

Crop type mapping using Sentinel-2 data – a case study from Parvomay, Bulgaria

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Monitoring of agricultural crops is of vital importance for efficient food production and sustainable development of agricultural sector. The main objective of the present study was to evaluate the possibilities for crop recognition, using Sentinel-2 data in Parvomay test area in Bulgaria. For that purpose, the classification methods Support Vector Machines (SVM) and Random Forest (RF) were evaluated. These methods were applied to satellite multispectral data acquired by the Sentinel-2 satellites, for the growing season 2020-2021. Main crops grown in the research area are winter wheat, rapeseed, sunflower and maize. In accordance with their development cycles, we developed temporal image composites for the suitable moments of time when each crop is most accurately distinguished from other crops. Ground truth data was available from the integrated administration and control system (IACS) - a vector database containing information about crops sown in individual agricultural parcels for the territory of Bulgaria. The IACS data was used for both training the classifiers and accuracy assessments of the final maps.

农作物的监测对于有效的粮食生产和农业的可持续发展至关重要。本研究的主要目的是利用 Sentinel-2 数据，在保加利亚 Parvomay 测试区，评估作物识别的可能性。为此，作者对包括支持向量机 (SVM) 和随机森林 (RF) 等分类方法进行了比较。初始输入数据是 2020-2021 年生长季节 Sentinel-2 卫星多光谱数据。研究区域内种植的主要作物是冬小麦、油菜籽、向日葵和玉米。根据它们的生长周期，在每种作物与其他作物最准确区分的适当时间段，我们开发了时间序列合成产品。地面真实数据来自于欧盟综合管理和控制系统 (IACS) --一个包含保加利亚境内各个农业地块中作物播种信息的矢量数据库。IACS 数据被用于训练分类程序和最终评估农作物分布地图的准确性。