

Wetlands Solutions *for the Future*

Learning from ALFAwetlands and
REWET Projects

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Remote Sensing Results from REWET: Monitoring seven OpenLabs Across Europe

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REWETs Open Labs

Seven Open Labs

—
seven different wetland systems

OL1 Netherlands

managed fen / controlled flooding

OL2 Austria

near-natural Morava floodplain

OL3 Finland

near-natural boreal peatland

OL4 Estonia

former peat extraction / passive
recovery

OL5 Belgium

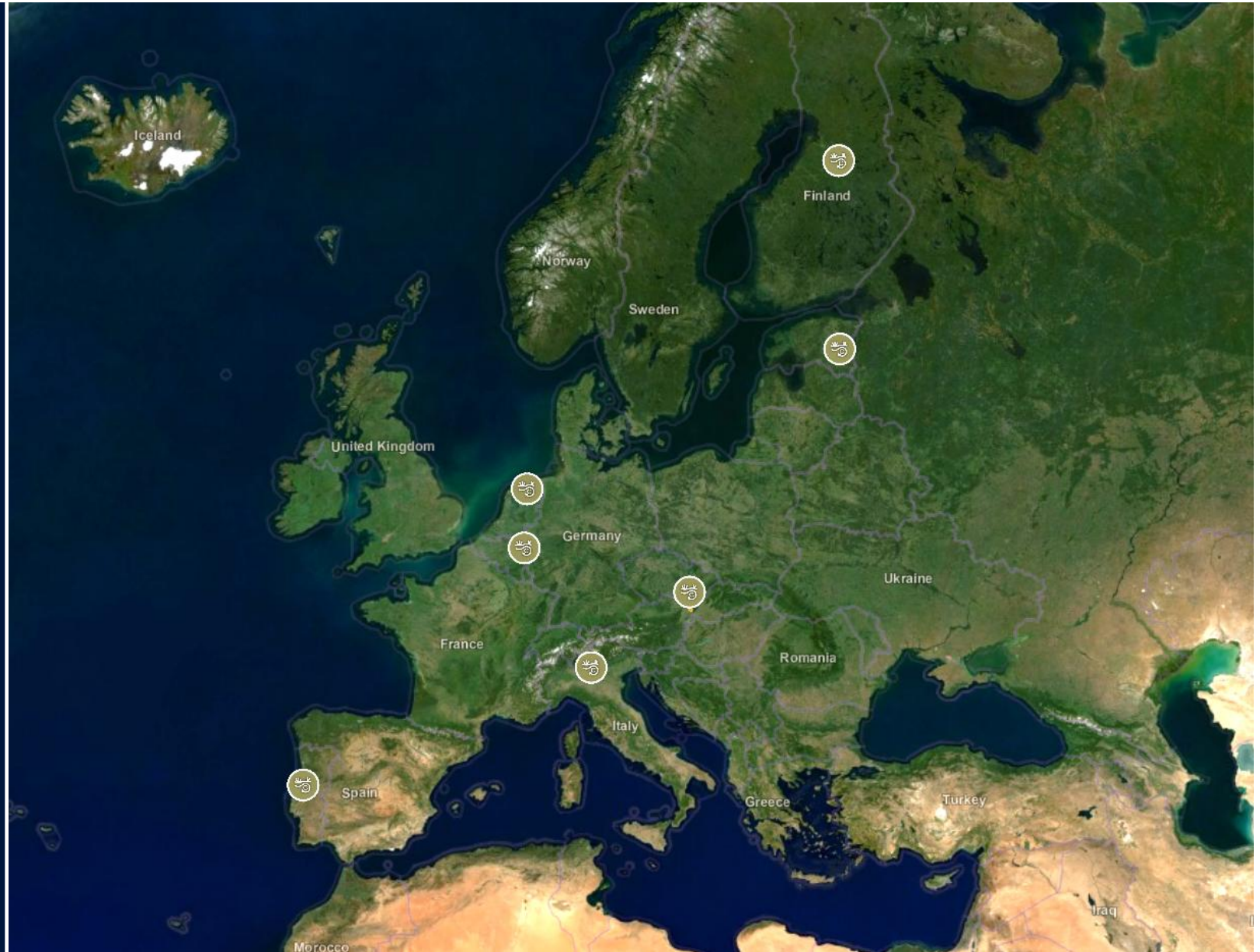
forest removal / habitat restoration

OL6 Italy

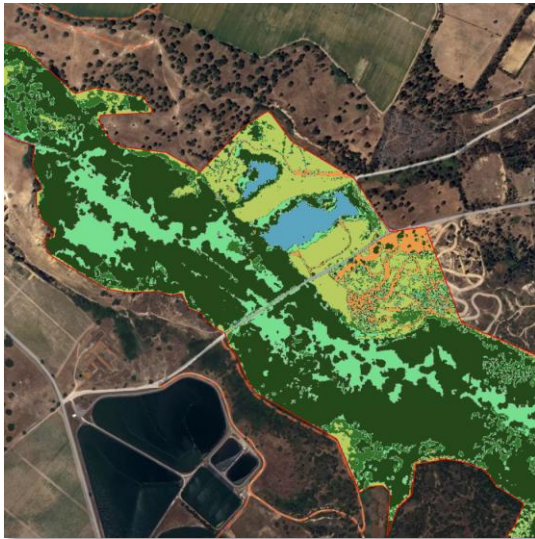
Po oxbow / hydrological
reconnection

OL7 Portugal

semi-natural wetland in agricultural
landscape

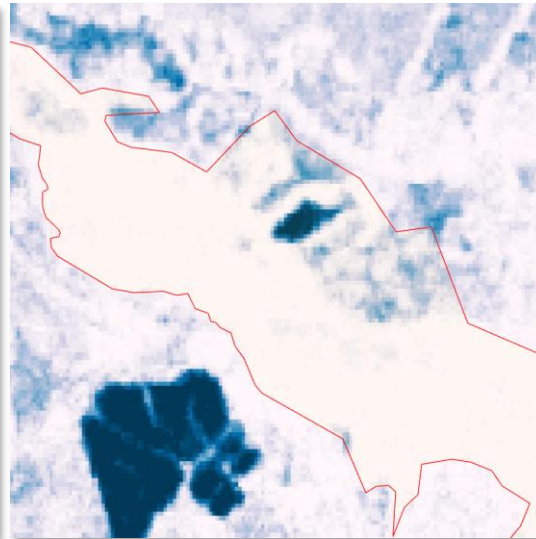


What can we observe from space?



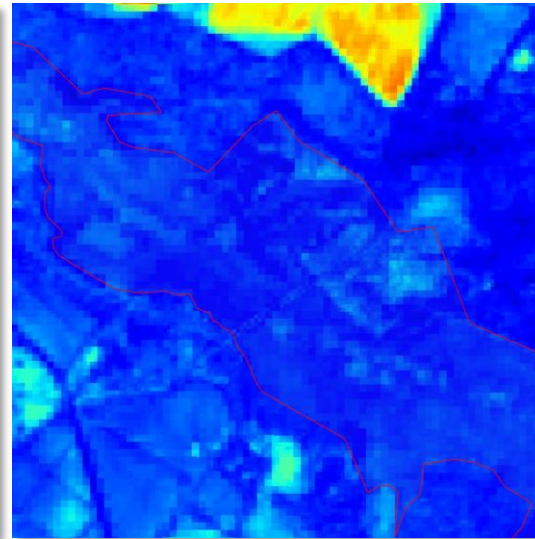
LULC & Change

→ vegetation structure / structural transformation



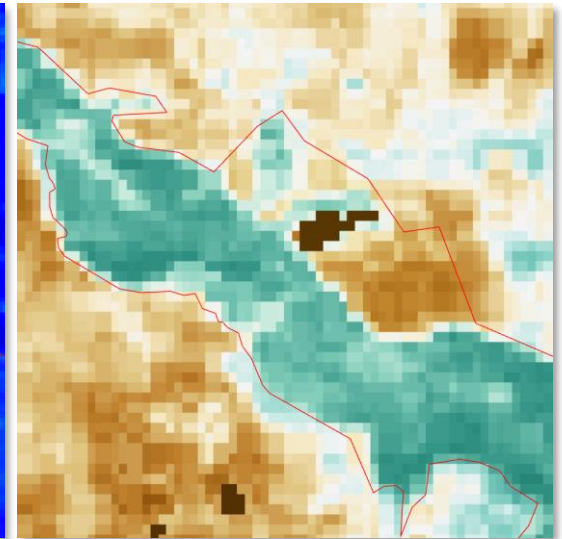
Surface Water Occurrence

→ hydrology / flooding / wetness frequency



Wetland Use Intensity

→ management dynamics



EO + Eddy Covariance

→ spatial CO₂ and CH₄ patterns

Successful wetland monitoring requires the integration of complementary EO indicators to capture different components of ecosystem change.

Most REWET Open Labs remained structurally stable

Large-scale land-cover transformation was the exception rather than the rule

5 of 7 Open Labs with largely stable LULC

Netherlands	structurally stable; hydrological dynamics
Austria	stable near-natural floodplain
Finland	exceptionally stable natural peatland
Estonia	stable open former peat extraction area
Portugal	largely stable

*Structural stability does not imply
ecological stability.*

*Changes may appear in hydrology,
management or functioning.*

OL 6 Italy



Limited structural changes

- > river connection
 - more frequent flooding

OL 5 Belgium

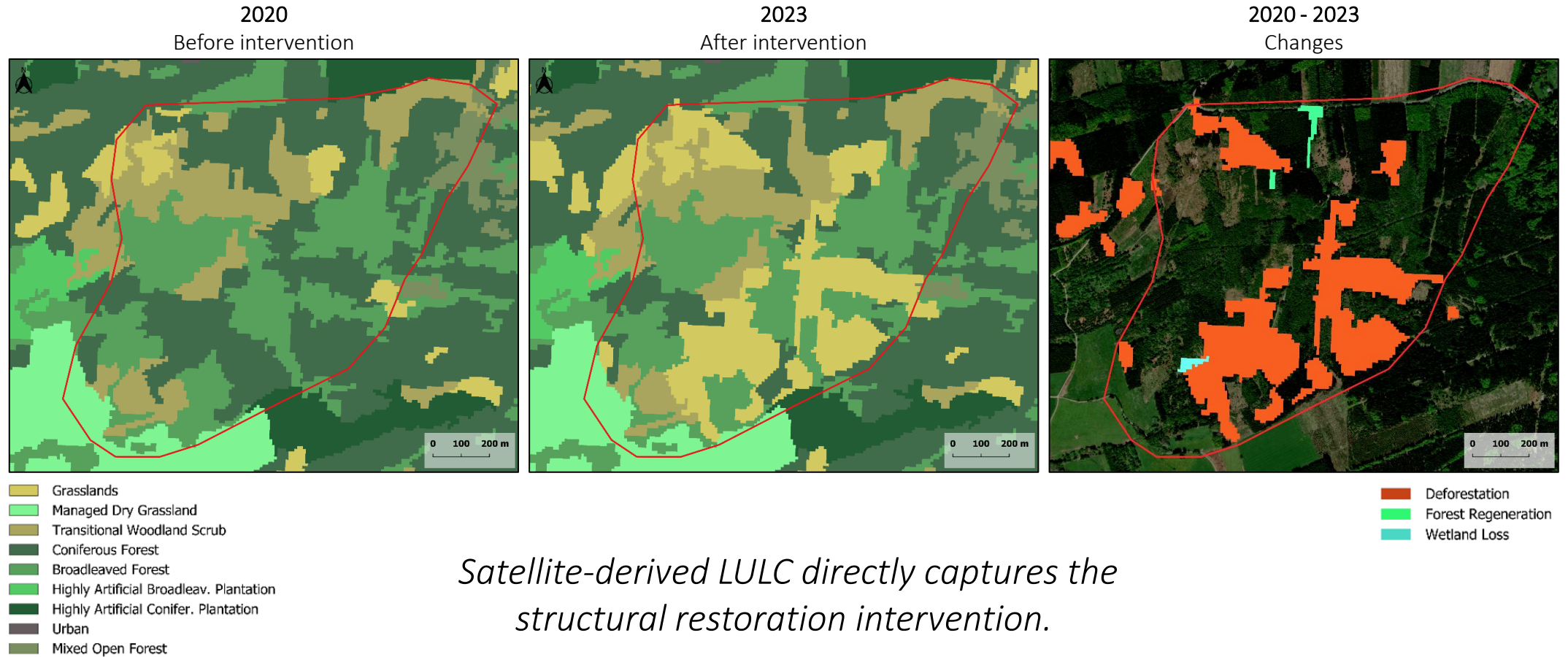


Clear structural changes

- > transformation to open habitat
 - forest removal
 - rewetting

When restoration changes the landscape

OL5 Belgium - conversion from coniferous forest to open habitats

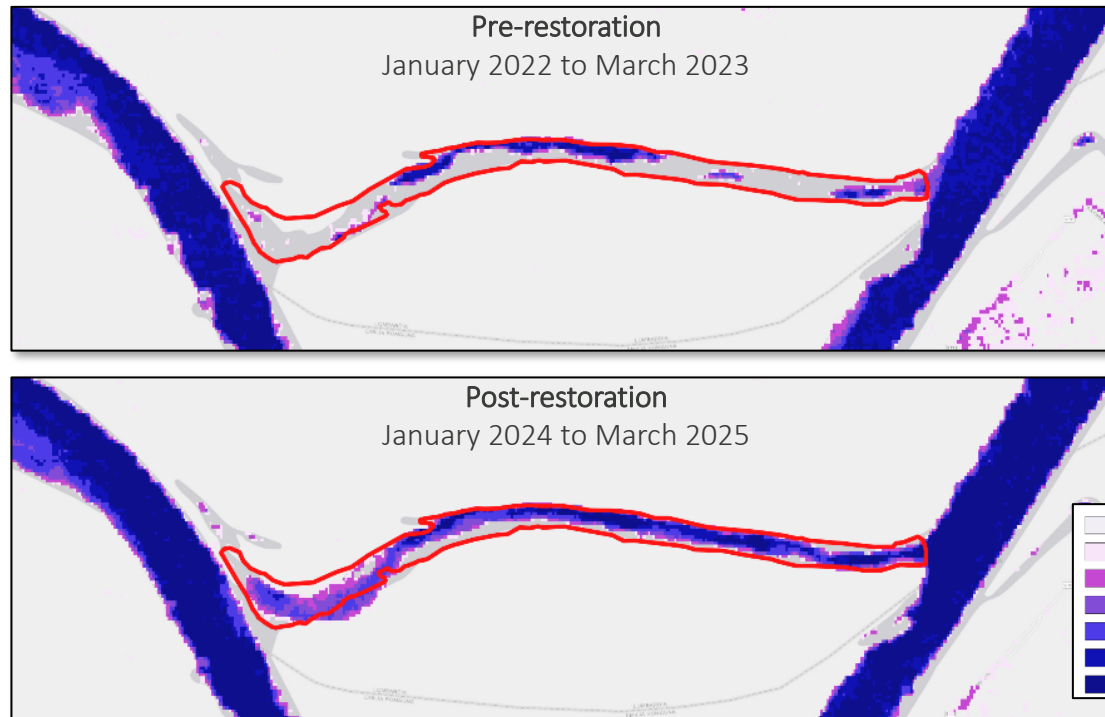


Satellite-derived LULC directly captures the structural restoration intervention.

Hydrology reveals what land cover cannot

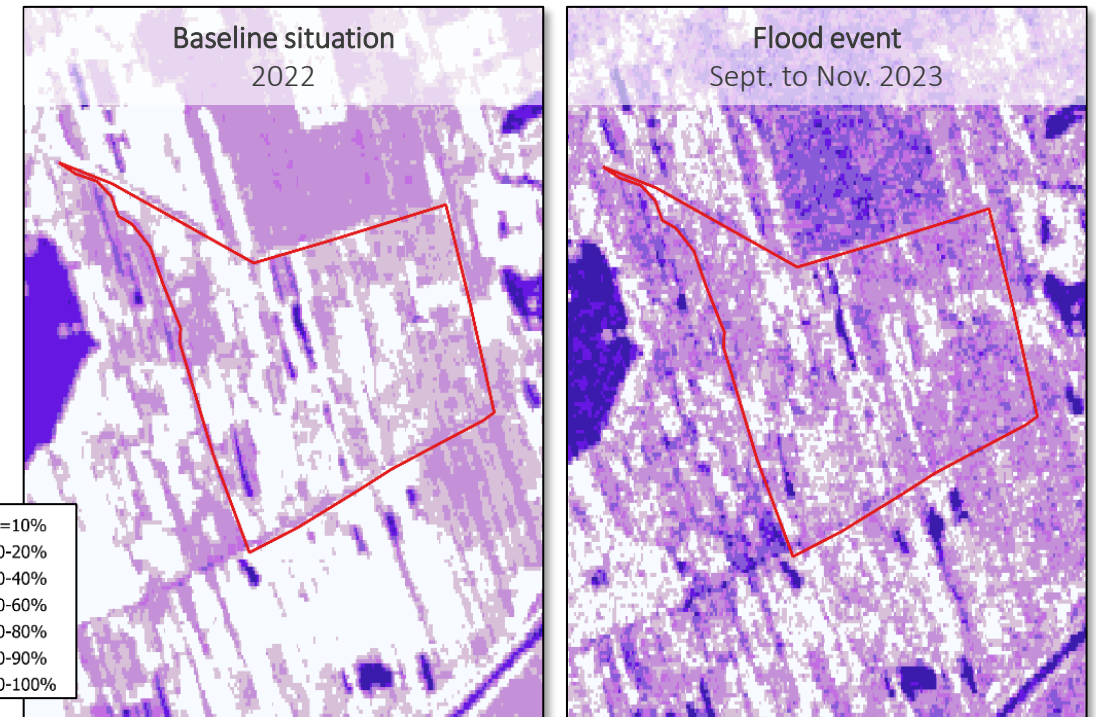
Many restoration effects are hydrological rather than structural

OL 6 Italy
River reconnection



Increased surface-water occurrence following improved connectivity.

OL 1 Netherlands
Controlled flooding

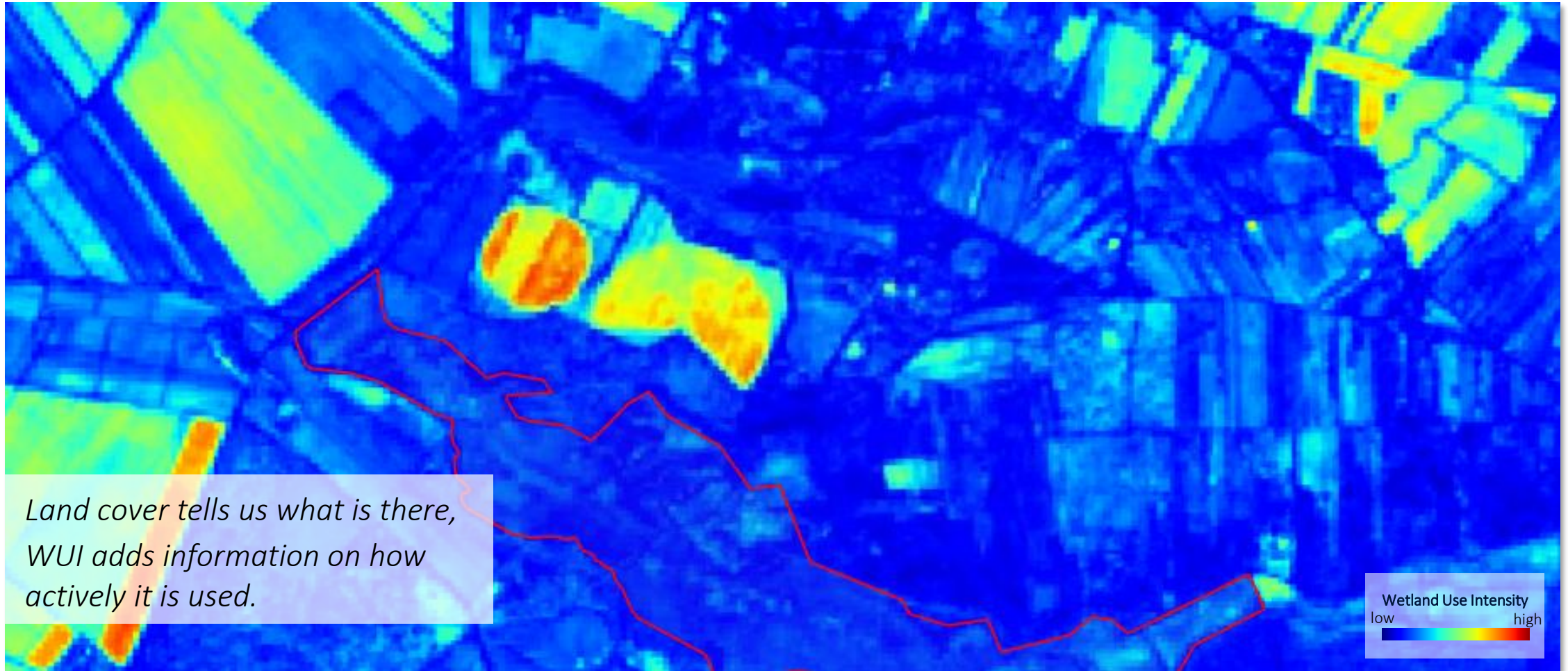


Temporal inundation is detectable despite largely stable LULC

Restoration signals can occur without land-cover change.

Management intensity leaves a spatial signal

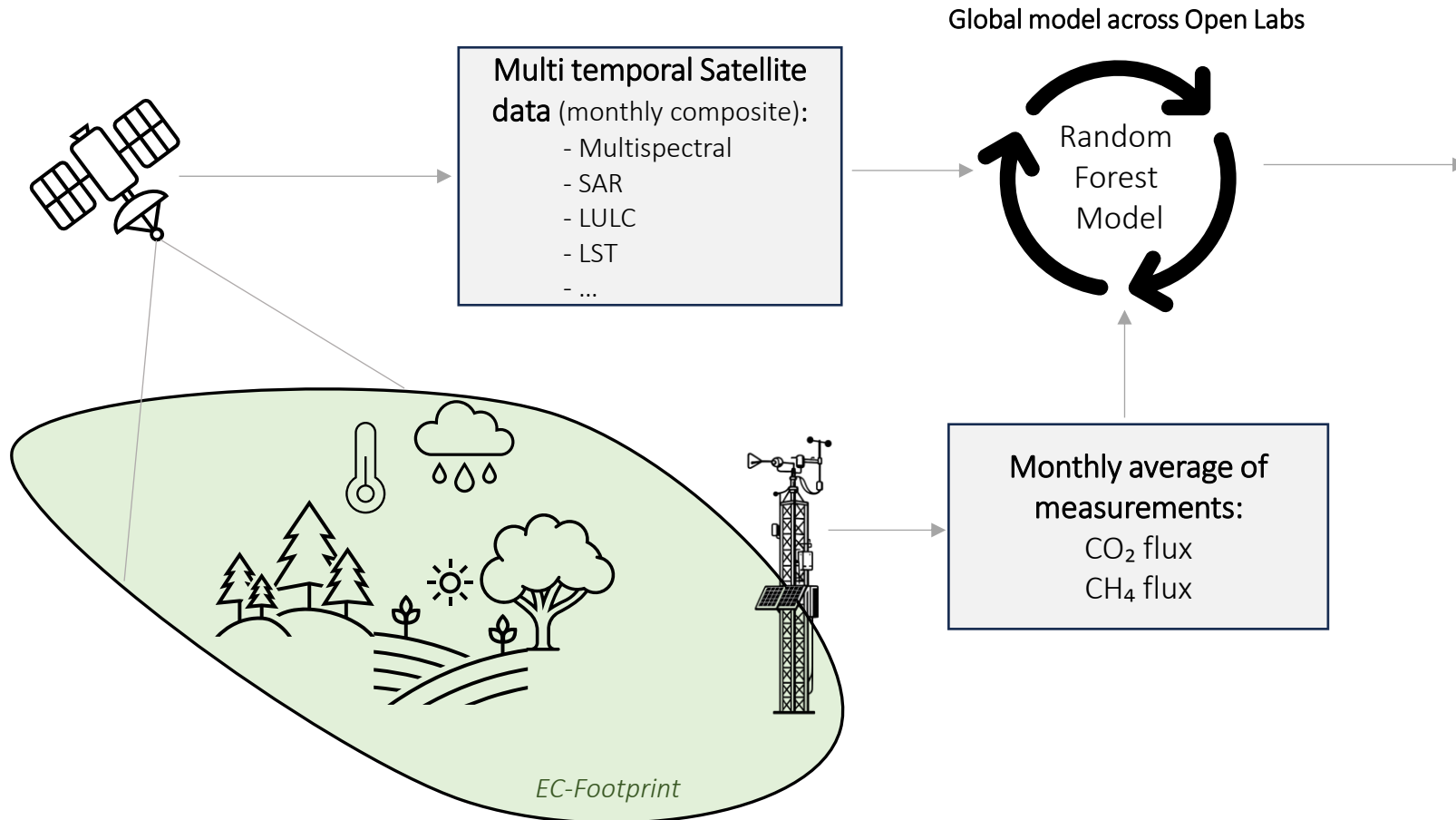
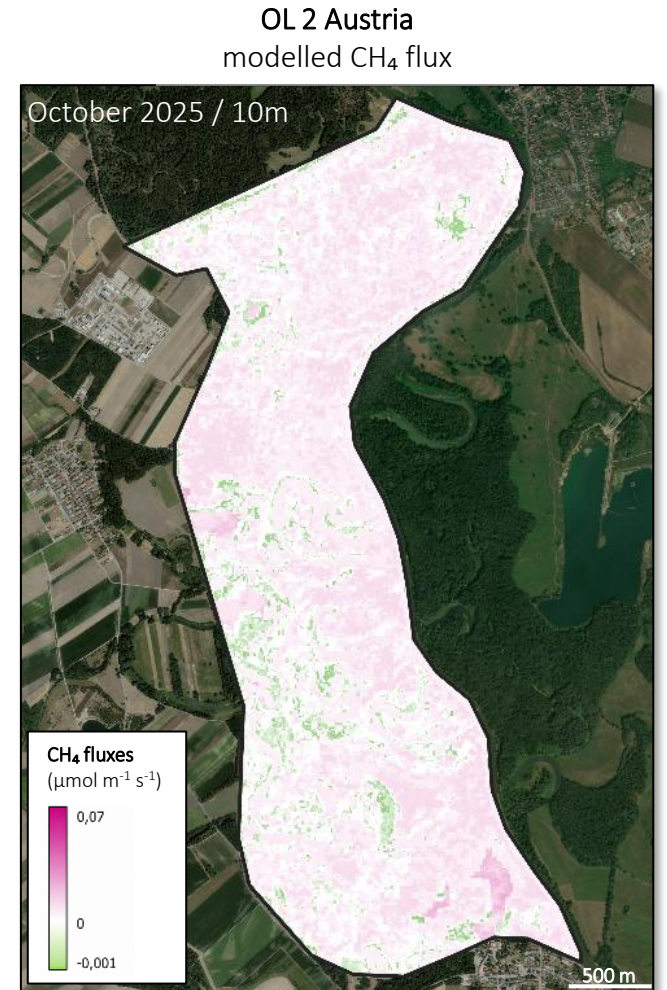
Wetland Use Intensity reveals spatial differences that are not visible from land cover alone



Based on Franke et al. (2012), Journal for Nature Conservation 20, 125–134

From Earth observation to spatial GHG fluxes

Linking Eddy Covariance measurements with satellite observations



Spatial patterns reflect differences in vegetation, wetness and land management

Bringing all results together: VerifAid®

From project results to continued wetland monitoring



What did we learn from seven OpenLabs in REWET?

1

**Restauration has
different EO signals**

Vegetation, water,
management and GHG
respond differently.

2

**Stability is also a
result**

Hydrology can change
while LULC remains
stable.

3

Spatial monitoring

From local field and EC
measurements to
entire wetlands.

*A harmonized EO framework can
monitor very different wetlands
consistently across space and time.*

THANK YOU

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