

Hot, salty, bottom-waters in the past?

ANDY RIDGWELL^{12*}

¹ Department of Earth Sciences, University of California, Riverside, Riverside, CA, USA
(*corresponding author: andy@seao2.org)

² Bristol University, School of Geographical Sciences, Bristol, UK

How is the global deep ocean ventilated? 'It's the poles, stupid'. At least, this seems a reasonable proposition: basins and shelves located at the highest latitudes will tend to form the densest waters (at least, seasonally), particularly in a past climate with a significant cryosphere. Yet the question continues to be posed; whether or not the global deep ocean might instead have at times been ventilated from the tropics by very warm, but highly saline waters. What would such a global ocean circulation look like, and how, through different proxies, might we identify or reject such a possibility?

Here I take a deliberately abstracted and idealized view, generating a zoo of potential global ocean circulation states within an Earth system model and analyzing their key tracer characteristics and global patterns, including of dissolved oxygen and carbon isotopes.