

## Second report on the status of global water resources published

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Clouds over Australia are shown. Credit: NASA

The World Meteorological Organization (WMO) recently presented its [second report](#) on the status of global water resources. According to this report, large parts of the world experienced drier conditions in 2022 than those recorded on average for the equivalent periods over the last 30 years.

"Nearly 40% of the territories examined were suffering from drier than normal conditions," said Professor Robert Reinecke of Johannes

Gutenberg University Mainz (JGU).

"This means that the flow rate of many rivers worldwide was significantly below what would normally be expected. Added to this, the levels of moisture in the soil were frequently indicative of the effects of the heat waves we have experienced while the need for greater use of water has resulted in the groundwater table becoming lower than in the reference period."

Reinecke, who joined the JGU Institute of Geography in May 2023, has made a major contribution to the new WMO report—in collaboration with Dr. Hannes Müller Schmied of Goethe University Frankfurt and the Senckenberg Leibniz Biodiversity and Climate Research Center Frankfurt (SBIK-F) as well as the Global Runoff Database Center (GRDC) in Koblenz.

Together they supplied [simulation data](#) based on hydrological modeling, participated in the development of the corresponding methodology, and provided scientific validation of the report's key statements. With the WMO acting as coordinating body, the report results from the expertise provided by 11 international modeling groups.

## **Scientifically validated findings on the global water situation**

The first State of Global Water Resources Report for 2021 was presented in late November 2022 at the WMO headquarters in Geneva. The report is to appear annually and provide an overview of the status of the Earth's [water resources](#).

The effects of climatic fluctuations and changes can often also be seen by what happens to our water: Heat waves coupled with droughts can

make wildfires more likely and these can then spread more rapidly due to the lack of [soil moisture](#), to give only one example.

"The WMO report is thus also designed to provide politicians and the industry with knowledge so as to identify regions that are at risk of experiencing water emergencies or are already in crisis," added Reinecke.

Among the data shown in the 2022 report is information on the discharge rate of rivers, the levels of groundwater, soil moisture, and evaporation. However, generation of the data basis itself is problematic in that there are currently insufficient global statistics available.

"Thus, we need to undertake simulation modeling," explained Reinecke, a specialist in modeling techniques. There is a particular lack of data on the situation regarding groundwater. Even Germany cannot provide complete figures as to the related circumstances. However, there is no doubt that the dry conditions in 2022 had considerable impact in Germany, too.

Just as in the case of the River Po in Italy, the water levels of the Rhine fell dramatically over longer periods, with the associated consequences for river traffic. France suffered from insufficient precipitation, resulting in difficulties when it came to providing the cooling required by nuclear power plants. South America experienced severe drought conditions while, despite increasing precipitation, groundwater levels in the important Murray-Darling Basin in Australia continued to drop below normal.

Provided by Universitaet Mainz

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