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Supplement of

Multi-component ensembles of future meteorological and natural snow conditions for 1500 m altitude in the Chartreuse mountain range, Northern French Alps

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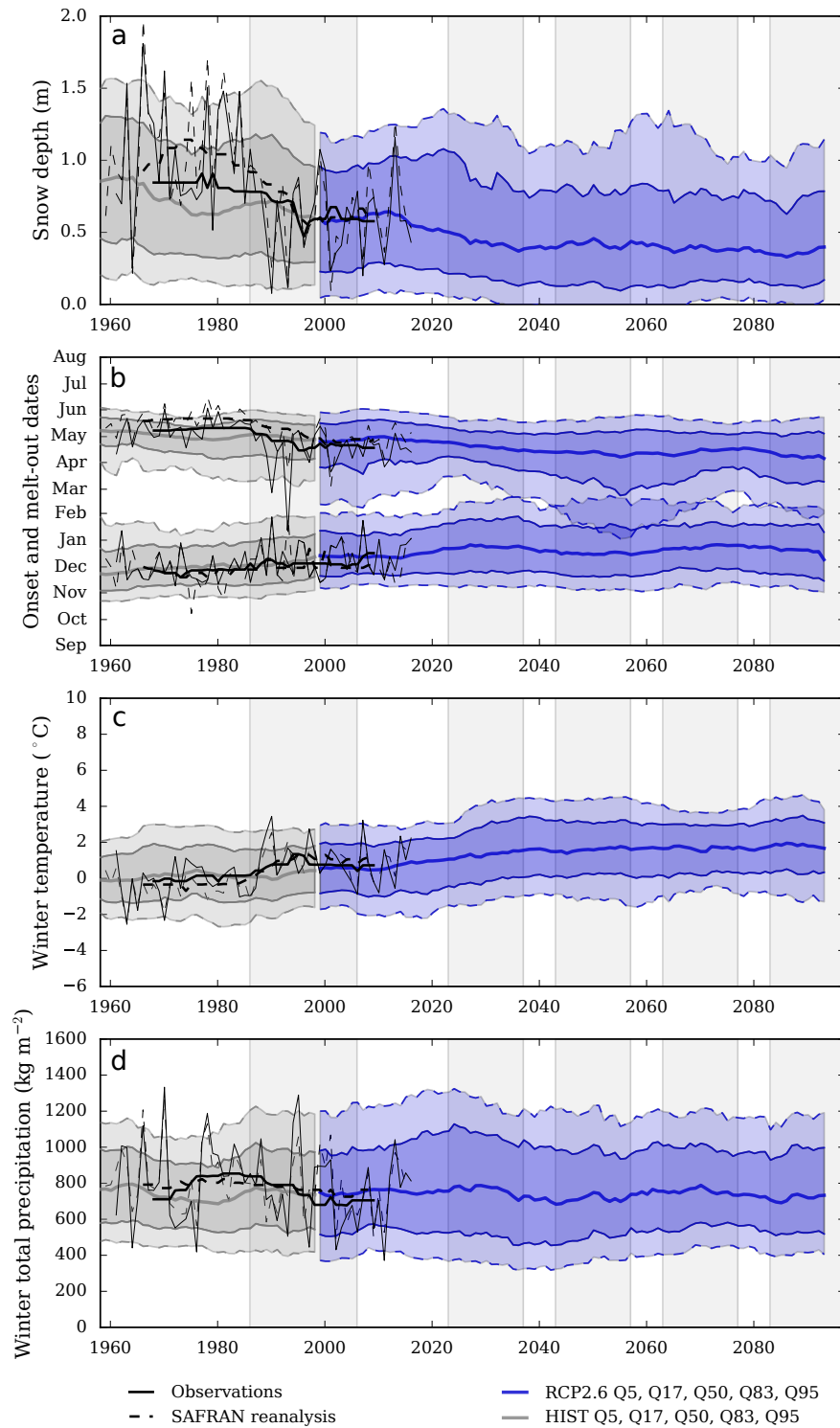


Figure S1. Quantile values (5%, 17%, 50%, 83% and 95%) over 15-year windows of all RCM/GCM combinations among the RCP2.6 scenario, with annual values of observations (1960-2014) and SAFRAN-Crocus runs (1959-2016) and their respective 15-year running medians (bold full and dotted lines respectively) at CDP, for: a) \overline{SD} , b) \overline{SOD} and \overline{SMOD} , c) \overline{T} , and d) \overline{P} .

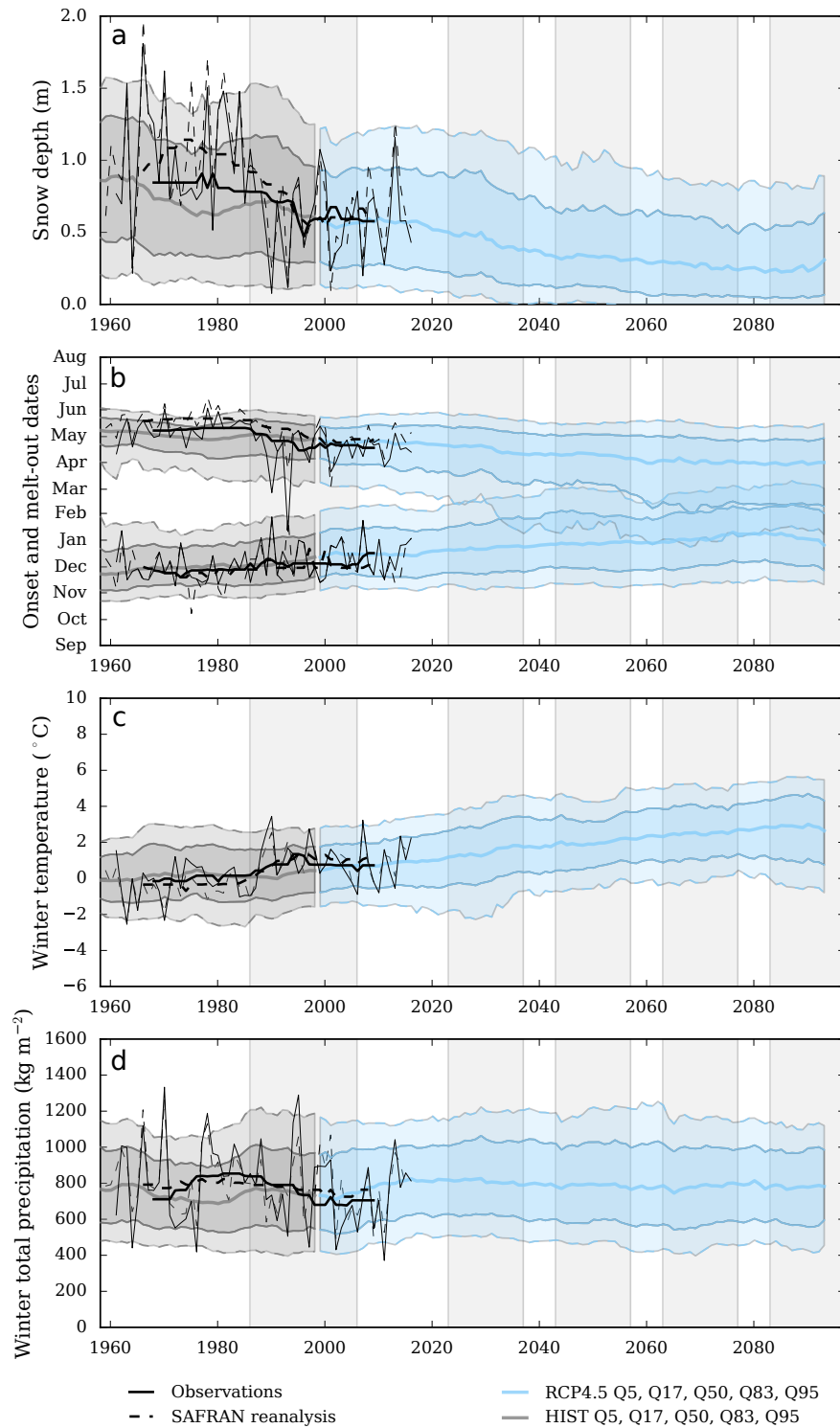


Figure S2. Quantile values (5%, 17%, 50%, 83% and 95%) over 15-year windows of all RCM/GCM combinations among the RCP4.5 scenario, with annual values of observations (1960-2014) and SAFRAN-Crocus runs (1959-2016) and their respective 15-year running medians (bold full and dotted lines respectively) at CDP, for: a) \overline{SD} , b) \overline{SOD} and \overline{SMOD} , c) \overline{T} , and d) \overline{P} .

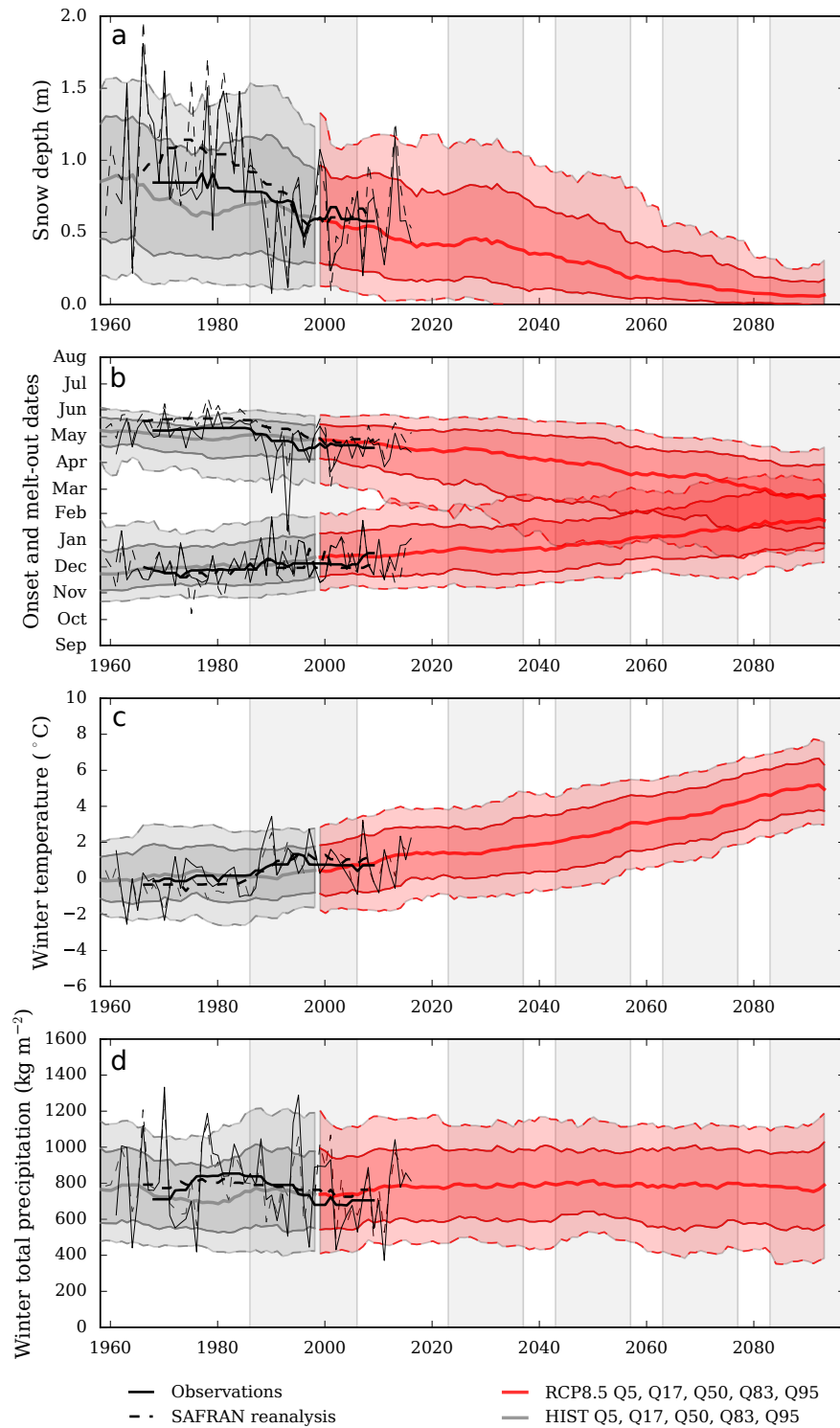


Figure S3. Quantile values (5%, 17%, 50%, 83% and 95%) over 15-year windows of all RCM/GCM combinations among the RCP8.5 scenario, with annual values of observations (1960-2014) and SAFRAN-Crocus runs (1959-2016) and their respective 15-year running medians (bold full and dotted lines respectively) at CDP, for: a) \overline{SD} , b) \overline{SOD} and \overline{SMOD} , c) \overline{T} , and d) \overline{P} .

Table S1. Quantile values (Q17 = 17%, Q50 = 50%, Q83 = 83%) over 15-year windows, for the reference period 1986-2005 (Ref) in observations (OBS, only Q50), SAFRAN-Crocus (S-C, only Q50) and historical scenario (HIST, *13 GCM/RCM pairs, **4 GCM/RCM pairs corresponding to the ones in RCP2.6), and around the time slots 2030, 2050, 2070 and 2090 for each future scenario (RCP2.6: 4 pairs, RCP4.5 and RCP8.5: 13 pairs), for $STED_5$, $STED_{50}$, $STED_{100}$ (number of days).

Time slot		$STED_5$			$STED_{50}$			$STED_{100}$		
		Q17	Q50	Q83	Q17	Q50	Q83	Q17	Q50	Q83
Ref	OBS		135			96			39	
	S-C		142			103			37	
	HIST*	111	136	151	33	90	130	0	27	82
	HIST**	106	137	153	28	93	134	0	30	81
2030	2.6	93	121	144	17	63	113	0	11	49
	4.5	94	123	144	18	62	111	0	13	65
	8.5	87	119	141	13	65	112	0	12	58
2050	2.6	83	120	147	13	69	118	0	13	49
	4.5	77	111	136	4	39	91	0	5	32
	8.5	55	98	132	0	32	83	0	4	26
2070	2.6	92	119	143	12	57	110	0	11	60
	4.5	49	96	129	0	32	86	0	4	29
	8.5	32	70	104	0	9	47	0	0	4
2090	2.6	81	109	140	2	49	110	0	8	49
	4.5	37	91	130	0	25	84	0	3	20
	8.5	7	35	70	0	2	15	0	0	2

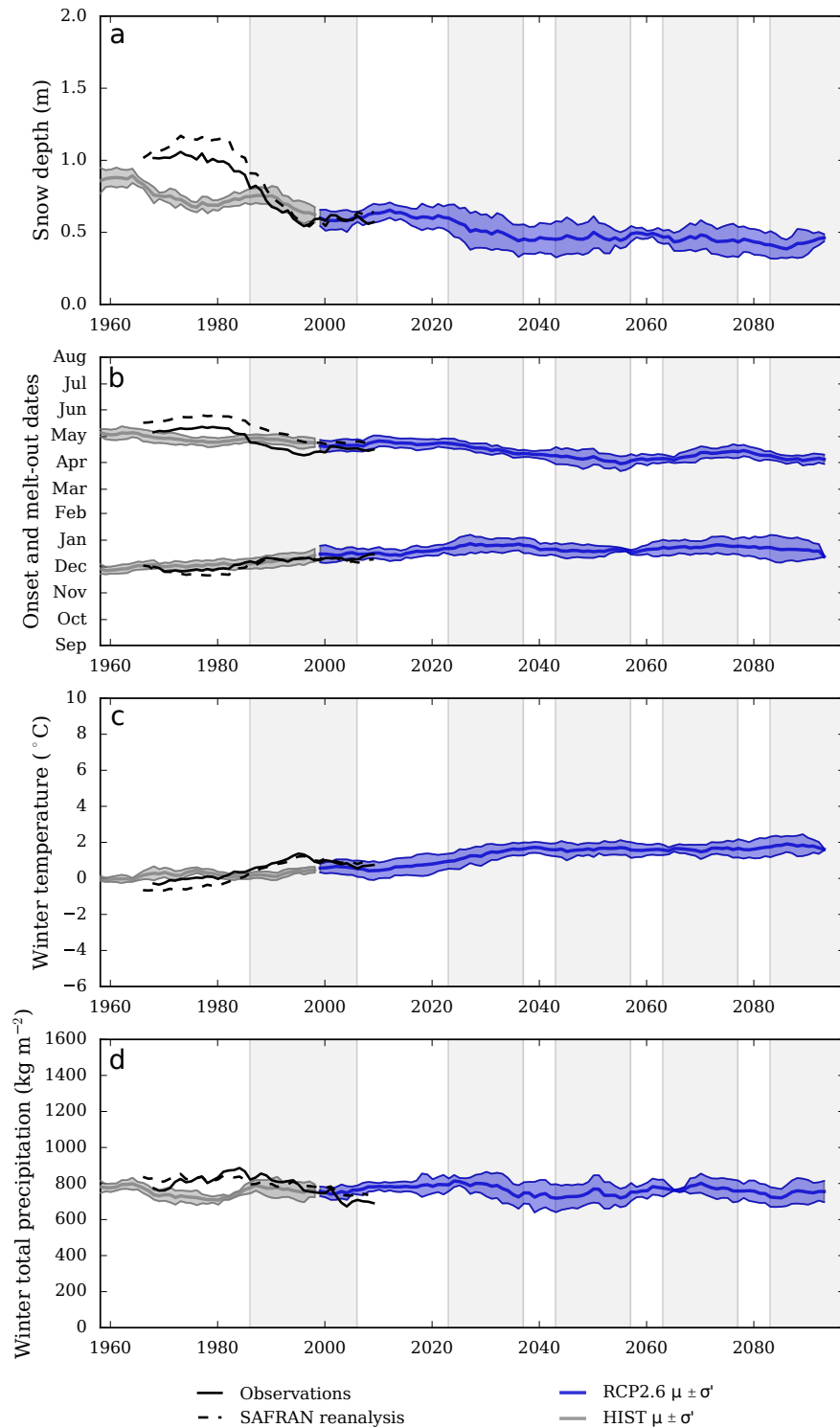


Figure S4. Mean (μ) \pm σ' of all RCM/GCM combination 15-year running means among the RCP2.6 scenario, with 15-year running means of annual values of observations (1960-2014) and outputs of SAFRAN-Crocus runs (1959-2016) at CDP, for: a) \overline{SD} , b) SOD and $SMOD$, c) \overline{T} , and d) \overline{P} .

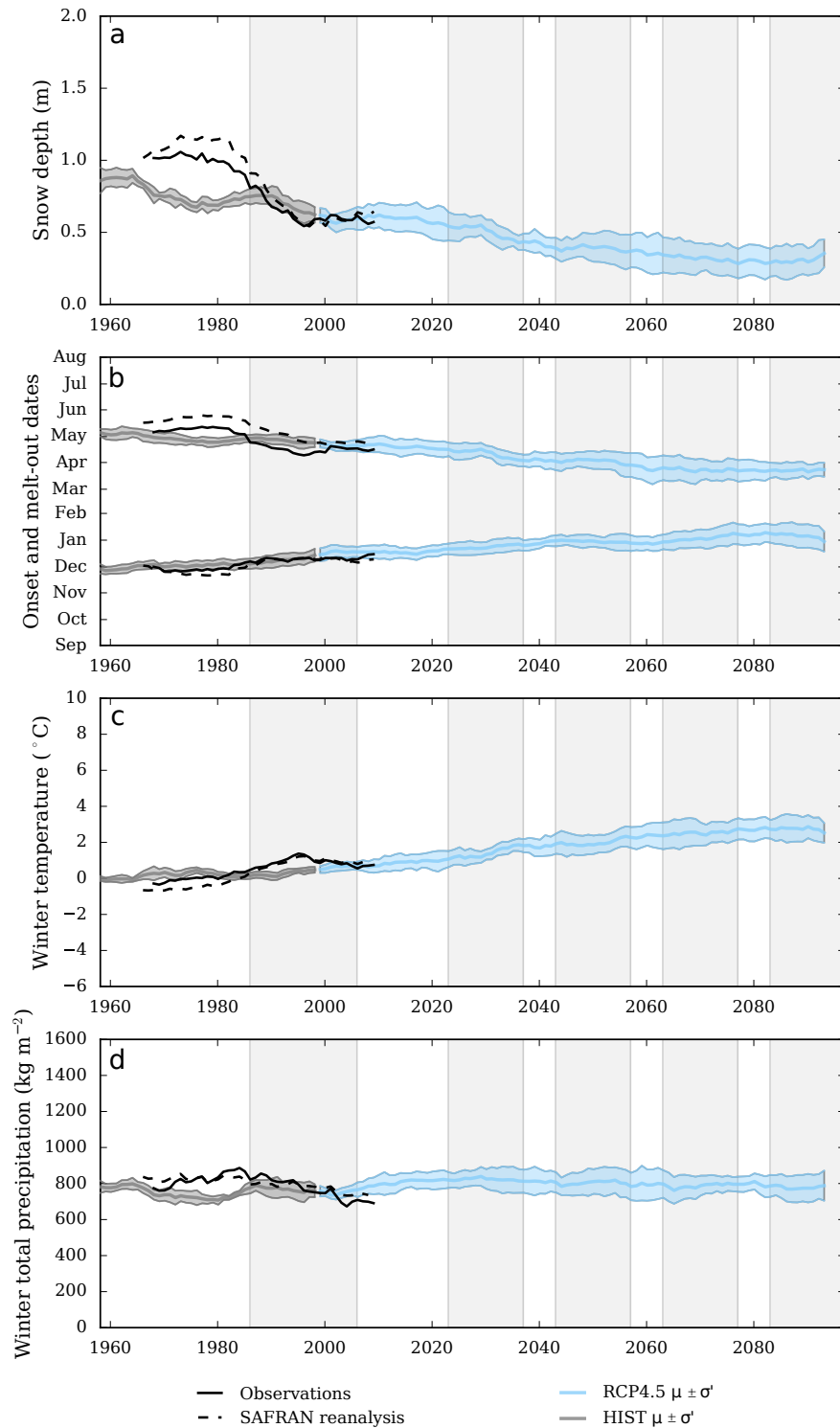


Figure S5. Mean (μ) \pm σ' of all RCM/GCM combination 15-year running means among the RCP4.5 scenario, with 15-year running means of annual values of observations (1960-2014) and outputs of SAFRAN-Crocus runs (1959-2016) at CDP, for: a) \overline{SD} , b) \overline{SOD} and \overline{SMOD} , c) \overline{T} , and d) \overline{P} .

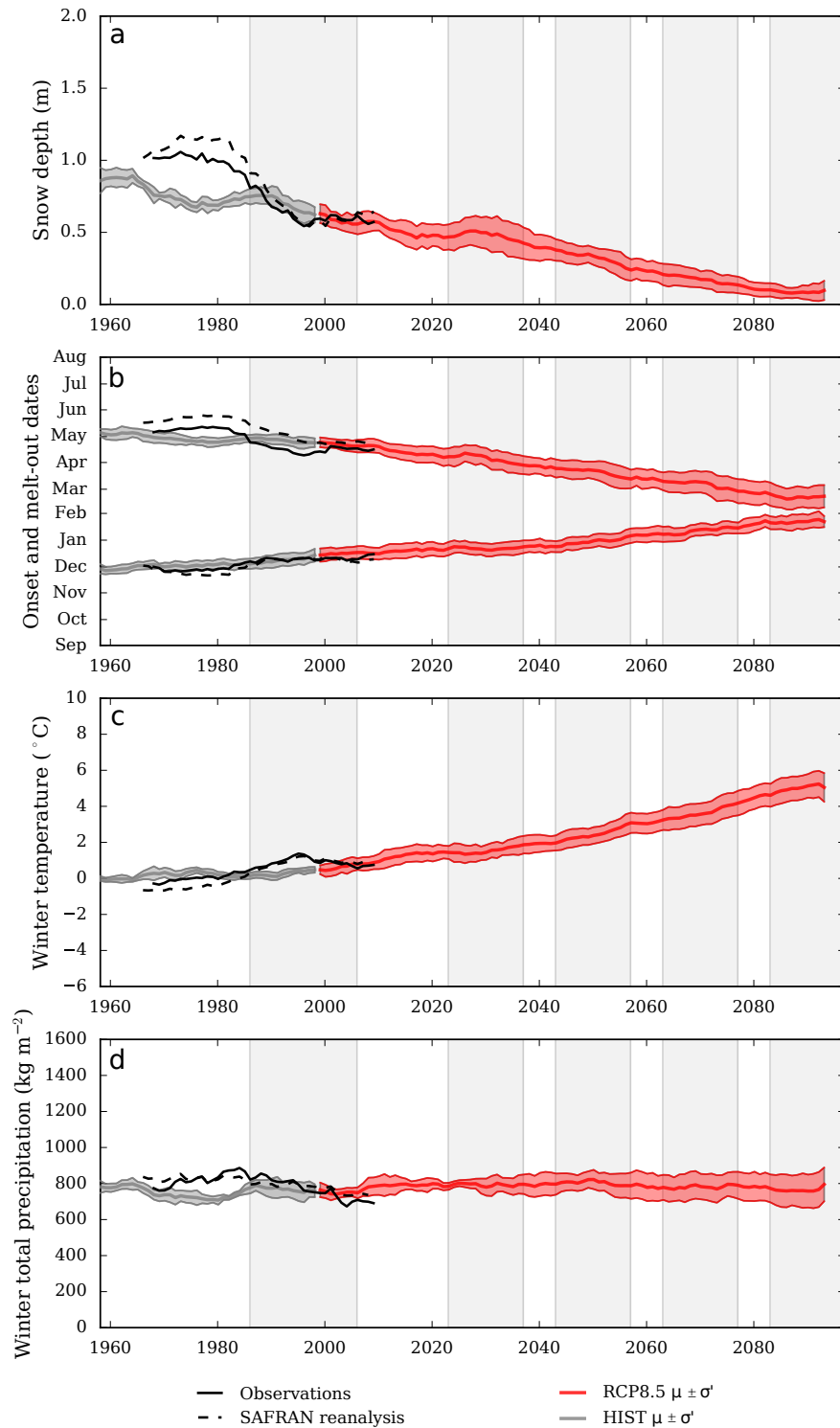


Figure S6. Mean (μ) \pm σ' of all RCM/GCM combination 15-year running means among the RCP8.5 scenario, with 15-year running means of annual values of observations (1960-2014) and outputs of SAFRAN-Crocus runs (1959-2016) at CDP, for: a) \overline{SD} , b) \overline{SOD} and \overline{SMOD} , c) \overline{T} , and d) \overline{P} .

Table S2. Values for the mean (μ) \pm σ' of 15-year running means, for the reference period 1986-2005 (Ref) in observations (OBS, only μ), SAFRAN-Crocus (S-C, only μ) and historical scenario (HIST, *13 GCM/RCM pairs, **4 GCM/RCM pairs corresponding to the ones in RCP2.6), and around the time slots 2030, 2050, 2070 and 2090 for each future scenario (RCP2.6: 4 pairs, RCP4.5 and RCP8.5: 13 pairs), for $STED_5$, $STED_{50}$, $STED_{100}$ (number of days).

Time slot		$STED_5$	$STED_{50}$	$STED_{100}$
		$\mu \pm \sigma'$	$\mu \pm \sigma'$	$\mu \pm \sigma'$
Ref	OBS	130	80	32
	S-C	135	89	33
	HIST*	130 ± 6	84 ± 9	36 ± 5
	HIST**	130 ± 6	84 ± 10	37 ± 6
2030	2.6	115 ± 9	62 ± 15	19 ± 9
	4.5	116 ± 9	63 ± 10	24 ± 8
	8.5	110 ± 10	60 ± 15	22 ± 9
2050	2.6	111 ± 8	63 ± 11	18 ± 5
	4.5	106 ± 11	47 ± 14	14 ± 7
	8.5	92 ± 11	38 ± 7	11 ± 4
2070	2.6	115 ± 7	58 ± 9	22 ± 10
	4.5	92 ± 16	39 ± 13	11 ± 6
	8.5	67 ± 15	18 ± 9	2 ± 2
2090	2.6	111 ± 6	56 ± 4	18 ± 7
	4.5	88 ± 15	38 ± 15	9 ± 6
	8.5	37 ± 13	6 ± 6	1 ± 3