1st review of "The impact of large scale ionospheric structure on radio occultation retrievals" by Mannucci et al.

This manuscript investigated the effect of large-scale ionospheric structure on the atmospheric retrievals using the climatological model and data assimilation model of the ionosphere, and pointed out that during the storm time, the ionospheric residual due to the separate of two GPS frequencies is not neglectable, which can cause a temperature bias up to 2 K in the stratosphere. The authors also quantified the impact of the LEO orbit height on the RO retrieval errors, which can be significant. It is very important to consider these effects appropriately in climate study using RO data. Overall this is an interesting and well-written paper, and can be published after minor revision, I think.

Specific comments:

1. Page 2535, Line 23-24: "… that often occur simultaneously during storms: overall electron density values increase as do their spatial gradients." Is it accurate? Actually negative ionospheric storm effects happen quite often.
2. Page 2540, Line 26: "S/C location"? What does S/C stand for? spacecraft?
3. Page 2542, Line 25-27: Could the different initial heights used for temperature retrieval explain the difference of temperature errors between Kursinski simulation and the one done by the authors?
4. Check the spell "Kursinski", which has several different versions in the paper.
5. Page 2543, Line 6: "~0.3 K for the quiet case". What I see from Fig. 14 is ~0.5 K temperature bias at 25 km for the quiet case.
6. Page 2544, Line 18-21: "Ionospheric residual is sensitive to … because … of low Earth orbiting receivers". Not clear.
7. Page 2546, Line 3: what is "mitigating strategies"?
8. Caption of Fig. 1: not right. Correct it.
9. Fig. 8: what is that nasty structure shown at the end close to the GPS satellite?