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A long-term, dynamical, high-spatial resolution inundation extent dataset at global scale, from the combination of multiple satellite datasets

Several satellite observations are used to monitor inundation over the globe: Visible/infrared observations (e.g. MODIS/Landsat), active (e.g. SAR) or passive microwave; each one with its own advantages/drawbacks. For instance passive microwave has a low spatial resolution, and visible cannot detect water below clouds or vegetation. We will review several of the techniques currently used. The Global Inundation Extent from Multi-Satellites (GIEMS) database is derived from multiple satellite observations (visible, active and passive microwave). It provides multi-year monthly variations of the global surface water extent at 25kmx25km resolution, from 1993 to 2007. Current work intends to obtain a 10-day resolution, for a longer time period (about 30 years). GIEMS spatial resolution is compatible with climate and surface model studies (e.g. methane emission) but is clearly not adequate for local applications that require higher spatial resolution. An approach to downscale GIEMS based on topography information has been developed (Aires et al. 2017): A floodability index is first introduced and is then used in a downscaling scheme. The resulting GIEMS-D3 database is long-term, dynamic, and high spatial resolution (90m) inundation database at the global scale. Comparisons with other visible datasets show the potential of GIEMS-D3 (Aires et al. 2018).

Which session would you like to present in?

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