



In situ

GEOID Team: Key areas of focus

Working Group Meeting - Geospatial data

Francesca Lorenzon

14-15 November 2023



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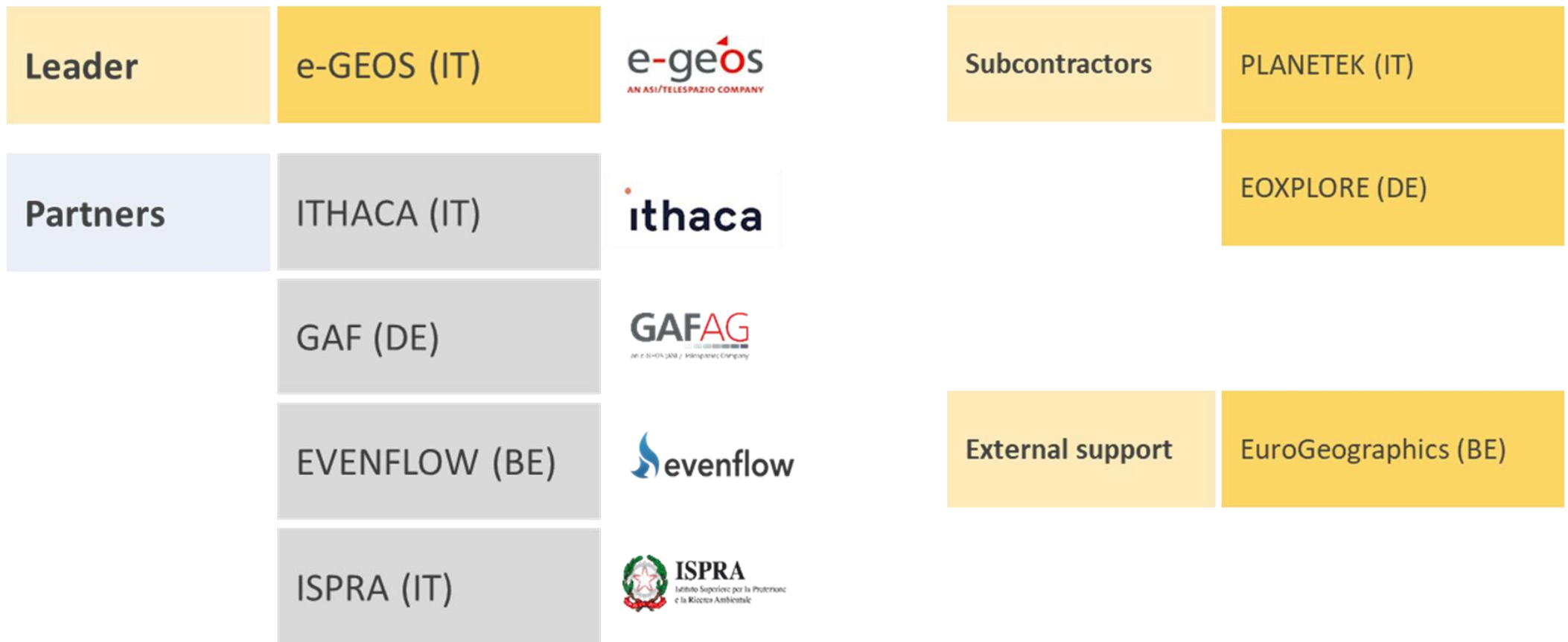
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GEOID Team

GEOspatial In Situ Data Team



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Contracts implementation

FRAMEWORK SERVICE CONTRACT

May 2020 - May 2024 + 6 months

Current Specific Contract

August 2023 – September 2024



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Updates since the previous 2022 WG meeting

Outcomes of the “Provide Access to data” task:

- ✓LPIS - Harmonization for HRL VLCC
- ✓LUCAS - Assessment of current usage (CLMS/CEMS)
- ✓CROWDSOURCING – data in support to CLMS and CEMS
- ✓LULC WETLAND – Inventory for EU



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LPIS HARMONIZATION



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Purpose and description

LPIS data

- Support to **HRL VLCC** in accessing LPIS data from initially three countries (CZ, LU, RO) for 5 years (2017 – 2021)
- **Harmonization** of national LPIS nomenclatures to HRL VLCC target nomenclature (ie. crop types)
- Creation of harmonized LPIS datasets and their provision to HRL VLCC and to **CORDA**



Main steps undertaken

- Getting **access** to LPIS data (supported by CORDA team)
 - Assessment of available LPIS data for their usability in HRL VLCC
 - Coordination with HRL VLCC team (GAF, VITO, GV)
- Mapping of **LPIS nomenclatures** to the HRL VLCC target nomenclature (53 classes)
- **Transforming** LPIS datasets to the target nomenclature
- Final checks/QC
- Making transformed datasets available for HRL VLCC team and via CORDA



Outcomes

- Czech Republic (CZ)

DPB datasets contain **only 14 major LC classes** and **only 6 of 14 LC classes could be harmonized with HRL-VLCC** crop type legend; detailed LPIS data (incl. crop types) were requested by the CORDA team, but **could not be provided by Czech data provider** in time for the HRL-VLCC

- Luxembourg (LU)

Publicly available data was insufficient (only 4 classes); detailed FLIK data requested by CORDA: 101 LC/LU classes of which 66 classes could be harmonized with the HRL-VLCC crop type legend

- Romania (RO)

Detailed LPIS data could not be made available by the data provider (RO) due to current national legislation



Conclusions

- **Level of detail** of publicly available, national LPIS data can vary significantly → analysis of the usability of available data is recommended
- **Communication** with national data providers in some cases complex and time-consuming → to be taken into consideration in the planning process
- Detailed, national LPIS data cannot always be made available/ public (in time) → Clarifications/ **agreements** with the national LPIS data providers are to be made as early as possible (i.e. license agreements)
- Explanatory documents are not always provided with the national LPIS data → complex searches required in some cases



LUCAS ASSESSMENT



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Purpose and description

- Assessment of the **current usage of LUCAS** (Land Use/Cover Area frame Survey) data within the CLMS (and CEMS)
- **Recommendations** on future improvement of LUCAS to gain added value for CLMS, and potentially other Copernicus Services (e.g. CEMS)



LUCAS points across EU28



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Conclusions

- LUCAS offer an **extensive range of applications** in pan-European EO context (e.g. training/calibration and validation of **CLMS** products (like e.g. HRLs, CLC+ BB)
- LUCAS usage in **CEMS** → potential use as ancillary data is limited
- **Limitations** of the use of LUCAS: coverage, geometric reasons, nomenclature → No direct integration into classification workflow possible
- Some **improvements**/changes have been implemented since the last recommendations
- Extensive **efforts to adapt** the data to project needs → addressing of shortcomings necessary (e.g. densification of points, frequent updates, synchronicity with CLMS products, extension of spatial coverage, revision of nomenclature, etc.)



Follow-up

- Assessment was presented to CLMS colleagues at EEA
- Outcomes were used by EEA as input for their feedback to EC's consultation on LUCAS
- Follow- up meeting with Eurostat on technical aspects related to LUCAS and the Copernicus programme took place



CROWDSOURCING

- Analysis of crowdsourcing initiatives
- Use case: methodology to improve UA using OSM



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Analysis of crowdsourcing initiatives



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Purpose and description

- Support the CLMS as regards efficient use of **LULC data gathered by crowdsourcing** (such as OSM) or citizen science projects;
- Assessment of the existing crowdsourcing sources;
- Introduction of crowdsourcing initiatives in the Copernicus Services and need **to compile missing data on land use** and improve its quality.



Main steps undertaken

1. Analysis of crowdsourcing initiatives identified within **SC01**
2. Analysis of other **crowdsourcing initiatives through a desk research**
3. Application of crowdsourcing initiatives on **use cases:**
 - LandSense
 - FotoQuest Go
 - CropObserve



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Conclusions

- Crowdsourcing apps are mature and could become a **reliable technology for in-situ data collection that can be adapted to several needs**;
- Data from future initiatives could be used:
 - to support **production, quality assurance/control**, or product **validation** of **CLMS** products
 - to **improve** the data **quality** of **CEMS-related** products
- **Quality control steps** for data output **need to be implemented** to ensure **higher reliability** of crowdsourcing data.



Methodology to improve UA using OSM



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Purpose and description

PURPOSE

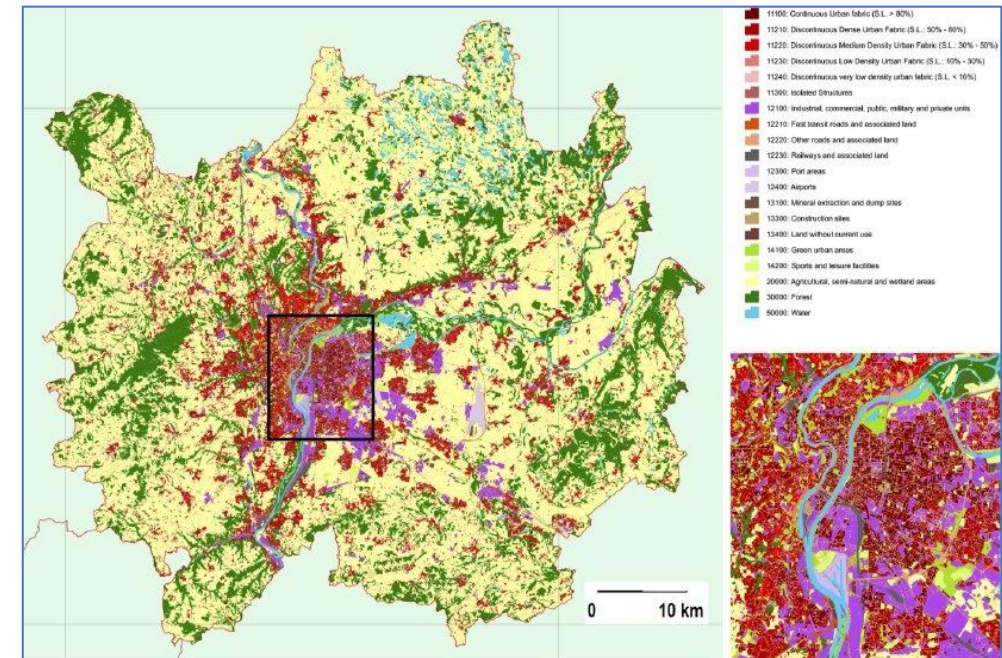
Draft a methodology to split commercial and industrial buildings within the Urban Atlas dataset using OSM categories.

MAIN STEPS TAKEN:

- Download and assessment of the Urban Atlas dataset;
- Comparison with OSM and National datasets on different use cases.

UA 12100 -> Industrial, commercial, public, military and private units

- **12110** Industrial
- **12120** commercial
- **12130** military and private units



Areas of analysis

15 European cities

- **Alytus** - Lithuania
- **Bristol** - England
- **Elbasan** - Albania
- **Geneve** - Swiss
- **Hannover** - Germany
- **Helsinki** - Finland
- **Kalamata** - Greece
- **Kilis** - Turkey
- **Leon** - Spain
- **Marseille** - France
- **Milano** - Italy
- **Porto** - Portugal
- **Presov** - Slovakia
- **Torun** - Poland
- **Utrecht** - Netherlands



Conclusions

- **OSM dataset**, in terms of number of building polygons and the land use surfaces, **allows to improve the quality of the Urban Atlas dataset** (37% for the polygons of the buildings to 56% for land use surfaces).
- For the 15 cities analysed, a **significant number of polygons classified as "mixed" emerged** and therefore it would be necessary to work on them, through photo-interpretation, to improve the Urban Atlas dataset.
- From the comparison between the Danish National dataset and OSM on the Aarhus area, it emerged that the **national data is much more reliable** than that of OSM and Urban Atlas. The national dataset could be used as an improvement element of the other two.



WETLAND INVENTORY



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Purpose and description

- Comprehensive inventory of **available wetland datasets for Europe** (global and European datasets)
- Assessment of wetland datasets **characteristics** (used wetland definitions, nomenclatures, data properties, comparison, etc.)
- Assessment of **gaps** (spatially, thematically)
- **Evaluation** of potential applications of available data (especially with respect to CLC+ LULUCF Instances creation)



Conclusions

- **29 European and global wetland datasets have been assessed**, only a handful are suitable for CLC+ LULUCF Instance
- Expectations were confirmed, **only a small number of available wetland datasets on European level with good quality**, detailed information and for needed reference years

→ Main gaps: management status information, insufficient MMU and coverage, low accuracies, outdated datasets, missing time series...

- Need for high quality wetland datasets wrt LULUCF is still present → analysis of national datasets available



Any question?



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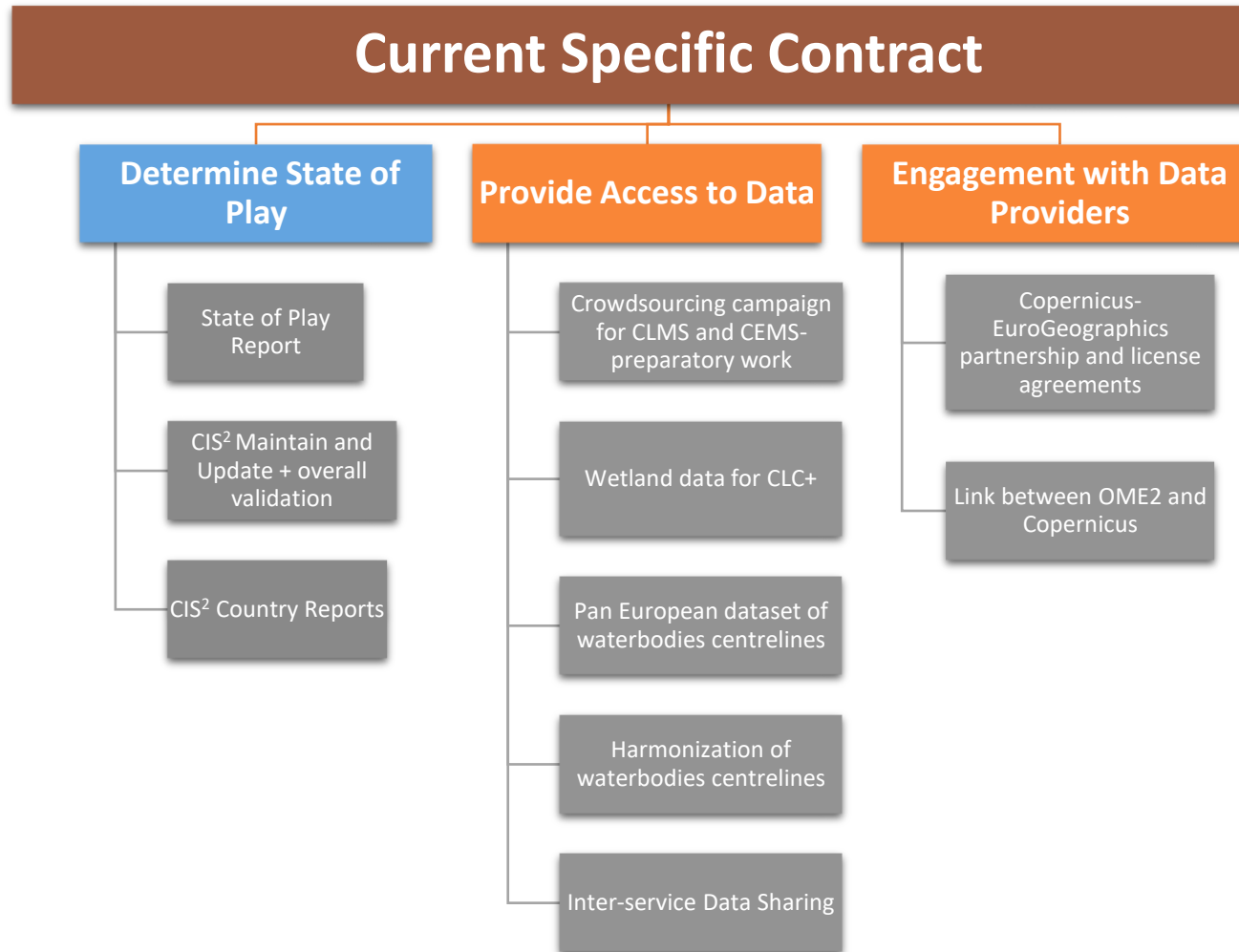


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Current contract - Overview of the main tasks



Planned activities within the current contract

- CIS2 maintenance
- Country Reports
- State of Play Report

- Crowdsourcing campaign
- Wetland data for CLC+
- Pan-EU waterbodies centreline
- Coastlines harmonization
- Inter service data sharing
- Engagement with National data providers



CIS² MAINTENANCE



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Purpose and description

Maintain an **up-to-date overview** of the **products, requirements, datasets** and **data providers** in use by the Entities and stored in the **CIS2**.

All information collected about the in situ geospatial data is regularly updated to be in line with the relevant Copernicus service products.



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Summary table

	CEMS		CLMS			CSS		
CIS² OBJECTS	RM	RRM	Local	Pan-EU	Global	BS	MS	SEA
PRODUCTS	4	36	11	38	3	12	10	10
REQUIREMENTS	13	27	18	27	11	13	11	22
DATASETS	63	94	65	102	53	17	11	18
DATA PROVIDERS	32	47	32	161	26	11	10	15
TOTAL	112	204	126	313	93	53	42	65

The CIS² database is now openly accessible to the general public at <https://cis2.eea.europa.eu>



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COUNTRY REPORTS



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Purpose and description

The aim of this task is to produce reports for **29 Copernicus participating States** (included Norway and Iceland) to inform the **National data providers** on the importance of their data for the Copernicus products of Emergency and Land Services.

The final goal is to encourage a fruitful discussion with the **NMCAs**, aiming at ensure the best possible **access** to the **authoritative national datasets** released by the Member States.

Focus on **Data Providers Institutions** from **CORDA** portal and from **CIS²** (no information on Data Themes, no text, only tables).



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CROWDSOURCING CAMPAIGN



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Purpose and description

Preparatory work for a crowdsourcing campaign in Land and Emergency mapping:

- Building on the assessment carried out in SC2, the consortium will collect and analyse **requirements from CLMS** and its service providers to run a **crowdsourcing campaign in 2025** and liaise with relevant stakeholders to understand the **feasibility of this activity**.
- The consortium will prepare a **roadmap** for the implementation of the activity and the integration of the campaign results in an operational context (e.g. use of data for training purposes).
- Alignment with **CEMS requirements** shall also be sought



Actions

1. Preparatory work for the task
2. **Collection and analysis of requirements from CLMS** and service providers to run a crowdsourcing campaign in 2025
3. **Check and align with CEMS** requirements and EEA preconditions
4. Preparation of a **roadmap** for the implementation of the activity
5. Finalization of the roadmap/ **feasibility study**



Outcomes

- **Target product** for a first campaign needs to meet the ***product requirements*** for crowdsourcing
- **crowdsourcing data** must meet the ***data requirements*** on project side
It is to be evaluated if the HRL VLCC (esp. the crop type product) is suitable for a first campaign.
- Potential campaign will **not take place until 2025**
- Consortium should work closely with HRL VLCC consortium, EvoLand consortium and IIASA

WETLAND DATA FOR CLC+



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Purpose and description

Wetland data for CLC+:

- Assessment within former specific contract on European and global wetland datasets showed need for high quality wetland datasets (e.g. in regards to LULUCF)
- Following specific requirements from the *Entities*, in particular CLMS, **investigate the availability and usefulness of national and regional wetland datasets for Europe** and their characteristics. **Gaps** shall be assessed, and potential applications of the available data shall be evaluated **with respect to CLC+ Instances** in particular



PAN-EU WATERBODIES CENTRELINES



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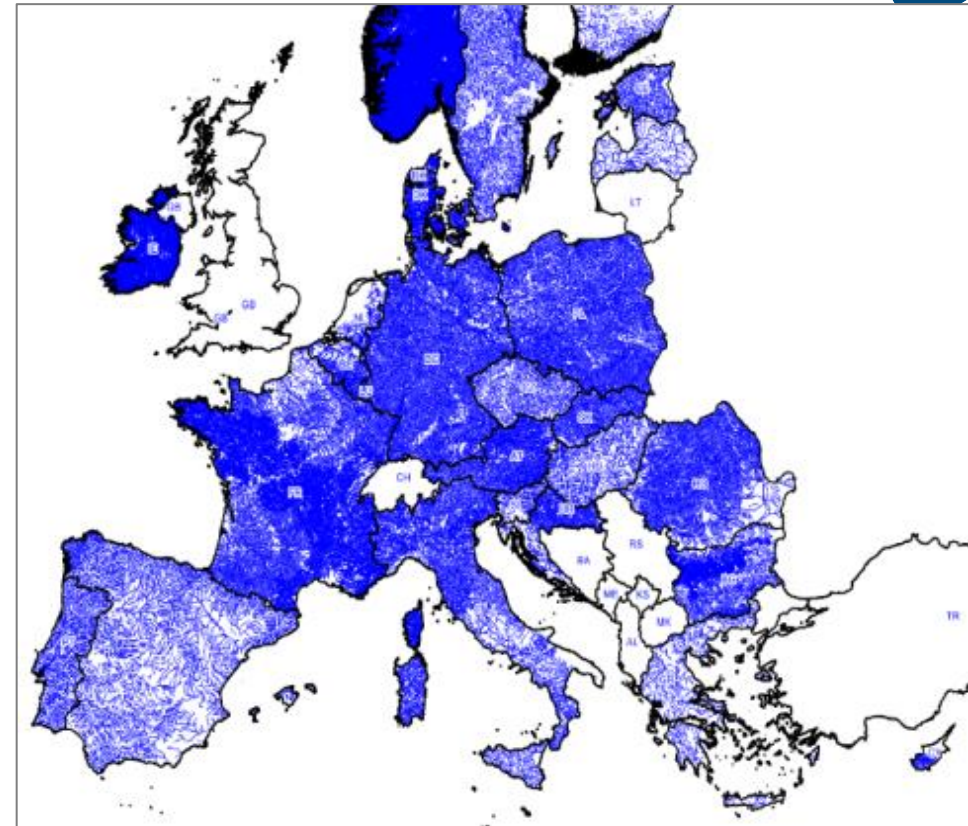


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Purpose and description

The goal is to carry out a **feasibility study** to assess the:

- Availability and collection of the 38 EEA countries national waterbodies centerlines datasets.
- Feasibility of harmonizing all these national hydrographic datasets into a single consistent pan-European coverage.



WISE - (Water information System for Europe) pan European coverages - 23 countries for the year 2016

Actions

1. Data Identification and Collection:

- **Identify all available waterbodies centerline datasets**, including sources and formats, evaluating quality and completeness.
- Contact National Mapping and Cadastral Agencies (NMCAs) and similar institutions like CORDA team or EuroGeographics (OME 2 dataset)

2. Exploring Harmonisation feasibility:

- Evaluate the **feasibility of harmonizing** all datasets into a consistent pan-European dataset, to be used for the **generation** of the CLMS reference dataset **EU-Hydro** (testing phase on some pilot countries focusing on countries borders)



COASTLINES HARMONISATION



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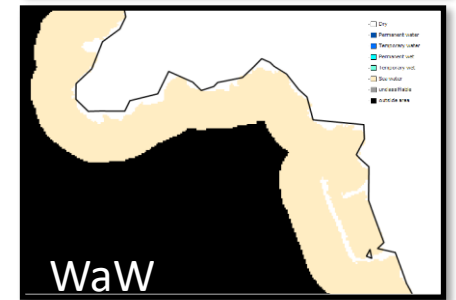
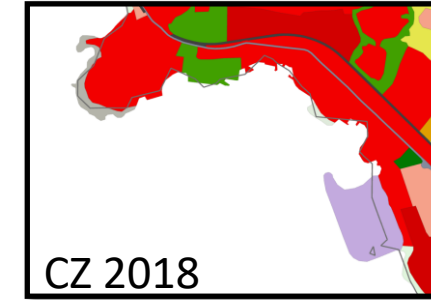
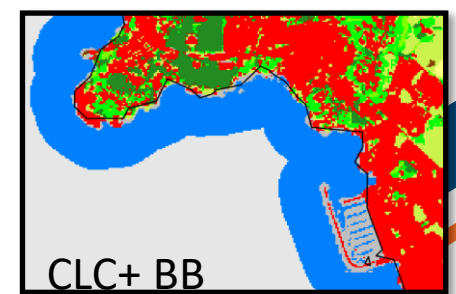


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Purpose and description

Harmonisation of coastlines within CLMS and CEMS

Based on results of previous contracts, conduct a **feasibility study to assess the best applicable coastline dataset:**



* Black line: EEA_Coastline_20170228

- to be used within CLMS and CEMS mapping products, including the
 - **collection of user requirements** (among CLMS and CEMS stakeholders)
 - assessment of **the current definition/use of coastline datasets** in the CLMS & CEMS mapping portfolio
 - **outline of harmonisation possibilities** for the future
- for a future EU-Hydro (according to user needs and technical feasibility), considering a harmonized coastline within CLMS and CEMS (and potentially further stakeholders) as EU-Hydro coastline.



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Actions

Feasibility study to assess best applicable coastline dataset

1. **Collection** of user requirements with CLMS/CEMS stakeholders, (e.g., MMU/level of details, inclusion of islands, update frequency, existence of certain water classes /transitional waters etc.)
2. **Assessment** of current definition and use of coastline datasets in CLMS and CEMS (selection of datasets, test sites, comparison & evaluation criteria)
3. Outline of **harmonization possibilities** for the future:
 - for coastlines among CLMS & CEMS products
 - for an implementation into a future EU-Hydro
4. **Finalization** of feasibility study



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Other activities

- ✓ State of Play Report
- ✓ Inter-service data sharing
- ✓ Use cases
- ✓ Engagement with data providers (Eurogeographics)

**Dedicated sessions
tomorrow**



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Any question?



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In situ

The GEOID Consortium

Supports the EEA's coordination of Copernicus' access to In Situ data



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