



Interactive comment on “The detailed snowpack scheme Crocus and its implementation in SURFEX v7” by V. Vionnet et al.

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Based on the comments from one solicited reviewer, one unsolicited CROCUS user, and my own reading of the manuscript, I recommend that this paper eventually be accepted for publication in GMD. The CROCUS model is used quite extensively within the French meteorological community and has evolved substantially from 1990s papers by Brun and co-workers. More recent developments and improvements have often been described in institutional reports that are not always readily accessible to the wider scientific community. The recent implementation of Crocus in SURFEX v7 is therefore a welcome opportunity to more fully document the current state of the snowpack scheme. This is a useful paper and GMD is well suited for this type of publications. My own editorial comments, to which the authors should respond, include:

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p. 2366, l. 13: 'insure' should be 'ensure'. Insure may be correct in American spelling but refers to 'insurance' rather than the intended 'make sure that'. Insure also appears elsewhere in the manuscript.

p. 2367-2368, and elsewhere: I am not particularly fond of bullet lists in scientific publications. This should be avoided and be replaced by a fluent text, if necessary by creating additional subdivisions. Also applies to pp. 2369-2370.

p. 2367, l. 24: parametrize: again, this is American spelling, and one would prefer parameterize or parameterise. Personally I dislike the American spelling but as long as it is used in the manuscript in a consistent way, that is acceptable.

p. 2367, l. 26: aging: again, this is the American equivalent of ageing. This is my last comment on American vs., UK spelling.

p. 2369, l. 15: 'term' should be 'terms'

p. 2369, l. 15: SWE is not defined at its first appearance but should be. As a general remark, this applies to all abbreviations. For the specialist, it is clear SWE should be snow water equivalent, but not to the general reader. It would equally be helpful to include an appendix with the explanation of all abbreviations.

p. 2372, l. 9-13: replace the bullet list by a fluent text, perhaps by using (i), (ii), (iii), ...

p. 2375, l. 17: 'thoses' should be 'those'

p. 2381, l. 1-2: 'resistances' should be 'resistance'. A better word is perhaps friction?

p. 2384, l. 2: 'to' should be 'from'

p. 2384, l. 26: 'contribution' should be 'contributions'.

p. 2387, l. 5: 'such file' should be 'such a file'.

p. 2388, l. 9: add 'N' and 'E' to the geographical coordinates of Col de Porte. p. 2388, l. 25 'in' should be 'of'

- p. 2389, l. 23: ‘satisfyingly’ should be ‘satisfactorily’
- p. 2390, l.5: ‘We here’ should be ‘Here we’.
- p. 2390, l. 13: separate ‘300’ from ‘m’.
- p. 2391, l. 6-7: what is a ‘two-moment scheme’?
- p. 2391, l. 20: ‘ongoing’ should be ‘progress’
- p. 2392, l. 21: ‘implementing’ should be ‘implemented’.
- p. 2392, l. 15: ‘term’ should be ‘terms’.
- p. 2392, l. 27: remove ‘a’ before ‘stand alone’.
- p. 2393, l. 3, remove ‘,’ after ‘including’.
- p. 2393, l. 17: ‘in order’ should be ‘envisaged’ or ‘planned’.
- p. 2394, Appendix A: the list of symbols and units is by no means complete. Why are most of the symbols mentioned in the text not included?

References

I did not check the one-to-one correspondence between the reference list and the text, but noted the following:

I don’t think it is necessary to include at which page a certain reference is cited – however ignore this comment if this was done by the typesetting office.

Check whether ‘in press’ references have already been published.

Gordon et al (2006): which journal is Atmos.-Ocean?

Loth and Graf (1998): more details required on the subject of this JGR (is it A,B,C,D,...?)

Masson (in prep.): remove ‘in prep.’ publications if not already submitted/ accepted.

Noilhan and Planton (1989): are the funny symbols really part of the doi?

Vionnet et al. (2011): IUGG did not produce proceedings. This is only an abstract and should not be included in the reference list.

Vionnet et al. (in prep.): what is the status of this paper? Remove when not accepted or in press.

p. 2410, fig. 4: labels and lettering are much too small to read.

p. 2415, caption of Fig. 9: 'top meter' should be 'the top 1 meter'.

Interactive comment on Geosci. Model Dev. Discuss., 4, 2365, 2011.

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