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Improving database design for ice sheet modeling

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Since the last IPCC report and their appropriate assessment on the poor understanding of outlet glacier acceleration and consequent sea level rise projection, a number of important improvements have been made on ice sheet models. Indeed, resolution of ice flow models has been greatly improved (from tens of kilometers to sub kilometric meshes), better understanding of key processes have emerged (e.g., grounding line dynamics) and inversion procedures have been implemented to better reproduce the current dynamical state of ice sheets into numerical models. We are today most probably at a stage where the possibility of this new generation of ice sheet model will be soon limited by the currently available database. After a brief overview of the new possibilities offered by the coming generation of ice sheet models, we will illustrate most obvious limitations induced by the current form of bedrock and surface elevation datasets. We will further discuss some possibilities of improving the design of current database that may mitigate coming limitations.