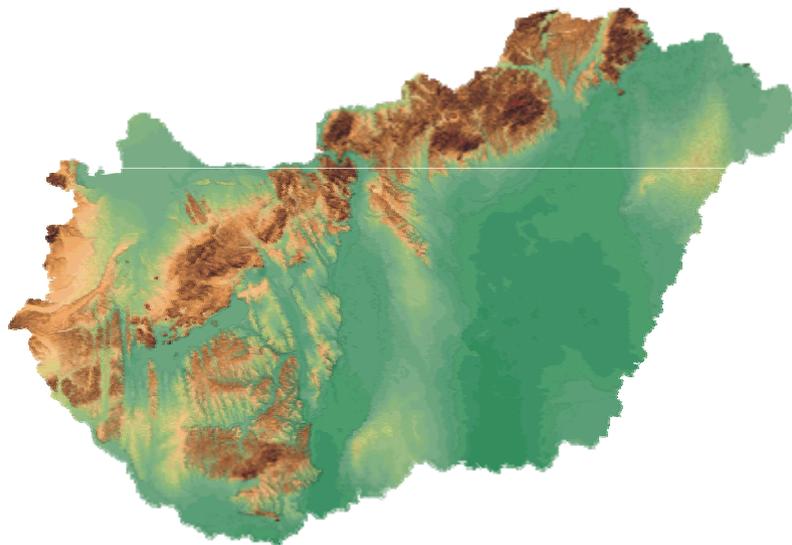


CARTOGRAPHY IN HUNGARY

1999-2003



Hungarian National Committee (HNC) of ICA
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Mapping Service of the Hungarian Defence Forces
Ministry of Defence Mapping Company

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1. Tasks and organisation of Hungarian national mapping

1.1. Act 76 of 1996 on Surveying and Mapping Activities

The scope of state mapping, charting and geodesy (MC&G) tasks and issues on the implementation of them are provided in *Act 76 of 1996 on Surveying and Mapping Activities*. According to this act, the following tasks are to be considered as state base ones:

- supplying the country with state maps;
- supplying the defence forces with maps;
- handling, storing, maintaining and providing state base data;
- fulfilling the tasks arising from international commitments;
- determining and filing geographical names as well as providing data from them;
- MC&G related technical R+D activities.

In the interest of mapping provision it is the state's responsibility to provide for state base works. State base works are as follows:

- creating and continuous updating of state surveying base maps and their index maps;
- creating and continuous updating of state topographic maps;
- creating and maintaining of control point networks;
- surveying of national borders;
- determining and filing geographical names according to special acts and in co-operation with the Hungarian Committee on Geographical Names.

According to *Joint decree No. 21/1997 (12 March) between the Ministry of Agriculture and the Ministry of Defence* on the implementation of the act the task of supplying the country with state maps has been allocated to the Institute for Geodesy, Cartography and Remote Sensing (FÖMI), the Mapping Service of the Hungarian Defence Forces (MS HDF) and the Ministry of Defence Mapping Company (MoD Mapping Company) as central MC&G organisations.

The way and scheduling of the implementation of the creation of state topographic maps, the establishment of the surveying base of the country as well as standardisation and regulation—taking into account the recommendations of the Coordination Committee on Map Supply—is stated in a joint directive of the two ministers.

The way of handling and providing surveying and mapping state base data as well as fees of data provision, examination and backing of surveying tasks with special aim and other public proceedings are provided in the *Joint decree No. 63/1999 (21 July) between the Ministry of Agriculture and Regional Development, the Ministry of Defence and the Ministry of Finance*

on handling and providing MC&G state base data and on fees on certain administrative services.

1.2. Organisation of civilian mapping

The civil surveying and mapping activities and the land affairs are administered by a governmental institutional network (consisting of one institute with nationwide competence and 136 land offices with territorial competence) and a public non-profit company, all being supervised by the Department of Lands and Mapping at the Ministry of Agriculture and Regional Development (DLM/MARD). This administration is responsible for establishing, maintenance and supplying of the geodetic control networks, the large scale base maps including the cadastral ones, the land registry, land protection and valuation, the topographic maps of selected scales and the remote sensing. Special emphasis is given to the tasks related to the implementation of the National Programme of the Adoption of the Acquis Communautaire (NPAA).

The Department of Lands and Mapping as supervising body is organised into four divisions with the following main responsibilities:

- Division of Surveying: tasks relating to control point networks, national cadastral and topographic maps as well as regulations and rules on national mapping and surveying.
- Division of Land Registration: real property registration, land area data supply, legal measures pertaining the dept, and revises the appeals against land office decisions.
- Division of Land Protection and Land Valuation: tasks relating to licensing of non-agricultural use of croplands, control of utilisation obligation of croplands, support of land restoration and land use as well as supervision of measures on land consolidation.
- Division of Land Control and Development: control of land administration activities, technical upgrade of the land offices IT development, co-ordination of the NPAA framework, developments in GIS, spatial data infrastructure (SDI), remote sensing.

The above mentioned works are carried out by the following organisations:

- Institute of Geodesy, Cartography and Remote Sensing (FÖMI) as governmental organisation with nation-wide competence,
- 19 County Land Offices (CLO) and the Budapest Land Office as governmental organisations with territorial competence,
- 116 District Land Offices (DLO) and the Capital Districts Land Office as governmental organisations with territorial competence,
- Office for National Cadastral Programme, as non-profit organisation.

1.3 Organisation of military mapping

The independent Hungarian military mapping dates back to 4 February, 1919.

As of January 2001, the military MC&G tasks are implemented by two independent military organisations.

The basic task of the **Mapping Service of the Hungarian Defence Forces** is to plan state base tasks and works in the responsibility of the minister of defence and having them implemented as well as carrying out official tasks in its sphere of authority. The Mapping Service of the Hungarian Defence Forces provides for the execution of the tasks necessary for defence map supply and professionally co-ordinates other sectors' defence related surveying and mapping activities including standardisation and regulation issues.

In connection with the above, MS HDF

- plans and organises mapping and military geographic support of the armed forces;
- elaborates professional standards and regulations;
- on special rule, provides for the authorisation of survey camera aerial photography as well as the technical supervision of the use of survey camera aerial photographs;
- operates military geographic and digital topographic database, provides for the continuity of both map updating and the filing of the changes on the maps;
- represents defence interests within the Co-ordination Committee on Map Supply established for determining medium and long term MC&G tasks of the country's map supply as well as scheduling and co-ordinating these tasks;
- fulfils the tasks arising from international commitments;
- directs and supervises the professional activities of MoD Mapping Company.

The basic task of **MoD Mapping Company** is to implement state base tasks and works in the responsibility of the minister of defence and having them implemented as well as safeguard, handle and provide state base data and maps.

The tasks of MoD Mapping Company are as follows:

- doing and having done surveying and mapping works in the scope of state surveying and mapping tasks—first of all for the interest of map supply of the defence forces—with national competency;
- safeguarding and handling state base data, base maps and state topographic maps arising from the activities detailed in the previous paragraph;
- map supply of the Border Guards, the Civil Protection and the defence administrative and law enforcement bodies against payment;
- producing military thematic maps (among others, by modifying state topographic maps according to NATO prescriptions), military geodetic control point catalogues and other special MC&G products in analogue and digital form and in compliance with the demands of MS HDF;
- storing and providing state topographic maps, mapping products and state base data in analogue and digital form for utilisation by national economy;
- implementing aerial photography and other remote sensing tasks or having them implemented;
- implementing tasks in connection with geodetic support of military equipment and other weapon systems;
- field examining and maintaining state control points for areas in MoD administration, preserving control points in control point catalogue as well as replacing destroyed control points;
- operating an aerial film archive and providing remote sensing materials;
- activities in connection with the technical servicing the 'Open Skies Programme'.

1.4. Topographic Mapping

1.4.1. 1:10,000 to 1:200,000 scale civilian topographic maps

1.4.1.1. Civil Topographic Analogue Maps

The EOTR system of topographic map has been introduced in the 1970's by the civil Lands and Mapping Administration to meet the demands, which could not be satisfied earlier by military classified maps.

The recent status of the analogue topographic map sheets of the civil Lands and Mapping Administration is as follows:

- at scale 1: 10 000: 4092 EOTR sheets (100%)
- at scale 1: 25 000: 267 EOTR sheets (25%) (Terminated production),
- at scale 1:100 000: 84 EOTR sheets (100%),
- at scale 1:200 000: 23 EOTR sheets (100%).

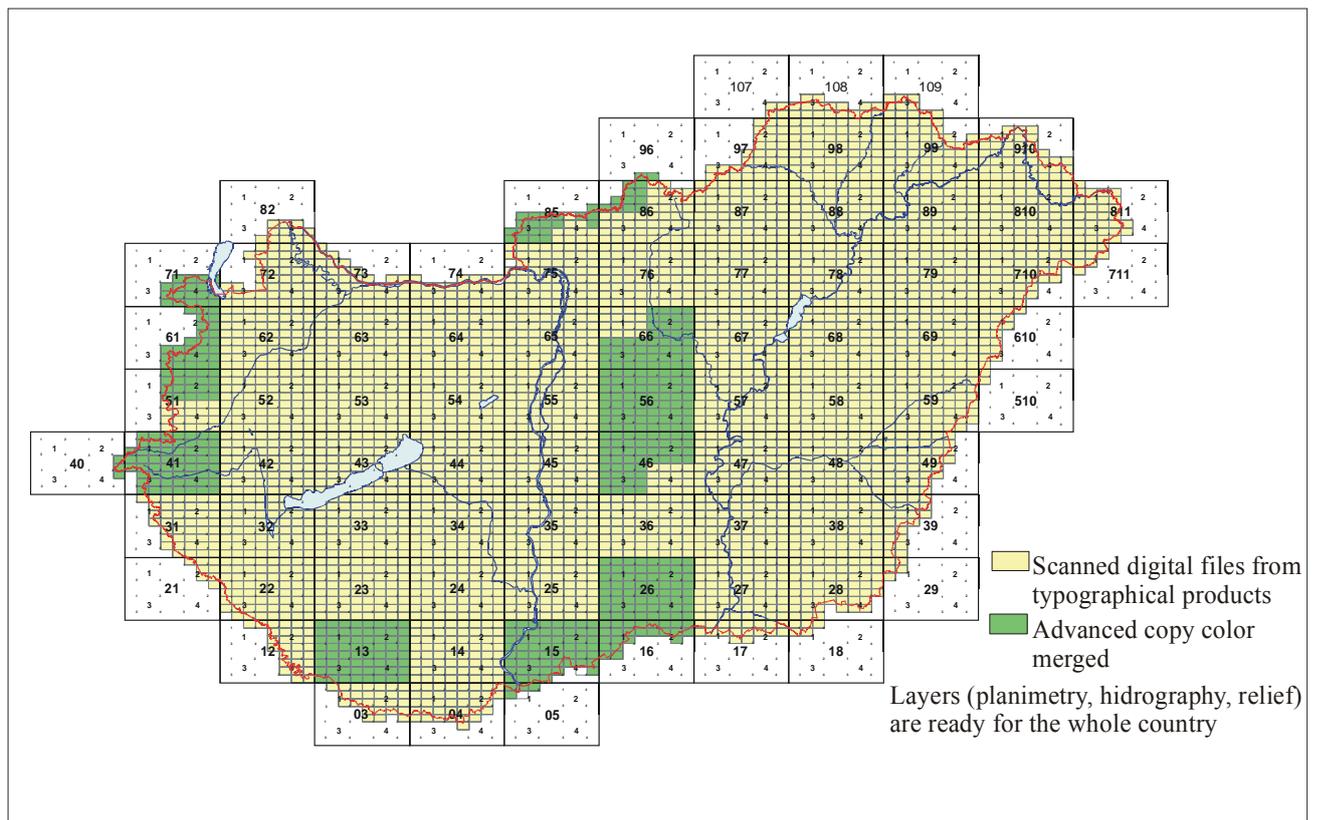
The production of EOTR topographic maps at scale 1:25 000 earlier was terminated. At scale 1:10 000, the production and updating has been finished and restarted in 2000. Updating the

scales 1:100 000 and 1:200 000 is continuous from 1995 – in digital form. The products at scales 1:10 000 and 1:100 000 have been supplied for the users continuously.

1.4.1.2. Digital Topographic Map Products of the Civil Lands and Mapping Administration

In the frame of the governmental base tasks and the EU-Harmonisation Programme the Ministry of Agriculture and Rural Development supported the scanning and georeferencing of 1:10 000 scaled topographic sheets. This task was carried out in 2000 for the whole area of Hungary.

In frame of the EU-Harmonisation Programme of the MARD the raster datasets of relief of 1400 sheets in scale 1:10 000 have been vectorized. The vector data is used for the production of a high resolution (5m x 5m regular grid interval) Digital Elevation Model. As a first step a "preliminary" DEM is produced (in same resolution), derived only from the contour lines. The high resolution DEM will serve as a base for the digital orthorectification of the aerial photographs, created the frame of "National Aerial Photographic Programme 2000", and of the high information for the National Topographic Programme.



1:10 000 Analogue and Digital Topographical Map Status Description

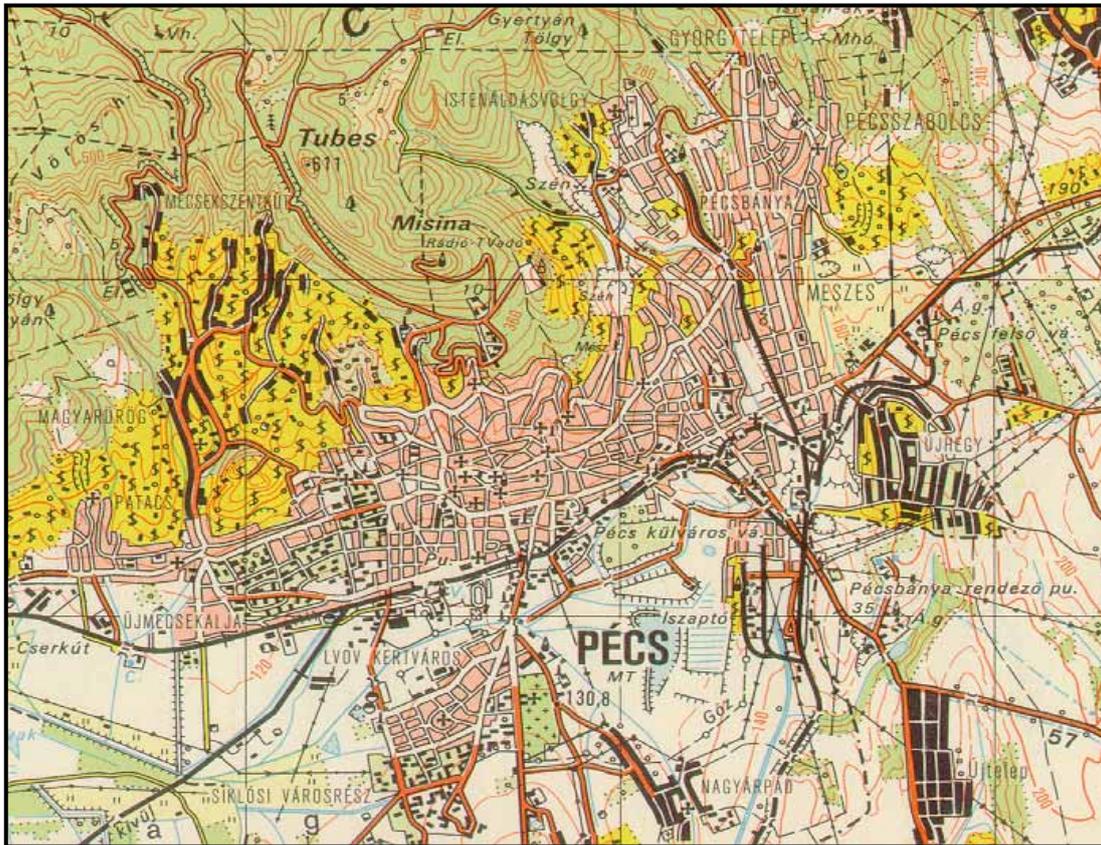
The 1:100 000 scaled topographic sheets of Hungary are available in digital (raster and vector) format, too.

Recently, the following products of the 1:10 000, 1:100 000 and 1:200 000 Digital Topographic Map series of EOTR are available:

DTA-200: Digital Topographic Map in scale 1:200 000

raster data of

colour prints 23 sheets (100%),

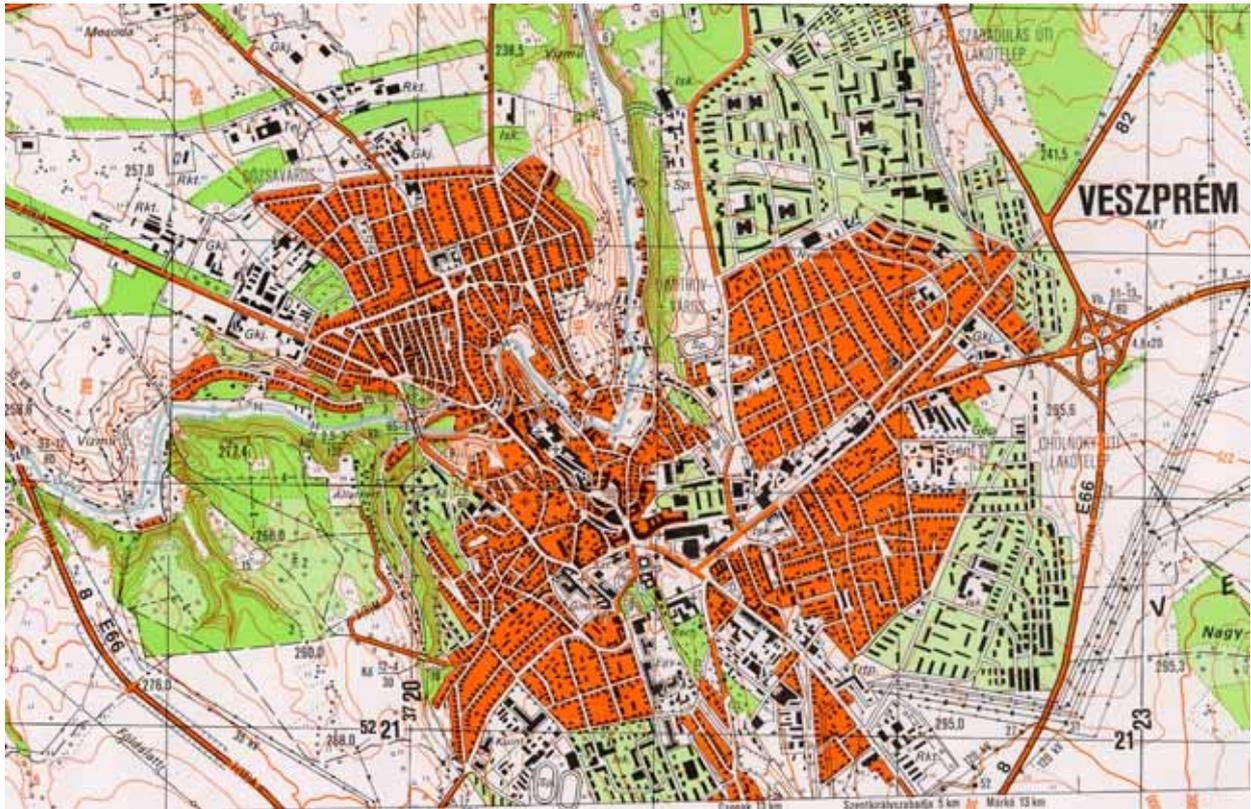


Fragment from the 1:100 000 Digital Topographic Map (© FÖMI)

1.4.2. 1:25,000 to 1:250,000 scale military topographic maps

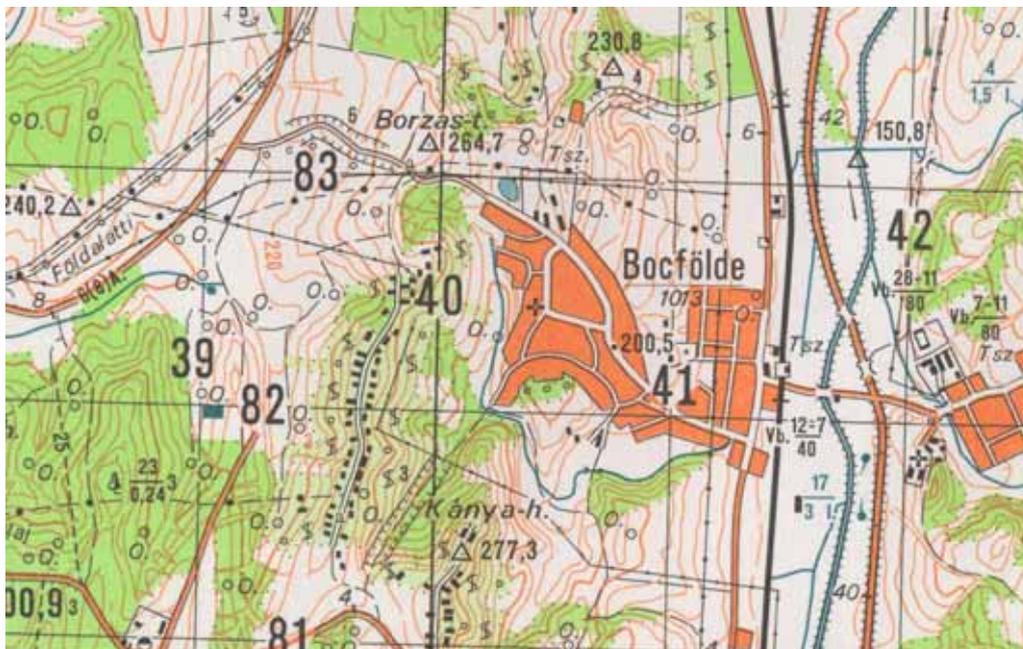
Topographic maps belong to the most important products of military MC&G. Classification of these maps were 'secret' until 1992, having made the civilian utilisation of them difficult to a great extent. This restriction has been fully lifted by now, thus anyone can have free access to military topographic maps.

The latest updating process of the 1:25,000; 1:50,000; 1:100,000 and 1:200,000 scale topographic maps began in 1983 and finished in 1997. The completed map sheets have full country coverage at all scales. Updating of the content has been carried out on the basis of aerial photographs and field verification. Smaller scale maps have been created by derivation and generalisation.



Extract from a 1:25,000 scale topographic map sheet

A revision of content and conversion into digital form of the 1:50,000 scale maps as well as re-editing of them onto WGS-84 datum and in UTM projection is under way.



Extract from a 1:50,000 scale updated topographic map sheet

The state acceptance process of the digitally transformed maps accomplished at the Mapping Company of the Ministry of Defence is performed by the Mapping Service of the Hungarian Defence Forces. As a first step, a detailed map quality control and content revision is carried

out; based on an approved specification laid down to set the technological process of the production. Following the result of the analysis the acceptance committee will make its decision on the possible inauguration of the maps.

1.5. Mapping databases, elevation models

Military mapping has been dealing with digital elaboration of maps since the early 1980's. GAB, Geodetic Data Base and DTA-200, Digital Topographic Database at 1:200,000 scale was completed in the second half of the 1980's, followed by the 10×10 and a 50×50 m grid density Digital Elevation Models (DDM-10 and DDM-50, respectively) and the DTA-50 Digital Mapping Database at scale 1:50,000.

1.5.1. Digital Topographic Database at 1:200,000 (DTA-200)

Creation of the **DTA-200** database commenced in 1988. Since that time this database has been used by several institutions as the basis for their autonomous thematic database.



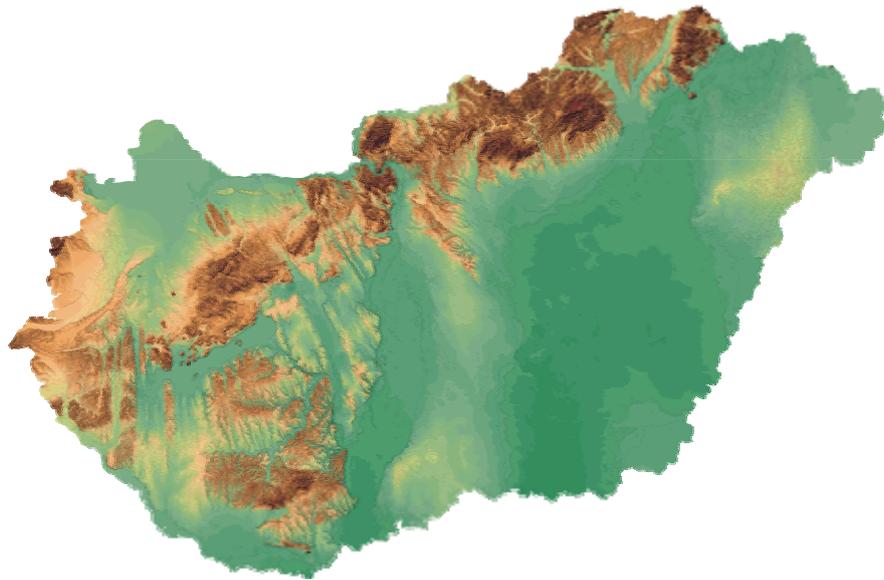
Extract from DTA200 data base

The updating of the database was carried out in 2000 and, as from 2002, the DTA200 database under the name HUNET200 is accessible on the Internet, too (www.topomap.hu).

1.5.2. Digital Elevation Models (DDM-10 and DDM-50)

The **Digital Elevation Model** holds height data above sea level for grid points of a 10×10 m and a 50×50 m grid for the territory of Hungary. The total extent of the data file with 10×10 m grid density is 2.5 GByte, with 50×50 m density is 100 MByte. The database is available in DTED Level1 and Level2 formats as well.

1.5.3. Digital Mapping Database (DTA-50)



The most significant work is the DTA-50 database founded on the 1:50,000 scale topographic map series. As a general skeleton map, on the one hand, it renders possible the automatic processing of topographic maps, and, on the other hand, it can be used as basis of a future GIS application. Of course, as a result of conversion of cartographic nature usual line representation as well as legend representation are also feasible as a basic requirement for topographic maps.

The Digital Mapping Database contains some 900 features in the following categories:

- ↵ marginalia;
- ↵ control points;
- ↵ settlements;
- ↵ facilities (industrial, mining, telecommunication, etc.);
- ↵ bridges and crossings;
- ↵ hydrography;
- ↵ hydrographic and shipping facilities;
- ↵ relief;
- ↵ vegetation and soils;
- ↵ boundaries.

1.5.4. GIS

A significant task will be the creation of Hungary's vector format GIS database at a scale answering to 1:500,000 and, based on this database, the production of a **Global Map** data file for the territory of the country.

MS HDF makes every effort to contribute to modernisation of the Hungarian Defence Forces by planning and evolving GIS systems as well. These systems combine GIS achievements and products of the Mapping Agency of the Hungarian Defence Forces as our legal ancestor. The main purpose of creation of GIS systems is to promote implementation of complex military geographic examinations as well as execution of various planning tasks. In addition to military information and maps the systems also involve other thematic data, maps and multimedia materials as characteristics of relevant areas.

1.5.5. Gazetteer of Hungary

The gazetteer-database under the responsibility of FÖMI contains 39 types of geographical names, including the names of settlements, parts of the settlement, the landscape, large units of the land woods, nature conservation areas, relief and hydrography, names of remarked points (ruin, look out tower etc.) as well as the names of the most important objects of traffic. It is the Database of Geographical Names (FNT – Földrajzinév-tár).

The database has two versions. The first one (FNT1) corresponds in quantity of names approximately to the scale 1:40,000. This database was produced by the use of 300 sources (maps, geographical literature, economical, statistical sources), and each municipality had the chance to complete, modify the database reflecting the local use of name. FNT1 covers the whole territory of Hungary, and changes are continuously updated.

The second version (FNT2) corresponds in quantity and in the types of names used roughly to the topographic map scale 1:10,000, with a readiness of 35%. It covers the names of the database FNT1 with additions taken from large scale topographical maps, cadastral maps, and other sources. The two parts of the database comprise 105,000 records.

1.6. Remote Sensing for the National Economy

1.6.1. Scope of activities at FÖMI Remote Sensing Centre :

- research and development of technologies for the applications of remote sensing primarily in the areas of agriculture and environmental protection/nature conservation;
- to provide an efficient service as National Distributor in the distribution, processing, archiving and utilisation of satellite and aerial remote sensing data, plus consulting for the entire Hungarian users community in their RS projects.

FÖMI RSC distributes all European, American, Indian and Russian satellite images and has contracts with EURIMAGE, SPOTIMAGE, EUROMAP and the Russian Space Agency. The national archive of satellite images is maintained by FÖMI RSC. Hungary is totally and repeatedly covered by both SPOT and Landsat TM images. All digital satellite images of the national archives are on CD. FÖMI RSC serves also as basic institution of the Hungarian Space Office in Earth Observation.

Under the direction of FÖMI RSC, a complete aerial photography of Hungary was carried out in 2000 (see 1.6.7.).

1.6.2. National Crop Monitoring and Production Forecast Programme (CROPMON 1997)

In the CROPMON Programme FÖMI RSC provides county and country level crop production forecast based on remote sensing, measuring the areas and expected yields of the 8 main crops. These crops together represent the 78-82 % of the entire Hungarian cropland. The area and forecasted yield data are reported by a strict calendar to the Ministry of Agriculture and Rural Development, 4-5 times in a season, synchronised to the existing traditional production forecast system of MARD.

CROP AREA ASSESSMENT in CROPMON is based on the quantitative analysis of multitemporal high-resolution images (Landsat TM and IRS-1C/1D LISS-III.) providing precise crop area estimation at different levels: locally, in the counties and for the entire country. The actual standard crop maps were also provided to MARD.

CROP YIELD FORECAST is accomplished by the application of FÖMI RSC developed model which combines high-resolution satellite (Landsat TM and IRS-1C/1D LISS-III. or SPOT) data and NOAA AVHRR time series. An HRPT receiving station had been installed and operated in FÖMI RSC from May, 1998 to provide secure and real time NOAA AVHRR data access for the models. FÖMI RSC provided yield estimates for the counties and expanded them to Hungary using a regional-historical correlation scheme. Because of the method applied, yield spatial distribution maps could also be reported for the major crops. The basic elements of CROPMON and the applications supported by CROPMON are shown on the next page.

1.6.3. Area-based Subsidy Control by Remote Sensing (1999-)

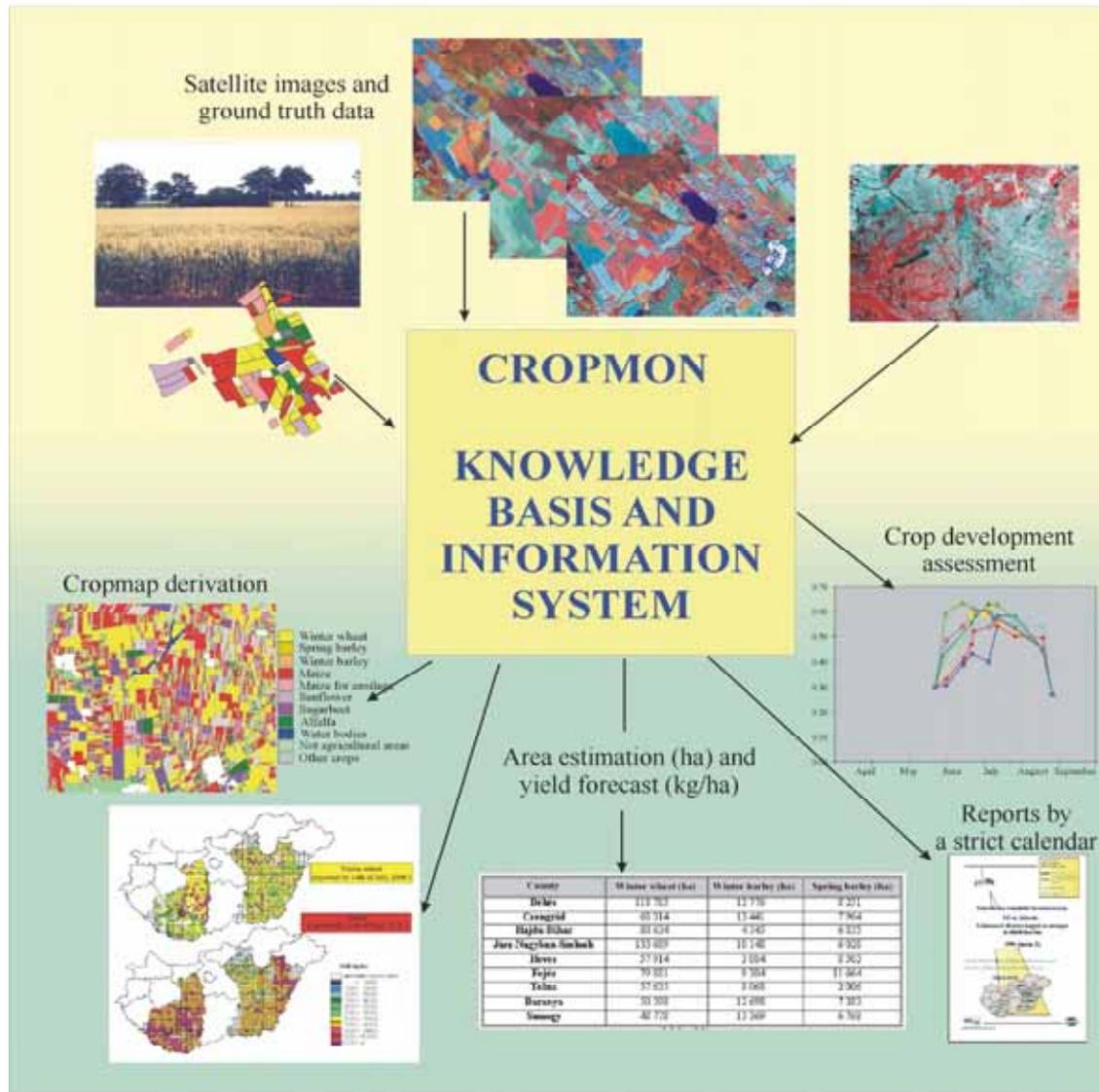
The principal national crop area based subsidy programme has been operative in Hungary, for many years now. Both the crop subsidy and the ad-hoc partial loss compensation programmes that are responses to extreme natural disasters (as e.g. for waterlog/flood damages), work in sound legal framework. In 1997 FÖMI Remote Sensing Centre (FÖMI RSC) initiated to MARD the introduction of remote sensing into the control of the subsidy and partial compensation programmes. The subsidy controls were performed on the CROPMON basis. Using FÖMI RSC's operational remote sensing based technology, a 3 counties sample was controlled by in a pilot project in 1999. The target area for RS based subsidy control was extended to a 7%, 4% and 5% ample of all the dossiers in 2000, 2001 and 2002 respectively (see next page). On the basis of CROPMON the automatic control can be an important part of the control of area based subsidies in Hungary.

1.6.4. Development of the Physical Block based Hungarian Land Parcel Identification System (LPIS) for IACS on Pilot Areas (ProMePAR)

The aim of the project was to develop the country-wide Land Parcel Identification System (LPIS=MePAR in Hungarian) on pilot sites with orthophoto based physical blocks in harmony with the requirements of the Integrated Administration and Control System (IACS) of the European Union.

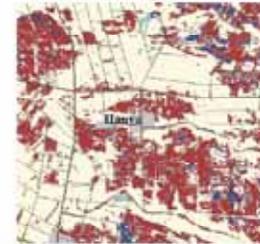
ProMePAR is an experimental system working on 6 settlements (3 counties) with voluntary participation of the farmers. It builds on the existing facilities and institutions and fulfils the EU requirements of the IACS area-based subsidy handling through the work-flow of applications: farmer → office → control → payment → farmer, with special emphasis on land parcel identification and remote sensing control.

Operational Remote Sensing Based Crop Monitoring and Production Forecast Program (CROPMON 1997-)

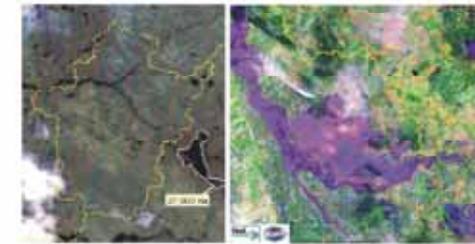


Applications supported by CROPMON

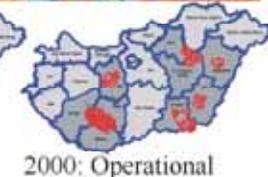
Waterlog and impact monitoring (1998-)



Flood monitoring (2000-)



Area based subsidy and waterlog impact compensation control/IACS



Surveying the vineyards and orchards

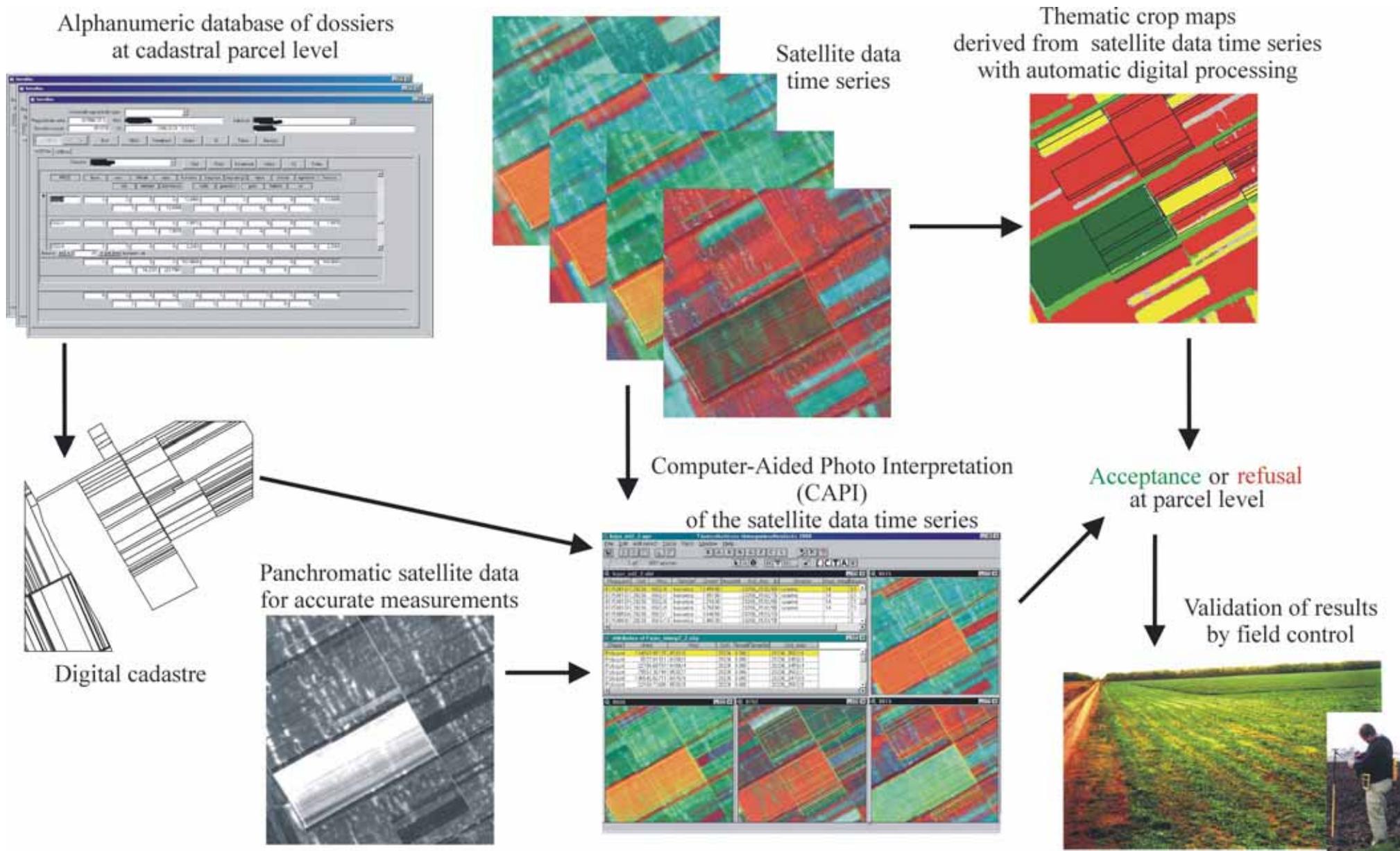
1998-2000: Test surveying at parcel level



- Traditional farming vineyard areas
- Large scale farming vineyard areas
- New vineyard plants
- Unutilized (abandoned) vineyard fields
- Vineyard gardens
- Other land cover

2001: Full survey of Hungary for helping the census





Major results from ProMePAR as the basis for developing MePAR (the Hungarian LPIS):

- EU harmonic timeframe followed in the simulated EU harmonic area-based subsidy payment process
- orthophoto generation and development of the physical block system (on 83 000 hectares) with unique block identification, with delineation of non-cultivated areas within the blocks, using satellite data time series and digital topographic maps as supplementary information, giving the exact areas of the blocks in a GIS system .
- training for the farmers and participating institutions
- development of the EU harmonic application forms, maps and guidelines together with the other participants (county offices of the Ministry of Agriculture and Rural Development, Agricultural Intervention Centre)
- preparation and dissemination of orthophoto based physical block maps to the local agricultural officials participating in the project
- preparation of orthophoto based block maps focused on the farmers' agricultural parcels, and sending of these through mail
- reception of the filled EU area-based subsidy forms, building up the databases and GIS system
- formal and administrative control of over-declarations
- remotely sensed and field control of declarations



A part of the orthophoto based physical block maps generated in the framework of the Hungarian Land Parcel Identification System pilot project (ProMePAR)

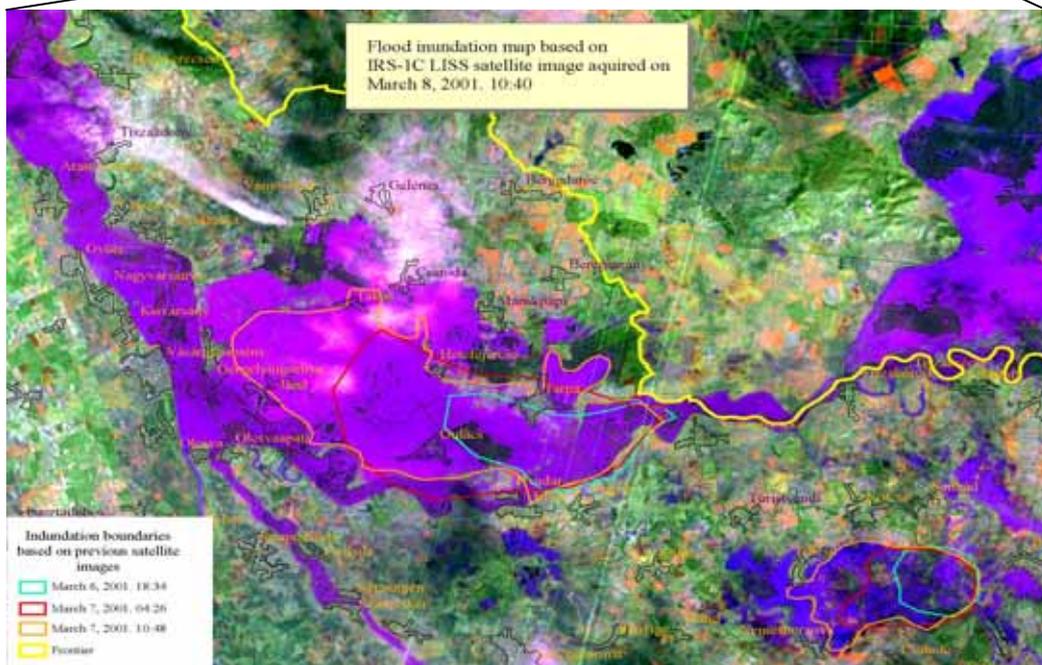
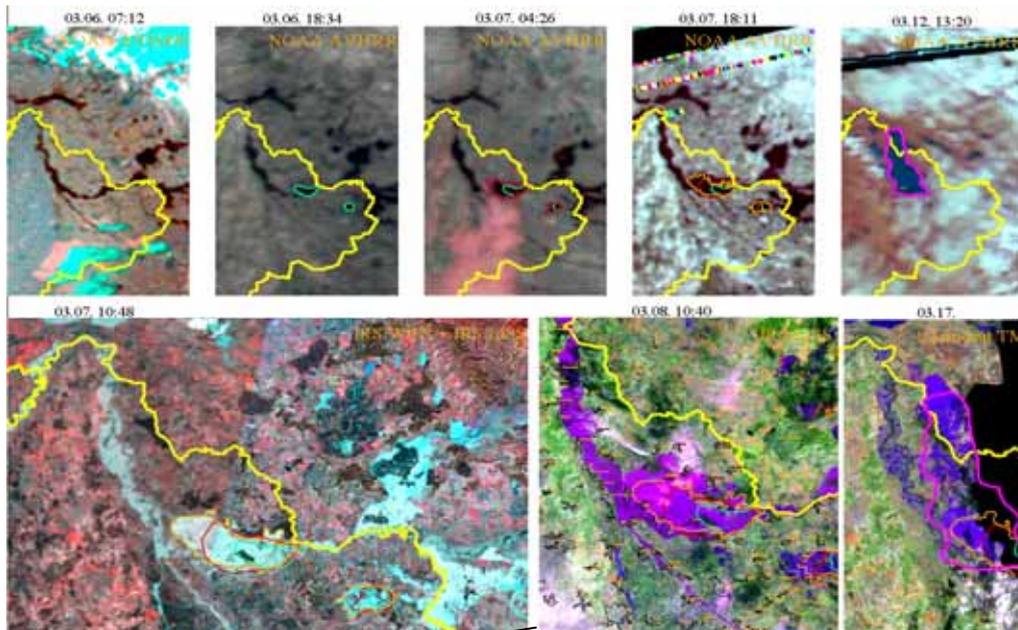
1.6.5. Additional applications implemented on the CROPMON basis

The CROPMON makes the implementation of other monitoring programmes possible and very cost effective on the same data, infrastructure and know-how basis at the FÖMI RSC. WATERLOG AND IMPACT MONITORING Programme was launched for MARD that covered the most affected 4 (1998) and 8 (1999) counties of about 4 million hectares. Reliable waterlog maps and area measures were derived. Beyond the static status assessment of the areas under water or having saturated soil, impact analysis on the crops and the dynamism of changes could also be monitored quantitatively. This assessment made use of high and medium resolution optical data, that is Landsat TM, IRS-1C/1D LISS-III and WiFS as well. The resulted GIS data base and printed maps were utilised by MARD intensively and proved to provide fast, operational information for decision makers. Moreover remote sensing can successfully be used at the parcel specific disaster compensation Programme for the control of claims.

On April 9, 2000 the Hungarian government declared parts of eastern Hungary a disaster area due to the serious flood event occurred on Hungary's second largest river, the Tisza, and several tributaries. FÖMI Remote Sensing Centre (FÖMI RSC) immediately began to start REMOTE SENSING BASED FLOOD MONITORING operations with its available resources to help the combat providing real time satellite data for the disaster area. As soon as the NOAA data are recorded by the FÖMI RSC receiving station they got processed and analysed in each day and transmitted directly to the Ministry of Transport, Communications and Water Management, to the Regional Water Management network headquarters in the most threatened areas plus the MARD. Even the slower and less frequent high resolution data were acquired and processed relatively very quickly to monitor and document the flood. According to the serious flood situation along the upper part of Tisza river, FÖMI RSC could mobilise its operational capabilities in spring 2001. At the first time after 53 years, the dike along river Tisza was breached by the water and the water flooded the neighbouring areas through a 120-m wide gap threatening tens of villages and thousands of people. The extent of flooded areas was evaluated both on the Ukrainian and the Hungarian side and the high-, low- and medium resolution flood maps were forwarded to the central and local management authorities through electronic transmission.

In addition to waterlog and flood, large area draught also hit Hungary in 2000 and SATELLITE BASED DRAUGHT MONITORING were carried out for the detection of extension and intensity of the draught at regional level based on NOAA AVHRR data received at FÖMI satellite station. FÖMI provided a rapid draught report to MARD including county level draught maps and temporal profiles of the most affected crop (wheat) comparing actual data of 2000 to the data of previous years having normal (1991) or draught conditions (1992, 1993).

FÖMI RSC started to develop methods for SATELLITE BASED VINEYARD AREA ASSESSMENT to monitor the real extent of production vineyard areas in Hungary. In 1997-98 this was carried out in marked area of Mór, Etyek, Szekszárd wine-districts using high- resolution satellite data (Landsat TM, SPOT, IRS-1C/1D LISS-III.).



The elements of real-time flood monitoring carried out by FÖMI RSC in 2001: low, medium and high resolution satellite images (a.).

Flood inundation map based on IRS-1C LISS satellite image acquired on March 8, 2001, 10:40, with the previous inundation boundaries delineated on NOAA AVHRR and WiFS data (b.).

In December 2000, according to the EU regulations, the Hungarian Government enforced by law, that the Central Statistical Office (CSO) has to conduct a census in 2001. The census's objective is to have up-to-date information about the vineyard and orchard areas in Hungary. As a preparation for the census FÖMI RSC carried out the assessment of the potential vineyard and orchard areas covering the whole country (19 counties) using high resolution satellite data in a very short, two months surveying period in 2001. This high-tech RS-GIS technology gave a really good basis for the census.

1.6.6. CORINE Land Cover 1:50 000

As part of fulfilment of the government resolution on the “Development of environmental information systems”, the implementation of the CORINE Land Cover database at scale 1:50 000 (CLC50) has started within the frames of the Acquis National Programme in 1999. The database supports Hungary’s accession to the EU in various programmes, such as the planning of sustainable agriculture, rural development, agri-environmental planning and nature conservation.

The CLC50 project has direct links to the standard European CORINE Land Cover project, however most elements of the methodology were upgraded according to the present level of technology in geo-data processing. The CLC50 nomenclature used has been developed from the standard (level-3) nomenclature and includes nearly 80 level-4 and level-5 classes, which have been adapted for Hungarian conditions. Orthorectified SPOT-4 satellite images taken in 1998-99 and computer-assisted photointerpretation allow for high positional accuracy of delineation. The 0.04 km² size minimum mapping unit (0.01 km² for lakes) provides enhanced geometric detail. A rigorous internal supervision and an external quality control (performed by the National Park Directorates and the counties' Plant Health and Soil Protection Service) are other key elements of producing a high quality database.

In the table below, main parameters of the standard European CORINE project (CLC100) and that of the CLC50 project are compared.

Parameter	CLC100, Hungary	CLC50
Nomenclature	standard EU level-3	standard EU, extended to level-4/5 according to natural conditions in Hungary
Methodology	hardcopy photointerpretation	softcopy (computer assisted) photointerpretation
Area resolution	0.25 km ² for all categories	0.04 km ² ; 0.01 km ² for lakes
Linear resolution	100 m	50 m
No. of classes	27 (out of 44)	80
No. of polygons	24 000	>150 000 (estimation)
Positional accuracy	<100 m (RMS)	<20 m (RMS)
Thematic reliability	>80%	>90%
Supervision	not documented: direct corrections on plastic overlays	documented: remarks on polygon level (instructions for corrections)
External quality control	no	yes
Final product	topologically structured database	

Up to now there were seven phases of the project resulting in about 86% of the total area of the country mapped by December 2002:

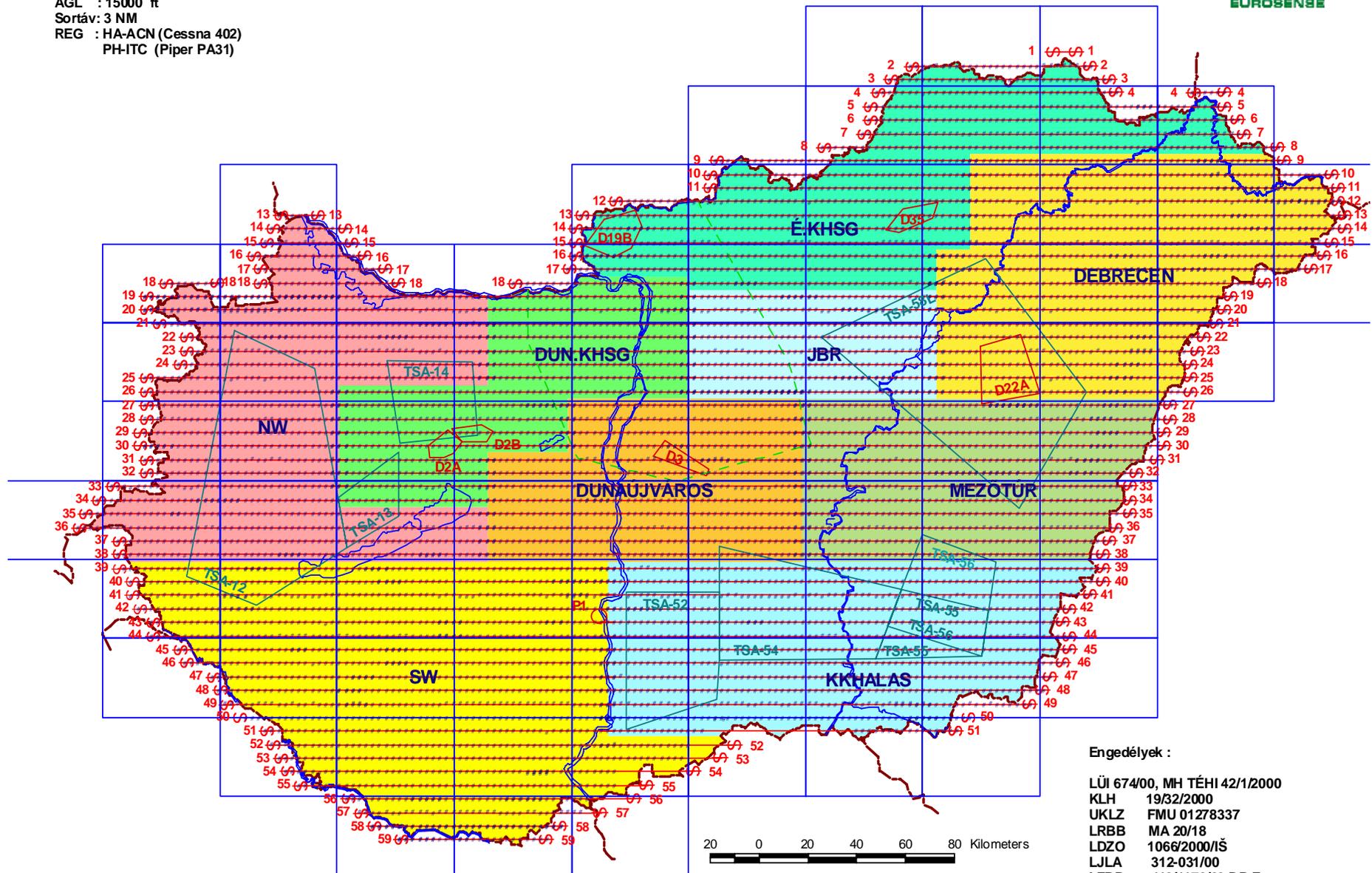
Phase	funding	percent of country mapped
1	ANP -1999 / Ministry of Agriculture	20
2	KAC / Ministry of Environment	10
3	Phare / Ministry of Environment ¹	27
4	Econet / Ministry of Environment	9
5	ANP-2001 / Ministry of Agriculture	4
6	Econet / Ministry of Environment	3
7	ANP-2002 / Ministry of Agriculture	13
Total:		86

1.6.7. Aerial photography in civilian mapping: Aerial Photography of Hungary 2000

Within the frame of the European Harmonisation Programme of the Ministry of Agriculture and Regional Development in the year 2000 - for the first time of its history - aerial photography was completed for the whole territory of Hungary during a short period of time at scale of 1:30 000 (see. Fig.11.). As a result of this project more, than 7000 pieces of colour diapositive aerial photos were taken, all of them were scanned and archived. This enormous amount of data will serve as a “back-bone” of the nation-wide digital orthophoto programme at scale of 1:10 000.

MAGYARORSZÁG LÉGIFÉNYKÉPEZÉSE

AGL : 15000 ft
 Sortáv: 3 NM
 REG : HA-ACN (Cessna 402)
 PH-ITC (Piper PA31)



Engedélyek :

LÜI 674/00, MH TÉHI 42/1/2000
 KLH 19/32/2000
 UKLZ FMU 01278337
 LRBB MA 20/18
 LDZO 1066/2000/IS
 LJLA 312-031/00
 LZBB 449/1176/00 DP-F
 LYBA -

Frissítve: 2000.06.21

Gyetvai József, T: 30/9492-857

Aerial photography of Hungary

The photography has to be suitable for several applications, as

- Topographic mapping,
- Recording of statement of several agricultural plants,
- Establishing of land use categories,
- Delineation of waste lands,
- Surveying of soil map contents,
- Delineation of soil erosion areas,
- Mapping of inland waters,
- Regional planning,
- Forest inventory, management etc.

Based on the high-resolution digital elevation model (5m-grid interval), FÖMI has started the orthorectification of aerial photographs (ground pixel size 63 cm). The full technology is under construction (see below)



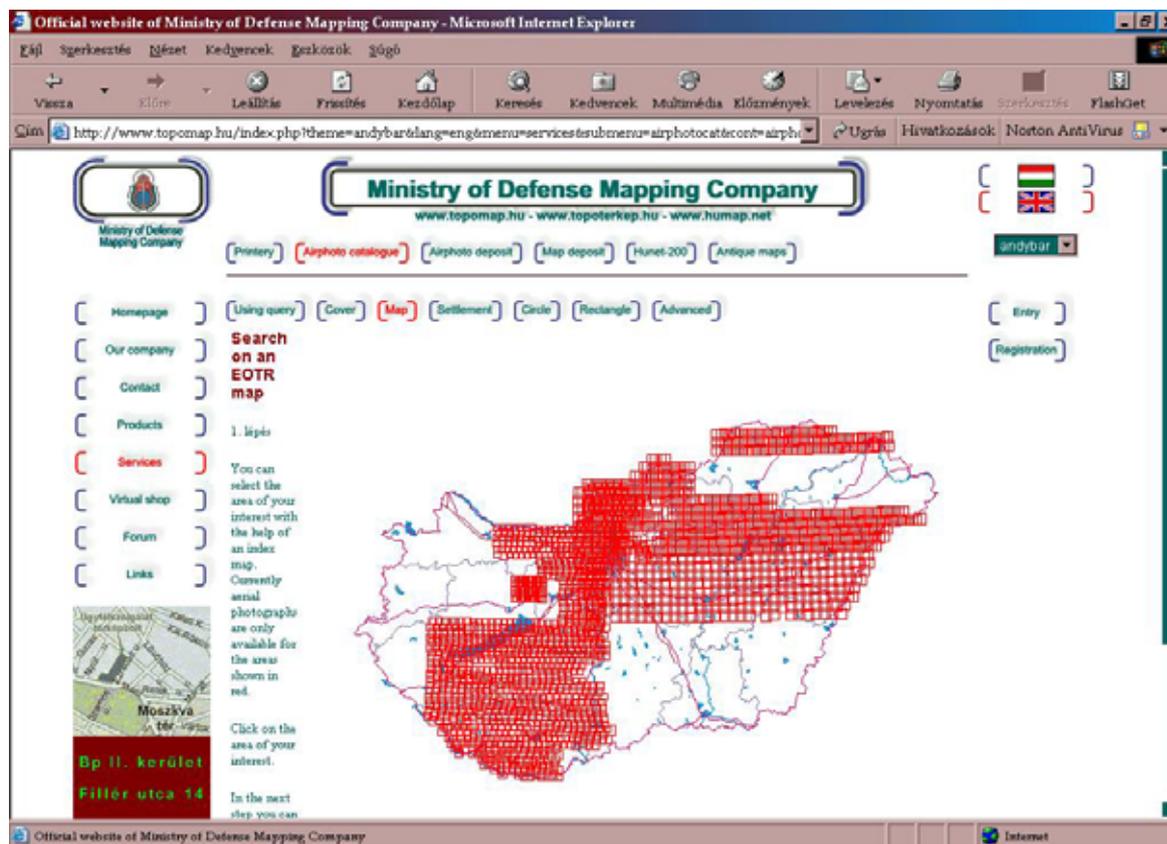
Digital orthophoto of Tokaj, draped to the high resolution DEM

1.6.8. Aerial photography in military mapping

MoD Mapping NPC produces survey camera aerial photographs in a significant number. According to the last years' practice, 30% of the county is photographed every year at 1:30,000 scale that, besides mapping tasks, can be utilised in many other fields of national economy. Information pertaining to aerial photographs can be seen on the website of the Mapping Company of the Hungarian Defence Forces. An Internet catalogue of survey camera made aerial photographs will make possible

- the viewing and storing technical data of survey camera made aerial photographs,
- the viewing of quick looks of aerial photographs.

Quick look images are published by means of the MrSid Image server. 800 × 800 pixel quick look images of the aerial photographs are published with a 20× MrSid compression.



Internet catalogue of aerial photographs of the Mapping Company of the Ministry of Defence

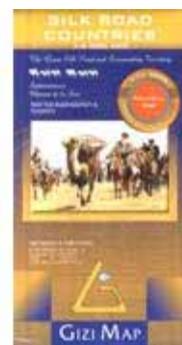
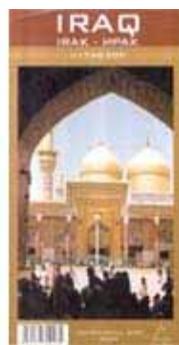
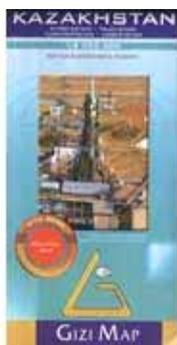
MS HDF is responsible for technical supervision of survey camera aerial photography. Beside authorisation and control of aerial photography of military purpose MS HDF is also responsible for technical supervision in terms of security classification.

2. Map publishing enterprises

The competition in the map publishing business is as fierce as ever. Maps of Hungarian territories using state base data have to be preceded by a government licence issued by either of the two national mapping agencies as stipulated by the 1996 Act on surveying and mapping. Computer technology is now prevailing in both larger and smaller cartographic firms; in a viable mapping company almost all phases of map production are now computerized. Below are some examples of map publishing enterprises:

- **GiziMap**

Gizella Bassa, head of GiziMap (virtually a one-person enterprise), finished her degree in cartography in 1969 and she has been working in mapmaking ever since. She had worked for Cartographia of Budapest for almost two decades on various map projects before deciding to establish her own publishing company. The opportunity came with the end of the state planning system and the return to market economy in Hungary in the early nineties. As she had previously concentrated her editorial mapping work on very different parts of the world the subjects for her independent editing activities were not a problem to choose. Countries and regions of political and everyday interest dominate her maps. Following her first maps of Estonia, Norway, she nowadays concentrates on such Eurasian areas and countries like Kosovo, Macedonia (FYROM), the Caucasus, Central Asia, Kazakhstan, Tibet, Northwest China, the Silk Road Countries and Iraq.



Contact address:

Ms. Gizella BASSA

GiziMap H-1279 Budapest 25, P.O. Box 29.

Hungary

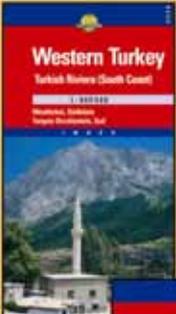
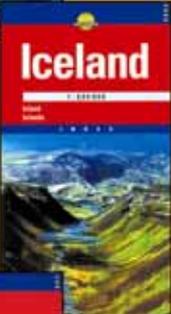
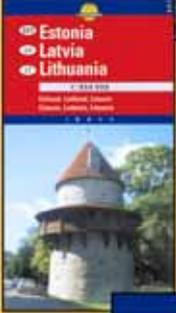
E-mail: gizimap.mant@mtesz.hu

- **Cartographia**

Cartographia of Budapest, although still state-owned, may celebrate its 50th year of foundation next year in private ownership.



EUROPEAN ROAD MAPS


CITY MAPS

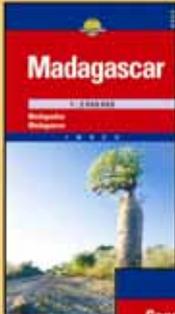
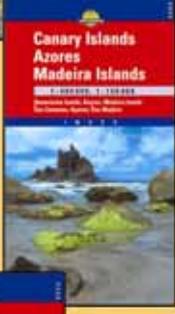
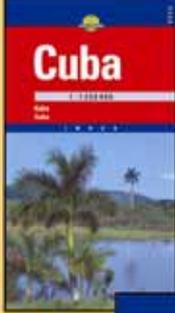
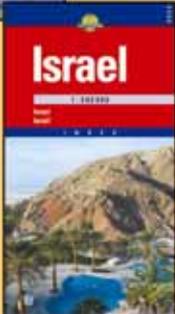









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3. Map collections, events on map history

3.1. *The Map Collection of the National Széchényi Library*

This collection, presently numbering approximately 192,000 items, is based on the original donation of Count Ferenc Széchényi, which contained a total of 1,500 items. The original collection consisted primarily of 18th century maps depicting Hungary, the neighbouring countries and castles. Additional donations, purchases and the legal deposit submission of a copy of all newly printed books as well as maps resulted in the gradual but steady increase of the collection.

The Map Collection was made into an independent unit of the Library in 1939. It now contains 151,000 printed and 35,000 holograph maps, 5,000 atlases, 84 contour maps, 58 globes and celestial spheres and 1,800 explanatory volumes.

The most important item among the printed maps is the oldest map of our country, the woodcut "Tabula Hungariae ad quatuor latera..." [sic] by Lazár, published in 1528. It justifiably takes its place among the most outstanding cartographic creations of its time and its wealth of place names makes it a source material of very great value. Among the greatest treasures of the Collection are the 105 items in the Enea Lanfranconi engraving collection, which also contains the creations of numerous 16th-18th century map-makers including W. Lazius, János Zsámboky, V.M. Coronelli, F. de Wit, Sámuel Mikoviny. They depict Hungary and its provinces.

The three editions (1664, 1684 and 1687) of M. Stier's Landkarten des Königreichs Ungarn. (Maps of the Kingdom of Hungary) come from the most eventful century of our history. Of considerable cartographic importance, the large-scale map of our country in 1709 by J. Ch. Müller is the first one to be based on actual surveys and must be regarded as the first official map of Hungary. The incomparably beautiful work of the Spaniard, C. Vasquez, Buda és Pest Szabad Királyi Várossainak Tájleírása (Description of the Free Royal Cities of Buda and Pest), 1835, contains four sheets of maps, each of which is an artistic masterpiece.

Among the unique, hand-drawn maps, the earliest comes from the original collection of the donor. It is a maritime map of 7 sheets, entitled Cartae Maritimae, a creation of G. Benincasa of 1474. The two coloured Dutch portolan maps drawn on parchment by Gh. Hessel in 1621 are among the earliest cartographic depictions of Australia. These maps are followed in time by two Italian cartographic creations, E. Stenghri's Descriptio ac delineatio totius Hungariae et Transylvaniae... of 1664 and G. Spalla's L'isola Murakes of 1670. The latter is a work of unparalleled delicacy of drawing and colouring. These are supplemented by the works of the most significant figure in 18th century Hungarian cartography, Sámuel Mikoviny and by the works of engineers, who in this and the following century did outstanding work in public administration, land surveys and water regulation. These include Lőrinc Bedekovich, Antal Balla, the brothers Kiss, József Beszédes and Mátyás Huszár.

Our atlas collection includes the 1541 Lyon and the 1605 Frankfurt editions of the Geographia, by the greatest of the ancient geographers Ptolemy; the 12-sheet Landtaflen [sic], a woodcut atlas from the first half of the 16th century, published by the Zurich press of Ch. Froschauer, and one copy of the Lafreri atlas, considered to be a rarity.

Our collection also holds the 1595 edition of the A. Ortelius atlas, from the Platin press, a 1606 edition of the G. Mercator atlas, hand-coloured, copper-engraved 17th century atlases from the Blaeu press and creations by J. Janssonius, F. de Witt, M. Seutter and J.B. Homann.

Among the valuable items of the collection we find the Parvus atlas Hungariae..., the first Hungarian pocket atlas, published in 1689 (the creation of Fabius Antonius Marchio de Colloredo and Gábor Hevenesy) and two hand-drawn atlases: the first one, published in 1771, depicts the copper mines of the Oravica region, and the other one, published in 1805 is the 120-sheet work of Antal Bauer depicting the settlements of Bács-Bodrog County. The Mag-

yar Átlása of Demeter Görög - Sámuel Kerekes (1790-1811) and the Oskolai új átlás (New School Atlas) of Ézsaiás Budai (1800) also deserve mention.

The two outstanding items of our globe collection are the copper engraved globe with a diameter of 48 cm, created in 1632 by M. Greuter; and the hand-drawn globe, created in 1862 by László Perczel. This latter with a diameter of 132 cm is one of the largest globes in Hungary.

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3.2. The Cartographic Collection of the Maproom of the Hungarian Institute and Museum of War History

In its present form the Maproom of War History was founded in 1954. The backbone of its total collection was made up of two sets of earlier materials:

- a collection of fifty thousand items rightfully belonging to Hungary was transferred from the War Archives /Kriegsarchiv/ of Vienna to the Royal Hungarian Archives of War History /later: War Archives/ after the First World War;
- a set of sixty thousand objects of the Royal Hungarian Cartographic Institute /later: Defence Mapping Institute/ was founded following the First World War.

The collection of the Maproom grew steadily partly by old maps /heritages, materials of other discontinued collections/, partly by new acquisitions /military map series, aerial photographs, other civil maps/. The total collection now numbers nearly 500.000. items /maps, atlases, globes, relief maps, professional journals, books, aerial photographs/, and by sheer size it constitutes the largest cartographic collection in Hungary.

Those military maps which were forbidden to give to the researchers, because they had "secret" qualifications, are free for research from 1992. Nowadays we have no classified maps in our Maproom.

Subdivision of the Cartographic Collection

The majority of maps are grouped according to the following geographical-regional divisions:

- maps of the heavens, of the world - historical, geographical atlases;
- maps of the continents
- maps of cities and their vicinities, travel guide books

- maps of war history - maps showing battles, campaigns, military events - are further grouped according to chronological order, following the classification of major historical epochs.

Within the territorial divisions there are the following *thematic classes*:

- general political, administrative maps
- physical maps
- special thematic maps

One of the most important parts of the collection of the Maproom is made up of the military series based on detailed field surveys, showing both Hungarian and foreign territories. In Hungary only the Maproom possesses complete series of the so-called first /1772-1784/, the second /1806-1869/ and the third military surveys /1869-1884/.

The original coloured manuscript sheets of the first and second military surveys are kept in the Kriegsarchiv in Vienna. Our Maproom has the colour copies of the originals in the same size. Usefulness, aesthetic value of these copied maps are all but identical with those of the original ones.

The collection consisting of the military series published by the Royal Hungarian Cartographic Institute, established after the First World War, can also be considered as complete, both for basic survey and derived scales.

The Maproom's collecting interests also cover military series of different scales and publishing years published after the Second World War in a different mapping and projection /Gauss-Krüger/ system.

In our collection as new items we have the NATO compatible UTM coordinate system 1:50.000 and 1:250.000 scale military maps.

The 120.000-piece collection of aerial photographs also has considerable value. A smaller part of them was made before the Second World War, while most of them are copies of air photos made for mapping purposes during the 1950s, '60s, '70s. and '80s.

Basic registration arrangement of materials of the Maproom has been put into effect. Better orientation among materials is assisted by a recording system, various study aid tools and index maps which are continually updated.

Computer processing of the collection has also started. Lists of geographical names of most sheets have also been processed, alphabetically arranged and printed /close to 30.000 items/. We started the elaboration of catalogue system in a My SQL database system.

A representative set of several maps of the Maproom has been processed and written to CD (166 sheets). In addition the maps of the first military survey of Hungary (for the present territory, 436 sheets, scale 1:28.800) are written to CD as well.

The collection grows by some 4-5 thousand new items yearly, a smaller part of them being old maps, new books and other publications, while most of them are deposit copies of military series.

The Maproom, as a public collection, is open to the public from 9 a.m. to 3 p.m. from Monday to Thursday. The number of research people is about 1000-1100 in a year. Black-and-white and colour photo and paper copies of maps are available on order request.

The Maproom took part in the organization of different exhibitions of the War History Museum, by lending maps.

Publications:

Annamária Jankó Ph. D: Study on the second military survey. In: Hadtörténelmi Közlemények. 103-109 pp. 22001/1.

Exhibitions:

In March of 2000 – exhibition on birthday of cartographer and engineer Mikoviny's 300 anniversary – in War History Museum

In September of 2000 - Millenium Exhibition – Hungary on maps in a 1000 years period – evolution of military maps – Budapest, Technical and Economic University

- the same exhibition in Győr (2001), in Sopron (2002)

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E-mail: janko.annamaria@hm-him.hu

3.3. Report on the Events Related to Map History in Hungary between 1999 and 2003

The past four years were very rich in conferences and exhibitions, dealing with map history.

In 1999, on the occasion of the 300th anniversary of the peace treaty signed on 26 January 1699 in Karlóca, Hungary (today Srijemski Karlovci, Serbia), a chamber exhibition was organised by the Map Room of the National Széchényi Library. For the first time in Europe, the warring parties (the Osman Empire, the Austrian Empire and Hungary) marked the national borderline not only on site, but also represented it on the map attached to the document.

In 2000, a joint exhibition and scientific session was organised by the National Széchényi Library and the War History Institute and Museum on the occasion of the 300th anniversary of the death and 250th anniversary of the birth of Sámuel Mikovinyi. They published the proceedings of the scientific session and the catalogue of the exhibition. The volume also comprises the papers of a conference held in 1998 that analyzed the circumstances of preparing

the map: "*Mappa generalis regni Hungariae...*" (General Map of the Hungarian Kingdom...) by János Lipszky.

In 2000, the Hungarian Society of Geodesy, Cartography and Remote Sensing organised an exhibition: "*One Thousand Years of Hungary in Maps*". Its catalogue (52 pages) was published under the same title.

In 2001, the same material of "*One Thousand Years of Hungary in Maps*" moved around as a travelling exhibition in various Hungarian towns – Győr, Hódmezővásárhely, Eger. Finally, the collection was exhibited in Paris as well. (The title of the latter event and its catalogue was "*La Hongrie depuis 1000 ans sur la carte géographique*").

In 2001, the Map Room of the National Széchényi Library organised chamber exhibitions with the titles "*National Maps – Maps of Provinces*" and "*Globes kept in the Map Room*".

In 2002, the material of the exhibition "*One Thousand Years of Hungary in Maps*" was also sent to the town Sopron, as a part of a scientific session on the current status of the scientific research in map history in Hungary. The convener of the conference was the Faculty of Forestry and Sylviculture, West-Hungarian University.

In 2002, the Geological Institute of Hungary organised an exhibition in Balatonfüred under the title: "*Maps of Lake Balaton*". Title of the catalogue: "*Balatinus, Balaton Lacus, Peiso, Pelso – Balatoni térképek*". Compiled and edited by Mrs. Jenőné Csongrádi, Balatonfüred, 2002. 32 p. ISBN 963 00 9727 4)

In 2002, on the occasion of the foundation of the National Széchényi Library, the Map Room organised an exhibition from the maps donated to the nation by the founder, Count Ferenc Széchényi.

In addition to the above listed events, various scientific exhibitions and conferences were held, where papers were delivered on map history. Among those events, the most important was the one held in 1999, which was dedicated to the life and activity of Johannes Honterus. It was Honterus, who published a map for the first time in Hungary around 1539, under the title: "*Chorographia Transylvaniae Sybenburgen*". The Collection of Old and Rare Prints of the National Széchényi Library is the keeper of the only copy in the world.

Publications on Map History:

1. **A magyar térképészek nagyjai. – Die Große der Ungarischen Kartographie: Lipszky János – Mikoviny Sámuel.** (Eminent Hungarian Cartographers: János Lipszky and Sámuel Mikovinyi.) Edited by Katalin Plihál – Csaba Reisz T. – Enikő Török. Budapest, 2001. 305 pp. ISBN 963 200 431 0.
2. **Térképkülönlegességek** (Map Rarities) by Katalin Plihál. Budapest, 2002. 112 pp. ISBN 963 204 133 X
3. **Gróf Széchényi Ferenc térképeinek és atlaszainak katalógusa. 1. kötet: Kézírtos térképek és atlaszok** (Catalogue of Count Ferenc Széchényi's Maps and Atlases. Vol. 1. Manuscript Maps and Atlases.) Edited by Katalin Plihál. Budapest, 2002. 442 pp. ISBN 963 200 450 7
4. **Gróf Széchényi Ferenc térképeinek és atlaszainak katalógusa. 1. Köt. Kézírtos térképek és atlaszok** (Catalogue of Count Ferenc Széchényi's Maps and Atlases. Vol. 1. Manuscript Maps and Atlases. (CD-ROM version) Edited by Katalin Plihál. Budapest, 2002. 442 pp. ISBN 963 200 451 5

5. Magyarország története térképeken (History of Hungary in Maps) by Árpád Papp-Váry. Budapest, 2002. 279 pp. ISBN 963 09 4387 5
6. Magyarország általános térképének elkészítése a 19. század első évtizedében. (Making the General Map of Hungary in the First Decade of the 19th Century) by Csaba Reisz T. Budapest, 2002. 512 pp. ISBN 963 202 327 7

Information about the events and publications concerning Hungarian map history is available also on the Internet.

Although it is not a real map history event, but worth mentioning here that the National Széchényi Library and the Lázár Deák Cartographic Foundation have been jointly organising annual exhibitions from the best printed and digital map products of the previous year every spring.

Katalin Plihal
kplihal@OSZK.Hu
Budapest, 27th February 2003.

4. Institutes of Higher Education in Cartography

4.1. Report of the Activities of the Department of Cartography, Roland Eötvös University of Budapest (ELTE), between 1999-2003

4.1.1. Introduction

The three basic duties of the Department are as follows:

- university-level training of cartographers,
- training of cartographic knowledge to future teachers of geography and other students of environmental sciences,
- supplying of maps, digital images, webmaps and professional advice for educational and scientific activities of the university's faculties.

The staff of the Department (full time, part-time and lecturers on contract) numbers 13. Subjects of the cartography syllabus that require other professional qualification than that held by the Department staff are taught (entirely, by holding special courses, or by reading a few lectures) by noted Hungarian and foreign scholars. 15 Hungarian and 6 foreign experts have contributed to the training of cartography undergraduates between 1999-2003. Training activities of the Department were expanded since the 1994-1995 schoolyear within the Postgraduate Degree School of Earth Sciences. In this period 9 candidates got the PhD in cartography.

Within the past four years 5 students and 3 staff members took part in foreign training projects at German and Portugal universities in the frame of ERASMUS co-operation.

István Klinghammer the head of the department was elected the Rector of the University in 2000. He was re-elected in 2003 for another 3-years period. He was elected for the member of Leopoldina, the German Academy of Science in 2002.

The website of the department (<http://lazarus.elte.hu>) was opened in 1995. This is the starting point of the Hungarian cartography, the daily average data transfer is about 1.5 GBytes.

4.1.2. Training

The first independent university department of cartography was established in 1953. The first training syllabus was prepared in 1955, and it formed the basis of the training of Hungarian cartography students until the early 1970s.

In 1973 cartography training was changed as part of the general reform of university training. Cartography training continued to be a 3-year course.

The Hungarian Act on Education of 1986 has made it possible that cartography training become a 5-year course. The first 10-semester course was launched in the 1988/89 schoolyear. We changed our curriculum continuously since 1990 to fit it to the digital cartography and we established a new curriculum in 2001.

Teaching of processes and methods of computer-assisted cartography (automated surveying methods, computer graphics, computer-controlled technologies, hypermedia) are secured by technical acquisitions of the Department (GPS receivers and base station, scanners, output devices).

4.1.3. Sub-program for Cartography of the Doctoral School of ELTE

Cartography is characterized by an essential variousness. Battles, geological formations, meteorological phenomena and ocean currents are all chances for communication of cartographical information.

If you visit the homepage of the ELTE Department of Cartography, you can get a sample of this variety, taking a view of whether the diploma works of our students or the themes chosen by our Ph. D. students.

We do not plan a radical change of our practice of training doctoral students, but we are susceptible to any new tendency arising. Our purpose is to go before the prevailing challenges and guide the way to those who work in practical cartography. Indeed, most of our students, including the majority of Ph. D. students, will find employment in the field of cartography (or in fields related to it, e. g. informatics, environmental conservation, public administration); some of them have even worked in these fields prior to being a student in our department.

Most of the staff of our department – researchers, professors, teacher-engineers – participate actively in education, research and practical cartography. In publication lists, beside traditional maps we can find electronic atlases and multimedia cartographical publications financed by domestic or foreign superiors (companies, funds, offices), whose preparation include theoretical and practical work of the staff of our department.

Modern education, especially doctoral schools and workshops surpassing even the higher education, need strong developing of our technical resources, because this is the only

way to keep pace with the development of the general level of techniques. This is why one of recent fundamental tasks of professors, Ph. D. students and undergraduate students is to compete, compete and compete.

4.1.4. Research

The Department has undertaken research in the following three fields of subjects:

4.1.4.1. Aspects of representation in thematic cartography (digital maps - electronic atlases) Major results:

- Magyar Nagylexikon (Great Hungarian Lexicon), Vol. 8-15 (articles and maps), 1999-2002
- Térképeken a Világtörténelem (Hungarian edition of The Times Atlas of World History), 1999
- Administrative Atlas of Hungary 1914, 2000
- World Atlas on CD-ROM (English/German/Hungarian), a cooperation with Cartographia, 2001
- Multimedia historical CD-ROM of Finland and Hungary, 2002
- Cherishing Hungary's Heritage/National Parks and World Heritage Sites, 2002

4.1.4.2. Education in Cartography

Major results:

- International Workshop on MassMediaMaps, 1999
- Publishing a book about digital cartography (László Zentai), 2000
- Conference on "Teaching maps for children: theories, experiences and perspectives beginning the 3rd millennium" in Budapest, 2002

4.1.4.3. Theoretical Cartography

Major results:

Being a landlocked country since 1920, Hungary has no significant marine research. However, cartographical representation of marine areas has been a repeated task of the Hungarian cartography.

In Hungary, research supported by the Commission on Marine Cartography of the International Cartographic Association started in 1989. As result of this, research on two topics was completed in 2003. The two topics are:

1. "Multilingual gazetteer of geographical names of marine areas and ocean floor...on CD-ROM"
2. IHO/IOC "Standardization of Undersea Feature Names" English/Hungarian version; Bathymetric Publication No. 6. Published by the IHB, Monaco

We intend to present our results to the session of the ICA Commission on Marine Cartography, during the 21st International Conference in Durban, South Africa.

4.1.5. The Department's other activities in ICA

Commission members:

- Mátyás Márton: Commission on Marine Cartography
- Jesús Reyes: Commission on Cartography and Children
- Zsolt Török: Commission on Theoretical Cartography
- László Zentai: Commission on Education and Training, Commission on Maps and Internet

Conferences, meetings:

- Organizing a meeting of the ICA Commission on Education and Training in Budapest, 2000
- Conference on "Teaching maps for children: theories, experiences and perspectives beginning the 3rd millennium" in Budapest, 2002
- Organizing ICA Executive Committee meeting, May 2003, Budapest.

István KLINGHAMMER
Professor and Head of Department,

László Zentai
Associate professor, Vice-head of Department

Mátyás MÁRTON
Associate professor

András Dutkó
Ph.D. student

Department of Cartography,
Budapest

4.2. Further institutions of higher learning in Hungary related to cartography:

4.2.1. The Department of Geoinformatics, College of Surveying and Land Management at the University of West Hungary (Székesfehérvár) is a college-level institute of higher learning training surveyors for both the government and the profession in general. The Department was established in 1994. As the first nation-wide activity the NCGIA (The National Center for Geographic Information and Analysis) CORE CURRICULUM adaptation was managed and published by the Department. Its wide-level foreign contacts and training projects gained a reputation for training in land information and GIS.

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Telephone: +36 22 348 271

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4.2.2. Budapest University of Technology and Economics

The legal predecessor of the University, Institutum Geometricum Hydrotechnicum (Institute of Engineering) was established by Emperor Joseph II (1780-1790) in 1782. Engineers specialized in surveying and water regulation were trained for three years of study.

- **Department of Geodesy and Surveying:** The basic educational task of the Department is to teach the Surveying for civil engineering, surveying/GIS, and architecture students, together with other obligatory and optional subjects. Coordination of education for GIS military topographic engineers. The Department offers courses in English, German and French languages for foreign students.

Contacts:

H-1111 Budapest, Műegyetem rkp. 3. K. mf. 16.

Tel: (36) 1 463 1146, Fax: (36) 1 463 3209

E-mail: titkarsag@agt.bme.hu

- **The Department of Photogrammetry and GIS** is the only university-level institution of learning in Hungary that specializes in the training of engineers of surveying and GIS in the fields of photogrammetry, remote sensing and GIS, but it also undertakes the training of civil engineers and technical managers in GIS.

Contacts:

H-1111 Budapest, Műegyetem rkp. 3. K. mf. 16.

1521 Bp. Pf.: 91.

Tel: (36) 1 463-1187, Fax: (36) 1 463-3084

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5. Major Cartographic Events and News in Hungary 1999-2003

- The Hungarian Cartographic Association (MATE), an alliance of Hungarian cartographic business people, was set up in 1999. Its primary aim is to ensure fair practice among actors of map publishing, and good public-private partnership. It also annually organizes competitions for professional prizes for cartographic products of the year.
- On 1 January 2000 István Klinghammer, Professor and Chair of the Department of Cartography at Eötvös Loránd University of Budapest, becomes the President of the University
- ICA Commission Education and Training met in Budapest in February 2000., Budapest
- Within the international conference "Teaching Maps for Children" the ICA Commissions Cartography and Children and Gender in Cartography also met in Budapest's Eötvös Loránd" University, in September, 2000
- January 1, 2001: Ministry of Defence Mapping Company is established (see 1.3.)
- The 6th Global Spatial Data Infrastructure (GSDI) Conference (GSDI6), entitled "From global to local", was held in Budapest in September 2002 with 220 participants. The Conference marked a turning point in the development of GSDI as a not for profit organization. The GSDI Association will give special attention to develop capacity building efforts with particular reference to obtaining resources for sustained capacity building in developing nations.
- In conjunction with GSDI6 the ninth meeting of the International Steering Committee for Global Mapping was also held in the Hungarian capital city on 20 September 2002.
- The luxurious volume „A History of Hungary on Maps” by Árpád Papp-Váry is published in Budapest in December 2002.
- Eötvös Loránd University, Budapest (ELTE), served host to the IMTA (International Map Traders Association) EAME (Europe, Africa and the Middle East) Annual Conference and Trade Show, 28 February-1 March 2003. Budapest 2003
- „Fine Hungarian Maps (Szép magyar térkép)” competition. The Lázár Deák Cartographic Foundation, bearing the name of the first Hungarian cartographer, and founded in 1994, annually organizes, together with the National Széchényi Library, the competition for the most beautiful maps of the year in several categories (tourism, science, atlases, digital products). Awards are announced each year in mid-March.
- Hungarian cartographers commemorated the 475th anniversary of publishing the first Map of Hungary by Lazarus. A symposium at the National Széchényi Library on 21 March 2003 highlighted various aspects of the map.
- Hungary was proud to host the ICA Executive Committee which held – on the premises of ELTE – a meeting on 2-4 May 2003 and discussed preparations for the 12th

General Assembly of ICA and the 21st ICC. The meeting coincided with celebrations marking the 50th anniversary of setting up the Department of Cartography at the university.

- In June 2003 the Hungarian government decided to provide a loan for the production in 2003-2007 of digital (vectorized) cadastral maps. covering the entire country

6. The Hungarian National Committee of ICA

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Secretary:

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Ministry of Agriculture and Rural Development
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Hungarian members of ICA Commissions for 1999-2003

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Maps and the Internet

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National and Regional Atlases

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