



Monitoring of pipeline ruptures by means of a Robust Satellite Technique (RST)

C. Filizzola (1), G. Baldassarre (2), R. Corrado (2), G. Mazzeo (2), F. Marchese (1), R. Paciello (1), N. Pergola (1,2), V. Tramutoli (2,1)

(1) National Research Council, Institute of Methodologies of Environmental Analysis, C. da S. Loja, 85050 Tito Scalo - Potenza (Italy), (2) University of Basilicata, Department of Engineering and Physics of the Environment, Via dell'Ateneo Lucano 85100 Potenza (Italy).

Pipeline ruptures have deep economic and ecologic consequences so that pipeline networks represent critical infrastructures to be carefully monitored particularly in areas which are frequently affected by natural disasters like earthquakes, hurricanes, landslide, etc.

In order to minimize damages, the detection of harmful events along pipelines should be as rapid as possible and, at the same time, what is detected should be an actual incident and not a false alarm.

In this work, a Robust Satellite Technique (RST), already applied to the prevision and NRT (Near Real Time) monitoring of major natural and environmental hazards (such as seismically active areas, volcanic activity, hydrological risk, forest fires and oil spills) has been employed to automatically identify, from satellite, anomalous Thermal Infrared (TIR) transients related to explosions of oil/gas pipelines. In this context, the combination of the RST approach with high temporal resolution, offered by geostationary satellites, seems to assure both a reliable and timely detection of such events. The potentials of the technique (applied to MSG-SEVIRI data) were tested over Iraq, a region which is sadly known for the numerous (mainly manmade) accidents to pipelines, in order to have a simulation of the effects (such as fires or explosions near or directly involving a pipeline facility) due to natural disasters.