Geoscientific
Model Development
Discussions

Interactive comment on "The Joint UK Land Environment Simulator (JULES), Model description – Part 1: Energy and water fluxes" *by* M. J. Best et al.

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General comments:

Text has been added to explain the considerations for making choices between the various options within JULES.

A table of the prognostic variables has been added to the text.

Specific comments:

596-24: Done.

597: A reference for both CLM and the NOAH models has been added to the text.

599: The aim of JULES is to include these other aspects, such as river routing, irrigation and ground water. As such, they are not coupled as the atmosphere is. Text has been added to clarify this.

Eq 4: Text has been added to explain why both emissivities are present (which is due to considering reflections of the longwave radiation).

601-25: the definition of the critical point has been added to the text and referenced to a similar definition for the field capacity.

602-5: The distinction between bare soil under sparse canopies and dense canopies with low LAI values has been explained further within the text to show how JULES represents these different land cover.

603-9: An explanation has been added to detail where and why this relationship has been derived.

604-13: The text has been changed to make this clearer.

605-18: Text has been added to clarify this point. It is specified from the land cover fractions for the various surface types.

605-25: Done.

606-17: Done.

2.4: A cartoon has been added.

Text has been added to explain how the urban parameters are derived.

607-21: The text has been changed to make this clearer.

608-2: Done.

608-4: Done.

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608-21: This symbol is now listed in the appendix, which includes units (see response to comment 3 from referee #2).

Tables 2, 5 & 6: We feel that it would not be helpful to include this in the document. The symbols for all equations detailed in the text are given in the appendix (see response to comment 3 from referee #2) along with units and equation numbers. In addition, it is not suitable to give the variable names as used in the model code, as these have a different structure to the symbols in the appendix, and would only lead to further confusion for the reader in our opinion. Also, further details of these quantities are given in the user guide which has been attached as supplementary information.

609-9: A more correct definition of "specific humidity" has been added to the text.

609-12: This has been clarified within the text.

A table of prognostic variables has been added.

3 & 3.1: The text has been changed to make it clearer for all of point raised.

610-10: Text has been added to explain this.

3.3: Text has been added to make this clearer.

612-20: Done.

614-22: This phrase has been removed following the changes made to clarify the text.

Eq 43: This has been clarified in the text.

617-3: Done.

617-21: Text has been added to clarify this.

621-14: This equation appears in the peer reviewed open literature and is referenced in this text. We feel that it is beyond the scope of this paper to justify equations that have already been published in the open literature.

623-20: Done.

624-5: The text has been changed to clarify this.

627-27: We are not sure what the referee means here. This line already has "Clark" and we can only assume that the referee has miss-read the text.

Table 2: The table caption and the content of the table have been changed to clarify this.

Table 3: The sections have been added to the table.

Interactive comment on Geosci. Model Dev. Discuss., 4, 595, 2011.