WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Supporting implementation of the UNFCCC Paris Agreement

Contributions by the WMO community to the Global Framework for Climate Services

WMO OMM
World Meteorological Organization
Organisation météorologique mondiale

Maxx Dilley, Director
Climate Prediction and Adaptation Branch
Climate and Water Department

Outline

- UNFCCC Paris Agreement and Nationally Determined Contributions
- Climate Services Information System (CSIS) components
- CSIS needs and areas of cooperation
- Selected country examples

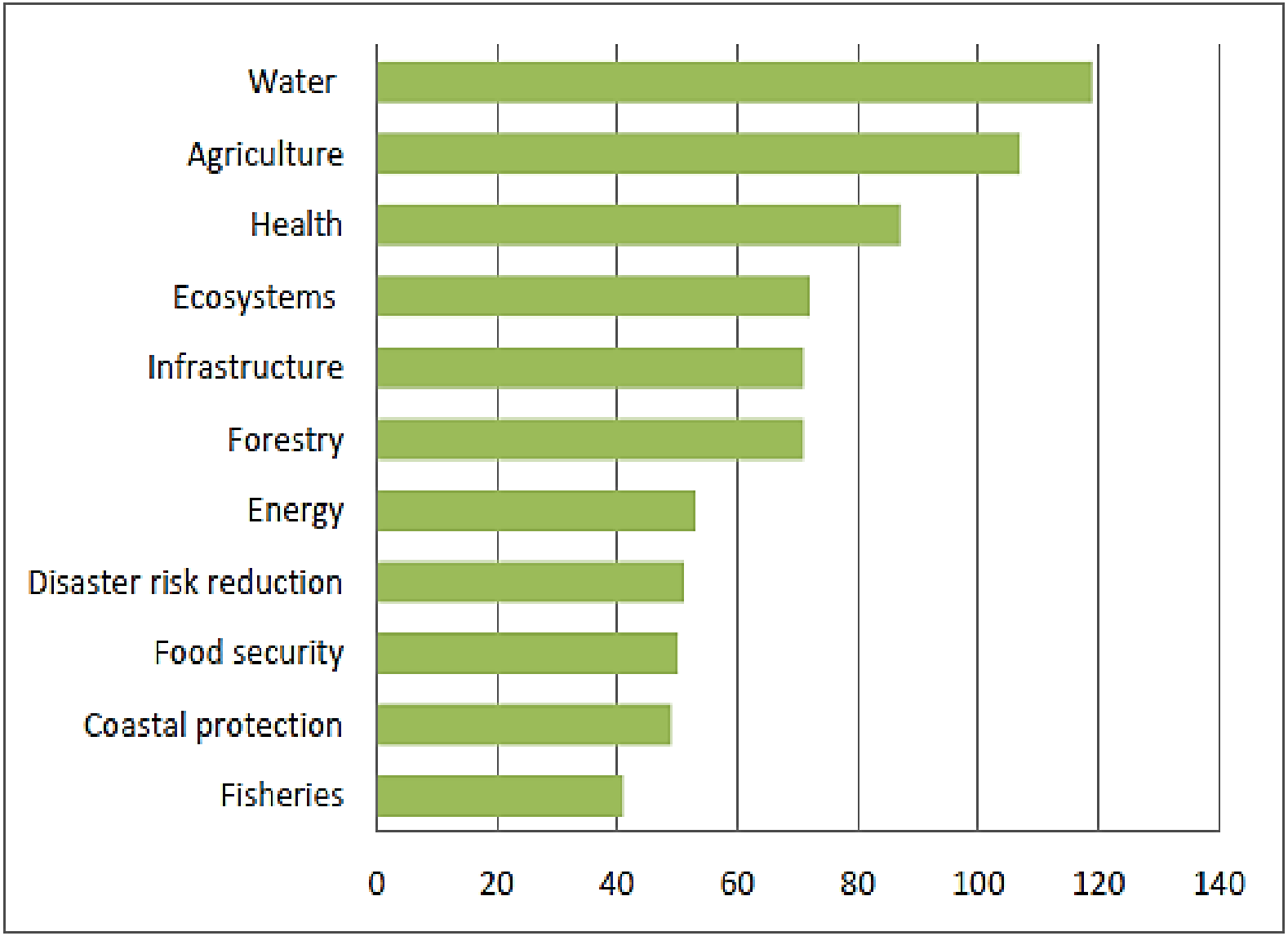
Paris Agreement key features

- New legal agreement for the post-2020 climate regime under the UNFCCC
- Addresses mitigation, adaptation and minimizing loss and damage
- Ambition to limit warming to well below 2 °C above pre-industrial levels while pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels
- Addresses the means of implementation: finance, technology and capacity building

Paris Agreement key features

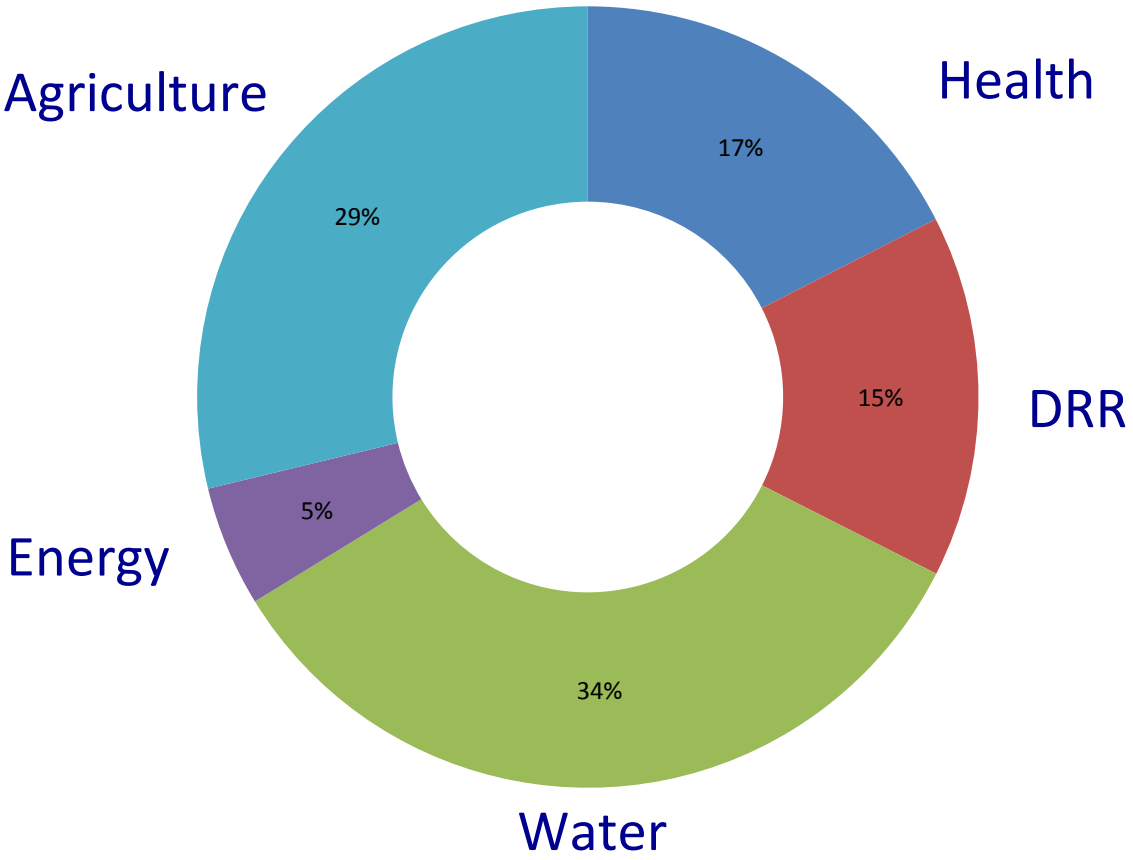
- Funding mobilization goal of USD 100 billion per year by 2020, with a new goal on the provision of finance from the USD 100 billion floor to be set before 2025 (GCF)
- Builds on Nationally Determined Contributions (NDCs) towards a common objective
- Countries invited to update emission targets by 2020 and every five years
- Transparency and reporting on national progress
- Enters into force after 55 countries that account for at least 55% of global emissions have deposited their instruments of ratification

NDC adaptation priorities (UNFCCC)



Climate services in NDCs

- Climate services invoked in 66 out of 189 country submissions



WMO OMM

Parties' support needs (UNFCCC)

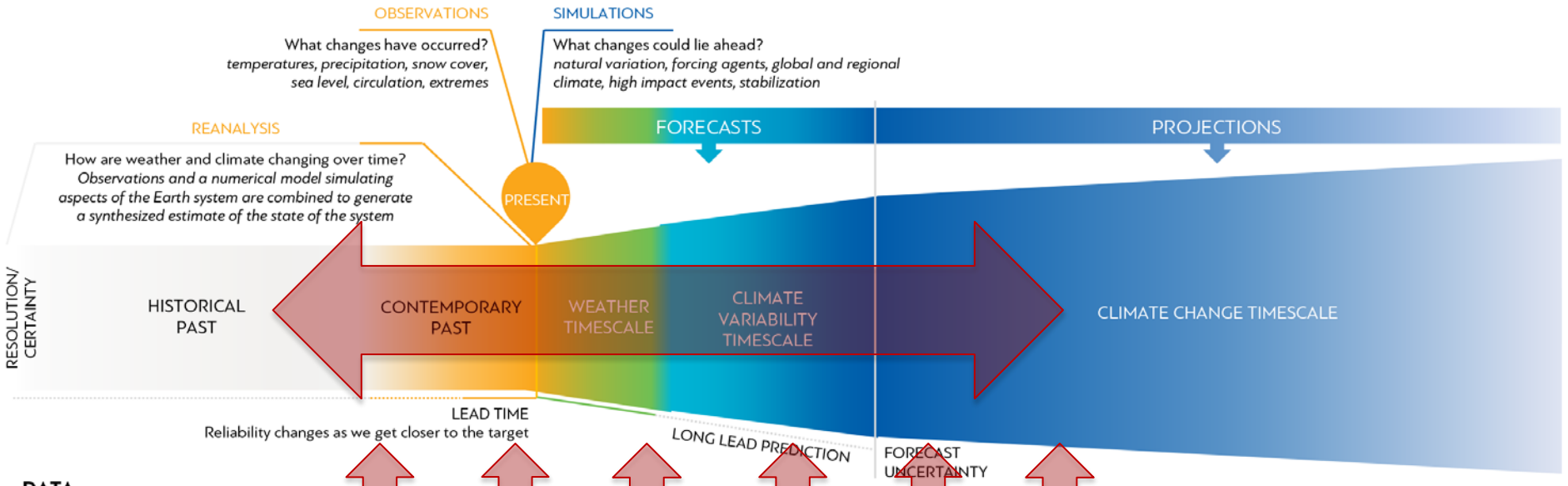
- Technologies for adaptation, including in the areas of climate observation and monitoring, early warning systems, water resources management, including irrigation and wastewater management, coastal zones, resilient transportation systems, sustainable or climate-smart agriculture, forestry (including forest fires) and land management

Parties' support needs (cont.)

- Training and building of institutional and human capacities and technical expertise, including in the area of vulnerability and adaptation assessments, cost–benefit analysis and the development of sectoral finance plans
- Research, data and information, including in the areas of climate forecasting and modelling, satellite data, regionally downscaled climate data and research into international energy markets
- Education, raising awareness and outreach on climate change impacts and adaptation

CLIMATE SERVICES INFORMATION SYSTEM

Data and Products for Climate Services



DATA

Historical data consists of
Instrumental data - century-long measurements of surface temperature and precipitation, records of daily data
Paleoclimate data - derived from natural sources such as tree rings, ice cores, corals, and ocean and lake sediments

Monitoring

Uses data from recent past and the present

Sub-seasonal to Seasonal

Flash flood guidance
Severe weather forecasting
Tropical cyclone forecasting

Interannual

Climate Change Indices

PRODUCTS

Past climate

Climate trends, Extreme climate indices, Sector-specific climate indices, Reanalyses, Return periods of extremes, Climate Normals , World Weather Records

Weather

Initial conditions

Climate variability

Boundary conditions (sea surface, snow cover, land), Climate monitoring and watch

Multi-decadal

Projections

Operational projections on climate change timescales

TOOLKIT - facilitates operations and used typically by forecasters

TAILORED PRODUCTS FOR DECISION SUPPORT – products can either be tailored in space and time or according to the decision relevance

DECISION SUPPORT APPLICATIONS – climate services apply past climatological records, contemporary monitoring and expected future conditions to socio-economic sectors

In agriculture, to inform crop choice, planting to optimize yield and minimizing crop failure risk
Disaster risk identification based on extreme event return periods and trends

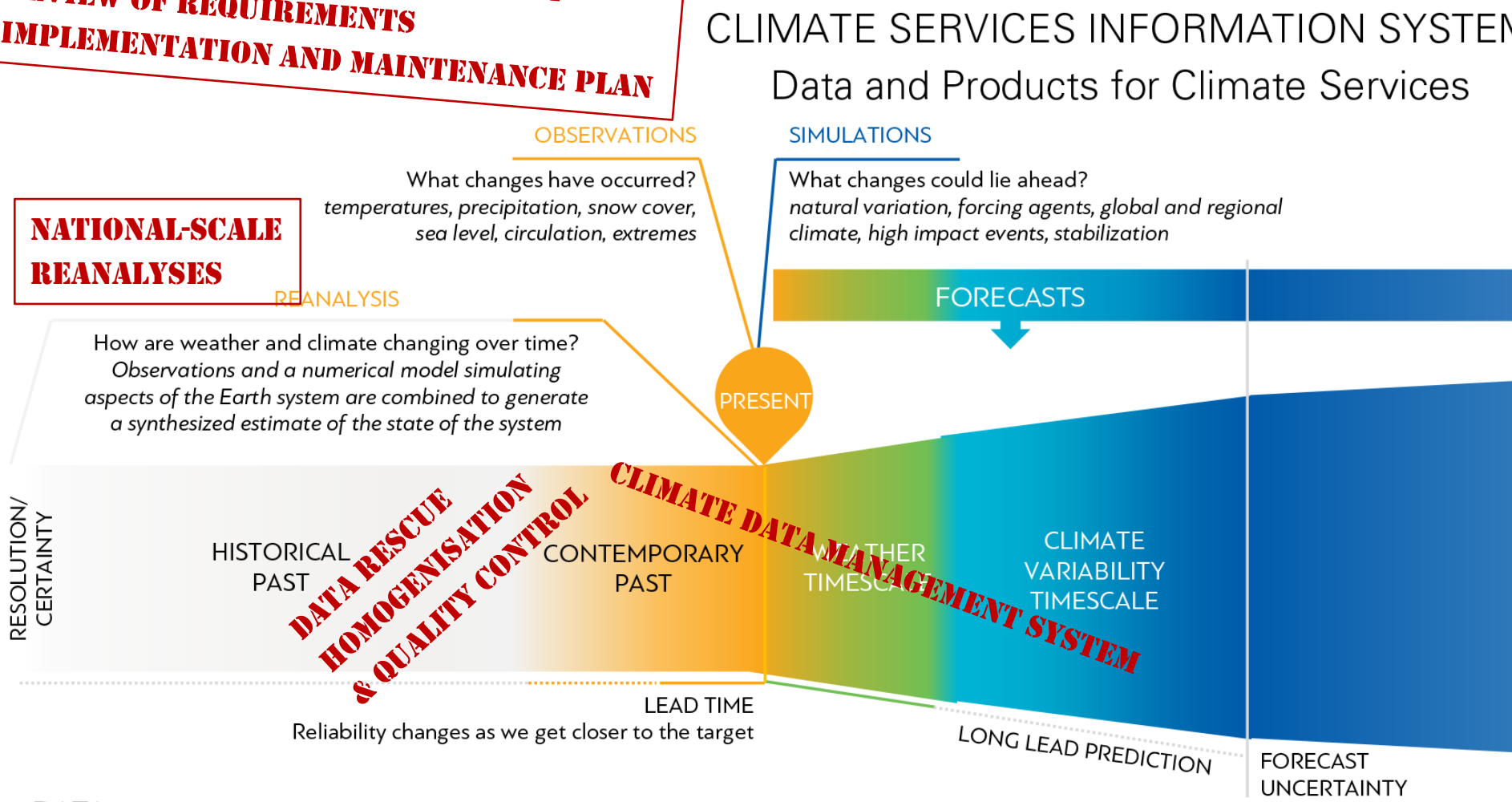
Emergency response, Disaster Risk Reduction

Contingency plans, humanitarian response, government and private infrastructure investment

Informs mitigation policy and adaptation choices
Impacts on water resources, heat stress, crops, infrastructure

STATION INVENTORY AND METADATA
REVIEW OF REQUIREMENTS
IMPLEMENTATION AND MAINTENANCE PLAN

NATIONAL-SCALE REANALYSES



DATA

Historical data consists of
Instrumental data - century-long measurements of surface temperature and precipitation, records of daily data
Paleoclimate data - derived from natural sources such as tree rings, ice cores, corals, and ocean and lake sediments

Monitoring

Uses data from recent past and the present

Sub-seasonal to Seasonal

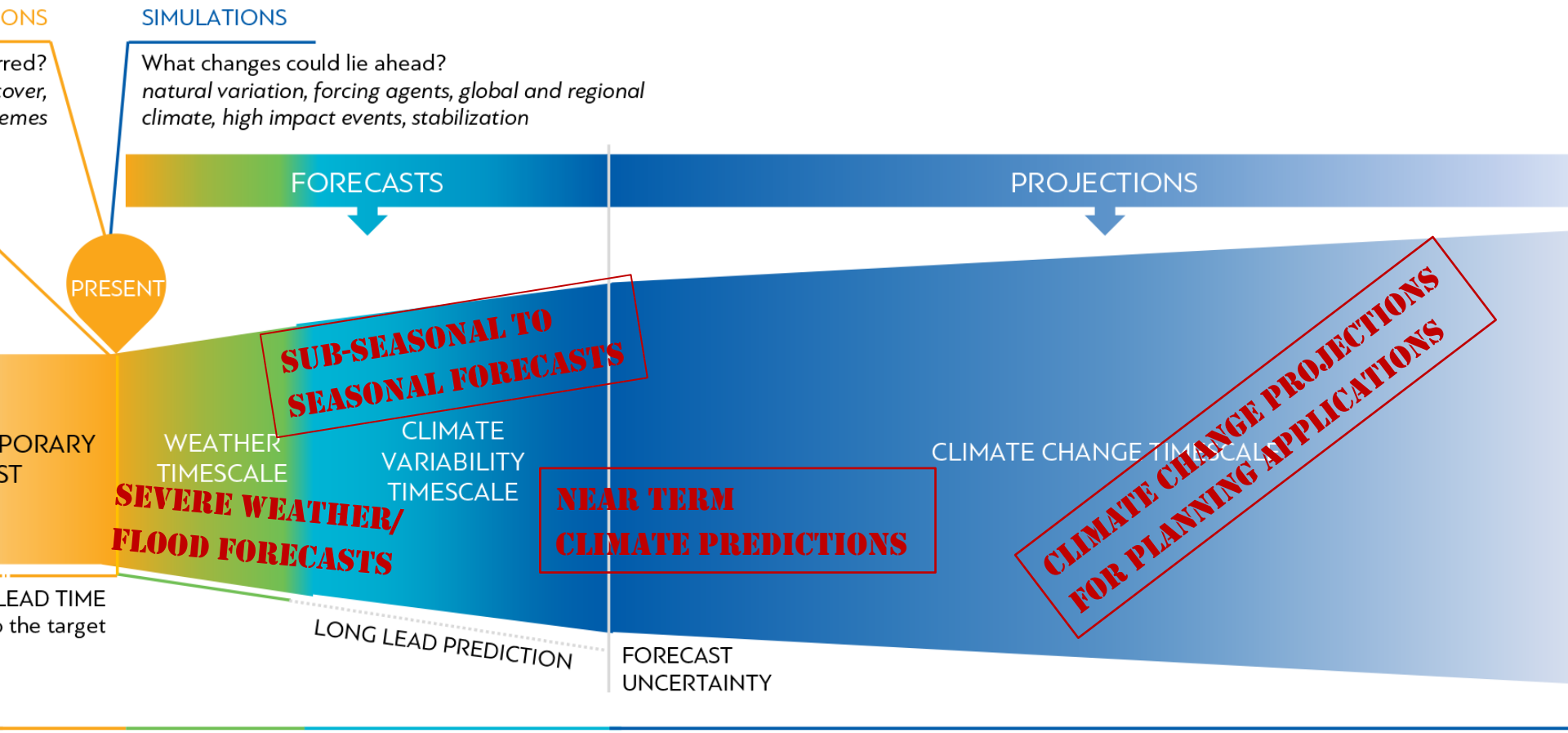
Flash flood guidance
Severe weather forecasting
Tropical cyclone forecasting

Interannual

Climate Change Indices

CLIMATE SERVICES INFORMATION SYSTEM

Data and Products for Climate Services



ing

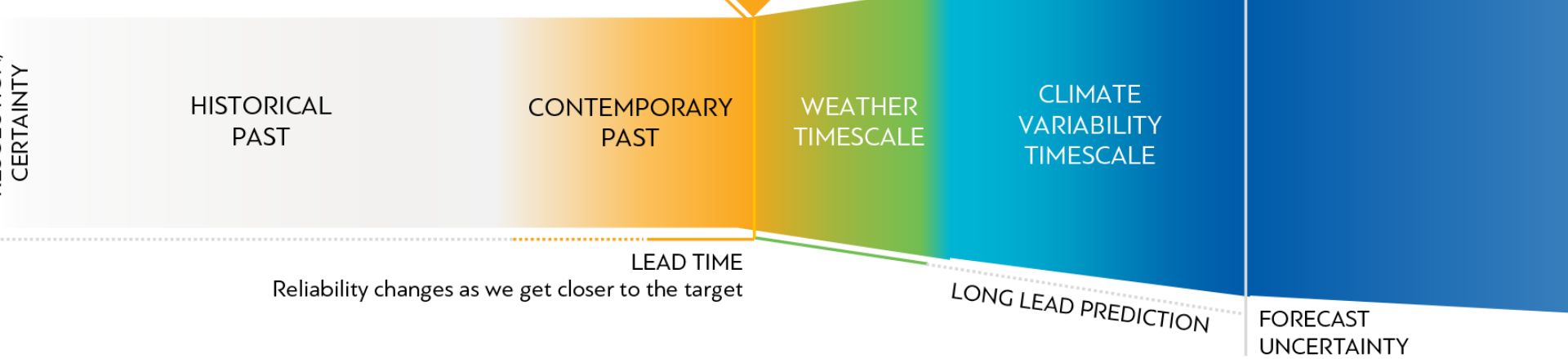
from
st and
nt

Sub-seasonal to Seasonal

Flash flood guidance
Severe weather forecasting
Tropical cyclone forecasting

Interannual

Climate Change Indices



DATA

Historical data consists of
Instrumental data - century-long measurements of surface temperature and precipitation, records of daily data
Paleoclimate data - derived from natural sources such as tree rings, ice cores, corals, and ocean and lake sediments

Monitoring

Uses data from recent past and the present

DROUGHT MONITORING

Sub-seasonal to Seasonal

Flash flood guidance
Severe weather forecasting
Tropical cyclone forecasting

Interannual

Climate Change Indices

PROBABILITIES OF KEY THRESHOLD EXCEEDANCE

PRODUCTS

Past climate

Climate trends, Extreme climate indices, Sector-specific climate indices, Reanalyses, Return periods of extremes, Climate Normals , World Weather Records

HAZARD ANALYSES

Weather

Initial conditions

FLOOD WARNINGS

Climate variability

Boundary conditions (sea surface, snow cover, land), Climate monitoring and watch

Multi-decadal

TOOLKIT - facilitates operations and used typically by forecasters

TOOLS FOR DEVELOPING DATA AND PRODUCTS

TAILORED PRODUCTS FOR DECISION SUPPORT – products can either be tailored in space and time or accord

DECISION SUPPORT APPLICATIONS – climate services apply past climatological records, contemporary monitoring and expected future con

In agriculture, to inform crop choice, planting to optimize yield and minimizing crop failure risk
Disaster risk identification based on extreme event return periods and trends

Emergency response, Disaster Risk Reduction

Contingency plans, humanitarian response, government and private infrastructure investment

Informs mitigation policy and ada
Impacts on water resources, heat

Selected CSIS needs and areas of cooperation (country focus)

- Functioning, sustainable observing networks, capitalizing on significant new investment (and avoiding risks associated with 3rd party implementation)
- Country level reanalyses/blended products
- Systematic implementation of objective, regional-scale multi-model ensemble seasonal forecasting systems with national downscaling
- Sub-seasonal forecasts
- Development of, and access to, S2D predictions and climate change scenarios for specific planning applications

Selected CSIS needs and areas of cooperation (country focus)

- CSIS integration (linking all components needed to obtain a functioning Climate Services Information System, horizontally, vertically, and capitalizing on the comparative advantages of national, regional and global levels)
- Capacity development, including through NMHS “twinning” and specialized technical assistance

Selected country climate services investment options

- Core CSIS components (observations, data rescue, CDMS, forecasts on various time scales, tailored products, + decadal predictions and climate change scenarios)
- Burkina Faso
  - Monitoring and forecasting for agricultural decision support and food security planning
- Colombia
  - Seasonal reservoir inflow forecasts for hydropower operations
  - Seasonal forecasts for coffee and rice production

Selected country climate services investment options

- Bhutan
  - Flash floods guidance systems
  - Extreme event catalogue for loss and damage accounting
  - Agriculture and health advisories
  - Climate change projections for hydropower planning
- Papua New Guinea
  - Drought monitoring and forecasting for agriculture, industry and transport
- Tanzania
  - Specialized solar and wind observing systems for renewable energy resource mapping and (eventually) operations

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

Thank you

WMO OMM

World Meteorological Organization
Organisation météorologique mondiale