

Developing High-Definition Flood Inundation Maps (HD-Fims) Using Raster Adjustment with Scenario Profiles (RASPTM)

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Abstract : Flood inundation maps (FIMs) are an essential tool in communicating flood threat scenarios to the public as well as in floodplain governance. With an increasing demand for online raster FIMs, the FIM State-of-the-Practice (SOP) is rapidly advancing to meet the dual requirements for high-resolution and high-accuracy—or High-Definition. Importantly, today's technology also enables the resolution of problems of local—neighborhood-scale—bias errors that often occur in FIMs, even with the use of SOP two-dimensional flood modeling. To facilitate the development of HD-FIMs, a new GIS method—Raster Adjustment with Scenario Profiles, RASPTM—is described for adjusting kernel raster FIMs to match refined scenario profiles. With RASPTM, flood professionals can prepare HD-FIMs for a wide range of scenarios with available kernel rasters, including kernel rasters prepared from vector FIMs. The paper provides detailed procedures for RASPTM, along with an example of applying RASPTM to prepare an HD-FIM for the August 2016 Flood in Louisiana using both an SOP kernel raster and a kernel raster derived from an older vector-based flood insurance rate map. The accuracy of the HD-FIMs achieved with the application of RASPTM to the two kernel rasters is evaluated.

Keywords : hydrology, mapping, high-definition, inundation

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