

Answer to Reviewer:

We are thankful for the reviewer's suggestions which help us to improve the quality of the manuscript.

1. You are using global TEC from GIM maps. However, there is a jump in GIM TEC in 2001, the values before being lower than values after (see Emmert et al., JGR-SP, 2017, doi:10.1002/ 2016JA023680). It has probably no effect on your result but for your future work.

Response: Thank you for the suggestion. Yes, we can see a clear jump in GIM TEC in 2001. We will discuss this in the revised version.

2. The 27-day variation in the lower ionosphere (D-region) is often predominantly caused by dynamical forcing (PW), not by direct solar forcing, particularly in winter under low solar activity (Pancheva et al., JATP, 1991, [https://doi.org/10.1016/0021-9169\(91\)90064-E](https://doi.org/10.1016/0021-9169(91)90064-E)).

Response: Thank you for the suggestion and we will discuss this in the revised version of the manuscript. However, D region ionization contributes only weakly to TEC.