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FRANCE 2030 PROGRAMME DE RECHERCHE CLIMAT

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METEO FRANCE
À VOS CÔTÉS, DANS UN CLIMAT QUI CHANGE

Secrétariat général pour l'investissement

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FRANCE 2030 PROGRAMME DE RECHERCHE CLIMAT

WEBINAIRE TRACCS

TRANSFORMER LA MODÉLISATION DU CLIMAT POUR LES SERVICES CLIMATIQUES

CHANGEMENT DE PARADIGME POUR LA FOURNITURE DES SERVICES CLIMATIQUES EN AFRIQUE-CARAIBES-PACIFIQUE

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Division Services de prévisions climatiques, Branche des Services Climatiques,
Organisation Météorologique Mondiale (OMM)

→ Vendredi 26/04/2024 de 11h à 12h

1

Cadre opérationnel et méthodologique de fourniture des services climatiques

2

Leviers de transformation et changement de paradigme

3

Applications dans les régions Afrique-Caraïbes-Pacifique

Contexte

United Nations Early Warning for all (EW4ALL) initiatives


Les Echos

À la une Idées Économie Politique Entreprises Finance - Marchés Bourse Monde Tech-Médias Start-up Régions Patrimoine Le Mag W-E

EN CHIFFRES

Les émissions mondiales de CO2 continuent d'augmenter dangereusement

Le Global Carbon Project présente ce mardi à la COP28 de Dubaï son nouveau bilan sur les émissions de dioxyde de carbone dans le monde. Sans surprise, elles ont encore augmenté cette année, alors qu'une baisse drastique serait nécessaire pour rester sur la trajectoire de l'accord de Paris. Particulièrement inquiétantes, les tendances à l'oeuvre en Chine et en Inde.

Ajouter à mes articles Commenter Partager Allemagne Brésil

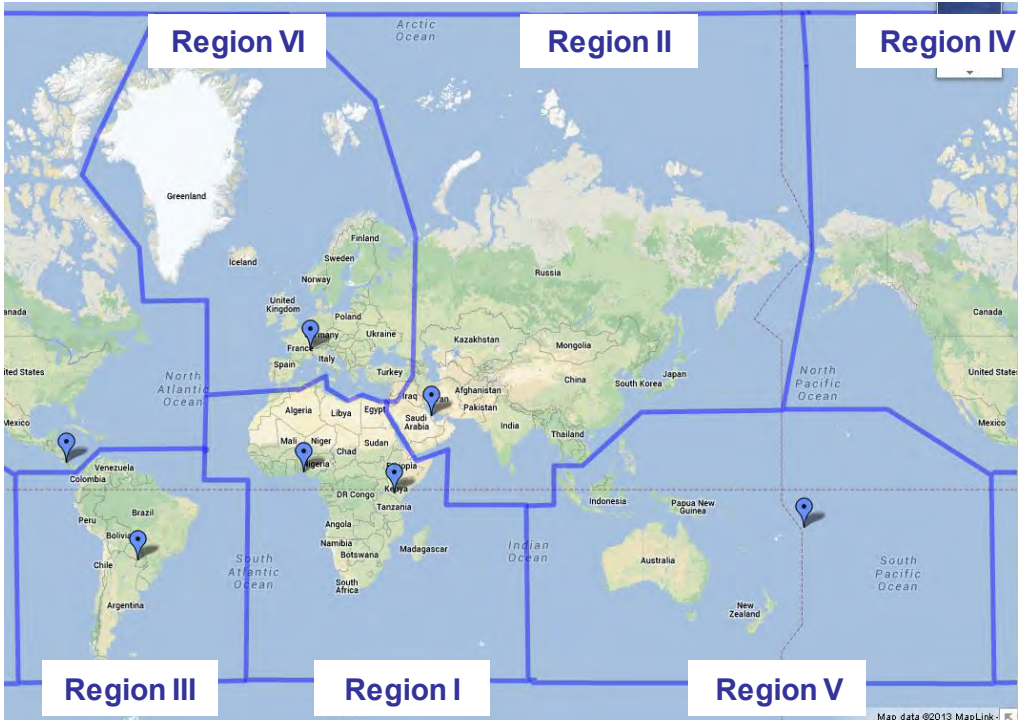
Organisation Météorologique Mondiale (OMM)

Mieux répondre aux besoins de la société
Fournir des informations et des services qui font autorité, accessibles, orientés vers l'utilisateur

Améliorer les observations et les prévisions du système terrestre
Renforcer les bases techniques et infrastructures

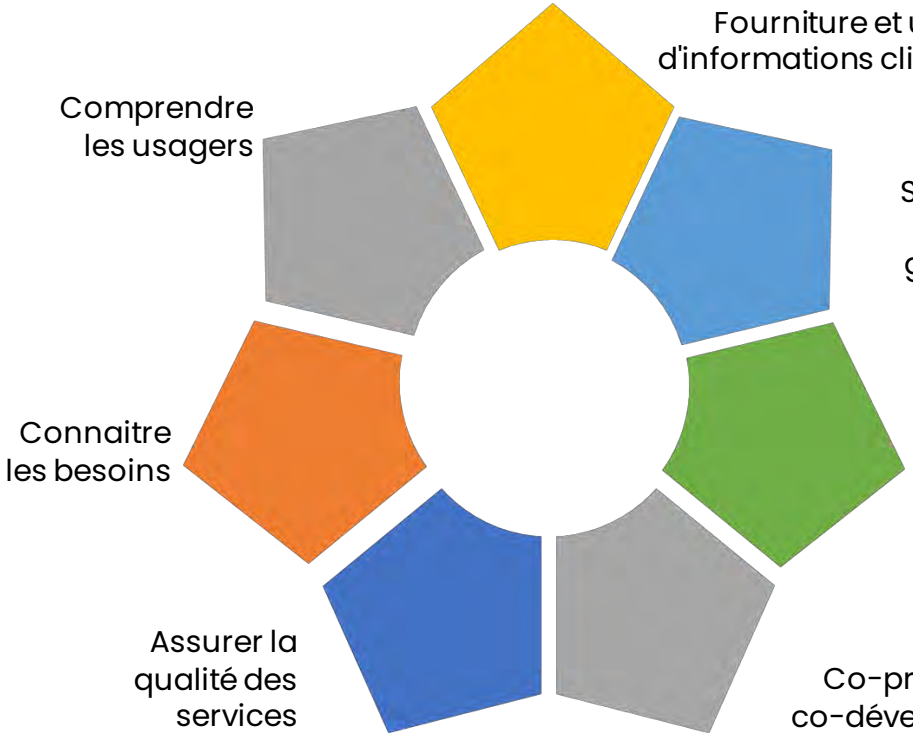
Faire progresser la recherche ciblée
Améliorer la compréhension du système climatique en vue de services améliorés

Combler le fossé des capacités
Renforcer la capacité de prestation de services des pays en développement pour garantir la disponibilité des informations et des services essentiels

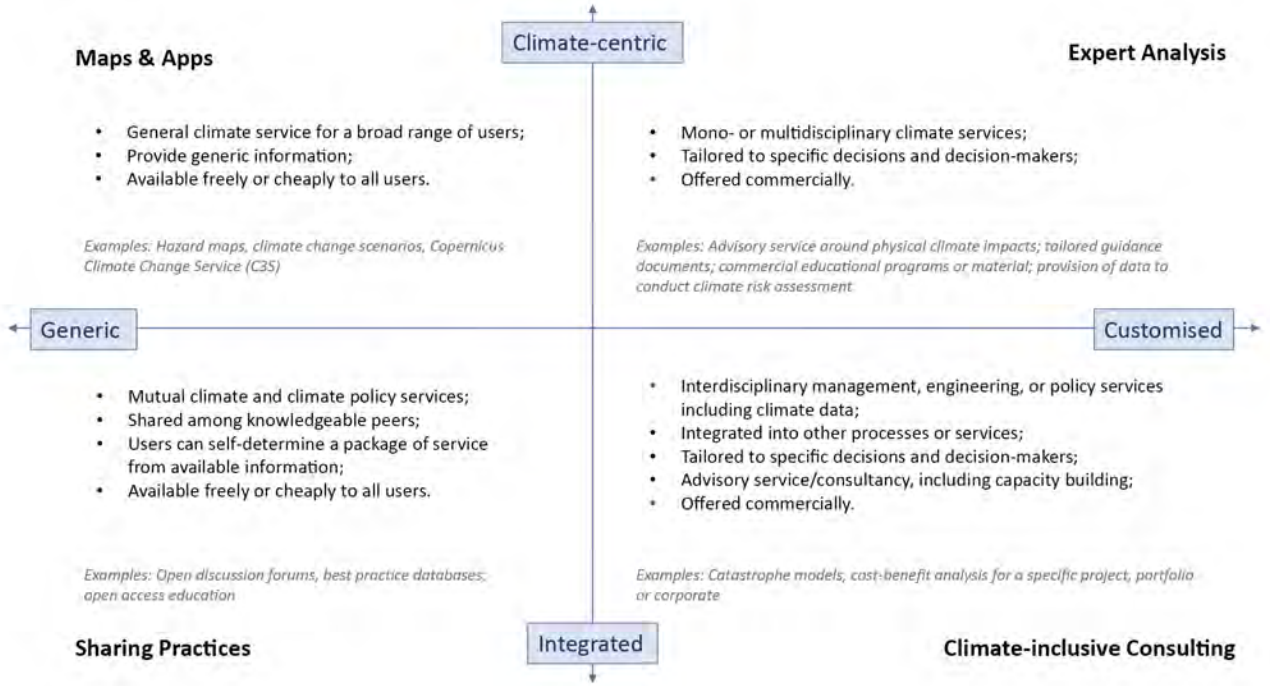


1. Cadre opérationnel et méthodologique de fourniture des services climatiques

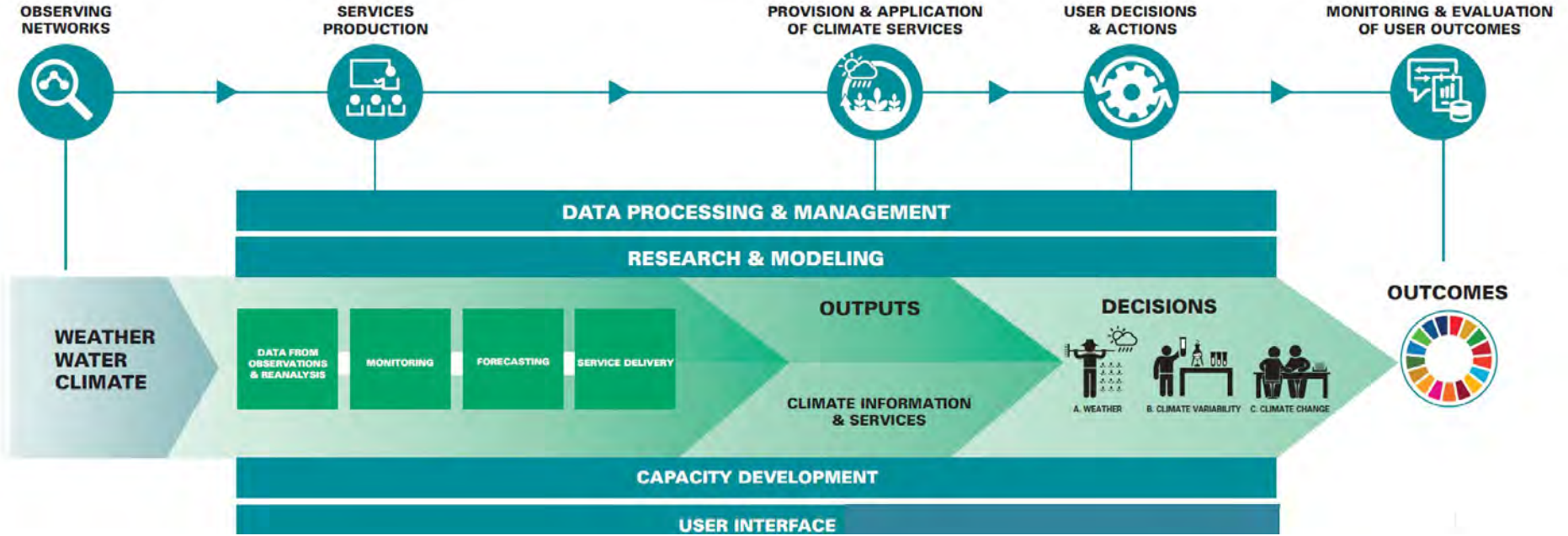
Services climatiques/climatologiques en quelques mots



Typographie des services climatiques



Chaîne de valeur des services climatiques



Cadre mondial pour les services climatologiques (GFCS)

- **Partnership** of governments and organizations
- Strengthens and coordinates the **development, delivery and use** of climate services
- Incorporation of **science-based climate information and prediction** into planning, policy and practice.
- Address global, regional and national scales
- Ensure **availability and access** to climate services
- All countries to benefit
- Operational climate services is core
- Develop and deliver services in **five priority areas**

Recentrage du cadre des services climatiques

1

Strengthen national climate service capacity and capability

- Improve availability of, access to, and use of, climate information, providing scientific and technical support
- Establish National Frameworks for Climate Services, and National Climate Fora, and link to regional structures

2

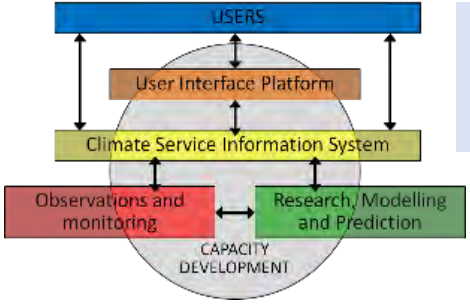
Support climate policy and finance with authoritative scientific information

- Produce regular reports and advice to support adaptation and mitigation (such as Global and Regional State of Climate reports; State of Climate Services; ENSO Bulletins; Climate Updates. Build on IPCC knowledge)
- Provide tools and expertise to help incorporate climate science into actions and investments

3

Develop Standards, Quality Management and Training

- Assess and develop Climate Service capacities (basic ⇨ essential ⇨ full ⇨ advanced) and needs
- Produce guidance on standards and competencies (through WMO's SERCOM and INFCOM)



4

Develop the climate services value chain/cycle

- Scientific capability (including Obs., data, WCRP) ⇔ climate services information ⇔ user engagement
- Generate value and enable actions

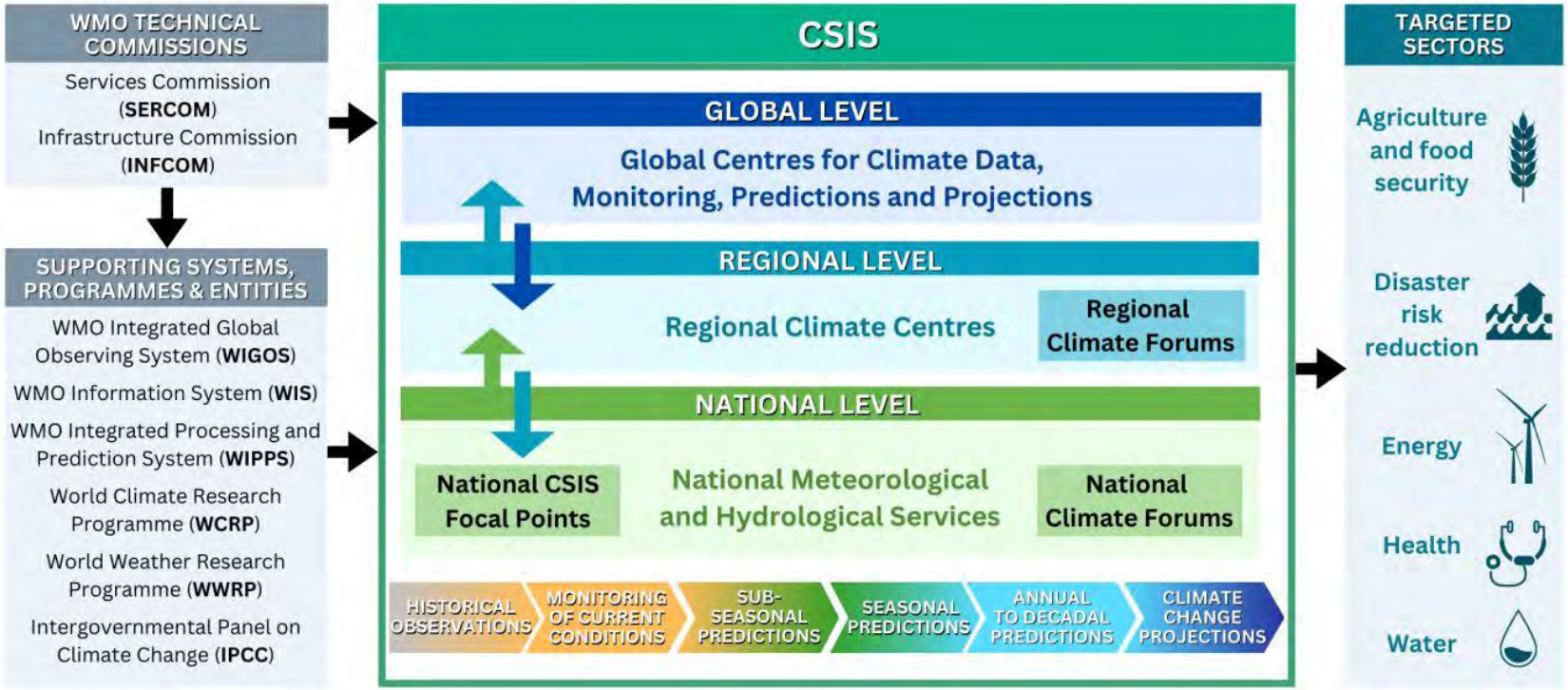
5

Improve visibility and effectiveness of GFCS, promote coordination

- Climate services are essential for society. Needs global-regional-national coordination
- Provide a forum for stakeholder communication, knowledge sharing, collaboration

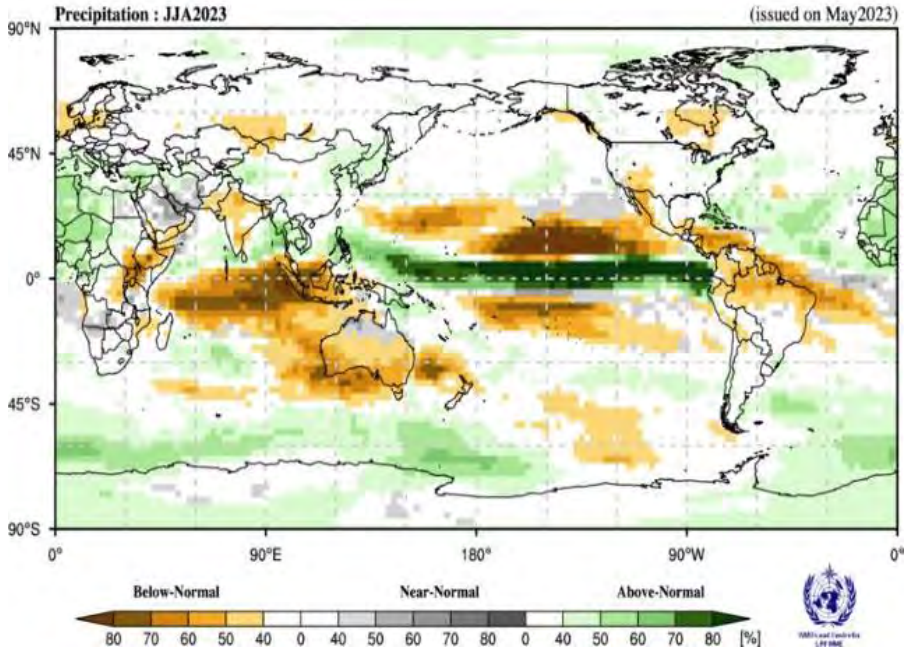
2. Leviers de transformation du paradigme

Systèmes d'information pour services climatiques



Systèmes de prévision climatique opérationnelle et planétaire

- 15 Global Producing Centres (GPCs) for **Long-Range Forecasts**
- 5 GPCs for Annual to **Decadal Climate Prediction**
- Lead Centre for Long-Range Forecast Multi-Model Ensemble
- Lead Centre for Annual to Decadal Climate Prediction
- Lead Centre for Sub-Seasonal Forecast



Probabilistic multi-model ensemble precipitation forecast for June-July-August 2023

Exemples de résultats de prévision climatique

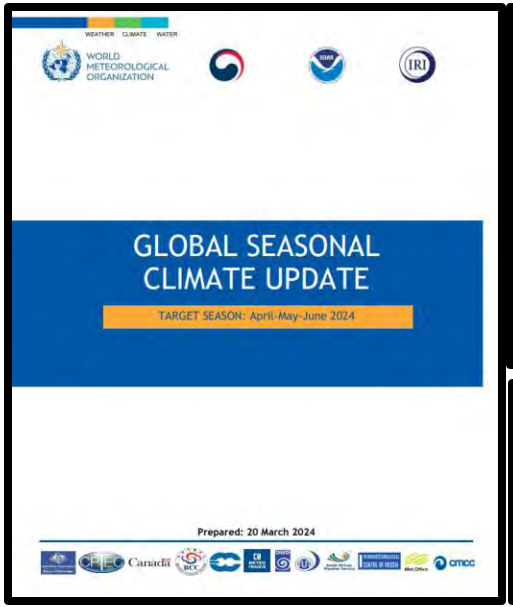
17 May 2023 - Global temperatures set to reach new records in next 5 years

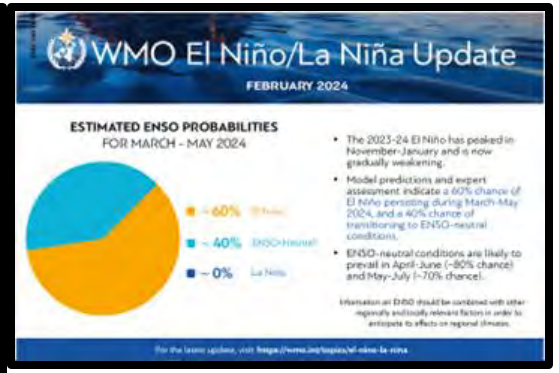
*"There is **66% chance** that annual global surface temperature will temporarily exceed 1.5 °C above pre-industrial levels for at least one of the next five years ."*

*"There is a **98% likelihood** that **at least one of next five years will be warmest on record**."*

"El Niño and climate change will likely combine to fuel global temperature increase."

"Arctic heating is predicted to be more than three times higher than the global average."





Échelles temporelles des projections climatiques

GREEN CLIMATE FUND
WORLD METEOROLOGICAL ORGANIZATION
WCRP World Climate Research Programme
SMHI

Site-specific report

Get an instant climate change overview for any location world-wide.

Data Access Platform

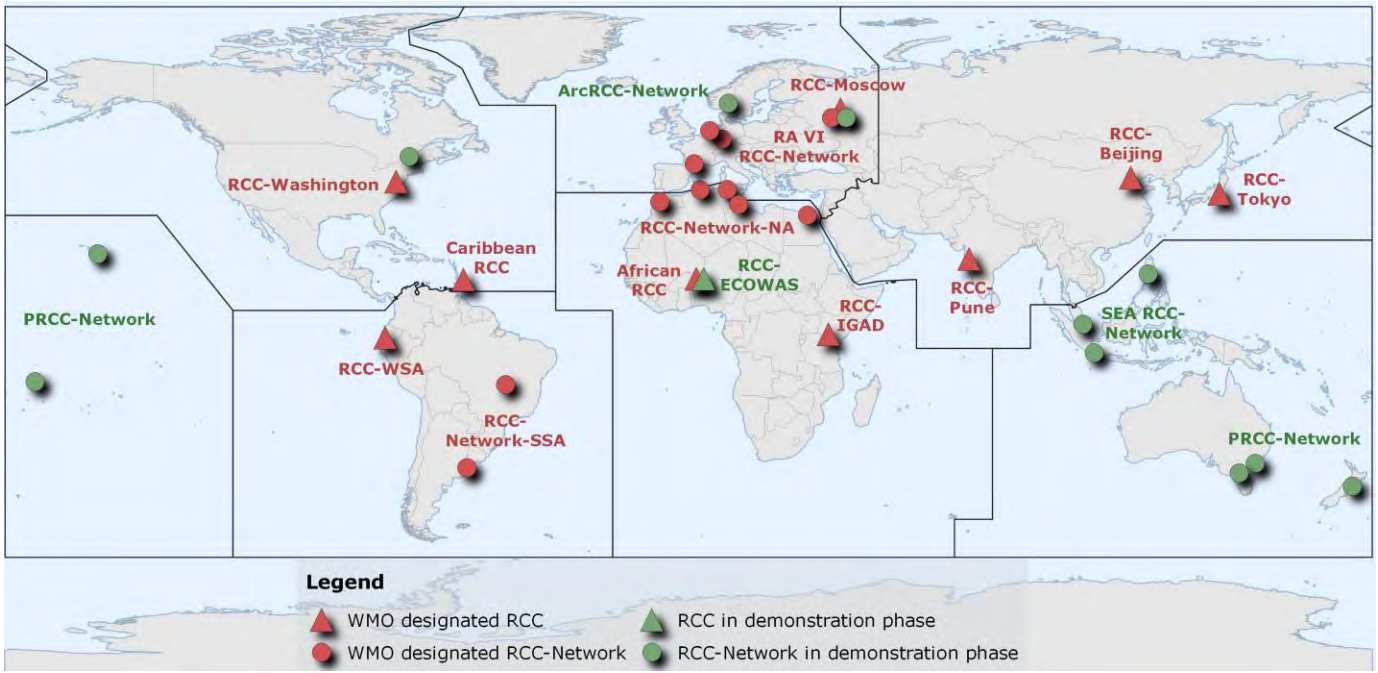
Download pre-calculated climate indicators and explore interactive maps and graphs.

Climpact

Calculate climate indicators using your own weather and climate data.

https://climateinformation.org/

Centres climatiques régionaux



Centres of Excellence to create regionally-oriented products and serve countries

Mandatory functions

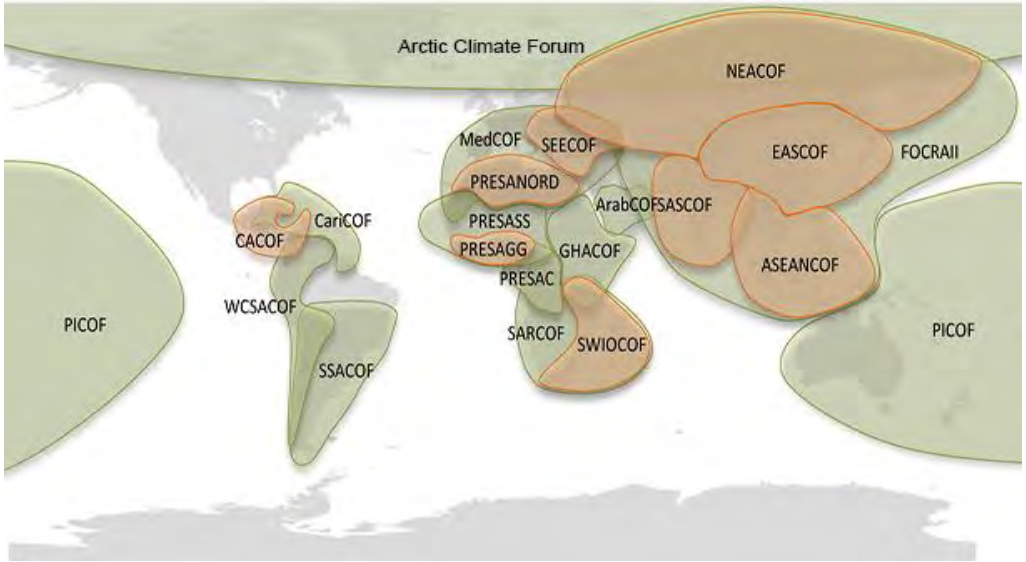
- Long-Range Forecasting
- Climate monitoring
- Data services
- Training

Highly recommended functions

- Climate prediction and projection
- Non-operational data services
- Coordination
- Training and capacity building
- Research and development

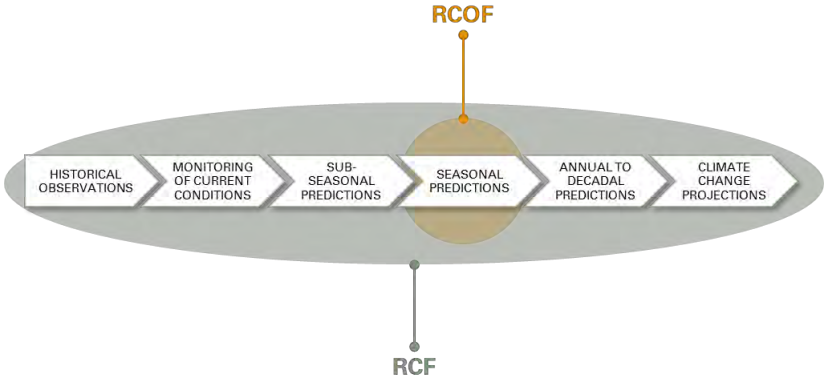
Forums climatiques régionaux

WMO Regional Climate Outlook Forums (RCOFs)

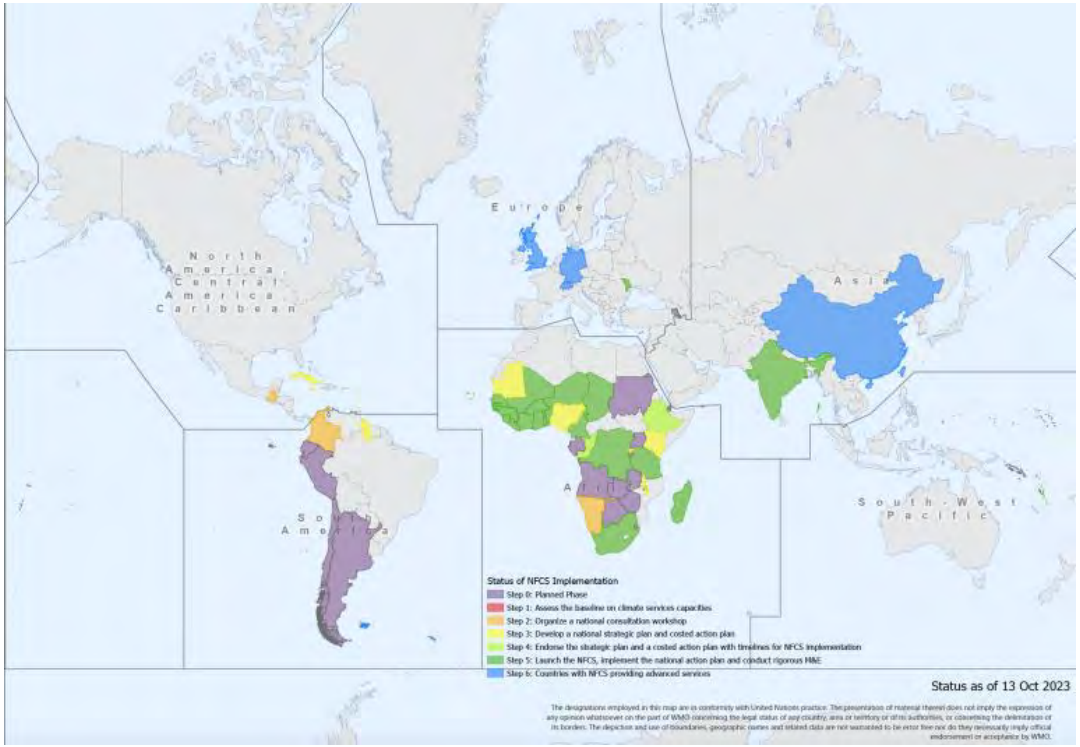


Regional Climate Forums (RCFs)

Evolve RCOF concept to RCF to encompass a range of products beyond seasonal time scale and better address Members' requirements.



Cadres nationaux pour les services climatiques



National Framework for Climate Services (NFCS)

Multi-stakeholder user interface platforms enabling the development and delivery of climate services at country level

India NFCS stakeholder Consultation Workshop, 5 – 6 Oct 2023

Co-conception et opérationnalisation de produits ciblés

Service delivery track	System operationalization track
Identification of priority products and services across sub-region (e.g. from national plans, NDCs, etc.)	Assess NMHS and WMO regional centre systems and services to identify capacity development and technical assistance needs
Regional sector-specific workshops/processes to develop tailored product specifications	Design/propose measures to enhance data and products availability through greater systems operationalization on sub-regional scales
Preparation of additional national datasets as needed for tailored products	Use Regional Climate Forums (RCFs) to plan and prepare for operational release of priority tailored products identified under the service delivery track
Country-level service delivery system/communication channels identified/established (NMHS partnership with sector stakeholders)	Introduce priority products operationally at national level, with support from the WMO Regional Centre and GPCLRFs
Delivery of tailored products and user feedback	Assimilation of feedback for forecast system and tailored product improvements
Assessment of socio-economic benefits (essential for sustainability)	Assessment of country-level climate services capacity improvements

Recherche, modélisation et prévision

WCRP Lighthouse Activities
New Core Projects with potential to enhance climate services and guide research based on societal needs

WCRP Coupled Model Intercomparison Project (CMIP)

WCRP Coordinated Regional Climate Downscaling Experiment
Basis for quantitative climate service information and input for adaptation and mitigation

Artificial Intelligence/Machine Learning (AI/ML) methods
Convergence of High-Performance Computing (HPC), big data, and Artificial Intelligence (AI) methodologies

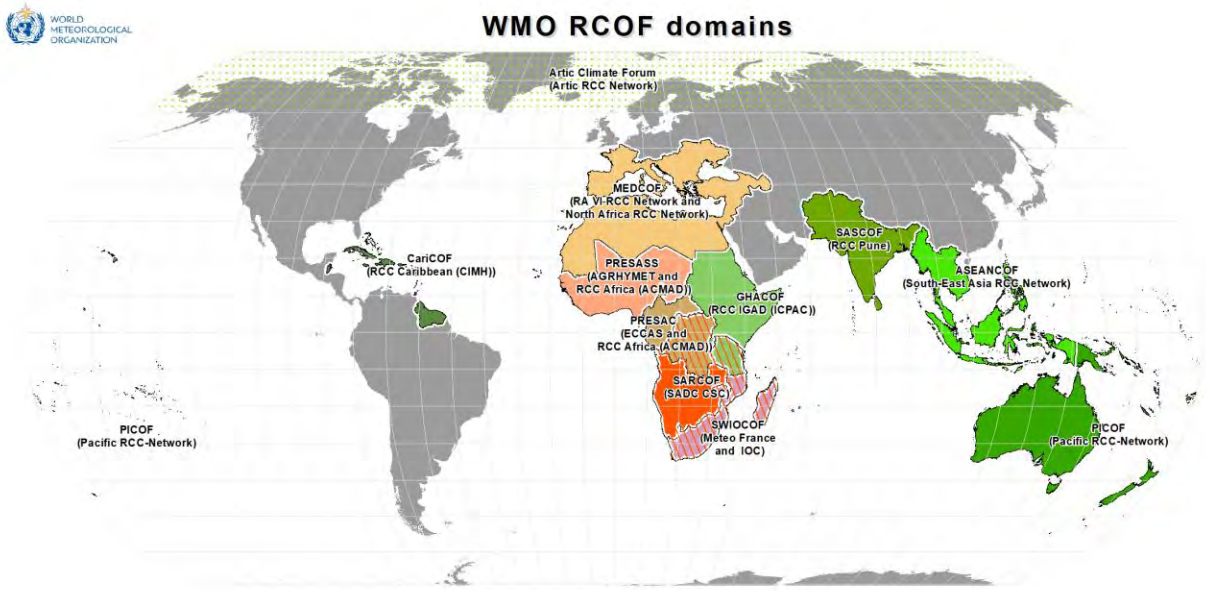
Kilometre-scale earth system modelling

Left: picture from space taken by Apollo 17 astronauts on 7 December 1972. Right: Simulated visible satellite image from a 1.25 km resolution simulation of the ICON model initialized with reanalysis fields on 5 December 1972 by NVIDIA., WMO Bulletin vol 7(29, 2023)

3. Applications dans les régions Afrique-Caraïbes-Pacifique

Intra-ACP Climate Services and Related Applications (ClimSA)

Guides pour la prévision saisonnières objectives



- Dynamical climate models, including multi-model ensembles
- Quality controlled regional observational databases for forecast verification
- Improved understanding of climate variability and predictability
- Global model evaluation and selection
- Regional calibration and bias correction
- Tailored seasonal forecast products

GHACOF (ICPAC)

Deliverables:

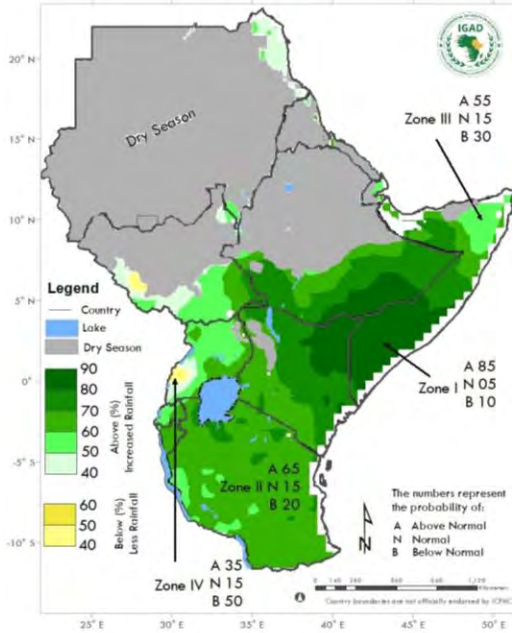
Output 2 - **Operational status and capacities of RCC-IGAD**: an evaluation and recommendations for future development (Oct 2023)

Output 3 - **Guidance for production of objective seasonal forecasts for the Greater Horn of Africa (GHA) region** (Apr 2021)

Priorities 2024-2026

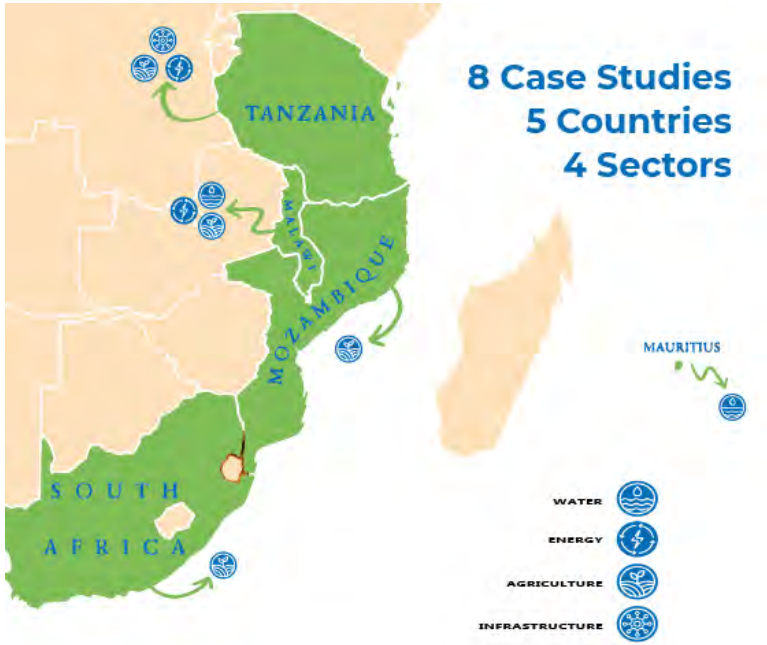
- Gap filling in the observation network & temperature monitoring
- Climate Watch
- KMD calibration laboratories (ISO 17025)
- Launch of Kenya NFCS

UK Met Office



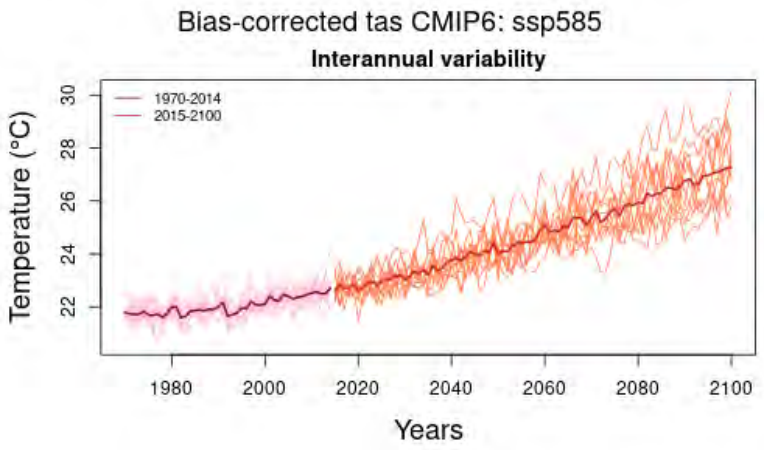
October-December (OND) 2023 RAINFALL OUTLOOK

Full value-chain Optimized Climate User-centric Services for Southern Africa (FOCUS-Africa)



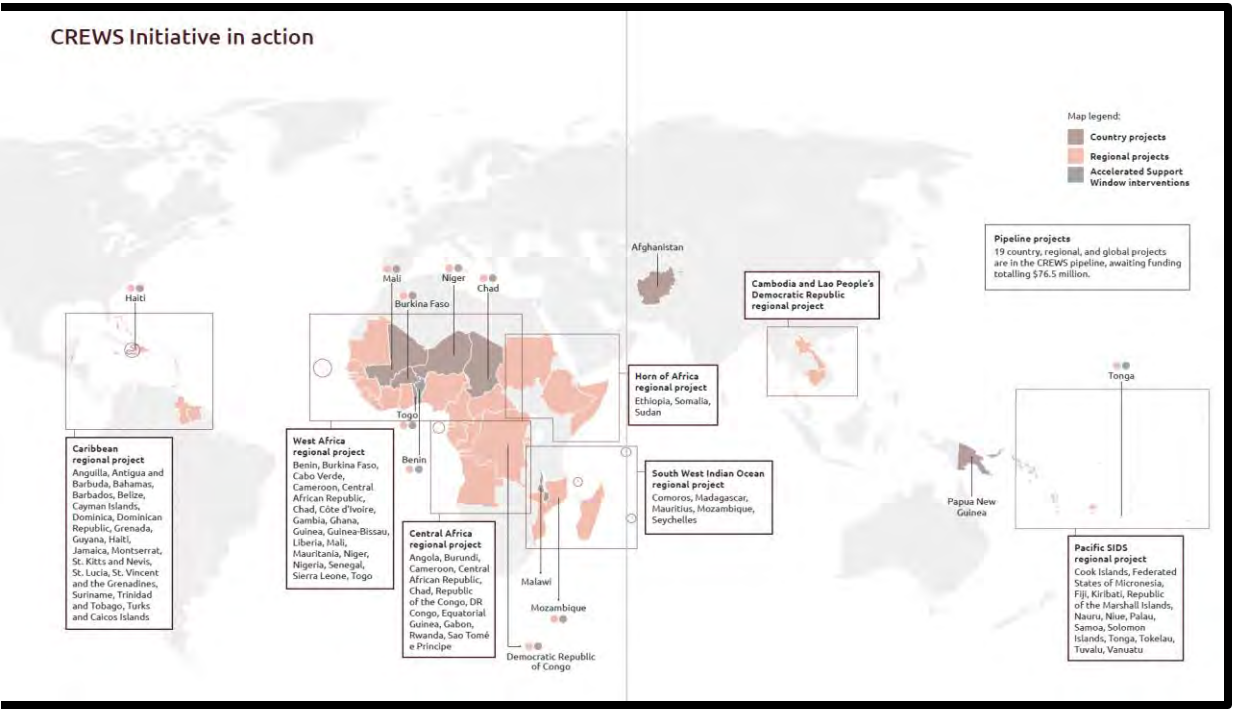
- Partners: WEMC, TMA, TANESCO, UKMO, Lgi
- Key findings
  - User engagement and collaboration – Tanzania November 2023
  - Hydropower model
  - Wind and solar
  - Downscaled seasonal climate information
- Challenges
  - Observational data
  - Sustainability
- Next steps
  - Model performance
  - Incorporation of dam level and installed capacity

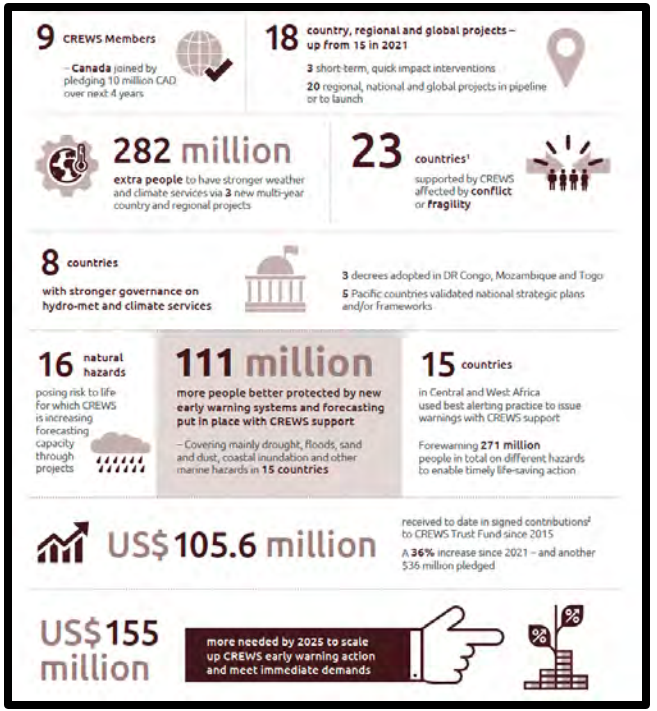
Full value-chain Optimized Climate User-centric Services for Southern Africa (FOCUS-Africa)



- ❑ Partners: EDF, WITS, UCT, WEMC, DCCMS
- ❑ Key findings
  - Bias-corrected projections show an increase in temperature (+3.5°C by 2100 for SSP5-8.5)
  - Enhanced precipitation cycle (+30% in autumn by 2100 for SSP5-8.5)
  - Downscaled seasonal climate information
- ❑ Challenges
  - Running hydrological model with 4 SSPs x 11 GCMs climate change scenarios
  - Sustainability
- ❑ Next steps
  - Produce hydro-climatic indicators and Fact Sheets to feed the Climate Service

Climate Risks & Early Warning Systems (CREWS)





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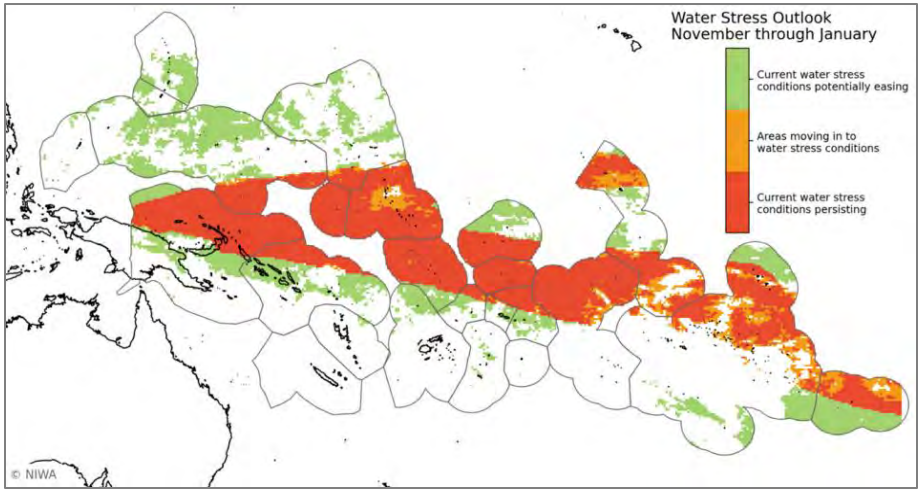
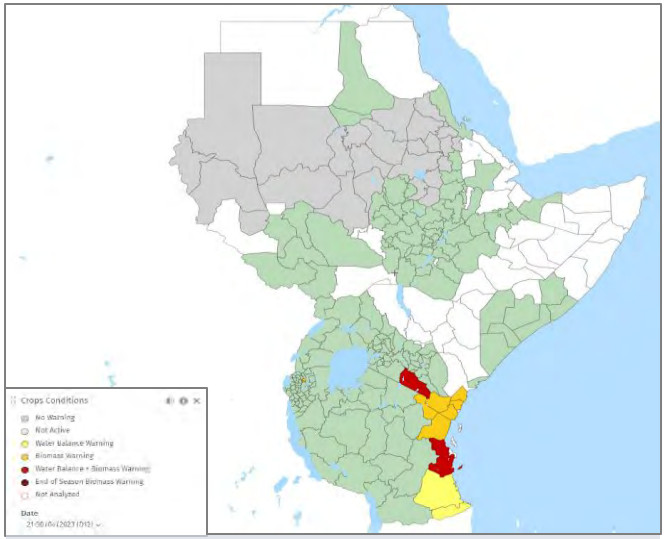
Exemples d'applications sectorielles ciblés



Water stress outlook
Source: Pacific RCC-Network



Crop conditions
Source: WMO RCC-IGAD