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An automatic Risk Chain for disaster management

Selma Cherchali (1), Jordi Inglada (1)
(1) Centre National d'Etudes Spatiales, 18 avenue Edouard Belin, 31401 Toulouse Cedex 9

CNES, the French national space agency, is involved in a European project set up under the European Global Monitoring for Environment and Security (GMES) initiative, PREVIEW, in order to make the best use of the most advanced research and technology outcomes in the field of Earth Observation for the improvement of risk management. In this paper, the rapid mapping service is described. The rapid mapping of hazards, whatever their type, is a common users' need both for emergency management (rapid assessment of the event extent and impacts) and for prevention and recovery purposes (final damage assessment for better management for the future events).

After a International Charter Space and Major disasters (http://www.disasterscharter.org/disasters/) activation to manage a crisis, the short time is one of the key factor for the users. The development and the validation of automatic image processing procedures for extracting requested information (**where and what are the changes, what is the impact)** will reduce the time and ensure the quality of the information.

Automatic algorithms for image registration and change detection between different kinds of optical data developed in other fields of image processing (medical imaging, computer vision) have been tested, validated and implemented in a specific CNES software processing called Risk Chain. Automatization of such facilities is absolutely necessary to reduce time delay to produce information for the customer.

Through implementation and validation of these tools, such as registration of images from different instruments, and also through performing a more automated change detection, the rapid mapping service can be improved in terms of quality and delivery time which is an important parameter in the case of managing a crisis in the frame of the International Charter.

In this paper, the operational tools will be presented through their application to real cases.