

MULTI-SOURCE APPROACH FOR ENHANCED LUCAS STATISTICS: A PILOT STUDY IN PORTUGAL

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Abstract

Under the promotion of a European strategy for accurate and updated statistics, a pilot study centred in land cover/land use (LCLU) statistics was developed in Portugal. It follows the nomenclature adopted by LUCAS project, at a scale of NUTS 3 level for the year 2013, relying in COS 2010 as reference. INE and DGT are now working together on a new project within LUCAS GT 2015, through a Memorandum of Understanding (MoU), using remote sensing data and ancillary data to derive LCLU statistics harmonized with LUCAS GT 2015 nomenclature.

The methodological approach for statistical results assures full integration with the national LCLU Map (COS2010), acquired through Remote Sensing techniques. Currently, there are being used simultaneously pixel-based and multi-temporal satellite data (Landsat imagery 5 and 7). Pixel-based technique allows improved understanding the infra and inter annual changes on LCLU and as a result, achieving training areas by overlapping with COS2010. The mapping procedure to derive the LCMaP 2010 consists in a supervised classification approach, such as the Support Vector Machine (SVM). To produce iLCMaP 2010 we will integrate previously produced LCMaP 2010 with COS 2010 at level 5 detail and 1ha MMU. This operation of spatial analysis will give us two sets of data: a) Evaluate the quality of the LCMaP 2010; and b) Provide thematic enrichment (detail) to the present classification. A Landscape Change Detection methodology was also developed to update iLCMaP 2010 to iLCMaP 2011 and from year to year till iLCMaP 2015. Taking for example the reference year of 2011 we will use the previous produced iLCMaP 2010 and combine it with the LC change from the images 2010 and 2011.

The methodology for the production of our base map (LCMap 2010) aims to be an accurate and efficient process to derive land cover maps that could be applied in other European Union countries. This study reveals to be of great value due to multi-source integration, which ultimately will be a crucial component for developing Small Area Estimation (SAE) methodology. Here, it's expected to enhance the LCLU desegregation. Despite its wider applicability, this paper focus on Remote Sensing and satellite imagery for acquiring LCLU statistics under LUCAS GT 2015 nomenclature, which allows a continuous updating and harmonized data.