WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

Secrétariat
7 bis, avenue de la Paix – Case postale 2300
CH 1211 Genève 2 – Suisse
Tél.: +41 (0) 22 730 81 11
Fax: +41 (0) 22 730 81 81
wmo@wmo.int – wmo.int

الرقم المرجعي: 6742243/2026/ESDP/MINT 26 أيار/ مايو 2026

عدد المرفقات: 3 (بالإنكليزية فقط)

الموضوع: وضع مفهوم موحَّد للمراكز الإقليمية للأدوات

الإجراءات المطلوبة: (1) موافاتنا بآرائكم وملاحظاتكم بشأن المفهوم الموحَّد المُقترَح

(2) تعميم هذه الرسالة على المنظمات المعنية التي تشغل مراكز إقليمية للأدوات، ومراكز إقليمية للأدوات البحرية، ومراكز إقليمية لقياس الإشعاع

تحية طيبة وبعد،

كما تعلمون، فإن اللجنة الدائمة للقياسات والأدوات والتتبُّع (SC-MINT) هي إحدى اللجان الدائمة التابعة للجنة الرصد والبنية التحتية ونظم المعلومات (والمعروفة اختصاراً باسم "لجنة البنية التحتية" أو (INFCOM)). وإنه لمن دواعي سروري أن أحيطكم علماً بأن اللجنة الدائمة للقياسات والأدوات والتتبُّع قد بدأت العمل على وضع *"مفهوم موحَّد للمراكز الإقليمية للأدوات"* يحل محل المفاهيم الحالية للمراكز الإقليمية للأدوات (RICs)، والمراكز الإقليمية للأدوات البحرية (RMICs) والمراكز الإقليمية لقياس الإشعاع (RRCs).

وبما أن بلدكم الكريم يستضيف واحداً أو أكثر من هذه المراكز التابعة للمنظمة، فإنني أتواصل معكم كي أطلعكم على التغيير المُقترَح في المفهوم، وأدعوكم من خلال هذه الرسالة إلى تقديم ما ترونه من آراء وملاحظات بشأن هذا المفهوم الجديد.

ويهدف المفهوم الموحَّد إلى تعزيز الأدوار التي تضطلع بها المراكز الإقليمية للأدوات، والمراكز الإقليمية للأدوات البحرية، والمراكز الإقليمية لقياس الإشعاع، في دعم أعضاء المنظمة في مجالات تتبُّع القياسات وخدمات المعايرة وتشغيل نظم الرصد وصيانتها. ومن أهدافه أيضاً ضمان أن يحصل الأعضاء على الخدمات التي ينتظرون الحصول عليها، وتعزيز الثقة في الخدمات التي تُقدِّمها هذه المراكز جميعاً، وتبسيط عملية الإشراف على هذه المراكز.

وهذا المفهوم الجديد هو ثمرة الجهود الرامية إلى دعم المراكز الإقليمية للأدوات وتعزيزها، بوسائل منها إنشاء صفحات ويب مُخصَّصة لكل مركز للترويج للخدمات التي يقدمها هذا المركز، وإعداد دورة تدريبية عبر الإنترنت عن المعايرة، وتكوين مجتمع من الممارسين المعنيين بهذه المراكز يتيح الفرصة لتبادل الآراء ووجهات النظر حول مجموعة متنوعة من الموضوعات (مثل منتديات النقاش، ومقترحات بشأن الشراكات بين المراكز الإقليمية للأدوات، وتبادل وحدات التدريب، والاطلاع على الإجراءات والممارسات التي تطبقها المراكز الإقليمية للأدوات).

إلى: الممثلين الدائمين لأعضاء المنظمة الذين يستضيفون مراكز إقليمية للأدوات، ومراكز إقليمية للأدوات البحرية، ومراكز إقليمية لقياس الإشعاع (توزيع محدود)

صورة إلى: رؤساء الاتحادات الإقليمية

ويستند وضع المفهوم الموحَّد إلى تقييم الوضع التشغيلي الحالي للمراكز الإقليمية للأدوات والمراكز الإقليمية للأدوات البحرية والمراكز الإقليمية لقياس الإشعاع وتقييم أداء هذه المراكز جميعاً، بما في ذلك تحليل التقارير الأخيرة والمُدخلات المقدَّمة من الأعضاء والجهات المعنية ذات الصلة. وقد سلط هذا التقييم الضوء على العديد من التحديات، منها:

- الخدمات المحدودة المقدَّمة إلى الأعضاء (مثل خدمات المعايرة، والمقارنات بين المختبرات، والتدريب)، مع وجود تفاوتات كبيرة بين الأقاليم التابعة للمنظمة؛
- التفاعل والتواصل المحدودان مع الأعضاء؛
- التنفيذ المحدود لإجراءات المعيار ISO/IEC 17025 من معايير المنظمة الدولية لتوحيد المقاييس (ISO) واللجنة الكهربائية التقنية الدولية (IEC)، واعتماد المراكز وفقاً لهذا المعيار، وعدم التتبُّع الموثق لبعض المراكز؛
- التعاون المحدود والتبادل المحدود للمعارف بين المراكز المُعيَّنة؛
- عدم فعالية وعدم جدوى عمليات مراقبة هذه المراكز وإعداد تقارير عنها وتقييمها وإعادة تأكيد تعيينها؛
- التداخل الجزئي بين المفاهيم المختلفة، مع تباين (وأحياناً تناقض) المتطلبات.

ومن شأن المفهوم الموحَّد المُقترَح، الوارد في المرفق الأول، أن ينسق الوظائف والأطر التشغيلية للمراكز الإقليمية للأدوات عبر مختلف المجالات، وأن يُعزِّز ويدعم تنفيذ المعيار ISO/IEC 17025 واعتماد المراكز وفقاً له، وأن يُحسِّن تقديم الخدمات ذات الصلة للأعضاء، وأن يُبسِّط عمليات ترشيح هذه المراكز وتعيينها وإعادة تأكيد تعيينها.

وتجدون طي هذه الرسالة، في المرفق الثاني، معلومات أساسية والمسوغات وراء وضع المفهوم الموحَّد، للتكرُّم بالاطلاع عليها. كذلك، يتضمن المرفق الثالث قائمة بالمراكز الإقليمية للأدوات والمراكز الإقليمية للأدوات البحرية والمراكز الإقليمية لقياس الإشعاع، حتى يتيسَّر لكم الرجوع إليها. ومن المتوقع أن يُعرَض هذا المفهوم الموحَّد على لجنة البنية التحتية في دورتها الرابعة (INFCOM-4) (التي ستُعقَد في المدة من 23 إلى 27 تشرين الثاني/ نوفمبر 2026) لإقراره ورفع توصية بشأنه إلى المؤتمر العالمي العشرين للأرصاد الجوية (Cg-20) في عام 2027.

وألفت انتباهكم الكريم إلى أن المنظمة ستعقد ندوة عبر الإنترنت في 2 حزيران/ يونيو 2026 لتقديم المفهوم الموحَّد ومناقشته[1]. وإننا نرحب بحضور ممثلين من مرفقكم ومن المراكز المُعيَّنة، ونسعد بالاستماع إلى آرائهم وملاحظاتهم بشأن هذا المفهوم.

---

[1] **معلومات عن الندوة:**

عبر تطبيق Microsoft Teams

رابط الانضمام إلى الندوة: https://teams.microsoft.com/meet/369719178684470?p=rGy2TLB7uIoEbG32oN

رقم تعريف الندوة: 369 719 178 684 470

رمز المرور: 5La3Ga6e

ويرجى منكم التكرُّم بالاطلاع على المعلومات المرفقة وتقديم ما ترونه من ملاحظات أو اقتراحات. وسأكون ممتنة للغاية إذا تفضلتم بتعميم هذه الرسالة على المنظمات الأخرى المعنية، في بلدكم الكريم أو إقليمكم، التي تُشغِّل مراكز إقليمية للأدوات أو مراكز إقليمية للأدوات البحرية أو مراكز إقليمية لقياس الإشعاع.

وللحصول على مزيد من المعلومات أو لتوجيه أي استفسارات، يمكنكم التواصل مع أمانة المنظمة، وتحديداً السيد Ercan Buyukbas عبر بريده الإلكتروني: ebuyukbas@wmo.int، أو الدكتورة Isabelle Rüedi عبر بريدها الإلكتروني: iruedi@wmo.int.

وتفضلوا بقبول فائق الاحترام،

السيدة كو باريت
عن الأمينة العامة

Draft Unified Concept for Regional Instrument Centres (RICs)

1. Introduction

WMO maintains a network of specialized centres to support its Members with respect to meteorological, hydrological and marine measurements. These centres play an important role in ensuring the quality, standardization and traceability of measurements worldwide. The Terms of Reference for the three existing types of regional centres, Regional Instrument Centres (RICs), Regional Marine Instrument Centres (RMICs) and Regional Radiation Centres (RRCs), have been adopted by the relevant WMO bodies and documented in official WMO publications.

Considering the evolving needs of Members regarding the operation and maintenance of observing systems and the traceability assurance of measurements, there is a clear need to establish a unified and scalable concept for Regional Instrument Centres covering all domains in order to provide structured support to Members in the operation of observing systems and in the calibration of instruments.

The Standing Committee on Measurements, Instrumentation and Traceability (SC-MINT) of the Commission for Observation, Infrastructure and Information Systems (INFCOM) has reviewed the existing concepts for RICs, RMICs and RRCs and developed a draft unified concept for regional instrument centres.

2. Unified Concept for Regional Instrument Centres (RICs)

The draft unified concept for regional instrument centres is presented below.

"World Meteorological Organization (WMO) Regional Instrument Centres (RICs) are specialized centres supporting WMO Members in matters related to surface based meteorological, hydrological, and/or marine measurements within WIGOS, especially with regard to traceability of measurements, and selection, installation, operation and maintenance of instruments.

A RIC provides services related to one or several variables (for instance temperature, wind, water salinity, solar irradiance) covered by a single quality management system.[1]

Regional Instrument Centres (RICs) shall have the following capabilities to carry out their corresponding functions:

Capabilities:

(a) A RIC shall have the necessary facilities and equipment to perform the functions necessary for the calibration of instruments;
(b) A RIC shall have competent managerial and technical staff sufficient to fulfil its functions;
(c) A RIC shall maintain a set of reference measurement standards and establish the traceability of its own measurement standards and measuring instruments to the International System of Units (SI) or other internationally recognized reference standards;[2]
(d) A RIC shall participate in, and/or organize inter-laboratory comparisons of standard calibration instruments and methods;
(e) A RIC shall be accredited according to ISO/IEC 17025 for at least one calibration method;
(f) A RIC shall comply with ISO/IEC 17025 requirements for non-accredited calibration

[1] A Member may propose more than one RIC if the services for different variables are provided by institutions under different governance arrangements (applying independent quality management systems).

[2] In accordance with WMO regulatory material.

methods, and provide regular evidence;

(g) A RIC shall have, or have access to, facilities to demonstrate the operation, verification and maintenance of observing station instruments/observing systems.

Corresponding Functions:

(a) A RIC shall assist Members, in calibrating their NMHS' measurement reference standards, and related equipment, or field verification equipment[3];

(b) A RIC shall organize, and/or participate in, inter-laboratory comparisons[4], and support instrument intercomparisons following relevant WMO recommendations;

(c) A RIC shall make a positive contribution regarding the quality of other Members measurements;

(d) A RIC shall assist Members on enquiries regarding instrument performance, maintenance, observation techniques, and advise on the availability of relevant WMO guidance materials;

(e) A RIC shall organize/participate in workshops/training events on calibration and maintenance of instruments;

(f) A RIC shall support the regular assessment of Members' needs for RIC services;

(g) A RIC shall report on an annual basis, to the WMO Secretariat on the services offered to Members and activities carried out.

_____

[3] A RIC may calibrate the field instruments of Members upon special arrangement between those Members and the RIC.

[4] In accordance with the requirements of ISO/IEC 17043.

Justification for the development of a Unified Concept for Regional Instrument Centres (RICs)

1. Background

Regional Instrument Centres (RICs), Regional Marine Instrument Centres (RMICs) and Regional Radiation Centres (RRCs) play a critical role in supporting WMO Members by providing calibration services, ensuring measurement traceability, supporting capacity development and contributing to the standardization of meteorological and related environmental measurements. These functions are fundamental for the effective implementation of the WMO Integrated Global Observing System (WIGOS) and for ensuring the quality and comparability of observational data across WMO Regions.

An analysis of recent annual RIC reports and evaluation schemes (for the period 2020–2024), RMIC and RRC reports, as well as information from sources including Member surveys and Systematic Observations Financing Facility (SOFF) peer advisor reports, reveals shortcomings in the functioning and performance of these regional centres. These findings indicate that the expected level of service delivery and operational effectiveness has not been achieved.

Furthermore, the various concepts appear to partly overlap and have different and sometimes conflicting requirements.

These findings underline the need for a revised and unified concept for regional instrument centres, aimed at harmonizing their functions, strengthening their capacities and enhancing their contribution to supporting Members in ensuring measurement traceability.

2. Operational and functional status of RICs, RMICs and RRCs

The operational status and performance of RICs, RMICs and RRCs are regularly monitored and evaluated based on the annual reports submitted by these centres. Proper evaluation depends on the submission of these reports.

2.1. Evaluation of RICs

The analysis of recent reports submitted by RICs (for the period 2020–2024) highlights several key issues:

- Insufficient and inconsistent delivery of core RIC functions, including calibration services, interlaboratory comparisons (ILCs), and training;
- Limited implementation of ISO/IEC 17025 accreditation (only nine RICs);
- Incomplete reporting, limiting transparency and effective monitoring.

These findings point to structural and functional challenges that constrain the ability of RICs to effectively support Members.

The following summary of a region-based analysis conducted for RICs in each Region, based on recent reports submitted by the centres, highlights significant issues in service provision, accreditation, capacity and reporting.

Region I

- Five RICs (Algeria, Botswana, Egypt, Kenya and Morocco) are designated in the Region.
- None are accredited to ISO/IEC 17025. Some of them have been preparing for accreditation for several years.
- RIC Botswana is not active and has not reported for many years.
- RIC Egypt and RIC Morocco have not submitted reports for 2024, preventing assessment of their recent activities.
- Only four instruments were calibrated for other Members by RA I RICs during the 2020–2024 period (by RIC Morocco and RIC Kenya).

- RIC services are very limited in the Region.
- Three capacity-development/training activities were carried out by RA I RICs during the 2020–2024 period.

Region II

- Two RICs (China and Japan) are designated in the Region.
- Both RICs are accredited to ISO/IEC 17025 and demonstrate sufficient capacity to perform their functions on their reports submitted for 2024.
- RIC Japan provided calibration services (13 instruments calibrated during the 2020–2024 period) to a few Members.
- RIC China organized an ILC in 2024.
- Both RICs carried out capacity-development/training activities within the Region.

Region III

- Only RIC Argentina is designated in the Region.
- It is not accredited to ISO/IEC 17025.
- Twelve instruments were calibrated for other Members by RIC Argentina during the 2020–2024 period (in 2022).
- RIC Argentina organized an ILC in RA III during the 2021–2024 period.
- RIC Argentina carried out capacity-development/training activities within the Region.

Region IV

- Only RIC Barbados is designated in the Region; it is operated by the Caribbean Institute for Meteorology and Hydrology (CIMH).
- It is not accredited to ISO/IEC 17025.
- The available report for 2020 does not mention any instrument being calibrated for other Members of the Region.
- RIC Barbados carried out capacity-development/training activities within the Region in 2020.
- RIC Barbados has not submitted its reports for 2021–2024, preventing assessment of its activities for those years. However, the report for 2025, recently submitted, indicates that the Centre has been performing some capacity-development/training activities and providing some calibration services in the Region.

Region V

- Two RICs (Australia and the Philippines) are designated in the Region.
- Both RICs are accredited to ISO/IEC 17025.
- RIC Australia provided calibration services (14 instruments calibrated in 2020–2021).
- RIC Australia has not submitted its report for 2023 and 2024, preventing assessment of its recent activities and capabilities.

Region VI

- Five RICs (France, Germany, Slovakia, Slovenia and Türkiye) are designated in the Region.
- The RICs in this Region are accredited to ISO/IEC 17025.
- All RICs except RIC Slovakia have submitted their reports for 2024.
- All RICs have enough capabilities to carry out their corresponding functions; however, despite this capacity, the level of service utilization by Members remains limited.
- RIC France (63 instruments calibrated), RIC Germany (41 instruments calibrated) and RIC Slovenia (36 instruments calibrated) provided calibration services to Members during the 2020–2024 period.

- RIC Slovenia organized an ILC, and RIC France, RIC Germany and RIC Türkiye participated in the ILC.
- On average, two training activities were organized yearly by the RA-VI RICs. Some of these activities were targeted to Members inside the Region, and some were targeted to Members outside the Region.

2.2. Evaluation of RMICs

The operational status and functionality of the RMICs were assessed based on available reports. Currently, there are only two designated RMICs: one for RA II/V and one for RA IV. No RMICs are available for the other Regions.

- RMIC China (Tianjin) for Asia–Pacific and RMIC United States of America (Mississippi) for North America, Central America and the Caribbean have been designated.
- Only RMIC China has provided the report for 2023 and 2024.
- No report was submitted by RMIC USA for several years.
- RMIC China has ISO/IEC 17025 accreditation.
- RMIC China participated in an ILC for Ultrasonic Anemometer Metrological Comparison in 2023 and an ILC for Proficiency Testing for Pressure Gauge Calibration in 2024.
- RMIC China provided services on capacity development (workshop, training) in 2023 and 2024.
- Calibration services have been provided by RMIC China at the national level, but it has not provided calibration services for other Members.

2.3. Evaluation of RRCs

The analysis of the performance of the RRCs was based on their participation in the International Pyrheliometer Comparison (IPC) and the reports they provided just prior to IPC-XIV (22 September–10 October 2025). The common and major findings are:

- There is insufficient instrumentation capacity in many centres to comply with the RRC Terms of Reference;
- There has been inconsistent and irregular attendance at International Pyrheliometer Comparisons (IPCs) and Regional Pyrheliometer Comparisons (RPCs);
- There is a lack of information regarding calibration services provided to Members because a formal reporting mechanism has not been implemented;
- Information on the number of calibrations performed in the last five years was received from nine RRCs in the context of IPC-XIV (one RRC performed one calibration, another RRC performed two calibrations and seven RRCs did not perform any calibration).

Region I

- Six RRCs (Algeria, Democratic Republic of the Congo, Egypt, Nigeria, Sudan, Tunisia) are designated in the Region.
- No information or report has been received recently from the RRCs of Algeria, Democratic Republic of the Congo, Nigeria, Sudan and Tunisia.
- Only RRC Egypt attended IPC-XIV (2025).

Region II

- Two RRCs (India and Japan) are designated in the Region.
- Both RRCs (India and Japan) attended IPC-XIV (2025).
- RRC Japan organized a Regional Pyrheliometer Intercomparison in collaboration with RRC Australia in 2023.

Region III

- Three RRCs (Argentina, Chile, Peru) are designated in the Region.
- All three RRCs (Argentina, Chile, Peru) attended IPC-XIV (2025).
- RRC Argentina and RRC Chile have provided information on their capacities and activities and attended IPC-XIV.

Region IV

- Three RRCs (Canada, Mexico, USA) are designated in the Region.
- Recent information is only available for RRC USA, which attended IPC-XIV.
- RRC Canada has not taken part in any IPCs since 2010.

Region V

- Only RRC Australia is designated in the Region.
- RRC Australia collaborated with RRC Japan in organizing a Regional Pyrheliometer Intercomparison in 2023.
- RRC Australia attended IPC-XIV (2025).

Region VI

- Seven RRCs (Belgium, France, Germany, Hungary, Russian Federation, Sweden, Switzerland) are designated in the Region.
- The RRCs of Germany, Hungary, Russian Federation, Sweden and Switzerland attended IPC-XIV.
- RRC Belgium and RRC France did not attend IPC-XIV and have not provided recent information regarding their capacities and activities.

3. Identified gaps

An analysis of the recent reports, complemented by a broader assessment of the operations and capacities of RICs, RMICs and RRCs, based on information from multiple sources, highlights several key gaps:

- Limited services are provided to Members (for example, provision of calibration services, interlaboratory comparisons, training), and there are large disparities between Regions;
- There is limited engagement and communication with Members;
- There is limited implementation of ISO/IEC 17025 procedures and accreditation, and there is a lack of demonstrated traceability in some centres;
- There is limited collaboration and knowledge-sharing between designated centres;
- There are ineffective and impractical monitoring, reporting, evaluation and reconfirmation processes;
- There is a partial overlap of the different concepts, with varying (sometimes contradicting) requirements.

These findings demonstrate that the current fragmented structure of RICs, RMICs and RRCs is no longer sufficient, nor effective, with respect to meeting the evolving requirements of WIGOS and Members' needs.

4. Rationale for a unified concept

In this context, the development of a unified concept for regional instrument centres is essential to address the identified challenges and strengthen their overall effectiveness.

A unified concept merging the different concepts of RICs, RMICs and RRCs would:

- Harmonize the roles, responsibilities and functions of the different types of centres;
- Promote and support the implementation of ISO/IEC 17025 procedures and accreditation;
- Improve the reliability, consistency and quality of services provided by the designated centres;
- Enhance service delivery to Members;
- Increase the visibility and operational effectiveness of the designated centres;
- Improve support provided to Members in the area of instrumentation, including calibration, operation and maintenance;
- Improve confidence in the services provided by the designated centres;
- Simplify and strengthen monitoring and reporting mechanisms;

- Foster collaboration, coordination and knowledge-sharing among the designated centres and relevant stakeholders;
- Facilitate transparent and consistent processes for the nomination, designation and reconfirmation of those centres.

5. Conclusion

The assessment of the operational status of RICs, RMICs and RRCs clearly indicates that overall performance remains below expectations, with significant gaps in reporting, traceability to the International System of Units (SI) or agreed reference, accreditation, service delivery, and regional balance in capacities.

In this context, the development of a unified concept for regional instrument centres is essential to address these issues, ensure consistency in implementation, strengthen measurement traceability and enhance the capacity of the designated centres to effectively support Members in calibration, maintenance and training activities.

The adoption of such a unified concept will be a key step towards improving the effectiveness, scalability, sustainability and regional/global coherence of operations of the designated centres.

_____

List of Existing Regional Instrument Centres (RICs), Regional Marine Instrument Centres (RMICs) and Regional Radiation Centres (RRCs)

1) Regional Instrument Centres (RICs)

Region I (Africa)

- Algiers (Algeria)
- Gaborone (Botswana)
- Cairo (Egypt)
- Nairobi (Kenya)
- Casablanca (Morocco)

Region II (Asia)

- Beijing (China)*
- Tsukuba (Japan)*

RA III (South America)

- Buenos Aires (Argentina)

RA IV (North and Central America)

- Bridgetown (Barbados)

RA V (South-West Pacific)

- Melbourne (Australia)*
- Manila (Philippines)*

RA VI (Europe)

- Toulouse (France) *
- Hamburg/Oberschleissheim (Germany)*
- Bratislava (Slovakia)*
- Ljubljana (Slovenia)*
- Ankara (Türkiye)*

* *RIC accredited according to ISO/IEC 17025.*

2) Regional Marine Instrument Centres (RMICs)

Region II/V (Asia–Pacific)

- Tianjin (China) **

RA IV (North America, Central America and the Caribbean)

- Mississippi (USA)

** *RMIC accredited according to ISO/IEC 17025.*

3) Regional Radiation Centres (RRCs)

Region I (Africa)

- Cairo (Egypt)
- Khartoum (Sudan)
- Kinshasa (Democratic Republic of the Congo)
- Lagos (Nigeria)
- Tamanrasset (Algeria)
- Tunis (Tunisia)

Region II (Asia)

- Pune (India)
- Tokyo (Japan)

Region III (South America)

- Buenos Aires (Argentina)
- Lima (Peru)
- Santiago (Chile)

Region IV (North and Central America)

- Toronto (Canada)
- Boulder (USA)
- Mexico City (Mexico)

Region V (South-West Pacific)

- Melbourne (Australia)

Region VI (Europe)

- Budapest (Hungary)
- Davos (Switzerland)
- St. Petersburg (Russian Federation)
- Norrköping (Sweden)
- Trappes/Carpentras (France)
- Uccle (Belgium)
- Lindenberg (Germany)
