

Mapping 1990 forestry land use in Ireland

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The areal extent of forestry land use is an important input into national greenhouse gas flux models. In the Republic of Ireland, forest land use has increased from less than 1% of all land area in 1900 to 10% in 2007, with a target of 18% by 2046. In order to better track forestry land cover/ land use dynamics, the Forest Service devised the National Forest Inventory (NFI), which contains land cover/ land use and other metadata for points at a 2 km grid spacing. In 2007, the Forest service identified 1742 NFI points (10%) that were in a forestry land use. In order to compare with historical data, and in particular the 1990 baseline year as designated by the Intergovernmental Panel on Climate Change (IPCC). In order to assess the 1990 status of forestry land use, we identified which points required additional scrutiny using NFI metadata, specifically where planting years where unknown or after 1990, or where other metadata were ambiguous or missing. Assessment involved a spectral rule-based land cover classification algorithm that is part of the Irish Forest Disturbance from Earth Observation (IForDEO) open-source Python library for the years 1988 – 1990 and orthophotography from 1995, 2000, and 2005. Results show that in 1990, 6.5% of Ireland was forested. We classified four land use classes, specifically cropland, forest, grassland, and natural vegetation. The urban class was excluded as NFI points in the class were found within the 2007 subset of forest plots. Overall classification accuracy was 70.2%, with forest user and producer's accuracies at 88.9% and 80.0% respectively, kappa = 0.5952, Z-statistic = 13.88.