



Airborne and in-situ multi-sensor-systems for hydrocarbons in the sea

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Monitoring, detection and quantification of hydrocarbons on the sea surface and within the water column is of high relevance for environmental protection objectives and spill response management alike. Sensing capacities provide a valuable tool for deterrence, reconnaissance and decision making. The scope of possible events ranges from natural sources to anthropogenic inputs and from small leakages to massive pollution. They also cover a wide amount of target substances, including dispersants, in a dynamic marine background with possible ambiguities like chromophoric dissolved organic matter or decaying algal blooms. To cope with these challenges, multi-sensor-systems provide a complementary suite of data sources that need to be merged for value-added information generation. Modern airborne remote sensing applies such a variety of sensors for marine oil spill detection and the analysis in the context of the sensor platform data and supplemental information. The work presented will 1) address these modern multi-sensor-systems, the electromagnetic-, space- and time-domain they cover and 2) the fusion approaches that provide real time information for immediate decisions relevant both in prosecution and mitigation of adverse effects. These will be based on the operational surveillance aircraft of different European countries, among them Spain, The Netherlands or Germany. In comparison to the highly integrated airborne systems, in-situ sensor capacities are still on a basic level. Therefore, an additional focus is on the objectives and possibilities of in-situ multi-sensor-systems, recent optical sensors and observation platforms.