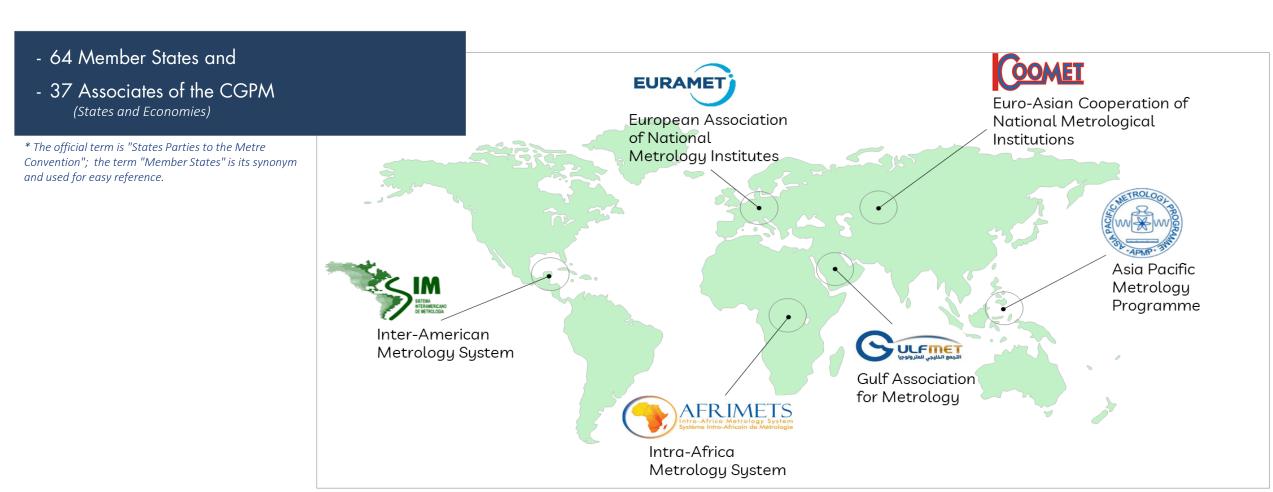
Report from the BIPM Director





Member States and Associates





108 of the 193 states listed by the UN participate in the BIPM's activities, covering around 98 % of the world's GDP according to 2023 IMF data.

Member States and Associates

26 180 CMCs

1195 KCs, 709 SCs

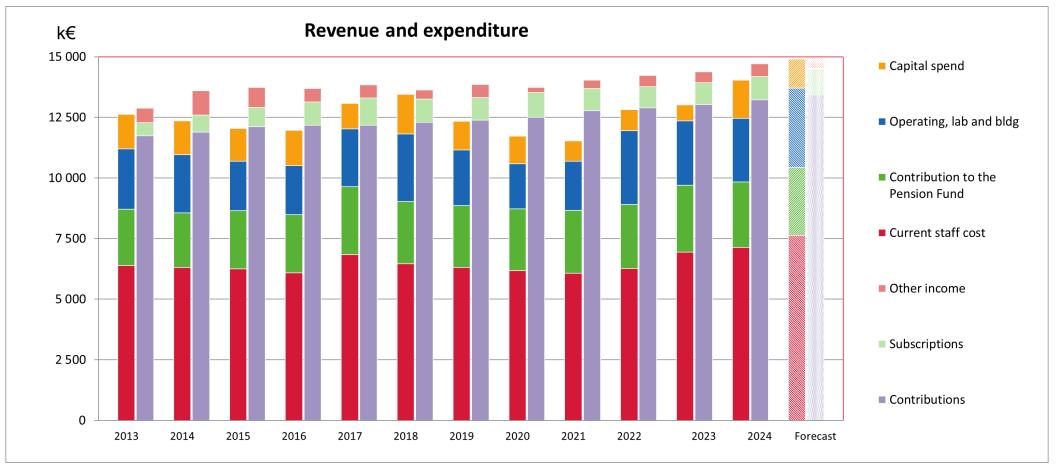




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Revenue and Expenditure (to end 2025)

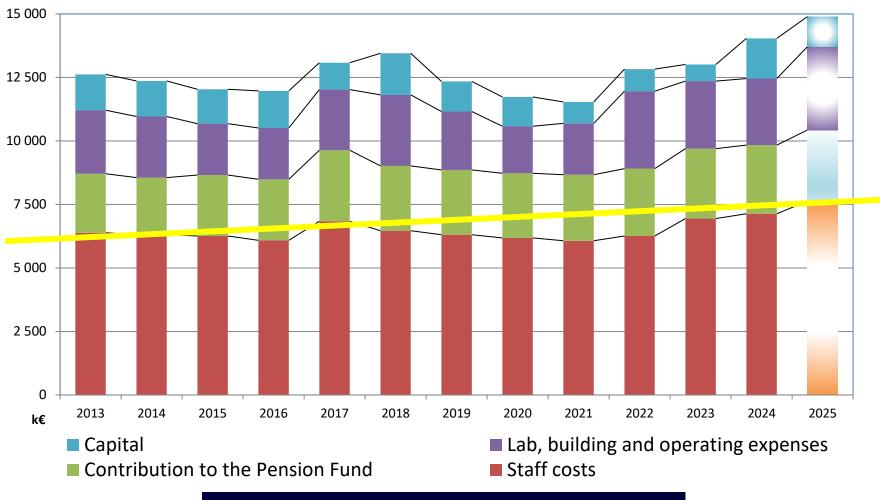




<u>Revenue</u> – increases with dotation (18% in 12 years) **Expense** – increase with inflation (utilities, lab equipment, salary inflation etc)

Expenditure (to end 2025)



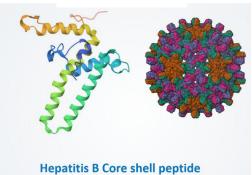


Salary costs increased by 20% since 2013. In the same period: dotation increase by 18%, RPI in France increases by approx. 25%

Working to broaden sources of support

Laboratory highlights – joint technical projects with NMIs





Characterization of candidate peptide and protein materials for comparisons

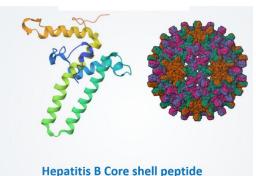
- Joint technical project with NPL on characterization of de novo peptides and proteins relevant to bioengineering as candidate materials for future CCQM-PAWG comparison.
- Three visiting scientists (27 months)fully funded by NPL
- Overseen by CCQM Protein Analysis Working Group



www.bipm.org 7

Laboratory highlights – joint technical projects with NMIs





Characterization of candidate peptide and protein materials for comparisons

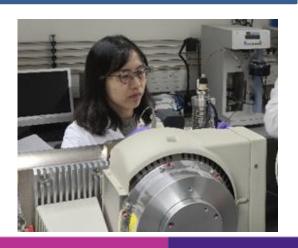
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- Three visiting scientists (27 months)fully funded by NPL
- Overseen by CCQM Protein Analysis Working Group





Metrology for safe food comparisons (CCQM-K78 series)

- Joint technical project with NIM on pesticide standards and comparions
- One visiting scientist fully funded by NIM (12 months) plus all samples of pure pesticide materials provided by NIM
- Supports CCQM Organic Analysis Working Group program of comparsoins and BIPM CBKT activity on safe food



Laboratory highlights – collaboration with the RMOs



Developing the International Reference System (SIR) for radioactivity

- New SIR has replaced the original one (dating from the 70s) with upgraded measurement capabilities and ULCA (from PTB)
- Copies of the SIR are being built in collaboration with SIM, APMP amd EURAMET to host regional comparisons.
- Launch of the "Extended" SIR comparisons with <u>14 new isotopes</u> including ¹⁴C (support to climate change studies), ³²P (for radio medicine) and ²²⁵Ac (new alpha therapies)

Laboratory highlights – collaboration with the RMOs

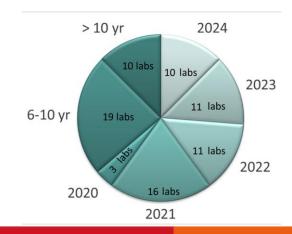


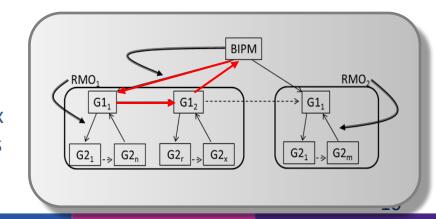
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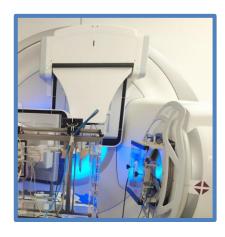
GNSS Receiver calibrations for UTC

- BIPM organises the calibration of G1 labs in each RMO using a Traveling System every 2-3 years,
- 75% of the UTC labs have re-calibrated their Rx in the last 5 years = more than 500 calibrations performed.





Laboratory highlights – using off-site facilities



Ionizing radiation facilities for dopsimetry and radio-protection

- high energy photon beams at DOSEO, Saclay (since 2017)
 - 8 comparisons (since 2017) and 17 calibrations (since 2020)
- 137Cs for radioprotection calibrations at IAEA, Seibersdorf (since 2023)
 - 3 comparisons (since 2023) and 2 calibrations (starting in 2024)

Laboratory highlights – using off-site facilities



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 - 3 comparisons (since 2023) and 2 calibrations (starting in 2024)

Future strategy is under discussion



Limited use of off-site facilities for large or high-cost facilities (LINAC, proton therapy).

maintain affordable, top-level facilities at BIPM — as recommended by the dosimetry community.



Selected off-site facilities centralized at the IAEA

- Only x-ray facilities at BIPM
- Strengthen collaboration with IAEA: free access but a dedicated BIPM staff member permanently based at the IAEA, also working partly for the IAEA



Full use of the IAEA facilities

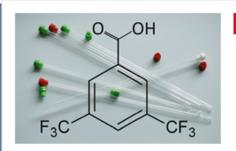
- No facilities remaining at BIPM
- All BIPM dosimetry staff located at IAEA
- Shared resources between BIPM and IAEA
- Expected metrological degradation

Support of BIPM lab projects from donations



JEOL donated an NMR

instrument in 2017
through a collaborative
agreement with NMIJ
which has led to many
visiting scientists at the
BIPM and the following
outputs:



New qNMR internal standard for pharmaceuticals and other organofluorine compounds

The first internal standard reference document on the use of 3,5-Bis(trifluoromethyl) benzoic acid for ¹⁹F qNMR for organic compound purity measurements has been published.



Successful qNMR Summer School at the BIPM Headquarters

The BIPM held its first Summer School on quantitative nuclear magnetic resonance (qNMR) measurement techniques on 24-28 June 2024.



Octad of standards for qNMR purity measurements

Publication of the benzoic acid reference document, together with seven others, provides guidance for the use of a universal suite of eight higher order SI-traceable primary standards, the Octad, for the purity assignment of organic compounds using qNMR in any solvent.



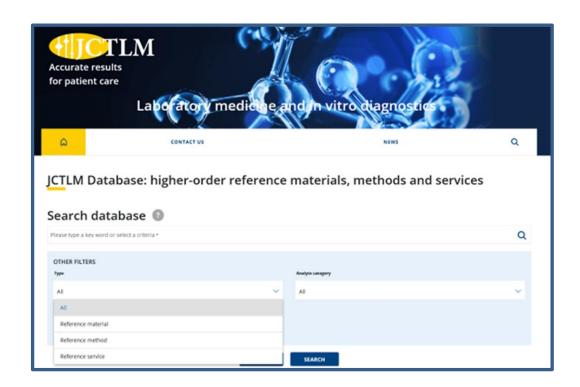
qNMR e-learning course now available

Guidance on value assigning the purity of organic pure materials using qNMR is available through the BIPM e-learning platform.

Supporting sector-specific activities: Laboratory Medicine

The "go-to" database for the *in-vitro diagnostics* (IVD) industry

- Covers 70% of laboratory testing
- > 95% of the Reference Materials listed are from NMIs

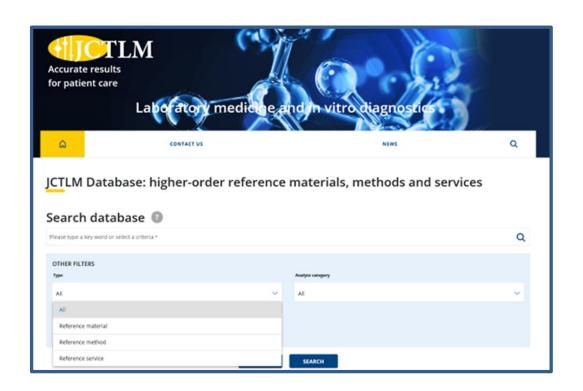




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Future tiered model for annual JCTLM funding (130 k€):

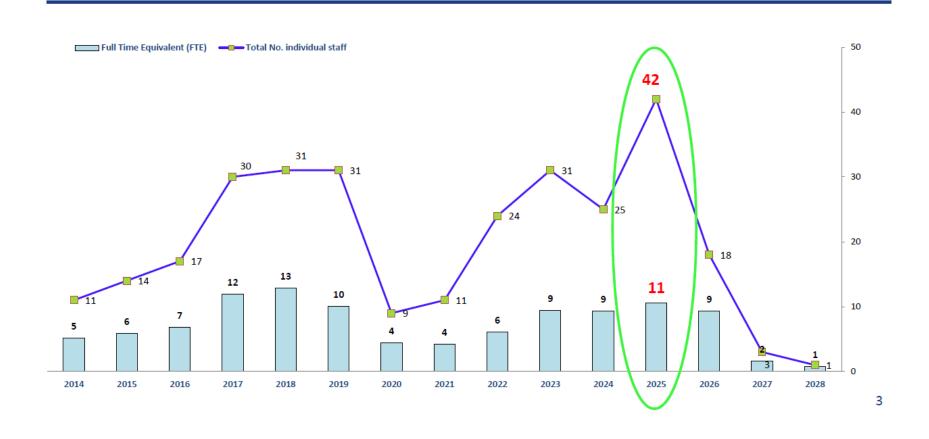
- IVD Industry 45 %
- IFCC donation 22 %
- BIPM dotation 22 %
- NMIs 6 %
- JCTLM Events 5 %

Will apply to all 81 member organistaions.

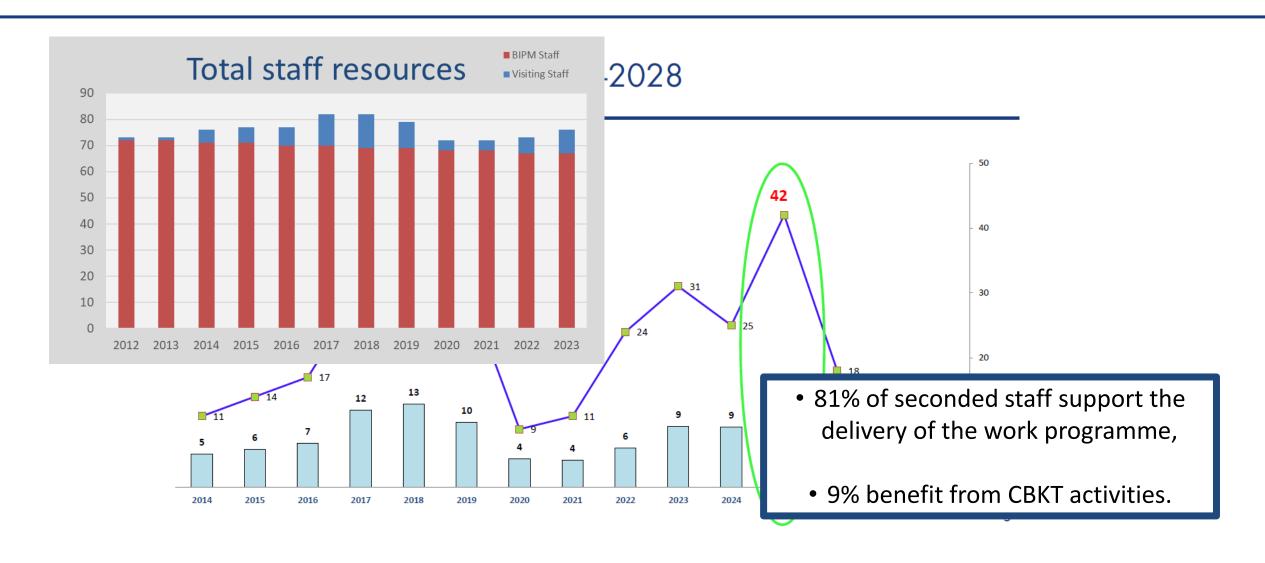


BIPM staff working with visiting staff

Complementary staff: FTE 2014-2028

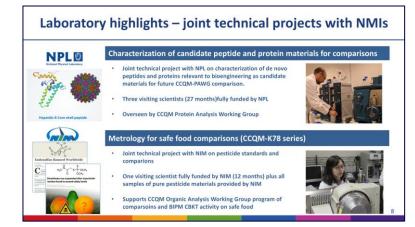


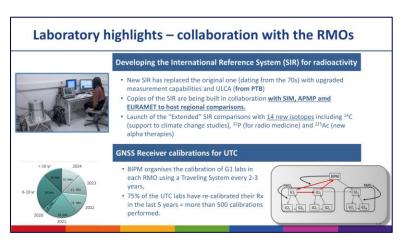
BIPM staff working with visiting staff

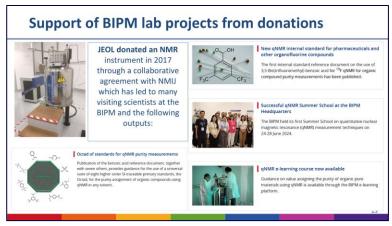


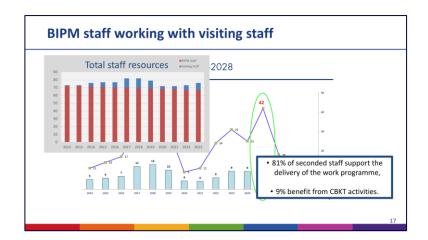
Broadening our sources of support

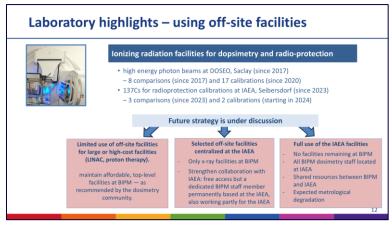


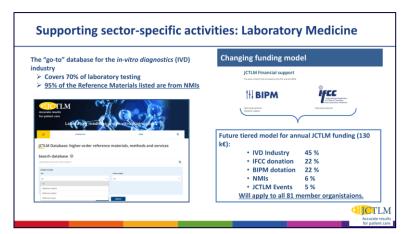












Routes to Impact

www.bipm.org

Promoting metrology to the global community





222 EX/39 Rev.

Executive Board

Two hundred and twenty-second session

PARIS, 10 September 2025 Original: English

Item 39 of the provisional agenda

MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN UNESCO AND THE INTERNATIONAL BUREAU OF WEIGHTS AND MEASURES (BIPM)

Negotiating a MoU with UNESCO on cooperation (to replace the 1949/1952 CIPM-UNESCO Agreement)

In August a <u>draft BIPM-UNESCO MoU</u> submitted to the 222nd Session of the UNESCO Executive Board scheduled for 1-16 October 2025.

Signing of the MoU expected by the end of 2025.

Promoting metrology to the global community





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TECHNICAL BARRIERS TO TRADE

Thematic session on the role of metrology in facilitating trade

Room D and Zoom - Hybrid





6:30 11 NOVEMBER 2025

Thematic session of the WTO TBT Committee on the role of metrology in facilitating trade to mark the 150th Anniversary

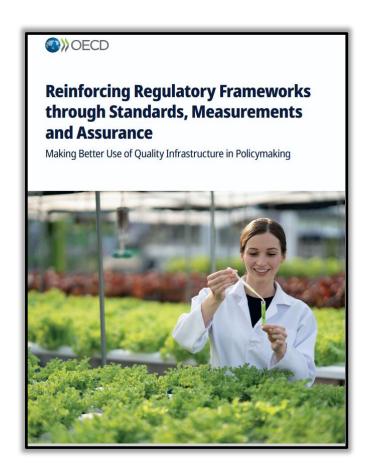
scheduled for 11 November 2025 (15-16:30) in Geneva

(proposal submitted by the Australian delegation and approved by the WTO TBT Committee in November 2024)

Agenda under development in cooperation with the WTO Secretariat and Australian delegation to the WTO.

Promoting metrology to the **global regulatory community**





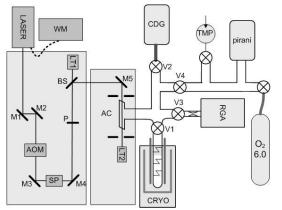
The OECD report <u>"Reinforcing Regulatory Frameworks through</u>
<u>Standards, Measurements and Assurance: Making Better Use of</u>
<u>Quality Infrastructure in Policymaking"</u> was published on 15
September 2025

The BIPM was one of the initiators of this project and seconded its staff to assist the OECD Regulatory Policy Division in the implementation of the project.

On 6 December 2024, the BIPM and the OECD hosted a full-day event "Building Stronger Connections Between Quality Infrastructure and Regulation" at the BIPM's headquarters to explore the critical links between regulatory systems and QI of the upcoming report.

BIPM ozone reference measurements adopted worldwide in 2025

BIPM measurements with KRISS and GUM



Viallon, J., Lee, S., Moussay, P., Tworek, K., Petersen, M., and Wielgosz, R. I.:

Accurate measurements of ozone absorption crosssections in the Hartley band,

Atmos. Meas. Tech., 8, 1245-1257, 2015.







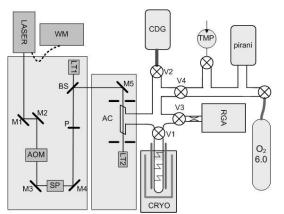


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Measuring Ozone Accurately for Clean Air and Blue Skies



International Day of Clean Air for blue skies







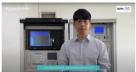






























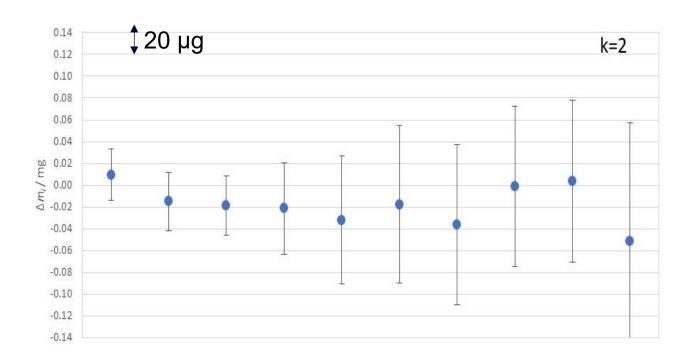


BIPM Ozone Comparisons Programme

Organization of the third key comparison of realizations of the kg



Differences between mass values attributed to a nominal 1 kg mass by Kibble balances and XRCD methods



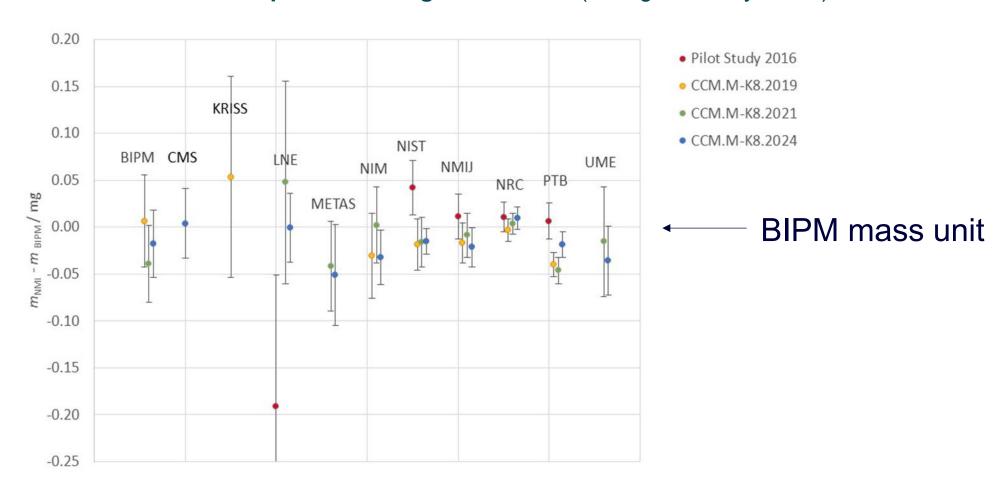
Presented in anonymous form because Draft A not yet available

- BIPM acted as pilot laboratory and participated with its own Kibble balance
- 10 participants: 3 XRCD, 6 KB,
 1 Joule balance
- Improved consistency compared to the two previous comparisons

Organization of the third key comparison of realizations of the kg

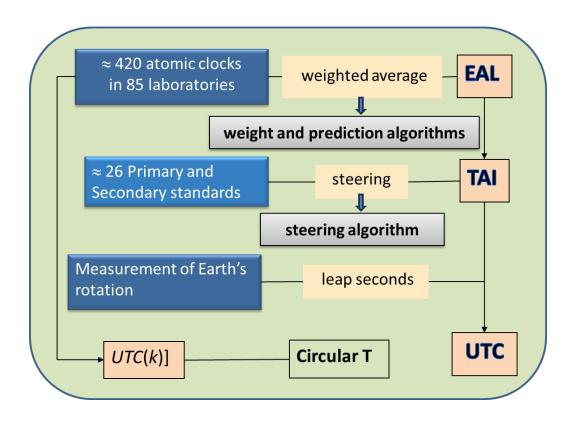


Results of four consecutive comparisons of kg realizations (all organized by BIPM)



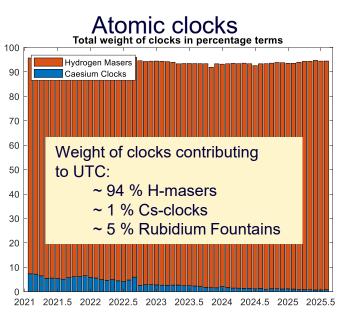
Impact of NMI clocks on UTC

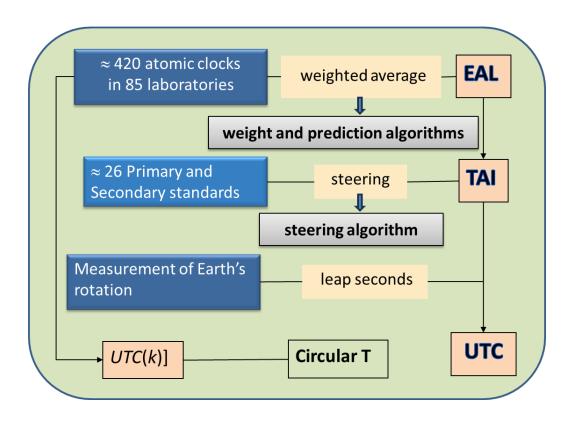




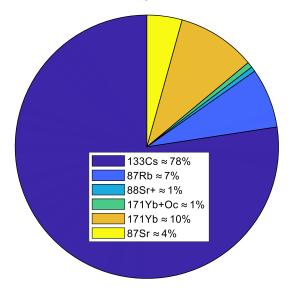
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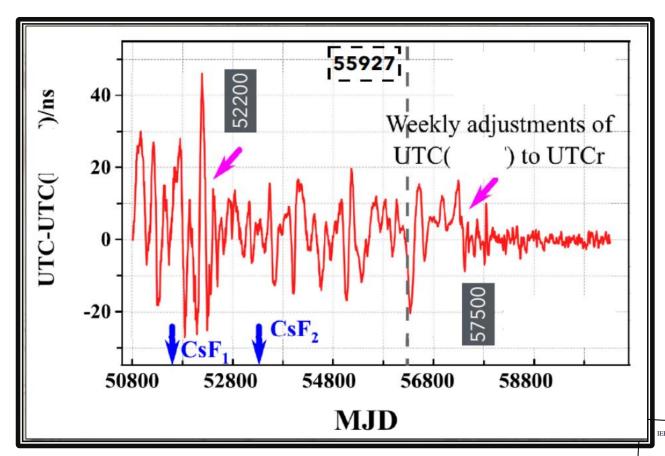






Impact of UTC on NMI clocks on UTC





SE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, VOL. 74, 2025

5503210

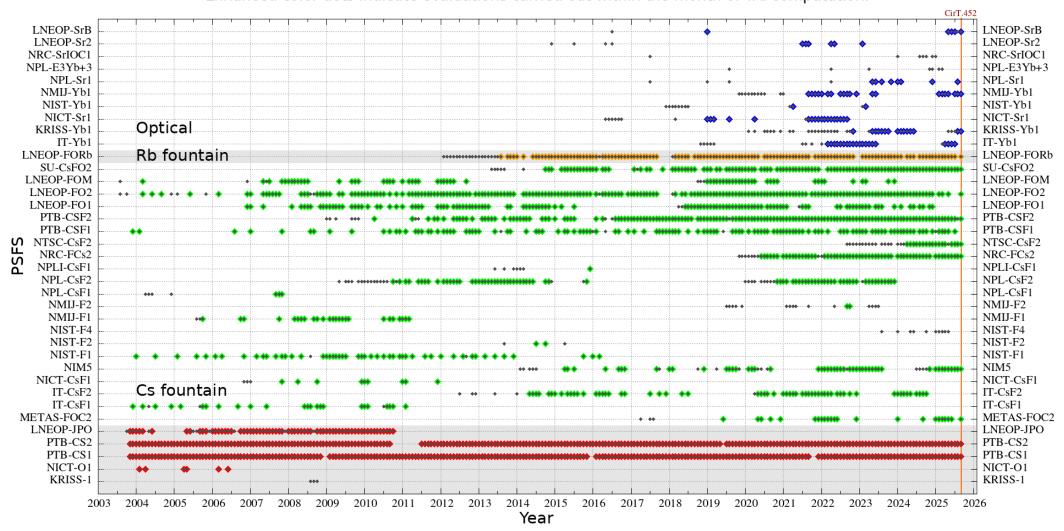
Performance Estimation of UTC and Several UTC(*k*) Realizations During the Past 25 Years

C. A. Ortiz¹⁰, E. de Carlos-López¹⁰, A. Medina-Herrera¹⁰, Michael A. Lombardi¹⁰, *Member, IEEE*, and J. M. López-Romero¹⁰, *Member, IEEE*

Impact of NMI clocks on UTC



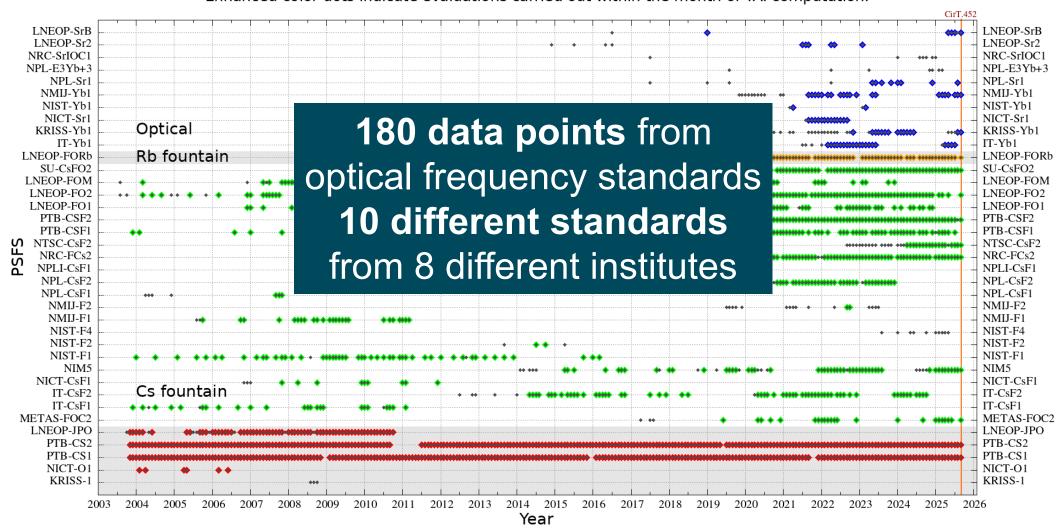
Graphical representation of all evaluations of Primary and Secondary Frequency Standards reported since Circular T 190. Enhanced color dots indicate evaluations carried out within the month of TAI computation.



Impact of NMI clocks on UTC



Graphical representation of all evaluations of Primary and Secondary Frequency Standards reported since Circular T 190. Enhanced color dots indicate evaluations carried out within the month of TAI computation.



UTC Summer Schools 2025

| BIPM

BIPM - SIM UTC Summer School

- 7-9 May 2025
- CENAM, Queretaro Mexico
- 29 participants from SIM region



BIPM UTC Summer School

- 9-11 September 2025
- BIPM, Sèvres France
- 38 participants from all RMOs



44 k\$ support from IEEE UFFC

UTC Summer Schools 2025

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- BIPM, Sèvres France
- 38 participants from all RMOs



BIPM/TÜBİTAK UME placements

- Over eight years of this initiative
- 76 participants from more than thirty countries across all regions have taken part over 8 years.
- 1 to 3 month placement at TÜBİTAK UME laboratories. TÜBİTAK UME covers laboratory and accommodation costs.
- Aimed at young metrologists (relatively inexperienced through to those with more experience).

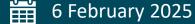
44 k\$ support from IEEE UFFC



Online technical exchanges for the CIPM MRA user community



COMPARISONS





237 participants

56 countries (all RMOs)

CMC WRITERS

3 April 2025

Designed for those who prepare CMCs and submit them for review.

268 participants

68 countries (all RMOs)

CC CHAIRS

19 June 2025

Tailored for those who review CMCs.

157 participants

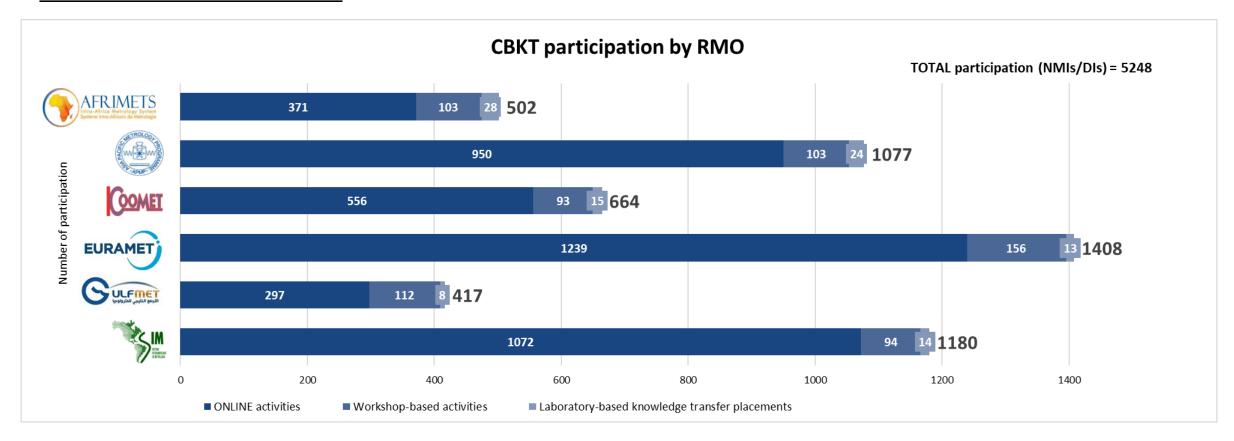
45 countries (all RMOs)

Based on the CIPM MRA policy on comparisons and CMCs, supported by live KCDB demonstrations, and enriched through real-case discussions, experience sharing and Q&A sessions with KCDB experts.

CBKT Participation by RMO

| BIPM

Collaboration with all six RMOs



Thanks for support from:

- METAS, Switzerland NMISA, South Africa
- NIM, China
 - NPL, United Kingdom
- NIST, USA
- PTB, Germany

- SCL, Hong Kong, China
- TÜBITAK UME, Türkiye
- EEE UFFC society

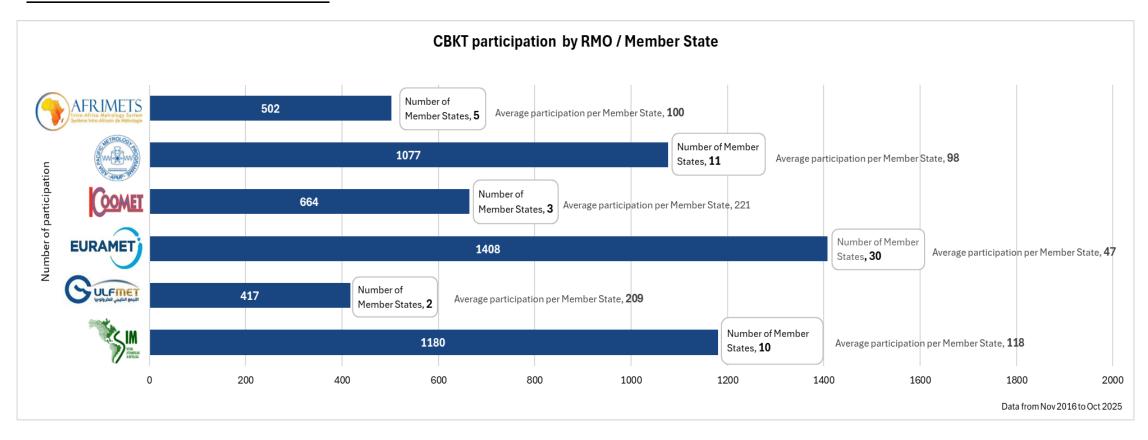
Plus

- All the RMOs

CBKT Participation by RMO

H BIPM

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Plus

- All the RMOs

Digital Transformation

<u>Semantic web</u> to make our services and data machine-readable.

• The SI Reference Point

V1.0 includes

- Units
- Prefixes
- · Defining constants
- · Quantities used in the SI Brochure
- Decisions
- CMCs
- · Measurement service categories
- for Physics (exc RI)

(v2.0) Under development

- Measurement service categories for RI and chemistry
- Quantities used in the KCDB
- Fundamental constants

• APIs for all BIPM databases

- Key comparison database
- Time database
- JCTLM database





Digital Transformation



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APIs for all BIPM databases

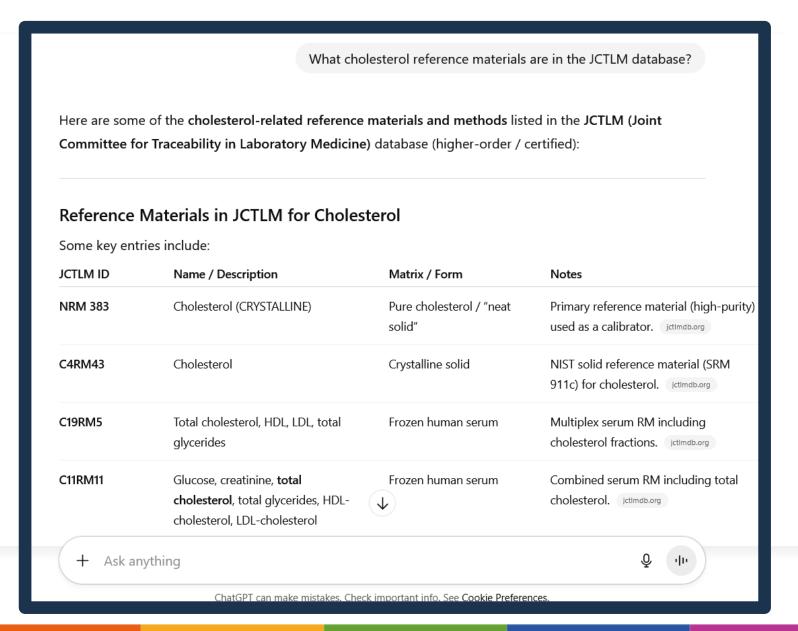
- Key comparison database
- Time database
- JCTLM database

<u>Artificial Intelligence</u> to make our services and data accessible to AI (eg LLMs)



Making NMI Services in the JCTLM visible to Chat GPT





Making NMI Services in the JCTLM visible to Chat GPT



Additionally:

- NRMeth 32 The CDC Abell-Kendall method for cholesterol is listed as a reference measurement procedure (NRMeth 32). jctlmdb.org
- "CDC reference method for HDL cholesterol in serum" is listed in the JCTLM database (for HDL cholesterol, a lipid-fraction related measurand). jctlmdb.org +1
- In the JCTLM index, there are entries for "total cholesterol," "HDL cholesterol," "LDL cholesterol," and "total glycerides" among the lipid analytes. [jctlmdb.org +1]

If you like, I can export a full list (with all available cholesterol / lipid reference materials and their details) from JCTLM as of the current date (2025). Would you like me to do that?



Next step: - using AI to support the peer-review process.







CELEBRATING #BIPM150

At BIPM, UNESCO and Versailles | May 2025









CELEBRATING IN SÈVRES

A photo exhibition entitled "150th Anniversary of the BIPM – Robert Doisneau and Raphaël Dallaporta" alongside a series of talks on the history of the BIPM and Metrology in Ville de Sèvres in collaboration with the BIPM.

EDITION SPÉCIALE HISTOIRE DE SÈVRES

BUREAU INTERNATIONAL

DES POIDS ET MESURES



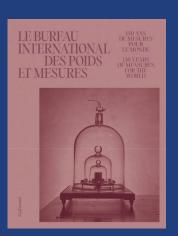




ANNIVERSARY **BOOK**

The newly published book The International Bureau of Weights and Measures, 150 Years of Measures for the World is a richly illustrated history that brings the evolution of international metrology to life through photographs, stories and archival insight.





AS PROPOSED OCTOBER 2023



Objectives of the 150th anniversary events

- We are planning a number of events in Paris in the week of 20th May 2025.
- The aim of these events will be:
 - 1. To celebrate the achievements of 150 years of metrology by the BIPM since the signature of the Metre Convention.
 - 2. To present a new vision and strategy for the BIPM for 2030 and beyond developed by the CIPM.
 - 3. To promote metrology to the widest possible global audience.

5

SOME OF OUR HIGHLIGHTS

- Interview on France 24 with Henry Rotich- here
- Full page feature in Le Figaro on LNE here
- Illumination of Le Molo, in Torino by INRiM
- UNESCO offered to involve "metrology" in their education outreach programmes







Mètre et kilogramme : comment la France a imposé au monde ses étalons il y a 150 ans

RÉCIT - Le 20 mai 1875, la signature d'un accord international fait du mètre et du kilogramme les unités de mesure de référence. Mais en 150 ans, les deux étalons ont bien changé, et sont désormais définis en référence à des invariables de la physique, la vitesse de la lumière et la constante de Planck.

Publié le 22/05/2025 à 21:02

Sciences & Environnement







Videos



The SI by William D. Phillips | World Metrology Day ...



Opening Session | World Metrology Day Symposium..

150 Years of international use of the Metric System |...

150 YEARS OF

Challenges in Metrology | Poster Presentations from...

The FAIR Digital Revolution | Expert Insights from..

Science | Ex

77 views • 13 days ago

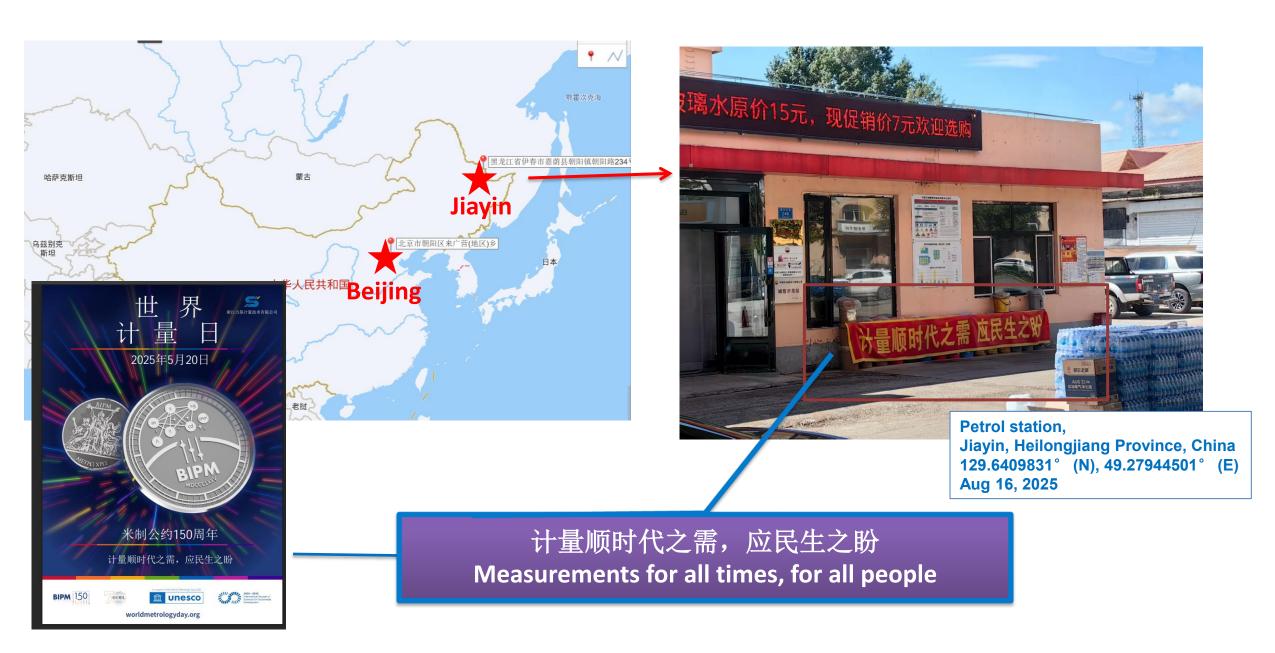
183 views • 10 days ago

81 views • 10 days ago

52 views • 10 days ago

95 views • 13 days ago

64 views • 13



B: NIM, China (Beijing) Aug 16, 2025 47









THANK YOU