01 – HYDROMETRIC DATA RESCUE FOR THE EXTENSION OF RIVER FLOW RECORDS IN IRELAND

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Summary

The availability of lengthy river discharge records can be a constraint for hydrological research. Whether it be to understand and characterise river behaviour over time; to evaluate the impact(s) of specific drivers of change such as anthropogenic disturbances; to validate historical discharge reconstructions; or to train hydrological models for the prediction of future river behaviour under a changing climate, these endeavours share a need for as much quality assured discharge data as possible.

The earliest hydrometric monitoring in Ireland began in 1939 by the Office of Public Works (OPW) for the design of the arterial drainage schemes. Data for many of these OPW monitoring stations are available online, but most of the oldest river flow data are stored as paper records in secure hydrometric archives in Headford, Co. Galway, meaning they are not easily accessible to researchers. The OPW has supported PhD research to make available historic water level and river discharge records for select catchments via a process is known as data rescue.

Methods for hydrometric data rescue are dependent on the format of the historical data. In Ireland, the earliest hydrometric data are daily staff gauge water level readings (1939-1950s) that require transcription into digital format and conversion from imperial units to metric. From the 1950s continuous water level data was collected via autographic recorders and exists as weekly charts that require digitisation using specialist equipment and software. Once water level data is rescued, historical rating equations are then used to convert it to river discharge, and the rescued data is merged with any existing station data to produce extended records.

This work presents extended water level and river flow records back to 1939 for eight stations within arterially drained catchments across Ireland (see Figure 1). Methodological insights are provided as a generalised workflow to assist future data rescue projects elsewhere to constrain potential subjectivity and to communicate effectively with future data users. Specific suggestions for future hydrometric data rescue in Ireland are also highlighted,

including standard operating procedures to handle data quality issues and to quality assure rescued data using a coding approach that complements modern hydrometric practices.

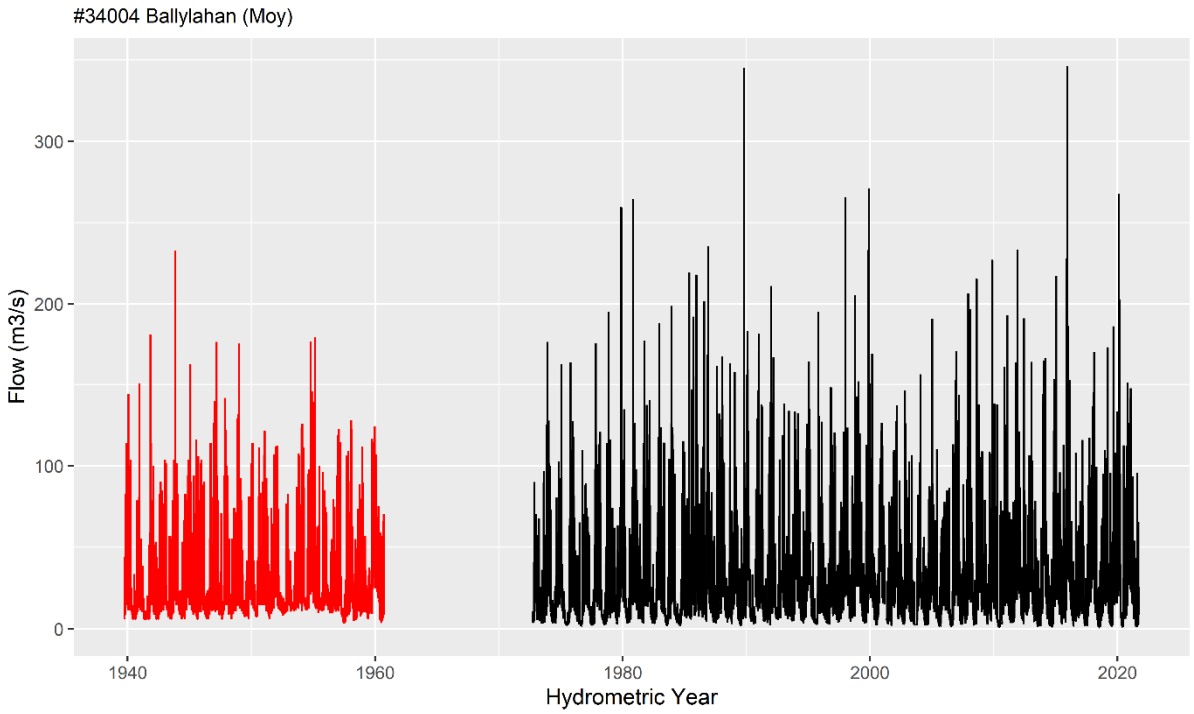

Figure 1: *An example of the extended discharge record for #34004 Ballylahan. The red line shows the historical discharge series from data rescue and the black line shows the existing available record to which the rescued data has been joined.*

This work is due to be submitted for open access journal publication shortly. Once published, the link will be provided here.

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