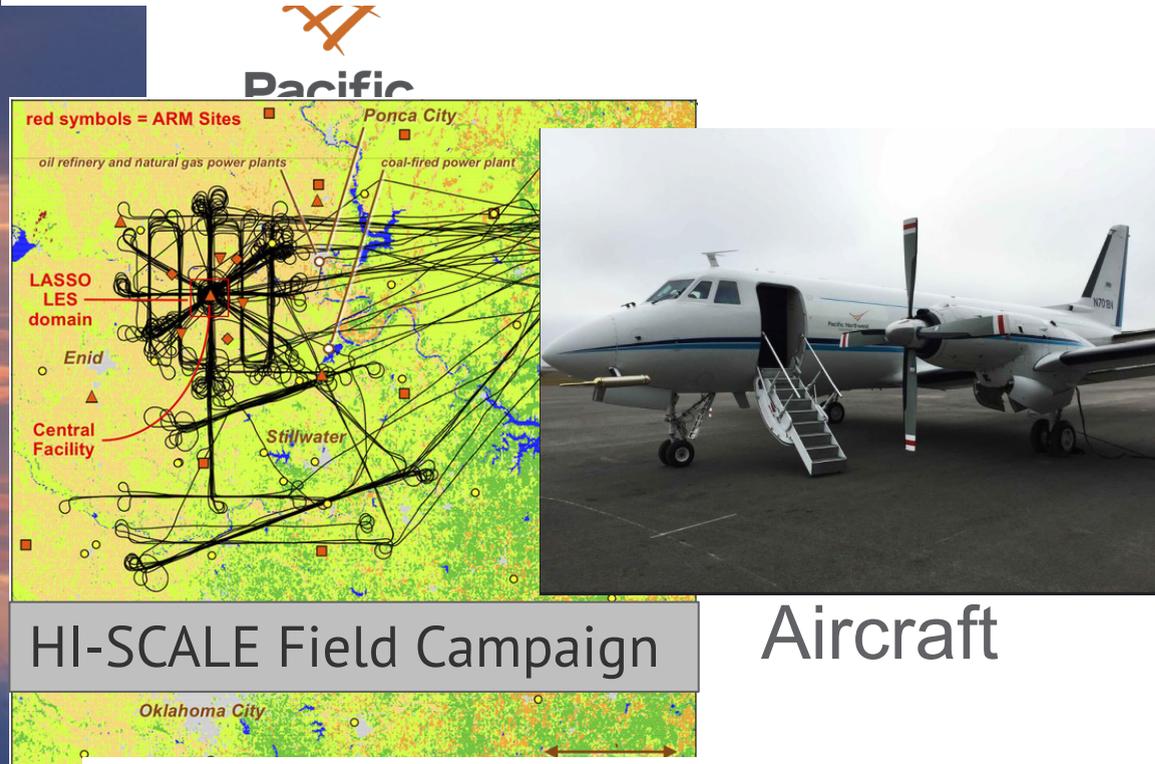


Assessment of vertical CCN retrieval methods against in-situ CCN measurements

-Gourihar Kulkarni, PNNL



Aircraft

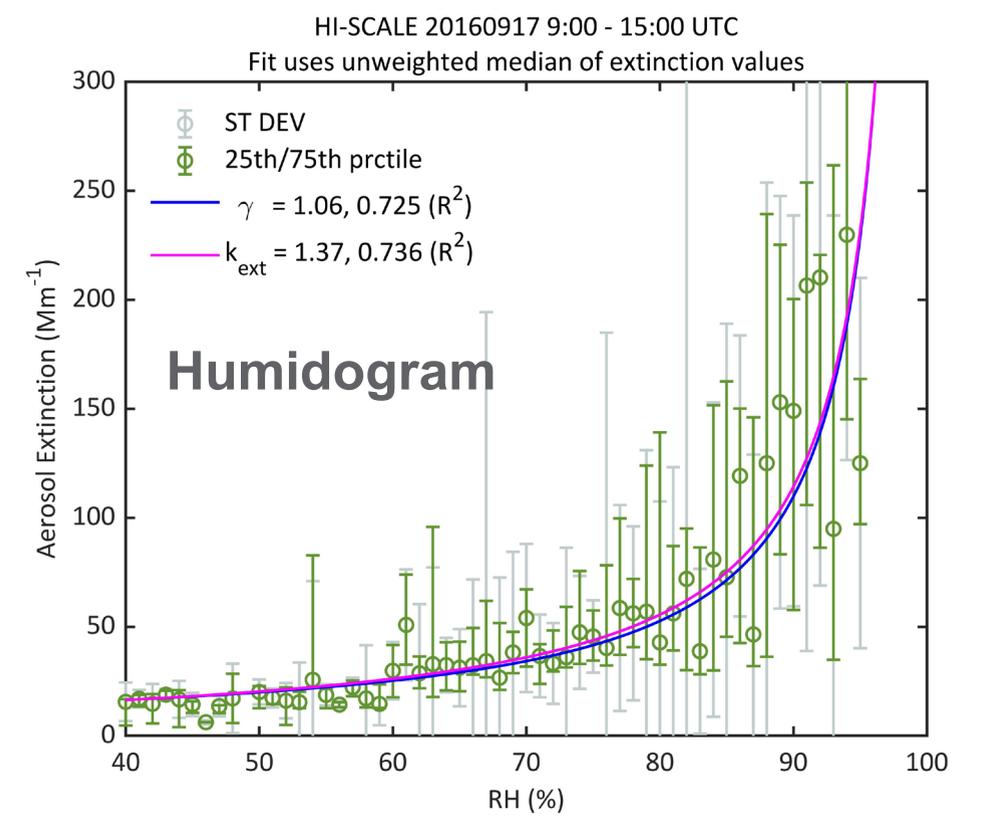
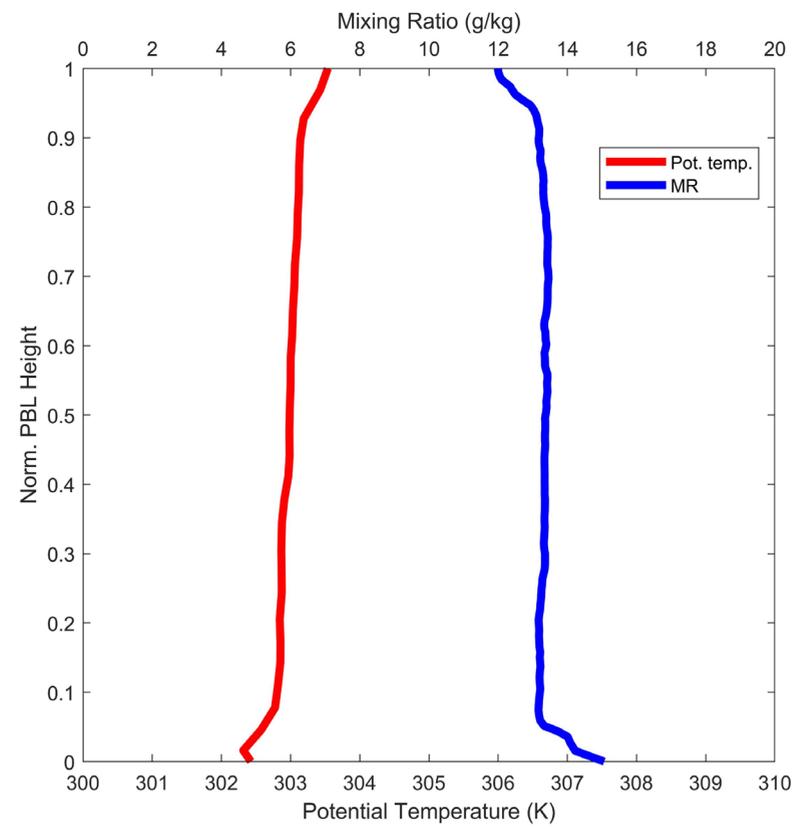
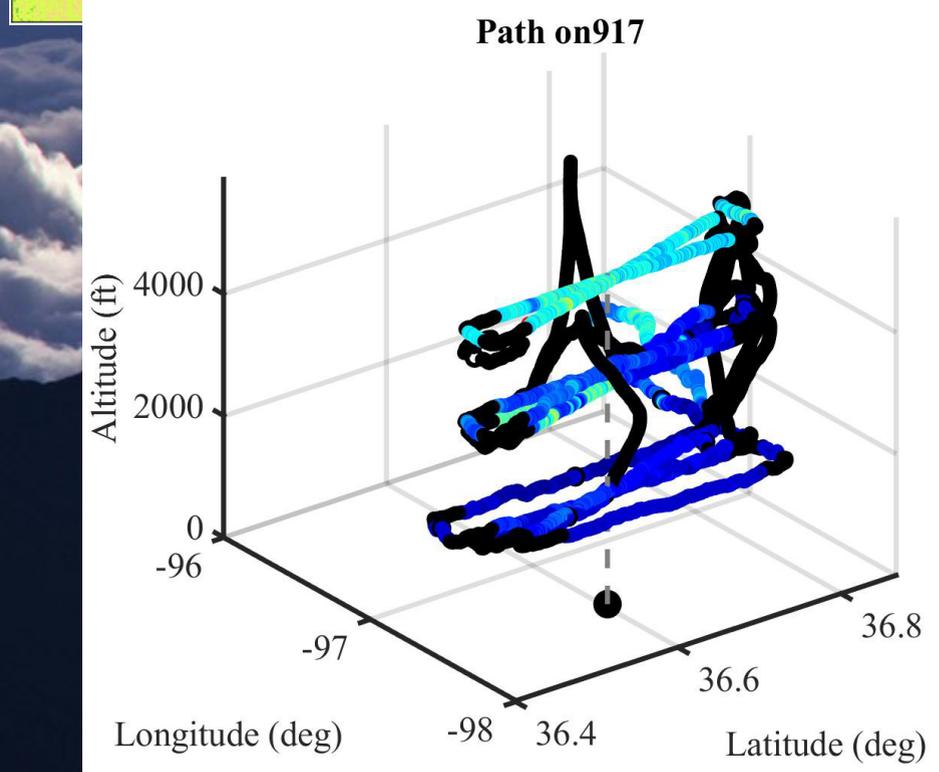
HI-SCALE Field Campaign

Comparison

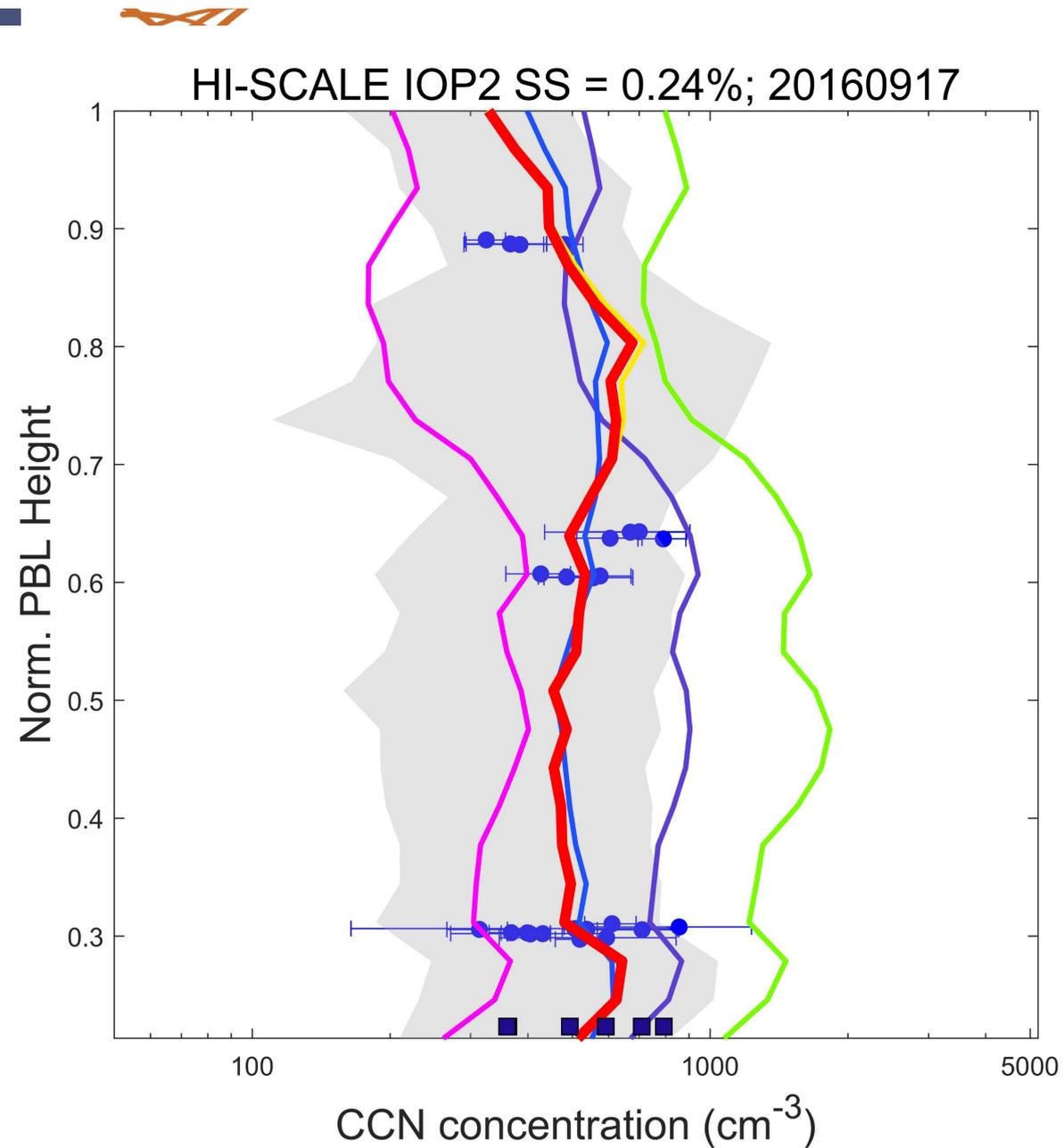
CCN measured vs. CCN retrieved



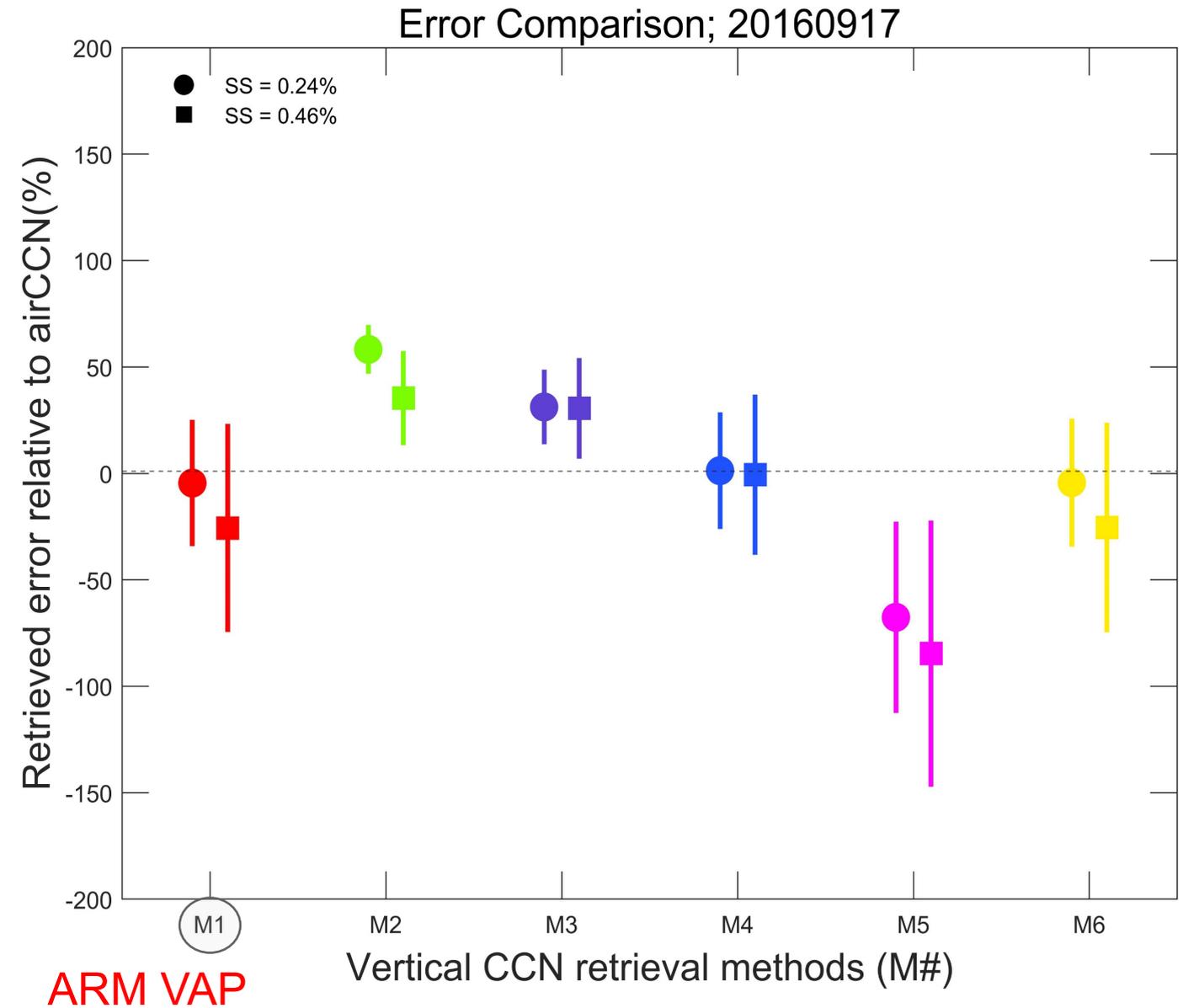
Raman lidar at SGP



Vertical profiles of CCN concentrations



% Error relative to measured CCN

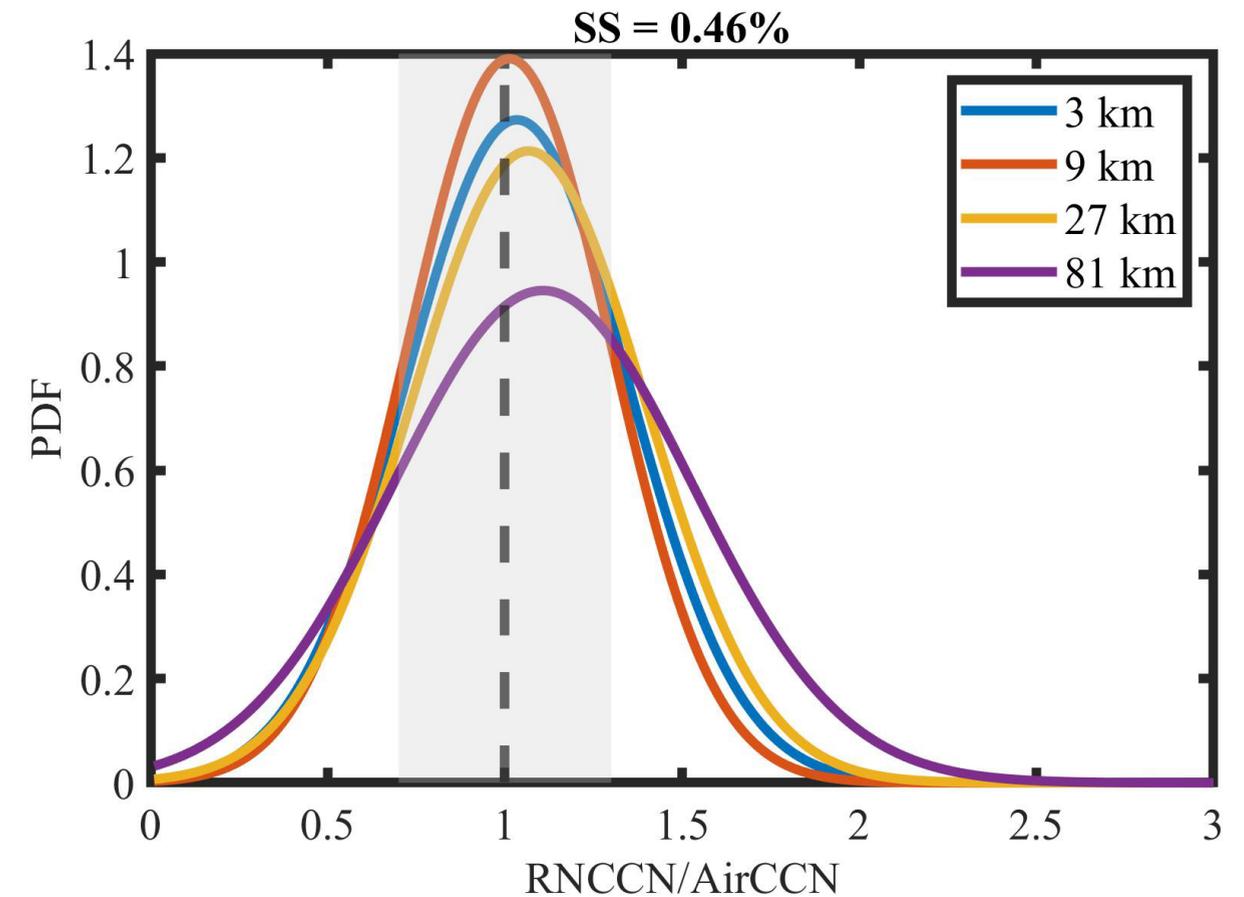
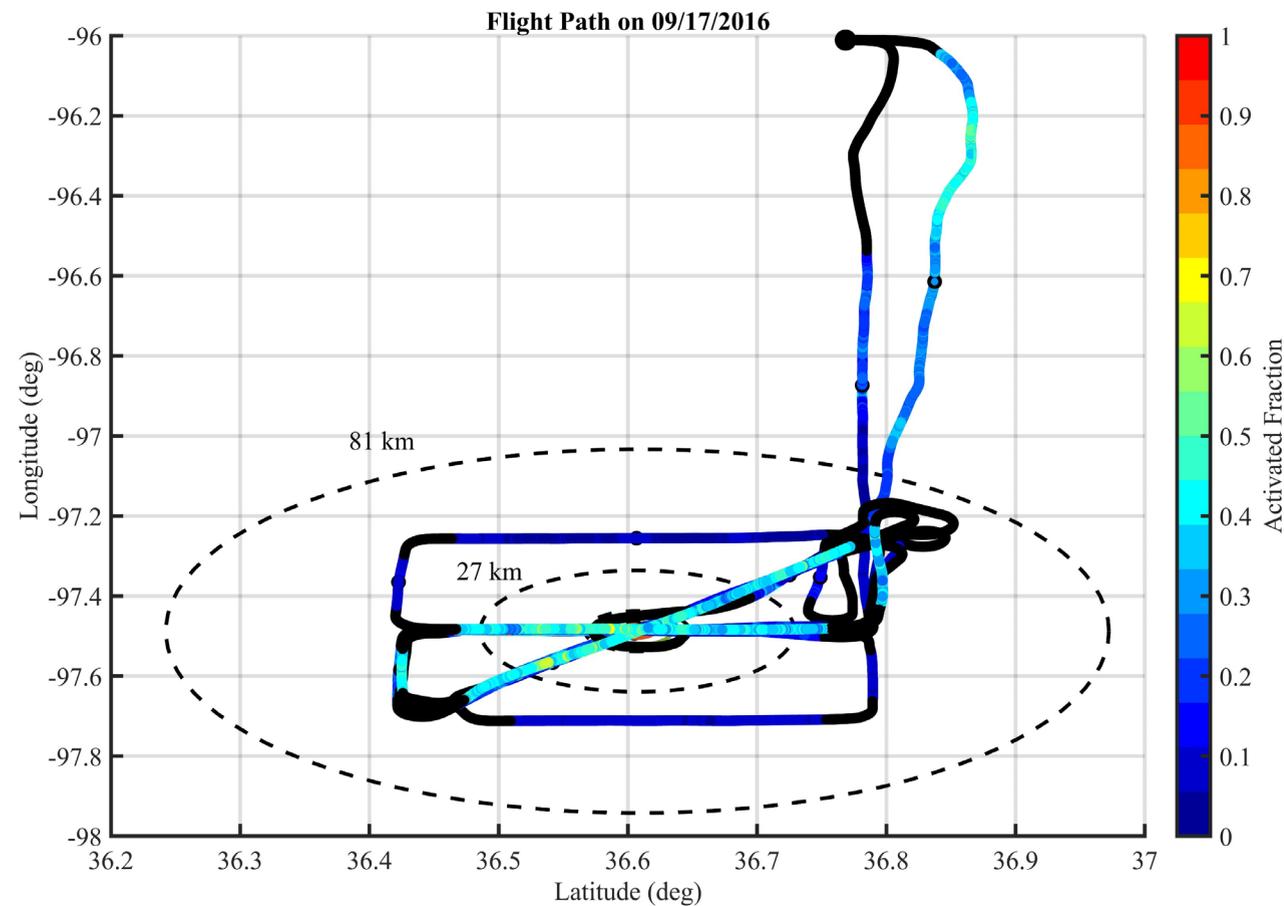


Methods:

- M1: Retrieved Number CCN concentration RNCCN VAP (ARM)
- M2: Ansmann et al. (2016) parameterization
- M3: Shinozuka et al. (2015) parameterization (version 1) neph based

- M4: Shinozuka et al. (2015) parameterization (version 2) RL based
- M5: Ghan et al. (2006) parameterization (version 1) neph based
- M6: Ghan et al. (2006) parameterization (version 2) RL based

Spatial and temporal collocated in situ CCN measurements are compared against RNCCN VAP retrieval profile.



Summary:

- ✓ Majority of retrieval methods, independent of SS, show agreement within $\pm 50\%$.
- ✓ Vertically integrated spatial errors at various grid sizes is nearly similar.
- ✓ Complex humidogram patterns show larger errors.