



RESEARCH PAPER

Estimation of water budget and its components using Google Earth Engine approach

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Abstract : Accurate assessment of water budget components is crucial in many fields, such as agriculture, water resources management, hydrology, ecology, and climatology. In this study, a freely available web-based tool is developed using the Google Earth Engine (GEE) to evaluate the water budget components at various spatial and temporal scales. This study explores the effectiveness of the fifth generation of European ReAnalysis (ERA5) Land datasets processed by the European Centre for Medium-Range Weather Forecasts (ECMWF). The water budget components such as precipitation, runoff, evapotranspiration, soil moisture, and storage change were analyzed monthly and annually at regional and river basin scales. The results showed that the water budget components were balanced at both spatial scales. Moreover, the result provided by this web-based tool was reasonable. Therefore, we are considering that this developed tool will help the farmers, watershed planners, and decision-makers to construct infrastructures and plan management activities at spatiotemporal scales.

Key Words : Google Earth Engine, Water budget, Water resources, ERA5 land datasets

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