

Review Faurès et al. (2026): Spectral versus co-spectral correction of eddy-covariance fluxes: a multi-site assessment across the ICOS network

Faurès et al. (2026) calculated flux correction factors for CO₂ and H₂O using power spectra and cospectra across multiple ICOS ecosystem sites. For CO₂, both methods yielded similar results, whereas significant differences were found for H₂O. Overall, the cospectral approach provided more robust results for the standard ICOS flux setup.

The authors compared their corrected fluxes with fluxes processed through the ICOS flux-processing pipeline and found significant differences, particularly for H₂O. Their work is a valuable contribution to the scientific community working with eddy-covariance flux measurements and is suitable for publication in *Atmospheric Measurement Techniques*. I also appreciate that the authors have made their code available under an open-source license. As a result, research groups working on flux measurements of other greenhouse gases and short-lived reactive gases can benefit from their work as well.

The manuscript is well written, clearly structured, and the methods and results are scientifically sound. I have a few minor comments and several technical comments, which are listed below.

Minor Comments:

L. 41–46: I would be more specific here. Please add the name of the instrument (LI-7200(RS)) and mention that it measures both CO₂ and H₂O. Otherwise, this section sounds somewhat vague.

L. 80: Was there a specific reason for selecting the year 2024? Were the results from other years similar to those obtained for 2024?

L. 101: How many bins were used for the smoothing/averaging procedure?

Technical comments:

L. 38: Change the capital "I" to a lowercase "i".

L. 53–56: This is a relatively long sentence containing a large amount of information. Consider splitting it into two sentences.

L. 83: There is an unclosed bracket.

L. 127: Missing reference.

L. 183, L. 477, L. 483: Add a "/" between *z* and *L*. Please check for other occurrences throughout the manuscript.

L. 212: a dot is missing between "exchange" and "This".

L. 221, L. 232, L. 234, L. 243, L. 347, L. 348, L. 368, L. 384, caption of Fig. 10: Change italic font to upright (roman) font.

Table 2, L. 384, L. 584: H₂O fluxes are not expressed in units of energy. Please replace "H₂O" with "LE" (latent heat flux).

L. 408: Add a hyphen between "first" and "order" ("first-order").

L. 534: Remove the opening bracket at the end of the sentence.

Fig. 3, Fig. 4, Fig. 8, Fig. D2, Fig. D3: Format the exponent "-1" in the x-axis label as a superscript.

Fig. 5: Add an explanation of the boxplot elements to the caption, for example: "Box frame = 25–75% interquartile range (IQR), bold line = median, whiskers = $1.5 \times \text{IQR}$." Also add: "Red bold labels represent the low measurement-height sites." Please make the labels bold.

Fig. 6: Make the red labels bold and change the titles to labels. Format the "2" in CO₂ and H₂O as a subscript.

Fig. 9: Change the caption opening to: "Boxplot of LE ..." and add a description of the boxplot elements. Replace "titles" with "labels" in the caption.

Fig. 10: No comment provided.

Fig. 11: Use a capital "C" in "Co-spectra" in the first line of the caption.

Figures B1–B4: Format the exponent "-1" in m s⁻¹ as a superscript. Also check the y-axis units.

Fig. C1: The title "SE-Deg" is missing. Format the exponent "-2" in the y-axis unit as a superscript.

Fig. C2: Change the unit to W m⁻² and replace "H₂O" with "LE" in the caption.

Fig. D3: Add the percentage ranges corresponding to the RH classes.

Fig. E1: Add a "/" between z and L in the caption.

Fig. E2: Are the outliers necessary? I would consider removing them to improve visibility. Also add a description of the boxplot elements.