

Multi-components ensembles of future meteorological and natural snow conditions in the Northern French Alps

Supplementary figures

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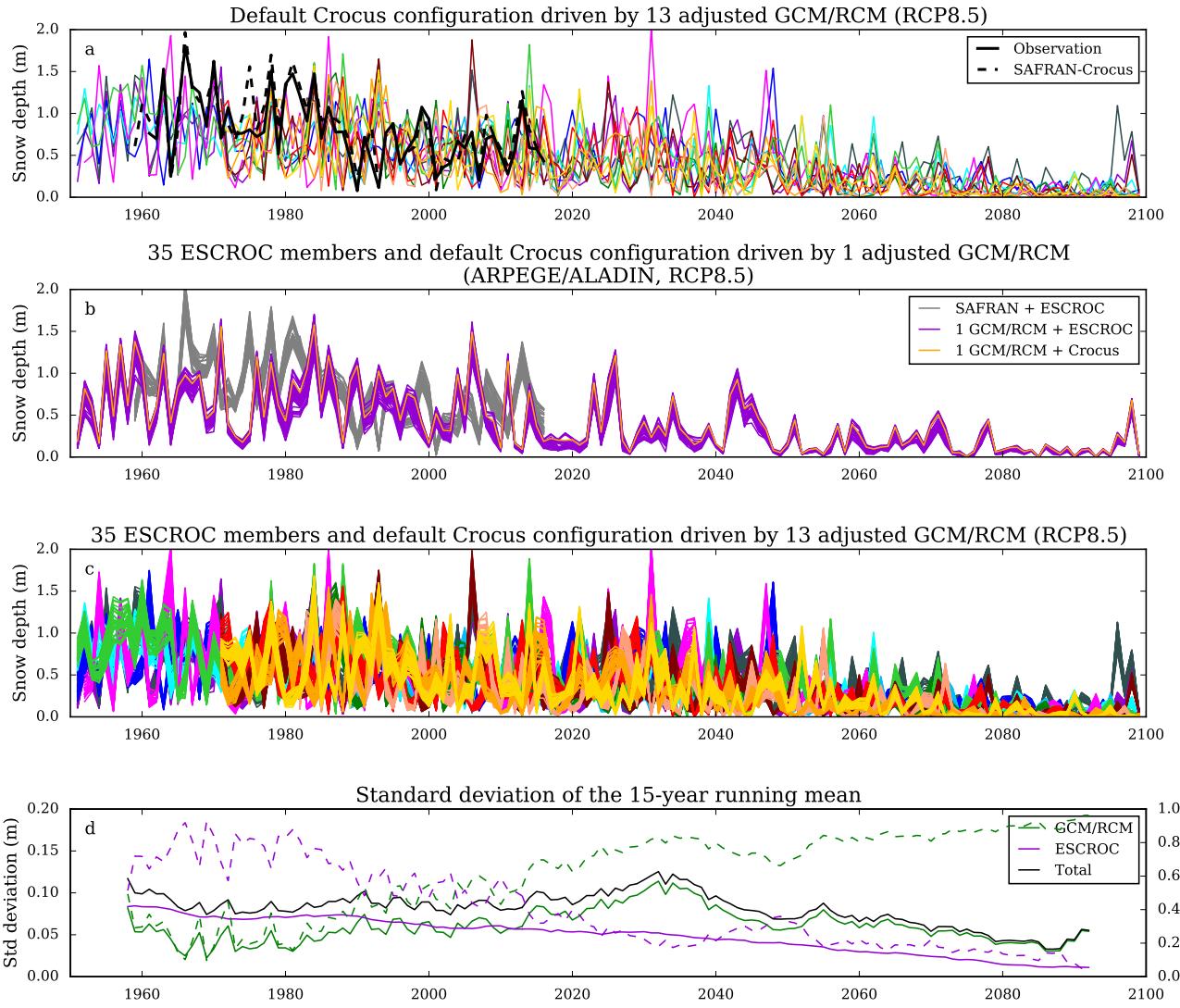


Figure 1. Observed and simulated time series of \overline{SD} . a) Continuous time series of annual values of mean winter snow depth data (\overline{SD}), either observed or generated by the default snowpack model configuration fed by meteorological data from a reanalysis or an adjusted RCM. b) \overline{SD} values obtained using the ensemble of Crocus model configurations ESCROC. c) Ensemble of Crocus model configurations driven by the 13 RCM/GCM couples in the case of the RCP8.5, each RCM/GCM couple being displayed with a given color. d) Estimate of absolute and relative contribution of uncertainty components arising from RCM/GCM inter-model variability and multiphysics snowpack model uncertainty (ESCROC).

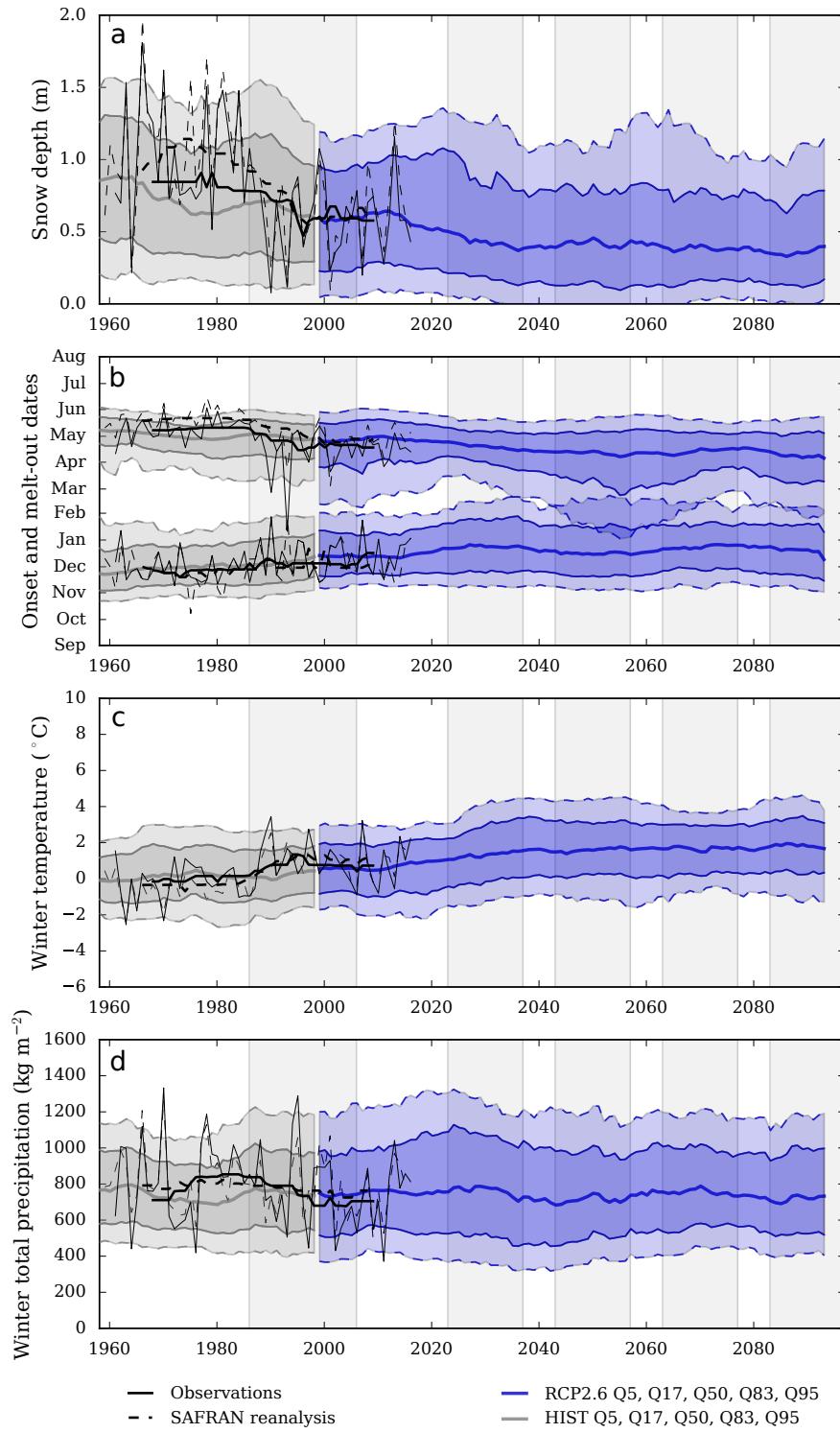


Figure 2. Quantile values (5%, 17%, 50%, 83% and 95%) over 15-year windows of all RCM/GCM combinations among the RCP2.6 scenario, with annual values of observations (1960–2014) and SAFRAN-Crocus runs (1959–2016) and their respective 15-year running medians (bold full and dotted lines respectively) at CDP, for: a) \overline{SD} , b) SOD and $SMOD$, c) \overline{T} , and d) \overline{P} .

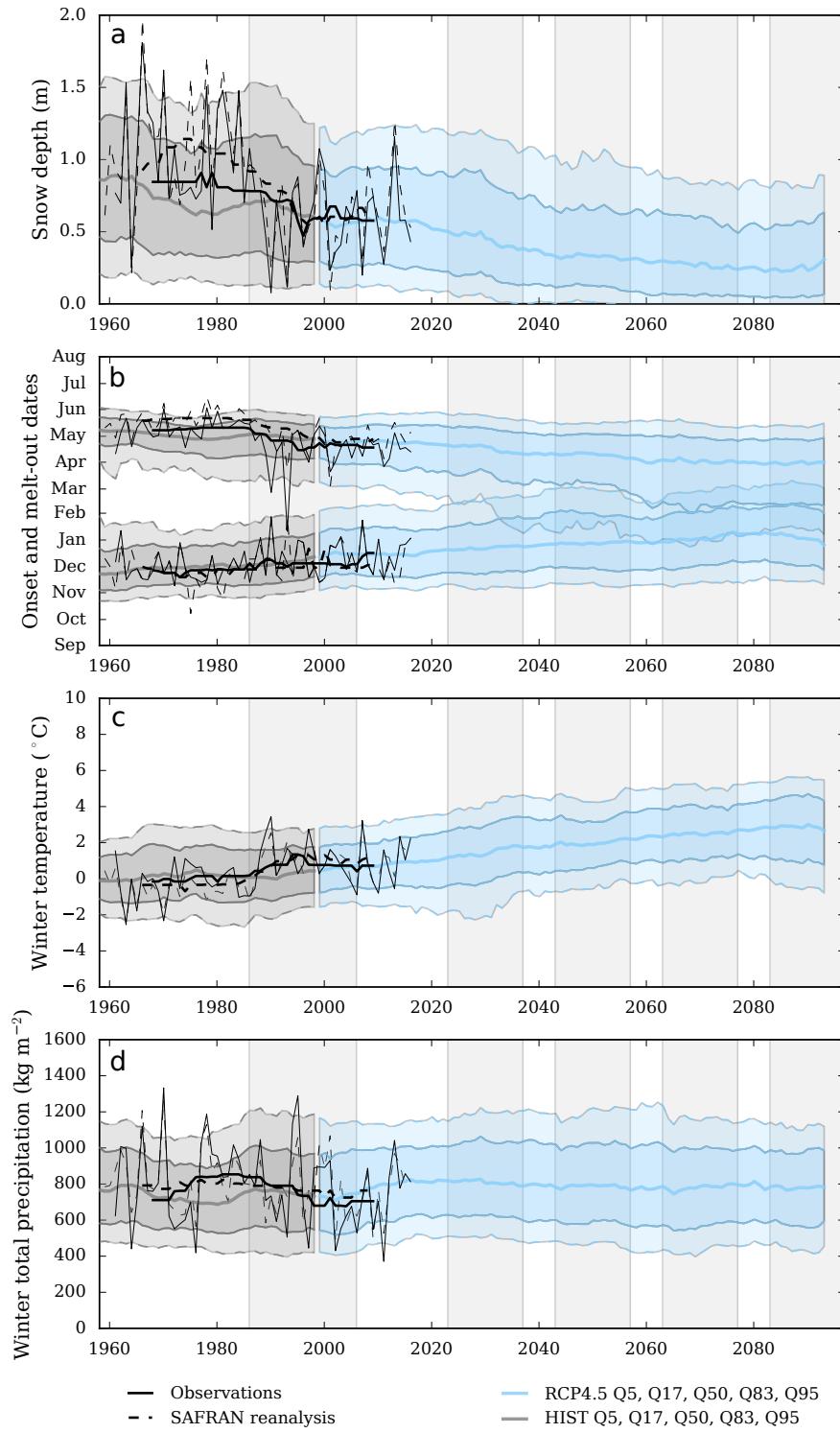


Figure 3. Quantile values (5%, 17%, 50%, 83% and 95%) over 15-year windows of all RCM/GCM combinations among the RCP4.5 scenario, with annual values of observations (1960–2014) and SAFRAN-Crocus runs (1959–2016) and their respective 15-year running medians (bold full and dotted lines respectively) at CDP, for: a) \overline{SD} , b) SOD and $SMOD$, c) \overline{T} , and d) \overline{P} .

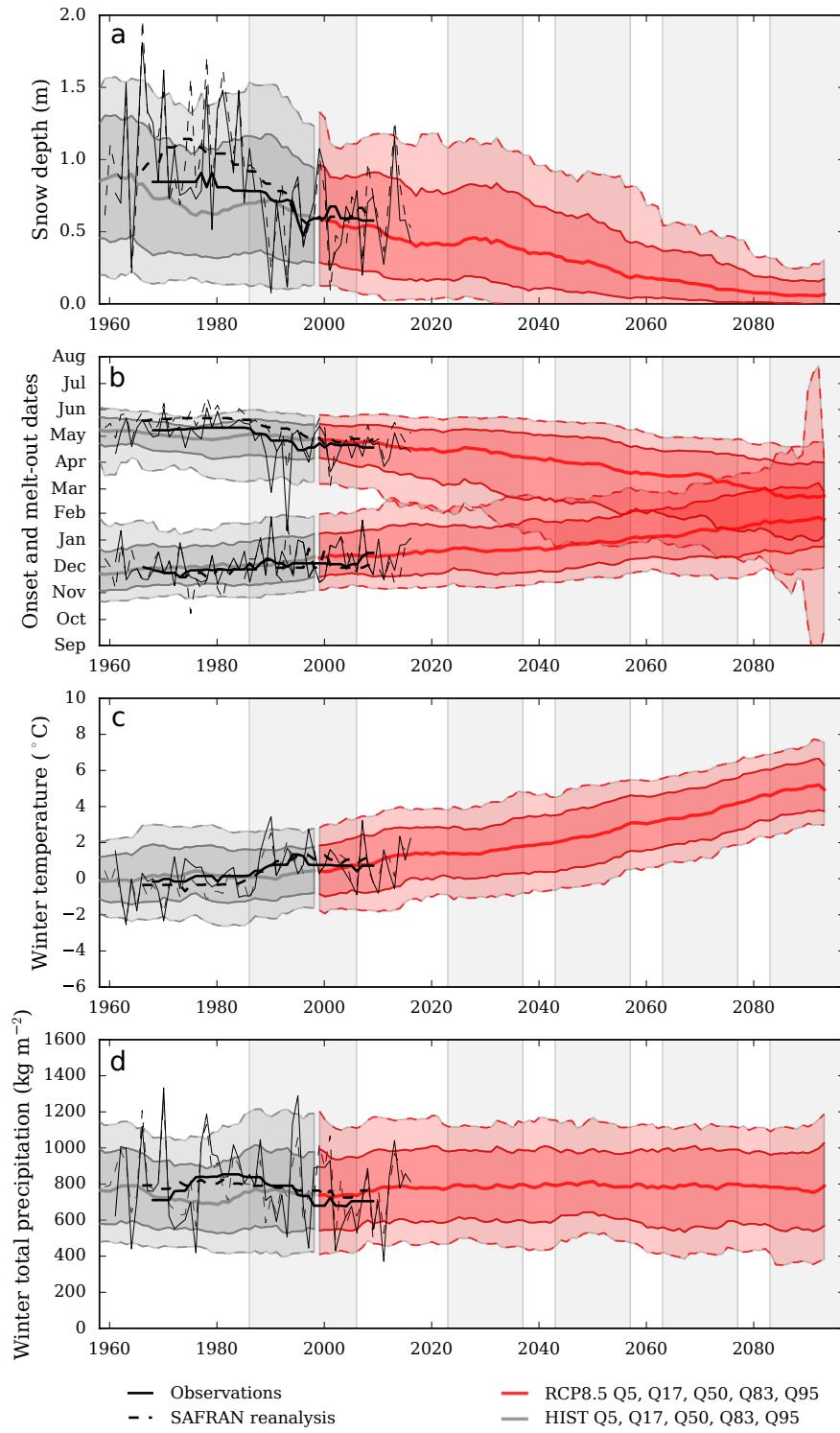


Figure 4. Quantile values (5%, 17%, 50%, 83% and 95%) over 15-year windows of all RCM/GCM combinations among the RCP8.5 scenario, with annual values of observations (1960–2014) and SAFRAN-Crocus runs (1959–2016) and their respective 15-year running medians (bold full and dotted lines respectively) at CDP, for: a) \overline{SD} , b) SOD and $SMOD$, c) \overline{T} , and d) \overline{P} .

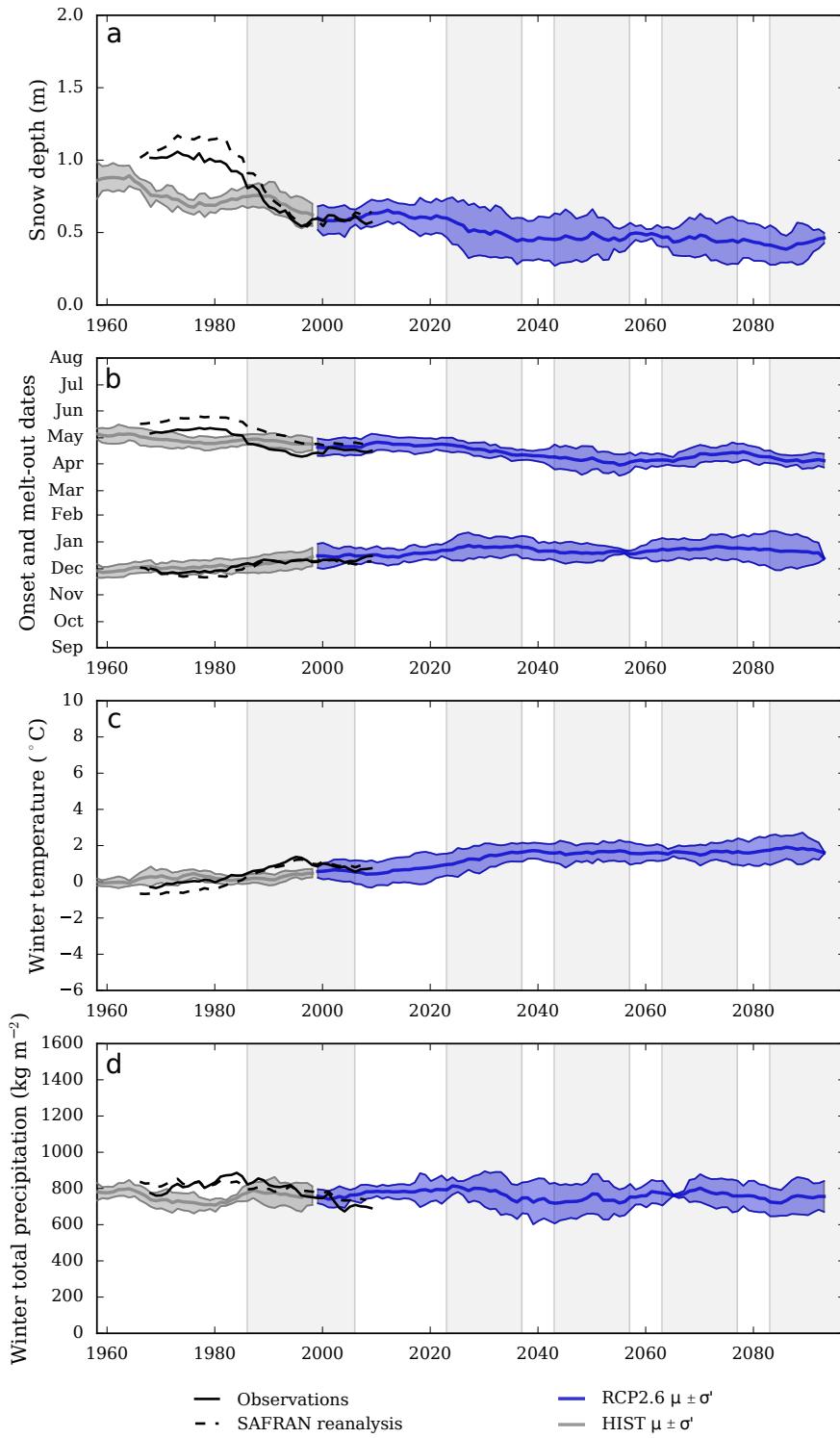


Figure 5. Mean (μ) $\pm \sigma'$ of all RCM/GCM combination 15-year running means among the RCP2.6 scenario, with 15-year running means of annual values of observations (1960–2014) and outputs of SAFRAN-Crocus runs (1959–2016) at CDP, for: a) \overline{SD} , b) SOD and $SMOD$, c) \overline{T} , and d) \overline{P} .

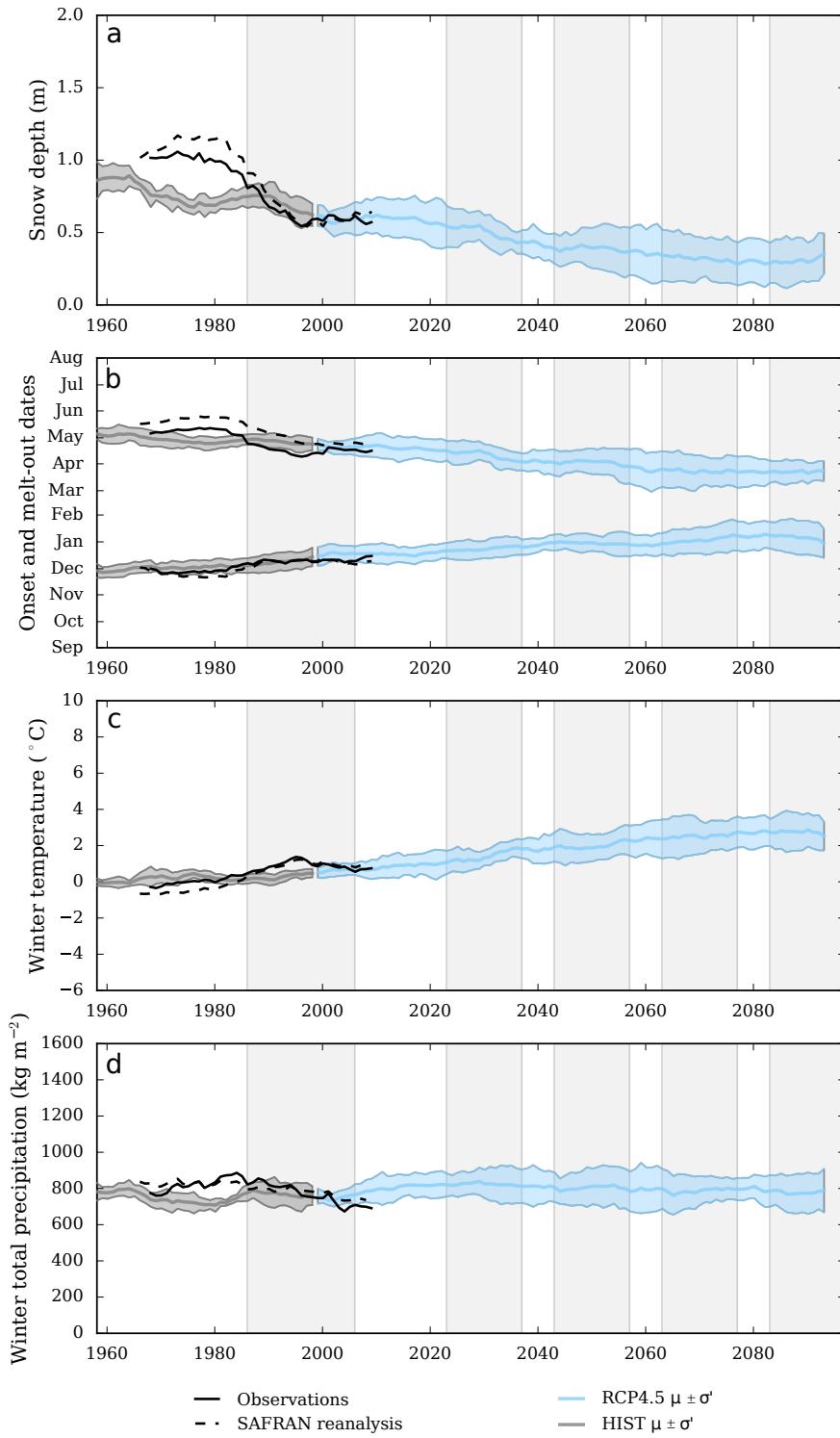


Figure 6. Mean (μ) $\pm \sigma'$ of all RCM/GCM combination 15-year running means among the RCP4.5 scenario, with 15-year running means of annual values of observations (1960-2014) and outputs of SAFRAN-Crocus runs (1959-2016) at CDP, for: a) \overline{SD} , b) SOD and $SMOD$, c) \overline{T} , and d) \overline{P} .

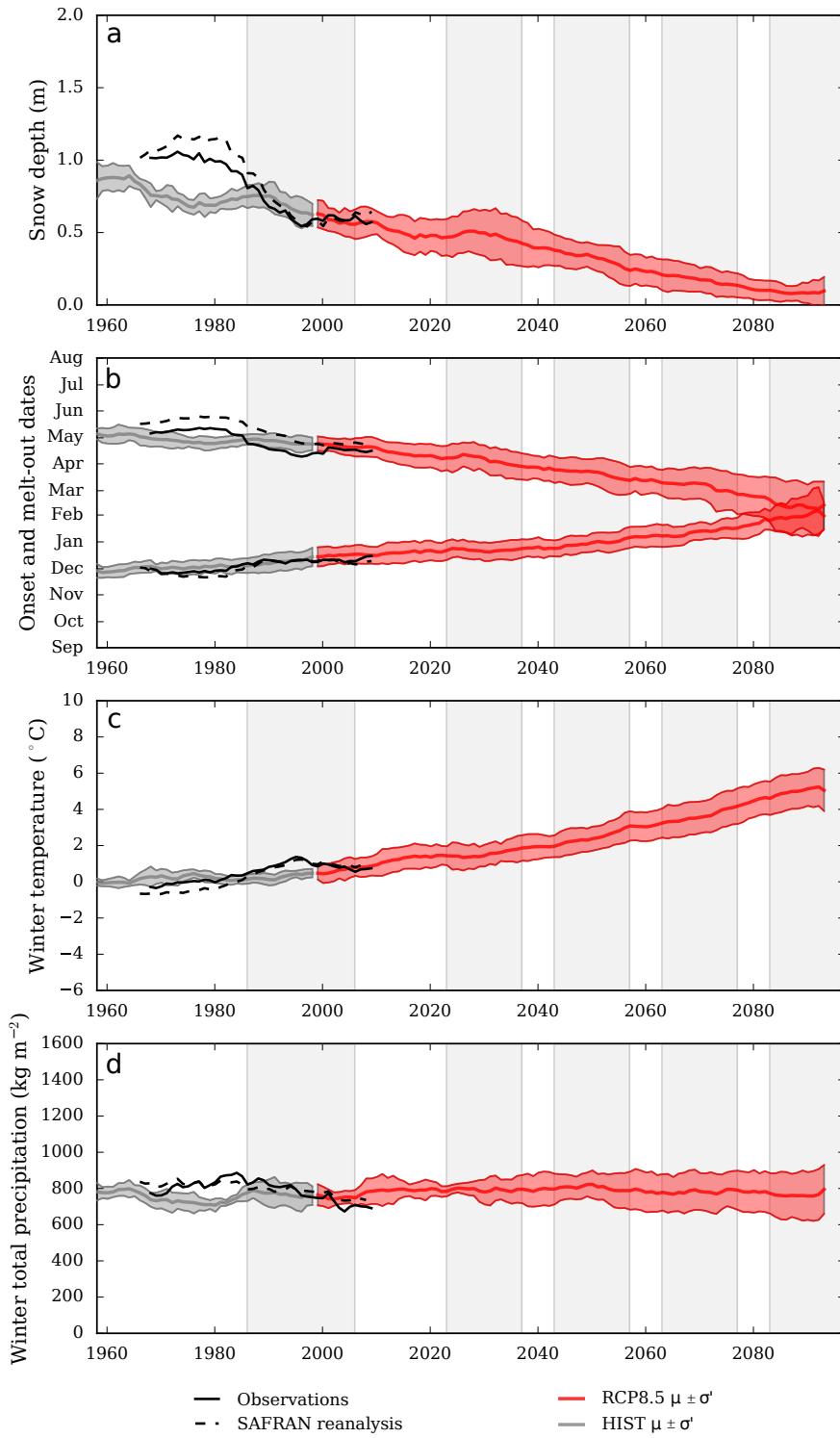


Figure 7. Mean (μ) $\pm \sigma'$ of all RCM/GCM combination 15-year running means among the RCP8.5 scenario, with 15-year running means of annual values of observations (1960-2014) and outputs of SAFRAN-Crocus runs (1959-2016) at CDP, for: a) \overline{SD} , b) SOD and $SMOD$, c) \overline{T} , and d) \overline{P} .