



Utilisation of the GMES Sentinel satellites for off-shore platform oil spills and gas flaring monitoring

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Oil spills and gas flaring are serious issues for ecosystem, economy and people working on the extraction sites. Oil spill is known. Gas Flaring is the disposal of poison waste gases generated in the oil extraction process. High volumes (every year gas flaring burns worldwide the equivalent of 25% of the overall gas burned in Europe), significantly contributing to the global carbon emission budget (0.5% of total, 2008). European and worldwide legislation pays an increasing attention to it.

Our Sentinel1 and 3 SAR and SLSTR usage for this objective won the GMES Masters 2012 IDEAS Challenge. In this study, we use SAR and infrared/thermal (SLSTR) data to identify unexpected misbehaviours of oil platforms, like switch on of the flare and oil spill in the ocean.

On one side, the detection and characterization of gas flaring is achieved by analysing the infrared/thermal radiances measured by the SLSTR instrument on-board SENTINEL-3. This technique has been developed and tested using the ENVISAT Along Track Scanning Radiometer (ATSR) dataset and proved to be adequate for long term monitoring of oil extraction for both off-shore and in-shore drilling stations. The spatial/temporal coverage provided by SENTINEL-3 will allow an unprecedented daily monitoring of the oil extraction platforms.

On the other side, the detection of oil spills and ships can be performed using Synthetic Aperture Radar (SAR). Both for oil spills and ships, many techniques have been published in the dedicated literature and validated to make the process of detection from SAR automatic. The extension of these techniques to the future SENTINEL-1 data is feasible.

The service is mainly addressed to governments (in charge of controlling respect of the rules), civil protection authorities (to promote prevention of pollution damages), oil companies (that want to prove their respect of rules and attention to the environment), and ONGs (involved in the monitoring of the environment).

The methodology applied, the tests performed, and the foreseen development of the service will be presented at the conference.