Title:
Neutrally averaged radiocarbon climatology

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Abstract:
This gridded product consists of a global (80ºS-62ºN) climatological estimate of radiocarbon content (\(\Delta^{14}C\)) at half-degree horizontal resolution, provided both on neutral density and depth surfaces. It is based on the GLODAPv2 data compilation (Key et al. 2016, Olsen et al. 2016) and the neutral density (\(\gamma^n\); Jackett and McDougall 1997) field of the WOCE global hydrographic climatology (Gouretski and Koltermann 2004). The mapping has been performed separately along 140 neutral density surfaces, using the distance look-up system described at http://www.marine.csiro.au/~dunn/cars2009/DLU/, following the procedure described in de Lavergne et al. (2017).

Please note that:
- The product does not correct for bomb-produced \(^{14}C\).
- The search radius of 1200 km used north of 58ºS is reduced to 800 km south of 62ºS, with a linear transition over the intervening latitude range. Use of these radii allows the vast majority of the ocean to be mapped but smoothes out smaller scale structures that may be present in the data.
- The gridded product provided on the depth vertical coordinate has been obtained through vertical interpolation of the climatology constructed on density surfaces, except for depth levels shallower than 100 m, for which we performed additional mapping along depth surfaces.
- Uncertainty in the constructed maps varies with the underlying data density. In addition to the ‘gridded \(\Delta^{14}C\)’ fields, we provide ‘measured \(\Delta^{14}C\)’ fields which contain the data values that entered the mapping on each vertical level. The gridded fields should be considered alongside the underlying measurements.

The dataset contains two netcdf files providing:
(1) gridded \(\Delta^{14}C\), measured \(\Delta^{14}C\) and depth as a function of latitude, longitude and neutral density (\(\gamma^n\)).
(2) gridded \(\Delta^{14}C\), measured \(\Delta^{14}C\) and neutral density (\(\gamma^n\)) as a function of latitude, longitude and depth;

Please cite this dataset as:
or
References:


Acknowledgements:
C. de Lavergne, R.M. Holmes and T.J. McDougall gratefully acknowledge Australian Research Council support through grant FL150100090.