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Interactive comment on "Density correction of NRLMSISE-00 in the middle atmosphere (20–100 km) based on TIMED/SABER density data" *by* Xuan Cheng et al.

Anonymous Referee #1

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The reviewer deems this study is innovative and meaningful. However, some questions should be clarified in the paper before its publication, as following,

1. Line 87: earth -> Earth;

2. Line 175: Below ∼45 km -> Below about 45 km;

3. Line 213∼214: This decreases to an average relative error of 1.44% and standard deviation of 4.29% after correction, an absolute correction of 1.59%. -> These decrease to an average relative error of 1.44% and standard deviation of 4.29% after correction, with an absolute correction of 1.59%. The same mistake appears in line 231. Besides, there are also some other grammar mistakes which will not be listed

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Discussion paper

here, please correct them in the manuscript. 4. The value “68%” in line 169 are not consistent with “60%” in line 184, please check it. The same for “15%” in line 183 and “19%” in line 184.

5. Why the deviations are so large at 72 km given by NRLMSISE-00 in Fig. 3b and Fig. 4b? An explanation is suggested in the manuscript.

6. It is found that the average relative error decreases a lot while the refinement of standard deviation is not so clear, how to explain it? Especially the case of 32 km in Table 1 and Table 2.

7. The average deviation becomes very small while the standard deviation decreases slightly, how to explain it?

8. Throughout the paper, the quantitative results after corrections are insufficient. In order to make a comprehensive assessment, more quantitative results under different conditions (latitude, month, altitude, local time) should be provided.

9. In line 111, it is mentioned that “Cubic spline interpolation is used to calculate the correction factor at other heights”. However, there is no correction result at other heights. This is very important for the assessment of the correction method. Hence some correction results at non-node heights are suggested to be presented in the paper.

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