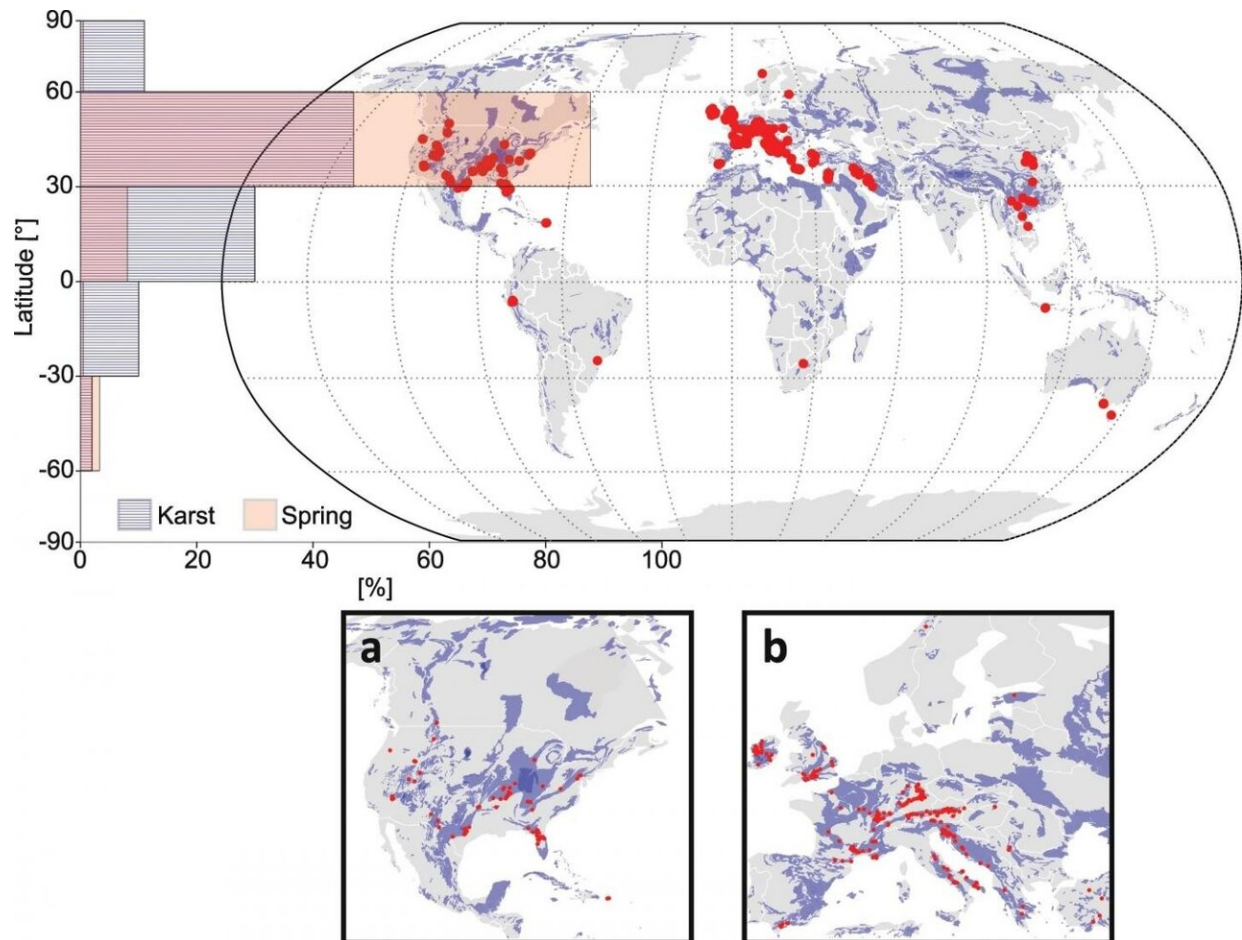


Global database for Karst spring discharges

February 21 2020



Global spatial distribution of karst regions (blue) and springs (red). Credit: Tunde Olarinoye

When carbonate rocks weather, karst landscapes are formed. The groundwater reserves in these layers of earth currently supply 10 to 20

percent of the world population with drinking water. So far, however, researchers have not been able to precisely determine the amount of water present in karst regions. The reason for this is that the computational models cannot adequately capture the special features of hydrological processes in karst regions without observational data. As a result, reliable information for sustainable water management is often lacking. To address this problem, a team led by Tunde Olarinoye, Vera Marx and Assistant Professor Dr. Andreas Hartmann from the University of Freiburg has developed the "World Karst Spring Hydrographs Database" (WoKaS). The group presented the database in the journal *Scientific Data*.

Previous research on karst hydrology has concentrated on the local level and the respective catchment areas. Very few studies have taken into account how climate and land use changes affect karst water resources on a large scale. Scientists have not been able to draw on sufficient [observational data](#) for this. The new database contains more than 400 karst spring discharge data, which represent the highest number of observations of karst springs worldwide. For the study, the Freiburg researchers and more than 50 co-authors reviewed articles, reports and national hydrological databases and compiled the observations.

"Thanks to the database, researchers, hydrologists and people working in water management now have free access to a high-quality data set," explains Olarinoye. A large part of the data sets, available for download, is frequently updated. This makes the information suitable for various applications such as trend analyses, impact studies and model evaluations.

For his [doctoral thesis](#), Olarinoye is analyzing large groundwater data sets from karst regions. The project is part of Hartmann's research project "Global Assessment of Water Stress in Karst Regions in a Changing World" (GloW), which is funded by the Emmy Noether

Programme of the German Research Foundation. The Karst Research Association and the Karst Commission of the International Association of Hydrogeologists supported the researchers in setting up the global database.

More information: Tunde Olarinoye et al, Global karst springs hydrograph dataset for research and management of the world's fastest-flowing groundwater, *Scientific Data* (2020). [DOI: 10.1038/s41597-019-0346-5](https://doi.org/10.1038/s41597-019-0346-5)

Provided by University of Freiburg

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