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Poster Summary: This study assesses the accuracy of satellite-derived runoff estimates using three satellite precipitation products (SPPs), including CHIRPS, IMERG, and PDIR. After the evaluation of SPPs, the products were also evaluated to capture extreme precipitation events. the correlation coefficient (CC) of extreme indices, for IMERG was (>0.70). Moreover, the estimated relative Bias was also within the adequate limit (±10). Therefore, we suggest the use of estimates of the IMERG and CHIRPS products for hydro-climatic applications in the South Asia Mountains domain.

1. Problem Statement

Recently, due to the changing climate, a recent flood in Pakistan occurred in August and September of 2022, and the damage caused by these floods is still being assessed.

Friederike (et al., 2022) The flooding occurred as a direct consequence of the extreme rainfall throughout the summer 2022 season exacerbated by shorter spikes of very heavy rain particularly in August hitting the provinces Sindh and Baluchistan.

Therefore, the importance of Hydroclimatic Studies increased significantly. Especially, Hydrological *<u>Rainfall-Runoff</u> * Modeling.

2. Objective

 Evaluate SPPs over the mountainous domain of Pakistan

To capture extreme events by using SPPs.

Runoff Estimates by using SPPs.

3. Keywords

- Satellite-Precipitation Products
- **Extreme Events**
- Mountainous domain
- **DERSIANN-DIR**



A Combined Approach For Runoff Estimation Using Satellite and In-situ Gauge Data MUHAMMAD UMAR NADEEM, KOJI DAIRAKU, Department of Engineering Mechanics and Energy, Regional Hydroclimate Lab





Weather stations of study area



Figure 3. Correlation coefficients of intensity rainfall indices (R95) between rainfall products and observations





6. Conclusions

The findings of this validation study advocate the better performance of an IMERG product than all other SPPs in the Mountains under topographical climatic various and conditions.

- The IMERG other SPPs to capture extreme events for the whole study region. Moreover, the correlation coefficient (CC) of extreme indices, for IMERG was (>0.70). Moreover, the estimated relative Bias was also within the adequate limit (± 10) .
- Therefore, we suggest the use of estimates of the IMERG and CHIRPS products for hydro-climatic applications in the Karakoram Mountains. The findings of this research will hydrologists, helpful for very be meteorologists, and water managers in Pakistan, as well as algorithms developers of SPPs and reanalysis products.

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PDIR

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