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Interactive comment on "Early Soviet satellite magnetic field measurements over 1964 and 1970" *by* Roman Krasnoperov et al.

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This paper presents digitised data from Soviet satellite magnetic surveys in 1964 and 1970 and provides some background information to accompany them. The data represent some of the earliest space-based magnetic field measurements around and their publication is to be welcomed. How do you estimate 75% and 94% coverage in the abstract? The section "Satellite missions for magnetic field measurements" is hard to follow, partly because of more than one name for each satellite, and would benefit from splitting into 1.1 Kosmos-49 and 1.2 Kosmos-321. The paper would benefit from information on how the satellite positions were determined and how the timing was achieved, and if possible, a comment on their accuracy. If anything is known about what was done to estimate spacecraft fields at the magnetometer sensors this should

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also be included. These factors will have a huge influence on the accuracy of the final magnetic data. If you know the dimensions of Kosmos-49, provide it. It would be good to have, as far as possible, equivalent information for both satellites. It would be interesting to have the authors' opinion on the accuracy for Kosmos-49 quoted by Benkova and Dolginov (1971) – do they agree with 25-30 nT? Can an equivalent estimate be made of the accuracy of the data from Kosmos-321? In Figure 2 clarify where the 2 absorption chambers are? We are told they are at 135° to one another but the boom appears to be at 135° to satellite body. Figure 4 – this does not show the complete coverage of Kosmos-49 data. Clarify that it is only showing a certain number of (near-complete?) orbits. I plotted the whole dataset and the orbits disappear for Kosmos-49 but there is good even coverage. Include plots in the paper showing complete coverage of both satellites, and for added interest and confidence in the data, the data positions can be colour-coded according to magnetic field measured. The area of weak field, called the South Atlantic Anomaly, shows up nicely, as well as larger magnetic fields at high latitudes. Examples included. The altitude of the digitised Kosmos-321 data is 232-470 km. This is somewhat different to the 280-507 km range given in the paper. Please check. The POGO series of satellites should be mentioned, in particular OGO-2, OGO-4 and OGO-6 which flew 1965-1971, and whose magnetic data are readily available from NASA. A suitable reference would be Langel and Hinze, 1998. "The magnetic field of the Earth's lithosphere: the satellite perspective". Detailed corrections Title - should be "Early Soviet satellite magnetic field measurements from 1964 and 1970". Abstract - replace "Totally" in abstract with "A total of" Line 21 - replace "to analyse of" with "the analysis of" Line 32 – remove "totally" Line 59 – replace "to organize" with "the organisation of" Line 159 – remove "to obtain" and add "to be obtained" at end of sentence Line 169 – replace "to determine" with "the determination of"

Please also note the supplement to this comment:
https://www.earth-syst-sci-data-discuss.net/essd-2019-218/essd-2019-218-RC2-supplement.pdf

Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2019-218, 2019.

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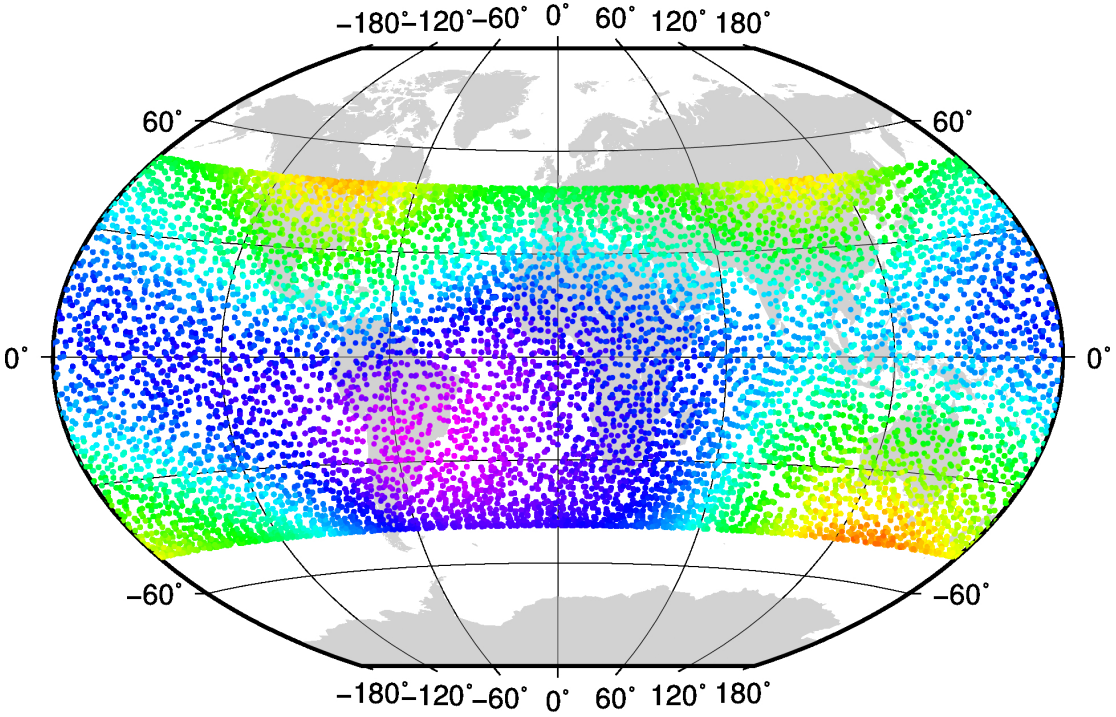

Fig. 1. Kosmos-49_1

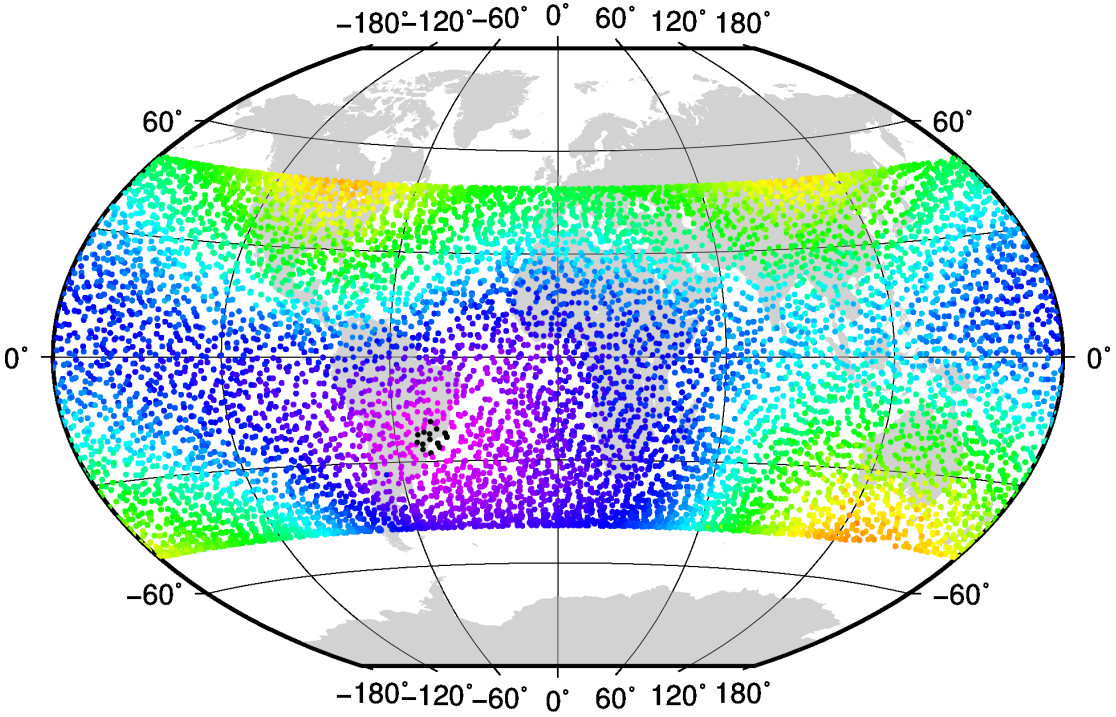

Fig. 2. Kosmos-49_2

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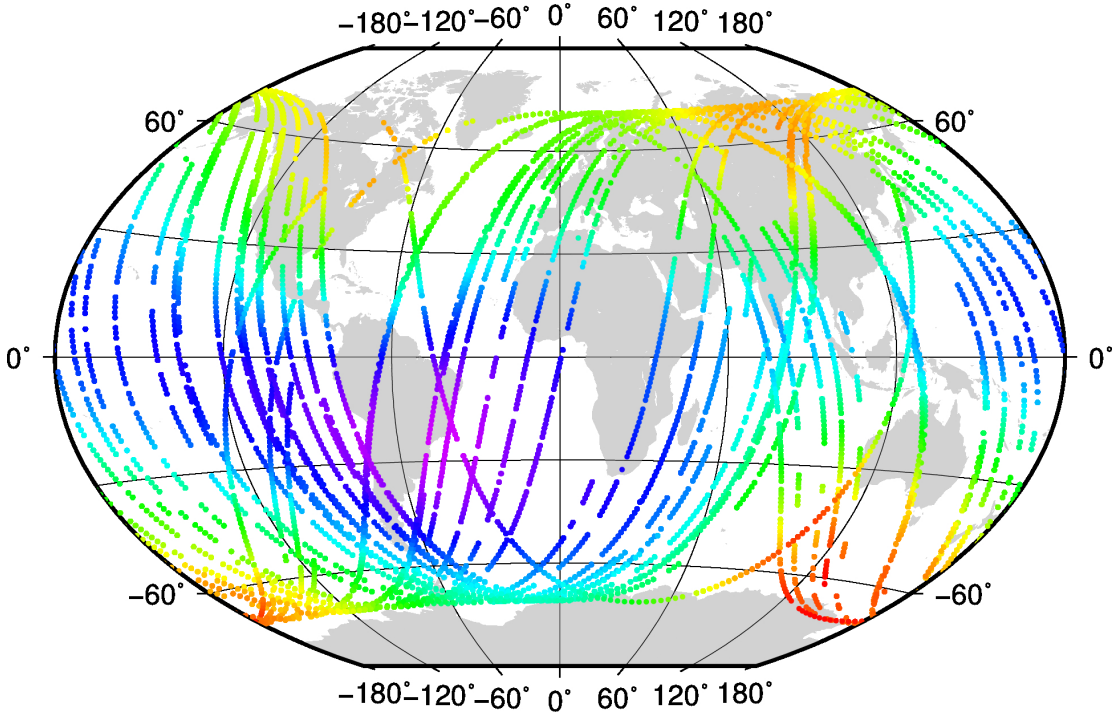

Fig. 3. Kosmos-321

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