

ANTENNAE PROBLEMS AT THE TEMPORARY OCCUPIED GNSS SITES IN ANTARCTICA

J. Cisak¹, Y.M. Zanimonskiy²

¹*Institute of Geodesy and Cartography, Warsaw, Poland,* ²*Institute of Radioastronomy National Academy of Sciences of Ukraine, Kharkiv, Ukraine*

The significant part of GNSS data collected for local or regional geodynamic in Antarctica is obtained from Epoch Crustal Movement Campaigns. Duration of the campaigns varies from one or few days up to tens days. The influence of the GNSS antenna effects on accuracy and reproducibility of the solutions of measurements is mentioned in many scientific publications reporting the results of Epoch Campaigns. The use of the same antenna at the same place in each campaign can reduce the part of this effect. Further augmentations of the accuracy of GNSS measurements seems to be possible by the better knowledge of the antenna effects on occupied sites. In this connection the international project "In situ GNSS Antenna Tests and Validation of Phase Centre Calibration Data" has been established during the last meeting of Geoscience Standing Scientific Group of SCAR in Bremen, 2004. Most of GNSS antennae used in Epoch Campaigns in Antarctica are placed in nearest vicinity of rocky ground, some decimeters above the ground. In such a situation where the height of antenna phase center is of order of single wavelength the electrodynamic characteristic of antenna is significantly changing and choke-ring antenna does not protect against the multipath effect. The presentation describes the influence of the surrounding ground conditions on multipath effect of GNSS antennae. Changes of weather and snow conditions have an impact on antenna characteristics. It means that the use of the same antennae in consecutive campaigns does not guarantee the accuracy of the results on the millimeter level. The data derived from one-year observations of Ashtech Z-12 receiver on Ukraine Antarctic Vernadsky Station, in the frame of Polish and Ukrainian co-operation, were elaborated. The results of data developing and antenna phase centre study are discussed in the framework of future co-operation