
Supplementary Materials

**Climatology of Polar Stratospheric Clouds derived from CALIPSO
and SLIMCAT**

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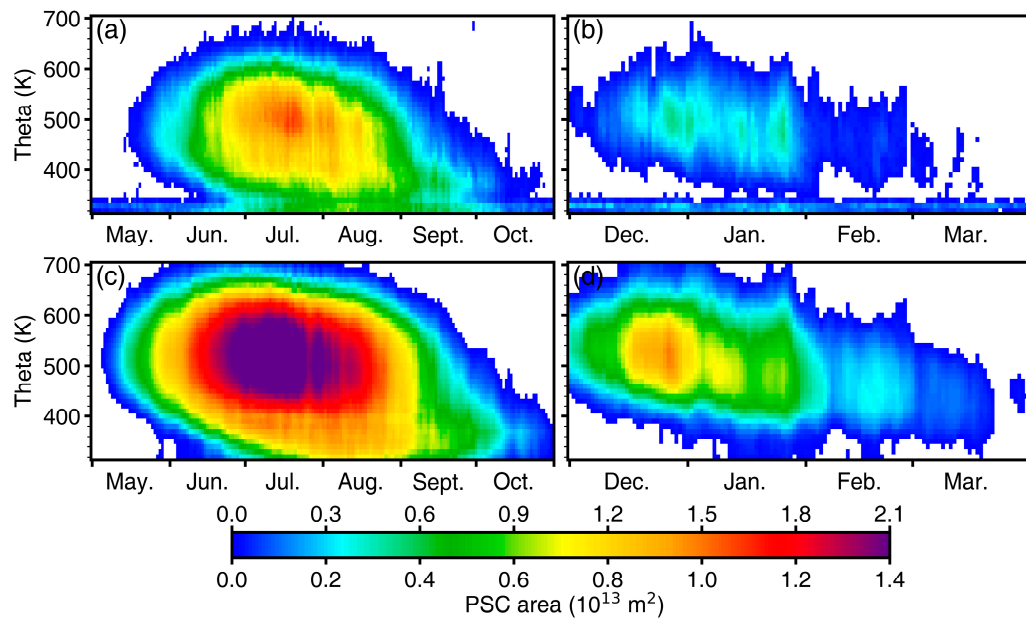


Figure S1. Seasonal variations in the climatology of the PSC area derived by (a, b) CALIPSO during 2006–2020, (c, d) SLIMCAT during 2006–2020 in the Antarctic (left) and Arctic (right). The range of the color bar is 0 to 1.4 for the Arctic and 0 to 2.1 for the Antarctic.

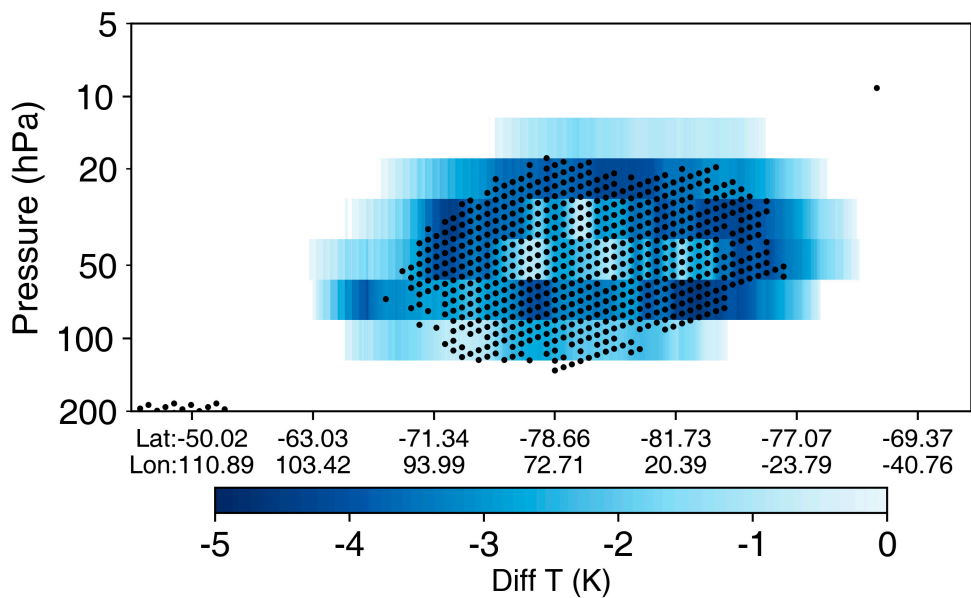


Figure S2. The difference in T and T_{NAT} (color shading) along the 10th orbital profile on June 14, 2006. Regions where $T - T_{\text{NAT}} < 0$ indicate the presence of PSCs. PSCs directly observed by CALIPSO are shown in black-dotted regions.

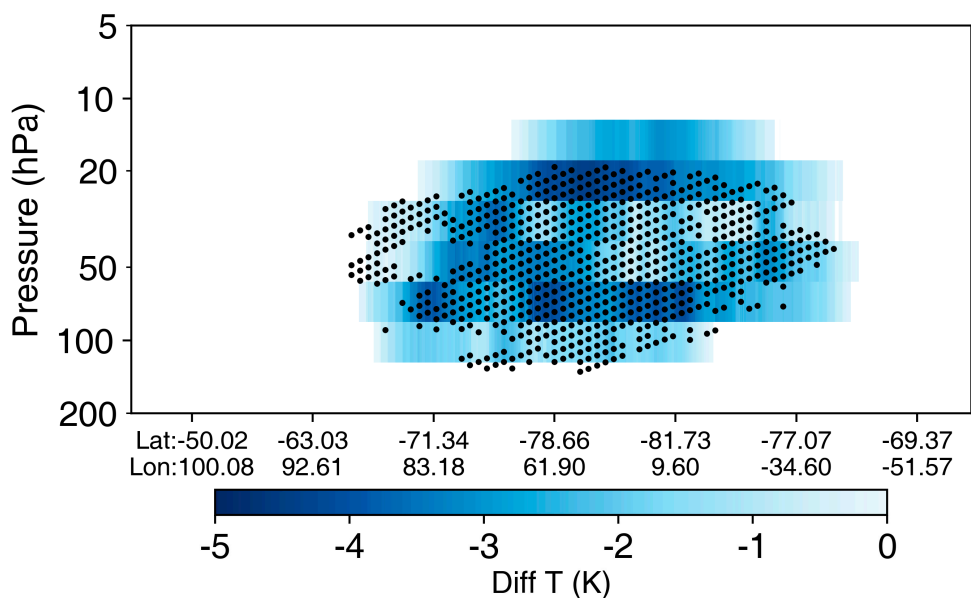


Figure S3. Same as Figure S2, but for PSCs on June 15, 2006.

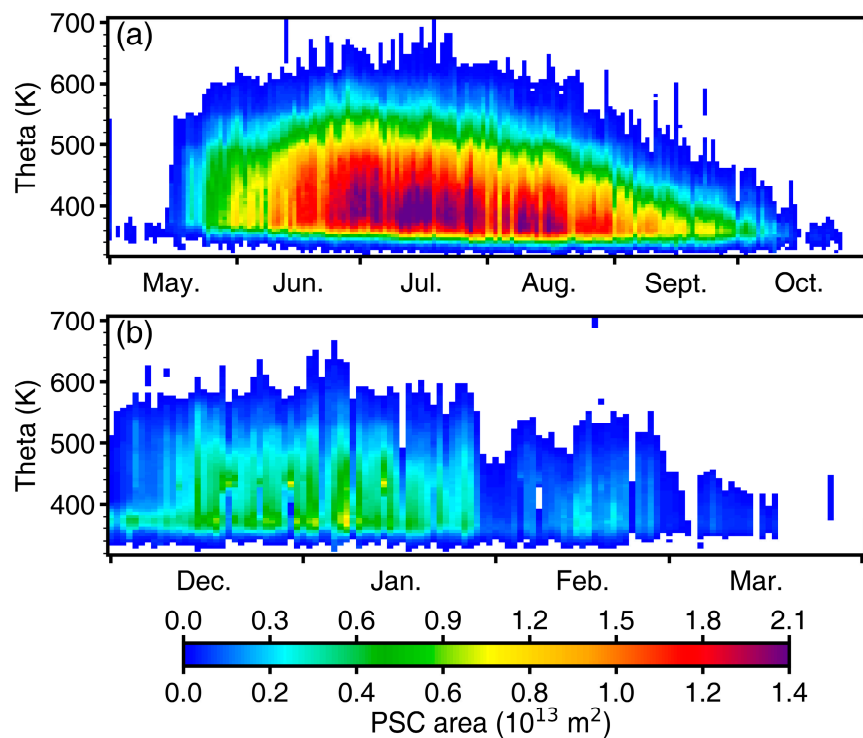


Figure S4. Seasonal variation in the climatology of the PSC area derived by MIPAS during 2002–2012 in the Antarctic (a) and Arctic (b). The range of the color bar is 0 to 1.4 for the Arctic and 0 to 2.1 for the Antarctic.

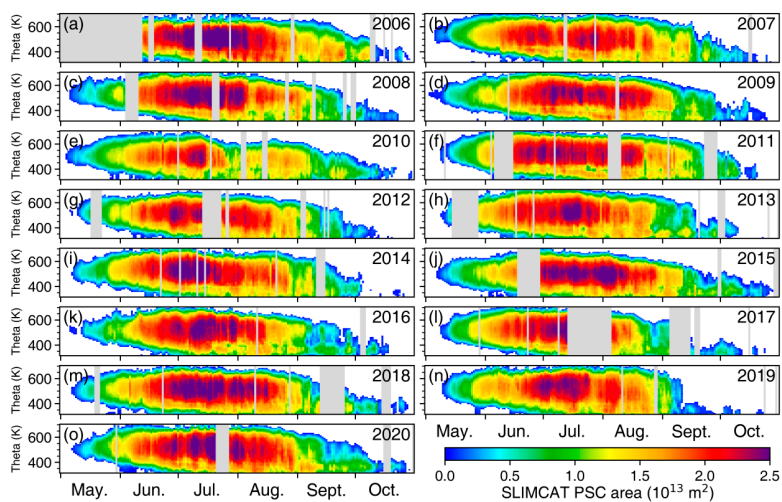


Figure S5. Seasonal evolution of the Antarctic SLIMCAT PSC areas calculated by P18

method during 2006–2020. The gray-filled areas indicate missing data or less than eight orbits.

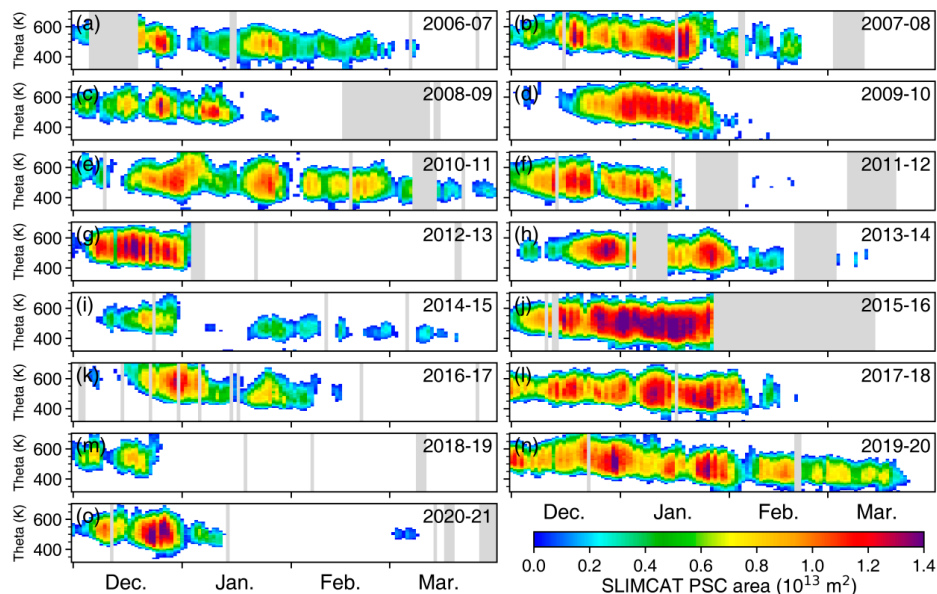


Figure S6. Same as Figure S5, but for the Arctic during 2006–2021.

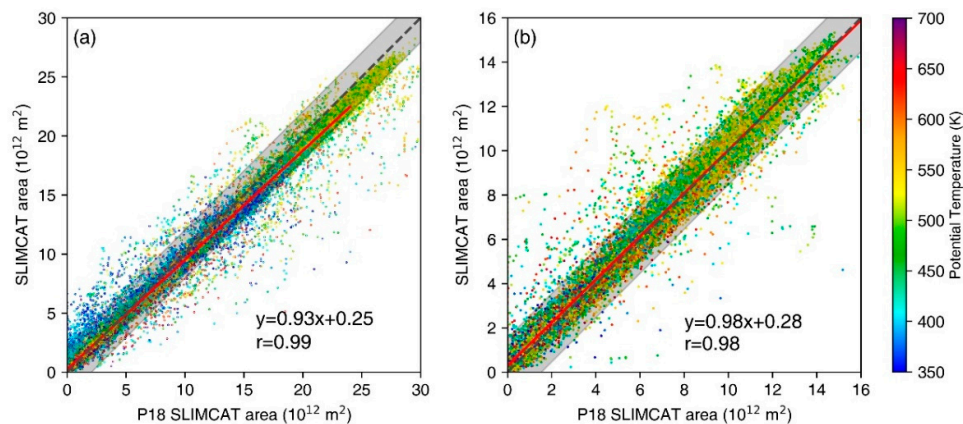


Figure S7. The SLIMCAT PSC area was calculated using the Grid method and plotted against the SLIMCAT PSC area, which was calculated using the P18 method in the Antarctic (a) and the Arctic(b). Different colors indicate PSCs on different isentropic levels. The linear fits are shown as solid red lines. The linear fit equations and

correlation coefficients are shown at the bottom right of each panel. The gray area indicates that 95% of the points fall into this region.

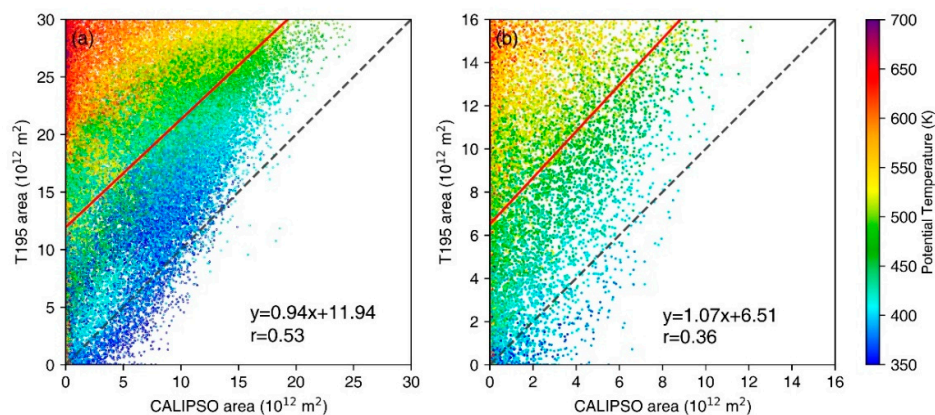


Figure S8. The PSC area using 195 K as the formation threshold is plotted against CALIPSO observation in the Antarctic (a) and Arctic (b). Different colors indicate PSCs on different isentropic levels. The linear fits are shown as solid red lines. The linear fit equations and correlation coefficients are shown at the bottom right of each panel.