



First-year evaluation of IMERG - *Final Run* in the Netherlands

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For almost two years now, the Global Precipitation Measurement (GPM) mission has provided worldwide satellite rainfall estimates at higher spatiotemporal resolutions than its predecessor TRMM (Tropical Rainfall Measurement Mission). Accurate rainfall estimates at higher resolutions are the main input in modeling physical processes relevant to society like floods, landslides, and weather extremes. Conversely to TRMM Multi-satellite Precipitation Analysis (TMPA) products, the Netherlands is within the coverage of GPM Level-3 products, i.e., IMERG (Integrated Multi-satellite Retrievals for GPM). The IMERG spatiotemporal resolution is $0.1^\circ \times 0.1^\circ$ every 30 min (180°W to 180°E , and 60°N to 60°S), with latencies of 6, 18 hours and 4 months.

Here we evaluate the first full year of the IMERG *Day 1 Final Run* over the land surface of the Netherlands. IMERG *Final Run* is considered the research product, and provides the longest public data set among IMERG products. We compare half-hourly and daily IMERG rainfall maps against Dutch gauge-adjusted radar rainfall maps. Radar rainfall maps are provided by the Royal Netherlands Meteorological Institute (KNMI), and are considered as the ground truth given its accuracy, spatiotemporal resolution and availability. In general, there is a tendency of GPM to underestimate rainfall intensities over the land surface of the Netherlands. Nevertheless, this underestimation is relatively low, which suggests a potential applicability of IMERG *Final Run* as a reliable source of rainfall estimates in diverse hydrological and hydrometeorological applications. The robustness and data availability of IMERG is an important asset, especially in places where rain gauge networks are scarce or poorly maintained, or where weather radar networks are too expensive to acquire and/or maintain.