

REPORT OF CURRENT ACTIVITIES OF POLAND FOR 2000-2002

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The following Polish organisations / institutes have developed working programmes to conduct research or operational work in the Antarctic in the field of Geodesy , Geographic Information and Cartography

1. Institute of Geodesy and Cartography, Warsaw, Poland
2. Department of Antarctic Biology, Polish Academy of Sciences Warsaw, Poland
3. University Warmia and Mazury, Olsztyn, Poland
4. Institute of Soil Science and Plant Cultivation (IUNG), Pulawy, Poland

1. FIELD ACTIVITIES

1.1 Geodetic Surveys (Institute of Geodesy and Cartography and Department of Antarctic Biology, Polish Academy of Sciences)

- a) GPS observation campaigns 2000 and 2001 were carried out in the international framework of the SCAR 95 and SCAR 96 Epoch GPS Campaigns at Arctowski Station.

2. MAPPING ACTIVITIES

2.1 Topographic Mapping (Department of Antarctic Biology, Polish Academy of Sciences and Institute of Soil Science and Plant Cultivation (IUNG), Pulawy, Poland)

The Topographic Map of Site of Special Scientific Interest No.8 (SSSI – 8), King George Island in scale 1:12 500 has been elaborated in 2002. The map was based on local control network and RTK GPS measurements. The Transvers Mercator projection on WGS84 Spheroid with central meridian 57° W were used. The author of the map is Rafal Pudelko from the Institute of Soil Science and Plant Cultivation, Pulawy, Poland sponsored by Department of Antarctic Biology, Polish Academy of Sciences.

3. GEOGRAPHIC INFORMATION ACTIVITIES

3.1 Digital Datasets

From the local control network and RTK GPS measurements the Digital Elevation Model of surroundings of Arctowski Station and SSSI – 8 has been elaborated.

The co-operation with Steffen Vogt - leader of KGIS project has been continued.

4. SCIENTIFIC PAPERS PUBLISHED / PRESENTED

- Krankowski, A., Baran, L.W., Shagimuratow, I.I., Cisak, J., (2001): *Influence of Ionosphere in Arctic and Antarctic Regions on GPS Positioning Precision*, SCAR Report, Publication of the Scientific Committee on Antarctic Research, Scott Polar Research Institute, Cambridge,UK
- Baran, L.W., Wielgosz, P., Cisak, J., Shagimuratow, I.I., (2001): *The Response of Polar Ionosphere to a Magnetic Storm Obtained from GPS Observations*, SCAR Report, Publication of the Scientific Committee on Antarctic Research, Scott Polar Research Institute, Cambridge,UK
- Kryński, J., Zanimonskiy, Y., (2001): *Contribution of Data from Polar Regions to the Investigation of Short Term Geodynamics. First Results and Perspectives*, SCAR Report, Publication of the Scientific Committee on Antarctic Research, Scott Polar Research Institute, Cambridge,UK
- Manning, J., Cisak, J., (2002): *Overview of the SCAR/WG-GGI/GIANT activities within the project on the Atmospheric Impact on GPS Observations in Antarctica and possible fields of cooperation with IGS/Iono WG*. Proceedings of IGS/IAACs Ionosphere Workshop, Darmstadt, 17-18 January 2002
- Krankowski, A., Baran, L.W., Shagimuratow, I.I., Cisak, J., (2001): *Influence of Ionosphere in Antarctic Regions on GPS Positioning Precision*, Proceedings of IGS/IAACs Ionosphere Workshop, Darmstadt, 17-18 January 2002
- Ephishov I.I., Cisak J., Shagimuratov I.I, Wielgosz P. (2002): *Phase fluctuations of GPS Signals at High attitude Ionosphere during the Storm*, presented on 16th International Wroclaw Symposium "Electromagnetic Compatibility", June 25 – 28, 2002
- Cisak, J., (2002): *Overview of the SCAR/WG-GGI/GIANT Activities as an Introduction to the Workshop*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland
- Figuński, M, (2002): *Atmospheric Impact on Precision of the Positioning in Regional GPS Network*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland
- Kryński, J., (2002): *Variations in GPS Solutions versus Atmospheric Delay*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland
- Zanimonskiy, Y., Kryński, J., Cisak, J., (2002): *Correlation of the Atmospheric and Geodetic time Series of GPS Results. Impact, coincidence or artifact?* Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland
- Krankowski, A., (2002): *Modeling of the Ionosphere in Polar Regions*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland

Shagimuratov, I., (2002): *Storm-time Ionospheric Effects Obtained from GPS TEC Measurements*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland

Wielgosz, P., (2002): *Use of Deterministic Ionospheric Component in GPS Observations Processing*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland

Zanimonskaya, A.Y., Prokopov, A.V., (2002): *Some Effects of Ionosphere Model Thickness on GPS Results*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland

Vey, S., (2002): *Tropospheric Research using GPS, Activities in Dresden*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland

Kruczyk, M., (2002): *Tropospheric Delay in GPS Permanent Networks – a Tool for Atmosphere Research*, Paper presented at the International workshop on "Atmospheric impact on GPS observations focused on polar regions", 15 May 2002, Warsaw, Poland

Kryński, J., Zanimonskiy, Y., Wielgosz, P., (2002): *Modelling biases in GPS Positioning Based on Short Observing Sessions*, Presented at the XXVII General Assembly of European Geophysical Society 2002, Nice, France, 21-26 April 2002.

Cisak, J., Kryński, J., Zanimonskiy, Y., (2002): *GPS and internet in recent remote geophysical research in polar regions (in russian)*, Paper presented at the International Conference on Modern Progresses of Geodetic Sciences and Industry, 28-30 March, Lvov, Ukraine.

Kryński, J., Cisak, J., Zanimonskaya, A., Prokopov, A., Zanimonskiy, Y., (2002): *On some errors in zenith tropospheric delay determination from GPS data*, Paper presented at the International Conference on Modern Progresses of Geodetic Sciences and Industry, 28-30 March, Lvov, Ukraine

5. PLACE NAMES

5.1 About 10 new place names have been introduced to the Topographic Map of Site of Special Scientific Interest No.8 (SSSI – 8), King George Island in scale 1:12 500 and preliminary approved by Department of Antarctic Biology, Polish Academy of Sciences. They will be published and submitted to the Composite Gazetteer of Antarctica soon.

5.2 Some of the place names already introduced to Composite Gazetteer of Antarctica were corrected by prof. K. Birkenmajer

6. GROUND CONTROL POINT LIBRARY

6.1 Some points of local control network in the vicinity of Arctowski Station were remeasured.

7. PLANNED ACTIVITIES FOR THE NEXT TWO YEARS

7.1 Geodetic Surveys (Institute of Geodesy and Cartography and Department of Antarctic Biology, Polish Academy of Sciences)

- a) GPS observation campaigns 2003 will be carried out in the international framework of the SCAR 95 and SCAR 96 Epoch GPS Campaigns at Arctowski Station

7.2 Topographic Mapping – not yet planned

7.3 Geographic Information Activities – not yet planned

7.4 Termination of the “Atmospheric Impact on GPS Observations” project is planned for 2003