

# Deep Neural Network for SYM-H Forecasting aided by ACE's SWICS plasma data

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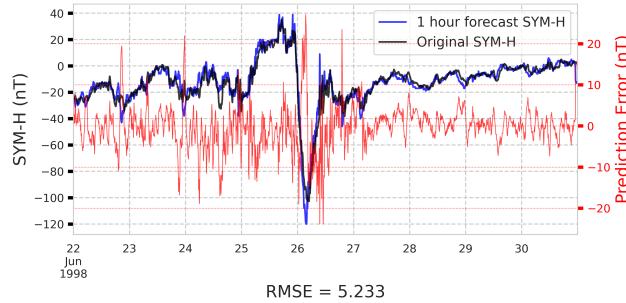
## Contents of this file

1. Figures S1 to S17

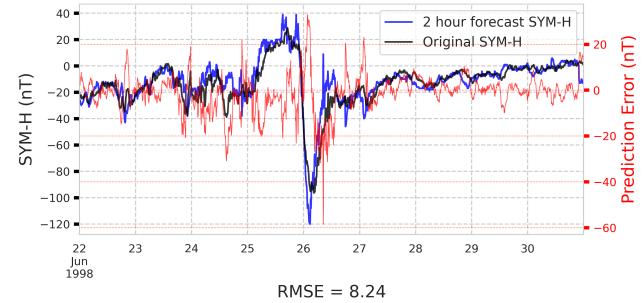
## Introduction

This file contains the figures for each of the test geomagnetic storms, comparing the observed and predicted SYM-H for the six trained neural networks for both time horizons, 1 and 2 hours ahead.

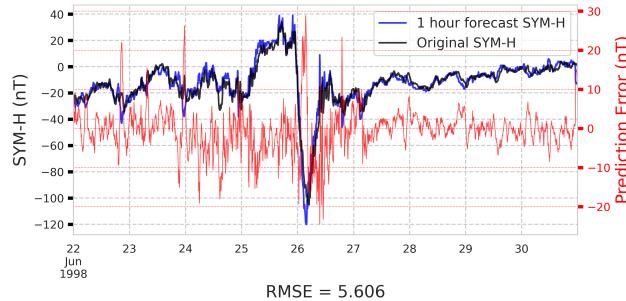
- Model [1]: Trained with SWEPMAM's missing data filled with SWICS both in training and test data for 1 hour ahead forecasts.
- Model [2]: Trained with SWEPMAM's missing data filled with SWICS both in training and test data for 2 hours ahead forecasts.
- Model [3]: Trained only with SWEPMAM's data, the missing values have been interpolated both in training and test data for 1 hour ahead forecasts.
- Model [4]: Trained only with SWEPMAM's data, the missing values have been interpolated both in training and test data 2 hours ahead forecasts.



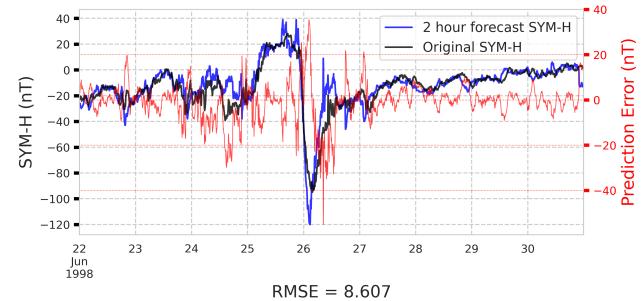
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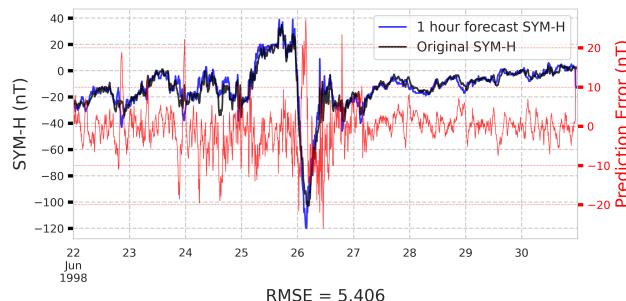
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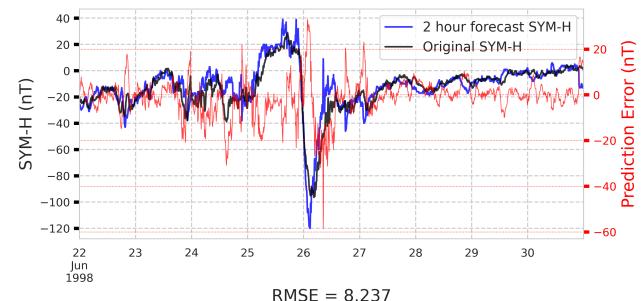
Model [3]



Model [4]

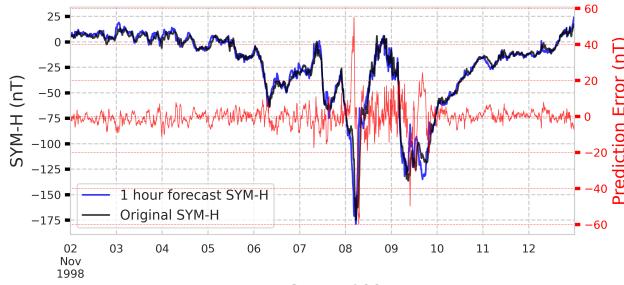


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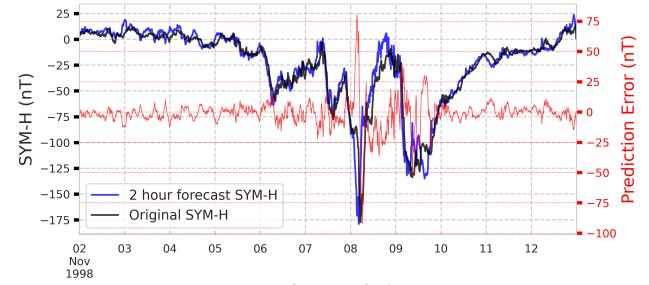


Model [2] evaluated on Model [4]'s test data

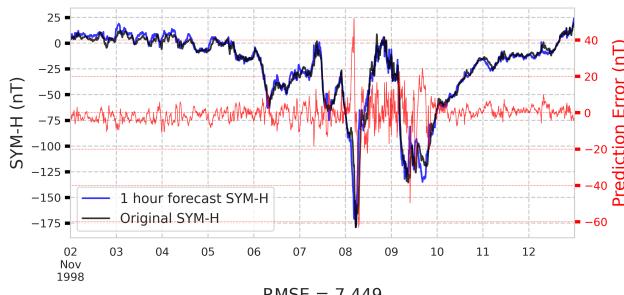
**Table S1.** Predictions for Storm Number 26 – June of 1998



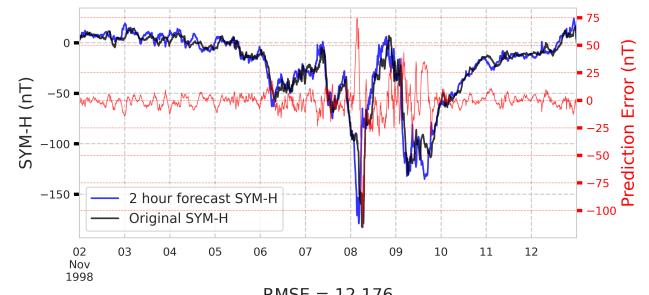
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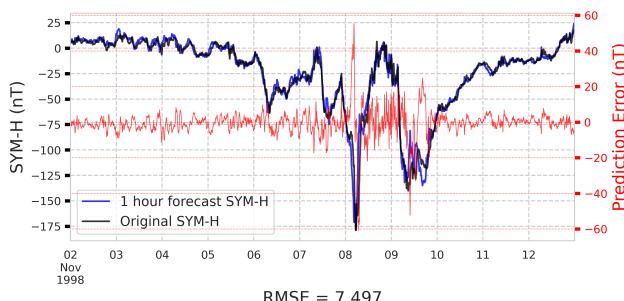
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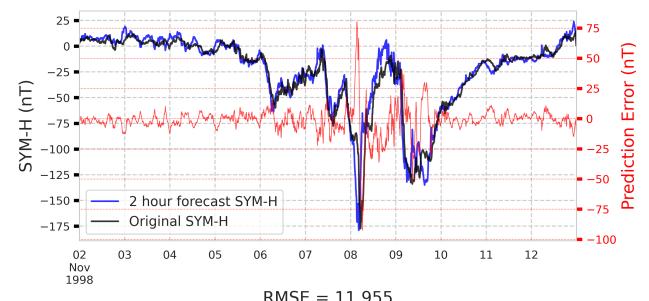
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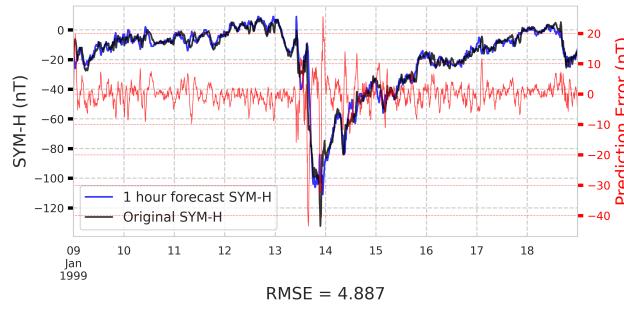


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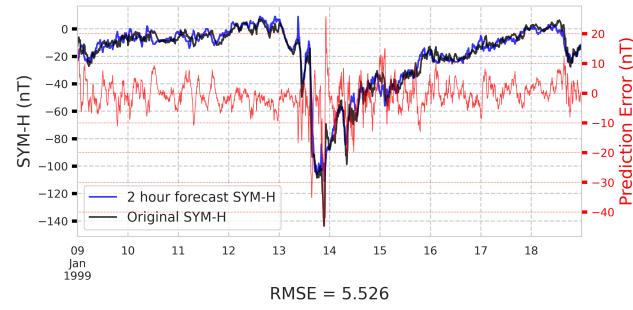


Model [2] evaluated on Model [4]'s test data

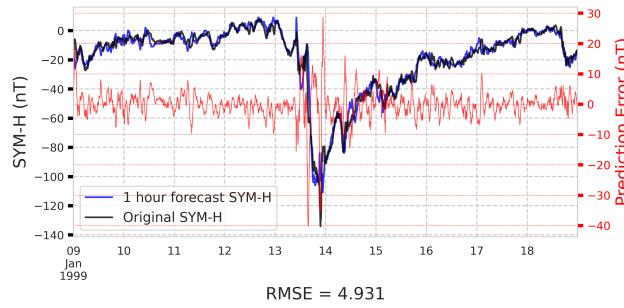
**Table S2.** Predictions for Storm Number 27 – November of 1998



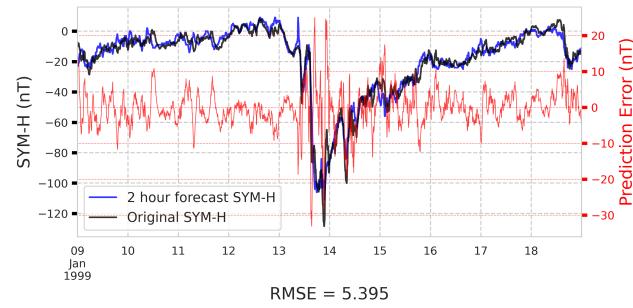
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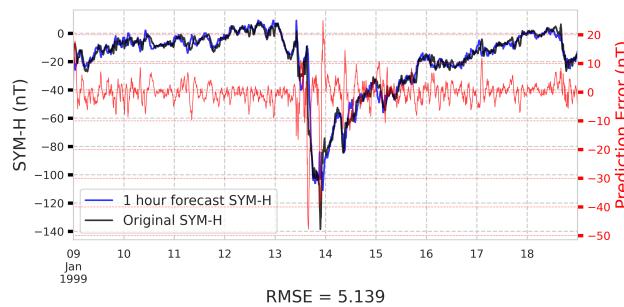
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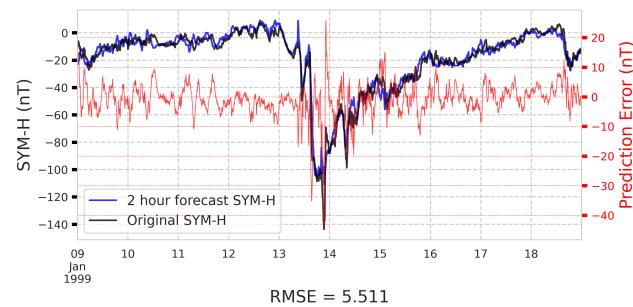
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Model [4]

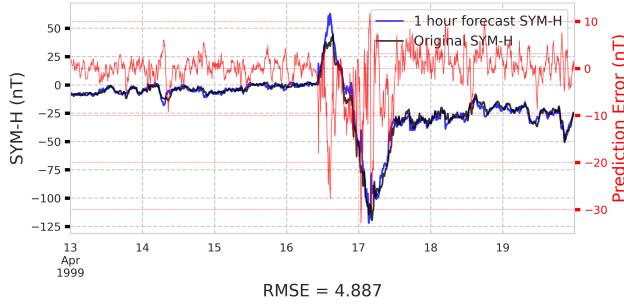


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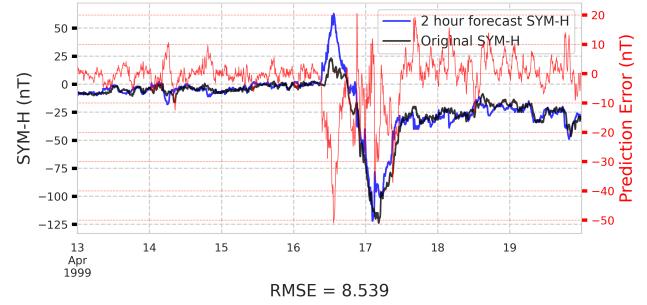


Model [2] evaluated on Model [4]'s test data

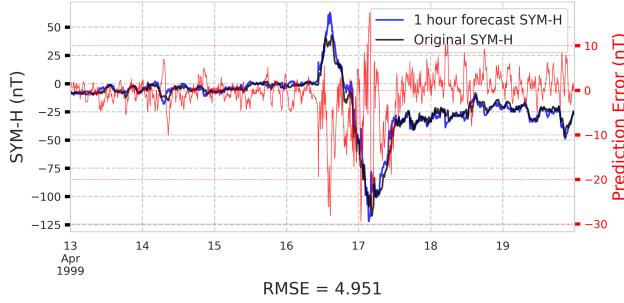
**Table S3.** Predictions for Storm Number 28 – January of 1999



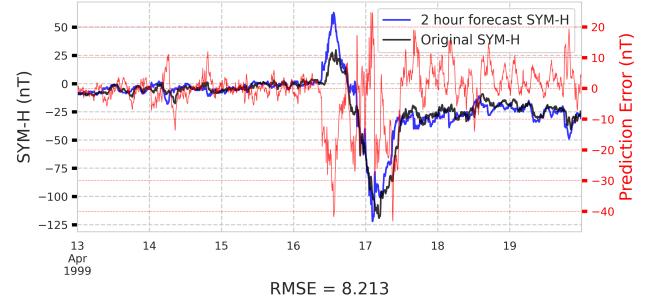
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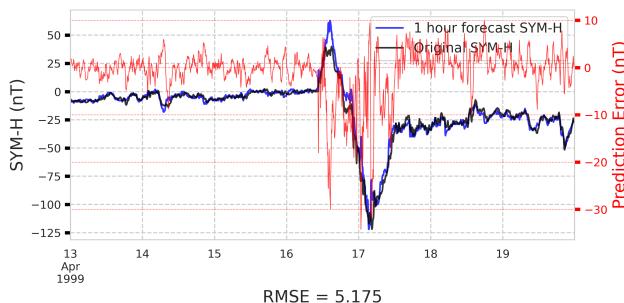
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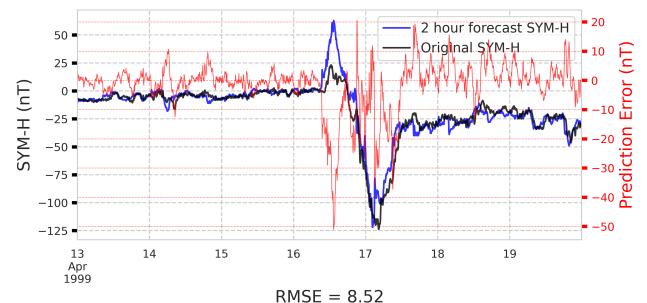
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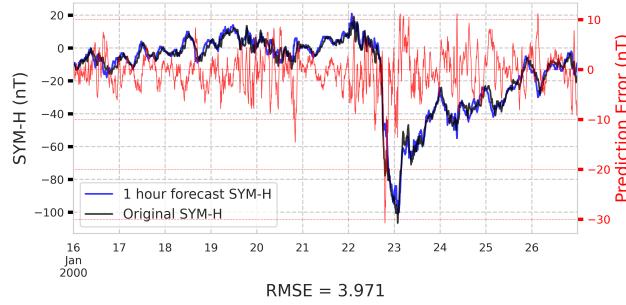


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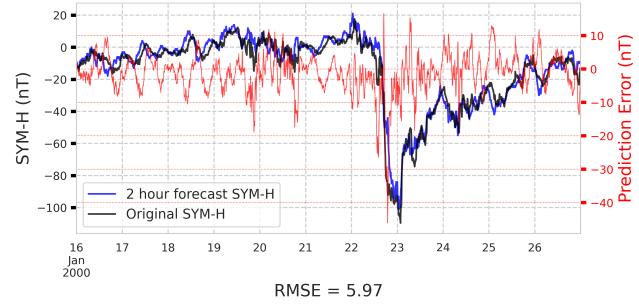


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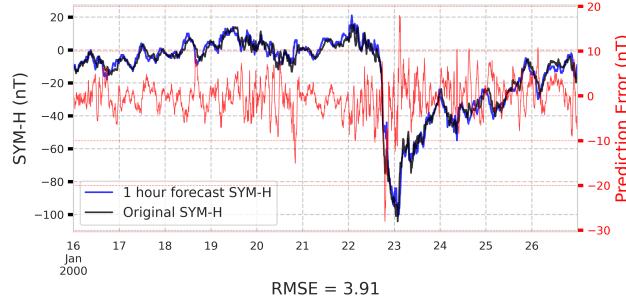
**Table S4.** Predictions for Storm Number 29 – April of 1999



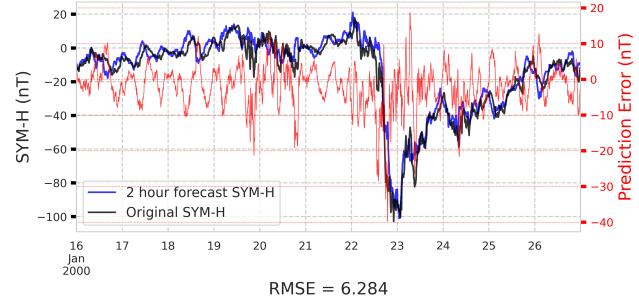
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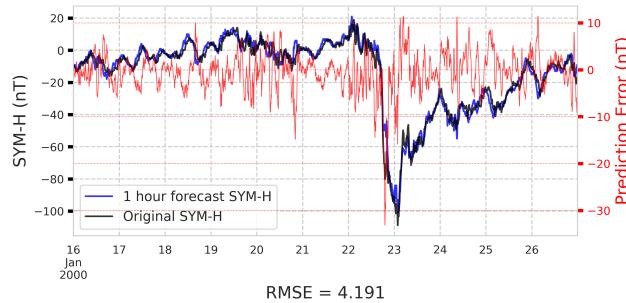
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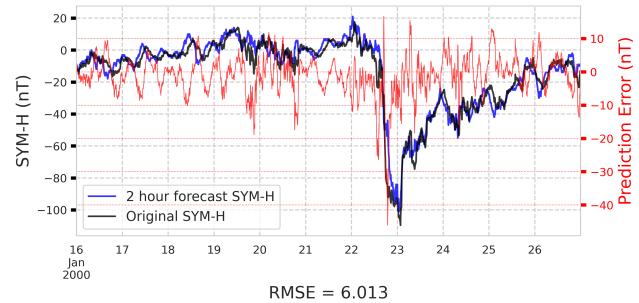
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Model [4]

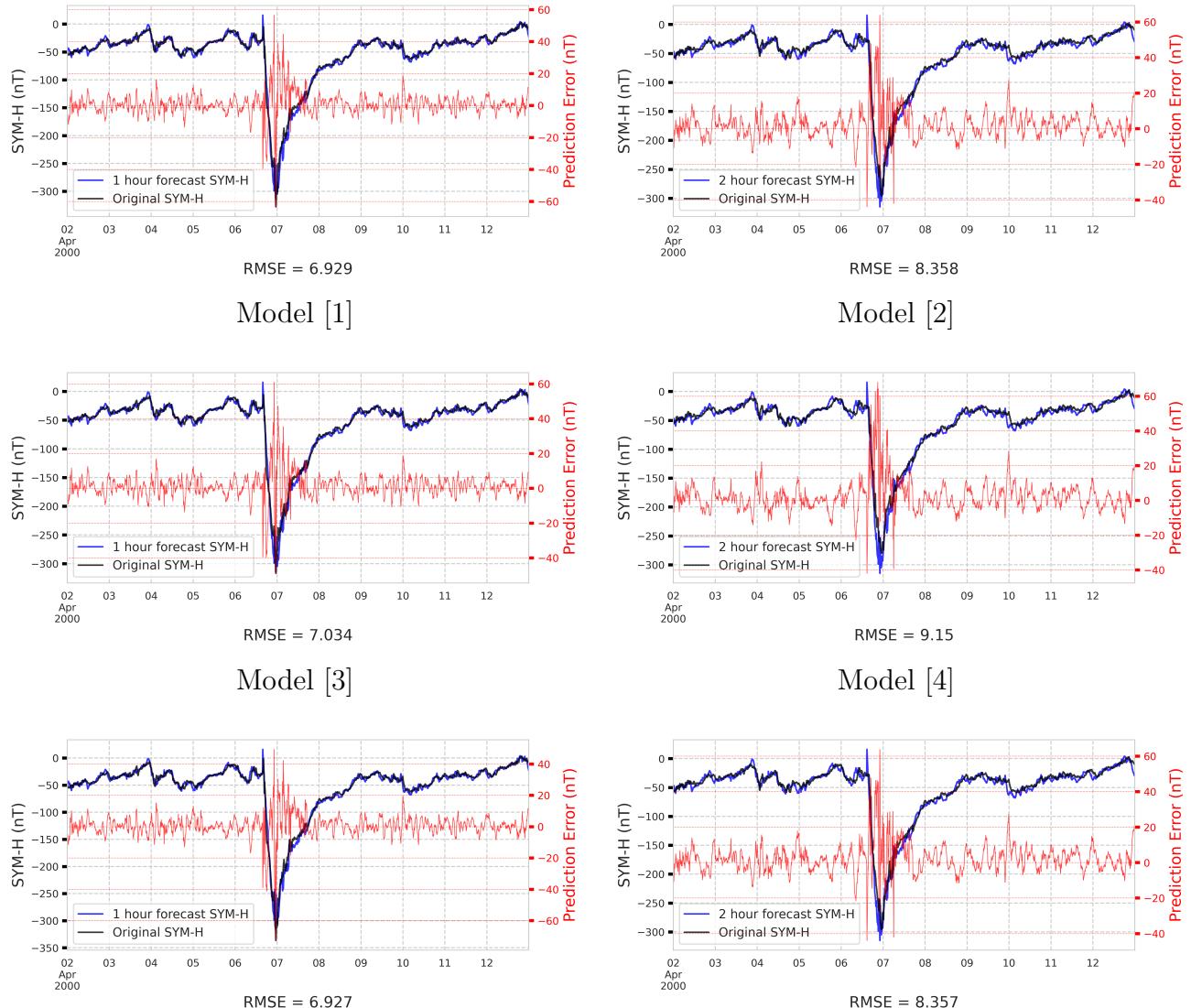


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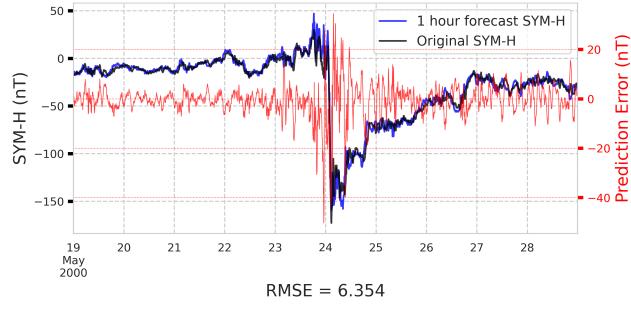


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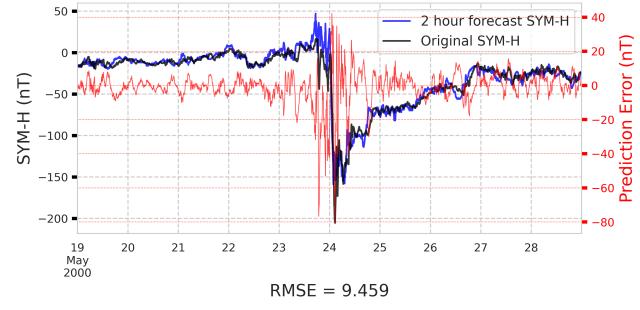
**Table S5.** Predictions for Storm Number 30 – January of 2000



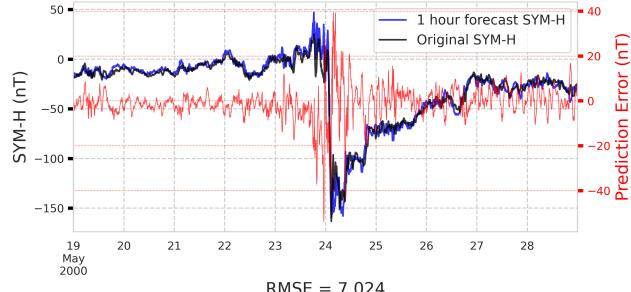
**Table S6.** Predictions for Storm Number 31 – April of 2000



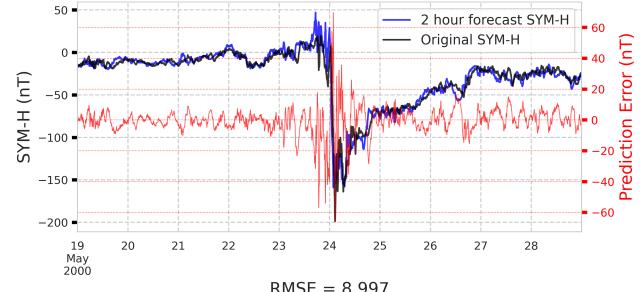
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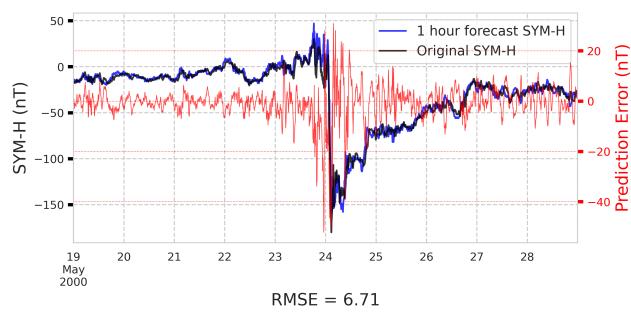
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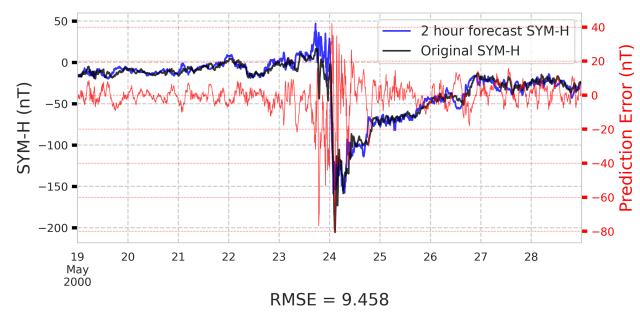
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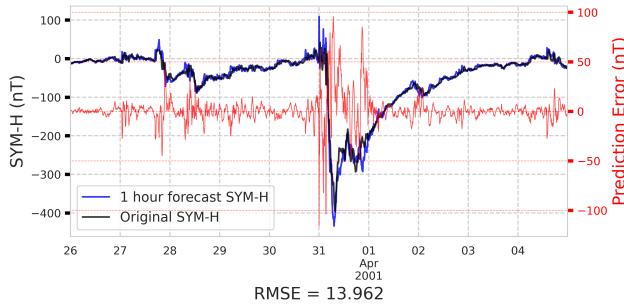


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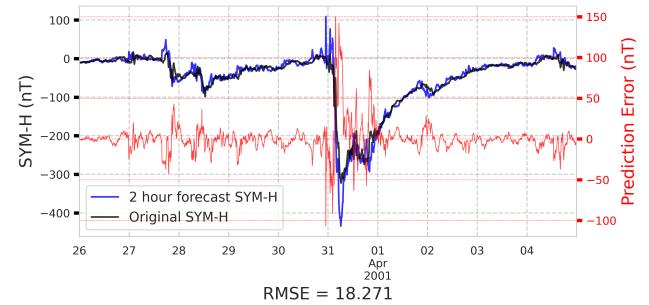


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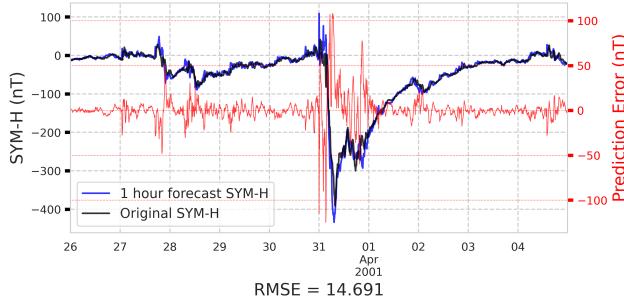
**Table S7.** Predictions for Storm Number 32 – May of 2000



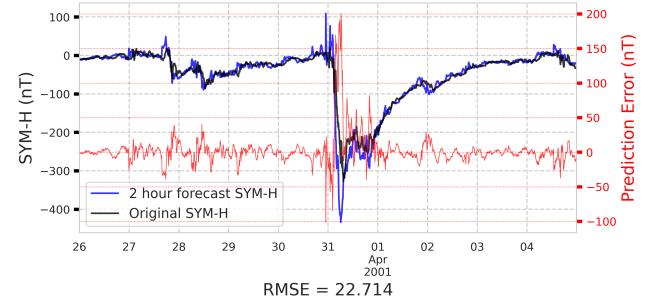
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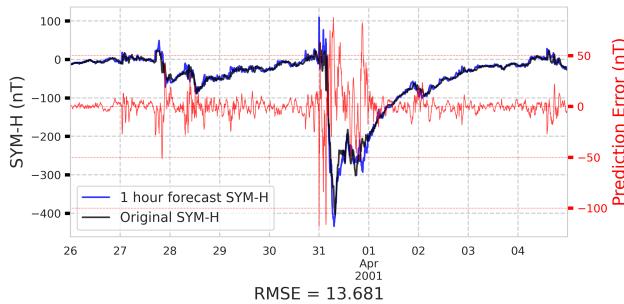
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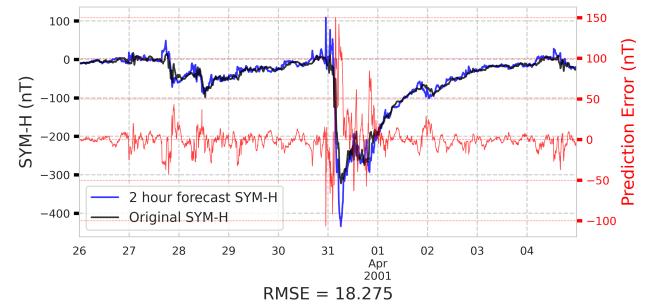
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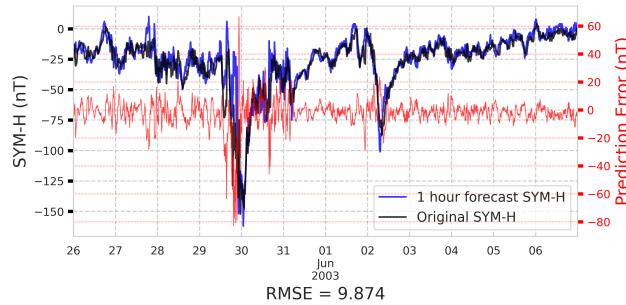


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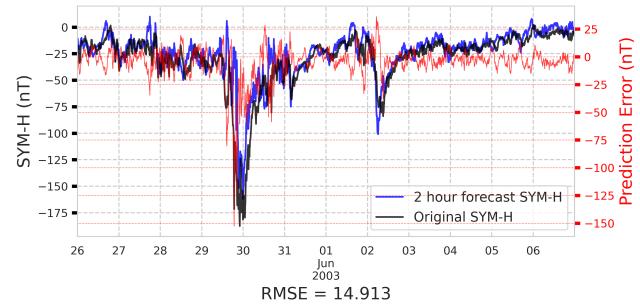


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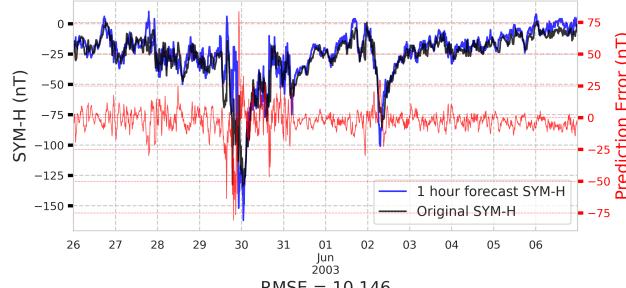
**Table S8.** Predictions for Storm Number 33 – March of 2001



Model [1]



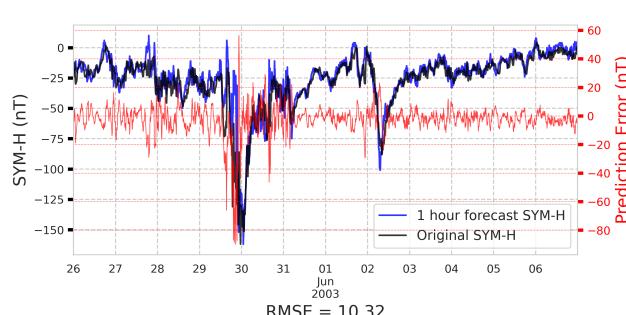
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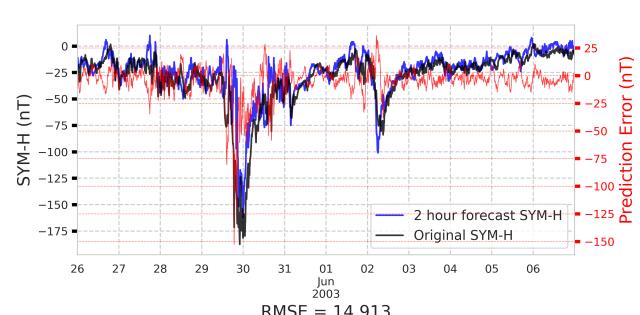
Model [3]



Model [4]

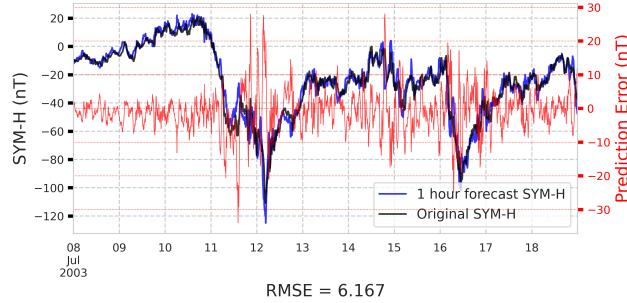


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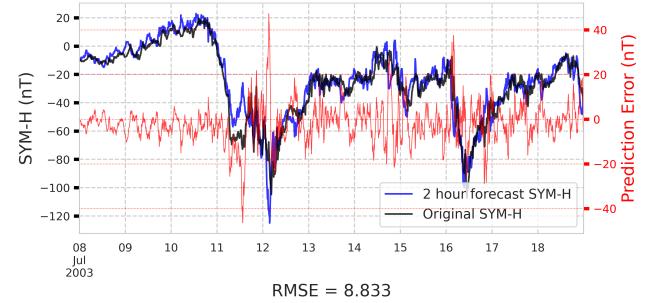


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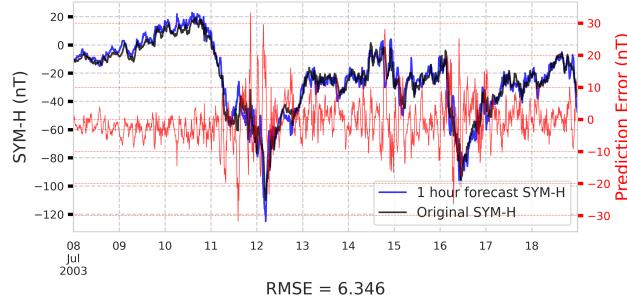
**Table S9.** Predictions for Storm Number 34 – June of 2003



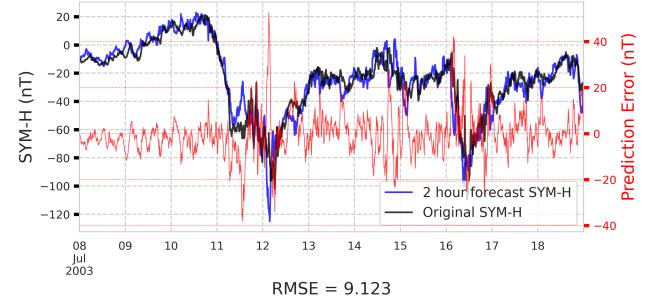
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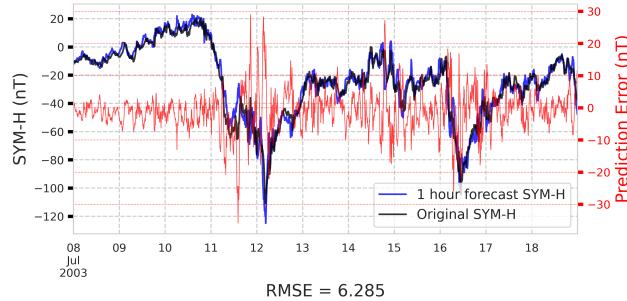
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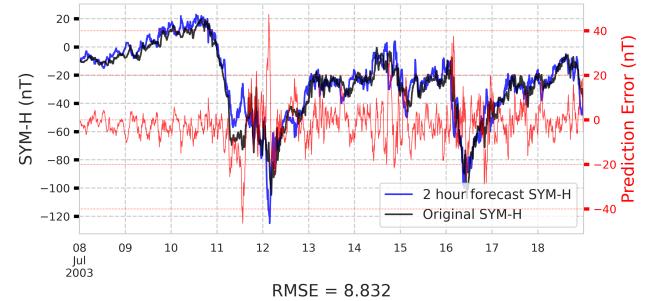
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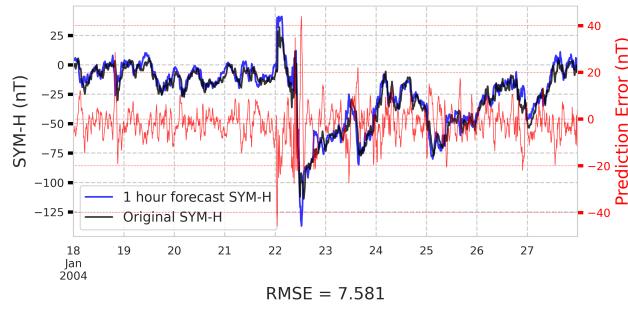


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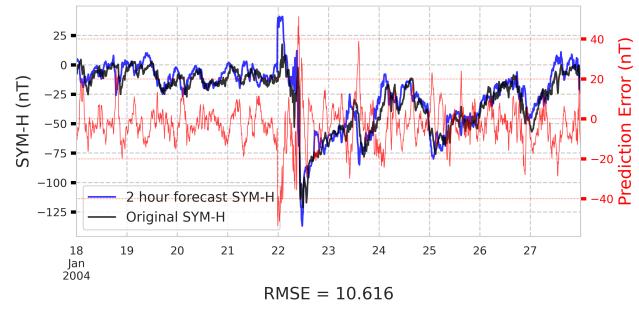


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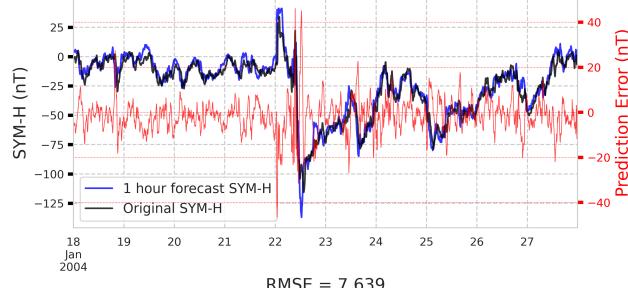
**Table S10.** Predictions for Storm Number 35 – July of 2003



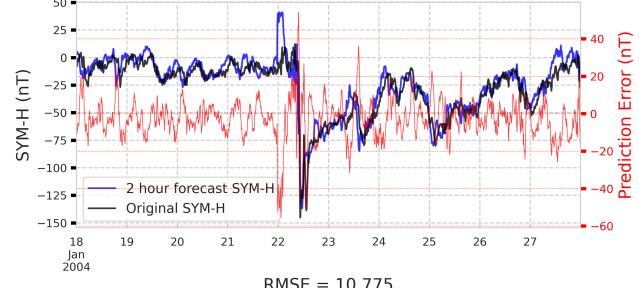
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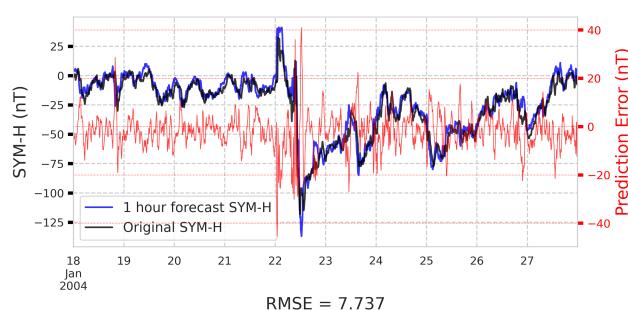
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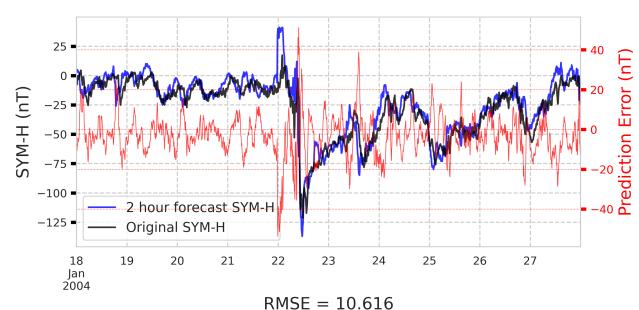
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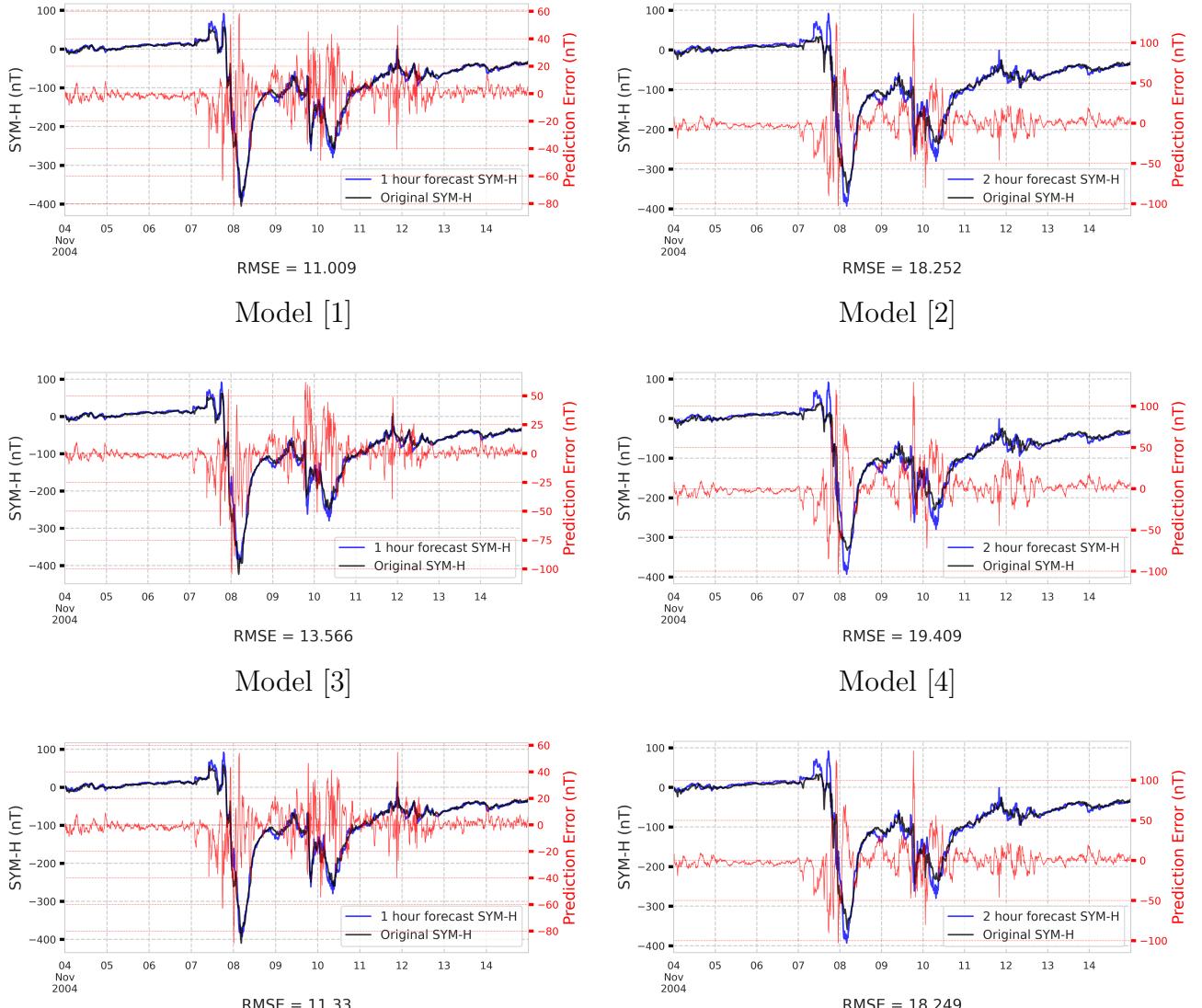


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Model [2] evaluated on Model [4]'s test data

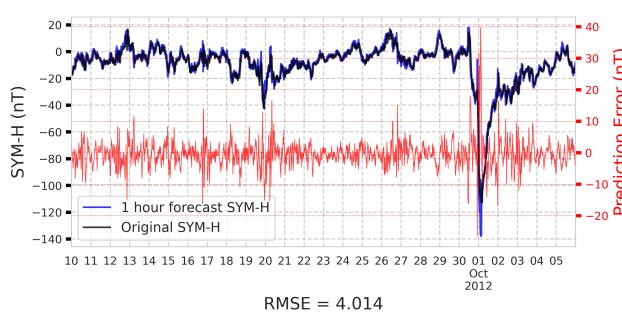
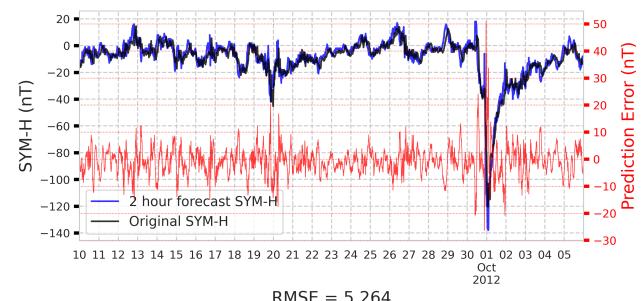
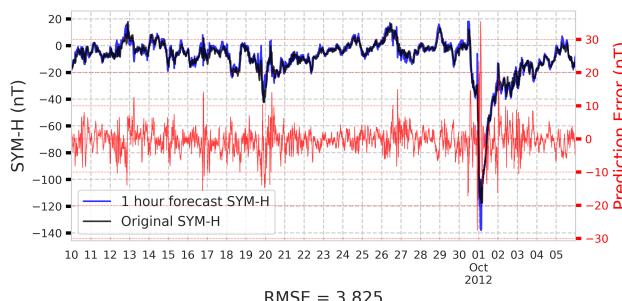
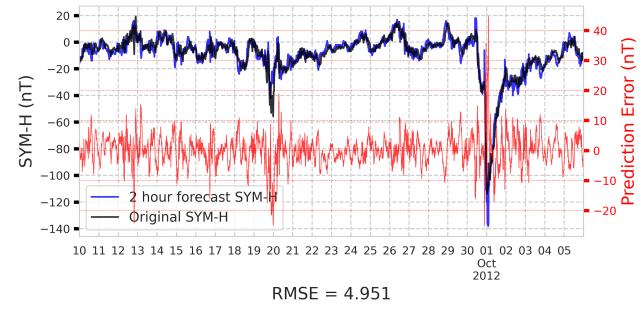
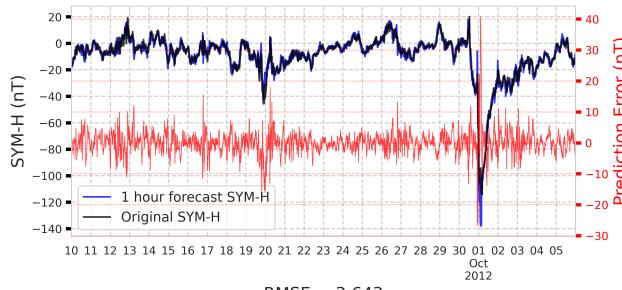
**Table S11.** Predictions for Storm Number 36 – January of 2004



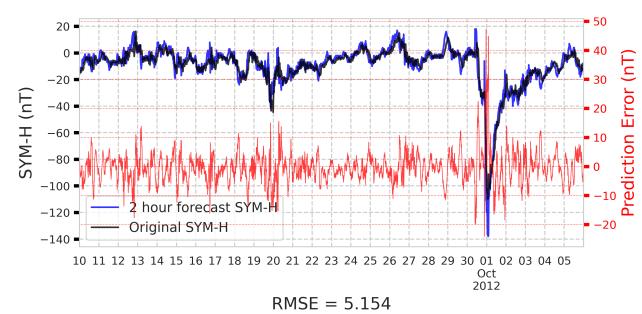
Model [1] evaluated on Model [3]'s test data

Model [2] evaluated on Model [4]'s test data

**Table S12.** Predictions for Storm Number 37 – November of 2004

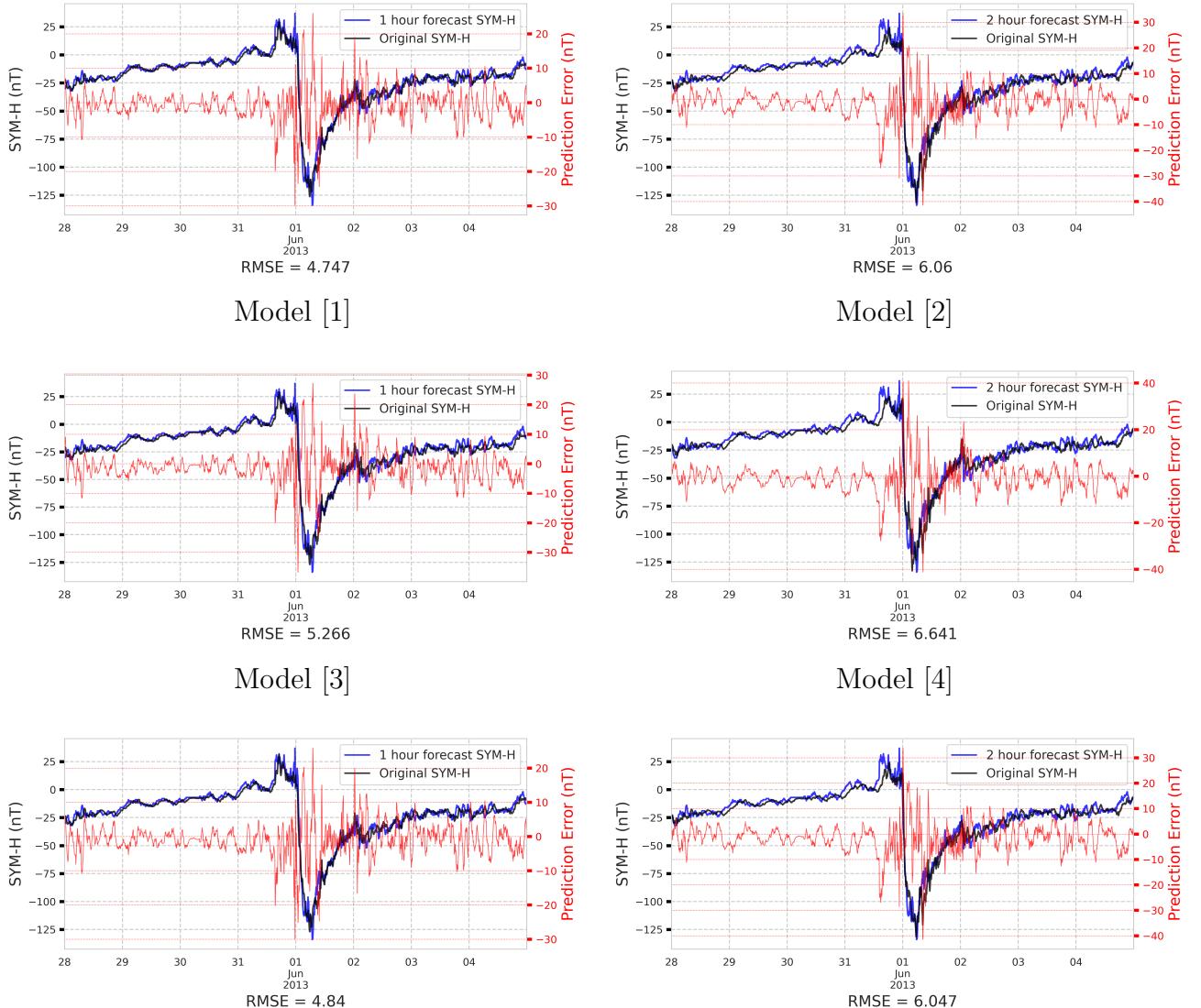


Model [1] evaluated on Model [3]'s test data



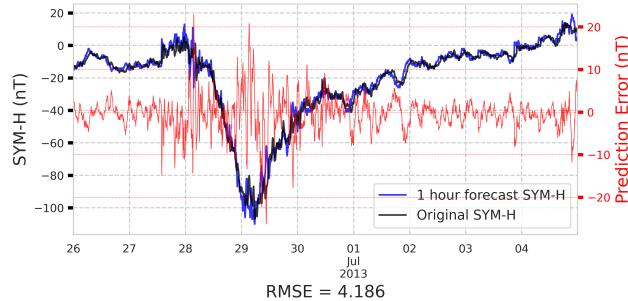
Model [2] evaluated on Model [4]'s test data

**Table S13.** Predictions for Storm Number 38 – September of 2012

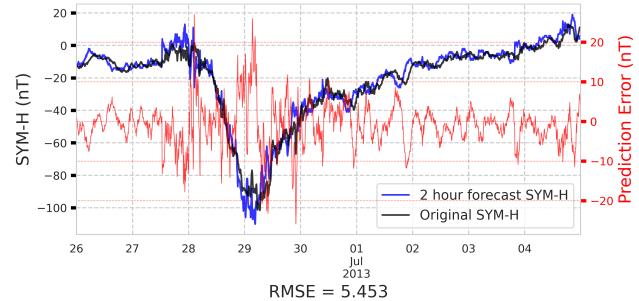


**Table S14.** Predictions for Storm Number 39 – June of 2013

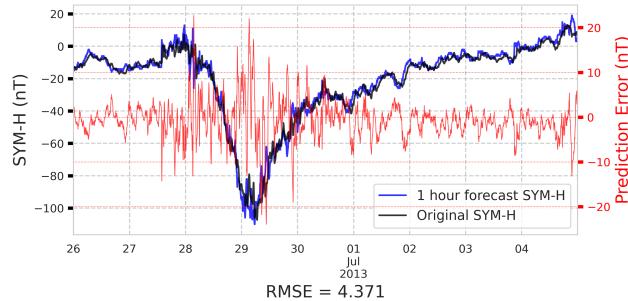
January 30, 2023, 5:14pm



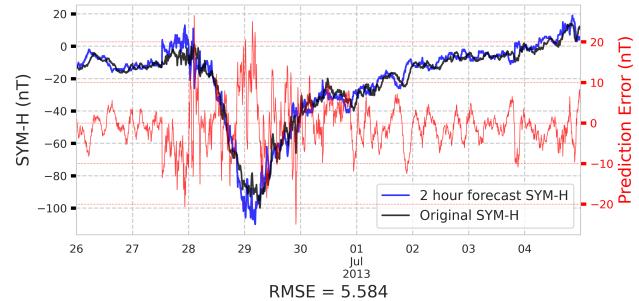
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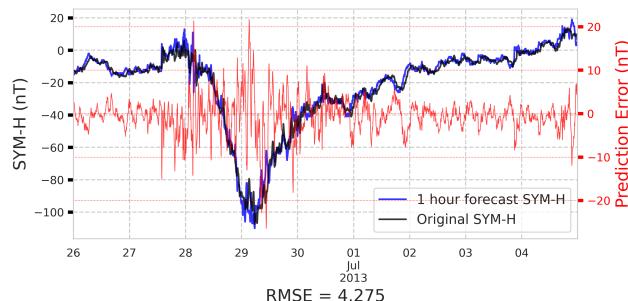
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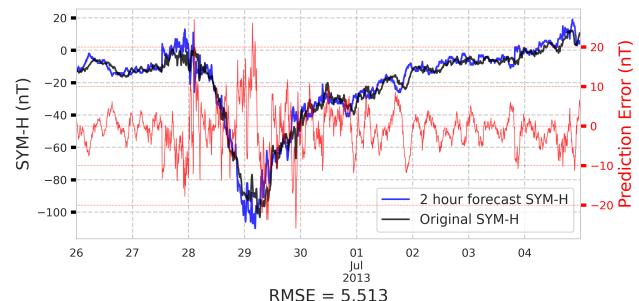
Model [3]



Model [4]

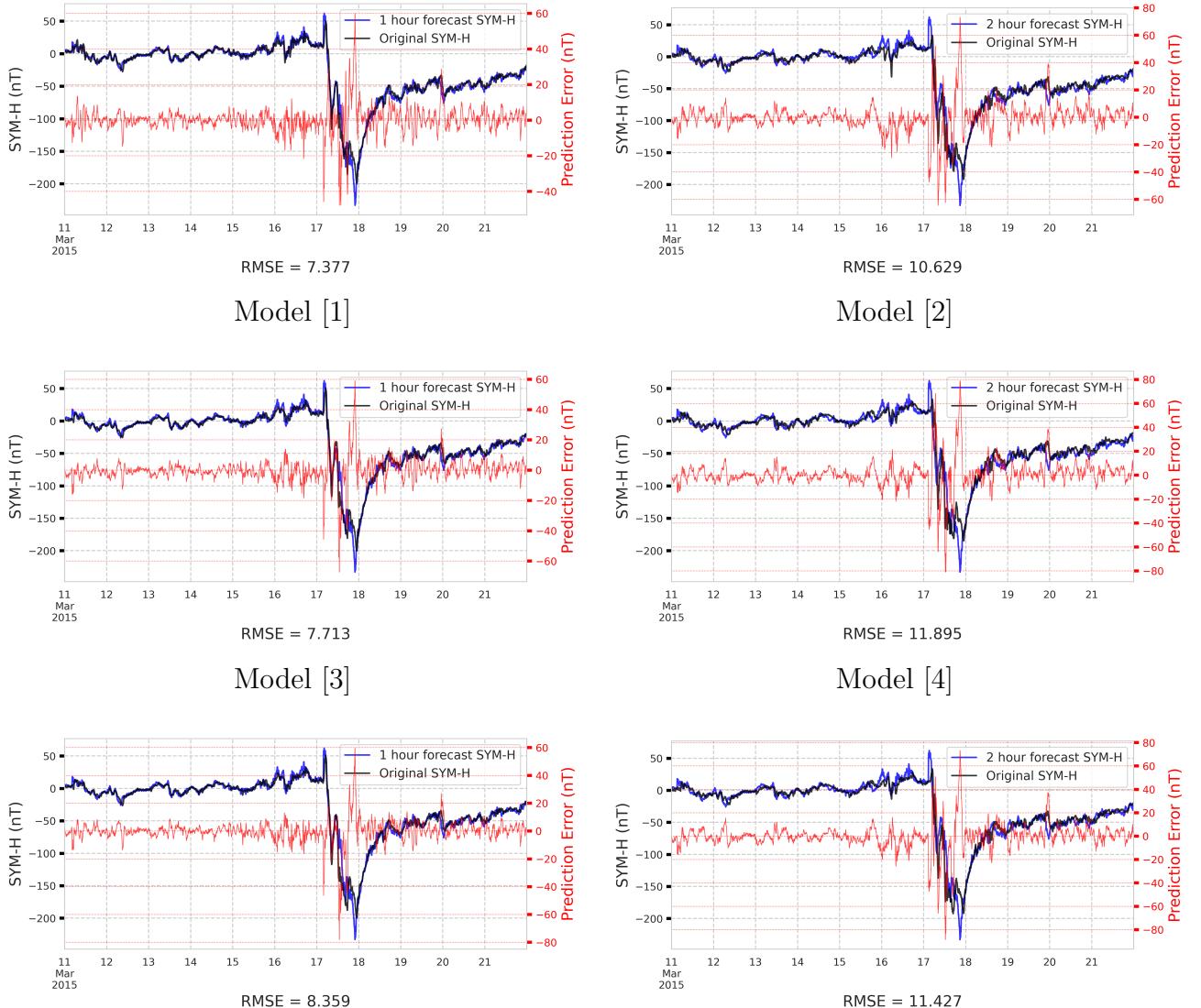


Model [1] evaluated on Model [3]'s test data



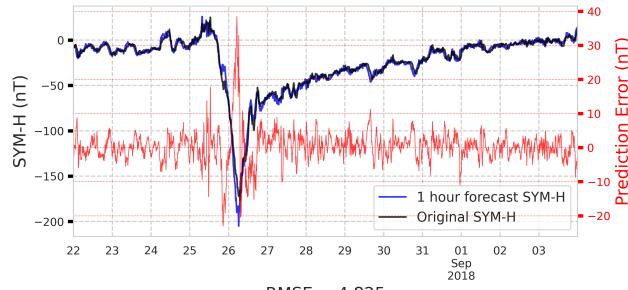
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**Table S15.** Predictions for Storm Number 40 – June of 2013

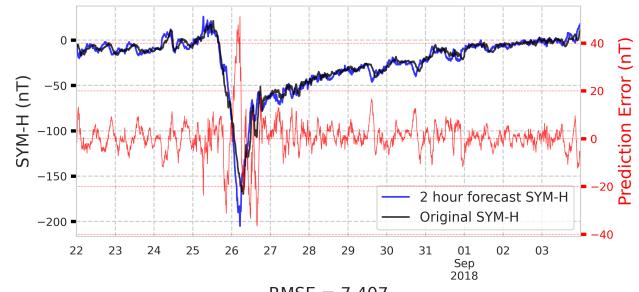


**Table S16.** Predictions for Storm Number 41 – March of 2015

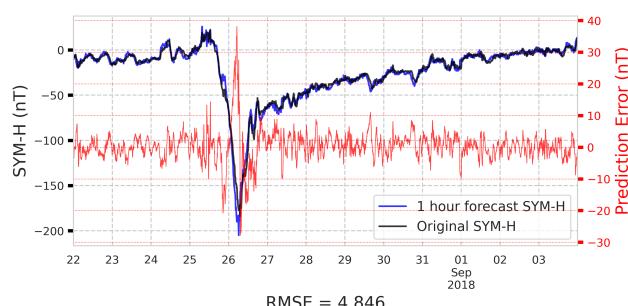
January 30, 2023, 5:14pm



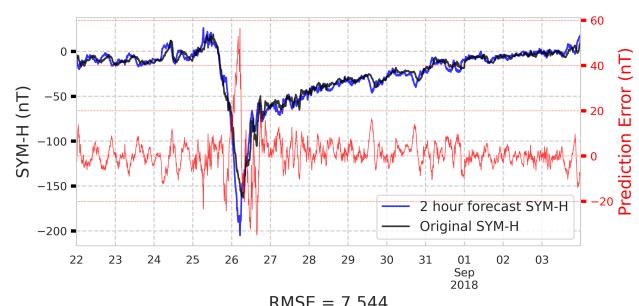
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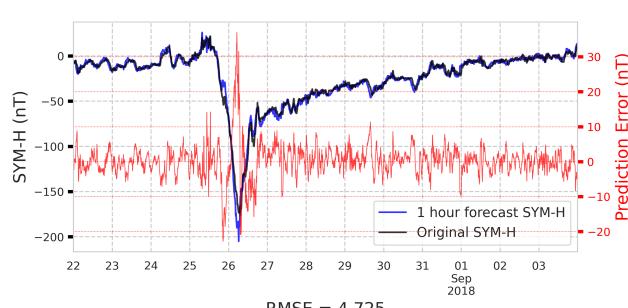
Model [2]



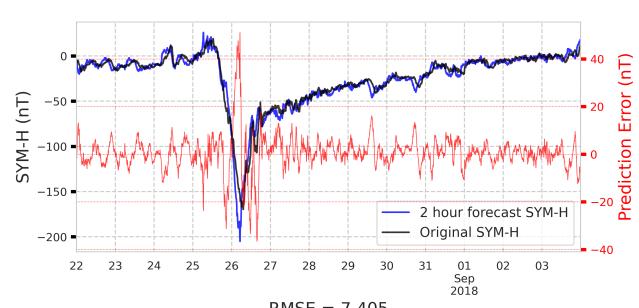
Model [3]



Model [4]



Model [1] evaluated on Model [3]'s test data



Model [2] evaluated on Model [4]'s test data

**Table S17.** Predictions for Storm Number 42 – August of 2018