

EGU2020-2946

<https://doi.org/10.5194/egusphere-egu2020-2946>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Oil spill modeling for the Port of Taranto (SE Italy)

Svitlana Liubartseva¹, Ivan Federico², Giovanni Coppini², and Rita Lecci²

¹CMCC Foundation - Euro-Mediterranean Center on Climate Change, Ocean Predictions and Applications, Bologna, Italy (svitlana.liubartseva@cmcc.it)

²CMCC Foundation - Euro-Mediterranean Center on Climate Change, Ocean Predictions and Applications, Lecce, Italy

The Taranto Sea is a Mediterranean lagoon where alarming pressure is expected to further increase, due to industrialization, heavy ship traffic, and densely populated coasts. The area hosts the Trading Port, Industrial Port, and Container Terminal. There is an important refinery, owned by ENI's Refining&Marketing, with a potential of 6 million tons per year (Autorità di Sistema Portuale del Mar Ionio – Porto di Taranto, 2017). A buoyed area in the Mar Grande is used by tankers of up to 300,000 GRT carrying petroleum for the refinery. Being at risk of oil pollution, the Taranto Sea became a pilot site for the development of a universal relocatable platform aimed at the real time management of marine pollution events in the harbors and ports in the framework of the IMPRESSIVE Project.

According to a Project paradigm, marine pollution forecasting system in harbors includes (1) EO observation technologies (satellite, ASV, UAV); (2) high-resolution hydrodynamic models based on downscaling of CMEMS products, and (3) pollution transport models.

To implement the system components for the Taranto Sea the Lagrangian oil spill model MEDSIK-II has been coupled to Southern Adriatic Northern Ionian coastal Forecasting System (SANIFS <http://sanifs.cmcc.it> Federico et al., 2017) and ECMWF atmospheric forecast. To this end, the SANIFS output discretized on the unstructured horizontal grid at a variable resolution of 3–4 km for the open sea and of 50–500 m for the coastal area is interpolated to a regular grid with a resolution of 150 m. For the first time, MEDSLIK-II can use currents and sea surface temperature of such the resolution, which is almost 15 times less than previously exploited horizontal resolution for the Pilot sites in the framework of coupling to the Adriatic Forecasting System (AFS) (Guarnieri et al., 2010).

The new coupling is planned to run the MEDSLIK-II simulations in stochastic mode in order to evaluate the environmental consequences of possible accidents and malfunctions in the ENI petroleum transport system.

This work is performed in the framework of the IMPRESSIVE project (#821922) co-funded by the European Commission under the H2020 Programme.

References:

Autorità di Sistema Portuale del Mar Ionio – Porto di Taranto, 2017. Three-year operational plan 2017–2019 and Port vision 2030 of the Port of Taranto. <http://www.port.taranto.it/index.php/en/>

Federico, I., Pinardi, N., Coppini, G., Oddo, P., Lecci, R., Mossa, M. 2017. Coastal ocean forecasting with an unstructured grid model in the southern Adriatic and northern Ionian seas. *Nat. Hazards Earth Syst. Sci.*, 17, 45–59, doi: 10.5194/nhess-17-45-2017.

Guarnieri, A., Oddo, P., Pastore, M., Pinardi, N., 2010. The Adriatic Basin Forecasting System new model and system development. *Coastal to Global Operational Oceanography: Achievements and Challenges*, pp. 184–190.