

## Polar stratospheric cloud climatology based on CALIOP measurements from 2006-2017

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The CALIOP (Cloud-Aerosol Lidar with Orthogonal Polarization) instrument on the CALIPSO (Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations) satellite has been observing polar stratospheric clouds (PSCs) at latitudes up to 82 degrees in both hemispheres since mid-June 2006 and has provided a rich new database for studying polar particle processes. A new CALIOP Version 2.0 (v2) PSC algorithm has been developed that addresses known deficiencies in previous algorithms and includes additional refinements to increase the robustness of the inferred PSC composition. In this paper, we present a state-of-the-art PSC reference data record and climatology constructed by applying the v2 algorithm to the more than 11-year CALIOP spaceborne lidar dataset. In addition to 4-D (latitude, longitude, altitude, and time) information on the occurrence, composition, and variability of PSCs in both hemispheres, it also includes the estimated particulate SAD and VD to facilitate comparisons with in situ data and PSC measurements by other remote sensors, as well as with theoretical models relating PSCs to heterogeneous chemical processing and ozone loss.