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Automated Multi-Sensor Near-Real Time Flood Monitoring in the Lower Mekong

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Floods and water-related disasters impact local populations across many regions in Southeast Asia during the annual monsoon season. Satellite remote sensing serves as a critical resource for generating flood maps used in disaster efforts to evaluate flood extent and monitor recovery in remote and isolated regions where information is limited. However, these data are retrieved by multiple sensors, have varying latencies, spatial, temporal, and radiometric resolutions, are distributed in different formats, and require different processing methods making it difficult for end-users to use the data. SERVIR-Mekong has developed a near real-time flood service, HYDRAFloods, in partnership with Myanmar's Department of Disaster Management that leverages Google Earth Engine and cloud computing to generate automated multi-sensor flood maps using the most recent imagery available of affected areas. The HYDRAFloods application increases the spatiotemporal monitoring of hydrologic events across large areas by leveraging optical, SAR, and microwave remote sensing data to generate flood water extent maps. Beta testing of HYDRFloods conducted during the 2019 Southeast Asia monsoon season emphasized the importance of multi-sensor observations as frequent cloud cover limited useable imagery for flood event monitoring. Given HYDRAFloods' multi-sensor approach, cloud-based resources offer a means to consolidate and streamline the process of accessing, processing, and visualizing flood maps in a more cost effective and computationally efficient way. The HYDRAFlood's cloud-based approach enables a consistent, automated methodology for generating flood extent maps that are made available through a single, tailored, mapviewer that has been customized based on end-user feedback, allowing users to switch their focus to using data for disaster response.