



SVENSKA SÄLLSKAPET FÖR
FOTOGRAMMETRI OCH FJÄRRANALYS
SWEDISH SOCIETY FOR
PHOTOGRAMMETRY AND REMOTE SENSING

NATIONAL REPORT FROM SWEDEN

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ABSTRACT

A description of the most significant developments within the fields of photogrammetry, remote sensing and related GIS-activities during the last four years follows. The report is a compilation of contributions to a conference in Sweden in February 1992. The papers covered activities related to each of the seven commissions in ISPRS. The whole document is available (in Swedish) from the Society of Photogrammetry and Remote Sensing, KTH, 100 44 Stockholm.

COMM I: PRIMARY DATA ACQUISITION

Activities related to this commission have been rather extensive during the last years. One of its working groups has been chaired by Hartmut Ziehm, who is employed by the Technical College of Stockholm. Significant work has been done specially in the following fields.

- Development of improved methods for precision correction of satellite imagery at Satimage AB.

- Preparations for and use of the radar sensor of ERS-1 launched in 1991. The work has been performed at SMHI, CTH and FOA (abbreviations are explained in the end of this paper).

- Introduction of systems for processing of data from weather satellites at SMHI.

- Introduction of GPS for positioning during air photo missions at LMV.

- Development of a scanning laser for bathymetric purposes (measuring of water depth) at FOA.

Several other achievements could be listed here as well.

COMM II. INSTRUMENTS FOR DATA REDUCTION AND ANALYSIS

Sweden has invested a large amount of money in the receiving station for satellite data in Kiruna north of the polar circle. Landsat, SPOT, ERS-1 and MOS (Japan) imagery can be landed there. The development of the ground segment is still going on.

SMHI has acquired technology for receiving Meteosat and NOAA data. At SMHI a network of radar sensors for forecasting weather locally has been built up.

During most of the period image processing hardware for primarily remote sensing purposes have been developed by three different companies (SSC, Teragon and Context Vision). Due to declining market for dedicated image processing systems the production has finished at all companies.

Concerning stereo instruments it was reported that the number of analytic plotters has increased from 17 to 40 during the last four years (mostly Zeiss). The area of applications has become wider and connections to GIS and CAD more common.

COMM III: MATHEMATICAL ANALYSIS OF DATA

A limited number of research projects have been performed at a few institutions. These can be grouped into five categories.

- The image as an information system. Projects were done at FOA, KTH and SU.

- Automatic registration of objects. KTH and FOA.

- Interpretation and collection of thematic information at several universities.

- Knowledge based systems for extraction of information from images. KTH, FOA, SU and LBU have been active.

- Weather forecasting based on remote sensing at SMHI.

COMM IV: CARTOGRAPHIC AND DATA BASE APPLICATIONS

The Swedish activities have been concentrated to LMV and SSC. LMV has been represented in one of the working groups by Christian Elvhage.

This commission is application oriented and concerns mostly methods for production and revision of maps by photogrammetry and remote sensing. Geographic Information Systems are also treated here. Important activities in Sweden were:

- Production of a revised topographic map at the scale 1:20 000 through photogrammetric processing of aerial photographs from 9200 m at LMV.

- Development within LMV concerning digital ortophotos, terrain models and monoplottting.

- Production of databases for GIS and introduction of digital images as thematic layers in GIS's. A breakthrough has occurred for the use of GIS in forestry.

- The use of satelliteborn sensors for map production has been studied mostly by SSC. Production of small scale maps from satellite images is now operative. Applications for the forestry have been developed by SSC and LBU.

COMM V: NON-CARTOGRAPHIC APPLICATIONS OF PHOTOGRAMMETRY AND REMOTE SENSING

An inquiry was sent to 44 organizations in Sweden and 11 gave written answers. They showed that the research has been limited to a few projects at FOA and KTH concerning matching of images from different sensors.

Development of applications for practical purposes was done regarding

- automatic checking of products in manufacturing

- description of damages on cars after road accidents

- medical applications

COMM VI: ECONOMIC, PROFESSIONAL AND EDUCATIONAL ASPECTS

Rather little work has been done in Sweden in this field. Worth mentioning is a second edition of a comprehensive book on remote sensing within the forestry sector .

A working group within the frames of a national standardization project has given a proposal for data formats for raster images.

COMM VIIA: INTERPRETATION OF PHOTOGRAPHIC DATA

An inquiry was made among users of air photos in Sweden. It resulted in 20 written answers that showed use of photographs in an increasing number of applications, especially within for-

estry, physical planning and protection of environment.

Several universities and colleges are involved in the development work.

Vegetation and geomorphological maps (scale 1:50 000) have been produced in a large number based on interpretation of IR-photos.

Other areas of application are revision of topographic maps, forest inventory, mineral exploration, biophysical inventories, etc.

COMM VIIB: INTERPRETATION OF REMOTE SENSING DATA

The activities in this area have been very extensive, at least 80 projects were performed at different organizations throughout the country. A few functioning systems are mentioned here.

- Classification of clouds at SMHI
- Surveillance of ice (SMHI)
- Detection of oil spill along the coasts by a new radar system.
- Revision of topographic maps by SPOT-data (LMV).
- Production of small scale maps from SPOT and Landsat imagery (Satimage).

ABBREVIATIONS

- LMV - National Land Survey
S-801 82 Gävle
- FOA - National Defence Research Es-
tablishm
Box 1165
S-581 11 Linköping
- SSC - Swedish Space Corporation
Albyg 107
S-171 54 Solna
- SU - University of Stockholm
Dep of Geography
Box 6801
S-106 91 Stockholm
- KTH - Royal Technical College
Dep of Photogrammetry
S-100 44 Stockholm
- CTH - Chalmers Technical College
Dep of Radio and Space Science
S-412 96 Göteborg
- LBU - University of Agriculture
Dep of Forest Taxation (Remote
Sens)
S-901 83 Umeå
- SMHI- Swedish Meteorological and
Hydro-
graphic Inst
S-601 76 Norrköping
- Satimage - Satimage AB
Box 816
981 28 Umeå