

## Supplementary Figures

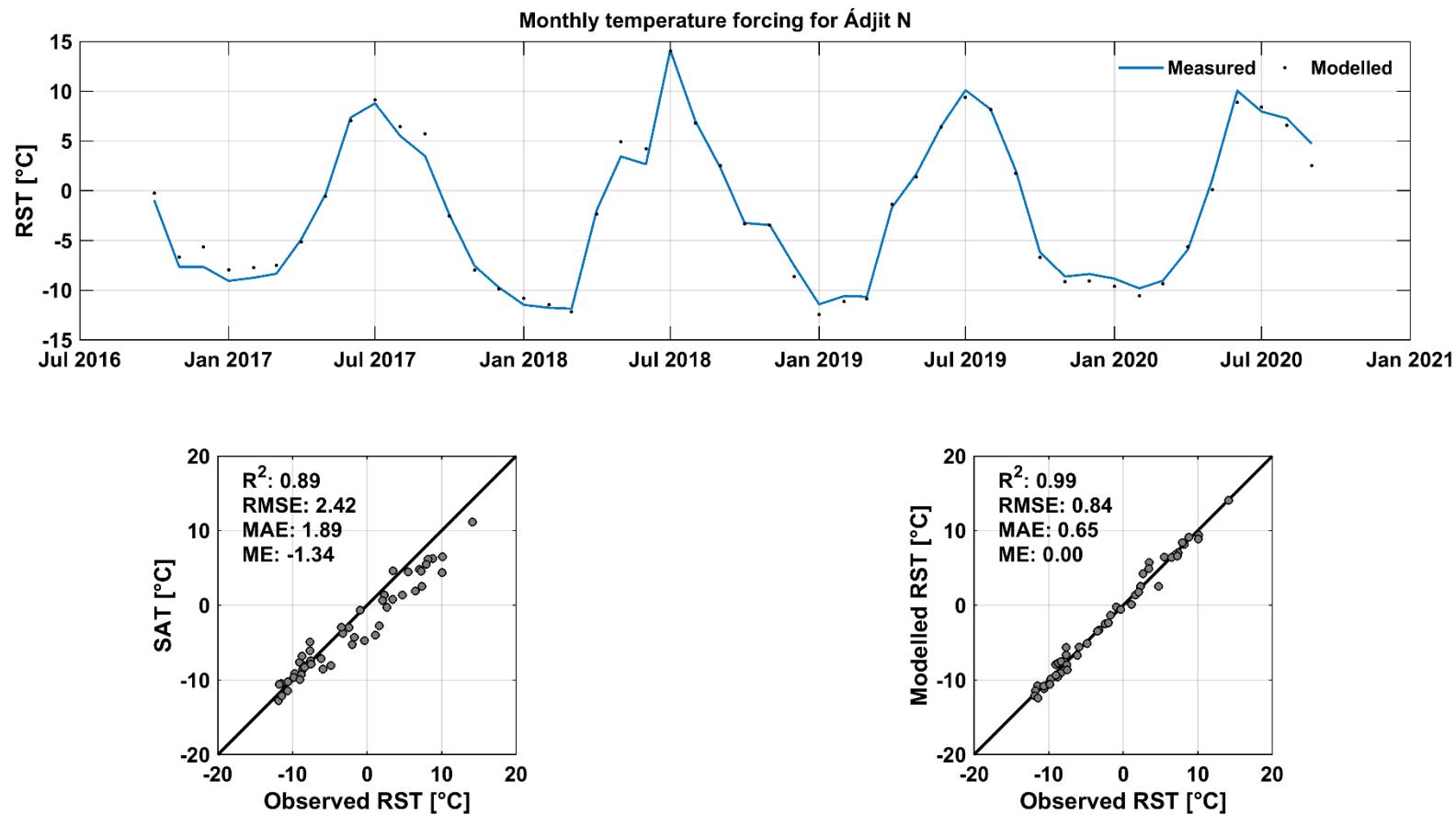
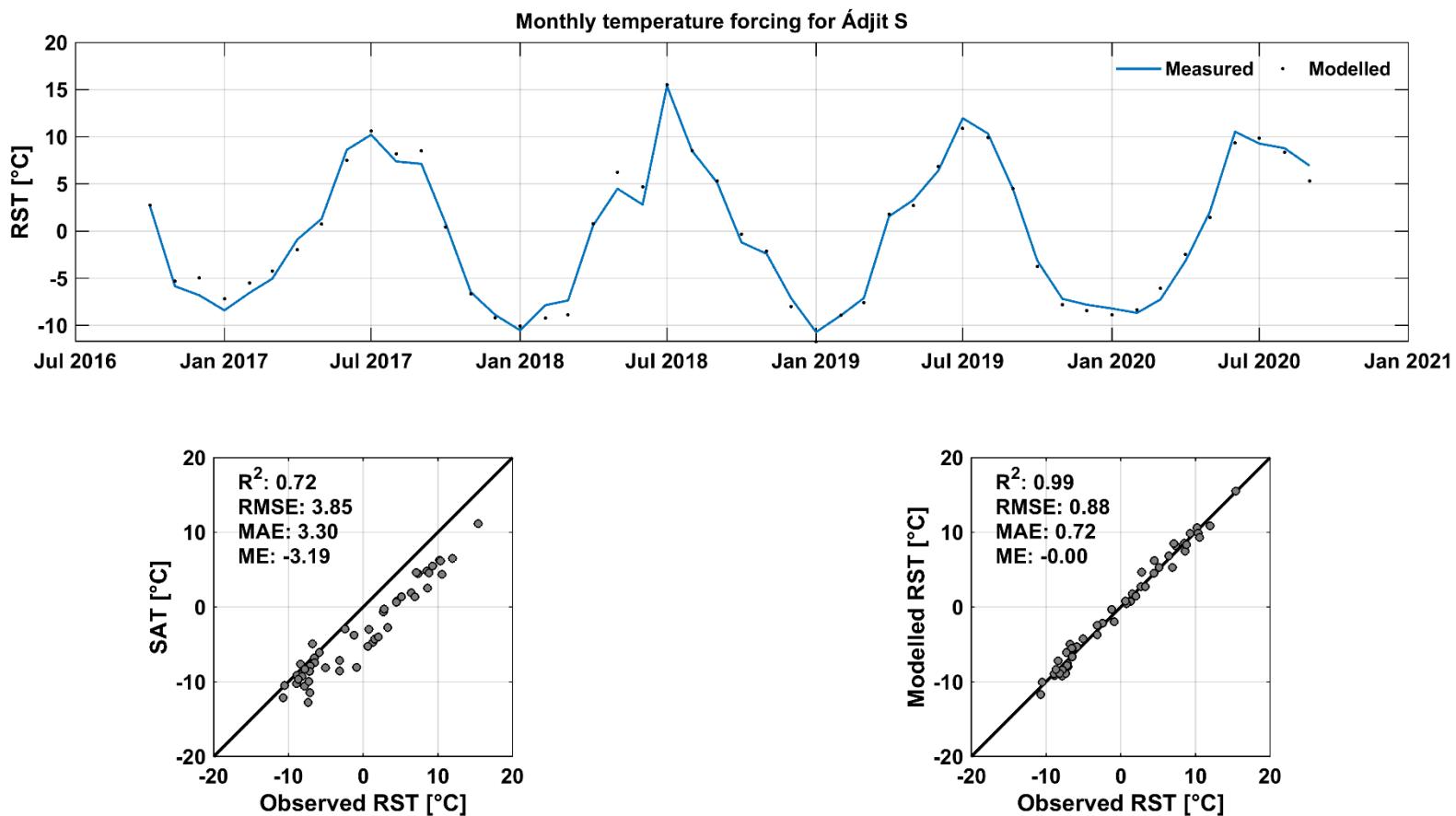


Figure S1. Validation for the north-facing logger at Ádjit. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S2.** Validation for the upper south-facing logger at Ádjit. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

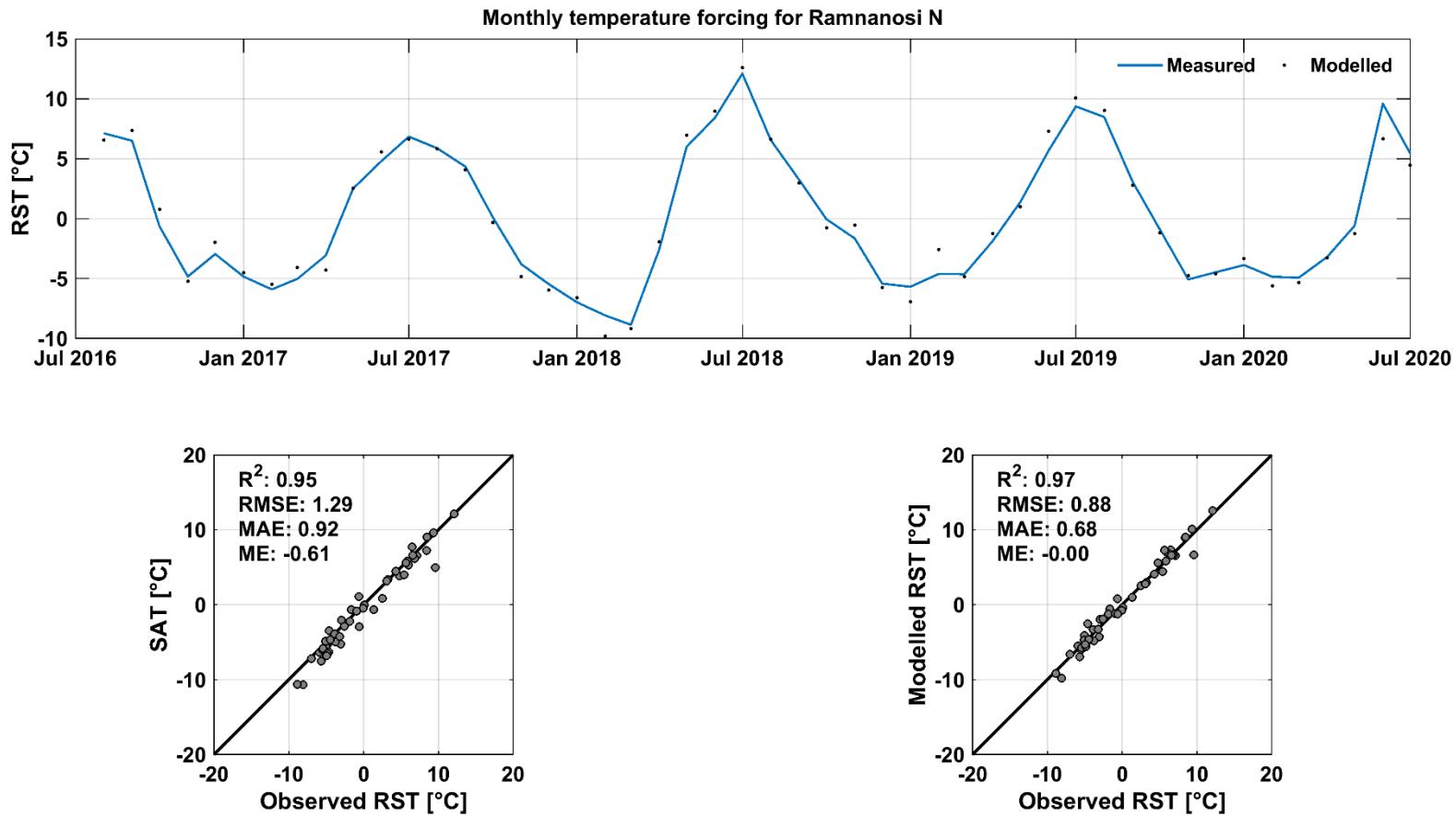


Figure S3. Validation for the north-facing logger at Ramnanosi. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

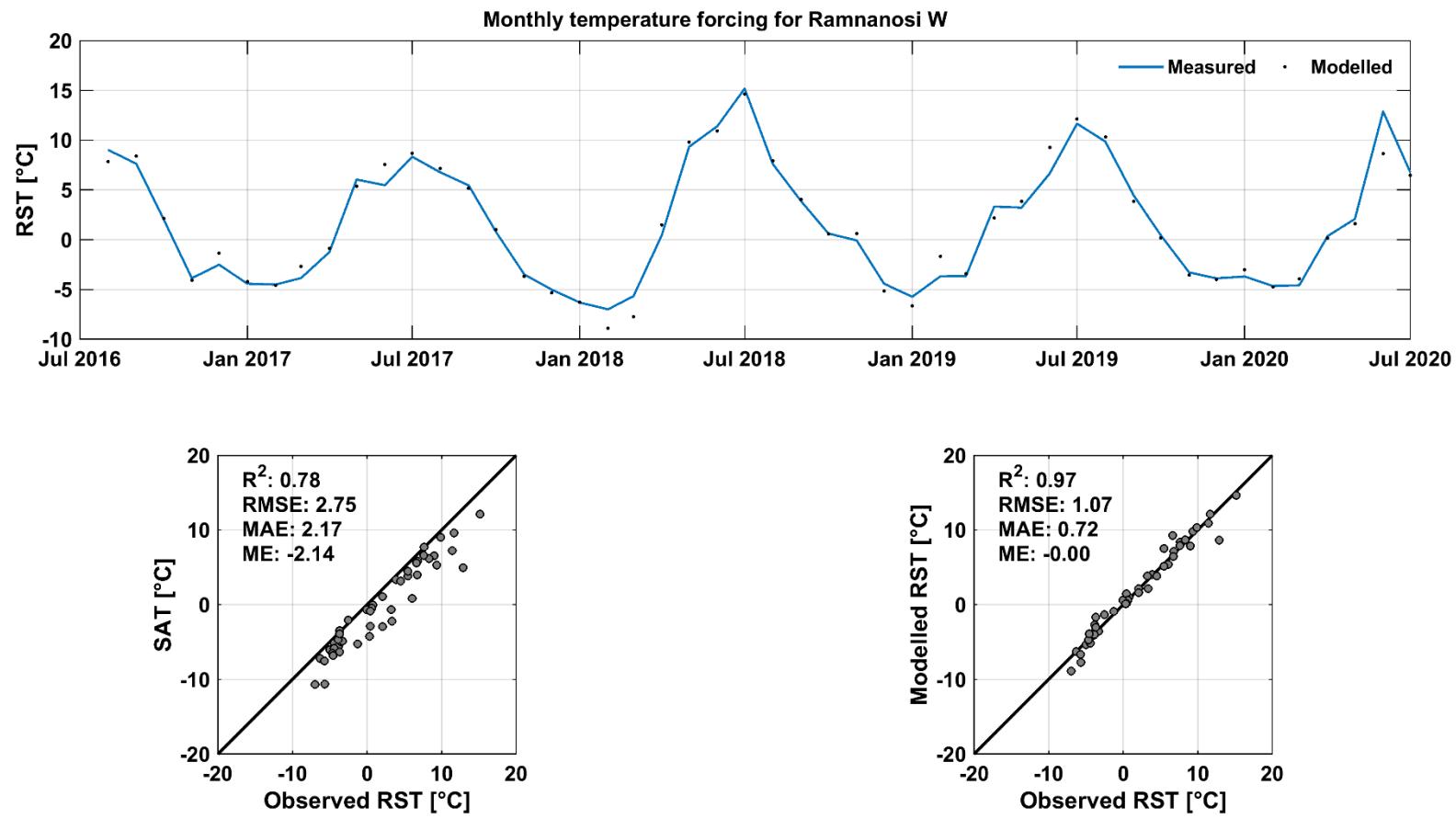


Figure S4. Validation for the west-facing logger at Ramnanosi. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

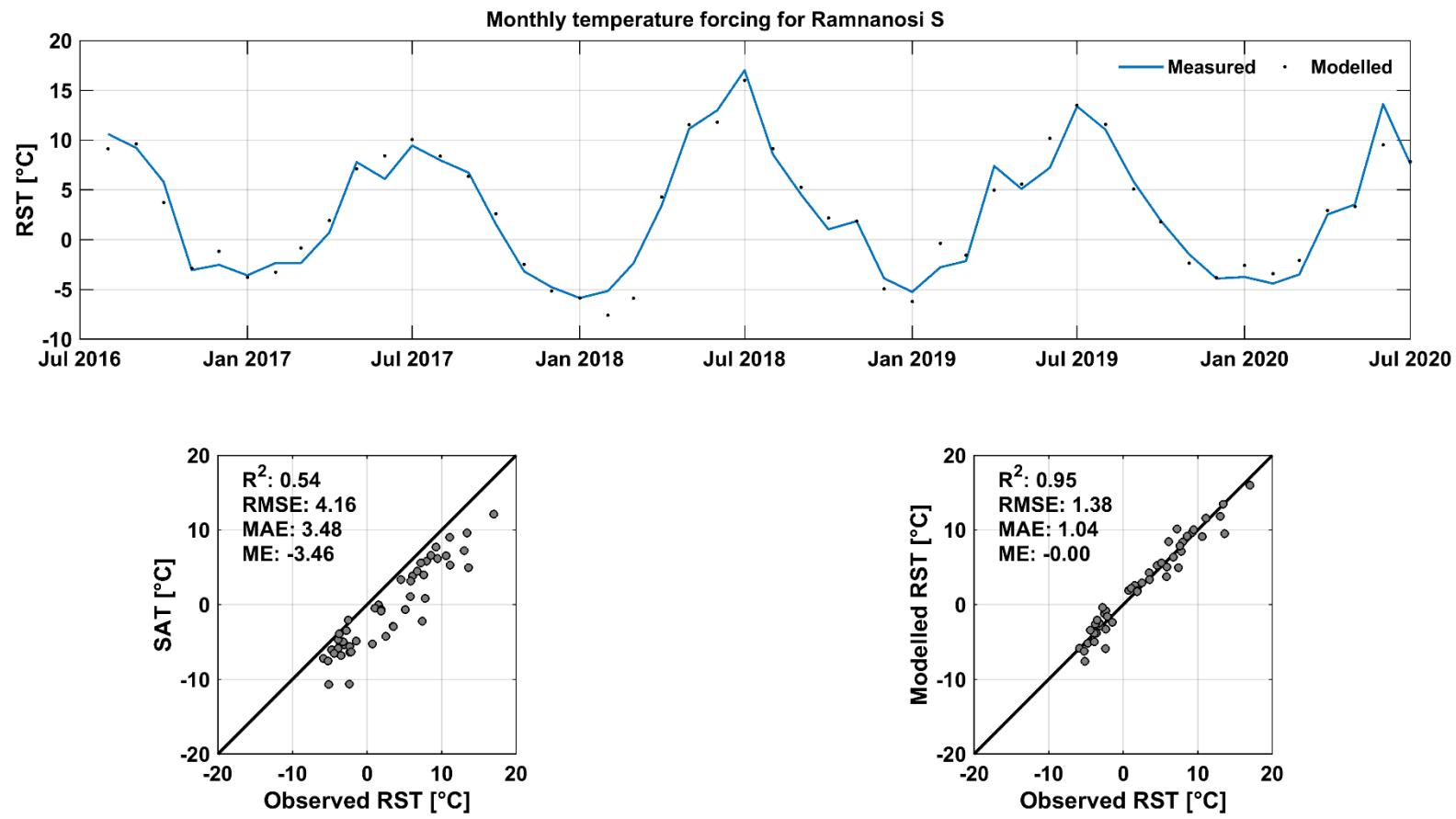


Figure S5. Validation for the south-facing logger at Ramnanosi. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

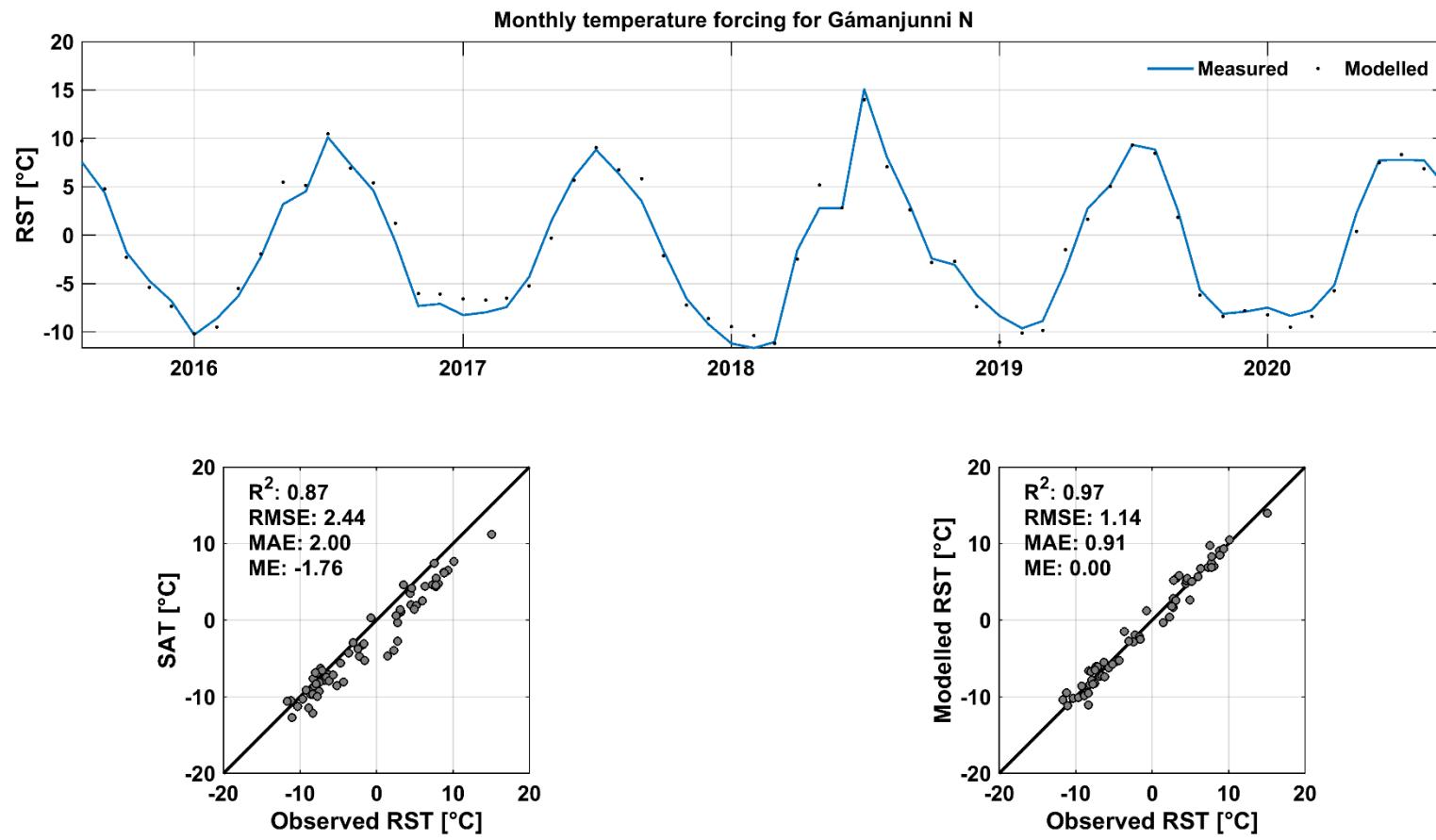
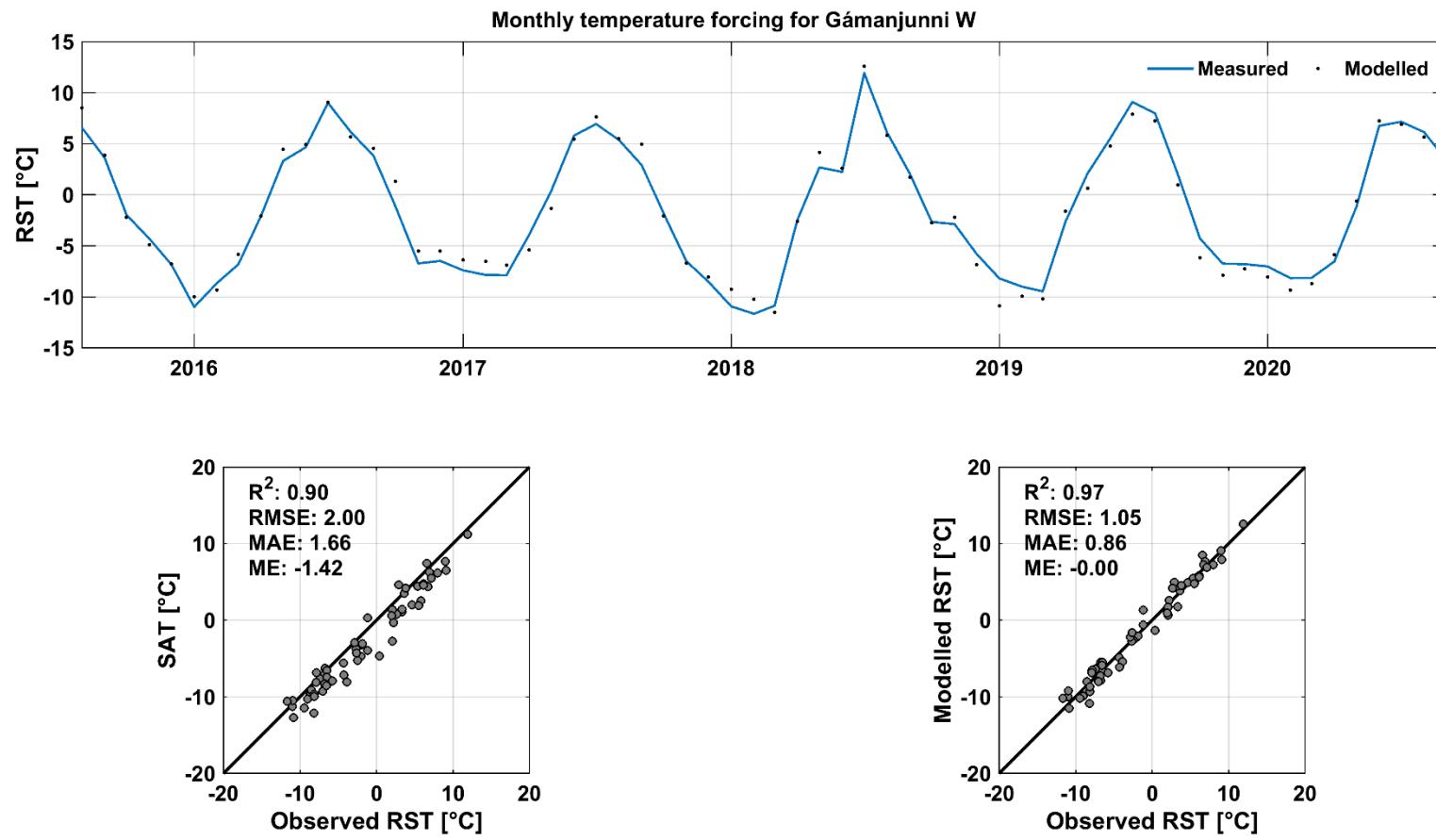


Figure S6. Validation for the north-facing logger at Gámanjunni. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S7.** Validation for the west-facing logger at Gámanjunni. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

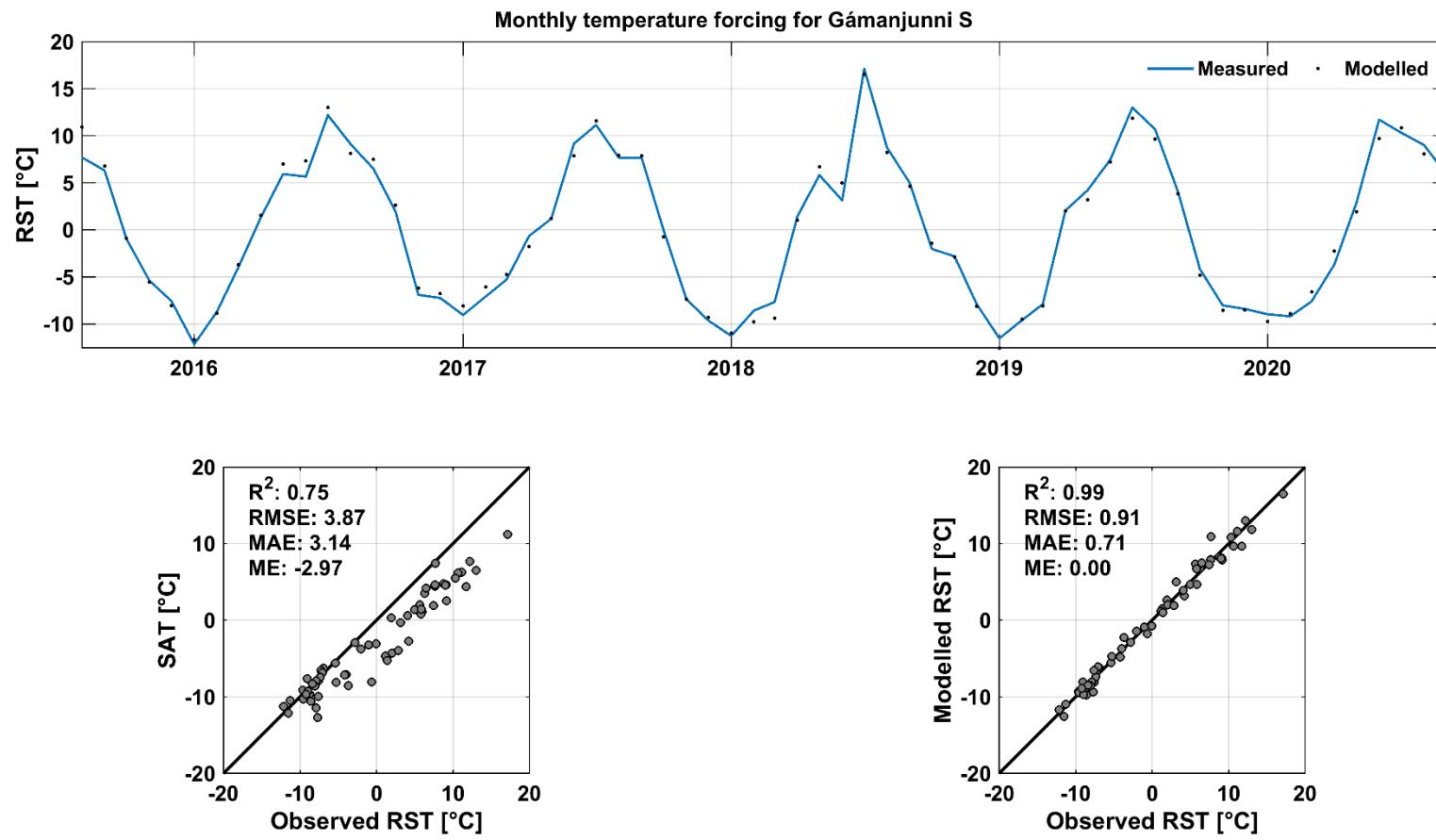
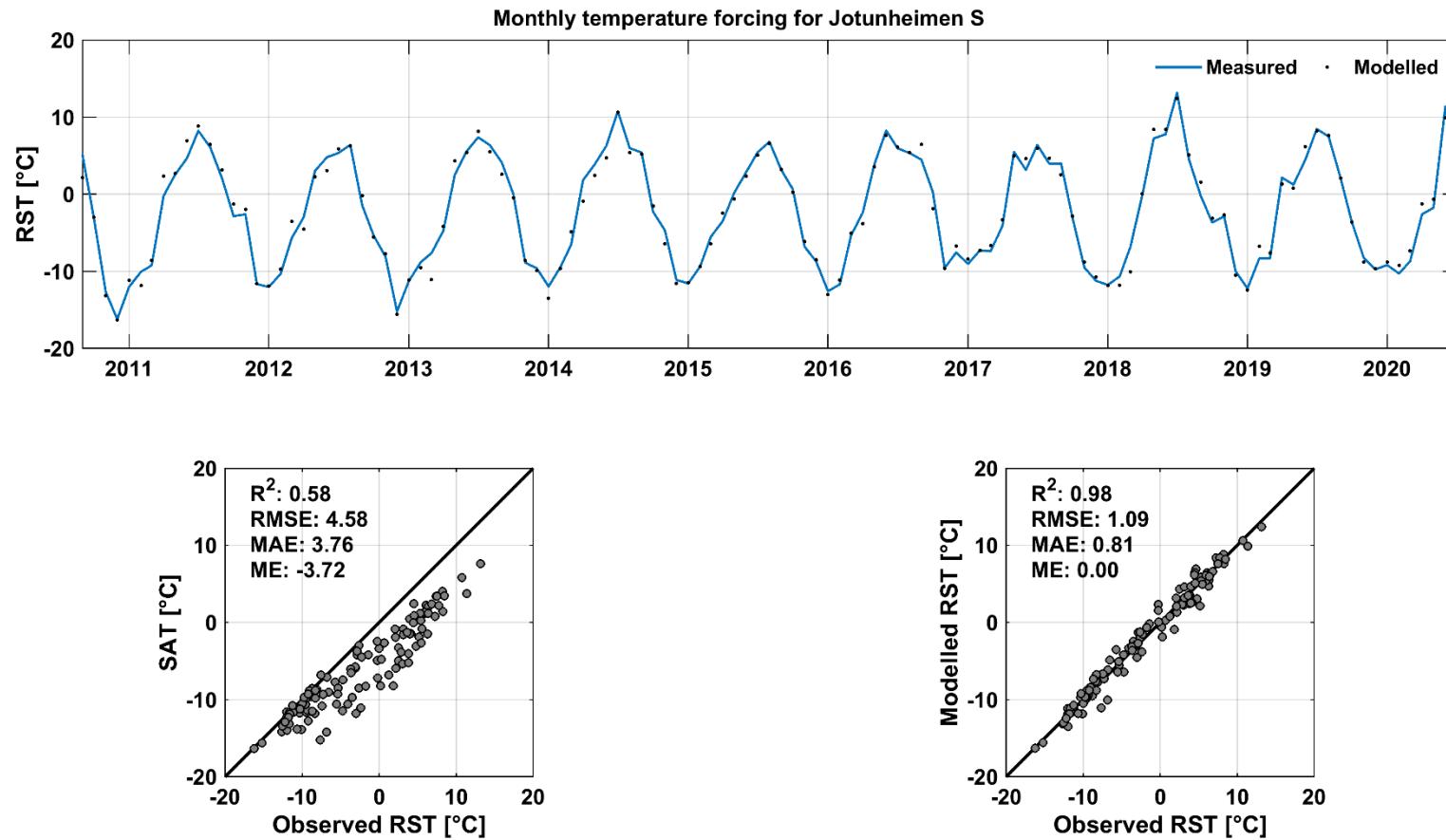
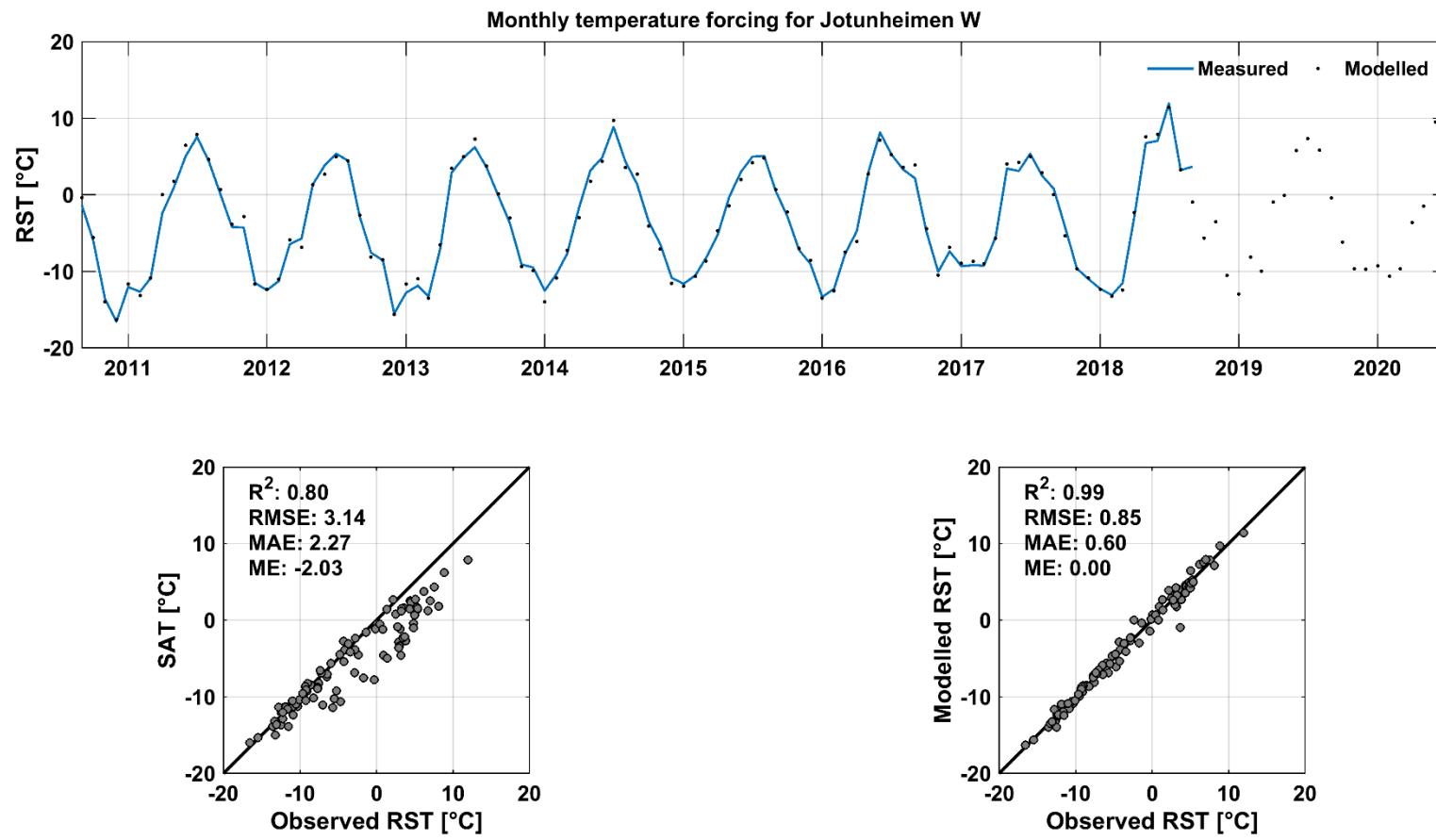


Figure S8. Validation for the south-facing logger at Gámanjunni. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S9.** Validation for the south-facing logger at Jotunheimen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S10.** Validation for the west-facing logger at Jotunheimen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

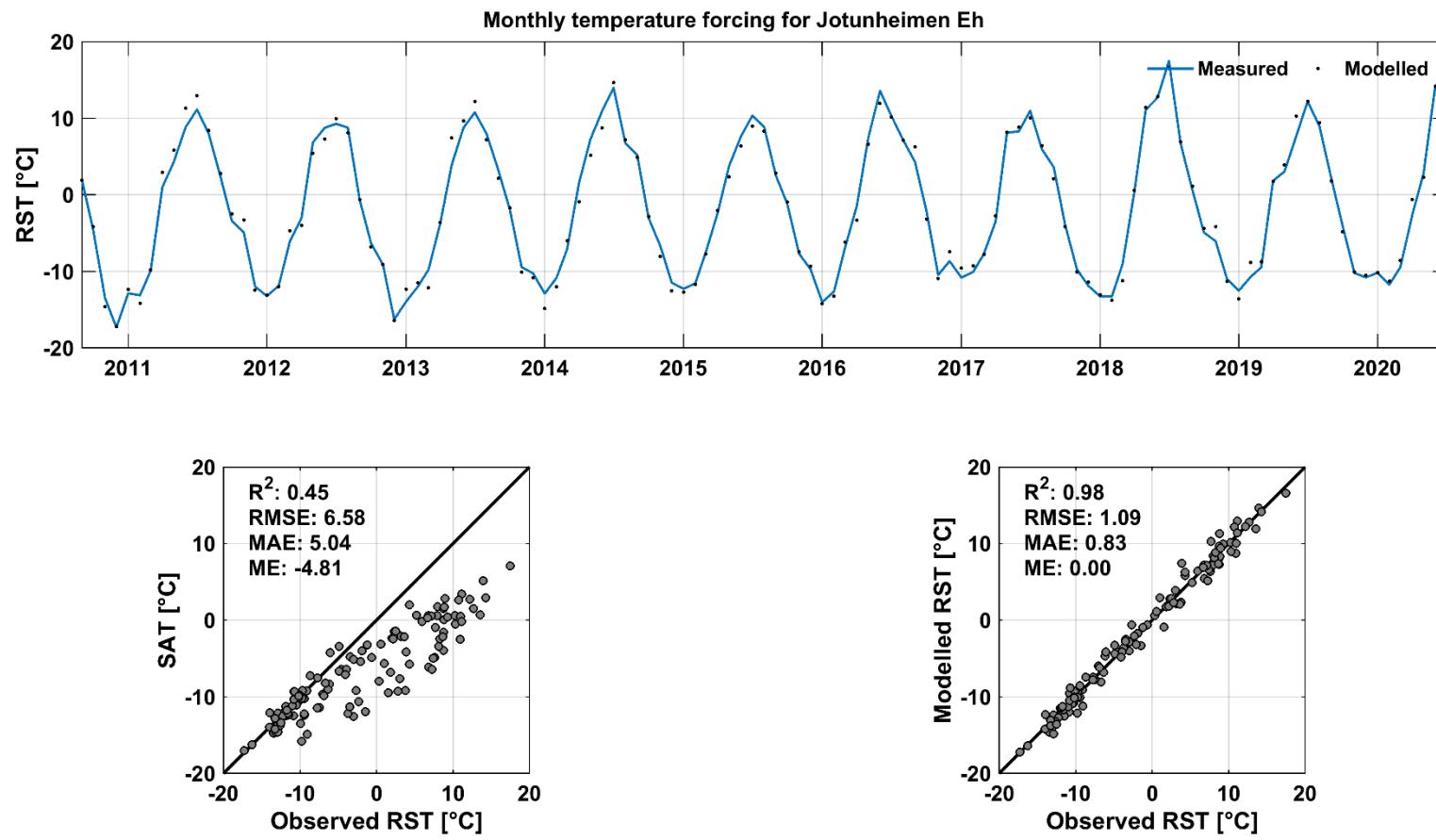
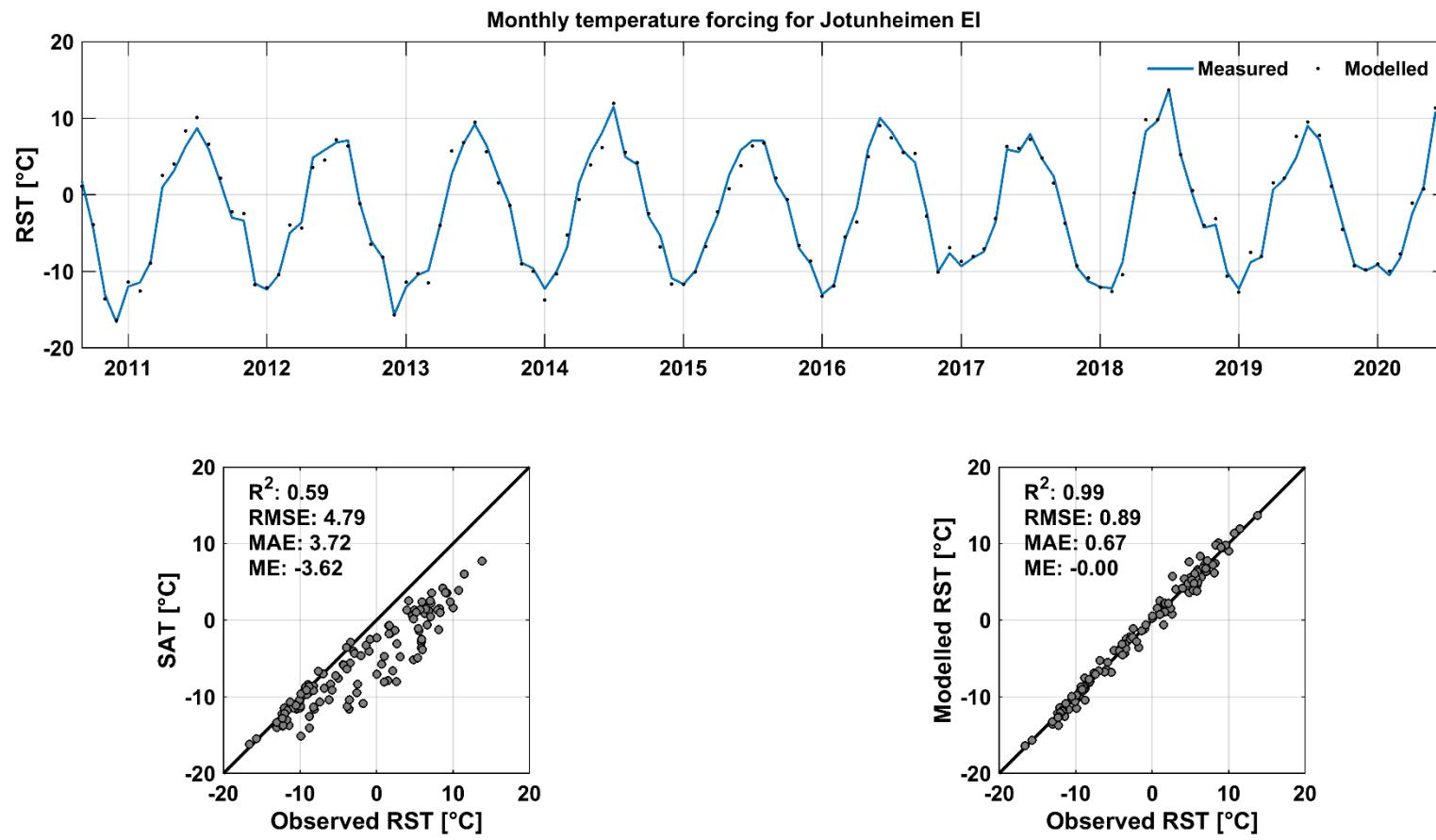


Figure S11. Validation for the upper east-facing logger at Jotunheimen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S12.** Validation for the lower east-facing logger at Jotunheimen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

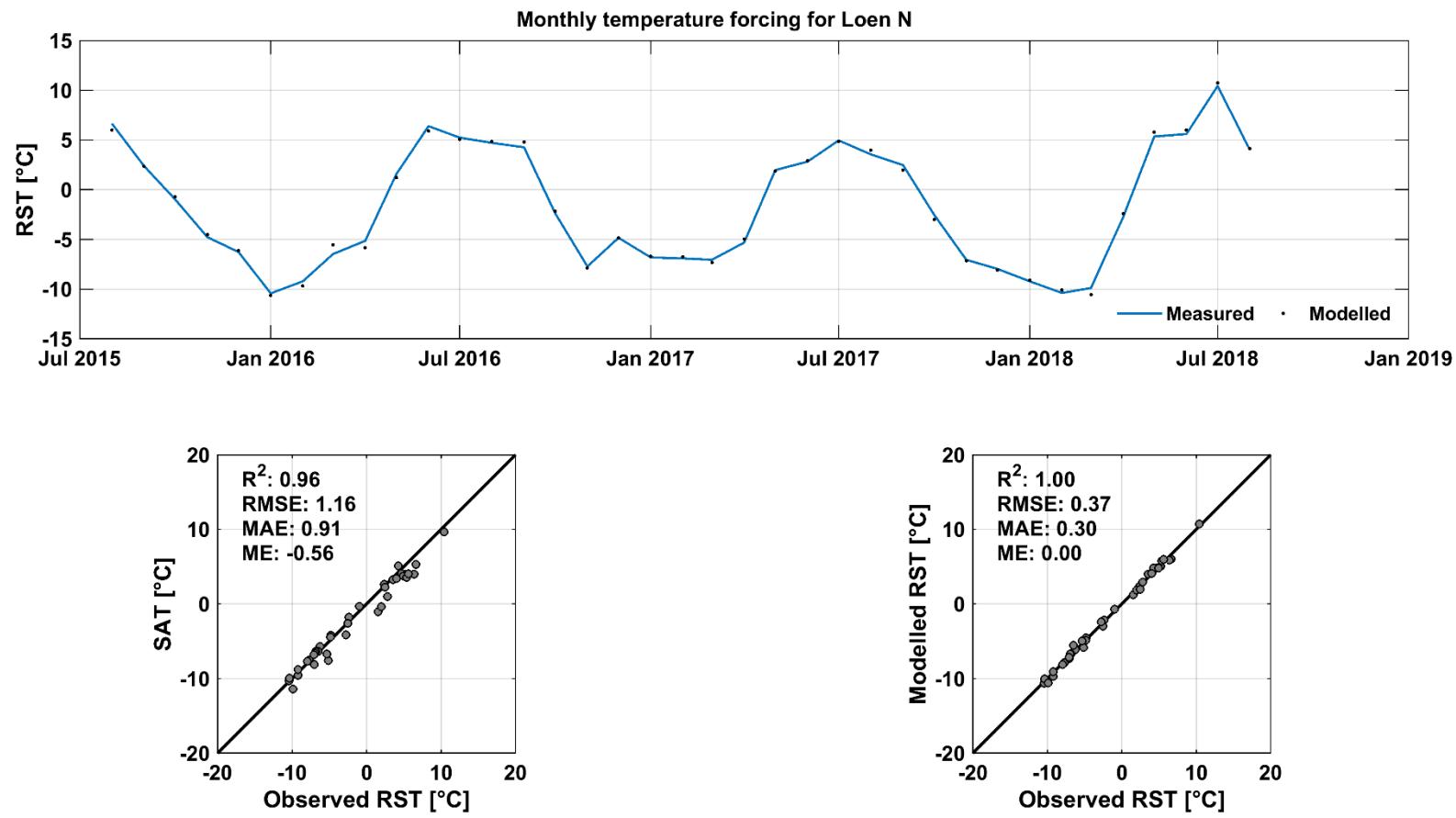
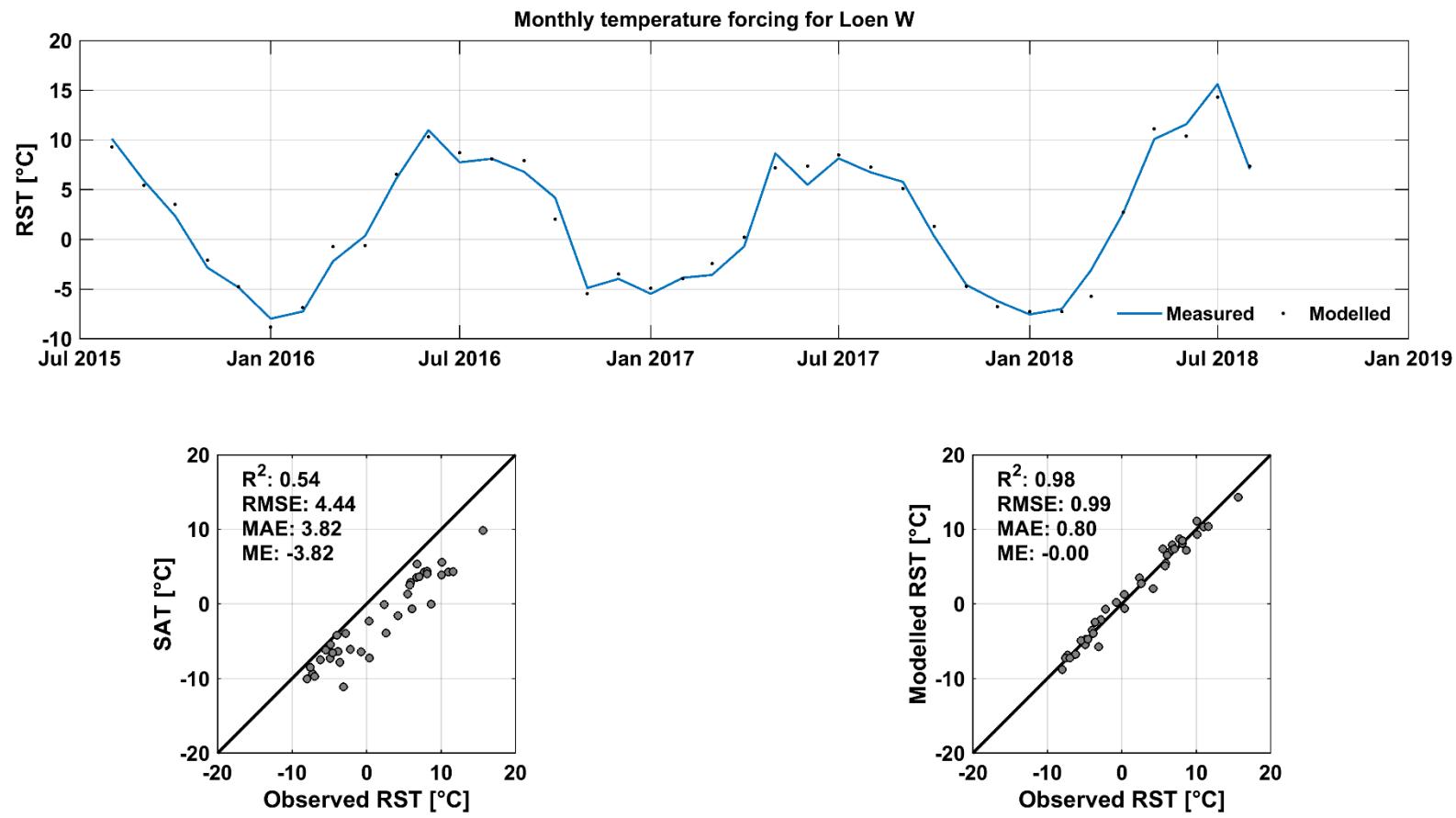
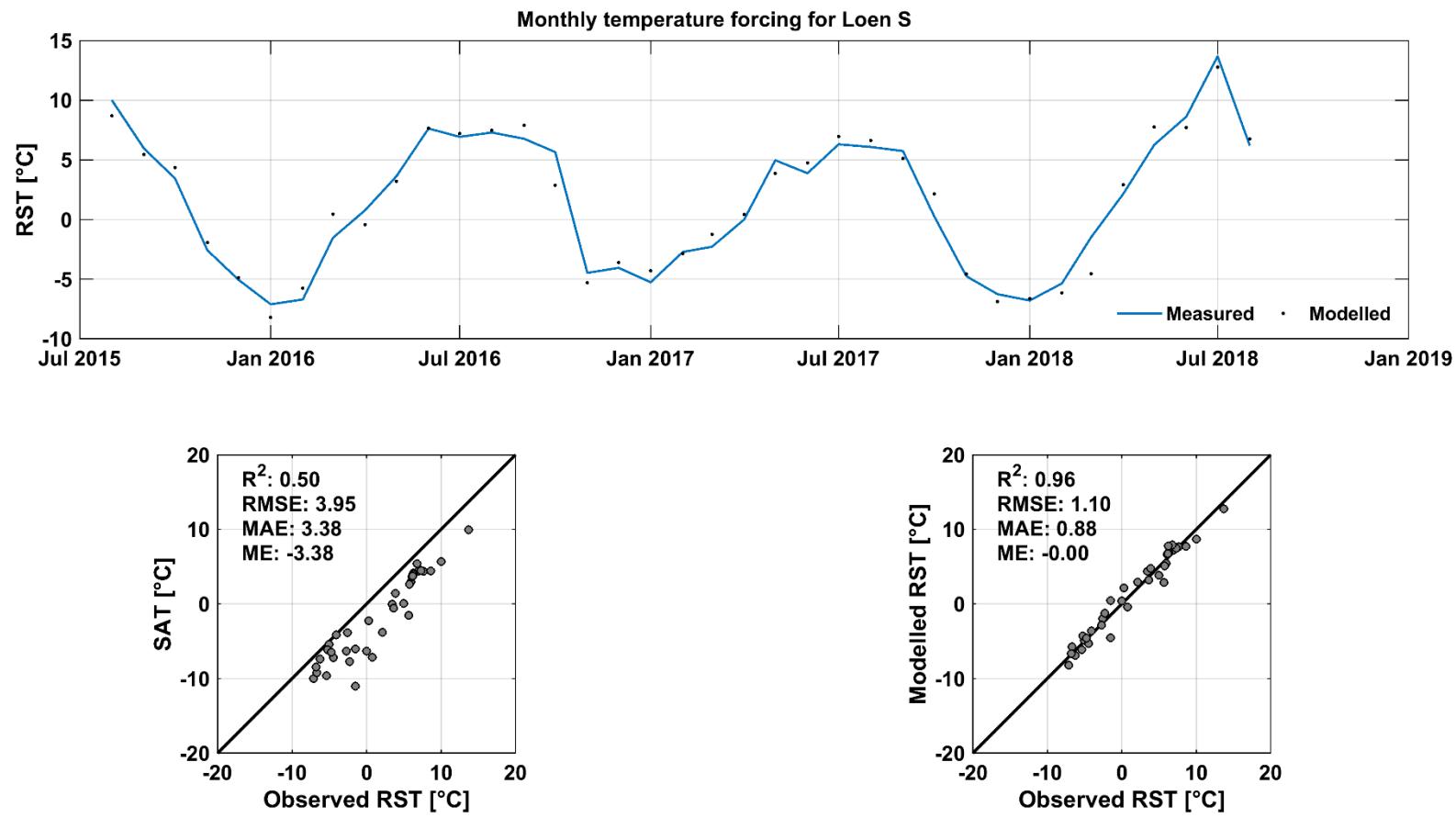


Figure S13. Validation for the north-facing logger at Loen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S14.** Validation for the west-facing logger at Loen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S15.** Validation for the south-facing logger at Loen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.

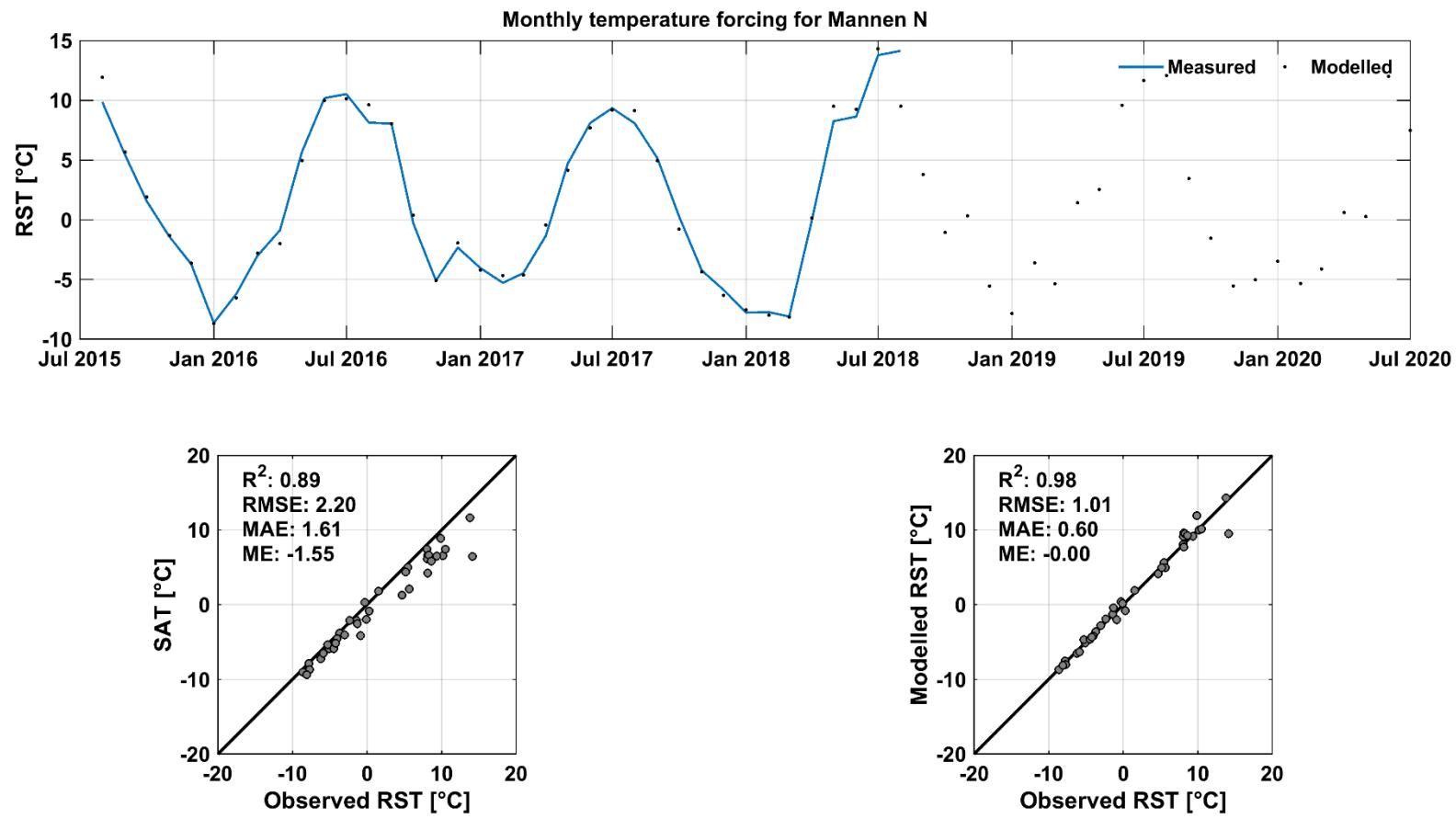
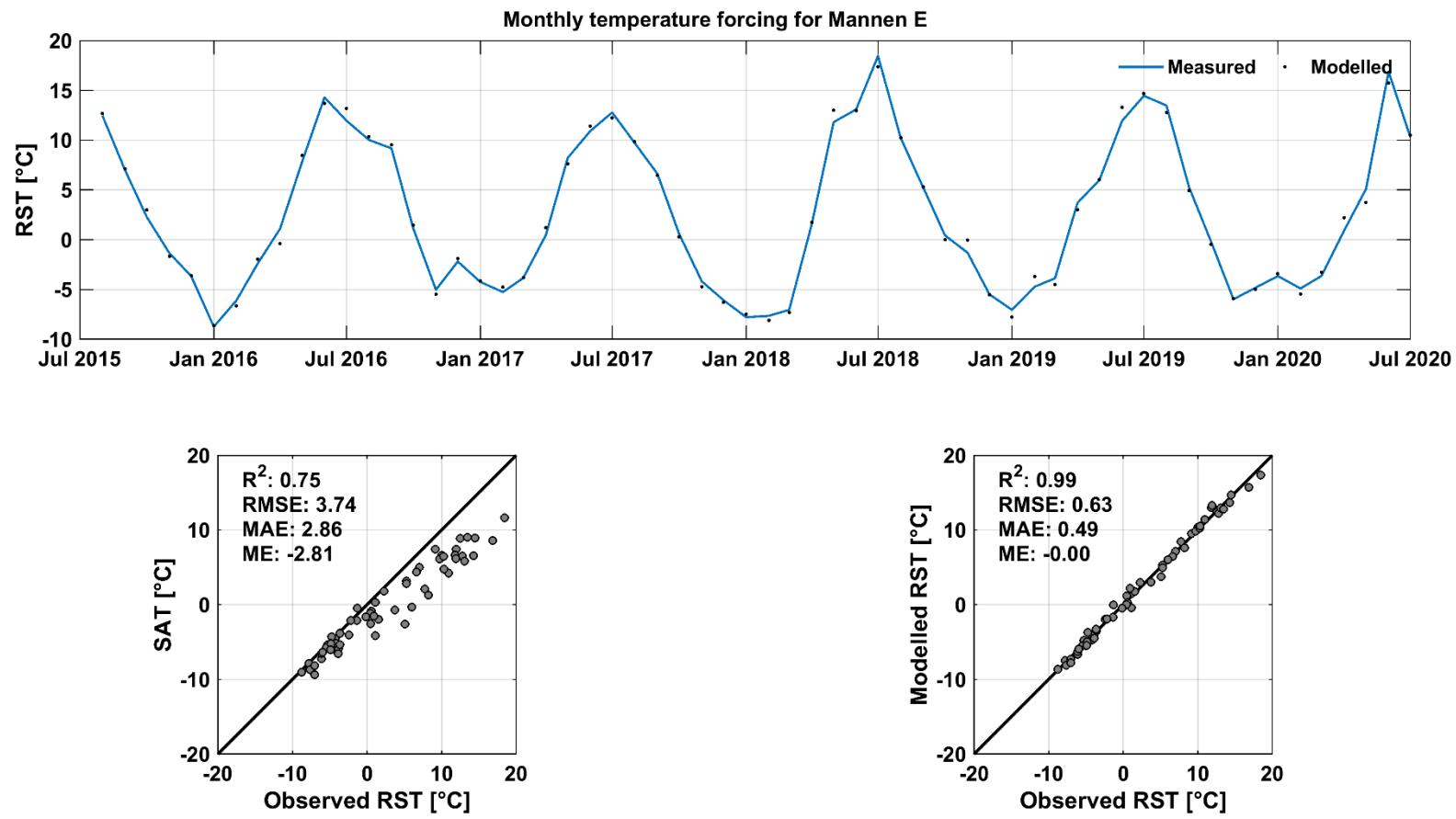
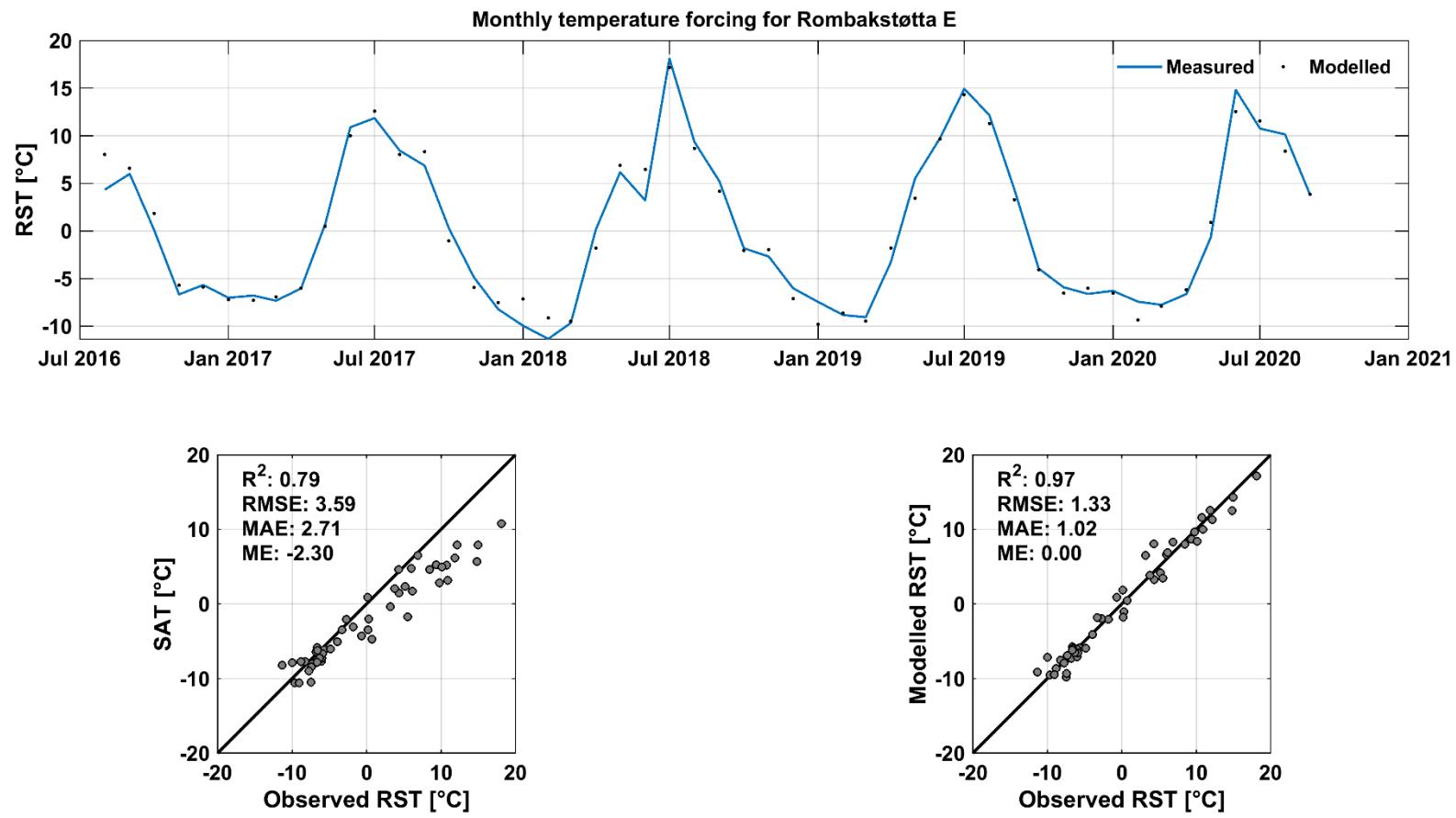


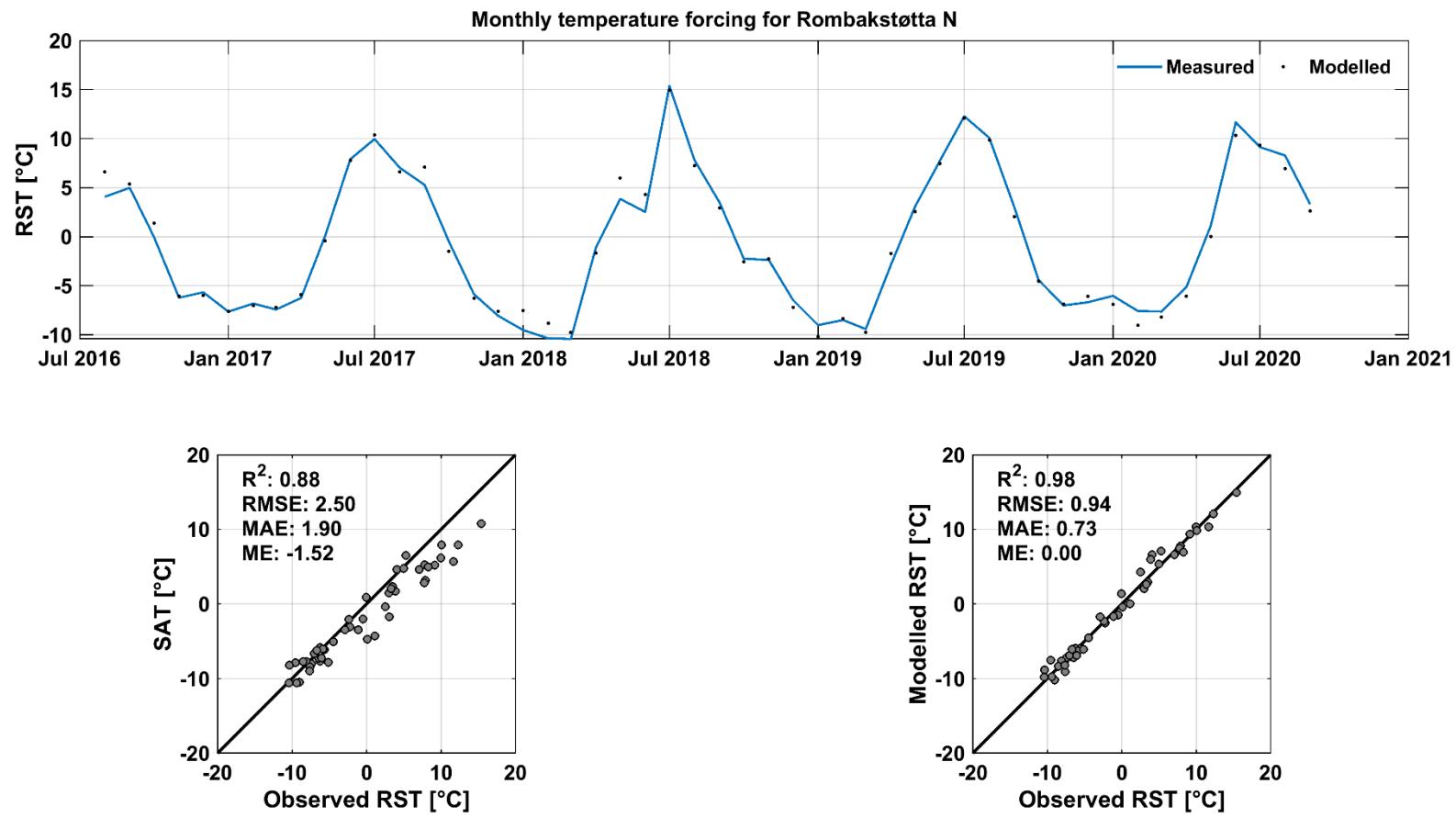
Figure S16. Validation for the north-facing logger at Mannen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



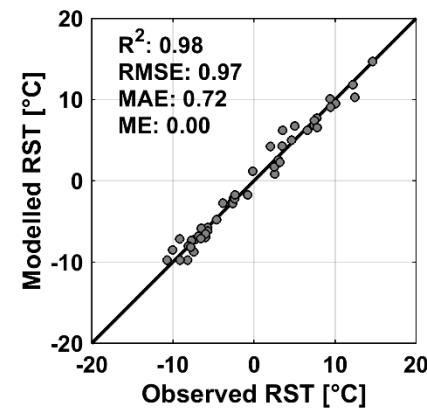
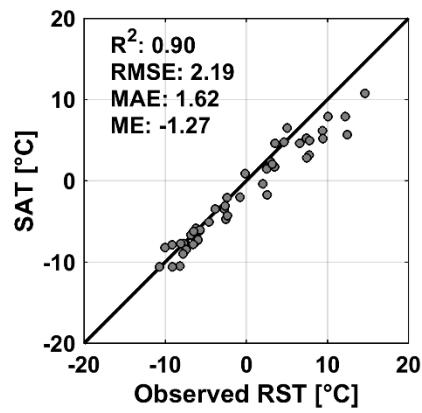
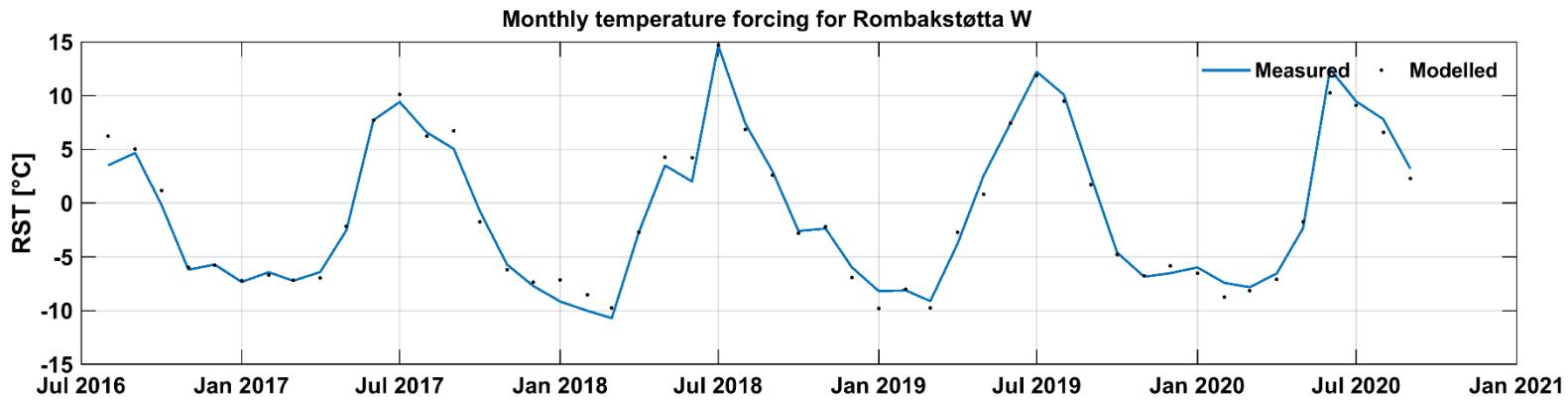
**Figure S17.** Validation for the east-facing logger at Mannen. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S18.** Validation for the east-facing logger at Rombakstøtta. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S19.** Validation for the north-facing logger at Rombakstøtta. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.



**Figure S20.** Validation for the west-facing logger at Rombakstøtta. RST-rock surface temperature. SAT-surface air temperature. RMSE-root mean square error. MAE-mean absolute error. ME-mean error.