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Geohazard widget web application: how to manage data in a standard way

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Starting from OneGeology-Europe project results and unsolved problems we have defined a first analysis based on a comparison of the two geological maps provided by the neighbouring countries. This phase has been followed by a detailed scale geological map analysis aimed to solve the anomalies identified in the previous phase. The Italian and Slovenian Geological Surveys involved in a specific pilot project within the European project eENVplus[1] have discussed the problems highlighted during this phase. Subsequently, they have developed the cross-border harmonised layers applying different approaches to harmonise geological data [2] in accordance with data granularity and to meet different requirements of INSPIRE and GeoSciML models.
These layers have represented the basic information input in a web application to produce specific geohazard map (i.e. Landslide Susceptibility Map [3]).
To generate all the procedures to produce this geohazard map in standard format like the INSPIRE Natural Risk Zone model we have built up a web widget encapsulated in a 3D JavaScript viewer to highlight the results of the process.
The aim of this work is to demonstrate how both, the web application and the harmonisation process that runs behind the widget work. The geologically harmonised layers allow the application to orchestrate in a single step the selection and intersect function, providing a single result from both countries. This operation is managed on the fly in the web using specific geo-processing developed in the project, but re-usable in other contexts.
The widget is able to manage different geohazard aspects: one for landslide analysis where the user can manage and manipulate the susceptibility classes of the input data (geology and land-cover) based on own experience or analyse the geological parameters (i.e. consolidation degree or foliation classes) to better refine the map calculation.
The second procedure that the user can perform in the widget is the flood prone area identification; in this case the system is able in the first level to calculate automatically the flood prone map by a selection of geologic feature in the unified harmonised geologic layer. The second step is the procedure that calculates the water accumulation area (based on the topographic index [4]) and where the users can manipulate the threshold of the model to determine better quality of layer to integrate with the previous one and produce the final flood probability map.
In both the case, when the user finds the final geohazard map optimal, the widget is able to store that map in INSPIRE NRZ standard format applying the HazardArea Application schema to the WFS service and mapping the non-structured *Gml* encoding of final maps in a standard way.
The major result of the web application is the flexibility of the model applied, in fact in the system we can modify the probability model used, building a new WPS and including this in the widget; the web application remains able to again perform the flood and landslide probability maps.

References:
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