

Interactive comment on “Accuracy of analyzed temperatures, winds and trajectories in the Southern Hemisphere tropical and midlatitude stratosphere as compared to long-duration balloon flights” by B. M. Knudsen et al.

Anonymous Referee #1

Received and published: 24 August 2006

Accuracy of analyzed temperatures, winds and trajectories in the Southern Hemisphere tropical and midlatitude stratosphere as compared to long-duration balloon flights.

by

M. Knudsen, T. Christensen, A. Hertzog, A. Deme, F. Vial, and J. Pommereau

The paper presents an intercomparison between analyzed data/trajectories and long-duration balloon flights in the SH which took place during the HIBISCUS campaign.

The study is of highly scientific interest as it provides a new intercomparison between the operational ECMWF (NCEP/REA) data and independent in-situ measurements. These new results are very important for research studies which depend on the accuracy of assimilations systems such as for example chemical transport studies in the stratosphere do. Although the authors clearly point out their new work, the motivation (e.g. as mentioned above) is somehow missing in the introduction. The paper would be a bit short if it would stand for its own. Due to the fact that it belongs to the special issue of the HIBISCUS campaign and that they are other accompanying papers (e.g. Pommereau al., Christensen et al. cited) this doesn't seem to be a problem. The publication of the paper is recommended with minor revisions as described below.

General comments:

- 1) The introduction is a bit short and the motivation for the paper is missing. The paper is investigating not only the analyses accuracy but also the trajectory codes. In fact it also gives a trajectory code evaluation, which is also an important contribution for the research community. This latter point could be a bit more strengthened by the authors.
- 2) Due to point 1) a bit more detailed description of the trajectory codes is missing, which is important and should be added.

Specific comments:

Title: As you are only comparing analysed horizontal winds with in-situ measurements you should change the title accordingly to:

"Accuracy of analysed temperatures, horizontal winds...."

Section 2:

The abbreviation BP is not explained.

3. Analyses: It remains unclear why you are using two different trajectory codes here?
5. Trajectories "this figure also shows that the major part of the wave perturbations

seen on BP4 trajectory is not caught by the ECMWF analyses."

Could this be due to the fact that you use rather coarse resolution (T79) of the input data? So if you would use the 0.5x0.5 deg data from T511 ECMWF you would analyse the wave perturbations? Change the text to a more cautious argument!

6. Conclusions

-After 5 days the average trajectory error is about $\sim 500\text{km}$ " In the abstract you write 700 km? Please correct one of the values!

- The ERA40 results (Page 7508, line 15-21) are not your results! They belong to an other study in the HIBISCUS special issue. Cut them out of your conclusions and put them into the discussion of your results!

Figure 2: Six-hourly data are compared?

Figure 5:

Where does the lonely green vertical line come from in the upper right corner of your plot? It looks suspicious.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 7499, 2006.

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