Development and Use of Segmented Libraries of Inundation Extents for Rapid Flood Mapping [1]

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Abstract:
Recent major flood events have shown that currently available inundation extent information is insufficient from both a planning and a response perspective. Current initiatives at the GP-RESAC's Kansas Applied Remote Sensing Program (KARS) are aiming to bridge the gap between limited information that is presently available and what is needed to adequately prepare for and respond to a range of inevitable, and in some cases unprecedented, flood events. Developing a library of modeled flood extents for over a range of potential flood levels can offer a resource that is easily accessed and, when combined with addition geospatial data, can provide valuable information that can be used to guide critical, time dependent decision making. In response to recent major floods events in Kansas, we have constructed a segmented library of inundation extents (SLIE) with the KARS FLDPLN model. The SLIE can be accessed in near real-time to provide valuable information to disaster responders. Because a SLIE only requires a DEM as the primary input for development and a gage readings, water surface elevations, or other water surface elevation proxies to construct an estimated local flood extent, it is potentially a valuable tool for rapid flood extent estimation for many areas worldwide where there is limited spatially explicit information regarding predicted or potential flooding. Additionally, it can be an effective masking tool when coupled with satellite imagery of flooded areas.

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