



Supplement of

Snow sensitivity to temperature and precipitation change during compound cold–hot and wet–dry seasons in the Pyrenees

Josep Bonsoms et al.

Correspondence to: Juan Ignacio López-Moreno (nlopez@ipe.csic.es)

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Supplementary material

Table S1. FSM2 configuration

Physics and driving data options	FSM2 Configuration	FSM2 Compile number
Albedo	Prognostic age function	2
Snow conductivity	Function of density	1
Snow density	Function of overburden	2
Turbulent exchange	Richardson number atmospheric stability adjustment	1
Snow hydrology	Gravitational drainage	2
Snow cover fraction	Linear function of snow depth	1

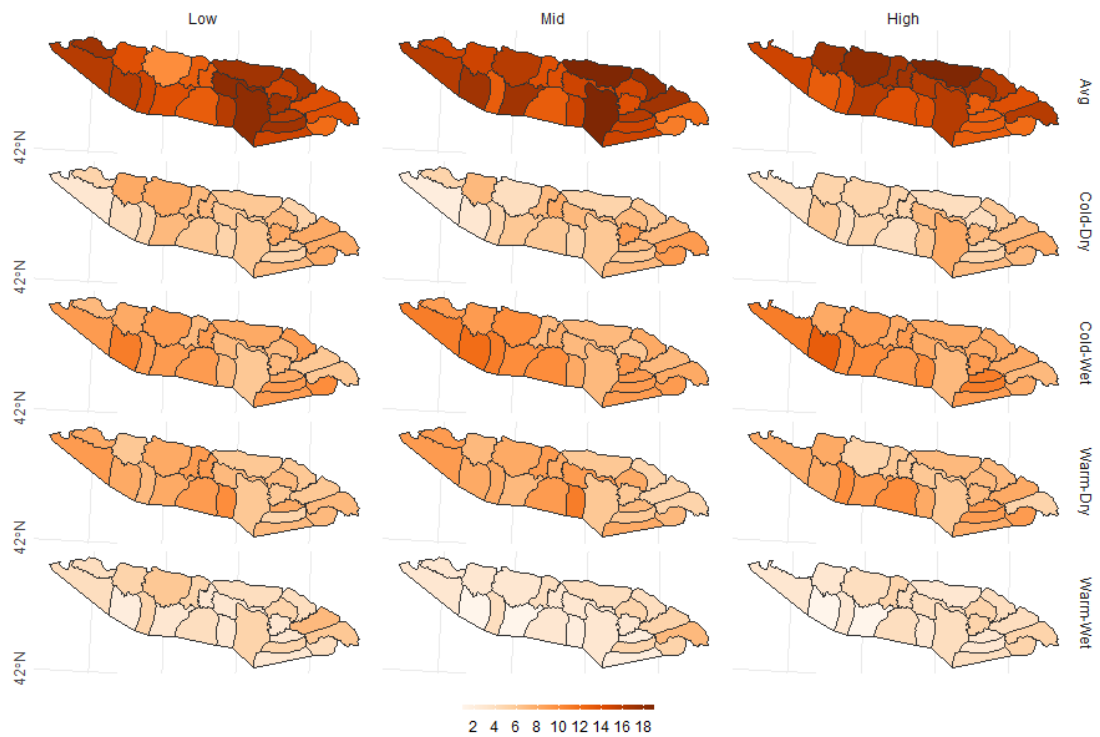


Figure S1. Number of season types by massif, elevation and climate season type.

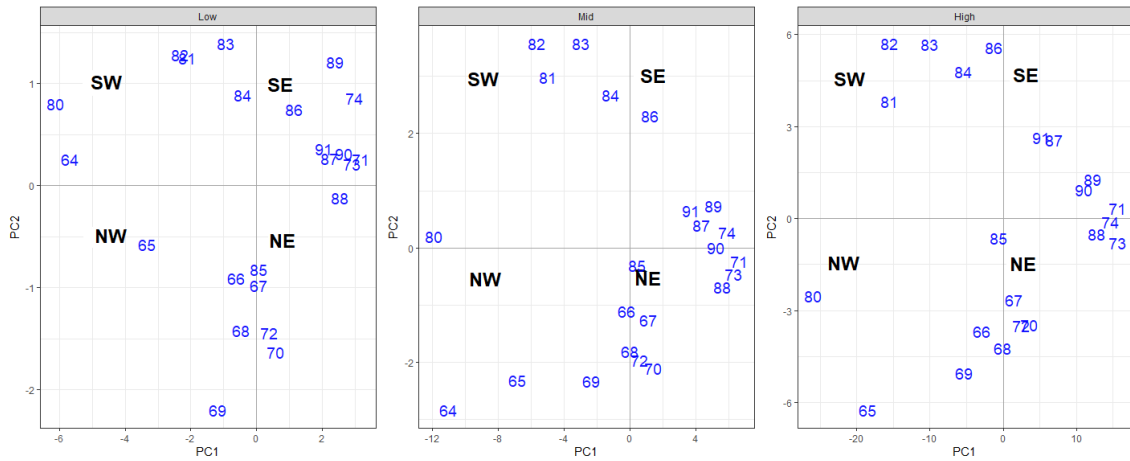


Figure S2. PC1 (x axis) and PC2 (y axis) scores grouped by elevation. The blue numbers are the Pyrenean massifs number identification defined by Vernay et al. (2022). The black bold letters are the Pyrenean sectors for low, mid and high elevation (left to right boxes).

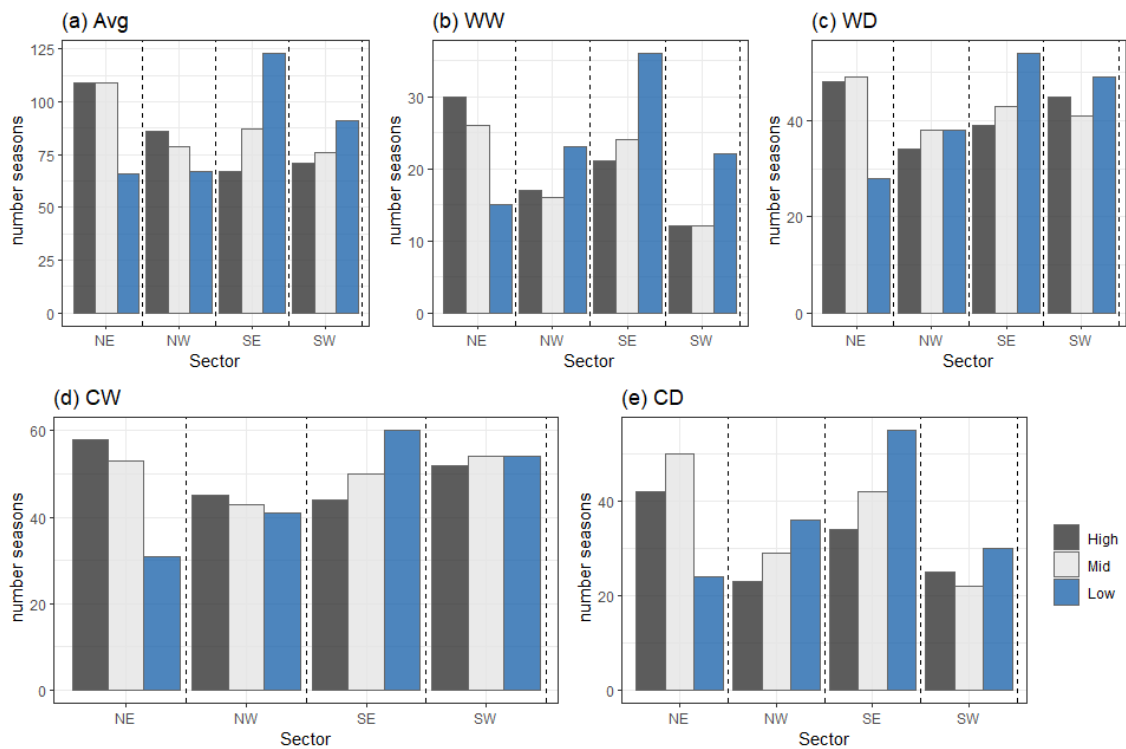


Figure S3. Number of season types by sector and elevation range.

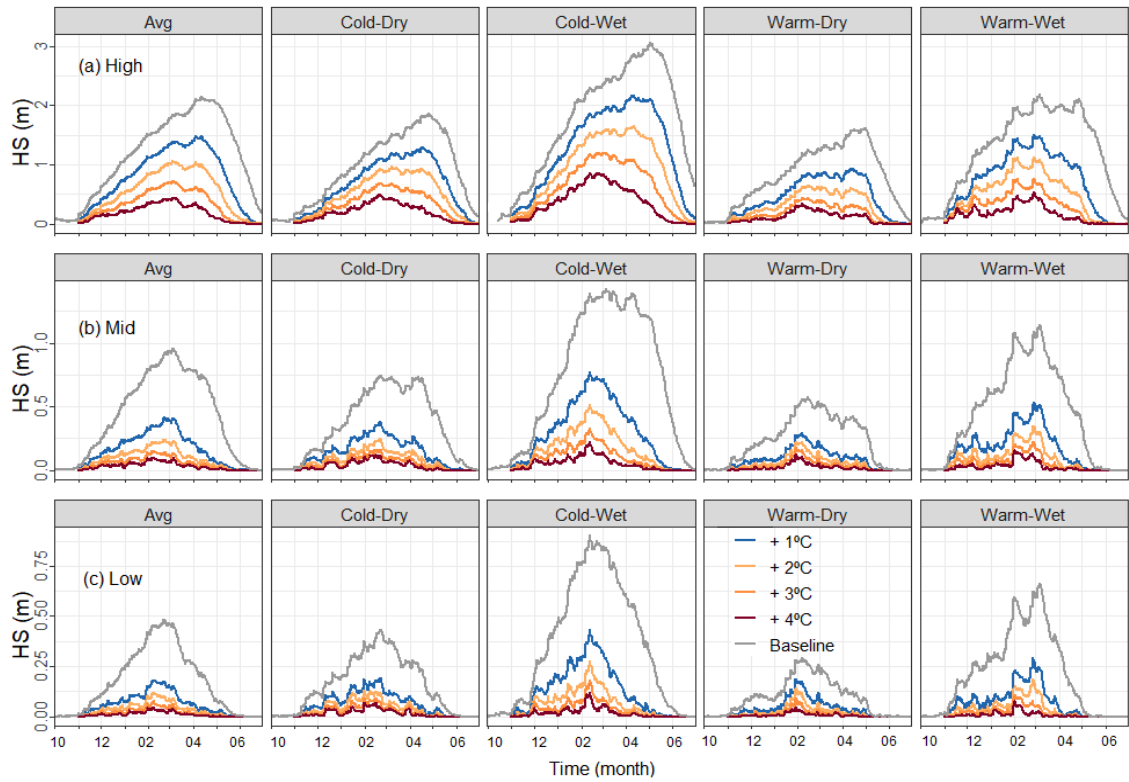


Figure S4. Seasonal HS temporal evolution for elevation, compound season type, and different temperature increases for low, mid and high elevation.

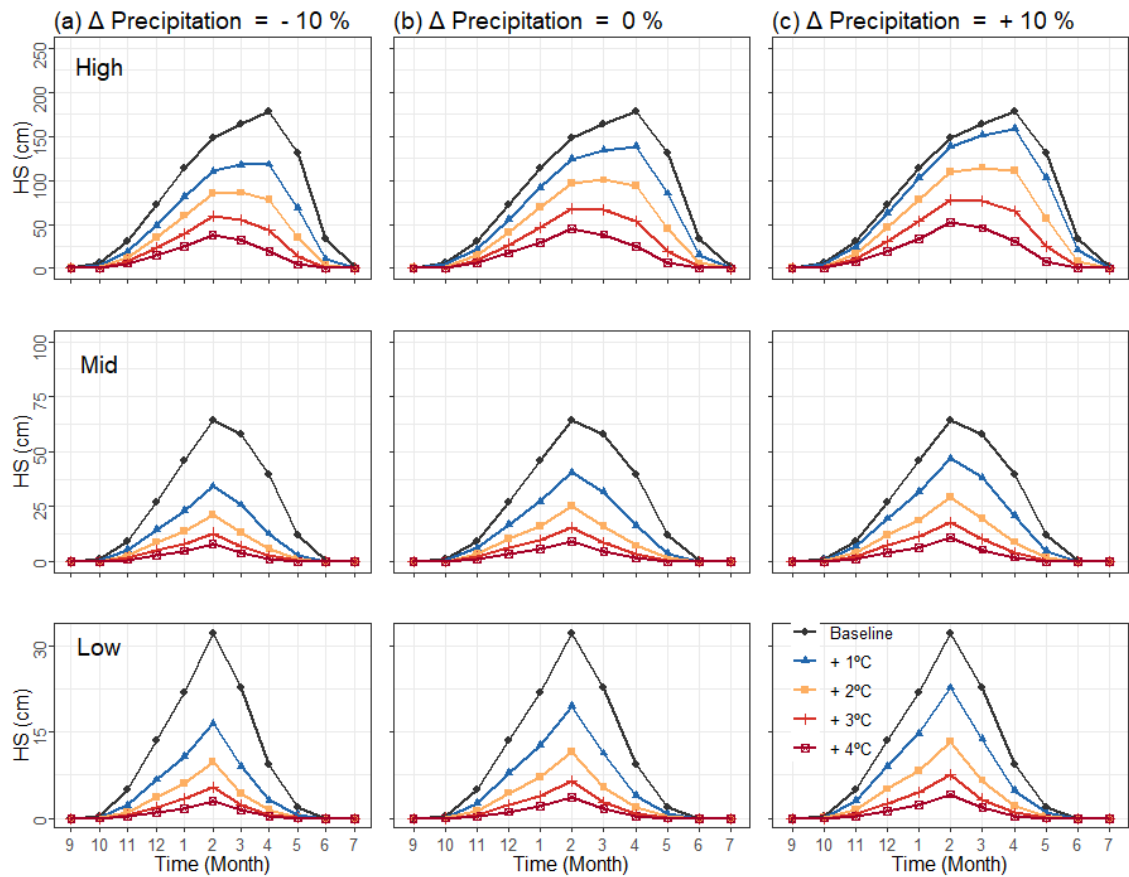


Figure S5. Modelled monthly HS values grouped by climate perturbed scenario and elevation range.

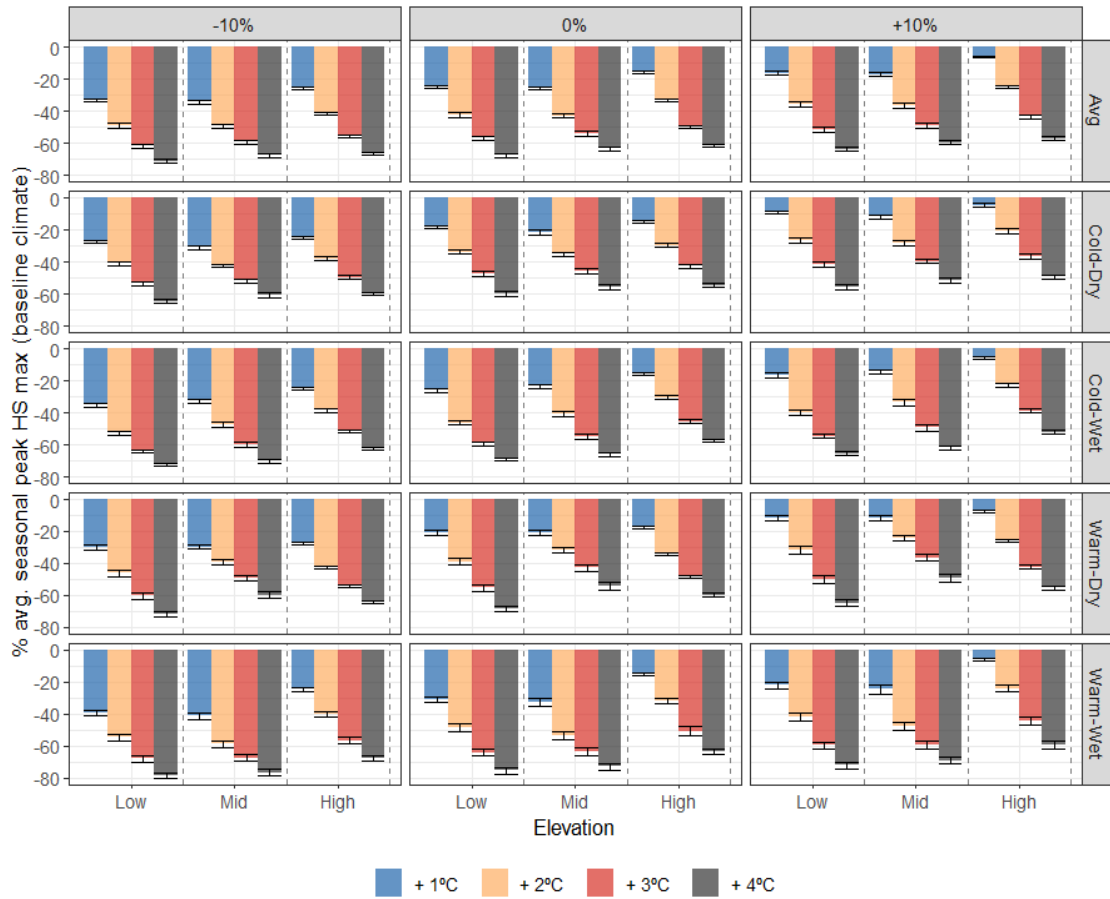


Figure S6. Peak HS max anomalies over the baseline scenario, grouped by compound temperature and precipitation extreme season (rows), precipitation perturbation (columns) and increment of temperature (colors).

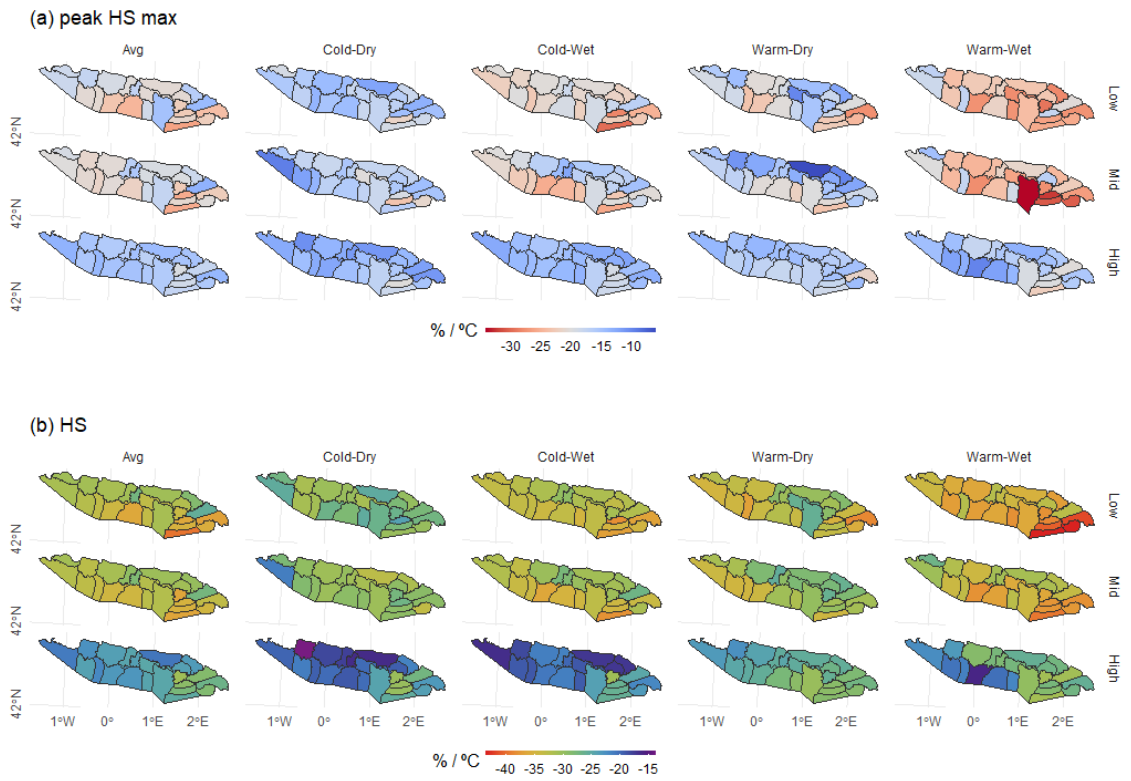


Figure S7. Geographical distribution of seasonal (a) peak HS and (b) HS sensitivity to climate change during the four different compound temperature and precipitation seasons.

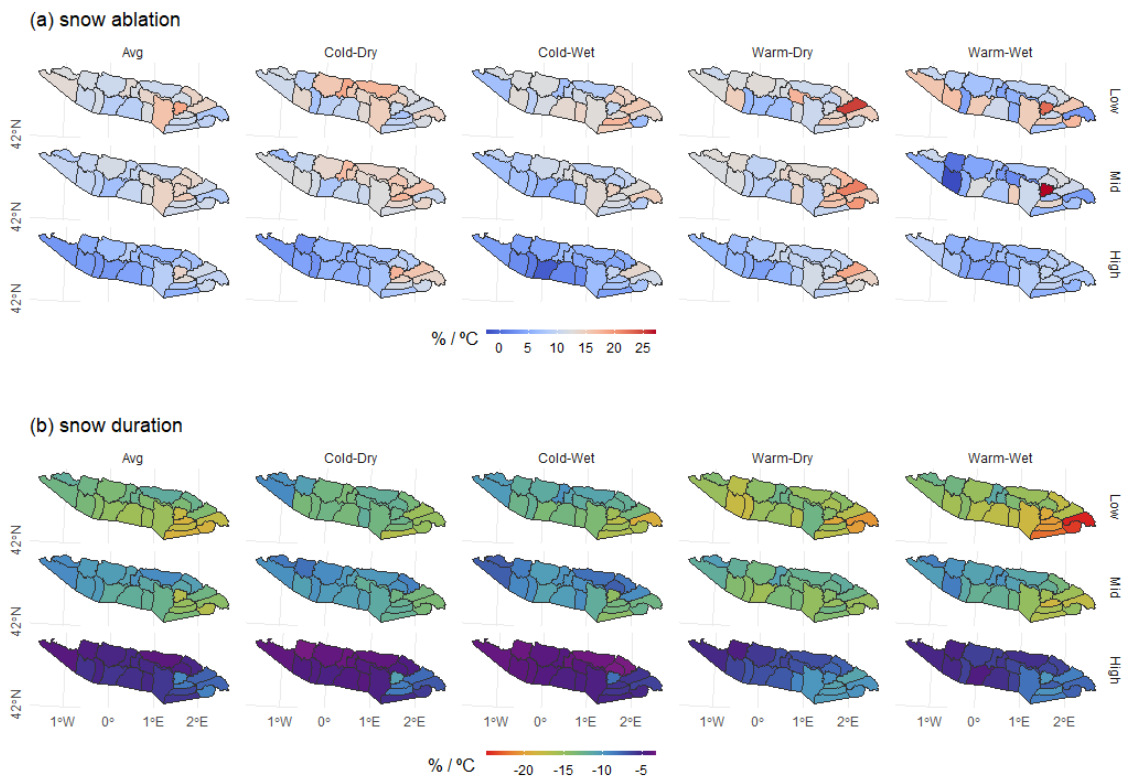


Figure S8. Geographical distribution of seasonal (a) snow ablation and (b) snow duration sensitivity to climate change during the four different compound temperature and precipitation seasons.

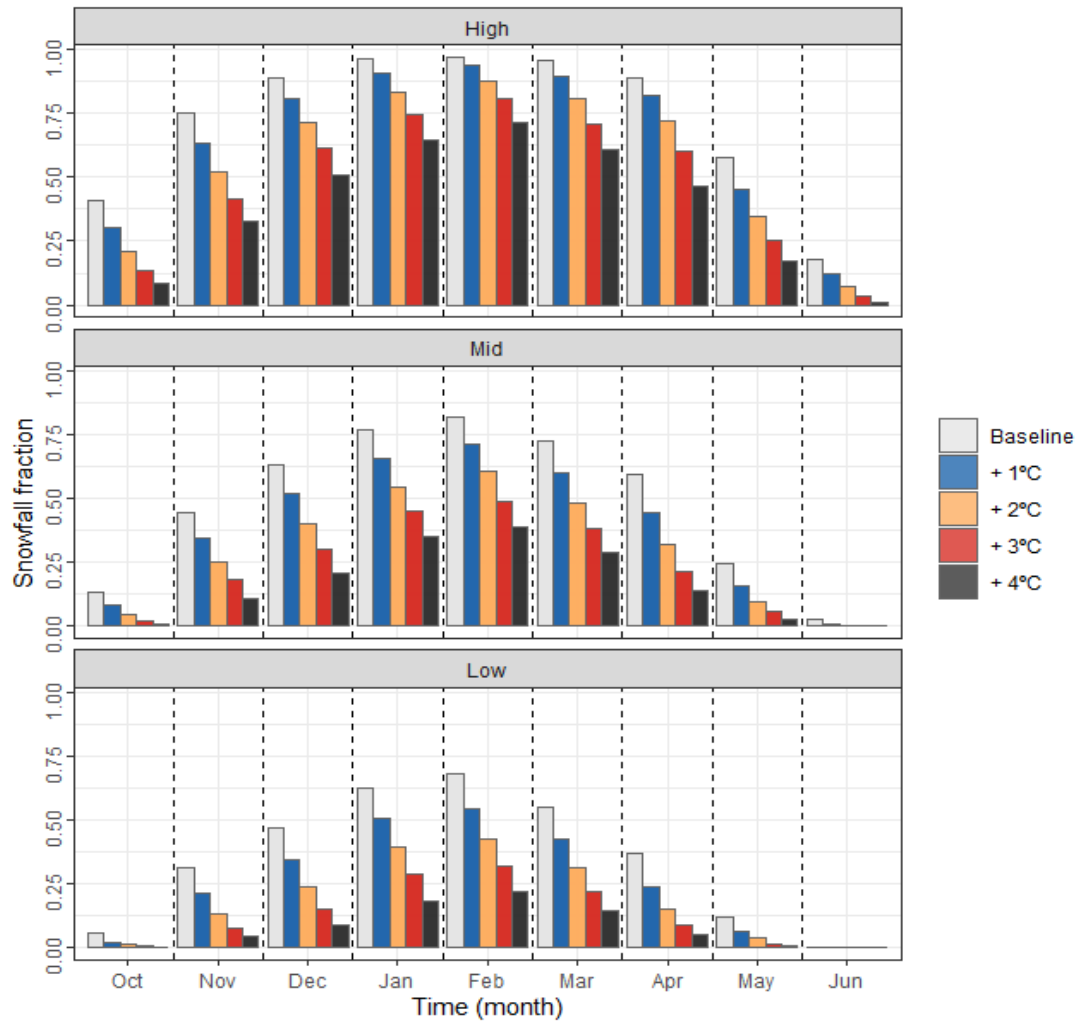


Figure S9. Baseline and climate perturbed snowfall fraction temporal evolution.