Oil Spill Monitoring in Western Australia

EOMAP GmbH & Co has launched several services to support oil spill monitoring using optical satellites. The services were developed for mapping a major ecological disaster: a recent oil spill near the coast of Western Australia.

Oil, gas and condensate started seeping into the Timor Sea on 21st August from a leak 250 kilometres north of Truscott, and 690 kilometres west of Darwin. The incident occurred in 3,500 metres depth during drilling by mobile offshore drilling unit of Bangkok-based PTT Exploration & Production Pcl. Since end of August the spill has covered several thousand square kilometres with approx. 400 barrels a day leaking. The spill could provoke heavy damage to commercially important fish stocks, the marine ecosystem and coral colonies around Ashmore Reef, about 840 kilometres west of Darwin and 610 kilometres north of Broome.

Timely and accurate detection of surface oil slicks is indispensable for monitoring oil spill hazards and operating drift forecast models. Such data is extremely valuable to emergency response management. Assessment of the distribution of oil slicks is often implemented with the use of satellite remote sensing techniques. Typically these techniques rely on visible, infrared and synthetic aperture radar (SAR). Dampened ocean surface roughness caused by caused by the oil layer is the phenomena identifiable when processing remote sensing imagery. When using SAR data or optical, high-resolution satellite imagery, the limiting factor is mainly spatial coverage and revisit frequency.

To avoid these limitations, procedures for mapping oil slicks using various optical satellite sensors were developed. They cover wide swath sensors such as MODIS and MERIS, and high-resolution satellites like RapidEye. These systems are capable of imaging any point on earth every 1-2 days. While the MODIS and MERIS instruments provide imagery at medium resolution (250m-500m), RapidEye's five satellite constellation produces 5 meter resolution imagery.