



Where is the Oil? WITOIL as an open and accessible oil spill simulation platform on a digital twin.

A user-friendly application has been developed to democratize access to real-time and historical oil spill modeling. This interface allows users to navigate the infrastructure and utilize the WITOIL on cloud Docker container, which incorporates the Medslik-II oil spill model through a simple interface. By inputting basic characteristics such as oil spill event position, date and time, oil spill volume, oil API, and spill rate, users can initiate simulations. The backend system retrieves necessary data from Copernicus and ECMWF APIs, providing either analysis or reanalysis data for sea and ocean conditions, along with ERA5 reanalysis for wind inputs. Additionally, it leverages topography data from GEBCO 2023 and coastline information from GSHHS as boundary conditions. Within few minutes, users can assess the outputs of their simulations. This innovative tool eliminates the need for advanced coding skills, thereby empowering stakeholders and users from various backgrounds to evaluate the risks associated with real or hypothetical oil spill scenarios. Consequently, it provides essential resources for informed decision-making and effective response during oil spill emergencies. This digital twin framework not only facilitates immediate impact assessment but also supports long-term strategic planning for environmental protection and sustainability.

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