

# BfG-KLIWAS: An integrated climate service for the transboundary river basin and coastal management of Germany

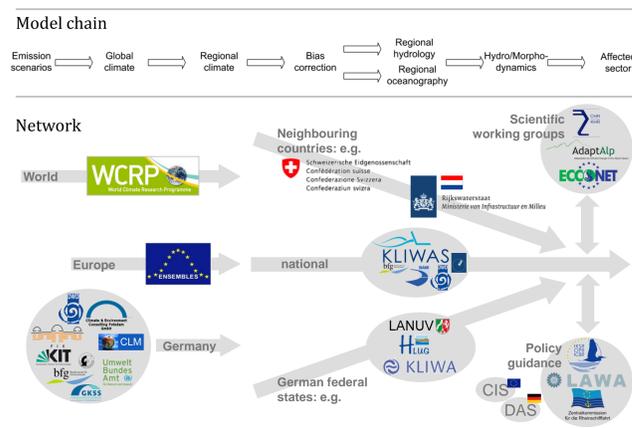
**Departmental Research Programme**

- National Meteorological Service of Germany (DWD)
- Maritime and Hydrographic Agency, Germany (BSH)
- Federal Institute of Hydrology, Germany (BfG)
- Federal Waterways Engineering and Research Institute, Germany (BAW)

## Background

All infrastructure planning in water resources management, waterways engineering, flood protection, and coastal defence requires knowledge of meteorological, hydrological and oceanographic parameters on a daily to climate scale. Since the planning horizon of such infrastructure projects spans from decades to a century and beyond, information about historical and future climate changes is of utmost relevance.

These information are offered by an integrated service run by the German Federal Institute of Hydrology (BfG) and the German Meteorological Service (DWD) for the basins of the rivers Rhine, Danube and Elbe and the coastal areas of the North Sea.

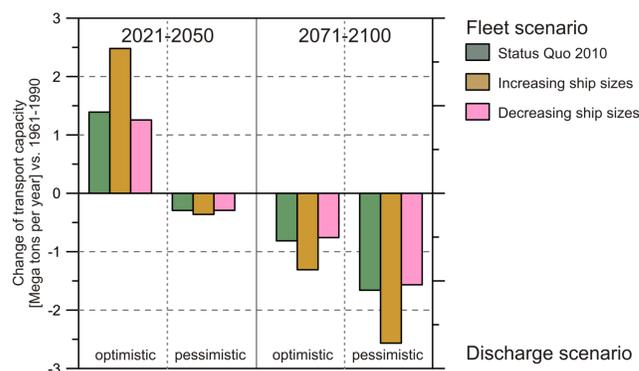


**Figure 1:** Schematic model chain of BfG-KLIWAS (Top) and network partners involved (Bottom).

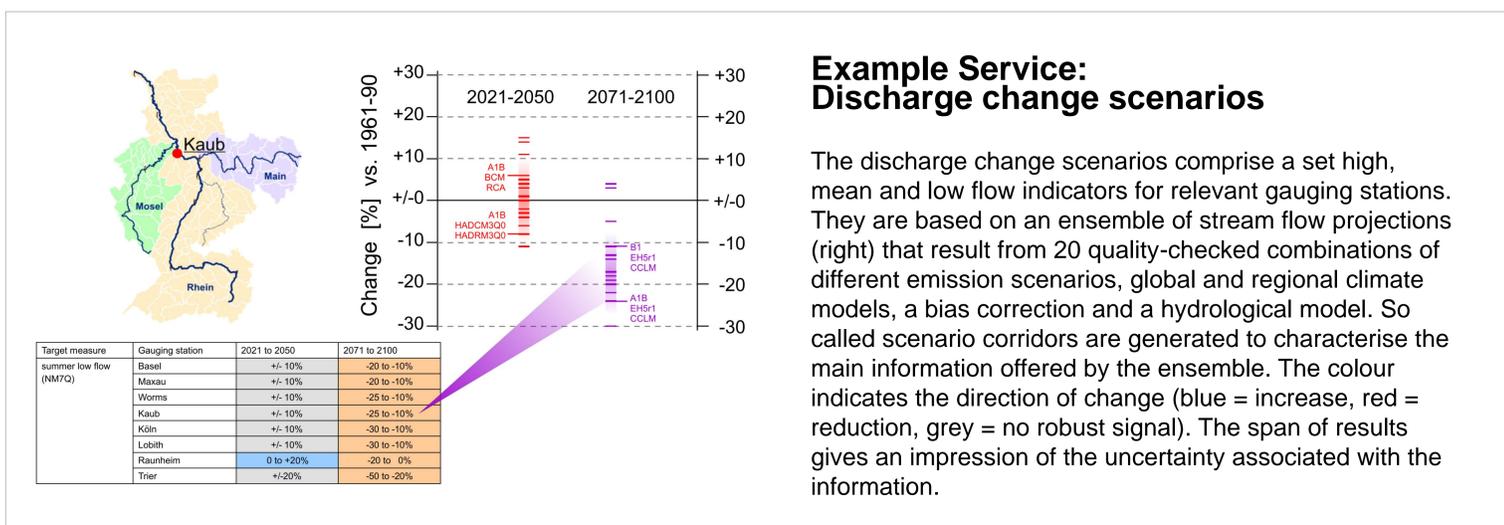
## Steps towards BfG-KLIWAS

In preparation of the service the following steps were taken

- Identifying the user needs and expectations:** Here, the need for a transparent concept of evaluation and guidance in coping with the uncertainty of the climate information were core elements.
- Identifying the institutional framework:** BfG-KLIWAS is based on data, methods and models, generated by a network of institutions (Figure 1)
- Evaluating data and models:** A set of hydrometeorological and hydrological target statistics, reference periods and reference regions and gauges were defined for the purpose of validation and change detection.
- Tailoring data products:** BfG-KLIWAS does not end with information on water quantity and hydrodynamics. It also tailors specific information for different user groups (Figure 2).



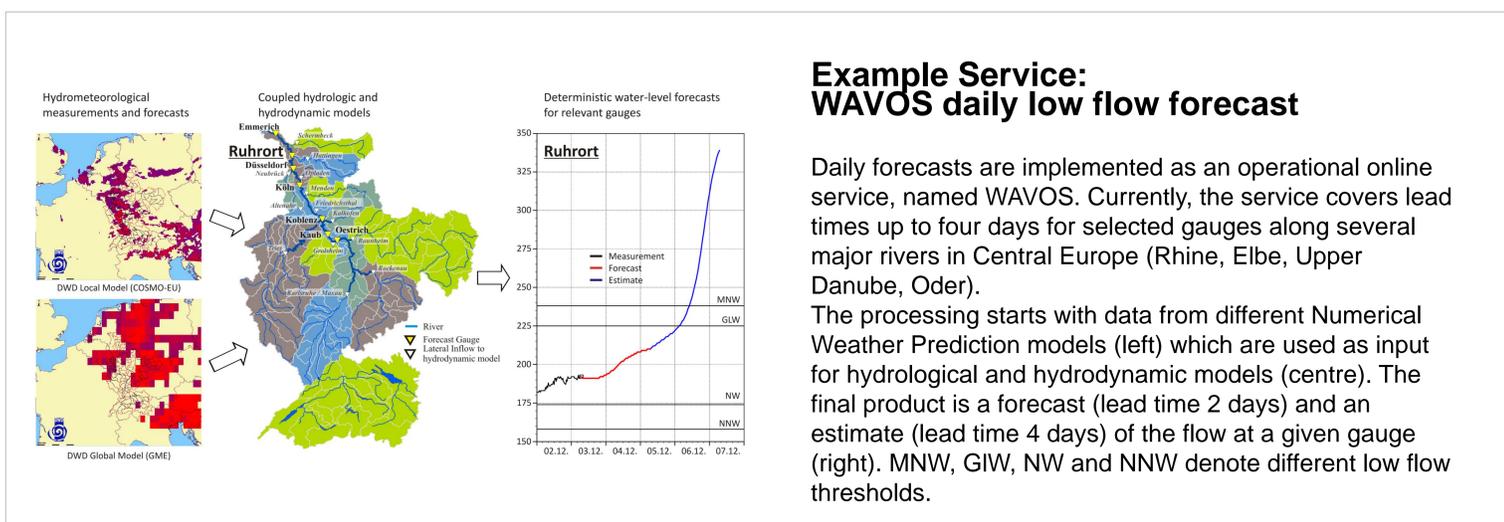
**Figure 2:** This graph on the effect of projected climate change on transport capacity of cargo on the Rhine river is an example of user-specific information generated by BfG-KLIWAS.



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