



***Interactive comment on “The SURFEXv7.2 land and ocean surface platform for coupled or offline simulation of Earth surface variables and fluxes” by V. Masson et al.***

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General comments:

This manuscript represents a good and important overview of the surface scheme SURFEX and should be useful for those working with surface development in various type of modelling systems. SURFEX is a fast developing modelling system and an overview paper like this is very helpful, especially since it lists many references to developments and studies related to individual components of SURFEX.

Detailed comments:

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Page 3774, Line 5: The Viterbo and Beljars (1995) reference for TESSEL is old. Please include more recent reference.

Page 3774, Line 14: Please also include reference to ALARO.

Page 3775, Section 2: I think this section should be extended to make it more clear what more or less tiles/patches means from a physical process point of view in SURFEX. E.g. that one separate snow storage is present in each tile/patch, that each tile/patch soil column is treated independently from energy/hydrology perspective (see comment below on subgrid hydrology options), that turbulent exchanges of fluxes depend on tile/patch characteristics like roughness length, surface temperature.

Page 3777, line 14: It is not required (or possible) to define optical properties in input fields for FLake in current SURFEX.

Page 3791, Lines 20-26: Here I get the impression that the tile approach is simply one among five optional hydrology parameterisations but I think that gives the wrong impression. The tile approach is fundamentally different from the mixing approach and that hydrological processes are treated by tile in the tile approach is just a consequence of that. See comment on Section 2 above.

Page 3792, Line 11: Please replace "used in other" with "used in some".

Page 3793, Line 2: Is the one-layer snow scheme in TEB a unique one or is it the same as one of the bulk schemes in ISBA?

Page 3794, Line 8: How do surface properties change when sea ice appears?

Page 3796, Lines 16-17: Here I get the impression that lakes are disregarded if not explicitly resolved. That is true in non-tiled schemes but not in tiled schemes as SURFEX provides. Thus, the overall area coverage of lakes will remain the same in a tiled scheme independent on horizontal resolution.

Page 3797, Line 1: Again, only lake depth is required by FLake at the moment.

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Page 3800, Line 18: Please specify the spectral bands SURFEX can deal with.

Page 3801, Lines 11-13: I would assume that some TEB prognostic variables may have the same short time scale as some ISBA variables. Thus, if implicit coupling is required to keep these ISBA variables stable it would be the same for TEB, right? So, is this statement really true (e.g. for long time steps in order of 30 min)?

Page 3802, Line 11: Maybe I'm confused, correct me if I'm wrong, but I thought that the SBL scheme is not implicitly coupled?! I have heard arguments like it works well for short time steps but since it is not implicitly coupled it will probably not work well for long time steps.

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Interactive comment on Geosci. Model Dev. Discuss., 5, 3771, 2012.

**GMDD**

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