

## ***Interactive comment on “Saint Petersburg magnetic observatory: from Voeikovo subdivision to INTERMAGNET certification” by Roman Sidorov et al.***

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Dear Anonymous Referee, Thank you for your comment and for valuable remarks on the manuscript! The initial version contained some more details on the observatory equipment, magnetic survey results etc. and corresponding photos, but during the manuscript preparation we decided to make a short (but informative) paper with the general aspects, and excluded some details. We shall take your remarks into account.

a) According to your advice we've prepared a map of Saint Petersburg city vicinity including Voeikovo and Pavlovsk, and this map will be the second section of the first figure (please have the figure enclosed). We have also included the current coordinates

of the observatory in the manuscript.

b) The sampling rate of the base station was 3 seconds (we used the GSM-19 proton magnetometer installed at the absolute pavilion as a base station).

c) Unfortunately, the survey was not repeated (but it will surely be repeated in future).

d) The material is marble, and the tops were fixed on the marble pillars using grout.

e) Certainly the influence of some elements of the pavilion interior (like the power cables etc) and some influence of natural disturbances could cause such a difference of 5.5 nT, but the point is that this value is quite constant. After we repeated the determination of the pillar difference in 2014 or 2015, this value was generally the same except for some second decimal places. So it indicates the stability of the field distribution on the absolute pavilion area. Generally, this difference is less or more depending on the particular observatory (in a particular location) and the particular pillar, and on some observatories the difference between the observation pillar and the scalar magnetometer pillar can be even up to 30 nT but it does not significantly change from measurement to measurement.

d) We'll provide the information on the point positioning and the GPS differential mode. The GPS receivers were positioned at auxiliary points for determining the azimuth of the baseline between these points. Point positioning was performed in differential mode. Two continuously operating GPS-stations SVTL and PULK, located within 150 km from the observatory site, were used as base stations.

e) Yes indeed, probably we should formulate it this way: "The corresponding differences were calculated; their dispersion plots are given in Fig. 9a, b, c. As seen, some outlier values produced the large differences varying from  $-7.98$  to  $18.24$  nT, from  $-7.09$  to  $15.86$  nT, and from  $-0.78$  to  $4.23$  nT for X, Y, and Z component, respectively. After the removal of the outliers, the obtained RMS deviations for baselines for the period 01.01.2015–01.01.2016 were 2.91, 2.08 and 0.61 nT for X, Y, and Z, respectively."

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f) The short blue lines on the right of the plots indicate the adopted baselines calculated for the next year (they include the baselines from December 1 of the current year); this image was generated by our data visualization system. I added the caption as an element of the legend.

g) We suppose that the differences of even more than 100 nT still allow to make a conclusion that the magnetometer set is properly installed and the component and total field data is physically close, as the values are close in general (thousands of nT). The differences in hundreds of nT can be caused by particular anomalies of geological origin in the vicinity of the observatory location whose effect can produce a constant component, and the contribution of these anomalies could be not properly reflected in the model data. Moreover, the models selected for the comparison, representing the internal magnetic field, do not generally reflect exactly the same distributions of the magnetic anomalies due to possible differences in their compilation and the source data used, and one can clearly see the differences between the model values up to even 150 nT for the same epoch.

Thank you again very much for your comment and for the mentioning of technical details to be improved.

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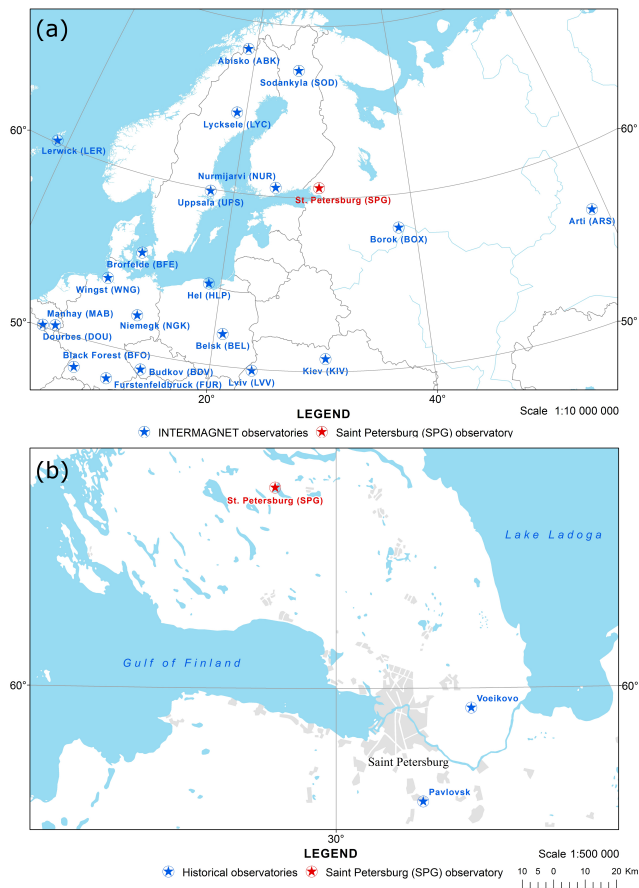


Fig. 1.

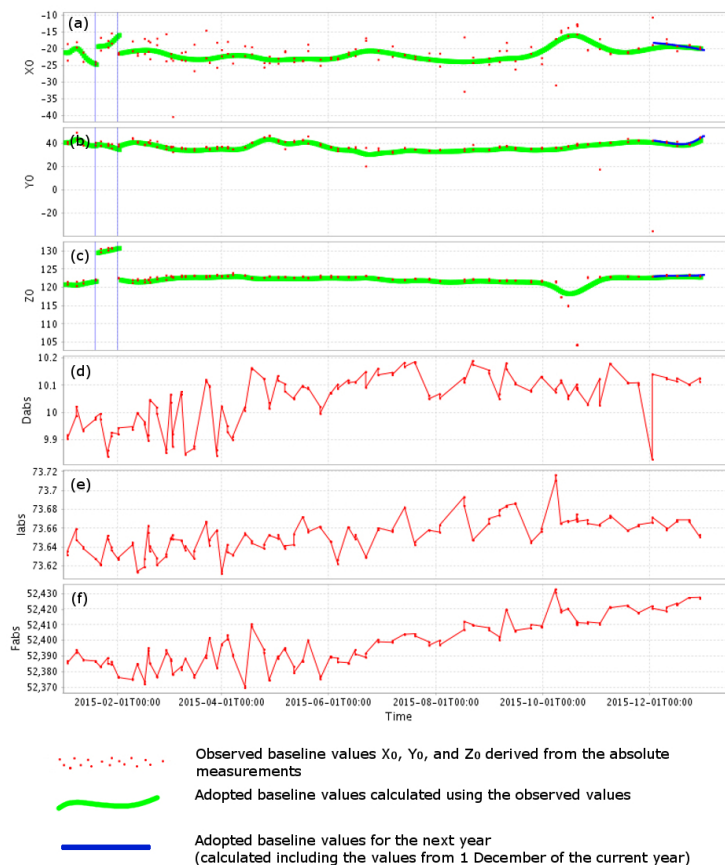


Fig. 2.