

Dr. Erik van Sebille
Topic Editor
Ocean Science

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Dear Dr. van Sebille,

We thank for your letter of decision and the response of Referee #1. We are happy that the overall opinion is positive, and you require minor revisions. Here we list the remaining points and the detailed answers, and the changes performed in the 2nd revised version.

General comment 5: We show only the separate results for NH and SH tracer subsets in subsection 3.2, where the cross-correlations with ONI and SOI is analyzed. We think that the cross-correlation function for NH and SH advection indices (Fig. 3) justifies a separated treatment, because of the statistically significant negative correlation at a time lag of 7 months. We think that a marked El Nino (or La Nina) episode has an effect on both side of the Equator, however in quite periods the two sections exhibit a kind of decoupling. In order to improve the explanation, we inserted the sentences below Fig. 3: “The observed relatively weak real-time positive correlation and the statistical feature of the phase shift by 7 months between the northern and southern tracer subsets suggested us to perform all subsequent statistical tests separately. We illustrate that the results are very similar, but not identical.”

General comment on Fig. 6: We are convinced by now, thus we deleted the figure.

Specific comment on lines 149-156: We follow the recommendation and removed the paragraph.

Line 72-73 (original numbers): In order to improve the definitions, we reformulated the sentences as follows: “Monthly advection indices AdI_1 and AdI_2 are defined by the ensemble mean values of two metrics: (1) zonal distance and (2) total trajectory length (meridional drift components are included) from the positions at the end of the previous month. We will see that there is no difference between the values of both standardized indices, demonstrating that westward drift absolutely dominates. On an absolute distance scale, AdI_1 is systematically lower than AdI_2 , as expected, but the difference is negligible.

Eq. (2): We would like to keep this equation to show the precise mathematical definition. According to our experience, the equation itself might be widely known, however the appropriate interpretation of the time lag at maximum (minimum) values can be problematic for many readers.

Sincerely Yours,

Imre M. János