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Interactive comment

Interactive comment on "Single Point Positioning with Vertical Total Electron Content estimation based on single epoch data" *by* Artur Fischer et al.

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Interactive response to the referee comment (Anonymous Referee #2) on "Single Point Positioning with Vertical Total Electron Content estimation based on single epoch data" by Artur Fischer, Sławomir Cellmer and Krzysztof Nowel. First of all, we appreciate your contribution to improving the manuscript. The remarks were implemented into the new version of the paper. The responses (R) to the questions (Q) and comments (C) are as follows: Q1. Equation (7): based on cited literature: Leick et al., 2015, the argument of the trigonometric function is a zenith angle at the piercing point. Is it the case in the proposed algorithm? R1. This is our mistake. The cited algorithm is referred to the zenith angle calculation at the observing site (from observer's view). The corrected formula was made in the updated version of the manuscript. That was a separate mistake

in the quoted algorithm because the formula used in the code in the MATLAB environment during the numerical experiment was implemented correctly. C2. Equation (16): The authors should give the formulas for calculating the entries of the design matrix A. R2. The formulas for calculating the individual components of the design matrix A were implemented in the revised form of the manuscript. C3. Equation (14), (15), (17), (18), (20): I suggest to denote vectors with small, bold letters. R3. The suggested matrix designations were done in the improved version of scientific research. C4. Equation (19): In my opinion, the weight matrix should be denoted as W instead of P. R4. The recommended symbol for the weight matrix was changed as the reviewer's suggestion. C5. Equation (24): Consequently, the name of the gradient vector should be changed. The calculation of the entries of the gradient vector should be explained. R5. The consequence of the weight matrix designation change is the need for the gradient name change as well. Therefore, the remark was positively included in the corrected version of the manuscript. C6. The authors should describe the results listed in Table 3 in more detail. R6. Basically, the results contained in Table 3 are quite close. Hence, we decided to make the extended description according to the reviewer's suggestion, including the similarity of the values of mean errors of coordinates differences in the NEU system on the comparable level.