Further Explorations of the Meteorological Value of Radio Occultation Data: The Strength of the Constraints to the Radiance Bias Correction

Aparicio, Josep M., and Laroche, Stéphane,
Environment Canada
Josep.Aparicio@ec.gc.ca

We will present some work in progress of our exploration of the meteorological value of GPSRO data, and in particular several recent lines related to a collaboration between forecast centers, aimed to analyze the dependence of weather forecast services on data provided by non-operational radio occultation missions.

We have undertaken several denial tests, partial and complete, with updated forecast system and available data. We note that over the last few years, while CPU power, model resolution and volume of available data have all improved, allowing the continuation of significant advances in forecast performance, a large fraction of the supplementary data is of near-nadir radiance type. It is well known that their moderate vertical resolution leaves large null spaces in the vertical. Data with good vertical resolution, able to constrain these null spaces, has therefore become more important. By contrast, the availability of sources of vertically well resolved data has been steady, and with GPSRO data it has been in decline, and may accelerate in the near future.

We must conclude that the strength of the constraints provided by vertically well resolved data is weakening, while the need for these constraints is accruing. We verify that the performance gap between our reference system assimilating all data and a GPSRO-denied system has widened at Environment Canada's system over the last few years.