1 Supplementary Material Part A.
Combinations of general circulation model (GCM) and regional climate model (RCM)

RCMs	GCMs					
	CNRM-CM5	HadGEM2-ES	MPI-ESM-LR	EC-EARTH	IPSL-CM5A-MR	NorESM1-M
RCA4	✓	✓	✓	✓	✓	
CCLM4-8-17	✓	✓	✓	✓		
RACMO22E	✓		✓	✓		
ALADIN53	✓					
ALADIN63	✓					
REMO2009		✓				
RegCM4-6			✓			
WRF331F					✓	
WRF381P					✓	
HIRHAM5						✓
REMO2015						✓

Table S1. 20 GCM-RCM pairs considered. We always rely on the variant r1i1p1 except for EC-EARTH where we use r12i1p1.

2 Supplementary Material Part B.
Selected parametrization of the GEV distribution

5 Table S2 indicates the selected parameterization of the GEV distribution for all massifs and all elevations from 900 m to 3600 m. We observe that 46% of these selected parameterizations consider one linear piece for the temporal non-stationarity of the GEV parameters. Simple linear trends are thus selected in most of the cases for the evolution of the GEV parameters. Similarly, the most parsimonious configuration is selected for 63% of the cases, i.e. without any adjustment coefficients. This means that adding a shift for the location or scale parameters of the GEV fitted to the projected annual maxima of snowfall with respect 10 to the observed annual maxima does not usually improve the fitting of the GEV model. In other words, observed and projected annual maxima share the same parameterization for the majority of the fitted GEV models.

Parameterization of the adjustment coefficients	Number of linear pieces				Total
	1	2	3	4	
Zero	28%	11%	14%	11%	63%
One for all GCM-RCM pairs	0%	2%	1%	1%	3%
One for each GCM	4%	1%	2%	1%	8%
One for each RCM	6%	2%	1%	1%	9%
One for each GCM-RCM pair	9%	1%	3%	6%	18%
Total	46%	16%	20%	19%	100%

Table S2. Percentages of selected GEV parameterization (number of linear pieces for the temporal non-stationarity and adjustment coefficients) for all massifs and all elevations between 900 m and 3600 m.