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Evidence of long-term improvements in the quality and completeness of UK river flow data

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Globally, access to hydrometric data of adequate record length, quality and geographical coverage to answer research questions and manage freshwater systems remains a major issue. The UK National River Flow Archive (NRFA) provides stewardship of river flow data from over 1,500 locations across the UK. Data are acquired and displayed as 'provisional' in real-time for 500 stations, however the NRFA also undertake a full update to the quality controlled dataset on an annual basis. Upon submission, river flow records are subject to both automated data screening and manual methods of quality control by a team of trained hydrologists to ensure the data disseminated by the Archive to its broad user community are of the highest quality and fit-for-purpose for a range of applications. In the 1990s, an increasing number of gaps in river flow records and emerging declines in data quality resulted in the introduction of a Service Level Agreement (SLA) in 2002 to protect the UK's hydrometric network and resulting data. Here, we present the results from 15 years application of the SLA system through the use of a set of quantifiable indicators of data quality, completeness and provision. The improvements shown demonstrate the benefits of such a system to the overall utility of the nationally archived river flow data and an example of quality control and performance indicator systems that can be used as a best practice model for other monitoring networks around the world. They also demonstrate one method of helping to ensure hydrological databases provide information of high quality to meet pressing research and water management needs today and into the future.