

WMO global infrastructure

From observations to forecasts — and the spectrum that makes the chain possible

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Global ITU/WMO Seminar on the Use of Radio Spectrum for Weather, Climate, Water and Related Environmental Activities

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Observations

Are the first and essential step of the meteorological value chain, allowing developing and delivering products and services for the benefit of the people:


Meteorological



Climate


Hydrological



**Other environmental
related**



Lack of or poor observations mean lack of products and services or poor/low quality products and services provided by NMHS.



Quantify



Monitor



Understand

Earth System Domains



Atmosphere



Hydrosphere



Oceans



Cryosphere



And others....



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WIGOS: observing the Earth as one system

A common framework integrating space-, land-, ocean- and atmosphere-based observations.



Global models require global data

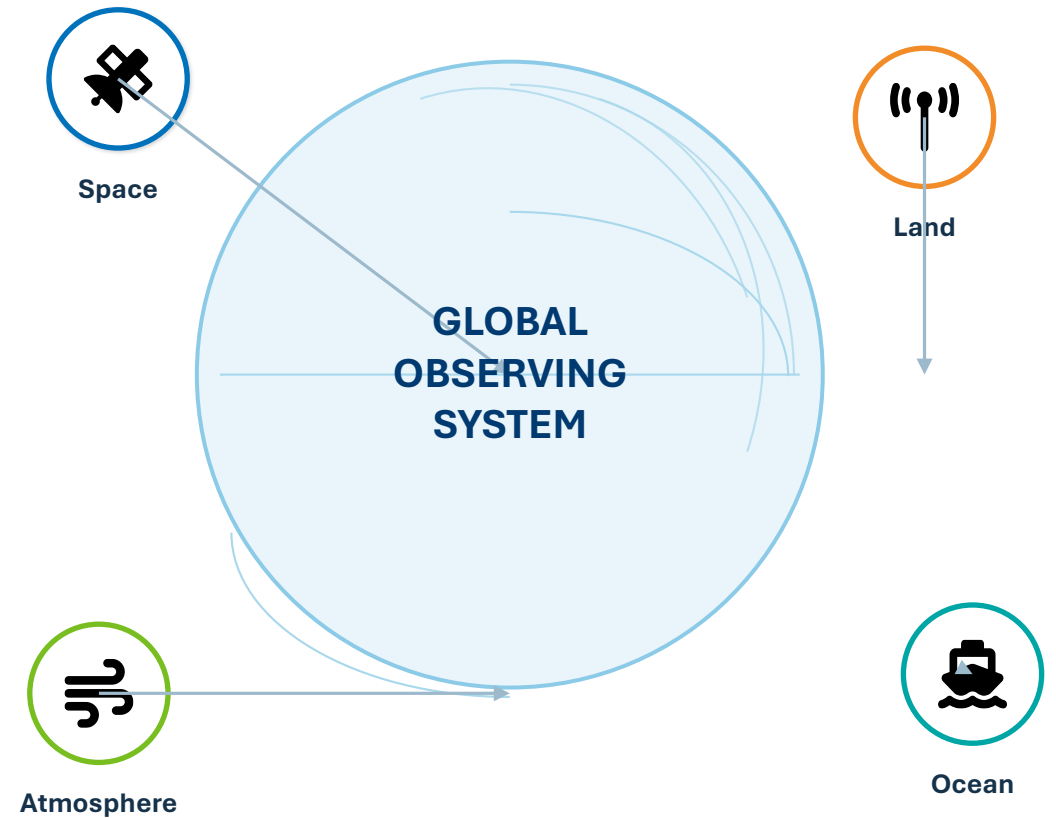
Observations made across the planet are combined, exchanged and assimilated into prediction systems that serve every Member.

Observe globally

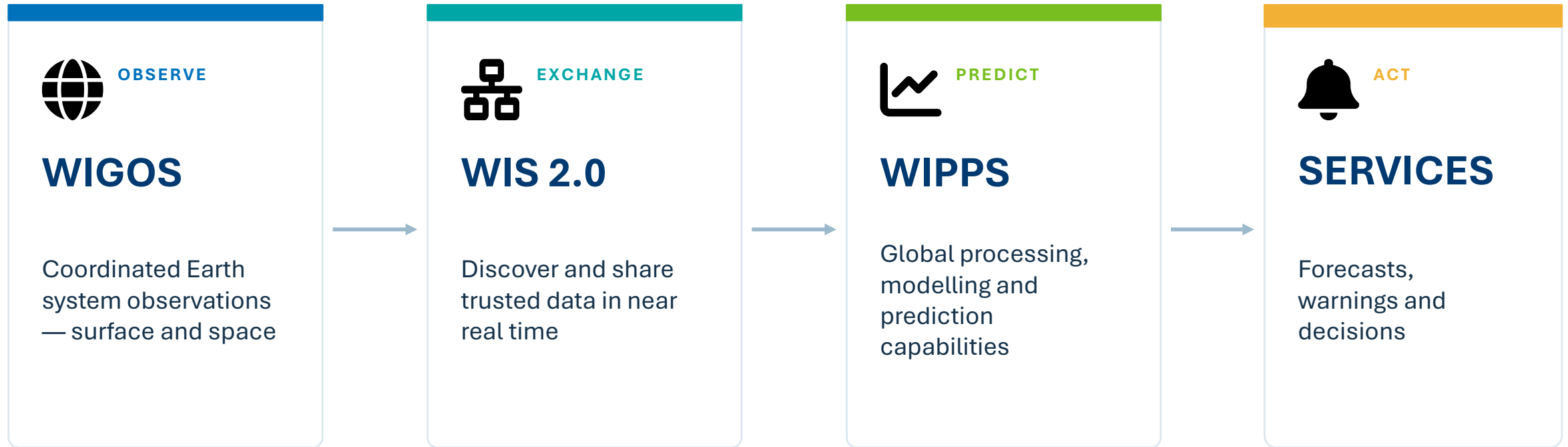
Exchange rapidly

Predict collectively

The value is created by connection — not by any single sensor, country or platform.



One global infrastructure. Three connected systems.



The systems are distinct — but the public value is created end to end.

A weakness at the observation or exchange stage propagates downstream into prediction and services.

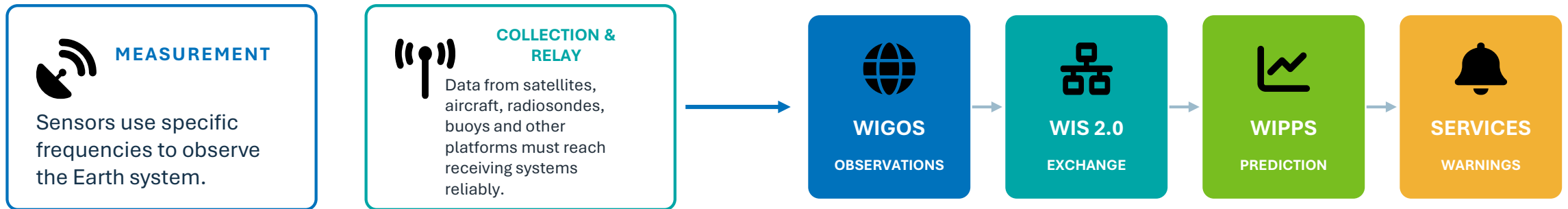
WMO & the HydroMet Value Chain

Our Mandate: Facilitate worldwide **cooperation** to advance the delivery and use of high-quality, authoritative weather, climate, hydrological and related environmental **services** by its **Members** to improve the well-being of all, through the **exchange of data, information products, standardization, applications, research, and training.**



Spectrum enables observation — and gets the data moving

It supports measurement and critical data links that bring observations into the global exchange and prediction infrastructure.



If measurement or critical data links are degraded, the effect propagates downstream.

After collection, WIS 2.0 supports global exchange; WIPPS turns those observations into prediction products.

The observing ecosystem is changing fast

More capability also means more complexity — and more dependence on resilient spectrum access.

MORE OBSERVATIONS

higher spatial &
temporal resolution

MORE PROVIDERS

public • research •
commercial

MORE PLATFORMS

small satellites • IoT •
new sensors

MORE AI DEMAND

data-hungry models &
new applications

Opportunity

+

Complexity

=

Spectrum resilience becomes more important

WIGOS towards 2050

Today's spectrum decisions shape tomorrow's observing system.



INTEGRATED

space + surface +
ocean + air



DIVERSE

public + research +
commercial



FASTER

lower latency +
higher resolution



AI-ENABLED

new assimilation +
new applications

WRC-27

2050

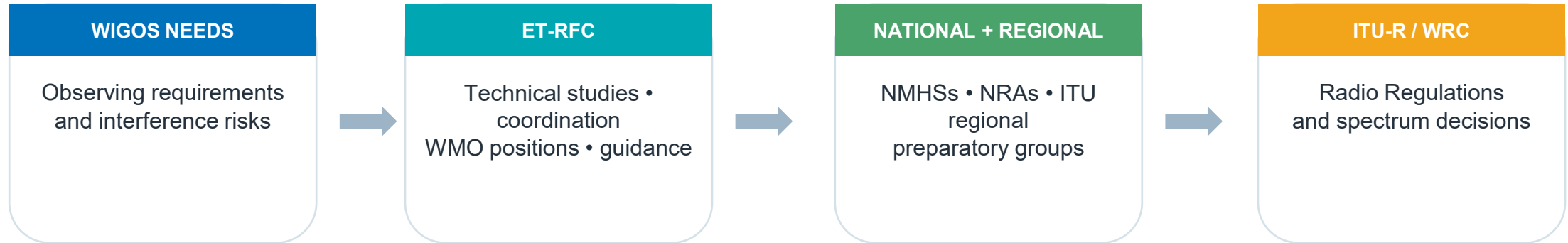
Protecting spectrum is not only about today's systems — it preserves options for the future.



WMO OMM

ET-RFC: turning observing requirements into spectrum action

WMO's technical coordination mechanism for radio-frequency matters under INFCOM / SC-ON



What ET-RFC does

- Tracks spectrum issues affecting meteorological and environmental observing systems
- Coordinates technical input with ITU-R and partners including CGMS and SFCG
- Develops WMO positions for World Radiocommunication Conferences
- Supports the ITU/WMO Handbook, WMO guidance, National Focal Points and training

Why it matters for WRC-27

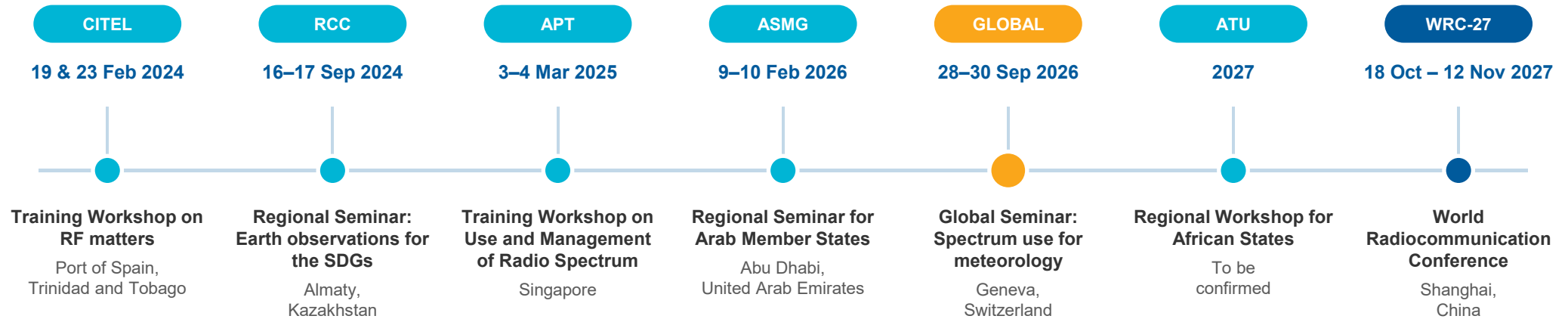
The WMO position covers 14 agenda items of prime interest or concern. Because WMO has observer status at WRC, Members must carry these priorities into national and regional preparations.

The bridge: observing community ↔ spectrum regulators

Source: WMO ET-RFC and WMO Position on the WRC-27 Agenda

Joint ITU/WMO training on the road to WRC-27

A sustained engagement pathway linking WMO technical priorities to national and regional WRC-27 preparation



Purpose

Build technical understanding and move WMO positions into national and regional WRC-27 preparatory processes.

Focal points + regulators

Bring NMHS experts and spectrum administrations into the same conversation.

Reusable capacity

Presentations and recordings remain available so Members can reuse the material nationally.

Four regions trained, 180 participants

Four regional trainings delivered since 2024 — focal points and their national regulators in the same room

Caribbean Region

Port of Spain, Feb 2024
with the ET-RFC meeting

45 participants

- 25 in person, incl. CTU
- 20 focal points online

OUTCOME

CMO invited by CTU to join the Caribbean Spectrum Management Task Force

CIS Region

Almaty, Sep 2024
with ITU-R WP 7x meetings

60 participants

- 10 focal points, 50 regulators
- Held in English and Russian

OUTCOME

Dedicated session on the economic value of Earth observation for decision-making

Asia-Pacific Region

Singapore, Mar 2025
with the ET-RFC meeting

50 participants

- 17 focal points, 10 regulators
- 6 focal points, 17 online

OUTCOME

WhatsApp group set up — the start of a community of practice

Arab Member States

Abu Dhabi, Feb 2026
with the ET-RFC meeting

25 participants

- 15 focal points, 10 regulators
- In person, hosted by NCM

OUTCOME

Five Member States presented national experience; break-out groups worked on taking WMO positions into Arab States' WRC-27 preparations

Every event is anchored to a technical meeting

- Port of Spain, Singapore and Abu Dhabi — held with the ET-RFC meeting
- Almaty — with the ITU-R Working Party 7B and 7C meetings, as is Geneva 2026

What has been achieved

Four regions, 180 participants, and focal points now sitting alongside their regulators. Sustained engagement is building lasting national capability ahead of WRC-27.

National Focal Points on Radio Frequency matters

A WMO network connecting National Meteorological and Hydrological Services with their spectrum regulators

01

Strengthen national capability

Equip NMHSs and other mandated institutions to address RF issues across all Earth system domains.

02

Connect NMHSs with regulators

A standing channel to National Regulatory Authorities on meteorological spectrum requirements.

03

Grow the pool of experts

Develop spectrum management expertise that sustains ET-RFC membership and succession.

What the focal points do

- Serve as the national contact for RF activities — nationally, regionally and globally
- Promote WMO positions on WRC agenda items with their NRA and in national committees
- Register meteorological stations and frequencies with the national administration
- Inform ET-RFC early of new RF requirements so international protection can begin
- Disseminate WMO RF guidance across the meteorological community and beyond

Regulatory basis

Manual on WIGOS (WMO-No. 1160), draft sixth edition

- 2.3.1.5 Members operating instruments reliant on radio spectrum shall comply with national and international frequency regulations.
- 2.3.1.6 Members should designate national focal points for RF matters to engage with their NRAs.

Established by WMO Circular Letter 24769/2023/I/SSU (13 December 2023); focal points are nominated by Permanent Representatives.

Focal points today: 150 nominations, 116 Members

Coverage of the network as recorded in the WMO Contacts Directory, September 2026

150

nominated focal points

116

Members and Territories covered

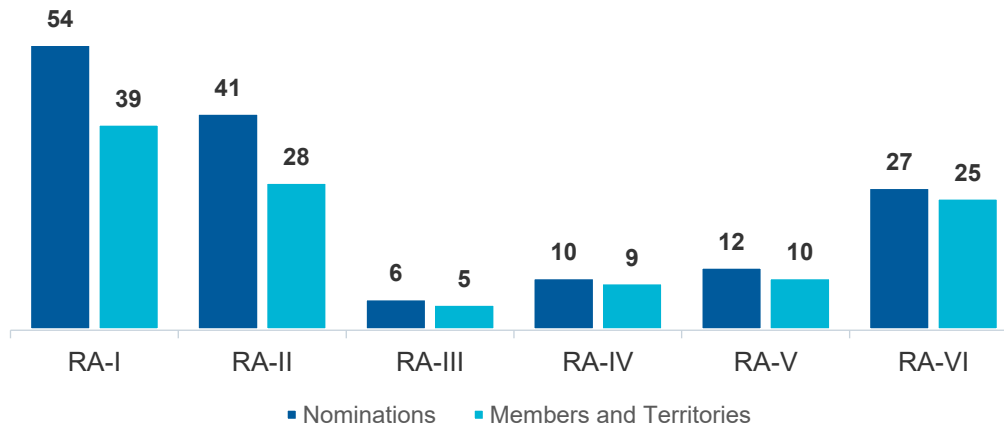
~60%

of the WMO membership

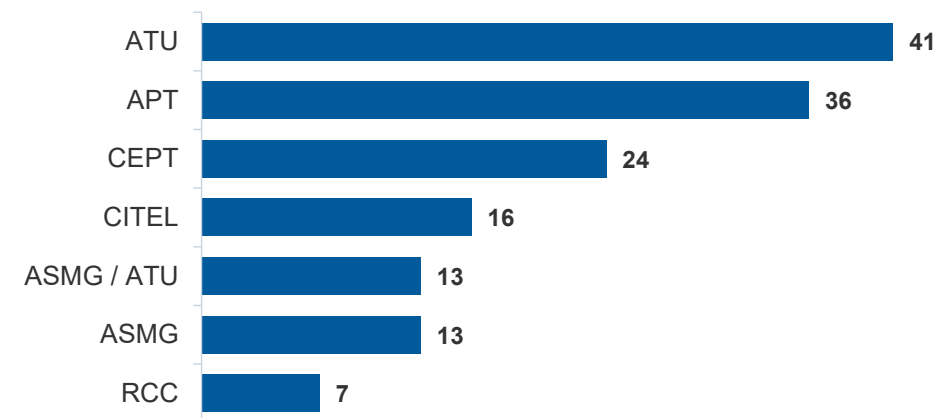
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Members with more than one

By WMO Regional Association



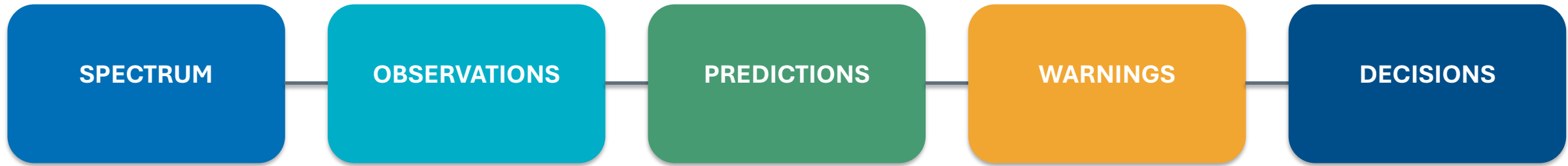
By ITU regional group



Regional spread: RA-I 39 countries, RA-II 28, RA-VI 25, RA-V 10, RA-IV 9, RA-III 5 — South America and the Caribbean remain the thinnest coverage.

Members belonging to both ASMG and ATU are shown as a separate group.

Protect the beginning of the value chain.



Spectrum decisions made today affect the observations, forecasts and warnings available tomorrow.

Thank you