XIV Congress

of the

International Society for Photogrammetry

Hamburg 1980

National Report of Switzerland

about photogrammetric activities during the period

1976 to 1980

NATIONAL REPORT OF SWITZERLAND ABOUT PHOTOGRAMMETRIC ACTIVITIES DURING PERIOD 1976 - 1980

General remarks

Statements about the ever increasing pace of progress are to-day common place and unquestionably correct with respect to specific technical activities. Such remarks are also proper concerning certain photogrammetric developments, as occassionally referred to in the individual chapters of this report. Generally speaking however the observation can be made that the introductionary remarks made in the preceding National Report for 1976 are still an adequate description of the situation of photogrammetry in Switzerland at the time of the Hamburg-Congress at 1980.

Still the traditional methods of data evaluation are dominating the field of photogrammetry and all changes are more or less of an evolutionary type, which generally speaking reflect the trend to incorporate the potential of the computer into the various phases of photogrammetry and associated activities.

Coupled with these developments is the increasing interest in genera automation from the standpoint of data-management, in direction of data-banks and interactive editing systems.

On account of a rather stabil economy there is a contineous demand on the general discipline of surveying and mapping and therefore equally on the field of photogrammetry.

However the introduction of equipment operating after entirely new technical and managerial concepts is being judged against stringent economical considerations.

Therefore the aquisition of equipment with new possibilities such as Orthophotoinstrumentation is restricted despite the increased interest

in this method, to a single larger commercial surveying and mapping outfit. Further development of the more sophisticated numerical or digital or analytical methods, generally speaking the introduction of computer aided photogrammetry is therefore more or less restricted to larger governmental entities and to the academic institutions. This situation also holds for the activities in the fields of remote sensing.

Again the organisation of this report remains essentially unchanged from its successors in order to provide continuity and to enable the reader to judge the progress of Photogrammetry in Switzerland over extented periods.

For more detailed representation the following subjects were chosen:

1. The Swiss photogrammetric Industry

2. Official institutes and private enterprises engaged in the program of national mapping, the revision of existing map series and general photogrammetric activities

3. Education in Photogrammetry
   The status of photogrammetry at the two Swiss Federal Institutes of Technology at Lausanne and Zürich as well as the educational program at the Swiss School for Photogrammetry Operators at St. Gallen

4. Research and Development

5. The application of photogrammetric methods to serve the maintenance and the preservation of cultural values especially with respect to "Architectural Photogrammetry"

6. Photointerpretation - Remote Sensing

7. The Swiss Society of Photogrammetry
   (Schweizer Gesellschaft für Photogrammetrie)

1. The Swiss photogrammetric Industry

Photogrammetric Development at WILD-HEERBRÜGG AG

During the past inter-congress period Wild Heerbrugg Ltd. has taken a further decisive step in the development of photogrammetric equipment and systems. The most remarkable feature of recent developments is the trend towards integrated systems including computer hardware and substantial software packages. The result of this development phase is discussed in terms of its major components.

1. Aerial photography and interpretation

The aerial camera system Aviophot RC 10 has been further refined with the goal of optimizing image quality. As a first step in this process the 15/4 UAG wide-angle lens (f = 15 cm, f/4, 23 cm x 23 cm) has been introduced. Its main characteristic is a highly homogenous image quality in combination with negligible geometrical distortion. The Aviopret APT 1 is the first instrument by Wild for aerial photo-interpretation. Its main component is a zoom stereo-microscope combined with a parallel-guided image carrier. A variety of accessories (discussion oculars, photographic camera attachment, etc.) makes it a highly flexible system.

2. Stereo-restitution

The Aviograph AG 1 is a new plotting instrument for topographic restitution at all scales. Its main characteristics are a focal-length range from super-wide-angle (f = 8,5 cm) via wide-angle (f = 15 cm) to semi-wide angle (f = 21 cm). It can be used in conjunction with graphical output: a mechanical pantograph belongs to the standard instrument configuration. The electronic Aviotab TA plotting table is offered as a high-performance alternative. For the establishment of a digital terrain model or the control data for the Aviplan OR 1 Orthophoto projector, the instrument can be equipped with a semi-automatic scanning device. Further accessories will make it suitable for further applications such as instruction, road construction etc.

The Aviolyt AC 1 is a first-order analytical plotter of the latest generation. Due to its high universality it is suitable for all applications known in conventional photogrammetry. Because of its great operating ease it is not only suited for a research environment but for day-to-day production work. To cope with the high performance of the Aviolyt AC 1 the Aviotab TA 2 was conceived. Compared to the simpler Aviotab TA table it has a greatly increased acceleration and speed which make it a very powerful output device not only for online plotting, but also for computer-controlled offline work.

The Avioplot RAP is a computer-assisted plotting system. It is especially suited for medium to large scale plotting to achieve a high-quality, directly reproducible manuscript. In conjunction with analog stereoplotters and the Aviotab TA it consists of a function-keyboard, an application software package and a separate mini-computer. In the case of the Aviolyt AC 1 and the Aviotab TA 2 the RAP software is implemented on the process computer of the analytical plotter.

3. Interactive mapping system

The WILD/MAP system is an interactive graphic system especially developed for map production. One or more photogrammetric workstations, each consisting of a stereoplotter with encoders, the TA plotting table with the microprocessor PRI and an alphanumeric CRT, are directly connected to a mini-computer. During data acquisition all the information is stored in digital form in the data base of the computer. During digitizing a control plot of the information stored in the data base it is simultaneously plotted on the TA table. The mini-computer is also connected to one or more graphic workstations, consisting of a graphic and an alphanumeric CRT, keyboard, menu tablet and digitizing table. With the aid of these workstations it is possible to make corrections and to add nongraphical information to the data base until one has a final product in digitized form. The generated plot file is finally plotted on a precision flat-bed plotter or on the TA table.

Photogrammetric Developments at KERN & CO. AG. AARAU

In the four years since the last ISP-Congress Kern & Co. Ltd. has successfully introduced extensions to existing equipment as well as new equipment.

PG 2

Extension of focal length range to 210 mm.
On request, the analogue plotter Kern PG 2 can now also be equipped with longer focal length slides for pictures with focal length from 85 mm to 213 mm.

PG 2-H Handwheel version

The new handwheel version of the Kern PG 2 satisfies a wide demand. A specially designed cross-slide system allows free-hand as well as handwheel drive of the base carriage without limitation. The encoders for the generation of model coordinates are integraded in the cross-slide system.

EPS 1

Electronic Profiling System for the Kern PG 2-H
A very usefull electronic attachment enables the operator to scan profile lines in any direction with the Kern PG 2-H in a simple way. Both handwheels drives are equipped with stepper motors. The operator introduces the direction of the profile on the control panel. This causes an automatic movement of the shorter axis in the selected proportion when he manually turns the handwheel of the longer axis.

DC 2-B Computer-supported Stereocompilation System.

The DC 2-B system, first shown in 1976, was immediately taken in serial production and has proven itself in practice with great success. The system allows computer-supported data acquisition and a simultaneous or later graphical output. The microprocessor for the data acquisition contains many programs which facilitate the work of the operator. Through

a Keyboard and Menu Board the programs such as for absolute orientation, manuscript preparation, control point plotting, building squaring, spot height annotation with terrain elevation, area computation and stream digitizing, are readily available. If the automatic drawing table is on-line, a practically fair drawn manuscript is generated.

Automatic drafting with the Kern AT

The automatic drawing table Kern AT is equipped with its own microprocessor. This microprocessor can be linked to the data acquisition processor through an 8 bit parallel communication channel for on-line graphical output or it can be linked to a computer through an RS232C interface for off-line graphical output. Through its many integrated functions like: vector generator, arc generator, curvilinear interpolation, scaling and rotation of the numerous symbols, alphanumeric characters and line types it needs only a relatively simple command program.

PMG 2

Zoom Point Transfer Instrument

This new point transfer instrument KERN PMG 2 was developped for application in aerotriangulation. The main features are: vacuum holddown for the diapositives or negatives, large Kappa motion for rough relative orientation, simultaneous movement of both picture carriers, X motion of 200 mm, Y motion of 85 mm, precision drills, differential zoom from 5 to 25 times magnification, variable measuring mark diameter from 0.03 to 0.2 mm.

CPM 1

The left picture carrier of the Kern PMG 2 can be equipped with linear encoders (resolution 0.001 mm). The instrument is then called Kern CPM 1 - Comparator Point Marker. The left X and Y image coordinates of the fiducial marks, the already transferred and marked points as well as the new selected and marked points are now measured and recorded at the same time as the point selection, transfer and marking is done, thus eliminating the need of a separate monocomparator measurement.

Next to these new developments a number of computer programs are available to users of Kern instruments. In particular for aerotriangulation and for digitizing with analogue instruments, standard Kern application programs are in use worldwide.

2. OFFICIAL INSTITUTES AND PRIVATE ENTERPRISES ENGAGED IN THE PROGRAMM OF NATIONAL MAPPING, THE REVISION OF EXISTING MAP SERIES AND GENERAL PHOTOGRAMMETRIC ACTIVITIES

The Federal Agency for Topographical Mapping
(Bundesamt für Landestopographie, Wabern)

During spring of 1979 the final sheet of the national map of Switzerland at the scale 1 : 25'000 was published. Now Switzerland has available the following topographical maps:

249	sheets at the scale of	1 : 25'000
78	"	1 : 50'000
23	"	1 : 100'000
4	"	1 : 200'000
1	sheet at the scale of	1 : 500'000

The topographical base of the national map at the scale of 1 : 25'000 was taken to a large portion from the so called "Grundbuch - Uebersichtsplan" (1 : 10'000) and was complemented by stereophotogrammetric evaluation of own aerial photography.

Since 1968 the entire national map series are revised with a cycle of six years. This work is based on photography taken with a Wild RC-10 camera, which is installed in an airplane of the type Grand Commander. The photographs are taken at a scale between 1 : 25'000 and 1 : 30'000. These aerial photographs are interpreted on the ground, a work which demands about three weeks field activity for a sheet at the scale of 1 : 25'000 (210 km^2). The following stereophotogrammetric evaluation is performed on a Wild A-7 and three Wild A-8 instruments on coded glass

plates. As base serves the photographically registered old map sheet. There is no signalization in the terrain.

The orientation of the aerial photographs is made with the aid of existing topographical objects.

The same photographs, taken for the purpose of map revision are also used by some state surveying organisations, and also as base material for the revision of the cadastral map at 1 : 10'000 (Grundbuch-Uebersichtsplan).

In addition the aircraft of the Swiss Federal Topographical Agency serves other Federal institutions with aerial photography, including the Waterresource Agency and places concerned with the survaillance and research about glaciers.

The Swiss Federal Directorate for Surveing

(Eidgenössische Vermessungsdirektion, Bern)

1. Aerial Photography for large scales

An airplane of the type DHC-6-300 Twin Otter procured during the year 1976 has proven itsself, particulary for larger scale photography of 1 : 5'000 to 1 : 15'000.

The airplane has two floor openings thus allowing the simultaneous taking of twin-photography.

2. Aeromagnetic survey of Switzerland

For the production of an aeromagnetic chart the area of Switzerland of 42'000 km^2 is being recorded with a magnetic sonde during a period of three years. The north-south flights will be made with the TWIN-OTTER airplane. Besides the magnetometric measurements, aerial photography will be taken for purpose of orientation. The project is under the guidance of the Institute of Geophysics of the Swiss Federal Institute of Technology, Zürich.

3. Photography of larger cities

The city of Basel has produced an atlas from aerial photography at scale 1 : 5'000 covering the complete area of the city. The photographs were taken with the TWIN-OTTER-airplane, the first time with black and white photography using a 15 cm camera and a second time taking simultaneously color and false color photography with 30 cm focal length. The black and white photography is used for geometric - the other type for semantic evaluations.

The aerial photographic atlas was created for the purpose of obtaining an improved base for planning. The atlas is also open for public use.

Similarly, preparation of such documentation is under way for the city of Zürich and other larger towns.

4. Cadastral surveys and Uebersichtspläne (1 : 5'000 / 1 : 10'000)

As mentioned in previous national reports the method of photogrammetry is used for cadastral surveys and related purposes. Presently an economical version is used when a new cadastral survey is in the works, using a combination of photogrammetry and terrestrial methods. The procedure has already resulted in considerable savings particularly for the delineation of cultural and natural property boundaries.

The Melioration and Survey Agency of the Kanton Graubünden

There is a report of the Melioration and Surveying Agency of the Kanton (state) of Graubünden concerning the computations of aerial triangulation and corresponding photogrammetric evaluation for an inquiry about the areas used for agricultural purposes. During the years of 1978 and 1979 in the Kanton of Graubünden a total of 35 aerial triangulation blocks were adjusted with the method of independent models. 807 models were measured, the smallest block contains 4 models, the largest block consisted of 77 individual models. The model evaluations were made on a Wild A-7 with registration on an EK 22 using paper tape recording. The computations were made on a large computer CDC 6400/6500/Cyber 174. As passpoints the triangulation points 1st - 4st order were used. Any

points suspicous on account of surface movement were eliminated after the first iteration and used as unknown points. About 4000 points were thus determined by photogrammetric aerial triangulation.

These points were signalized in the field with centred markers and signal strips. They were well surveyed to local objects. These points served as basis for the stereophotogrammetric - graphical evaluation, resulting in plots of the signalized boundary markers. On a transparent folio (covering an area of about 150 km^2) about 60'000 property parcels were plotted. The purpose is to obtain information on which the amount of subsidy for farmers can be computed.

The Swissair Photo + Surveys Ltd.

From the private enterprises engaged in photogrammetry in Switzerland only the Swissair Photo + Surveys Ltd. forwarded information about their experience during the reporting period.

They are of the opinion that the demands with respect to the production of small scale maps and large scale plans, mostly used for construction purposes are on the decline in Switzerland, because the country in general is well-mapped and map revision for the national map series is a monopoly of the Swiss government.

However privat mapping organisations may be employed to produce for a specific area the so called "Uebersichtsplan" 1 : 5'000 / 1 : 10'000.

Once the main source for application of photogrammetry namely the planings of superhighways and schemes for hydroelectric power systems are now finished, thus reducing greatly the need for photogrammetric operations.

Still there are at the Swissair Photo + Surveys Ltd. five stereoplotters in use, partly for the periodical volume determination in gravel pits, the establishment of large scale plans for pipeline- and utility cadastres, using digital registration of coordinates of various planimetric detail, the compilation for river-control and railway purposes

and some small scale mapping for developing countries. The company features the only commercially available Orthophotoinstrumentation (Wild OR-1). Customers are forest engineers and landscape planners. It is hoped that other specialists will discover the possibilities of this advanced technique.

In order to be able to keep its traditional personnel on the payroll the company had to look for work outside the country.

Thus the Company was engaged is mapping projects in Libya, Gabun, Togo, Nepal, Sumatra, Indonesia, Honduras and others. Lately the Swiss Photo + Surveys Ltd. works also in Arabia, mapping an area six times the size of Switzerland at a scale of 1 : 50'000. This work includes the production of orthophotos and the printing of the map sheets.

Some of these projects were accomplished by using super-wide angle photography, not normally encountered with respect to typically Swiss mountainous conditions.

3. Education in Photogrammetry

The two Federal Institutes of Technology at Lausanne and Zürich offer education in Photogrammetry. The languages used are French and German respectively.

At the level of technicians, education in Photogrammetry is available at the "Technikum Basel".

All these places of teaching are well equipped with various types of analog instruments, partly with digitizing equipment and modern drawing tables.

In addition, the education in practical photogrammetry is taken care of by the Swiss School for Photogrammetry Operators (SSPO) at St. Gallen.

The school offers regular courses at different levels for beginners and experienced operators. An extensive range of modern instruments ensures an intensive, practice related training. The equipment of the school is regularly up-dated and comprises to-day among many other items 24 analog plotting instruments of various makes, a large number of coordinate registering systems, a monocomparator, a rectifier, an orthophotoequipment and a computer.

The courses are given in English, Spanish, French and German. Main topics are graphical plotting at large and small scales, digital data acquisition in single models and for strip and block triangulation, checking and maintenance of instruments and the production of orthophotographs.

Special subjects, like for instance close range photogrammetry, are treated in advanced courses.

Participants from Government institutions in developing countries are under certain circumstances eligible for fellowships from international organisations. Respectiv inquiries should first be sent to the SSPO.

4. Research and Development

The research and development effort rests with the scientific departments of the industrial companies and with certain institutes at the Federal Institutes of Technology at Lausanne and Zürich.

A main point of interest in the activities at the Photogrammetric Department at Lausanne (Institut de Photogrammétrie de l'Ecole Polytechnique Fédérale de Lausanne) and representing equally the area of application of the photogrammetric method at the Swiss Federal Institute for Forestry is the evaluation of aerial photography for land use and for the registration of environmental damages.

In preparation are two national inventories, namely the realization of a new concept for national area statistics and a Swiss Federal Forestry

Inventory. With these inventories a survey is attempted with regard to the present land use in the hope to establish an instrument for judging the development of the country over extended periods. It is assumed that the bulk of necessary information can be obtained from aerial photographs restricting the collection of in-situ-data to a minimum.

First, samples are chosen by analytical methods. The interpretation itself will be executed by visual means using mirror stereoscopes. As raw material the aerial photography is used, as obtained by the Swiss Federal Topographic Agency for the purpose of revision of the national map series. The work is conducted in cooperation with the ORL-Institute, Institut für Orts-, Reginal- und Landesplanung at the Swiss Federal Institute of Technology Zürich, the aforementioned Swiss Federal Topographic Agency, the Swiss Federal Department for Statistics, the Agency for Landplanning and the Swiss Federal Directorate for Surveying.

The generally recognized trend towards computer aided procedures for the various phases of photogrammetric data-evaluation is persued as the Institute for Geodesy and Photogrammetry at Zürich with respect to both teaching and research. For this purpose a modern computer assisted instrumentation system could be procured from the Wild Company. The system has as its centerpiece a rather powerful Miniprocessor, surrounded by peripheral components, which are chosen in such a way as to enable practical work in the area commonly referred to as digital or numerical or analytical photogrammetry.

In this respect the effort is directed towards studies for following problems

1. Development of computer aided methods to improve the economy of present analog equipment.
2. Strictly numerical treatment of photogrammetric triangulation problems according to the requirement of the Gauss-Helmert model of rigorous least squares adjustment.
3. The use of extremly fast miniprocessor technique for real time application in the operation of a socalled Analytical Plotter.

4. Interactive editing of photogrammetric data thus introducing information management to the process of producing topographical maps and charts of larger scale including the corresponding map revision cycle.

With respect to OEEPE experiments the participation of Prof. Spiess and its cartographic department should be mentioned with respect to "The Fribourg Test of OEEPE Commission D".

In 1975 the Swiss Group of the OEEPE offered to prepare the test material for an experiment on map revision by photogrammetric methods. A partical problem to be solved was the revision of a part of a topographic map at the scale 1 : 25'000 of the suburban area west of the town of Fribourg. By courtesy of the Federal Directorate of Cadastral Surveys images at the scales 1 : 18'000 and 1 : 30'000 could be provided for the test. The base materials were prepared by the Federal Office of Topography.

Seven national mapping centres participated in this experimental work. A total of 9 complete test samples were delivered for evaluation to the Department of Cartography of the Swiss Federal Institute of Technology in Zürich. Most centres used the 1 : 30'000 imagery. Four times the orthophoto method was used, the other method applied was stereoplotting. Corrections for completeness as well as accuracy and line quality of the various results were assessed. Approximately 500 new houses and 35 km of roads had to be added in the revision process. In order to substantiate these restitutions, a detailed field identification was carried out by the pilote centre.

On the basis of large scale plans at the scale 1 : 1000, which were up-dated by photogrammetry, accuracy tests were designed. Some 350 points had to be determined in all map samples for verification purposes. These measurements were made on the final film positives with a stereocomparator. The results of the statistical analyses will be published in full as final report in an OEEPE publication. A summary is presented in a paper to the Hamburg Congress. Detailed descriptions of the revision processes applied are given there and some representative items will be shown in the exhibition. The procedures used are compared also in terms

of time needed for each subprocess. The intention is that these individual components could be rearranged into new map revision sequences which are both economically and qualitatively superior.

Finally a symposium should be mentioned, organized by both the Cartographic Department and the Institute of Geodesy and Photogrammetry during the period of 9 - 13 July 1979 at Zürich. The participating organisations were

- The International Cartographic Association (ICA),
- The International Society of Photogrammetry (ISP) and
- The Fédération Internationale des Géomètres (FIG).

This meeting of about 30 representatives of the aforementioned organisations was supported by the Swiss Societies of Cartography and of Photogrammetry and by the companies WILD HEERBRUGG AG and KERN & CO., Aarau. The participants came from Belgium, Canada, Denmark, France, Germany, Great Britain, Israel, The Netherland, Sweden, Switzerland and the United States of America. The underlying objective of the meeting was to define and coordinate the work to be carried out in the area of digital mapping by commissions or working groups of the three sister associations between 1980 and 1984 in common or separately. After two days of discussions, which were prepared by a "program committee" asking each participant to write a short "position paper" before the meeting, the following recommendations were formulated on the third day:

1. Instead of adding more conferences to the ones already scheduled, it is recommended to organize further joint sessions or symposia within the program of the coming conferences of the three organisations.

2. For the 16th FIG Congress in 1981 the following subjects are recommended as being of primary interest for such a "joint symposium".
   - Classification of topographic features,
   - Description of digital topographic data taking into account their geometric quality,
   - Investigations of the data files and data bases for digital map making,
   - Definition of the basic capabilities needed in interactive editing systems for digital map data,
   - Economic aspects of digital methods in map production.

3. The three participating societies should establish a "Joint Study Group" to consider the following subjects, with one society taking the lead role in each of them:
   - Classification of topographic features for digital mapping (ICA),
   - Design and structure of data files and data bases most suitable for digital topographic information systems (FIG),
   - Basic capabilitites needed in interactive editing systems for photogrammetric and cartographic applications (ISP).

   These study groups should first meet at the 1981 FIG Congress, and finally submit a report to the 1982 ICA Congress and ISP-Commissions IV Syposium.

5. The application of photogrammetric methods to serve the maintenance and the preservation of cultural values especially with respect to "Architectural Photogrammetry"

The statement prepared for the preceding National Report still characterizes the present situation.

Especially the use of the photogrammetric method for architectural purposes is increasing. Sufficient suitable cameras are now available for tasks concerned with the preservation or restoration of architectural interesting villages and historical sites.

6. Photointerpretation - Remote Sensing

General Aspects

The most significant aspect of the last years is the rapidly increasing diversification in the application of remote sensing sensor systems, research topics, interpretation methods and techniques by a continuously growing user community. The principal trends of this development may be characterized as follows·

- Intensified international cooperation, e.g. by a participation in the remote sensing programs of the European Space Agency.
- Setting up of a data processing center by integrating the former Photographic Institute of the Swiss Federal Institute of Technology, Zürich, in the new Institute for Communication Technology with a chair for image processing (Prof. Dr. O. Kuebler).
- Execution of various remote sensing programs in developing countries by the Department of Geography, University of Zürich and the Swiss School for Photogrammetry Operators, St. Gallen, under the direction of the "Swiss Directorate of Development Assistance", Berne.

It is not the intention to provide a comprehensive catalog of all completed and ongoing projects but much more to illustrate some major research activities taking place at the various institutions in Switzerland.

Department of Geography, Swiss Federal Institute of Technology, Zürich
(Prof. Dr. D. Steiner)

- Implementation of a PDP/RAMTEK interactive interpretation system to handle remote sensing data, map information and statistical data.
- Feature extraction from Landsat-data with Fourier analysis.
- Digital image processing techniques to extract metric data on buildings from shadows.

Department of Geography, University of Berne
(Prof. Dr. B. Messerli, Dr. M. Winiger)

- HCMM Principal Investigator for the project "Topoclimatological and snowhydrological survey in Switzerland".
- Mapping of fog layers, air flow pattern, surface temperature pattern, cloud pattern, etc. with spaceborne and airborne sensor data.
- Temperature and emissivity studies in urban environments (CLIMOD-program).

- Studies on geoecology and land dynamics in developing countries (Simen Mountains, Ethiopia).

Department of Geography, University of Zürich
(Prof. Dr. H. Haefner, Dr. K.I. Itten, Dr. H. Maurer, Dr. D. Nüesch)

- Classification of multidimensional remote sensing data for snow and landuse application.
- Geometric and radiometric correction of Landsat-data.
- Mapping of rural crop types from large-scale color aerial photography based on textural parameters.
- Land evaluation and classification, changes of landuse, and ancient landscape pattern in developing countries (Yemen Arab Republic, Ethiopia etc.).
- Rice yield forecasting and monitoring of landuse changes with Landsat-data (Sri Lanka).
- High mountain geoecology and mapping of abandoned agricultural land.

Federal Institute for Snow and Avalanche research, Weissfluhjoch-Davos
(Dr. J. Martinec)

- Monitoring seasonal snowcover depletion (in particular from orthophotographs) for the computation and forecasting of snowmelt run-off, using run-off models.

Institut de Génie rural, Ecole Polytechnique Fédérale de Lausanne
(Prof. Dr. P. Regamey, A. Musy, P. Meylan, C. Morzier)

- Determination of hydrological, soil moisture, soil and vegetation parameters by means of remote sensing data, ground measurements, and simulation models.
- Classification methodology.

Institute for Communication Technology (formerly Photographic Institute), Swiss Federal Institute of Technology, Zürich
(Prof. Dr. O. Kuebler, Dr. K. Seidel)

- Image analysis and classification.
- Image registration of several Landsat-scenes to multitemporal data sets based on geometric corrections (translation, rotation etc.).
- Mosaicing of various Landsat-frames.
- Preprocessing of remotly sensed data and statistical evaluation.
- Photographic presentation of images and classification results with an OPTRONICS photomation system P 1700.

Institute for National, Regional and Local planning, Swiss Federal Institute of Technology, Zürich
(Dr. H. Trachsler)

- Application of aerial photography for planning purposes.
- Methods and examples of aerial photointerpretation for the compilation and updating of a countrywide agricultural census and for a national information system.

Institute of Applied Physics, University of Berne
(Prof. Dr. E. Schanda, Dr. K. Küenzi, R. Hofer)

- Passive and active microwave studies on soil moisture, snow, ice and hydrological features.
- Interpretation of SEASAT-SAR-data.
- Microwave experiments for Spacelab and Nimbus-G.

Swiss Forest Research Institute, Birmensdorf
(Dr. O. Koelbl, now Professor at the Swiss Fed. Inst. of Techn., Lausanne, F. Mahrer)

- Methods of forest inventories by means of sampling and remote sensing techniques.

- Vegetation damage assessments.
- Realistic landuse mapping.

Publications

Amongst the many books and articles published of which a list of references for the reporting period of 1976-1980 will be compiled as usual, special emphasis shall be given to the textbook by SCHANDA (Edit.) "REMOTE SENSING FOR ENVIRONMENTAL STUDIES", the illustrative "WELTRAUMBILD-ATLAS" by BODECHTEL, BECKEL & HAEFNER, which contains a complete Landsat-coverage of Germany, Austria and Switzerland; and the newly edited "REMOTE SENSING SERIES" by the Department of Geography, University of Zürich.

7. The Swiss Society of Photogrammetry

In 1978, the Swiss Society of Photogrammetry celebrated its 50th anniversary.

Presently the Society counts about 180 members, mostly specialists in the fields of photogrammetry, geodesy, topography and cartography. The aims of the Society have remained unchanged. It seeks to promote advances in the theory and practical applications in the above mentioned fields and to further the application of photogrammetry in the various branches of the sciences, the general national economy, and particularly in the field of technical engineering. Furthermore, the Society promotes the exchange of professional information among the specialists on a national as well as an international basis.

During the past four years, numerous reports have been given, of which the following are of particular interest:

- Beurteilung der Bildqualität von Luftbildobjektiven.
- Etude sur la stabilité des appareils de restitution analogiques.
- Vorträge zum Thema Architekturphotogrammetrie.

- Satellitengeodäsie in der Schweiz.
- Joint ICA/ISP/FIG Commission Meeting on Digital Technology in Topographic Mapping.
- Periodical orientations of the activities of the international organisations (International Society of Photogrammetry ISP) and the European Organisation for Photogrammetric Experiments (OEEPE) and their technical commissions.
- Reports on developments in photogrammetric instrumentation, accompanied by visitis to industrial enterprises.

In addition, the Swiss Society of Photogrammetry acts as co-publisher of the professional journal "Vermessung, Photogrammetrie und Kulturtechnik".

The material for this report was collected and edited by Prof. Dr. Dr. e.h. Hellmut Schmid (Institute of Geodesy and Photogrammetry, ETH Zürich)

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