A deep learning framework for gridding daily climate variables from a sparse station network

Abstract

This supplement contains time-series comparisons for the test stations not included in the main manuscript. The figures demonstrate the model performance and uncertainty quantification for daily mean air temperature and total precipitation throughout the year 2023.
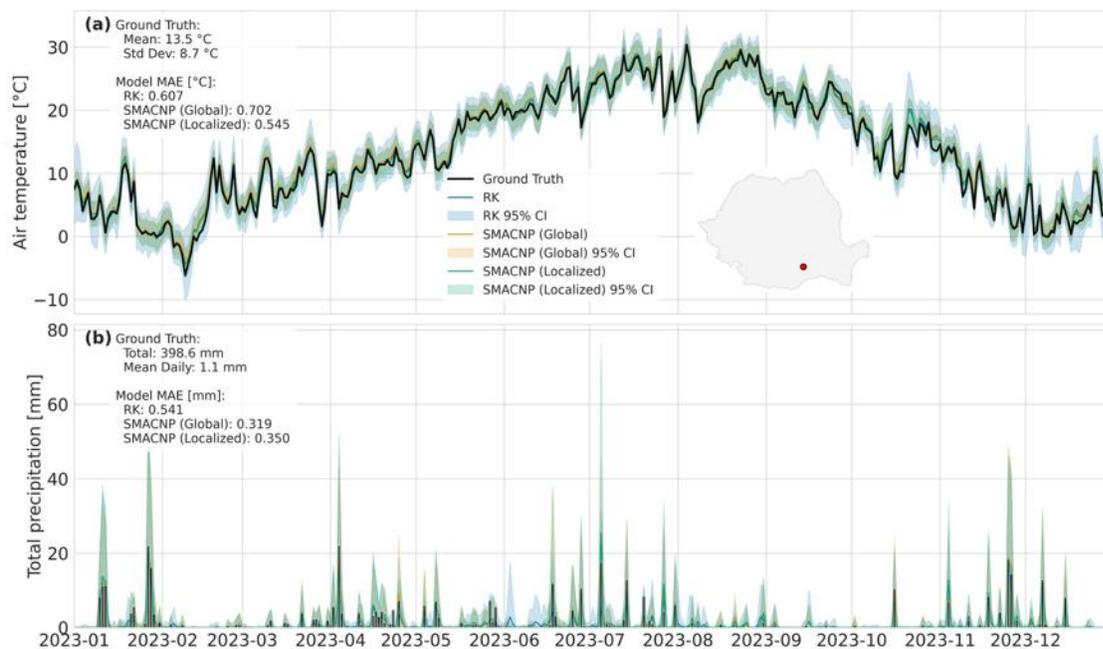
Supplementary Material

Figure S1. Model performance and uncertainty at **Baneasa** station (**90** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
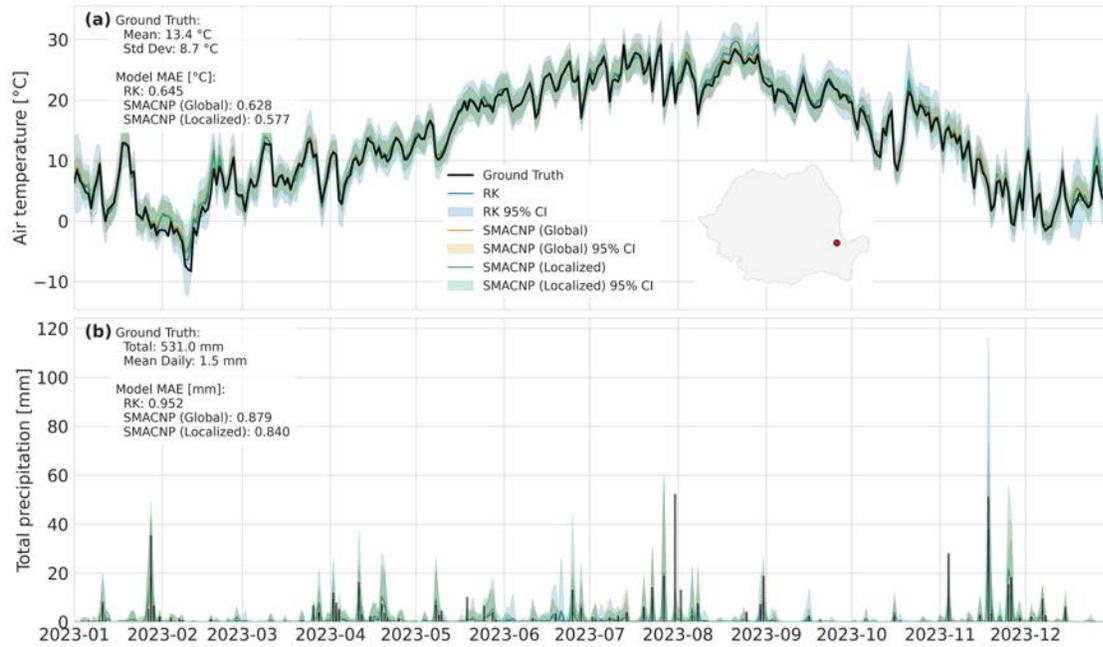
Figure S2. Model performance and uncertainty at **Braila** station (**15** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
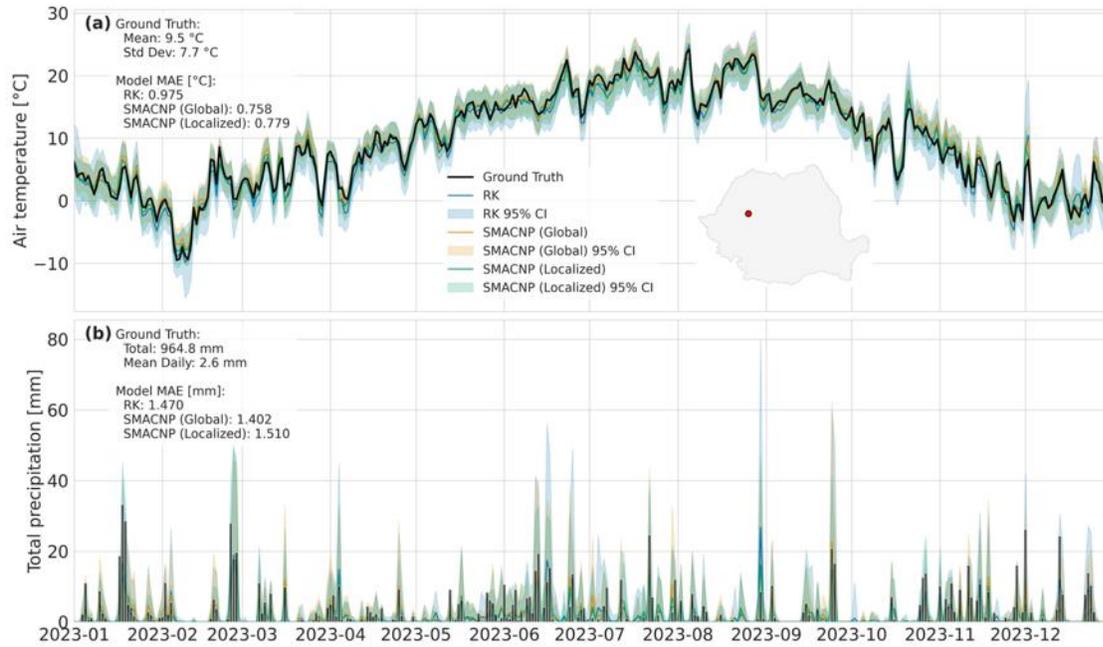
Figure S3. Model performance and uncertainty at **Campeni** station (**591** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
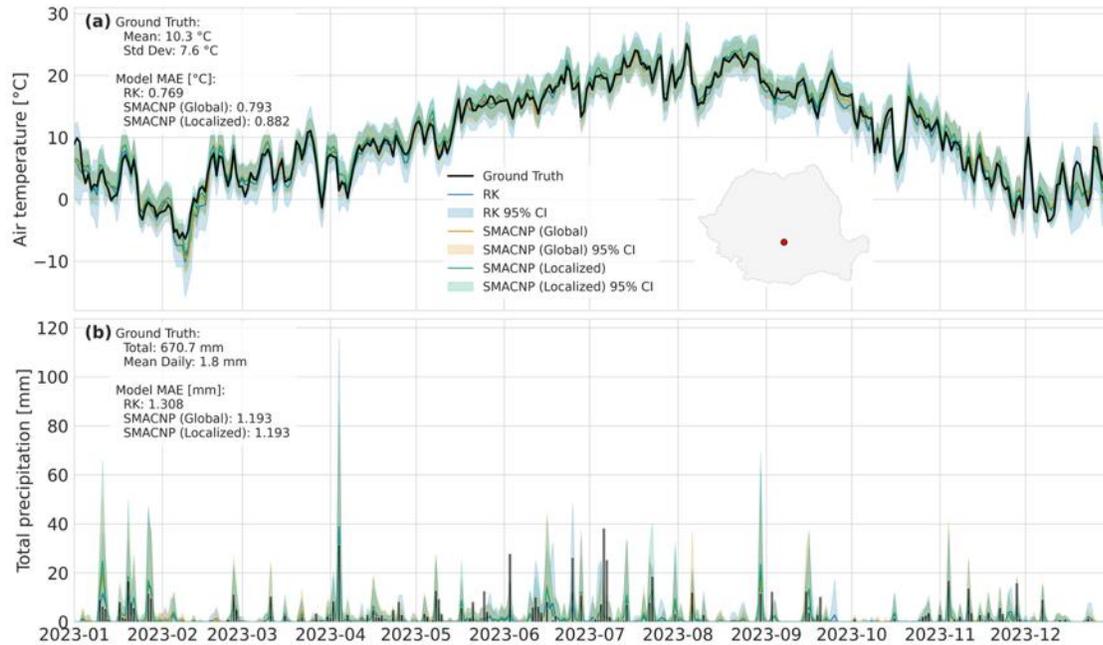
Figure S4. Model performance and uncertainty at **Campulung-Muscel** station (**681** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
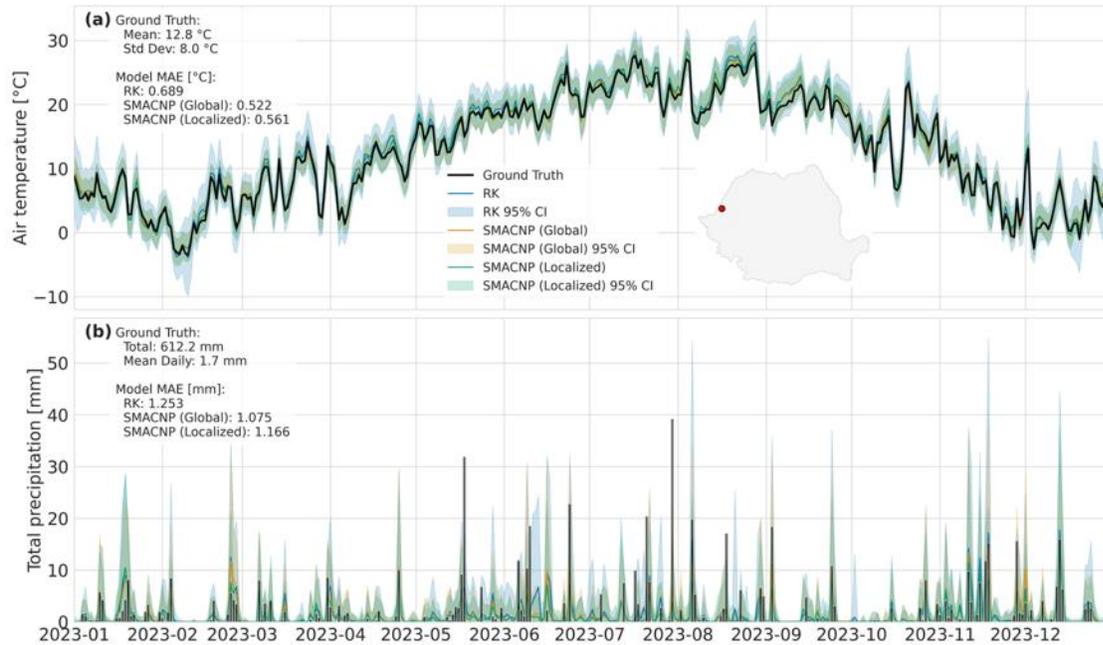
Figure S5. Model performance and uncertainty at **Chisineu-Cris** station (**96** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
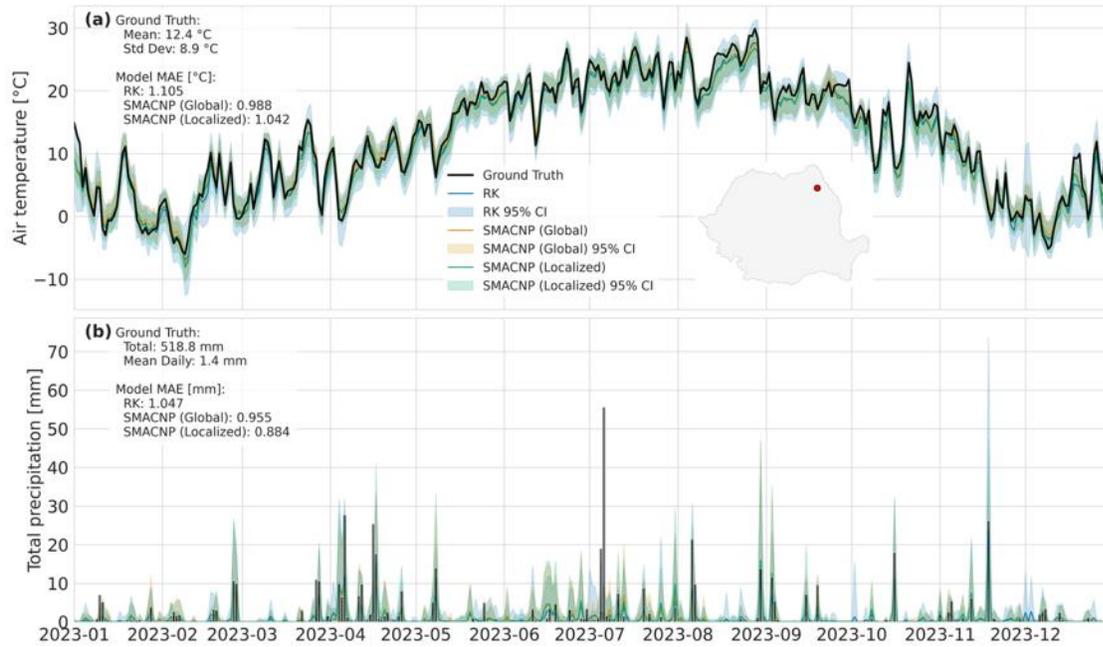
Figure S6. Model performance and uncertainty at **Cotnari** station (**289** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
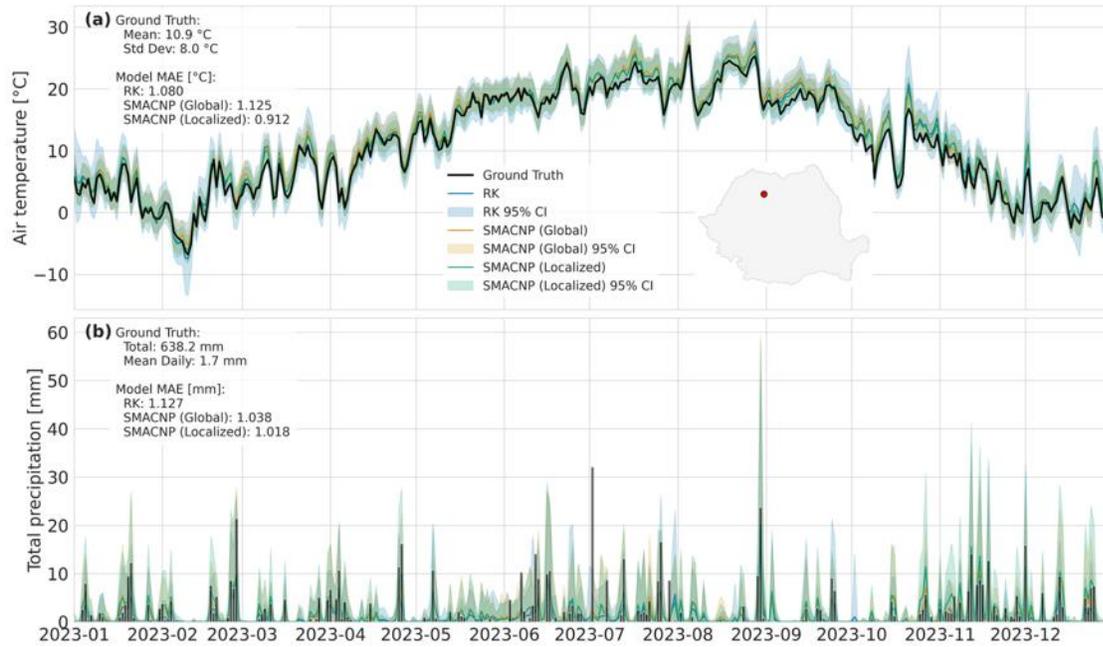
Figure S7. Model performance and uncertainty at **Dej** station (**232** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
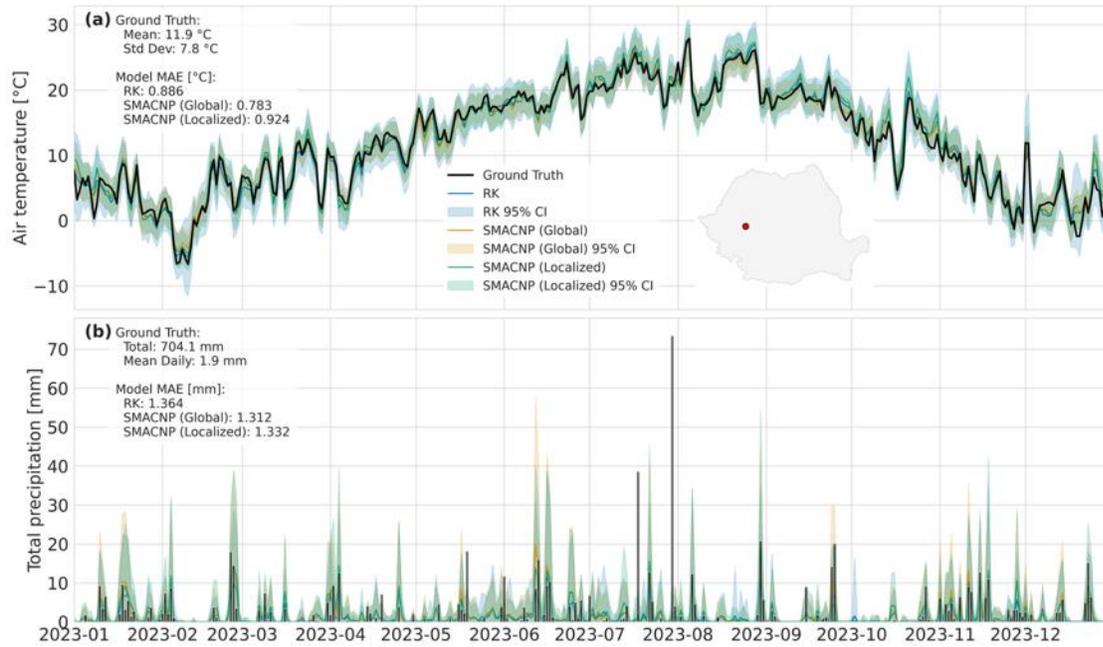
Figure S8. Model performance and uncertainty at **Deva** station (**240** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
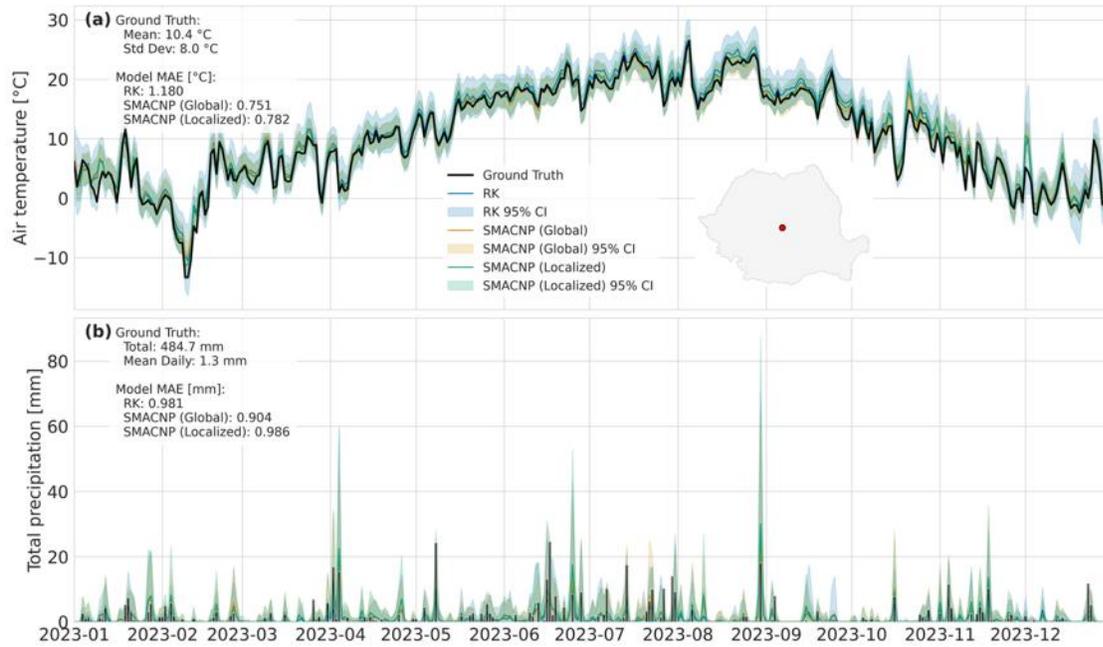
Figure S9. Model performance and uncertainty at **Fagaras** station (**428** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
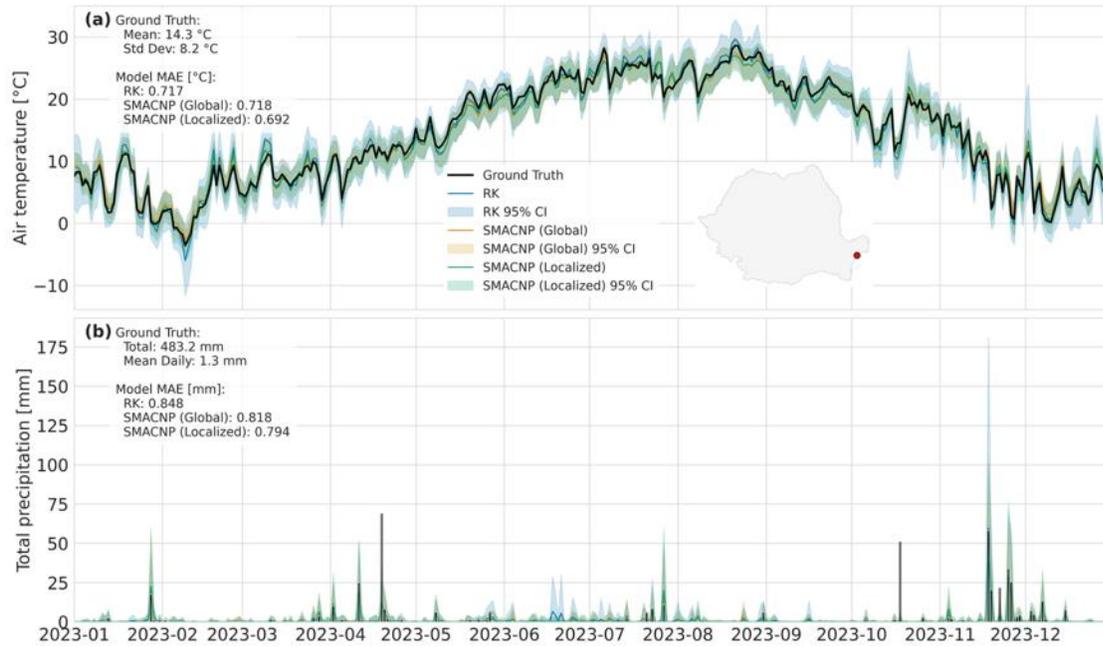
Figure S10. Model performance and uncertainty at **Gura-Portitei** station (**2** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
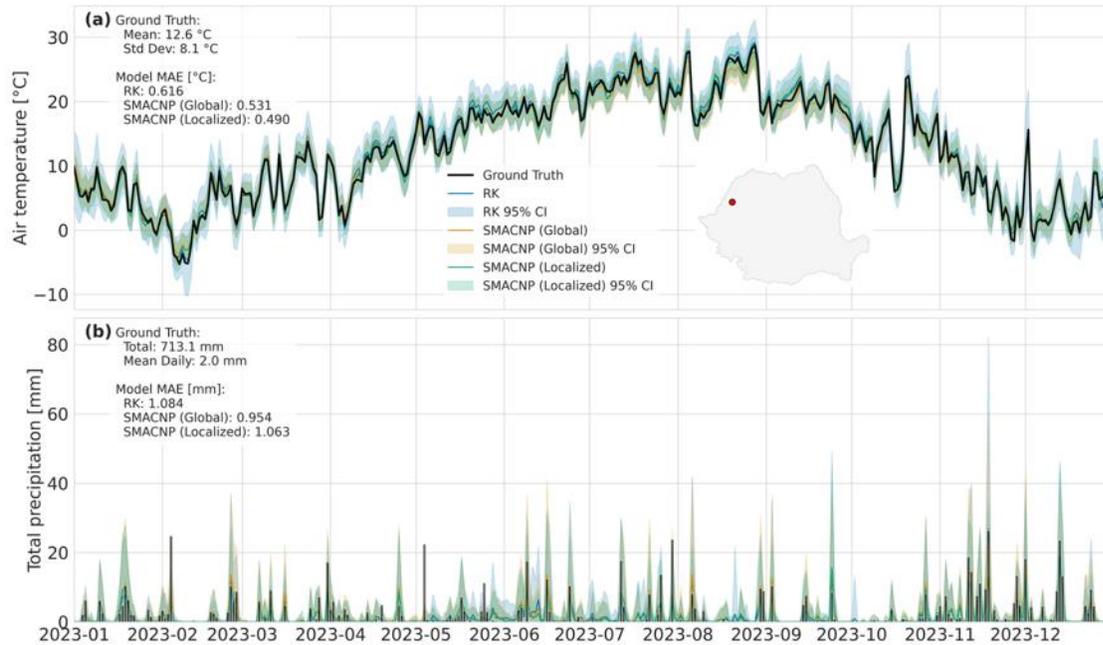
Figure S11. Model performance and uncertainty at **Holod** station (**163** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
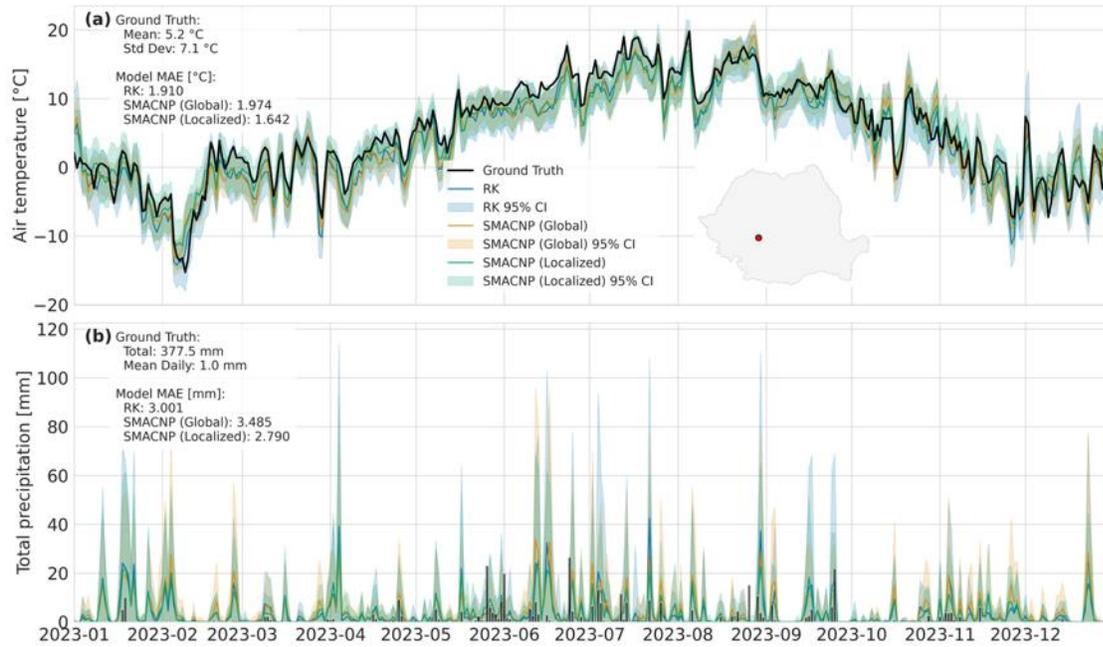
Figure S12. Model performance and uncertainty at **Obarsia-Lotrului** station (**1348** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
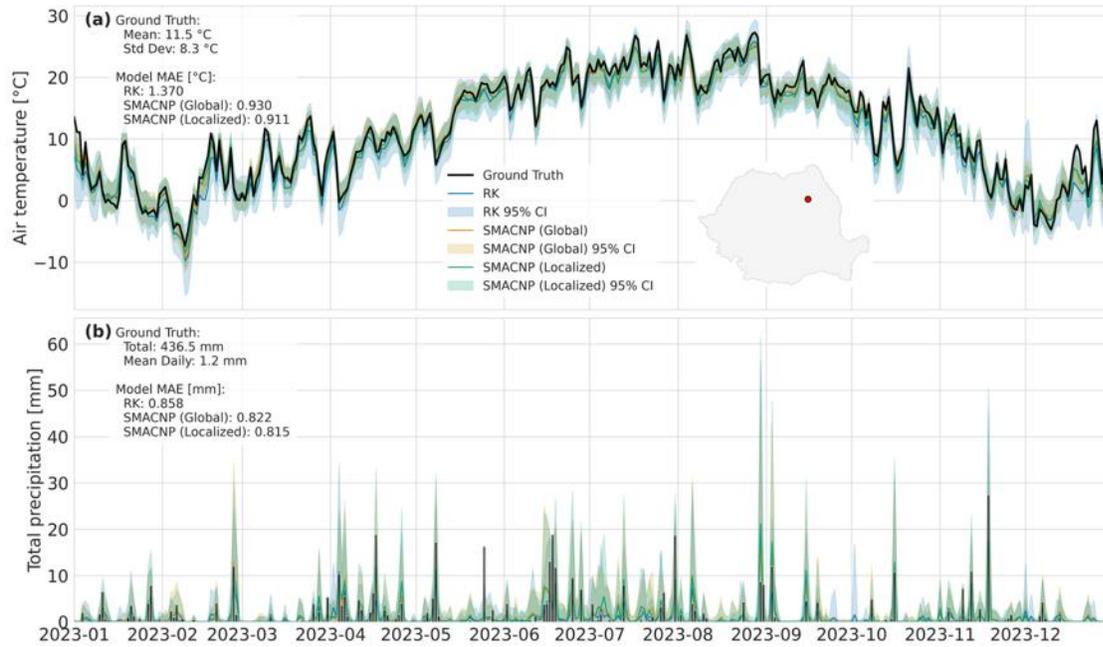
Figure S13. Model performance and uncertainty at **Piatra-Neamt** station (**360** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
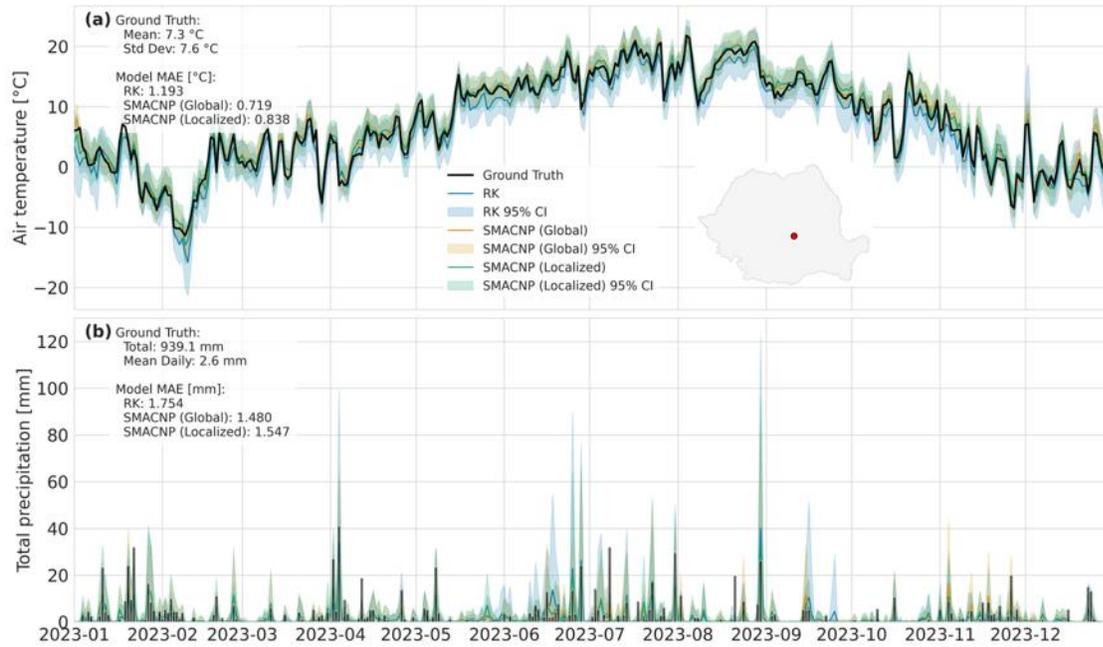
Figure S14. Model performance and uncertainty at **Predeal** station (**1090** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
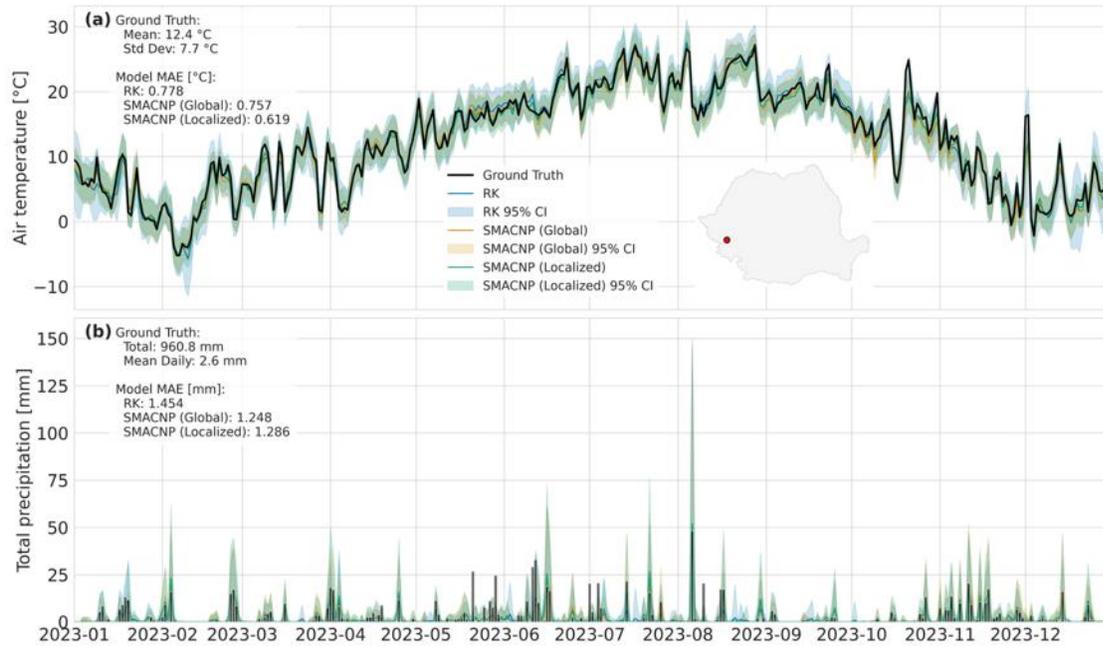
Figure S15. Model performance and uncertainty at **Resita** station (**279** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
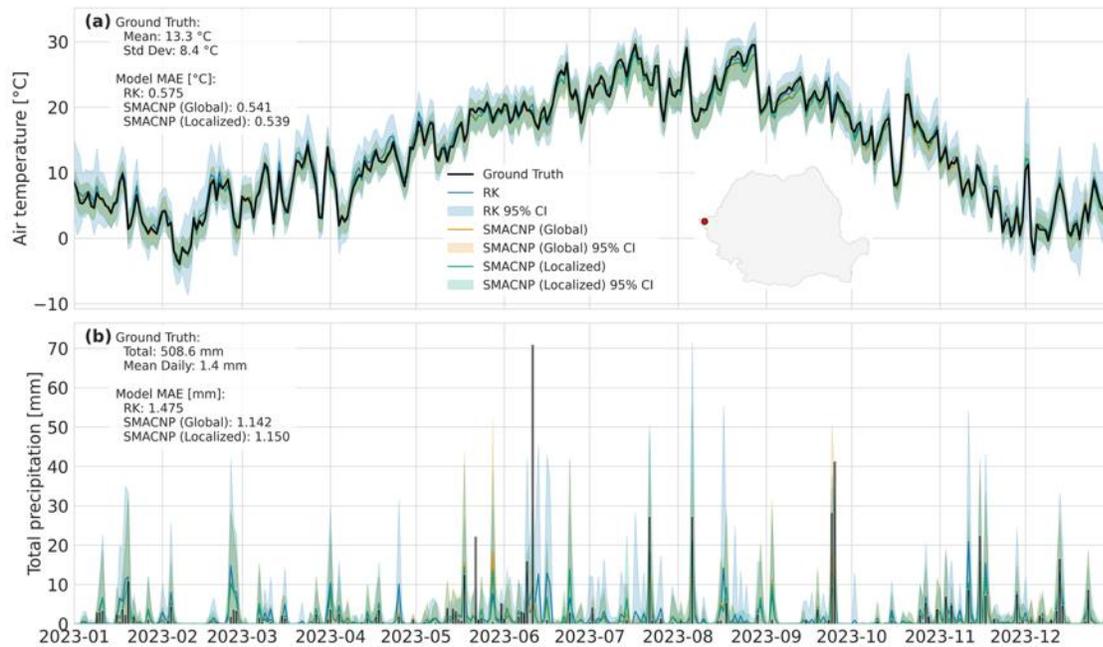
Figure S16. Model performance and uncertainty at **Sannicolau-Mare** station (**85** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
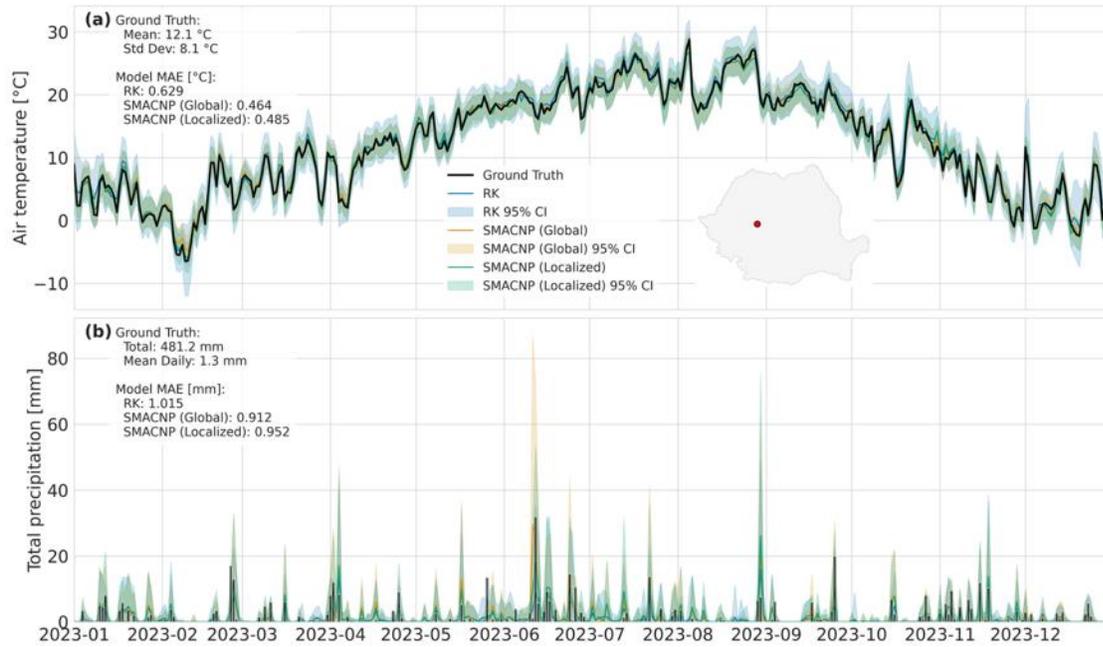
Figure S17. Model performance and uncertainty at **Sebes** station (**271** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
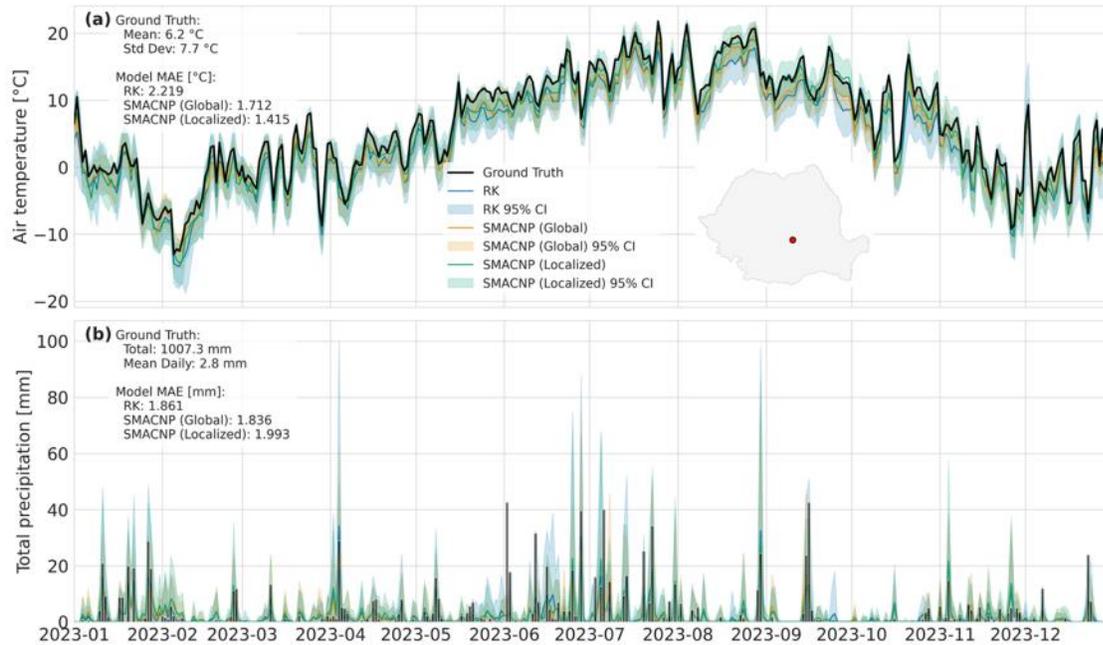
Figure S18. Model performance and uncertainty at **Sinaia-1500** station (**1510** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
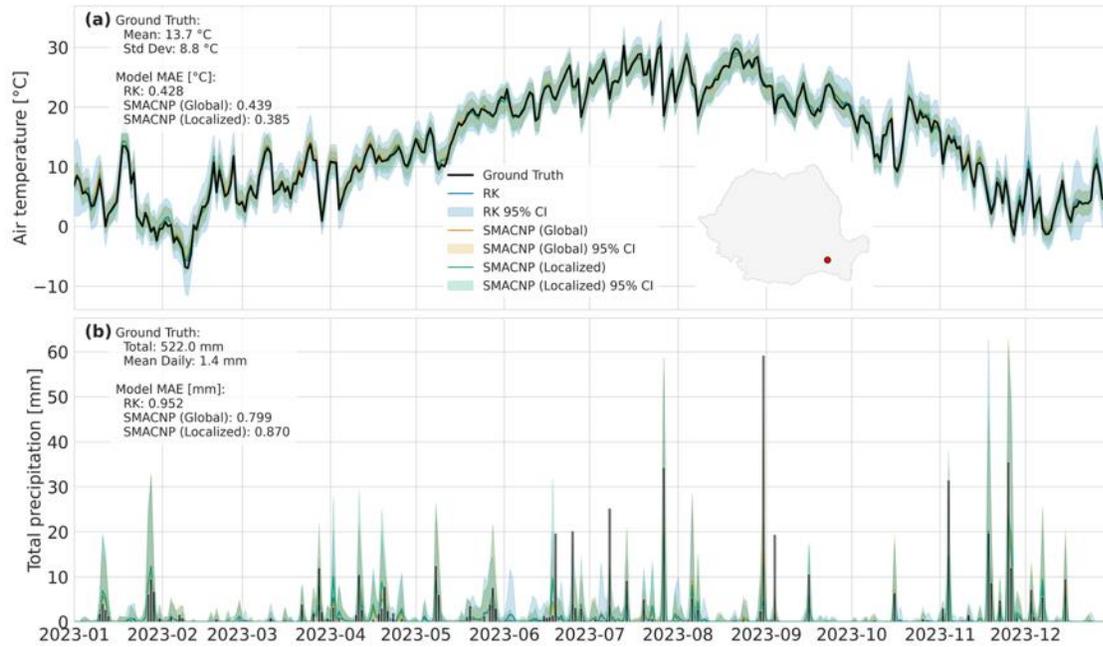
Figure S19. Model performance and uncertainty at **Slobozia** station (**51** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
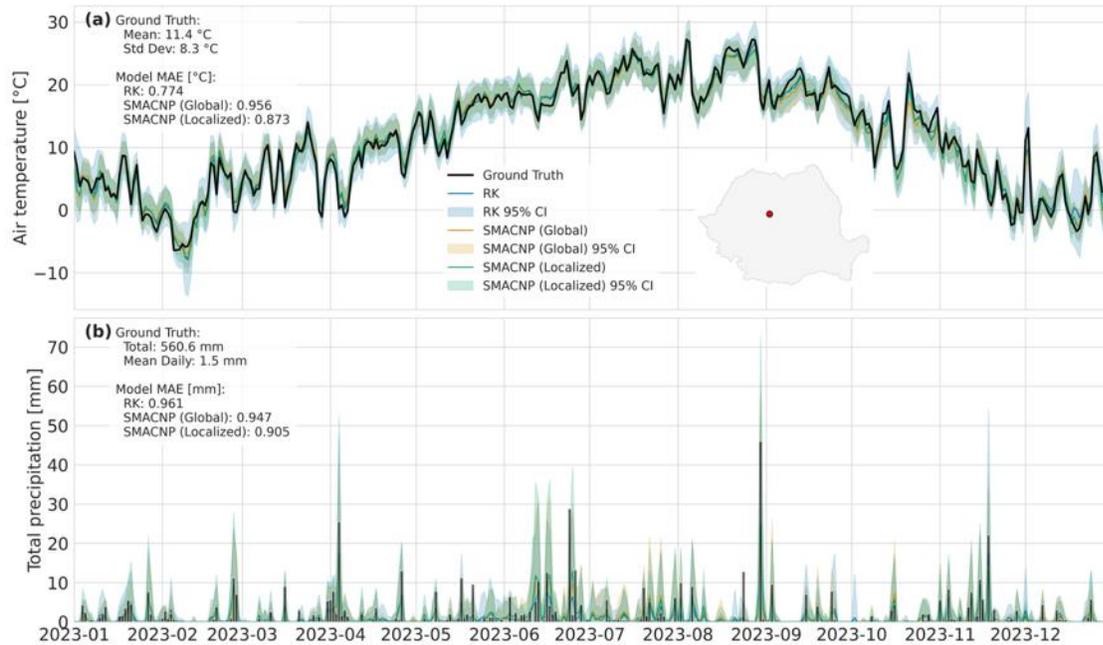
Figure S20. Model performance and uncertainty at **Tarnaveni** station (**523** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
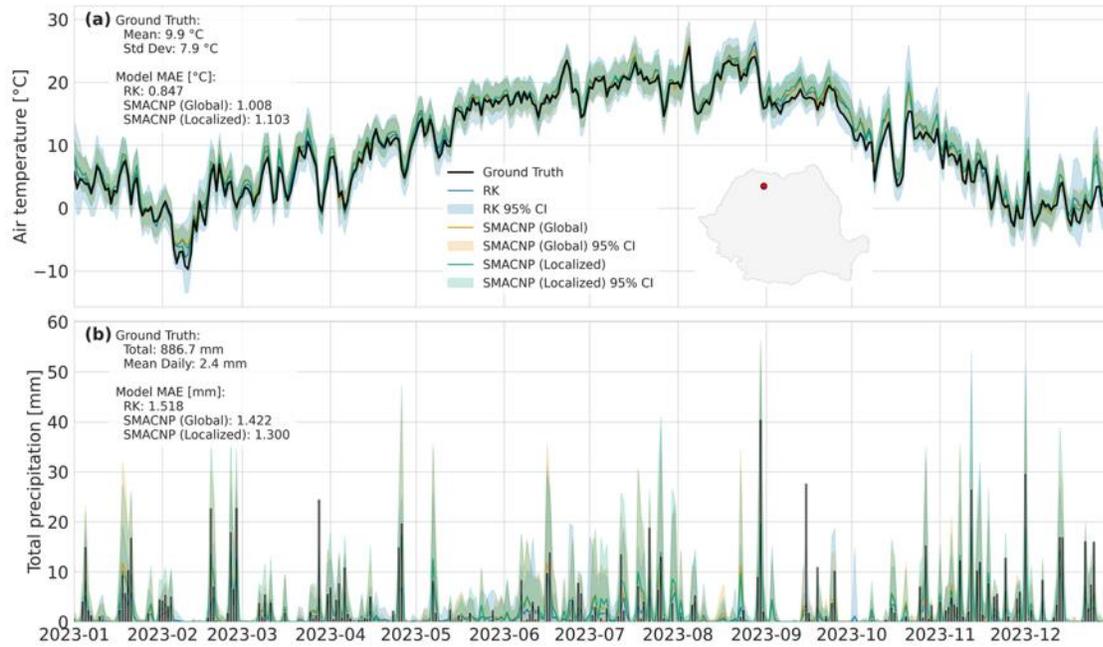
Figure S21. Model performance and uncertainty at **Tg.-Lapus** station (**363** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
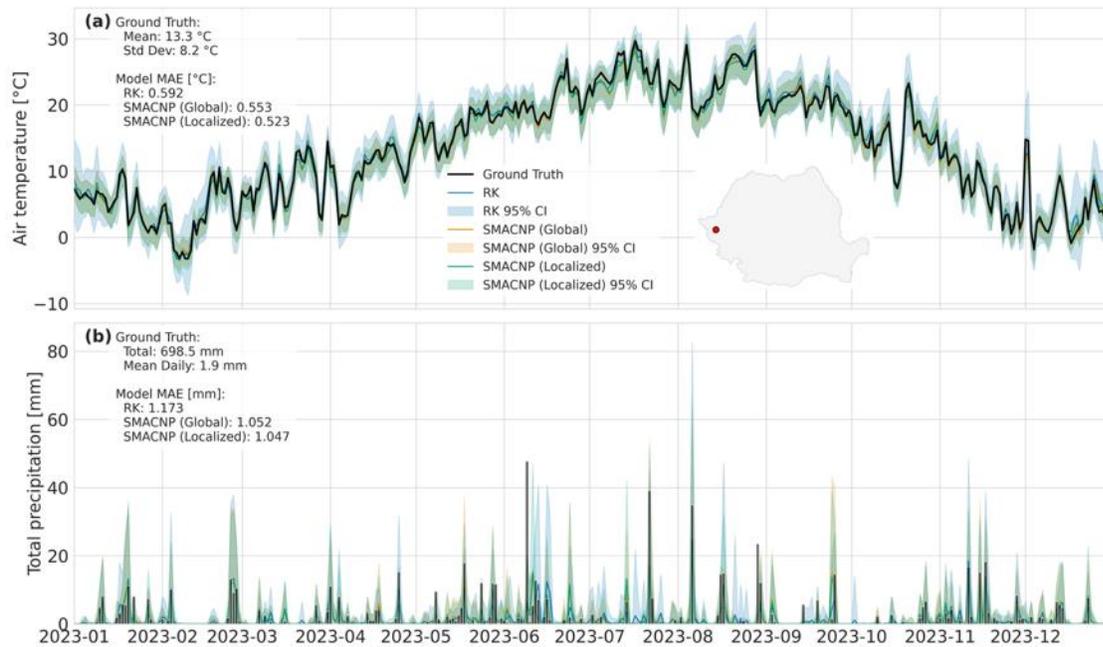
Figure S22. Model performance and uncertainty at **Timisoara** station (**86** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
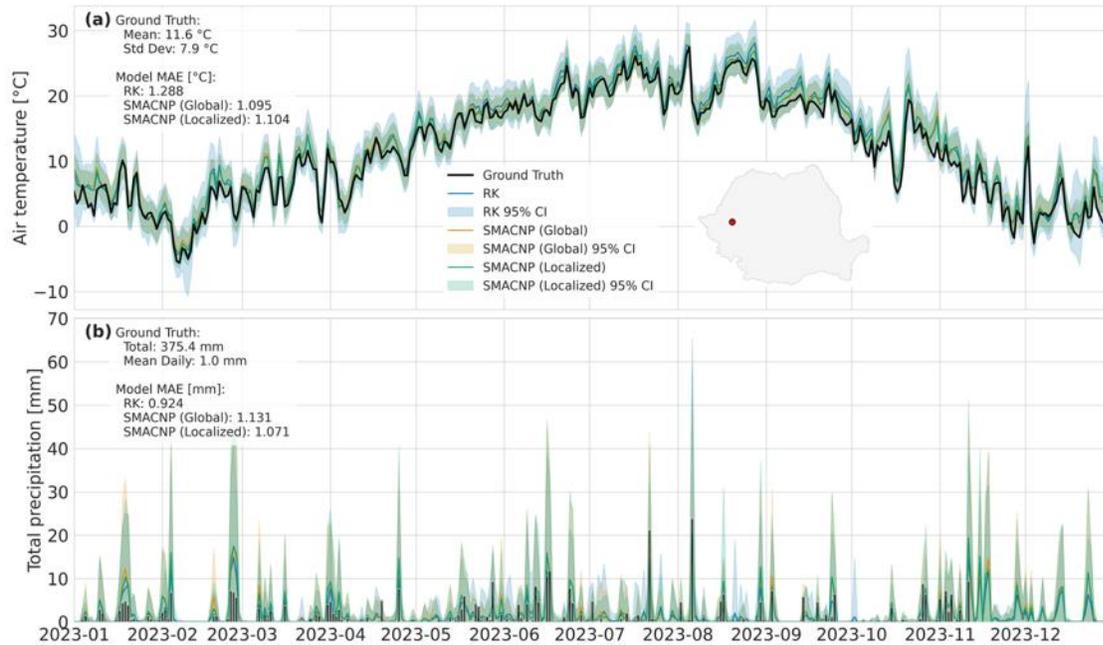
Figure S23. Model performance and uncertainty at **Varadia-de-Mures** station (**156** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.
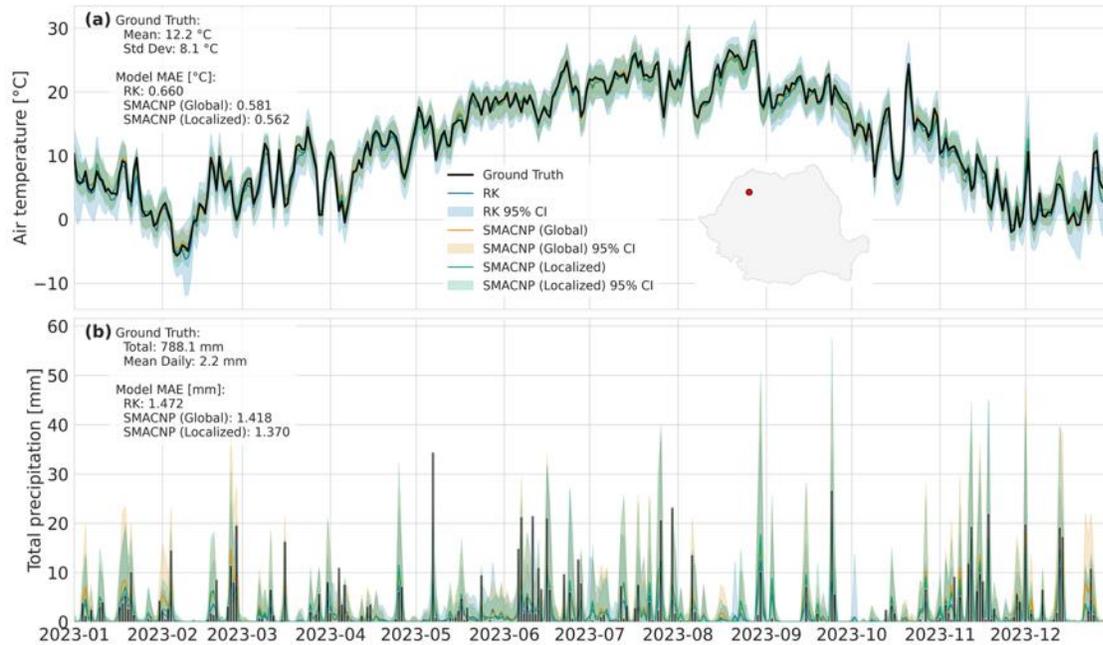
Figure S24. Model performance and uncertainty at **Zalau** station (**295** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station within the study area, marked by a red dot.

Figure S25. Model performance and uncertainty at **Zimnicea** station (**34** m a.m.s.l.). Time series comparison of (a) daily average temperature and (b) daily total precipitation for the year 2023. Shaded areas represent the 95% confidence interval for each model's prediction. The inset map shows the location of the station wit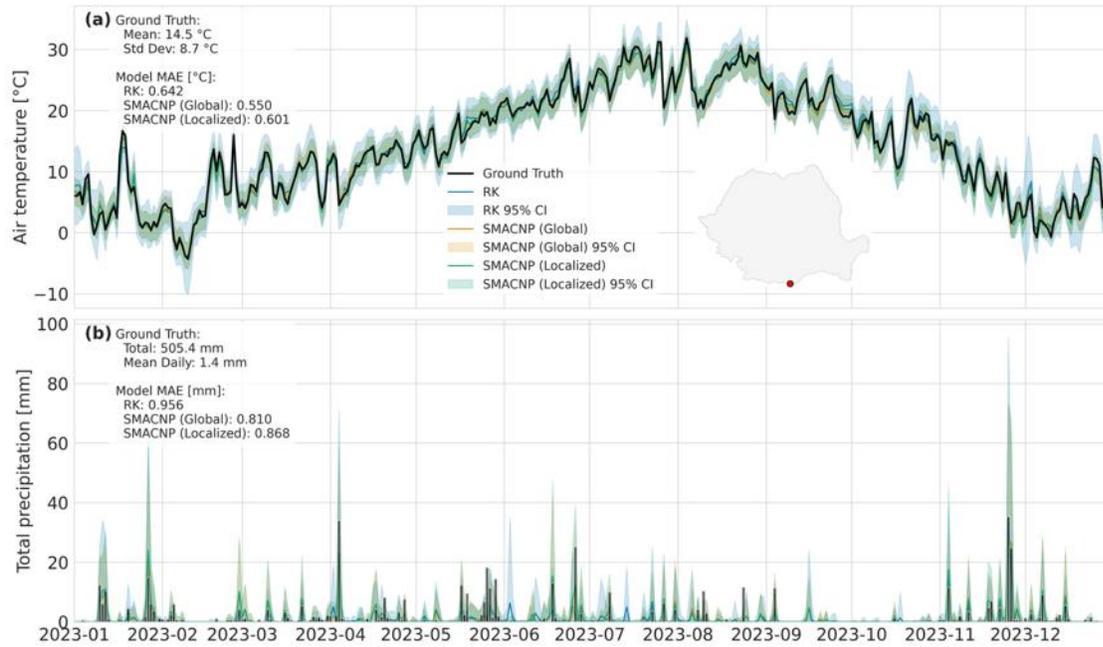hin the study area, marked by a red dot.