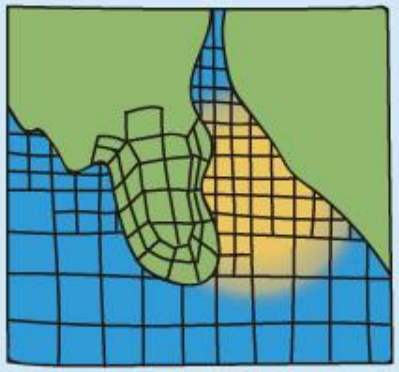

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PROJECT

Integrated Water Cycle Modelling in Galicia

MARETEC – Instituto Superior Técnico

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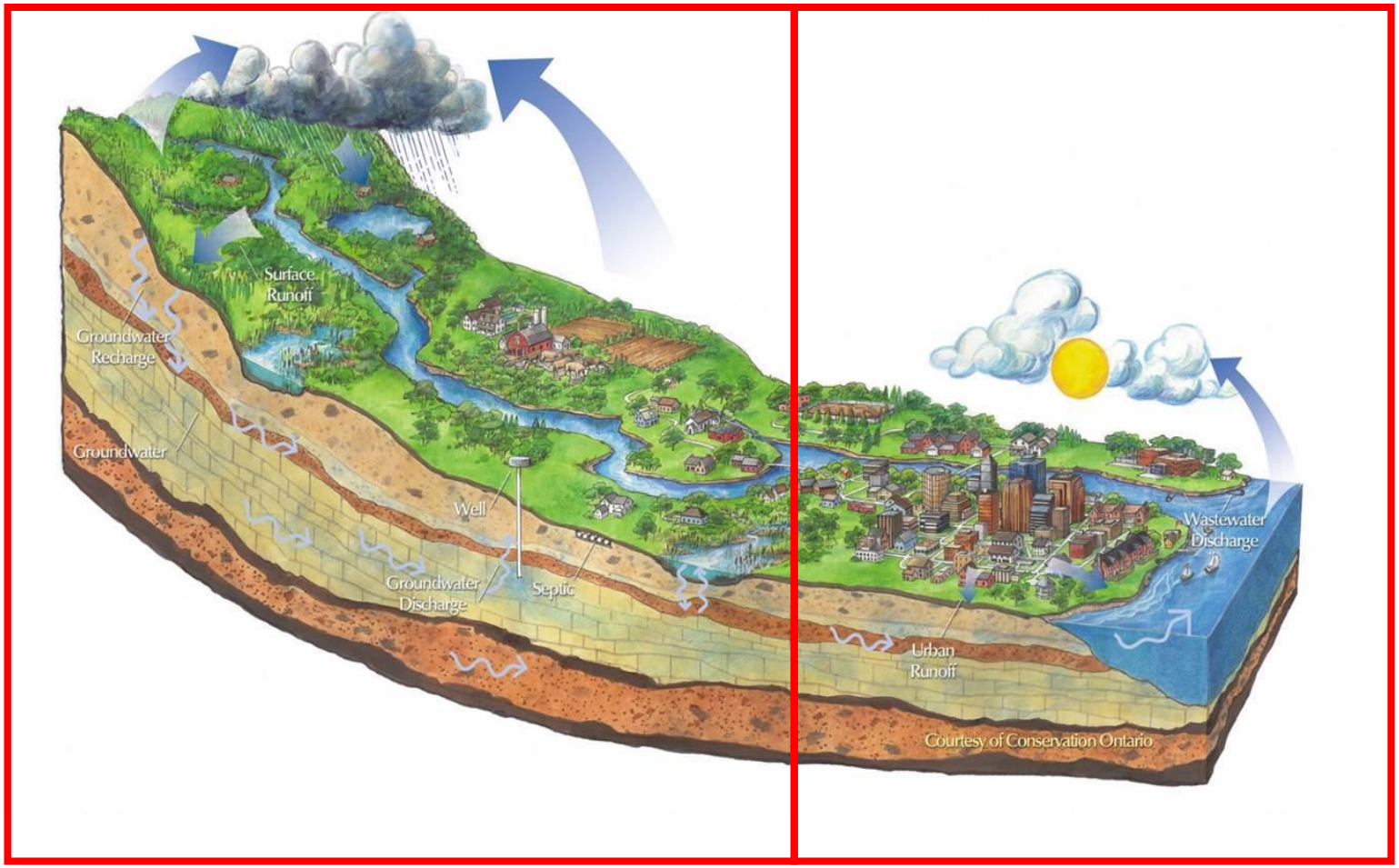
Watershed – Estuary – Coastal zone connection



Watershed modelling **Coastal modelling**

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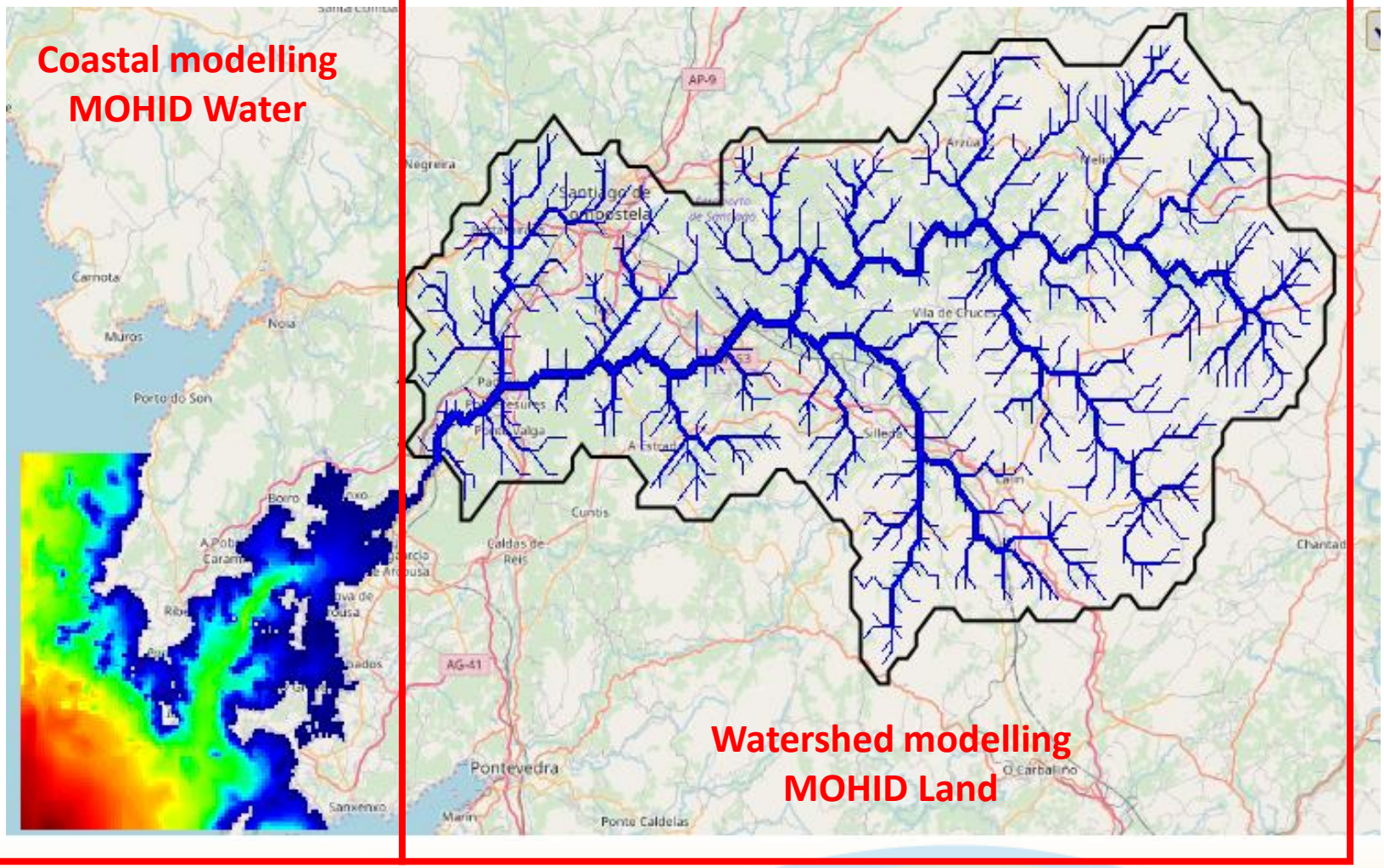
Watershed – Estuary connection in MOHID



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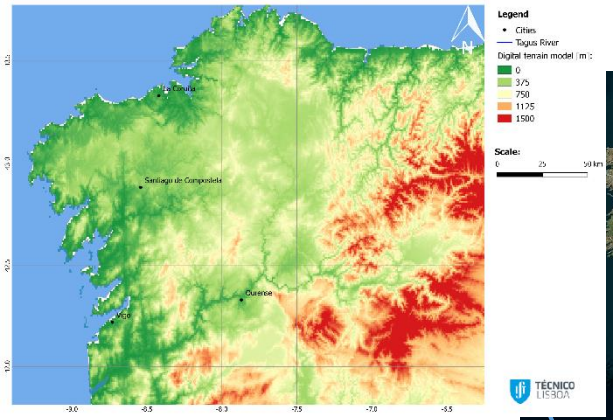
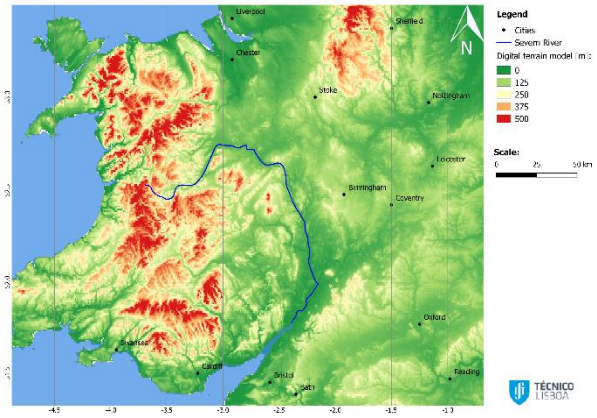
HazRunoff study areas

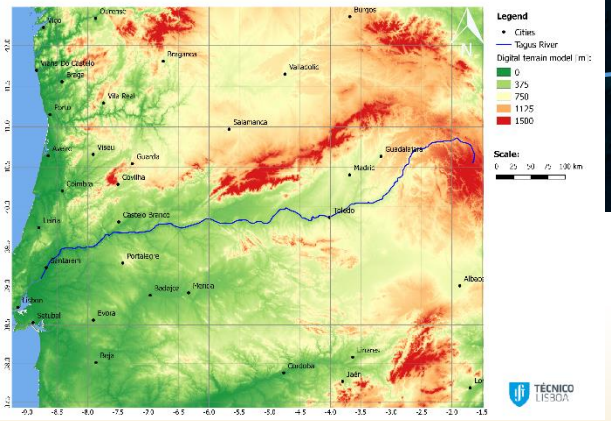
Ulla and Sar rivers \ Ria Arosa



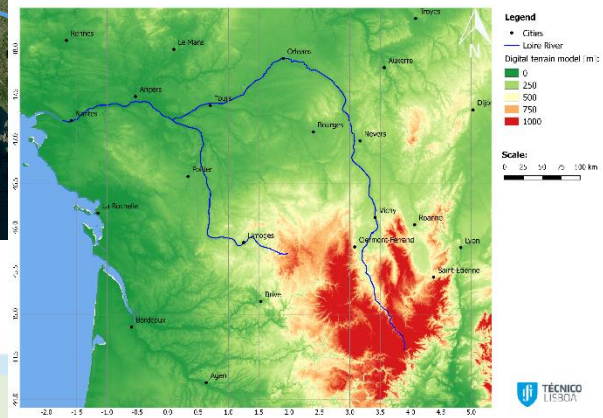
Severn river \ estuary



Tagus river \ estuary



Loire river \ estuary



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MOHID

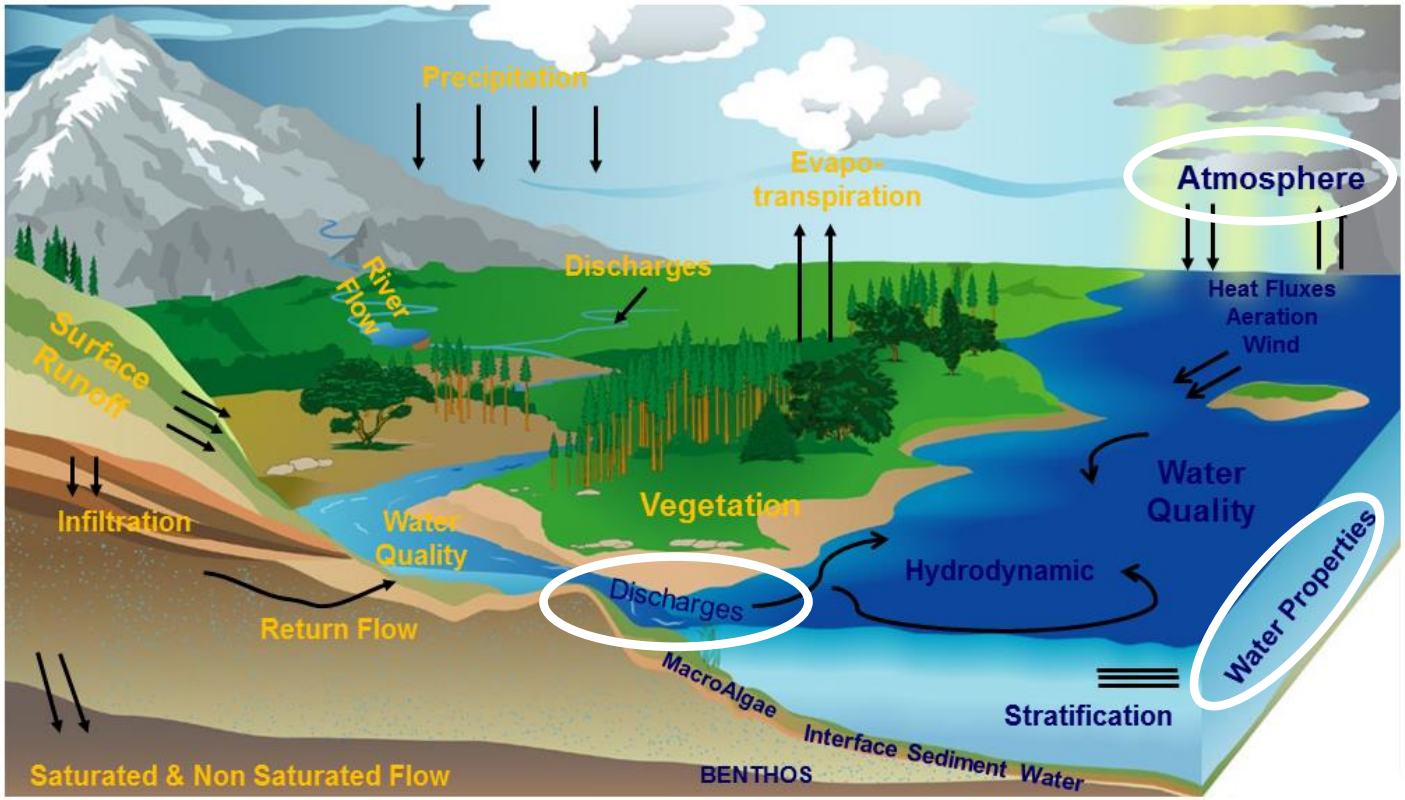
Water Modelling System

Copyright by Maretec

Open-source community model

Research and engineering purposes

Applied by scientific and engineering community all over the world



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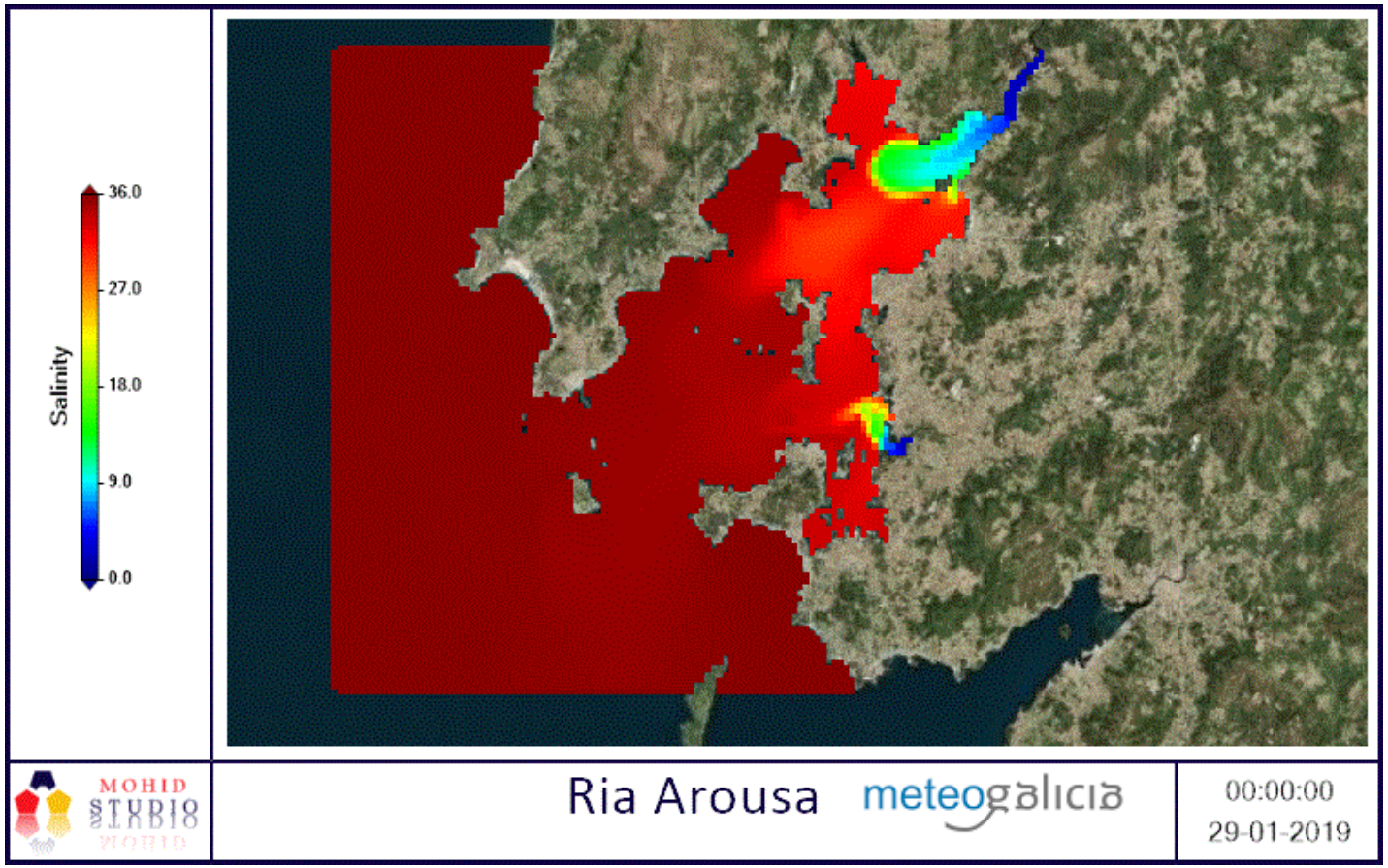
Mohid Water – estuary and coastal zone modelling



meteogalicia

3D model
- 34 vertical levels

Main Parameters
- Water level
- Velocity
- Temperature
- Salinity

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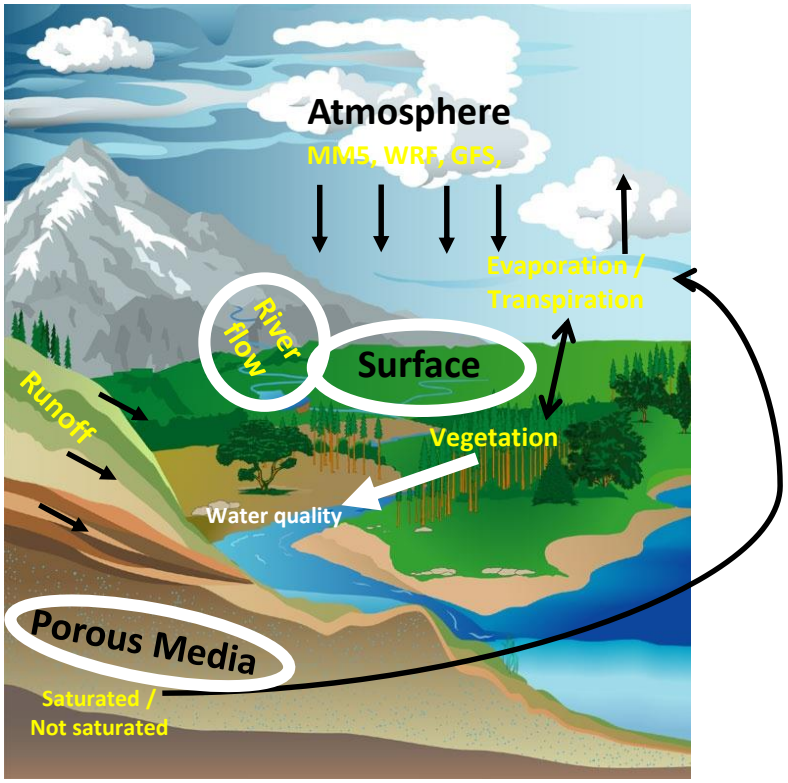
MOHID Land – Watershed Modelling

- According to a bidimensional regular grid and based on meteorological information, the precipitated water is estimated for each cell of that grid.
- The water deposited in each cell is distributed by the syrface, as runoff, by the porous media, as infiltration, and by the drainage network.
- The water fluxes between the porous media, the surface and the drainage network are calculated.
- The water extraction in the system occurs by evaporation and transpiration.
- Properties related to water quality are estimated in the porous media, in the surface and in the drainage network. The main input of nutrients comes from the vegetation.



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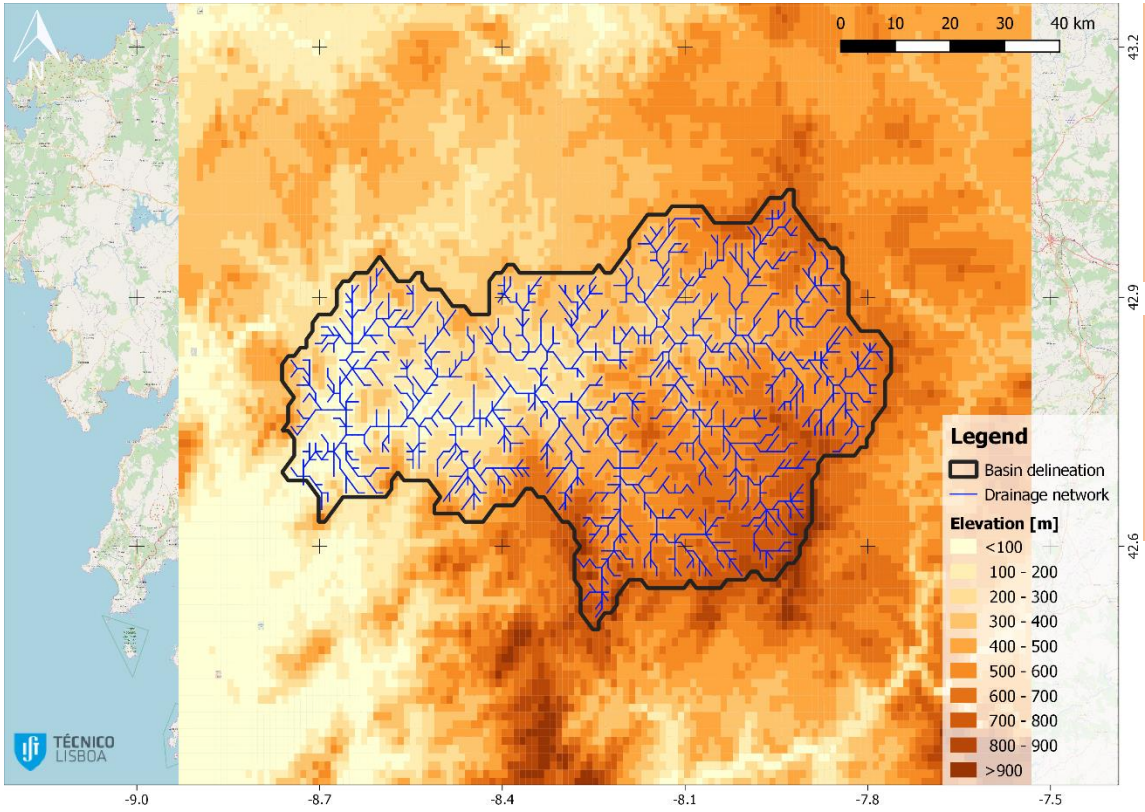
Galicia

Grid resolution: 1 km x 1 km



Digital terrain model: interpolated from Shuttle Radar Topography Mission from NASA. **Resolution:** 30m.

Basin and drainage network delineation based on the created digital terrain model.

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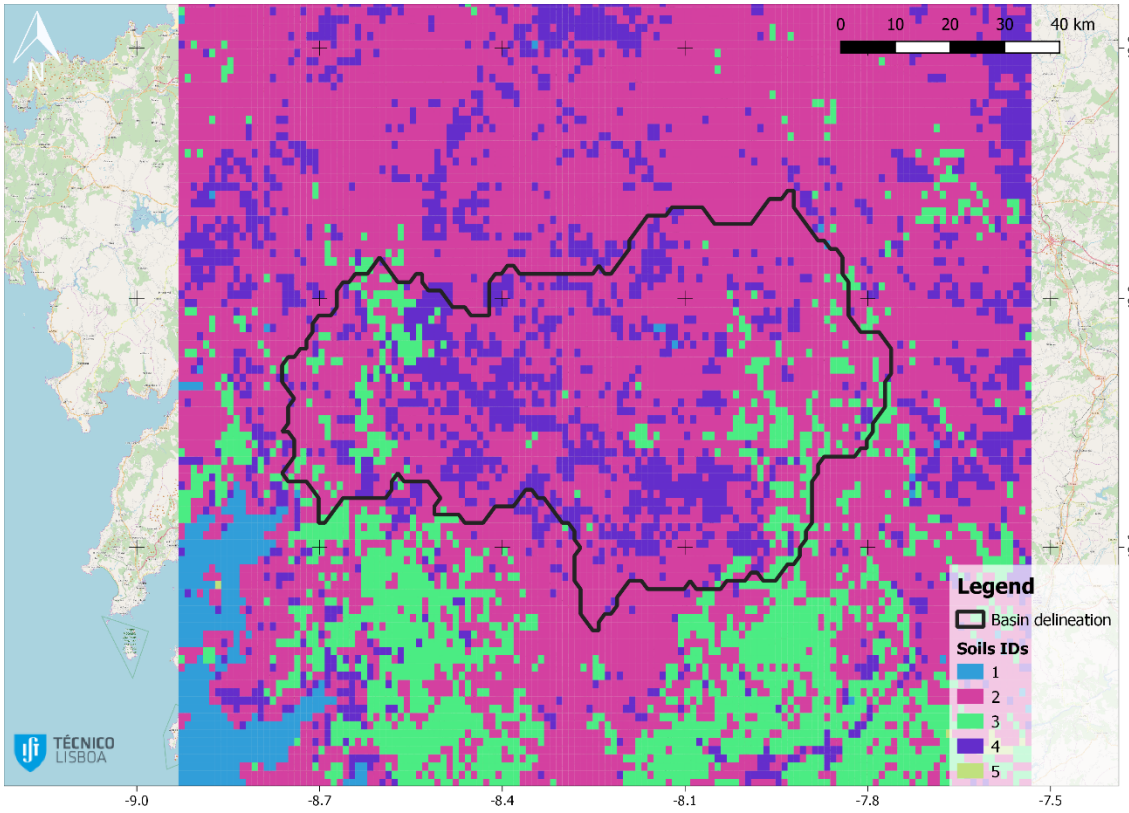
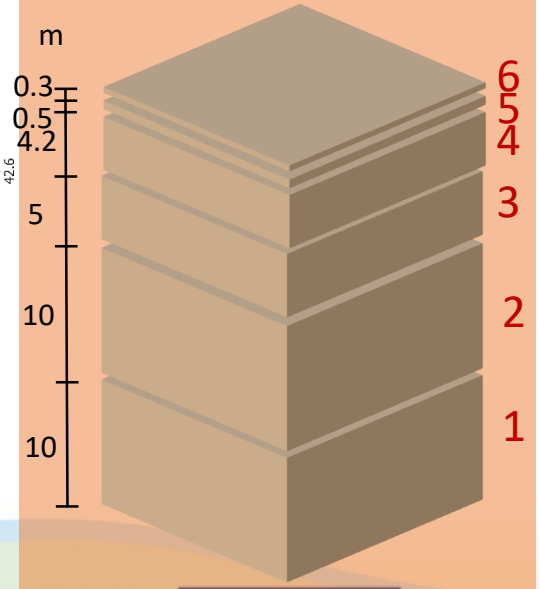
Galicia

Grid resolution: 1 km x 1 km



Soil van Genichten parameteres from 3D Soil Hydraulic Database of Europe at 250 m resolution.

Vertical layers:



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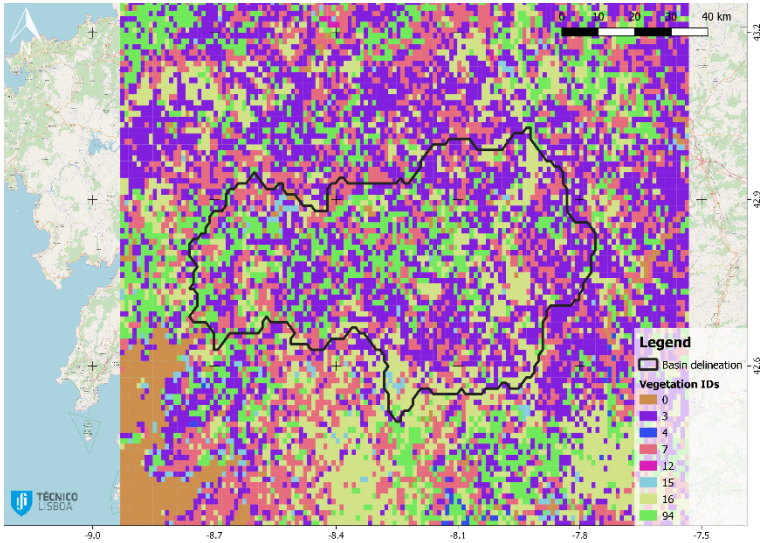
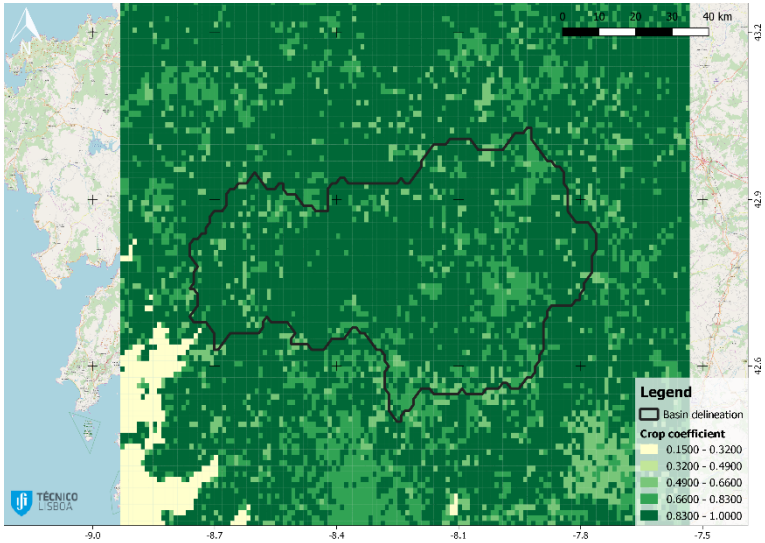
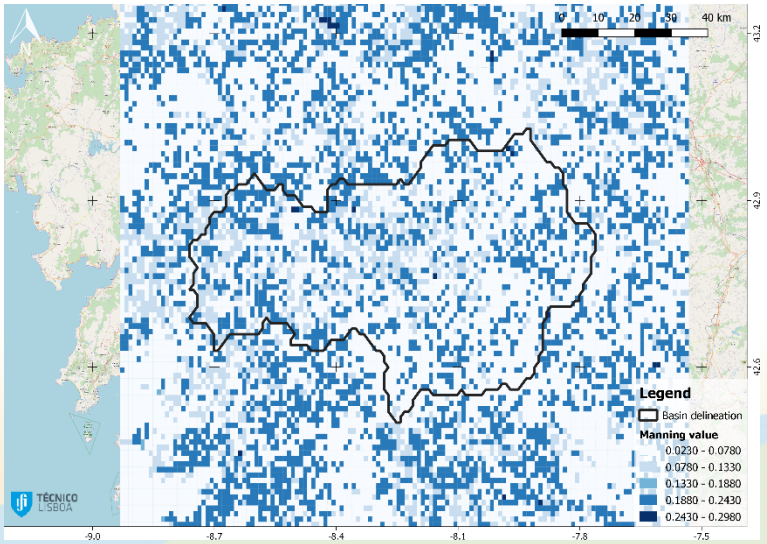
Galicia

Grid resolution: 1 km x 1 km







Land use: based on Corine Land Cover 2012.

From land use we get the type of vegetation in each cell, the corresponding crop coefficient and the Manning value.

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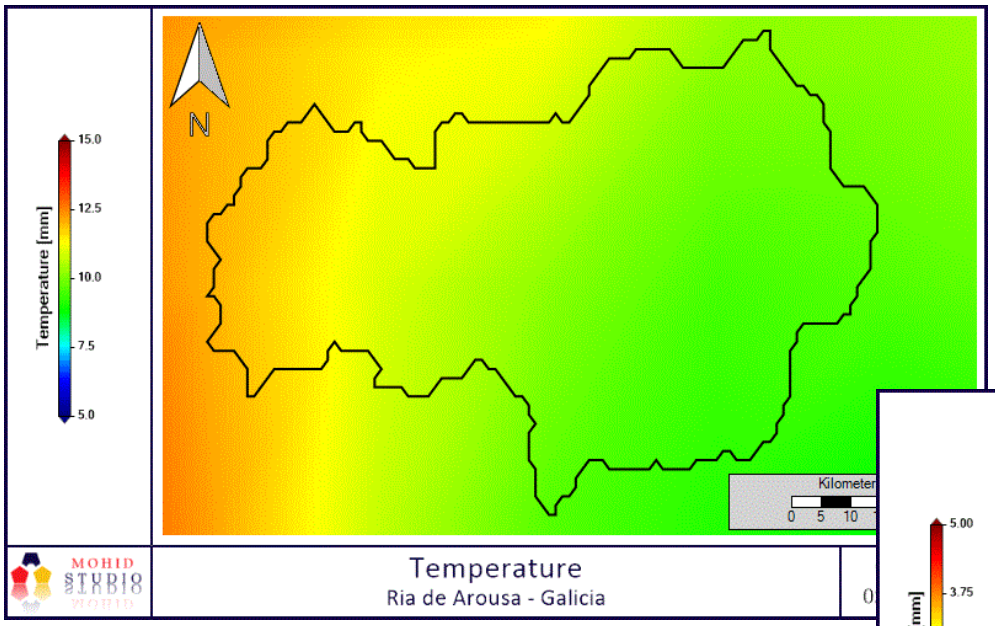
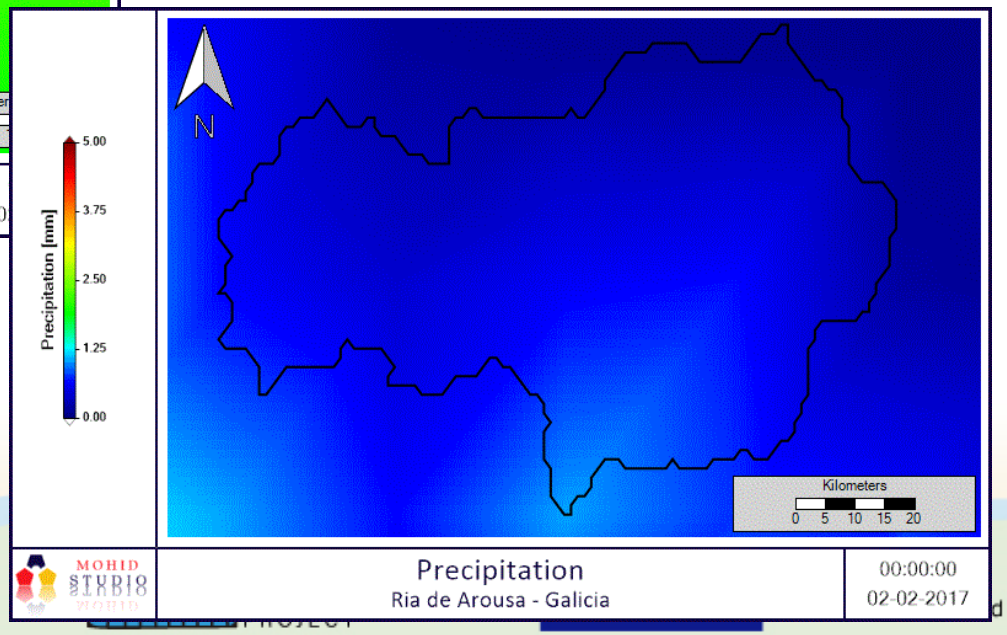
Galicia

Grid resolution: 1 km x 1 km

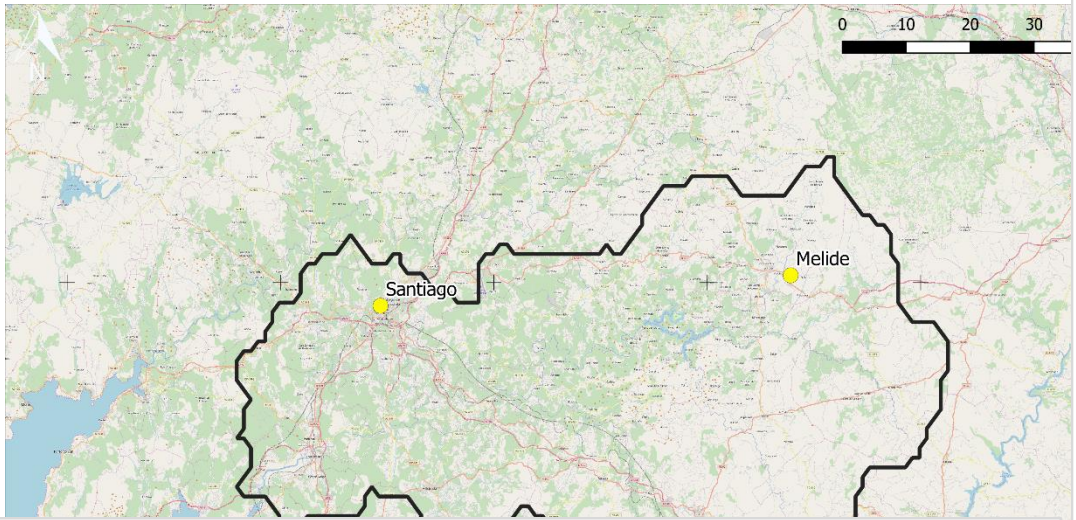
Meteorological data from ERA5 Reanalysis of ECMWF.

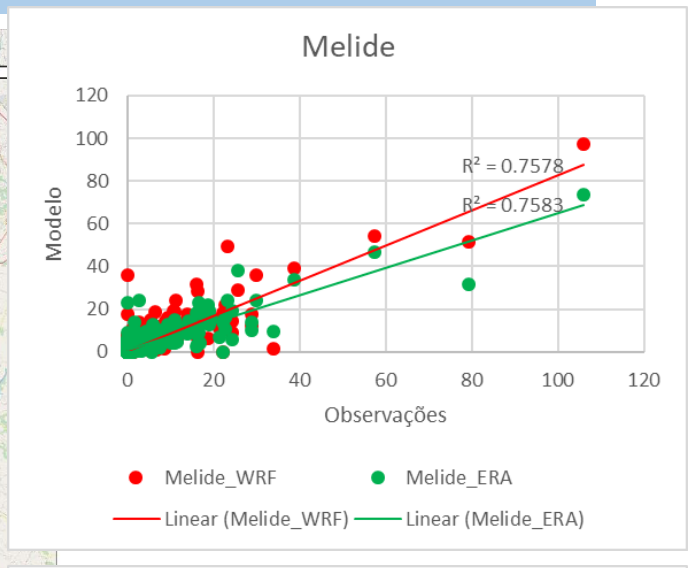


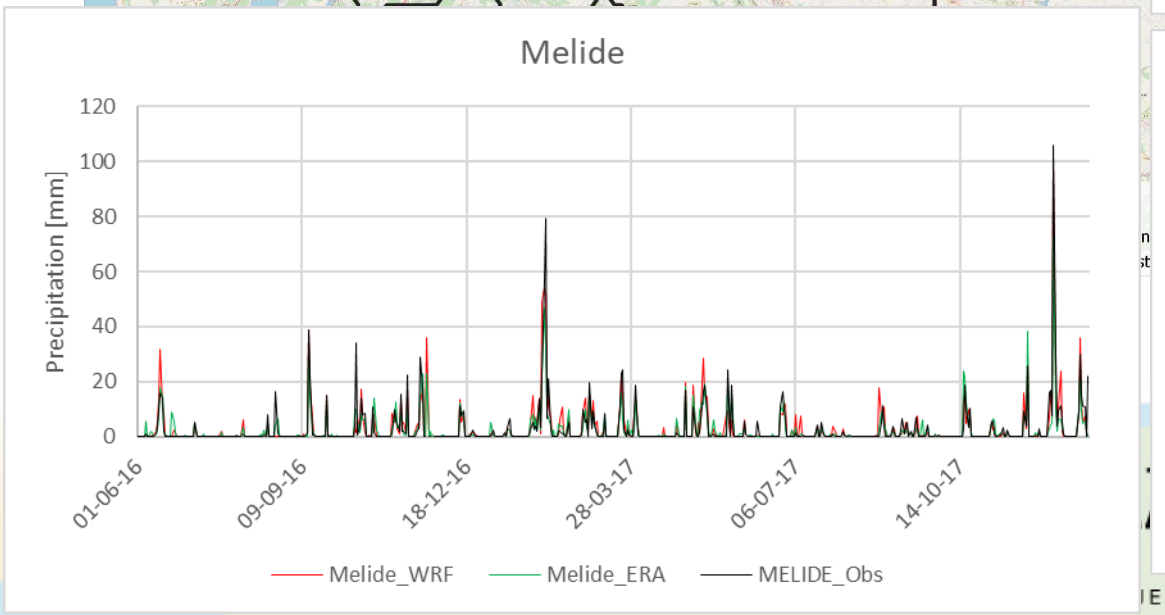


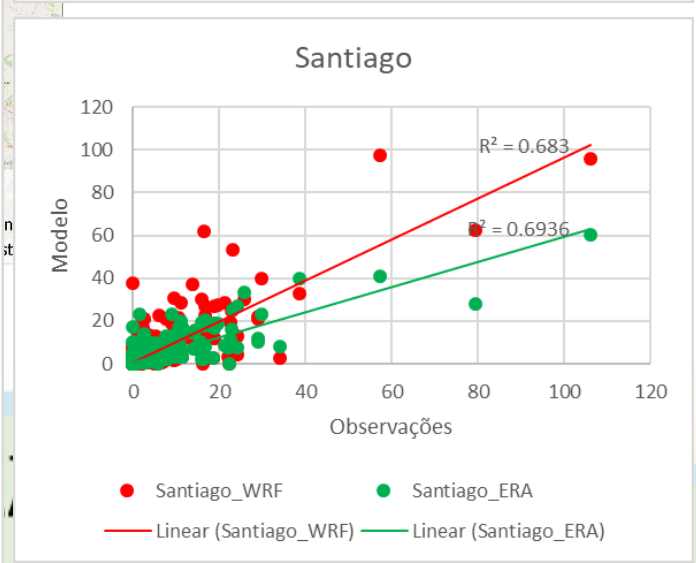
Galicia

Validation stations - precipitation



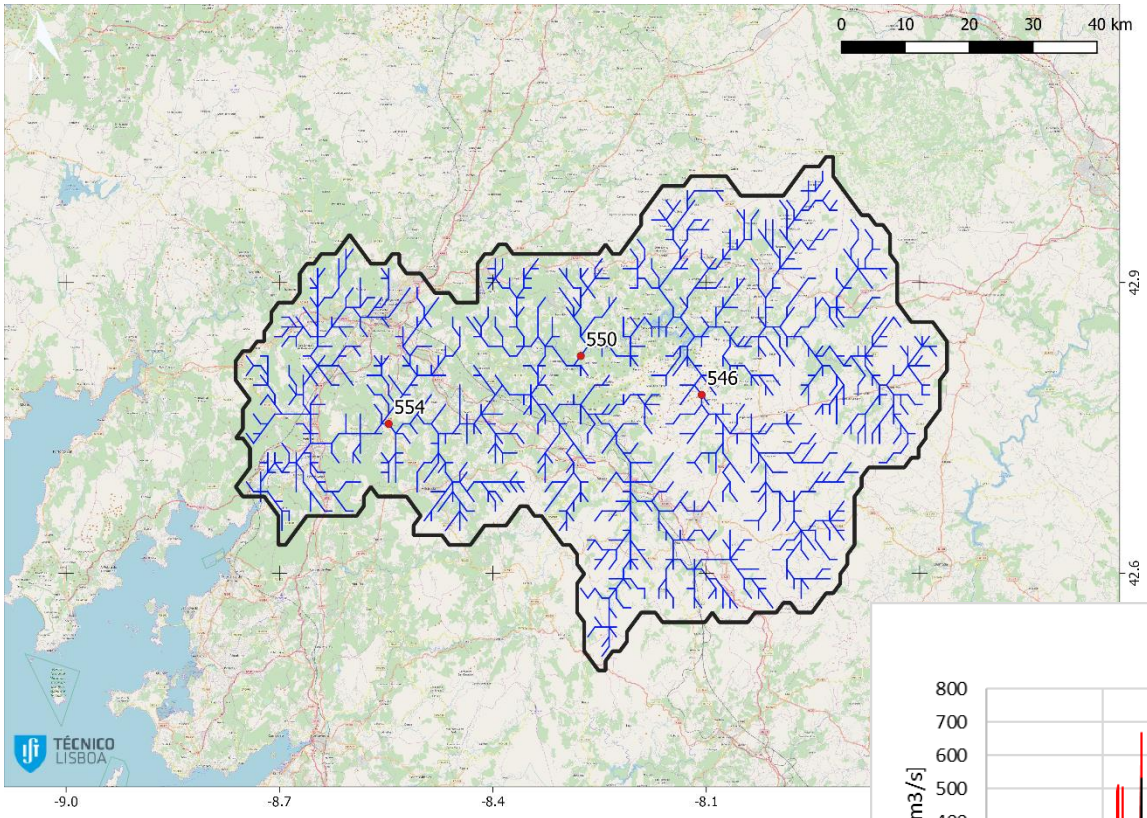




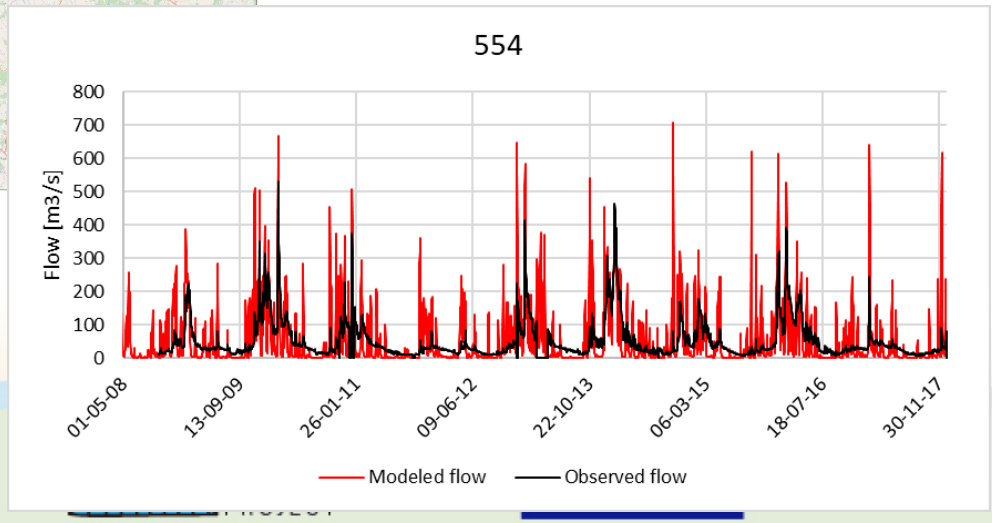


Galicia

Calibration and validation points - flow

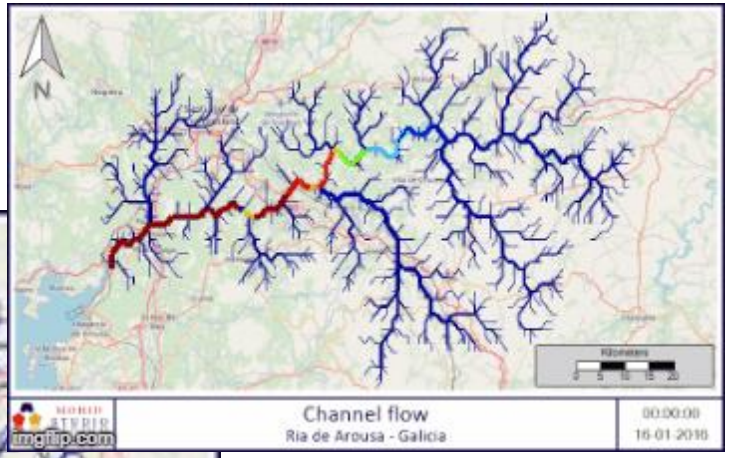


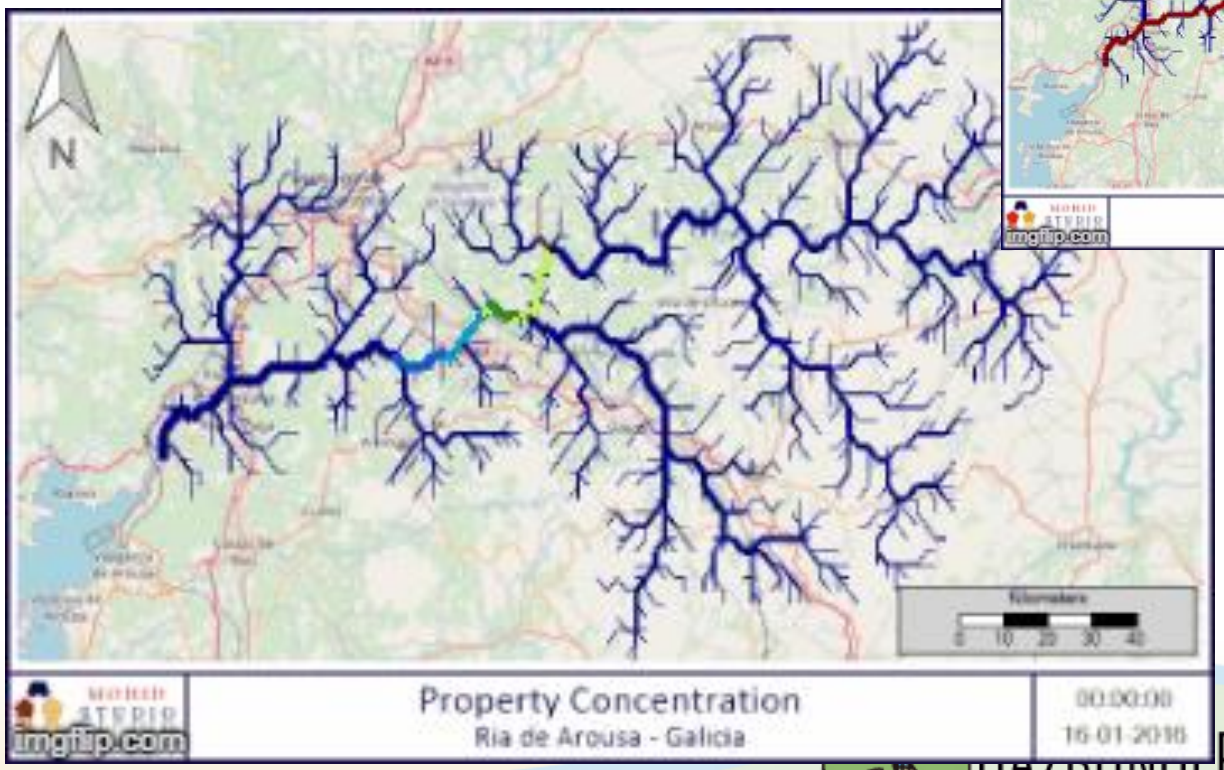
Data from Augas de Galicia



Galicia

Evolution of a property





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Obrigada

Thank you

Lígia Pinto
ligia.pinto@tecnico.ulisboa.pt

Ana Oliveira
anaramosoliveira@tecnico.ulisboa.pt

TÉCNICO LISBOA

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