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Interactive comment on "The Land surface Data Toolkit (LDTv7.2) – a data fusion environment for land data assimilation systems" *by* Kristi R. Arsenault et al.

Anonymous Referee #2

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This paper presents an overview of the land surface data toolkit v7.2. The main purpose of the paper is to explain the functionality of the toolkit and present the justification for various components with reference to the literature. Such tools are essential to the community as a means of facilitating model development and implementation, especially given the ever-increasing availability of observational data and computing resources.

The paper is not a technical description of the toolkit as such, more a very detailed description of the components. I was a little sceptical about the value of the paper for this reason, however after reading the content I believe it to be a worthy contribution

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Discussion paper

to the literature and reference point for the current state of the art in terms of data pre-processing for land surface applications. After accepting the premise of the paper, I had very few comments regarding its content. The toolkit is very well presented. I am therefore suggesting only very minor comments and clarifications and believe the article is a good fit for GMD.

Line 31: lots of acronyms here makes it quite hard to read. Could you maybe write out MDF its only used 6 times? Section 2 Background. A few additional examples of data processing environments designed to support large scale modelling would be a nice addition. Is it really the case that you would only classify the WRF as relevant to this broad definition? For me this section doesn't do enough to set the context within which LDT has been developed and is my only substantive criticism of the paper. Furthermore, you could also replace ArcGIS and Matlab with QGIS and R to have much the same functionality in an open source framework. Overall this paragraph is not very convincing relative to the rest of the paper. Is the text wonky on Figure 1? Maybe it's just my eyes, but it would look a little better if straightened up. P6 line 28: Am I correct in thinking that hydrological response unit approach to sub-grid parametrisation is not supported. If so could you briefly comment on the implications and future potential/challenges in this regard? Section 4.4. The frequent use of currently here suggest changes are planned or in progress. Perhaps either mention imminent development plans or drop the "currently" bit.

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