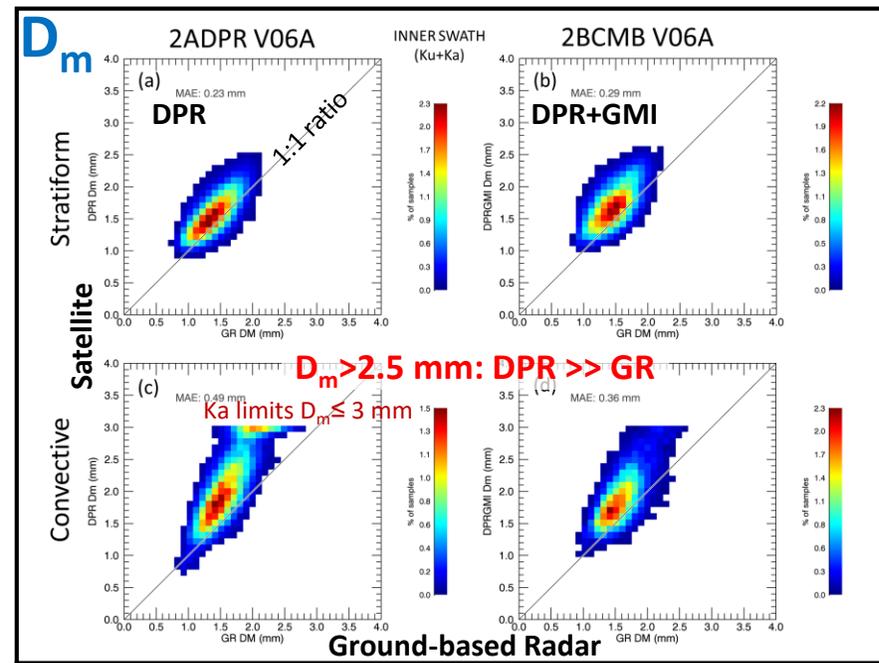
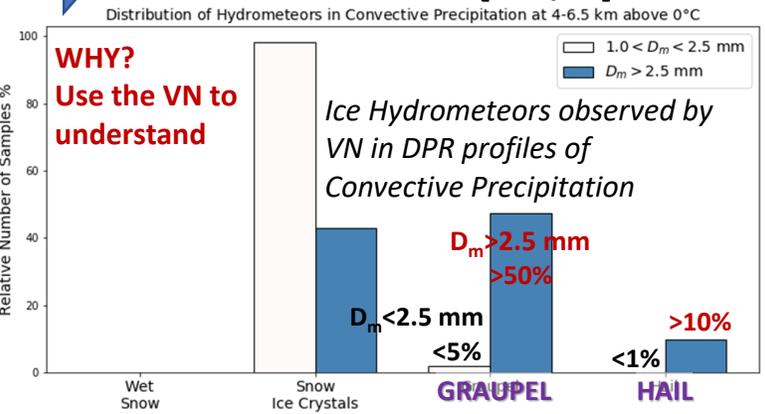
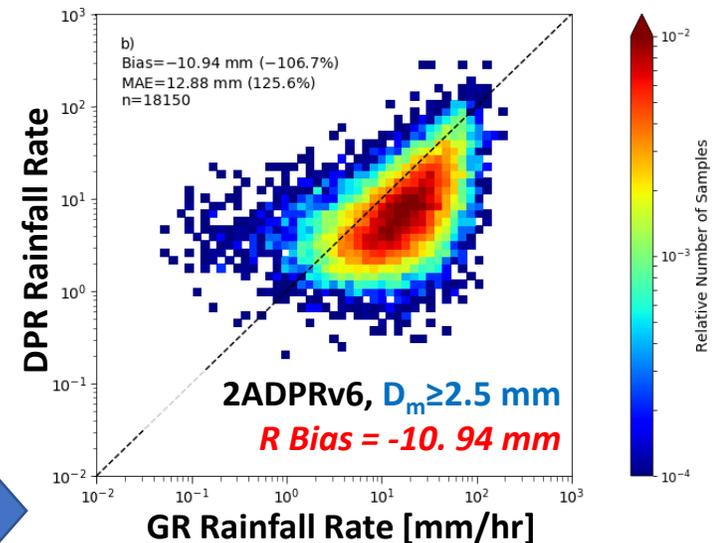


Validation of GPM DSD retrievals leveraging operational radar networks



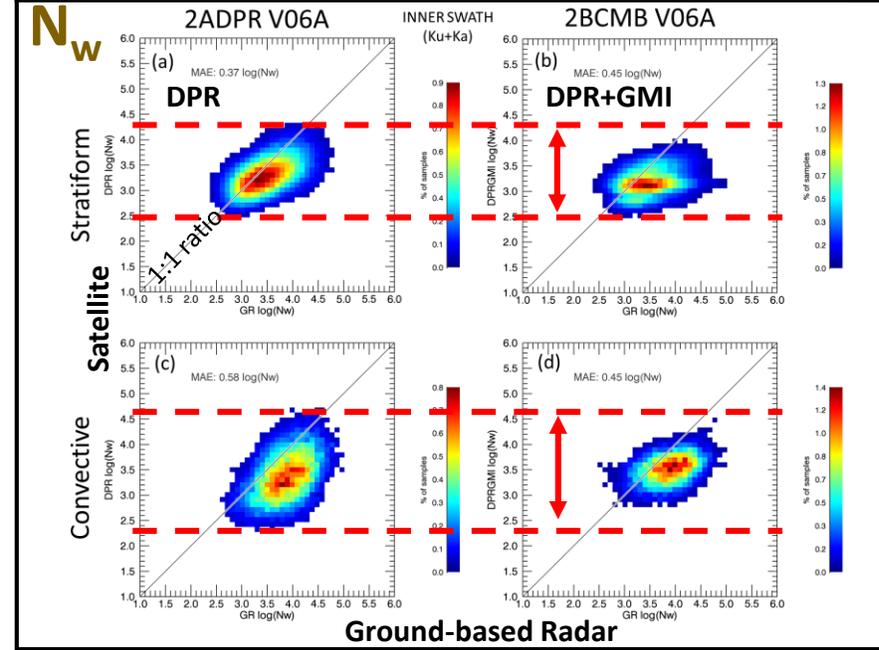
118 ground-based radars (GR): March 2014-present

- Overall, D_m bias < 0.5 mm, BUT...
- Ka-band D_m constraint detracts 2ADPR
- in convective precipitation it overestimates size of raindrops, especially at larger D_m
- Severely biases convective rainfall estimate



- Number concentration of raindrops is largely underestimated, especially in convective precipitation
- 2BCMB less error than 2ADPR in convection
- ❖ 2BCMBv6 includes MS and NUBF
- 2BCMB has much smaller dynamic range in N_w than 2ADPR
- Need to broaden dynamic range of a priori database used by Combined Alg.

- Large bias in convective R occurring when large, rimed ice is present above 0°C
- Multiple scattering (MS) and non-uniform beam-filling (NUBF)



Gatlin, P.N.; Petersen, W.A.; Pippitt, J.L.; Berendes, T.A.; Wolff, D.B.; Tokay, A. The GPM Validation Network and Evaluation of Satellite-Based Retrievals of the Rain Drop Size Distribution. *Atmosphere (Basel)*. 2020, 11, 1010, doi:[10.3390/atmos11091010](https://doi.org/10.3390/atmos11091010).