



## **Volcano Hazard Tracking and Disaster Risk Mitigation: A Detailed Gap Analysis from Data-Collection to User Implementation**

D. Faied (1) and A. Sanchez (2)

(1) International Space University, Strasbourg France, (2) Aerospace Research and Technology Center

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Dohy Faied, Aurora Sanchez (on behalf of SSP08 VAPOR Project Team)

Dohy.Faied@masters.isunet.edu

While numerous global initiatives exist to address the potential hazards posed by volcanic eruption events and assess impacts from a civil security viewpoint, there does not yet exist a single, unified, international system of early warning and hazard tracking for eruptions. Numerous gaps exist in the risk reduction cycle, from data collection, to data processing, and finally dissemination of salient information to relevant parties. As part of the 2008 International Space University's Space Studies Program, a detailed gap analysis of the state of volcano disaster risk reduction was undertaken, and this paper presents the principal results. This gap analysis considered current sensor technologies, data processing algorithms, and utilization of data products by various international organizations. Recommendations for strategies to minimize or eliminate certain gaps are also provided.

In the effort to address the gaps, a framework evolved at system level. This framework, known as VIDA, is a tool to develop user requirements for civil security in hazardous contexts, and a candidate system concept for a detailed design phase. VIDA also offers substantial educational potential: the framework includes a centralized clearinghouse for volcanology data which could support education at a variety of levels. Basic geophysical data, satellite maps, and raw sensor data are combined and accessible in a way that allows the relationships between these data types to be explored and used in a training environment. Such a resource naturally lends itself to research efforts in the subject but also research in operational tools, system architecture, and human/machine interaction in civil protection or emergency scenarios.