Climate Rationale:
Strengthening evidence-based adaptation planning and decision making

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WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

This session

What is a Climate Rationale?

How climate rationale can improve climate action?

What support is available for climate rationales?

A climate rationale provides the scientific underpinning for evidence-based climate decision making.

It ensures that the linkages between climate impacts, climate action and societal benefits is fully grounded in the best available climate data and science.

Mandates for Enhancing Climate Science into Decision-Making Processes

NAP-GSP
NATIONAL ADAPTATION PLAN GLOBAL SUPPORT PROGRAMME

Paris Agreement
(sub-paragraph 7(c)) mentions: "..strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making.."
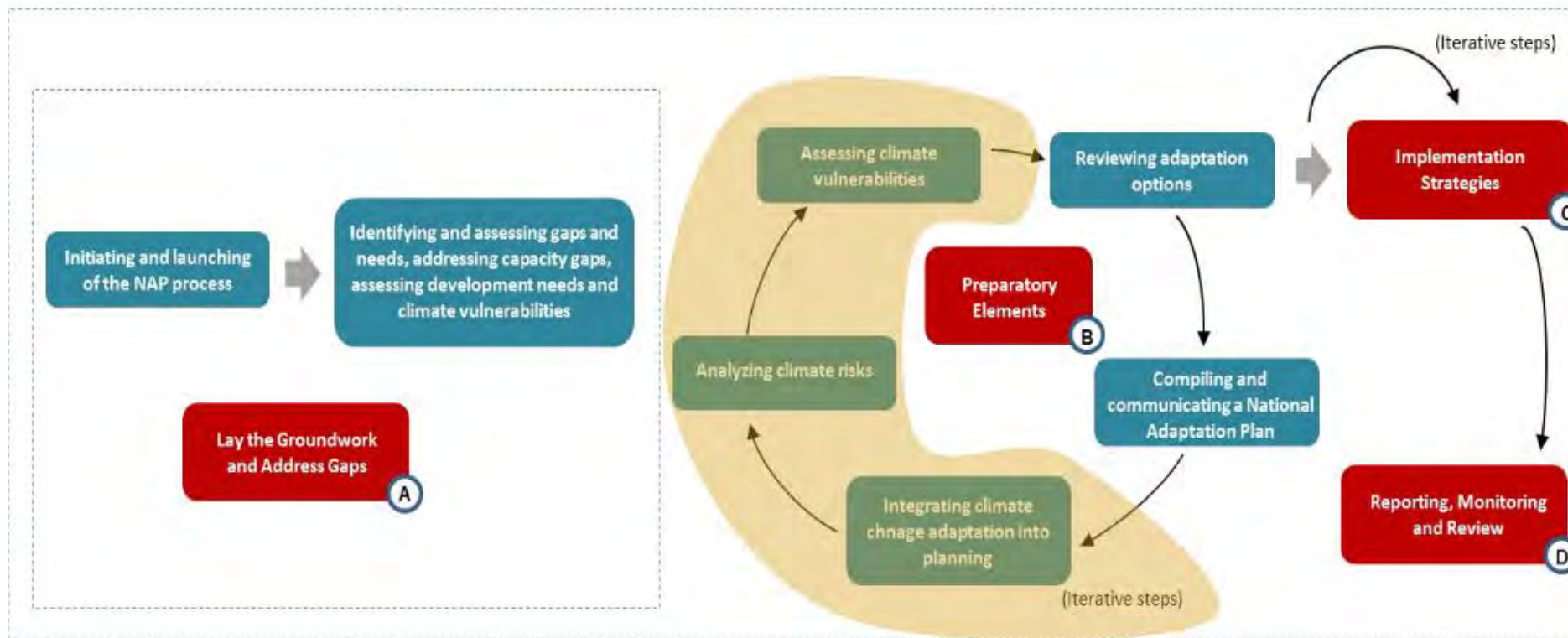
NAP Technical Guidelines
Element B. Preparatory elements of the NAP Technical Guidelines (LEG, 2012) mentions the need for: "...analysing current climate and future climate change scenarios."

At B.19
the Board called on the Secretariat to develop an integrated approach to enhance the climate rationale of GCF-supported activities.
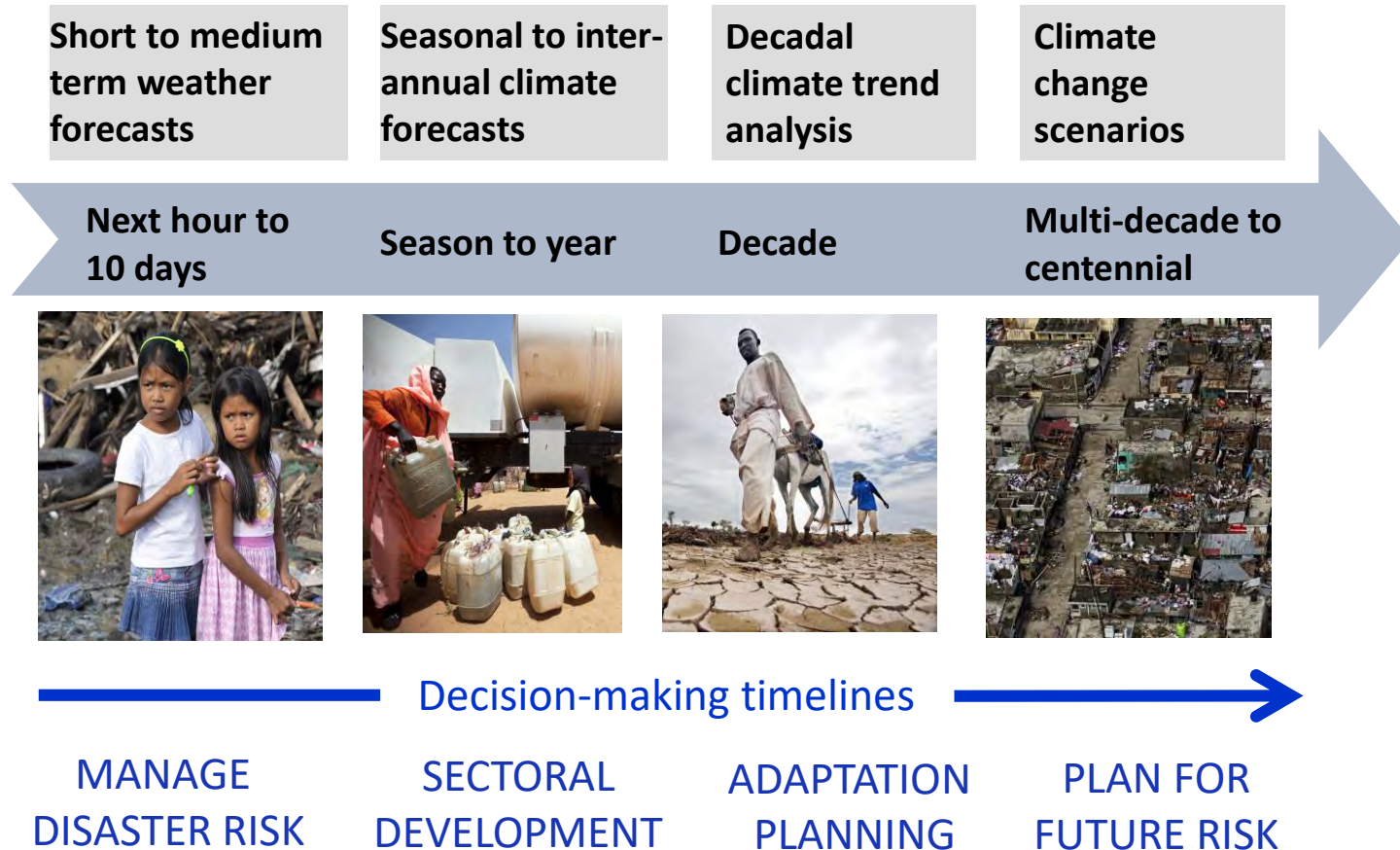(Decision B.19/06, Feb-Mar 2018)

Climate information in the NAP process


Source: NAP Technical Guidelines (LEG, 2012)

Climate Services for Climate Resilient Development planning

Climate information are crucial resources for decision-makers at all levels

Short to medium term weather forecasts	Seasonal to inter-annual climate forecasts	Decadal climate trend analysis	Climate change scenarios
Next hour to 10 days	Season to year	Decade	Multi-decade to centennial

Decision-making timelines

MANAGE DISASTER RISK	SECTORAL DEVELOPMENT	ADAPTATION PLANNING	PLAN FOR FUTURE RISK

Data and capacity issues

- Availability and digitization (data rescue)

- Homogeneity (QC)

- Relevance

- Accessibility and communication
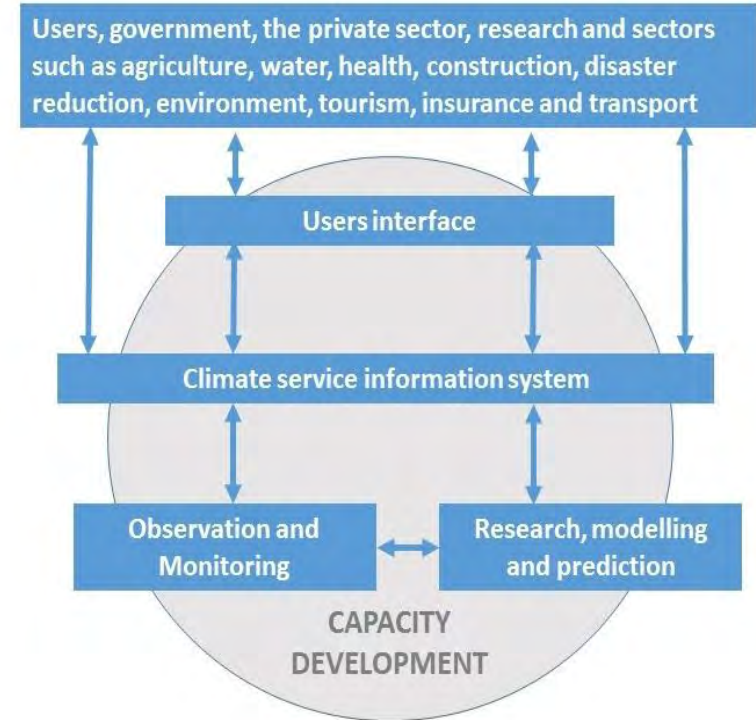
The potential of climate rationale can only be realised when the information provided matches the needs of end-users

Capacities underpinning CSIS

INFRASTRUCTURAL

Observational capabilities:
station networks, remote sensing platforms

PROCEDURAL

Data management:
organize, manage and exchange data from observations, analyses and models
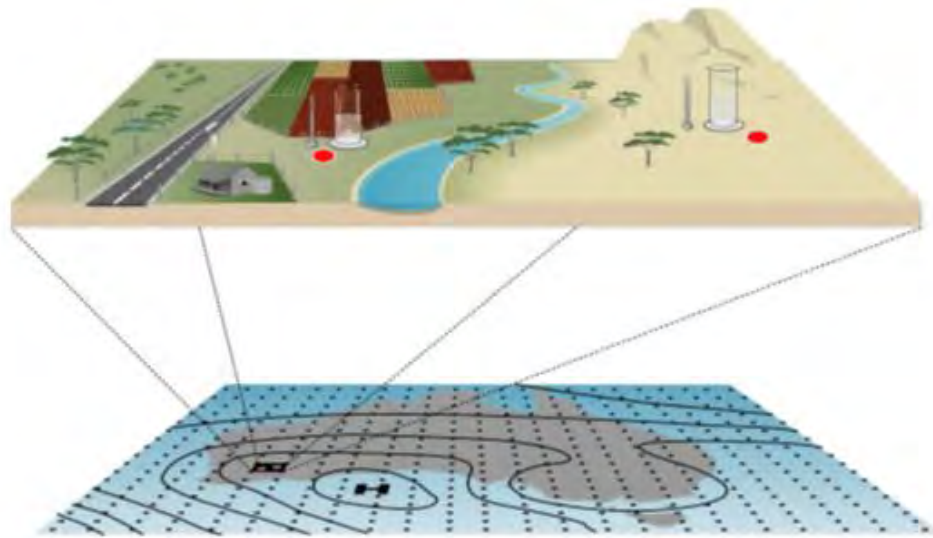
HUMAN

Product generation:
data analysis, model runs

INSTITUTIONAL

Policy use:
climate information and prediction into planning, policy and practices

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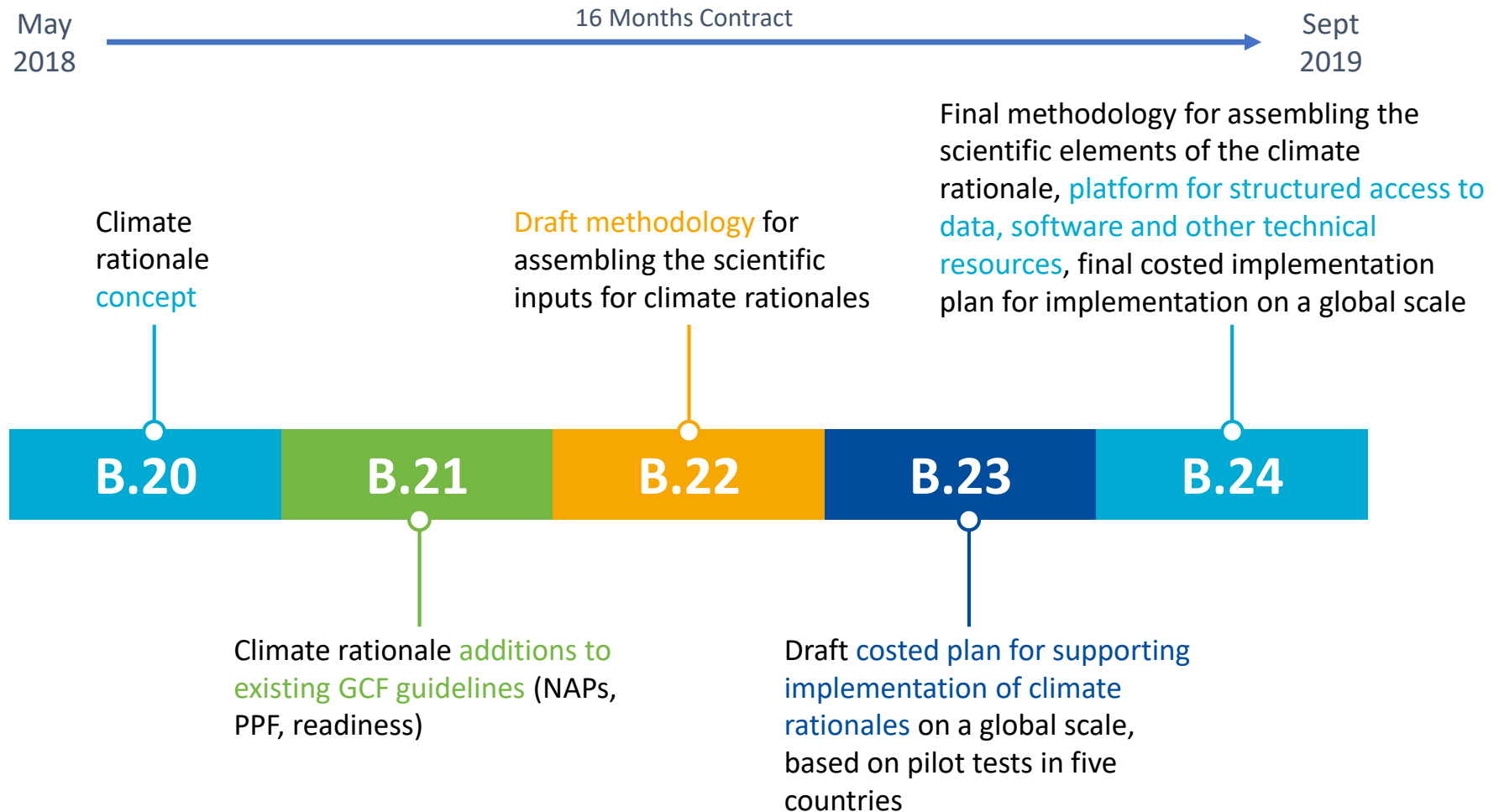# Challenges Accessing Robust Information at Project Scale

Information is required at project scale for establishing climate rationale

Downscaling

... from a global climate model (GCM) grid to the point of interest.

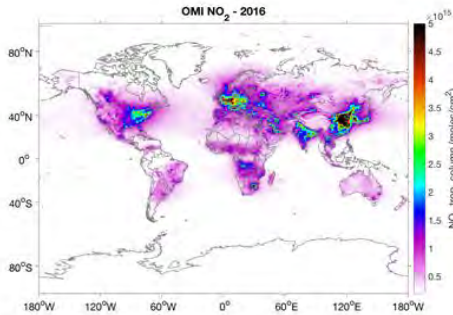# Outputs / Deliverables

Guiding principles

Best available science and appropriate data

Analysis and interpretation

Appropriate response options

Impact beyond projects

The scientific framework

Global climate indicators

State of the climate system

Sector specific indexes

Socio-economically relevant sectors

High impact events

Widespread, multi-sectoral impacts

Global climate indicators

- Variables or parameters used to describe weather conditions and trends *(precipitation, temperature, sea surface T, GHGs, sea ice, glaciers, extremes)*

- Derived from physical and observational networks

- Deployed for global and aggregated analysis
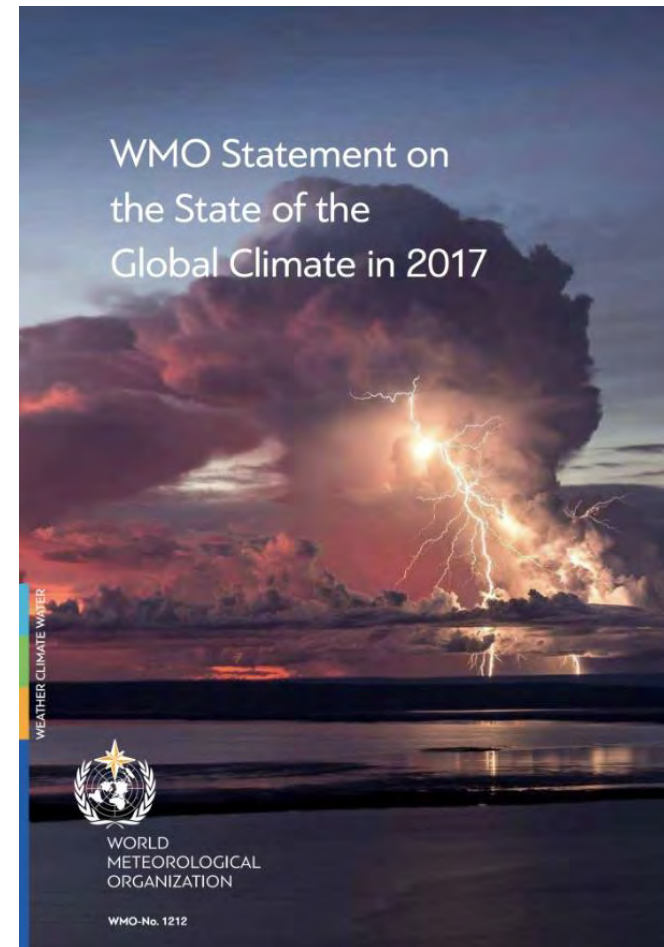
Headline indicators will ensure national consistency for the UNFCCC Global Stock-take (starting in 2023)

Standardized Precipitation Index (SPI)

- The SPI is a flexible index, simple to calculate

- Precipitation is the only required input parameter (20-30 years of monthly values)

- Effective in analysing dry/wet periods/cycles

- The program can run in both Windows and UNIX environments

- It can be used in conjunction with other indexes

Risk identification leads to the preparation of drought management plans

http://www.droughtmanagement.info/indices/

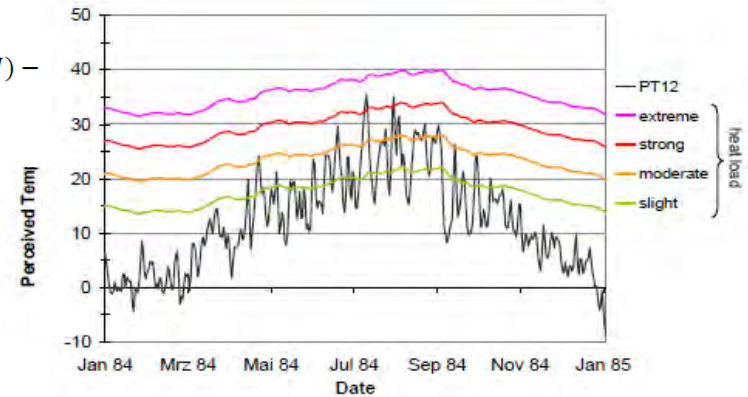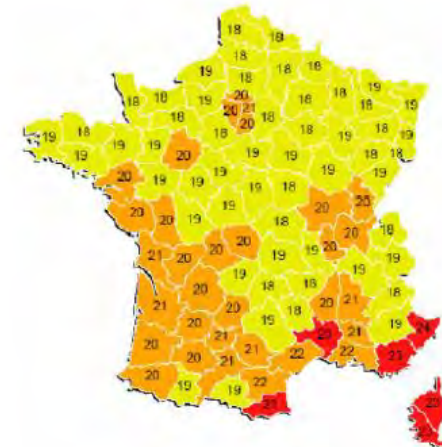| SPI	Category	Number of times in 100 years	Severity of event
0 to -0.99	Mild dryness	33	1 in 3 yrs.
-1.00 to -1.49	Moderate dryness	10	1 in 10 yrs.
-1.5 to -1.99	Severe dryness	5	1 in 20 yrs.
< -2.0	Extreme dryness	2.5	1 in 50 yrs.
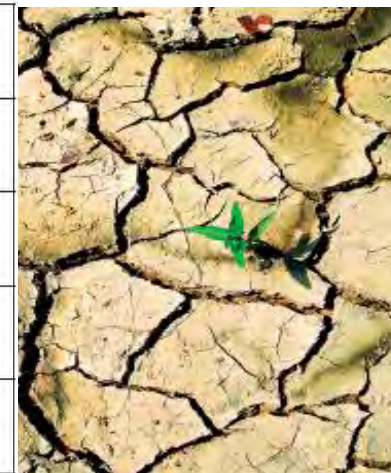
Sector specific index: Health

- Heat-stress index combines meteorological variables (T and H), with heat-budget models describing the body's heat gains and losses

$Heat\ Index\ (HI) = -42.379 + 2.04901523(T_f) + 10.14333127(RH) - 0.22475541(T_f)(RH) - (6.83783 * 10^{-3})(T_f^2) - (5.481717 * 10^{-2})RH^2 + (1.22874 * 10^{-3})(T_f^2)RH + (8.5282 * 10^{-4})(T_f)(RH^2) - (1.99 * 10^{-6})(T_f^2)(RH^2)|$

- Health-warning systems: source of advice on how to avoid negative health outcomes

Example of the thresholds used in the German Heat–Health Warning System (WMO, 2015)

- Short-term measures: watch/warning messages

- Long-term measures: public education and urban planning and design

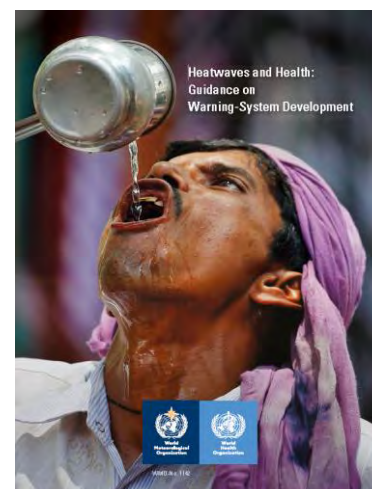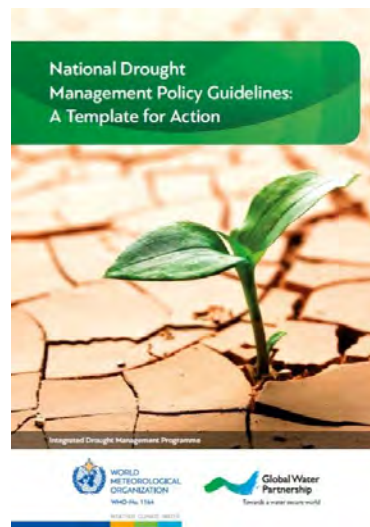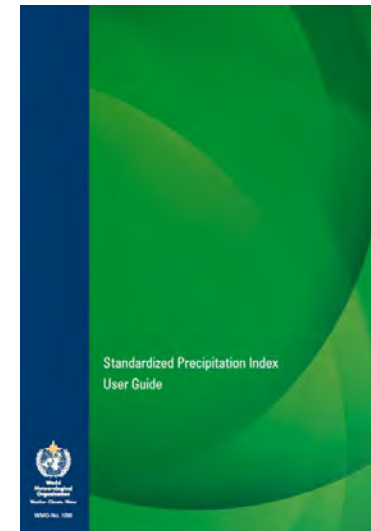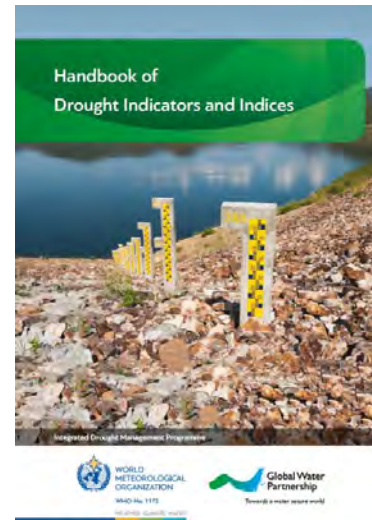Example of the thresholds used in France – Meteo-Alarm (WMO, 2015)

Useful resources

Climate Data and Monitoring
WCDMP-No. 72

Guidelines on
Analysis of extremes in a changing climate in
support of informed decisions for adaptation

Handbook of
Drought Indicators and Indices

Integrated Drought Management Programme

WORLD METEOROLOGICAL ORGANIZATION

Global Water Partnership

Standardized Precipitation Index
User Guide

National Drought
Management Policy Guidelines:
A Template for Action

Integrated Drought Management Programme

WORLD METEOROLOGICAL ORGANIZATION

Global Water Partnership

Heatwaves and Health:
Guidance on
Warning-System Development

Climate Services Toolkit

Guidance
Reference to WMO guidance documents related to GFCS pillars including Climate Services Information System

Software Tools
Links to selected data sets for development of climate services at global, regional and local levels.

Help Desk
Access to frequently asked questions and answers, climate experts, WMO terminology and CST feedback form.

Training Resources
Reference to training courses on the WMO-defined professional competencies for climate services development.

Climate Data
Links to selected tools for climate data management, analyses, predictions, projections, and downscaling.

User Forum
Access to venue for CST users' discussions, updates, and various climate services topics of shared interests.

http://www.wmo.int/cst/

Good practice: Regional Outlook Forums

Issue ⟹ Reduce weather and climate-related health risks including malnutrition, cholera and malaria

Method ⟹ Regional Climate Outlook Forum, a multi-stakeholders group assessed the likelihood for 2018 seasonal outbreaks

Near-term climate services ⟹ Outbreaks map-rooms and agro-meteorological bulletins reaching users (farmers, livestock keepers, refugees)
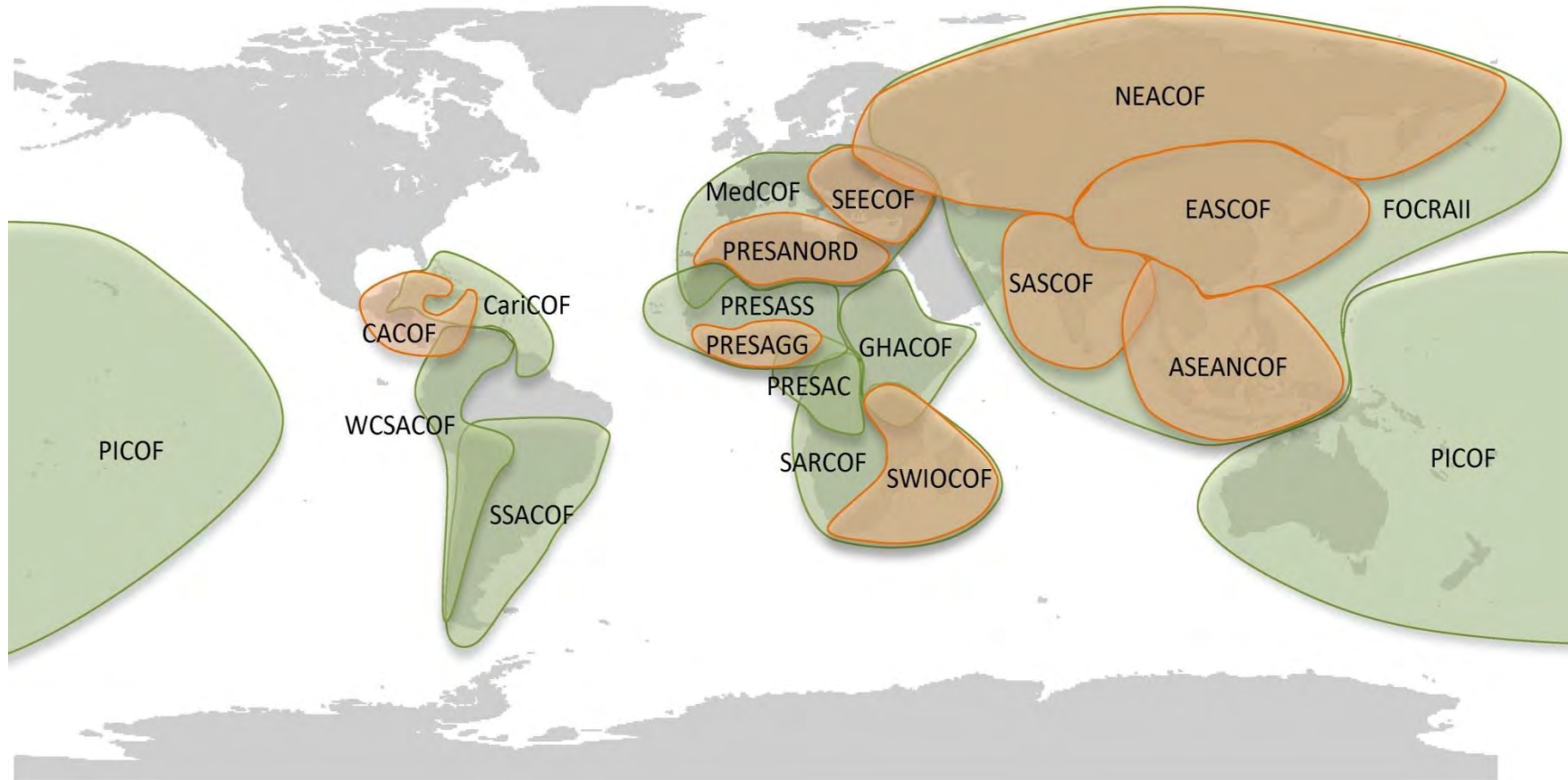
Medium to long term climate services ⟹ Awareness campaigns, resource planning/allocations, mitigation measures (spraying, moving supplies, vaccination, water treatment, etc.)
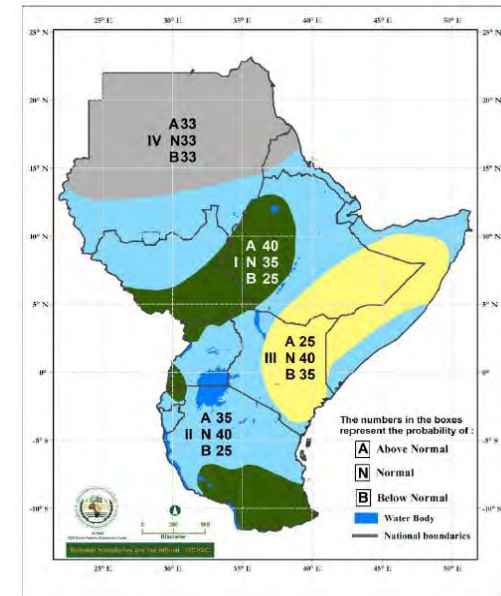
Rainfall outlook MAM 2018 (WMO-WHO, 2018)

RCOFs worldwide

https://public.wmo.int/en/our-mandate/climate/regional-climate-outlook-products

How climate rationale improves climate action

Better investments projects
- Climate **risk-proofing** of GCF investments
- Climate **effectiveness** – Value for investment
- Improve the quality of GCF funded activities based on objective, scientific, evidence-based, data-driven conclusions and analysis
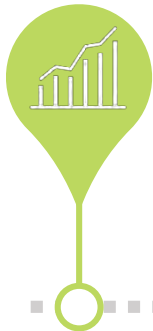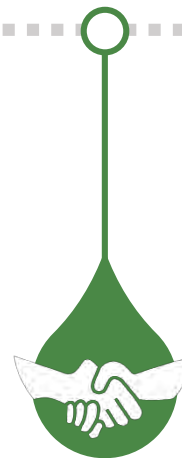
Alignment to Paris mandate
- Focus on climate change vs. development (**transformational** projects)

Addressing of country priorities
- Better and evidence-based country climate priority setting as reflected in NDCs – linked to the **Paris Agreement** Global Stocktake 2020

Strengthening of country capacity
- **Strengthen National Meteorological and Hydrological Services** (NMHS)
- Nationally Designated Authorities (**NDAs**) incorporate the climate rationale in project documents

WMO support to climate rationale

Authority
UN authoritative voice on weather, climate, water

UNFCCC
Annual WMO statement on the state of the global climate; MoU on provision of climate evidence for policy making

Science
Co-sponsor World Climate Research Programme, IPCC

Institutions
WMO Commission for Climatology, Global Climate Observing System, Climate Centers, GFCS – for developing the climate rationale methodology and for implementation support
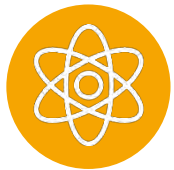
Country
National Meteorological and Hydrological Services integral part of WMO Integrated Global Observing System

Standards
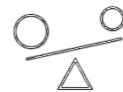ISO standardization body

Thank you
Merci

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