

Accelerating Trusted Product Access, Evaluation and Use to Support Community Lifelines

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Abstract

Satellite imagery to rapidly develop maps of historical flood hazard and current inundated areas over large spatial coverage is indispensable in supporting situational awareness for improved debris estimation, transportation impacts and damage assessments. However, how best to utilize these maps as actionable information during flood disasters and for flood disaster response assistance is less clear. Furthermore, the integration of any satellite data from an “untrusted” (non-mandated) source into the operations chain and response protocols of a mandated agencies such as FEMA, PDC (PDC is already pulling some DFO-DSS layers) or the UN WFP would be a non-trivial procedure. These agencies desire to prioritize support and resource requirements for community lifelines. (Safety & Security; Food, Water & Shelter; Health & Medical; Energy (Power & Fuel); Communications; Transportation; and Hazardous Materials). The majority of these lifelines can be impacted by floods. The Global Flood Observatory’s (DFO, University of Colorado Boulder) web map server and its associated mobile app (DFO-Floods) is a resource for global extents of floods now delivered as map products via web services. This flood decision support system (DSS) serves flood maps along with other trusted geospatial data to the global disaster response community. However, acceptance of the DFO product line as a trusted information source requires additional tests to assess its performance in combination with the respective response process of agencies around the world. This would allow moving the product from a high Application Readiness Level into an Operational Readiness Level (ORL) for agency trusted data implementation. This paper reviews success examples of the DFO flood layers, illustrates the newly released mobile app and discusses the need for trusted flood map products and services to support the global disaster response community.

80NSSC18C0121: An interoperable decision support system for flood disaster response assistance

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Phase II Key Innovation Met

There is to date no global decision support system for flood disasters that ingests all the data from existing systems and provides real-time critical information that can guide operational reactions on the ground. Because these capabilities evolve over time, any such interoperable system must incorporate changes and improvements thereof, it must be flexible, and itself robust and able to be maintained into the future. These challenges are addressed in this SBIR where Remote Sensing Solutions collaborates with existing efforts of the Dartmouth Flood Observatory (DFO) to develop an interoperable one-stop-shop based on open geospatial data standards that unifies information relevant to flood disaster response.

Technical Objectives Met

Four primary objectives have been defined to achieve this goal (product, i.e. data layer, design; system development; demonstration; commercialization plan). The technical approach to meet the objectives is streamlined into specific work packages, each one including a milestone target to ensure successful project completion.

Notable Deliverables Provided

1. User Needs Survey
2. Technical Requirements Definitions
3. Interactive Online Web Map Service Platform / GIS (Hosted at DFO)
4. Free, Fully Functional Mobile App (iOS & Android)
5. Demo Workshop with Select Stakeholders
6. Progress Reports and Final Report



The “DFO-Floods” App: free, fully-functional mobile app developed for serving flood-related data layers to assist global disaster response activities..

Possible NASA Application

For NASA mission and pre-mission projects in general and for the NASA Disasters Program, the DSS will be a very valuable resource for assisting disaster response. In this context, for NASA and mandated response agencies, this system can be turned into a service to be inserted into response protocols.

Possible non-NASA Commercialization

Two potential target customer groups: (i) Geospatial data management companies; Flood modeling vendor companies; insurance companies; mortgage lenders/banking industry; (ii) Emergency response organizations; humanitarian agencies; development aid organizations., and other actors operating in flood disaster response.

Planned Phase III Team & Key Partners

Team: Remote Sensing Solutions (RSS) Inc.; DFO CU Boulder; Aquaveo; StormCenter Communications Inc.

Key Partners: FEMA; UN WFP; Pacific Disaster Center (PDC)

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