particularly intense. The currents closer to the coast tend to swerve against the SE tip of Malta as a swift flow; the currents further offshore continue to flow away from Malta. When the AIS vein is displaced away from the coast and shifted more towards the southern Sicilian coast, particularly in Winter, a mesoscale anticyclonic eddy formation comes into action, tending to reverse the flow to a NW direction closer to the Maltese coast. These eddy formations can become even more complex when the AIS is weaker.

Applications of hydrodynamic models for modelling drifting jellyfish blooms around the Maltese islands

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Within the ambit of the MED-JELLYRISK project, the IOI-Malta Operational Centre is coordinating the development of a jellyfish dispersion model capable of generating both a hindcast and a forecast (extending up to a maximum of 4 days following day of sighting) output for the dispersion trajectory taken by a jellyfish bloom of specified densities and sighted at a specified location. 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 coastal model is nested into an Open Ocean sub-regional 3D hydrodynamic model (ROSARIO), having a resolution of $1/64^0$ and which reproduces daily the 3D hydrodynamic fields needed for predicting the fate of released numerical particles. 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 system will be integrated into a Graphical User Interface (GUI) which will allow the user 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 model will be partly validated by using the trajectories followed by a series of open water and coastal water drifters whose dispersion is geo-referenced and which have been regularly released by the IOI-MOC within Maltese coastal waters.