WMO Regional Association VI (RA VI) - Regional Conference 2026

EW4All in Region VI: Turning Ambition into Action with Innovation and Exchange

GBON in RA VI

Strengthening the Global Foundation of Weather and Climate Services

(Krunoslav Premec, WMO Secretariat)

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(Bucharest, Romania, 30 Sept – 1 Oct 2026)

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The value chain

WIGOS



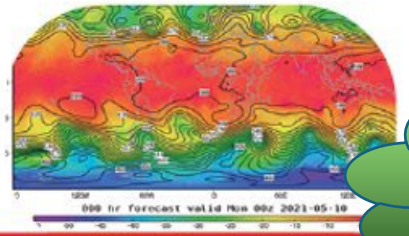
Observations from the entire globe

WIS



International exchange of observations

WIPPS



Global Numerical Weather Prediction

GBON

Weather and climate-related infrastructure - **must be designed and managed globally**

Last-mile activities undertaken **primarily at regional, national and local level**

Local data processing, forecast, warning and advisory products



Delivery of weather and climate services



Effective decision-making and action

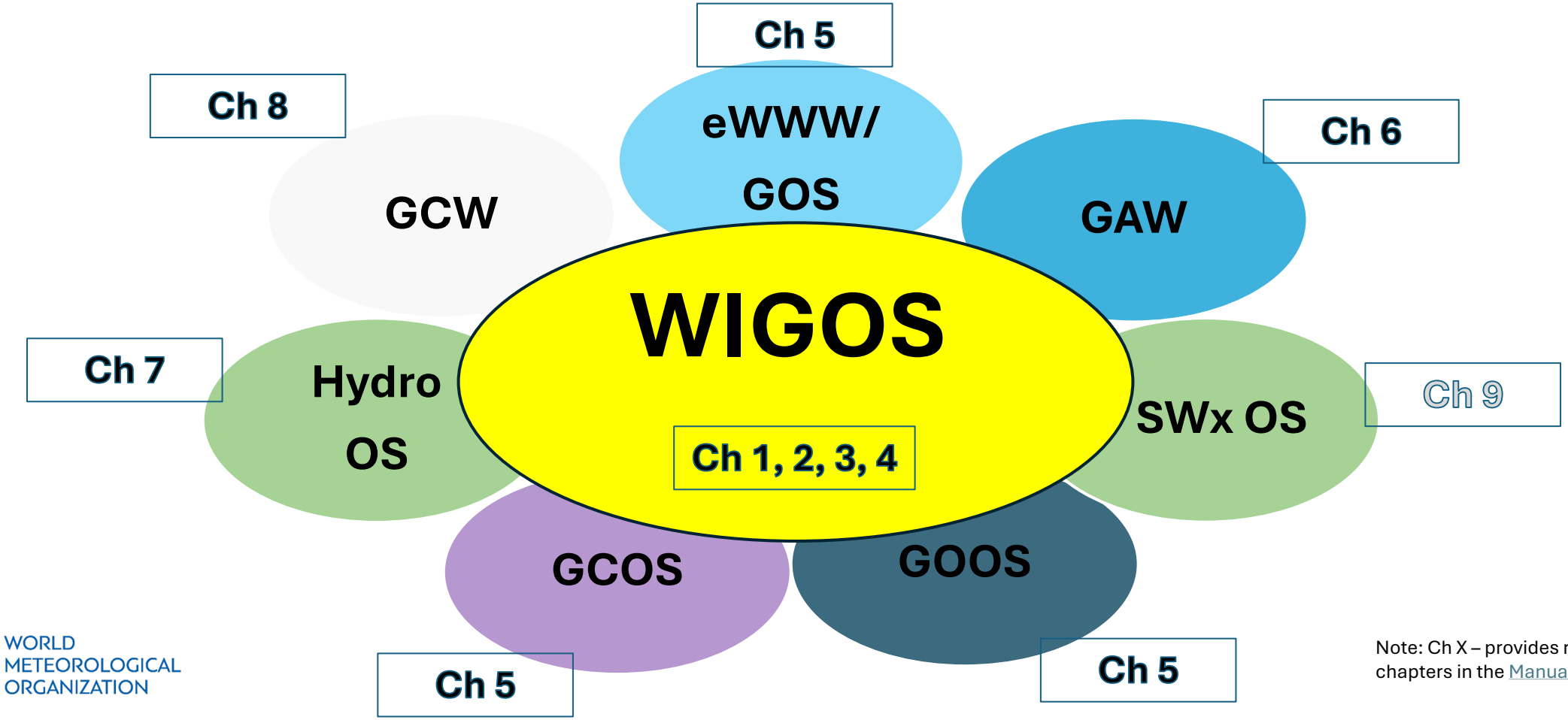


RBON

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WMO Integrated Global Observing system (WIGOS)

- a framework for all WMO observing systems and contributions to co-sponsored observing systems in support of all WMO Programmes and activities, with the following component observing systems:



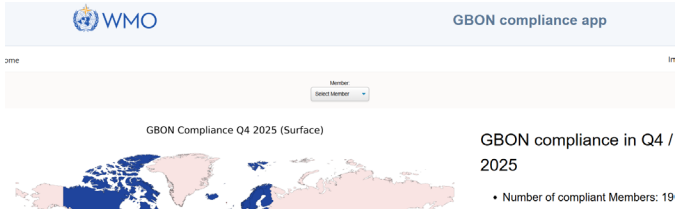
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Note: Ch X – provides reference to the chapters in the Manual on WIGOS.

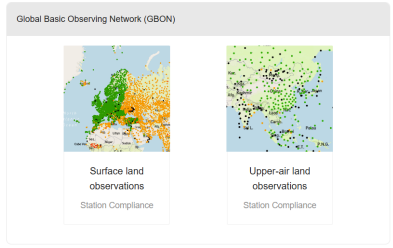
The WIGOS (Web) Tools

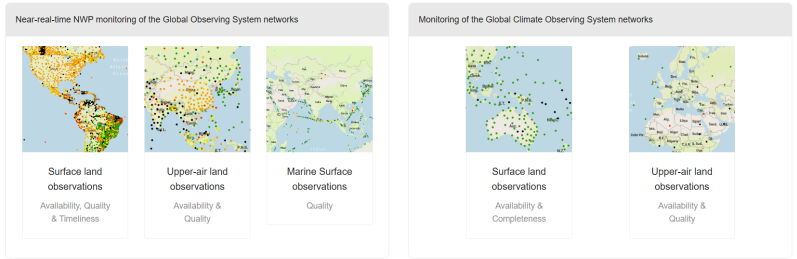
GBON Compliance app

Quarterly compliance of WMO Members with GBON regulations



WIGOS Data Quality Monitoring System (WDQMS)

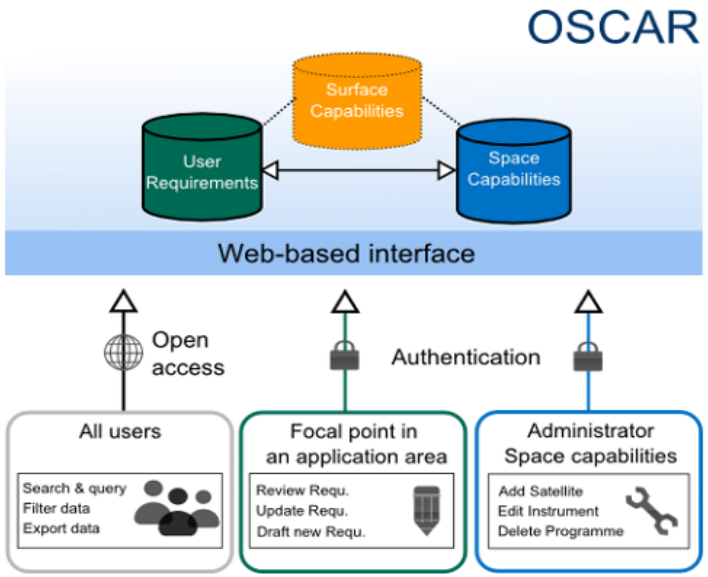




WDQMS Incident Management System (IMS) (restricted access)



Observing System Capabilities Analysis and Review (OSCAR)



Regional Implementation of WIGOS

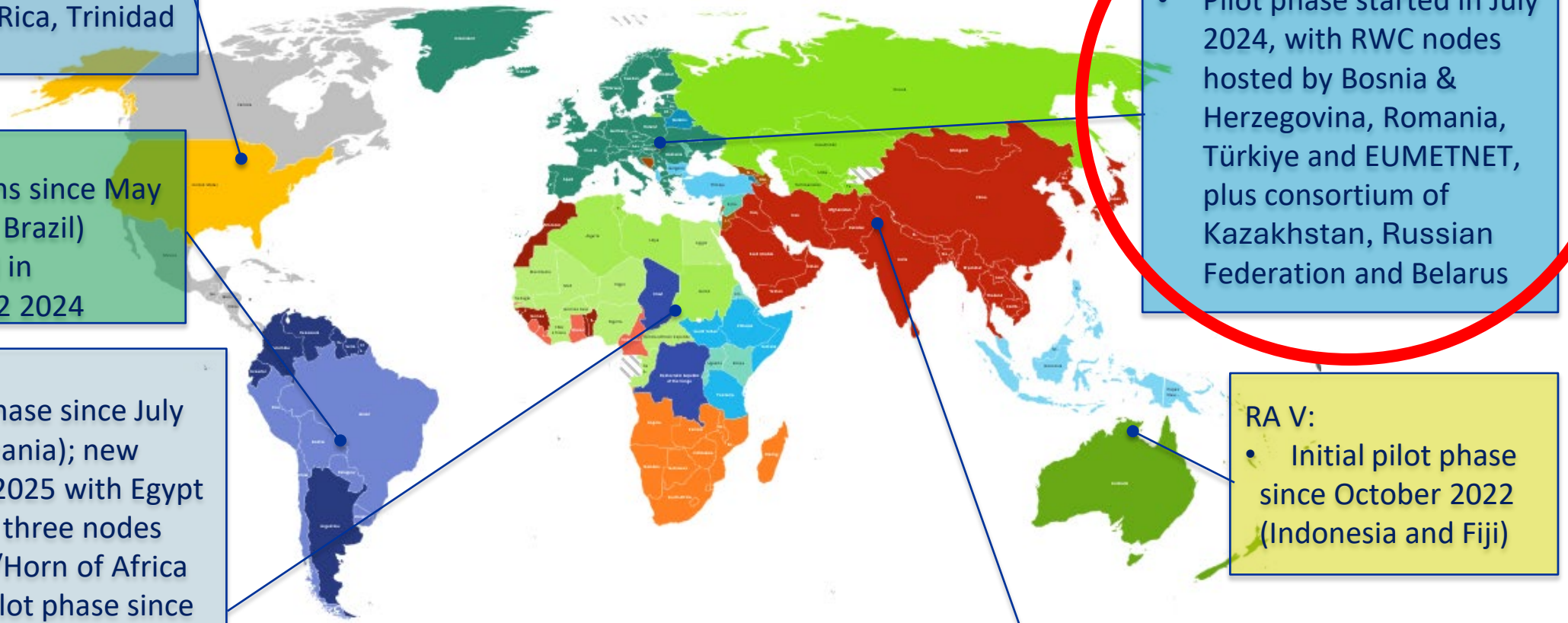
Status of RWCs establishment

RA IV:
- Started pilot phase in Dec 2023 (BCT, Canada, Costa Rica, Trinidad & Tobago, USA)

RA III:
- Pilot phase operations since May 2020 (Argentina and Brazil)

RWC Argentina started in operational mode in Q2 2024

RA I:
- East Africa - Pilot phase since July 2020 (Kenya and Tanzania); new concept approved in 2025 with Egypt as a new RWC, so the three nodes will cover North/East/Horn of Africa
- Southern Africa - pilot phase since March 2021 (South Africa); moving into operational phase in Q2 2025
- West/Central Africa – new concept approved in 2024 with additional nodes hosted by Cote d'Ivoire, Rep. of Congo and Nigeria, led by Morocco



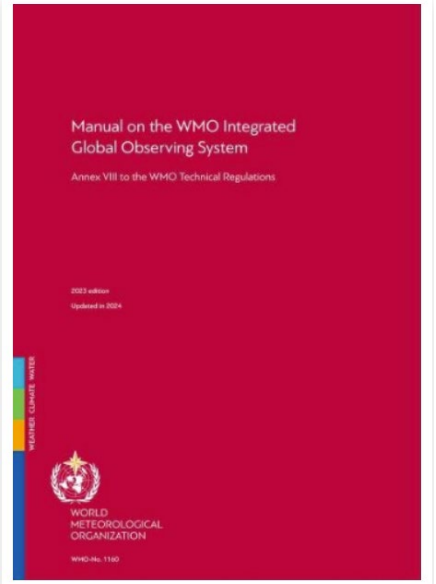
RA VI:
- Pilot phase started in July 2024, with RWC nodes hosted by Bosnia & Herzegovina, Romania, Türkiye and EUMETNET, plus consortium of Kazakhstan, Russian Federation and Belarus

RA V:
- Initial pilot phase since October 2022 (Indonesia and Fiji)

RA II
- RWC Beijing and RWC Tokyo, fully operational since September 2021; new concept approved in 2025 with Russian Federation and Kazakhstan (in collaboration with Belarus) as additional RWC network for RA II to cover Russian Speaking countries in the Region

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A brief reminder of GBON



Global Basic Observing Network (GBON) shall be:

- ❑ a **subset of the surface-based** subsystem of WIGOS, comprising:
  - ✓ Surface land stations (SLP, T, H, W, P, SD),
  - ✓ Upper-air stations over land (T, H, W),
  - ✓ Surface marine meteorological stations in Exclusive Economic Zones (SLP, SST),
  - ✓ Upper-air stations (over the marine areas of Member's jurisdictions) (T, H, W),
- ❑ used in combination with the space-based subsystem,
- ❑ and other surface-based observing systems of WIGOS,

to contribute **to meeting the requirements of Global NWP**, **including reanalysis in support of climate monitoring**.

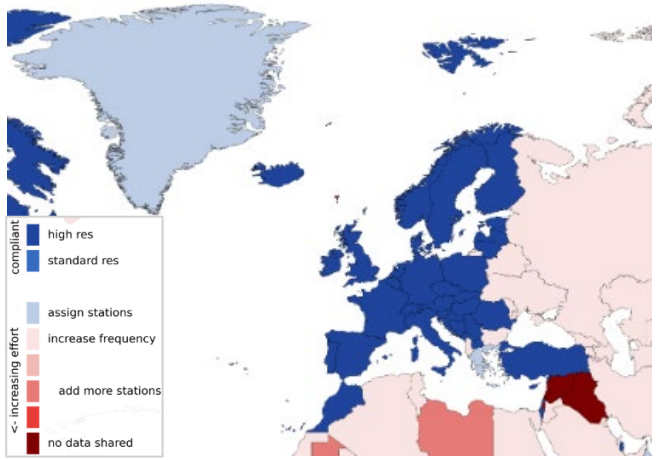
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GBON regulations came into force on 1 January 2023.

GBON Implementation in RA VI - Compliance Status (Q1 2026)

RA VI – one of the leading WMO Regions in terms of GBON implementation

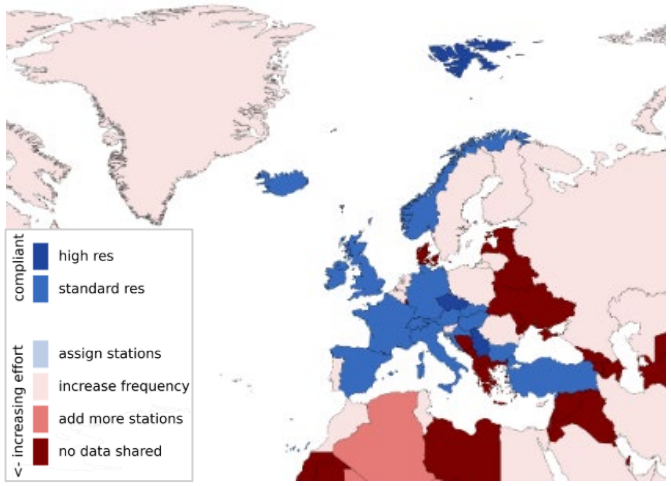
Surface



Considerable observational capacity available within RA VI and the significant contribution by many Members beyond their minimum GBON obligations.

Upper-air observations remain limited or unavailable in several Members in Eastern Europe and the Middle East.

Upper-air



60 %

Members compliant with surface observing requirements
(30 of 50 Members)

28 %

Members compliant with upper-air requirements
(14 Members)

26 %

Compliant with both surface and upper-air requirements
(13 Members)

38 %

Non-compliant in both components
(19 Members)

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For the most recent data please visit: GBON compliance app

GBON Implementation Survey

- conducted by INFCOM/SC-ON/ **Expert Team on Surface-based and basic Observing Networks** (ET-SON),
- November 2025 to January 2026,
- Consolidated **129 unique national submissions** (126 countries + 3 territories) from NFPs on WIGOS, WDQMS and OSCAR/Surface.

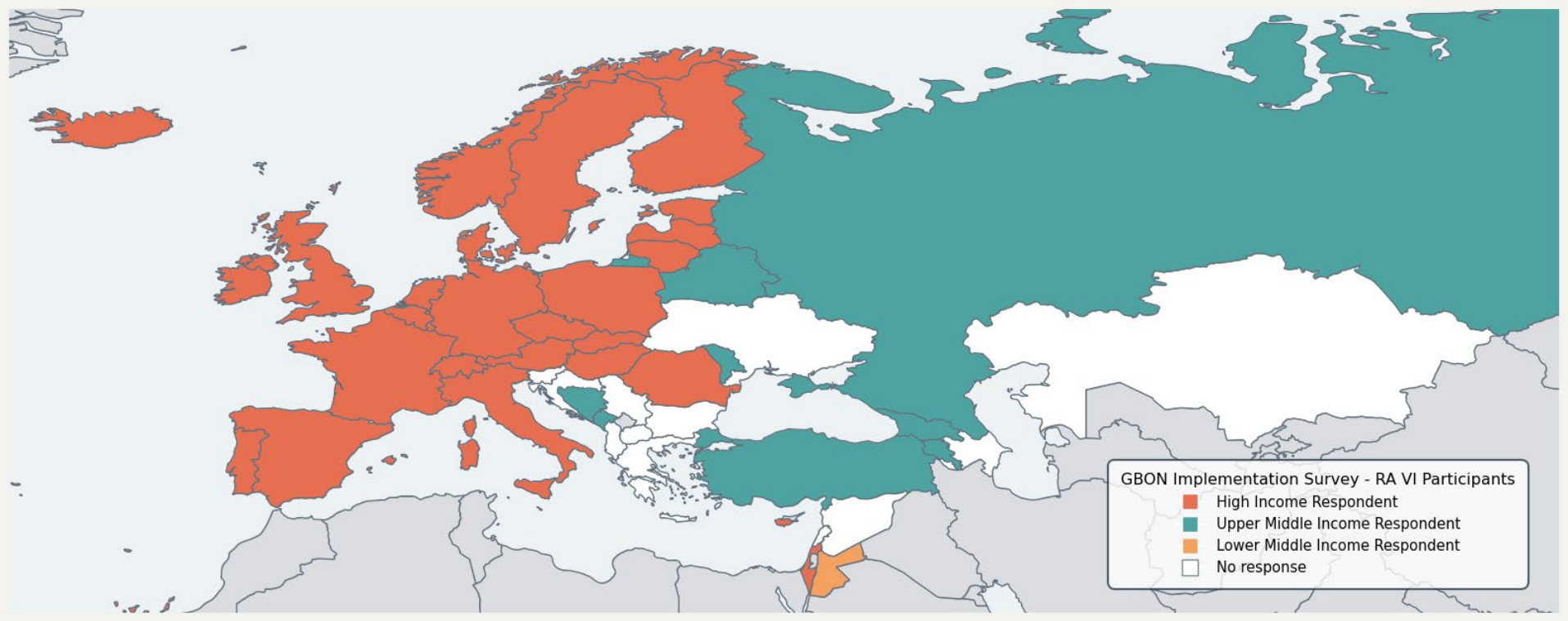
The survey captured:

- **Member experiences,**
- **challenges, and**
- **innovative approaches** to GBON compliance.

Balanced representation across all six WMO regions and all World Bank income classifications.

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The survey – targeted RA VI Members



Majority of the RA VI Members (36, or 72 %) have responded to the survey.

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Survey Results: Regional Insights & Common Themes (1)

- **Highly Optimistic Outlook:** 75% of Members view global GBON implementation positively, considering full compliance achievable.
- **Universal Value Recognition:** There is widespread recognition across the region of GBON's critical importance.
- **Targeted Resource Constraints:** Funding gaps are highly segmented; budget constraints mainly affect transitioning economies or arise from sudden national landscape budget cuts and operational cost spikes.
- **Highly Specialized Staffing Shortages:** Finding qualified personnel for specialized meteorological equipment maintenance and niche engineering roles remains a recurrent challenge for non-compliant members.

Survey Results: Regional Insights & Common Themes (2)

- **Geographical Obstacles in Remote Regions:** Mountainous terrains, isolated locations, and remote archipelagos still hinder physical maintenance access and baseline automation for several members.
- **Data Synchronization & System Gaps:** Managing hybrid networks creates significant backlogs where automated stations send hourly updates but manual inputs run in parallel on mismatched 3-hour schedules.
- **Telemetry and External Disruptions:** Telecommunications and network integrity present major modern roadblocks, with explicit mentions of regional GPS signal jamming and radio-frequency interference affecting upper-air stations.
- **Software and Reporting Limitations:** Minor compliance gaps are often caused by software limitations.
- **Strong Demand for Cutting-Edge Solutions:** Demands are heavily focused on utilizing novel or supplementary observing technologies to achieve compliance without over-stretching traditional networks.

Survey Results: Regional Insights & Common Themes (3)

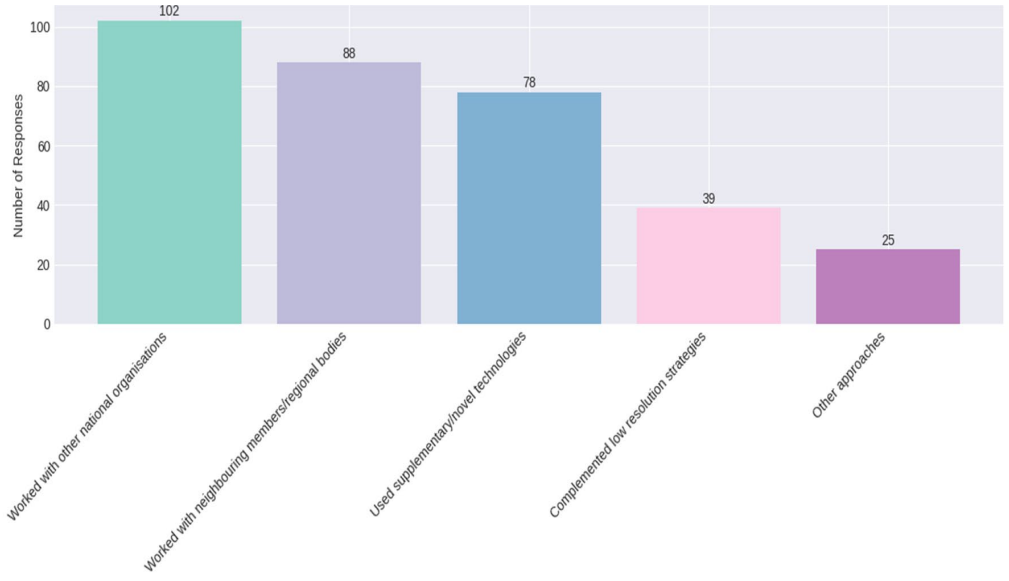
- **Advanced Data Interoperability:** 81% of RA VI countries possess real-time access to GBON data reported by neighboring territories, reflecting high regional connectivity.
- **SOFF Demands:** Only 9 countries are SOFF beneficiaries.
- **Strong Support for Shared Platforms:** Over 73% of Members expressed explicit interest in a GBON Implementers' Forum.
- **Overseas Territory Logistical Strain:** For advanced economies, compliance issues are frequently isolated within remote overseas territories and distant islands where spatial coverage is logistically difficult or extremely costly to achieve.

Survey Results: Regional Insights & Common Themes (4)

- **Complex Governance Blockages:** Domestic institutional complexity.
- **Sub-Regional Trend:**
  - ✓ **Western and Northern Europe:** Exhibiting highly active and mature implementation, with most organizations maintaining fully compliant station and member-level networks.
  - ✓ **Eastern Europe and the Caucasus:** Progressing effectively, dealing with transition-phase constraints, including migrating manually operated lines into integrated automated systems and upgrading data exchange systems.
  - ✓ **Middle East:** Transitioning steadily, with ongoing active plans focused on revising reporting schedules, optimizing station selection, and adjusting observation frequencies to meet GBON requirements.

Good practices and alternative approaches – insights from the survey (global, not RA VI specific)

- Work with **other national organizations** (e.g., academia, other agencies)
- Work with **neighboring NMHSs / regional bodies**
- Using **supplementary or novel technologies** (e.g., AWS, remote sensing)
- Adopting **low-resolution observation strategies** complemented with other technologies.



Partnerships and innovative technologies are the most common strategies to support GBON compliance.

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Regional / sub-regional approach

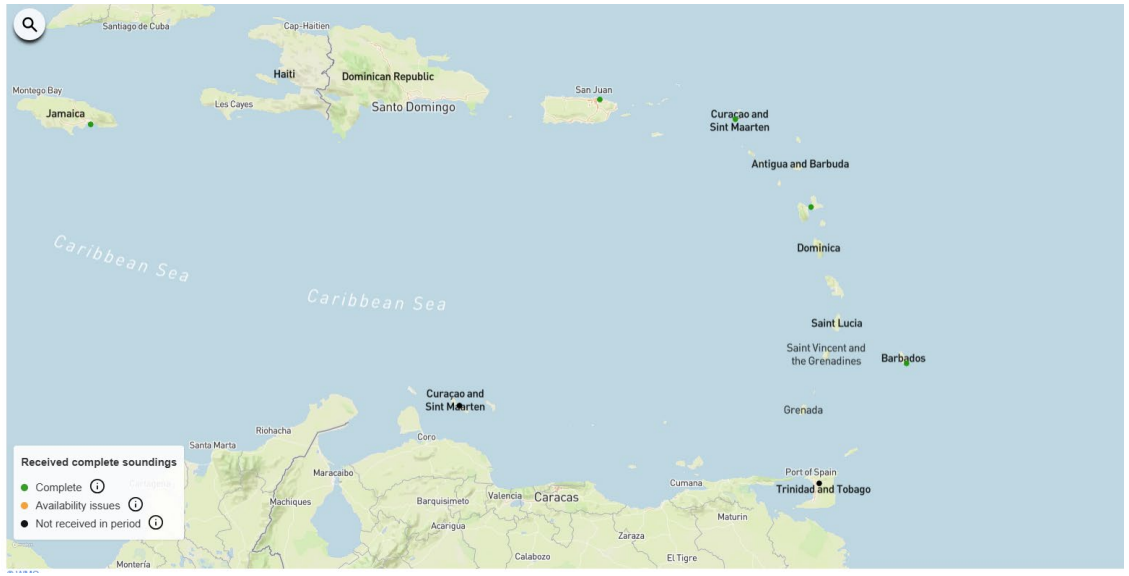
- Boundary areas can be agreed upon and **covered by neighboring countries**.
- This may also apply to small countries surrounded by others.
  - **Bilateral agreement** between Members, to be reported to the Secretariat

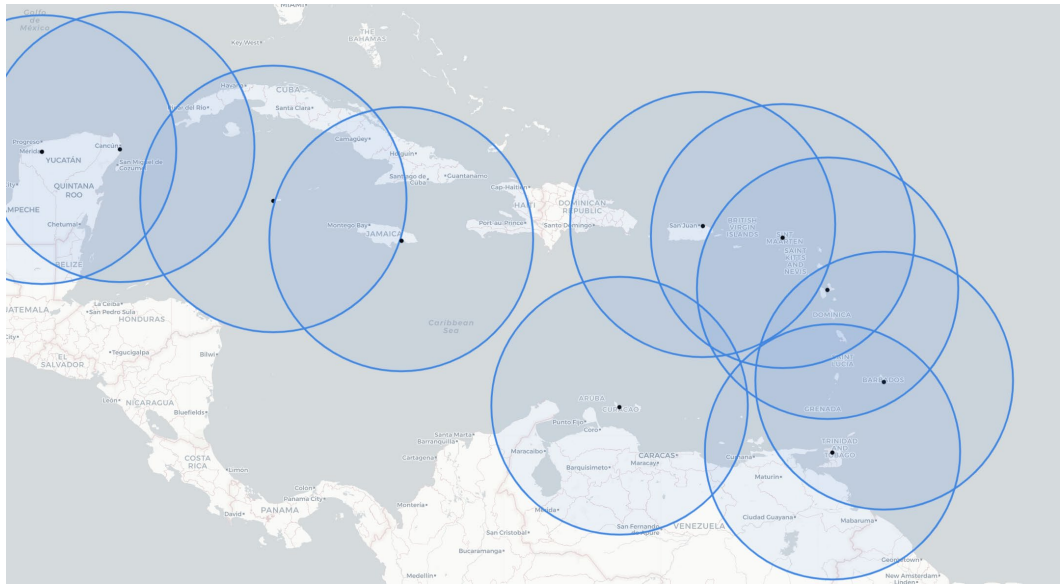
> Note under section 10.4.4 of the Guide to WIGOS (WMO-No. 1165)
>
> Note: Under certain circumstances, for example when a Member's territory is relatively small or of an irregular shape, some GBON-compliant stations from the neighbouring Member(s) can be included in the Member's compliance assessment. In such circumstances, the Member concerned must provide written proof that the neighbouring Member(s) agrees to include its stations in the GBON assessment of the Member concerned, and must report this to the Secretariat, as described in section 10.4.5.

  - **Regional / Sub-regional agreement** through RA sessions.

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Example RA IV approach – subregional agreement on GBON design





Decision 2 (RA IV-19(I)) Regional design of the upper-air component of GBON

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Recommendations

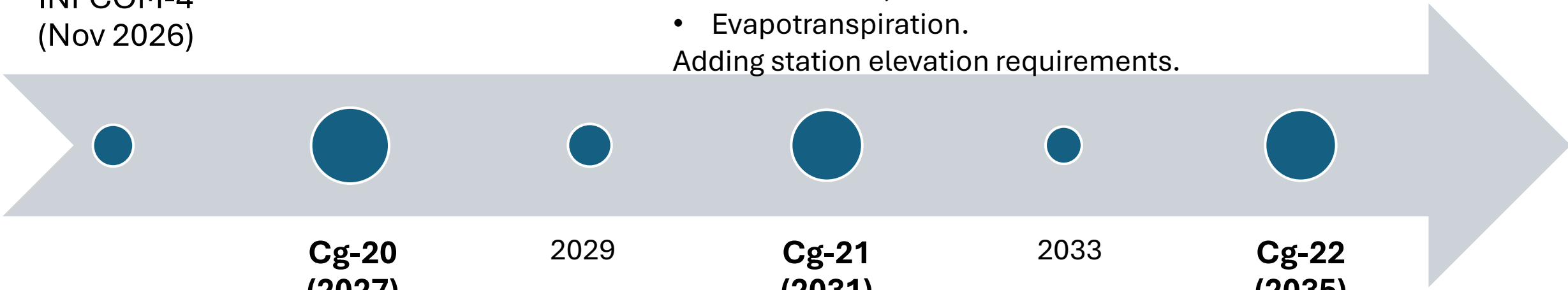
- **Strengthen regional and subregional collaboration** (with neighbouring countries and regional bodies).
- **Focus support on enhancing compliance of upper-air stations**.
- **Support capacity developments for improved and sustainable operations** (through regional training, technical cooperation and peer-to-peer support).
- **Promote the use of WIGOS tools** (such as GBON Compliance App, WDQMS, OSCAR/Surface and IMS).
- **Support testing and implementation of innovative and complementary observing technologies** (in particular in harsh environment and remote areas).
- **Ensure that National Focal Points are appointed and operational**, and that their contact details are regularly updated in the WMO Expert Database.

GBON expansion Roadmap – for INFCOM-4

INFCOM-4
(Nov 2026)

New variables:
- Ocean subsurface temperature,
- Sea level,
- Water equivalent of snow cover (SWE),
- Soil moisture,
- Evapotranspiration.

Adding station elevation requirements.



Cg-20 (2027)

2029

Cg-21 (2031)

2033

Cg-22 (2035)

1. Expansion of GBON scope to **Climate monitoring**.
2. CLIMAT and DayCLi reporting.

New variables:
- Radiation variables (albedo),
- Surface hydrology variables (streamflow and ground water),
- Sea ice variables.

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Improvement of the WIGOS Tools (monitoring capabilities and compliance)



Thank you

Gracias

Merci

Спасибо

شكرًا لك

Mulțumesc

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