

# ***Interactive comment on* “BESS-STAIR: a framework to estimate daily, 30-meter, and allweather crop evapotranspiration using multi-source satellite data for the U.S. Corn Belt” by C. Jiang et al.**

## **Anonymous Referee #1**

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General comments: The study “BESS-STAIR: a framework to estimate daily, 30-meter, and all-weather crop evapotranspiration using multi-source satellite data for the U.S. Corn Belt” used the BESS model with 30-m fused inputs from a automated data fusion algorithm (STAIR) to simulate fine resolution cropland ET across the U.S. Corn Belt from 2000 to 2017. The results showed good performance compared with field measurement, indicating that BESS-STAIR is applicable for field scale ET simulations in the U.S. Corn Belt, which is useful and meaningful for agricultural water management and precision agriculture applications. The manuscript was well written and followed

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a good logic. Lots of work was done by the authors to explore applicable and reliable methods for agricultural management. It is good for the farmers and decision makers to know agricultural water demands. Thus, I think this study could be considered for publication in this journal. However, I have several minor comments listed below.

Specific comments: 1. Please use only one term (ET or LE) consistently throughout the manuscript. It would be easier for people to read this manuscript. 2. In the section 2.1, please list the most important equations in the BESS model for ET calculations. And please list the full name of the variables before using the abbreviations (e.g.  $\alpha$ VIS,  $V_{cmax}$ , etc.) 3. Ln. 205, please show the equation for clear demonstration. 4. Ln. 254, CI could not be found in Eq. 6 or 7. Please check the manuscript clearly to correct this kind of errors. 5. Fig. 6, is the irrigation measured in the field? In Fig. 8 and 9, it would be good to point out flux tower sites. 6. I think Fig. 7 could be put in the supplementary materials, since Fig. 6 already showed good performance of BESS-STAIR ET. 7. Ln. 346-347, the authors said “measured daily LE do not show strong and fast response to precipitation and/or irrigation”, however, in Fig. 10, averaged ET showed significant correlations with precipitation. How did the author interpret this?

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