



Environmental hazard and risk assessment for Italian oil rigs

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A forecasting and risk assessment tool for oil dispersion from Italian oil rigs has been set up within the framework of a national project devoted to the monitoring and assessment of the oil spill related risk. Such system is based on 3D Eulerian hydrodynamical models providing forcing fields for a Lagrangian model for oil dispersion and slick evolution (oil transport and transformation). The system daily provides the outcomes of numerical simulations of possible oil dispersions from oil rigs. Aside the operational use of the system, the numerical outputs are used to compute statistics of the slick distributions. Such statistics provide an estimation of the hazard, assessed by two different indexes. The indexes constitute the basic informative layer on which the environmental risk is also assessed, once opportunely combined with coastal vulnerability and sensitivity layers. As short forecasts (2-4 days long) often does not allow the oil to reach the coasts, an extra set of long-period simulations has been performed in order to compute a further, long-term based, set of hazard indexes. Concerning coastal sensitivity layers we took into account basic information like shore type (rocky, sandy), presence of potentially relevant and sensitive habitats (e.g. *Posidonia oceanica* meadows) and protection level (given by the perimeter of protected areas). It is shown that, while the hazard (related to the probable oil occurrence and concentration) is obviously larger in the nearby of the oil rigs, the largest environmental risk, strictly connected to the vulnerability of the sites, is related to particularly sensitive environments/biotopes as, for instance, the zones with *Posidonia oceanica* coverage within protected areas. So, the risk is strictly linked to an "expert analysis" that can assign given values to the vulnerability layers. We may conclude that risk is a concept changing with time and varying with the level of knowledge, awareness and information at disposal.