



LARGE NITRIC ACID PARTICLES ABOVE ARCTIC STRATOSPHERIC CLOUDS

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In situ measurements of aerosol composition, size, concentration, phase, and optical properties and of gas phase water were completed in December of 2001 and 2002. In both years this was near the beginning of polar stratospheric cloud (PSC) formation in the vortex for the winter. The two clouds sampled in December 2002 formed within a synoptic scale pool of cold air and were not perturbed by lee waves. The observation in December 2001 was completed in a lee wave situation. PSCs were observed between about 20 and 26 km each year and contained in quite distinct layers super-cooled ternary solution droplets and solid nitric acid trihydrate and ice particles. In addition at the top of each of the three clouds sampled, there was a layer of particles consisting of a very few large solid particles and almost no smaller PSC particles. The large particles had radii $> 1 - 3$ micrometers and concentrations of less than 10^{-3} cm^{-3} . The existence and formation of these particles raises interesting questions about PSC evolution and has implications for denitrification. The observations from the six instruments on these three balloon flights will be presented and compared.