



## **Streamflow sensitivity to water storage changes across Europe**

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Terrestrial water storage is the primary source of river flow. We introduce storage sensitivity of streamflow, which for a given flow rate indicates the relative change in streamflow per change in catchment water storage. Storage sensitivity of streamflow can be directly derived from streamflow observations. Analysis of 725 catchments in Europe reveals that storage sensitivity of streamflow is high in e.g. parts of Spain, England, Germany and Denmark, whereas flow regimes in parts of the Alps are more resilient (that is, less sensitive) to storage changes. A comparison of storage sensitivity of streamflow with observations suggests that storage sensitivity of streamflow is a significant control on the regional differences in variability of low, median, and high flow conditions. Streamflow sensitivity provides new guidance for a changing hydrosphere where groundwater abstraction and climatic changes are altering water storage and flow regimes.