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Single-year radiocarbon measurements on trees from the United Kingdom 1 BCE –330 CE

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The current radiocarbon calibration curve for the northern hemisphere, IntCal20, represents a major update of the previous calibration curve, IntCal13. Over the first half of the first millennium CE, IntCal20 is based on over 550 calibration datapoints, in comparison to IntCal13, which was based on just over 100. In general, the calibration data and, thus, the two curves follow each other closely. There is, however, a more appreciable divergence between c. CE 50 and c. CE 250. The reason that IntCal20 diverges from IntCal13 in this period is that it includes new data from two Japanese trees, which produce older ages than the current data from North American and European trees only during the late first and second centuries CE. The datasets are more compatible at later times, including with the single-year data on European trees.

We present single-year measurements on Irish oak from across this period, including a replicate analysis of rings from the same tree measured independently at ETH Zürich, the University of Groningen, and the National Museum of Japanese History. This study aims to contribute towards providing reliable calibration for archaeologists working on European sites during this time frame, and attempts to investigate whether inter-laboratory variation may be the cause of the observed offsets.

Student Submission

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