

We appreciate this reviewer's kind words and thoughtful comments. Below our responses are in red.

In the abstract the authors mention that the short-term variability computed is variability of timescale 5-14 days. But this timescale is not mentioned anywhere in the manuscript.

The other reviewer noted the same thing. We changed the abstract to be consistent with the text.

How did you manage the data gaps in the moored buoy data in your analysis? How continuous is the data? Nothing is mentioned about this in the methods section.

As the reviewer points out, these mooring time series are sampled hourly, but with gaps for many of them, sometimes years in length. In our analysis, taking each ensemble time period, if there were at least 10 hourly samples within that period, we computed the STV and RE. This will be stated in a revised version.

"The GTMBA mooring time series have many gaps and missing data. The STV and RE were computed within each ensemble time period only if there were 10 or more hourly values of measured SSS."

Authors use current speed to determine the timescale of short-term variability at each mooring location. Why don't you use power/wave spectrum on the buoy timeseries (or collocated model data) to understand the timescale of short-term variability?

The current speed was used in our work to determine the approximate amount of time needed in order to sample a 100 km-sized area of ocean. (We think the reviewer is talking about computing spectra of SSS, not surface waves. The moorings did not measure the surface wave field that we are aware of.) We are in fact working on computing space/time spectra of SSS from the global model in a separate effort and hope to report on those results soon. Computing spectra of SSS from the mooring time series would make a nice future study - it's amazing that someone has not already done this! However, there are enough complications with the methodology of computing power spectra, especially given the gappy and variable

length records as the reviewer notes above, that this would add significantly to the scope of the paper and distract from the focus. Thus, we request that an effort of this type be left for the future.

Authors suggest that moorings exhibit larger short-term variability during rainy periods than non-rainy periods. Does it have seasonal variations? For example in Bay of Bengal, does this conclusion holds during both monsoon season (when there is heavy precipitation) and non monsoon seasons.

We are not sure what the reviewer is asking. There is a figure in the paper (Figure 7) showing the seasonality of STV, when it is maximum and the ratio of the maximum to minimum value. In the BoB, the seasonality is relatively small and the phase inconsistent. The maximum STV is about 2-4X that of the minimum. One mooring has maximum STV in January and two others in September-October. We would guess that the variability of STV in the BoB is more determined by river outflow than rainfall. The reviewer may know more about this than we do. We added a short statement to this effect to the text.

"In the Bay of Bengal, STV is maximum is inconsistent, with two moorings giving maximum STV in September-October and another one in January. We suspect that STV variability in the BoB is closely related to river outflow (Akhil et al., 2014)."

Also, no description is given on how realistic is the model in capturing the surface salinity at each mooring location. A comparison (correlation & bias) with the model and buoy timeseries is lacking.

It was not stated clearly enough in the paper. The model is free-running, and does not assimilate any ocean data. Thus, there is no expectation that the model and the mooring data would be correlated or depict the same field in detail. We added a statement to the paper indicating this - below. The type of analysis we are doing, comparing the statistics in the model with those of the moorings, is in a sense a validation exercise for the model that the reviewer is looking for. Thus, we could do the additional validation

the reviewer is asking us to, but we think it would be misleading and does not reflect the model's purpose accurately.

"For this reason, it is not expected that there would be detailed agreement between model and mooring data, but the statistics of each should be similar. "