

Interactive comment on “Effects of polar stratospheric clouds in the Nimbus-7 LIMS version 6 data set” by Ellis Remsberg and V. Lynn Harvey

J. Austin (Referee)

enigmascience@outlook.com

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The paper is a comprehensive analysis of the PSCs detected in the LIMS dataset using the most up to date parameters in the profile retrievals. The paper is well suited for publication in the Atmospheric Measurement Techniques. The paper is very well written and prepared and I have just a few minor comments to add.

General remarks

1. It is common and convenient to refer to pressure-altitude as an altitude in km based on pressure and a nominal temperature profile. However, much of the paper has pressure (correctly) as the vertical coordinate so regularly referring to it as "pressure-

C1

altitude" is confusing.

2. The paper is a bit woolly in identifying the extent of the denitrification due to PSCs. I think this could be strengthened by using the information in the last few figures. For example, could the authors not set up a linear correlation between PV and HNO₃ as a function of equivalent latitude? In the case of the later it should be possible to identify a 2 ppbv or so loss in HNO₃ by the end of January encompassing the major PSC period. (Thereafter the seasonal change in sunlight may be interfering) The point is that the regression would give the loss of HNO₃ with some uncertainty limits.

3. I suppose it's still journal policy, but I must say that the format of the paper for review was a challenge. In this day and age of limiting the amount of printing, I like to review entirely on screen. With the paper presented in a traditional separated manner this was a particular nuisance as I had to keep scrolling from the text to the references to the figures to the table and back again. Personally, I would like to see figures and tables in the text where they are first referenced. I don't know the purpose of the separate list of figures which just added to the effort taken to review.

Abstract

The fact that the emissions from PSCs occur 1-2 km below the altitude of minimum temperature and the temperature are slightly lower than saturation for NAT (lines 65-69 and 505) is worthy of inclusion in the abstract. As it is, the abstract is a bit vague on lines 36-38

I.133. The convention used to refer to the narrow band CO₂ is a bit suspect bearing in mind the N might be interpreted as nitrogen.

I.300-307. This is a bit confused. It starts referring to Knudsen 1996 conclusions but then "later" refers to conclusions from Crutzen and Arnold (1986).

I.441. The text has a typo: PSCs are dependent on pressure and local temperature, not altitude as such.

C2

I.632. I think "imply" is too strong and would use "suggest" instead. The correlations provide a starting point for comparisons but are not in themselves conclusive. I see that on line 644, the word "likely" is used.

I.688. There is a mix of coordinate systems here. The planetary vorticity is expressed in spherical polars, so the relative vorticity should be as well.

John Austin

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