FZJ Water Resources Bulletin for Germany, Spring 2023

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Release date: 2023-03-22

The **Forschungszentrum Jülich (FZJ) water resources bulletin (WRB)** gives a **regular seasonal update** on the **current state and the upcoming potential evolution of terrestrial near-surface water resources**. The WRB is an open access research data product for an expert environmental sciences and stakeholder audience as well as the interested public.

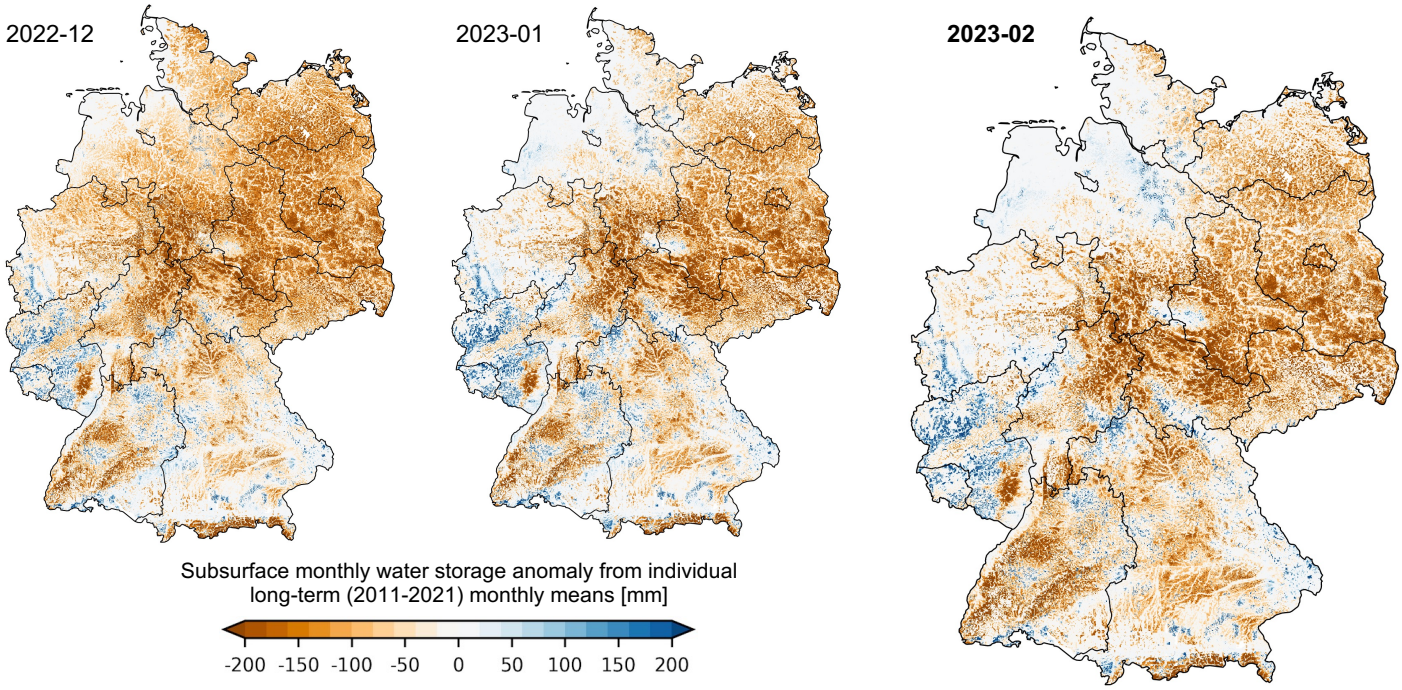

Fig. 1: **Monthly anomalies of total subsurface water storage for the past season** with respect to long-term monthly means from 2011-2021 in **mm water column** for the upper 60m of the subsurface. Data: Hindcasts from ParFlow/CLM simulations with ECMWF HRES atmospheric forcing.

State and possible developments: The exceptional autmn 2022 drought persisted into spring 2023. Despite subsurface water storage recharge during winter 2022/23, there is a potential for persistent negative anomalies of subsurface storage well into the spring and summer 2023, based on a 50 ensemble member forecast, as initialized on 2023-03-01.

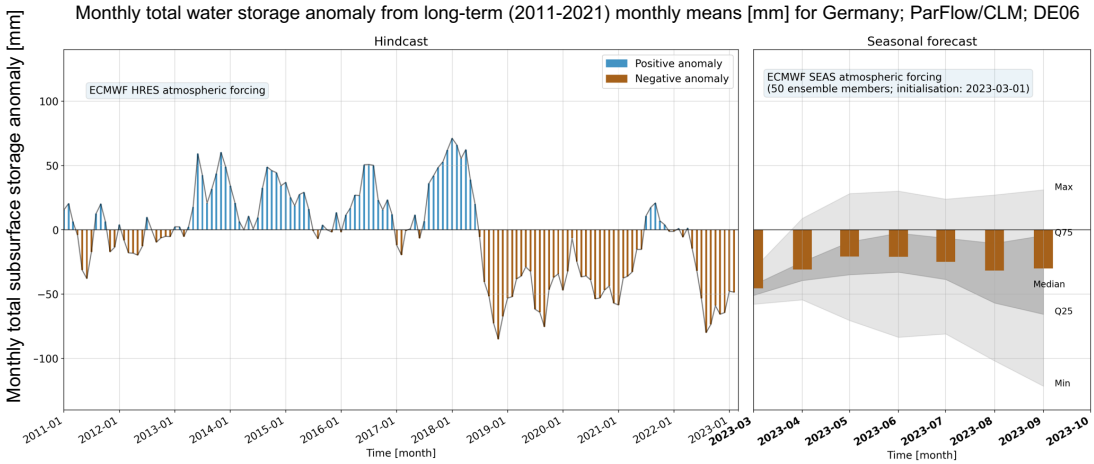

Fig. 2: **Past evolution of monthly total subsurface storage anomalies as spatial means for Germany** from 2011-Jan to 2023-Feb as simulated at 611m resolution with the ParFlow/CLM (www.parflow.org) integrated hydrological model based on daily forecasts driven by ECMWF HRES deterministic atmospheric forcing ("hindcast"), and 7-months forecast from 2023-Mar to 2023-Sep based on ECMWF SEAS 50-member ensemble ("seasonal forecast").

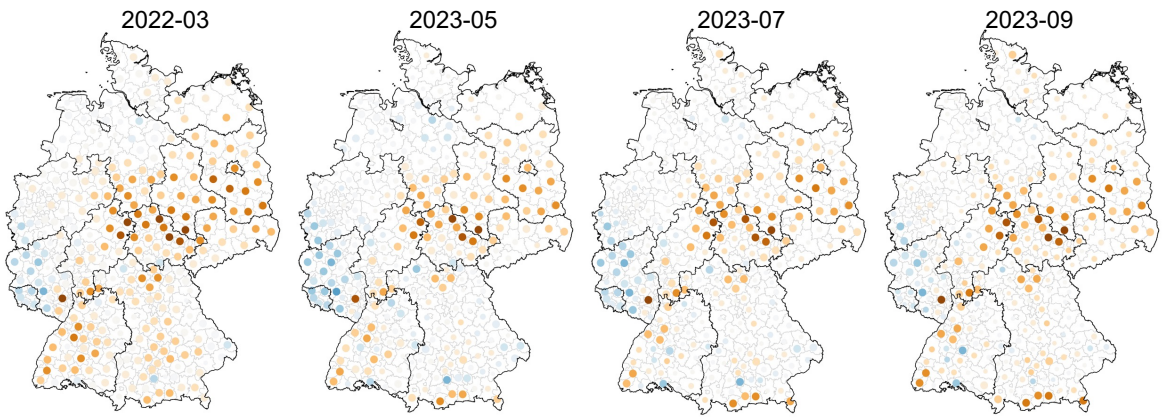

Fig. 3: **Seasonal forecasts (2023-Mar to 2023-Sep)**; mean of subsurface water storage anomalies from 50-member ParFlow/CLM ensemble (initialized on 2023-03-01), ECMWF SEAS seasonal ensemble prediction driven. Dots: NUTS-3 level administrative region; circle size: proportional to how many members agree in their sign.

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Updates

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Jülich, 2023-03-22