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Risk index of contaminant dispersion in the sea, case study from HarmoNIA project

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Abstract:

HarmoNIA (Harmonization and Networking for contaminant assessment in the Ionian and Adriatic Seas) is an Adrion (Adriatic - Ionian) project. One of our tasks in the project was to develop a methodological proposal for the assessment of the risk index of contaminant dispersion and results in case study areas. The result is presented in the form of a spatial layer on the GeoPortal of the project along with many other layers. In this case, we use QGIS to customize and harmonize the input layers. Some input layers are inserted into the spatial database where the spatial analysis was performed, creating the result layers. All layers are available in the GeoPortal, which is driven by Geoserver and the customized Mviewer JavaScript framework. Some layers are stored in the server's file system, others come from the geodatabase. The address of Geoportal is: https://vrtlac.izor.hr/harmonia/

To support a collaborative and coordinated approach to oil spill accidents in a number of key areas characterised by the potential risk of contaminant dispersion, the coexistence of multiple vulnerable environmental and socioeconomic aspects, and transboundary relevance, a coastal vulnerability and oil spill spread risk assessment tool was introduced that combines multidisciplinary information, hydrodynamic and oil spill modelling, and extensive stakeholder engagement was introduced. Coastal vulnerability and pollution dispersion risk assessments are highly dependent on the availability, coherence, and reliability of data and information, as well as on different national priorities and levels of economic development. All spatial information entered is divided into two groups: Hazard and Vulnerability. The risk index is calculated using the spatial analysis with the buffer approach.

The main challenge was to transfer the risk index algorithm with all related components to the web environment GIS. The calculation of the risk index is implemented in a spatial Oracle database. Custom JavaScript procedures were developed to trigger the risk calculation and risk index display. The model results are displayed as animated layers.

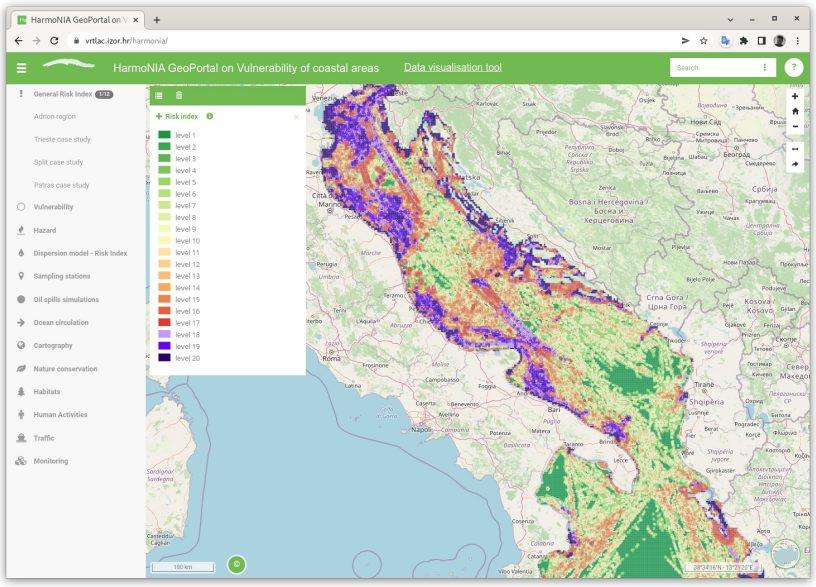

Figure 1. HarmoNIA project Geoportal.

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References

Ivankovic D, Jelavic D, Maria Eugenia M, Lipizer M HarmoNIA project: web application for data visualisation, In: International Conference on Marine Data and Information Systems, 12-14 April, 2021 Online, pp.148–150. Bollettino di Geofisica. Vol 62