TTL cirrus microphysics: insights from POSIDON and ATTREX

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TTL cirrus play an important role in determining the composition of stratospheric air through dehydration of tropospheric air entering the stratosphere. This dehydration affects Earth's energy budget and climate, yet little is known regarding the microphysical processes that govern TTL cirrus. To investigate the processes influencing the microphysics of these TTL cirrus, we present the variability in ice concentrations, size distributions and habit as functions of temperature and cirrus type from recently collected airborne in situ measurements made in the Western Pacific TTL. A Fast Cloud Droplet Probe (FCDP), 2D-Stereo (2D-S) probe, and Cloud Particle Imager (CPI) were flown during the NASA ATTREX and POSIDON missions to provide particle sizing, concentration, extinction, and high resolution cloud particle images for habit identification. Supporting measurements of water vapor from the NOAA instrument and pressure and temperature from MMS are used to derive estimates of supersaturation with respect to ice. We will present comparison of the microphysics between ATTREX and POSIDON as well as the variation in microphysics between in situ and anvil type cirrus.