

IMPROVING PREDICTIONS AND MANAGEMENT OF HYDROLOGICAL EXTREMES



KEYWORDS: Climate services, Water, Sectoral climate impacts, Weather forecasting, Climate projections, Risk management, Adaptation strategy



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WHAT IS IMPREX?

IMPRES will improve society's ability to anticipate and respond to future hydrological extreme events in Europe. It will enhance forecast quality of extreme hydro-meteorological conditions and their possible impacts. The knowledge developed by the project partners will support risk management and adaptation planning at European and national levels.

IMPRES focuses on water-related natural hazards events, such as floods and droughts and their consequences.



Photo courtesy of Barcelona Supercomputing Center

PROJECT OUTCOMES

- Improved short- to medium-term hydro-meteorological predictions.
- User-relevant climate projections.
- Policy recommendations on risk management and adaptation strategies for future climate conditions.

THE CHALLENGE

Both floods and droughts cause huge social and economic damage across Europe. For example, the 2013 large-scale floods in Germany caused overall losses of €11.7bn, while the 2014 UK winter floods cost the industry €1.8bn.

Climate change is likely to increase both the frequency and magnitude of these events in the coming years.

Future hydrological extremes may be very different from today's reality and difficult to predict. Changed water-related extremes will have important implications on the water sector and the design of water management practices. **There is a need for "actionable research" to guide decisions!**

WHAT ARE THE PROJECT OBJECTIVES?

- Develop methods and tools to improve the forecasting of meteorological and hydrological extremes and their impacts.
- Develop novel risk assessment concepts for hydrological extremes that respond to limitations of current methods and assessment practices.
- Demonstrate in a set of case studies the value of the information on hydrological impacts to relevant stakeholders at regional and European scale.
- Develop a prototype periodic outlook of multi-sectoral and trans-regional risks for hydrological hazards.

HOW WE DO IT?

- IMPRES is built on the idea that we can learn from today to anticipate tomorrow. **The project invests in improving current state-of-the-art forecasting systems and puts current experience with extremes in a future context.**
- IMPRES focuses on customising **climate information to stakeholders' needs**. The project is designed around a set of case studies addressing six strategic sectoral applications, which provide guidance on current practices and the information needed in the field.
- The co-creative setting guides the development of new forecasting tools, impact and risk assessment concepts, and management strategies.



SECTORAL APPLICATIONS AND CASE STUDY EXAMPLES

FLOOD INUNDATION PREDICTION AND RISK ASSESSMENTS

- Rhine River Basin (The Netherlands and Germany) ①
- Bisagno River Basin (Italy) ②
- Somerset Region (UK) ③

HYDROPOWER

- South Eastern French Catchments ④
- Lake Como Basin (Italy) ⑤
- Jucar River Basin (Spain) ⑥
- Upper part of River Umeälven (Sweden) ⑦

TRANSPORT

- Central European River Basins of the Rhine, Elbe and Danube ⑧ ⑨ ⑩

URBAN WATER

- Segura and Llobregat River Basins (Spain) ⑪ ⑫

AGRICULTURE AND DROUGHT

- Rhine-Meuse Estuary (The Netherlands) ⑬
- Segura and Jucar River Basins (Spain) ⑭ ⑮
- Como River Basin (Italy) ⑯
- Messara River Basin (Greece) ⑰

WATER ECONOMY

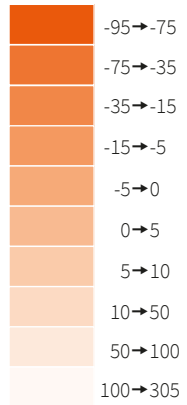
- Global Supply Network ↪


TARGET AUDIENCE



IMPRES CASE STUDIES

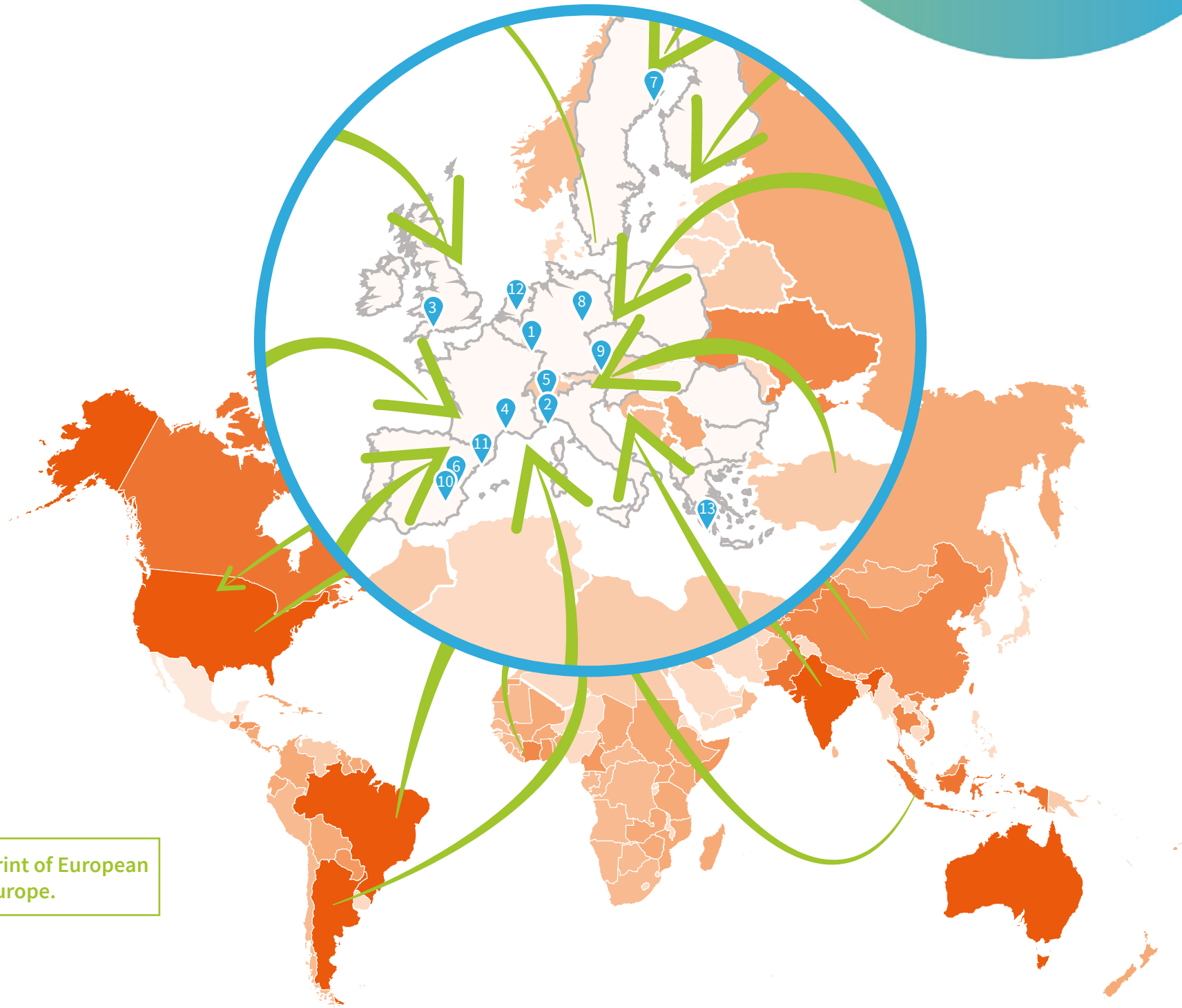
Net virtual water import [Gm³/yr]



 Case studies at European scale

 Global Supply Network case study: international dependencies

40% of the water footprint of European consumers is outside Europe.



IMPRES will improve the quality of forecasts. Working in close collaboration with relevant stakeholders, we will facilitate the uptake of weather and climate information into policy and management.

EXPECTED IMPACTS

- More efficient management of strategic water resources in Europe due to better understanding and use of forecasts of extreme hydrological events.
- Improved management planning across the European Union in support of the *Blueprint to Safeguard Europe's Water Resources*, the *European Climate Change Adaptation Strategy* and relevant priority areas of the *European Innovation Partnership (EIP) on Water*.
- Informative climate services in relation to the water cycle, supporting adaptation, mitigation and disaster risk management.

“ Experience in managing weather extremes is the best learning school to anticipate consequences of future climate ”

Photo: Shutterstock



BENEFICIARIES

The IMPRES consortium brings together expertise and capabilities from both the public and private sectors, as well as from universities and research institutions across Europe.

23 partners well positioned to pave the way towards better anticipation of hydrological extreme events.

PARTNERS

	Koninklijk Nederlands Meteorologisch Instituut – NL (project coordinator)		HKV Lijn in Water BV – NL
	Adelphi Research GmbH – GE		Institut national de recherche en sciences et technologies pour l'environnement et l'agriculture – FR
	Arctik – Environmental communication – BE		Met Office – UK
	Barcelona Supercomputing Center - Centro Nacional de Supercomputación – ES		Politecnico di Milano – IT
	Bundesanstalt für Gewässerkunde – GE		Potsdam-Institut für Klimafolgenforschung – GE
	Centro Internazionale in Monitoraggio Ambientale - Fondazione CIMA – IT		Stichting Deltares – NL
	Cetaqua, Centro Tecnológico del Agua, Fundación Privada – ES		Stichting Vu-VUmc – NL
	European Centre for Medium-Range Weather Forecasts – UK		Stichting Water Footprint Network – NL
	FutureWater SL – ES		Sveriges Meteorologiska och Hydrologiska Institutet – SE
	Helmholtz-Zentrum Geesthacht – Zentrum für Material- und Küstenforschung GmbH – GE		The Research Committee of the Technical University of Crete – GR
	Deutsches GeoForschungsZentrum – GE		The University Reading – UK
			Universitat Politècnica de València – ES



imprex

Learn from today to anticipate tomorrow

AT A GLANCE



INSTRUMENT

European Union Horizon 2020 Framework Programme

BUDGET

€ 7 996 848

DURATION

4 years (2015 – 2019)

CONSORTIUM

23 partners from 9 countries

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