**Qiang Fu, interactive comment**

*The comparisons between WOP and ECMWF shown in Figs. 1-3 and between COSMIC and ECMWF in Figs. 4-5&8 do not show the impact of the noise, but the combined impact of the noise AND the differences between WOP/COSMIC before adding superimposed noise and ECMWF "references". We just cannot draw a conclusion on the impact of superimposed noise by comparing WOP/COSMIC (with superimposed noise) and ECMWF "references"!*

Because the reference field does not change, the variation of the deviation of WOP/COSMIC from the reference does show the effect of the noise.

*The threshold character of the noise effect claimed in this paper is an artifact of the differences between WOP/COSMIC before adding the noise and ECMWF data: When the noise is smaller than this difference (e.g., when the S/N ratio is better than ~10V/V), it does not matter anymore since the difference between WOP/COSMIC (before adding superimposed noise) and ECMWF data becomes dominant.*

As pointed out by Kursinski in his review, the threshold character of noise has been known for many years, and my estimate agrees with (Kursinski, 1997).

*The impact of the noise can be seen by comparing the WOP with and without superimposed noise (see "WN-W" in Fig.3) and by comparing the COSMIC data with and without superimposed noise (see Figs. 6-7 and "CN-C" in Fig.8), where we DO NOT see a threshold character of the noise effect!*

We do see the threshold character of noise at least in the reduction of the number of data that pass QC.

*The results of WN-W and CN-C should also be shown for an altitude of 1 km in addition to 5 and 20 km.*

OK.

*What is the spectral distribution of the internal receiver noise? Is the white noise with a flat spectral distribution a reasonable approximation? What is the sensitivity of the results to this assumption?*

In the previous works like (Sokolovskiy, 2010), (Beyerle, 2006), white noise is assumed as a good model for the thermal noise of the receiver. The spectral

distribution of the thermal noise can deviate from a flat one for very high frequencies, due to quantum effects. But for the conditions in question, a flat spectrum must be a good model.