EEA activities on the promotion of in-situ data for environment and climate policies

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GEOSS data sharing and data Management

European Environment Agency

EuroGEO

European Environment Agency

HELLENIC REPUBLIC MINISTRY OF DEVELOPMENT AND INVESTMENTS | GSRI GENERAL SECRETARIAT FOR RESEARCH AND INNOVATION

European Commission

EuroGEO SLA – what is it?

- **Service Level Agreement** with EC/DG RTD (H2020 WP 2018-20 (12))
- Duration: 36 months **(2021-2023)**
- Focus on **improving access to key data for global/EU environmental policies**
- Budget: **1,5 M €**
- **Horizontal and thematic** data activities

evenflow

CREAF

OGC

tracasa global

UN World Conference on Disaster Risk Reduction 2015 Sendai Japan

Work structure

WP0
Project Management

WP1
Improving the value of sharing GEOSS data

[GEO Data WG]
[In Situ data providers]

WP2
Interoperability and quality requirements

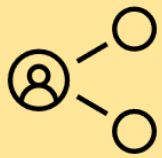
[In Situ data requirements]

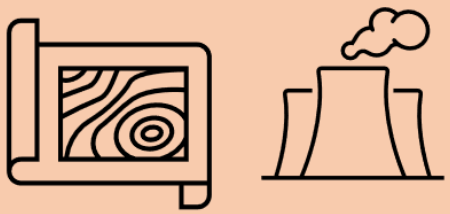
WP3
Standard processes to facilitate re-use of data

[Showcases]

WP4
Representing European Caucus

[Programme Board]
[EuroGEO]





Support to the GEO Data Working Group

Focus on in-situ data and on the promotion of GEO Data Sharing and Management Principles

Revised GEO Data Sharing and Data Management Principles

This document is submitted by the Secretariat to the Programme Board for decision.

1 INTRODUCTION

In 2015, the GEO Data Management Principles Task Force was tasked with defining a common set GEO Data Management Principles[1]. These principles address the need for discovery, accessibility, usability, preservation, and curation of data and related resources that are shared. Such resources also should be shared as open data in accordance with the GEO Data Sharing Principles[2]. The GEO Data Management Principles complement the FAIR Principles and TRUST Principles, which also are being adopted across research communities. The GEO Data Management Principles can be applied to the entire data management lifecycle, while the FAIR principles (Wilkinson M.D. et al.) focus primarily on aspects of metadata, including persistent identifiers. The TRUST principles (Lin D. et al.) primarily focus on the curation and preservation of data and related resources. To support the implementation of the principles, the GEO Data Management Principles Guidelines have been developed so that data providers and other stakeholders can use them as a reference as they seek to implement the principles. These guidelines can also be used when assessing how well the principles are being followed in practice. This current version of the guidelines is the result of a revision process conducted by the GEO Data Working Group in 2022.

These guidelines are applicable to the management of all Earth Observation data products, both remote sensing and in-situ data, as well as other types of data products and services. These guidelines are intended to cover raw data and higher level products, including Analysis Ready Data (ARD) and data products that are produced on-demand by services. While the principles can be applied to services that generate data on-demand; this guidance focus primarily on data and related products. The Data Management Principles can be applied to Decision Ready Information (DRI) and other Knowledge assets, but these guidelines do not explicitly offer recommendations for them.

The GEO Data Branding website[3] offers a self-assessment opportunity for data providers to generate a GEO label that reflects the level of implementation of the DMPs. The GEOSS Yellow Pages[4] (https://www.geoportal.org/yellow-pages) provide information about the level of implementation of the DMPs as have been declared once by data providers and covering all their data. At this stage, the GEO has not defined any process for independent certification of a data provider against the DMPs.

Guidance for implementing the GEO Data Management Principles (DMP) is offered within each section of the guidelines. The following topics are covered in the guidelines for each of the DMP:

First Steps Towards a GEO In Situ Data Strategy

This document is submitted by the Data Working Group to the Programme Board for discussion.

1 INTRODUCTION

This document has been prepared by the Data Working Group's Subgroup on In Situ Data (SG-ISD) and outlines key elements of the forthcoming GEO In Situ Data Strategy ("the Strategy") as well as the process and consultation phase leading to its finalisation.

Although preparatory work has just begun, the SG-ISD would appreciate feedback from the Programme Board with respect to:

- Key elements of the Strategy presented and their relevance;
- Additional elements that should be included in the Strategy;
- The proposed process and consultation phase as regards the involvement of stakeholders and timing;
- Recommendations and guidance vis-à-vis the implementation of the Strategy.

The feedback from the Programme Board forms an essential part of the initial consultation phase also comprising input from the Data Working Group members (including its subgroups), the GEO Secretariat, Regional GEOs, selected GEO Work Programme (GWP) activities, and the GEO Executive Committee. The timing of the consultation phase is as follows:

- The initial part of the consultation phase will be completed by end of October 2021.
- A draft outline of the In Situ Data Strategy will be made widely available for comment during the GEO Week 2021, and may be provided as an information document to support discussion at the GEO plenary
- The second iteration of the consultation phase will start January 2022.

2 BACKGROUND

Earth observations from diverse sources, including satellite, airborne, in situ platforms, and citizen observatories, when integrated together provide powerful tools

Revised Guidelines: https://earthobservations.org/documents/open_eo_data/PB-23-12_Revised%20GEO%20Data%20Sharing%20and%20Data%20Management%20Principles.pdf

First steps towards a GEO In Situ Data Strategy: https://earthobservations.org/documents/pb/me_202109/PB-21-11_Towards%20a%20GEO%20In%20Situ%20Data%20Strategy.pdf

EEA-RTD SLA showcases

Main goal: fostering **improved data sharing and management** in the context of **climate adaptation related policies and initiatives**

Better data and statistics at pan-European level in support of the EU strategy on adaptation to climate change.	Activity #1: Support accessibility, re-usability and interoperability of data on **losses and damage by weather and climate extremes.**
	Activity #2: Support accessibility, re-usability and interoperability to **climate adaptation datasets in support of the Mission on Adaptation to Climate Change and the Digital Twin of on Climate Change adaptation**
	Activity #3: Support accessibility, re-usability and interoperability of data related to **climate change impacts on human health and well-being**
Providing access to data supporting the mainstreaming of climate resilience considerations in key community systems.	Activity #4: Support accessibility, re-usability and interoperability of relevant in-situ data on **wet terrestrial ecosystems**
	Activity #5: Support accessibility, re-usability and interoperability of **relevant historical in-situ data to facilitate the restoration of free-flowing rivers**

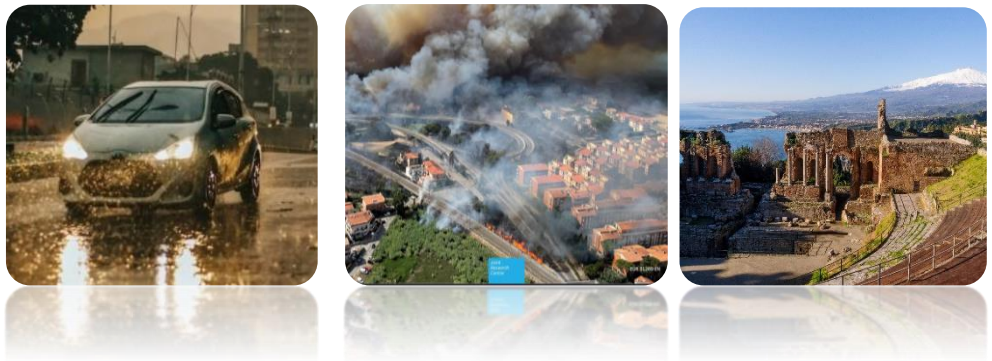
InCASE: Losses & damages from climate related extremes

Scope: Information is currently dominated by re-insurance companies in the EU. A consolidated view of existing but underused databases is called for. Exploration of non-satellite data may help overcome existing challenges such as providing ground-truth, estimating indirect impacts, governance issues, fragmentation or openness of data, thematic or hazard-specific requirements

Implementation:

Dynamic Inventory of losses & damages databases, wide scoping (48 entries), point of reference

Shortlist: different hazards, themes, potential of added value brought by EEA, variety of data sources



*Showcases: **Flood fatalities** – profiling the circumstances, **Fires** – exploiting existing in situ information, **Cultural Heritage** – Structuring the climate impact*

***Main messages**: Exploit what is out there, push Open Data paradigm in the domain, promote structure, connect with ongoing initiatives (e.g. Risk Data Hub), communicate benefits of in situ data utilization across users/providers*

InCASE: Climate Adaptation Indicators

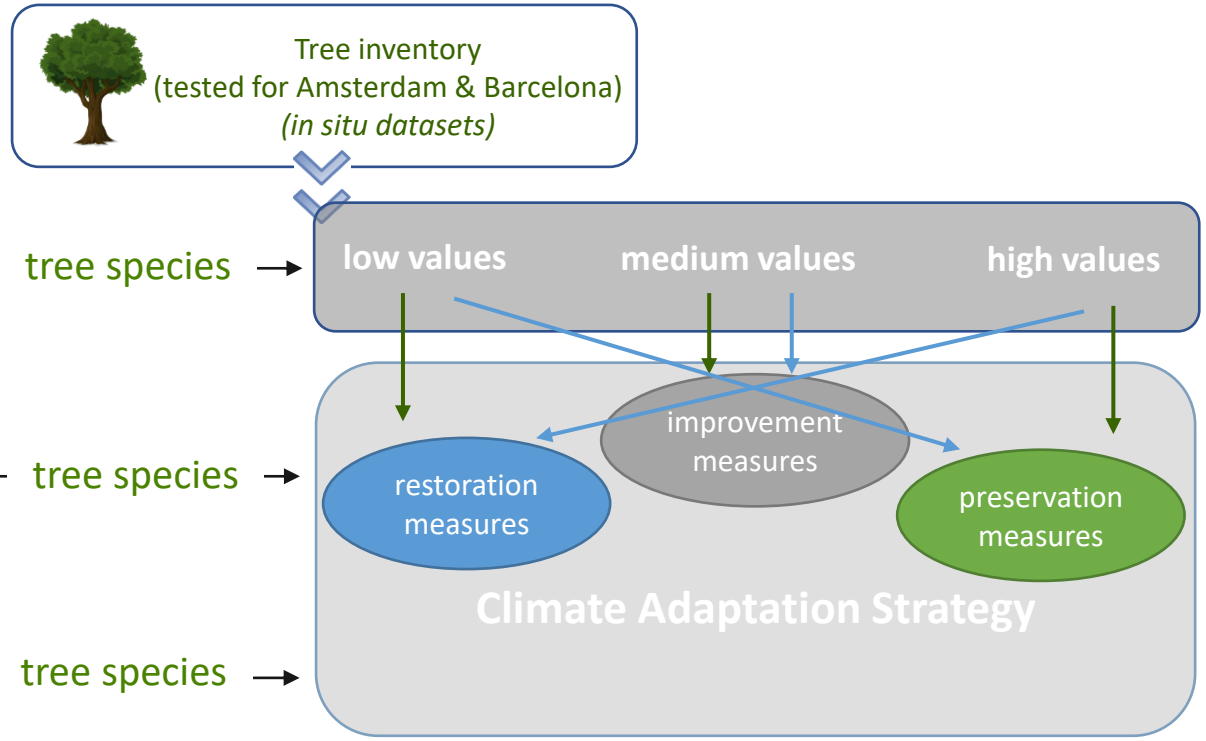
Implementation:

- *Climate adaptation inventory development*
- *Based on selection and filtering criteria, propose cross-cutting and integrating indicators:*

Scope: select a set of in situ climate adaptation indicators that are suitable at various scales, replicable to all countries and up-scalable from local/urban to regional/EU.

1. Urban Biodiversity Indicator: *distribution and percentage of native/alien/invasive toxic trees in the city*

2. Urban Ventilation Indicator: *a factor of 3D buildings and road density/width/traffic*

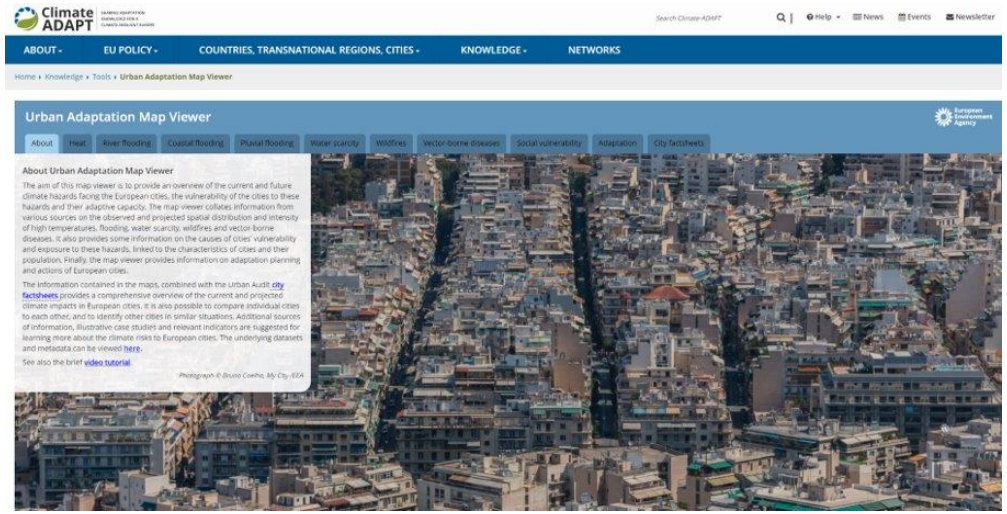


Main messages:

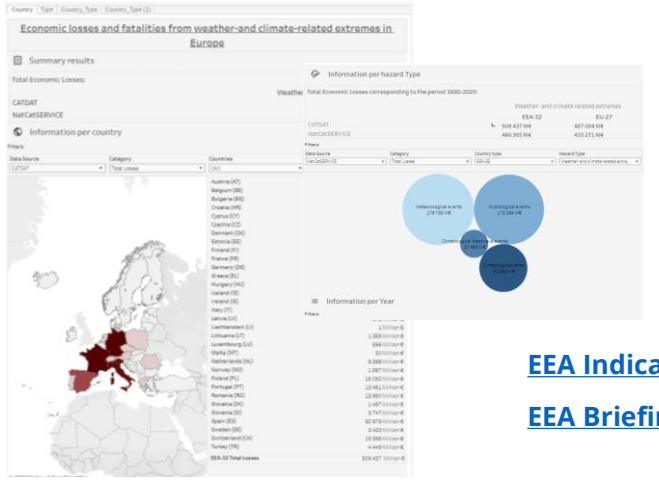
- *In situ data are a valuable source of information for climate adaptation strategy*
- *There is an urgent need to convince competent stakeholders to exploit in situ datasets to frame replicable and up-scalable in situ indicators for climate adaptation*

EEA-RTD SLA showcases

Climate ADAPT – Urban Adaptation map viewer

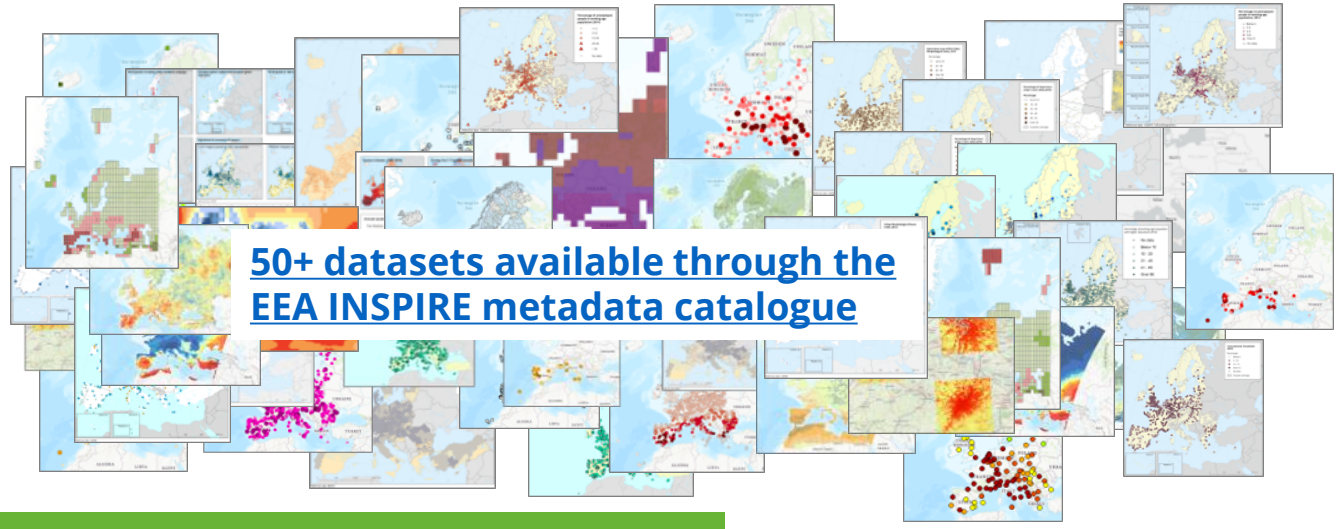


EEA dashboard on economic losses and fatalities from climate-related extremes in Europe



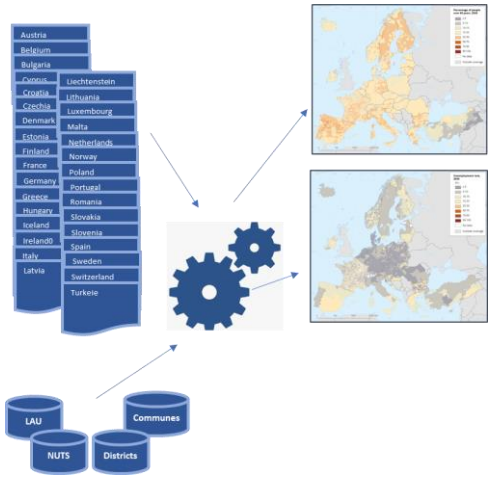
EEA Indicator

EEA Briefing



50+ datasets available through the EEA INSPIRE metadata catalogue

Geocoding socio-economic and demographic inequalities across Europe

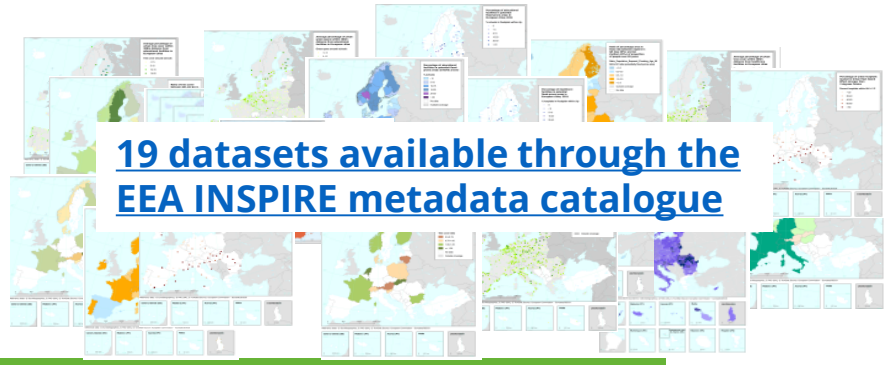


Percentage of population over 65 years (2020), Nov. 2021

Percentage of unemployed people in working age population (2020), Nov. 2021

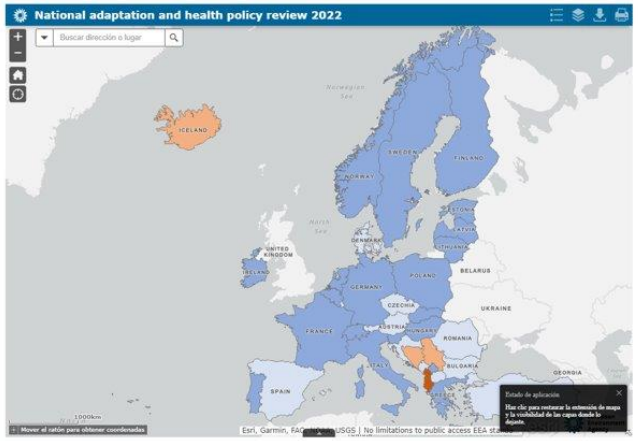
EEA-RTD SLA showcases

European Climate and Health Observatory platform

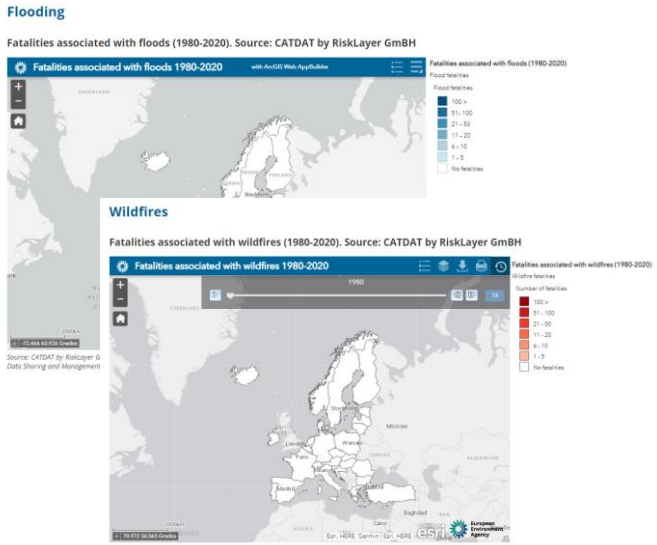


19 datasets available through the EEA INSPIRE metadata catalogue

European Climate and Health Observatory: Overview of national policies in Europe



European Climate and Health Observatory: Health effects



Fatalities associated with floods (1980-2020)

Fatalities associated with wildfires (1980-2020)

Percentage of educational facilities in potential flood-prone areas at the NUTS 2 level

Percentage of hospitals in potential flood-prone areas at the NUTS 2 level

Percentage of educational facilities in potential flood-prone areas in European cities

Percentage of hospitals in potential flood-prone areas in European cities

Ratio of population exposed to flooding

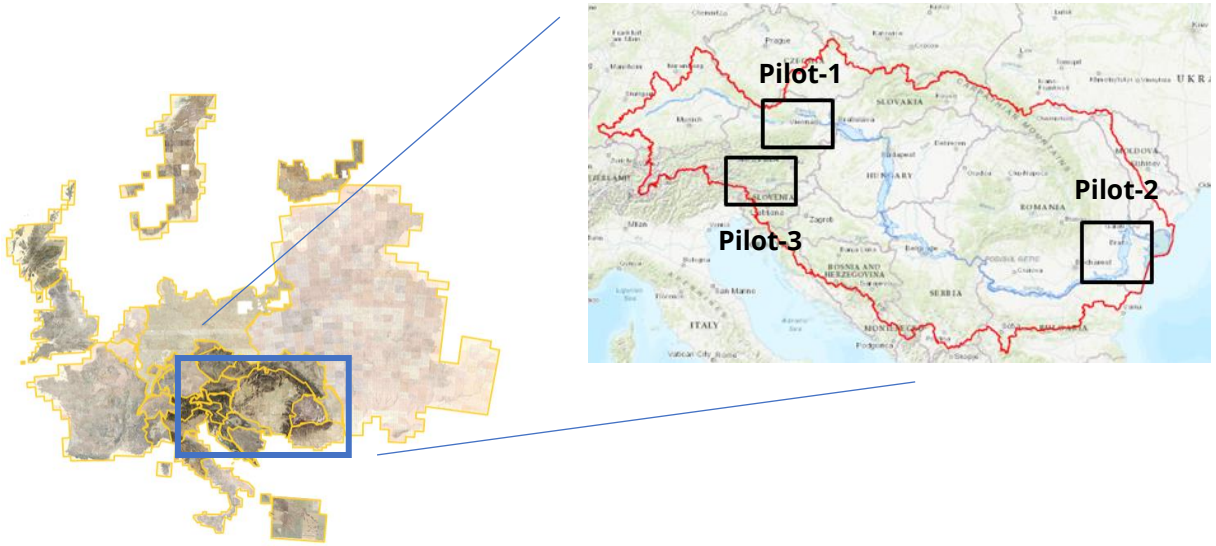
Percentage of urban hospitals located in Urban Heat Island Effect stronger than 2 degrees Celsius

Average travel time to the nearest hospital in minutes, NUTS3

EEA-RTD SLA showcases

Digitalisation of historical maps for the restoration of free-flowing rivers

- Focus on **Danube river basin area**
- **Scanned maps** from the Second military survey of the Habsburg Empire (Arcanum)
- CLMS Riparian Zones 2018 used as a mask



Pilot 1: Traun river – Upper Austria

5.000 km² – 1819-1869
Mountainous area scale 1:28 800

Pilot 2: Balta Brailei – Wallachia

10.795 km² - 1855-1859
Low land area scale 1:57 600

Pilot 3: Drava river - Carinthia

32.500 km² 1821-1836 / 1829-1835
Mixed low and high land scale 1:28 800

EEA-RTD SLA showcases

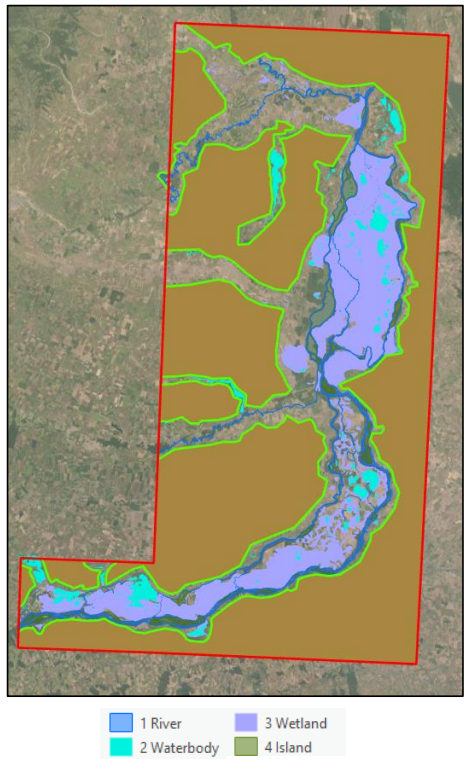
Overall statistics of water surface increase and decrease

Area	Hydrological feature	Digitalised (1819-1869) (km^2)	Riparian zones (2018) * (km^2)	% water surface **increase/decrease**
Pilot-1 Mountainous area	River	135.39	79.92	40.97
	River bank	20.66	0.39	98.11
	Lake	65.01	77.25	18.83
	Wetland	-	0.96	-
	Island	96.87	-	-
Pilot-2 Low land area	River	637.1	546.82	14.17
	River bank	-	-	-
	Lake	547.99	194.84	64.44
	Wetland	3,369.59	123.44	96.33
	Island	330.62	-	-
Pilot-3 Mixed high and low land	River	56.84	47.26	16.85
	River bank	22.76	17.14	24.69
	Lake	60.2	67.4	11.96
	Wetland	15.89	6.8	57.21
	Islands	11.42	-	-

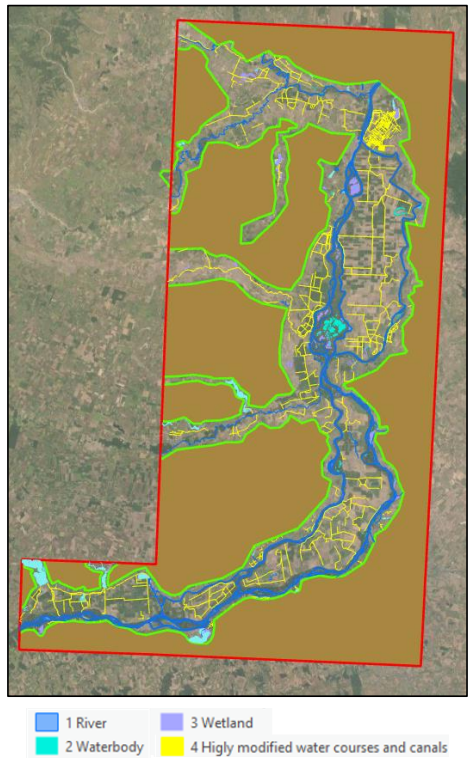
*Temporal extent: 2017-2018 / Date of publication: Dec, 2021 / Revision date: Dec, 2021

Decrease of wetland areas in Wallachia

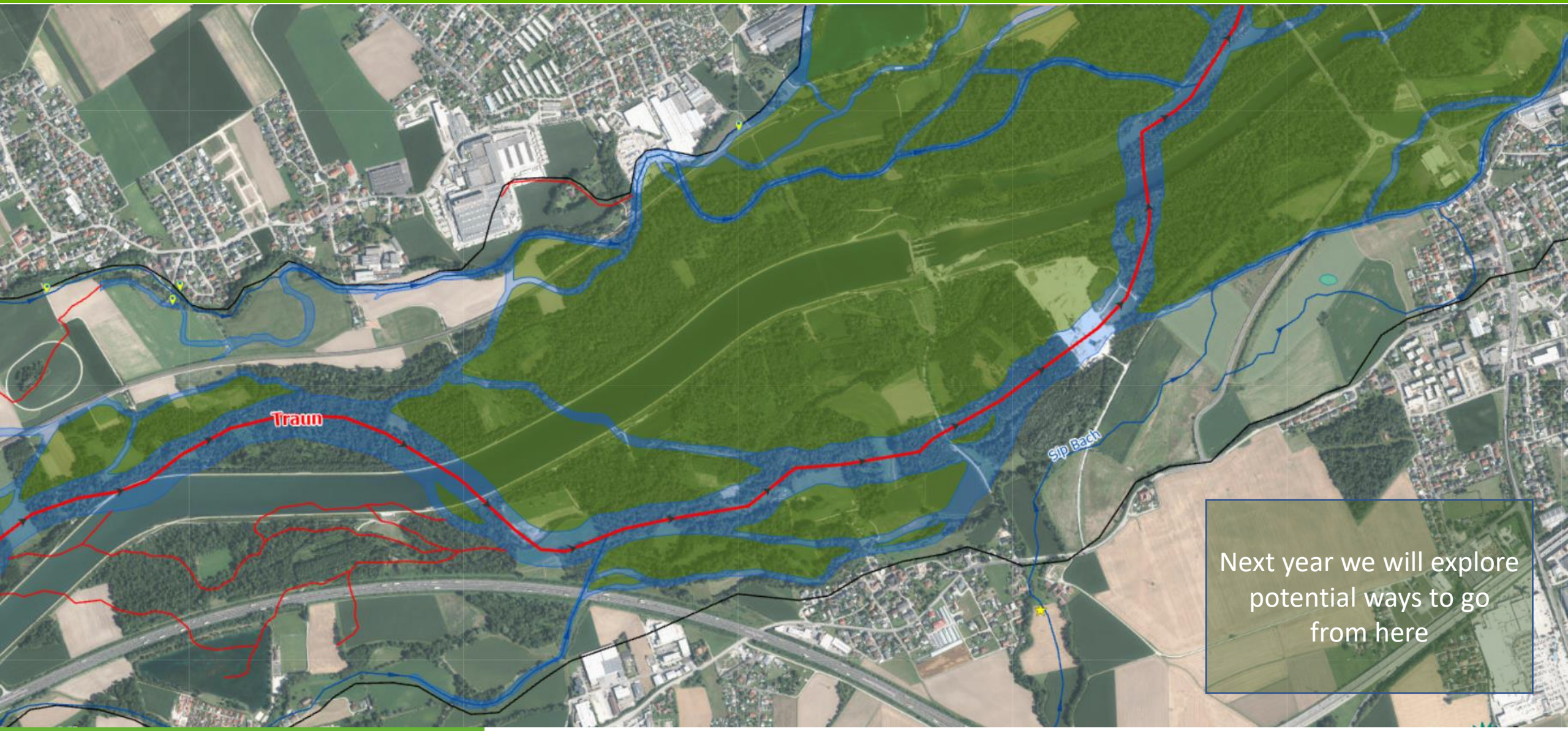
Hydrological features digitalised over **Wallachia historical map** (1855-1859)



Hydrological features contained in the **Riparian zones** layer (reference year 2018)



Digitalisation of historical maps for the restoration of free-flowing rivers



Many thanks for your attention