

Analysis Tools for Polar Stratospheric Cloud Studies Using CALIPSO Data

John C. Wherry¹, Michael C. Pitts², Larry W. Thomason²

¹Austin Peay State University, Clarksville, TN USA

²NASA Langley Research Center, Hampton, VA USA

Science Directorate, Climate Science Branch

NASA Science Mission Directorate

Studying the formation and evolution of polar stratospheric clouds (PSCs) is very important to understanding different aspects of Earth's global climate. Using CALIPSO (Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation) data, we can better understand how these clouds affect the Earth's climate. PSCs, which form over the polar regions during the winter at altitudes between about 15 to 30 km, play an important role in the formation of the ozone hole. The CALIPSO data is providing the first comprehensive set of PSC observations from space. To better understand how these clouds form and evolve with time, we combine the CALIPSO observations with different computer models. One model, a microphysical cloud model, simulates how the clouds form and behave in the atmosphere. Another model, an atmospheric trajectory model, simulates the transport of these clouds in the atmosphere. Analysis tools to help LaRC scientists explore the formation of these clouds and to simulate them with these models is highly needed. This project deals with the building of these analysis tools. LaRC scientists can now easily take large volumes of CALISPO data and compare them with findings from the models. This software makes the efficiency of analyzing PSC data increase tremendously and makes it easier for LaRC scientists to focus on more important aspects of PSC analysis.