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## Intercomparison of operational precipitation products in Vietnam

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The INDRA project (Research and development of INtergrateD RAinfall measurements platform for application in agriculture, hydro-meteorological hazard prevention and mitigation, and water management) is a bi-lateral scientific cooperation project between Italy and Vietnam. The Project aims to improve the quality of low-latency rainfall products firstly by measuring the uncertainties associated to the various QPEs available over the Vietnamese area, and then building an algorithm which exploits complementary strengths of the different instruments. Quantitative reference is taken from the ground network of around 1500 rain gauges. QPEs come from the following sources: the Vietnamese ground weather radar network, the IMERG Early Run and Final Run releases, the south-Korean GEO-KOMPSAT-2A and the Chinese FengYun-4A geostationary satellites, the DPR onboard the GPM Core Observatory, and the European ERA5-Land reanalysis. The products are projected over a common 0.02° Lon/Lat grid and compared with the rain gauges over the station locations, during 8 heavy rain events (39 days) occurred between 2019 and 2020. Results show the ground radars are unmatched by all the other sources (with CC of 0.66 and CV of 1.49). Geostationary QPEs tend to overestimate precipitation, particularly at the higher regimes, while more complex products like ERA5 and IMERG have latency drawbacks.