

## Temperature history of NAT particles observed in the Antarctic stratosphere

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Polar Stratospheric Clouds (PSCs) play a crucial role in ozone destruction processes in the polar lower stratosphere: they allow heterogeneous reactions that convert inactive reservoir chlorines into active chlorines, and their sedimentation removes nitric acid from the gas phase irreversibly (denitrification), which obstructs deactivation of activated chlorines. PSCs have a large variability in their compositions: Nitric Acid Dihydrate (NAD), Nitric Acid Trihydrate (NAT), H<sub>2</sub>SO<sub>4</sub>/H<sub>2</sub>O/HNO<sub>3</sub> liquid ternary solutions (LTS), and water ice. Unfortunately, PSC microphysical formation processes are still not clear in spite of their important roles.

In particular, the formation processes of solid nitric-acid containing particles that cause denitrification remain to be resolved. In this study, we investigated temperature history for NAT PSC cases observed with a satellite sensor to examine the formation processes of PSCs.

In this study, version 7 (V7) of Improved Limb Atmospheric Spectrometer (ILAS) data were utilized. The retrieval algorithm V7 tried to derive gaseous species and aerosol/PSCs compositions simultaneously with size information of particles (Oshchepkov et al., 2005). After comparison with some other retrieval schemes, some events are estimated to be beta-NAT PSCs in June 1997 in the lower Antarctic stratosphere. We examined the backward isentropic trajectories from the height and locations where beta-NAT PSCs were observed. The result shows that the trajectories came over the area near the Antarctic Peninsula.

### References

Oshchepkov, S. et al., (2005), *Applied Optics*, 44, 4775-4784.