Issue 1 - Comparability of data from different COSMIC satellites

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Claims of 0.02-0.05 K precision in retrieved T at all vertical levels (surface to 30 km) seem based on average differences between 2 satellites, based on samples of ~3,000 occultation pairs. These pairs are presumably from different regions, times of day, seasons. Rather than averaging the differences, some indication of the spatial and temporal patterns of mean differences is needed, as well as the statistical distribution of differences. Mean differences may be <0.1 K, but what about those 0.5 to 1.5 K difference values? And how do these statistics look for retrieved water vapor? Basically, is the averaging process masking important information on measurement or retrieval uncertainty? Analyses subsetting the data into latitude bands as well as land and ocean subsets could show that this reproducibility is not regionally dependent.

Response from Kevin Trenberth:

In Fig 8 of the BAMS paper the mean and s.d of the differences is given, From about 8 to 22 km altitude standard deviations are small <0.2% (about 0.5 C), but at lower altitudes and higher levels the values are larger. Presumably one reason for larger differences at lower levels is the water vapor contribution and thus heterogeneity of clouds etc come into play, and multipath tracks come into play, especially in the tropics. I agree that a closer examination of the larger differences is warranted. Retrieved water vapor depends on an assumed temperature from elsewhere and I don't think that is a strength of GPSRO.

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