OPEN SOURCE OPPORTUNITIES IN GIS

Flooding Exposure for Vulnerable Communities

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Partners Contribution

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We attempted to use a number of different datasets to investigate the flooding risk of different areas in Girona.

We performed a variety of analyses to:

- highlight buildings and roads most at risk from flooding
- identify possible evacuation scenarios
This project used a variety of software techniques and different types of dataset to infer risk of flooding in different areas of Girona.

Software used was:

- PostgreSQL/PostGIS
- OrbisGIS
- Quantum GIS
- Geoserver
We used data from:

1. The digital elevation model of the Girona area
2. Population structure (residential and commercial buildings)
3. Road network (OpenStreetMap)

These were imported as PostGIS tables and analysed using the different GIS packages available.
A combination of SQL and PHP allowed us to test for at-risk buildings in the different flooding scenarios (10, 50, 100 and 500 year floods).

We calculated the distance from each building to each road and identified the buildings in flooding areas furthest from roads.
QGIS: Roads affected in different flooding scenarios
We also showed the different flooding scenarios in the form of ‘OpenLayers’ for visualisation on a dynamic web map.

(this would be useful for making such information available to the public and third parties)
Potential flood damage

map of flood damage

This map shows the different buildings affected under each of the different flood return periods.

Done
Problems

We initially had to convert some of the datasets to the correct UTM31N spatial reference system

- this was difficult because some of GDAL’s CRS definitions were out of date.

Visualisation in OpenLayers was also difficult to set up.

In future situations we would like to be able to use more detailed road and population data (e.g. population count).
Thank you for listening

Questions?