

**Reply to Referee #2:**

*The manuscript is of significant importance, and I recommend its publication, but it requires major revisions.*

Thanks very much for your helpful comments and suggestions. Our responses to the comments are as follows. The Referee's comments are cited in italics.

*Figure 1a: The colorbar displays the full range of colors, but these colors are unusual. Using pyGMT or an equivalent tool in MATLAB might offer better and more common maps.*

*Figure 1b: Please use a linear gradient colormap.*

Thanks for your suggestions. In the revision, we have changed the color scale for the figure.

*You cite many articles, but you don't summarize their findings. For example, lines 50-53 show a large amount of papers that are not explained.*

Thank you for raising this issue. Most of these studies on the fronts in the Seto Inland Sea mainly focused on the formation and seasonal variations in front position and intensity based on in situ data. We have added related text on lines 55-56 of the revised manuscript and the related in situ data results to the revised Supplementary Materials (Figures S1 to S3).

*Line 103: Can you reference Section 3.4 to provide the magnitude of the wind intensity? When you say relaxation, which values (approx) do you mean.*

The magnitude of the wind intensity is approximately 10 m/s. The relaxation or intensification of the wind indicates a decrease or increase in the wind speed.

*Section 3: How do you demonstrate the dynamics using only SST satellite data? Do you use any other products (satellite, simulations, etc.)?*

The intra-tidal variations of tidal front F1 have been studied by Dong and Guo (2021) using the observation-based tidal current at one point and Equation 5. In this study, we follow the dynamic given by Equation 5 and use the tidal currents from a numerical model that can reproduce the spatial distribution of tidal current in the Seto Inland Sea (Guo et al., 2013) and the satellite SST data to discuss the intra-tidal variations of the other fronts (in Section 4).

*Line 120: Instead of "were ~0.59 and ~-0.16 K," I suggest "were approximately 0.59 K and -0.16 K, respectively."*

Thanks for your suggestion. We have made this change in the revised manuscript.

*Equation 4: Could you provide the ratio of the total number of points for the given period of time to the number of cloud-free valid data points ( $N_b$ )? It is important to know this ratio for the representativeness of the samples.*

There are 27576 cloud-free data scenes selected from the entire dataset in seven years, accounting for 45% of the total data. We have added related text on lines 149-150 of the revised manuscript.

*Table 1: Can you add the distance to the stations?*

We have added the distance in Table 1 of the revised manuscript.

*Figure 3: Consider dedicating a full page to this map (and some others, they are small, and the lines are hard to observe. A configuration of 4 rows and 3 columns might improve clarity.*

Thanks. We have changed the configuration of this figure in the revised manuscript.

*Figure 5: Use a consistent format for showing the numbers. Currently, some are rotated to the left, others to the right.*

Thanks. We have revised the figure using a consistent format for the numbers.

*Generally, is much better to use the same colormap for similar representations, many plots have different colormaps.*

Thank you for pointing this out. We have revised these figures in the revised manuscript.

*Line 226: If there is an exception, please specify which ones.*

For the tidal fronts F1, F5, F6, and F8, their intensities were lower during the spring tide than during the neap tide in July. We have added this information on line 233 of the revised manuscript.

*Figure 7: The colormap has changed again. Please ensure consistency.*

Thanks. We have revised this figure.

*Figure 12: Can you explain the difference in values at latitude 34°N?*

The results in the upper and lower areas in this figure are averaged using summer and winter SST data, respectively, so there are differences at the interface in the figure.

*In conclusions I would define the limitations of using only SST.*

Because the satellite data were limited to the sea surface, the vertical structure and its variations of the fronts remain unclear, which requires more field survey data and high-resolution simulations to clarify. We have mentioned this limitation in the last paragraph of the manuscript.