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ACPD

6, S300–S302, 2006

Interactive Comment

Interactive comment on "Temperature climatology and trend estimates in the UTLS region as observed over a southern subtropical site, Durban, South Africa" by H. Bencherif et al.

Anonymous Referee #1

Received and published: 20 March 2006

General Comments

The manuscript describes a temperature climatology and trend analysis in the upper troposphere - lower stratosphere (UTLS) over Durban, South Africa, a subtropical site in the southern hemisphere. The questions posed by this work are certainly relevant within the scope of this journal. The concepts discussed are not necessarily novel, but are very important to current scientific discussion regarding UTLS temperature trends. There is certainly a paucity of radiosonde data over Africa and in that regard, the work is unique. In general, the manuscript is well written and the methods used are clearly



defined for the most part. However, in my opinion, the available radiosonde data are not fully utilized. A more thorough analysis of the available data could better support the conclusions. Additionally, even with a more thorough examination of the current data, the conclusions would still be based on a geographically limited dataset. The analysis could benefit from a more geographically comprehensive dataset. My specific comments are given below.

Specific Comments

1. The SAWS undertook twice daily radiosonde launches, one in the early morning and one in the early afternoon, from Durban, South Africa during the period of the current study. The authors state that they chose to use only the afternoon data to limit any tidal biases. However, I think an inclusion of the morning data could enhance the current analysis. Namely, how do atmospheric tides affect the diurnal cycle of temperature at different altitudes? Is there a trend in the morning data as well, and if so, how does it compare to the afternoon data?

2. The authors explored the temperature climatology and trends over one site. While the conclusions are interesting, I fear that they lack a great deal of meaning without analyzing a more geographically comprehensive dataset. Are additional temporally comparable data over Africa available? If so, analyzing these data would more fully support any conclusions that are ultimately drawn.

3. The individual radiosondes that are launched from a particular site during different seasons over many years could be separated spatially by hundreds of kilometers by the time they reach the UTLS. As a result, any analysis of temperature in the UTLS from multiple radiosondes over a particular site is not necessarily representative of that particular location. Again, the addition of additional launch sites would make this less of an issue, as a greater geographical region is intentionally covered and spatial differences are investigated. In the absence of a more comprehensive dataset, was any analysis of the spatial variability of the data performed to account for the potential

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heterogeneity?

4. On page 1304, section 2, line 24, the manuscript states that all unrealistic data were removed. Could the authors specify what type of statistical process was used to remove the spurious data?

5. The post Pinatubo data from June 1991 - December 1995 were removed from the dataset. However, these data appear to remain in the plots given in Figures 1 and 4b. Is this correct?

Technical Corrections

1. Page 1306, line 7: The authors state that the SAO maximum is at 200 mb (and again in the conclusion). However, according to Figure 3, it appears to be at 250 mb.

2. Page 1307, line 11: The word "a" should not be between the words "by" and "eruptions."

3. Page 1307, line 15: In the sentence that begins with "The PinatuboĚ", the word "The" should be removed.

4. Page 1308, first full paragraph: The trends that are given should be negative.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 1301, 2006.

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