A satellite-style image of the Earth, showing the continents of Europe and Africa. The image is partially obscured by a large green curved shape on the left side of the slide.

The implementation of the 2013 IPCC Wetlands Supplement Guidance and the reporting of Tier 2 emissions from UK organic soils in the two most recent inventory submissions

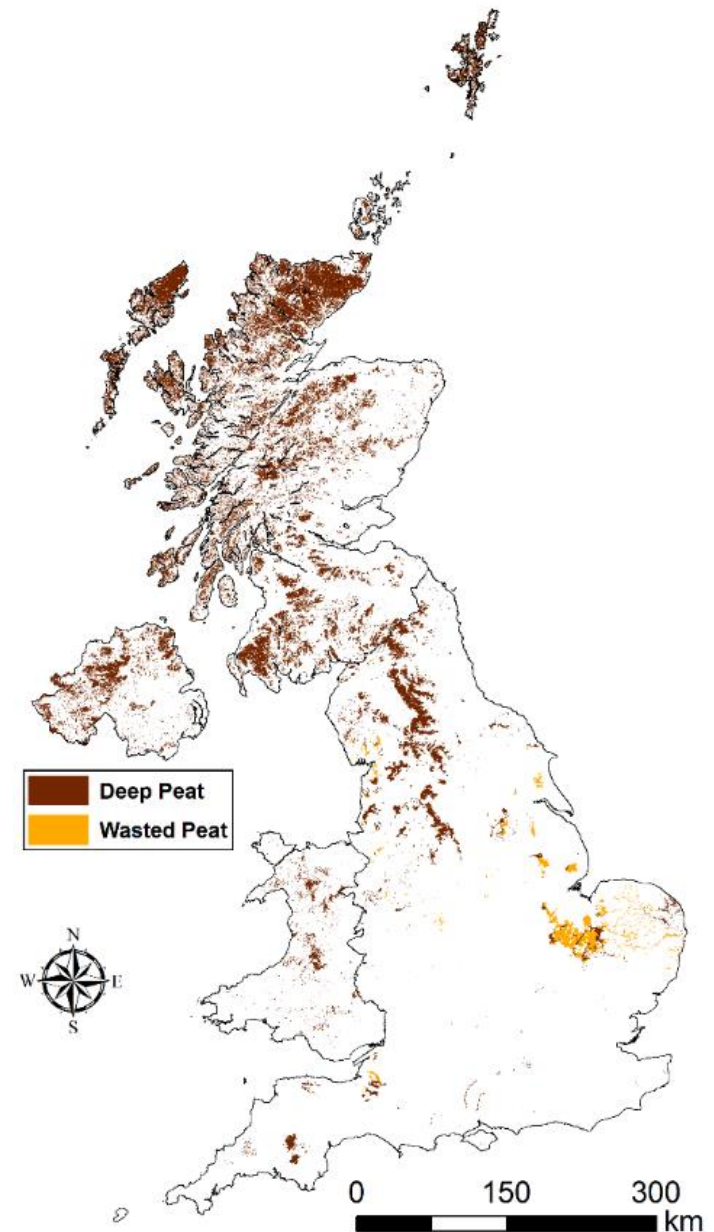
Amanda Thomson, UK



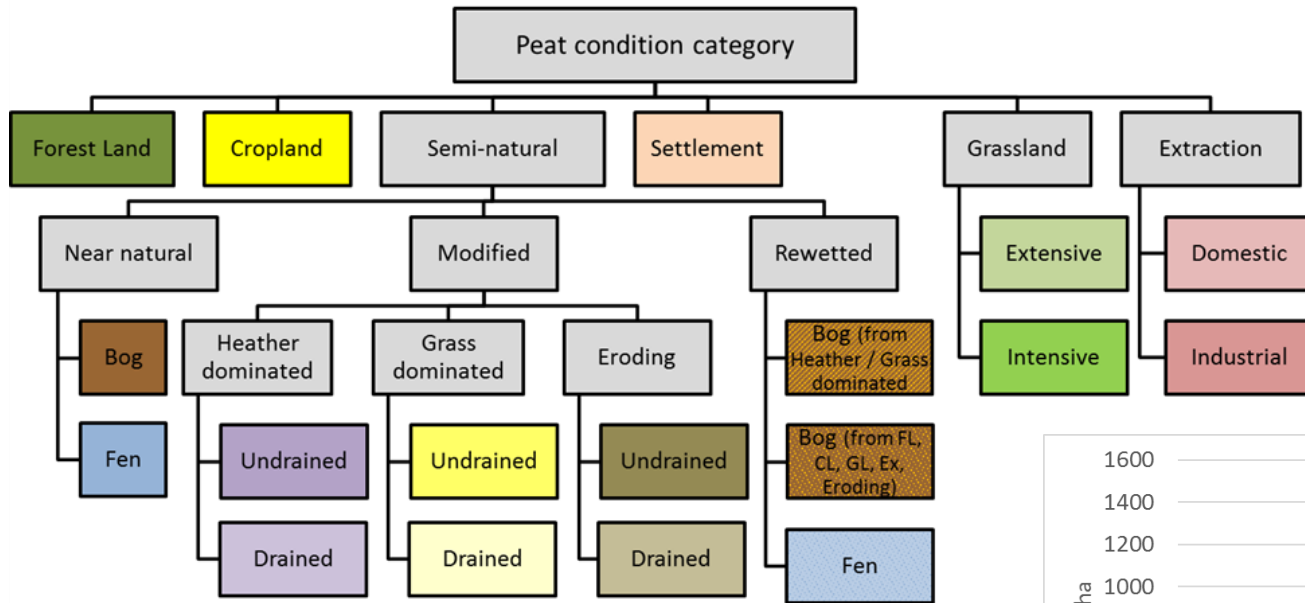
UK Centre for
Ecology & Hydrology

Background to Reporting Emissions from Organic Soils

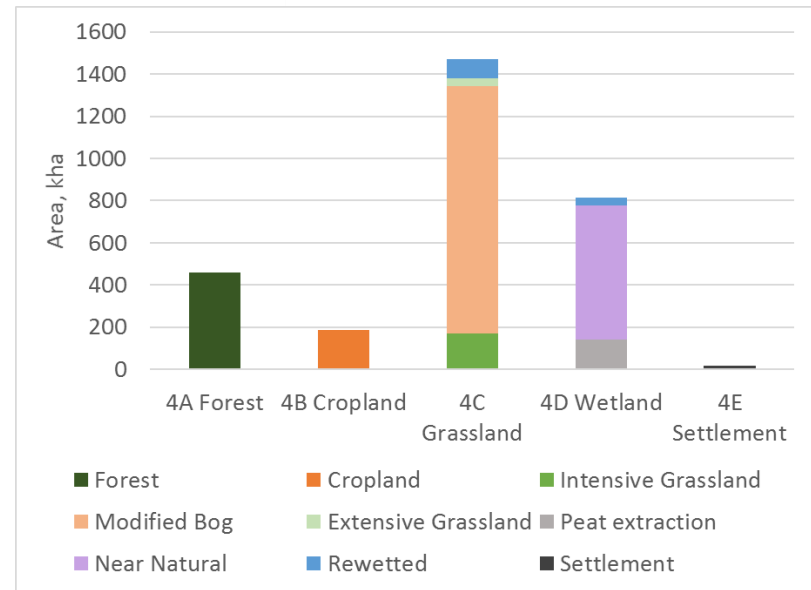
- 12% of UK land area is organic soil (peatland)
 - 76% of organic soils are in a modified state and no longer function as a C sink
 - 22% are near-natural bog or fen
 - 4% have undergone restoration actions to restore peatland hydrology and biogeochemical functioning
- The UK elected to report Article 3.4 Wetland Drainage and Rewetting during the 2nd KP Commitment Period.
- Emissions from the drainage and rewetting of organic soils were included for the first time in the 1990-2019 UK GHG inventory.
- Implemented following guidance for estimating emissions from inland organic soils set out in chapters 2 and 3 of the *2013 IPCC Wetlands Supplement* and using methodology for implementation from Evans *et al.* 2017.
https://naei.beis.gov.uk/reports/reports?report_id=980



Land Cover hierarchy



Grey cells represent higher-level categories with two or more sub-categories.
 Note separate rewetted bog categories



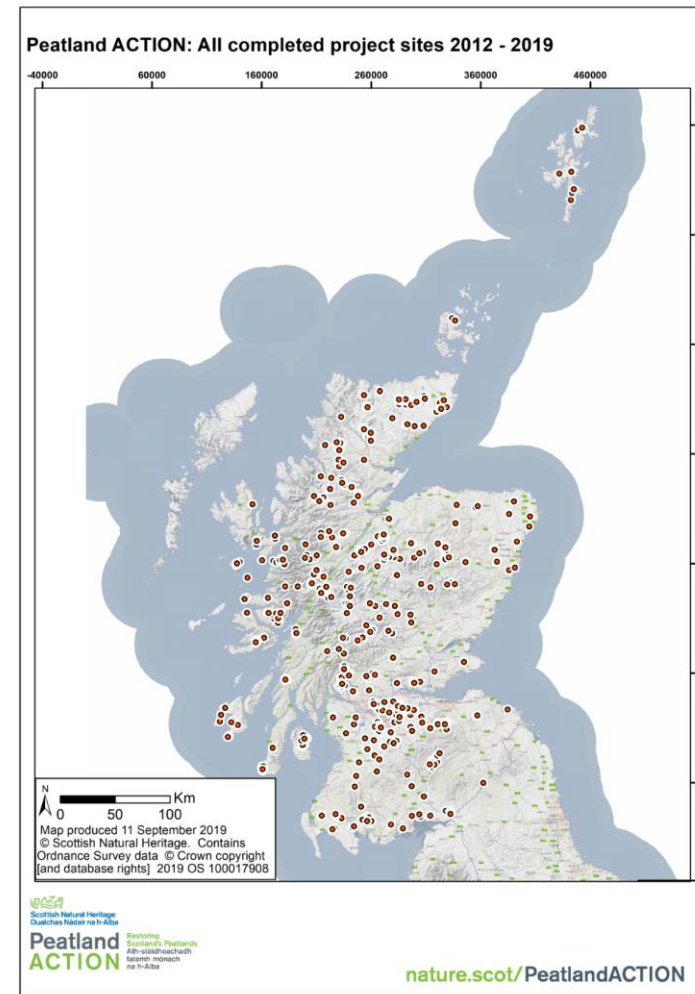
Peat conditions categories



Changes in peat condition/land-use

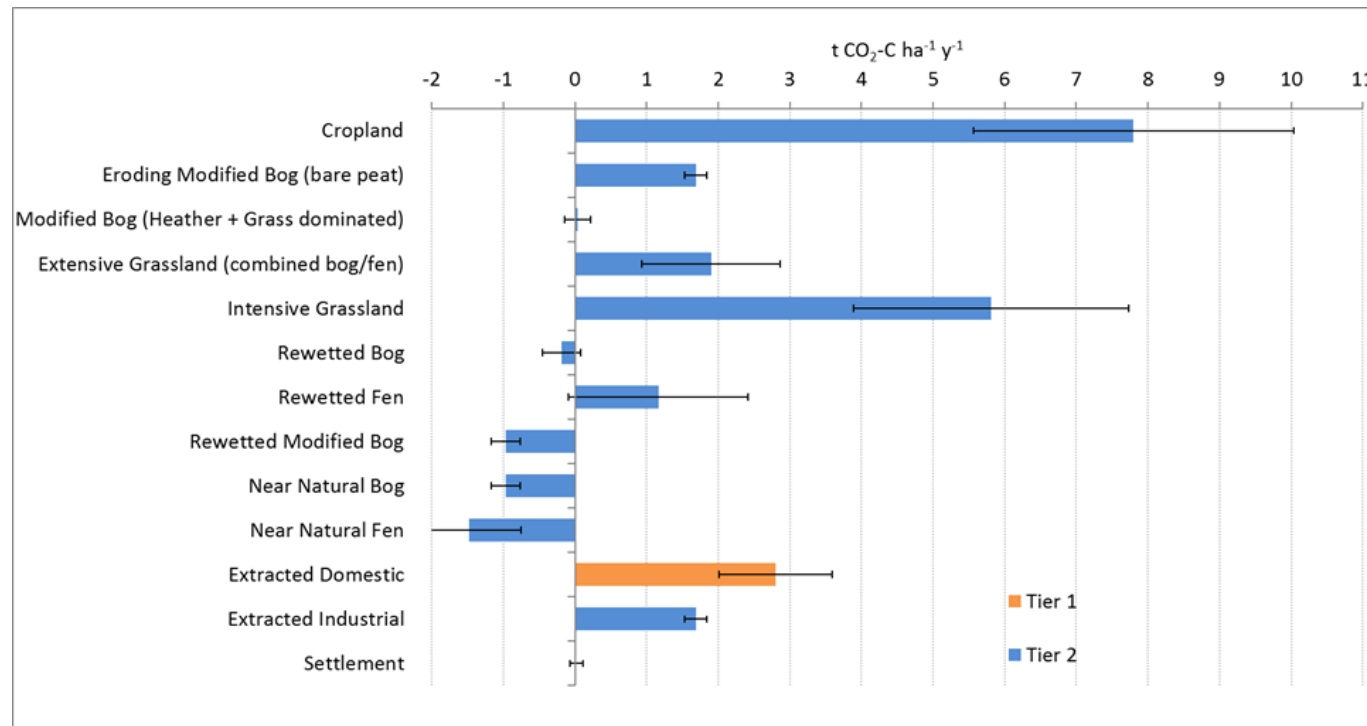
- Most large-scale drainage pre-1990
- Restoration/rewetting
 - Spatial assessment of restoration 2000-2013
 - Developing reporting mechanism for post-2013 restoration
- Changes in peat extraction
 - Information from industry and Google Earth satellite imagery
- Forestry
 - Information from national forestry institutes

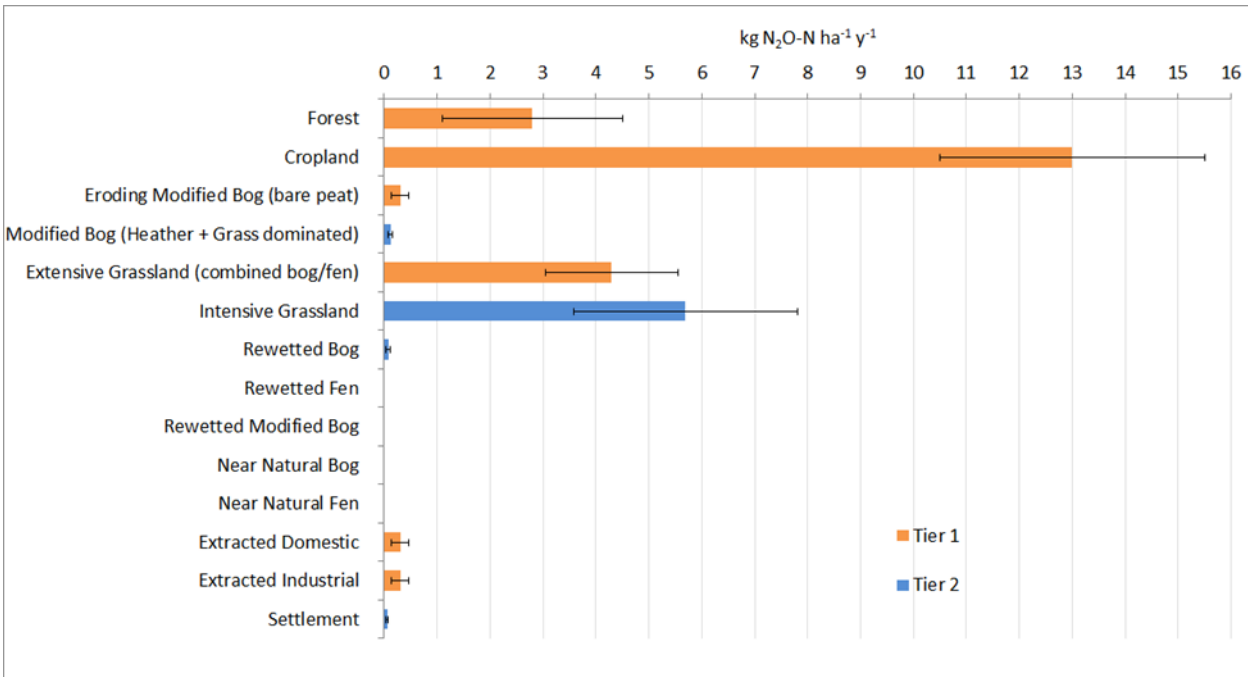
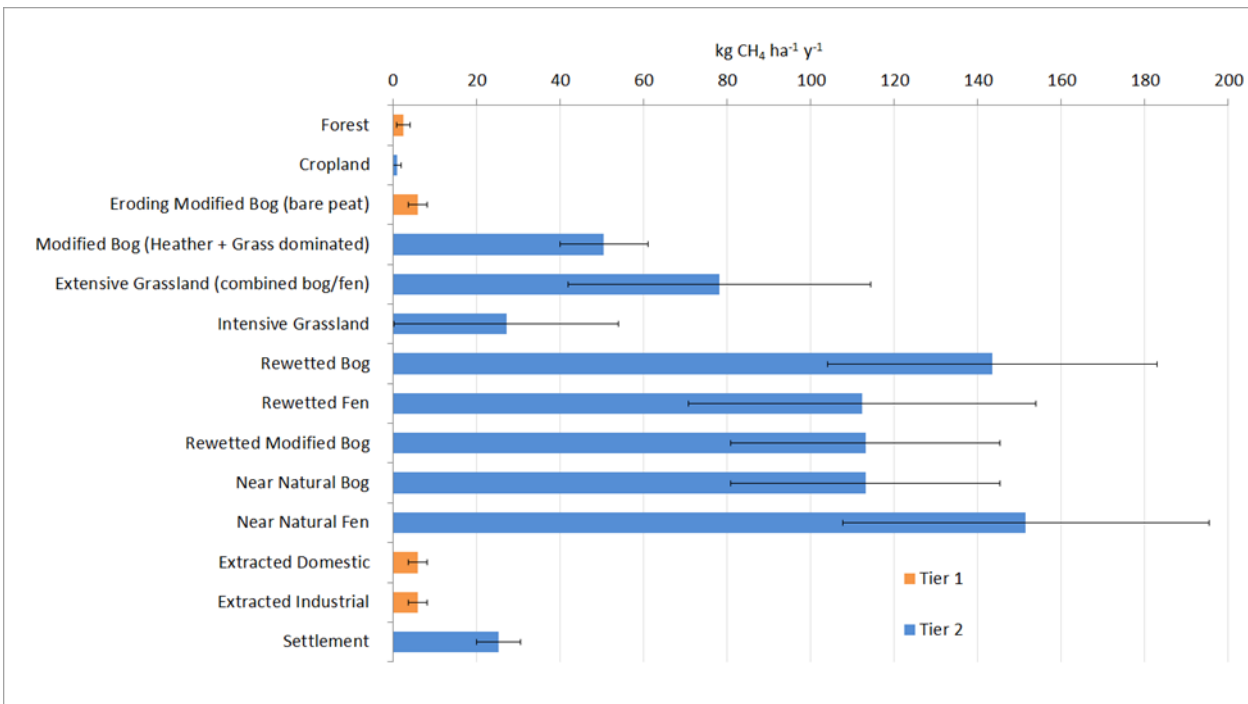
Wasted peats: former deep peat depleted through agricultural activity



Tier 2 Emission Factors

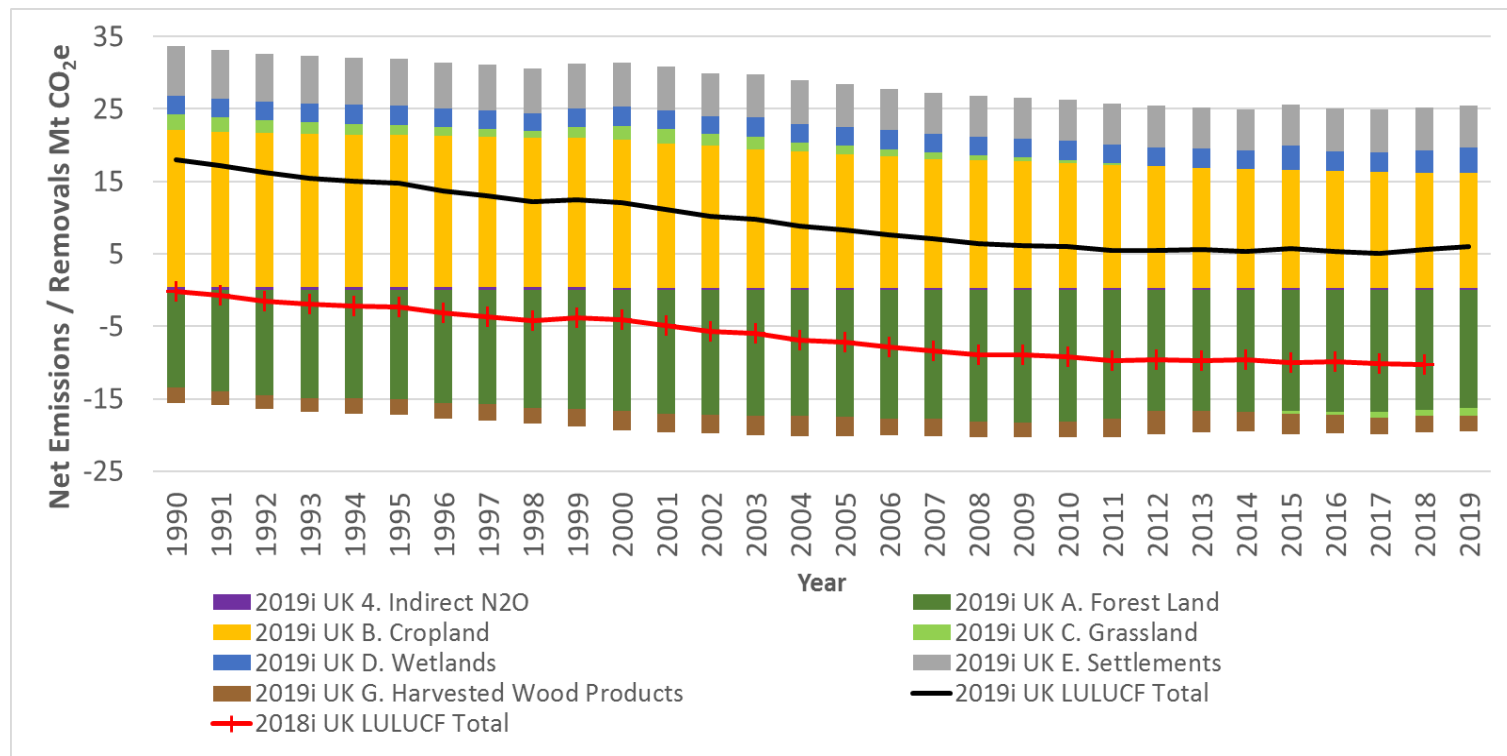
- Developed in Evans et al. (2017)
- EF literature review and meta analysis updated in 2019
- Tier 2 EFs calculated from ≥ 4 different primary study locations
- Tier 3 approach for forest direct CO₂ fluxes (from CARBINE model)





Impact on 1990-2019 inventory

- Increased the area of organic soil reported, from 534 kha to 2,957 kha in 2018 for the 2018i and 2019i.
- Impact of LULUCF recalculations on the 2019 inventory was +15.8 Mt CO₂e in 2018.



Estimated emissions from organic soils in 1990-2019 inventory

- Grassland, **8.49 Mt CO₂e**, includes the majority of peatland area,
- Cropland, **5.98 Mt CO₂e**, which has the highest GHG emissions per unit area
- Rewetted peatlands **0.33 Mt CO₂e**
- Avoided soil emissions from restoration = **0.92 Mt CO₂e** of emissions removed from the inventory in 2019
- Near natural peatlands are slight sinks (**-0.014 Mt CO₂e**) for 2019.

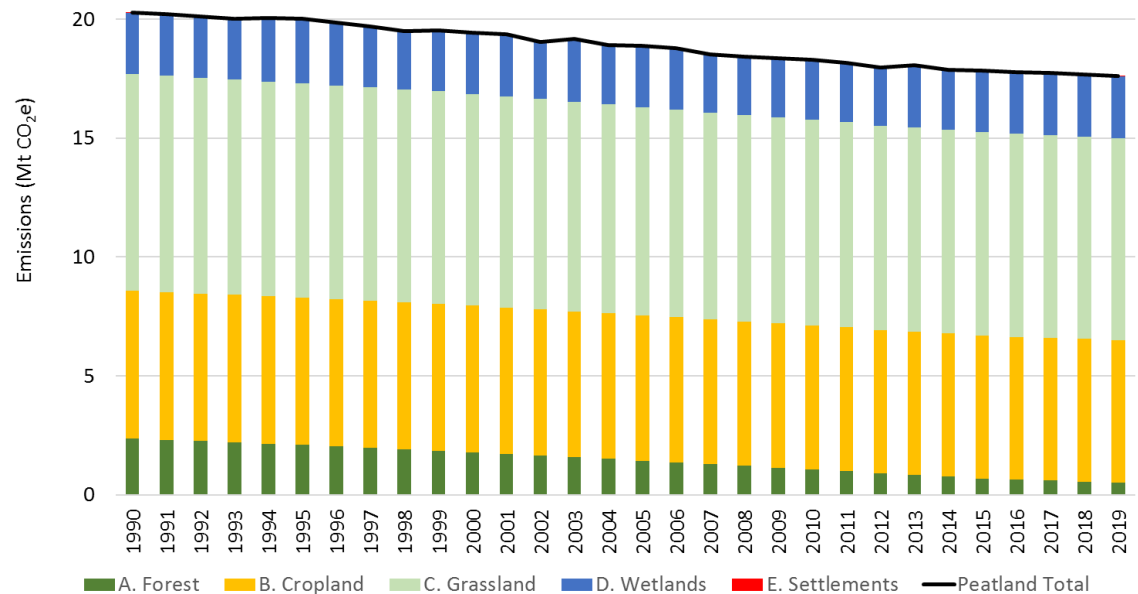
2019

LULUCF = **17.61 Mt CO₂e**

Agriculture = **1.61 Mt CO₂e**

Total (LULUCF + Ag) = **19.22 Mt CO₂e**

LULUCF Emissions from organic soils in the UK in 2019.



Impact on 1990-2020 inventory

- Minor changes in areas on organic soil <-0.01 Mt CO₂e in 1990/2019
- Updated activity data for restoration -0.1 Mt CO₂e in 2019
- Inclusion of emissions from organic soils in Isle of Man (UK Crown Dependency)
- Ongoing work to collect activity data and appropriate emission factors for the Falkland Islands (UK Overseas Territory)



Further development

Very active research area in UK

UKCEH leads a collaborative network of CO₂, CH₄ and N₂O flux towers covering all major land-use categories

Flux tower data suggest we could reduce UK agricultural peatland emissions by around 2/3rds by halving average drainage depths- being tested with field trials

Need assessment of wasted peat in other parts of UK beside England

Flux measurements strongly suggest that wasted peat EFs are lower

- New Cropland EF for wasted peat will be included in the next inventory

Moving towards information collection protocol for restoration sites, to facilitate inclusion of activity in the GHG Inventory

A man with glasses, wearing a light blue long-sleeved shirt, is leaning over a piece of scientific equipment in a greenhouse. The greenhouse has a complex metal frame and is filled with green plants. The background shows another similar greenhouse structure. The overall scene is dimly lit with a blue tint.

Thank you

Any questions?

