

Validation of Ionospheric Specifications During Geomagnetic Storms: TEC and foF2 during the 2013 March Storm Event

J. S. Shim^{1*}, I. Tsagouri², L. Goncharenko³, L. Rastaetter⁴, M. Kuznetsova⁴, D. Bilitza⁵, M. Codrescu⁶, A. J. Coster³, S. C. Solomon⁷, M. Fedrizzi⁶, M. Förster⁸, T. J. Fuller-Rowell⁶, L. C. Gardner⁹, J. Huba¹⁰, A. A. Namgaladze¹¹, B. E. Prokhorov⁸, A. J. Ridley¹², L. Scherliess⁹, R. W. Schunk⁹, J. J. Sojka⁹, L. Zhu⁹

1. The Catholic University of America, NASA GSFC, Greenbelt, MD, USA,
2. National Observatory of Athens, Penteli, Greece
3. Haystack Observatory, Westford, MA, USA,
4. NASA GSFC, Greenbelt, MD, USA,
5. Department of Physics and Astronomy, George Mason University, Fairfax, Virginia, USA,
6. NOAA SWPC, Boulder, CO, USA,
7. High Altitude Observatory, NCAR, Boulder, CO, USA,
8. Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Potsdam, Germany,
9. Utah State Univ. Logan, UT, USA
10. Plasma Physics Division, Naval Research Laboratory, Washington, D. C., USA,
11. Murmansk Arctic State University, Murmansk, Russia,
12. Space Physics Research Laboratory, Univ. of Michigan, Ann Arbor, MI, USA,

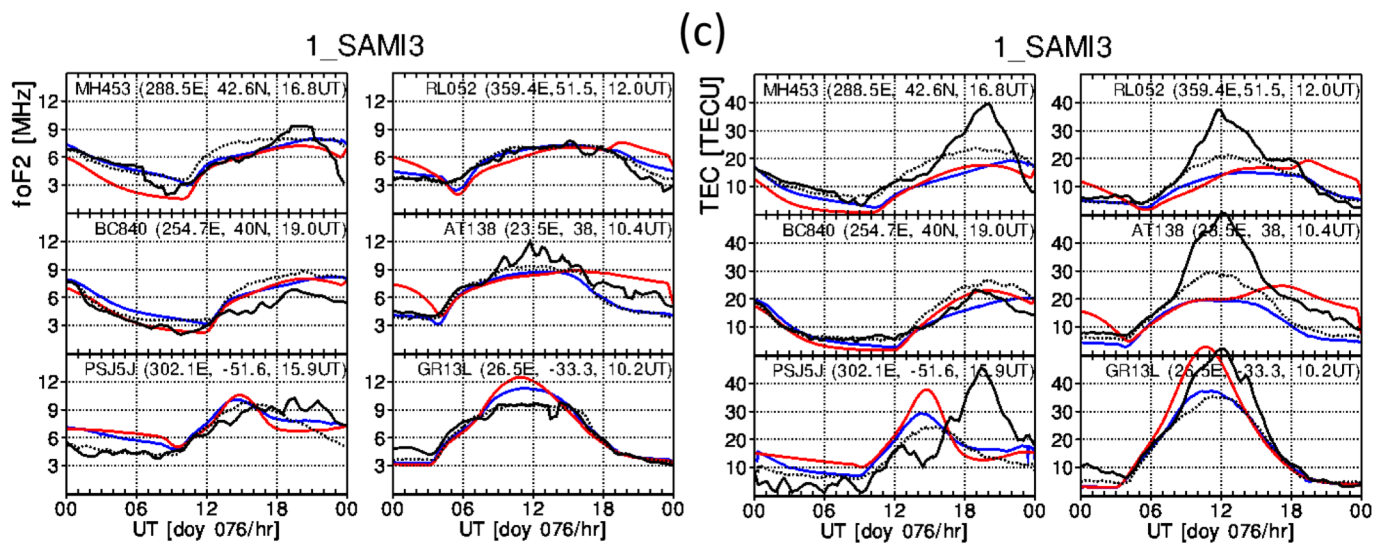
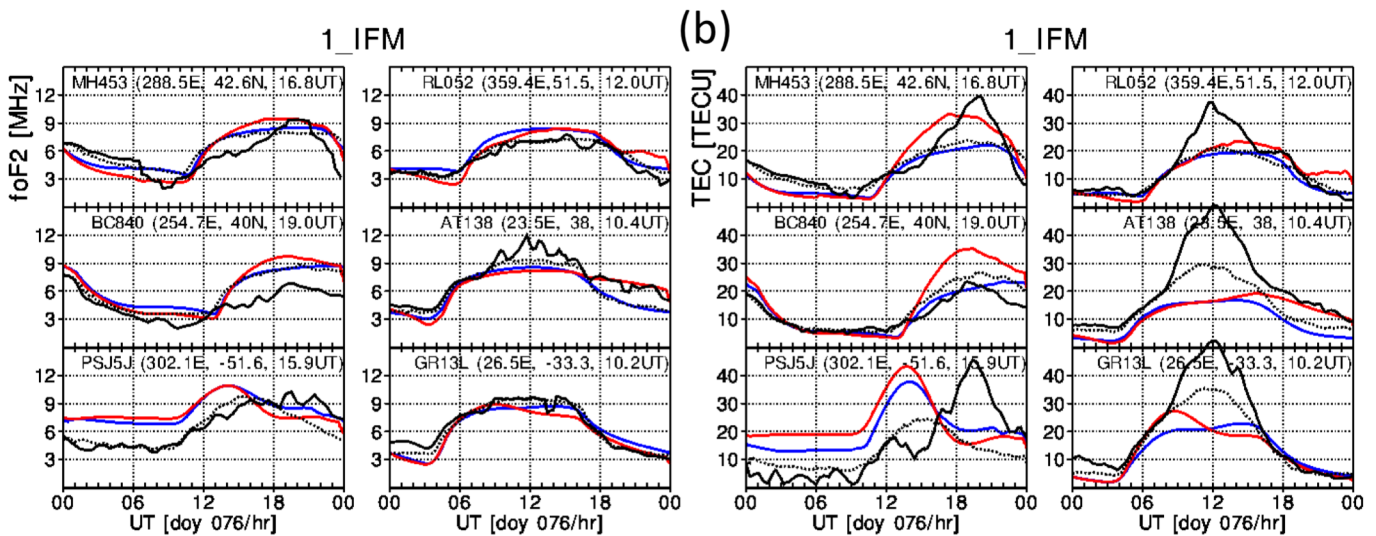
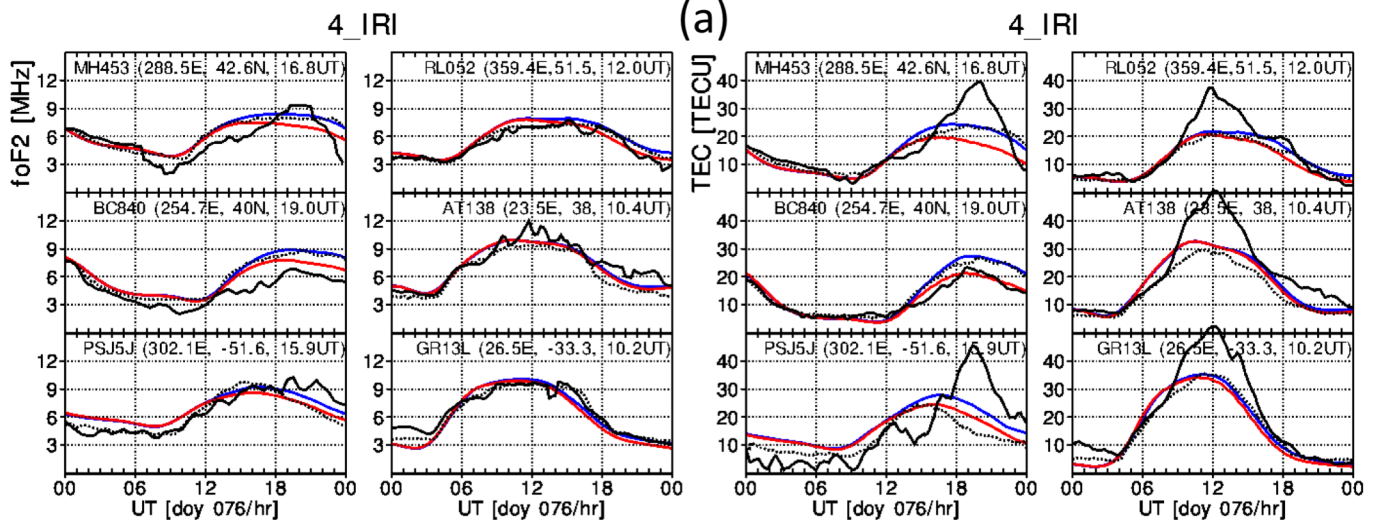
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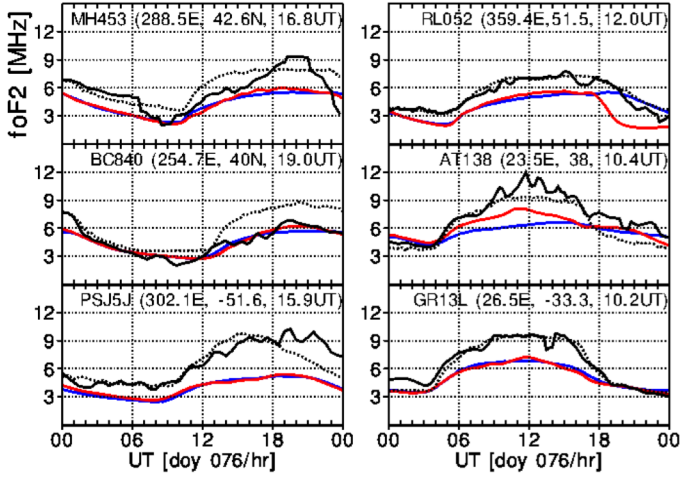
Introduction

This supporting information file includes:

1. Figure S1: Comparison foF2 and TEC data with modeled values
2. Figure S2: Scatter plots of observed and modeled foF2
3. Figure S3: RMSE scatter plots
4. Figure S4: Yield and Timing Error scatter plots

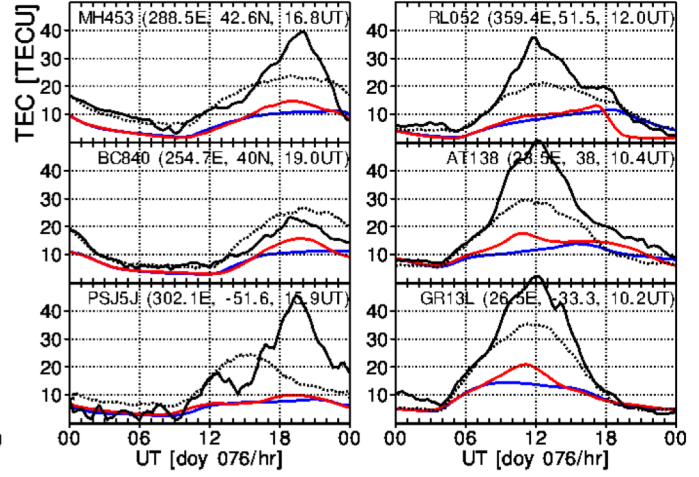


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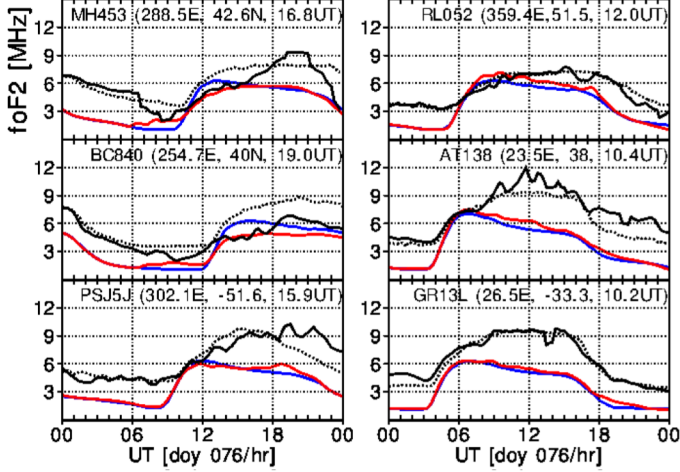


(d)

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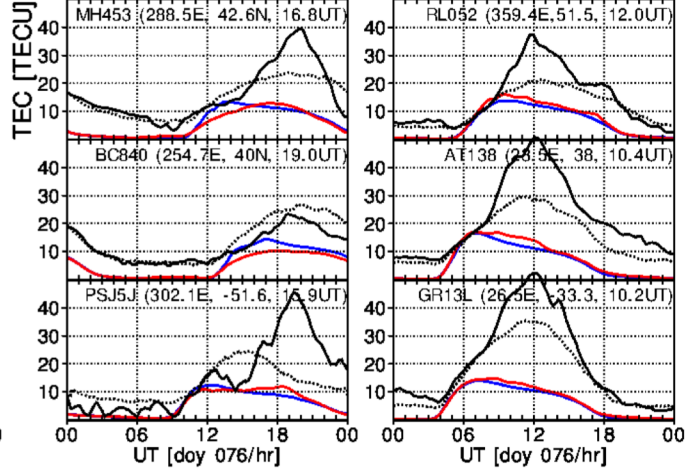


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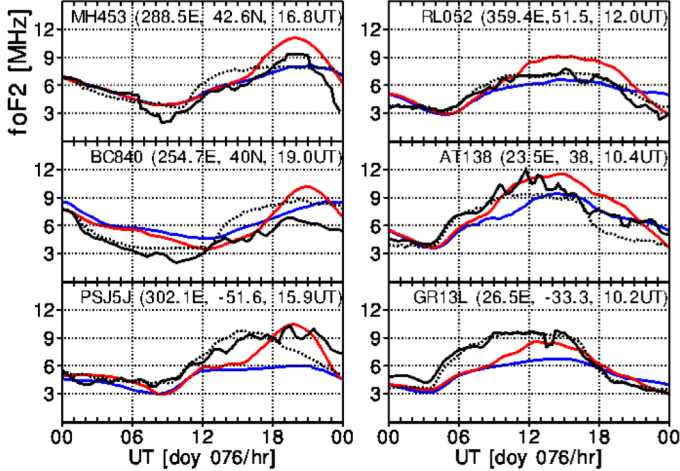


(e)

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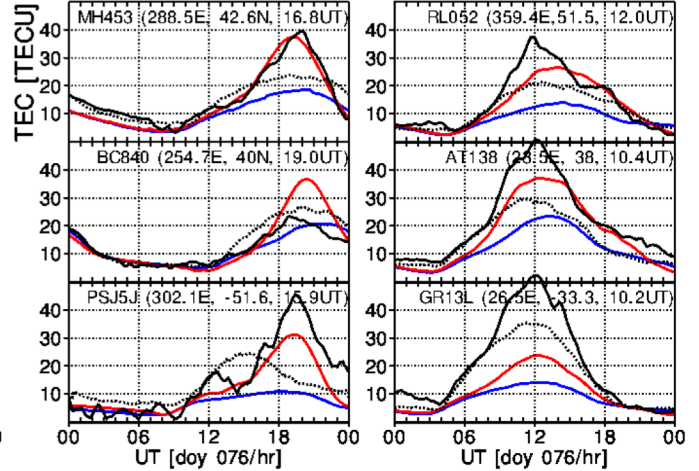


11_TIEGCM



(f)

11_TIEGCM



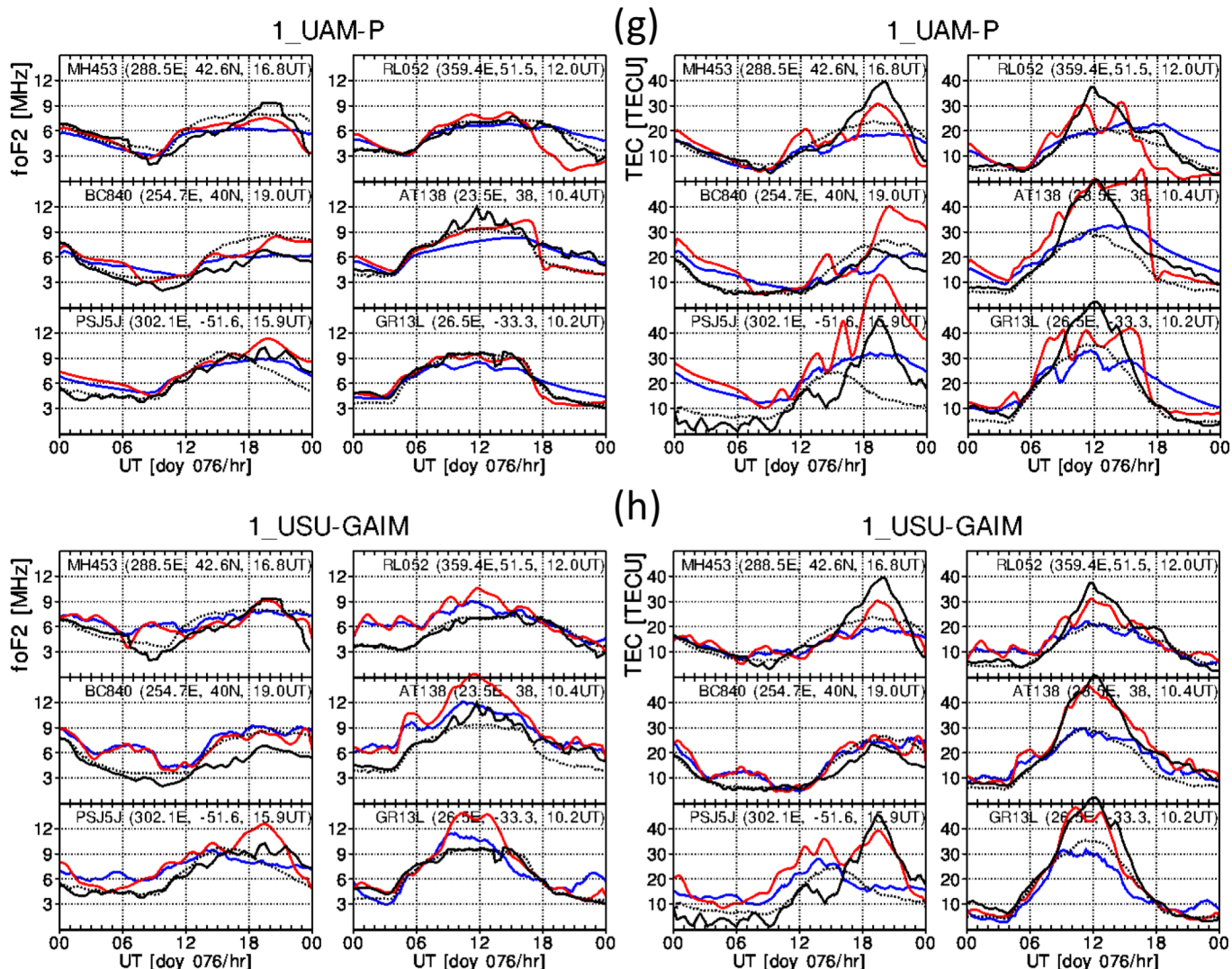


Figure S1. Comparison foF2 and TEC data with modeled values: (a) 4_IRI, (b) 1_IFM, (c) 1_SAMI3, (d) 11_CTIPE, (e) 6_GITM, (f) 11_TIEGCM, (g) 1_UAM-P, and (h) 1_USU-GAIM. In each plot, foF2 in the first two and TEC in the other two columns. Black solid and dotted lines denote observed storm time values and quiet-time reference (30-day median) respectively. Red and blue curves denote modeled storm time values and 30-day median.

Observed vs Modeled foF2

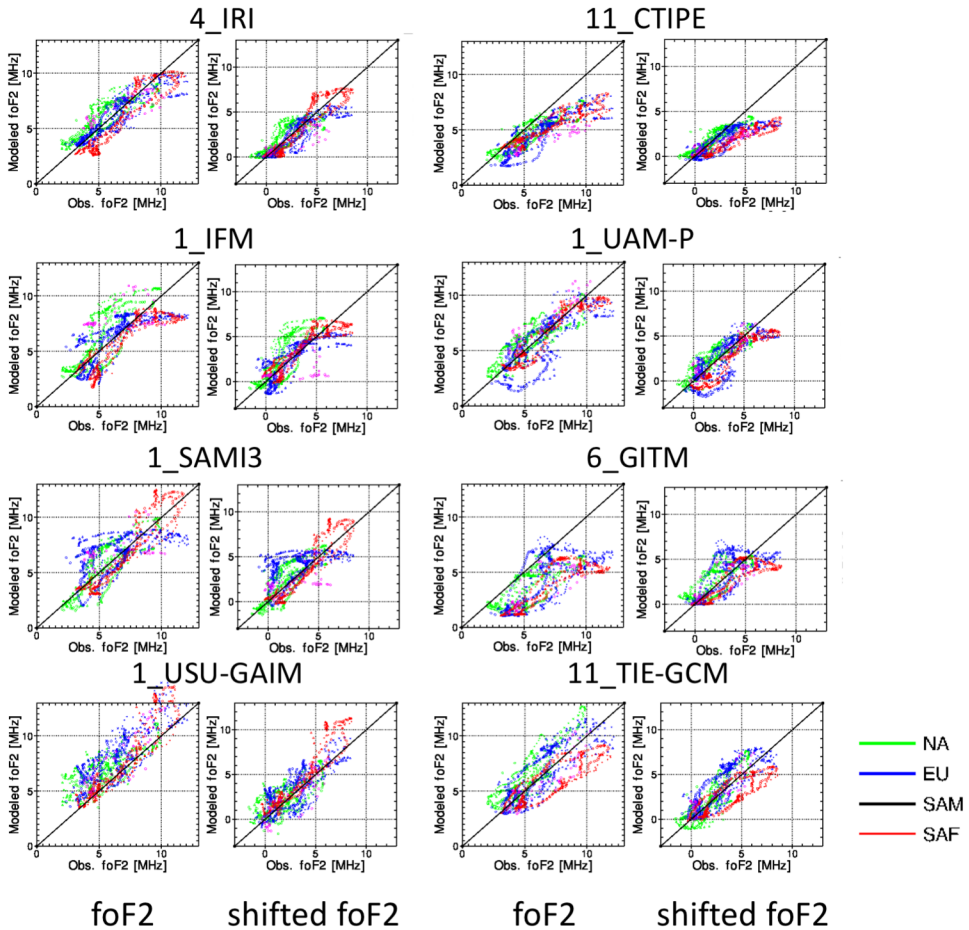
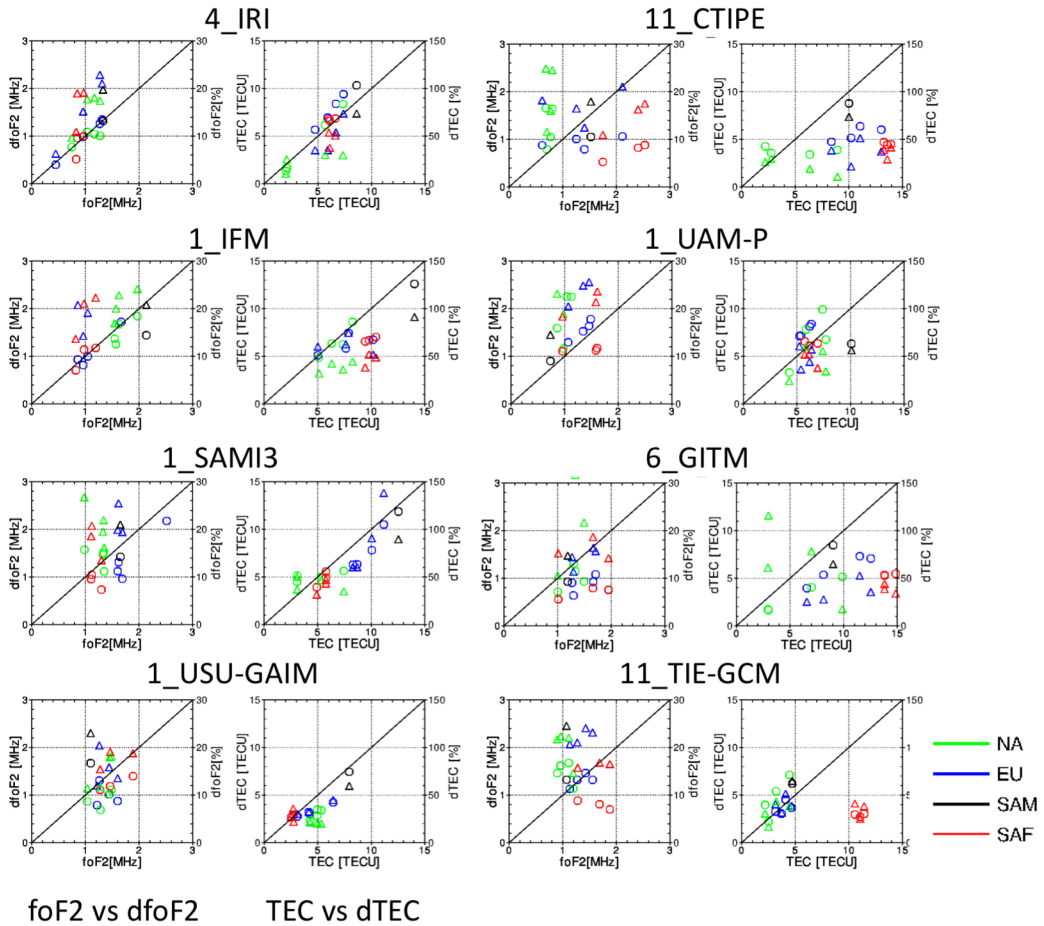


Figure S2. Scatter plots of the observed (x-axis) and modeled foF2 (y-axis). For each simulation, foF2 values before and after shifting are in left and right panels, respectively. Green, blue, black and red associate with North America, Europe, South America, and South Africa, respectively.

RMSE Scatter Plot



circles: dfoF2 or dTEC
 triangles: percentage changes

Figure S3. Scatter Plots of RMSE of the eight simulation. For each simulation, in left (right) panel, foF2 (TEC) on the x-axis and dfoF2 and dfoF2[%] (dTEC and dTEC[%]) on the y-axis. Green, blue, black and red associate with North America, Europe, South America, and South Africa, respectively. Circle and triangle indicate changes and percentage changes.

Yield and Timing Error Scatter Plot

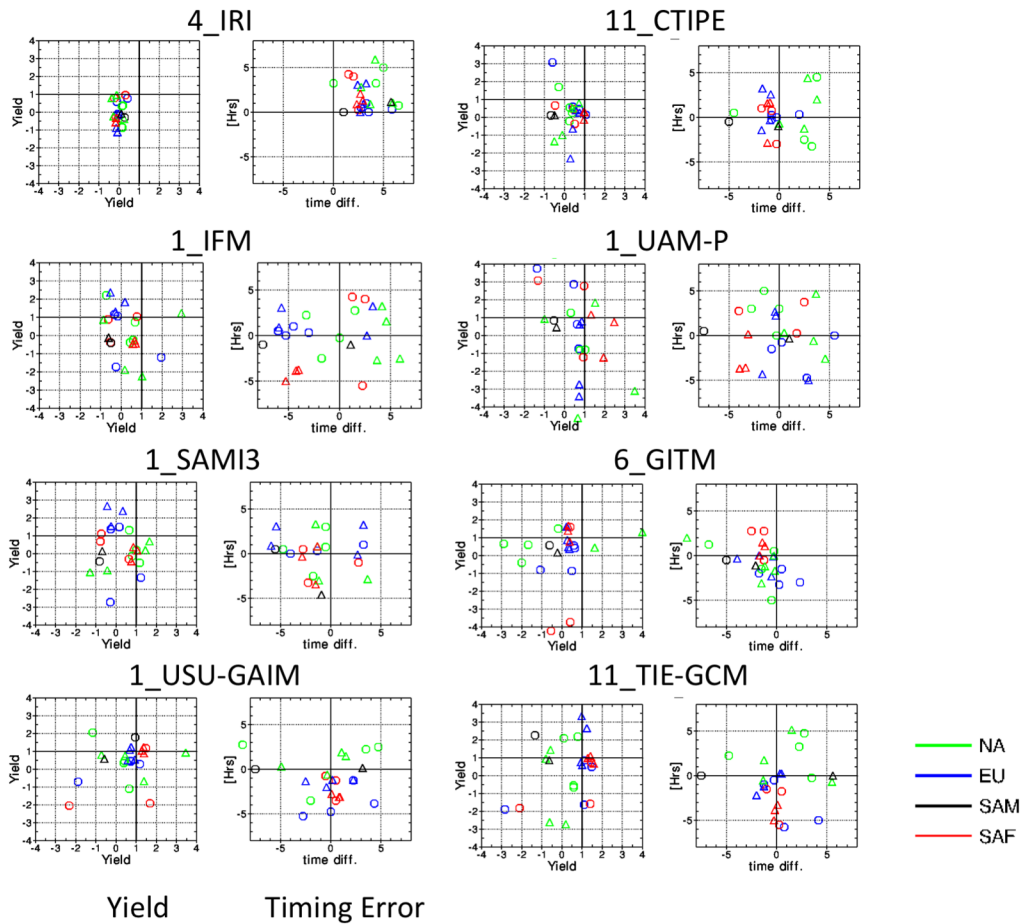


Figure S4. Scatter Plots of Yield and Timing Error (TE) of percentage changes of foF2 (circles) and TEC (triangles). For each simulation, Yield and TE are in left and right panels, respectively. Yield and TE for the time interval of 06-15UT are on the x-axis and those of 15-22UT on the y-axis. Green, blue, black and red associate with North America, Europe, South America, and South Africa, respectively.