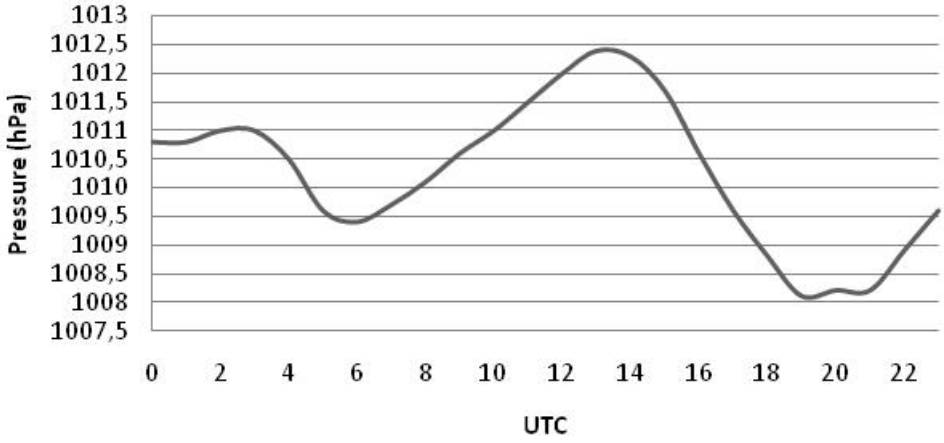


Figure 4 – Hourly sea level pressure for 2010/03/05.

Figure 5 shows the instability conditions observed at São Luis Airport Station. We can see by the local atmosphere thermodynamics that we could have expected to have huge formation of severe weather (by the instability indices). But, it was not observed due to dynamical conditions. This day was dominated by a subsident flux forced by the two moisture zones in the vicinity of Alcântara, the Intertropical Covergence Zone and the South Atlantic Convergence Zone.

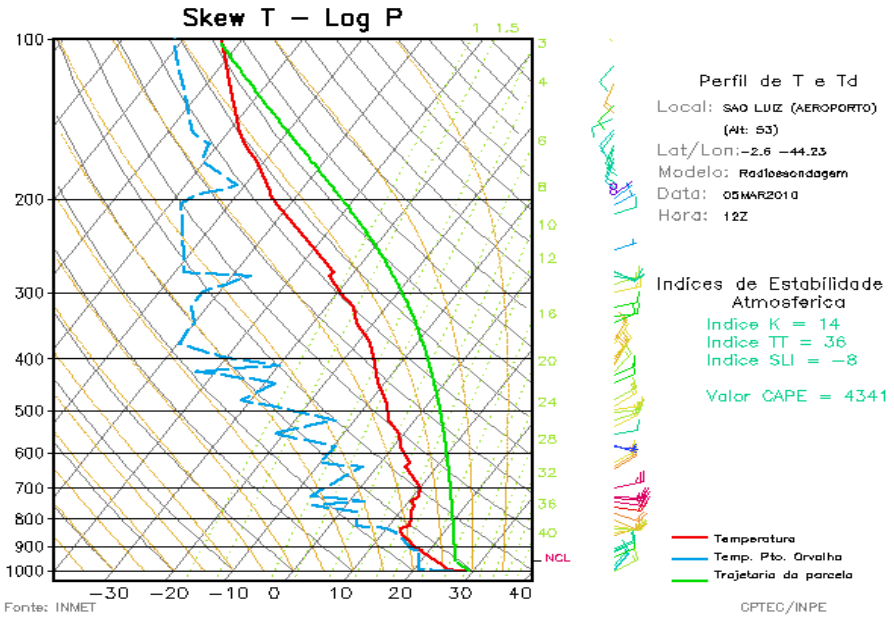


Figure 5 – Thermodynamic profile at São Luis Airport Station.

The CLA RADAR measured precipitation from a convective cloud at about 60 km of distance at 20:00 UTC. This cloud was in the main line of the measurements in an azimuth of 141.2 º (Figure 6).

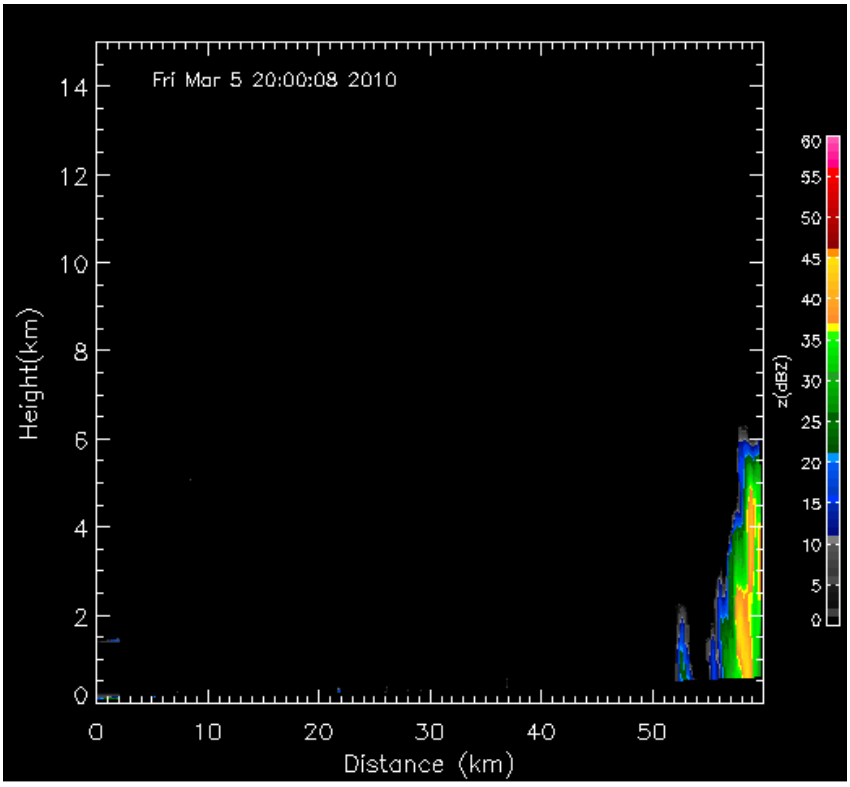
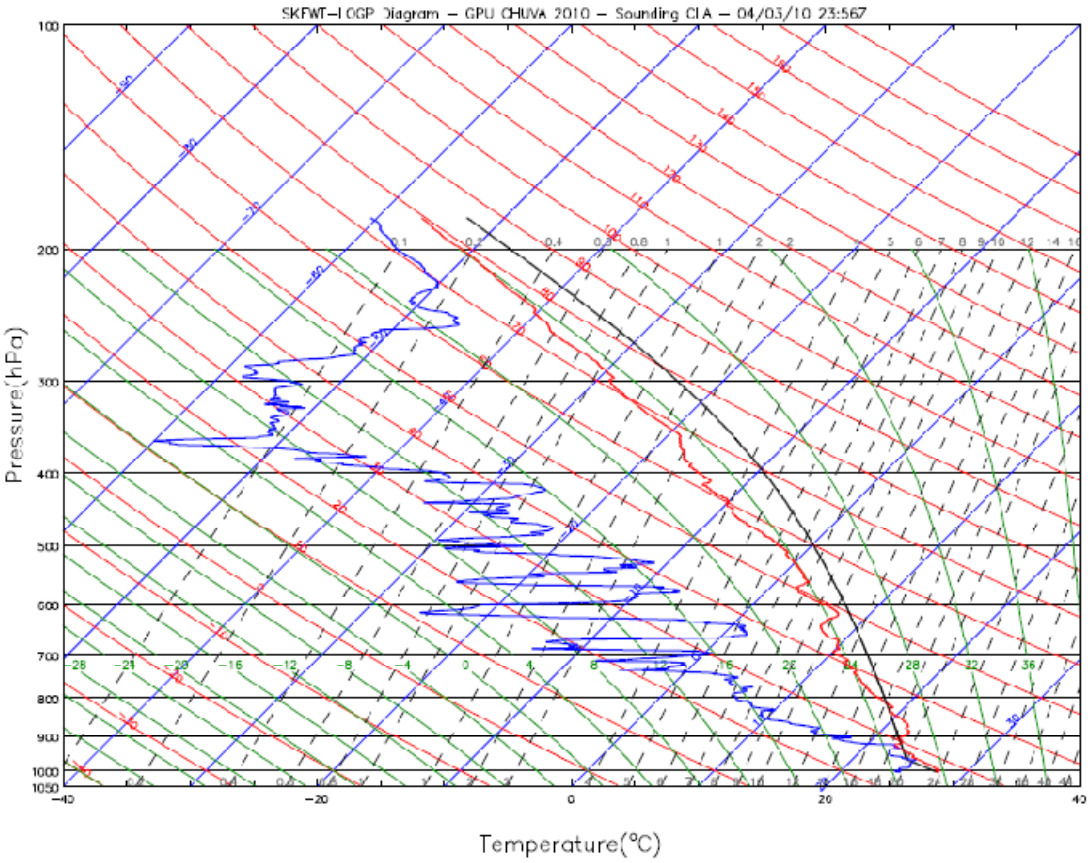


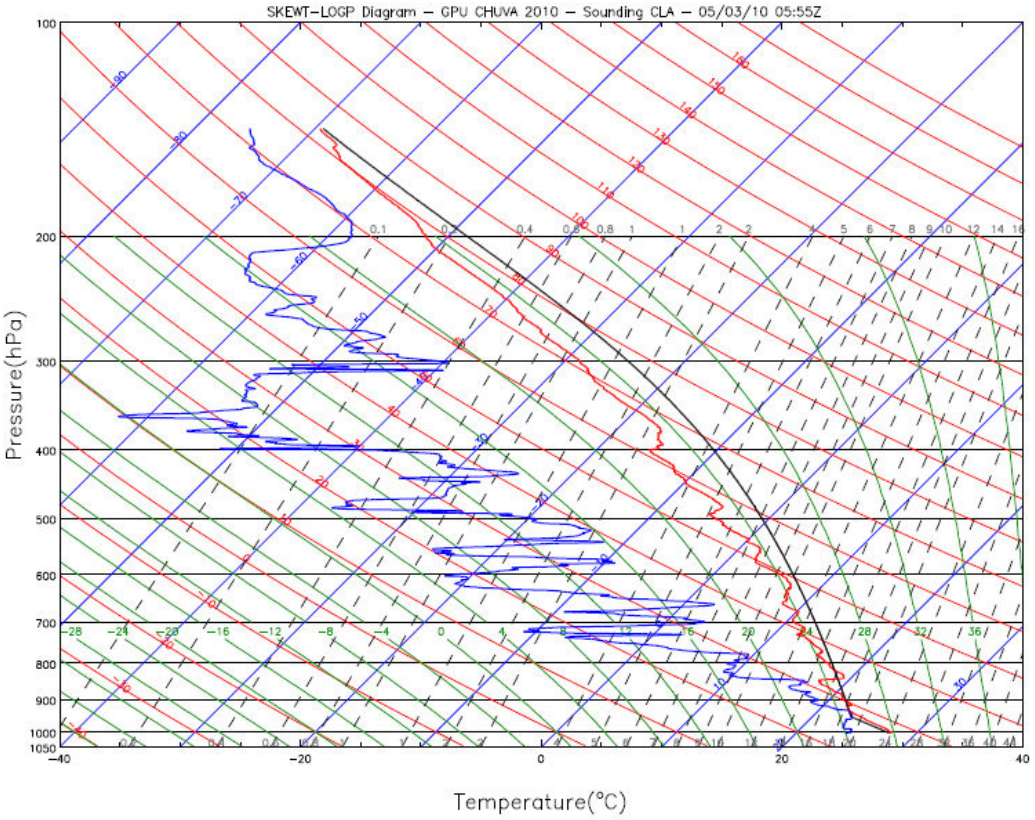
Figure 6 – RHI at 141.2 ° azimuth from CLA RADAR.

The instability conditions obtained by the laughing of radiosondes at the Meteorological Facilities of CLA can be seen at Figure 7.

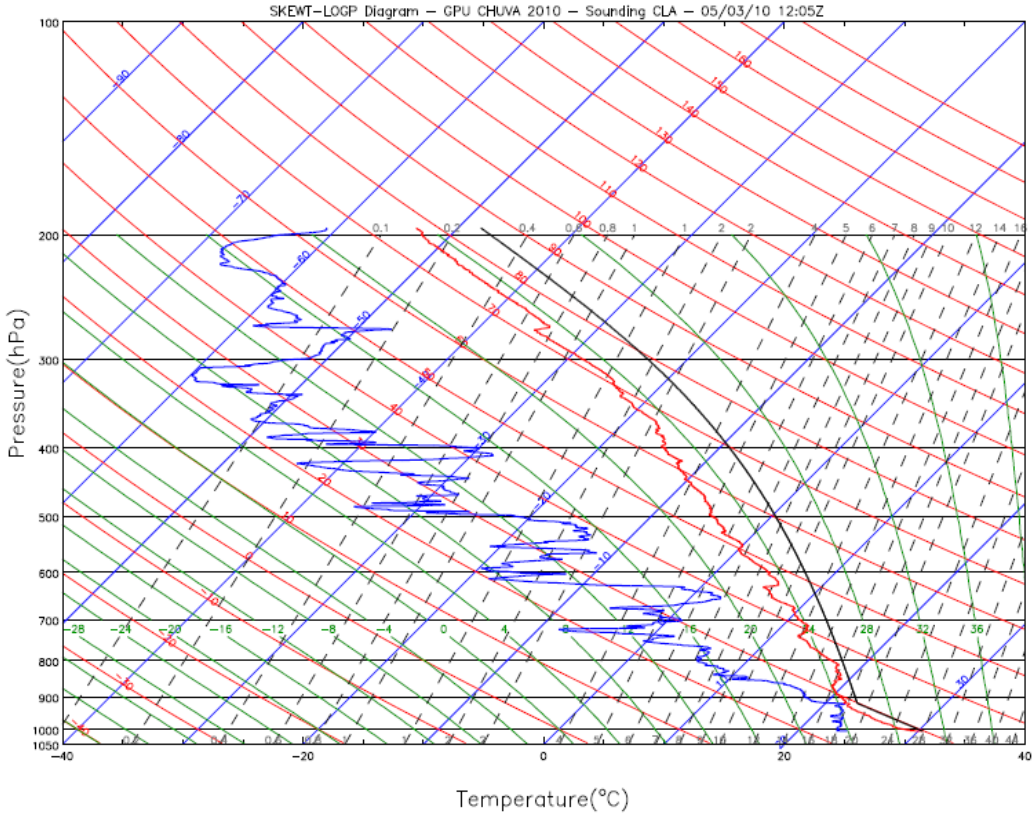


(a)

Figure 7 – Sequence of SkewT LogP diagrams for March, 5. Continue.

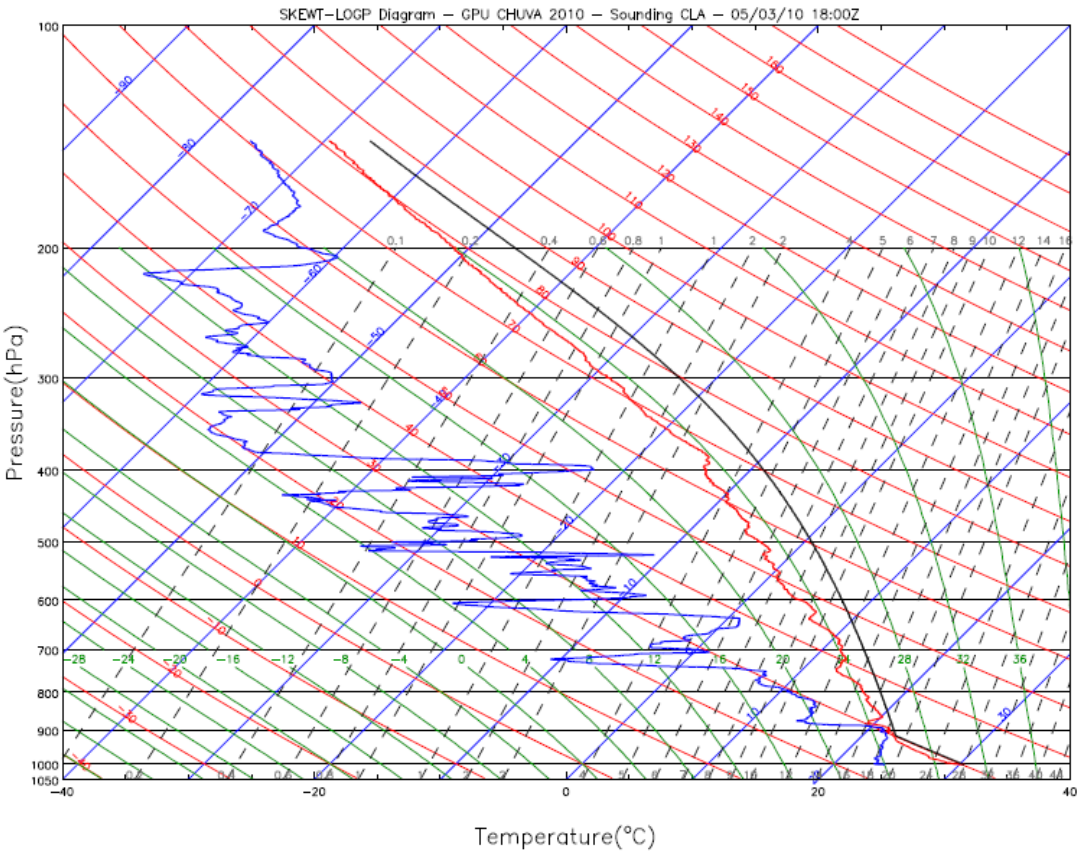


(b)



(c)

Figure 7 - Continue



(d)

Figure 7 – Conclusion.