Referee Report

Recommendation: Accept subject to minor revisions

General assessment

The revised manuscript is considerably improved relative to the previous version. The Introduction now gives a clearer account of atmospheric controls on medicane development, including baroclinic instability, Rossby wave breaking, and upper-level precursors. The Methods section provides additional detail on the along-track analysis and the Ekman pumping calculation. The biogeochemical data limitations are also better acknowledged, especially for satellite chlorophyll products in cloudy or optically complex coastal conditions.

The paper can now be considered a useful observational case study of storm-ocean interaction during Medicane Daniel. The main remaining revisions are technical and editorial: they should ensure that the conclusions are phrased consistently with the observational nature of the analysis.

Response: First, we sincerely thank the reviewer for their valuable time and effort in reviewing our manuscript. We are pleased that the reviewer finds that we have adequately addressed the comments and concerns raised during the review process. We are also grateful for the positive evaluation and for considering our manuscript suitable for publication, subject to these minor comments. We appreciate the constructive feedback, which has helped us to further improve the quality and clarity of the manuscript. The comments and suggestions provided are very helpful and have significantly improved the quality of the manuscript. The response to the reviewer's comments is shown in blue.

Remaining minor correction

The main remaining point is to ensure that the wording remains consistent with the observational nature of the study. Some statements in the Abstract, Key Points, and OHC discussion still imply a stronger causal role for WCE/MHW/OHC than is fully demonstrated. I suggest replacing phrases such as "sea-induced intensification," "created optimal conditions," and "provided the energy necessary" with wording that emphasizes that the oceanic anomalies likely **supported** or **modulated** intensification under favorable atmospheric forcing.

A suitable wording would be along the lines of: "The results indicate that Daniel intensified in a region of anomalously warm upper-ocean conditions, suggesting that WCE/MHW/OHC anomalies may have supported or modulated the intensification under favorable atmospheric forcing."

Response: Thank you for your suggestion. We have modified the sentences in the abstract and key points according to your suggestion.

Minor technical comments

- **Abstract and Key Points:** Please moderate phrases that imply direct causation of intensification or precipitation by WCE/MHW/OHC, unless additional causal attribution is provided.

Response: Thank you. We modified the sentence in the abstract as 'Our results show that medicane Daniel intensified immediately prior to landfall in a coastal environment characterized by the co-occurrence of a warm-core eddy (WCE), elevated ocean heat content, and a moderate marine heatwave (MHW), suggesting that sea anomalies may have supported or modulated the intensification under favorable atmospheric forcing.'

Similarly, in the Key points, we have modified 'created optimal conditions' to 'provided support'.

- **Along-track anomaly analysis:** The added along-track analysis is useful. Please report the result more explicitly, for example by giving the anomaly value or percentile/rank of SST, OHC, and MHW intensity near the maximum cyclone intensity point.

Response: Thank you. We mentioned the values of SST, OHC and MHW anomalies and modified sentence as 'We observed from the analysis that the maximal values of MHW (~0.6), SST (~0.83 °C), and OHC (~ 16.30 KJ/cm2) anomalies occurred in the last two days before Max-CI, indicating that medicane Daniel intensified over thermodynamically favourable conditions that were among the most anomalous along its track.'

- **OHC interpretation:** Please clarify whether OHC is computed relative to the 20 °C threshold or from absolute temperature, since the equation still uses *T* in °C. Also replace "energy necessary" with a more cautious phrase such as "favorable upper-ocean thermal reservoir."

Response: Thank you. We already mentioned it in the methods section as 'OHC is defined as the vertically integrated thermal energy from the surface down to the depth of the 20 °C isotherm (a proxy for the thermocline layer).'

We modified the sentence as 'Analysis of the OHC revealed a significant amount of OHC at the intensification locations, providing a favorable upper-ocean thermal reservoir for medicane Daniel to intensify.'

- **SWOT interpretation:** SWOT should be described as improving the depiction of SSHA and eddy structure, rather than directly resolving air–sea interaction.

Response: Thank you. We modified the sentence as 'By improving the detection of these fine-scale physical structures, SWOT also provides a framework for interpreting biogeochemical responses.'

- **Terminology and grammar:** Please correct remaining grammar and terminology issues, for example “the medicane destabilize” should be “the medicane destabilizes,” and use consistent spelling/capitalization for “medicane Daniel,” “warm-core eddy,” “marine heatwave,” and “biogeochemistry.”

Response: Thank you for pointing this out. We modified it according to your suggestion in the entire manuscript.