

Author response

R: Referee's comment

A: Author's response

C: Proposed changes in the manuscript

S: Status

Blue letters: Suggested changes in the text

R: P4 L27: Add (θ_e) behind 'retention capacity' in order to introduce the parameter. Also add that it represents the fraction of the fraction pore space filled with water.

A: We replaced 'retention capacity' by irreducible water content. The variable name is added here as an insertion between two commas. It is therefore no longer necessary to add the symbol after the designation.

R: P4: Regarding saturation, I wondered whether in this model it is possible to have saturation with respect to the total pore space, i.e. $\theta_e = 1$? Thus if a slush layer is allowed to develop.

A: No, the model does not allow θ_w to be greater than θ_e , hence no slush layer can develop.

R: P17 L4: Better to remove 'in the next months' and replace it with something like 'in the autumn of 2020'.

A: We changed the text to: "The system is currently running in test mode but will be available to the public in [spring 2021](#)."

R: P18-19: In the conclusions, I would still like it when it is made more clear that COSIPY does not include the distribution of input over a grid, nor does it do any input preparation.

A: Yes, we have changed the text to: "The model is written in Python and completely based on open source libraries. The model, source code, [case studies and codes examples for data preprocessing](#) are provided on a freely accessible Git repository ([\url{https://github.com/cryotools/cosipy}](https://github.com/cryotools/cosipy)) for non-profit purposes."