

Detecting Iğdır Floods with GPM IMERG data

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Floods are the primary natural disasters threatening human life with increasing occurrences due to climate change. Flash floods are the most dangerous due to the limited recovery time. Despite the improvements in numerical weather forecasting, predicting flash floods, especially those arising from local convective systems is problematic. It is widely mentioned in the literature that regions with arid/semi-arid and humid climates are equally likely to be exposed to sudden floods, that classical precipitation observation networks are insufficient in detecting sudden floods, and that observation networks in arid/semi-arid regions are inadequate.

Iğdır, located in the easternmost part of Turkey and has a microclimate feature, is one of the cities with the least precipitation. Despite the drought in recent years in Iğdır, the increase in daily extreme precipitation values due to climate change causes sudden floods during which both life and property are lost, roads are closed to traffic, houses and lands are covered with mud. The floods on May 24, July 24, August 22 in 2021 show the effect of convective precipitation over the region.

In the study, the floods occurred over Iğdır will be investigated with the Integrated Multi-satellite Retrievals for GPM (IMERG) for GPM within the scope of Global Precipitation Measurement (GPM). Since 2014, IMERG has been providing precipitation data with a half-hourly temporal and spatial resolution of 0.1°x0.1°. The fact that the IMERG data showed 11 mm/h during the flood of May 24, 2021 in the preliminary studies is promising in terms of the accuracy of the study. Within the scope of the study, the threshold values that cause floods will be found by downloading the IMERG data on the flood dates.