

Developing an updated crop classification for ecologists using high resolution Sentinel imagery.

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Satellite imagery is frequently used within the scientific community to monitor land cover (or use) and atmospheric phenomena. With the launch of newer satellite missions and the open availability of higher quality imagery, the scope of applications has also widened. Land use and land cover classifications are one such important satellite imagery-derived end product that can be constantly improved or updated using finer resolution imagery. For instance, one of the most widely used European scale classifications is the CORINE land cover dataset, with a spatial resolution of 100 meters. However, the dataset is too coarse for small scale applications. At present, within the field of ecology, there is a heavy dependence on hyperspectral imagery to supplement field data, which is often a tedious and costly process. Many studies thereby use available land cover datasets such as CORINE for their work, which introduce spatial errors into their modelling process. With an increasing need for the integration of higher resolution land products with ecological applications, this study's first use case, develops a crop classification for the state Rhineland-Palatinate using the new Sentinel 2A/2B products with a spatial resolution of 10-20 meters. Using supervised classification methods and the Sentinel SNAP Toolbox, this work collates an updated classification for the German state, to improve upon the CORINE land cover product. An important motivation of this research is to maximize the use of the open and reproducible nature of the Copernicus project, including both the imagery and platforms for Sentinel image processing. The project thereby enables scientists to streamline the automation of image processing, making it possible to handle larger volumes of high resolution imagery than in the past.