

EGU2020-5087

<https://doi.org/10.5194/egusphere-egu2020-5087>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



The forgotten drought of 1765-1768: Reconstructing and re-evaluating historical droughts in the British and Irish Isles

Conor Murphy¹, Robert Wilby², Tom Matthews², Csaba Horvath¹, Arlene Crampsie³, Francis Ludlow⁴, Simon Noone¹, Jordan Brannigan¹, Jamie Hannaford⁵, Robert MacLeman⁶, and Eva Jobbova³

¹Maynooth University, Irish Climate Analysis and Research Units (ICARUS), Geography, Maynooth, Ireland (conor.murphy@mu.ie)

²Department of Geography and Environment, Loughborough University, Loughborough, UK

³School of Geography, University College Dublin, Belfield, Dublin 4, Ireland.

⁴Trinity Centre for Environmental Humanities, School of Histories and Humanities, Trinity College, Dublin, Ireland.

⁵Centre for Ecology & Hydrology, Wallingford, UK

⁶Department of Geography and Environmental Studies, Wilfrid Laurier University, Waterloo, Canada.

Historical precipitation records are fundamental for the management of water resources, yet rainfall observations typically span 100 – 150 years at most, with considerable uncertainties surrounding earlier records. Here, we analyse some of the longest available precipitation records globally, for England and Wales, Scotland and Ireland. To assess the credibility of these records and extend them further back in time, we statistically reconstruct (using independent predictors) monthly precipitation series representing these regions for the period 1748-2000. By applying the Standardised Precipitation Index at 12-month accumulations (SPI-12) to the observed and our reconstructed series we re-evaluate historical meteorological droughts. We find strong agreement between observed and reconstructed drought chronologies in post-1870 records, but divergence in earlier series due to biases in early precipitation observations. Hence, the 1800s decade was less drought prone in our reconstructions relative to observations. Overall, the drought of 1834-1836 was the most intense SPI-12 event in our reconstruction for England and Wales. Newspaper accounts and documentary sources confirm the extent of impacts across England in particular. We also identify a major, ‘forgotten’ drought in 1765-1768 that affected the British-Irish Isles. This was the most intense event in our reconstructions for Ireland and Scotland, and ranks first for accumulated deficits across all three regional series. Moreover, the 1765-1768 event was also the most extreme multi-year drought across all regional series when considering 36-month accumulations (SPI-36). Newspaper and other sources confirm the occurrence and major socio-economic impact of this drought, such as major rivers like the Shannon being fordable by foot. Our results provide new insights into historical droughts across the British Irish Isles. Given the importance of historical droughts for stress-testing the resilience of water resources, drought plans and supply systems, the forgotten drought of 1765-1768 offers perhaps the most extreme benchmark scenario in more than 250-years.

