



DSS4NAFA – a tool for data management, visualization and risk communication in emergencies affecting food and agriculture

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In light of any disaster– natural or manmade– there is urgency by relevant authorities for efficient tools to aid in the response process. Environmental impacts need to be understood through the speedy collection and clear visualization of data, while the decisions made by policy makers, including its risks and impacts, have to be communicated clearly to members of the public.

Innovative methods of fulfilling the functions above can include utilizing cloud-based platforms paired with mobile technologies, implementation of advanced visualization tools to assist in decision making, and communication of risk with pre-defined correspondence templates. This study will introduce the Decision Support System for Nuclear Emergencies Affecting Food and Agriculture (DSS4NAFA), a tool with the aforementioned functions developed by the Soil and Water Management & Crop Nutrition Laboratory, under the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture.

DSS4NAFA is a cloud-based tool that assists in data management, visualization and risk communication. While it was originally developed as a system for nuclear emergency response management and communication, its ability to discern data quality, to provide user-friendly spatio-temporal visualizations for decision makers, and to instantly create communication materials also makes it a good candidate tool for usage in natural hazard risk mitigation. The DSS4NAFA system was built using open-source tools such as the Ruby On Rails web application framework, the PostgreSQL/PostGIS database system, the PhoneGap/Cordova framework, the Bootstrap User-Interface library and the D3 & map box leaflet libraries.

The development of DSS4NAFA was highly iterative and our findings from the process were invaluable. Main lessons learned are (1) the necessity for stakeholder participation and involvement during the design process and (2) the usage of a “one-house approach” for centralized data and to reduce occurrences of data silos and (3) the importance of building a tool that is flexible enough to be used during emergency response and routine monitoring operations. The beta version of DSS4NAFA is slated to be released in July 2018.