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An advance forecasting system for ship originated oil spills in the Mediterranean

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One of the permanent risks from an oil spill incident in the Mediterranean is associated with the heavy traffic in maritime transport, as well nowadays with the coastal and offshore installations related to the oil and gas industry. Such dense activity imposes on the coastal countries the need for preparing an operational response to major oil spill incidents. In the recent past, several policies related to oil spill response have been adopted internationally. At the regional level the Barcelona convention, recognizing pollution from oil spills as one of the major threats to the marine environment of the Mediterranean, initiated the preparedness for responding to major oil spill incidents, through various national and sub-regional contingency plans. At the European level the Member States was obliged to implement the EU Directive 2005/35, aimed at identifying the polluter and bringing them to prosecution. The response to an oil spill incident employs various measures and equipment. However, the success of such response depends greatly on the prediction of the movement and weathering of the oil spills. Such predictions may obtained through the operational application of advanced numerical oil spill models integrated with met-ocean forecasting data. A well established operational system for oil spill predictions in the Mediterranean is the MEDSLIK three dimensional model that predicts the transport, diffusion and spreading of oil spill and incorporates the fate processes of evaporation, emulsification, viscosity changes, dispersion into the water column and coastal impact and adhesion. MEDSLIK is integrated with the MyOCEAN regional and several downscaled ocean forecasting systems in the Mediterranean, contributing to the development of the GMES marine services. Moreover, MEDSLIK has been coupled with EMSA-CSN and ESA ASAR imageries, for short forward and backward predictions, to assist the response agencies in the implementation of the EU Directive 2005/35. From 2007 to 2011 more than a thousand possible ship originated oil slicks were detected by ASAR imageries in the Levantine Basin and then used for operational predictions by MEDSLIK. The successful operation of the MEDSLIK oil spill prediction system in the Levantine Basin has initiated efforts to implement a multi model approach to oil spill predictions in the Mediterranean through the realization of the recently approved project known as MedDESS4MS-Mediterranean Decision Support System for Maritime Safety, funded under the MED program. MEDESS4MS project is dedicated to the prevention of maritime risks and strengthening of maritime safety related to oil spill pollution in the Mediterranean. MEDESS4MS will deliver an integrated operational multi model oil spill prediction service in the Mediterranean, connected to existing monitoring platforms (EMSA-CSN, REMPEC, AIS), using the well established oil spill modeling systems, the data from the GMES Marine Core Services and the national ocean forecasting systems.