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Remote web-based 3D visualization of hydrological forecasting datasets.

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As the possibilities for larger and more detailed simulations of geoscientific data expand, the need for smart solutions in data visualization grow as well. Large volumes of data should be quickly accessible from anywhere in the world without the need for transferring the simulation results. We aim to provide tools for both processing and the handling of these large datasets.

As an example, the eWaterCycle project (www.ewatercycle.org) aims to provide a running 14-day ensemble forecast to predict water related stress around the globe. The large volumes of simulation results with uncertainty data that are generated through ensemble hydrological predictions provide a challenge for existing visualization solutions. One possible solution for this challenge lies in the use of web-enabled technology for visualization and analysis of these datasets.

Web-based visualization provides an additional benefit in that it eliminates the need for any software installation and configuration and allows for the easy communication of research results between collaborating research parties. Providing interactive tools for the exploration of these datasets will not only help in the analysis of the data by researchers, it can also aid in the dissemination of the research results to the general public.

In Vienna, we will present a working open source solution for remote visualization of large volumes of global geospatial data based on the proven open-source 3D web visualization software package Cesium (cesiumjs.org), the ncWMS software package provided by the Reading e-Science Centre and the WebGL and NetCDF standards.