Supplement of

Improve iLOVECLIM (version 1.1) with a multi-layer snow model: surface mass balance evolution during the Last Interglacial

Thi-Khanh-Dieu Hoang1, Aurélien Quiquet1, Christophe Dumas1, Andreas Born2, and Didier M. Roche1,3

1Laboratoire des Sciences du Climat et de l’Environnement, LSCE/IPSL, CEA-CNRS-UVSQ, Université Paris-Saclay, 91191 Gif-sur-Yvette, France
2Department of Earth Sciences, University of Bergen and Bjerknes Centre for Climate Research, Bergen, Norway
3Department of Earth Sciences, Faculty of Science, Vrije Universiteit Amsterdam, Amsterdam, the Netherlands

Correspondence: Thi-Khanh-Dieu Hoang (dieu.hoang@lsce.ipsl.fr)
Figure S1. Annual mean SMB anomalies (in mWE yr$^{-1}$) of BESSI with respect to MAR during the period 1979-2021 for (a) Greenland and (b) Antarctica.
**Figure S2.** Temporal variation of the annual mean total SMB and its elements integrated on the present-day ice sheet extent of ITM (in Gt yr\(^{-1}\)) during LIG for (a) Greenland and (b) Antarctica.
**Figure S3.** Annual mean SMB (in Gt yr\(^{-1}\)) of some LIG time slices (135, 128.5 and 115 kaBP) and the pre-industrial simulation of (a) ITM and (b) BESSI-iLOVECLIM for Greenland Ice Sheet. The total SMB (in Gt yr\(^{-1}\)) integrated for the present-day ice sheet extent (red line) is also included.
Figure S4. Annual mean SMB (in Gt yr⁻¹) of some LIG time slices (135, 128.5 and 115 kaBP) and the pre-industrial simulation of (a) ITM and (b) BESSI-iLOVECLIM for Antarctic Ice Sheet. The total SMB (in Gt yr⁻¹) integrated for the present-day ice sheet extent is also included.
Figure S5. (a) Annual mean SMB (in Gt yr\(^{-1}\)) of some LIG time slices (135, 128.5 and 115 kaBP) and the pre-industrial simulation of bias-corrected BESSI-iLOVECLIM, including the total SMB (in Gt yr\(^{-1}\)) integrated for the present-day ice sheet extent (red line). (b) Annual mean SMB anomalies (in Gt yr\(^{-1}\)) between several LIG time slices (135, 128.5 and 115 kaBP) and the pre-industrial of bias-corrected BESSI-iLOVECLIM for Greenland Ice Sheet.