

Monitoring vegetation cover in the postfire in Tavira – São Brás de Alportel (Southern Portugal)

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Introduction

Often, restoration of areas affected by fire faces lack of knowledge of how ecosystems respond to the action of fire. Depending on environmental conditions, structure and diversity of the vegetation or the severity of the fire, burnt systems can provide responses ranging from spontaneous recovery in a relatively short time to onset of severe degradation processes. For this reason, it is necessary to monitor the evolution of post-burned in the fire, in order to plan effective strategies for restoring systems and soil erosion control. In order to assess soil erosion risk, this research aims to analyze the evolution of vegetation cover in a Mediterranean burnt forest soil, using vegetation indexes derived from

- Landsat-7 (Thematic Mapper sensor-TM);
- Landsat-8 (Operation Land Imager sensor, OLI);

Study Area



Figure 1: Study area of the wildfire by 18-22 July 2012 (Southern Portugal - the coordinates 37° 9' – 37° 21' N and 7° 40' – 7° 53' W)

The relief in the studied area has an irregular topography. Soils are shallow and develop mainly metamorphic rocks (as slates or quartzite) and igneous rocks, which produce acidic and nutrient-poor soils, poorly developed in depth. The wildfire was one of the most important fires in Portugal during the recent years, and affected more than 24000 ha.



Figure 2: cork oak (*Quercus suber*);

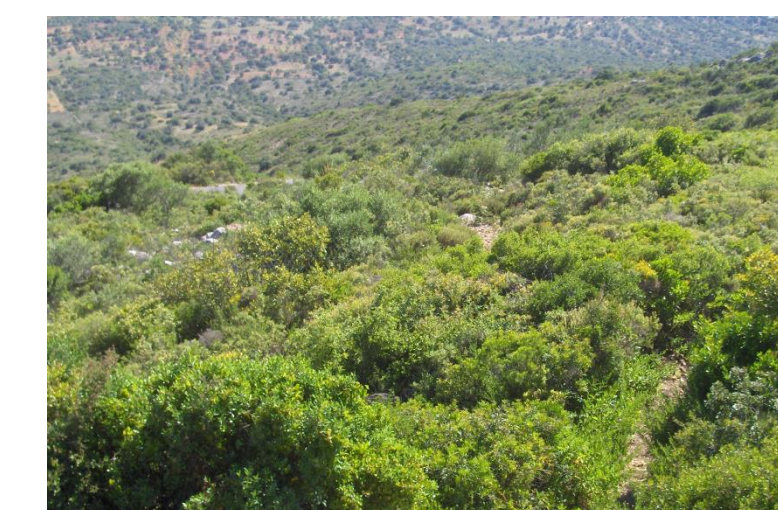
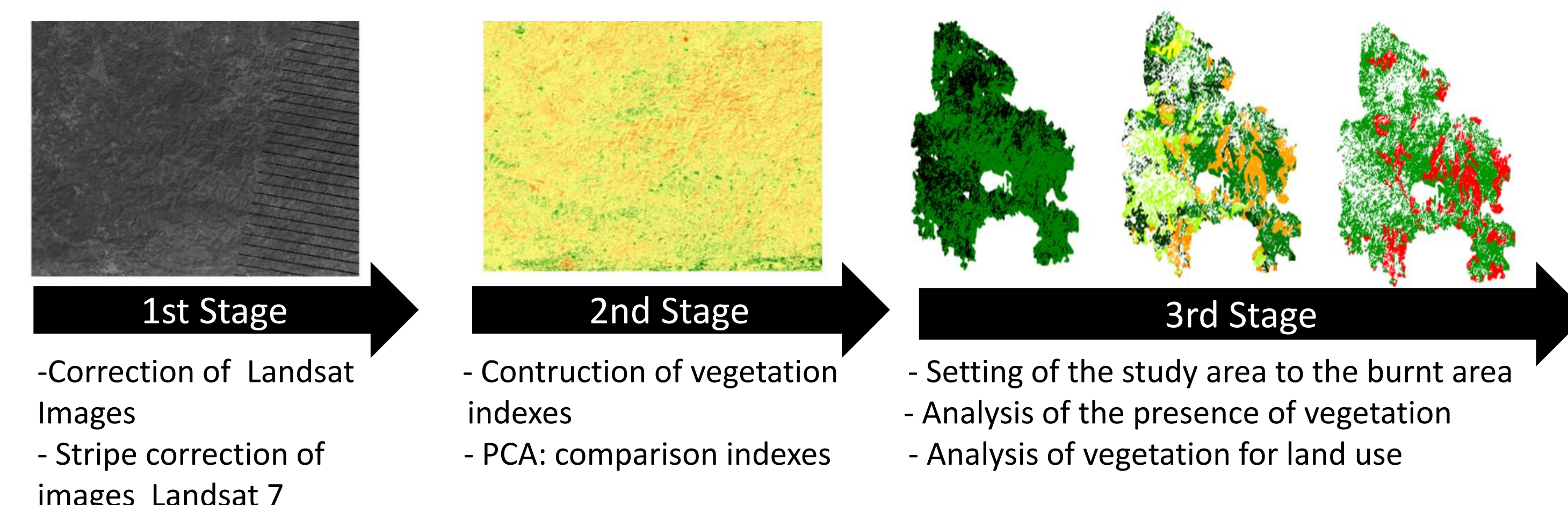


Figure 3: sclerophyllous vegetation

Methods

Computational methods:



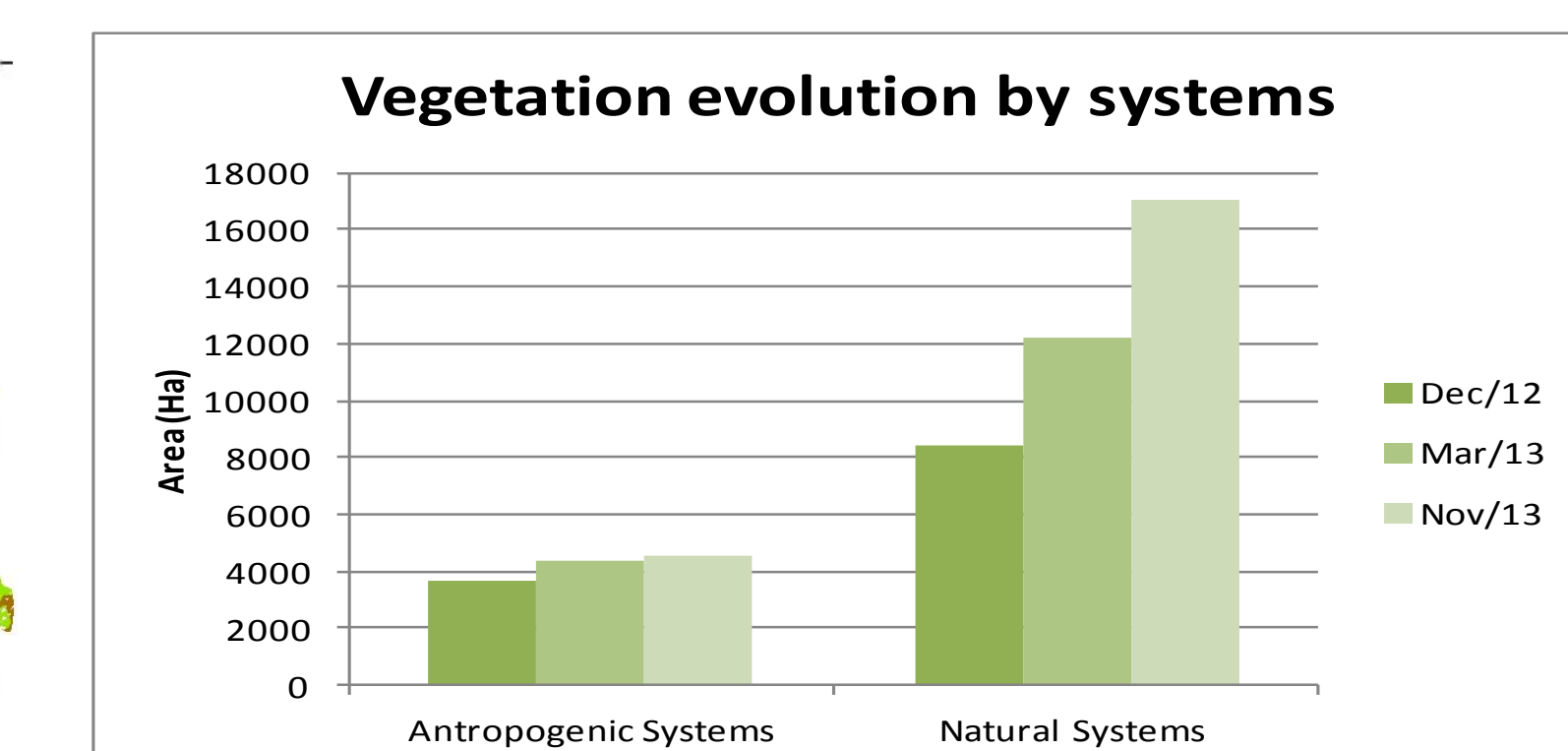
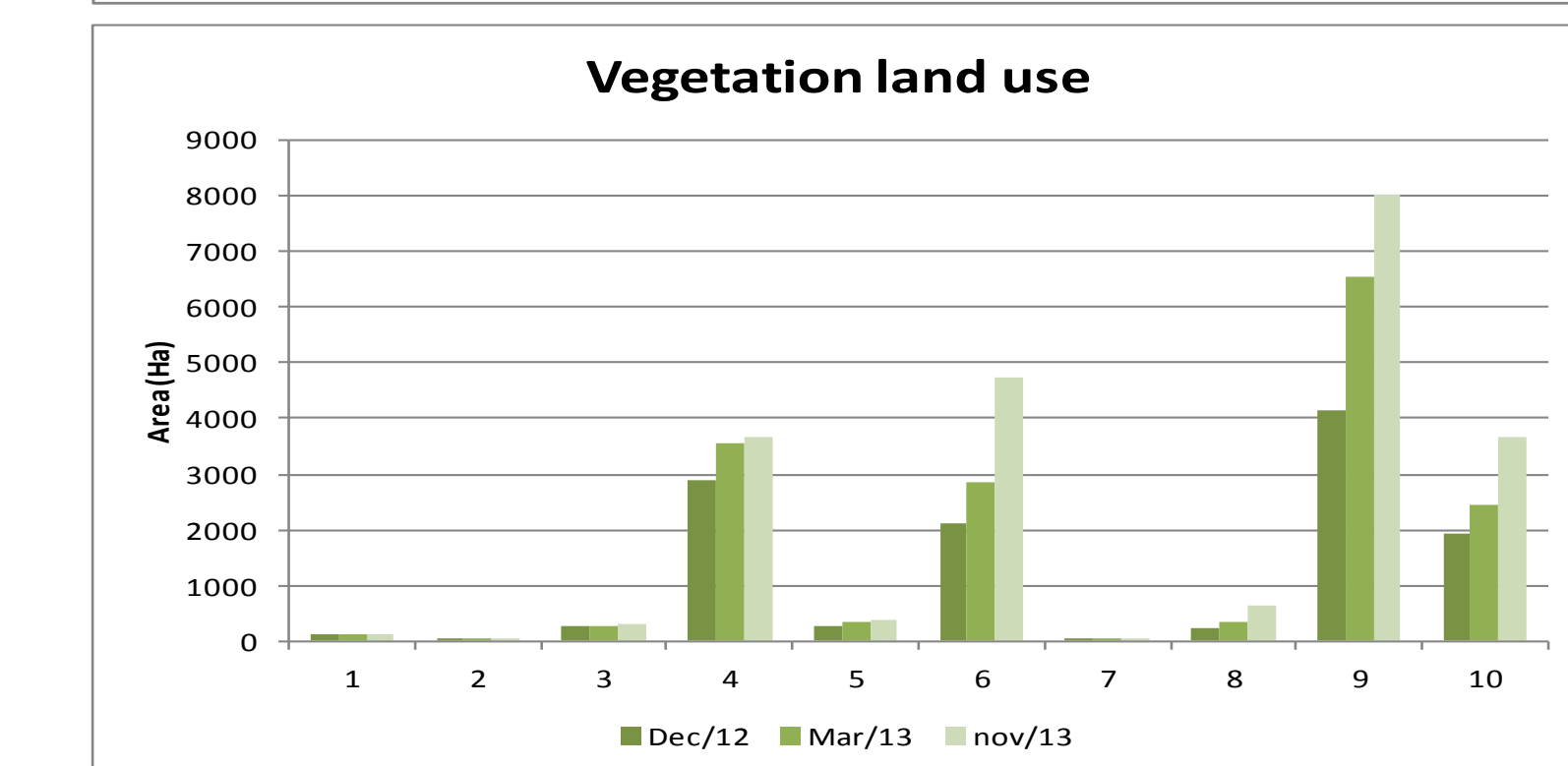
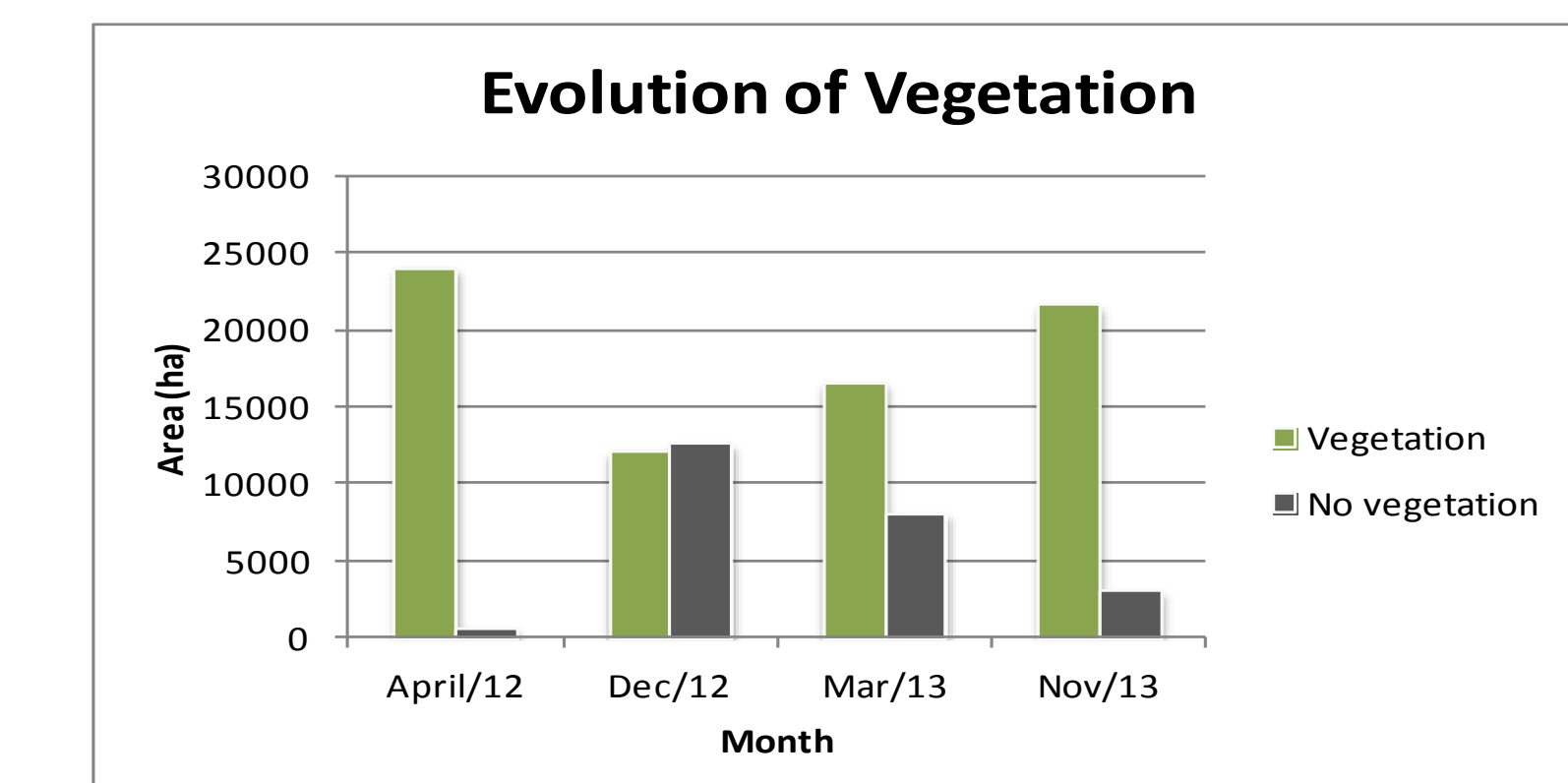
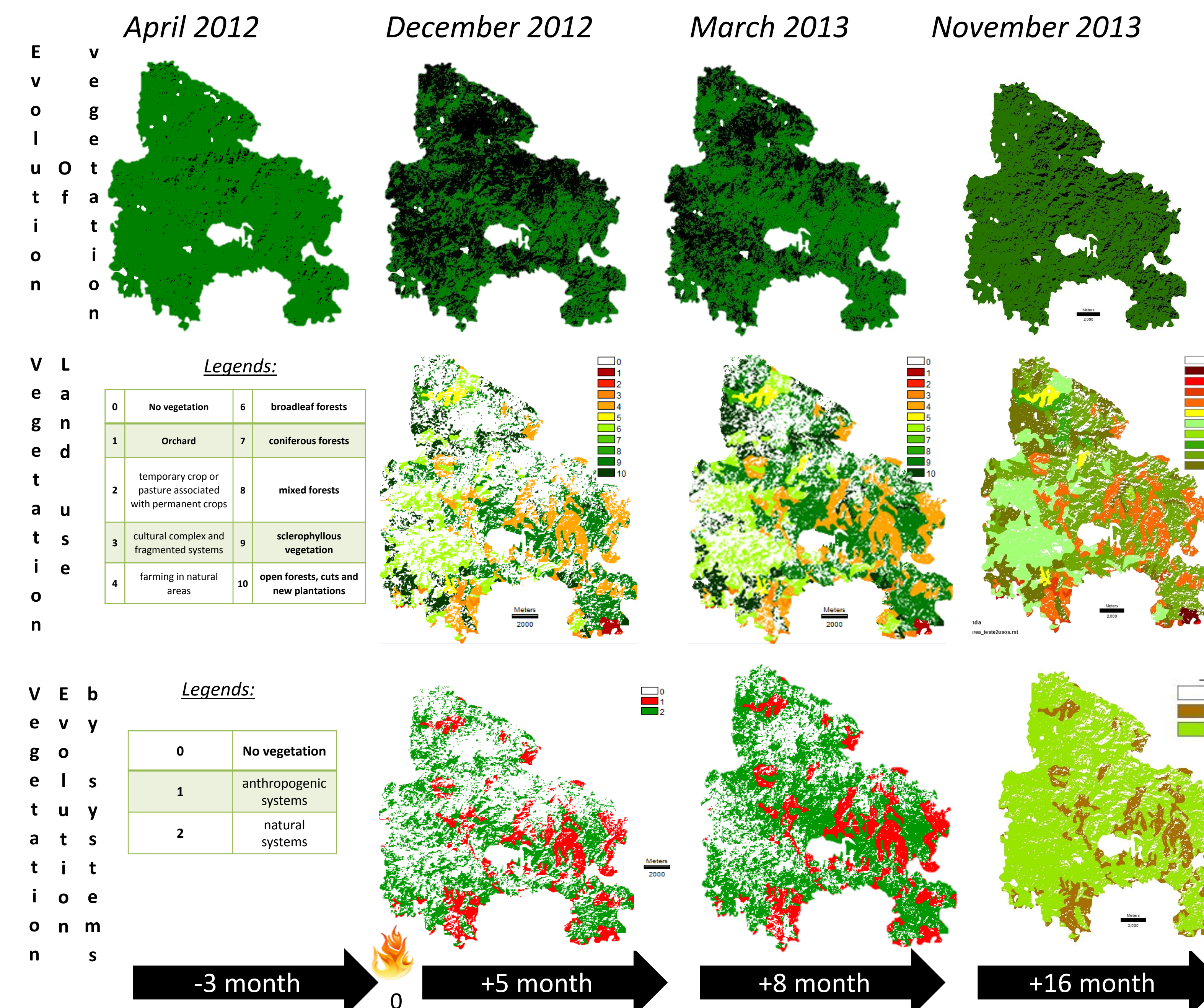
Practical methods:

- Validation of indexes through field validations

4th Stage

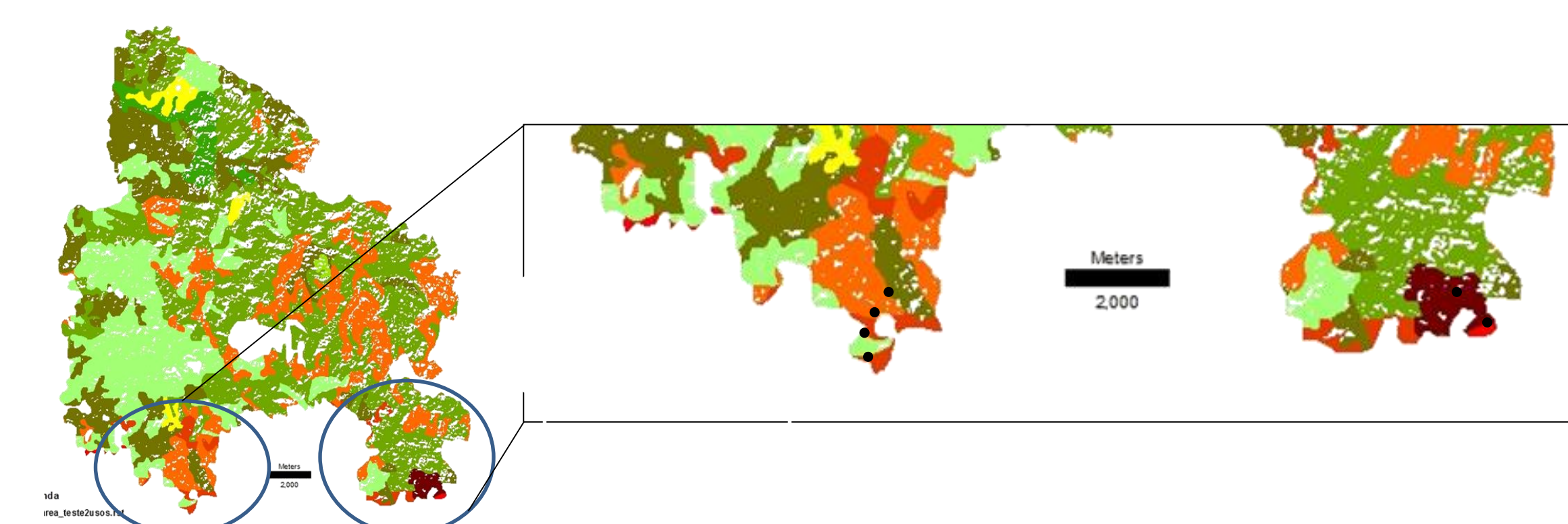
Results

Through PCA was chosen the index Tasseled Cap Green that better correlated with all indexes studied.



Validation indexes through field surveys:

- In validation were used Landsat 8 images of November 2013



Conclusion

There was a positive evolution of vegetation in burned areas, being much more evident for vegetation in natural system, the sclerophyllous or Mediterranean vegetation.

The vegetation indices are an efficient tool for analyzing the presence of vegetation, and its response direct result of the quality of satellite images.

The fieldwork validated the results obtained from the vegetation index, Tasseled Cap Green, only in the area that made the field validation.