



Contemporary runoff and discharge estimates for the North American continent using satellite remote sensing based precipitation data sets

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Freshwater resources are widely recognized as perhaps the most important constraint limiting economic development and human well-being in the 21st Century. Despite the obvious need for reliable observations of major components of the hydrological cycle, traditional monitoring networks are deteriorating, severely undermining our ability to accurately assess existing water resources and to detect changes. Emerging remote sensing technologies are hoped to fill the much need gap in Earth systems monitoring.

Remote sensing of precipitation is particularly attractive since in-situ observations are known to have difficulties in depicting the spatial distribution of precipitation. Precipitation data products from satellite sensors matured over the last two decade providing not only ever improving precipitation estimates but continuously growing time series (e.g. GPCP 1979-present, TRMM 1998-present).

The Water Systems Analysis Group of University of New Hampshire is developing spatially distributed continental runoff and discharge datasets on high resolution gridded networks by utilizing various precipitation data products in a hydrological modeling framework that combines simulated runoff estimates with observed discharge. The 32;147;blending103;148; of observed discharge with modeled data as a means to calculate discharge estimates between discharge recording gauges was found to be useful for numerous applications. The new continental runoff and discharge time series product extends beyond the monthly climatology and provides monthly and daily runoff and discharge time series at 30' and 6' (lon & lat) resolution.

The presentation will highlight the key steps in producing such blended runoff and discharge fields. We will show consistency between historic and contemporary precipitation datasets and river discharge. We will demonstrate the propagation of precipitation error in runoff estimates.