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Implementation of SEEA Water in Europe - the EEA approach

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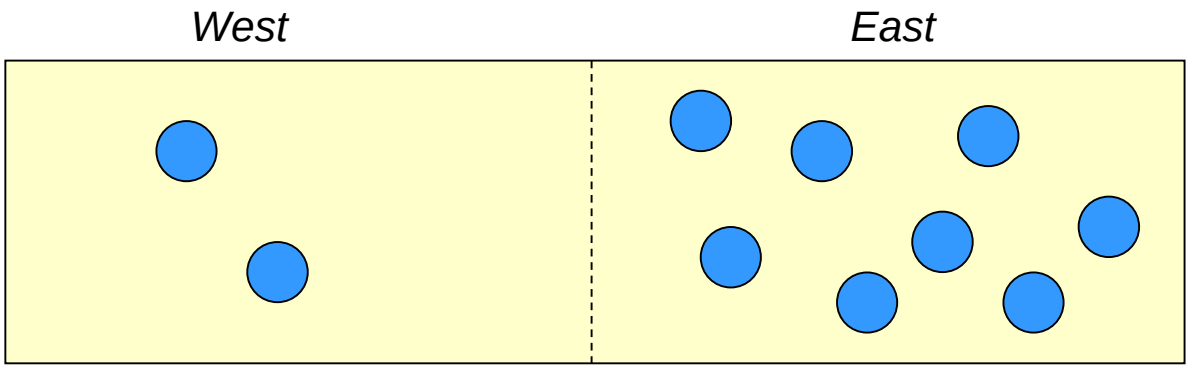
Policy relevance of water accounts

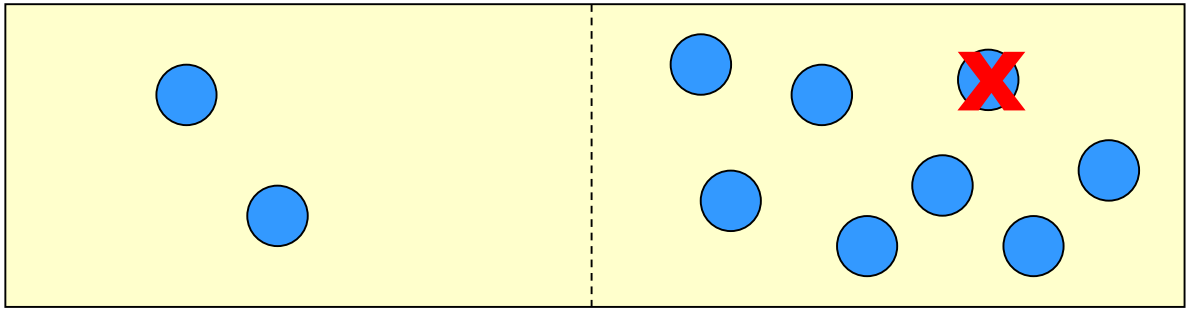
- In Europe: the Water Framework Directive
  - Use of water by sectors (irrigation, urban water, energy…)
  - Emissions to water, waste water treatment
  - Availability of water resource, effects of climate change, water stress
  - Chemical-physical water quality of rivers, aquifers
  - Ecological quality of rivers/ river basins
  - Transitional and coastal water (eutrophication, sedimentation…)
  - Costs and benefits
- Europe, countries, regions, national and international catchments
- EEA – Eurostat cooperation

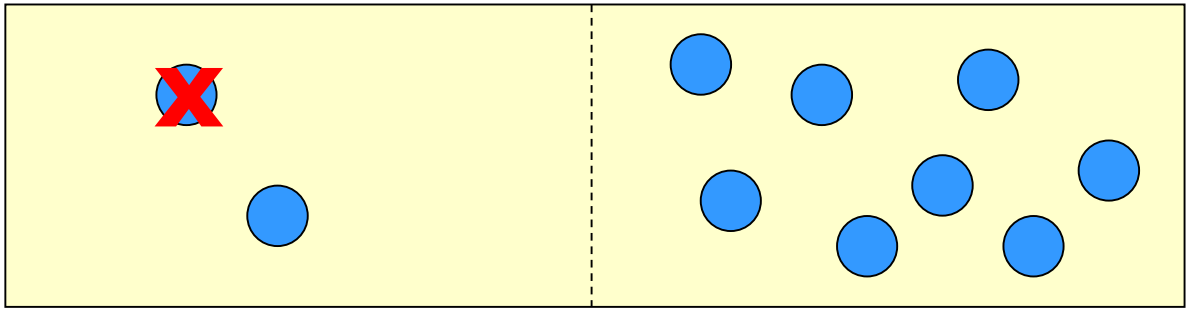
Primary data sources for water accounting...

Accounting domains	Monitoring	Hydrological modelling	Statistics
Primary resource (rainfall…)	***	***	
Evapotranspiration	*	***	
Groundwater replenishment	*	**	
River run-off	***	*	
Abstraction	**	*	***
Exchanges between sectors, supply	*		***
Losses, leakage and disposal	*	*	**
Use by sectors, industries	*	*	***
Evaporation resulting from irrigation	*	**	**

Importance of accounting by catchments – an example







The total water resource of the country **10 lakes** distributed over **2 catchments**. The western catchment with 2 lakes is close to a scarcity threshold while water resource is abundant in the eastern catchment (8 lakes).

Scenario A: 1 lake is lost in the east

Scenario B: 1 lake is lost in the west.

Resource loss of 1 lake in the **eastern** catchment

(a) Aggregated national loss (without catchments): (10-9)% = **10%**

(b) National average of loss by catchments: $\frac{(2\text{-}2)\% + (9\text{-}8)\%}{2}$ = **5.5%**

Resource loss of 1 lake in the **western** catchment

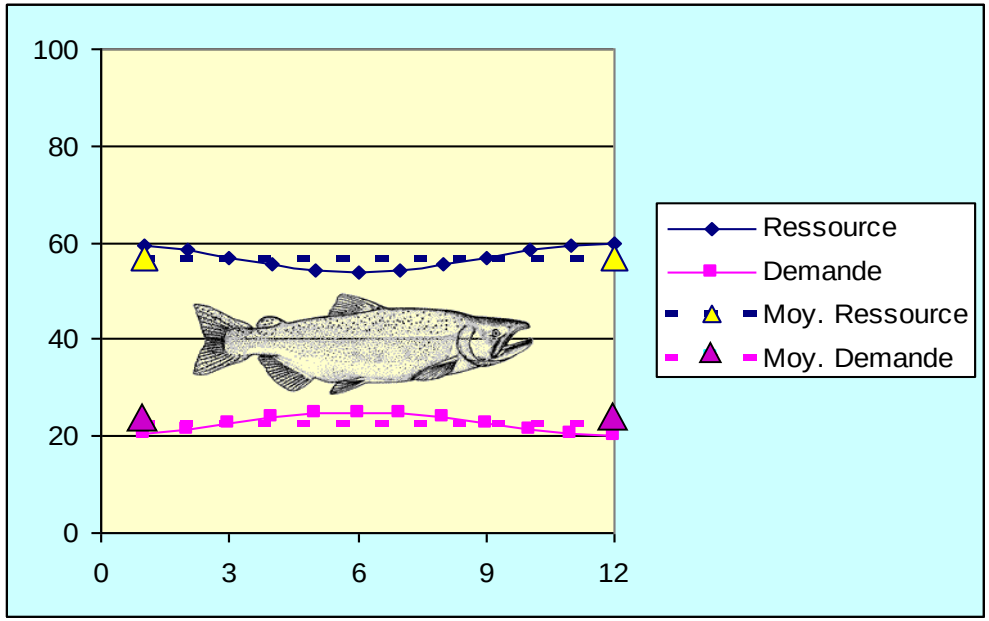
(a) Aggregated national loss (without catchments): (10-9)% = **10%**

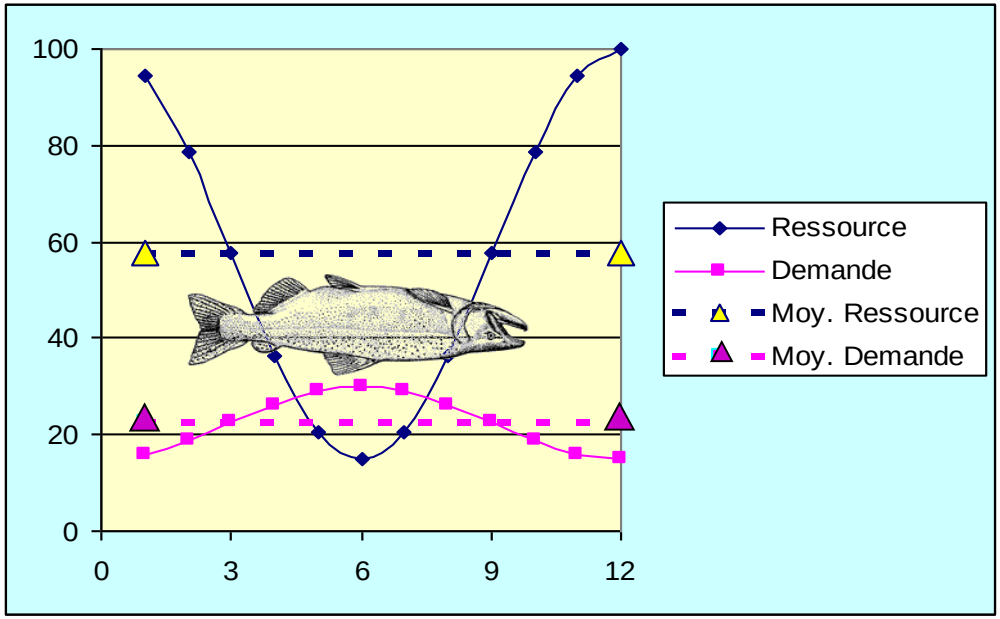
(b) National aggregation of loss by catchments: $\frac{(2\text{-}1)\% + (9\text{-}9)\%}{2}$ = **25%**

Time frame: e.g. water resource/demand

Mean annual values may tell the same stories for very different conditions

(e.g. no water shortage in this river in both cases)

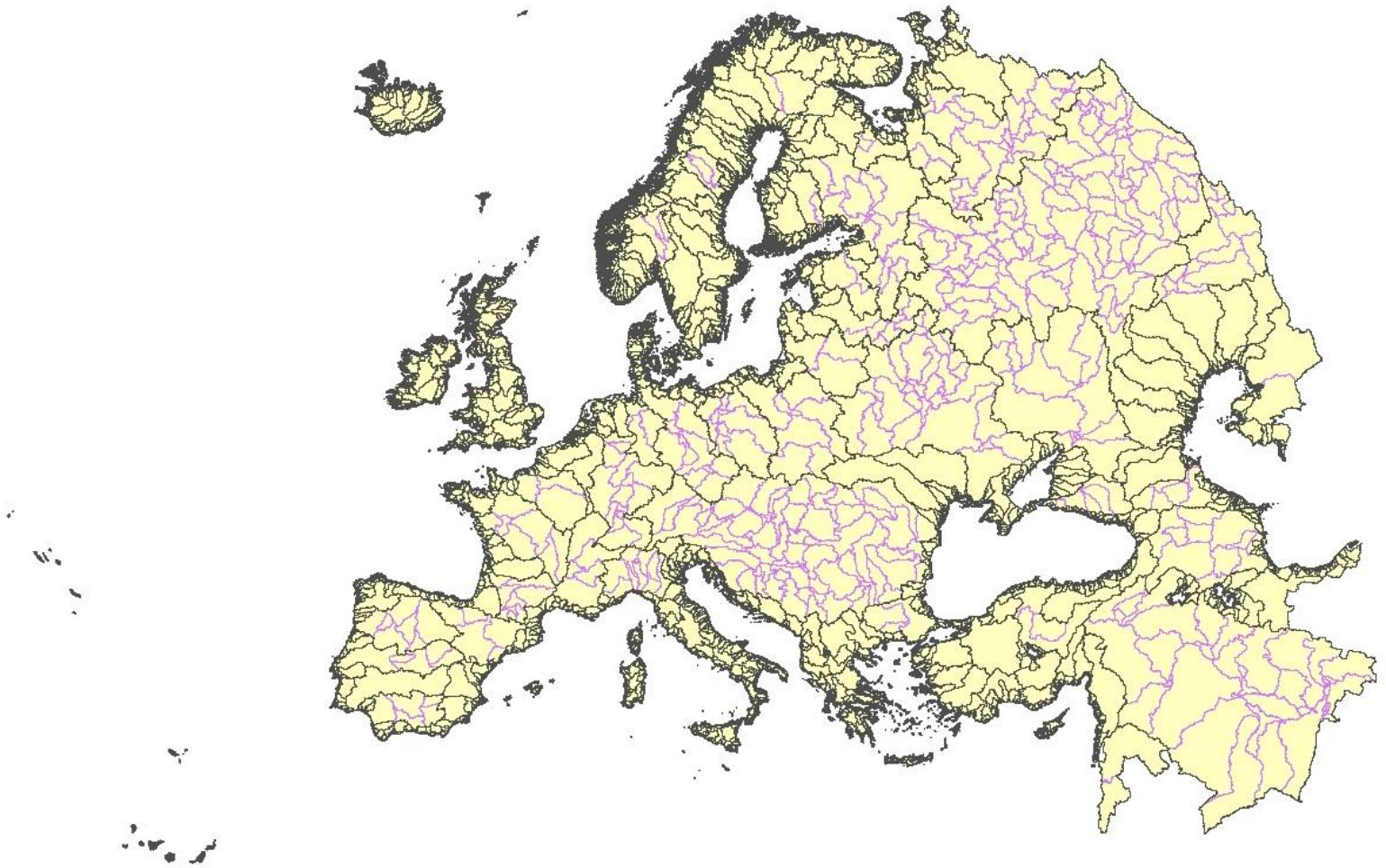




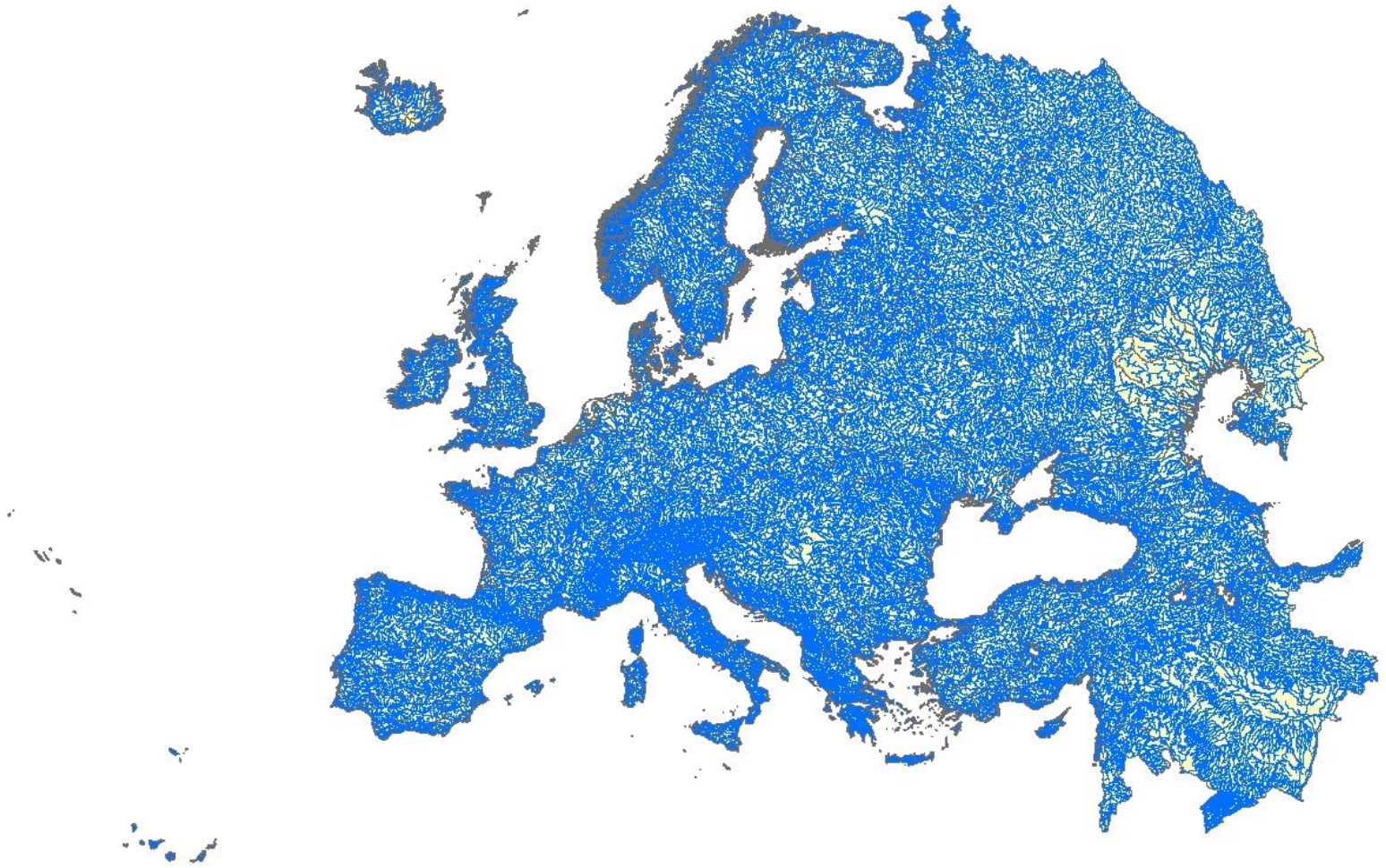
Steps of implementation of SEEAW in Europe

- Data infrastructure – GIS, meteo & hydrological reference data
- Broad brush accounts 2009/2010 – framing the picture, dialogue with stakeholders
- Integration with sector statistics on water use, protection expenditure, business (**with Eurostat**)
- Integration with environmental reporting on water (with WFD, EIONET)
- Introduction into WISE data centre

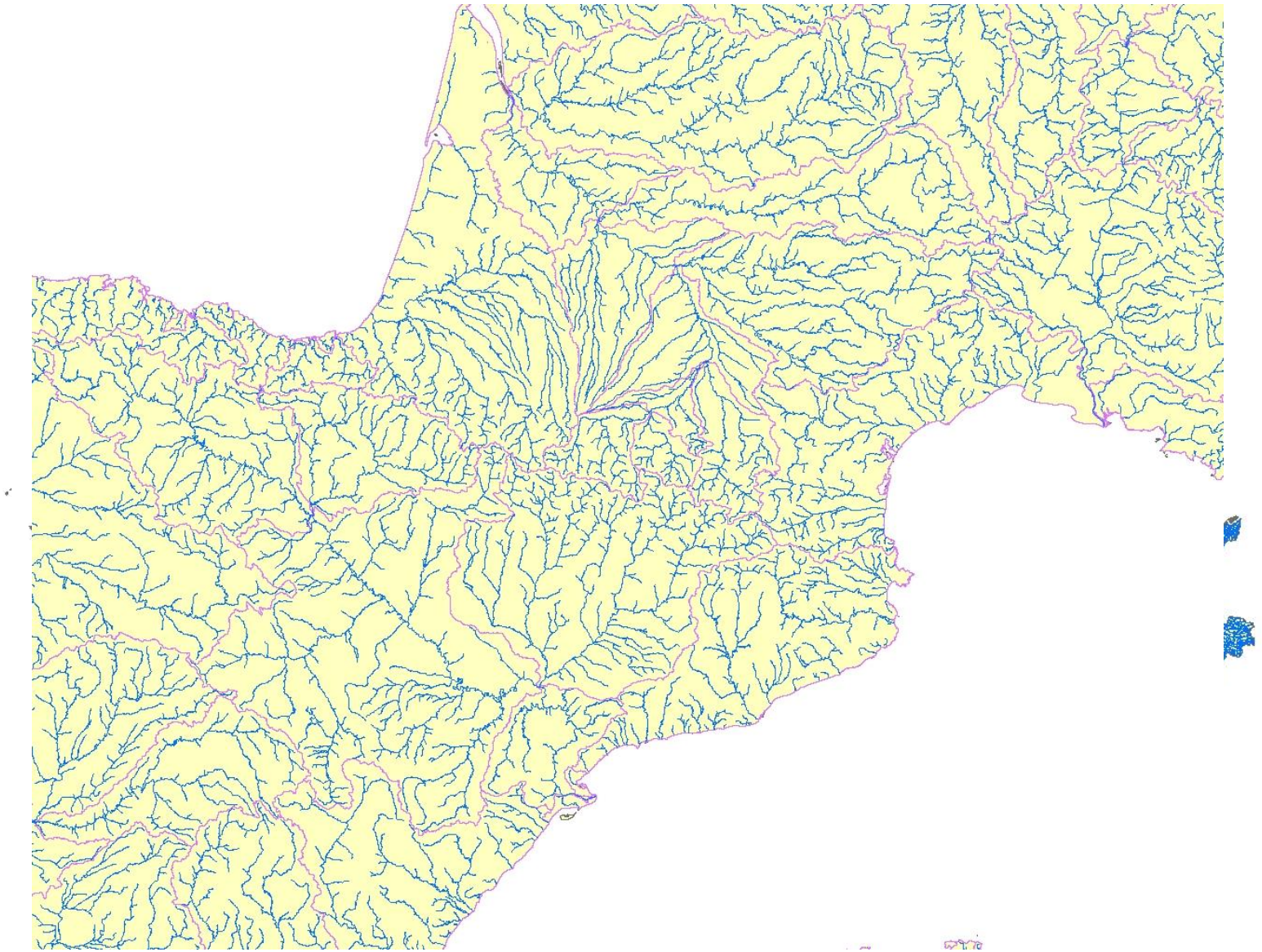
Data infrastructure: catchments reference layer



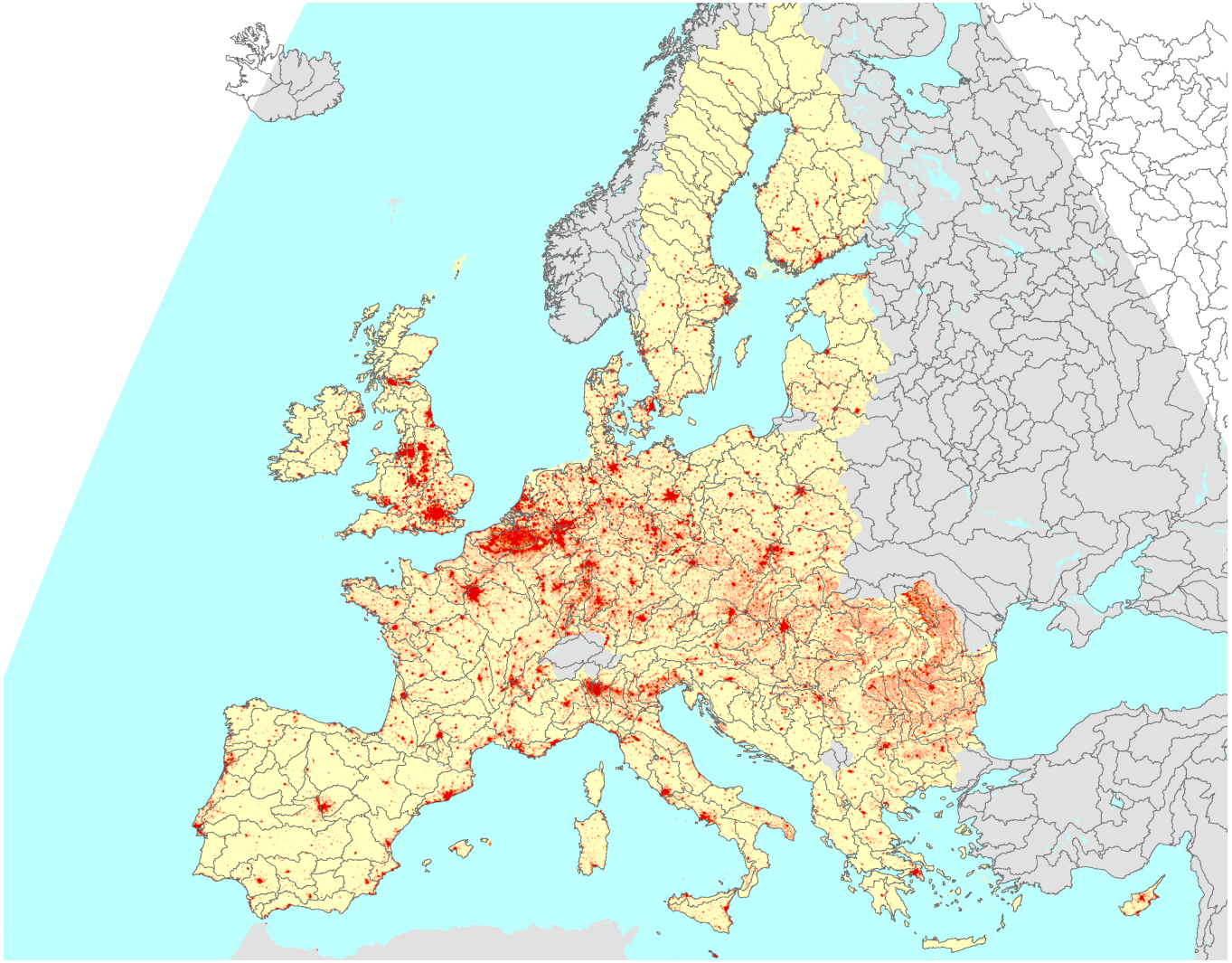
Data infrastructure: rivers reference layer



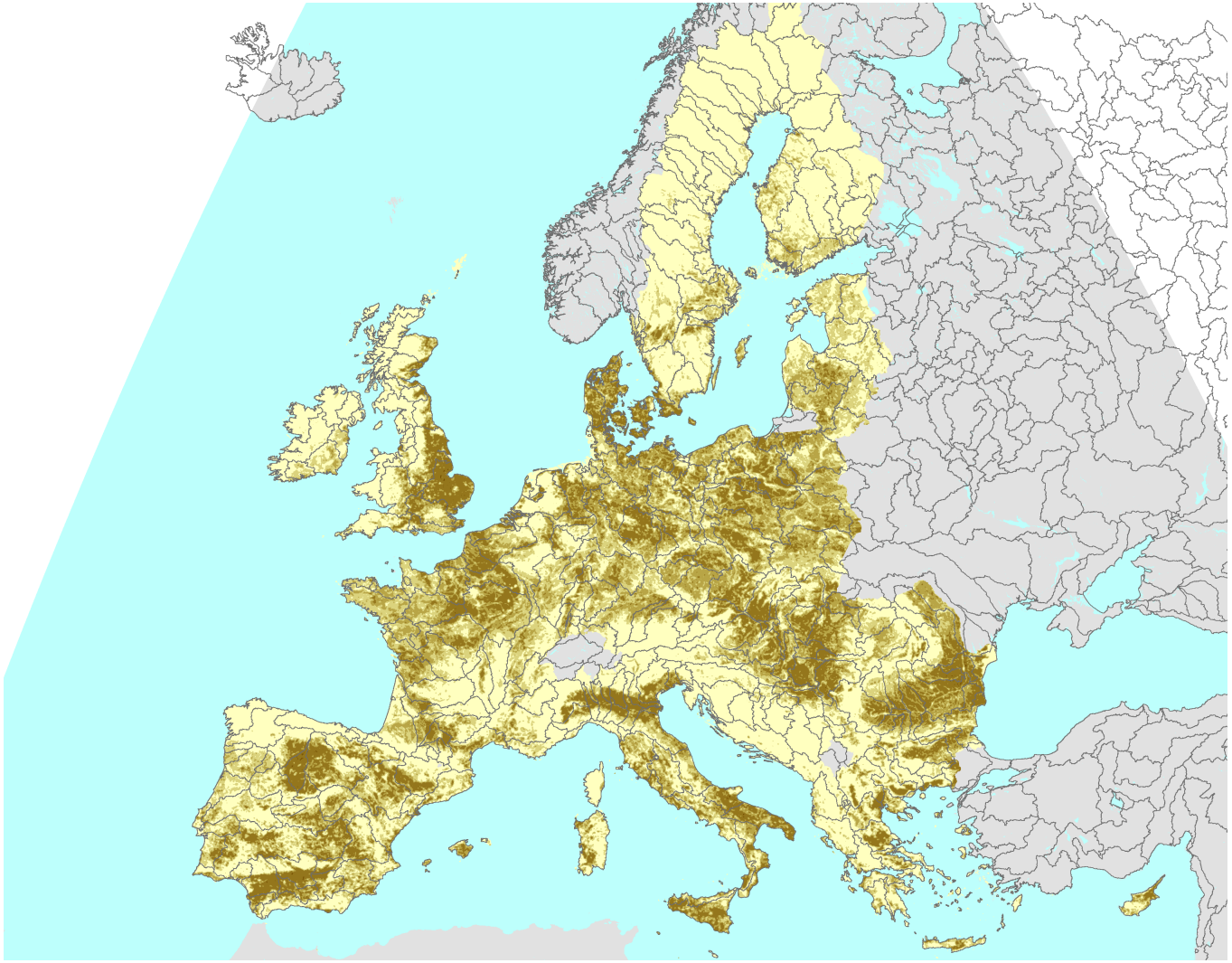
Data infrastructure: rivers reference layer



Data infrastructure: Land cover/ land accounts
1 – Urban temperature 2000



Data infrastructure: Land cover/ land accounts
2 – Intensive agriculture temperature 2000



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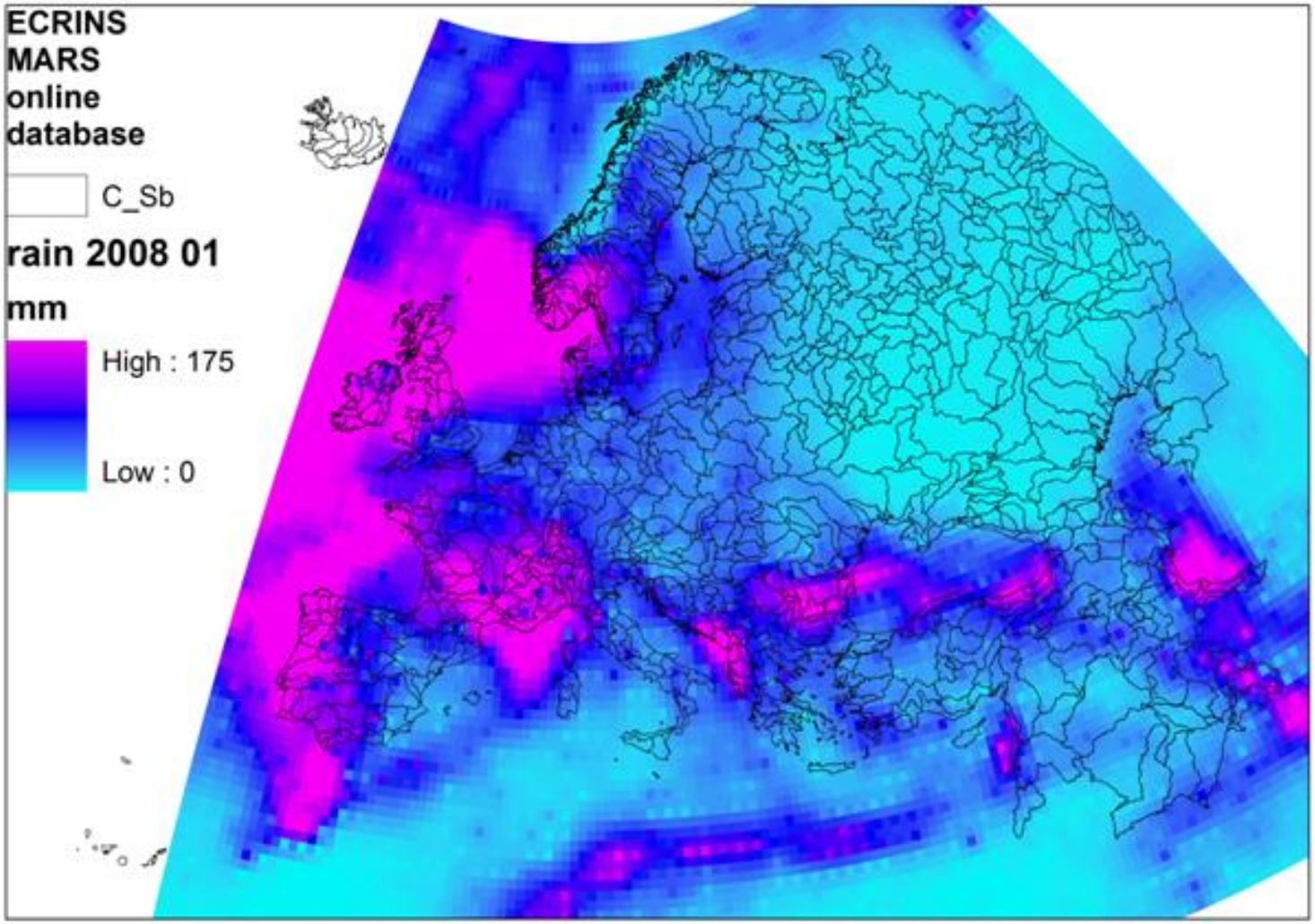
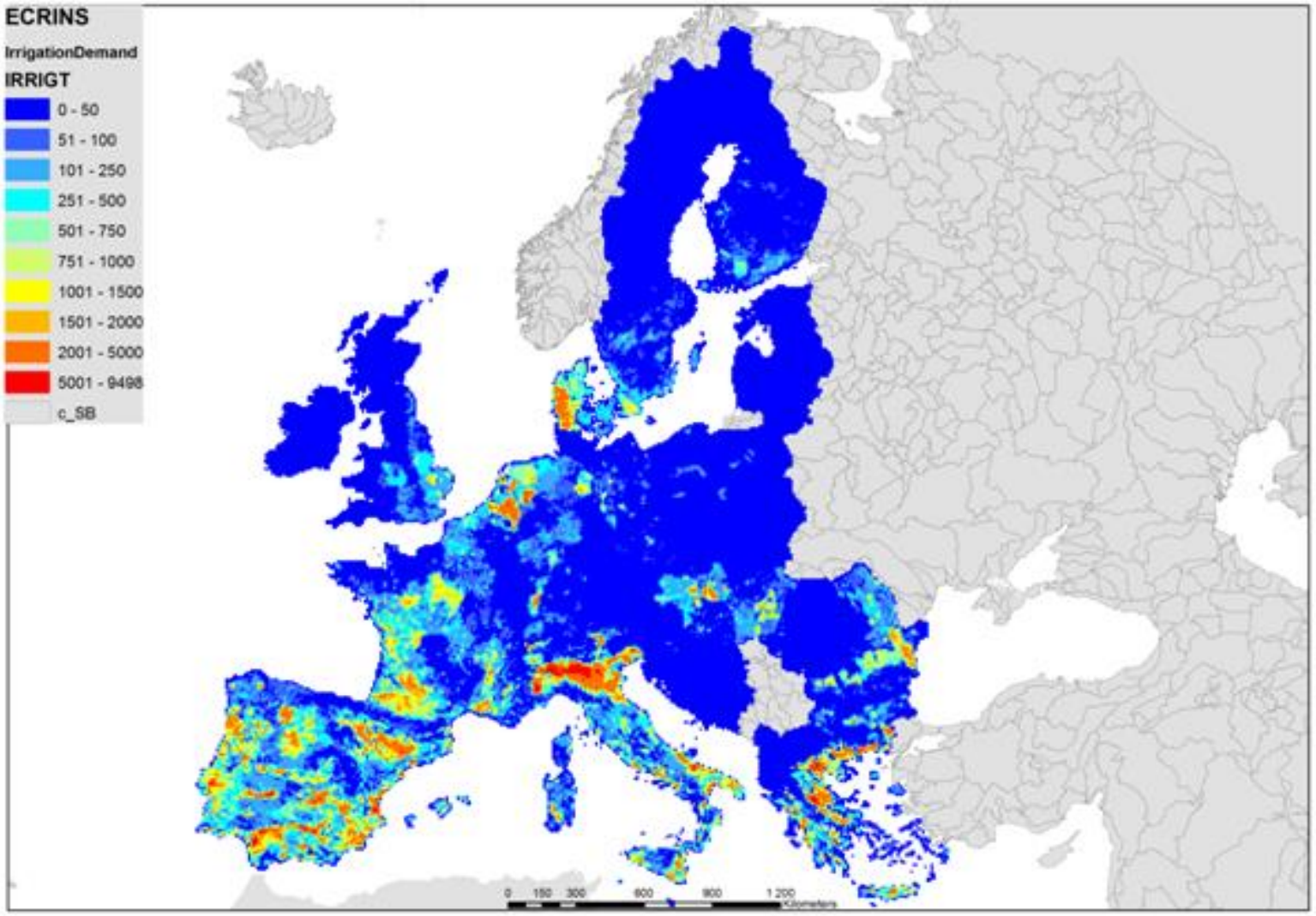
Broad brush SEEAW accounts: precipitations



Broad brush SEEAW accounts: irrigation



Broad brush SEEAW accounts: first results for Ebro catchment, Spain

Entity	Ebro
Month	(All)

Asset account, Flows, All months

Somme de vol	Libel_FR						
Code	1311 : Reservoirs	1312 : Lakes	1313 : Rivers	1314 : Glaciers, snow and ice	132 : Groundwater	133 : Soil Water	Grand Total
2 : Returns	52		439		712		1,203
3 : Precipitations	262	8	131	924		58,152	59,477
4b : Inflows from other resources within the territory	23,461	364	41,818		5,607		71,249
5 : Abstractions	2,413		4,824		264	9,700	17,201
6 : Evaporation / Actual Evapotranspiration	272	8	140			36,112	36,533
7a : Outflows to other resources in the territory	26,664		26,418	924	7,200	10,043	71,249
7b : Outflows to the sea			7,768				7,768
7c : Outflows to other territories	300						300
Grand Total	5,875	363	3,237	0	1,146	2,297	1,123

entity	Ebro
Year	2000
Month	(Tous)

Asset account, Internal transfers, All months

Somme de vol	Destination				
Origin	1311 : Reservoirs	1312 : Lakes	1313 : Rivers	132 : Groundwater	Total
1311 : Reservoirs			26,664		26,664
1313 : Rivers	23,060	263		3,096	26,418
1314 : Glaciers, snow and ice			924		924
132 : Groundwater			7,200		7,200
133 : Soil Water	402	100	7,030	2,511	10,043
Total	23,461	364	41,818	5,607	71,249

Steps of implementation

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Integration with sector statistics on water use, protection and management expenditure, business

- Currently, coarse estimates only for water uses ➔ necessary upgrade with **water use** statistics and accounts; expected breakdowns by catchments and for large urban areas; irrigation water as another issue (ongoing improvements)
- Water protection and management **expenditures** by catchments or basin districts
- NAMEA Water for future integration with I-O Tables

➔ **Work sharing with Eurostat**

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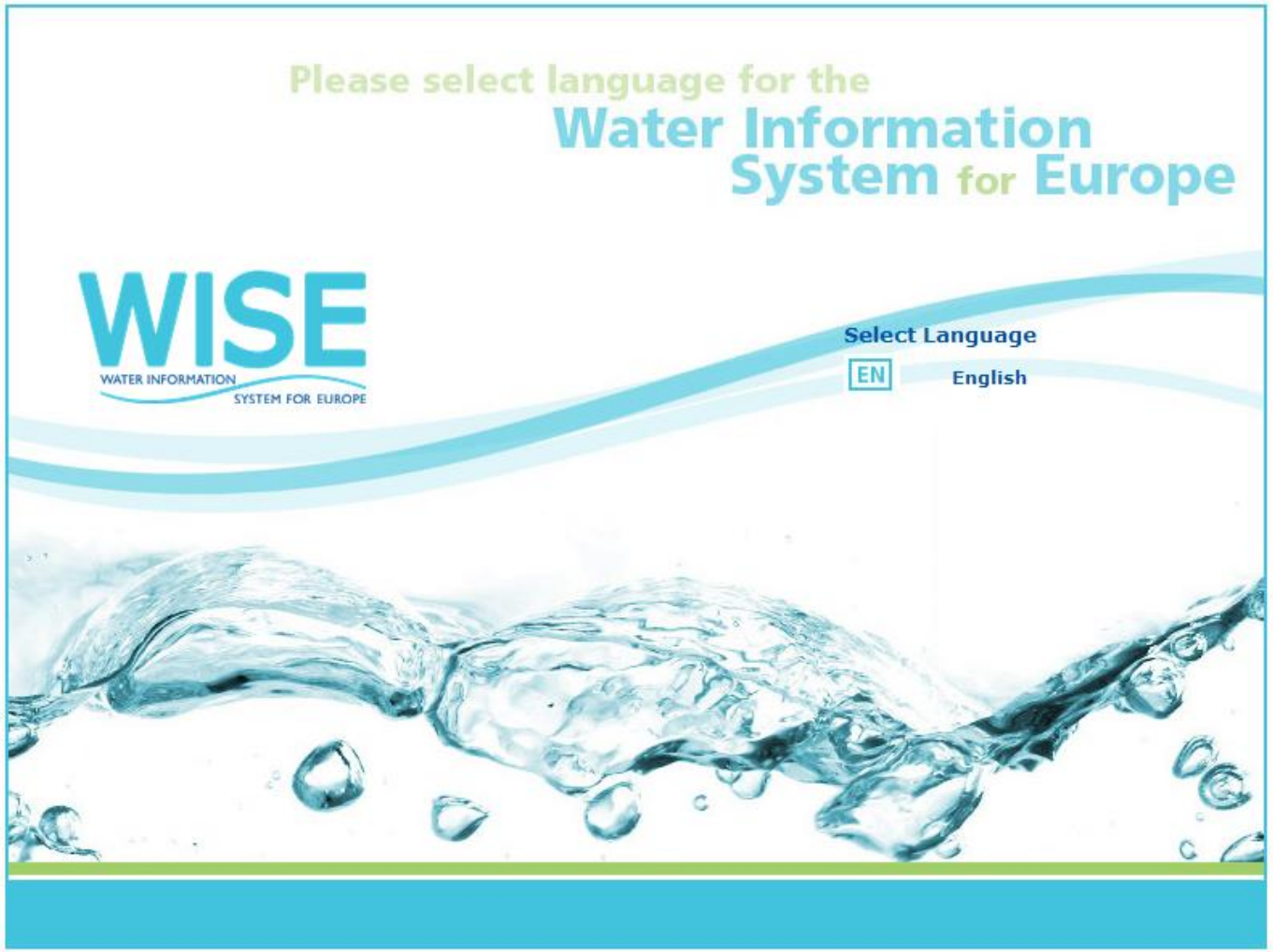
Water Information System for Europe



WISE Partners

WISE is a partnership between the European Commission (DG Environment, Joint Research Centre and Eurostat) and the European Environment Agency. The main roles and responsibilities of the partners are:

• **DG Environment**, leads the policy and strategic aspect of WISE. It liases with Member States, especially on official reporting requirements of EU water legislation.
For more information:
http://ec.europa.eu/environment/water/index.html

• **The European Environment Agency** is the water data centre and hosts the public WISE webpage and the section on themes and data.
For more information:
http://themes.eea.europa.eu/Specific_media/water

• **The Joint Research Centre** (Institute for Environment and Sustainability) is responsible for data synchronisation and has developed a number of useful tools.
For more information:
http://agrienv.jrc.ec.europa.eu/

• **Eurostat** is collecting water statistics and provides significant input in the development of the GIS part of WISE and in particular ensuring the link to INSPIRE.
For more information:
http://epp.eurostat.ec.europa.eu/

Future steps in water accounting

- River quality accounts (2010)
- Integrated quantity*quality (exergy loss)
- NAMEA Water (Eurostat)
- Virtual water, water footprint

Tabla 46. **Evolución de la huella hidrológica per cápita de la Comunidad de Madrid, (m^3 por habitante y año)**

Años	Agua interna utilizada (AIU) (1)	Importación neta de agua virtual (MNAV) (2)	Huella hidrológica (HH) (3) = (1) + (2)
1984	261	908	1.169
2005	191	1.476	1.667
Ratio: 2005/1984	**0,73**	**1,62**	**1,42**

Evolution of the hydrological footprint per capita of the Community of Madrid (m3 per inhabitant per year)

Source: José Manuel Naredo Pérez (Coordinador) et. al., *El agua virtual y la huella hidrológica en la Comunidad de Madrid"* © Canal de Isabel II - 2009