Greenness Prediction

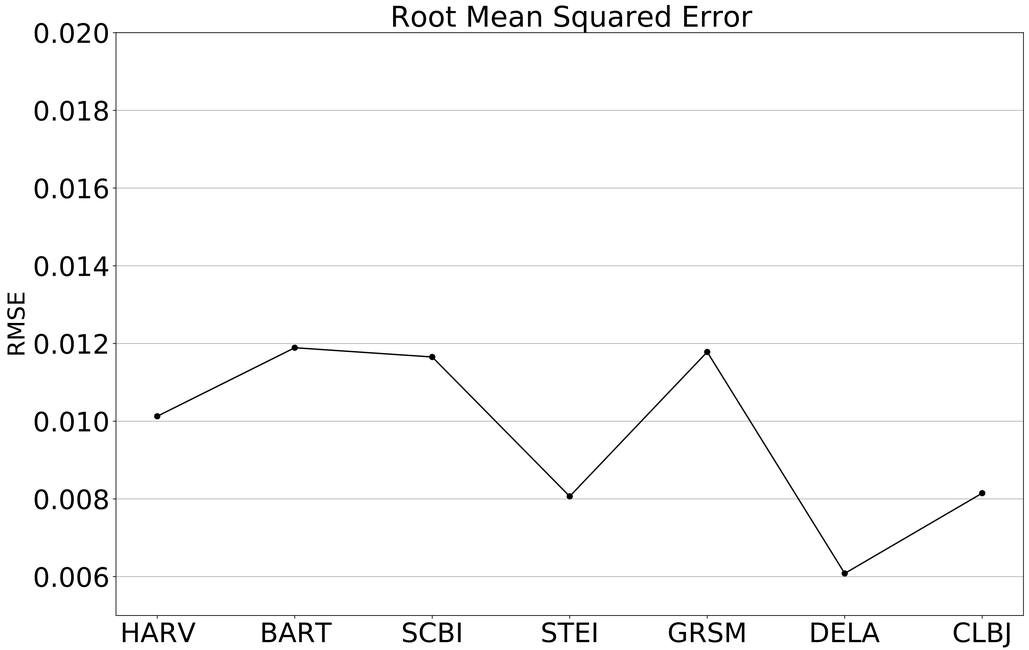
- Target Variables (#35): gcc of next 35 days
- Features Used (#25): Last 5 days gcc value i.e. gcc90 value from (t-1)th to (t-5)th day and gcc90 value from (t-5)th to (t+14)th day of lastt year
- Model used: Random Forest Regressor
- Cross-validation strategy used: Time Series Cross Validator (n_splits = 3)
- Train Data: Till 2019
- Test Data: 2020
- Missing values in the train data has been filled with interpolate(method = time) function

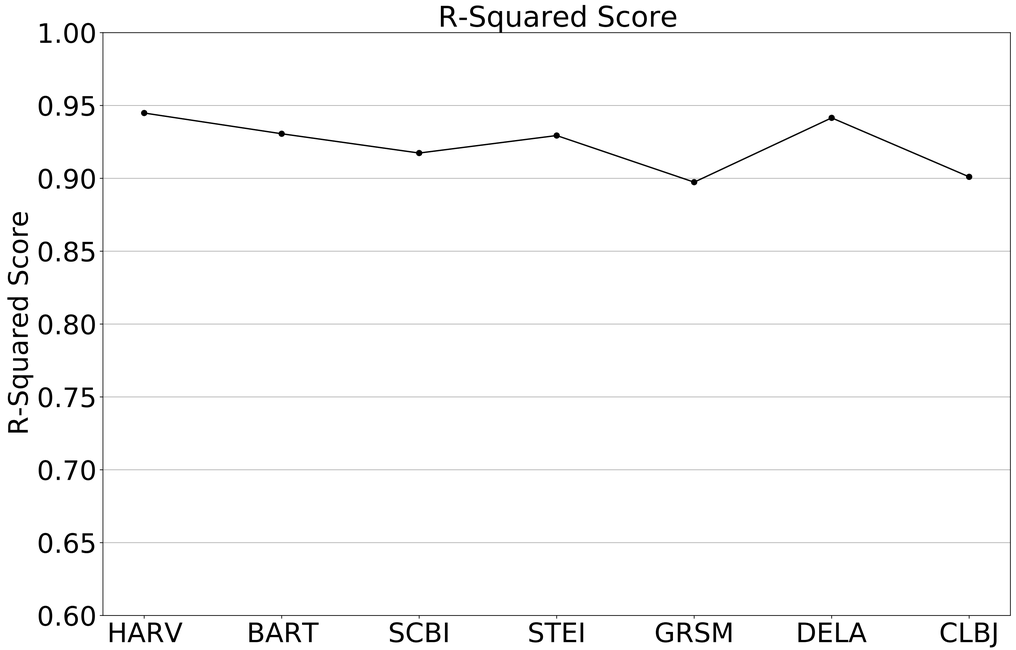
- Note
    - Model trained separately for each of the sites
    - Hyperparemeters of Random Forest Regressor are also different for each of the sites

Year-wise no. of observations (after creating features and dropping missing values)

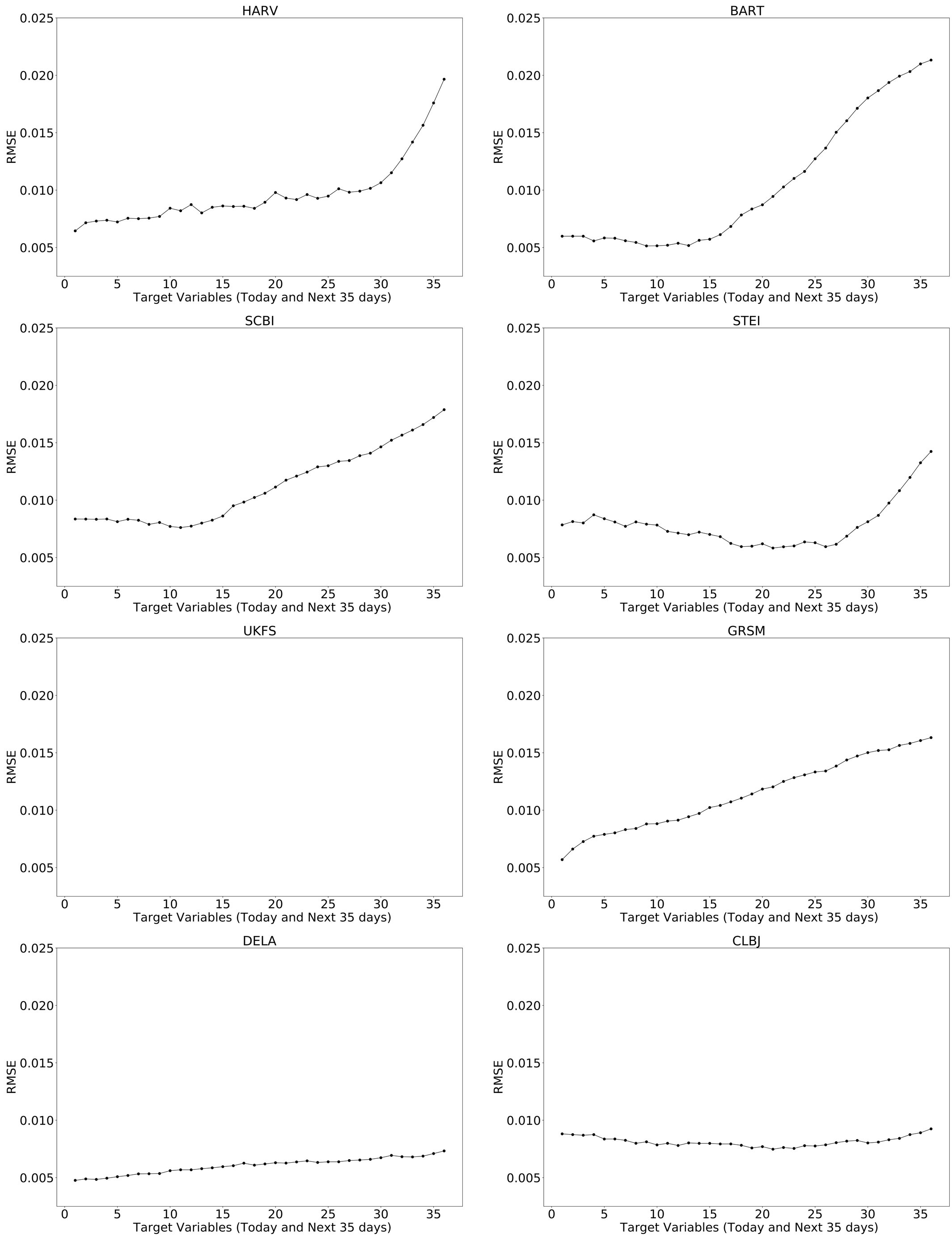
Site Name	Train_Size	Test_Size
HARV	744	204
BART	743	208
SCBI	744	242
STEI	423	305
UKFS	43	199
GRSM	702	253
DELA	741	252
CLBJ	385	274

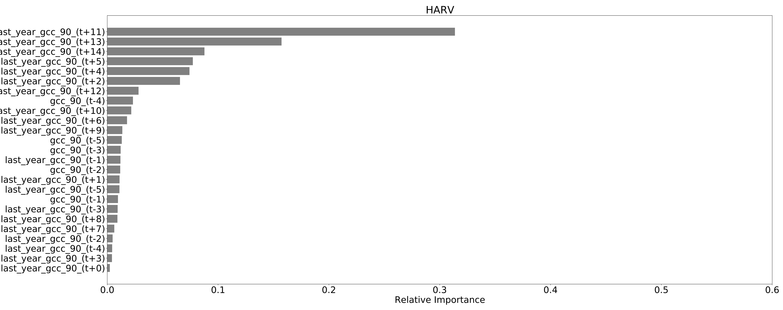
Site- wise Overall Performance Evaluation

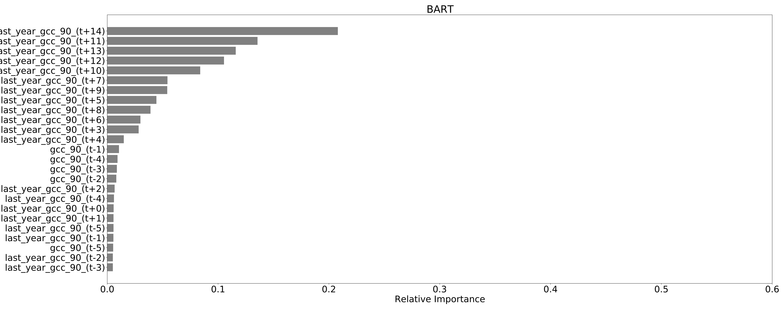


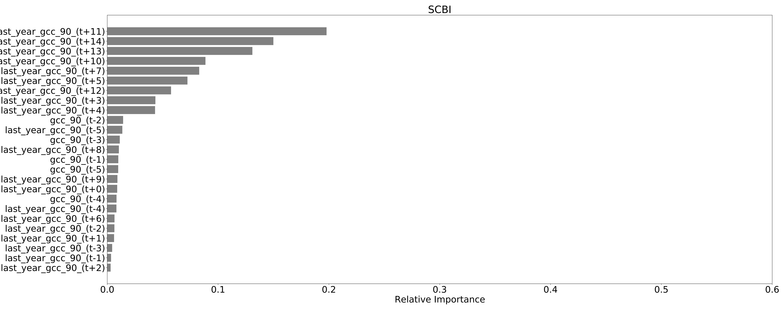


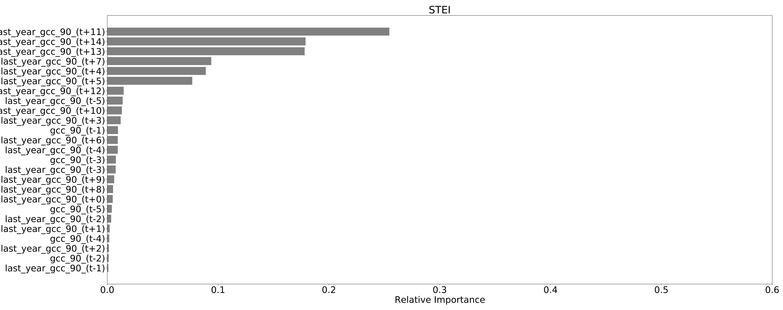
Target Variable Wise RMSE

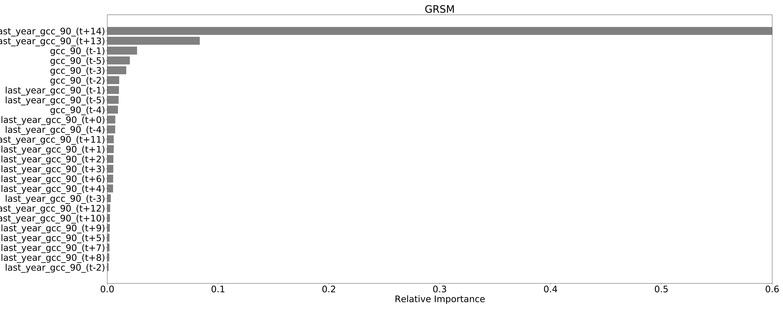


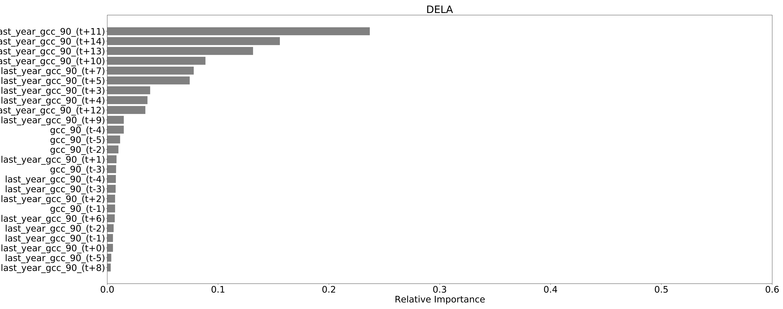

HARV
last_year_gcc_90_(t+11)
last_year_gcc_90_(t+13)
last_year_gcc_90_(t+14)
last_year_gcc_90_(t+5)
last_year_gcc_90_(t+4)
last_year_gcc_90_(t+2)
last_year_gcc_90_(t+12)
gcc_90_(t-4)
last_year_gcc_90_(t+10)
last_year_gcc_90_(t+6)
last_year_gcc_90_(t+9)
gcc_90_(t-5)
gcc_90_(t-3)
last_year_gcc_90_(t-1)
gcc_90_(t-2)
last_year_gcc_90_(t+1)
last_year_gcc_90_(t-5)
gcc_90_(t-1)
last_year_gcc_90_(t-3)
last_year_gcc_90_(t+8)
last_year_gcc_90_(t+7)
last_year_gcc_90_(t-2)
last_year_gcc_90_(t-4)
last_year_gcc_90_(t+3)
last_year_gcc_90_(t+0)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Relative Importance

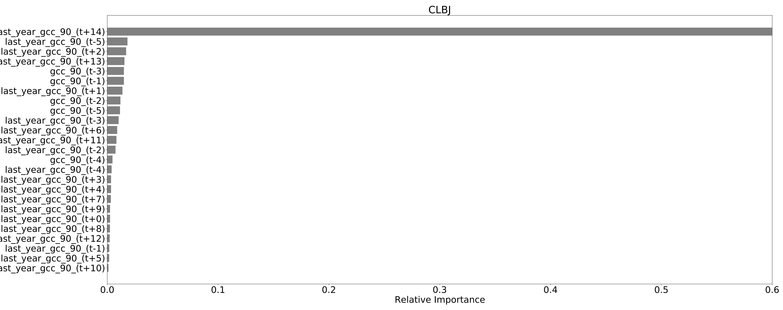

BART
last_year_gcc_90_(t+14)
last_year_gcc_90_(t+11)
last_year_gcc_90_(t+13)
last_year_gcc_90_(t+12)
last_year_gcc_90_(t+10)
last_year_gcc_90_(t+7)
last_year_gcc_90_(t+9)
last_year_gcc_90_(t+5)
last_year_gcc_90_(t+8)
last_year_gcc_90_(t+6)
last_year_gcc_90_(t+3)
last_year_gcc_90_(t+4)
gcc_90_(t-1)
gcc_90_(t-4)
gcc_90_(t-3)
gcc_90_(t-2)
last_year_gcc_90_(t+2)
last_year_gcc_90_(t-4)
last_year_gcc_90_(t+0)
last_year_gcc_90_(t+1)
last_year_gcc_90_(t-5)
last_year_gcc_90_(t-1)
gcc_90_(t-5)
last_year_gcc_90_(t-2)
last_year_gcc_90_(t-3)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Relative Importance


SCBI
last_year_gcc_90_(t+11)
last_year_gcc_90_(t+14)
last_year_gcc_90_(t+13)
last_year_gcc_90_(t+10)
last_year_gcc_90_(t+7)
last_year_gcc_90_(t+5)
last_year_gcc_90_(t+12)
last_year_gcc_90_(t+3)
last_year_gcc_90_(t+4)
gcc_90_(t-2)
last_year_gcc_90_(t-5)
gcc_90_(t-3)
last_year_gcc_90_(t+8)
gcc_90_(t-1)
gcc_90_(t-5)
last_year_gcc_90_(t+9)
last_year_gcc_90_(t+0)
gcc_90_(t-4)
last_year_gcc_90_(t-4)
last_year_gcc_90_(t+6)
last_year_gcc_90_(t-2)
last_year_gcc_90_(t+1)
last_year_gcc_90_(t-3)
last_year_gcc_90_(t-1)
last_year_gcc_90_(t+2)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Relative Importance

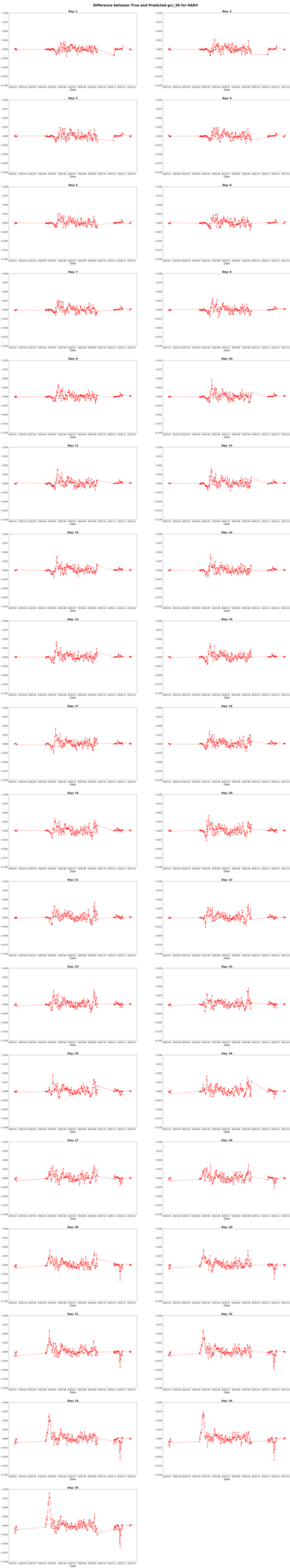

STEI
last_year_gcc_90_(t+11)
last_year_gcc_90_(t+14)
last_year_gcc_90_(t+13)
last_year_gcc_90_(t+7)
last_year_gcc_90_(t+4)
last_year_gcc_90_(t+5)
last_year_gcc_90_(t+12)
last_year_gcc_90_(t-5)
last_year_gcc_90_(t+10)
last_year_gcc_90_(t+3)
gcc_90_(t-1)
last_year_gcc_90_(t+6)
last_year_gcc_90_(t-4)
gcc_90_(t-3)
last_year_gcc_90_(t-3)
last_year_gcc_90_(t+9)
last_year_gcc_90_(t+8)
last_year_gcc_90_(t+0)
gcc_90_(t-5)
last_year_gcc_90_(t-2)
last_year_gcc_90_(t+1)
gcc_90_(t-4)
last_year_gcc_90_(t+2)
gcc_90_(t-2)
last_year_gcc_90_(t-1)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Relative Importance


GRSM
last_year_gcc_90_(t+14)
last_year_gcc_90_(t+13)
gcc_90_(t-1)
gcc_90_(t-5)
gcc_90_(t-3)
gcc_90_(t-2)
last_year_gcc_90_(t-1)
last_year_gcc_90_(t-5)
gcc_90_(t-4)
last_year_gcc_90_(t+0)
last_year_gcc_90_(t-4)
last_year_gcc_90_(t+11)
last_year_gcc_90_(t+1)
last_year_gcc_90_(t+2)
last_year_gcc_90_(t+3)
last_year_gcc_90_(t+6)
last_year_gcc_90_(t+4)
last_year_gcc_90_(t-3)
last_year_gcc_90_(t+12)
last_year_gcc_90_(t+10)
last_year_gcc_90_(t+9)
last_year_gcc_90_(t+5)
last_year_gcc_90_(t+7)
last_year_gcc_90_(t+8)
last_year_gcc_90_(t-2)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Relative Importance

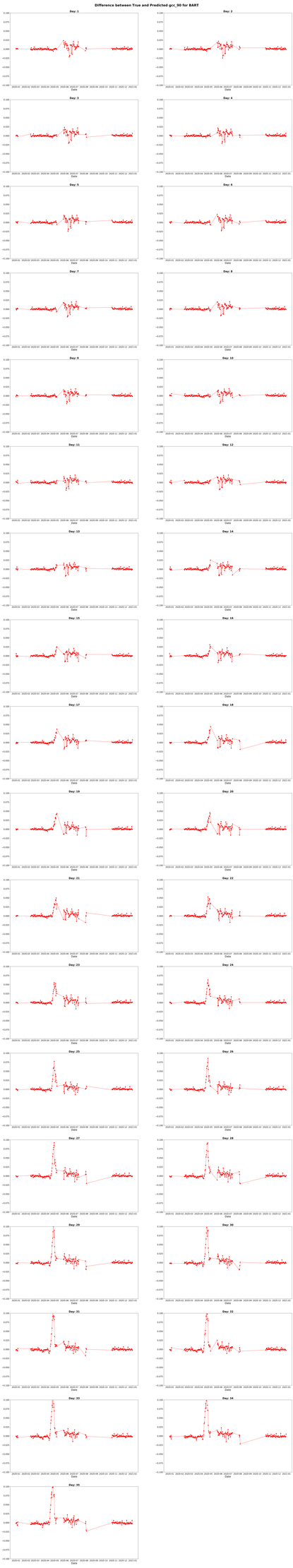

DELA
last_year_gcc_90_(t+11)
last_year_gcc_90_(t+14)
last_year_gcc_90_(t+13)
last_year_gcc_90_(t+10)
last_year_gcc_90_(t+7)
last_year_gcc_90_(t+5)
last_year_gcc_90_(t+3)
last_year_gcc_90_(t+4)
last_year_gcc_90_(t+12)
last_year_gcc_90_(t+9)
gcc_90_(t-4)
gcc_90_(t-5)
gcc_90_(t-2)
last_year_gcc_90_(t+1)
gcc_90_(t-3)
last_year_gcc_90_(t-4)
last_year_gcc_90_(t-3)
last_year_gcc_90_(t+2)
gcc_90_(t-1)
last_year_gcc_90_(t+6)
last_year_gcc_90_(t-2)
last_year_gcc_90_(t-1)
last_year_gcc_90_(t+0)
last_year_gcc_90_(t-5)
last_year_gcc_90_(t+8)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Relative Importance


CLBJ
last_year_gcc_90_(t+14)
last_year_gcc_90_(t-5)
last_year_gcc_90_(t+2)
last_year_gcc_90_(t+13)
gcc_90_(t-3)
gcc_90_(t-1)
last_year_gcc_90_(t+1)
gcc_90_(t-2)
gcc_90_(t-5)
last_year_gcc_90_(t-3)
last_year_gcc_90_(t+6)
last_year_gcc_90_(t+11)
last_year_gcc_90_(t-2)
gcc_90_(t-4)
last_year_gcc_90_(t-4)
last_year_gcc_90_(t+3)
last_year_gcc_90_(t+4)
last_year_gcc_90_(t+7)
last_year_gcc_90_(t+9)
last_year_gcc_90_(t+0)
last_year_gcc_90_(t+8)
last_year_gcc_90_(t+12)
last_year_gcc_90_(t-1)
last_year_gcc_90_(t+5)
last_year_gcc_90_(t+10)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Relative Importance

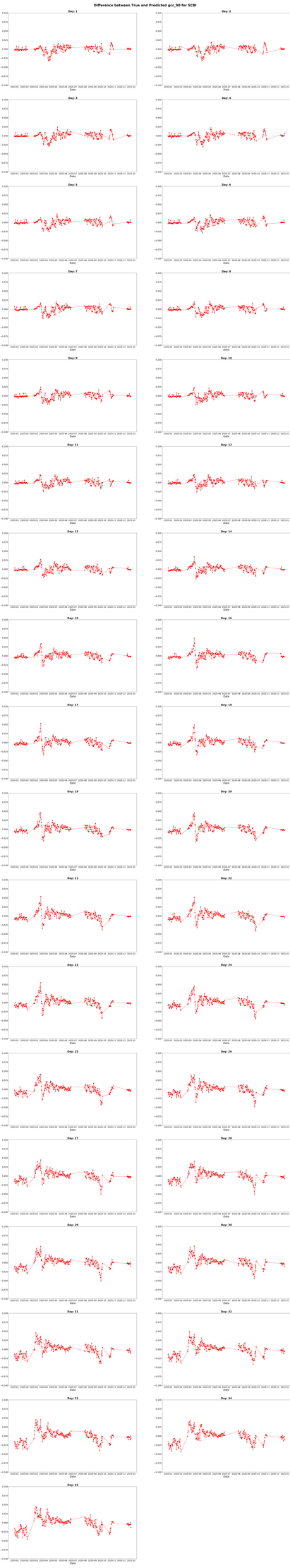
Difference between True and Predicted gcc_90 for HARV



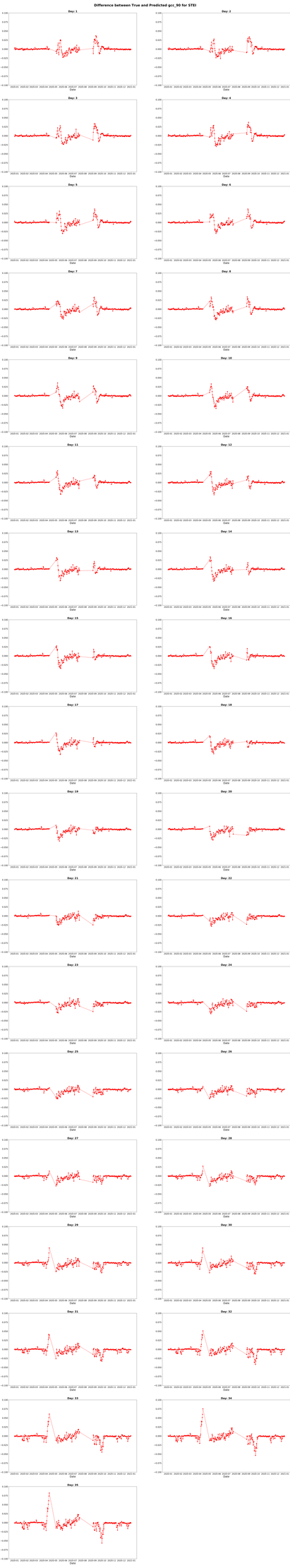
Difference between True and Predicted gcc_90 for BART



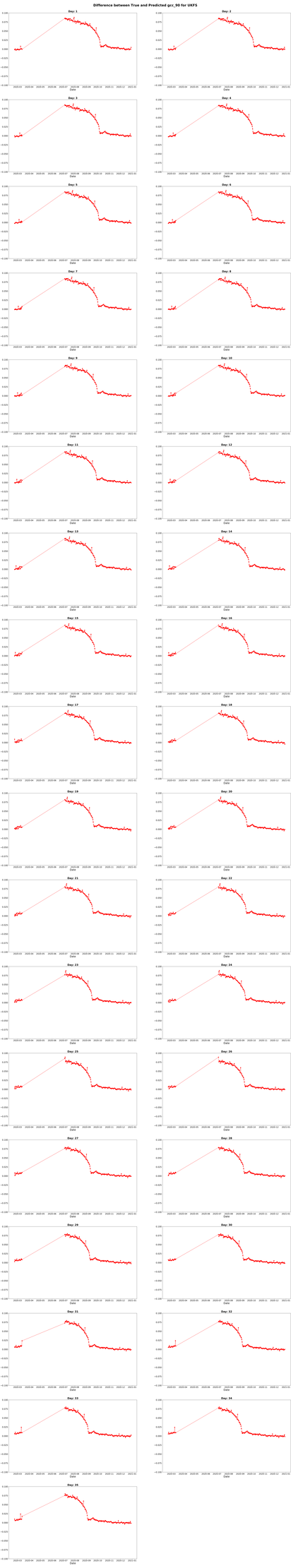
Difference between True and Predicted gcc_90 for SCBI



Difference between True and Predicted gcc_90 for STEI

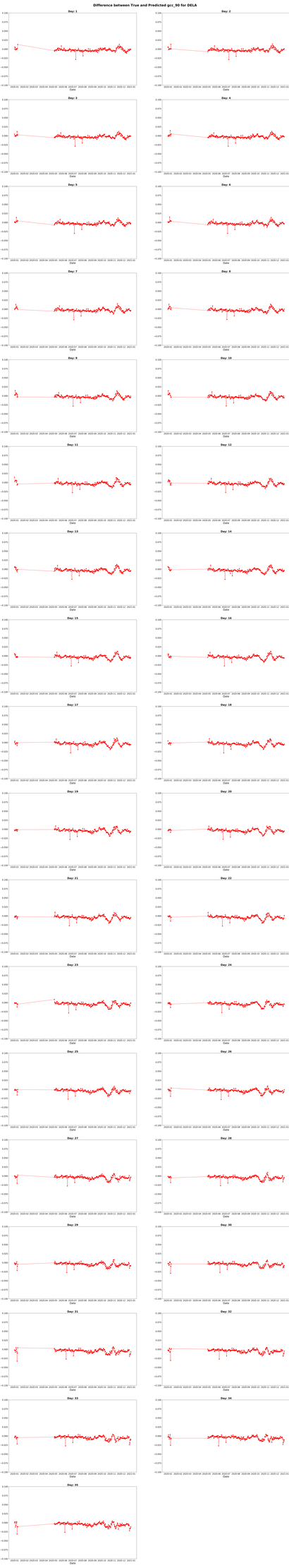


Difference between True and Predicted gcc_90 for UKF5

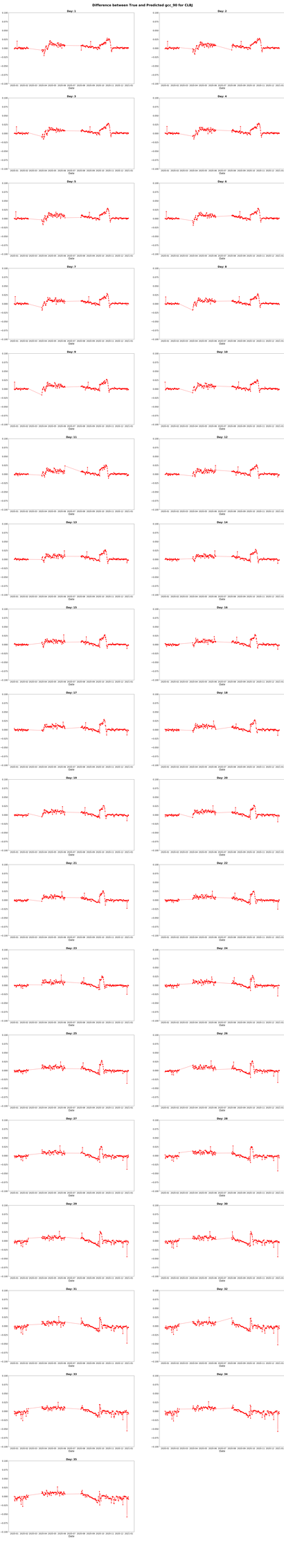


Difference between True and Predicted gcc_90 for GRSM

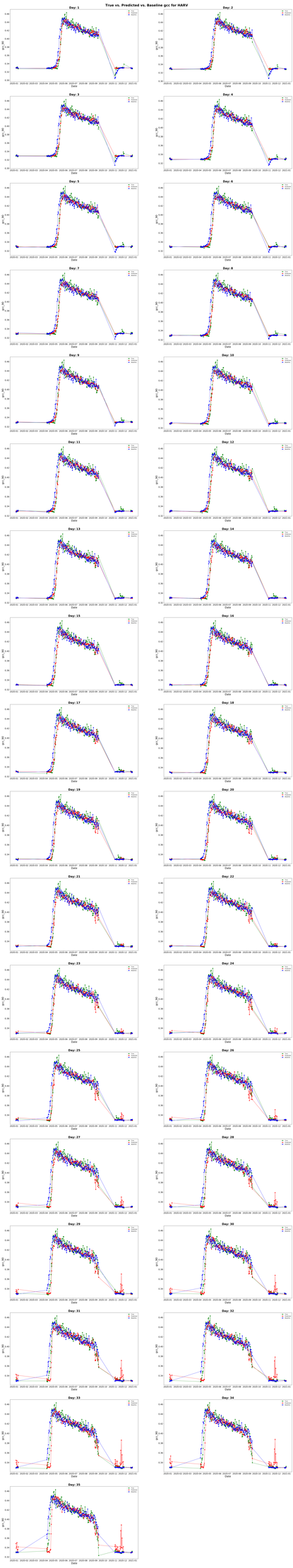
Difference between True and Predicted gcc_90 for DELA



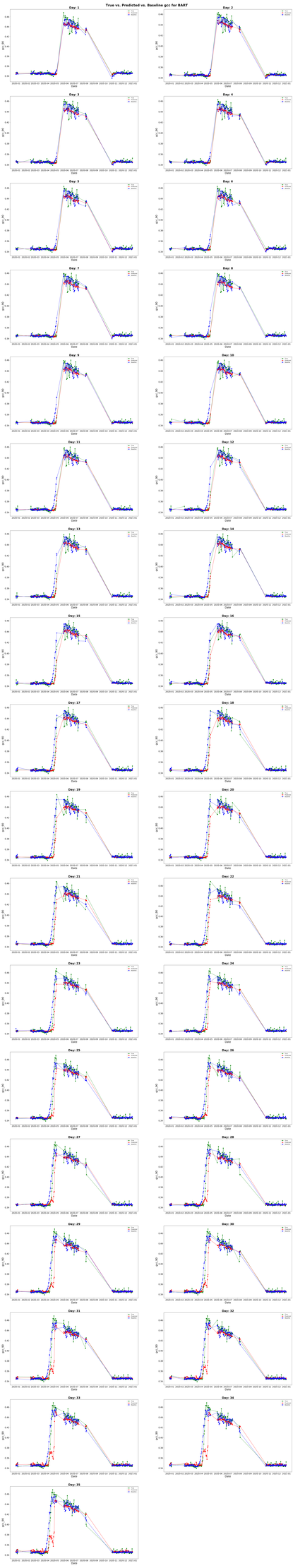
Difference between True and Predicted gcc_90 for CLBJ



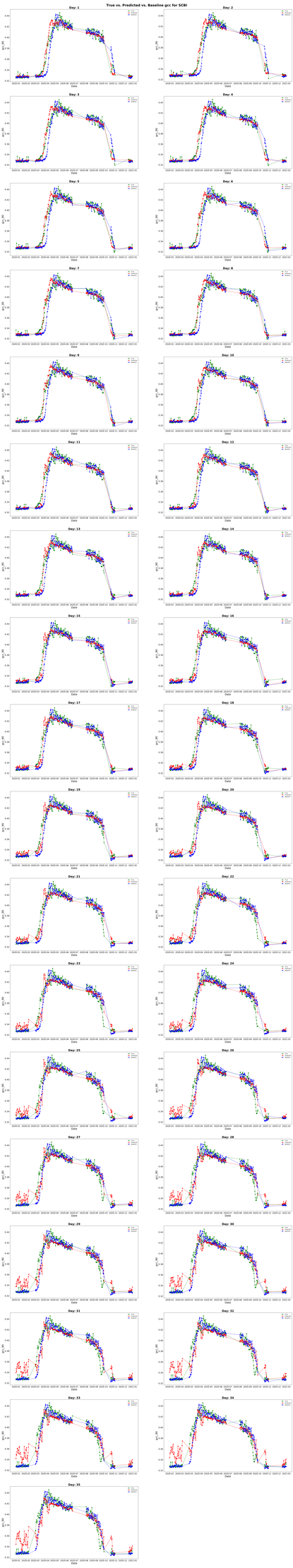
True vs. Predicted vs. Baseline gcc for HARV



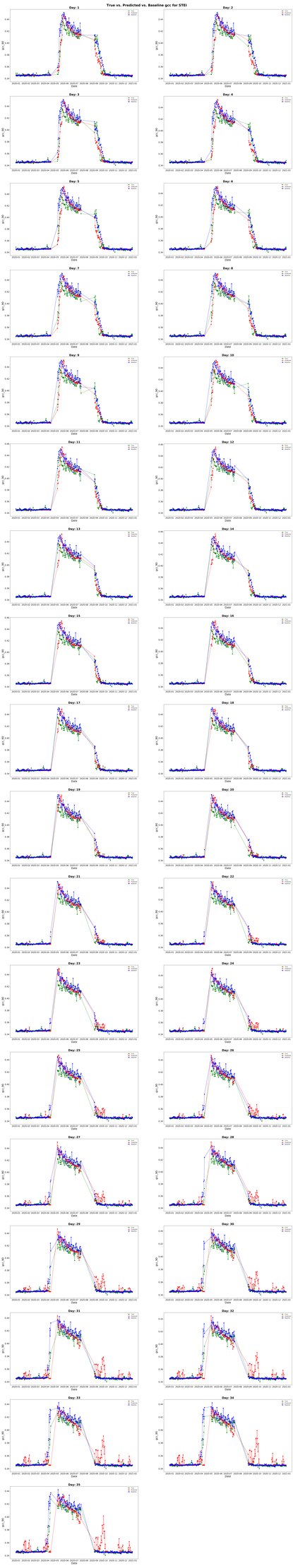
True vs. Predicted vs. Baseline gcc for BART



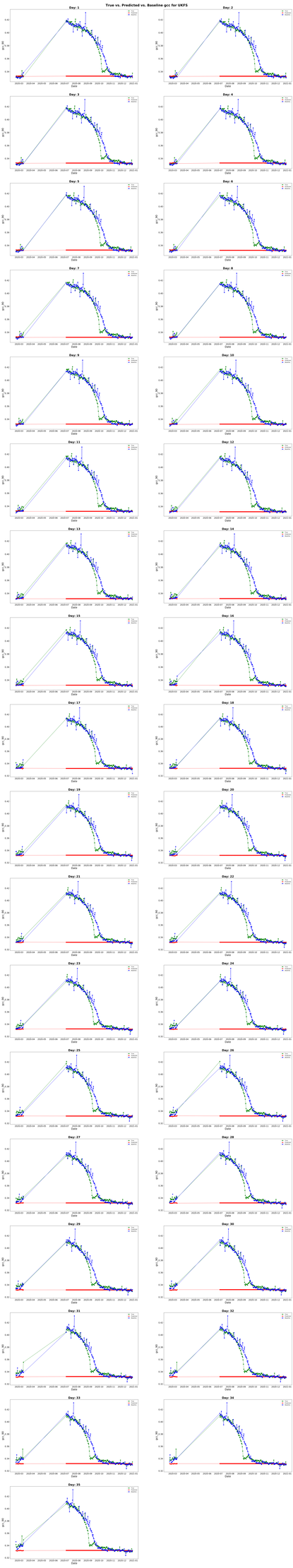
True vs. Predicted vs. Baseline gcc for SCBI



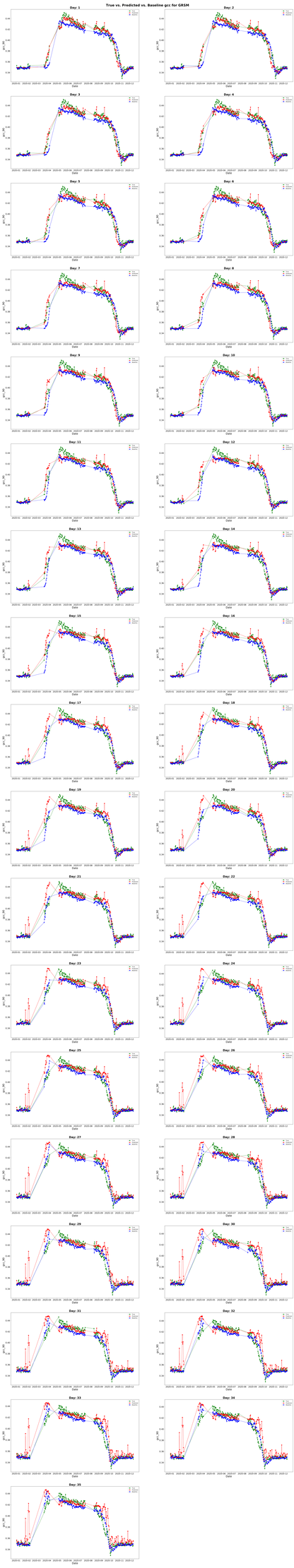
True vs. Predicted vs. Baseline gcc for STEI



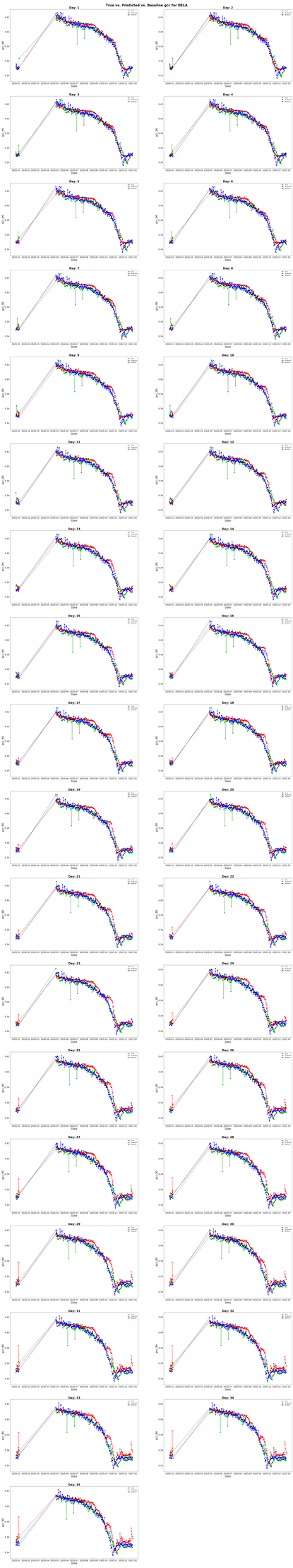
True vs. Predicted vs. Baseline gcc for UKF5



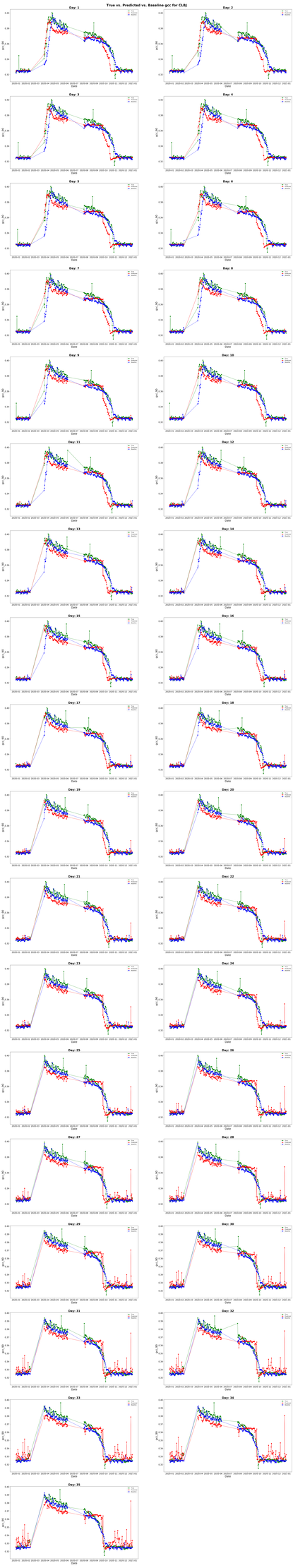
True vs. Predicted vs. Baseline gcc for GRSM



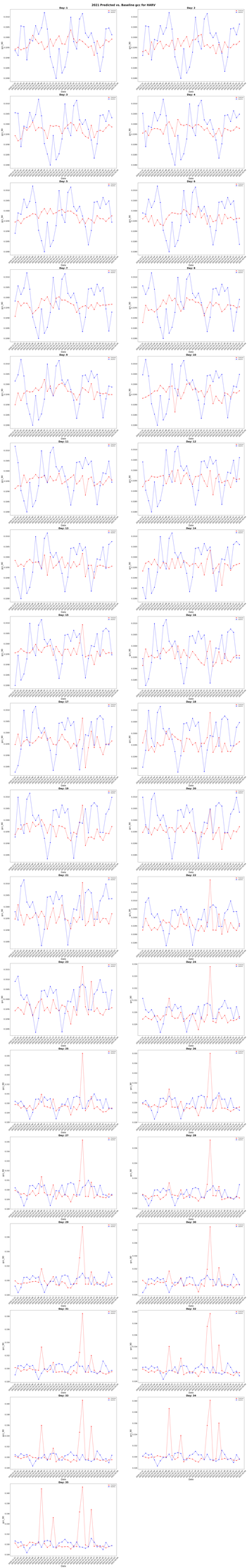
True vs. Predicted vs. Baseline gcc for DELA



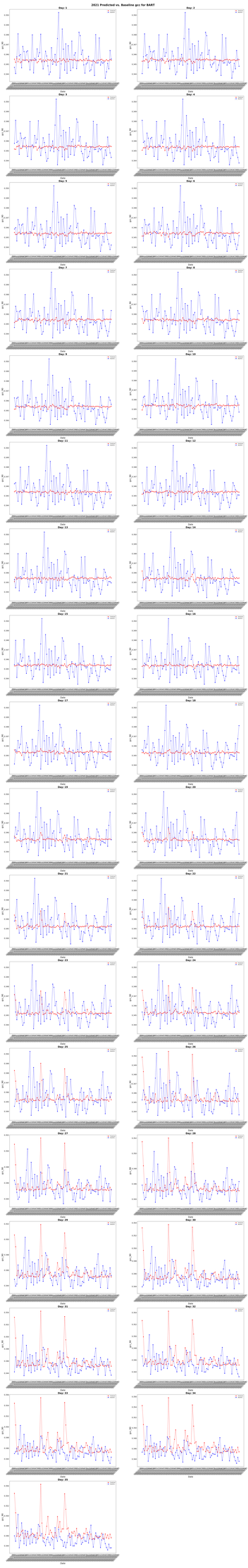
True vs. Predicted vs. Baseline gcc for CLBJ



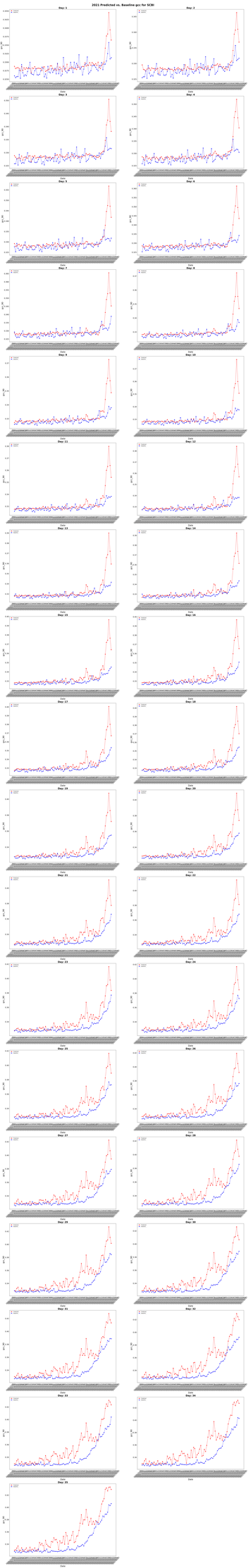
2021 Predicted vs. Baseline gcc for HARV



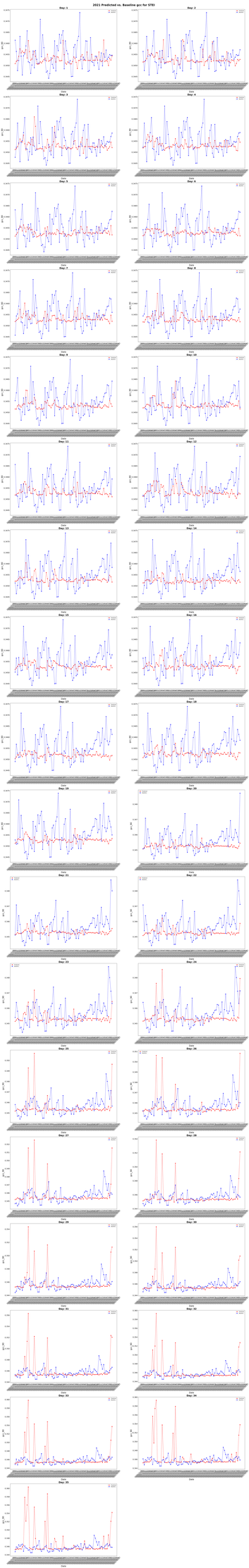
2021 Predicted vs. Baseline gcc for BART



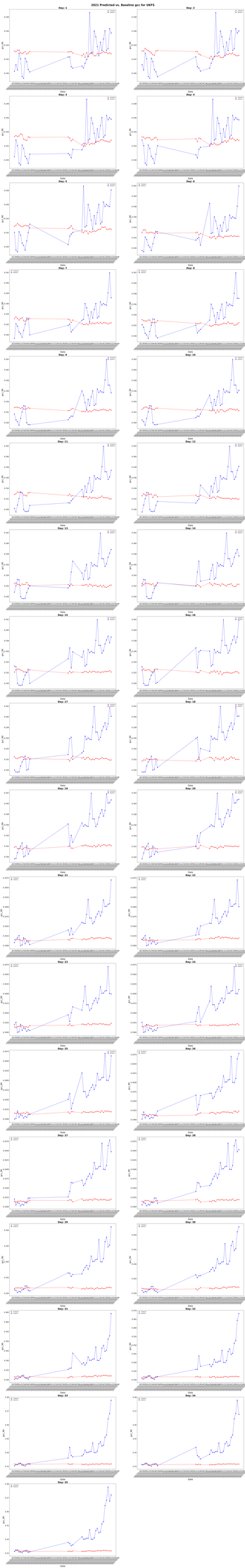
2021 Predicted vs. Baseline gcc for SCBI



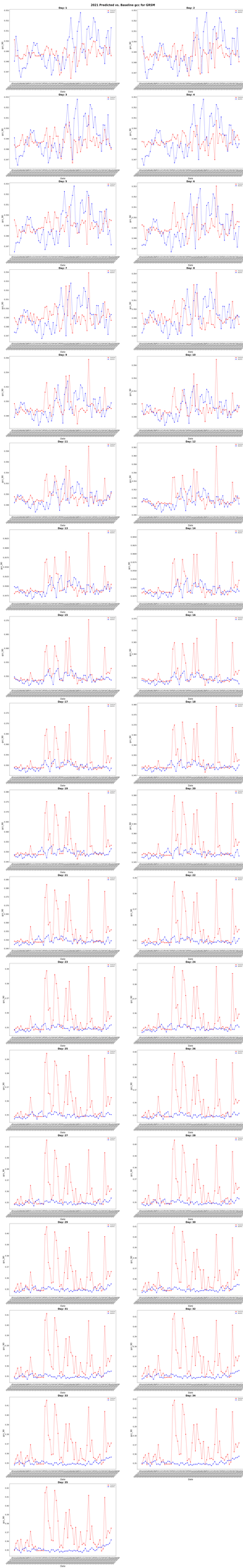
2023 Predicted vs. Baseline gcc for STEI



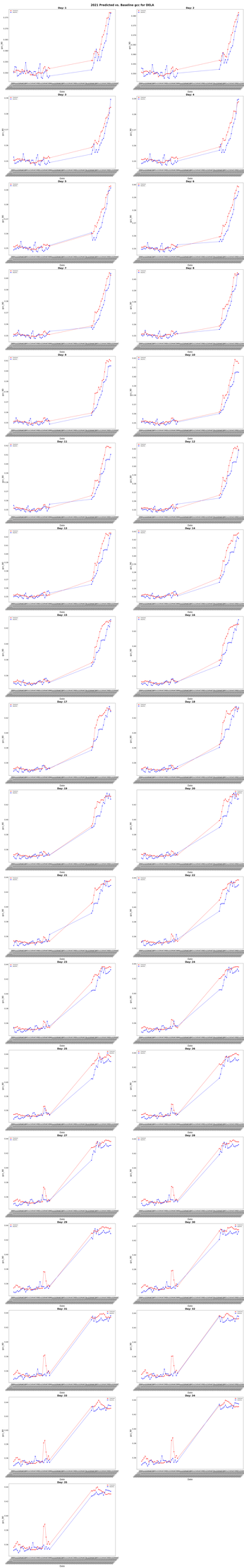
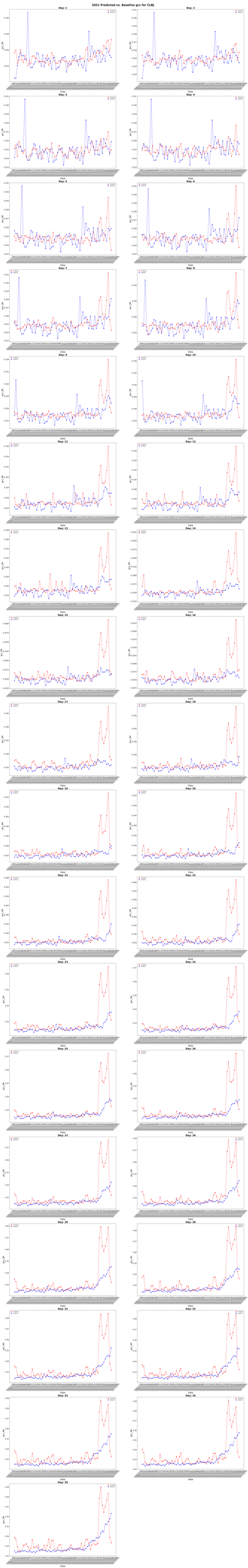
2021 Predicted vs. Baseline gcc for UKFS



2021 Predicted vs. Baseline gcc for GRSM



2021 Predicted vs. Baseline gcc for DELA



2023 Predicted vs. Baseline gcc for CLBJ