# Mid-depth Northeast Atlantic $^{14}C$ during the past 30000 years

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Combined U-series and radiocarbon dating of deep sea corals provides measures of the paleo seawater radiocarbon content. This is driven by air-sea gas exchange close to the surface and further influenced by advection and mixing of differently aged water masses at depth. Framework forming deep water corals generally occupy habitats at the thermocline depth (500 – 1000m) in the north-eastern Atlantic influenced by the recirculation of mostly well ventilated water masses. Thus, such corals offer the possibility to reconstruct the reservoir age history of the north Atlantic. Here, we present a radiocarbon compilation spanning 30000 years in age using corals from the Rockall Bank and the temperate east Atlantic. From 13000 years to present we observe a perfect match with the IntCal13 and IntCal09 assuming a mean $^{14}C$ offset between atmosphere and ocean of -55±5‰. This is similar to the pre-bomb surface reservoir effect. Between 20000 and 28000 years, i.e. during the Last Glacial a similar offset yields a good match to the IntCal09 record, whereas IntCal13 would require higher and more variable reservoir effects, i.e. reduced ventilation. At 14500-13000 years, i.e. Heinrich event one, we observe a puzzling radiocarbon peak in the temperate Atlantic that exceeds the atmospheric calibration record IntCal09 and IntCal13 by up to 80‰. In conclusion, framework forming deep-sea corals may provide an archive for a new marine radiocarbon calibration record. Nevertheless, challenges remain to understand the appearance of high radiocarbon values that are possibly caused by coral alteration, and or U-series open system behaviour.