Geophysical Research Abstracts, Vol. 7, 05395, 2005
SRef-ID: 1607-7962/gra/EGU05-A-05395


# A study of "PRESTIGE" oil spill by the combined uso of ENVISAT/ASAR, QuikSCAT scatterometer and limited-area model simulations.

M. Adamo (1,2), G. De Carolis (1), S. Morelli (3) and F. Parmiggiani (4)

(1) ISSIA-CNR, Via G. Amendola 122, 70126 Bari, Italy (2) COS(OT), COnsorzio Sviluppo Distretti Ind. Oss. Terra, Bari, Italy (3) Dept. of Physics, Univ. of Modena and Reggio E., 41100 Modena, Italy (4) ISAC-CNR, via Gobetti 101, 40129 Bologna, Italy

The "Prestige" tanker wreck of November 2002 was a major disaster affecting the environment of north-western coasts of Spain (Galicia). The consequences of "Prestige" accident have been studied by several research groups in the last two years. Hereafter we present a study of "Prestige" oil spill by means of a combined use of remote sensing tools and limited-area model simulations.

Two Envisat/ASAR Wide Swath (WS) images over the area of the disaster, Nov. 17 and Dec. 3, were retrieved from ESA archive. ASAR WS processing consists of 2 main steps: 1. Ingestion and geo-location, performed by means of the commercial software package TeraScan (www.seaspace.com); and 2. Speckle filtering and segmentation, performed according to the algorithms described in [1] and [2].

A major question in oil spill detection with SAR images is the discrimination between "real" oil slicks and "lookalikes". To operate this distinction we adopted an approach, based on local meteo-marine condition analysis, which implies: 1. Wind and wave information retrieval from SAR image itself, performed according to the methods described in [3] and [4]; 2. QuikSCAT scatterometer wind data from the 2 daily passes of the satellite, as obtained from PODAAC/JPL; 3. Simulations by means of the limited-area meteorological model Eta [5], a three-dimensional, primitive equation, grid-point model currently operational at the National Center for Environmental Prediction of the U.S. National Weather Service.

We shall present and discuss the results of the analysis outlined above. In particular, we

shall stress the relevance of these methodologies as a support to risk management, and in order to provide civil defence structures to deal with the different social, political and economic issues resulting from a disaster like that of "PRESTIGE" (fisheries, tourism, transports, etc.).

REFERENCES [1] A. Baraldi and F. Parmiggiani, "A refined Gamma MAP SAR speckle filter with improved geometrical adaptivity", IEEE Trans. Geosci. Remote Sensing, vol. 33, No. 5, (1995), 1245-1257. [2] A. Baraldi, P. Blonda, F. Parmiggiani and G. Satalino, "Contextual clustering for image segmeation", Optical Engineering, vol. 39 (2000), no. 4, pp. 1-17 [3] P. Wadhams, F. Parmiggiani and G. De Carolis, "The use of SAR to measure ocean wave dispersion by frazil-pancake ice fields", J. Phys. Oceanography, Vol. 32 (2002), no. 6, 1721-1746. [4] Giacomo De Carolis, Flavio Parmiggiani and Elena Arabini, "Observations of wind and ocean wave fields using ERS Synthetic Aperture Radar imagery", Int. J. Remote Sensing, Vol. 25, No. 7-8 (2004) 1283 - 1290. [5] D. Cesini, S. Morelli, F. Parmiggiani, "Analysis of an intense bora event in the Adriatic area", Natural Hazards and Earth System Sciences, (2004) vol. 4, Issue 2: 323 - 337.