



## **The UK National River Flow Archive – systems and procedures for managing a national hydrometric data archive**

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Records of river flow are vital for developing our understanding of the hydrological cycle. Discharge records from discrete points on a river system allow hydrologists to quantify the integrated output of all hydrological processes acting upon a catchment, and thereby underpin effective water management across areas such as flood risk estimation, water resources management, hydro-ecological assessment and hydropower generation. The beginning of the 21st century has seen a heightened scientific demand for hydrometric information to help improve our understanding of variability in the global water cycle. As in other fields of the geosciences, however, despite technological advances and recent developments in data management and data sharing, a lack of widely available observational data remains a major issue. The restricted transfer of hydrometric information continues to constrain research and operational hydrology across the globe.

One of the greatest barriers to effective data exchange is a lack of connectivity between the different aspects of environmental data collection, management and use. National Hydrometric Information Services provide an opportunity to significantly improve these connections and are therefore one of the most appropriate tools for providing enduring access to comprehensive, high quality river flow information. This paper defines a 'Hydrometric Information Lifecycle' and considers the role of National Hydrometric Information Services in relation to all aspects of this cycle, from user requirements and network design through to information dissemination and decision making.

The paper presents experiences from one National Hydrometric Information Service, the United Kingdom National River Flow Archive (NRFA), in managing national-scale river flow data, and details operational practices that are potentially transferable to other monitoring networks around the world. Details of the NRFA's data acquisition and quality control procedures are examined, outlining ways in which the archive aims to advance feedback between scientific end-users and those operational bodies who maintain hydrometric observation networks. The paper outlines current developments in data dissemination and stresses the role of National Hydrometric Information Services in contributing towards international data initiatives under the auspices of the United Nations (e.g. the Global Runoff Data Centre and European Water Archive). Above all the paper emphasizes the need to consider the hydrometric monitoring system as a whole and foster greater integration and feedback between the many stakeholders - principles which are directly relevant to other areas of geoscience where the barriers between initial data producers and researchers must be overcome.