

Wetlands Solutions *for the Future*

Learning from ALFAwetlands and
REWET Projects

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But Where Are They? A Survey of Europe's Wetlands Under Pressure

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Michael-Succow-Foundation
Greifswald Mire Center



Situation at project start:

“Obsolete and incomplete data on wetlands in Europe — or their misalignment — result in underutilization of available information, and especially hamper prioritization of restoration needs with regard to wetlands.... However, high-quality local, national, and regional exist that could help create a complete picture of European wetlands.”
(Grant Agreement, 2022)



Task: Advancing the state-of-the-art of the geospatial knowledge base on wetlands, their use and degradation in Europe.



Major Outputs:
European Wetland Map ('EWM')
updated European Peatland Map (as part of EWM)

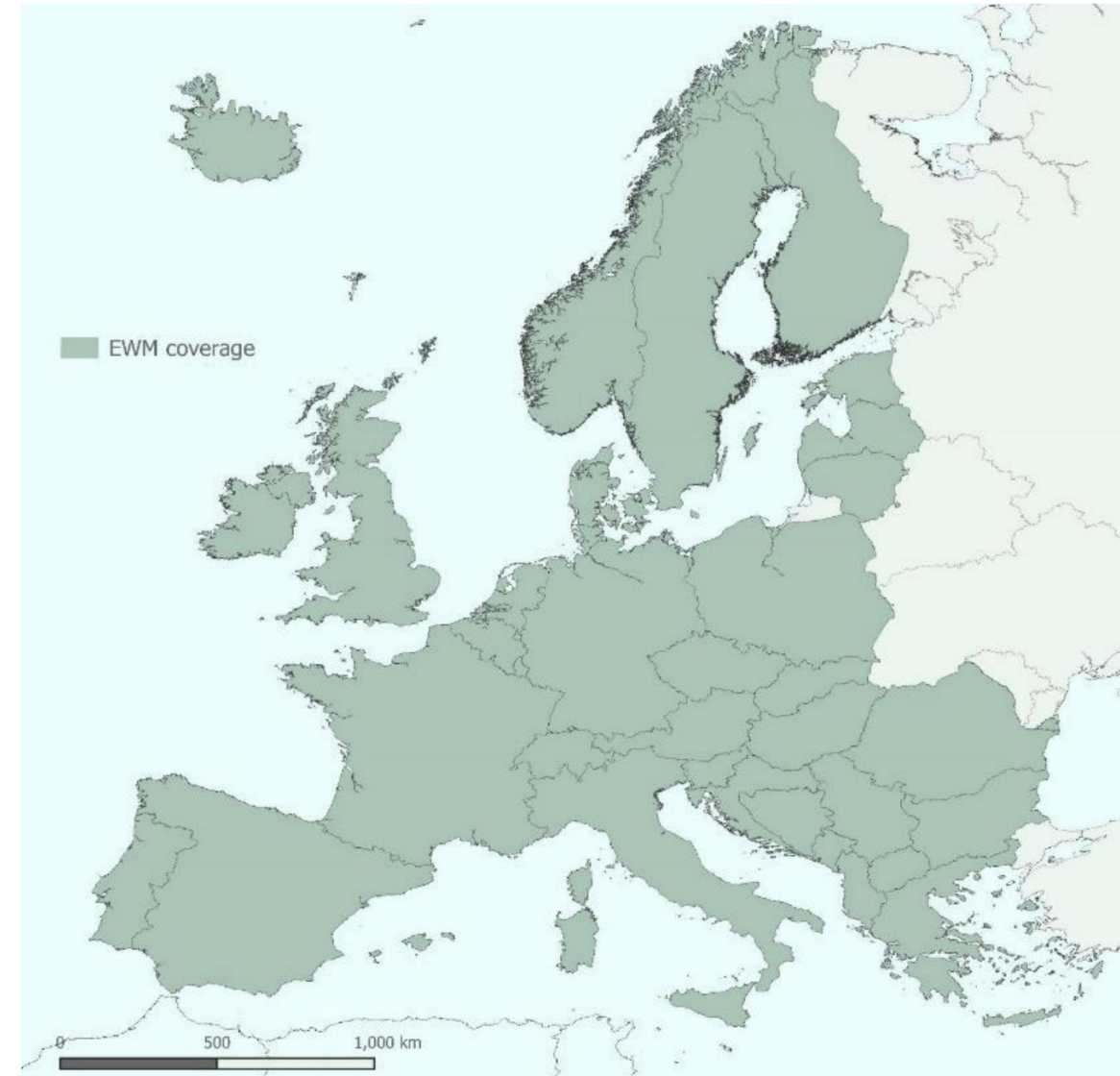


Specific application:
Multiple peatland related maps on land use, GHG emissions and biodiversity values



European Wetland Map covers most European countries ('EU+')

Not included: Moldavia, Malta, Monaco, San Marino, Vatican, Cyprus, Belarus, Ukraine and the Russian Federation



European Wetland Map input data:

Peatland layer

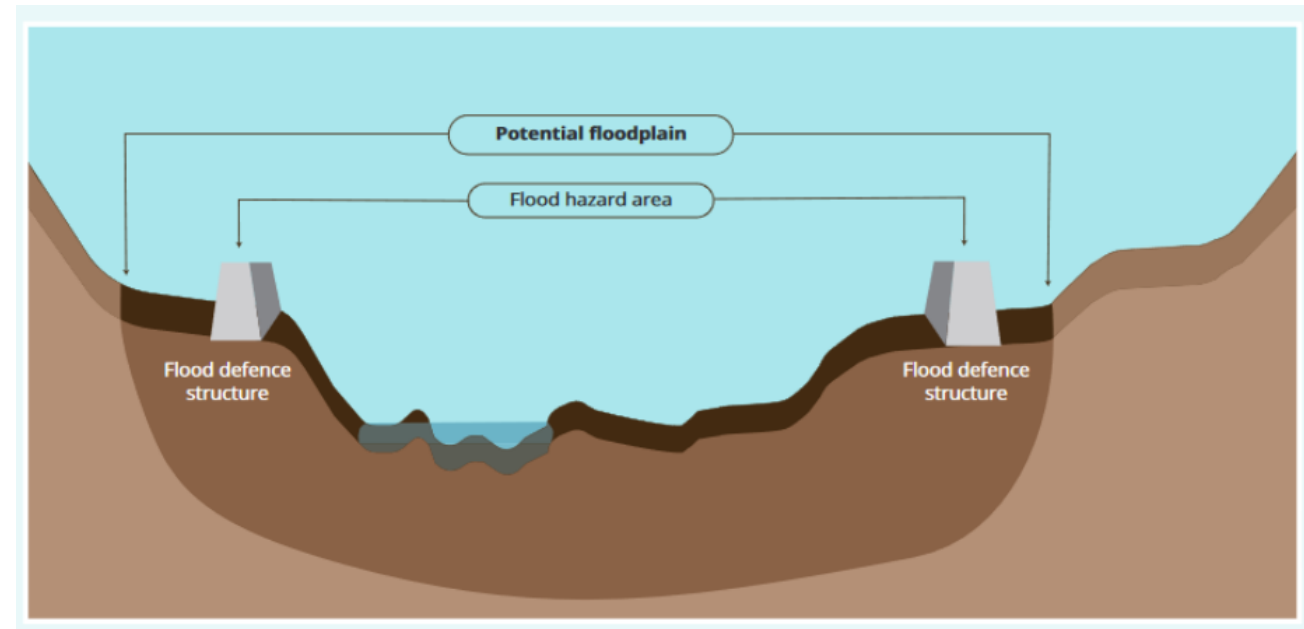
- divers data between countries
- no fixed thresholds for peat thickness to accommodate for national/regional specifics (mostly 20-50 cm)
- including all data $>12\%$ SOC = “organic soils”
- also include proxy data (e.g. typical habitats, mire vegetation)



European Wetland Map input data:

Floodplain layer

- Copernicus Riparian Zone product as baseline
(Copernicus 2019; cf. EEA Report No 24/2019)
- 100 m flood hazard map (JRC, 2016)



European Wetland Map input data:

Coastal wetland layer

We extracted data from the Coastal Zones (2018)/Copernicus:

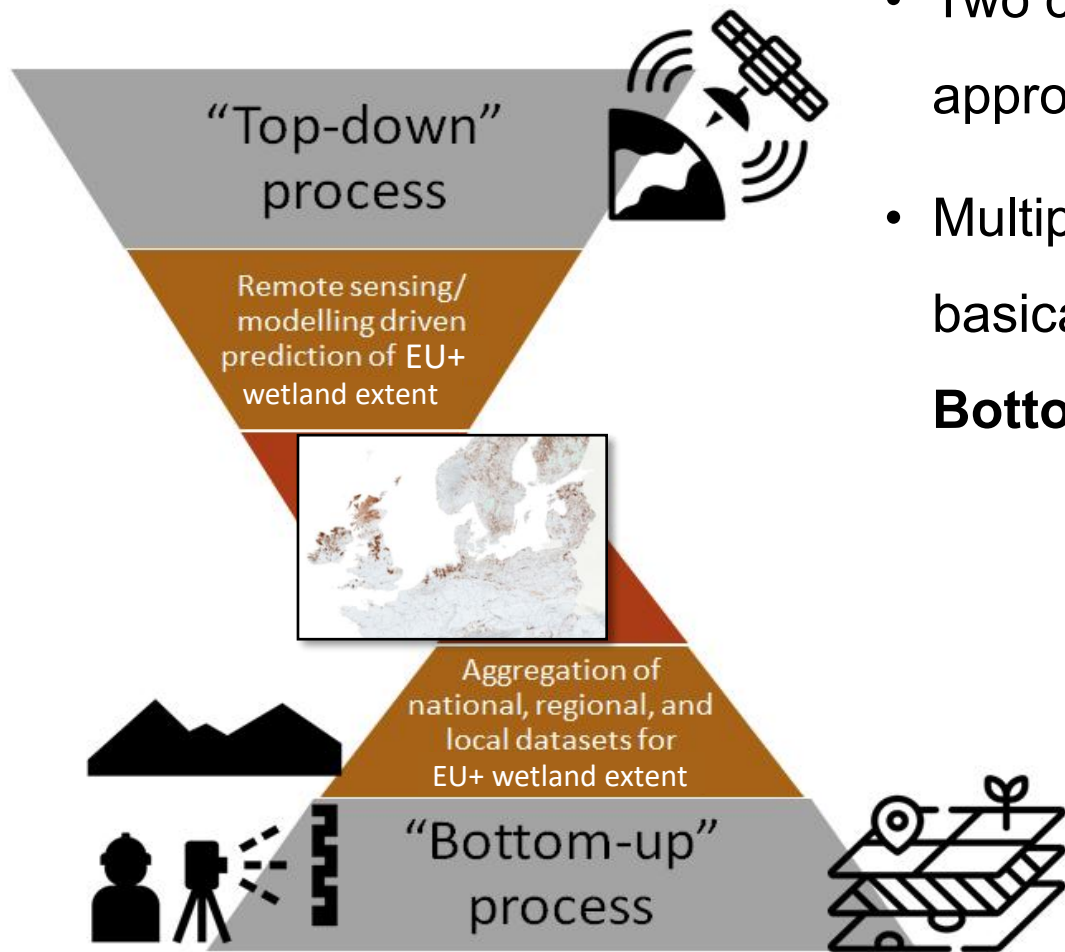
- 7.2. Coastal wetlands: inter-tidal flats, salt marshes, salines, and
- 8.3. Transitional waters: lagoons, estuaries.

We added data for coastal wetlands from a global wetland product (Zhang et al. 2023) on:

- tidal flats, estuaries and lagoons.



<https://land.copernicus.eu/local/coastal-zones/coastal-zones-2018>



- Two conceptual different (peatland) mapping approaches
- Multiple methodologies have been employed to date, basically follow either a **Top-down approach** or a **Bottom-up approach**.

We collated and assessed >400 GIS datasets on peatlands, floodplains and coastal wetlands - and used about half of them for the EWM.

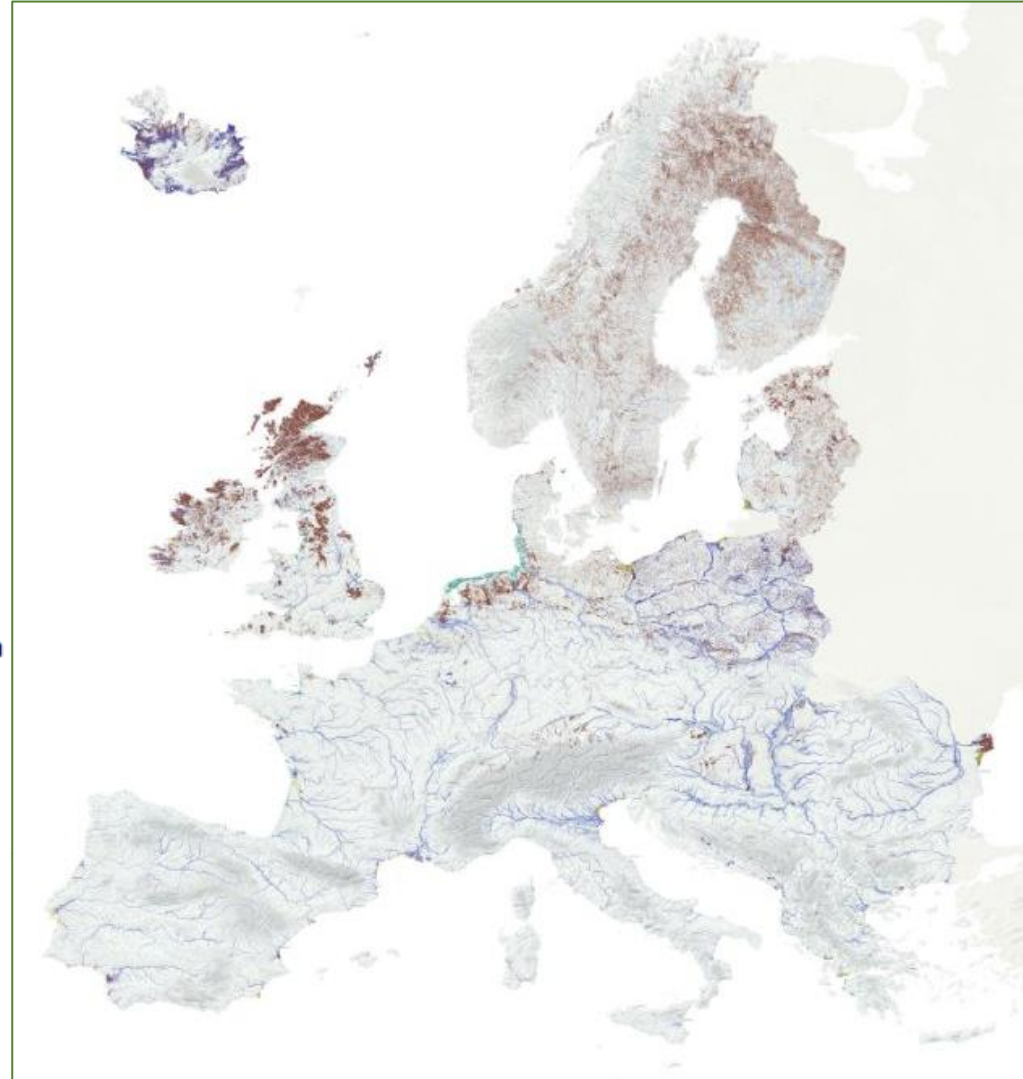
The national peatland data is a mosaic layer.

The European Wetland Map ('EWM')

After data processing and
amalgamating...

Wetland type

- 100 yr flood risk
- potential floodplain
- actual floodplain
- (inter-)tidal flat
- estuary
- lagoon
- salt marsh
- saline
- other wetland
- peatland



The European Wetland Map ('EWM')...



But, is not
perfect
everywhere!

- brings together regional data & expertise from many European experts in ONE map;
- is the most comprehensive European Wetland Map to date;
- provides free access to high resolution spatial data for peatlands;
- provides (partly) additional information, e.g., on peatland types and drainage;
- displayed wetland distribution largely follows landscape patterns across Europe (quality sign);
- shows the interconnection of floodplains, coastal wetlands and peatlands across Europe.

The European Wetland Map ('EWM')...

- is free available since early 2026
<https://zenodo.org/records/14717561>
- is already widely used with currently 29k downloads
- has been included in CORDA*
(Copernicus Reference Data Access portal)

Wetland type

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Using the EWM to identify EU's wetlands under threat

- Conversion of *original floodplain extent* and remaining *natural floodplains* can be deduced from the map;
- Floodplain and coastal wetland data can be overlaid with e.g., GIS data on artificial barriers to assess river connectivity or river-tidal connectivity;
- Overlay EWM (or single layers) with spatial data on land use, drainage, or infrastructure data to assess extent of conversion, degradation and habitat loss on multiple scales and locations.

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Using the EWM to identify EU's wetlands under threat: Peatlands

We developed a scalable and reproducible spatial mapping framework to demonstrate the feasibility of existing spatial data to prioritize peatland restoration and protection across all scales and EU+.

Using the EWM to identify EU's wetlands under threat: Peatlands

How to locate drained and highest GHG emitting peatland areas for restoration prioritization to mitigate climate change?

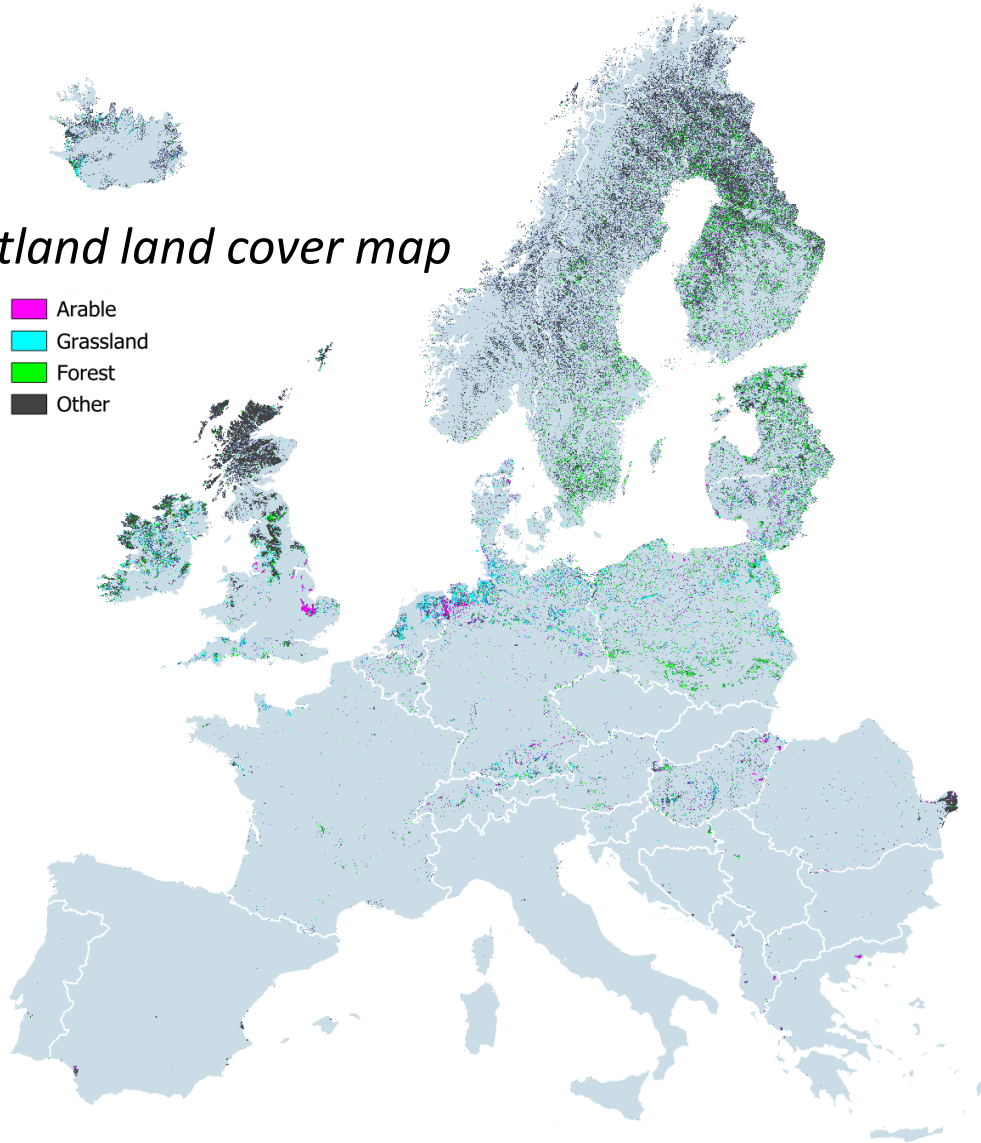
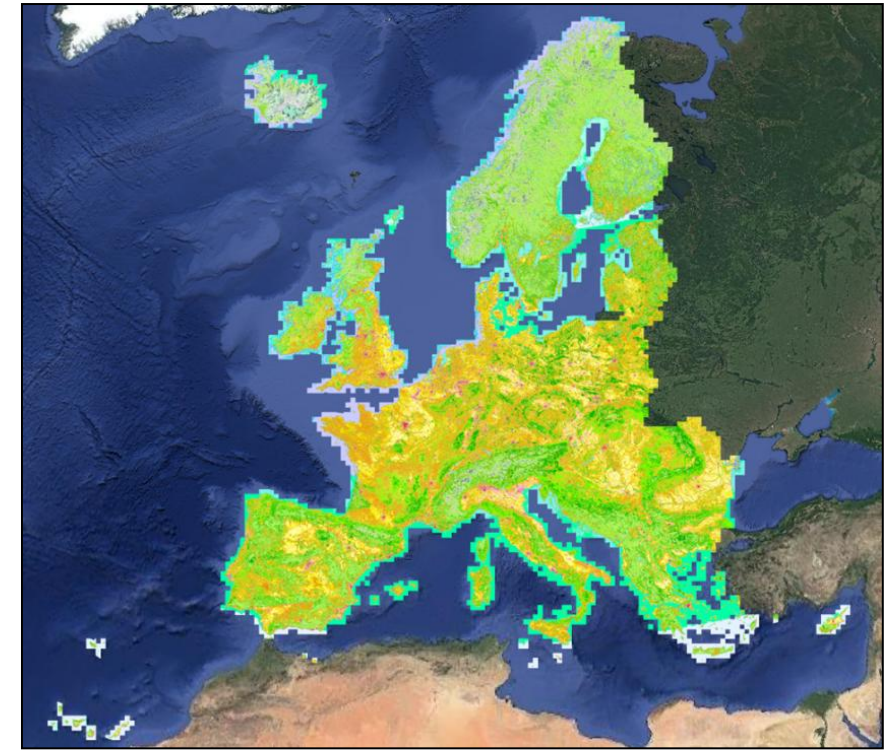
Peatland layer (EWM)

+

LULC dataset (Arable and
intensive Grassland)

Peatland land cover map

- Arable
- Grassland
- Forest
- Other



Continental Europe land cover map at 30m resolution based CORINE and LUCAS on samples (Parente et al. 2021)

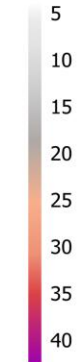
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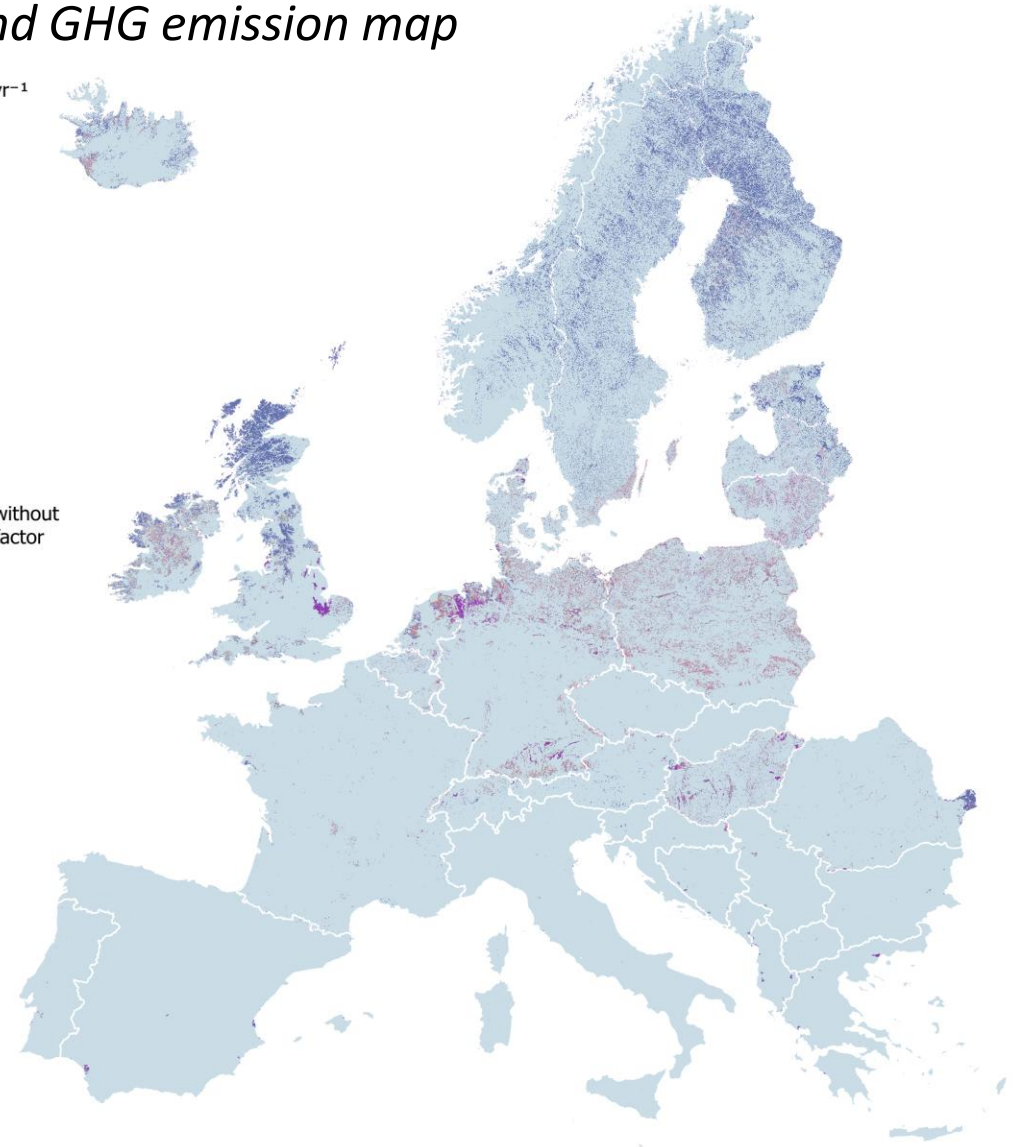


Peatland GHG emission map

t CO₂e ha⁻¹ yr⁻¹

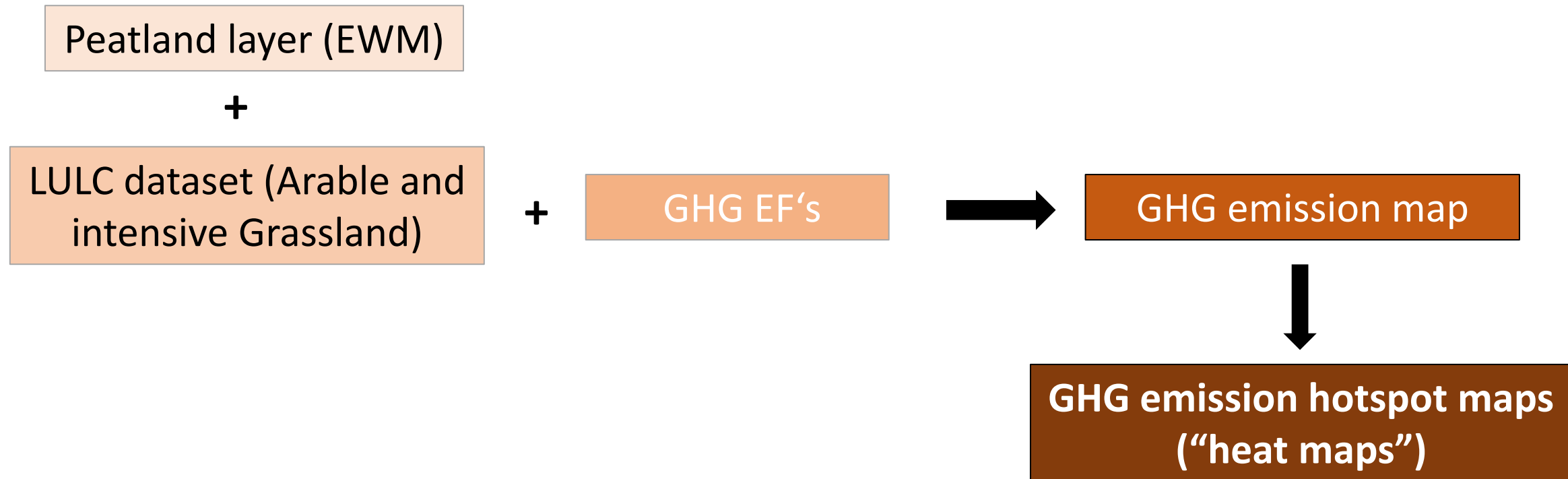


■ Peatland without
emission factor

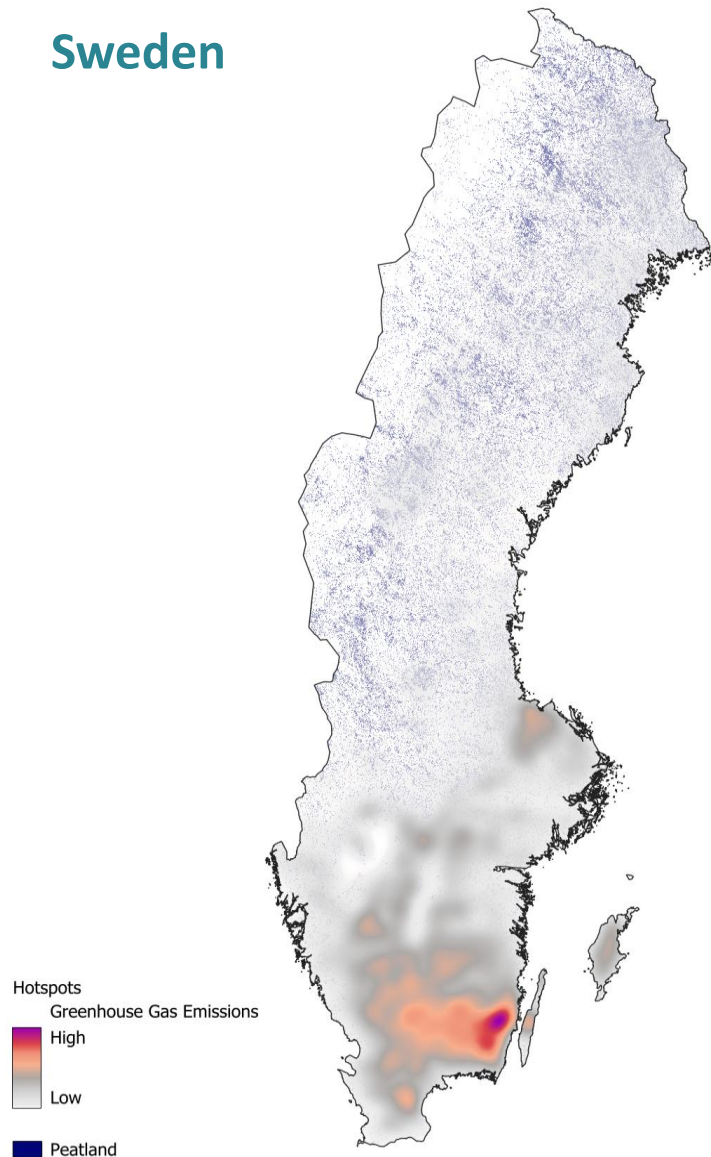


Using the EWM to identify EU's wetlands under threat: Peatlands

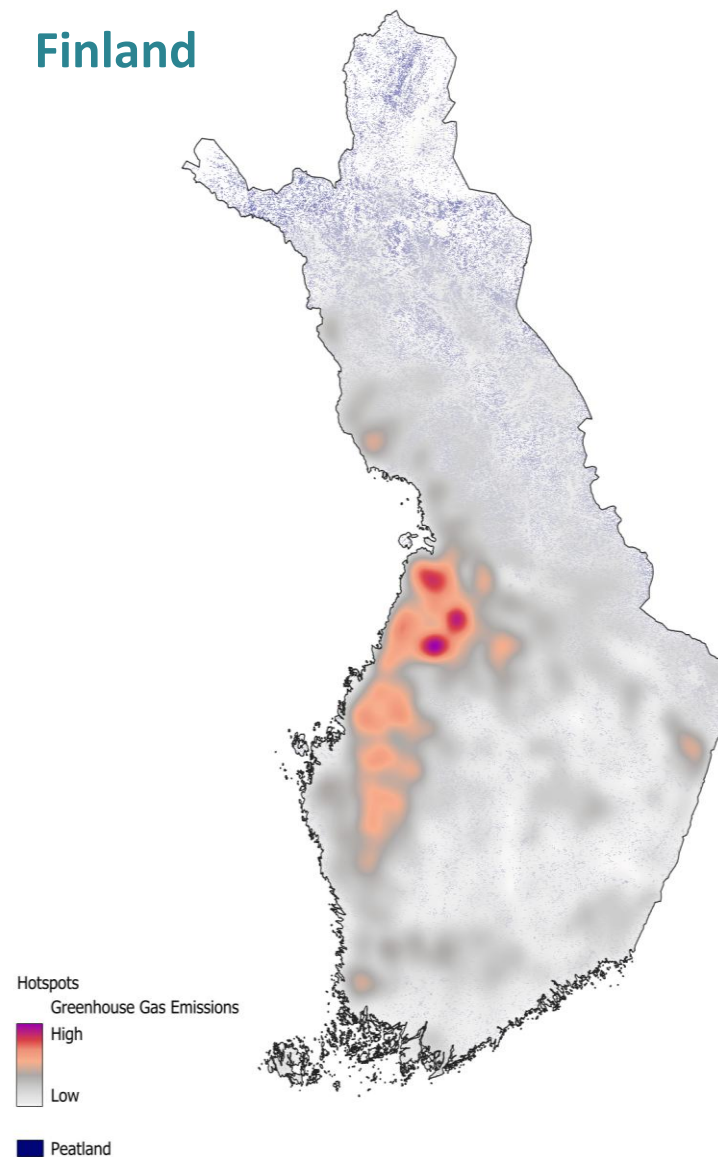
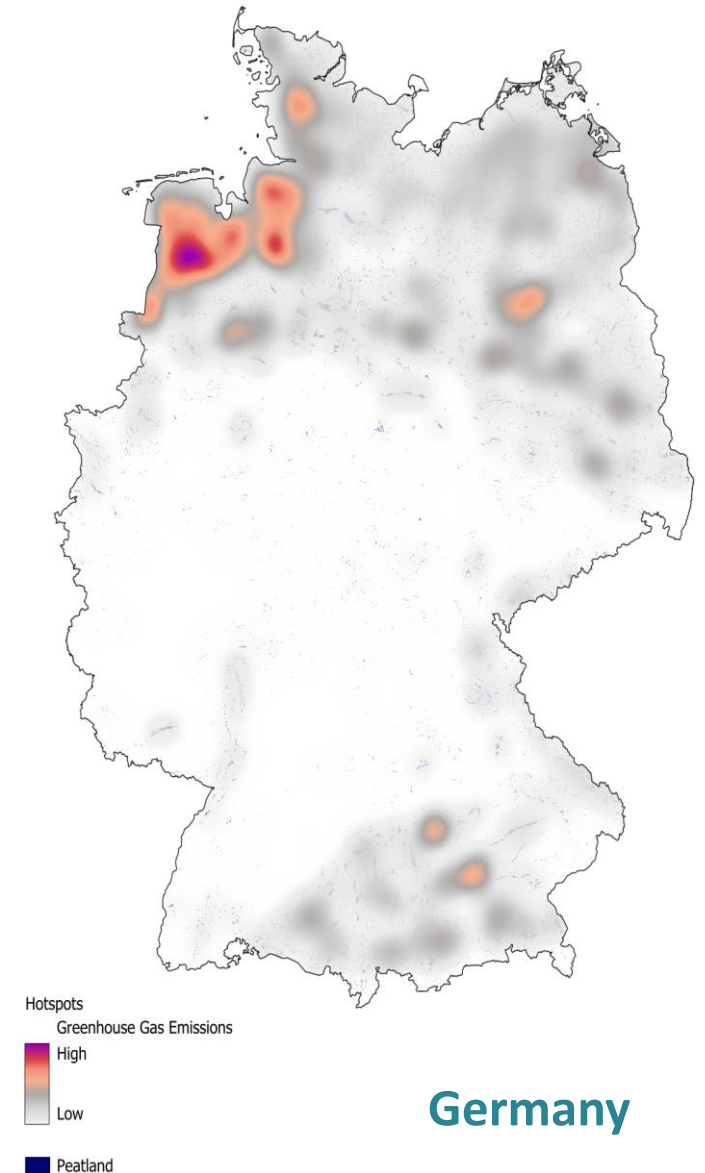
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Sweden

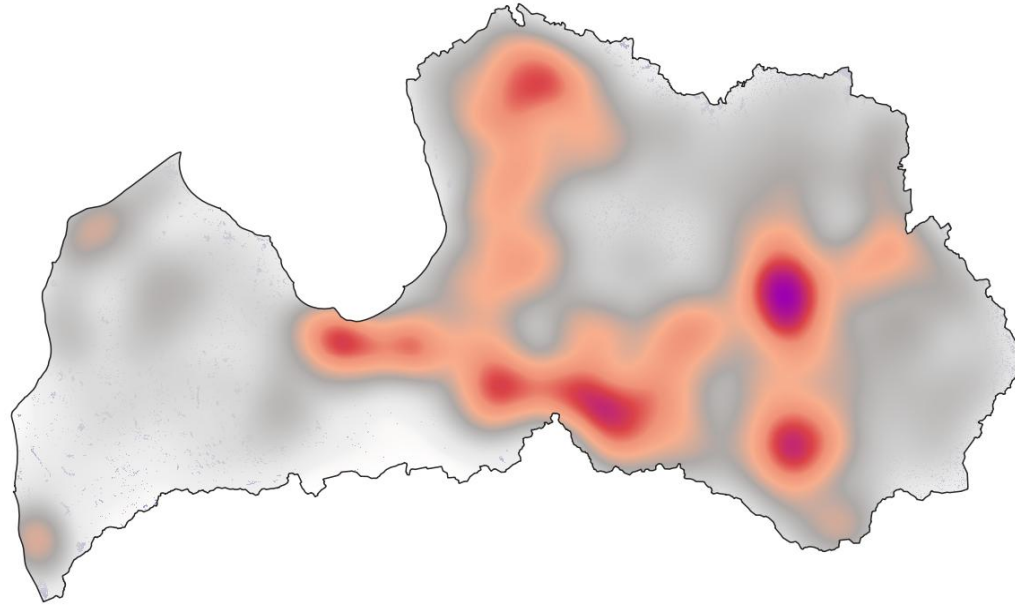


Finland



Germany

Latvia



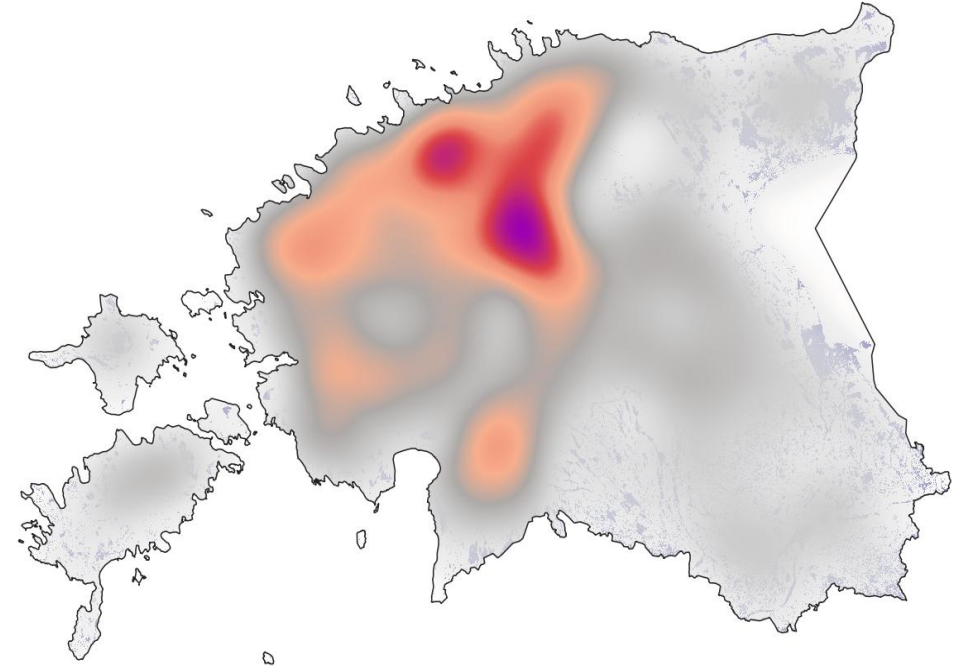
Hotspots
Greenhouse Gas Emissions

High

Low

Peatland

Estonia

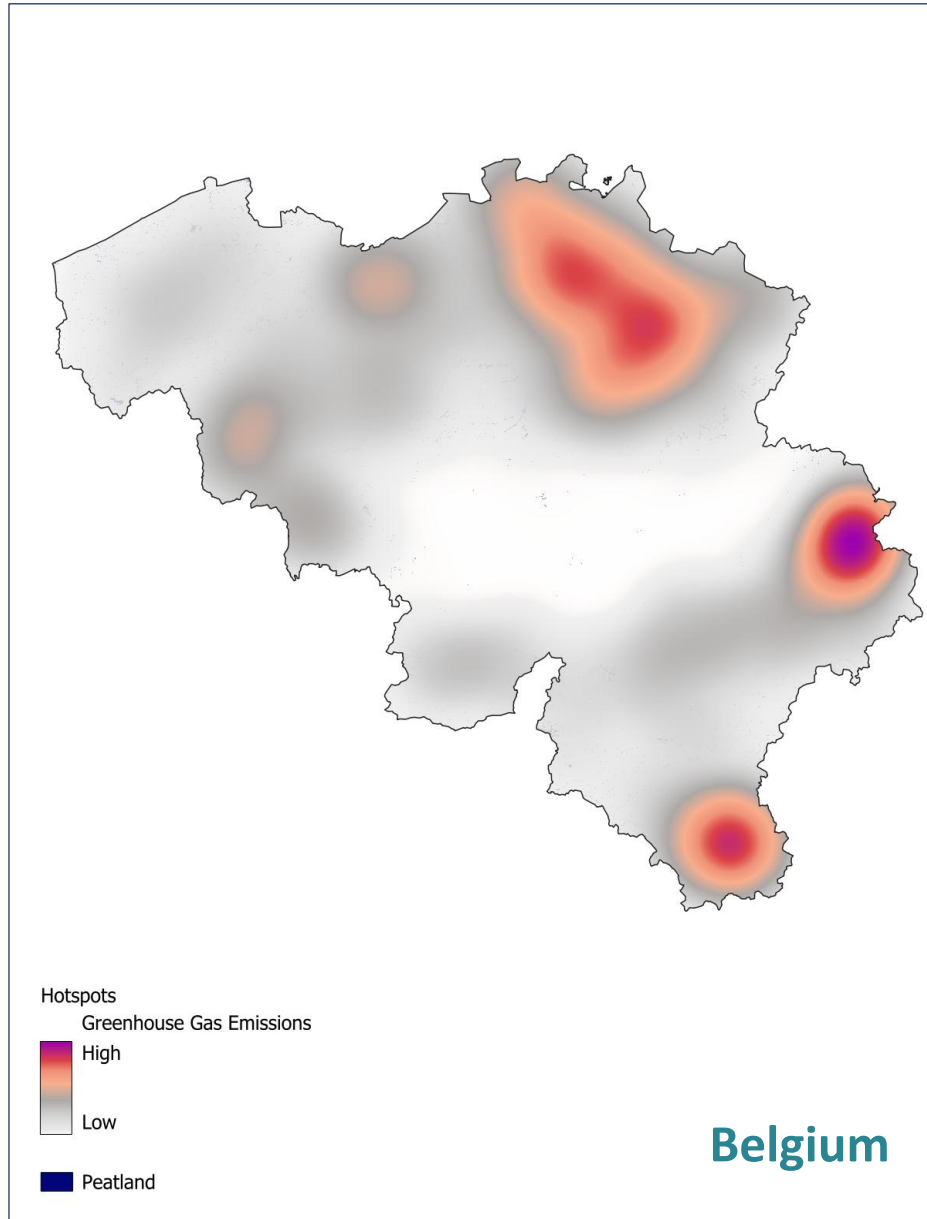


Hotspots
Greenhouse Gas Emissions

High

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Peatland



Using the EWM to identify EU's wetlands under threat: Peatlands

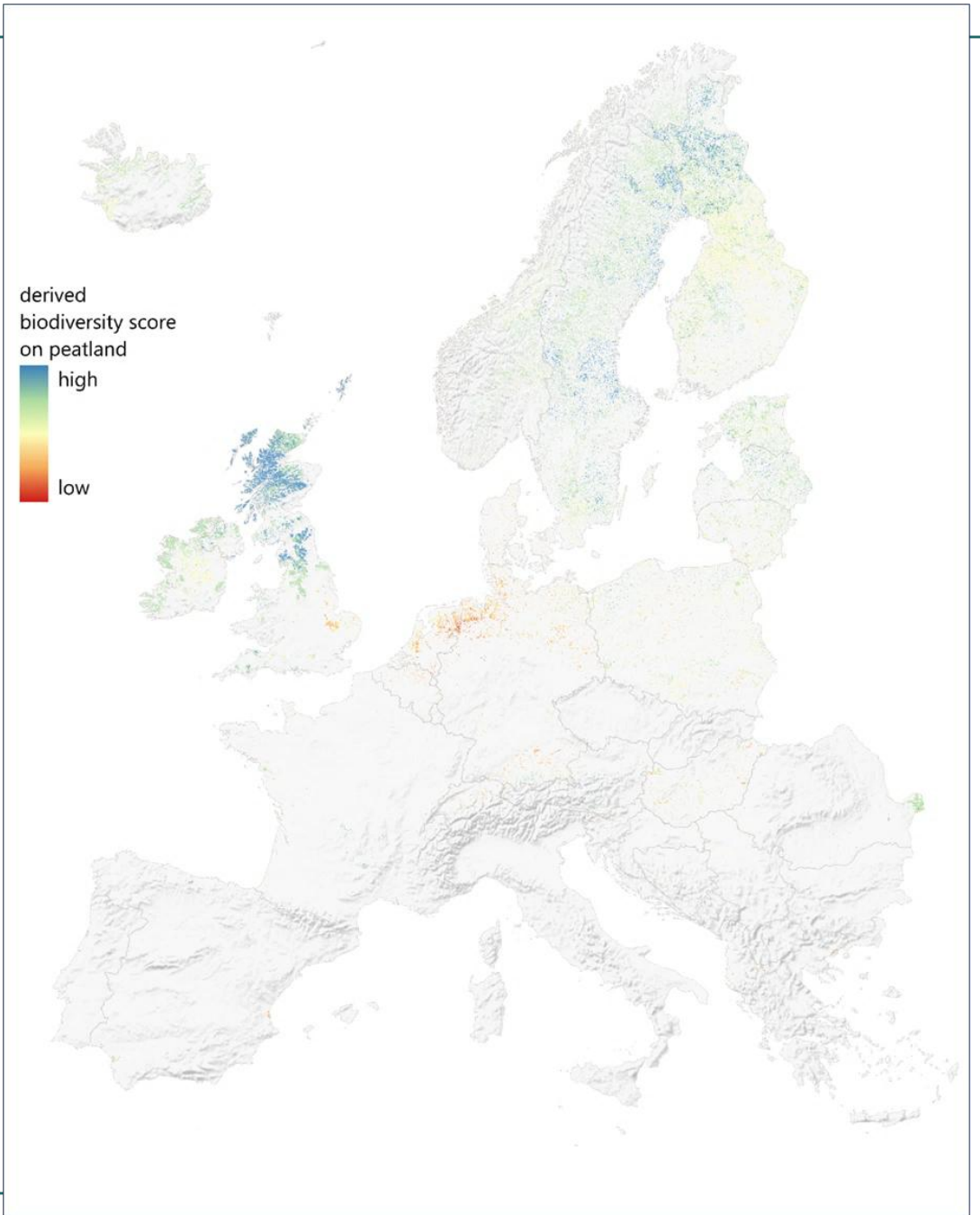
How to locate today non-protected, less degraded peatlands for conservation prioritization to safeguard remaining peatland biodiversity?

Peatland layer (EWM)

+

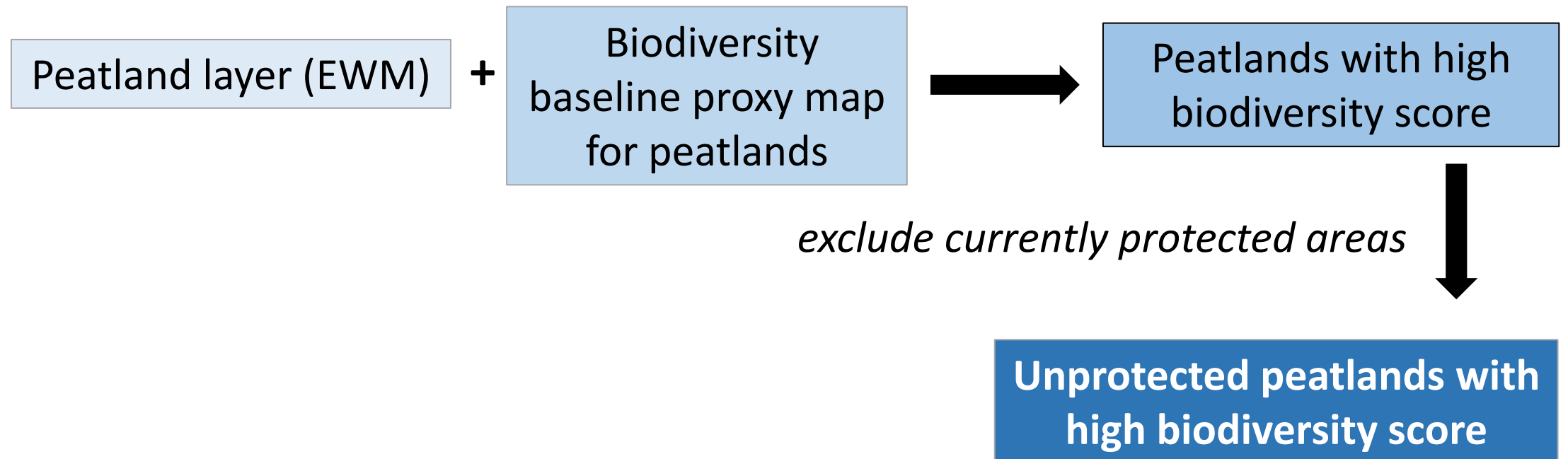
Biodiversity
baseline proxy map
for peatlands

Biodiversity Baseline Proxy Map for Peatlands

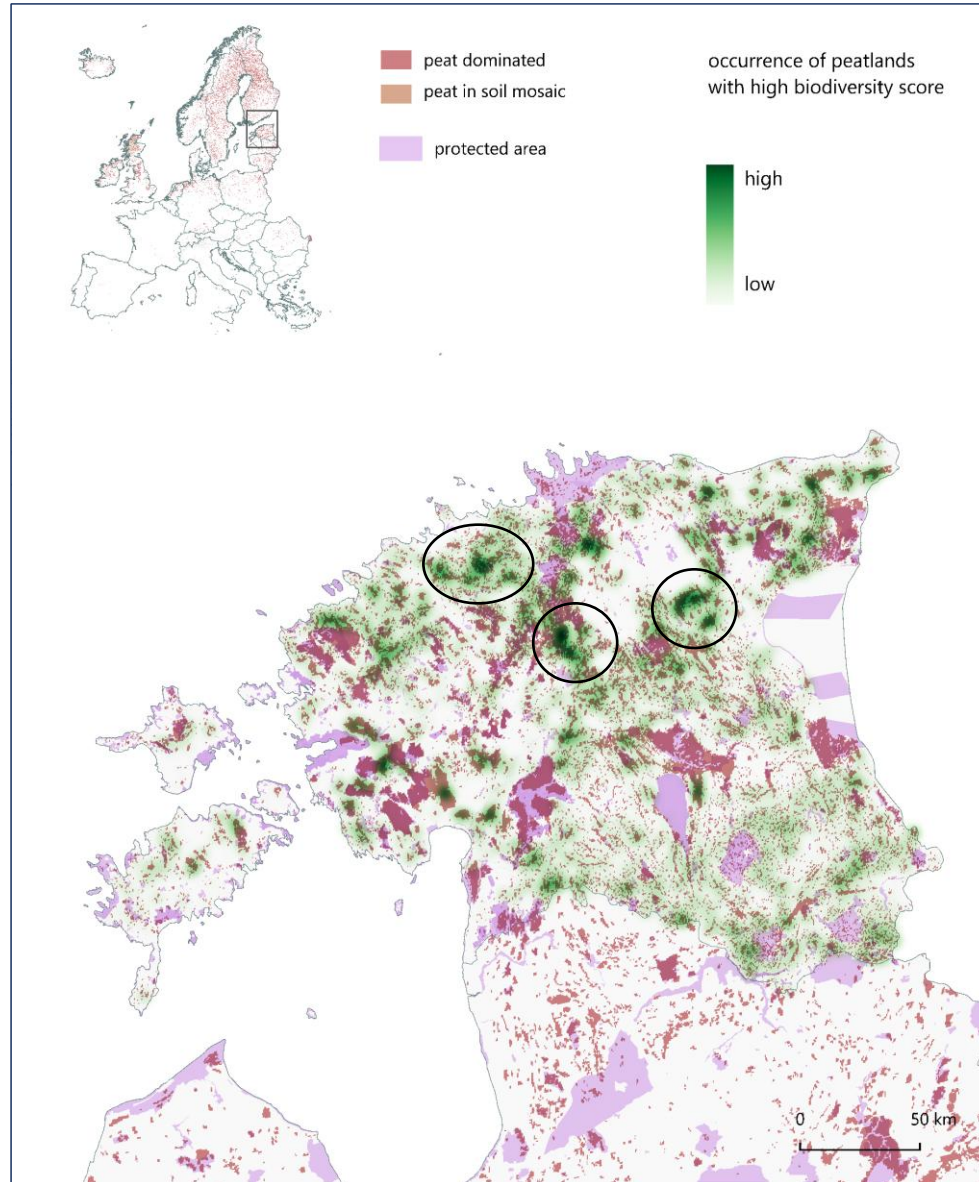


Using the EWM to identify EU's wetlands under threat: Peatlands

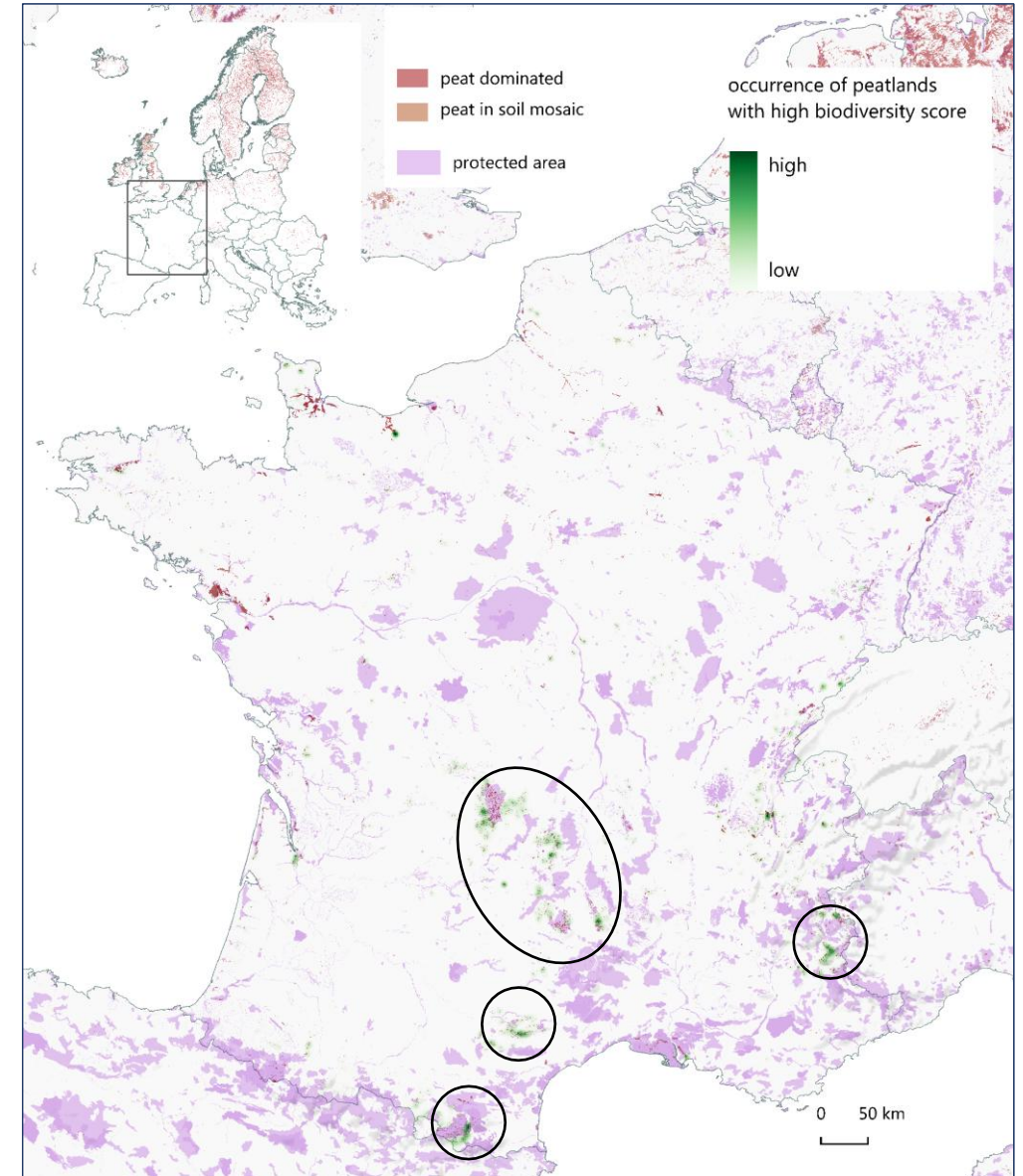
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Estonia

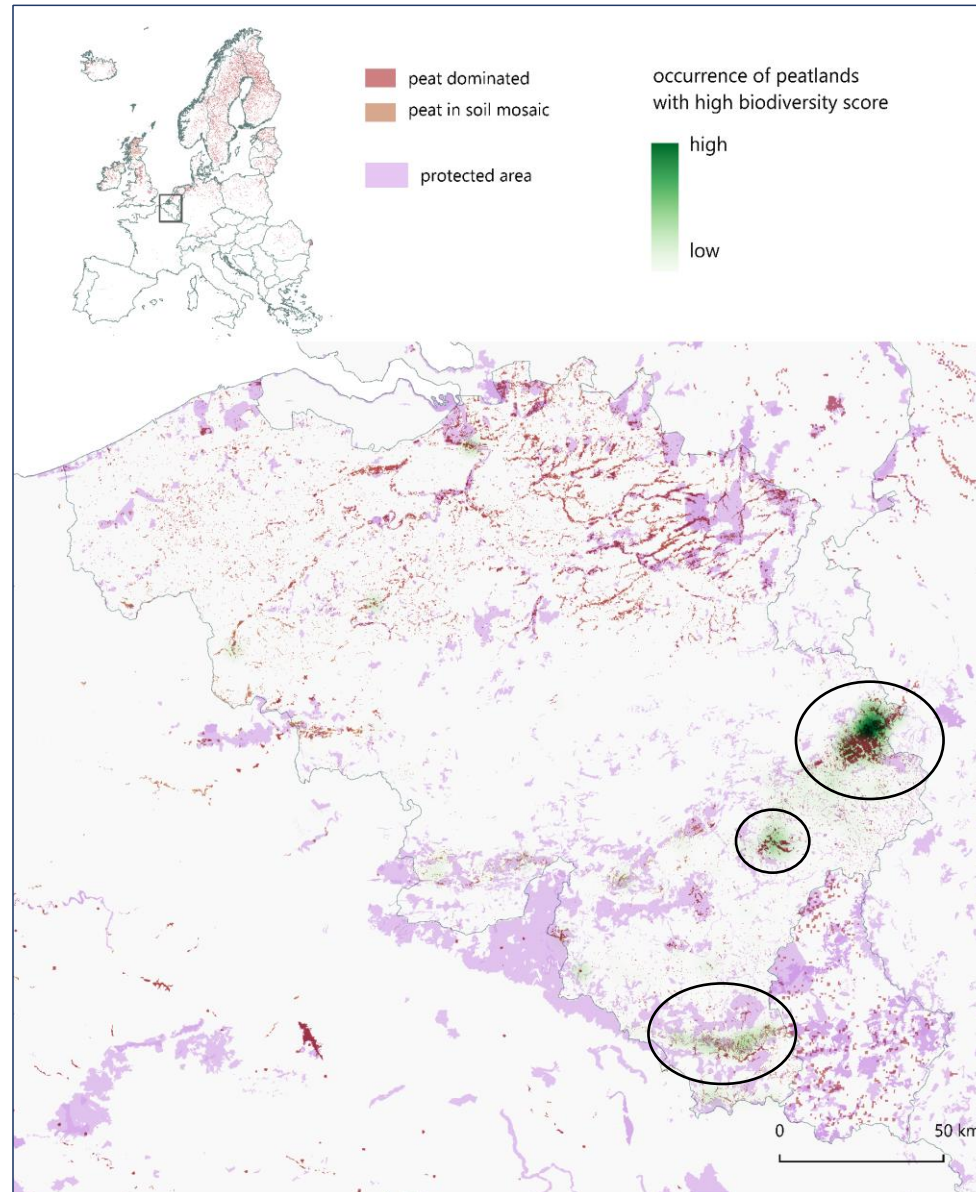


France*



* probably quite incomplete peatland data

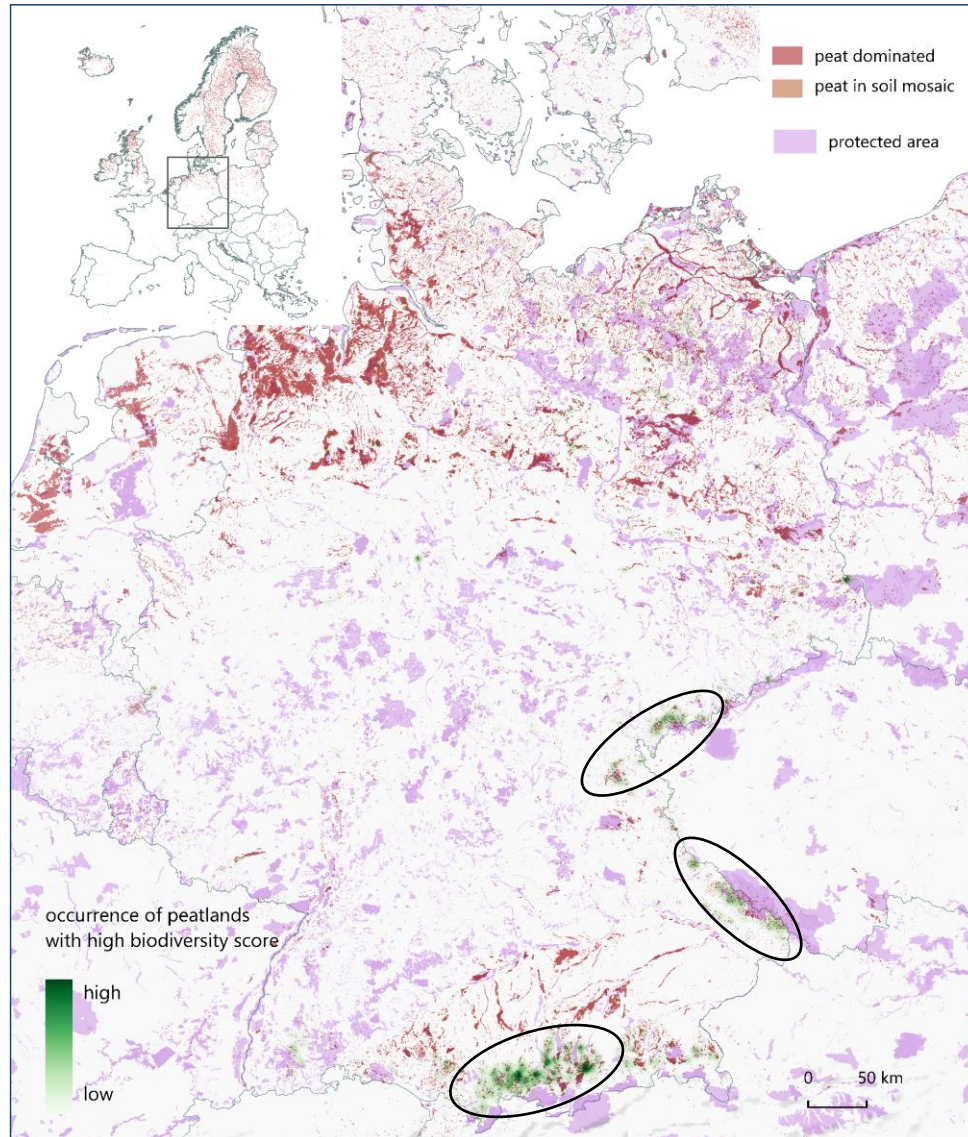
Belgium



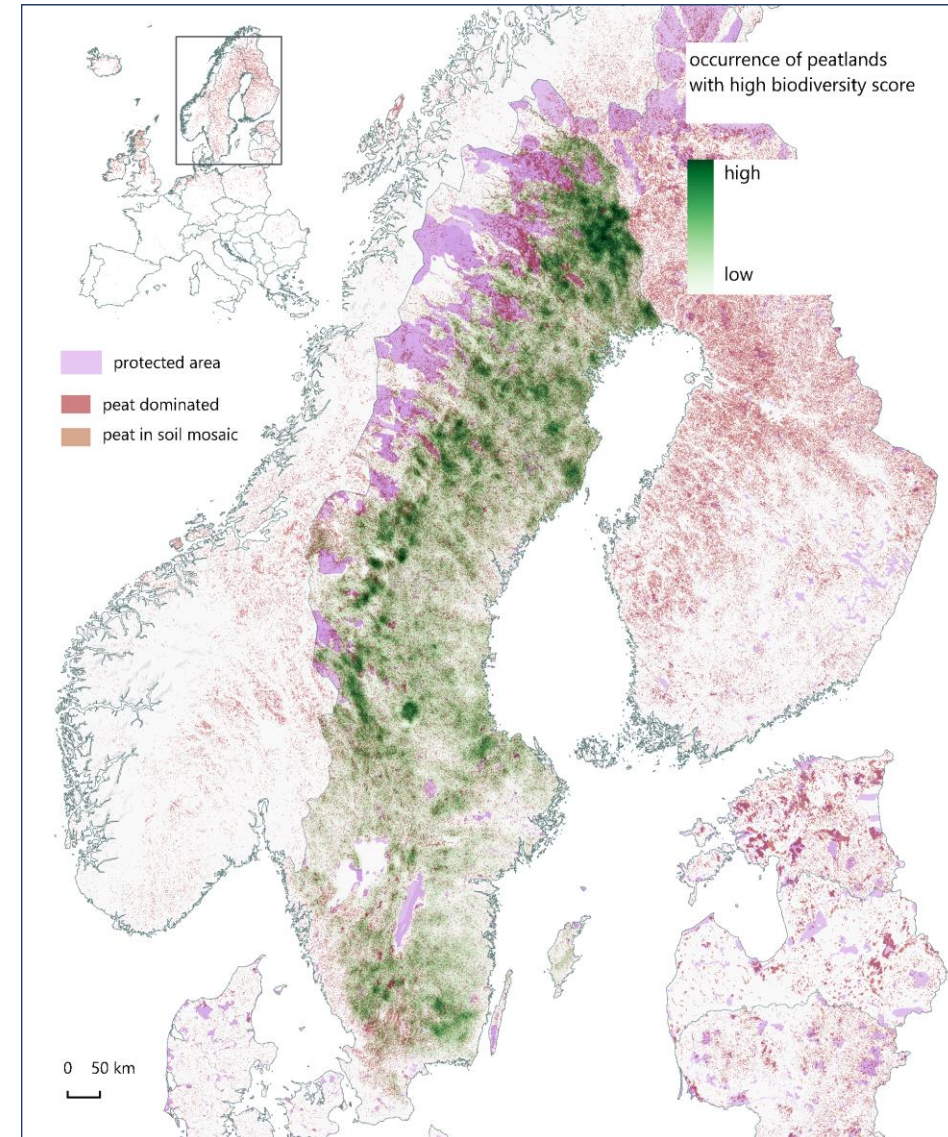
Latvia



Germany



Sweden



THANK YOU

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**Many thanks to all colleagues involved in
ALFAwetlands, WET HORIZONS and the
Greifswald Mire Center.
It is a privilege to work with you!**



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