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Flood simulation for a small ungauged arid catchment using GSMaP+ data

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The HEC-HMS and IHACRES rainfall runoff models were applied to simulate a single flood event in the Wadi Dhuliel arid catchment occurring on 30./31.01.2008. The HEC-HMS model application was using the HEC-GeoHMS extension in ArcGIS. Flood estimation was performed on the basis of hourly scale. The aim of this study was to develop a new framework of rainfall-runoff model applications in arid catchment by integrating re-adjusted satellite derived preciptation dataset (GSMaP_MVK+) to track the location of the rainfall storm. Each model has its own input data. HEC-HMS input data include soil type, land use/land cover, and slope. IHACRES input data sets include hourly rainfall and temperature. The model was calibrated and validated using observed stream flow data set collected at Al-Za'atari discharge station. The performance of IHACRES showed some weaknesses, while the flow comparison between the calibrated streamflow results fits well with the observed streamflow data in HEC-HMS model performance. The Nash-Sutcliffe efficiency (*Ef*) for both models was 0.51, and 0.88 respectively. The application of HEC-HMS model is considered to be satisfactory.

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