

Departmental Research

Federal Institute of Hydrology (BfG)
German Meteorological Service (DWD)
Federal Maritime and Hydrographic
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KLIWAS-news | December 2010

Dear readers,

KLIWAS-news reports on achievements of our research efforts and keeps you informed about current events in our research association.

First research results on the River Rhine

On 13 and 14 October 2010, the International Commission for the Hydrology of the Rhine Basin (CHR) presented results of its research project *RheinBlick¹ 2050* in the Bonner Uniclub ([RheinBlick2050](http://www.kliwas.de/RheinBlick2050)). This project had the purpose to study how regional climate change influences the flow behaviour of the River Rhine and its tributaries. To this end the participating countries bundled their national research projects and coordinated the methods. The KLIWAS core project (*Projekt 4.01*) that has been running since 2007 was a substantial contribution to the research project *RheinBlick2050*.

In the near future (2021 to 2050) no distinct tendencies of changes were identified in mean and low-flow discharges at the gauging stations on the main river during the hydrological summer (May to October) against the reference period (1961-1990).

¹ <http://www.chr-khr.org/de/rheinblick2050-schlussveranstaltung>

For the hydrological winter months (November to April) increasing flows during low-flow situations are expected. If greenhouse-gas emissions will continue to increase until the end of the 21st century, present knowledge suggests that changes in the flow regime will become more pronounced. For the average of flows, simulations predict under these conditions increases between 5 and 30 % in winter and decreases between 5 and 25 % in summer (again referring to low- and mean flow situations) for the more distant future (2071 to 2100).

The full report on the project *RheinBlick 2050* that considers many aspects of the topics "multi-model approach", "uncertainties", and "spans/ranges of change" may be downloaded from the [CHR](#) Web sites².

General information about the *KLIWAS-Projekt 4.01* can be found on the KLIWAS³ Web sites.

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The KLIWAS multi-model approach and the model chain

The KLIWAS multi-model approach takes a multitude of assumptions and modeling procedures into account, beginning with the inclusion of several diverging scenarios of emission trends. These assumptions originate from the International Panel on Climate Change (IPCC), the body where the leading climate researchers of the world congregate. These scenarios are inputs to a variety of climate models. Each of these models is based on certain assumptions and yields consequently different results. Today's climate models, however, indicate changes of the global climate (resolution about 200 x 200 km). This means that another computation step is needed: the so-called regionalisation. Here too, a multitude of methods are available that find consideration in the model computations of KLIWAS. These results serve as inputs to hydrologic modelling for computing the flows in rivers (mean monthly flow; floodflow and low-flow). More computation steps follow, regarding for instance water levels, sediment transport, water temperature as well as chemical, biological, and ecological aspects.

→ All results are to be understood as **possible** future conditions. More information on KLIWAS [methods](#) can be found on our Web sites⁴.

² http://www.chr-khr.org/files/CHR_I-23.pdf

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http://www.kliwas.de/cln_005/nn_538264/KLIWAS/DE/03__Vorhaben/04__vh4/01__401/401__node.html?__nnn=true

KLIWAS Status conference 2011

Please make a note of the date and venue of the next KLIWAS [Status conference](#)⁵: We will present the most recent results on the rivers Rhine, Elbe, and Danube and on the coastal waters on 25 and 26 October 2011 in the Berlin headquarters of the Federal Ministry of Transport, Building and Urban Development (*BMVBS*) who is also the convener of this conference.

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Other events

11 and 12 January 2011,

Internationales Wasserbau-Symposium Aachen⁶ ([IWASA](#) 2011)

The German Federal Institute of Hydrology (*BfG*) and the German Federal Waterways Engineering and Research Institute (*BAW*) will inform there about fundamental aspects of the sediment management in the River Rhine. The symposium will be held in the *Technologiezentrum AGIT* at the *Europaplatz* in Aachen.

With best regards,

on behalf of the KLIWAS Programme Coordination

Dr. Sebastian Kofalk

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⁴ <http://www.kliwas.de>

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http://www.kliwas.de/cln_016/nn_522962/KLIWAS/DE/02__Aktuelles/07__statuskonf__2011/statuskonf__2011__node.html?__nnn=true

⁶ <http://www.iww.rwth-aachen.de/de/menue/iwasa/iwasa2011.html>