Supplementary Material

The following three figures show comparisons of L3-ICE with aggregated statistics from DARDAR and 2C-ICE for July 2008 in six different latitude bands: -85º – 60º, -60º – -30º, -30º – 0º, 0º – 30º, 30º – 60º, and 60º – 85º. Results in Figures S1 and S2 for 0º – 30º are the same as shown in Figure 19 and Figure 20 except that mean values are shown for all altitudes, regardless of the number of samples. Mean values at very low and very high altitudes may be based on very few samples.

Figure 1S. From left to right: comparisons of cloud occurrence (CA), mean 532 nm extinction coefficient (σ_{532}), extinction coefficient histograms, mean ice water content (IWC), and IWC histograms. Mean extinction coefficient and IWC in the second and fourth columns are estimated for all-sky conditions using Equation 6.
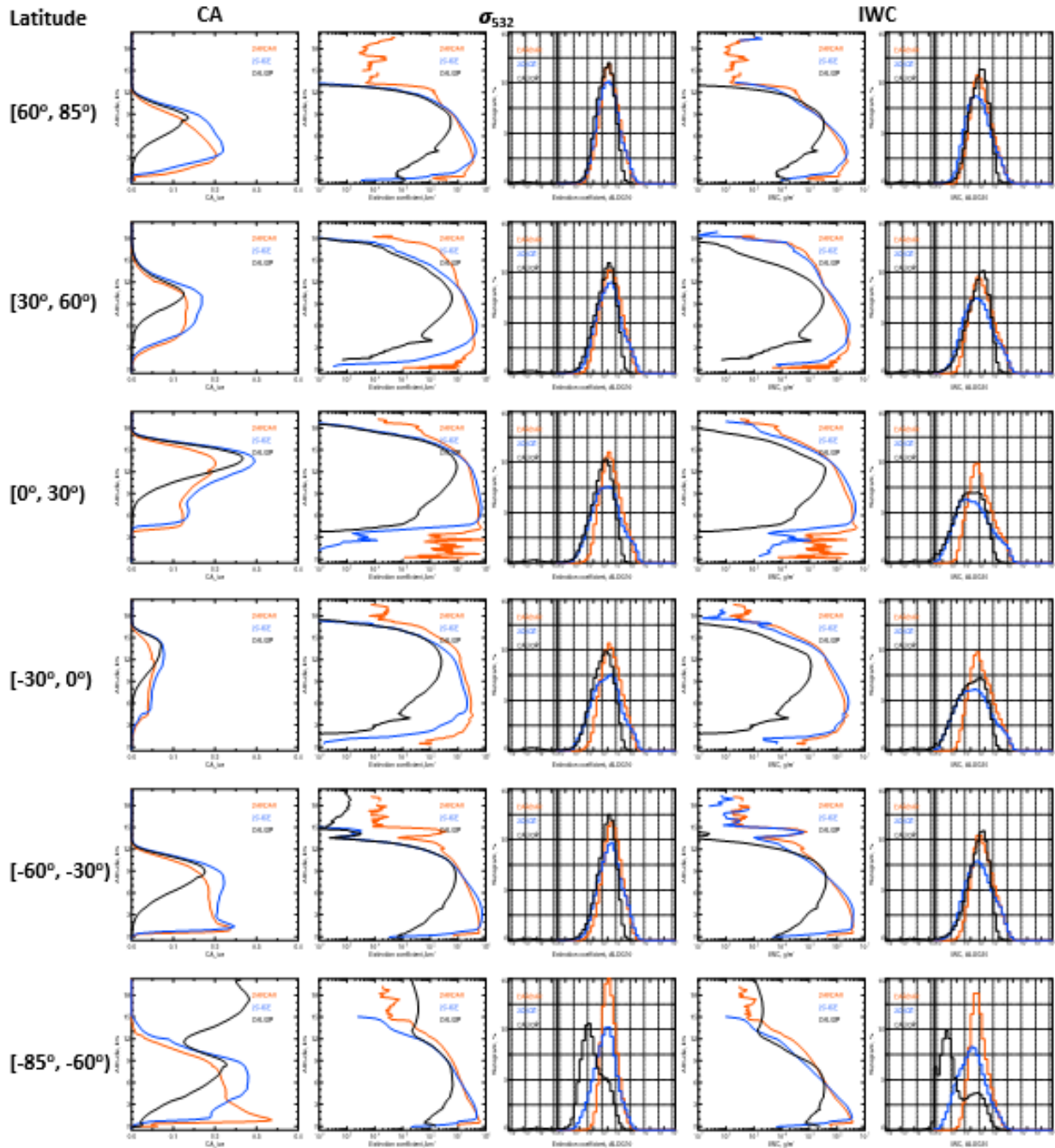
Figure 2S: The first, third, and fifth columns are the same as Figure S1. The second and fourth columns show the mean in-cloud 532 nm extinction coefficient and IWC, computed using Equation 5.
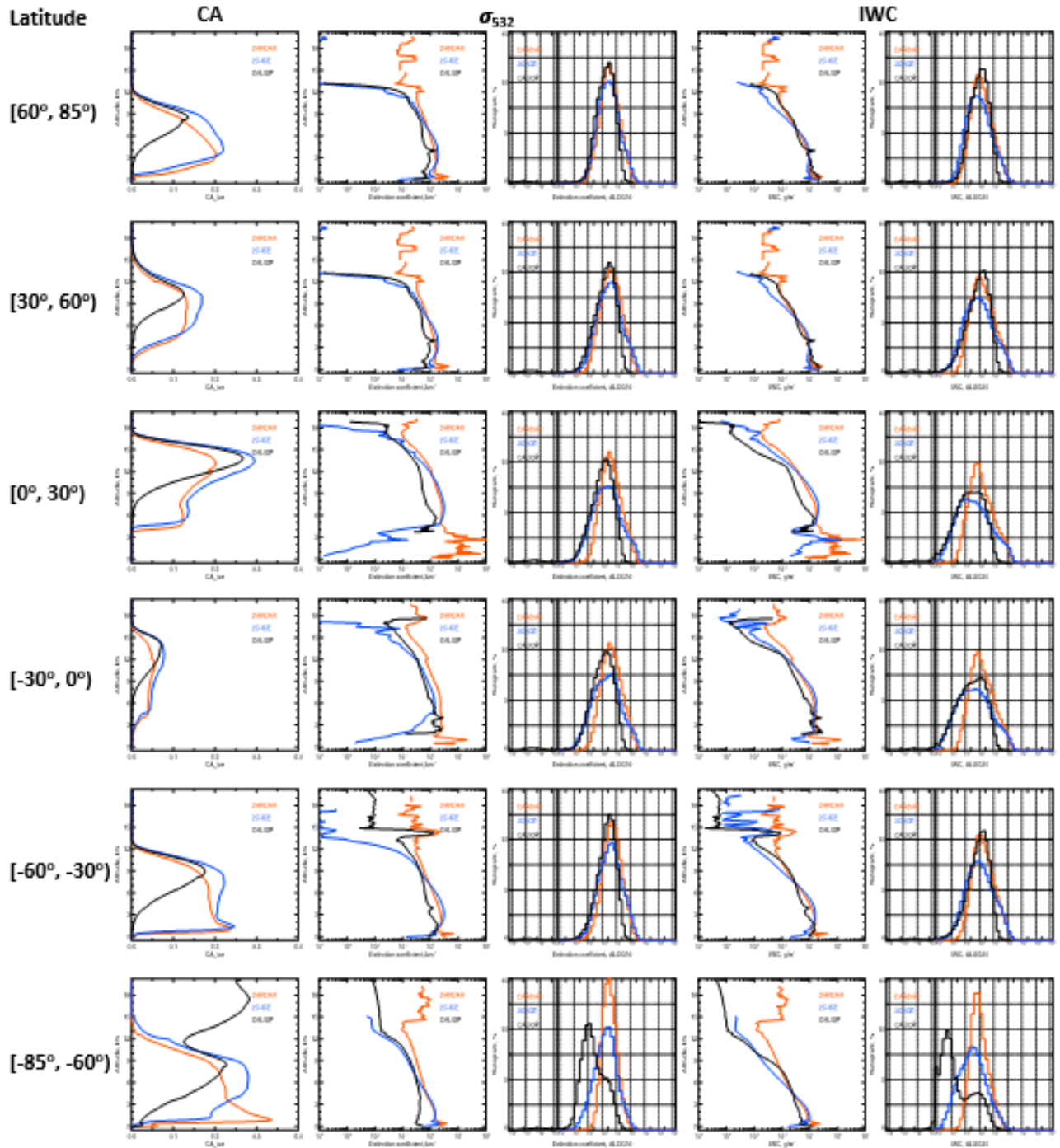
Figure 3S: Comparisons of cloud occurrence profiles using L3-ICE, aggregated DARDAR and 2C-ICE data when selecting different instruments. In the first column, clouds retrieved with both lidar and radar, including lidar only, lidar radar overlapped, radar only, are included in the aggregated DARDAR and 2C-ICE data. In the second column, only clouds retrieved with lidar only and lidar radar overlapped are selected. In the third column, only clouds from lidar only are chosen in the aggregation process.