

EGU21-9262

<https://doi.org/10.5194/egusphere-egu21-9262>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Mapping land use on Irish raised bogs using Sentinel-2 imagery and Google Earth Engine

Wahaj Habib¹, John Connolly¹, and Kevin McGuinness²

¹Trinity College Dublin, Geography, Dublin, Ireland (habibw@tcd.ie)

²Insight Centre for Data Analytics, Dublin City University

Peatlands are one of the most space-efficient terrestrial carbon stores. They cover approximately 3 % of the terrestrial land surface and account for about one-third of the total soil organic carbon stock. Peatlands have been under severe strain for centuries all over the world due to management related activities. In Ireland, peatlands span over approximately 14600 km², and 85 % of that has already been degraded to some extent. To achieve temperature goals agreed in the Paris agreement and fulfil the EU's commitment to quantifying the Carbon/Green House Gases (C/GHG) emissions from land use, land use change forestry, accurate mapping and identification of management related activities (land use) on peatlands is important.

High-resolution multispectral satellite imagery by European Space Agency (ESA) i.e., Sentinel-2 provides a good prospect for mapping peatland land use in Ireland. However, due to persistent cloud cover over Ireland, and the inability of optical sensors to penetrate the clouds makes the acquisition of clear sky imagery a challenge and hence hampers the analysis of the landscape. Google Earth Engine (a cloud-based planetary-scale satellite image platform) was used to create a cloud-free image mosaic from sentinel-2 data was created for raised bogs in Ireland (images collected for the time period between 2017-2020). A preliminary analysis was conducted to identify peatland land use classes, i.e., grassland/pasture, crop/tillage, built-up, cutover, cutaway and coniferous, broadleaf forests using this mosaicked image. The land-use classification results may be used as a baseline dataset since currently, no high-resolution peatland land use dataset exists for Ireland. It can also be used for quantification of land-use change on peatlands. Moreover, since Ireland will now be voluntarily accounting the GHG emissions from managed wetlands (including bogs), this data could also be useful for such type of assessment.