GLOBVOLCANO: GLOBAL MONITORING OF VOLCANOES FROM SPACE

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The GlobVolcano project (2007-2010) is part of the Data User Element programme of the European Space Agency (ESA). The project aims at demonstrating Earth Observation (EO) based integrated services to support the Volcanological Observatories and other mandate users (e.g. Civil Protection) in their monitoring activities. The information services are assessed in close cooperation with the user organizations for different types of volcano, from various geographical areas in various climatic zones.

In a first phase , a complete information system has been designed , implemented and validated , involving a limited number of test areas and respective user organizations (Colima in Mexico, Merapi in Indonesia, Soufrière Hills in Montserrat Island, Piton de la Fournaise in La Reunion Island, Karthala in Comore Islands, Stromboli and Volcano in Italy) .

The set of offered EO based information products is the following:

- Deformation Mapping (DM)
- Surface Thermal Anomalies (STA)
- Volcanic Gas Emission (SO_2)
- Volcanic Ash Tracking (ASH)

In the currently on-going second phase, 15 volcanic sites located in four continents are monitored and as many user organizations are involved and cooperating with the project team. Based on user requirements , the GlobVolcano Information System has been developed following system engineering rules and criteria, besides most recent interoperability standards for geospatial data. It consists of two main elements:

1. The GlobVolcano Data Processing System includes the EO data processing subsystems, located at each respective service center.
 - *Deformations mapping by Conventional DINSAR* is located at MDA Inc. (Canada).
 - *Deformations mapping by PSInSAR^{TM}* is located at T.R.E. (Italy).
 - *Surface Thermal Anomalies* is located at CGS. (Italy).
 - *Volcanic Gas Emission (SO_2)*: is located at: BIRA IASB Belgium (SCIAMACHY data), KNMI The Netherlands (OMI data) and DLR IMF German (GOME 2 data).
 - *Volcanic Ash Tracking* is located at CGS. (Italy).
2. The GlobVolcano Information Service is the provision infrastructure, including the following elements:
 - GlobVolcano Products Archive offering two main functionalities: 1) WMS (Web Map Service) for products visualization through the GVUI and 2) products delivery.
 - GlobVolcano Metadata Catalogue offering CS-W (Catalogue Service for Web) functionality.
 - GlobVolcano User Interface (GVUI), based on the Virtual Earth platform.

While product downloading is currently permitted only to the respective user organisation, the Metadata Catalogue can be publicly accessed, providing a powerful tool for scientific interchanges and cooperation among the user organizations.

The GlobVolcano information system and its current experimentation represent a significant step ahead towards the implementation of an operational, global observatory of volcanoes from space.