Iowa Flood Information System: Towards Integrated Data Management, Analysis and Visualization

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The Iowa Flood Information System (IFIS) is a web-based platform developed by the Iowa Flood Center (IFC) to provide access to flood inundation maps, real-time flood conditions, flood forecasts both short-term and seasonal, flood-related data, information and interactive visualizations for communities in Iowa. The key element of the system's architecture is the notion of community. Locations of the communities, those near streams and rivers, define basin boundaries. The IFIS provides community-centric watershed and river characteristics, weather (rainfall) conditions, and streamflow data and visualization tools. Interactive interfaces allow access to inundation maps for different stage and return period values, and flooding scenarios with contributions from multiple rivers. Real-time and historical data of water levels, gauge heights, and rainfall conditions are available in the IFIS by streaming data from automated IFC bridge sensors, USGS stream gauges, NEXRAD radars, and NWS forecasts. Simple 2D and 3D interactive visualizations in the IFIS make the data more understandable to general public. Users are able to filter data sources for their communities and selected rivers. The data and information on IFIS is also accessible through web services and mobile applications. The IFIS is optimized for various browsers and screen sizes to provide access through multiple platforms including tablets and mobile devices. The IFIS includes a rainfall-runoff forecast model to provide a five-day flood risk estimate for around 500 communities in Iowa. Multiple view modes in the IFIS accommodate different user types from general public to researchers and decision makers by providing different level of tools and details. River view mode allows users to visualize data from multiple IFC bridge sensors and USGS stream gauges to follow flooding condition along a river. The IFIS will help communities make better-informed decisions on the occurrence of floods, and will alert communities in advance to help minimize damage of floods. This presentation provides an overview and live demonstration of the tools and interfaces in the IFIS developed to date to provide a platform for one-stop access to flood related data, visualizations, flood conditions, and forecast.