1. GPT2w model can also provide the Tm globally for real time applications. Authors should include this model in the comparisons

Response: We have included Tm estimations from GPT2w model in all of our comparisons. And the results still indicate that our Ts-Tm model has accuracy advantages over other Tm estimation models. Detail statistics are included in the revised manuscript.

2. What do the numbers in Figure 4 stand for? Are they results from the radiosonde? If so, you can also use the circles as shown in Figure 1.

Response: The numbers in figure 4 are the contour values. In static Ts-Tm model Tm = a*Ts + b, a stands for slope constant and b stands for intercept constant. We estimated a and b at each gird node of ERA-Interim data. In figure 4, top figure is the global color contour of a, middle figure is the global color contour of b, and bottom figure is the global color contour of Ts-Tm model RMSE.

3. Explain m1, m2, n1, n2 in equation (5).

Response: (m_1, m_2), (n_1, n_2) and (p_1, p_2) are the fitting coefficients of formula (5) items, and these coefficients can indicate amplitudes of annual, semiannual and diurnal variations in our Ts-Tm models. We have included these explains in the revised manuscript (Line 197~198).

4. When interpolating the Tm onto the GNSS sites, did you consider the impact of height differences?

Response: We have considered two types of height differences in our interpolations:

(a) The difference between geodetic height (applied by GNSS) and geopotential height (applied by NWP). A GNSS site's geodetic height is converted to altitude height using EGM2008 model, and the difference between altitude height and geopotential height is neglected as we done in our another study(Jiang et al., 2016);

(b) The height differences between GNSS sites and NWP levels. For a GNSS site, we estimated the Tm at its four neighbor gird nodes in ERA-Interim data and then horizontally interpolated them onto GNSS site's location. At each gird node, the Tm integral geopotential height range is from GNSS site's geopotential height to 1 hPa level's height. The pressure, temperature and humidity at GNSS site's geopotential height is interpolated from its upper and lower ERA-Interim levels.

Reference:

Jiang, P., Ye, S. R., Chen, D. Z., Liu, Y. Y., and Xia, P. F.: Retrieving Precipitable Water Vapor Data Using GPS Zenith Delays and Global Reanalysis Data in China, Remote Sensing, 8, 10.3390/rs8050389, 2016.