MED-JELLYRISK

Conference and Training Seminar

Addressing jellyfish blooms to safeguard coastal economic activities

Research, innovation, management and education

Corinthia St. George's Hotel, St. Julian's, Malta
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CAN WE PREDICT THE DISPERSAL PATH OF A JELLYFISH BLOOM?

Jellyfish blooms occurring in coastal waters can be a source of risk for public health, fishery and all the related economical activities. The prediction of the environmental conditions that promote jellyfish outbreaks as well as the fate of the bloom are of high interest especially when dealing with CZM.

We present a numerical system able to furnish a support to the local authorities for the management of the risk of presence of jellyfish blooms along the Maltese coastal waters. The system consists of a set of numerical models that allow non expert users to make predictions over the most probable areas of impacts of jellyfish blooms along the Archipelago's coastlines.

The numerical tool is based on a high resolution hydrodynamic finite element coastal ocean model (SHYFEM) coupled with a particles tracking lagrangian model for reproducing both the surface water circulation and the transport and diffusion of numerical particles inside the area of interest. The costal model is nested into an Open Ocean sub-regional 3D hydrodynamic model (ROSARIO) which reproduces daily the 3D hydrodynamics fields needed for predicting the fate of released numerical particles. The area of investigation included both the Maltese Archipelagos coastal areas and the surrounding open ocean areas roughly between the X and Y. The model domain was reproduced by means of a finite element mesh that was designed to accurately reproduce both the bathymetric features and the complex geometry of the Maltese archipelago coastlines. The grid patial resolution ranged between few km for the open ocean area and few tens of meters for coastal areas of particular interest such as beaches or harbors.

The system will be integrated into a Graphical User Interface which will allow to define the position in time and space of a hypothetical bloom found in the Maltese waters, to select the amount of particles to simulate the jellyfish biomass and to launch the trajectory model run. The output will consist on both the geographical positions of each seeded particles within the area of interest and along the whole duration of the simulation and on the impacted

Author Cucco, Andrea[1]; Umgiesser, Georg[2]; Drago, Aldo[3]; Cutajar, Denis[3]; Gauci, Adam[3]; Azzopardi, Joel[3]; Deidun, Alan[3]

Affiliation [1]IAMC-CNR, Oristano, Italy; [2]ISMAR-CNR, Venice, Italy; [3]IOI-MOC, University of Malta, Msida, Malta

Contact andrea.cucco@cnr.it