From Peat to Pixels: The England Peat Map

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What is the England Peat Map?

The England Peat Map (EPM), developed by Natural England as part of the Natural Capital and Ecosystem Assessment Programme (NCEA), is a set of national-scale baseline maps showing the extent, depth, and condition of England's peaty soils. The maps under development are the:

- **Extent of peaty soils**
- **Depth of peaty soils**
- **Vegetation on peaty soils**
- **Surface features on upland peaty soils** (bare peat, grips, gullies, haggs and peat dams)
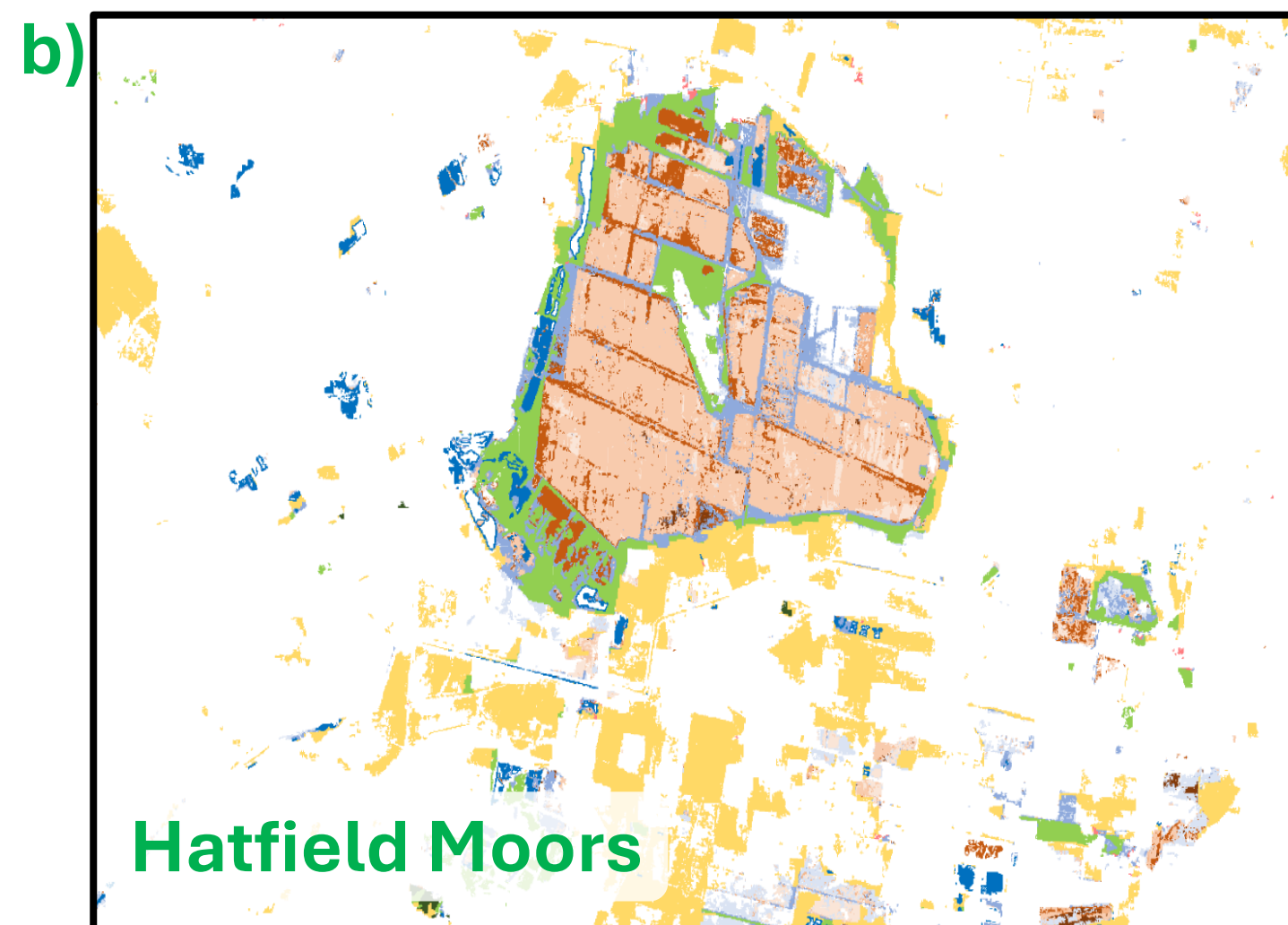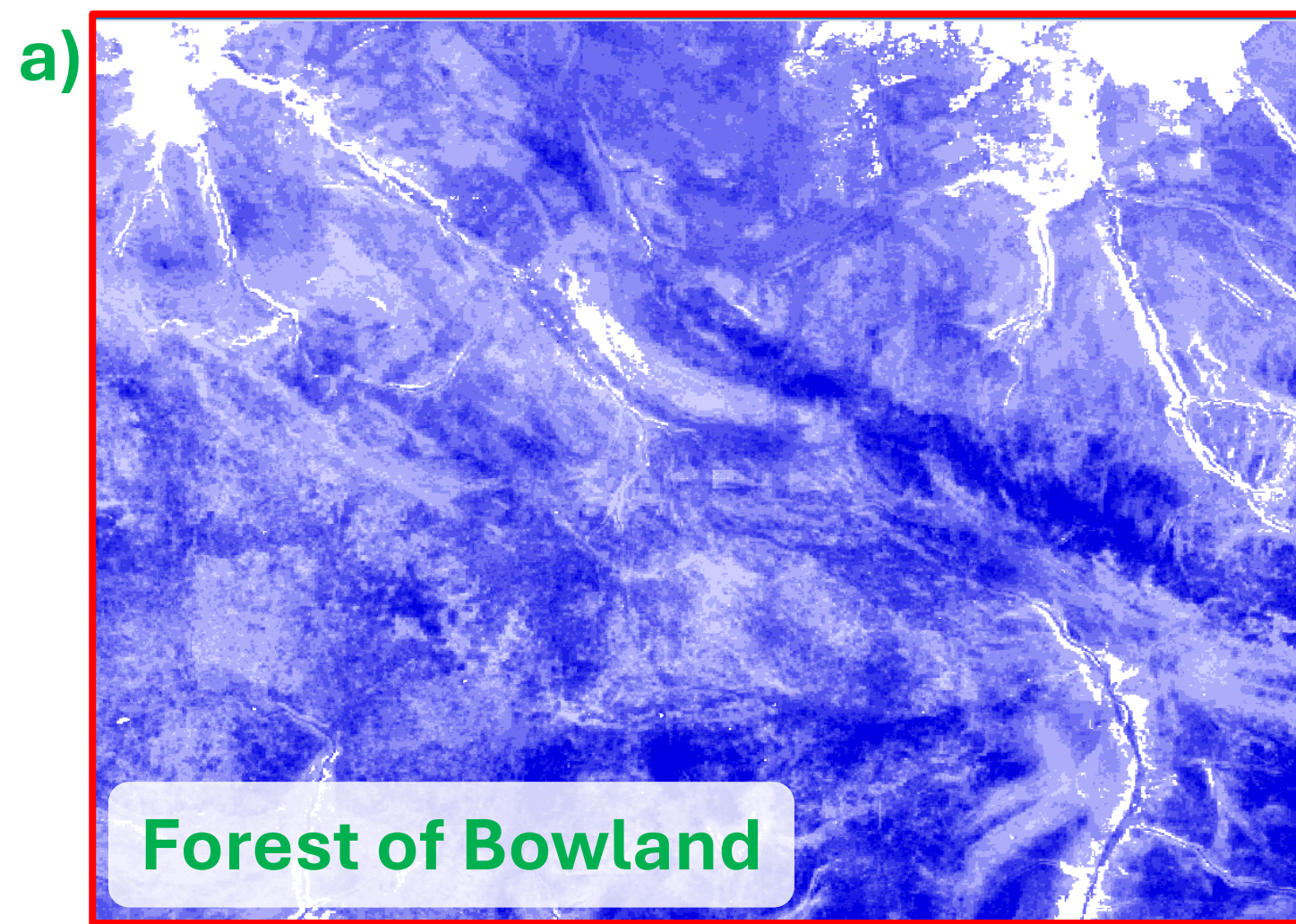
These maps will provide fundamental evidence on peatland natural capital assets, supporting a range of policy and delivery areas. Anticipated uses include peatland restoration targeting, nature recovery planning, greenhouse gas emissions reporting, regulation (e.g. burning activities in the uplands), land use planning and the future development of new peatland monitoring tools.
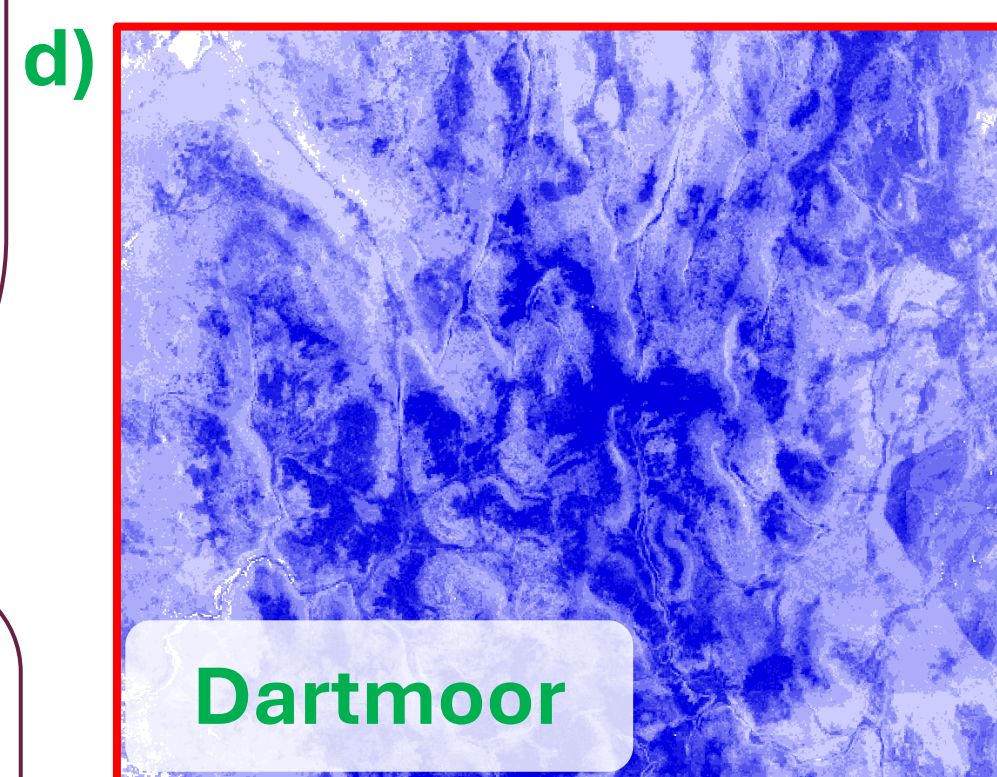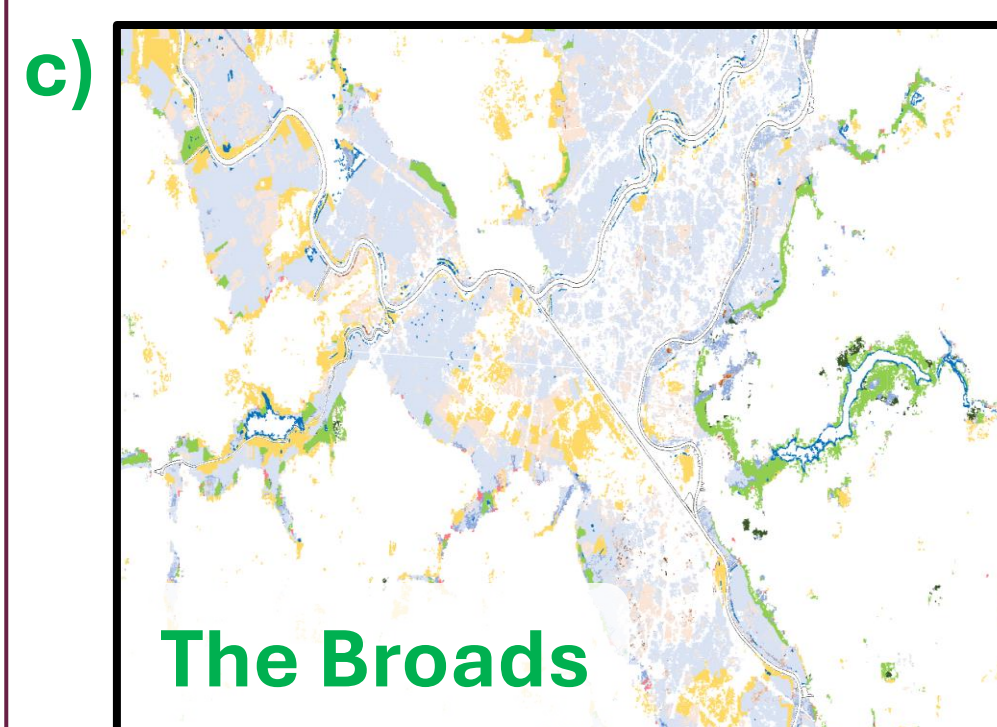
How is it made?

The EPM is a **modelled product** where a range of geospatial data (e.g. satellite imagery (Sentinel-1 and Sentinel-2), LiDAR-derived topography, geology and historical land use) are combined with field survey data to train **machine learning models**. In some cases, separate models are used to improve the mapping accuracy in upland and lowland areas. The advantage with modelled products are these maps can be **updatable** with new data in the future and are designed to **quantify measurement uncertainty.**

The extent, depth and vegetation maps use an XGBoost algorithm to predict the likelihood of presence and depth at **10m resolution**. The surface feature mapping, carried out by the AI4Peat and EPM teams, use U-Net deep learning architectures to predict presence in upland areas at **sub-metre resolution**. The maps are thoroughly checked against an independent subset of survey data, derived from ground-based and desk-based surveys.

a) Forest of Bowland

b) Hatfield Moors

What about field survey?

Our surveyors work closely with landowners to collect field data for use in the EPM. This is to provide **up-to-date information** on the location of peaty soil, its depth and vegetation cover to inform our machine learning models, often in areas with limited or no field survey data. The EPM's in-house field surveyors help to train others across Natural England and external contractors in **field protocols** for Earth observation focused peatland mapping and to quality assure survey work.

Scan me to find out more

Our own national survey programme **supplements past surveys** within Natural England and across many partner organisations, including the Great North Bog, United Utilities and the National Trust, whose **data donations,** comprising over 90,000 peat depth measurements, have helped us stretch our database across the country. This contribution is greatly appreciated, and we now have an **external dataset with over 500,000 observations**.

Can I access the beta maps?

The beta maps are available for the peatland community and key stakeholders to provide feedback to help improve our maps before our **public release in March 2025.**

If you would like to gain access and help improve our extent, depth and condition maps, please contact PeatMap@naturalengland.org.uk.

What's next?

The England Peat Map will be **available under an Open Government License (OGL) in March 2025.** EPM will also be publishing a **database** of all its own field data and many of the field observations contributed by other partners. In addition, we will publish user guides, trained machine learning models and code.

England Peat Map Beta

Depth

- 0 - 20 cm
- 21 - 40 cm
- 41 - 60 cm
- 61 - 80 cm
- 81 - 100 cm
- 101 - 120 cm
- 121 - 140 cm
- > 140 cm

Vegetation

- Arable and Horticultural
- Bare Peat
- Broadleaved Woodland
- Built-up Areas and Gardens
- Calluna Bog
- Conifer Woodland
- Dry Grass and Scrub Bog
- Eriophorum Bog
- Molinia Bog
- Other Grassland
- Scrub and Tree Fen
- Short Fen Vegetation
- Sphagnum - Eriophorum Bog
- Tall Fen Vegetation
- Water

c) The Broads

d) Dartmoor

NCEA
Natural Capital and Ecosystem Assessment

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