Operational downscaling and down streaming in the Med-Sea assisting local and regional agencies in oil spills incidents via state of the art ICT technologies

The operational response of the MONGOOS members during the Syrian oil pollution crisis in late summer 2021 threatened the neighboring countries in the Eastern Mediterranean, demonstrate a best real practice within the broader context of the operational oceanography developments in the Mediterranean, the usefulness of the downscaling and the down streaming applications to the local and regional response agencies to support their decisions during major oil pollution incidents (Zodiatis et al. 2023). As it was reported by REMPEC a total of 12,000 tons of crude oil was spilled in the NE Levantine basin on the 23 August 2021 from the fuel tanks of the Baniyas power station in Syria. All available satellite-derived SAR and optical images provided by ESA and EMSA-CSN were processed to initiate the MEDSLIK and MEDSLIK-II oil spill modeling predictions using operational basin and downscaling met-ocean forecast from CYCOFOS, CMEMS-Med MFC, SKIRON and ECMWF. The post operational inter-comparison of the oil spill extends observed by the satellite images and those from the oil spill prediction shown good statistical agreement in most of the examined cases (Keramea et al. 2023). To improve the operational accessibility of the end-users to downscaled and down streaming products, we are currently working on an implementation with state-of-the-art open-source technologies, including (a) PostGIS for geospatial data storage and transformations, (b) QGIS for geospatial processing, map creation and visualization, and (c) Docker container platform to implement an improved operational services as a virtualized portable stack. In addition, Machine Learning (ML) modules are considered for improving the detection rate, efficiency and time, based on remote sensing data. References: -Keramea, et al., (2023). Satellite imagery in evaluating oil spill modelling scenarios for the Syrian oil spill crisis, summer 2021. Front. Mar. Sci., https://doi.org/10.3389/fmars.2023.1264261. -Zodiatis, et al., (2023). The Syrian oil spill predictions in the Eastern Mediterranean using SAR images, CMEMS and CYCOFOS forecasts. Proceedings of the 10th EuroGOOS International Conference. doi: http://hdl.handle.net/10793/1883

George Zodiatis, ORION Research, Nicosia, Cyprus. Kyriakos Prokopi, Roswell Computing, Nicosia, Cyprus. Andreas Nikolaidis, MIST, Nicosia, Cyprus