

General Comments

I appreciated your further explanations regarding my questions. Concerning the structure of the Methods and Results sections, I understand why you prefer to keep the original order: the cruises were not planned to sample the extraordinary bloom, as it was unexpected, and your focus is on finding the physical explanations for your observations!

Based on your revision, I would still suggest making minor adjustments to the manuscript.

Specific Comments

Figures: I am still concerned about the colormap used in the figures. As the references I initially sent you mentioned:

e.g. Michael Stoelzle and Lina Stein 2021: “The rainbow color map attracts attention but distorts and misleads scientific visualizations. Major rainbow pitfalls are the non-linear data encoding, steps and disorder in luminance, and minor perceptual accessibility for people with CVD or other vision impairments. Here we investigated the use of rainbow color maps in around 1000 papers in different environmental journals and found that the misleading rainbow color map or red–green color issues are present in around 44 % of all papers ...”

This is even more problematic for studies like yours, as rainbow colormaps distort fine-scale current analysis by masking gradients, amplifying irrelevant features, misrepresenting continuity, excluding colorblinds... I believe the rainbow colormap hinders rather than helps in visualizing key features. I strongly recommend using perceptual colormaps like viridis.

- Part 2.7: How do you obtain vertical velocities? Is not your model in 2D (only horizontal velocities)?
- I appreciated that you added more discussion about results of your lagrangian experiments. However the sentence line 527: “...no fronts separated...” is a bit strong, because as you mentioned later you do not investigated the submesoscale dynamics. I suggest just to add the scale you refer to: “no mesoscale front ..”.
- Same as above, the sentence on line 533, “...this situation is improbable...” seems a bit too strong. Do you mean that it is improbable for peculiar conditions to independently lead to two similar blooms? If so, it is not entirely evident that this is improbable. I agree that a single bloom occurring at both stations seems more likely. However, the distinction between the 'Same bloom patch' scenario in the heterogeneous case and the 'Independent bloom' scenario is not entirely clear. Similar optimal bloom conditions could have occurred at both stations, potentially leading to either heterogeneous patches or independent blooms, as you do not have data between the both stations.

Technical corrections

Some of the mistakes I raised in my initial feedback still appear in the revised manuscript. For example, in the abstract, the abbreviation AZA-2 is still missing after first mention of the full name

(line 31), "metre" is still write instead of "meter" and "litre" instead of "liter". Line 73 the first "h" of thermohaline is still missing. Please refer to the previous file I sent to ensure all these corrections are made.

- Part 2.2: It would be better if the objectives of the cruises are presented before the strategies

- Line 245: You say "two complementary analyses: Lagrangian advection ...", while in the discussion you refer to both analyses as Lagrangian experiments. I would suggest using "Lagrangian analysis" to describe both analysis as you refer in the discussion.

- Lines 264 to 265 and the line 269 (from "FSLEs are commonly..") concerned the definition of FSLEs. So they should be merged together.

- Line 266: "FSLE... exponential rate ($\lambda [d^{-1}]$)" include the units. The equation is $\lambda(\delta) = 1/\tau(\delta) * \ln(\delta_0/\delta_f)$, where both λ and τ depend on δ . Also, since FSLE are defined as λ , I suggest modifying the sentence on line 266, "FSLE are strongly linked..." to something like "FSLE are defined by..."

- Lines 333 and 334: Are the two numbers after the point (31.68 and 13.69) necessary?

- Line 38: "100 km in diameter", "in" to remove

- Line 383: Which figure?

- Figure 10: "Fronts identified" – which fronts are you referring to? FSLEs identify the separation rate of a fluid. I agree that they also identify fronts (included within the Lagrangian coherent structures), but it's not entirely accurate to say it this way, especially because you are not focusing on fronts in this paper. I would suggest simply stating "FSLE ridges computed..." instead.

Is there a possibility of negative FSLE values? If so, why were they not displayed on the colorbar? Positive and negative values indicate the convergence or divergence of the flow (i.e., whether particles are getting closer or moving away)

- Figure 11: I still don't see the clear purpose of this figure. Moreover, you already have the GIF video to demonstrate this

- Lines 424-434: As I already mentioned, it's better to avoid simply listing "factors"

- Line 572: "...acted as the physical driver", change "the" by something like "a crucial" as although your study demonstrates the crucial role of mesoscale circulation in bloom formation, other physical factors could also act in synergy to create optimal bloom conditions

