



Holocene reservoir age corrections for the Norwegian Sea based on cold-water corals

Carin Andersson Dahl (1,2), Henriette Linge (2), Philippa Ascough (3), Jan Fietske (4), and Richard Telford (5)

(1) UNI Bjerknes Centre, Bergen, Norway (carin.andersson@bjerknes.uib.no), (2) Department of Earth Science, University of Bergen, Bergen, Norway (henriette.linge@geo.uib.no), (3) SUERC, Glasgow, UK (p.ascough@suerc.gla.ac.uk), (4) Leibniz-Institut für Meereswissenschaften, Kiel, Germany (jfietske@ifm-geomar.de), (5) Department of Biology, University of Bergen, Bergen, Norway (richard.telford@bio.uib.no)

There is an offset in ^{14}C age in organisms that lived contemporaneously in the atmosphere relative to those that lived in other carbon reservoirs, such as the ocean. Information about this offset, or reservoir age, $R(t)$, is needed to accurately calibrate marine ^{14}C dates. Although the reservoir age of the ocean is not constant, difficulties in reconstruction the temporal changes in $R(t)$ through time often result in the use of a constant reservoir age correction based on the pre-industrial estimate. This makes detailed comparisons between different archives difficult. Holocene cold-water corals are abundant on the Norwegian shelf and can be dated independently using two different radiometric dating method. The reservoir age correction (ΔR) of surface ocean waters in the eastern Norwegian Sea was determined for two Holocene periods (9763-9262 and 3097-365 cal. BP) using paired U/Th and AMS ^{14}C dating of nineteen samples of the cold-water coral *Lophelia pertusa*. Assessment of Holocene ΔR values show that early Holocene ΔR values are higher compared to the late Holocene. In addition, there also appears to be a trend of increasing ΔR values for the past 3000 years BP in the eastern Norwegian Sea. Comparisons to ΔR values from the British Isles point towards that there is a latitudinal dependence in ΔR in the North Atlantic realm.