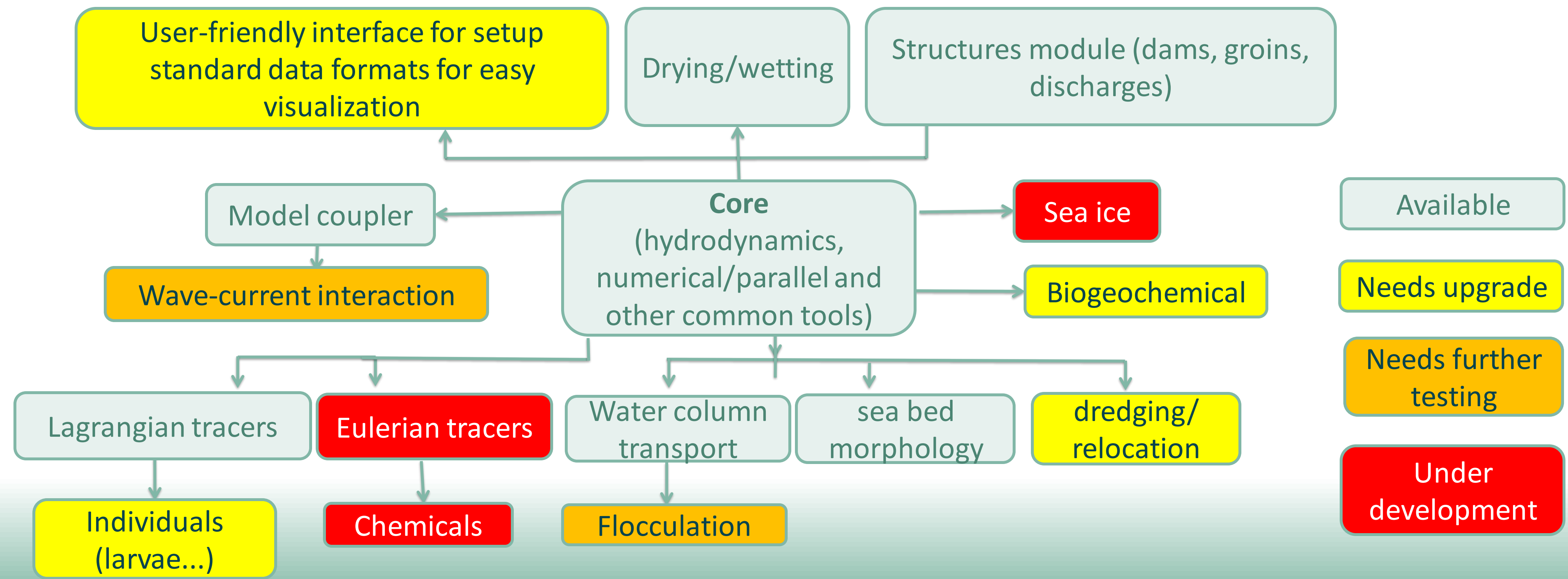


Katrijn Baetens, Dries Van den Eynde, Léo Barbut, Stéphanie Ponsar, Valérie Dulière, Nathan Terseleer-Lillo, Paloma de la vallée Poussin, Sébastien Legrand and Geneviève Lacroix
Royal Belgian Institute of Natural Sciences, Operational Directorate Natural Environment, Belgium



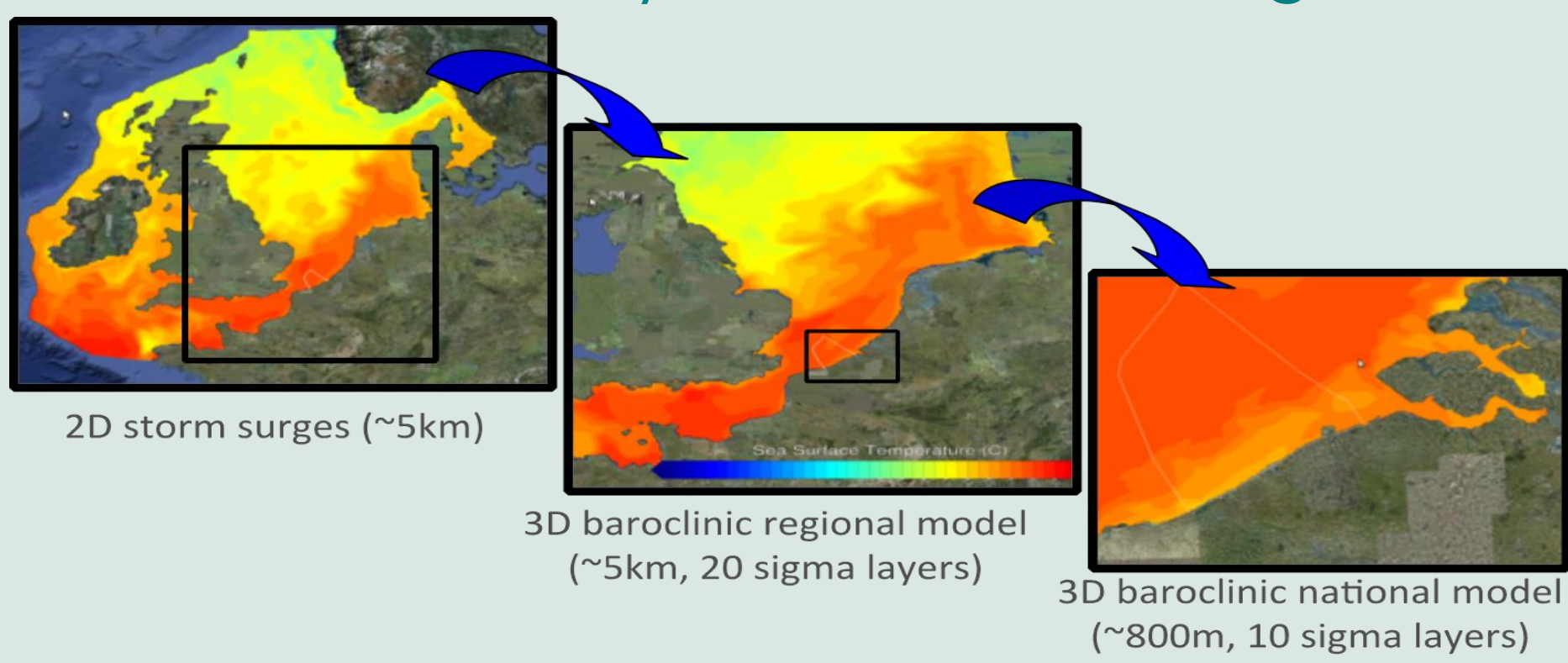
In-house software COHERENS

COHERENS is an acronym for COupled Hydrodynamical Ecological model for REgional Shelf seas. It uses a rectangular or curvilinear grid. It recently had an upgrade and is under constant development.



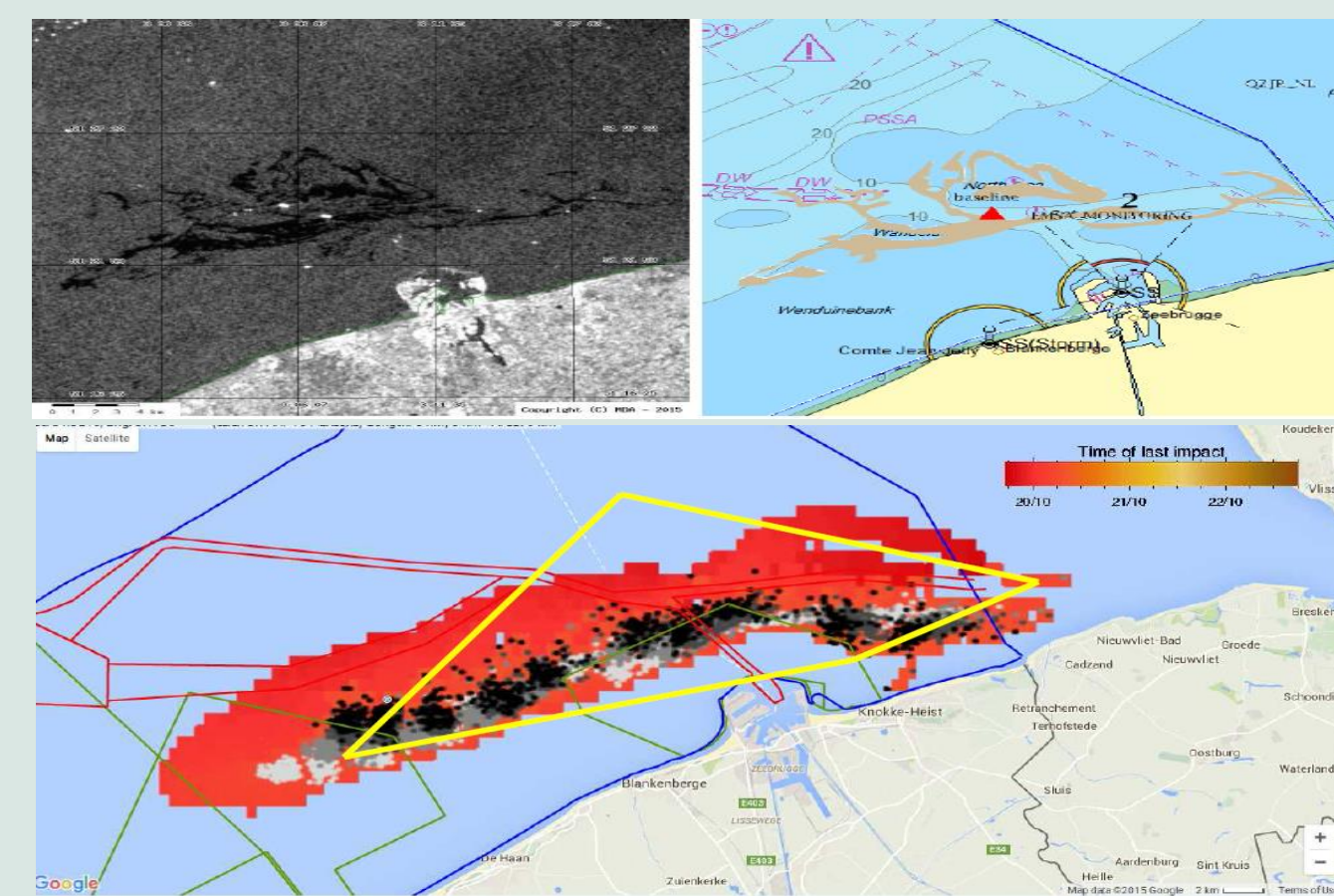
Some applications

Daily forecasts of the sea state (currents, sea surface temperature, water level...) with the modeling forecasting suite



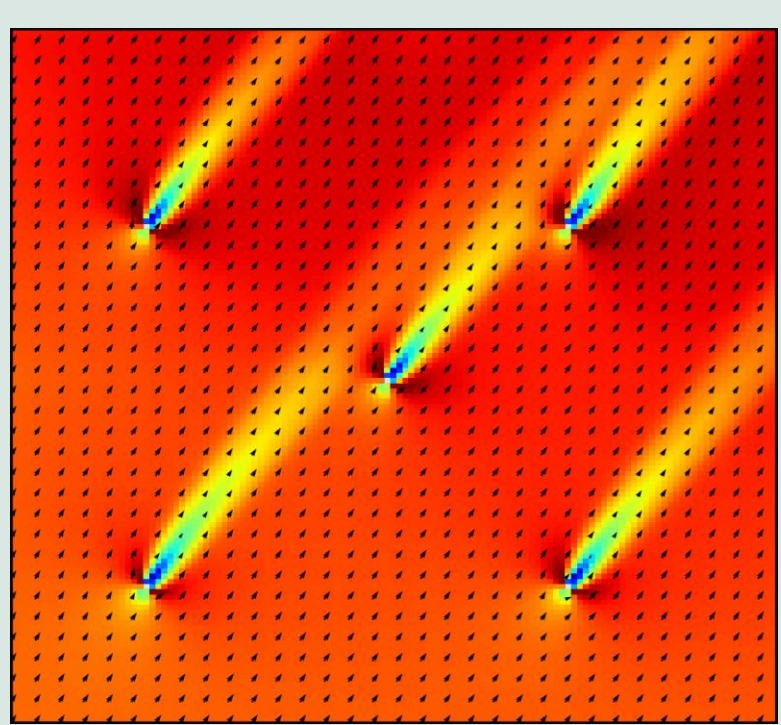
<https://odnature.naturalsciences.be/marine-forecasting-centre/>

OSERIT, oil spill simulations

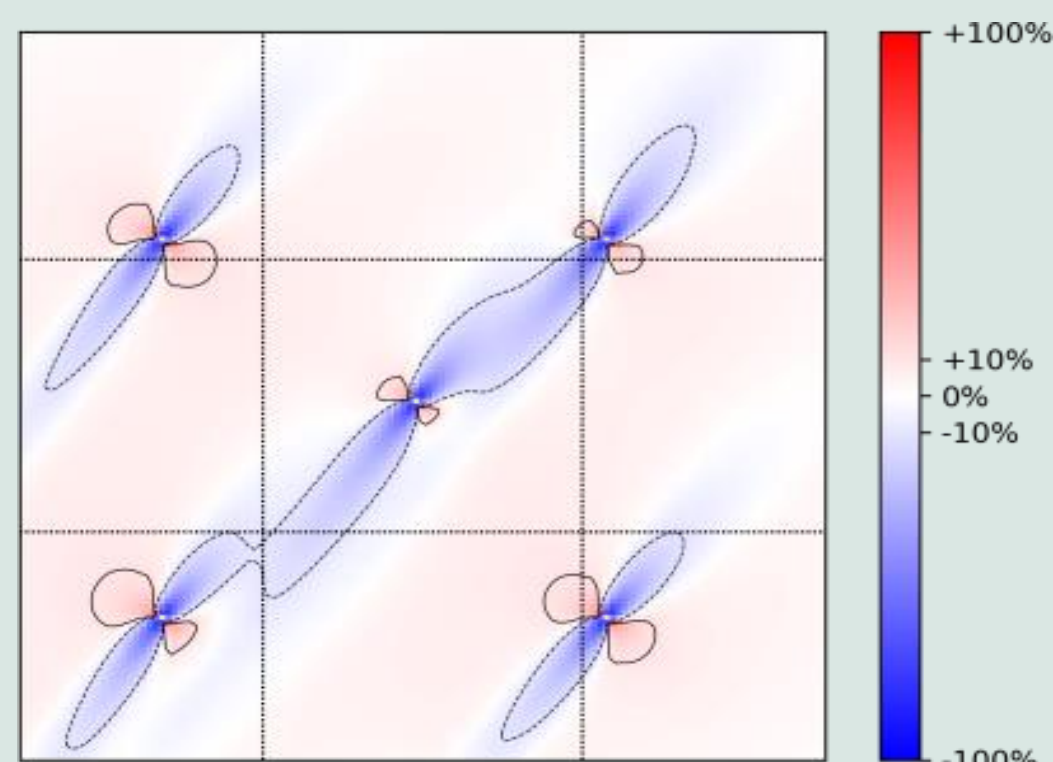


Example of a simulated oil spill in front of the port of Zeebrugge, validated against aerial observations

Effects of windmills on the hydrodynamics. Each windmill is estimated to have an impact area of 0.066 km²

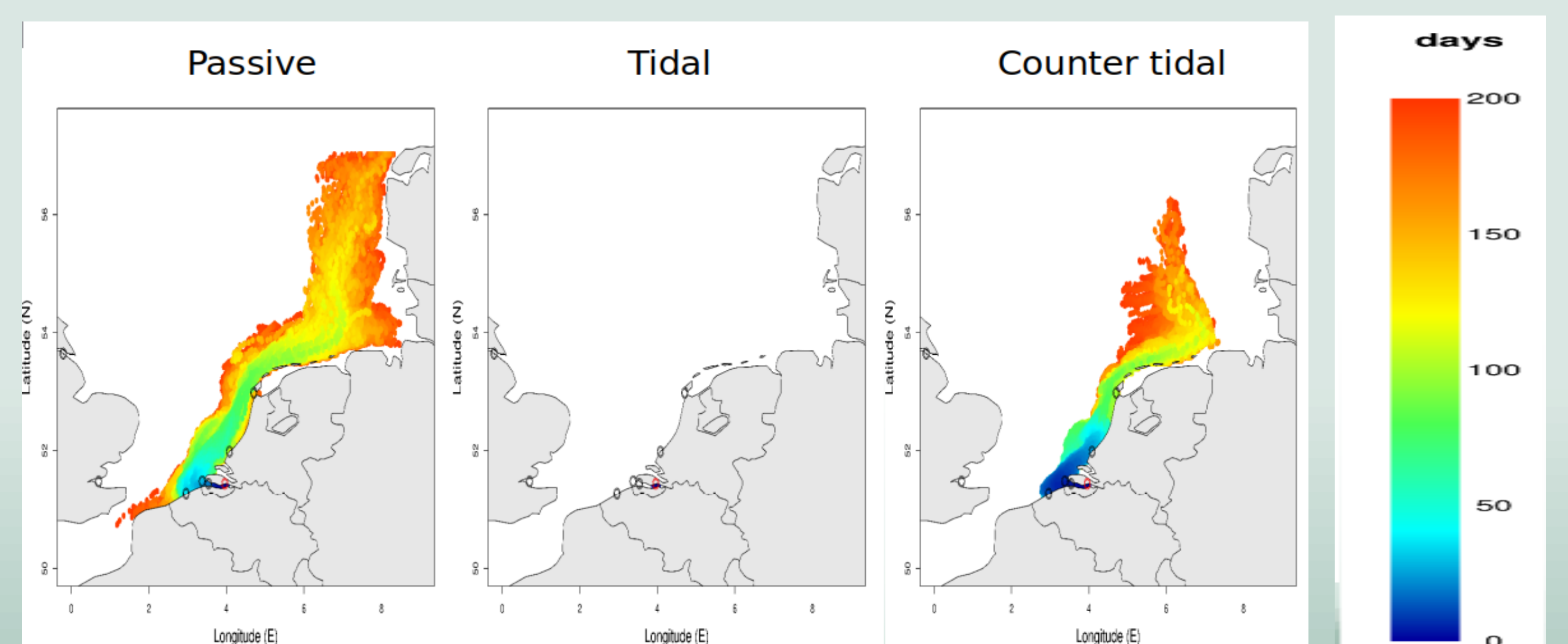


Bottom current (m/s)



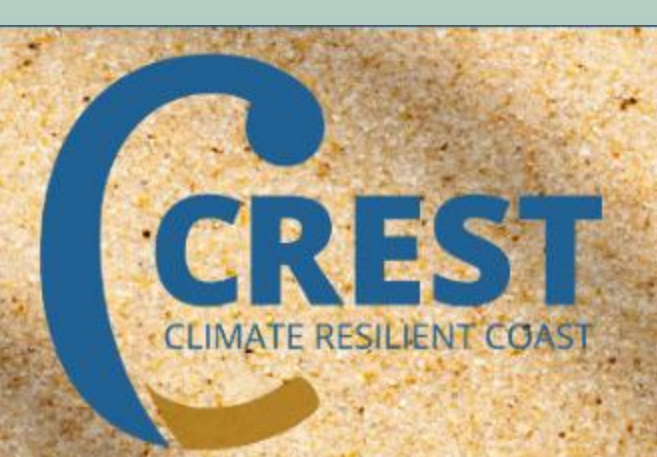
Impact of windmill structures on bottom current

Ecological evidence for a 'Same Risk Area' between Belgium and the Netherlands. The connectivity between ports in the North Sea depends on species behaviour.



Larval dispersal of a generic species released from Antwerp (in days). Species are drifting passively along the water current (left), or move upward during flood (middle) or during ebb (right).

Climate change



Define state of the art climate change scenario's along the Belgian coast