

## **The GPM Validation Network: Validating IMERG with Ground-Based Radars**

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NASA's global-gridded precipitation product, IMERG, is vital to NASA's goals to advance understanding of Earth's water and energy cycle. Consequently, performance assessment of the multi-satellite IMERG product is paramount, particularly over oceanic regions where ground-based measurements are limited. The Global Precipitation Measurement (GPM) Mission Validation Network (VN), which geometrically matches three-dimensional precipitation retrievals from the GPM Core Observatory (CO) sensors to 118 international ground-based radars, can support advancements in IMERG validation. The VN software system, run at Marshall Space Flight Center, will be updated to include the Level-3 (gridded) IMERG product alongside Level-2 (footprint) GPM DPR, CORRA and GPROF products. The updated GPM VN can support IMERG validation efforts under a consistent framework across North America (Eastern CONUS, Alaska, Hawaii), Brazil, and Pacific islands (e.g. Kwajalein). Furthermore, the VN updates will allow users to trace IMERG's systematic and random errors back through to the source Level-2 GPROF product where the GPM-CO overpasses the VN's ground-based radars. In this initial study with the updated GPM VN, IMERG V06B's oceanic performance will be assessed using the VN's island-based radars. Novel stratification of IMERG errors using ground-based radar measurements such as hydrometeor classification and the vertical profile of reflectivity will aid in identifying future IMERG version improvements. This work can provide knowledge to the end-user community about conditions under which IMERG can be appropriately used for societal and research applications.