NATIONAL REPORT OF THE POLISH SOCIETY OF PHOTOGRAMMETRY AND REMOTE SENSING (PERIOD 1988-1991)

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1. PRODUCTIVE IMPLEMENTATIONS OF PHOTOGRAMMETRY

Productive implementations of photogrammetric methods in Poland are connected with production of topographic and large scale maps. Demands for new maps may be still observed, however growing needs for updating of existing maps are also noticed. Such works are performed by means of conventional methods (line maps drafted in ink), with the use of analog stereo plotters, where analytical aerial triangulation is the only computerized process (performed with utilization of the Stecometer and PSK-2 stereocomparators connected to the PC computers and with the use of the Polish software: NADZOR SG, NADZOR AG,AERONET IBM).

One of the main tasks of the Polish photogrammetric services is the adjustment of data collection methods to the needs of the created national Land Information System (GIS, LIS). Polish or foreign software, enabling the utilization of IBM PC type computers combined with analog stereo plotters equipped with the special encoding devices (Stereometrograph, Wild A8, A10 supporting the Polish DIGIMAP, Norwegian STEREOTRACK and French DEMETER software) are applied for this reason. OPTON P1 analytical stereo plotter,working with the Phocus system, and Wild AC-1 working with TA-2 plotting table and DIGIPLAN system, have been also successfully implemented in practice. Works aiming at standardization of data collection systems in order to include this data into ARC/INFO or INTERGRAPH type systems, are also performed. The needs however for the works performed with the use of numerical photogrammetry are not very often.

The modern Wild RC-20 camera has been purchased.

The Office of Central Administration for Geodesy and Cartography have designed a schema for SIT-system which will unify and interconnect all existing local cadastral and thematic numerical map data bases.

The recording of historic monuments and deformations is still the main task of nontopographic production. Here the computer assisted techniques for elaboration of terrestrial photographs are being developed, specially for the needs of inventory of cultural objects and monuments, as well as in the field of investigations of static and dynamic deformations of superficial and spatial objects.

2. RESEARCH AND DEVELOPMENT

a) At University of Mining and Metallurgy in Cracow:
- The AGH Analytical Plotter was designed and constructed
- The AGH Digital Screen Stereoplotter was developed
- Digital data processing and classification methods has been developed
- For compilation of orthophoto and stereo-orthophoto from satellite digital imagery and aerial photographs in digital form programs were developed
- Modeling of soil thermal inertia using thermovision camera
- Adaptation of 6x6 format photographic camera for photogrammetric purposes as a semi-metric camera was successfully accomplished
- Survey of the shape and deformations of cooling towers using terrestrial cameras and analytical techniques were developed
- The program for the high accuracy (over 0.1 pixel) determination of cross position on a digital image was developed
- Program for the terrestrial cameras self calibration was developed

b) At Warsaw Technical University:
- The best solution for aerial triangulation in Polish conditions was determined
- Using independent photographs the body of car deformation measurements has been developed
- The method of not-targeted surface displacement measurements was presented
- real-time photogrammetry was introduced for searching bearing deflect using Moire technique
- Real time photogrammetric system using 2 CCD cameras for determination of spatial coordinates was elaborated
- The methods for the soil classification using satellite imagery were further developed

c) At Olsztyn Agriculture and Techniques University:
- The methods of photointerpretation and remote sensing were implemented for the collection of information about the agricultural soil use at the close to the the town regions and for the determination of soil moisture
- The method of thematic maps compilation using set of different photographs was successfully examined

d) At Stettin University:
- Application of remote sensing methods to the study of sea environment an particularly to the seashore.

e) At Wroclaw Agriculture University:
- Application of aerial photographs to different agricultural needs (to search and to draw up inventory of draining net, integration of land property and surveying of agricultural area).

f) At Institute of Geodesy and Cartography in Warsaw:
   - Study on applications of satellite photographs for topographical and thematic map compilation.
   - Compilation of large scale city map using numerical techniques.
   - TV Photogrammetry - Video images digital processing.
   - Measurements and computations of engineering constructions displacement.
   - Analytical Plotter Planicomp P1 was equipped with PHOCUS system.

g) At State Enterprise of Geodesy and Cartography
   - photogrammetric technologies were modernized combining analog plotters with IBM-PC computers. Wild A-10 Plotter was equipped with DIGIMAP system - supporting edition of numerical map.

h) At the Export Enterprise GEOKART two Wild A-8 plotter were equipped with French DEMETER system. It was used for 15000 hectares numerical map compilation at Malta.

i) At Polish Army Map Service the Army Geodesy and Remote Sensing Center was created equipped with Wild Aviolyt AC1 analytical plotter.

j) At the Center of Geodesy and Cartography in Warsaw the system AEROMAP was improved and adapted to standard digitalization for purpose of numerical map.

k) At the Warsaw Geodetic Enterprise the Norway system STEREOTRACK - for data collecting from analog plotters was installed. System was used for numerical map compilation at scale 1:2500 in United Arabic Emirates.

l) Three institutions: GEOPROJECT, Wroclaw OPGK Enterprise and Institute of Geodesy and Cartography - Warsaw developed and applied photogrammetric technology of measurements and computations of engineering constructions displacements - named "PARABLOK" and "TERRABLOK".

m) For two Silesia district huge areas in Poland where displacements of surface caused by mining exploitation are prominent - simultaneous determination more than ten thousand coordinates of points was accomplished using aerial triangulation methods supported, tied and controlled by GPS technic. The result are promising. Based on rock mass movement prognosis of the X,Y,Z coordinates determination in the time *t* are established.

3. EDUCATION

Photogrammetric education for geodesists and surveyors is given in Poland in the following three different levels:

1) high school or technical college - for Survey Technicians
2) post high school education of 4 years for Bachelor of Surveying (technology level)
3) university of 5 years for Master of Surveying.

The primary and middle level of photogrammetry is provided at 28 technical schools. The university education in the field of surveying and geodesy is provided at 2 technical universities and at 3 agricultural universities and at the military academy. There is one faculty devoted purely to geodesy and cartography, and others combine geodesy with environmental protection, meteorology or drainage and other agricultural specializations. Yearly, about 300 students begin study in all above mentioned universities. But only about 30 students specialize in photogrammetry and remote sensing, and only 15 students is graduated yearly. The scope of photogrammetric education is carefully adjusted to fulfill the needs of passive and active photogrammetrists. Also foreigners are educated at the university level. We have students from some Asiatic and African countries.

The photogrammetric and remote sensing university and research stuff is following: 5 professors, 4 associate professors, 35 doctors.

The university studies in geology, cartography and geography include photogrammetry and remote sensing courses also.

4. PUBLICATIONS

In the period of 1987-1991 there were elaborated 10 textbooks and 398 articles concerning photogrammetry and remote sensing.

The following are the bibliographical data for textbooks in a chronological order:

1. Linsenbarth A. SATELIARNE SYSTEMY TELEDETEKCYJNE. PW Warszawa 1987, s.185
2. Olędzki J.R.et al. SŁOWNIK PODSTAWOWYCH TERMINÓW UŻYWANYCH W TELEDETEKCJI. UW Warszawa 1987
3. Olędzki J.R.et al.POLSKA NA ZDJĘCIACH LOTNICZYCH I SATELITARNYCH. PWN Warszawa 1988, s.311
4. Sitek Z. et al. SŁOWNIK TERMINOLOGICZNY Z ZAKRESU FOTOGRAMETRII I TELEDETEKCJI. AGH Kraków 1988, t.I,s.262, t.II,s.177
5. Sitek Z.,Mierzwa W. ROZWÓJ INSTRUMENTÓW I METOD FOTOGRAMETRYCZNYCH W UJĘCIU HISTORYCZNYM (tłum. podręcznika J.Blachut, K.B.R.Burkhardt). AGH Kraków 1988
6. Ciołkosz A.,Kęsik A.TELEDETEKCJA SATELITARNA PWN Warszawa 1989, s.294
7. Wójcik S. ZDJĘCIA LOTNICZE. PPWK Warszawa-Wrocław 1989, s.546
8. Butowtt J., Hermaszewski M., Kaczyński R., Konieczny J., Nowosielski A. ZIEMIA Z KOSMOSU. MON Warszawa 1990, s.231
9. Sitek Z.et al. SŁOWNIK PIĘCIOJĘZYCZNY Z ZAKRESU FOTOGRAMETRII I TELEDETEKCJI. AGH Kraków 1990, t.I, s.318, t.II, s.229
10. Sitek Z. FOTOGRAMETRIA OGÓLNA I INŻYNIERYJNA PPWK Warszawa-Wrocław 1991, s.757

The technical and scientific works were printed in 20 national periodicals, 23 serial publications and in 65 other occasional booklets. Works prepared by polish authors were printed also in 36 publications abroad. The table below shows the thematic classification of publications according to the domains of ISPRS commissions (some papers thematically belong to more than one commission).

year of issuse	ISPRS Commission number							
	I	II	III	IV	V	VI	VII	total
1987	9	13	7	17	16	22	13	97
1988	6	20	10	8	18	22	15	99
1989	3	9	14	13	8	20	4	71
1990	5	7	15	15	7	15	10	74
1991	1	4	12	14	5	15	6	57
	24	53	58	67	54	94	48	398

The list of publications and papers concerning photogrammetry and remote sensing from the years 1987-1991 is printed in detail in Proceedings of the Scientific Symposium held on the occasion of celebrating 60-th Anniversary of the Polish Society for Photogrammetry and Remote Sensing (it is the third part of the bibliographic information which is being continuously prepared by our Society). The Symposium took place in Warsaw on 22-24.05.1991.

5. PROFESSIONAL SUBJECTS.

Two main professional organizations for photogrammetry and remote sensing are active in Poland:

POLISH SOCIETY OF PHOTOGRAMMETRY AND REMOTE SENSING (PSPRS) - is the scientific section of POLISH GEODETIC ASSOCIACION (SGP). The activity of PSPRS began in 1930. In 1984 PSP took name PSPRS. The area of activity of PSPRS is Poland. PSPRS continues the activity of PSP which was interrupted in 1939.

The aims of PSPRS are:

a) activity in the field of photogrammetry and remote sensing together with various technical application,
b) popularization and promotion of photogrammetric and remote sensing methods in different scientific and technical fields,
c) exchange, publication and circulation of information within the country and abroad.

The supreme authority of the Society is the General Assembly. The General Assembly consists of all members of the Society, and every three years the President and, by the separate voting, the Council of the Society are elected.
The number of active specialists in the Society is about 150. PSPRS is a member of the Main Technical Organization in Poland (NOT- it is federation of scientific, and technical associations).
Legislative basis of the professional activities of PSPRS is statues law issued 27 October 1932 (Dz.U.R.P.Nr 94,poz.808) and amended 9 June 1982 (M.P.Nr 17, poz.144).
Main Technical Organization (NOT) and Polish Geodetic Association (SGP) have established the awards (monetary grant) to the author of outstanding merit also on photogrammetry, photointerpretation or remote sensing.

POLISH GEOGRAPHICAL SOCIETY (PTG) - THE CLUB FOR REMOTE SENSING SPECIALISTS is active in Poland on the basic of PTG Statutes.
The objective of the Club is the activity on photointerpretation field particularly for searching geographical environment. The number of members of the Club is about 30. They are members of PTG.
Polish Society of Photogrammetry and Remote Sensing and The Club for Remote Sensing Specialists of Polish Geographical Society established a common consulting body to improve the cooperation.
Actual changes in the professional activity of photogrammetry and remote sensing specialists as well as changes within the organization of associations, will possibly change the number of members as PSPRS as The Club for Remote Sensing Specialists of PTG.