

Booklet presentation

2 pages

MAPPING HIGH-RESOLUTION SOIL PROPERTIES WITH GEOADDITIVE MODELS

H2020 SOCIETAL CHALLENGES: Climate action, environment, resource efficiency and raw materials

PRODUCTIVE SECTOR: Agriculture and Fishing

PROBLEM DESCRIPTION

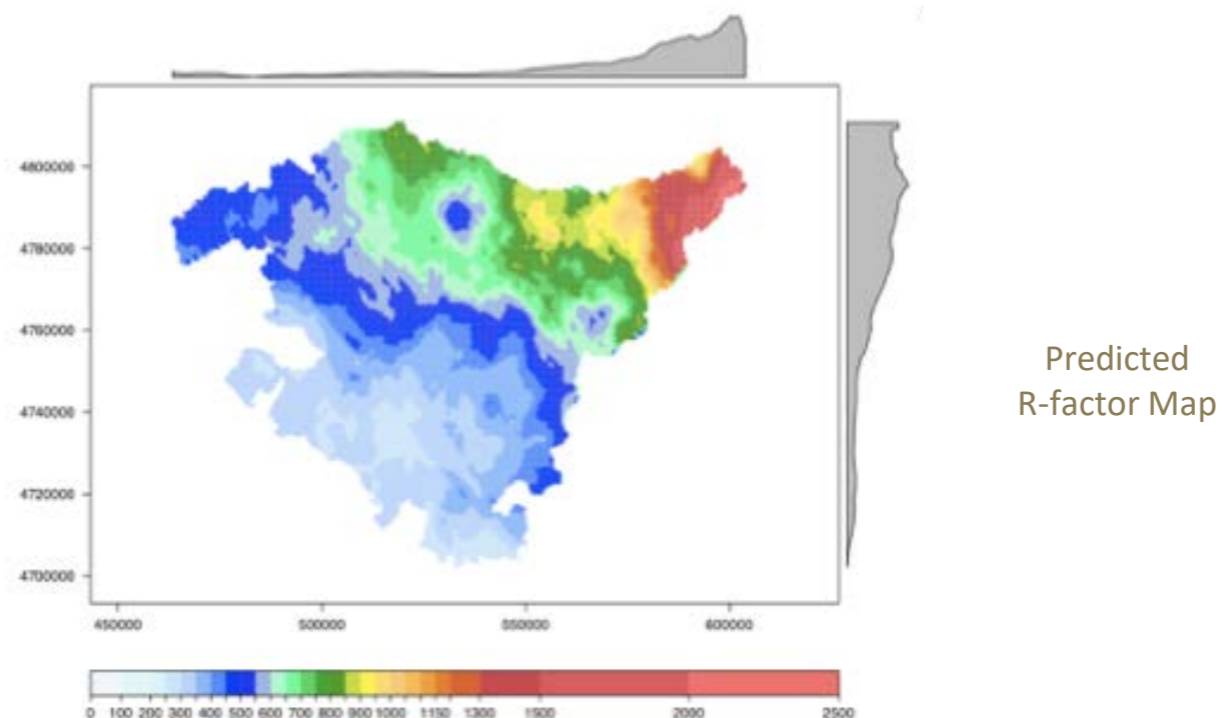
Neiker was interested in elaborating high-resolution maps of carbon stocks and soil texture properties in different land use at 0-30cm depth in the Basque Country.

CHALLENGES AND GOALS

The goals of the project were to compute the soil erosivity factor (R-factor) in $\text{MJ mm ha}^{-1} \text{h}^{-1} \text{yr}^{-1}$, to identify areas of susceptible erosion, to relate with climate and environmental variables, to predict organic carbon stock (Mg C/ha) and to predict soil texture properties (%sand, %clay and %silt)

MATHEMATICAL AND COMPUTATIONAL METHODS

- Geoadditive models are used as an unified framework for spatial prediction with smooth effects of climate variables such as average temperature, min/max temperature and precipitation.
- Carbon stocks are predicted using pedotransfer functions.
- Soil texture data are estimated using a compositional data approach using an additive log-ratio transformation and a multivariate Gaussian distribution



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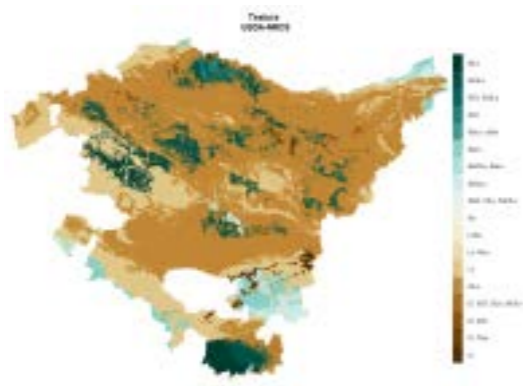
Results and Benefits

An unified mathematical framework for spatial prediction of rain erosivity factor and soil properties at high-resolution is developed.

These maps contribute to agricultural planning of crops, forest management and environmental protection.

Stock carbon and soil texture maps are publicly available at GeoEuskadi.

High-resolution maps of soil provide valuable information for the agricultural and forestry industry



Predicted soil texture map using
USDA classification



Predicted carbon stock map
available at GeoEuskadi



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Neiker