

Response to Editor, <https://doi.org/10.5194/amt-2024-34-EC2>

(Editor Comments in black, responses in red)

The authors submitted a substantially revised version on the basis of the reviewers' comments.

However, after reading the revised version, I find that quite a number of points still do need improvement, for instance:

We are grateful for the Editor's careful scrutiny of the revised manuscript and track-changes version. While there were many revisions, the majority were relatively minor. The program we used to track changes created an unnecessarily long document. It has been significantly shortened by removing tracking for small changes such as punctuation, ordering and position of references in sentences, and formatting. We have added several more substantive changes as recommended by the Editor, which we summarize below. We are pleased to make these changes as they improve the paper.

The sentence in lines 58-61 introducing the new instrument is very hard to read (in fact the sentences in the original version of the manuscript were better in that respect):

“As fast in situ observations of H₂O are essential for numerical weather prediction and for investigations of the evolution of the ABL and its turbulence characteristics (e.g. large eddy simulations), and there is a need for more frequent measurements from remote locations, we have developed an economical new fast-response laser spectrometer (Helbig et al., 2021; Petersen, 2016).”

We have changed this to read:

“High-resolution in situ observations of H₂O are essential for numerical weather prediction and for investigations of the evolution of the ABL and its turbulence characteristics (e.g. large eddy simulations), and there is a need for more frequent measurements from remote locations (Helbig et al., 2021; Petersen, 2016).”

Line 65: The term „capacitive sensors” appears to correspond to “thin-film water-sensitive polymers sandwiched between two electrodes” in lines 53-54. This should be made clear.

We agree. We have added changed this to read:

“At the other end of the cost spectrum are various versions of capacitive humidity sensors that employ thin-film water-sensitive polymers sandwiched between two electrodes.”

Lines 83-84: The meaning of „heterogeneous scalar and vector fields resulting from complex terrain“ remains cryptic. If H₂O mixing ratio (scalar) fields and H₂O flux (vector)

We have modified the sentence to read:

“Another application is tracking water-resource loss from reservoirs with ground-based flux measurements. There is a need to increase the density of measurements on specific reservoirs to map out the large spatial and temporal gradients in humidity due to adjacent complex terrain that contributes to significant errors in latent heat fluxes derived from those measurements (Friedrich et al., 2018).”

Line 105 (Caption of Fig. 1): What does the dashed line (there appears to be no dotted line) actually indicate ?

Thank you for catching this error. We changed line styles for clarity without correcting the figure caption. This, we have modified the figure caption to read:

“The components surrounded by the bold dashed line are contained on a single printed circuit board (schematic shown in Fig. 3).”

Line 125: Explain “a Teensy 3.6“. Is this one of the Arduino microcontrollers mentioned above?

Correct. For clarity, we have modified this to now read:

“Two independent Arduino-compatible microcontrollers (PJRC, Sherwood, OR) were chosen for separately driving the laser (a Teensy 3.6) and for data acquisition (a Teensy 4.1).”

In addition, we have added “3.6” and “4.1” to the labels in Figure 1 to clearly indicate the locations of these two microcontrollers.

Line 141: What does the term „Teensy 4.1“ refer to?

The Teensy 4.1 is the microcontroller that acquires and stores data. Hopefully this is now clarified by the change above.

Line 179: Give figures also in nm.

We have converted from wavenumbers to nm: “1373.3002 and 1373.2878 nm”

Figure 3 (new): Lower right corner: TIP32AG is designated PNP transistor, but the symbol indicates an NPN transistor (which is probably correct from the schematics, so transistor type designation is probably wrong), perhaps TIP31AG.

Thank you for catching this error in the PNP transistor symbol in the schematic. This has been corrected.

Unfortunately this list can be extended.

Thank you. Without specific examples, we have carefully reviewed the remainder of the manuscript and made a few additional changes, which we have noted in the new versions of track changes and authors’ response. We trust that these will adequately address the Editor’s concerns, but we are open to further editorial or copy-edits that improve the final manuscript.

Furthermore the „track changes“ document is not very helpful in that several sections of the text are marked as changed while they are actually unchanged (e.g. most of lines 58 and 59). At the same time several changes (e.g. the caption of the new Fig. 3) are not marked as changed although they are clearly new text.

The Editor has raised a good point; the track-changes version that was generated by our editing software was verbose. We have taken another pass through the marked-up version for the Editor, and we have manually removed instances where the original document is unchanged.

Also the line numbers given in the answer to the reviewers do not appear to match the text.

Thank you. Unfortunately, we do not understand what happened with the document received by the Editor, as it does not match the line numbering on the version we submitted. We do notice that a marked-up document generated by an iMac have different line numbering than one generated by a Windows machine. However, that does not completely explain the discrepancy. We will work with the Editorial Support Team to ensure that the Editor receives a copy that has numbering that corresponds to the version we have used for the “explanation of changes” document.

Overall, I am sorry to have to conclude that the revised manuscript is still not ready for acceptance for final publication in AMT.

I therefore suggest:

1) That the authors provide a further revised version after thoroughly going through the text and taking care of the unclear statements and errors. In this context it might be helpful if a more senior scientist (co-author) could help.

As the most senior scientist on the team, Prof. Toohey has created the versions of the revised documents submitted to Copernicus for final review. We welcome any suggestions, including at the copy edit stage, that will further improve the final published version of the paper.

2) That the authors provide a „track changes“ version that shows all changes (and only the changes) with correct line numbers.

This will be done.

Alternatively, the authors may re-submit a revised version of the manuscript to AMT.

This does not seem necessary, given the nature of the changes. We respect the view of the Editor and we accept this constructive recommendation and the spirit in which it was offered.