

Assessing the Role of Land Use Changes in the Accumulation and Feedback of Water Vapor and Pollutants

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Research question

Do land use changes play a role in the occurrence of atmospheric extreme events on the Spanish coasts ?

Multidisciplinary approach

Bottom-up Approach



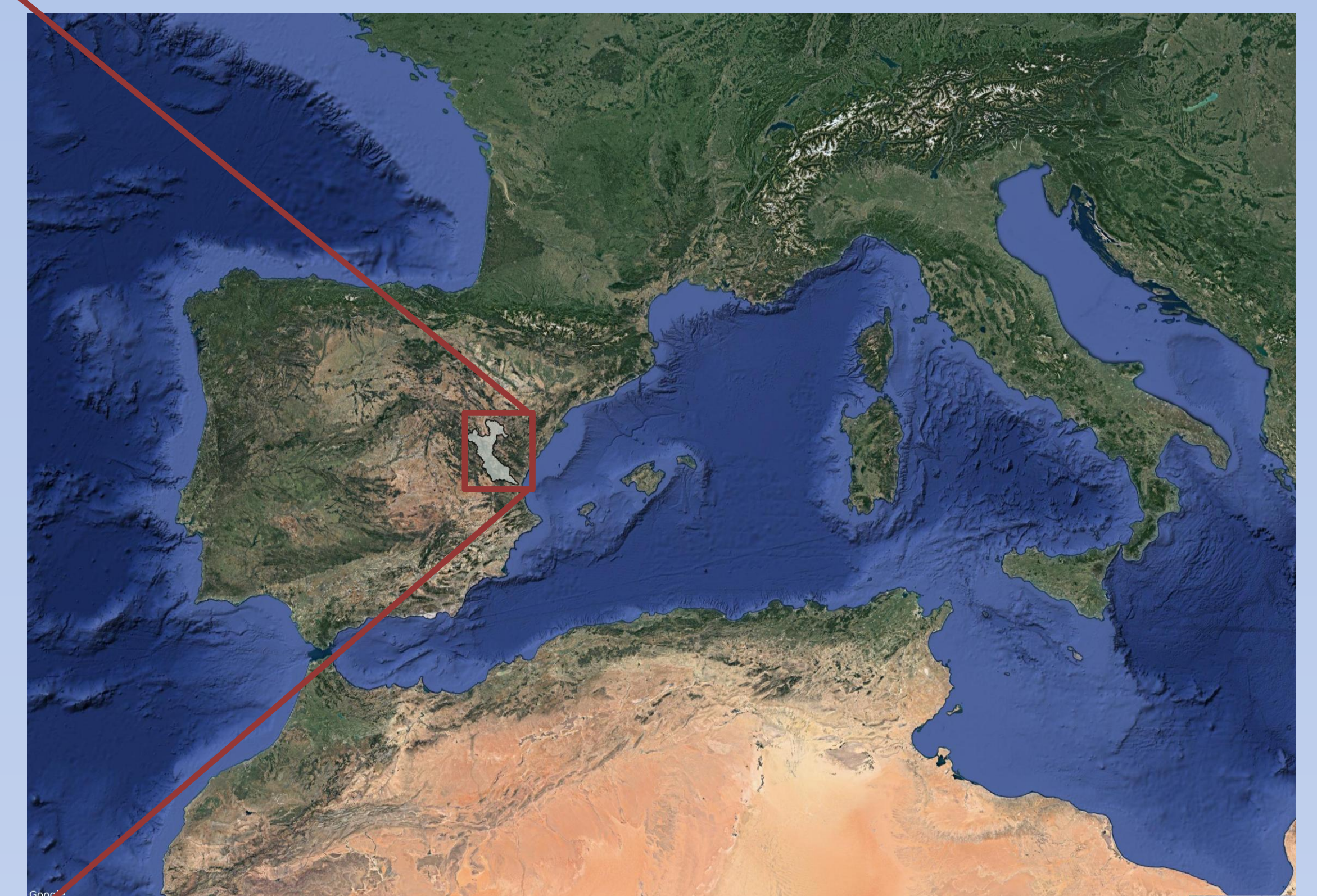
Soil moisture sensor (S-SNx-M005 HOBO)



Sap flow sensor
(Heat pulse method)



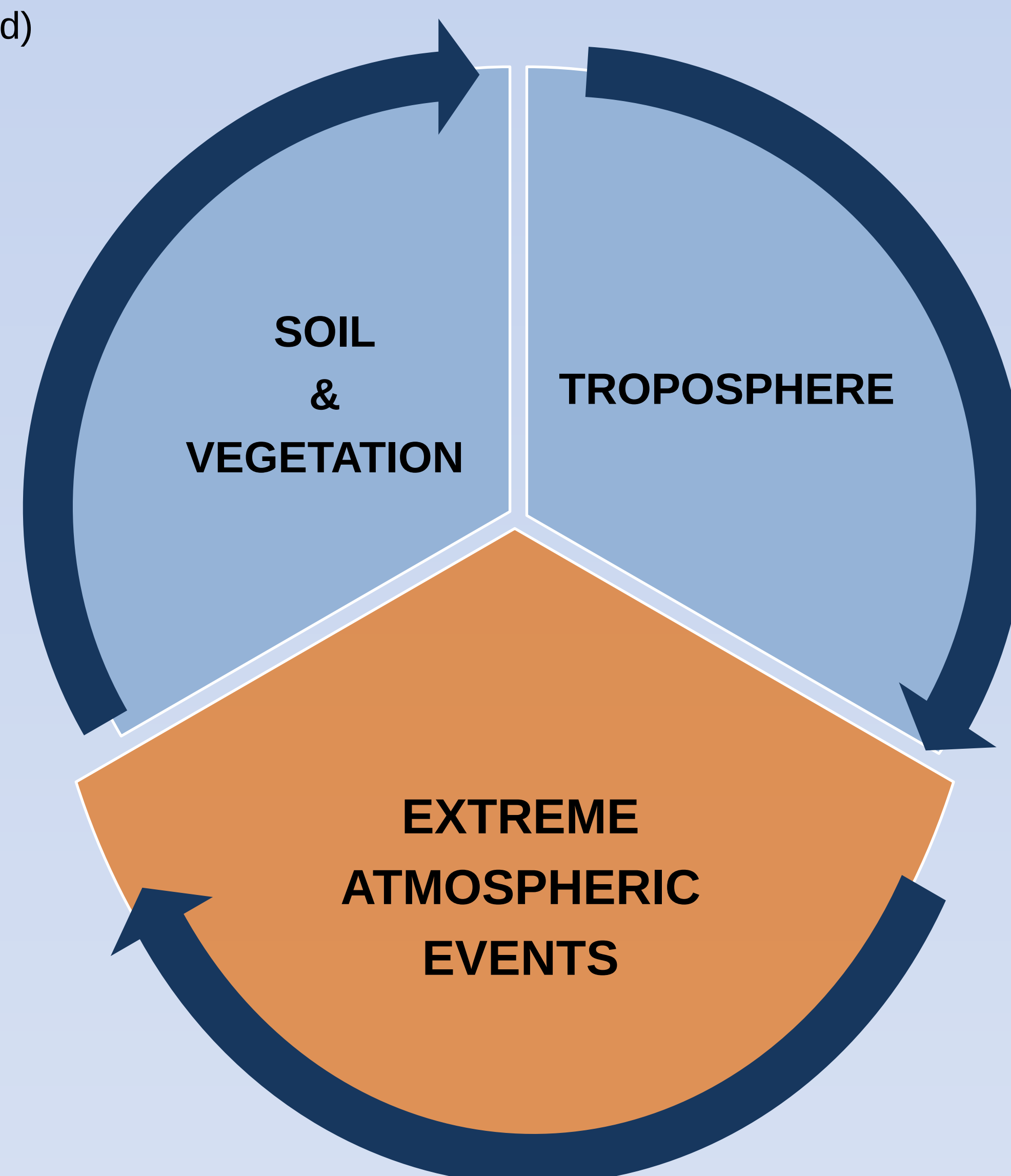
Outline of Túrria river basin with field plot locations



Túrria river basin location in the Western Mediterranean

Eco-hydrology

- Vegetation characterization, measurements of Sap Flow, Soil Moisture, Temperature and Relative Humidity in six field plots (20m x 20m)
- Modeling water balance with HYDROBAL
- Elaborate detailed maps with information on land use in the Túrria basin
- Extrapolate on-site water balance to estimate evapo transpiration for the whole basin



Meteorology

- Simulation of base year (2015) with selected parametrizations
- Simulation of periods with extreme weather events in 2015 using estimates from HYDROBAL
- Comparison of simulations and analysis of the critical thresholds for triggering topographically-aided summer storms
- Simulation of the base year considering land use changes at local and regional scales according to IPCC scenarios

Research goals

- Identify “key” observables that trigger extreme weather events in the Western Mediterranean
- Improve surveillance and early warning systems on atmospheric risks in the Túrria Basin
- Assess the extent to which land use changes at local/regional scales can cause variations in rainfall patterns at different meteorological scales (meso-α to meso-γ) in the Western Mediterranean Basin

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