Automatic RST-based system for a rapid detection of man-made disasters

Valerio Tramutoli (1), Rosita Corrado (1), Carolina Filizzola (2), Caterina Sara Livia Grimaldi (1), Giuseppe Mazzeo (1), Francesco Marchese (2), and Nicola Pergola (2)

(1) Univeristy of Basilicata, DIFA, Potenza, Italy (valerio.tramutoli@unibas.it), (2) National Research Council, Institute of Methodologies of Environmental Analysis

Man-made disasters may cause injuries to citizens and damages to critical infrastructures. When it is not possible to prevent or foresee such disasters it is hoped at least to rapidly detect the accident in order to intervene as soon as possible to minimize damages.

In this context, the combination of a Robust Satellite Technique (RST), able to identify for sure actual (i.e. no false alarm) accidents, and satellite sensors with high temporal resolution seems to assure both a reliable and a timely detection of abrupt Thermal Infrared (TIR) transients related to dangerous explosions.

A processing chain, based on the RST approach, has been developed in the framework of the GMOSS and G-MOSAIC projects by DIFA-UNIBAS team, suitable for automatically identify on MSG-SEVIRI images harmful events. Maps of thermal anomalies are generated every 15 minutes (i.e. SEVIRI temporal repetition rate) over a selected area together with kml files (containing information on latitude and longitude of "thermally" anomalous SEVIRI pixel centre, time of image acquisition, relative intensity of anomalies, etc.) for a rapid visualization of the accident position even on Google Earth.

Results achieved in the cases of gas pipelines recently exploded or attacked in Russia and in Iraq will be presented in this work.