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Improving estimates of surface water radiocarbon reservoir ages in the northeastern Atlantic Ocean.

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Radiocarbon measurements from foraminifera in marine sediment cores are widely used to constrain age models and the timing of paleoceanographic events, as well as past changes in ocean circulation and carbon cycling. However, the use of radiocarbon for both dating and palaeoceanographic applications is limited in sediment cores by a lack of knowledge about the surface ocean radiocarbon reservoir age and how it varies in both space and time. Typically, to convert a planktic radiocarbon age into a calendar age, an assumed constant reservoir age is applied. However, there is mounting evidence to suggest that this assumption of constant reservoir age through time is an oversimplification, particularly for the high latitude oceans during the cold climates of the last glacial and deglacial periods. Here we present new high-resolution radiocarbon records together with tephra tie points and 230-thorium (230Th) constrained sedimentation rates to improve estimates of radiocarbon reservoir age in the Northeast Atlantic Ocean. In addition we will explore the impact of the new reservoir ages for both the age models of the cores studied, as well as the palaeoceanographic implications of these reservoir age changes during intervals of rapid climate change over the past 40,000 years.