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Integration of 2D flood inundation modeling and event observations from satellites over large scales

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Abstract

By 2050, damage by floods in coastal areas alone is projected to reach US\$1 trillion annually. Remotely sensed information on floods coupled with advanced 2D flood event inundation simulations can be game-changing in assisting governments and reinsurance markets globally. Augmenting this with state-of-the-art web mapping analytics can reach many decision-makers and flood responders worldwide and deliver valuable information across networks and to many mobile devices.

This talk will present first results of a NASA ESTO-funded project that will produce enhanced flood hazard and risk maps from a combination of state-of-the-art computer modeling, global MODIS satellite imagery and Google's big data analytics Earth Engine. We expect that our maps will help increase societal resilience to flooding and better assist flood disaster response teams during high magnitude events worldwide. The goal of this project is to deliver these maps seamlessly to end-users using web mapping services in order to allow maximum data interoperability.

Short Bio

Dr. Guy J-P. Schumann is a scientist at Remote Sensing Solutions, Inc. He received both the M.Sc. (Remote Sensing) and Ph.D. (Geography) degrees from the University of Dundee (Scotland). Dr. Schumann has more than 10 years of experience in the field of remote sensing data integration with hydrodynamic modeling and particularly radar remote sensing and its use in flood model calibration and validation. He has done extensive work on flood inundation mapping from SAR and integration of uncertainties. His recent research focuses on large-scale flood inundation modeling and integration with remotely sensed data. Most of his current work and projects are NASA- and JPL-funded projects focusing on simulating river hydrodynamics and floodplain inundation, particularly as part of pre-mission projects for the upcoming NASA/CNES SWOT mission and other NASA research projects. Dr Schumann is also involved in the Interoperability Program activities of the Open Geospatial Consortium (OGC). Dr. Schumann is currently also a Visiting Research Fellow at Geographical Sciences, University of Bristol. Prior to joining Remote Sensing Solutions Inc., Dr. Schumann took up a Postdoctoral Research Scholar position at the NASA Jet Propulsion Laboratory (JPL/Caltech) and was also an Associate Researcher at UCLA.