

Dear Editor, Please find our responses to your comments are made in italic text below.

Public justification (visible to the public if the article is accepted and published):

Dear Authors,

Thank you for this revision. I am pleased to accept the manuscript for publication, pending the minor revisions listed below.

Section 2.3.1 still requires additional justification:

- Please begin with a sentence clarifying what you aim to identify through NAME or local wind direction (e.g., Atlantic air masses) and why this is important.

At lines 275-6 of the new MS we added:

'We are particularly interested in the North Atlantic air mass at this coastal location, as this represents the background condition for the UK during the typical southwesterly conditions.'

- Please rephrase the final sentence to provide a more conclusive statement, such as: "We conclude that the Atlantic air mass (?) can be identified from the local wind direction when ranging from X to Y, and we will use this definition going forward..."

At lines 296-7 of the new MS we added:

"We conclude that the North Atlantic air mass can reasonably be identified from the local wind direction between 210° and 260°, and we use this definition in section 2.3.2 below."

- In Section 2.3.2, you briefly state that the all-direction methane concentration is higher than that in the southwest sector. Could you elaborate on the meaning of this finding and its implications? Without this, the analysis may seem insufficiently justified.

At lines 304-306 we added:

'We expect measurements from the southwest wind sector to be more representative of the Atlantic and so background Northern Hemisphere. That the all-direction mean mixing ratio is higher reflects local and regional emissions of methane.'

For improved readability, please merge Figures 4 and 5 into a full-page figure and update it with the latest data.

Done.

Additionally, for these figures:

- Ensure no overlap between the y-axis tick labels.

Done.

- Remove the redundant y labels (e.g., "Variable" in Figure 4) as they add little value.
Done.

- Remove the box separating the y-axis from the plotting area.

Done.

- Replace "TEMP" with "T" or "TA" (for air temperature) since "TEMP" is neither an acronym nor a chemical formula.

Done.

- In the caption, please add the short name of each variable (e.g., "From top: wind speed (WS), air temperature (TA), ozone (O3)...").

Done.

- Consider adding the variable name and unit as either the y-axis label (stacked if necessary) or as a panel label within each plot, instead of using a legend. To separate name and unit, use "WS [m s-1]" or "WS (m s-1)" rather than "WS_m s-1."

Done.

For Figure 7 and all other multi-panel figures, please follow the recommendation for panel labels: <https://www.earth-system-science-data.net/submission.html#figurestable> "Labels of panels must be included with brackets around letters in lowercase (e.g., (a), (b), etc.)."

Done (Figs 6, 7 and 8 of the new MS are updated versions).

Line 606: A closing parenthesis is missing at the end of the line.

Done

To avoid further delays, I will not need to review the manuscript after this point.

Thank you.

Please conduct a final proofread to address any remaining issues, harmonize the figures, and ensure all captions include essential information for readers. Additionally, verify that all links are functional.

Done.

Thank you for your efforts and patience.

Kind regards,
Baptiste Vandecrux