A review of the status, research opportunities and future of large-scale river flow archives

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Abstract Large-scale river flow archives hold vital data to identify and understand the changing water cycle, to underpin modelling of future regional and global hydrology, and to inform water resource assessment and decision making. Notable examples of such datasets include that held by the WMO Global Runoff Data Centre (GRDC) and the UNESCO-FRIEND European Water Archive (EWA). For large-scale river flow archives to be useful research resources, they must be fit-for-purpose. However, such datasets are under threat by shrinking gauging network coverage and more restricted access to national-scale information. This article aims: (a) to highlight the value of these databases for study of important blue-skies and applied issues; (b) to present a state-of-the-art review of large-scale river flow datasets; and (c) to propose ways to consolidate historical, and secure future, data. We seek to stimulate debate on this topic and action to move forward.

Keywords discharge; runoff; streamflow; database; time-series; availability; regional hydrology; worldwide