



EGUsphere, referee comment RC1  
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## **Comment on egusphere-2022-436**

Anonymous Referee #1

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Referee comment on "Satellite-derived constraints on the effect of drought stress on biogenic isoprene emissions in the southeastern US" by Yuxuan Wang et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-436-RC1>, 2022

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This study investigates the impacts of drought conditions on isoprene emissions. By combining observational data including satellite product and model simulations, the authors aim to improve the quantification of biogenic isoprene emissions in response to drought stress. This is a very important topic and the results are of great importance to the community. The paper is in general well written and I only have a few relatively minor comments.

- In using the HCHO data to derive the changes in isoprene emissions (drought vs no-drought conditions), I believe the underlying assumption is that there is no significant changes in other factors (e.g. chemistry, emissions of ozone precursors such as NO<sub>x</sub> from soil) during drought conditions – this is likely true, but it would be very helpful to point out and discuss in the text.
- Thinking about the future development of biogenic emission schemes used in CTMs, such as MEGAN, do you think it's easier to apply a drought stress factor as done here or simply add the precipitation (probably precipitation history over a certain period) in the MEGAN parameterization? I feel each has their own advantage. E.g. precipitation data is already there, just like other metfields like temperature, so you can easily do the calculations on the fly. Some discussion on this would be particularly helpful for the modeling community.