THE ROHP-PAZ POLARIMETRIC RADIO OCCULTATION RESEARCH DATASET AND ITS APPLICATIONS

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After more than 4 years on orbit, the Radio Occultations and Heavy Precipitation aboard PAZ satellite (ROHP-PAZ) experiment has already demonstrated the ability of polarimetric radio occultations (PRO) to detect precipitation. In fact, PRO have shown potential not only in rain detection, but also in precipitation characterization and in sensing the associated vertical cloud structures. PAZ PRO $\Delta\phi$ observable profiles were made available in 2020 trough the ICE servers (https://paz.ice.csic.es), and more recently through the JPL (https://genesis.jpl.nasa.gov).

A new re-processing of the PRO observations is being carried out with the aim to make it public during the second half of 2022. In addition to a better treatment of the rainy observations, the new re-processed profiles will come with an extensive collocation dataset that will allow the users to address scientific studies much more easily. These will take into account the limb-sounding geometry of the observations, performing the collocations directly into the RO rays obtained through a ray-tracer. These collocations include observations like the 30-minute geostationary 10.8 μm brightness temperature, GPM IMERG surface precipitation, microwave brightness temperatures from the numerous overpasses by the satellites in the GPM constellation, radar reflectivities from the GPM core satellite and the NEXRAD ground based weather radars, among others. Furthermore, the collocation algorithms are designed so that more external observations can be easily included.

In addition to the exact collocations as described above, external databases are also checked so that coincidences with Tropical Cyclones, Mesoscale Convective Systems and other relevant precipitating systems are identified nearby PAZ observations.

In this presentation, we will show a brief overview of the re-processing of the ROHP-PAZ data, with emphasis in the differences between the $\Delta\phi$ profiles obtained from UCAR's CDAAC excess phases and from those obtained from JPL excess phases. After that, examples of the coincident datasets will be presented. Results will include statistics gathered from the differentiation of different precipitation regimes (e.g. stratiform vs convective), identification and validation of cloud top height determination, and comparison with other relevant parameters obtained from the collocated observations.