



Determination of agro-environmental zones in Spain and sensitivity to global climatic change



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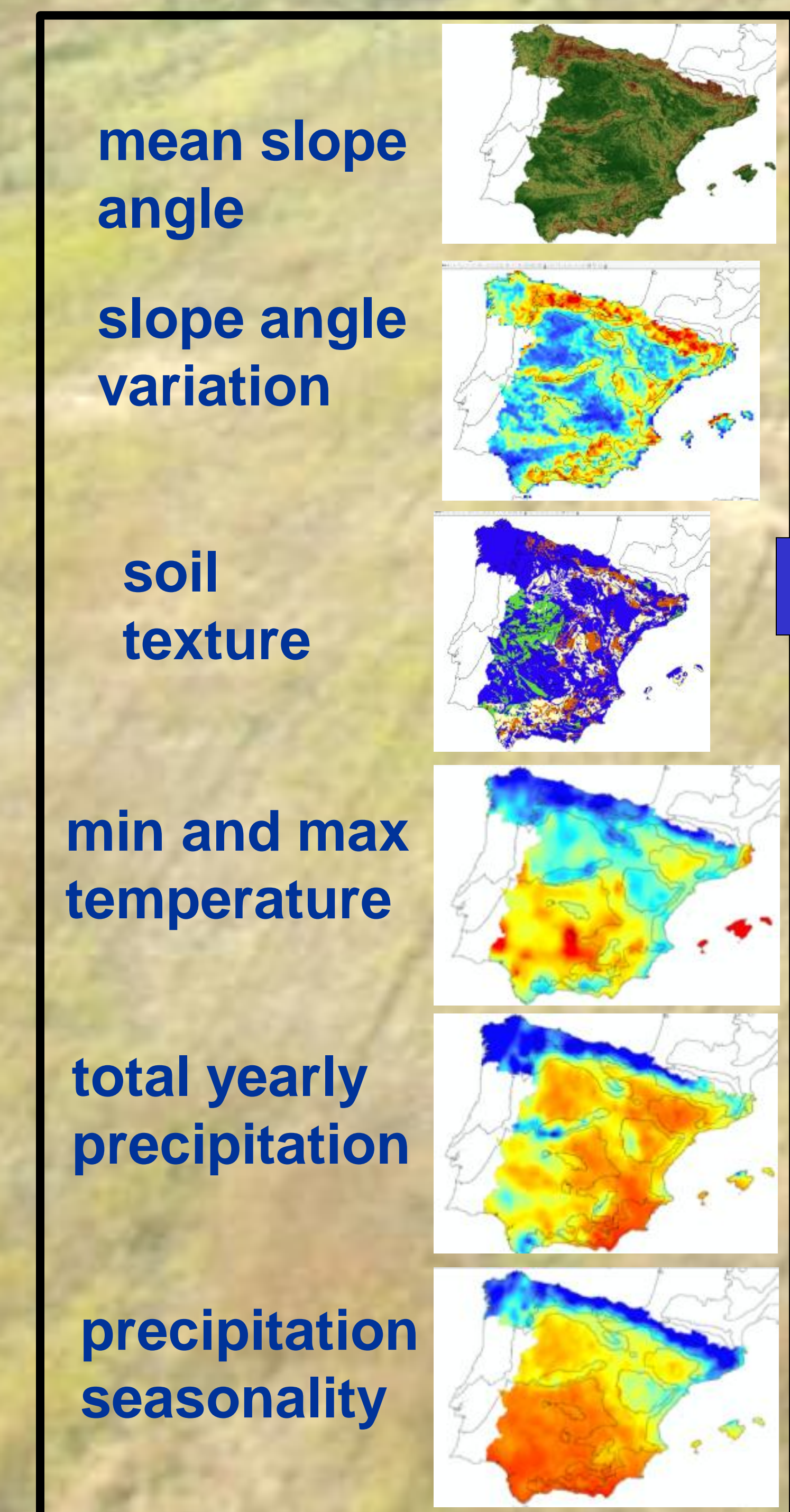
Background and objectives

Mitigation of climate change effects and maintaining long-term soil quality are key challenges for EU agriculture. Developing policy guidelines for best management practices need to be site-specific, given the spatial variability of environmental conditions in the EU.

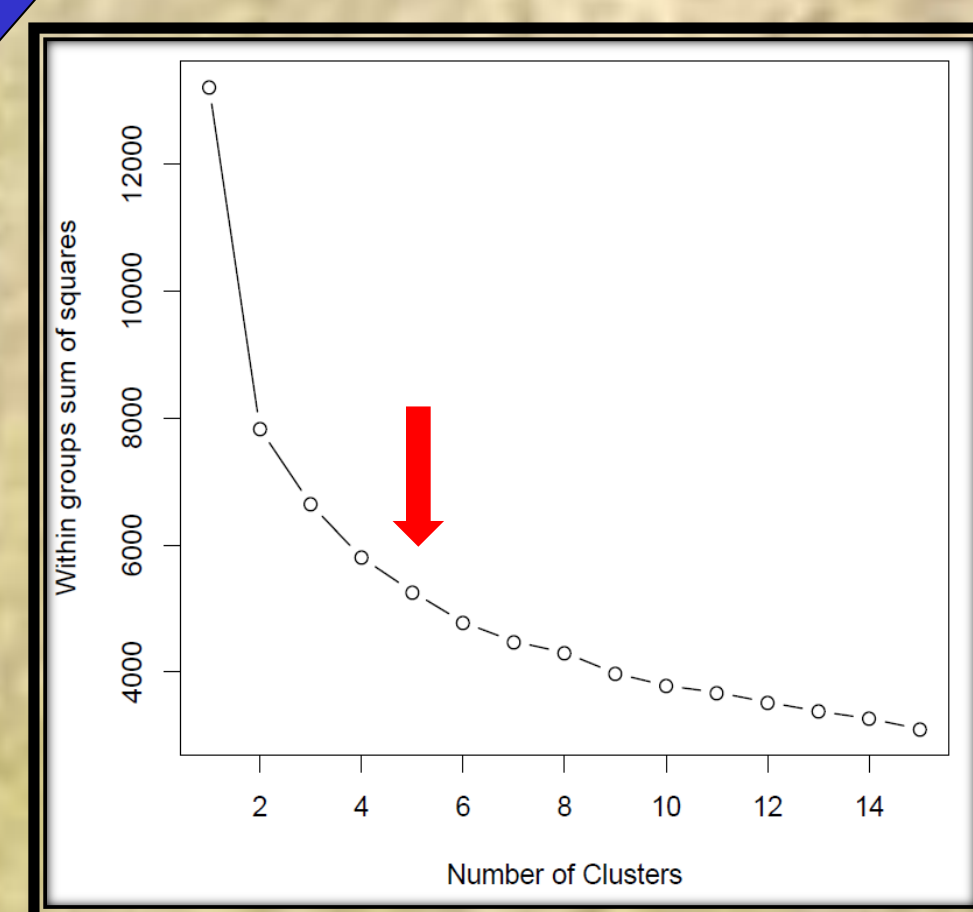
The objective of this study is therefore to delineate current agro-environmental zones in Spain and to determine the effect of global climate change on this classification in the future. The final objective is to assist policy makers in scenario analysis with respect to soil conservation.

Materials and methods

Our classification scheme is based on soil, topography and climate (seasonal temperature and rainfall, data 1950-2008) variables. The k-means method was used for classification.

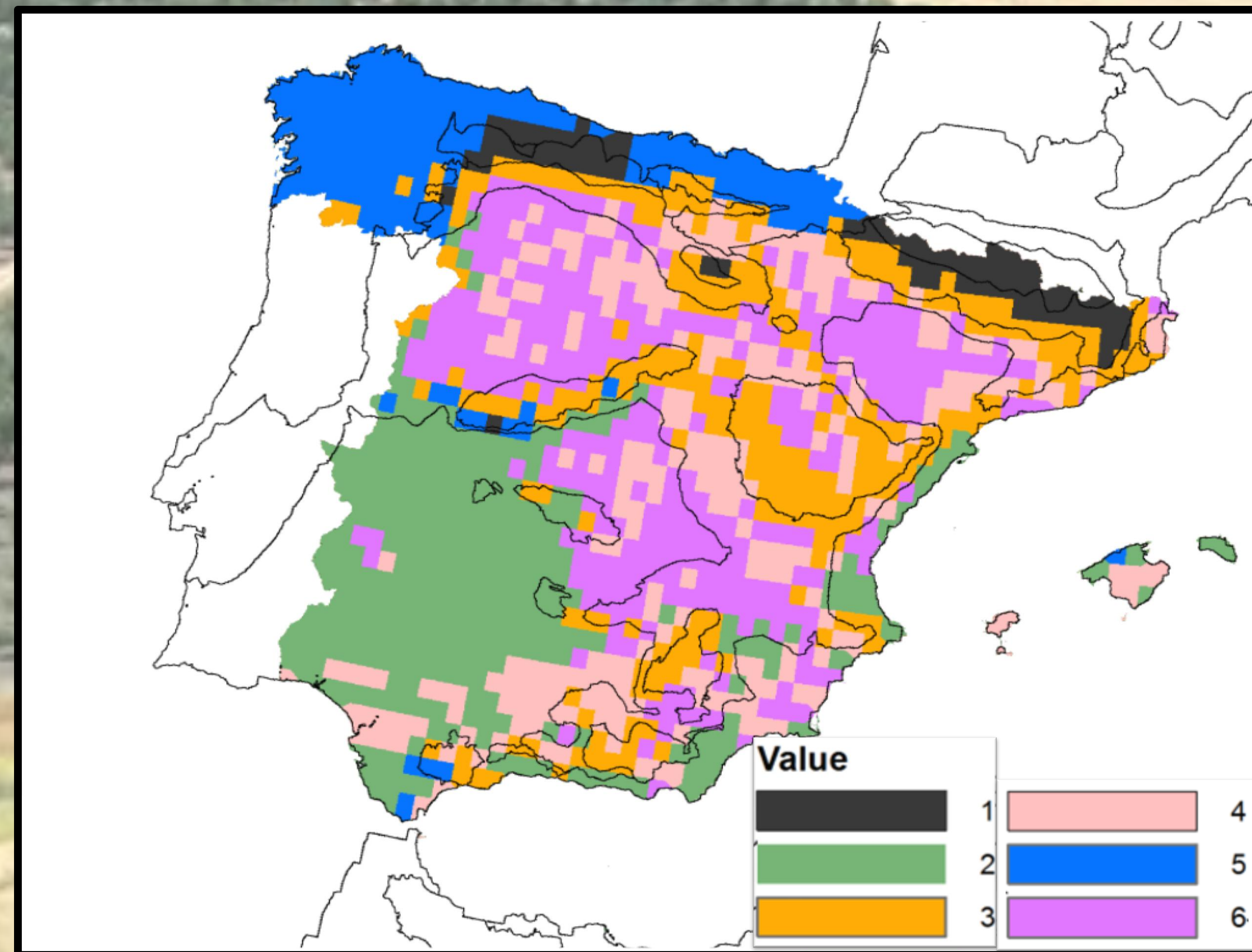


Classification using k-means

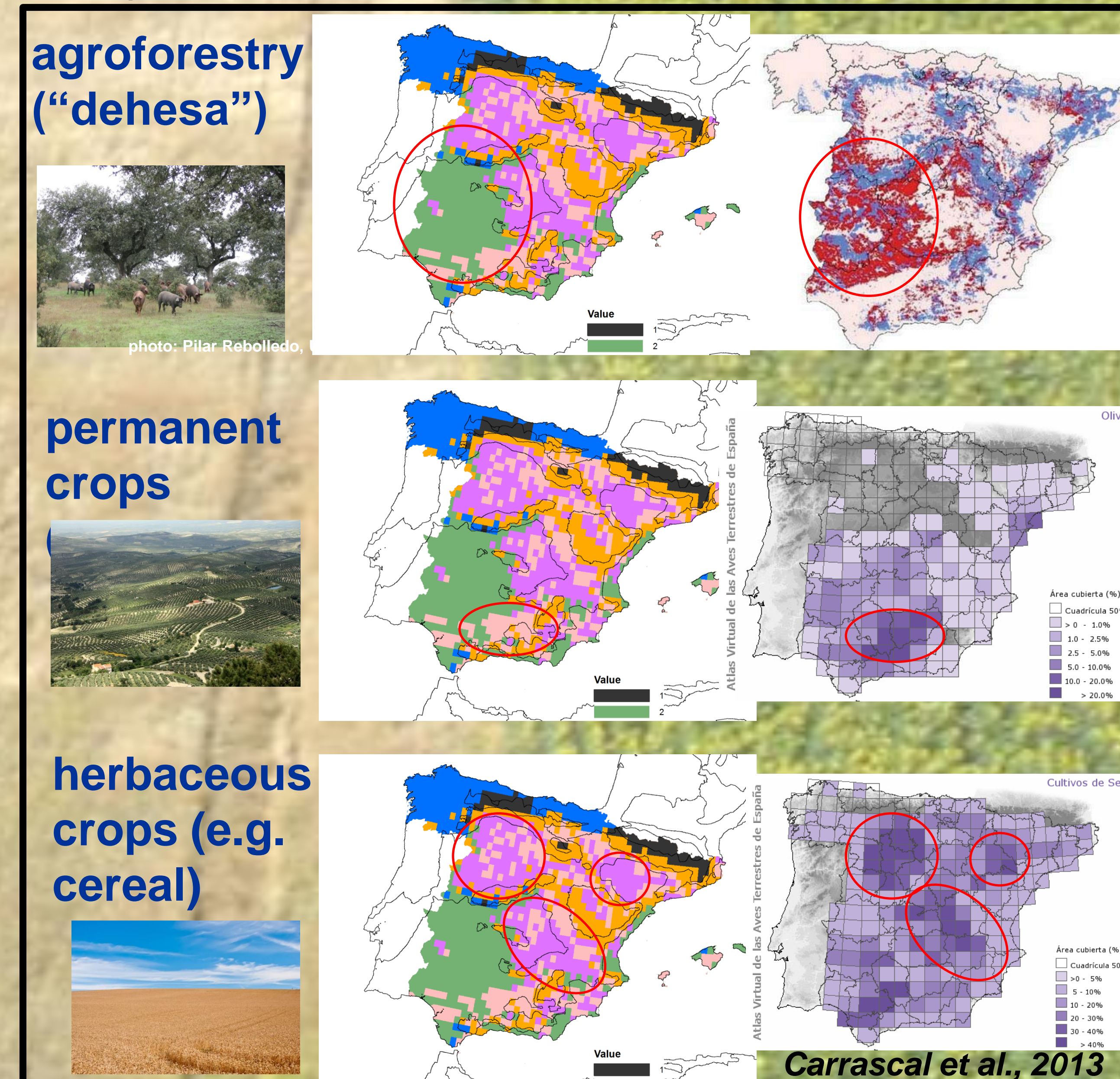


Results: agro-environmental zones

The final classification using 6 classes yielded the best results. Each of these classes could be related well to existing crops in Spain.



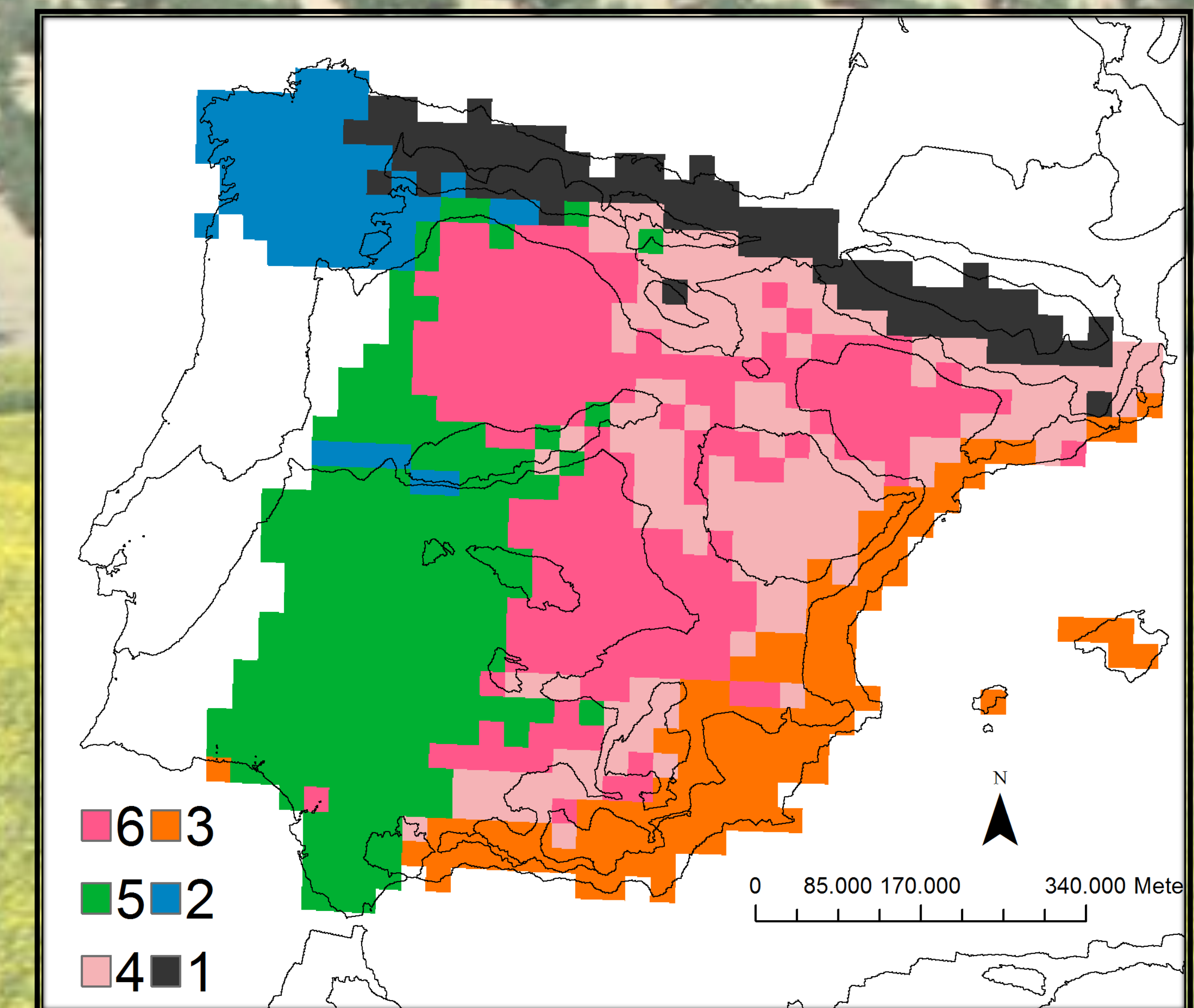
Present-day agro-environmental classification of Spain using 6 classes



Comparison of the obtained classification with existing agricultural land use

Climate change effects

We analysed the effect of climate change on changes in daily precipitation and temperature using the HadCM2SUL model projections for Spain 2071-2100. Important changes can be seen with respect to the current situation, especially in the Mediterranean.



Effect of climate change: agro-environmental classification of Spain for 2071-2100, using 6 classes

Conclusions

Using the objective k-means classification method we successfully delineated agro-environmental zones in Spain. The classification scheme reflected important changes due to climate change. This classification can be applied in supporting policy decision, for example related to the elaboration of Best Management Practices for different farming typologies.

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