



Exploitation of Modis and SAR imagery for oil spill detection

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SAR spaceborne capability to detect marine oil spills through damping of wind-generated short gravity-capillary waves has been extensively demonstrated during past years. In contrast, it has not yet been found the optimal use of optical/NIR imaging sensors for detection and monitoring of polluted areas. We propose the use of Modis images acquired in sun glint conditions to reveal smoothed regions such as those affected by oil pollution. The underlying physical mechanism is based on the modification of the surface slopes distribution composing the roughened sea due the action of mineral oils.

The methodology is demonstrated for a number of case studies in the Mediterranean Sea and North Atlantic spanning from 2001 to 2004 where spills were detected by ERS SAR imaging. The corresponding Modis images acquired within a few hours were under sun glint conditions according to satellite imaging geometry and wind field distribution over the selected areas. Results of a detailed study about the effective applicability of the method will also be discussed. As a result of the high repetitive Modis coverage at latitudes covering the Mediterranean Sea (about two times a day), the importance of these results are based on the possible extensive combined exploitation of SAR and Modis data to detect and track oil slicks.