

# ***Interactive comment on “Pyranometer offsets triggered by ambient meteorology: insights from laboratory and field experiments” by Sandro M. Oswald et al.***

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We thank Dr. Michalsky (Referee 1) for the positive judgment of our work and his suggestions for revising the manuscript.

Below we provide the review (in bold) and our point to point response to individual comments.

**The paper examines the effects of liquid precipitation on pyranometer output under laboratory and ambient conditions (commonly referred to as offsets). It also looks at the effects of three different ventilation systems for the same pyranometer type. I find the experiments were carefully conducted and add new**

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**information that should allow one to scrutinized irradiance data with an eye toward eliminating unphysical results after precipitation events. To my knowledge this type of study has not been performed, but was needed to explain strange results that were suspected, but until now, not confirmed by experiments.**

We thank the referee for acknowledging the originality of our work and its contribution towards eliminating unphysical results in radiation measurements.

**I would add a comment to the text that this affects data taken right after routine pyranometer cleaning when water or alcohol is sprayed on the pyranometer's outer glass.**

This is an excellent point. We will include a statement discussing effects on data reliability after pyranometer cleaning (with water or alcohol) in the discussion section of the revised manuscript.

**It follow on experiments, it would be interesting to see how snow, wind, and rapid temperature changes affect offsets.**

From our set of field-experiments we have a small set of spray-tests (during the January field campaign) at temperatures below 0 °C available. These spray-tests led to 'freezing rain' on the pyranometer glass dome. While the initial sensor response to 'freezing rain' was similar as observed during 'liquid precipitation' it took the sensor longer to recover to initial state. The small set of spray-tests below 0 °C available however does not allow drawing statistically robust conclusions and these results are therefore not included in the present manuscript. We agree that follow up experiments characterizing pyranometer offsets following abrupt temperature changes and different precipitation types would be highly interesting. Such experiments would require a more comprehensive laboratory equipment (e.g., a climate chamber) and could be performed, possibly with an extension towards other pyranometer types and heating/ventilation systems, in a community effort. We will include a statement indicating potential future directions in the discussion section of the revised manuscript.

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