

Interactive comment on “Dissolved Pb and Pb isotopes in the North Atlantic from the GEOVIDE transect (GEOTRACES GA-01) and their decadal evolution” by Cheryl M. Zurbrick et al.

Anonymous Referee #2

Received and published: 26 March 2018

This manuscript reports the concentration and isotopic composition data of Pb from the GEOVIDE transect in the North Atlantic and discusses their spatial distribution and decadal change. The quality of the data and discussion is high enough to be published in Biogeosciences. My comments and questions are as follows:

Are the authors using the concentration and isotopic ratio of Pb as conservative tracers in a part of discussion (ex. p. 8, the last paragraph)? Is it valid?

It is interesting that Pb isotope ratios are relatively homogenous and largely decoupled from Pb concentration. I would like to know more details of the mechanism.

In a previous paper (Wu et al., 2010), the authors proposed the pre-industrial
C1

$^{206}\text{Pb}/^{207}\text{Pb}$ is ~ 1.210 (based on sediment values) and homogenous in the Pacific deep water. Do you think the Pb isotope ratio in the Atlantic deep water will approach this value because of decrease in anthropogenic effects?

How much is the isotopic fractionation during scavenging and sedimentation? Is it un-detectable? Is it reasonable to assume that the Pb isotope ratio is equal between dissolved species in seawater and fixed species in sediments?

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2018-29>, 2018.