



Data sources, analytical methods and tools

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Starting point

Need for robust science answering questions

- What are the system's climate risks and vulnerabilities?
- How effective does the project address these climate risks?
- Is the investment climate risk proofed?

→ Strengthening the articulation of the climate rationale

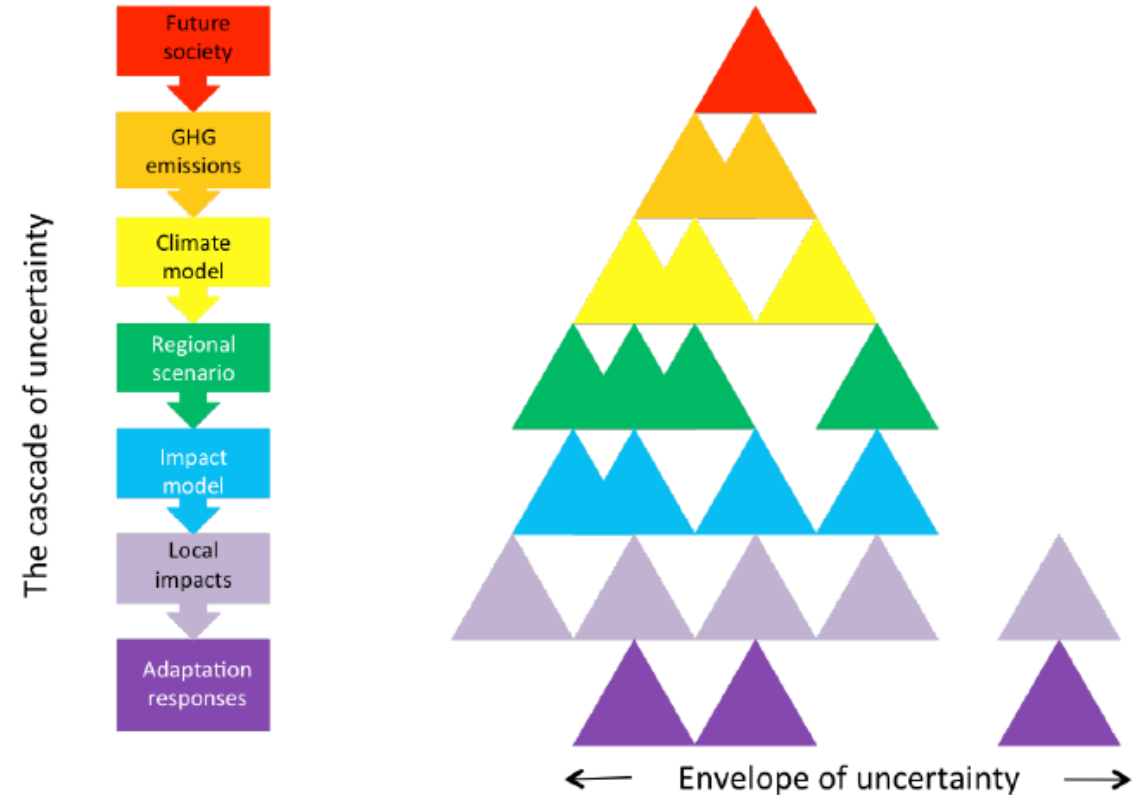
Climate Rationale foundation of an impactful GCF project

- Need for high-quality data and information
- BUT also consider aleatory and epistemic uncertainty and decision making under deep uncertainty
- **Forthcoming:** GCF – WMO climate rationale work to develop guidance on data sources, methods, tools

What about uncertainty?

Sources of uncertainty:

- GHG emission scenarios depend on future human behaviour
- Uncertainties in Global Climate Models' parameters and structures
- Limited understanding of interactions of earth system
- Climate variability
- Coarse spatial and temporal resolution (limited value for water resources planning, particularly for extremes)

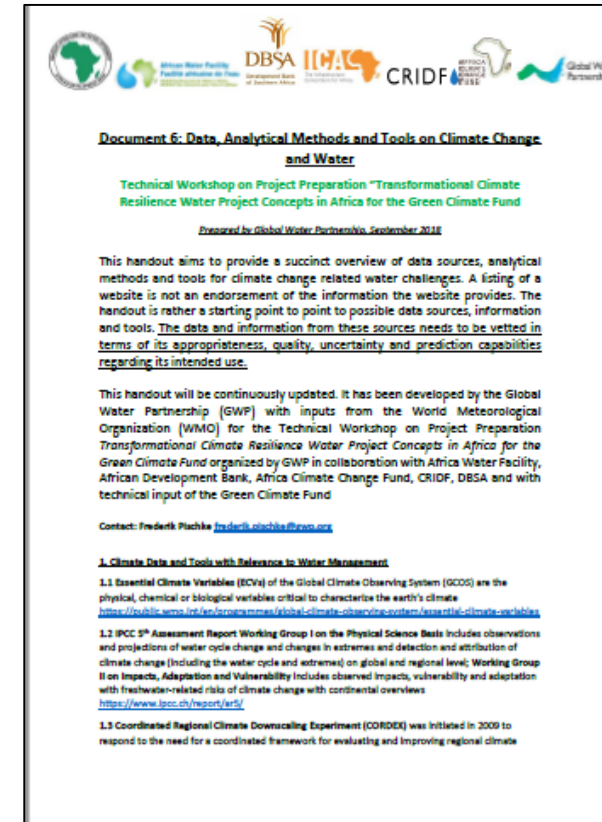


The Cascade of uncertainty (Wilby and Dessai 2010 cited in García, L.E. et al. 2014 *Beyond Downscaling: A Bottom-Up Approach to Climate Adaptation for Water Resources Management*)

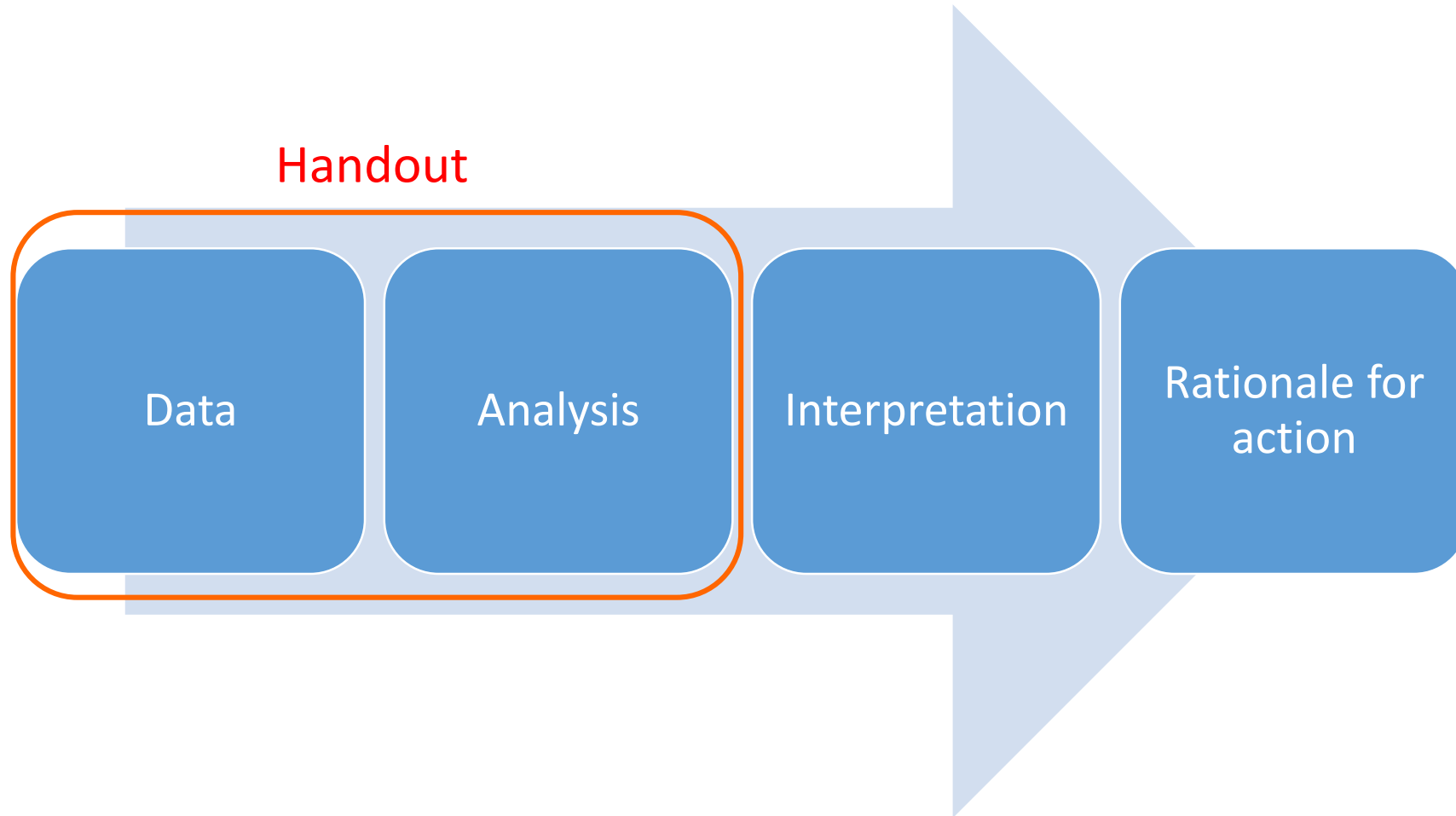
Handout listing data sources, analytical methods and tools

- Overview of data sources, analytical methods and tools for climate change related water challenges
- Does not endorse information provided by sources
- Check appropriateness, quality, uncertainty and prediction capabilities with regard to its intended use!
- Starting point to examine and help design relevant climate resilient water projects
- Is the handout complete? Continuously updated

Further improvements once Climate Rationale guidance and *Catalogue of Maturity-Assessed Climate Datasets* released

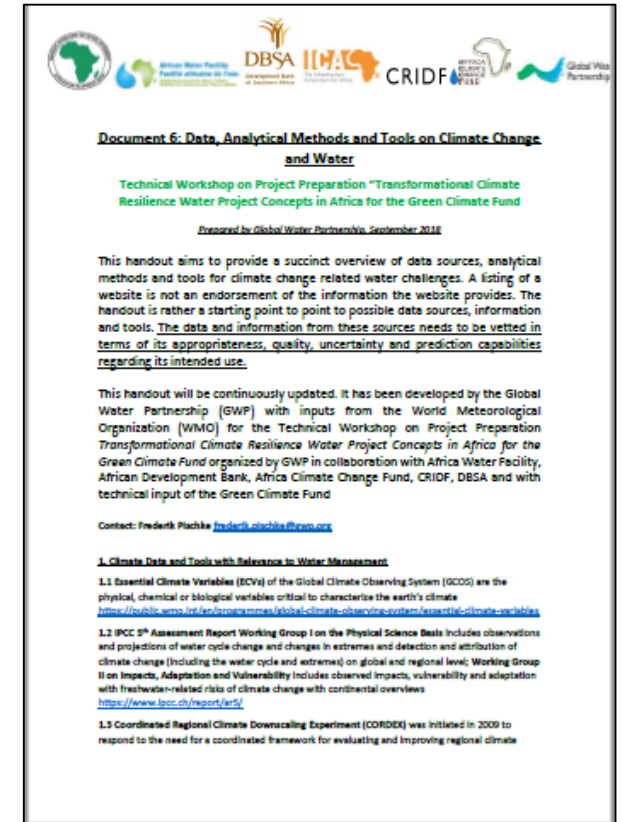


Climate Rationale Value Chain



Handout structure

1. Climate Data and Tools with relevance to Water Management
2. Water Data, Tools and Models
3. Regional Institutions and Mechanisms with technical resources
4. Conceptual framework of a Climate Services Information System (WMO)



Under development:

Catalogue of Maturity-Assessed Climate Datasets, WMO

Maturity of datasets to be assessed on (1) Accessibility, (2) Usability, (3) Quality Management, (4) Data Management

- Enhancing discoverability, access and use of high quality climate data
- Provide transparent information on source of data and metadata
- One-stop platform for assessing maturity and quality of climate datasets
- Increasing visibility of the best data

Source: WMO Draft Manual on High Quality Global Data Management Framework for Climate (under development)

Selected examples from Handout - Section 2.

Water Data, Tools and Models



- WMO Hydrological Observing System (WHOS)
- Global Runoff Data Centre (GRDC)
- International Data Centre on Hydrology of Lakes and Reservoirs (HYDROLARE)
- IGRAC Global Groundwater Information System (GGIS)
- Consortium of Universities for the Advancement of Hydrologic Science (CUHASI)
- Group on Earth Observations System of Systems (GEO SS) Portal
- Integrated Drought Management Help Desk
- Integrated Flood Management Help Desk

[27 resources listed in Handout]



World
Meteorological
Organization
Weather • Climate • Water

Managing Water Extremes

Drought and Flood Management HelpDesks



ASK ? FIND CONNECT

Focus on strengthening three Pillars:

- 1) Monitoring and Early Warning Systems
- 2) Vulnerability and Impact Assessment
- 3) Drought mitigation and preparedness

The Integrated Drought Management Programme (IDMP) has been jointly established by World Meteorological Organization (WMO) and the Global Water Partnership (GWP) to provide technical assistance and support to member states in developing and implementing IDMPs. The IDMP aims to support stakeholders at all levels by providing them with policy and management guidance through globally-coordinated generation of scientific information and sharing best practices and knowledge for integrated drought management. > about



Get Help

- RAPID GUIDANCE
- CAPACITY BUILDING
- PILOT PROJECTS

www.floodmanagement.info

Help Yourself

- TOOLS AND PUBLICATIONS
- EDUCATION
- REFERENCE CENTER DATABASE
- QUESTIONS AND ANSWERS

Focus on Project Preparation;
Build up strength on End-to-End Early Warning Systems

Synergies of Partners



IDMP Integrated Drought Management Programme

ASSOCIATED PROGRAMME ON FLOOD MANAGEMENT



Other successful collaborations:




Over 30 expert partner organizations in each programme



GFCS

GLOBAL FRAMEWORK FOR CLIMATE SERVICES



Objective 1: Bridge

Connecting user needs with climate services through sustained engagement mechanisms:

- National activities
- Regional activities
- Global activities

Objective 2: Priority Applications

Improving decision making in climate-sensitive areas:

- Health
- Food security and agriculture
- Disaster risk reduction
- Water resources
- Energy

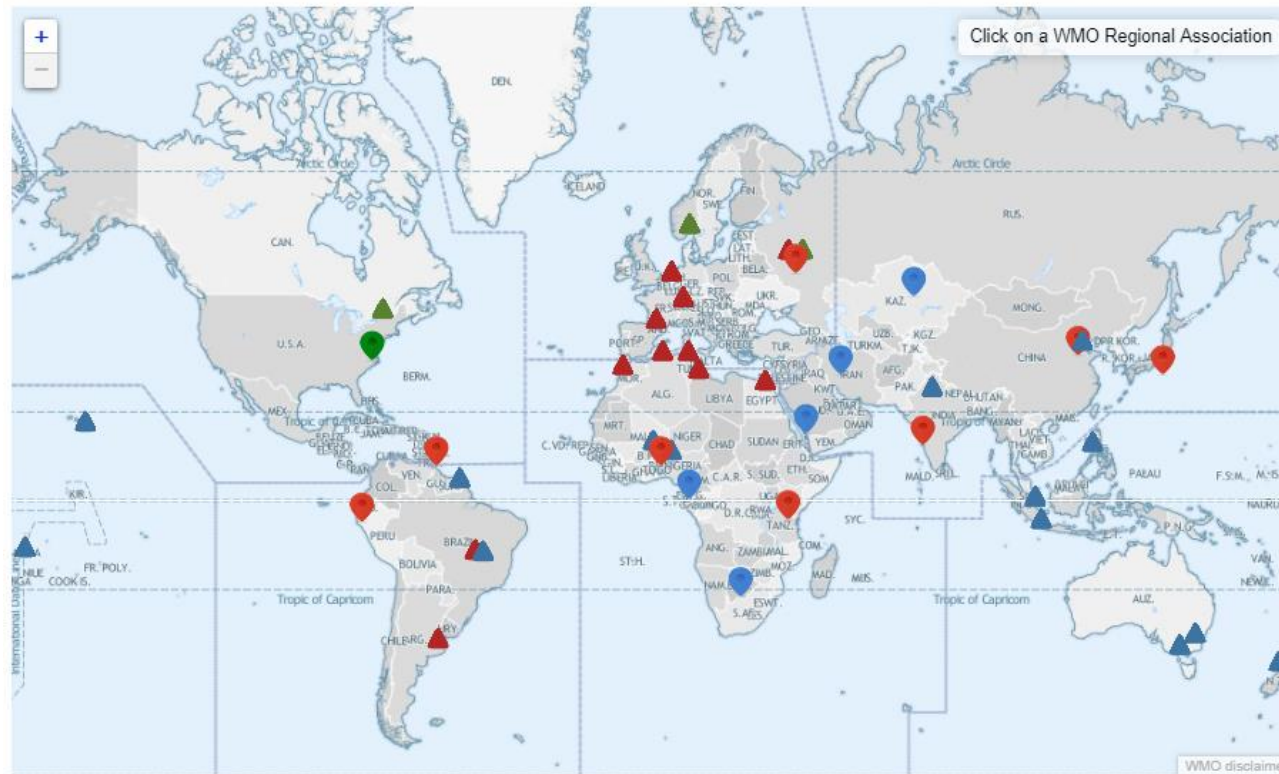
Objective 3: Foundational Pillars

Enhancing technical and scientific capabilities to support user-driven climate services:







- Observations and monitoring
- Research, modeling, and prediction
- Climate services information systems
- Capacity building

Section 3. Regional Institutions and Mechanisms

WMO designated [Regional Climate Centres \(RCCs\)](#) to generate and deliver more regionally-focused high-resolution data and products as well as training and capacity building.

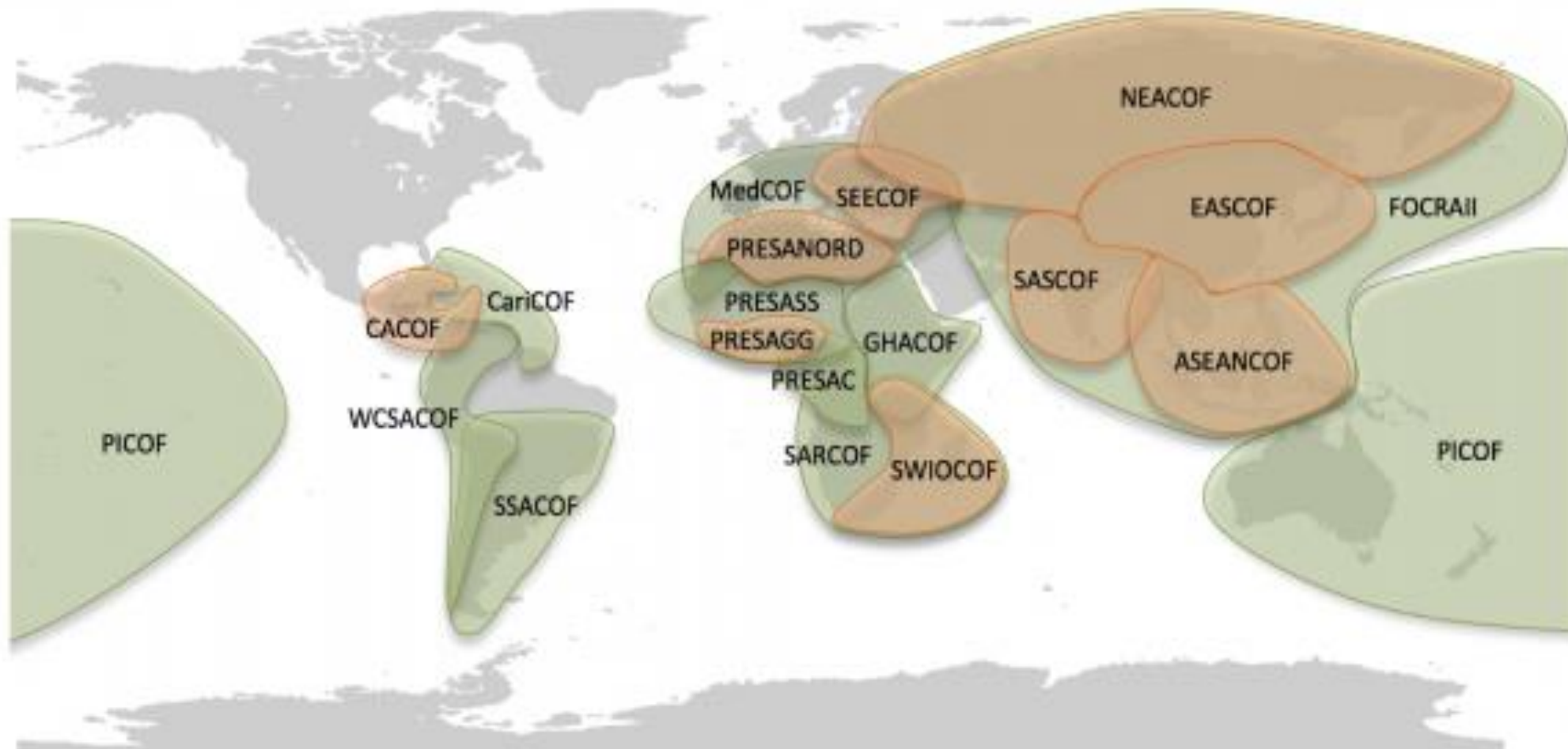


Legend

-  designated RCC
-  designated RCC-Network
-  RCC in demonstration phase
-  RCC-Network in demonstration phase
-  RCC proposed
-  RCC-Network proposed

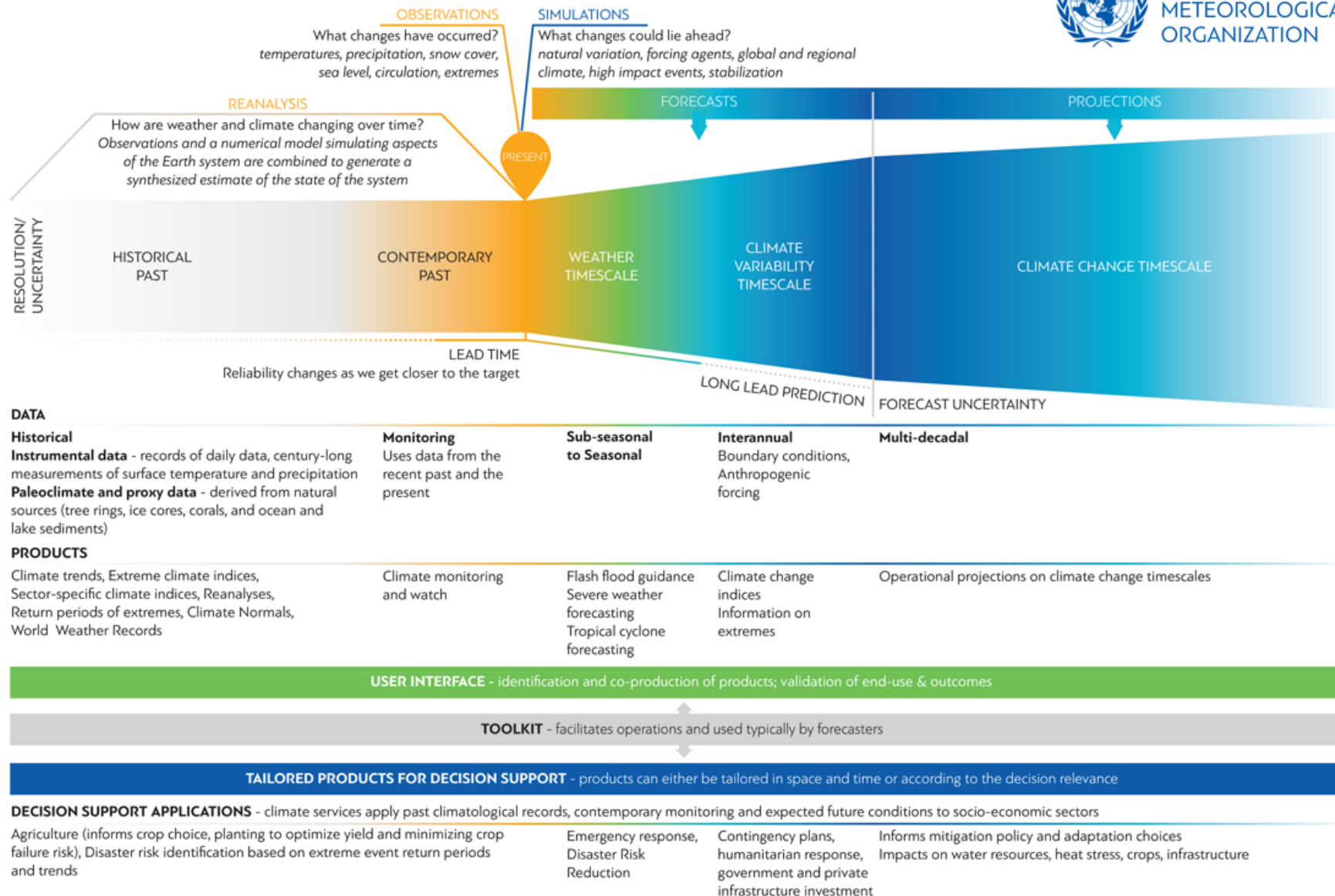
Section 3. Regional Institutions and Mechanisms

Regional Climate Outlook Forums produce consensus-based, user relevant climate outlooks for the coming season on a regular basis.



Section 4. Conceptual framework of a CSIS

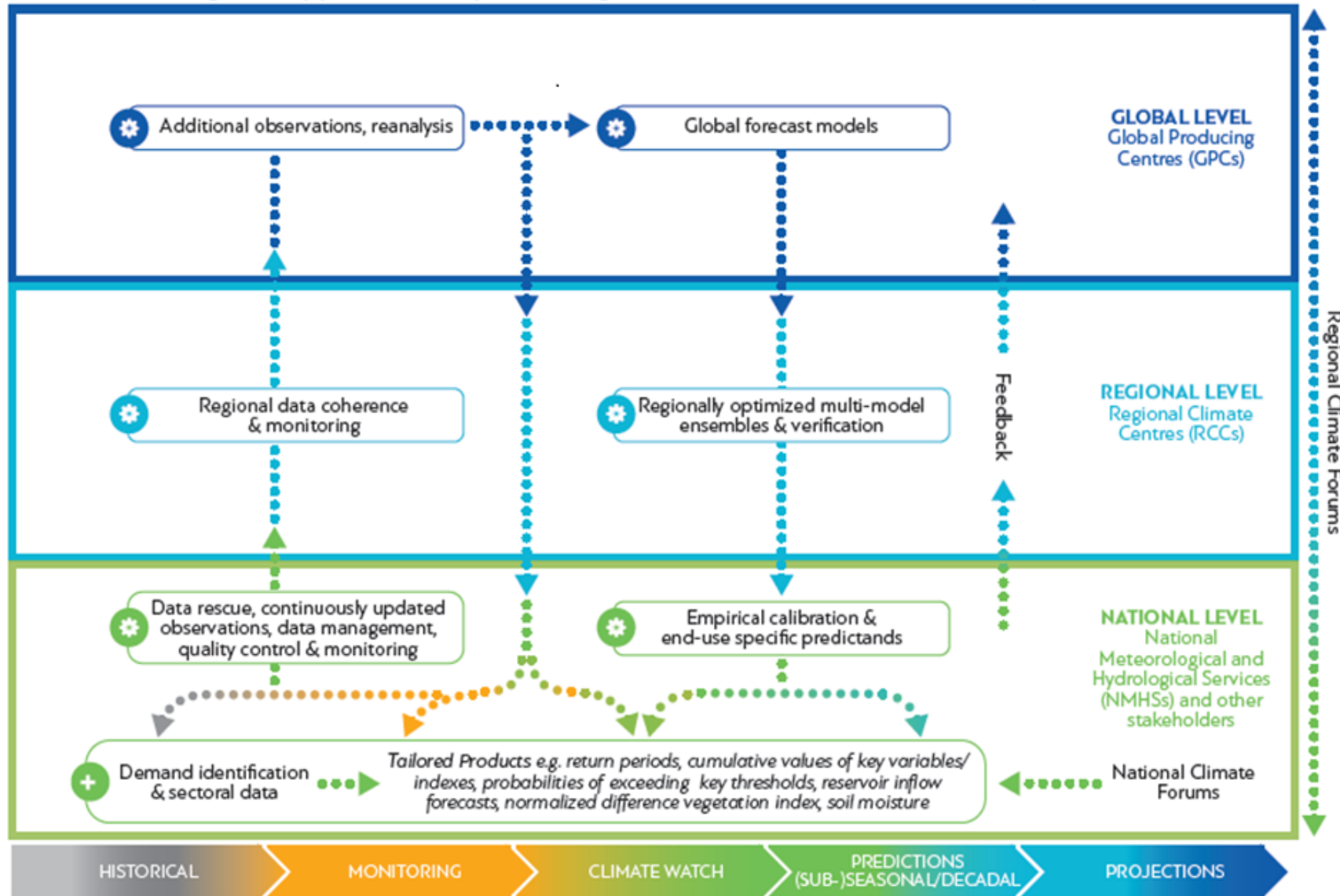
CLIMATE SERVICES INFORMATION SYSTEM



Section 4. Conceptual framework of a CSIS



A Regional Approach to Implementing the Climate Services Information System (CSIS-R)



Join the Partnership!

Go to **PARTNER** at: www.gwp.org

And visit our online library for water resources management: www.gwptoolbox.org

