

Dear Authors

Thank you for your patience during the review process. The paper can go forward for publication.

Both referees agree that you have now addressed their comments and that you have now produced a high quality research paper that has some important implications for modellers and practitioners in this field, and the users of their findings. In particular, your confirmation of the importance of recognising time-variable biases in soil moisture products and the shortcomings in commonly used methods in considering these has important implications in practice and for policy.

REgards

Graham

**We want to express our thanks to the editorial team and the two reviewers.**

Non-public comments to the Author:

The risk of misleading or distorted outcomes when applying the commonly used methods is critical. You have pointed this out in your comments outside of the paper. I think that this may be worth emphasising or stating more directly in the abstract. It's implied, but not stated directly.

When submitting the paper you stated that "Our findings have wide implications for policy-relevant research on drought monitoring and the role of vegetation in weather, climate and economy. Satellite-derived soil moisture products are deemed central to these tasks, but our work contends that time-variable biases can greatly reduce the extent to which satellite soil moisture products can contribute."

I think that a statement like this would not be out of place in the Conclusions and that you should consider adding one before final submission

- but I leave both suggestions up to you. The paper can proceed for publication, whatever you decide.

**We have modified the last two sentences of the abstract to make this point more explicitly. We have also rewritten the final paragraph of the conclusions to better highlight the implications for policy-relevant research.**

Please also note the minor corrections requested by one reviewer and consider these before final submission:

- 1) There is still no legend of what the line colors mean within figure 3a (only in the caption), which would be useful

We have labelled the two lines directly (rather than in a separate legend). The colours are also explained in the caption.

- 2) Page 20, line 10 seems to have a missing BibTeX reference

Fixed