Mapping the oil spill hazard across the Atlantic coasts

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Maritime casualties and operations (e.g. engine leakages, tank washing) are responsible for over 600,000 tons of oil spilt in the ocean every year. The numbers are impressive, but we are still unaware of the potential impacts such volume may have on our coastlines. The complexity of large-scale oil pollution and its inherent uncertainties hinder the determination of its coastal impacts through observations. A large ensemble oil spill experiment was performed aimed to obtain probabilistic estimates of potential accidental oil spill impacts to the coastal environment (i.e. coastal oil spill hazard). The experiment consisted on over 300,000 oil spill scenarios simulated with MEDSLIK-II, ingesting global Marine Copernicus ocean fields and encompassing the ice-free Atlantic basin. An innovative oil spill hazard index based on the statistical distribution of simulated beached oil concentrations was proposed. Countries/states bordering the Atlantic basin were ranked based on their coastal oil spill hazard indices. The experiment results are available on an interactive web portal aimed to support decision making at the international level. Finally, the fitness-for-purpose of the oil spill hazard map and the fitness-for-use of the input data were evaluated by expert users.