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Biogeosciences Discussions

Interactive comment on "Climate dependent diatom production is preserved in biogenic Si isotope signatures" *by* X. Sun et al.

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This manuscript is intriguing and marks, to my knowledge, the first silicon isotope record from the Baltic Sea region. I have three, hopefully simple, comments which I hope the authors can easily clarify:

1) The authors suggest that air temperature is the main driver of changes in the silicon isotope record, presumably through reductions in seasonal sea-ice cover. If air temperature is the main driver, why do changes in the actual δ30Si core record (Fig. 4b) not co-vary with changes in air temperature (Fig 6b)?

2) The authors state in Section 4.1 that the analytical error on their δ29Si measurements is up to 0.2‰ (2σ). Since the data are then converted to δ30Si (δ30Si = δ29Si *

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1.96), we can therefore presumably conclude that the error on the reported δ30Si data is up to 0.39‰ . Given an observed range in the δ30Si core record of c. 0.4-0.5‰ this would imply that all measurements are within analytical error of one another. Maybe I'm missing something obvious, but there is nothing else in the methodology (Section 4.1) to suggest so. In fairness the authors do state that errors for δ29Si are " better than 0.2‰ " so perhaps the authors just need to provide more detail here on what the errors are for each sample.

3) Have the authors looked at what diatom species are in the analysed samples? These will presumably have changed over the analysed interval in response to environmental changes and may allow the authors to further strengthened their arguments/interpretations.

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