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BRITICE-CHRONO: A multi-method project to determine the timing and rates of change of a marine-influenced ice sheet

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BRITICE-CHRONO is a five-year Natural Environment Research Council (NERC) funded consortium of more than 44 researchers comprising glaciologists, marine and terrestrial Quaternary scientists and ice sheet-modellers, with the specific aim to systematically collect and date material to constrain the timing and rates of change of the marine-influenced sectors of the collapsing British Irish Ice Sheet (http://britice-chrono.org/). At the halfway point of the project we have collected over 400 cores during two 40-day research cruises circumnavigating the British Isles and Ireland, and completed over 300 person-days of terrestrial fieldwork, yielding around 15 tonnes of samples for dating by optically stimulated luminescence-, surface exposure-, and radiocarbon methods. By end 2016 we expect to have generated about 850 new dates from landforms associated with the deglaciation of the last British and Irish ice-sheet.

The success of the project will in part depend on the team being able to provide ice-sheet modellers with robust chronological markers against which the ice-sheet models can be tested. The decision-making process in deciding robustness of ages derived from multiple samples and different Quaternary geochronological methods will be discussed. Some geochronological highlights thus far are that deglaciation of the northwest sector of the ice-sheet was in progress at 28ka, well before the global LGM, and the northern tip of mainland Scotland was ice free by 25ka. At the same time the Irish Sea ice stream in the south appears to have been advancing towards its maximum extend. Although deglaciation in the south commences much later, both the main southern and northern ice streams appear to have persisted for at least 10ka with final retreat onto the mainland occurring at approximately the same time (16ka).