

EUROMET Length

Rapporteur's Annual Report 1999



1 Annual Contact Persons meeting

The annual meeting was held in Prague on 25. - 27. October 1999, organised by the CMI. It was attended by 22 participants from 20 countries, the BIPM and the IRMM. The status of all active projects was reviewed. Seven projects have been completed this year and final reports or first results were presented: six comparisons in the field of dimensional metrology and one comparison of Iodine stabilised HeNe-Lasers.

Several new activities were proposed: three comparisons (RMO supplementary comparisons) and one co-operation in research (traceability study for surveying instruments).

The main topics of the meeting were the participation and contribution of EUROMET to the MRA key comparisons as well as the harmonisation and the process for reviewing of the CMCs. These subjects will be discussed separately in this report.

The MRA and the CMCs will technically not only be based on the actual key comparisons, but also on past comparisons made in the RMOs. For this reason, the contact persons for length have discussed an extensive list of EUROMET comparisons, which fit into the scheme of the key and supplementary comparisons, satisfy the requirements with respect to the followed procedure (according to the BIPM guidelines), which can reasonably be used for establishing equivalence, and where a published report is available. The list will be sent to the CCL secretary for approval by the CCL.

2 Outline of the projects

For the following, all information is adjourned on the 1 April 2000 on the basis of the actual status of the active projects rather than on the formal status of the EUROMET project forms.

In the reporting period, 18 projects involving 95 participations from EUROMET NMIs and 7 participations from non-european NMIs and the BIPM were active. Four of these projects are on-going traceability agreements, one consultation, one co-operation in research and twelve comparisons. Five projects have been completed during this period, while three projects were agreed. In addition, four new projects were proposed and will most probably be agreed within the next few months.

Many of the projects are related to the MRA: one active and two completed projects are EUROMET key comparisons, and from the new proposals, three will be supplementary comparisons.

The table in the annex to this report gives some more detailed information to the different projects which were active during the reporting period.

Active projects in 1999		Project No.	Type of Co-operation
On-going:	4	7, 135, 137, 142	traceability agreements
Current:	14 (+2)	369, 371, 372, 390, 406, 413, 450, 456, 462, 471, 498, 530, 533, 561	1 consultation 1 co-operation in research 12 comparisons
Total active:		18 (+2)	

Table 1 Overview on the number of active projects.

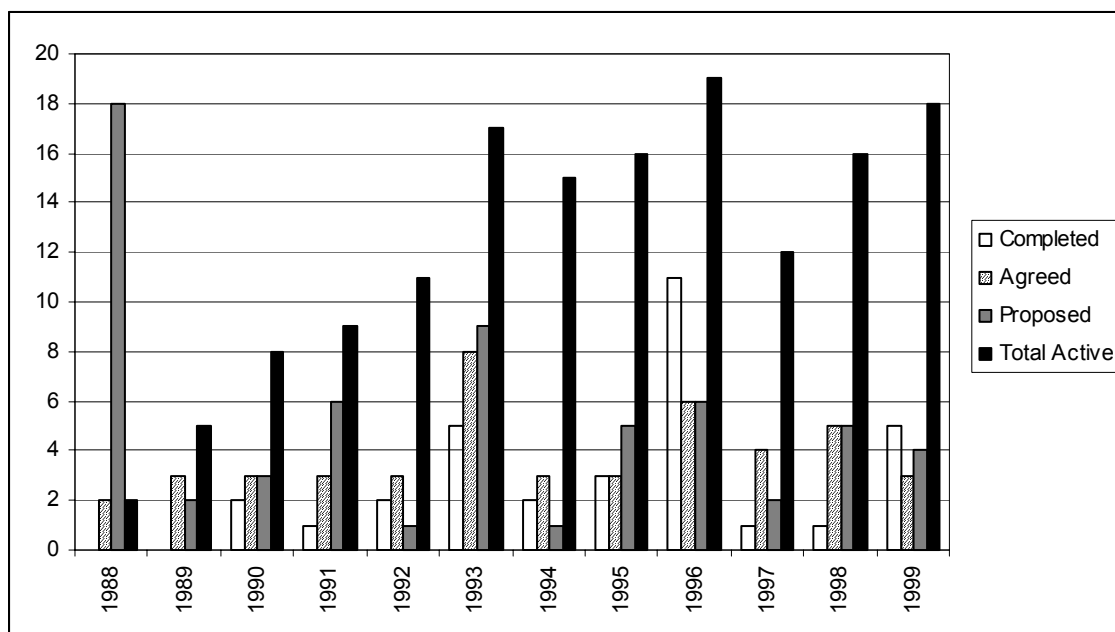


Fig. 1 Number of projects vs. year

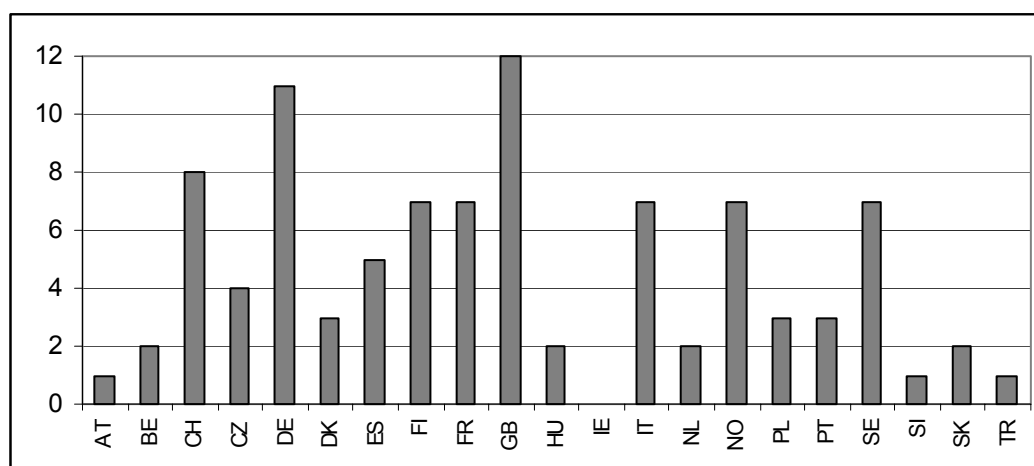


Fig. 2 Involvement of the EUROMET members in the projects active in 1999.

3 Contribution to key comparisons

The participation of EUROMET member laboratories in CCL key comparisons was a further subject of discussion. For technical reasons, the number of participants per region has to be limited to about four. For CCL-K3, CCL-K4 and CCL-K6, the participants were selected based on the criteria of CCL membership, technical competence, experience and equal distribution. Each CCL key comparison is backed up

with a corresponding EUROMET key comparison: three of these are already completed, namely EUROMET.L-K3 (optical polygons, project no. 371), EUROMET.L-K4 (cylindrical diameter standards, project no. 384), EUROMET.L-K5 (step gauge, project no. 372), one comparison is still active, namely EUROMET.L-K1 (short gauge blocks, project no. 471). The other two EUROMET key comparisons are planned to be organised once the corresponding CCL key comparisons have started. A list of all CCL and EUROMET key and supplementary comparisons and the involvement of the EUROMET members is continuously updated by the rapporteur.

4 Contacts to other Regional Metrology Organisations

Before and during the September 1999 meeting of the CCL working group Dimensional Metrology (WGDM), several meetings between the three rapporteurs of SIM (J. Pekelsky, NRC), APMP (N. Brown, CSIRO) and EUROMET and a few further experts took place. The goal was to achieve a world wide harmonisation of the entries in the CMC files for the field of length. The outcome was a common vocabulary and services classification scheme (DimVIM), detailed instructions about language, units and also about the range and uncertainty entries for completing the CMC files, and an example file. All these documents have proven to be extremely useful in the process of submitting and reviewing the CMCs by the NMIs and their regional organisations.

5 Harmonisation and review of the CMCs

At the contact persons meeting, some rules and procedures for the harmonisation and review of the CMCs were established, in addition to the instructions of the JCRB and the guidance documents of the WGDM. For the review process, the contact persons for length agreed to the following procedure:

- The CMCs are harmonised strictly according to the CCL service classification scheme; the low level services will not be included in Appendix C.
- A list of experts was nominated to cover all services of the classification scheme.
- Until the end of January 2000, all CMCs were reviewed by the experts; the review criteria were so far mainly inconsistencies.
- The complete CMCs were submitted to the EUROMET chairman on 31 January 2000.
- A second review, taking into account results in international comparisons and other information, is planned to be made until October 2000. This schedule will eventually have to be revised according to the latest instructions from the JCRB.

6 Personnel

Mr. Uwe Wätjen, IRMM, could be welcomed as the new contact person representing the EC. The contact person from Greece, Mr. Kostantinos Athanassiadis, has been replaced by Mrs. Panagiota Douka.

17 April 2000, R. Thalmann

- List of active EUROMET projects in the field of Length

Overview on the project activities of EUROMET Length

No	Subject	Type	Partners	Status
7	Calibration of gear standards	Trac	DE GB	ongoing
135	Calibration service for line standards from 0 to 3000 mm	Trac	FR GB	ongoing
137	Certification of API gauges	Trac	GB DE FR	ongoing
142	Calibration of polarimeters & saccharimeters (quartz control plates)	Trac	DE GB	ongoing
369	Diameter calibrations on precision cylindrical standards	Comp	DE CH FR GB IT NL SE USA	measurements completed, final report expected Apr 2000
371	Angle calibration on precision polygons (two loops)	Comp	DE BE CH CZ ES FI FR GB IT NL PL SK TR	measurements completed 1999, final report expected June 2000
372	Step gauge calibration (positions and thermal expansion)	Comp	DE CH ES GB IT NL SE	results published in PTB-report F-37
390	Intercomparison of thermal expansion etalons	Comp	DE FI GB NL	Final report completed April 1999
406	Dimensional calibration of small holes	Comp	DE CH FR GB IT NL NO BIPM	Measurements completed 1999, draft report received Apr 2000
413	Phase correction meas. in gauge block metrology	Comp	GB CH DE DK ES FI FR IT NO PT USA AUS	Project completed 1999; final report submitted to Metrologia
450	Interferometric measurement of long gauge blocks	Comp	SE FI SI?	status unclear
456	Comparison of angle gauges	Comp	PL CH PT	first measurements carried out 1999; measurements repeated in PT Feb 2000; progress report in preparation
462	Comp. of $^{127}\text{I}_2$ stab. 633 nm He-Ne lasers locked by 5th harm. method	Comp	FI CZ CN RU(VNIIM)	Project completed 1998; report submitted to Metrologia; final report received Apr 2000
471	Short gauge blocks measured by interferometry	Comp	FR BE CH CZ DE DK ES FI GB HU IT NL NO PT SE SK	on schedule; measurements to be completed Sep 2000
498	Intercomparison of $^{127}\text{I}_2$ stabilised He-Ne lasers at 633 nm	Comp	AT CZ HU PL BIPM	Project completed 1999; final report received Apr 2000
530	Uncertainty components of line scale measurements	Cons	NO SE	project expected to be completed Apr 2000
533	High precision roundness	Comp	FI CH DE GB SE	measurements completed 1999, draft report expected May 2000
561	Measurement of long gauge blocks	Coop	SE ES NL	expected to be completed in Apr 2000
570	Comparison of squareness standards	Comp	SK CH CZ DE ES FI FR HU IT NL PL PT SE SI	Proposed form received Feb 2000, questionnaire sent to potential participants
#	Traceability of surveying and geodetic instruments	Coop	ES	Proposed Apr 2000
#	Comparison of surface texture standards	Comp	DE DK	Proposal expected to be ready June 2000
#	Mechanical comparison of gauge blocks	Comp	IE	Proposal expected to be ready Apr 2000; start in June 2000