Reviewer 1

This data paper present a unique dataset of glider data equipped of both hydrological, biogeochemical sensors to investigate the source, fate and fluxes of magmatic fluid into the ocean close to Mayotte.

This 30 months data-set combined measurements acquired with different sensors and an effort was made to fix discontinuity in the dataset.

The datapaper is well presented and illustrations are clear. The present datapaper is suitable to be published in ESSD but I have several comments to be adressed before.

Dear reviewer,

Thank you very much for your thorough review and valuable comments on our data paper. We appreciate the time and effort you dedicated to reading the manuscript and providing detailed feedback.

- The strategy of underwater glider profiles to detect fluid dynamics is not well described. It seems that a multiple yos strategy between the bottom and about 100m above the seabed was adopted. Please clarify. How is the impact of this strategy on the estimation of the currents? Please give some uncertainty.

The sampling strategy, including the multiple yo-yo dives has been more clearly described in the revised manuscript : "In order to stay as near as possible to the seafloor where magmatic fluid emissions occur and should be sampled, the glider's navigation consisted in a 3-phase progression : a downward phase where the glider reached a depth of 1,000 m; a forward navigation phase, with about ten ascent/descent phases (i.e. yo) between 900 and 1,000 m; and a final phase of ascent to the surface. dives carried out in the Horseshoe area last on average 8 to 9 hours, with 6 hours in average between 900 and 1,000 m, covering a distance of around 6 km"

We have also added a clarification regarding the uncertainty in current estimation. While the theoretical uncertainty associated with the ADCP-derived velocities using SeaExplorer gliders is approximately 1.5 cm/s, as reported by De Fommervault et al. (2021), the specific sampling strategy adopted in our study likely introduces a higher uncertainty. Although we cannot quantify it precisely, based on our observations, we estimate it to be greater than 1.5 cm/s but likely below 10 cm/s. This range has been specified and discussed in the revised text.

- Corrections were applied such as thermal lag on CTD measurements but also on O2 measurements. It would be useful to show some vertical profiles with and without corrections to show the effectiveness of the correction.

A figure of vertical profile of raw and corrected CTD / O2 data has been added in appendix C Fig. C1.

- Two CTD sensors were used during the 30 months glider deployment, how do they compare or not? is there some periods with concomitant measurements?

There were no concomitant measurements since only one CTD sensor was installed on a glider at a time. However, no disruption is visible in the time series at the moments of sensor replacement, and both sensors were factory-calibrated before deployment. Therefore, there is no reason to expect any issues regarding the validity or consistency of the measurements between the two sensors.

- Additional comments are included in the additional pdf files I added :

- How many simple yo vs multiple yo profile were done? what is the implication on current measurement quality?

This point relates closely to the previous comment regarding the sampling strategy. Approximately 99% of the missions were carried out using a multiple-yo strategy, with single-yo profiles being used only during deployment and recovery phases of the glider. As a result, the vast majority of the dataset benefits from the improved vertical resolution provided by multiple yo sequences. This strategy, however, also implies a longer time integration for each dive, which can affect the temporal resolution of current measurements, as discussed previously in relation to the uncertainty in current estimation : "As stated in Pasqueron de Fommervault et al., 2018, ocean velocity data retrieved from glider-mounted ADCP show a mean difference of 1.5 cm/s compared to reference mooring data. This value corresponds to a simple yo pattern using a SeaExplorer glider. In our case, using repeated multi-yo patterns until August 2023, followed by spiral multi-yos from August 2023 to April 2024, the uncertainty is likely higher than 1.5 cm/s. Based on our preliminary assessments, it may remain below 10 cm/s, although this upper bound should be considered with caution."

- Figure 3 : Why the density plot is not complete? as you have the temperature and the salinity?

The incomplete density plot was due to a calculation issue, which has now been corrected. Figure 3 has been updated accordingly and is now complete in the revised manuscript.

- What is time % over the whole period corresponding to maintenance of gliders?

Over the 30-month deployment period, which included 72 missions, the glider was on land for approximately 28 days in total for battery recharging operations, typically longing half a day between missions.

Regarding technical maintenance, mission interruptions were minimal thanks to the availability of backup gliders on site in Mayotte. This allowed us to quickly resume operations by transferring sensors between platforms without waiting for full repairs. However, despite these precautions, a few major technical issues did occur, resulting in a total of approximately two weeks of mission downtime during the entire period.

- Appendix A : I suppose that the numbers correspond to sensor SN... please mention

You are correct, the numbers correspond to sensor serial numbers. This has now been explicitly mentioned in the revised manuscript.

- Appendix B : I do not see any offset value.... please clarify

This was indeed an oversight, and the error has been corrected in the revised manuscript.

Thank you again for your constructive input, which will undoubtedly help improve the quality of our manuscript.

Reviewer 2

In this paper entitled «30 months dataset of glider physico-chemical data off Mayotte Island near the Fani Maoré volcano», Heumann et al. Present a data set from a continuous monitoring of an active volcanic site off Mayotte Island made with autonomous glider.

The data presented by the paper is very unique and relevant to be published in ESSD. However, the paper needs some important revisions in order to better clarify aspects of the data processing and calibration. See my comments below.

Dear reviewer,

Thank you very much for your positive feedback and for recognizing the relevance of our dataset. We sincerely appreciate your careful review and the constructive comments you provided to help improve our manuscript.

We will address each of your comments individually and revise the paper accordingly to better clarify the aspects that you highlighted.

Major comments :

- Section 2.2 : There is no mention of data acquisition frequency of the glider. Are the data kept in time series or bin-average in vertical profiles, or something else ? There should be description of the process leading to the time series at 30s found in SEANOE (sub-sampling ? Bin-averaging?). Same issue for section 2.2.3 about ADCP data. There is no mention of the procedure applied to produce the 2-dbar profiles one can find in SEANOE.

We have added the missing information regarding the data acquisition frequency and the processing steps in the revised manuscript. Specifically, we now describe how the glider data were processed to produce the 30-second time series available on SEANOE (including sub-sampling procedures) : “The CTD and dissolved gas sensors are mounted on the SeaExplorer glider and operate at a sampling frequency of 1 Hz, before being bin averaged into 30-second time series available at the SEANOE data center (see Data availability).” We also clarify the method used to generate the 2-dbar profiles for the ADCP data : “The processing of water-current data with the "shear method" requires reconstructing vertical profiles by cutting the time-series on the basis of dives. In case of multi-yos, which are not optimal to retrieve best quality water-current measurements, all yos between two consecutive surfacings are merged to reconstruct a single average water-current profile. Since the tidal current oscillates over a period of about 12 hours, its oscillations are therefore almost always averaged over the duration of a 10-hours dive. To process the ADCP data, overlapping shear values were averaged over a given interval of 2 m to determine a mean shear profile for a dive.”

- There seems to be no comparison done with cruises that have been led in the area (MAYOBS). Shipborne measurements are always crucial to get accurate glider data. MAYOBS should be introduced and used here. Especially when looking at the TS diagram in Fig 5, in the intermediate and deep waters one can clearly identified group of profiles corresponding to different deployments/instruments… + L363-366: Including these comparisons in the present paper would be real asset, as it is hard to judge in the present form the accuracy of the data...

Thank you for this important comment. A comparison with shipborne measurements from the MAYOBS cruises has indeed been initiated, particularly through inter-calibration work involving dissolved gas sensors and ship-based measurements collected during the MAYOBS25 (September

2023) and MAYOBS30 (October 2024) campaigns. However, this work is extensive and will be presented in detail in a forthcoming, dedicated paper.

- The authors mention on several occasions that they followed international standards of Oceangliders. However, I have the feeling that these were not completely followed.

CTD : In particular, RBR unpumped CTD Legato salinity are kept as CTD output which certainly not recommended by any international standards, as they can suffer from important thermal lag issue. These thermal lag issues are known to be less pronounced for pumped CTD (such as GPCTD) for which you did apply a correction. Could you evaluate the thermal issue in your RBR time series, check whether it is problematic or not, and correct it ? Apart from thermal lag issue, salinity data also suffer from accuracy issues when used as raw data. In my opinion, some efforts have to be put into making the salinity time series consistent. Looking at TS diagram in Fig 5 and time series in Fig 6, variability at scale of the missions can be seen (about 15 days). The average TS diagram for each mission compare with each other ? Again, if CTD data are available from MAYOBS cruises, they should be used as reference. Alternatively data from World Ocean Atlas (WOA) climatology could be used.

DO : Electrochemical sensors (like SBE43F) are known to have slow time response which can cause hysteresis between up and downcasts. There is no mention of such features. Did you apply any correction for this ? l109-113 : How are «regimes » defined in this context ? (« Ocean glider » → OceanGliders). In my opinion, it seems essential that the data are compared with reference shipborne DO measurements (Winkler method) in order to qualify their accuracy; or at least compared to WOA climatology. Table A2 : « Gain and offset » → where are the offsets ? What are the group of profiles referring to ? The corrections aims to produce continuous time series of DO but clear jumps can still be seen.

We would like to clarify that thermal lag corrections have been applied to all CTD data, including both RBR Legato and Sea-Bird GPCTD sensors. Additionally, salinity has been recalculated from the conductivity data for both sensors, in line with recommended practices. These corrections aim to ensure the consistency and quality of the salinity time series.

To further assess data consistency, we updated Table 3 using the World Ocean Atlas 2018 (WOA18) climatology as a reference. This comparison helped evaluate the alignment of our dataset with established hydrographic baselines. However, this comparison did not result in any changes to the dataset itself, as all measurements already fell within the expected ranges defined by the WOA18 data.

Regarding dissolved oxygen measurements, we confirm that no significant hysteresis was observed between upcasts and downcasts in the data acquired with the electrochemical sensors (e.g., SBE43F). As a result, no correction algorithm was applied for this specific issue. However, we acknowledge that such behavior can sometimes be subtle and sensor-specific, and we have taken care to interpret this result cautiously. Additionally, oxygen data were compared with WOA climatology to support the evaluation of their accuracy. The stated accuracy of the SBE43F sensor is ± 1.5 µmol/kg, which provides confidence in the reliability of the recorded values.

As for Table A2, we have clarified the terminology. The term "offset" has been deleted.

Comments on Figures and Tables :

- please consider improving the readiness of your figures by increasing some of the axis labels that are sometimes too small to be read (eg Fig. 1, 10). Better settings of figure and label size would help to get a uniform rendering throughout the paper.

Thank you for pointing this out. We have revised the figures to improve their readability by increasing the size of axis labels and ensuring a more consistent and clear rendering throughout the manuscript.

- Figure 1 : Please add a colorbar or depth contours in (a) ; caption : « red triangles » → « red star » ; which area corresponds to (c)? Please add axis label or box on (a) to show it.

Done. The area of fig 1c has also been added on fig 1a.

- Fig 2 : «(a) Maps illustrating the sampling… (c) same for profiles down to 1250 m. What is the bin size considered considered to show the profiles density? From the latitude axis, there are about 7 squares for 2' (ie 2/60*111 = 3.7km) which is equivalent to a square size of 0.5 by 0.5 km, so a surface of 0.25km2. Please add a scale to the map.

Scale added and square size added in the figure title.

- Fig 3 : Temperature is described in the text before salinity. I would swap them. What is preventing density to be shown from Jan 2024 ? You could gain space by removing title (adding an inset with text of an axis to the colorbar) and x-axis label, in order to make your subplots larger using the same figure size. Contour at well chosen values could also help to read the values.

Salinity and temperature have been swapped in the figure and title has been removed to increase the figure size. Density have been recalculated throughout the whole data set. Contour has also been added for visibility.

- Fig 4 : It could be useful to have an idea of the variability behind those mean profiles.

Variability (+/- 2 standard deviation) has been added.

- Fig 5 : It seems that a cut-off in salinity has been applied in surface value for S<34.84psu, which is not described in the paper. Also visible in missing surface values in fig 3.

Thank you for noticing this. A cut-off in surface salinity values had been applied due to an outdated quality control procedure. We have now removed this cut-off to ensure that all surface data are properly included.

- Fig 6 : Since the data set comes from a large number of deployments in would interesting to show these with different colors (alternate dark and light blue for instance).

Very good idea, it's now visible in black and light blue.

- Fig 7 : « isopycnals ». I would be instructive to know where the data have been sampled by showing the glider trajectory in a thin or dotted line.

Done. The glider trajectory has also been added in light grey to reduce the risk of masking the figure.

- Fig 9: Values of dive-average currents could be added to the figure to compare with ADCP data.

Thank you for your suggestion. Unfortunately, we do not have automatic access to the dive-average current data, as this information is not systematically recorded during operations. However, we recognize the value of such a comparison and will consider including it in future analyses.

Additionally, it is worth noting that the dive-average current calculated by the glider represents an integrated value over the entire water column, which makes it difficult to directly compare with the depth-resolved layers presented in Figure 9.

- Fig 10 and 11 : Axis labels are too small. - You don't need to squares for every table cells, that makes the tables not easily readable.

The axes and labels size have been increased.

Table 3 : The TSO2 ranges could be regionalised using WOA climatology.

Done

Specific minor comments :

l3 : with the objective

Done

l4 : autonomous ocean glider (ALSEAMAR's SeaExplorer)

Done

l6 : 30 months from XX to YY

Done

l7 : showed the feasibility and value to continuously and autonomously measure at high spatio-temporal ...

Done

l23 : Please spell out the names of institutions before introducing their acronym, or consider adding a list of acronyms at the end.

Done : "French laboratories and institutions (Institut de Physique du Globe de Paris (IPGP), Centre National de la Recherche Scientifique (CNRS), Bureau de Recherches Géologiques et Minières (BRGM), Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER), Institut de Physique du Globe de Strasbourg (IPGS)) »

L40 : 23 active emission sites identified to date

Done

l42 : The Agulhas current flows south of the Mozambique channel as the East Madagascar Current and Mozambique Current converge and form a Western Boundary Current. However, Mayotte is located North-West of Madagascar, ie north of the Mozambique channel. The influence of the Agulhas Current on the circulation is hence not precise enough. Please revise the description of the regional circulation and add relevant references.

The paragraph describing the regional circulation has been revised to more accurately reflect the oceanographic setting near Mayotte. We clarified the distinction between the Agulhas Current system and the northern part of the Mozambique Channel, where Mayotte is located. The influence of regional circulation patterns, including mesoscale activity in the Comoros Basin and the dynamics of the upper-ocean circulation in the western tropical Indian Ocean, has been better contextualized. Relevant references have been added to support the revised description, including Schott et al. (2009), Collins et al. (2014), and Manyilizu et al. (2016) : "The ocean circulation around the Mayotte island is mainly influenced by the instabilities of Northeast Madagascar Current (NEMC) which originates from the splitting of the westward South Equatorial Current (SEC) (Schott et al., 2009). While the anticyclonic eddies, mainly generated west of Cape Amber (the northernmost cape of

Madagascar), strongly influence the circulation around Mayotte island at a monthly to seasonal timescale, cyclonic eddies formed along the northwest coast of Madagascar rarely reach the island (Collins et al., 2014). The large-scale circulation is also strongly influenced by seasonally reversing winds linked to the monsoon regimes (Manyilizu et al., 2016)."

L48-52 : Please revise this paragraph, add relevant literature and be more precise about the scales of variability of the ocean you describe (sub-mesoscale, internal waves/tides, etc.).

The paragraph has been revised to include more precise descriptions of the scales of ocean variability, including sub-mesoscale dynamics and tidal influences. In addition, relevant literature has been added to support and contextualize these descriptions : "This highly complex circulation consists of a southward flow coupled with mesoscale eddies (diameter ≥ 300 km) that can affect the entire water column (de Ruijter et al., 2002; Halo et al., 2014). The general circulation in the area is even more complex due to the significant influence of the islands on the local hydrodynamic context. Relatively little reference data is available for the near area of the Mayotte Island and until now, it remained poorly observed and understood. Tide gauges have been installed on the coasts of the main islands, and internal tidal waves have been observed during MAYOBS campaigns, which is consistent with maps of internal tide generation and dissipation built by de Lavergne et al. (2018). So we expect a strong variability at daily to monthly time scale linked to the tidal forcing, particularly near the bottom where internal waves are generated by the complex bathymetry of the Horseshoe."

l51 : what is deep ? Are these numbers from observations or literature ?

In this context, "deep" refers to the deep ocean currents observed in our dataset near Mayotte, typically below 1000 meters. We have clarified this in the manuscript to avoid ambiguity.

L57 : 2022 → 2021. How long is the observation planned to continue ? What is the current status of the monitoring ?

The monitoring is still ongoing, and no end date has been scheduled at this stage.

L67 : You should mention the GOOS's component OceanGliders here.

Done : "Since 2016, the OceanGliders component of GOOS has also been in charge of the coordination and improvement of the use of gliders around the world."

L80 : I find the notation « mbss » heavy and oceanographers understand that depth are below sea surface without having to repeat it.

The notation have been replaced throughout the manuscript and the figures.

L83 : what you refer as « transects » are dives if I understand correctly (as a full dive to 1000m + 10 yos of 100m would take about 8h to complete). Please clarify.

We agree with your observation and have clarified in the manuscript that the term "transects" refers to individual dives, including a full descent to 1000/1250 m followed by multiple yo-yo profiles. This clarification has been added to the text : "the glider's navigation consisted in a 3-phase progression : a downward phase where the glider reached a depth of 1,000 m; a forward navigation phase, with about ten ascent/descent phases (i.e. yo) between 900 and 1,000 m; and a final phase of ascent to the surface. Dives carried out in the Horseshoe area last on average 8 to 9 hours , with 6 hours in average between 900 and 1,000 m, covering a distance of around 6 km."

L85 : The sampling strategy is not a simple dive-climb pattern typical for gliders. Please consider adding a figure/schematics illustrating the different sampling strategy.

Thank you for your suggestion. We have clarified the description of the sampling strategy in the revised manuscript. All instances of the term “transect” have been replaced with “dive” to more accurately reflect the glider operations. The sampling approach was predominantly forward navigation before August 2024, and transitioned to spiral patterns afterward. The glider navigation paths are illustrated in Figures 7 and 10 to support this clarification.

L89 : what is the typical time between two surfacing for 1250m dives ?

The typical time between two surfacings for 1250 m dives is approximately 10 hours. This information has been added to the manuscript.

L99 : I guess you are calculating practical salinity, not as absolute salinity ?

You are correct, practical salinity is used throughout the manuscript. Absolute salinity is also calculated when needed, specifically for the computation of potential density.

L103 : OceanGliders

Done

L105 : Authors mention a method for correcting thermal lag issue with glider’s CTD. GPCTD are typical , while RBR unpumped CTD can be more affected by thermal lag issue.

We confirm that thermal lag corrections have been applied to both types of CTD sensors used in the study, including the unpumped RBR Legato as well as the pumped Sea-Bird GPCTD : “the thermal lag effect was described and addressed using the methodology described in Garau et al., 2011 for both CTD sensors.”

Section 2.2.2 : Oxygen is also a dissolved gas, please revise your title.

Done : “CH4 and CO2 data” is the new title of the section.

L133 : uplift and downlift → upcast and downcast

Done

Section 2.3 : Is the QF scheme following any existing QF like SEADATANET or WOA ? Since you have a sensor with high detection limit (CH4), you should have a flag describing « below detection level ».

The quality flag (QF) scheme applied in our dataset follows the guidelines established by UNESCO in *Ocean Data Standards Volume 3: Recommendation for a Quality Flag Scheme for the Exchange of Oceanographic and Marine Meteorological Data* (l. 194). This standard was chosen to ensure consistency with internationally recognized practices for oceanographic data quality control.

Regarding the methane (CH_4) sensor, we acknowledge the importance of properly flagging values that fall below the detection threshold. While such cases were not explicitly flagged in the current version of the dataset, we agree that assigning a QF=5 (“below detection limit”) is appropriate for these values. We will revise the dataset accordingly in a forthcoming update to improve its clarity and usability for end users.

l147 : what is the hydrodynamical model used to compute dive-average currents ? What is the statistics of the comparison with currents from ADCP ? Can you give a range of error for the final data ?

Thank you for your comment. The dive-average currents are estimated using the glider’s internal hydrodynamical model, which calculates underwater positioning based on onboard parameters such as pitch, roll, and heading. The influence of subsurface currents is inferred from the difference between the modeled surfacing location (based on dead-reckoning) and the actual GPS position at the surface. This displacement is used to estimate the average current over the dive. This calculation is performed internally by the glider software, but the resulting dive-average current values are not currently recorded in the dataset.

These estimates are nonetheless used internally as part of the correction procedure applied to the ADCP-derived current data. In response to your comment, we have included in the revised manuscript an estimated uncertainty range for the final current data: "As stated in Pasqueron de Fommervault et al., 2018, ocean velocity data retrieved from glider-mounted ADCP show a mean difference of 1.5 cm/s compared to reference mooring data. This value corresponds to a simple yo pattern using a SeaExplorer glider. In our case, using repeated multi-yo patterns until August 2023, followed by spiral multi-yos from August 2023 to April 2024, the uncertainty is likely higher than 1.5 cm/s. Based on our preliminary assessments, it may remain below 10 cm/s, although this upper bound should be considered with caution."

L149 : Can you develop more why data could be kept as profiles ? and L150 : How does the yo-averaging procedure affect the result ?

The decision to retain the ADCP data as profiles is linked to the limitations inherent in the processing method used : the shear method described by Visbeck (2002), which requires averaging between consecutive glider surfacings to reconstruct vertical current profiles. The yo-averaging procedure involves merging ADCP data over time windows typically exceeding 10 hours per profile. As a result, high-frequency signals such as tidal modulations are smoothed out over this period. The final ADCP-derived profiles therefore reflect only the mean current over the duration of the dive sequence, and do not resolve higher-frequency variability such as internal tides or short-term oscillations.

l151 : Please refer to the typical diving time during the mission and how it compares with the tidal period.

Done : "Since the tidal current oscillates over a period of about 12 hours, its oscillations are therefore almost always averaged over the duration of a 10-hours dive."

l153 : scatters in the water

Done

l167 : The tests described are the same as the ones applied for Argo floats. It should probably be mentionned.

Done : "Based on UNESCO's best oceanographic practices (https://repository.oceanbestpractices.org/handle/11329/413), which are also used for Argo floats, an objective and automatic quality control (QC) process was applied. Quality flags (QF) are composed of four quality values (Table 2)."

l169 : using

Done

l199 : potential density(?)

The term referred to in potential density with reference pressure of 0 dbar. This has been corrected in the manuscript.

l211 : (viewable → visible) There are also disruptions that can be caused by when changing sensors/glider ? Please justify at what scales you expect to see mesoscale variability and how does it translate in your data.

The wording has been corrected. Sensor or glider changes generally do not result in visible disruptions in the dataset. When necessary, corrections were applied (particularly for dissolved oxygen data) to ensure continuity and consistency across deployments and sensors. Additionally, we have added specific examples in the manuscript and in the figure 3 to illustrate how mesoscale variability manifests in our data and to justify the spatial and temporal scales at which such features are observed : "However, disruptions in the vertical distribution of temperature and salinity is visible, such as between June and July 2022 (between the gray dotted lines in Fig. 3) and can be attributed to the general circulation of the area or the mesoscale variability."

L215 : »puzzling » : they can be related to thermal lag issue in the seasonal thermocline. How does TS diagram of upcasts compare with downcasts ?

We agree that the term "puzzling" was too strong and have revised the wording accordingly. The observed seasonal variability in the TS diagram is consistent with previous observations in the region, such as those reported by Collins et al. (2016). Additionally, no significant differences were observed between upcasts and downcasts in the TS diagrams, indicating that thermal lag effects are not a major concern in this context.

L226 : The tidal oscillations even reach O(100m) in the deep layers.

Done : "In particular, vertical fluctuations of potential density levels (and temperature and salinity) increasing as it gets close to the bottom were observed at a ~ 12 h period (Fig. 7)."

L227 : I have to disagree with this sentence. Gliders have long proven to be able to sample internal tides (see https://os.copernicus.org/articles/20/945/2024/ and references therein) Your sampling strategy combined ADCP could very well be used to study internal tides in the area. The limitations reside more in the averaging applied between consecutive surfacing to produce vertical profiles.

In our case, the current profiles were derived using the shear method described by Visbeck (2002), which, combined with the multi-yo sampling strategy spanning time windows of around 10 hours per dive, does not allow for the resolution of internal tide signals or other high-frequency variability.

L233: AOU could be calculated or mean profile of O2 saturation shown in fig 4c along with the O2 profile.

Apparent Oxygen Utilization (AOU) has been added to Figure 4c alongside the O2 profile, as recommended. This addition provides a clearer view of the oxygen dynamics in the water column : High O_2 concentrations corresponding to oxygen saturation concentration are measured (O_2 concentrations of about 180-200 µmol/kg, apparent oxygen utilization between 0-20 µmol/kg, Fig. 3 and 4) at the surface layer (0 - 100 m) because of both dissolution from the atmosphere and O_2 production by phytoplankton.

l257 : These numbers would fit better in section 2.1. Also how are profiles defined regarding the sampling strategy ?

The numerical values in question have been moved to Section 2.1, where they are more appropriately placed. We have also clarified in the manuscript that a dive is defined as the combination of the initial descent to 1000–1250 m, followed by a series of yo-yo cycles, and ending with the final ascent to the surface : "the glider's navigation consisted in a 3-phase progression : a downward phase where the glider reached a depth of 1,000 m; a forward navigation phase, with about ten ascent/descent phases (i.e. yo) between 900 and 1,000 m; and a final phase of ascent to the surface. Dives carried out in the Horseshoe area last on average 8 to 9 hours , with 6 hours in average between 900 and 1,000 m, covering a distance of around 6 km."

L284; down to

Done

l288: It seems that the strong currents align with the continental slope and could be related to barotropic currents.

You are right, the alignment of the strong currents with the continental slope suggests they may be related to barotropic currents. This interpretation has been added to the manuscript to provide further context : "The strongest currents appear to be aligned with the continental slope (north-south axis), which may be related to barotropic currents."

L297 resulting from

Done

l300: There is no mention of how vertical velocities are calculated. Are they calculated from the ADCP or a flight model? L320 and after does not talk about currents not backscatter index… Consider making another subsection.

The computation of vertical velocities has been added in section 2.2.3 : "Finally, glider ADCP measurements also directly allows to compute vertical velocities by subtracting the glider motion from pressure measurements:

$UzG (z, t) = \Delta z(z, t)/\Delta t(z, t)$

where $\Delta z(z,t)/\Delta t(z,t)$ is the temporal derivative of the glider depth between two consecutive ADCP measurements. This computation is not accurate enough to obtain vertical oceanic velocities (O mm/s) but adequate to measure large vertical movements of scatterers such as CO2 droplets (O cm/s)."

L339: "The overall quality of the produced dataset is remarkable" This is not how a data paper conclusion should start. It is indeed truly remarkable to be collecting such a data set. Regarding the data quality, the last sentence of the manuscript let think that it can actually still be improved.

We removed the beginning of the phrase to adopt a more neutral and objective tone, as appropriate for a data paper : "This data set presented here demonstrates the feasibility of collecting long-term physico-chemical measurements (including CTD, ADCP and dissolved gases such as O_2, CH_4, and CO_2) using a glider platform over periods extending up to 30 months, with interruptions limited to deployment/recovery operations and brief maintenance interventions."

L344: Please provide reference or website and acronym for GEORGE project.

Done : "It also opens the possibility for new projects and research with the ability to detect and monitor CH_4 and CO_2 underwater distribution (GEORGE project (Next Generation Multiplatform Ocean Observing Technologies for Research Infrastructures, https://george-project.eu/), Hauri et al., 2024)"

L361 several studies?

The term attempts have been replaced by studies in the revised manuscript to better reflect the existing scientific efforts.

Thank you very much for these detailed and constructive comments. We have carefully considered all your suggestions and have revised the manuscript accordingly. Modifications have been made throughout the text to improve clarity, accuracy, and consistency, following your recommendations.