

Reviewers and Editors,

We have edited our manuscript in response to your feedback. We also made two changes to our manuscript in addition to the changes we made in response to your reviewer comments. We detail these two changes here. We then address your comments in individual responses, uploaded separately.

1. We caught a mistake in a calculation in the ikaite discussion. The relevant sentence now reads:

The ~5 mg ikaite L⁻¹ sea ice Dieckmann et al. (2008) found in the Antarctic could only enrich A_T of the surface 100 m by ~1 $\mu\text{mol kg}^{-1}$ for each meter of ice melted, and Arctic surface 100 m Alk^* is elevated by 59 $\mu\text{mol kg}^{-1}$ relative to the deeper Arctic in our gridded dataset.

This calculation used to read “~5 $\mu\text{mol kg}^{-1}$ for each meter of ice melted...”

2. We now calculate the gridded dataset volume-weighted mean Alk^* by ocean basin in Section 3.2 instead of the mean measured Alk^* . This way we avoid a portion of the measurement distribution bias.

Many thanks,

-Brendan and coauthors