AI-Driven TanDEM-X Penetration Bias Estimation in Antarctica Using ICESat-2 and ECMWF Data: Implications for the NASA Surface Topography and Vegetation Decadal Survey Incubation study

Descriptions of Files in Supplementary Material

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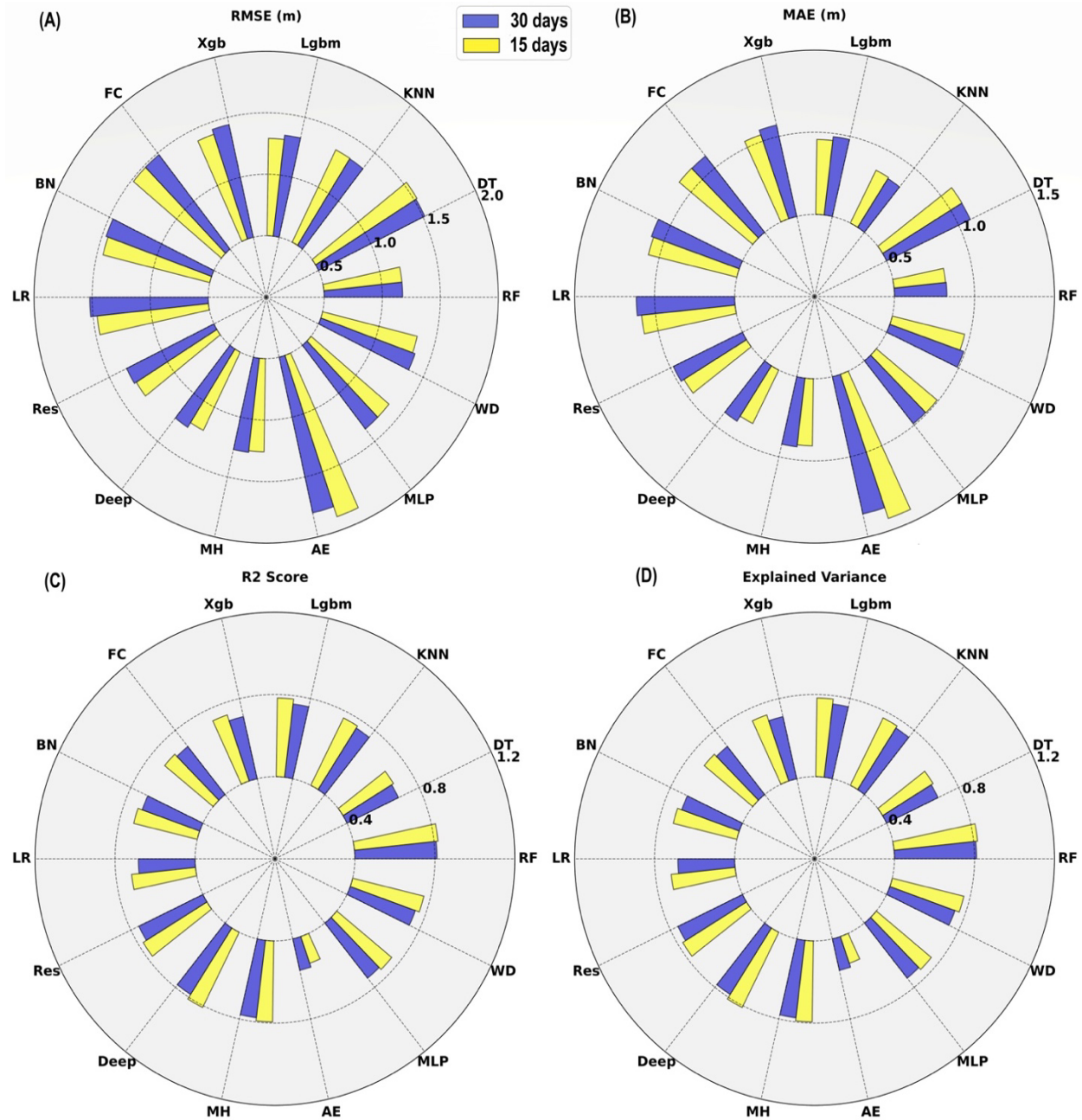
Figure S1. Comparison of model prediction parameters for Radar feature as input(A) RMSE, (B) MAE, (C) R2 Score, (D) Explained Variance for 30 days and 15 days' time difference between ICESat-2 and TanDEM-X data. RF is random forest, DT is Decision Tree, KNN is K-Nearest Neighbour, Lgbm is Light GBM, Xgb is XG Boost, FC is Fully Connected NN, BN is Batch Normalization NN, LR is Leaky ReLU NN, Res is Residual Network, Deep is Deep NN, MH is Transformer Multi-Head Attention NN, AE is Auto Encoder NN, MLP is Multi-layer Perceptron NN and WD is Wide and Deep NN. Blue color stands for 30 days and yellow color stands for 15 days' interval data.
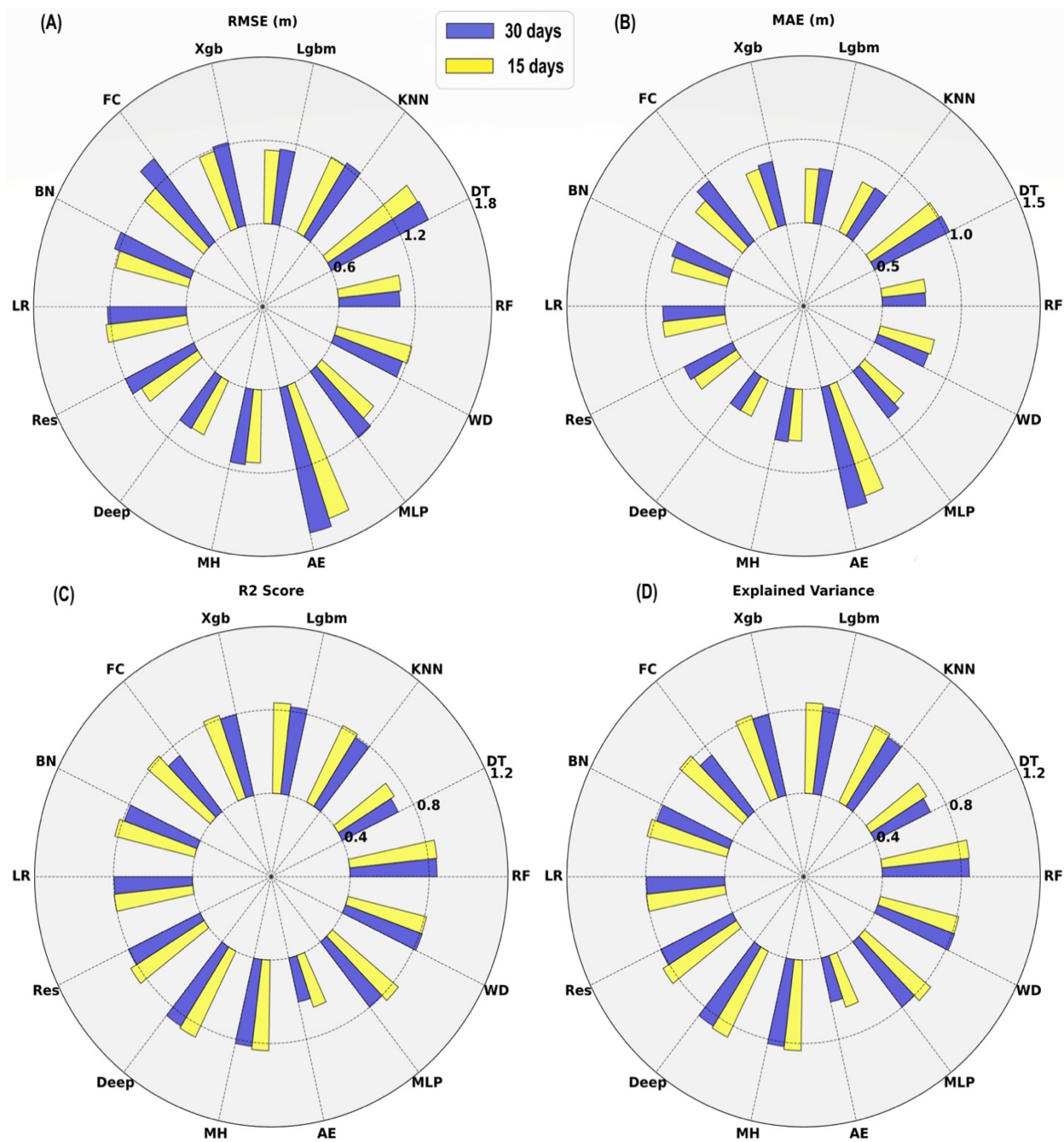
Figure S2. Comparison of model prediction parameters for both Radar and Atmospheric features as input (A) RMSE, (B) MAE, (C) R2 Score, (D) Explained Variance for 30 days and 15 days' time difference between ICESat-2 and TanDEM-X data.
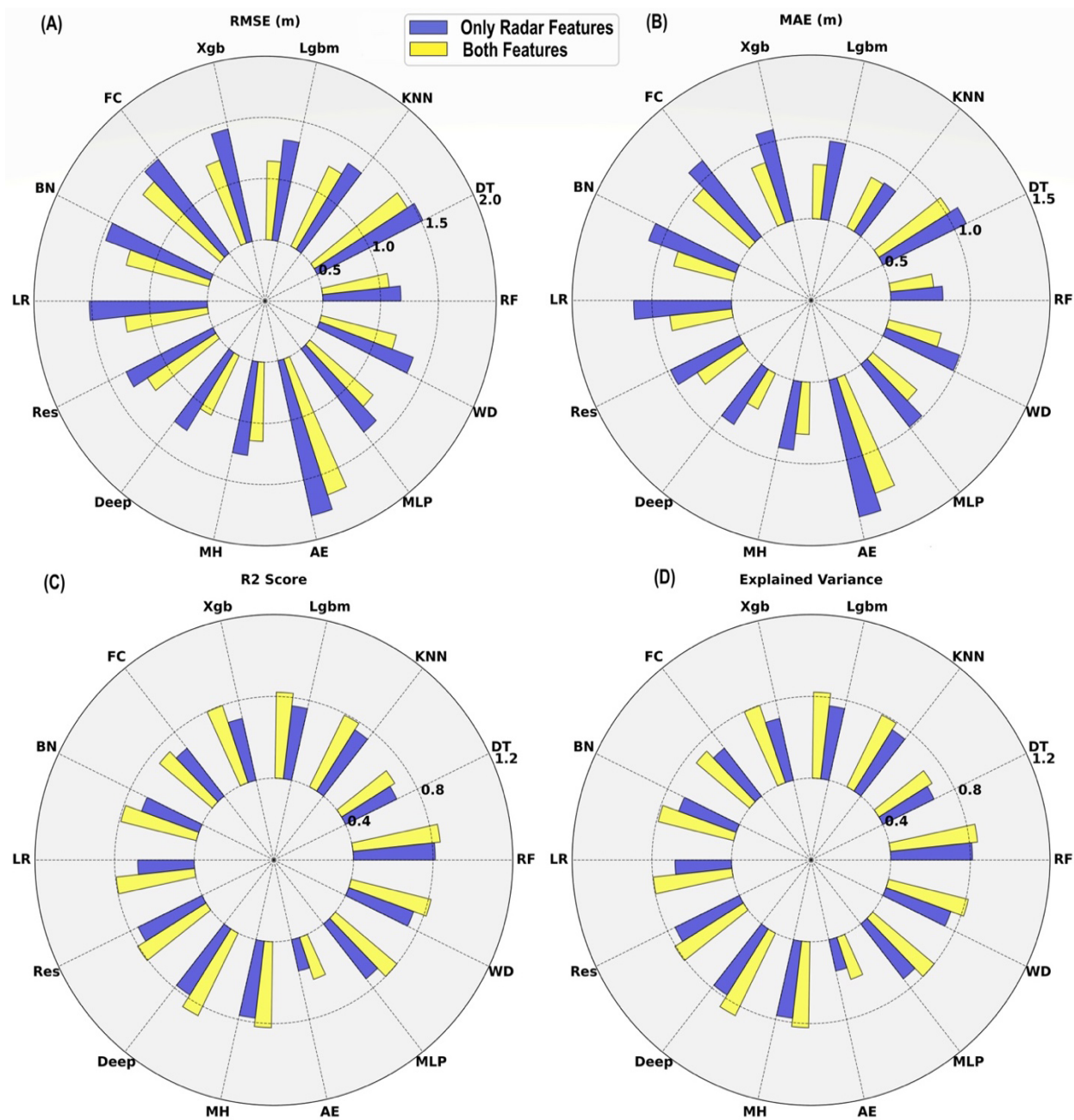
Figure S3. Comparison of model prediction parameters for when Radar features and both Radar and Atmospheric features as input (A) RMSE, (B) MAE, (C) R2 Score, (D) Explained Variance for 30 days' time difference between ICESat-2 and TanDEM-X data. Blue color stands for only radar feature and yellow color stands for both radar and environmental features as input data.
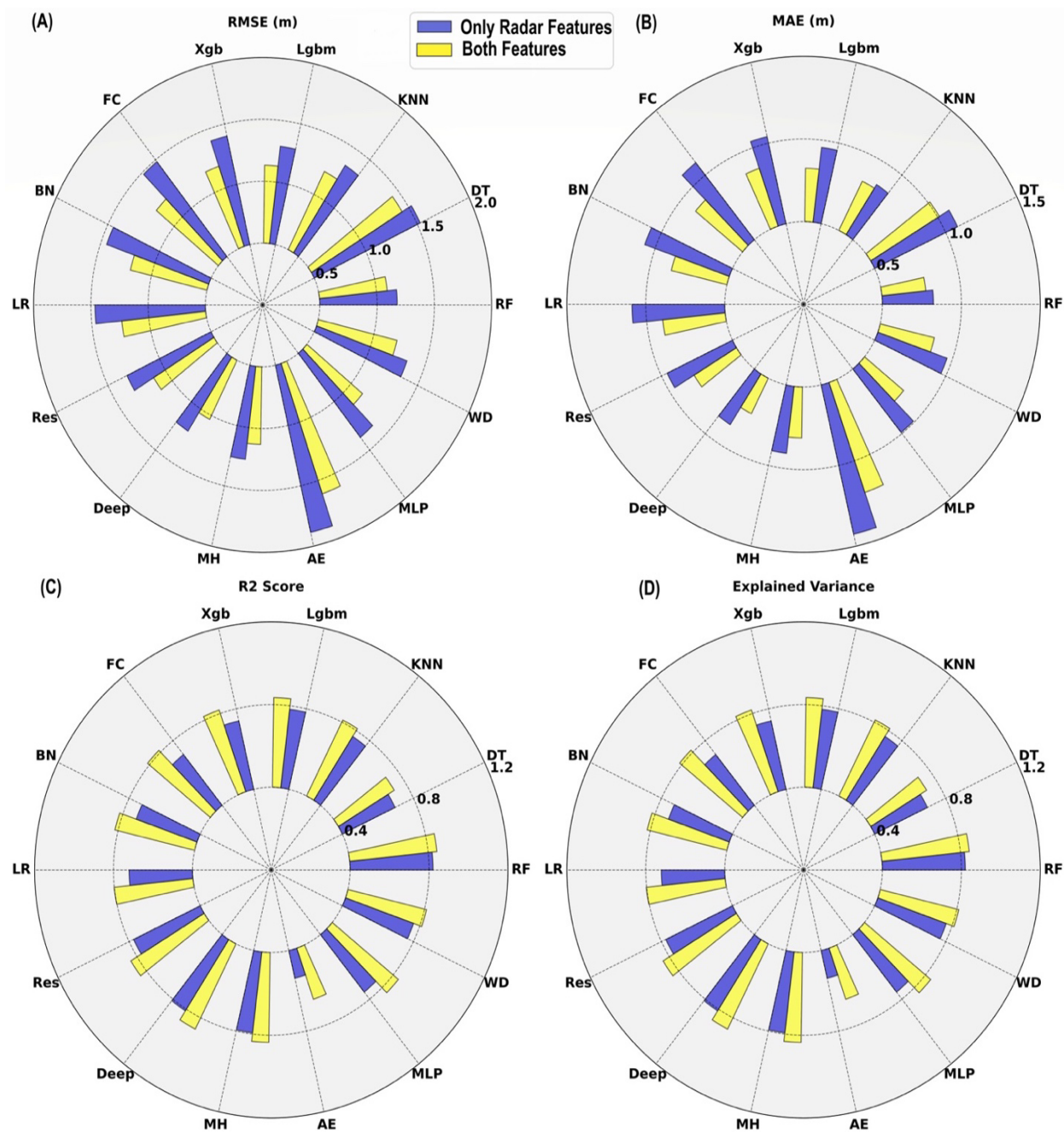
Figure S4. Comparison of model prediction parameters for when Radar features and both Radar and Atmospheric features as input (A) RMSE, (B) MAE, (C) R2 Score, (D) Explained Variance for 15 days' time difference between ICESat-2 and TanDEM-X data.