

# Radar Hydrology

Dr. Jonathan J. Gourley and Dr. Yang Hong (NOAA NSSL) co-authored “Radar Hydrology,” which focuses on the use of radars in hydrology. Weather radars have proven their value for remote sensing of precipitation, even at high enough resolution to monitor and predict the onset of flash floods. But the process to arrive at an accurate estimate of precipitation from the raw radar signal is not a straightforward one. For this reason, this book is dedicated to radar-based precipitation estimation alone.

Gourley and Hong believe the next revolution in hydrology will be initiated by radar remote sensing of variables beyond precipitation. Space-based, airborne, and ground-based radars operating at multiple frequencies can be used to detect and measure surface water spatial extent and depth, stream discharge, near-surface soil moisture, subsurface water, and depth to the water table. Radars are now providing insights into water storages and fluxes in regions that have only scarcely been observed. These new observations will influence new hydrologic theories, formulations, and basic understanding. Moreover, accurate estimation of the freshwater storages on earth will provide the pulse of the planet’s climate state.

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