

Hydrometeor Type Validation between EarthCARE Cloud Profiling Radar (CPR) and GPM DPR Observations

V. Chandrasekar and Minda Le

The Earth Cloud, Aerosol and Radiation Explorer (EarthCARE) have been successfully operating for around two years since its launch on 29 May 2024. It is a satellite mission implemented by the European Space Agency (ESA), in cooperation with the Japan Aerospace Exploration Agency (JAXA), to measure global profiles of aerosols, clouds and precipitation. One of main instruments on board the EarthCARE is the Cloud Profiling Radar (CPR) where CPR is a nadir-looking active instrument operating at W- band (94 GHz), developed by JAXA and NICT (joint development). The objective of CPR is to detect significant ice clouds and identify precipitation and vertical motions. The Level 2 data from CPR have been available for public since January 2025 including the target classification products. Meanwhile, GPM DPR Version 8 will be released in March, 2026, where a new product of hydrometeor profiling will be available in the Level-2 classification module. The product is a 3D product that generates hydrometeor type at each DPR resolution.

Cross-validation plays a key role in spaceborne radar weather products by verifying performance, identifying biases, and improving the robustness of retrieved meteorological parameters. In this research, validation cases from CPR and the GPM-DPR radar will be used to cross-validate hydrometeor profiling products between two the space radars. Quantitative analysis will also be included.