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Timely detection and monitoring of oil leakage by satellite optical data.

C.S.L. Grimaldi (1), I. Coviello (2), T. Lacava (2), N. Pergola (2), and V. Tramutoli (1)

(1) Department of Engineering and Physics of the Environment (DIFA), University of Basilicata, Italy (grimaldi@imaa.cnr.it),
(2) Institute of Methodologies for Environmental Analysis (IMAA), National Research Council, Italy

Sea oil pollution can derive from different sources. Accidental release of oil into the oceans caused by "human errors" (tankers collisions and/or shipwrecks) or natural hazards (hurricanes, landslides, earthquakes) have remarkable ecological impact on maritime and coastal environments. Katrina Hurricane, for example, hitting oil and gas infrastructures off USA coasts caused the destruction of more than 100 platforms and the release into the sea of more than 10,000 gallons of crude oil. In order to reduce the environmental impact of such kind of technological hazards, timely detection and continuously updated information are fundamental. Satellite remote sensing can give a significant contribution in such a direction. Nowadays, SAR (Synthetic Aperture Radar) technology has been recognized as the most efficient for oil spill detection and mapping, thanks to the high spatial resolution and all-time/weather capability of the present operational sensors. Anyway, due to their current revisiting cycles, SAR systems cannot be profitably used for a rapid detection and for a continuous and near real-time monitoring of these phenomena. Until COSMO-Skymed SAR constellation, that will be able to improve SAR observational frequency, will not be fully operational, passive optical sensors on board meteorological satellites, thanks to their high temporal resolution, may represent a suitable alternative for early detection and continuous monitoring of oil spills, provided that adequate and reliable data analysis techniques exist. Recently, an innovative technique for oil spill detection and monitoring, based on the general Robust Satellite Techniques (RST) approach, has been proposed. It exploits the multi-temporal analysis of optical data acquired by both AVHRR (Advanced Very High Resolution Radiometer) and MODIS (Moderate Resolution Imaging Spectroradiometer) sensors in order to detect, automatically and timely, the presence of oil spill over the sea surface, trying to minimize the "false-detections" possibly caused by spurious effects (e.g. clouds). In this paper, preliminary results obtained applying the proposed methodology to different test-cases are shown and discussed.