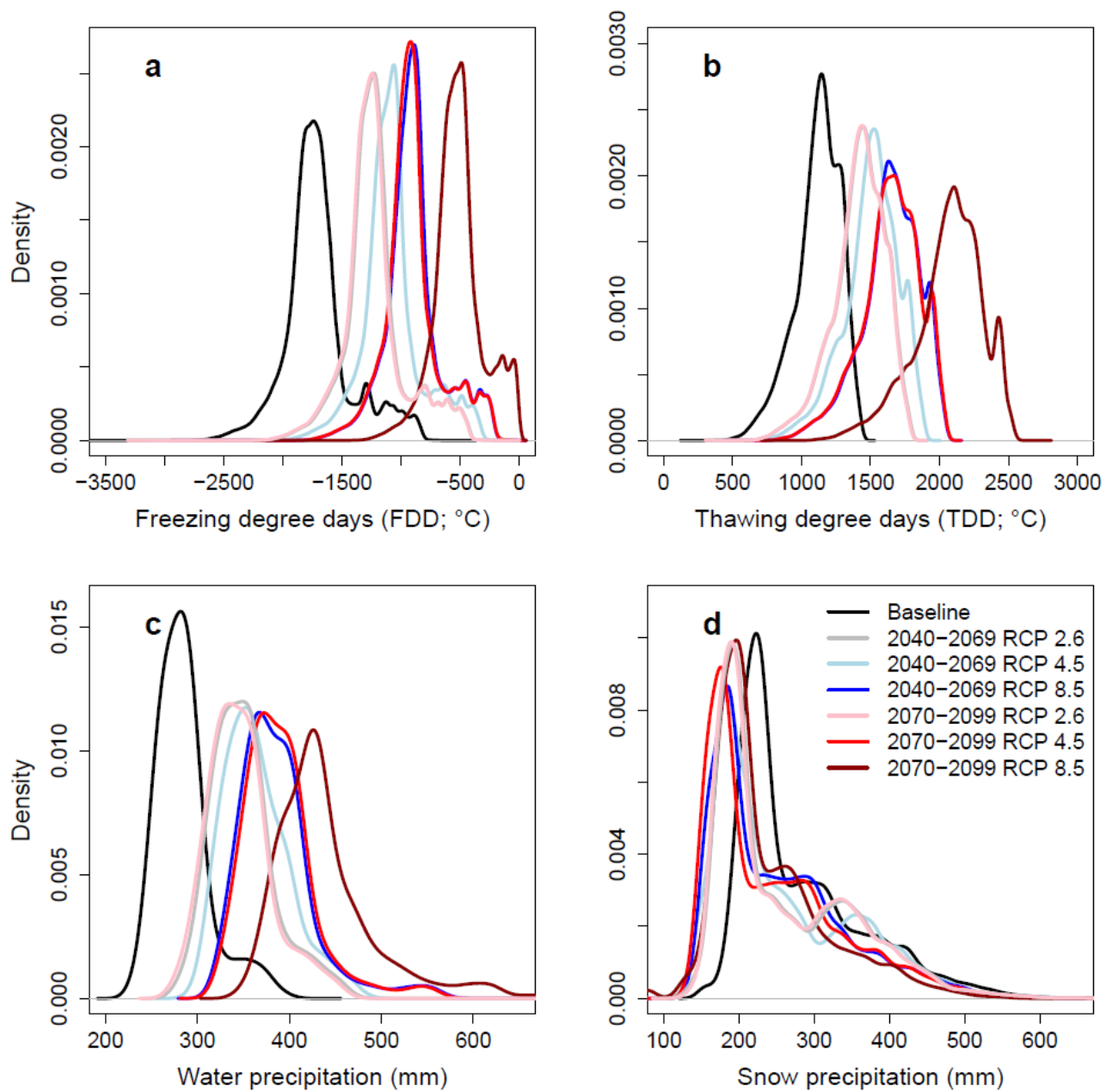


Description of Supplementary Files

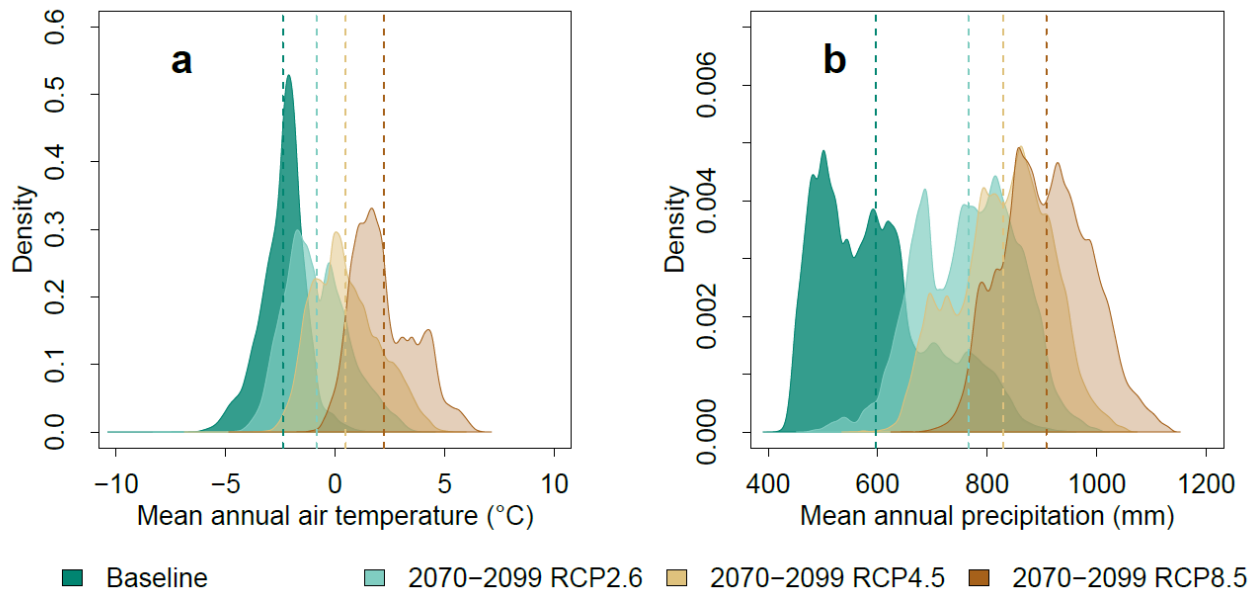
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Description: Supplementary Figures and Supplementary Table

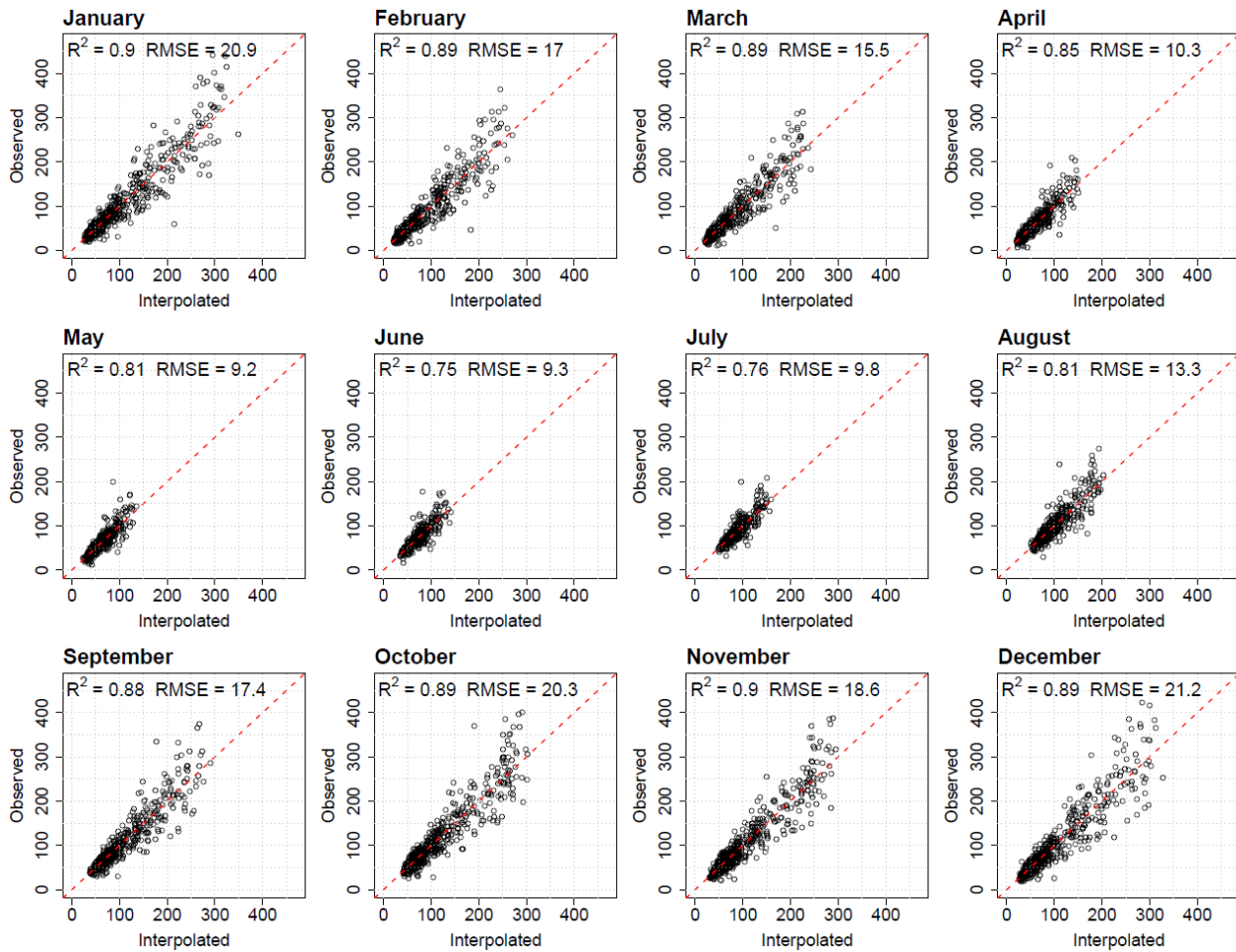
File Name: Peer Review File



Supplementary Figure 1. Kernel density plots (bandwidth = 20 for TDD [a] and FDD [b], bandwidth = 10 for precipitation variables [c water precipitation, d snow precipitation]) showing the distributions of the four climate variables used for modelling LSP occurrence under three time slices and RCP scenarios. TDD = thawing degree days (°C), FDD = freezing degree days (°C).



Supplementary Figure 2. The kernel density plots (bandwidth = 0.1 and 5 for mean annual air temperature [a] and precipitation [b], respectively) show the climatic distributions of the periglacial climate realm in the study area (i.e. combined spatial extent of LSPs) under baseline 1981–2010, 2070–2099 RCP 2.6, 2070–2099 RCP 4.5 and 2070–2099 RCP 8.5 climate conditions. The dashed lines depict the means of the non-smoothed distributions. All distributions differed significantly (t-test, $p \leq 0.001$).



Supplementary Figure 3. The agreement between observed and interpolated monthly average precipitation sum (1981-2010, in mm) based on a ten-fold random cross-validation, in the terms of adjusted R-squared (R^2) and root mean squared error (RMSE). The red dashed line depicts 1:1 line.

Supplementary Table 1. The modelled covers (%) of overlapping climatic spaces suitable for cryogenic land surface processes (LSP) at the study area, over three time periods and climate change scenarios.

	Baseline	RCP 2.6	RCP 4.5	RCP 8.5	RCP 2.6	RCP 4.5	RCP 8.5
Number of LSP	1981–2010	2040–2069			2070–2099		
1	48.5	13.4	11.3	9.2	13.1	9.2	6.3
2	11.2	2.8	2.3	1.7	2.7	1.6	0.6
3	2.7	0.2	0.1	0.1	0.2	0.1	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0