

## Reviewer1 comments

As environmental scientists, our ability to discern temporal (and spatial) variability will be increasingly scrutinized in the very near-future. The authors have improved the manuscript by reporting precision where known. However, I disagree with assuming a precision of 5% from all previous cruises. Nearly all the nitrous oxide datasets derive from Hermann Bange's laboratory and he is a coauthor on this manuscript and I would have thought that some information on precision is available in MEMENTO, but this might not be the case? I am also concerned by the authors response to another Reviewer's comment, copied below. It is unacceptable in other scientific disciplines to simply say 'our values are correct'. For example, transparency of data reporting and validation of datasets through the incorporation of reference material was a major outcome from the GEOTRACES program. The authors should consider attaching their datasets including the calibration, standards, and reference material used to this manuscript. I think in the near future the practice of attaching datasets with the accompanying calibrations and reference material is will become much more common.

**[Referee] p.7, lines 27-28: it seems difficult to explain a SP value of -9‰ under these conditions. I would be concerned here about calibration, and believe that the authors should further discuss their calibration techniques, and possible explanations for such a low SP value in surface waters.**

*[Response] We double checked the isotopic data; our in-house standard (cold seawater) and isotopic references showed no sign of inaccuracies. We are confident that the negative SP values are accurately measured...*

## Additional comments

Page 4 Line 7 'The MEMTNTO database did not archive N<sub>2</sub>O data at the ETSP during previous El Niño events, and therefore we were not able to compare N<sub>2</sub>O dynamics between two El Niño conditions'.

Spelling of MEMENTO and also doesn't Laura Farias have time-series measurements during El Niño. Are her measurements in MEMENTO or have you reached out to her?

Page 5. Line 27 except that October 2015 had warmer surface water

How much warmer?

Page 10 Line 23 Such a 75 – 95 % reduction in N<sub>2</sub>O fluxes during the 2015-16 El Niño was consistent with 80% reduction in fluxes observed during 1982-83 El Niño (Cline et al., 1987).

This conflicts with your previous comment. So there is data from El Niño conditions.