Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on essd-2021-207

Anonymous Referee #1

Referee comment on "Landsat-based Irrigation Dataset (LANID): 30□m resolution maps of irrigation distribution, frequency, and change for the US, 1997–2017" by Yanhua Xie et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-207-RC1, 2021

The manuscript by Xie et al. "Landsat-based Irrigation Dataset (LANID): 30-m resolution maps of irrigation distribution, frequency, and change for the U.S." developed new irrigation mapping datasets in the US for both cropland and pasture with high spatial resolution across a relatively long-time span (1997-2017). The irrigation mapping showed high accuracy compared with validation, and other multiyear results revealed interesting regional and local patterns in irrigation changes. This work will be an important contribution to the community. The manuscript is well-written and the presentation is clear.
Below I have some minor comments:

L65. There are several different irrigation products used in this study. For readers who are am not familiar with each of them like me, it is helpful to add a column in the table to briefly summarize the method for producing each dataset.

L125: What years are those selected reference and validation points?

L264: The authors need to discuss the spatial scale issue when comparing different datasets (points vs. pixel, spatial resolutions). How do different spatial resolutions influence the comparison among different data sources? What is a fair comparison? For example, how to make a fair comparison between irrigation fraction and the binary irrigation map?

L296 and Fig 14b: Unlike other products which were only compared with one year of NASS data, LANID was compared with multiple years of NASS data. I think this may contribute to the higher R2 of LANID in Fig. 14b. In terms of R2, LANID is better, but I don't understand why it is written that the LANID agreement is weaker than MirAD and GMIA.