

Interactive comment on "Assessment of GPS radiosonde descent data"

by M. Venkat Ratnam et al.

The authors have made an attempt to assess the GPS radiosonde data during the descent collected at Gadanki station in India. They find that there are small mean differences in temperature, relative humidity, and horizontal wind speed. They attribute the differences to the diurnal variations of these parameters and then suggest to record the radiosonde descent data because they could be useful for meteorological operations and scientific studies. I would recommend the manuscript to be published with major revisions.

Major concerns:

1. There are very few or no radiosonde descent data in the atmospheric boundary layer (ABL), especially during the monsoon season. This weak point should be mentioned in the abstract and/or conclusions. We know that in the free atmosphere (above ABL) the atmospheric state does not change much within 3 hours. This can explain why there are quite small differences between ascent and descent measurements.
2. The authors should explain in more detail under what circumstances the descent data are useful. For example, it can be stated that the lower the minimum descent altitude, the more valuable the radiosonde descent data. Otherwise, small difference between ascent and descent measurements implies that the descent data provide very few additional information.

Minor comments:

1. In lines 8-11 on Page 10363 it is stated that "Originally named a radio-meteor graph..., a name apparently derived by H. Hergesell from a combination of the words "radio" for the onboard radio transmitter and "sonde", ". However, according to the Wikipedia(<http://en.wikipedia.org/wiki/Radiosonde>), it is Robert Bureau who coined the name "radiosonde". Please check it.
2. Line 15 on Page 10363 . The number of upper-air stations could be more precise. Or , an internet link for more information should be given.
3. The local times of routine balloon launch should be mentioned somewhere.
4. Lines 3-4 on page 10364 "However, Aerosonde has not been much in use probably due to the complexities involved and cost factor". I think that the more important factor is that Aerosonde measurement ceiling is very limited. Miniature autonomous Aerosonde can't replace radiosone.
5. Lines 3-5 on page 10366. "Number of balloons reaching close to the surface

(0–1 km) in descent is highest in the pre-monsoon season and least in the monsoon season. Note that more than 50% of balloons reached 5km (in descent) in all the seasons”. The minimum altitude in descent is up to both topographic condition and balloon drift distance. In this case, the topographic condition around Gadanki station is not ideal.

6. In Figure 3, (b) and (c) might be displaced in error.
7. In lines 20-21 on Page 10369 it is stated that “Thus, in principle, it can be concluded that during the ascent and the descent same air masses are probed”. Strictly, it’s not true. If it’s strictly true, the descent measurements cannot provide any useful information.
8. The values of percent in Table 1 are not well interpreted/explained.
9. In lines 3-7 on page 10372. “... In the case of RH, there is a difference of about 10% between the ascent and descent data with higher RH during descent phase below 10 km and reverse above that altitude.” Why there is a reversion?
10. In Figure 7, it is seen that in most cases the differences are small, but very large sometimes. The cases with very large difference should be in depth examined.