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## The radiocarbon reservoir age of coastal Greenland waters

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Radiocarbon (<sup>14</sup>C) dating is the standard method for obtaining the age of marine sediments of Holocene and late Pleistocene age. For accurate calibrations, however, this tool relies on precise knowledge of the local radiocarbon reservoir age of the surface ocean, i.e. the regional difference ( $\Delta R$ ) from the average global marine calibration dataset. This parameter has become impossible to measure from modern material samples because of <sup>14</sup>C contamination from extensive testing of thermo-nuclear bombs in the second half of the twentieth century. The local reservoir age can thus only be calculated from the radiocarbon age of samples collected before AD 1950 or from sediment records containing absolute age markers, derived from e.g. tephrochronology or paleomagnetism.

Knowledge of the marine reservoir age around Greenland is sparse and relies on work by a few studies, represented by measurements clustered in local patches. In this study we add new radiocarbon measurements on samples from historical mollusk collections from Arctic expeditions of the late 19<sup>th</sup> and early 20<sup>th</sup> Century. The 92 new samples are from central east Greenland and the entire western Greenland coast. Although the new data is mostly coastal, it includes a few deeper sites from the Labrador Sea and northeastern North Atlantic Ocean, where deep waters were found to be very young. Together with existing measurements, the new results are used to calculate average  $\Delta R$  values for different regions around Greenland, all in relation to Marine20, the most recent radiocarbon calibration curve. Despite the significant addition of new measurements, very few data exist for southeastern Greenland, while no data at all is available for the Arctic Ocean coast in northern Greenland.