



*Supplement of*

## **Firn changes at Colle Gnifetti revealed with a high-resolution process-based physical model approach**

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Table S1: additional model parameters maintained at the default EBFM value.

Symbol	Unit	Explanation	Value
$\alpha_{ice}$	-	Bare ice albedo	0.39
$\lambda$	-	Optical thickness empirical constant	1.6
$\rho_{ice}$	kg m <sup>-3</sup>	Ice density	900
$d^*$	m w.e.	Albedo characteristic depth	0.007
$dz$	m	Measurement level for bulk turbulent fluxes	2
$E_c$	J mol <sup>-1</sup>	Gravitational densification factor	60000
$E_g$	J mol <sup>-1</sup>	Gravitational densification factor	42400
$k$	-	Von Kármán constant	0.4
$k_{aer}$	-	Aerosol transmissivity exponent	0.97
$p$	-	Exponent in $LW_{in}$ formulation	2
$P_{thresh}$	m w.e. s <sup>-1</sup>	Precipitation threshold to reset snow albedo	$2 \cdot 10^{-8}$
$T_{runoff}$	d	Slush runoff time-scale	0.001
$T_{s/r}$	K	Temperature of snowfall to rainfall transition	273.75