

Home

Online Library ACP

- ▣ Recent Final Revised Papers
- ▣ [Volumes and Issues](#)
- ▣ Special Issues
- ▣ Library Search
- ▣ Title and Author Search

Online Library ACPD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact
Factor
4.865

ISI
indexed



▣ [Volumes and Issues](#) ▣ [Contents of Issue 6](#)

Atmos. Chem. Phys., 8, 1609-1620, 2008
www.atmos-chem-phys.net/8/1609/2008/

© Author(s) 2008. This work is licensed under a Creative Commons License.

Aircraft measurements of microphysical properties of subvisible cirrus in the tropical tropopause layer

R. P. Lawson¹, B. Pilson¹, B. Baker¹, Q. Mo¹, E. Jensen², L. Pfister², and P. Bui²

¹SPEC Incorporated, Boulder, CO, USA

²NASA Ames Research Center, Moffett Field, CA, USA

Abstract. Subvisible cirrus (SVC) clouds are often observed within the tropical tropopause layer (TTL). Some studies suggest that SVC has a significant impact on the earth radiation budget. The Costa Rica Aura Validation Experiment (CR-AVE) sponsored by the National Aeronautics and Space Administration (NASA) took place near San Jose, Costa Rica from 14 January–15 February 2006. The NASA WB-57F sampled SVC in the TTL from -75°C to -90°C with an improved set of cloud particle probes. The first digital images of ice particles in the TTL are compared with replicator images of ice particles collected in 1973 by a WB-57F in the TTL. The newer measurements reveal larger particles, on the order of $100\ \mu\text{m}$ compared with $<50\ \mu\text{m}$ from the earlier measurements, and also different particle shapes. The 1973 particles were mainly columnar and trigonal, whereas the newer measurements are quasi-spherical and hexagonal plates. The WB-57F also measured very high water vapor contents with some instruments, up to 4 ppmv, and aerosols with mixed organics and sulfates. It is unknown whether these ambient conditions were present in the 1973 studies, and whether such conditions have an influence on particle shape and the development of the large particles. A companion paper (Jensen et al., 2008) presents crystal growth calculations that suggest that the high water vapor measurements are required to grow ice particles to the observed sizes of $100\ \mu\text{m}$ and larger.

▣ [Final Revised Paper](#) (PDF, 1011 KB) ▣ [Discussion Paper](#) (ACPD)

Citation: Lawson, R. P., Pilson, B., Baker, B., Mo, Q., Jensen, E., Pfister, L., and Bui, P.: Aircraft measurements of microphysical properties of subvisible cirrus in the tropical tropopause layer, Atmos. Chem. Phys., 8, 1609-1620, 2008. ▣ [Bibtex](#) ▣ [EndNote](#) ▣ [Reference Manager](#)

Search ACP

Library Search

Author Search

News

- ▣ [Sister Journals AMT & GMD](#)
- ▣ [Financial Support for Authors](#)
- ▣ [Journal Impact Factor](#)
- ▣ [Public Relations & Background Information](#)

Recent Papers

01 | ACPD, 03 Nov 2008:
Anthropogenic influence on SOA and the resulting radiative forcing

02 | ACPD, 03 Nov 2008:
Evidence of mineral dust altering cloud microphysics and precipitation

03 | ACPD, 03 Nov 2008:
Technical Note: A new method for the Lagrangian tracking of pollution plumes from source to receptor using gridded model output

04 | ACPD, 03 Nov 2008: