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Evaluating interannual vegetation anomalies in the Basilicata region using satellite spot vegetation 1999-2011 time series: preliminary results from the Mitra project

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The Basilicata region funded a fesr project, MITRA to develop reliable low cost technologies to preserve and enhance natural and cultural heritage in some relevant areas selected as test cases.
" Cultural heritage and the natural heritage are increasingly threatened with destruction not only by the traditional causes of decay, but also by changing social and economic conditions which aggravate the situation with even more formidable phenomena of damage or destruction, from THE GENERAL CONFERENCE of the United Nations Educational, Scientific and Cultural Organization meeting in Paris from 17 October to 21 November 1972, at its seventeenth session, available on line " (http://whc.unesco.org/en/conventiontext/).
This paper is focused on the preliminary results obtained in the framework of the Mitra project. In particular, a temporal series (1999–2011) of the yearly Maximum Value Composit of SPOT/VEGETATION NDVI was used to carried out investigation on the whole Basilicata region. The PCA was used as a first step of data transform to enhance regions of localized change in multi-temporal data sets (Lasaponara 2006). Results from PCA were further processed using Support Vector machine (SVM) to identify and map land degradation phenomenon

Both naturally vegetated areas (forest, shrub-land, herbaceous cover) and agricultural lands have been investigated in order to extract the most prominent natural and/or man induced alterations affecting vegetation behavior. Such analyses can provide valuable information for monitoring the status of vegetation which is an indicator of the degree of stress namely any disturbance that adversely influences
plants in response to natural hazards and/or anthropogenic activities.

Our findings suggest that the jointly use of PCA and SVM PCA can provide valuable information for environmental management policies involving biodiversity preservation and rational exploitation of natural and agricultural resources.

Rosa Lasaponara 2006, On the use of principal component analysis (PCA) for evaluating interannual vegetation anomalies from SPOT/VEGETATION NDVI temporal series. Ecological Modelling 1 9 4 (2 0 0 6) 429–434