Supplementary material

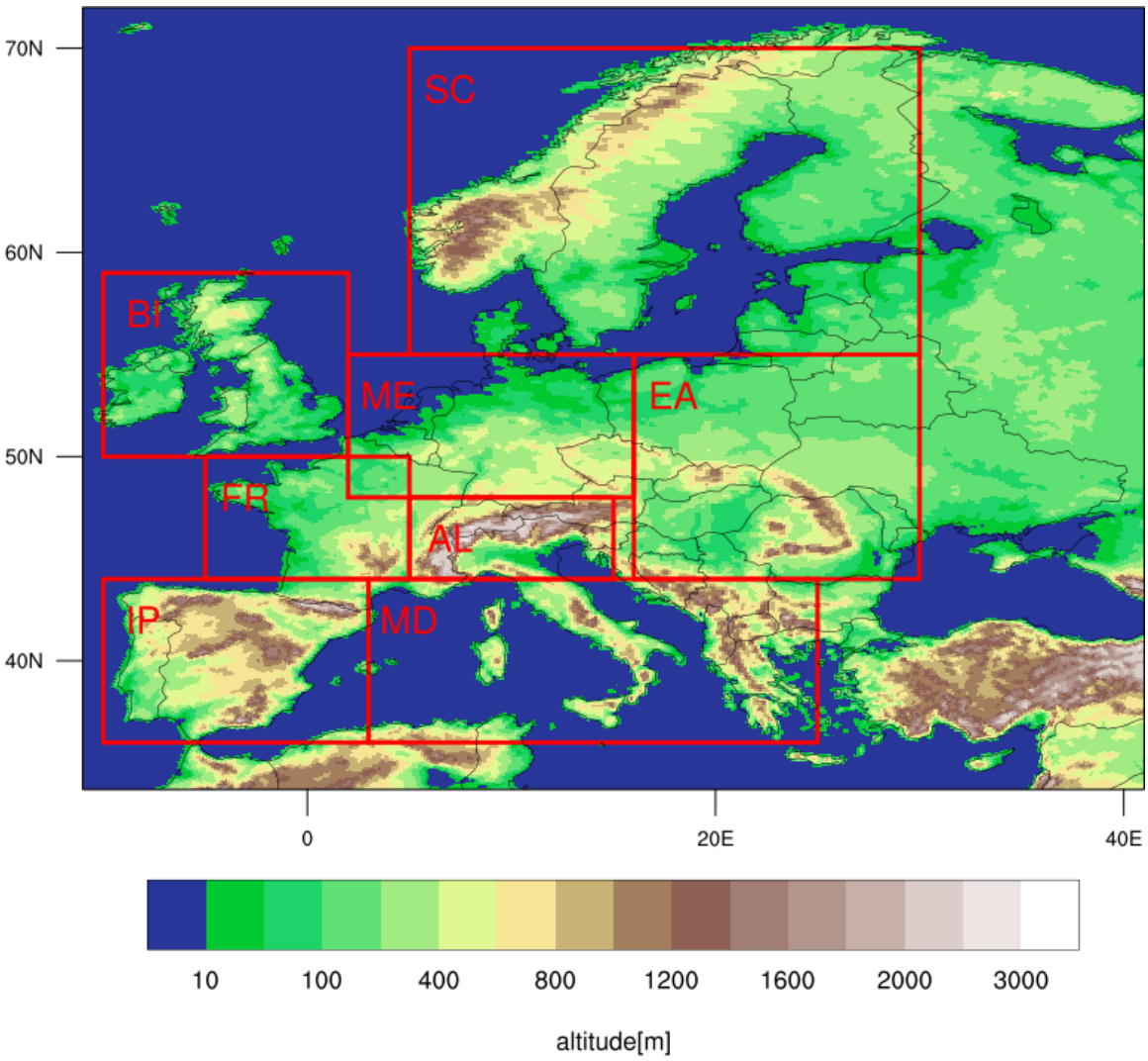

Figure S1: The eight European sub-regions as described in (Christensen and Christensen, 2007): Alps (AL), British Isles (BI), Eastern Europe (EA), France (FR), Iberian Peninsula (IP), Mediterranean (MD), Mid-Europe (ME) and Scandinavia (SC).

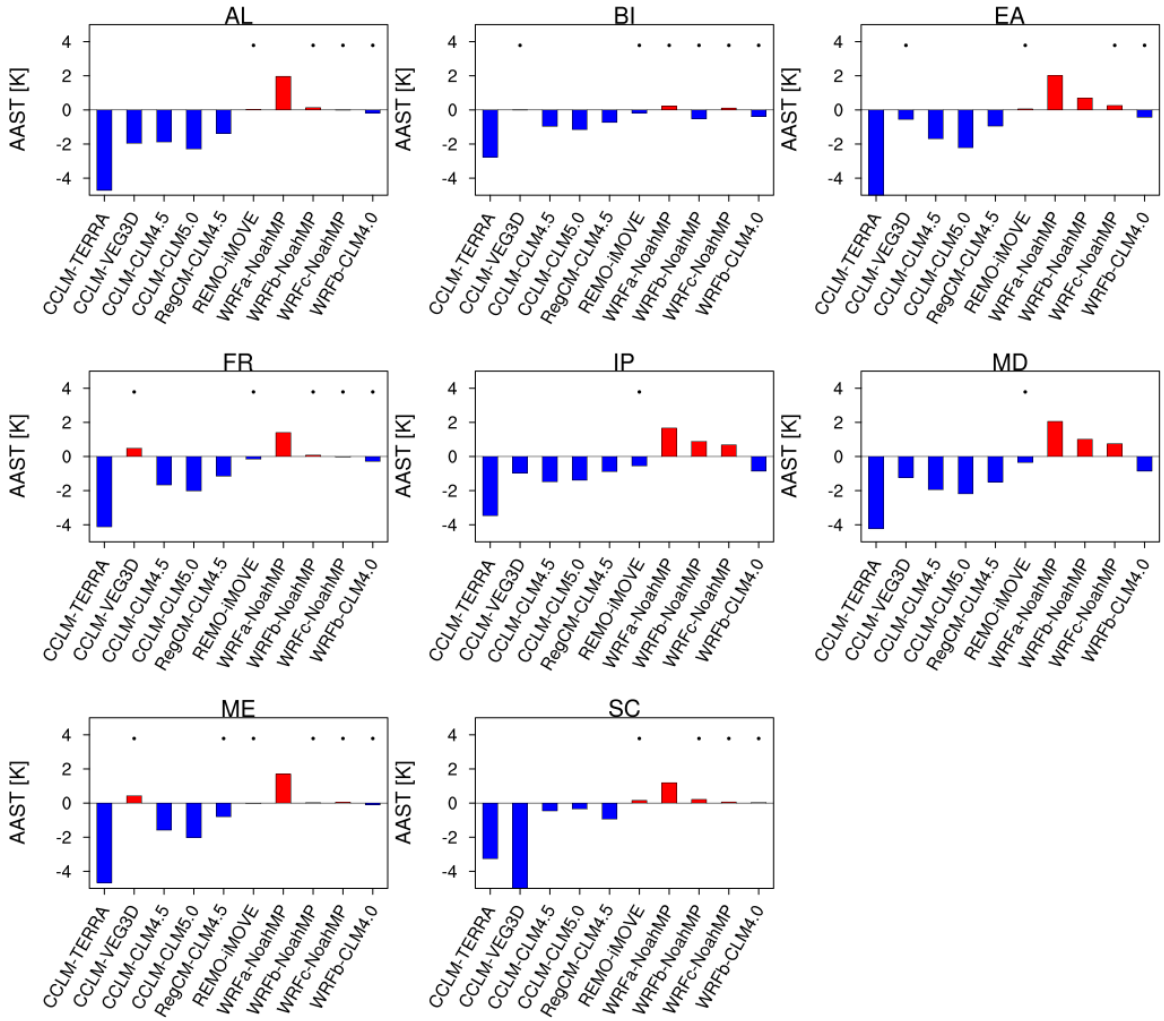

Figure S2: Afforestation (FOREST minus GRASS) impact on AAST (at 1 meter depth) summarized over the PRUDENCE regions. The dots above the bars indicate the differences in AAST which are insignificantly different from zero in a two-sided t-test at 95% confidence level.

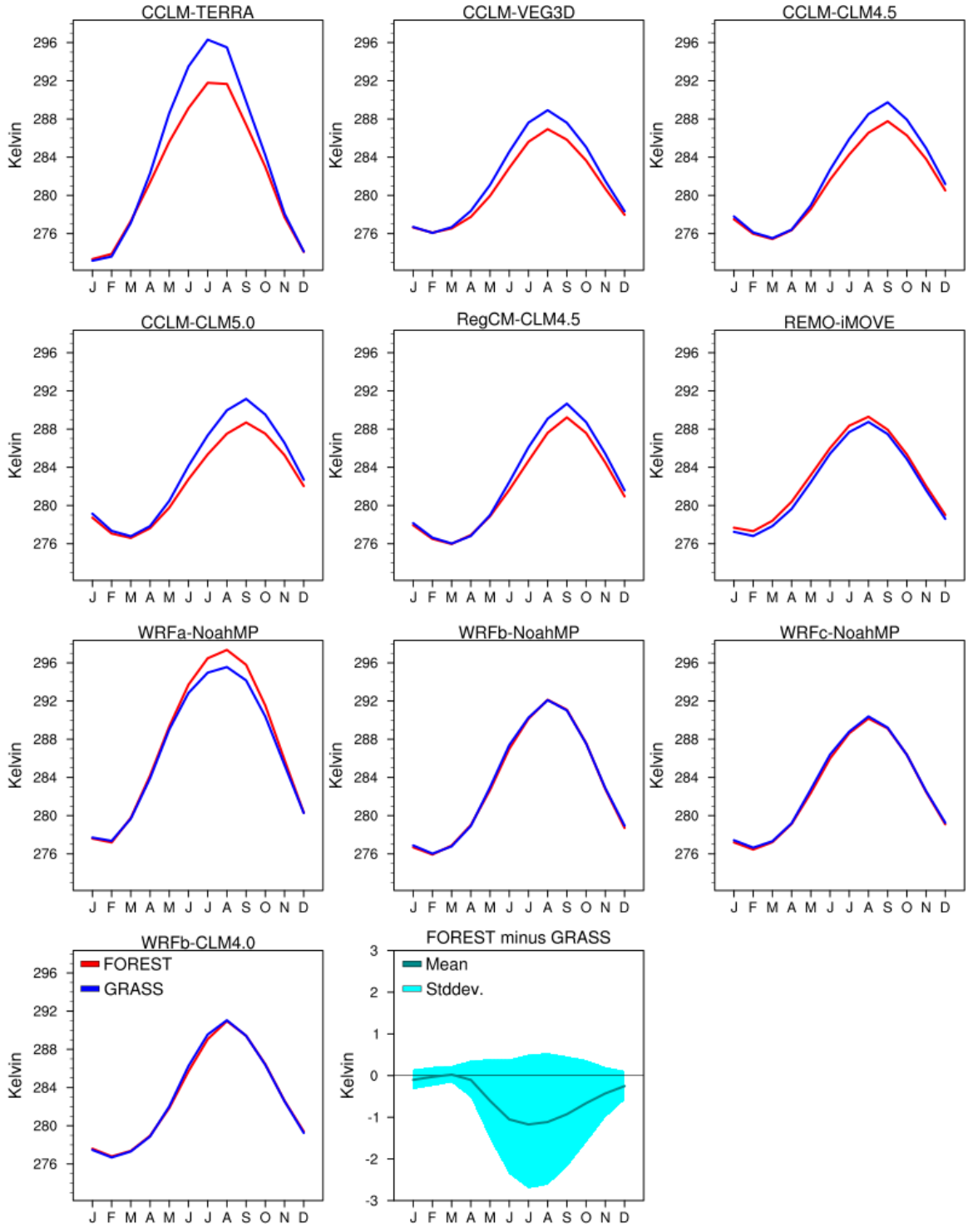

Figure S3: Annual soil temperature cycle for FOREST and GRASS over the AL region.

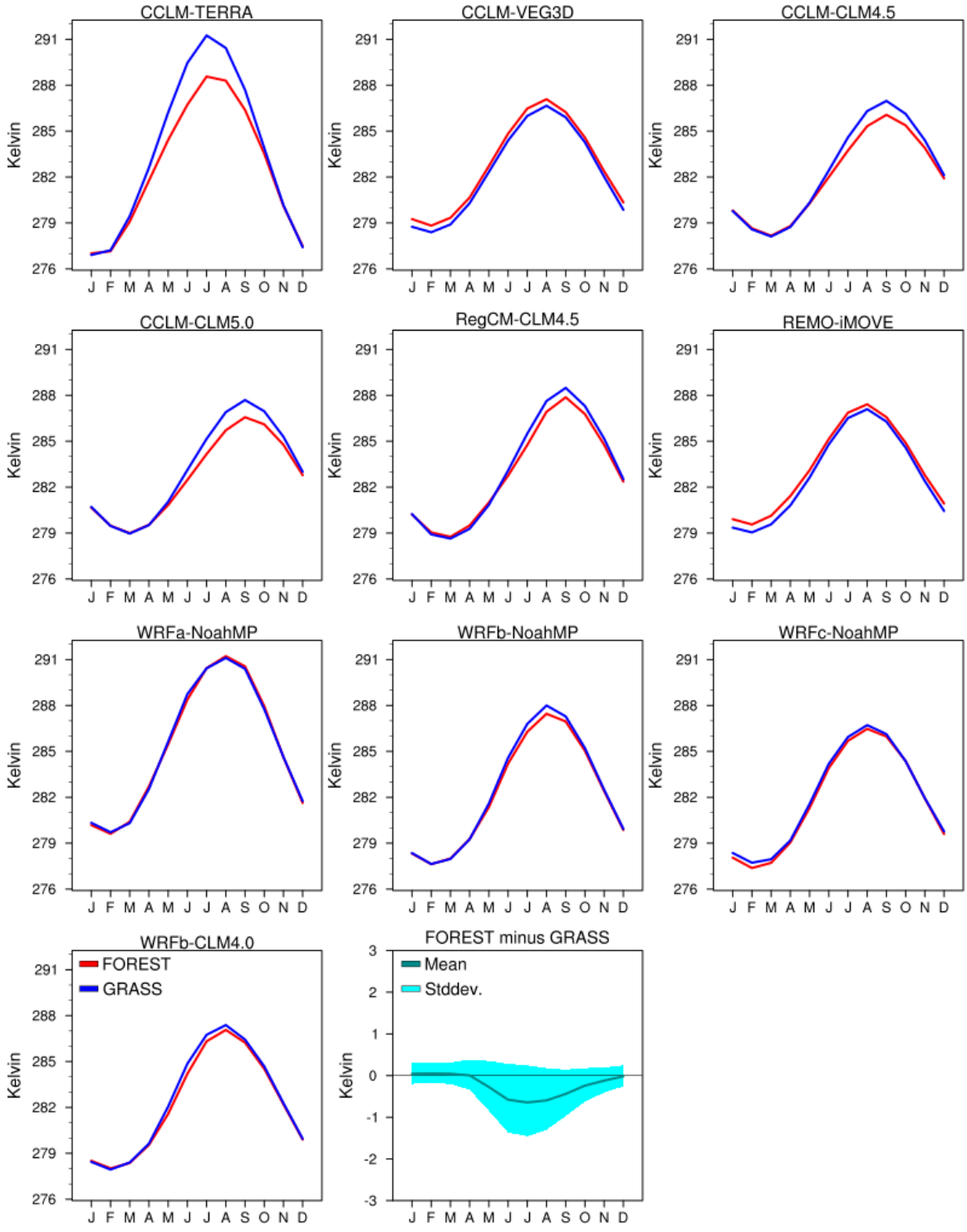

Figure S4: Annual soil temperature cycle for FOREST and GRASS over the BI region.

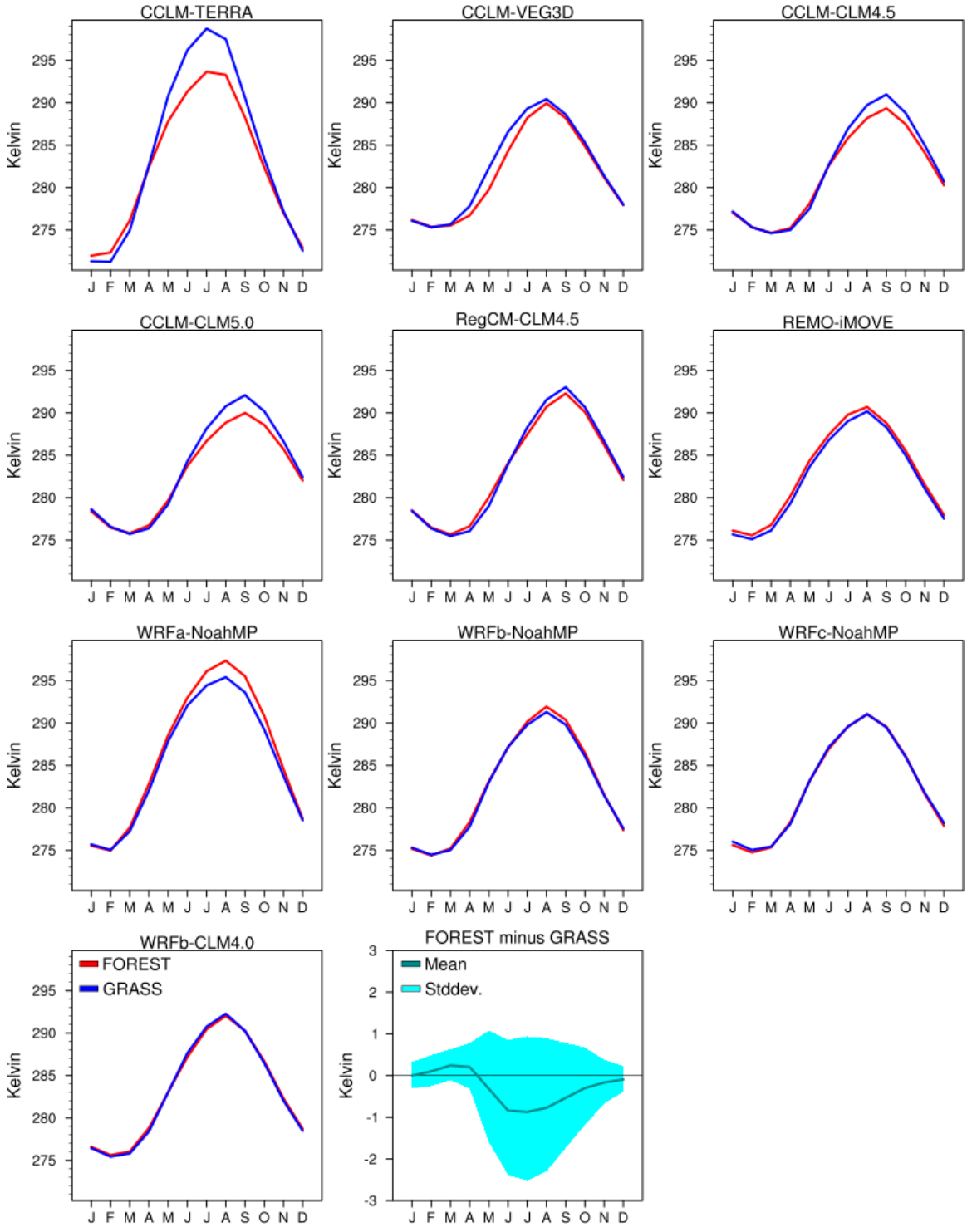

Figure S5: Annual soil temperature cycle for FOREST and GRASS over the EA region.

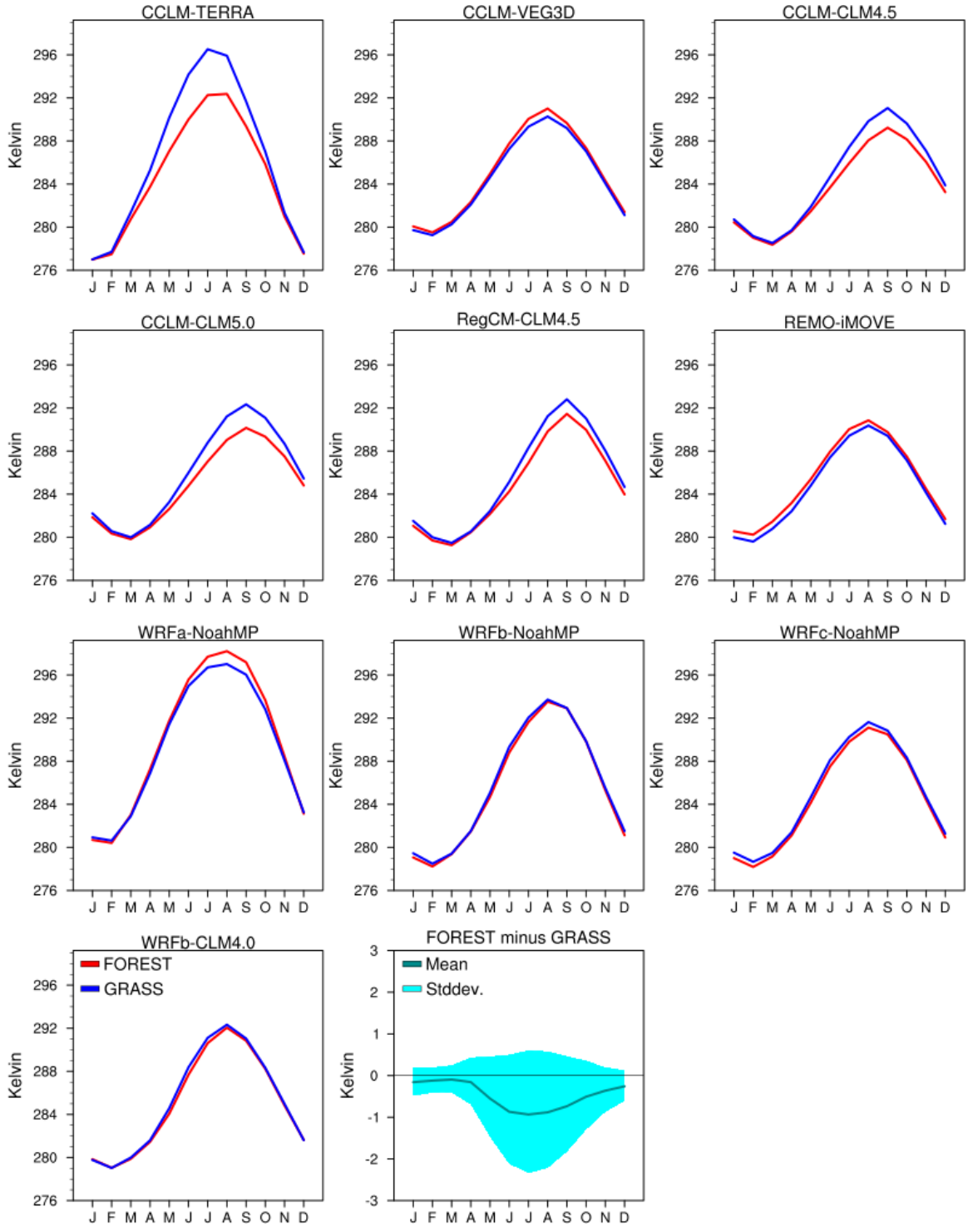

Figure S6: Annual soil temperature cycle for FOREST and GRASS over the FR region.

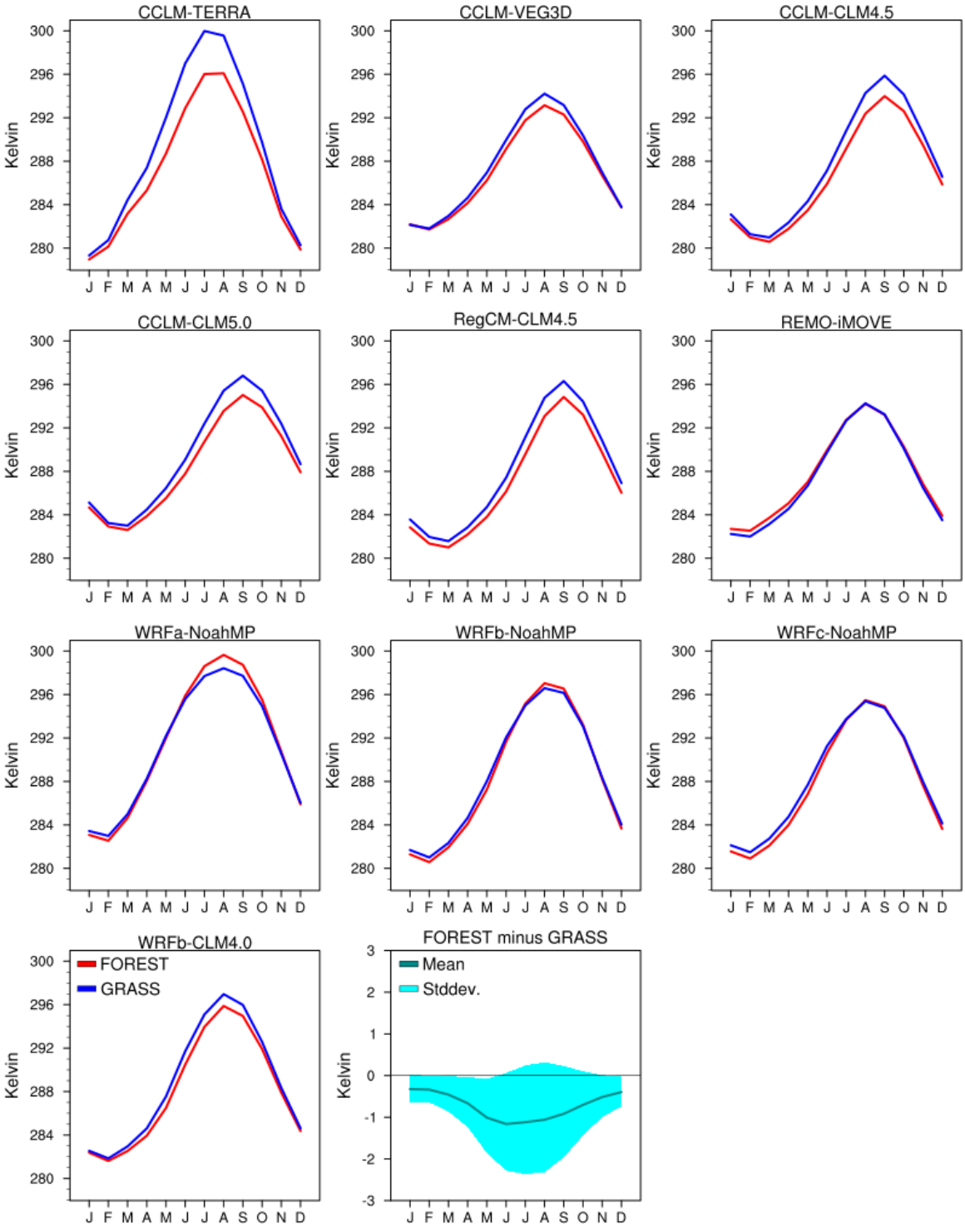

Figure S7: Annual soil temperature cycle for FOREST and GRASS over the IP region.

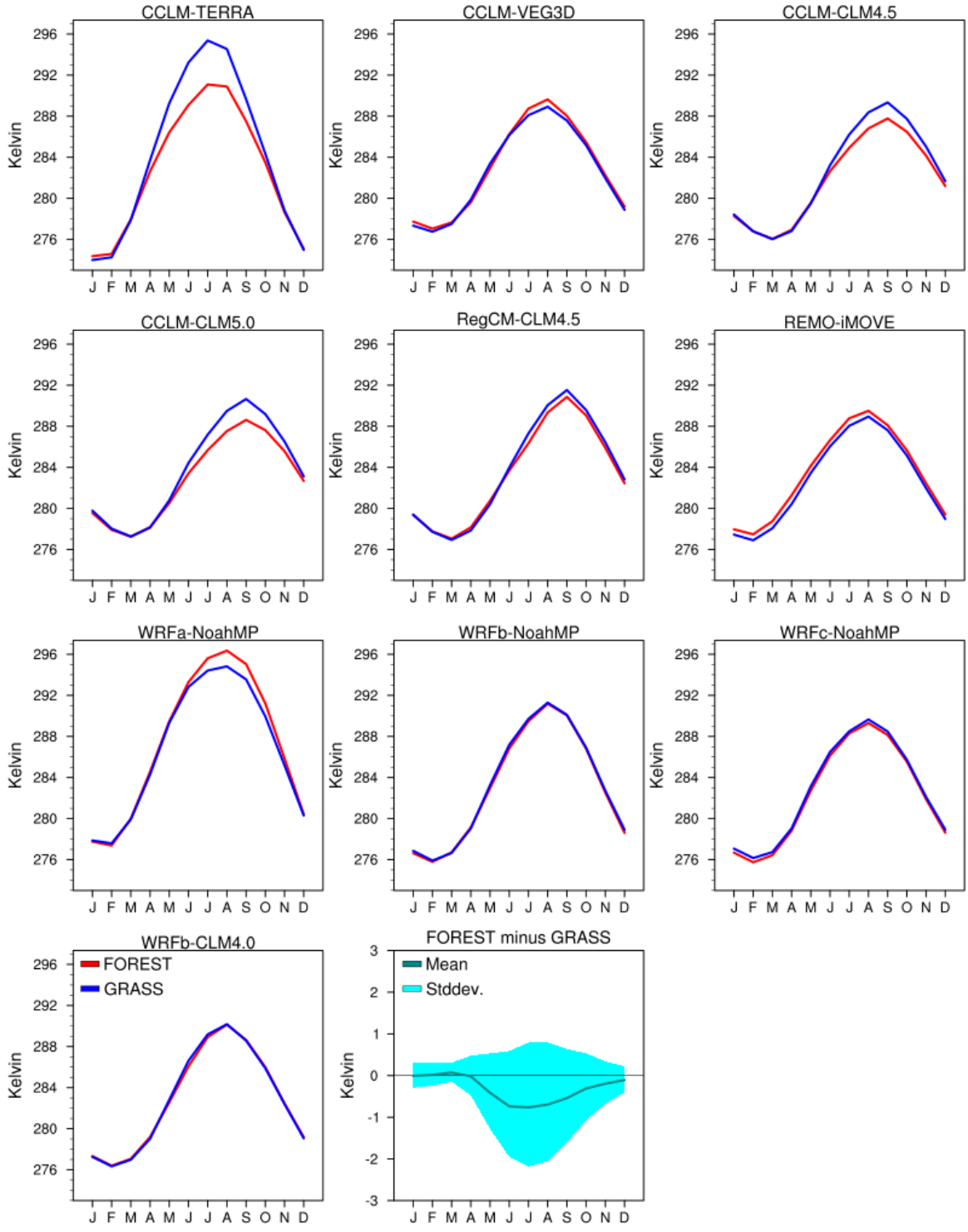

Figure S8: Annual soil temperature cycle for FOREST and GRASS over the ME region.

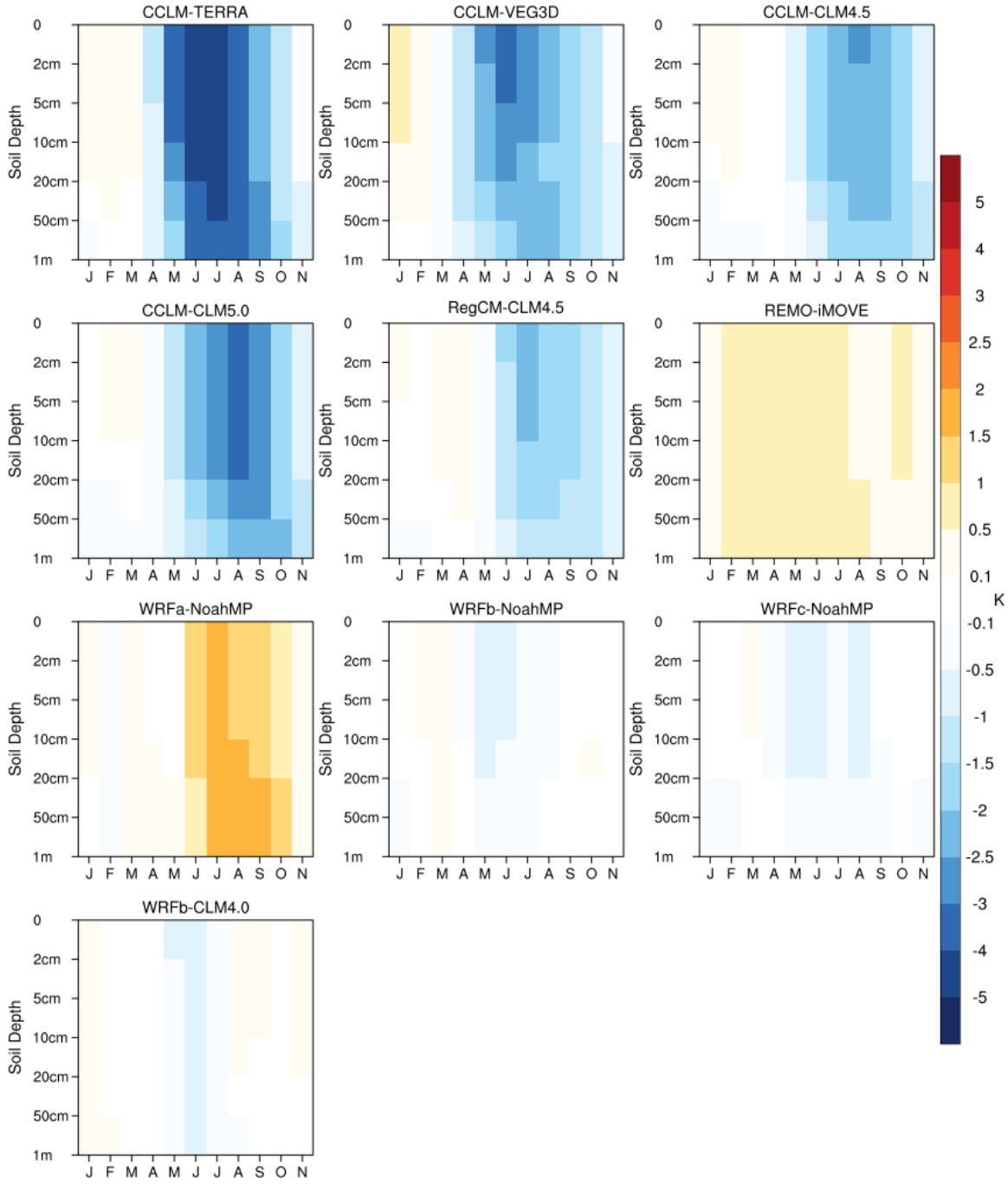

Figure S9: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the AL region.

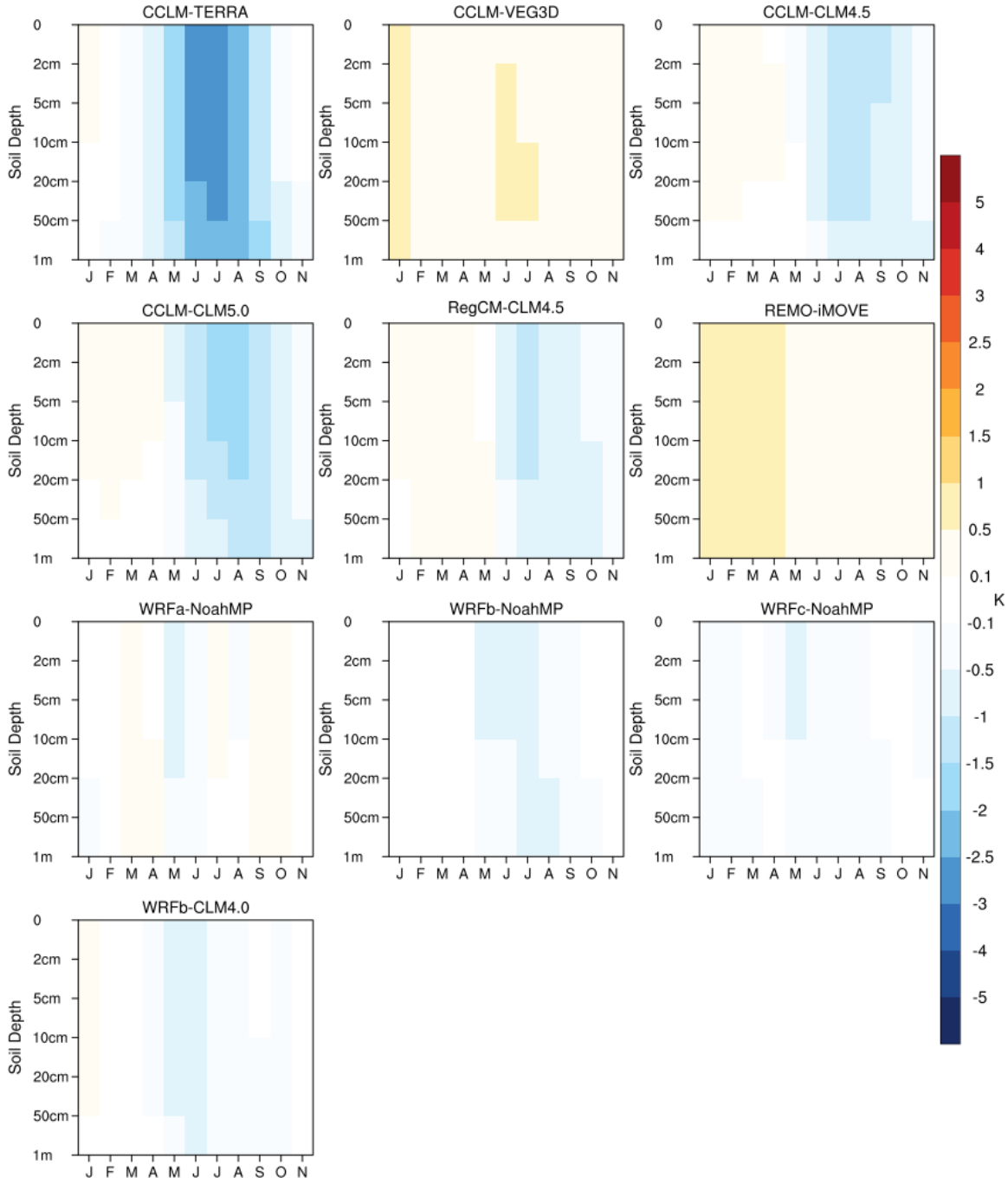

Figure S10: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the BI region.

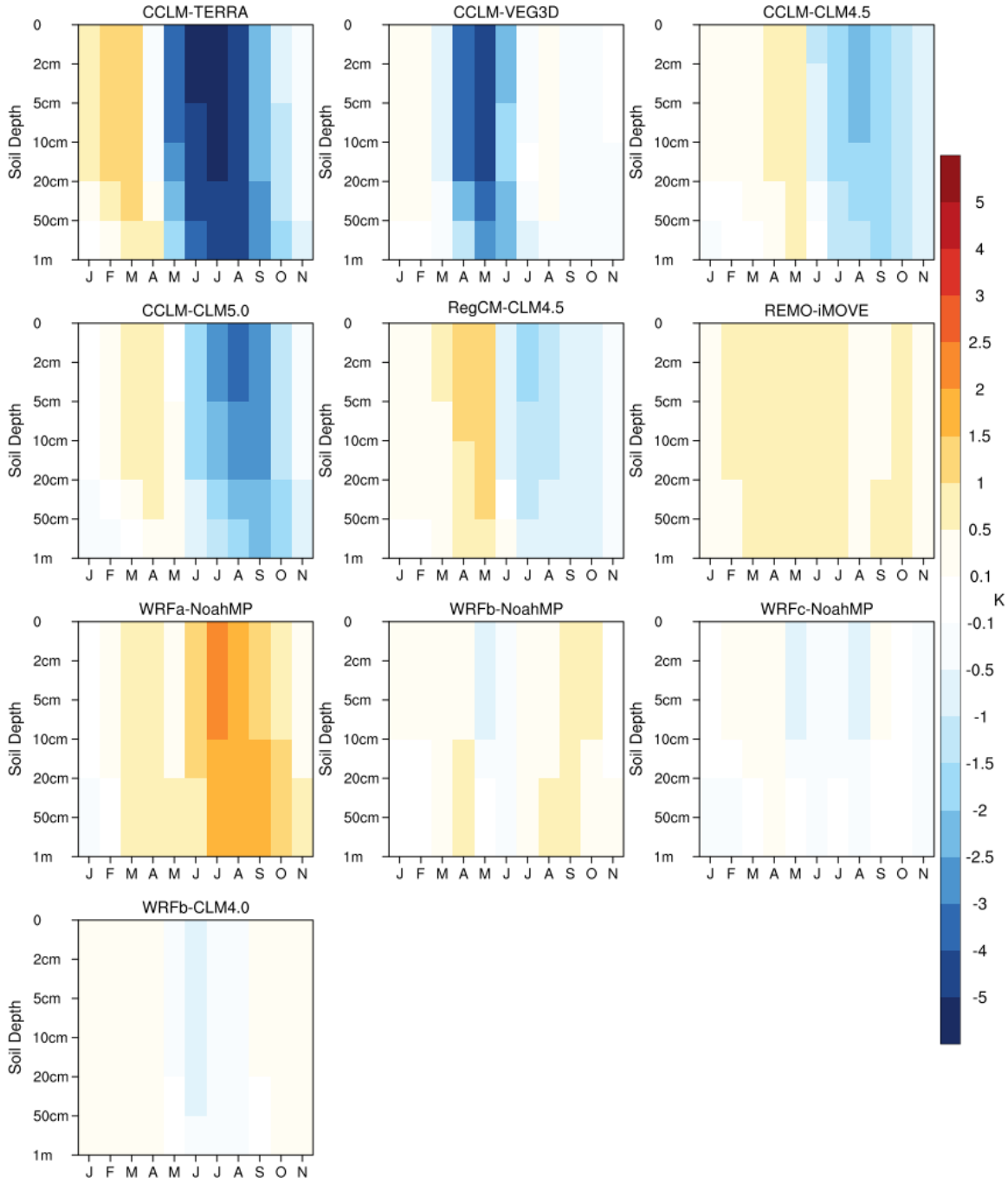

Figure S11: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the EA region.

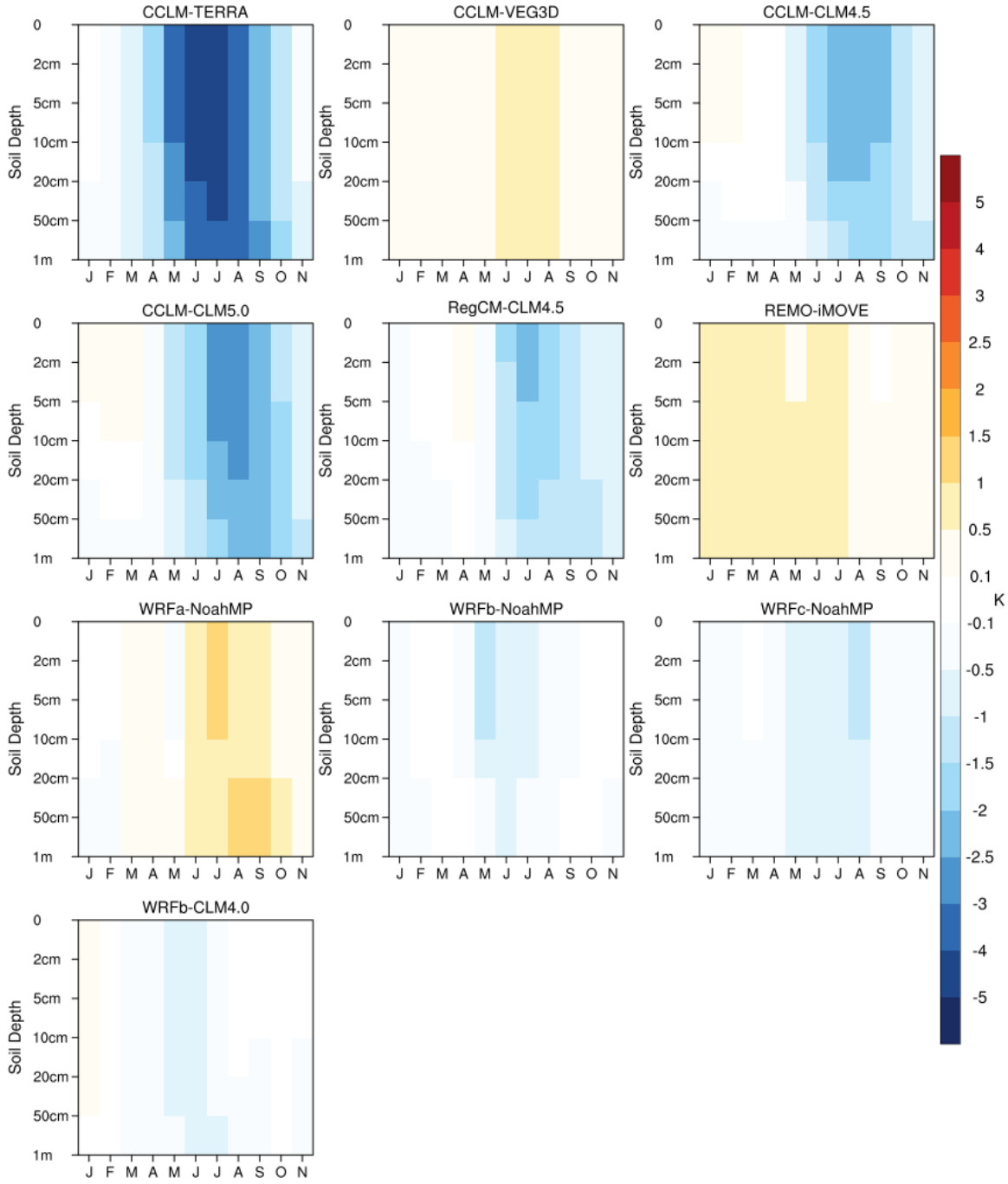

Figure S12: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the FR region.

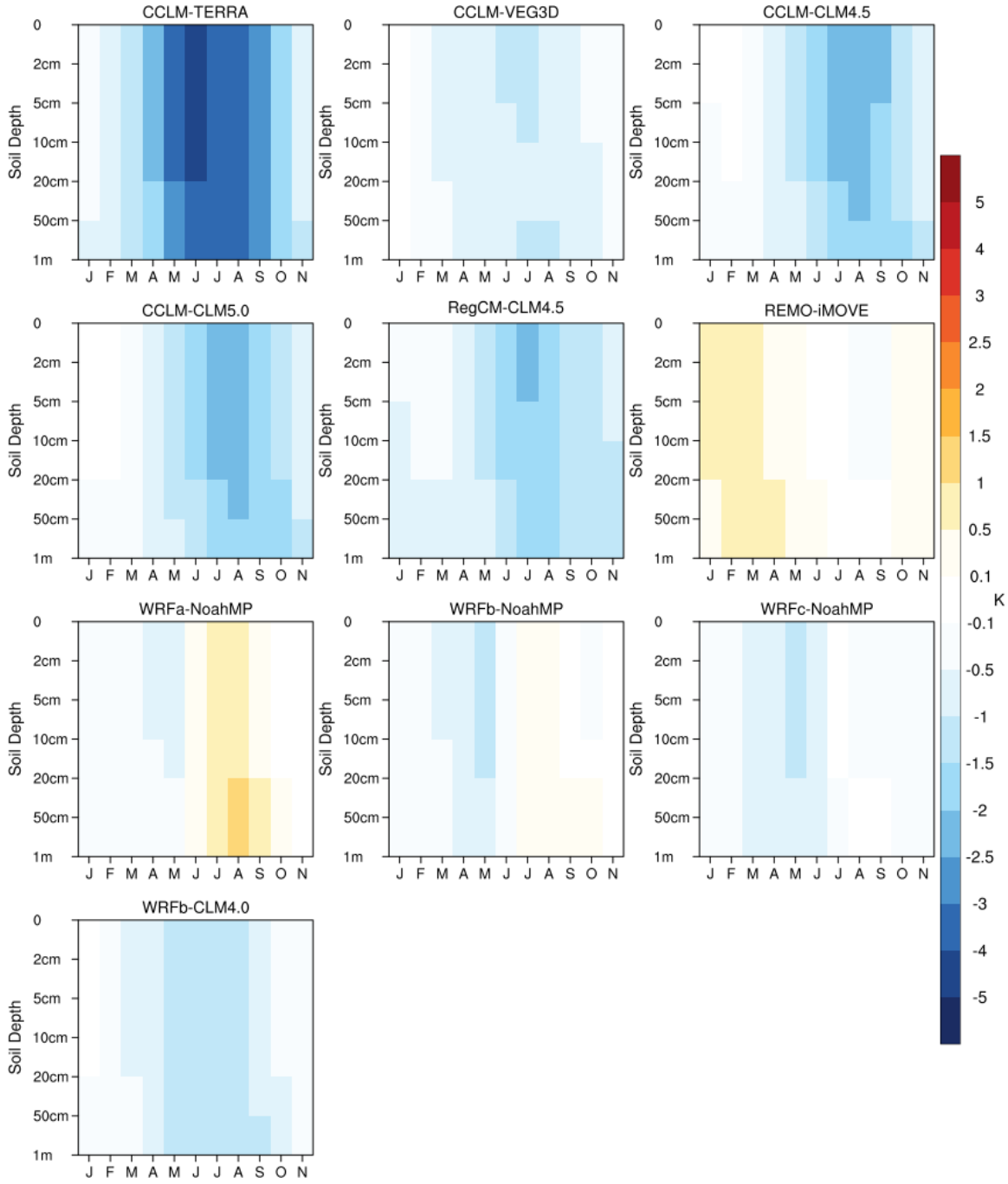

Figure S13: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the IP region.

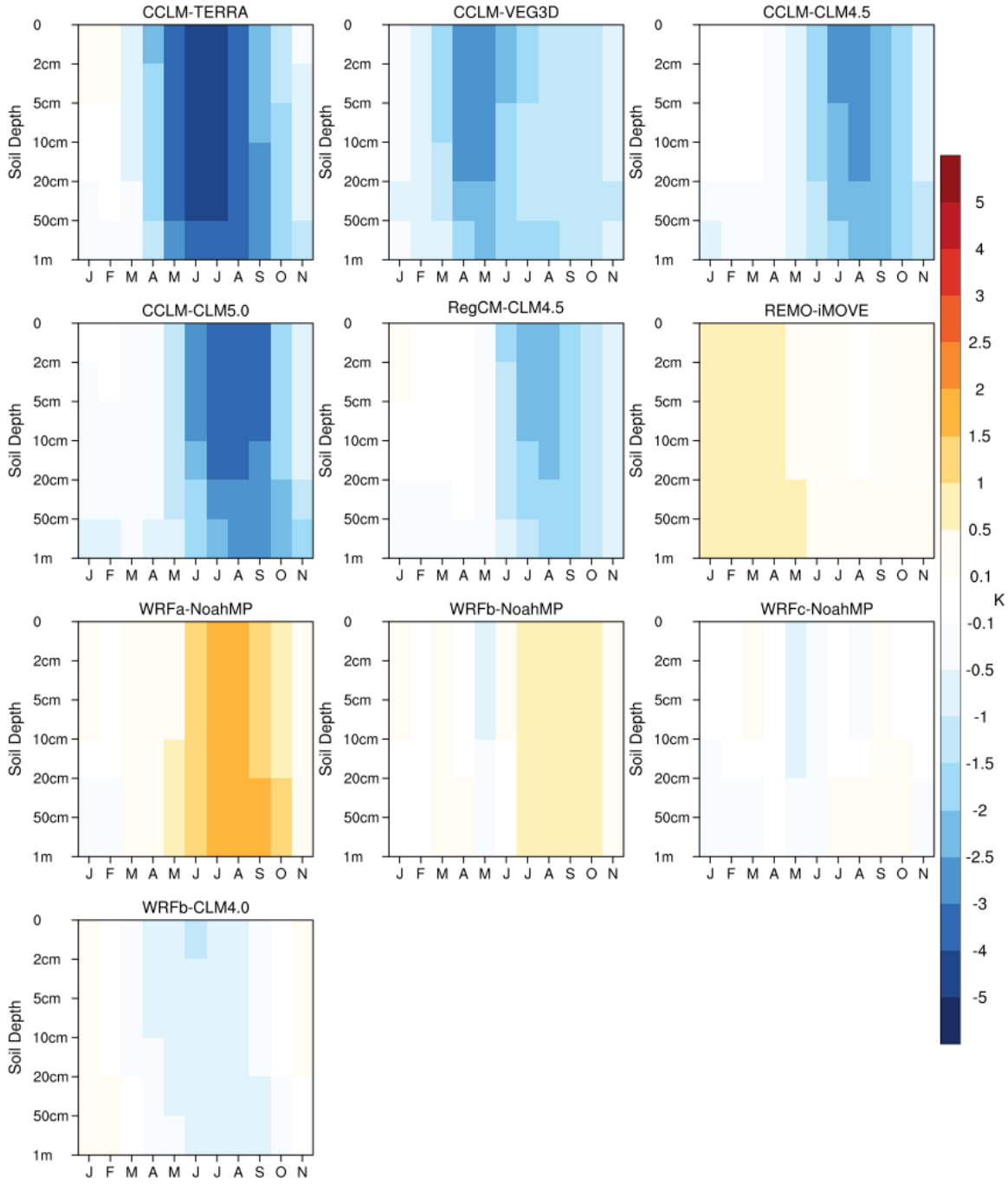

Figure S14: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the MD region.

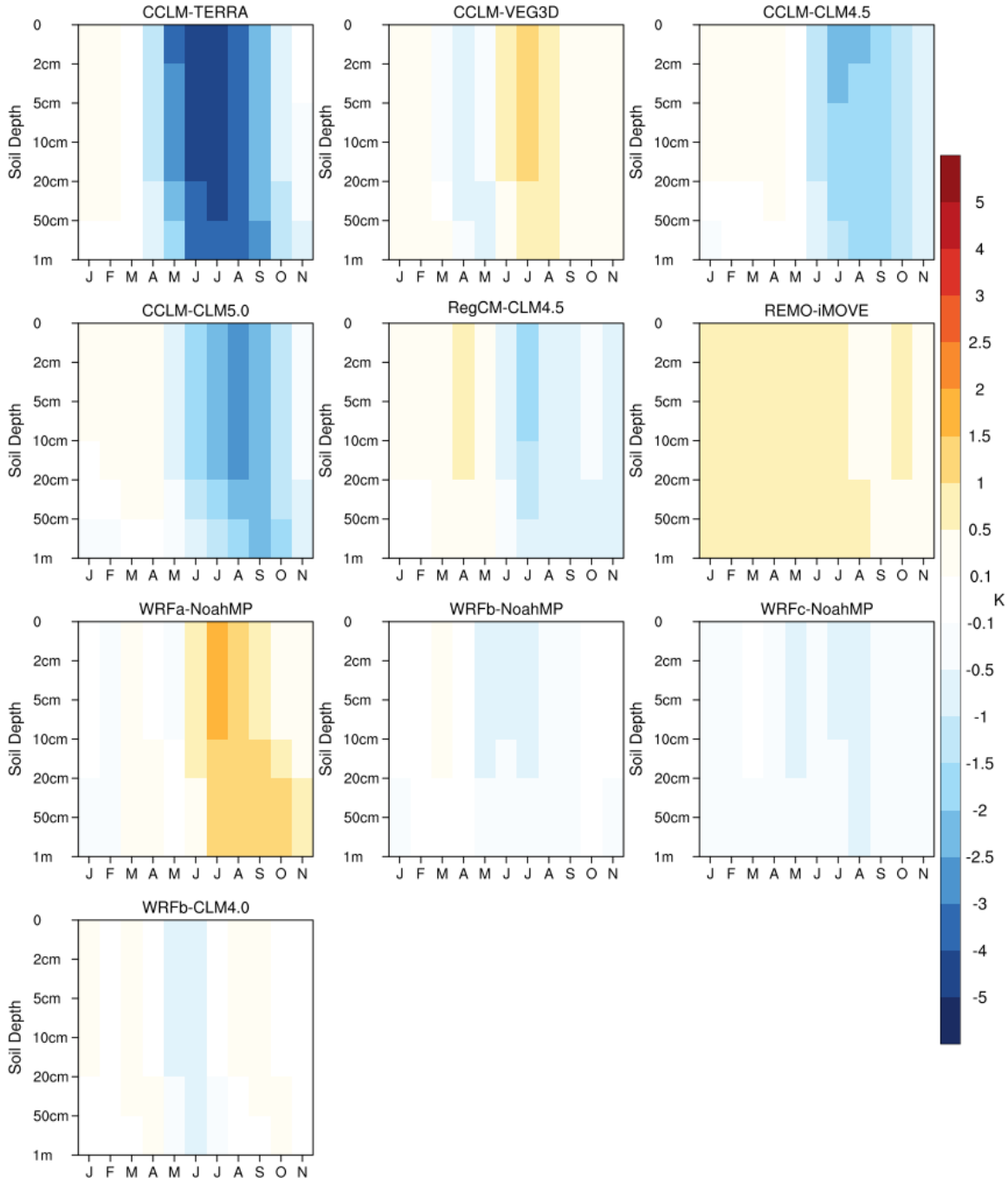

Figure S15: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the ME region.

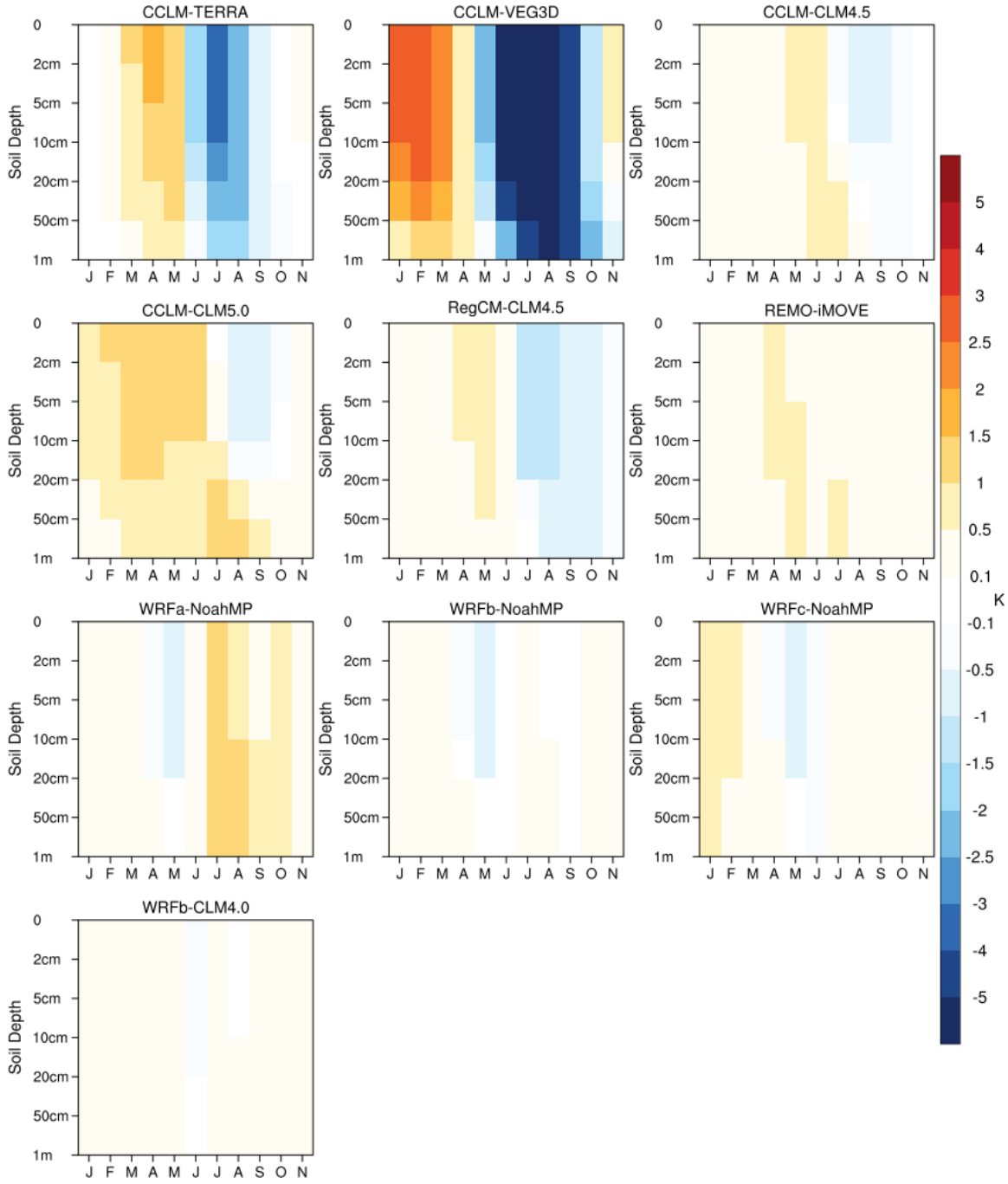

Figure S16: Afforestation (FOREST minus GRASS) effect on mean monthly soil temperature in the top 1 meter of the soil over the SC region.

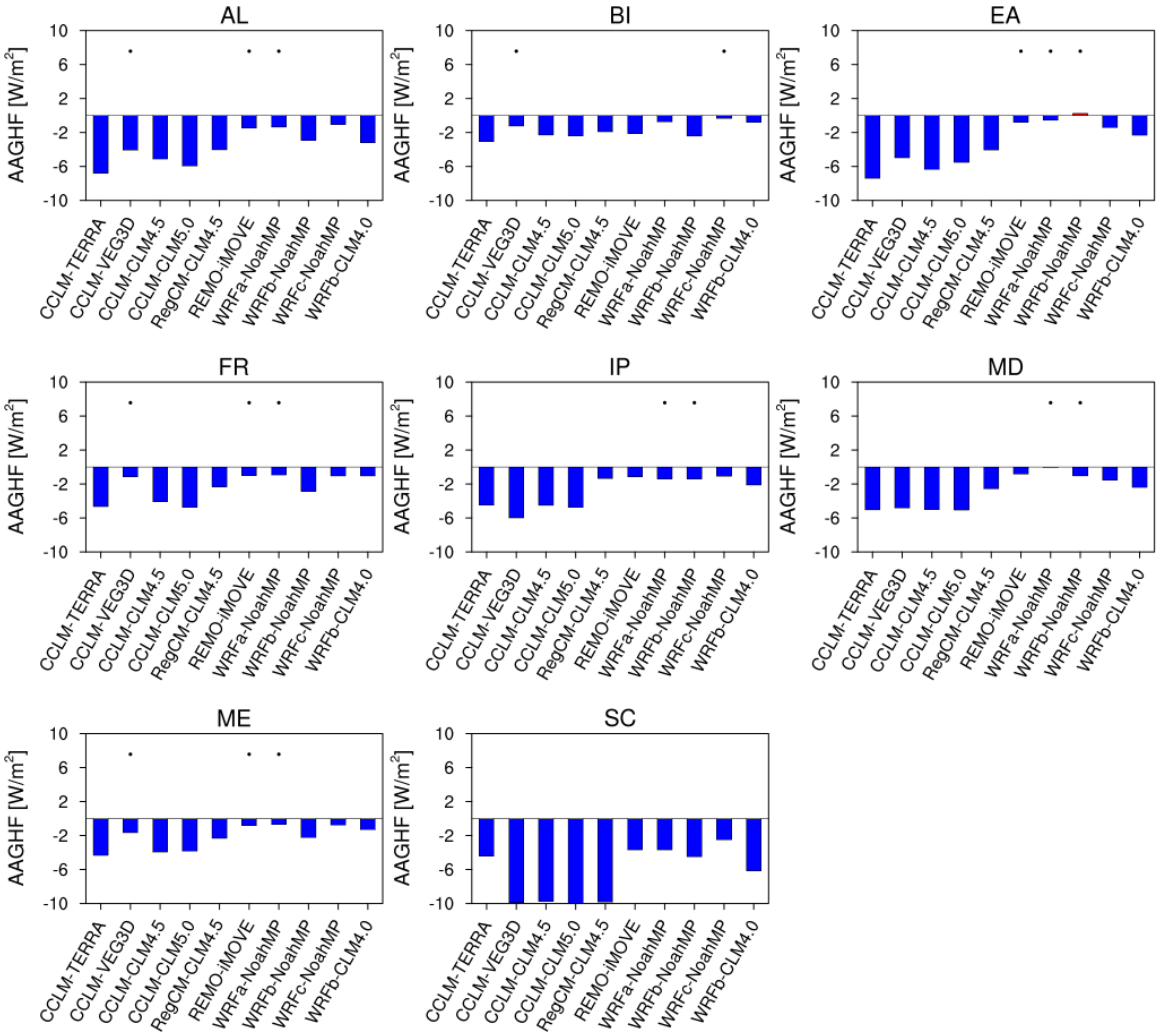

Figure S17: Afforestation (FOREST minus GRASS) impact on the AAGHF (W/m^2) summarized over the PRUDENCE regions. The dots above the bars indicate the differences in AAGHF which are insignificantly different from zero in a two-sided t-test at 95% confidence level.

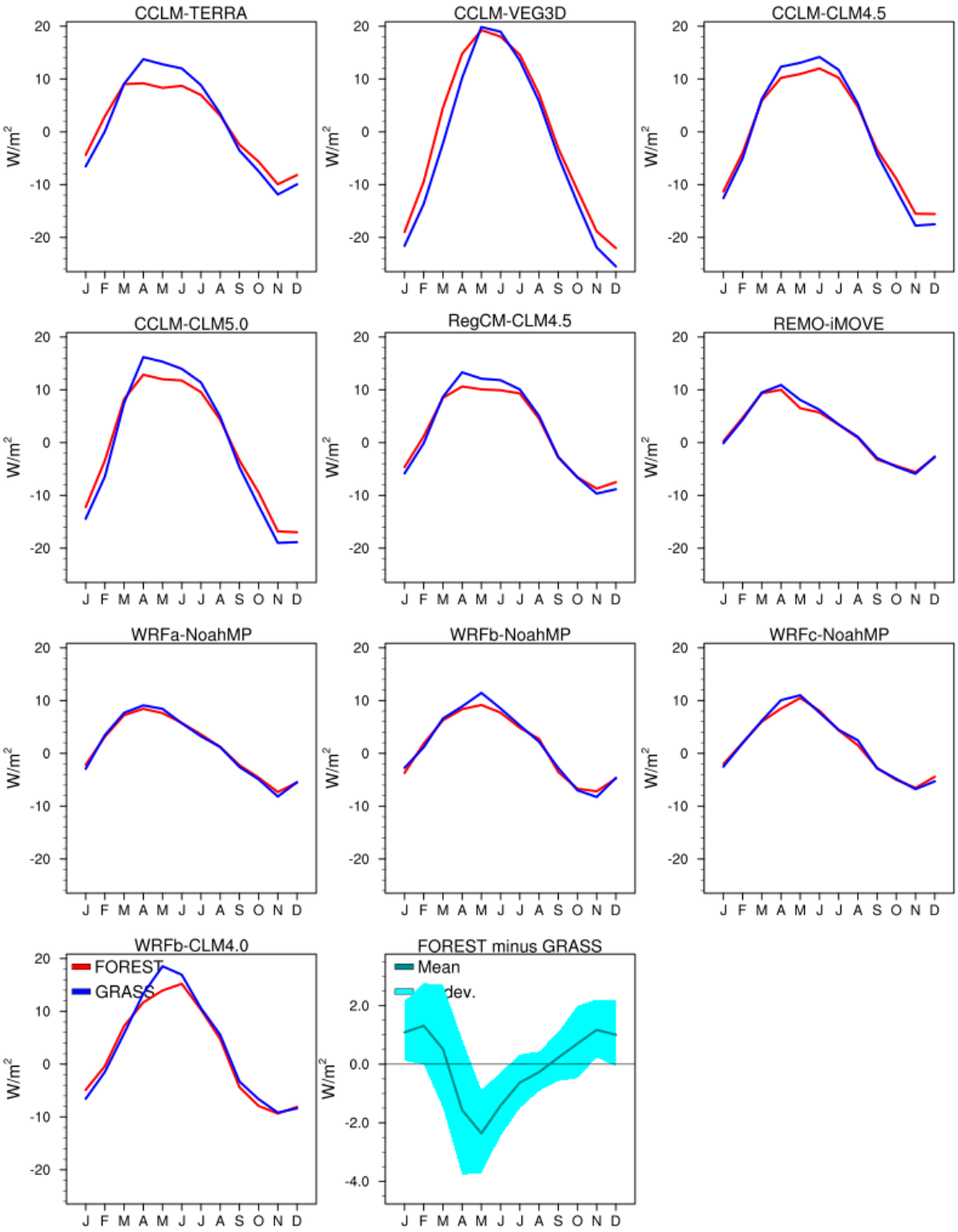

Figure S18: Annual GHF cycle for FOREST and GRASS over the AL region.

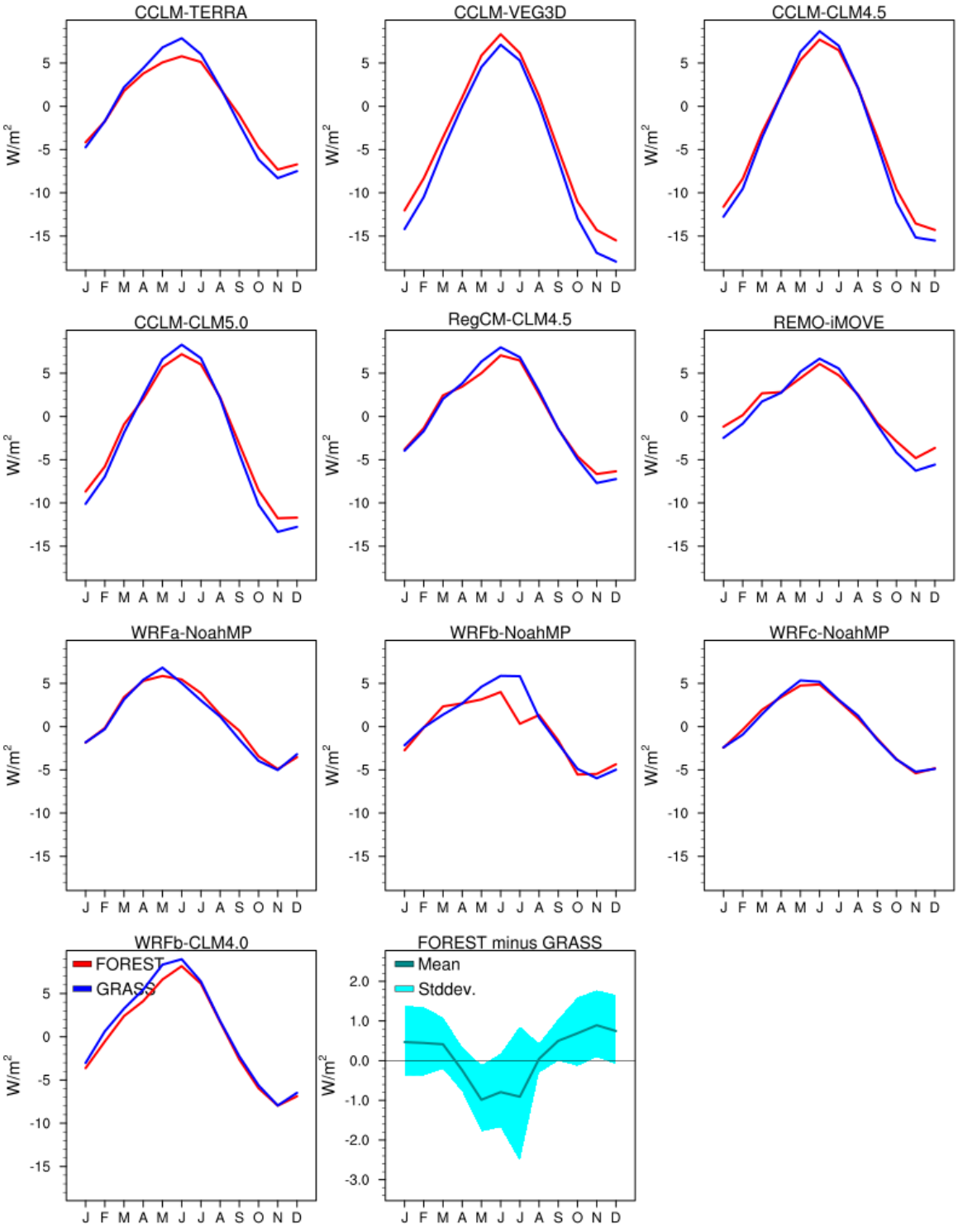

Figure S19: Annual GHF cycle for FOREST and GRASS over the BI region.

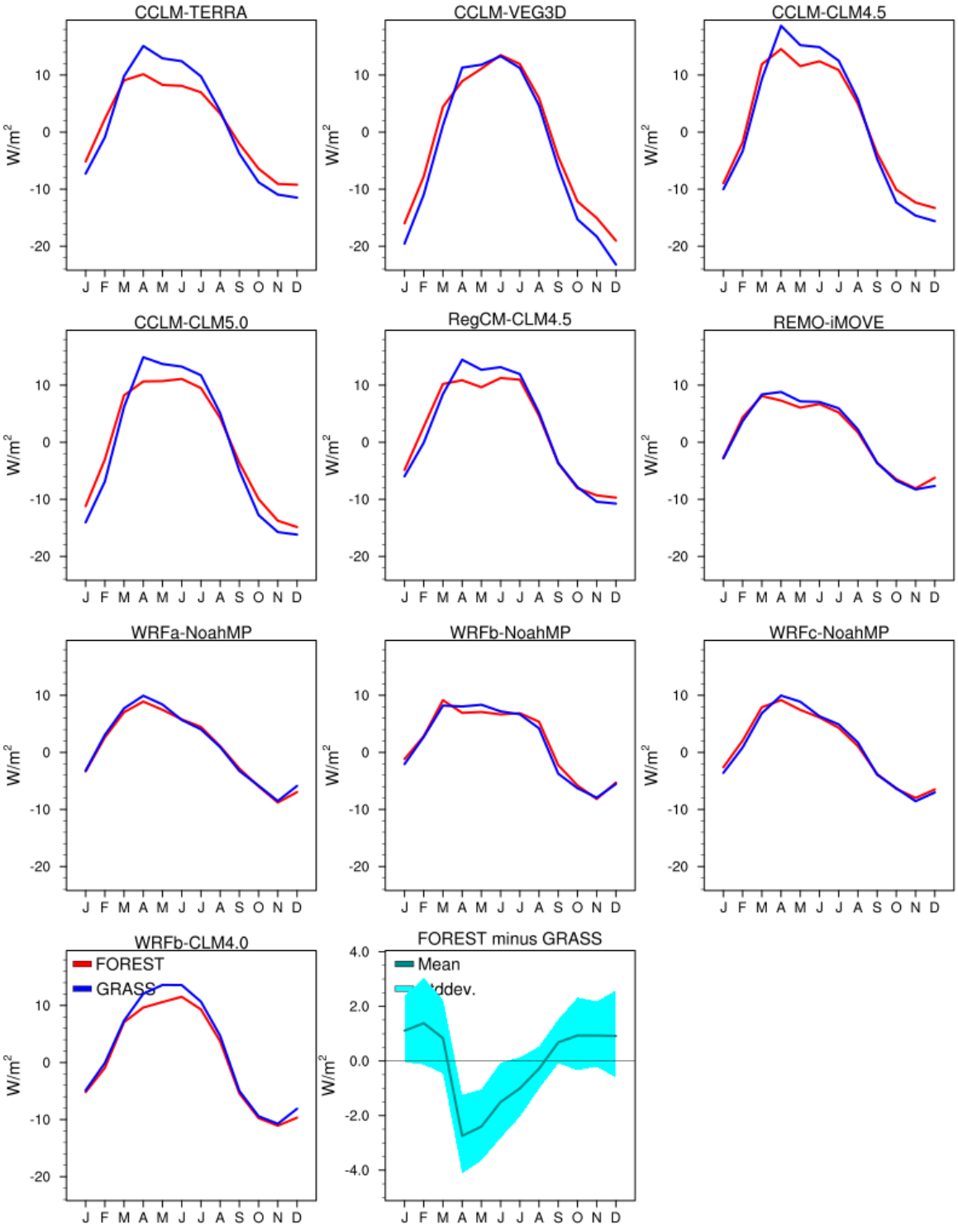

Figure S20: Annual GHF cycle for FOREST and GRASS over the EA region.

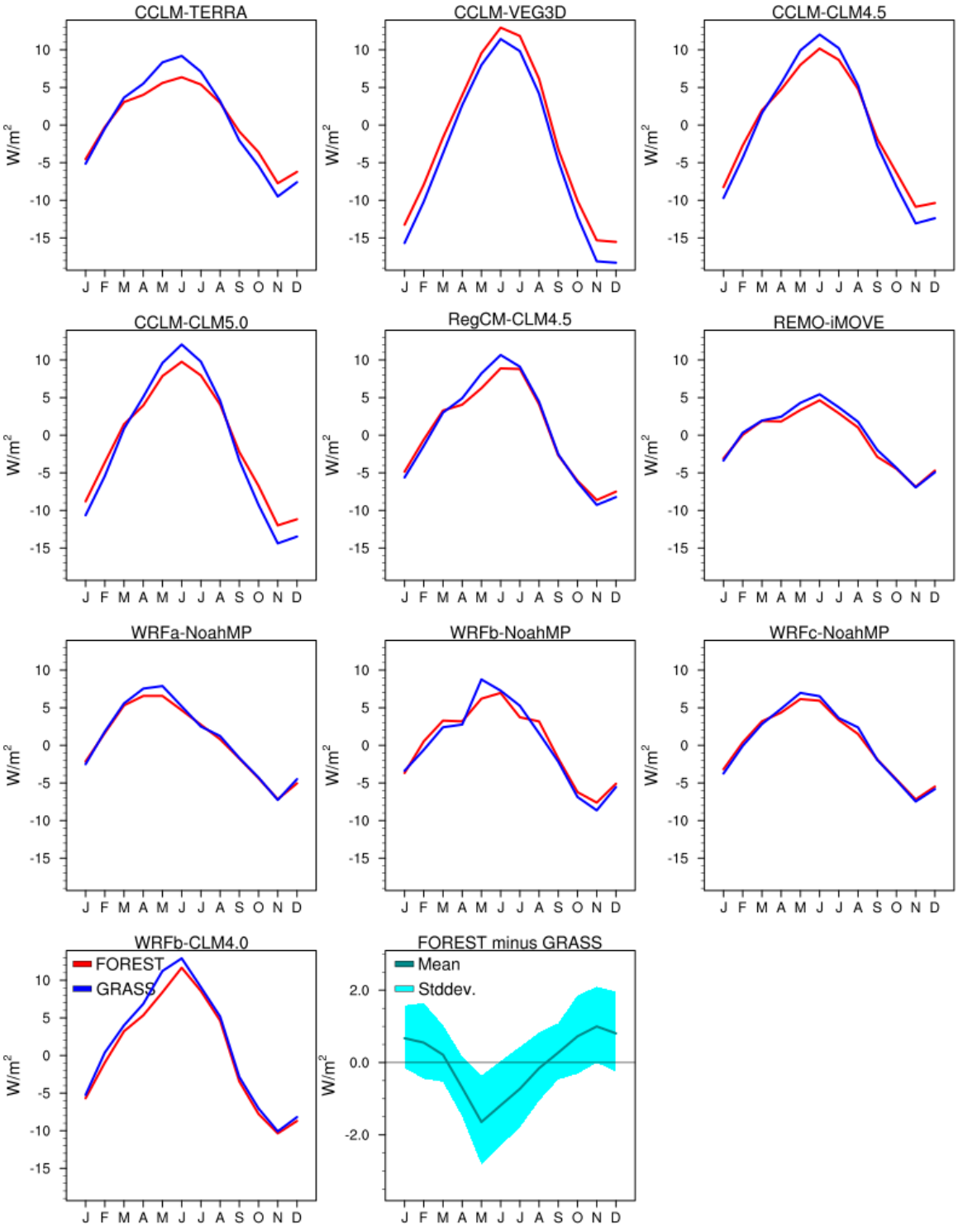

Figure S21: Annual GHF cycle for FOREST and GRASS over the FR region.

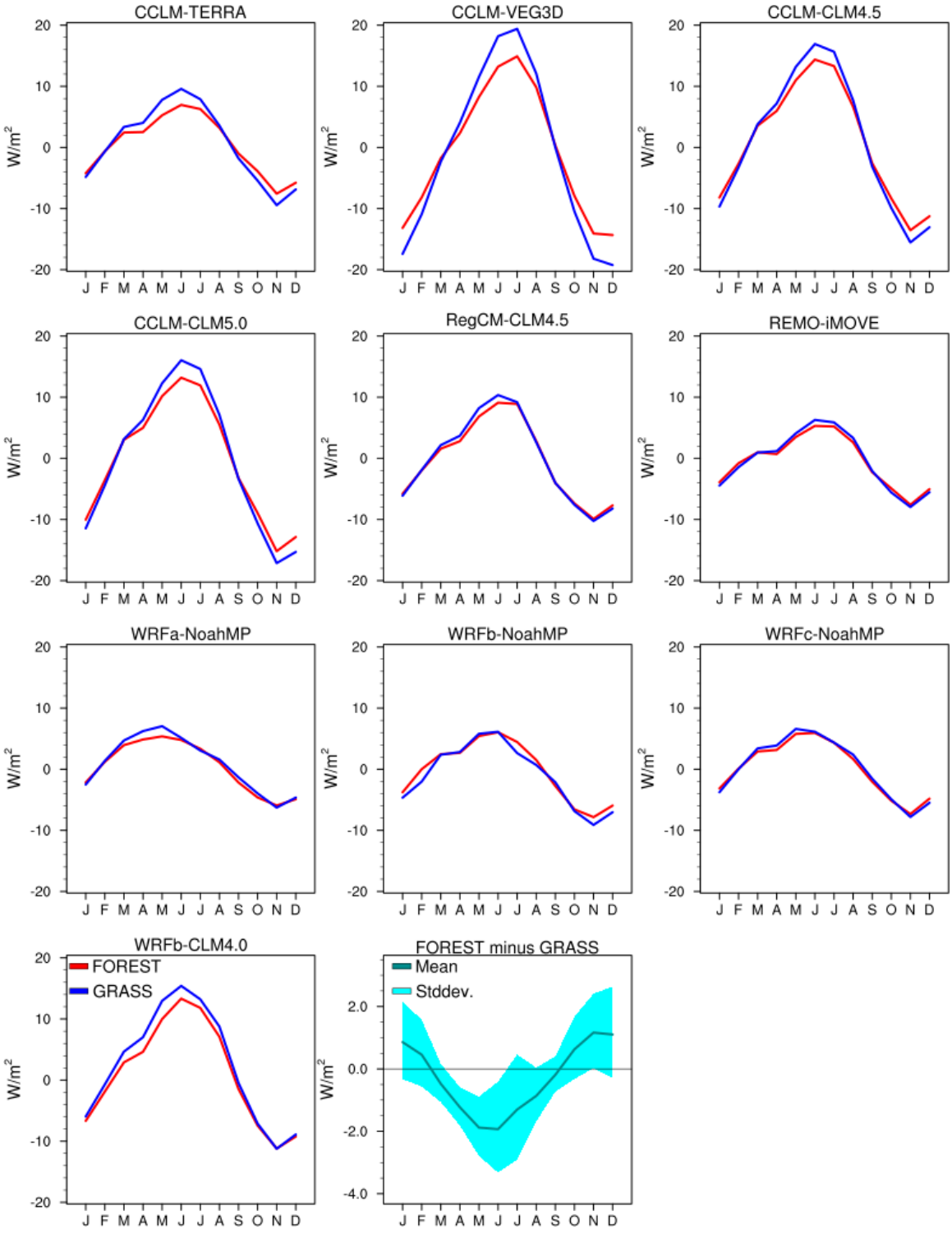

Figure S22: Annual GHF cycle for FOREST and GRASS over the IP region.

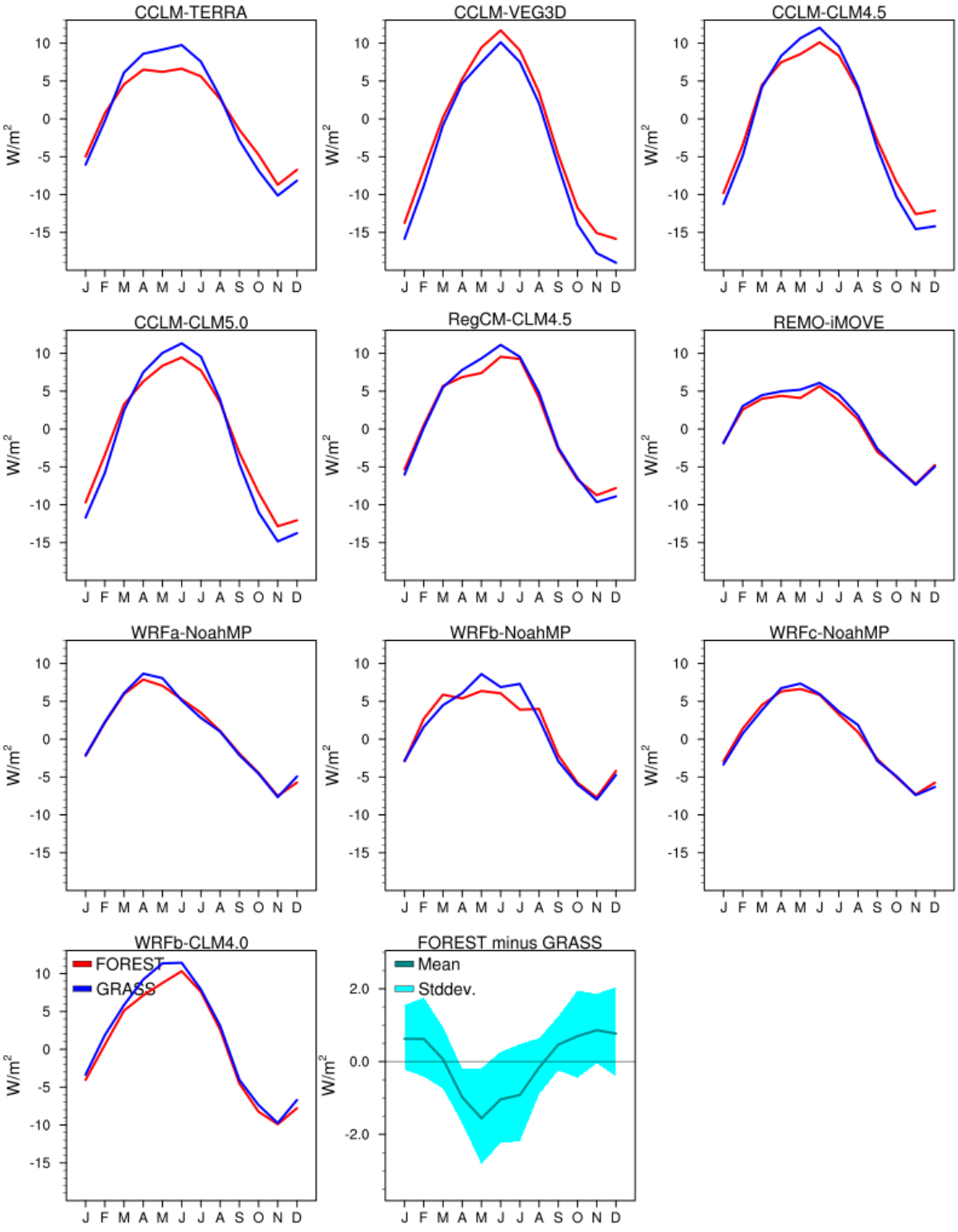

Figure S23: Annual GHF cycle for FOREST and GRASS over the ME region.

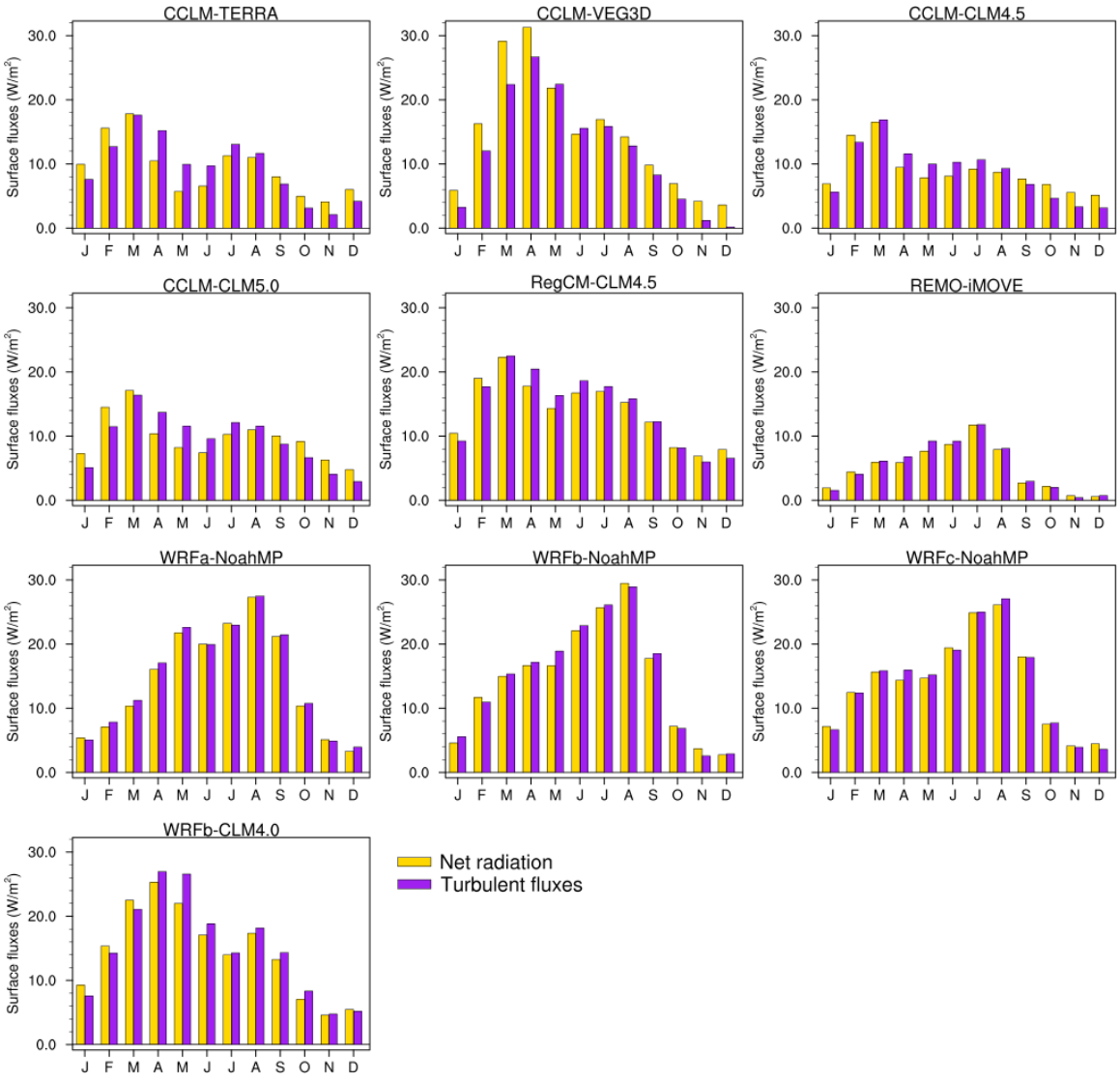

Figure S24: Mean monthly changes in net radiation and turbulent fluxes due to afforestation (FOREST minus GRASS) over AL region. Turbulent fluxes are defined as the sum of sensible and latent heat fluxes.

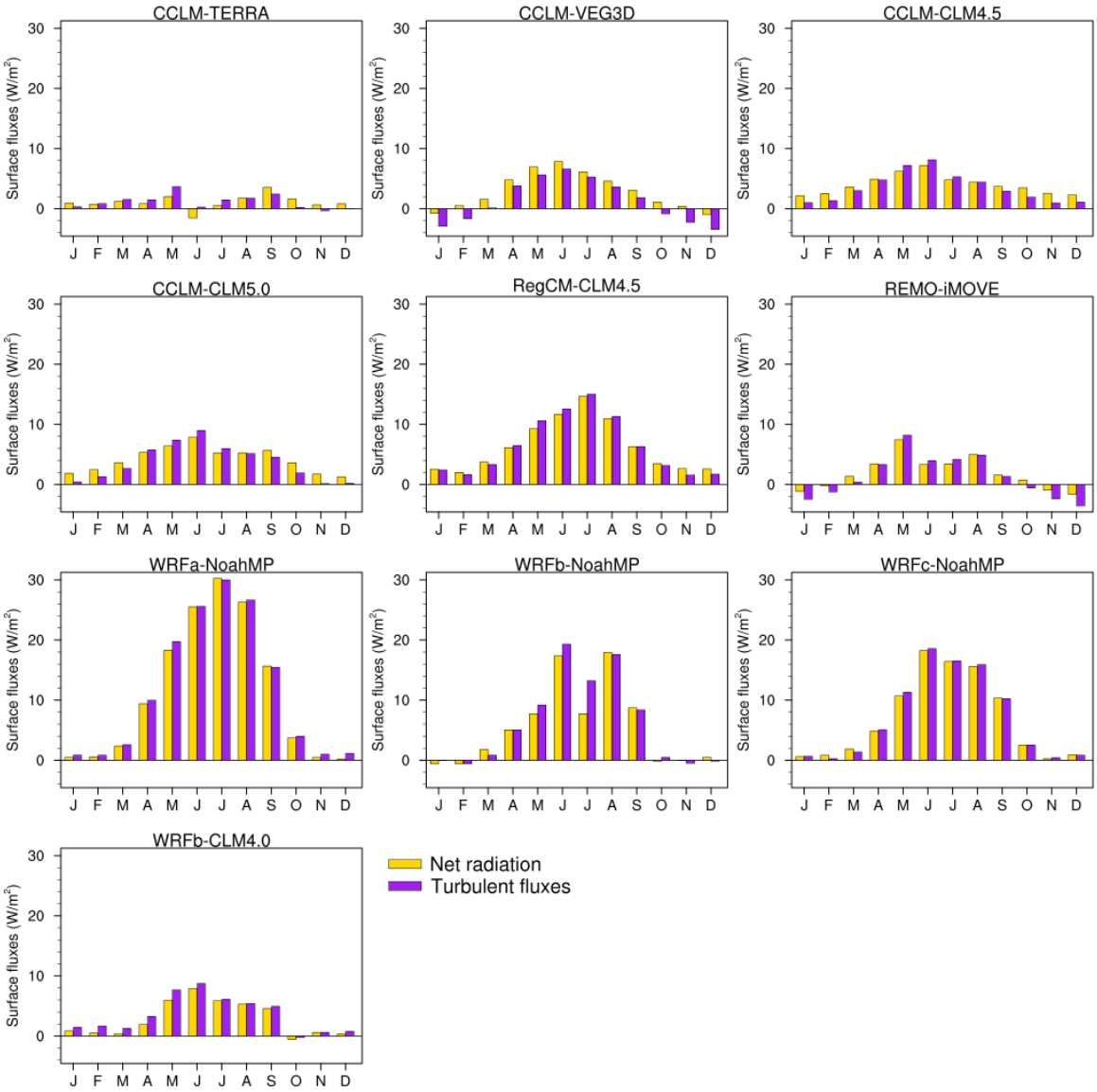

Figure S25: Mean monthly changes in net radiation and turbulent fluxes due to afforestation (FOREST minus GRASS) over BI region. Turbulent fluxes are defined as the sum of sensible and latent heat fluxes.

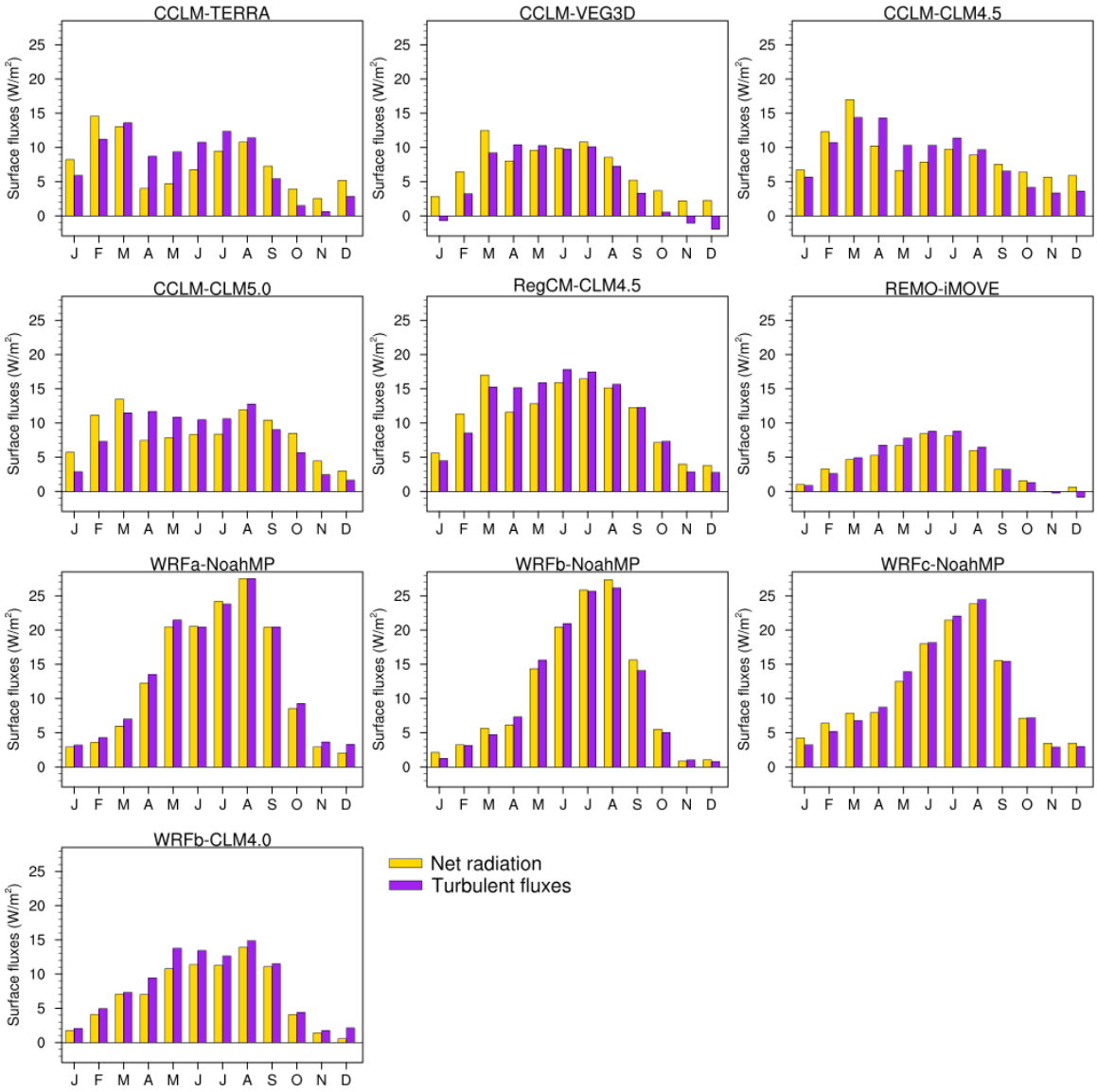

Figure S26: Mean monthly changes in net radiation and turbulent fluxes due to afforestation (FOREST minus GRASS) over EA region. Turbulent fluxes are defined as the sum of sensible and latent heat fluxes.

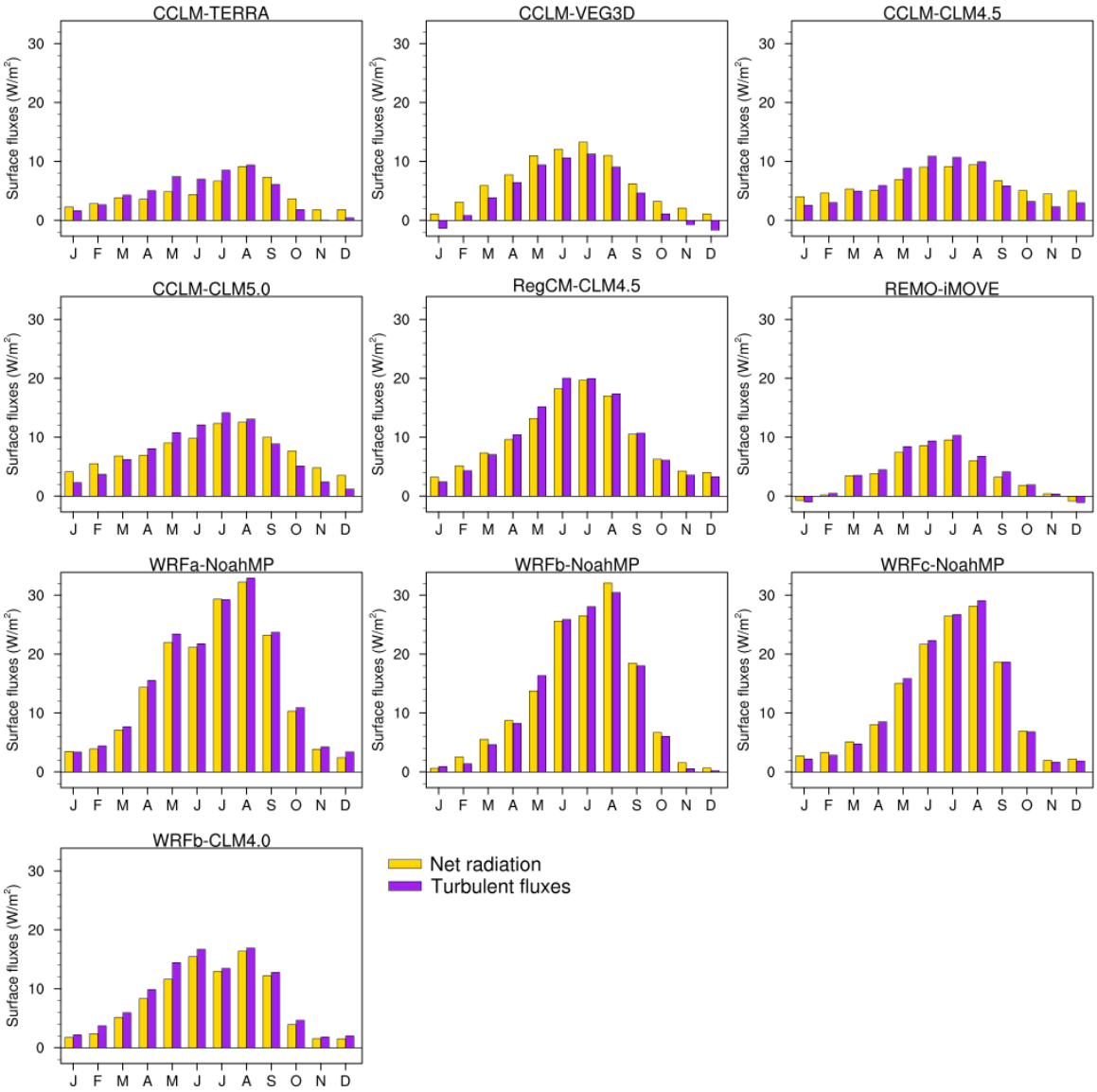

Figure S27: Mean monthly changes in net radiation and turbulent fluxes due to afforestation (FOREST minus GRASS) over FR region. Turbulent fluxes are defined as the sum of sensible and latent heat fluxes.

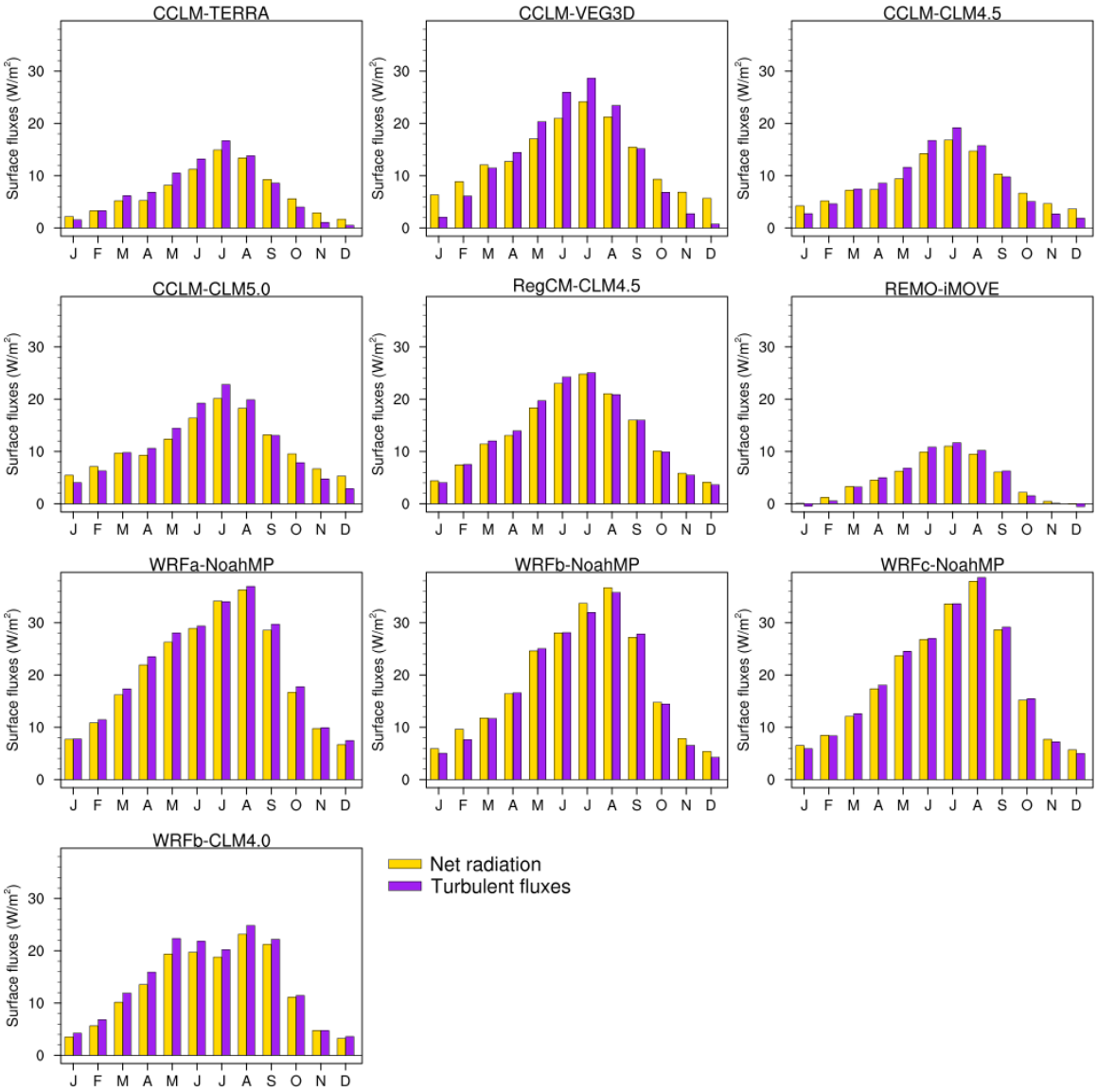

Figure S28: Mean monthly changes in net radiation and turbulent fluxes due to afforestation (FOREST minus GRASS) over IP region. Turbulent fluxes are defined as the sum of sensible and latent heat fluxes.

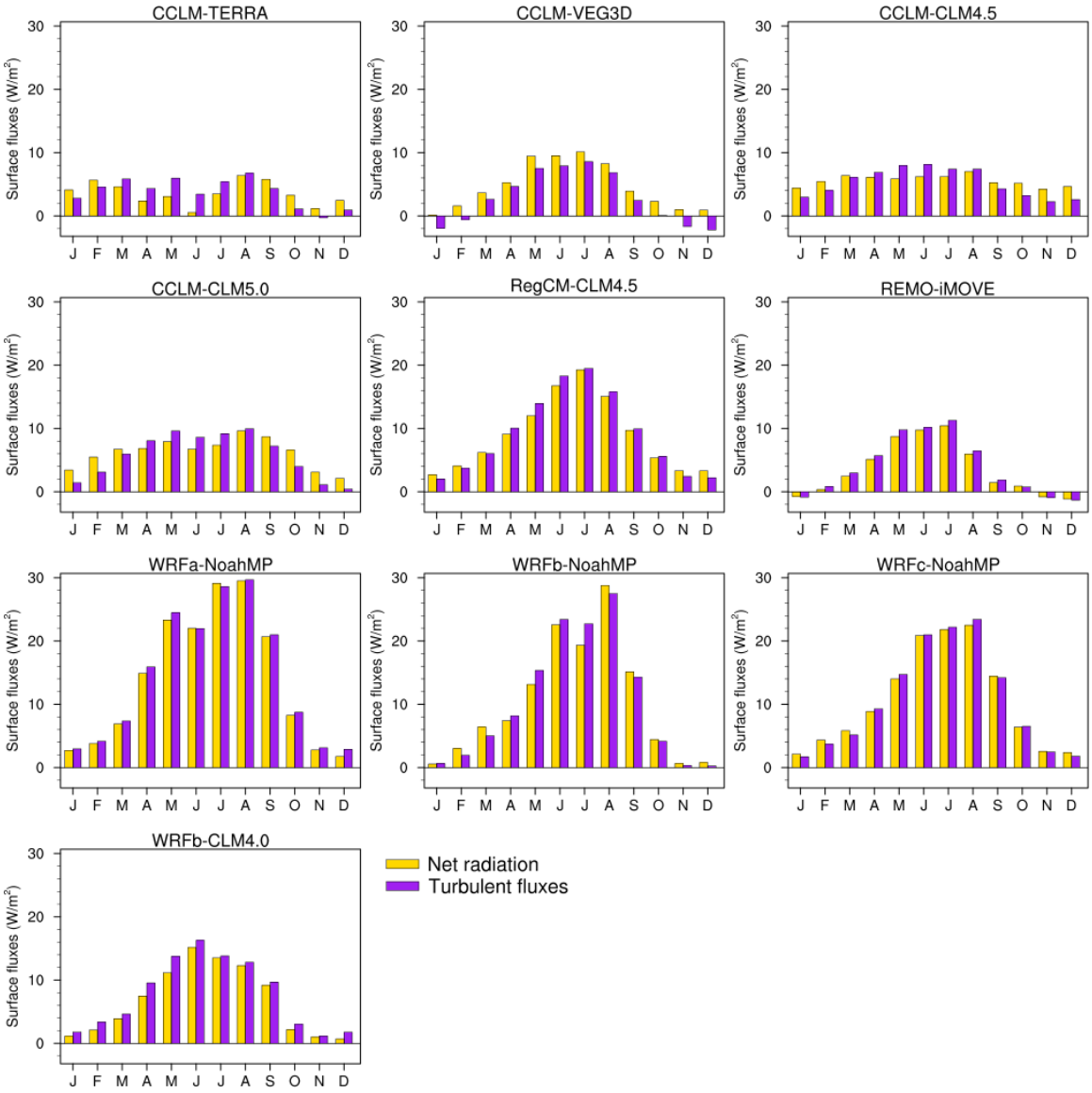

Figure S29: Mean monthly changes in net radiation and turbulent fluxes due to afforestation (FOREST minus GRASS) over ME region. Turbulent fluxes are defined as the sum of sensible and latent heat fluxes.

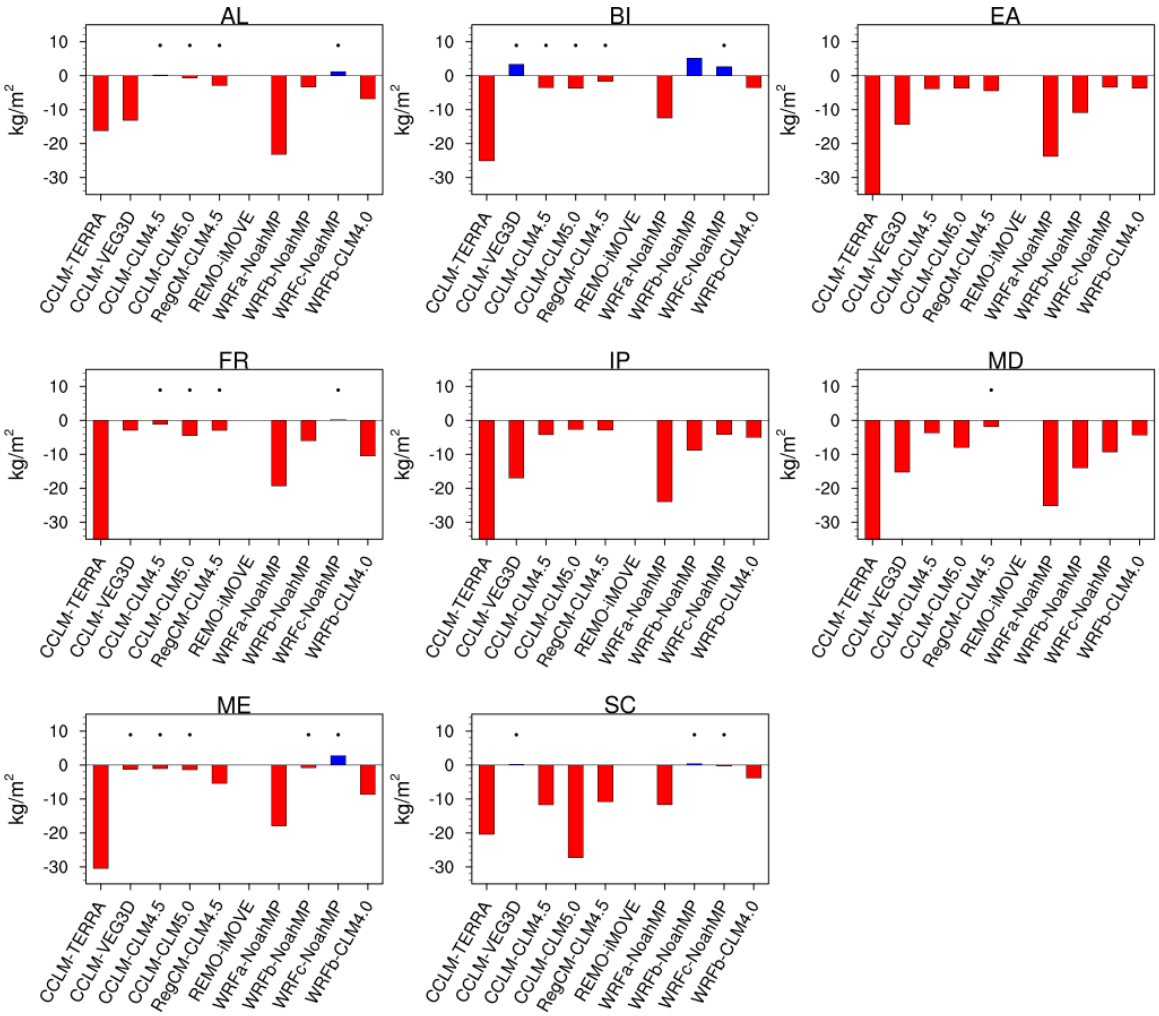

Figure S30: Afforestation (FOREST minus GRASS) impact on soil moisture content of the top 1 meter of the soil during summer, summarized over the PRUDENCE regions. REMO-iMOVE is not included because it employed a bucket scheme for soil hydrology in the LUCAS Phase 1 experiments, which does not allow a separation of soil moisture into different layers.

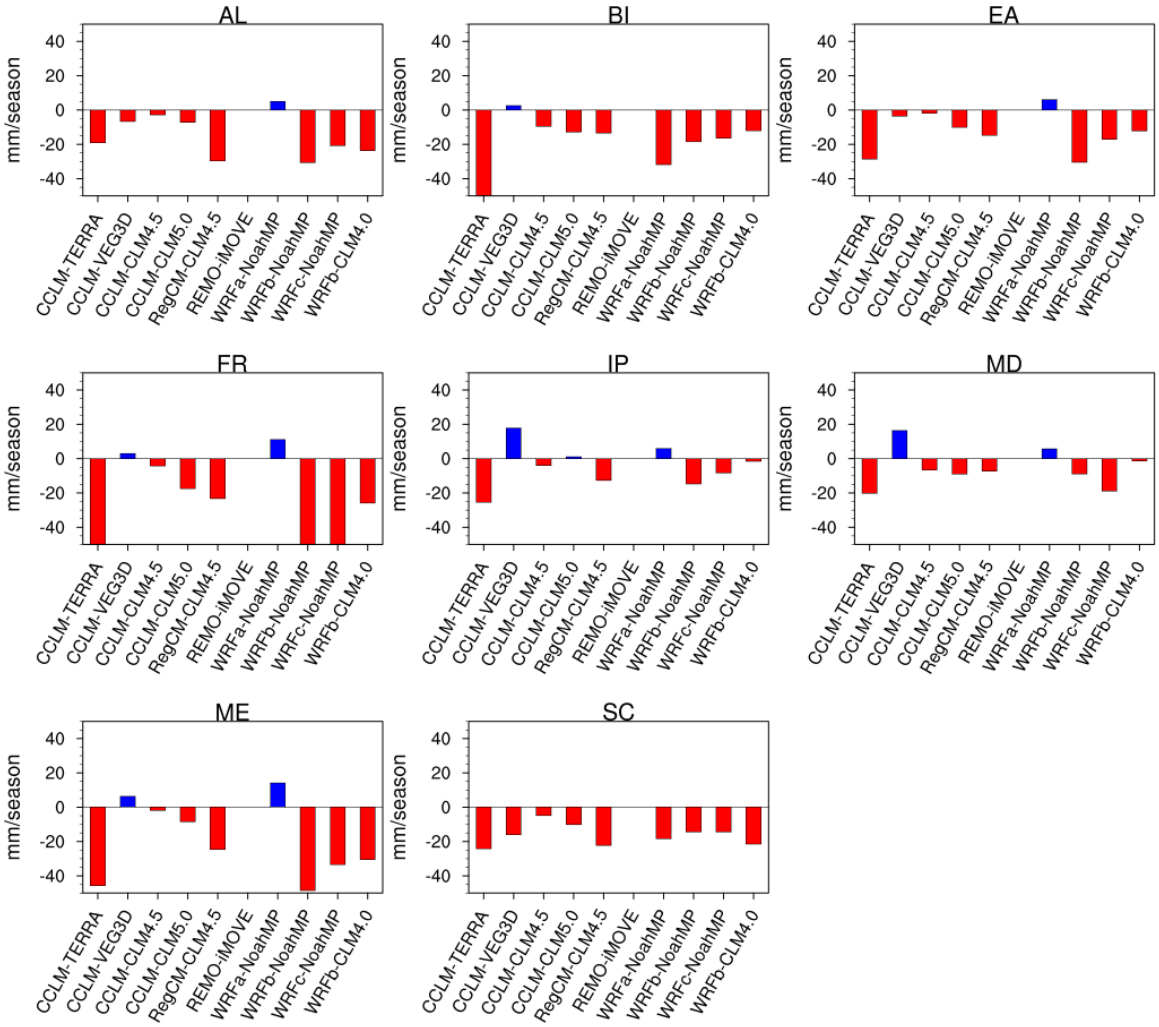

Figure S31: Afforestation (FOREST minus GRASS) impact on surface water balance, defined as the difference between precipitation and evapotranspiration, during summer season over the regions of interest.

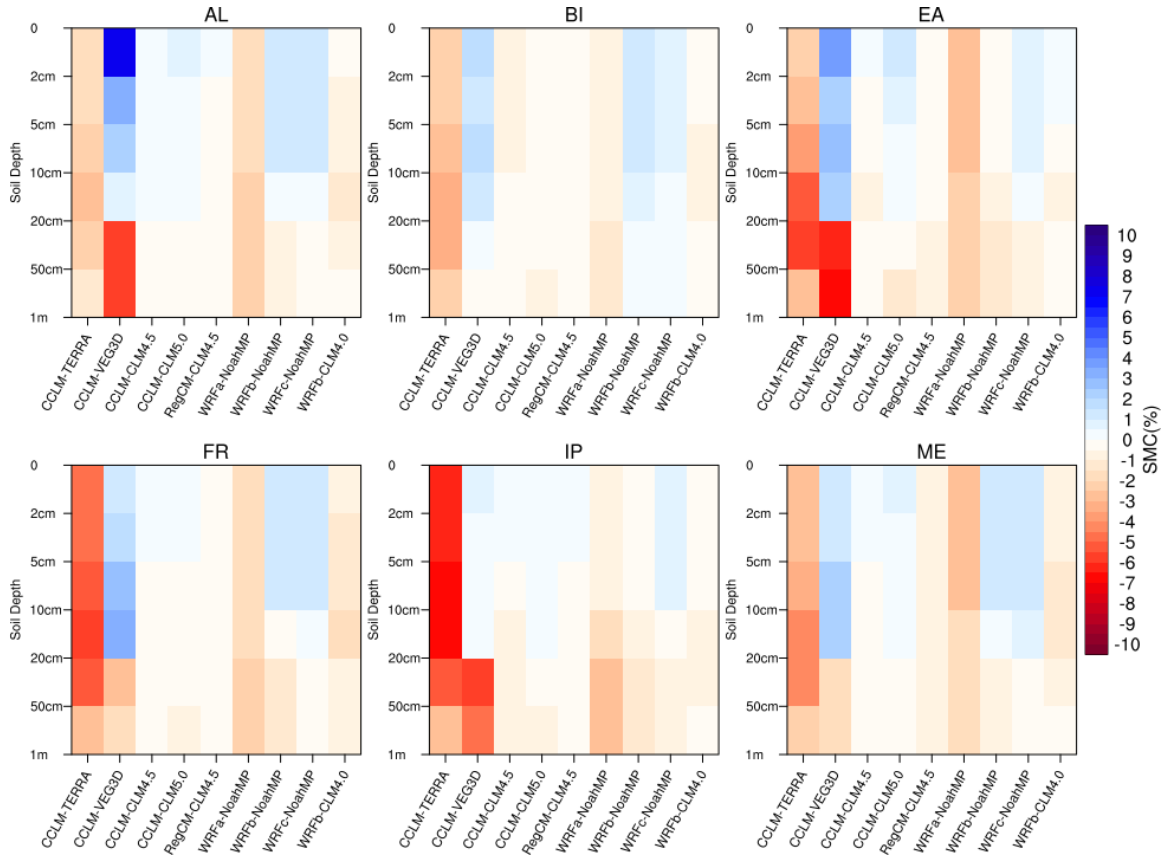

Figure S32: Summer changes in soil moisture content (SMC) due to afforestation (FOREST minus GRASS) in the top 1 meter of the soil over European sub-regions.