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Author: Mr. Eric Anderson
University of Alabama in Huntsville, United States

Mr. Daniel Irwin
NASA Marshall Space Flight Center, United States
Mr. Francisco Delgado
SERVIR, El Salvador
Mr. Manuel Diaz
Direccion General del Observatorio Ambiental, El Salvador
Mr. Giovanni Molina
Direccion General del Observatorio Ambiental, El Salvador
Mr. Emil Cherrington
Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC), Panama

EVALUATION OF SPACE-BASED SUPPORT THROUGH SERVIR DURING AND AFTER THE 2009 FLOODS AND LANDSLIDES IN EL SALVADOR

Abstract

In November of 2009, Tropical Storm Ida and Low Pressure System 96E converged over Central America, bringing heavy rains that caused extensive flooding and landslides throughout El Salvador. While damages mainly affected the country's central region, economic ramifications were widespread. Numerous Salvadoran government agencies relied heavily on space-based products to meet monitoring, warning, response, and recovery needs. This type of support was only possible through substantial efforts directed toward building institutional capacity and creating international partnerships.

In light of the approaching tropical weather systems, the National Territorial Studies Service (SNET) augmented their in situ measurements by taking advantage of a number of near real-time satellite products and regional numerical weather forecasts. SNET, an office within the Ministry of the Environment (MARN) was responsible for monitoring environmental conditions to provide the Civil Protection agency with accurate information so that proper warnings could be issued.

While the heaviest rains that triggered the majority of the floods and landslides lasted only six hours, the impacts and recovery endured much longer. At the request of MARN/SNET, significant space system support for this event was provided by the Regional Visualization and Monitoring System (SERVIR), which employed a number of different mechanisms to acquire and provide satellite images and value added products. Some secondary users included the Civil Protection agency and Ministry of Public Works, who were heavily involved in response, damage assessments and recovery.

During the immediate response phase, SERVIR provided assistance to decision makers by acquiring and rapidly analyzing high resolution satellite images to locate and measure floods and landslides as well as their impact on infrastructure, especially roads and bridges. Salvadoran field teams were responsible for assessing damages, but the widespread impacts placed them under significant stress. Images acquired by remote sensing instruments from numerous countries contributed to providing vital input to damage assessments.

Longer term impacts of these space system support products are evident in the ongoing recovery and mitigation phases. As a result of these images, value added products and follow-up field work, it is evident

that previous hazard zones need to be redrawn. Communities in high risk areas are being relocated, and monitoring systems are being strengthened.

This paper presents the chronology of the disaster and human response, focusing on evaluating how space-based resources and derived products were acquired, generated, disseminated and used, for this particular event. The utility of such products and areas for improvement are also discussed.