

Interactive comment on “An improved global zenith tropospheric delay model GZTD2 considering diurnal variations” by YiBin Yao et al.

Anonymous Referee #2

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Title: An improved global zenith tropospheric delay model GZTD2 considering diurnal variations
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MS Type: Research article

The paper describes an improved method to compute the Zenith Tropospheric Delay including the effects of the diurnal cycle based on statistics of ZTD data on the global scale. The model is well presented and the results show that the accuracy of the model improves.

1 General comment

Nonlinear Processes in Geophysics (NPG) is an international, interdisciplinary journal for the publication of original research furthering knowledge on nonlinear processes in all branches of Earth, planetary, and solar system sciences. The article not discuss

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about multifractals, turbulence, complex systems, nonlinear waves, pattern formation, complex networks, stochastic processes, extreme events, bifurcation, chaos, phase transitions, complex systems. Aspects related with scaling, predictability and data assimilation are indirectly commented.

As manuscript, the article would be appropriate for their publication.

2 Scientific questions

Reading becomes tedious by overuse of acronyms and references to other models are results. Please, use cm or mm, not both.

I think that it's necessary an atmospheric approximation to problem. An approximation as of the article 'Seasonal variability of GPS-derived zenith tropospheric delay (1994–2006) and climate implications' of Shuanggen Jin, Jong-Uk Park, Jung-Ho Cho, Pil-Ho Park in Climate and Dynamics Journal can be more appropriate for this journal. A reference to this article can be included.

An article very similar has been written for Li Wei with their IGGTrop model for Chinese Science Bulletin, and comparisons with results of IGGTrop model (or TopGrid2) can be of interest when you compare your results. Please, change in your references and include the entire name of first author (line 447, line 449).

The aspects related with validation (3.2), can be the most contentious. Why you use these 362 IGS sites?.

Aspects related with the ZTD changes are poorly treated. Convection effects are much more intense at the tropics daily. This would seem sufficient to explain the increased error near the equator. In line 327 you compare between GZTD and GZTD2 and you indicate that there are improvements of RMS in areas where you have limited IGS sites to compare.

3 Technical corrections

C2

Change Predication in line 56 for Prediction. Change girds for grids in line 79. Include '2. The new..' in line 98 and '4. Conclusions' in line 372. You forgot the dot.

Interactive comment on Nonlin. Processes Geophys. Discuss., doi:10.5194/npg-2016-9, 2016.