Expert Systems for Floodplain Characterization

Terry Pultz, Steve McArdle, Marek Zaremba, Anna Sztyber and Brian Brisco*

* Presenting author

The Canada Centre for Remote Sensing (CCRS) is currently undertaking a floodplain characterization project for flood hazard management. Earth Observation (EO) based activities and data sharing is being conducted by both internal and external partners and it is well acknowledged that data management is important for effective collaboration and data quality control. However, CCRS’s interest lies beyond geospatial data management – they have identified a need for a dynamic solution that supports agile, scientific-based, near-real-time monitoring with minimal human interaction for flood-risk activities. There is a requirement for a rule-based expert system built on advanced logic that allows geospatial centric users the ability to quickly map, update, and monitor the evolving floodplain environment and efficiently handle the processing and overlaying of multiple and disparate data layers and information products, specifically those of the anticipated Radarsat Constellation Mission (RCM). This requirement is in addition to the conventional geospatial querying, storing, retrieving, processing, updating, and disseminating of information, and data with accompany attributes, metadata, auxiliary information, and user-ready EO products specifically for flood mitigation and response. The finding from this research initiative will support the floodplain characterization project as well as the other water resource initiatives in support of the upcoming RADARSAT Constellation Mission (RCM). This presentation will describe a preliminary design of an expert system to manage multiple layers of disparate data during flood plain characterization activities including floodplain map updating, dynamic surface water mapping and near-real time flood monitoring. This would allow much of the process to be automated and reduce human resource requirements for these activities.