

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.

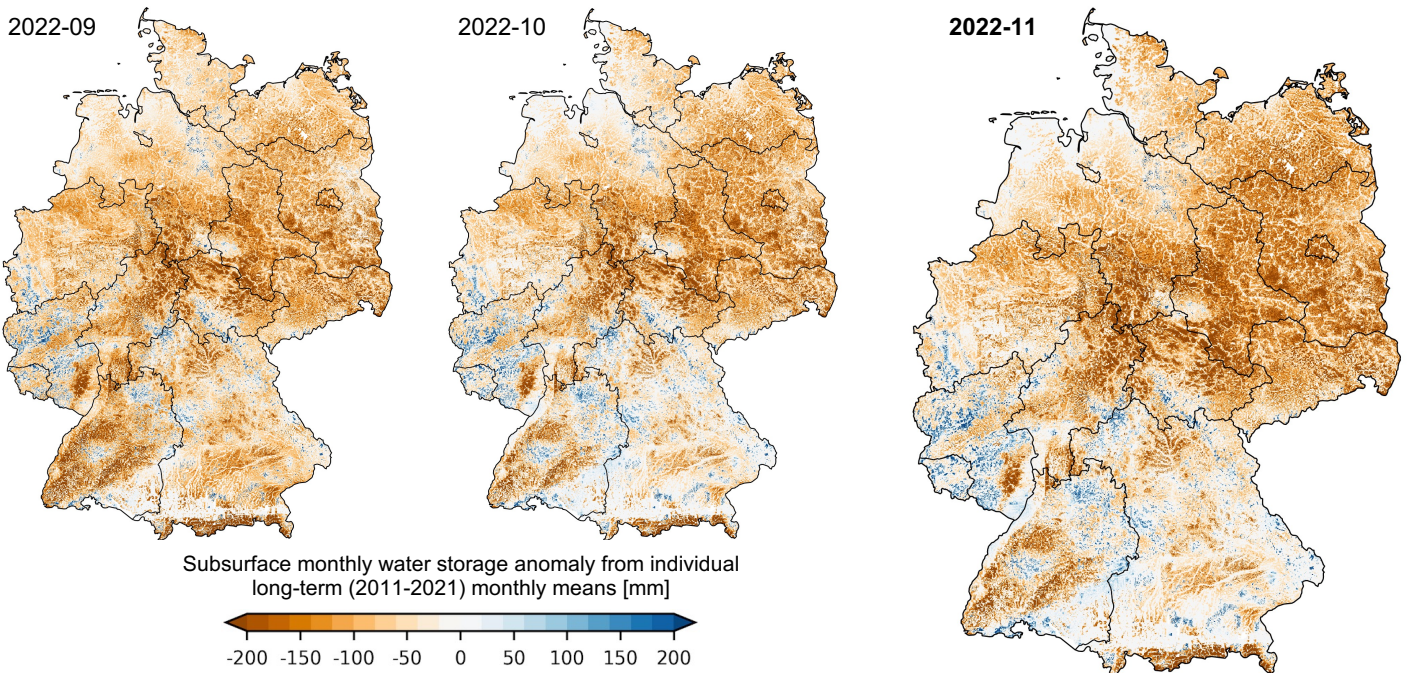


Fig. 1: Monthly anomalies of total subsurface water storage for the past season with respect to long-term monthly means from 2011-2021 in mm water column for the upper 60m of the subsurface. Data: Hindcasts from ParFlow/CLM simulations with ECMWF HRES atmospheric forcing.

State and possible developments: The exceptional summer 2022 drought persisted into autumn. Despite subsurface water storage recharge during winter 2022/23, there is a potential for persistent negative anomalies of subsurface storage well into the Spring 2023 and the vegetation period, based on a 50 ensemble member forecast, as initialized on 2022-12-01.

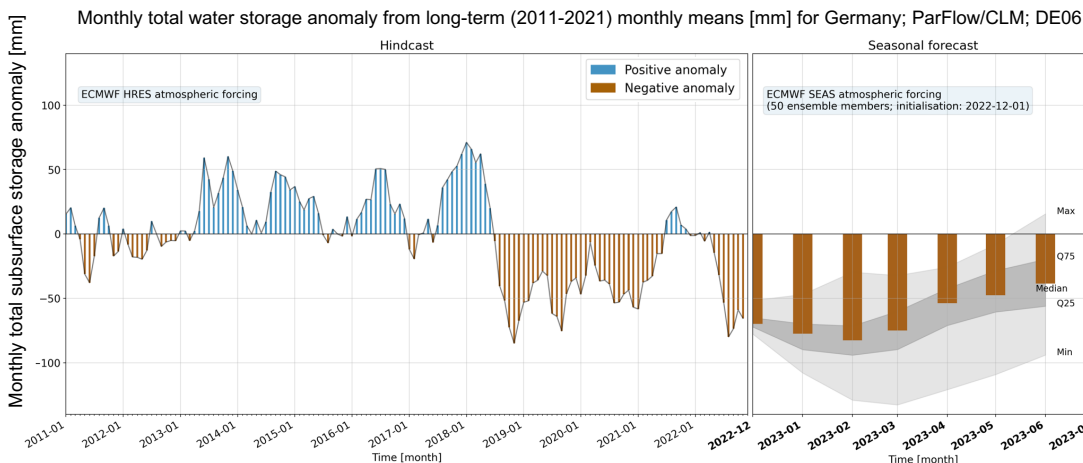
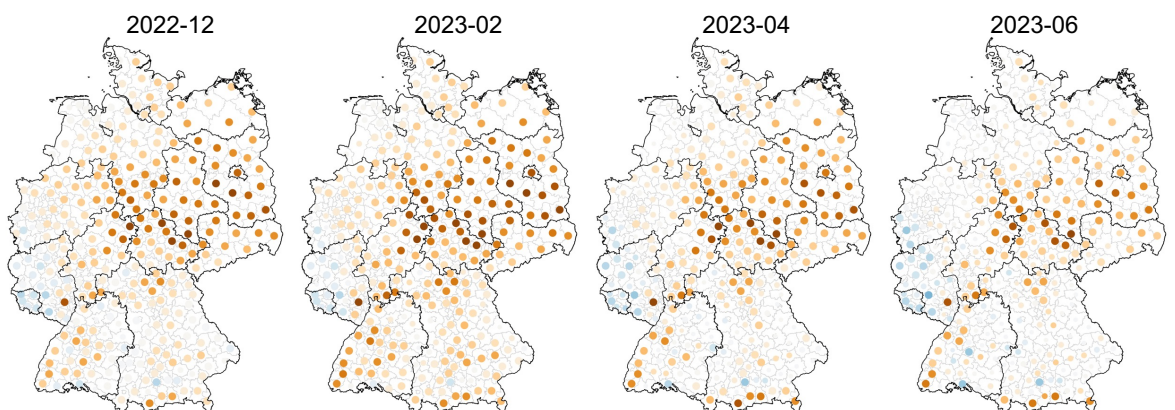


Fig. 2: Past evolution of monthly total subsurface storage anomalies as spatial means for Germany from 2011-Jan to 2021-Nov as simulated at 611m resolution with the ParFlow/CLM (www.parflow.org) integrated hydrological model based on daily forecasts driven by ECMWF HRES deterministic atmospheric forcing ("hindcast"), and 7-months forecast from 2022-Dec to 2023-Jun based on ECMWF SEAS 50-member ensemble ("seasonal forecast").

Fig. 3: Seasonal forecasts (2022-Dec to 2023-Jun); mean of subsurface water storage anomalies from 50-member ParFlow/CLM ensemble (initialized on 2022-10-01), 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

The FZJ Water Resources Bulletin information products are prototypical scientific products, that are part of a knowledge transfer towards practical real-world applicability. The forecast products are generated in a quasi-operational mode, i.e., they are not part of an official forecasting service. Nevertheless, the FZJ Water Resources Bulletin project team attempts to provide a forecast at the beginning of each meteorological season, within reason.

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