Application of MODIS NDVI time series data for land cover classification at European scale

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This study investigates the potential of MODIS 250-m NDVI (16-day composites) time series (10-years dataset) to derive land cover (LC) maps at European scale. The approach involves the use of support vector machines (SVM) trained on reference samples obtained through visual interpretation of Google Earth (GE) high resolution imagery. Within the available training samples, a small set of suitable support vectors is identified using a random selection approach to optimize class separability. Based on this approach, a previous study indicated an overall accuracy of 73% (95% C.I.: 68%, 77%). with a large number of independent validation samples spread over three contrasting regions in Europe (Eastern Austria, Macedonia and Southern France).

This paper aims at confirming preliminary findings with a focus on an additional dataset of 3000 samples randomly selected in Europe. Classification accuracies are presented for the resulting SVM maps and three (globally available) reference land cover products: GLC2000 (1 km), MODIS LC (500 m) and GlobCover 2009 (300 m). Results confirm that the accuracy of areas where the three reference maps disagree can be notably improved. Results are discussed, in view of an operative LC mapping application with a focus on vegetation monitoring at Europe scale.