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SUMMARY OF RESULTS

A. Participants

More than 40 participants attended this 2-day workshop. They came from 20 European countries, namely: Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Norway, Poland, Romania, Sweden, Slovakia, Spain, UK, Ukraine and Yugoslavia. Colleagues from Albania and Austria were not able to come but sent their regards and expressed their interest in results and potential cooperations.

B. Overview over repeat station status in the European countries

5-minute presentations about the status of repeat stations were given by one representative of each country. Summaries of these and questionnaires for each country will be compiled into an overview which will be available soon on a webpage.

C. Results of Discussions

A half-afternoon session was dedicated to discussions on improving and homogenising European repeat station surveys. The time was not sufficient to discuss in detail all the following points and some were dealt with very briefly.

Agenda:

1. Density
2. Epoch
3. Super European repeat stations
4. Format
5. Improvements
6. Cooperation
7. Scientific Motivation
8. Method

1. Density

The density of repeat station networks varies significantly in different countries. It was agreed that a minimum density of one station in 15000 km² or mean station distance of approximately 125 km is desirable. This value is motivated by the horizontal gradient of secular variation and was suggested several years ago (Andrzej Sas-Uhrynowski).

Susan Macmillan was assigned the task to produce a map of the spatial distribution of measurements made during the last five years.

Jean-Jacques Schott, Angelo DeSantis and Monika Korte were assigned the task to do some SCHA studies to determine what station density is desirable from the point of view of secular variation modelling.

If a survey of the whole (probably denser) network cannot be completed within one year, measurements on an evenly distributed subset of stations are encouraged in years where "European surveys" are planned (cf. 2.)

2. Epoch

All participants agreed that measurements have to be done in all countries during the same period (within one year) with results reduced to the same epoch. A common "European survey" for 2004 or 2005 was suggested. To determine the most suitable epoch an inquiry with the following results was carried out:

<i>Country</i>	<i>Year of next survey planned</i>	<i>Number of stations</i>	<i>Remarks</i>
Bulgaria	?	15	Not yet sure
Croatia	2004	5-10	
Czech Republic	2003 + 2005	6-8	
Denmark	--	--	
Finland	2003, 2004, 2005	2-3	Every year
France	2005	ca. 10	
Germany	2003/2004	ca. 22/23	Half the network every year
Hungary	2003	12	
Ireland	2005/2006	ca. 8/8	Half the network per year
Italy	2004/2005/2006	ca. 38/38/38	Dense network within 3 years
Latvia	?		
Norway	2003,2004,2005	8	Every year
Poland, Lithuania and Belarus	2003/2004	Poland: ca. 9/9	Half the network per year
Romania	2004	22	
Sweden	2003	10	
Slovakia	2003+2005	6	
Spain	2003/2004	ca. 20/20	Half the network per year
UK	2004 or 2005	51	Part of the network
Ukraine	2004	10	
Yugoslavia	2005	19	Not yet sure

3. Super European Repeat Stations

The subject was only discussed very briefly. A subset of stations from each country might be used as super repeat stations.

4. Format

Susan Macmillan from WDC Edinburgh reported that only about 25% of repeat station data are reported to the WDC in the IAGA format. Several participants expressed the opinion that the IAGA format is too complicated. It was agreed that suggestions to change that format should be made at the next IAGA working group V-8 meeting in Sapporo in June/July 2003.

The importance of making data available by delivering them to the WDC was emphasized. For the time being Susan Macmillan offered that data can be submitted to the WDC in any easily readable format.

5. Improvements

Modellers would appreciate if more raw data were available, i.e. the absolute values at the time of measurement or in particular absolute values reduced only to a quiet night time close to the time of observation.

6. Cooperations

Cooperations were encouraged. Gerhard Schwarz and Pavel Hejda volunteered to search for suitable INTAS/NATO/EU- or similar Programmes where proposals for cooperations might be submitted.

7. Scientific and practical aims

An overview over the different aims of repeat station surveys was collected in order to decide on the most appropriate spatial density and time interval of measurements.

The listed aims are:

- Updating of magnetic charts
- Secular variation studies
- Global models
- Determining the crustal field (and aeromagnetism*)
- Lithospheric induction and conductivity studies

* The usefulness of repeat station data for aeromagnetic surveys has been seen controversially.

The fact that the dimensions of most European countries are quite small with respect to the long-wavelength, global geomagnetic field and its secular variation was emphasized as a strong motivation to have a common "European survey".

8. Method

The importance of high accuracy results was stated. Repeat station data only are

useful if measurements and reduction are carried out considering very carefully all sources of errors. Recommendations for good measurement and reduction practice are given in the IAGA publication "Guide for magnetic repeat station surveys" by L. R. Newitt, C. E. Barton and J. Bitterly, 1996.

9. General

It was agreed to have an European commission to coordinate the efforts towards a first "European survey" in 2004 or 2005. The members of this commission were chosen to be:

Monika Korte
Andrzej Sas-Uhrynowski
Jean-Jacques Schott
Gerhard Schwarz

The commission will devise a recommendation of minimum requirements for an "European survey" based on the agreements of this meeting. It is meant to support the planning of the common survey in the different countries.

It was also suggested to have another meeting on the progress of an "European repeat station survey" in two years.

D. Information on the Internet

The program of the workshop and this summary can be found at links from the Niemegek observatory webpage:

http://www.gfz-potsdam.de/pb2/pb23/GeoMag/niemegek/obs_eng.html

We are working on a special webpage where more information (compilation of questionnaires, summaries of presentations, any news etc.) will be available. The URL will be distributed as soon as possible.

Monika Korte and Mioara Manda, February 24, 2003