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# Ice core and stratigraphic constraints on modelling dynamic Antarctic outlet systems

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Model reconstruction of past ice dynamic changes are essential for our understanding of future ice sheet responses to climate change. However, paleo ice sheet model studies are poorly constrained as spatiotemporal coverage of proxy reconstructions are sparse. Previously, we showed, that it is possible to identify or exclude past ice sheet instabilities by using the isotopic record and age structure of a deep ice core in vicinity to dynamic outlet sectors as a constraint for flow parameterizations in an ice sheet model. Here, we highlight key Antarctic ice sheet domains in which deep ice cores in concert with radar observations of the ice sheet' s stratigraphy hold great potential to provide an even more rigid observational tuning target for ice flow models. In some of these regions dated deep ice cores are already available, often including coverage of internal reflection horizons potentially connecting the ice core age structure with faster flowing outlet sectors. In other regions either an ice core providing age constraints or radar observations are not yet available. We discuss the potential of ice core/stratigraphically calibrated ice flow modelling of dynamic Antarctic drainage systems. Furthermore, we present first model estimates of the age structure in these regions and identify promising sites for future ice coring expeditions or ice penetrating radar missions.

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