



Global Reservoir-Age Variations since 45 kyr BP in a 3D Ocean Model

J. Franke, A. Paul and M. Schulz

Department of Geosciences, University of Bremen, Germany
(joerg.franke@palmod.uni-bremen.de / Phone: +49-421-218-7186)

Currently, past reservoir age variations can only be reconstructed at a limited number of times and geographic locations. For dating of marine samples this often leads to the assumption of present day global or regional mean reservoir age being constant in time. Here we use the University of Victoria circulation model to quantify marine reservoir ages spatially and temporally differentiated over the last 45,000 years. We force our model with most recent reconstructions of $\Delta^{14}\text{C}$ in the atmosphere and study the sensitivity of the reservoir ages to modern and glacial-type ocean circulation modes.

Modeled reservoir-age time series suggest rapid shifts of several hundred years within centuries caused by changes in atmospheric radiocarbon production rate. Major reservoir-age variations up to 1,000 years occur in high latitudes, especially in the Southern Ocean. Smaller but still significant variations of 200-400 years are simulated in subtropical and tropical areas which has implications for coral-based radiocarbon calibration. We will present results for different time slices of the simulated period as well as an outlook to the web interface, where time-dependent reservoir ages will be made available to the scientific community.