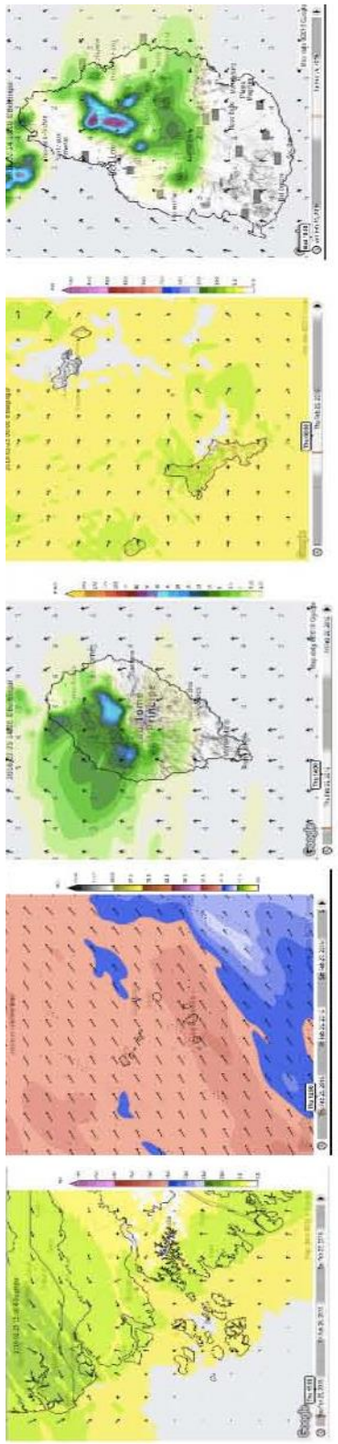
United Nations
Economic Commission for Africa

ACPC
African Climate Policy Centre



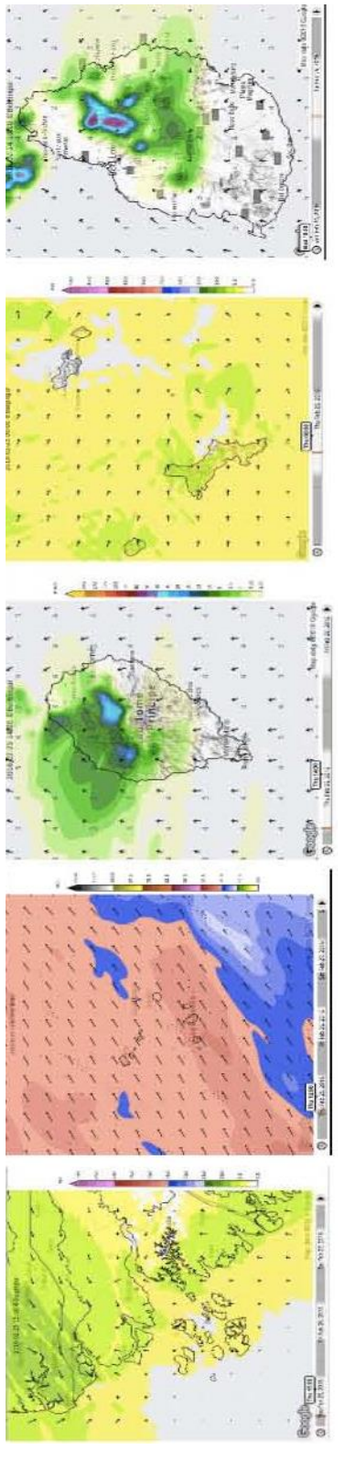
Weather and Climate Information SERvices

Training of legislators on use of climate information services in development planning, Kampala, Uganda

Yosef Amha
11 Feb 2020

Outline

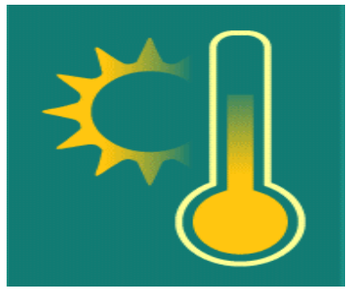
- Climate Projection in Africa
- Impacts of Climate Change in Africa
- Climate Information Services
- WISER Programme
  - Overview
  - Deliverables
- Lessons Learned
- Recommendations



Part 1

Climate Projection for Africa

Climate Projection in Africa



- **Weather**: the <u>day-to-day</u> state of the atmosphere at a particular place over a short period

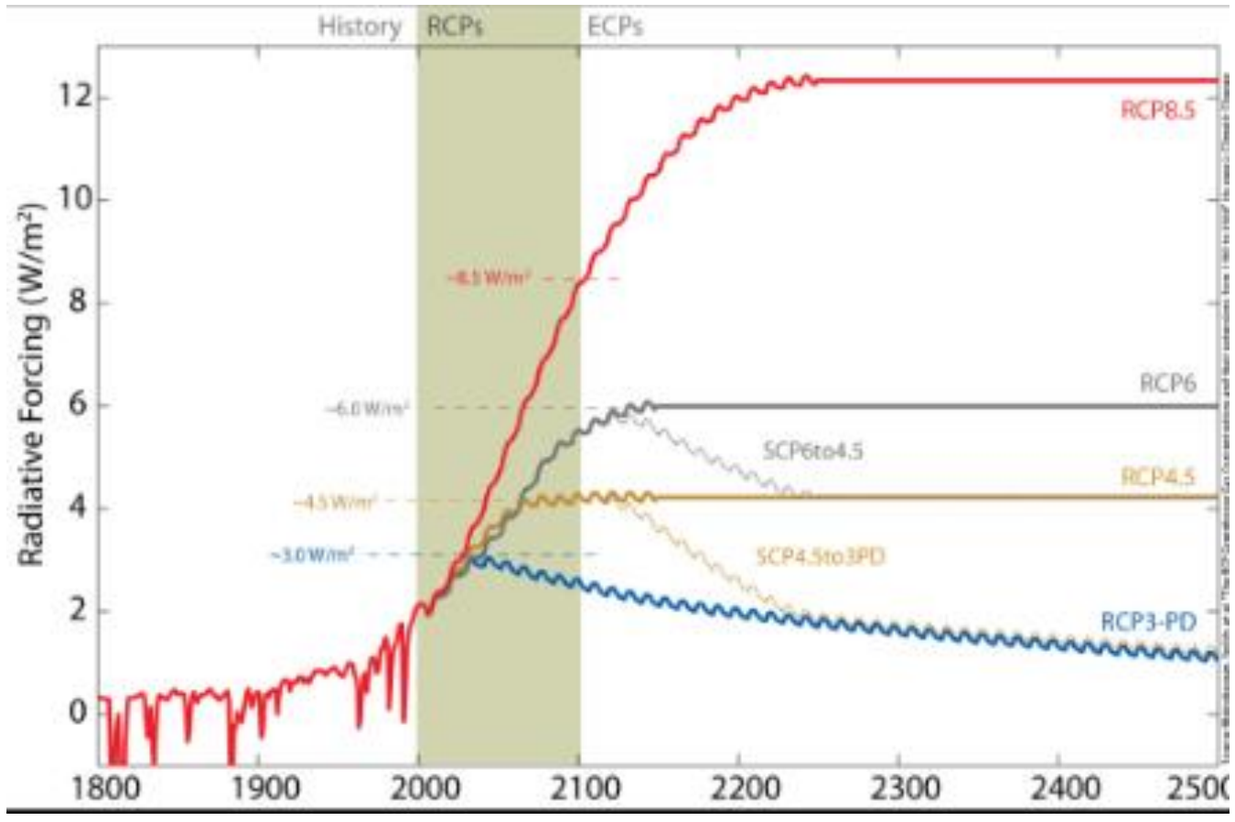
- **Climate**: <u>average weather</u> of a place over longer period of time, often 30 years

- **Climate Variability**: the <u>variation in state of climate</u> on all temporal and spatial scales, beyond individual weather events

- **Climate change**: <u>changes</u> in global temperature, precipitation, wind patterns and others that occurred over several decades or longer

Climate Projection *(Cont'd)*

Global Climate Change (*Warming Scenarios, IPCC, 2013*)



RCP8.5

RCP6.0

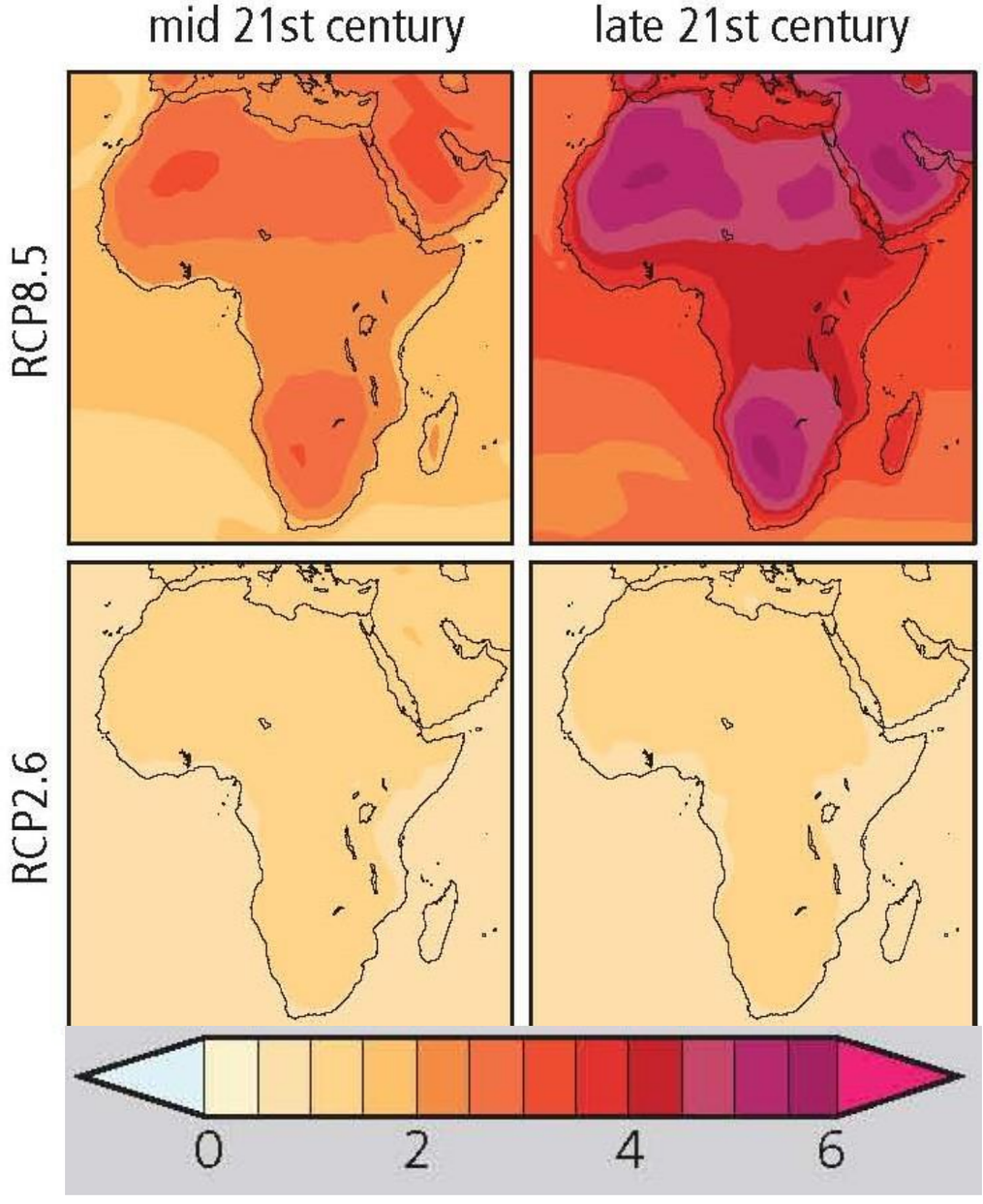
RCP4.5

RCP2.6

Climate Projection *(Cont'd)*

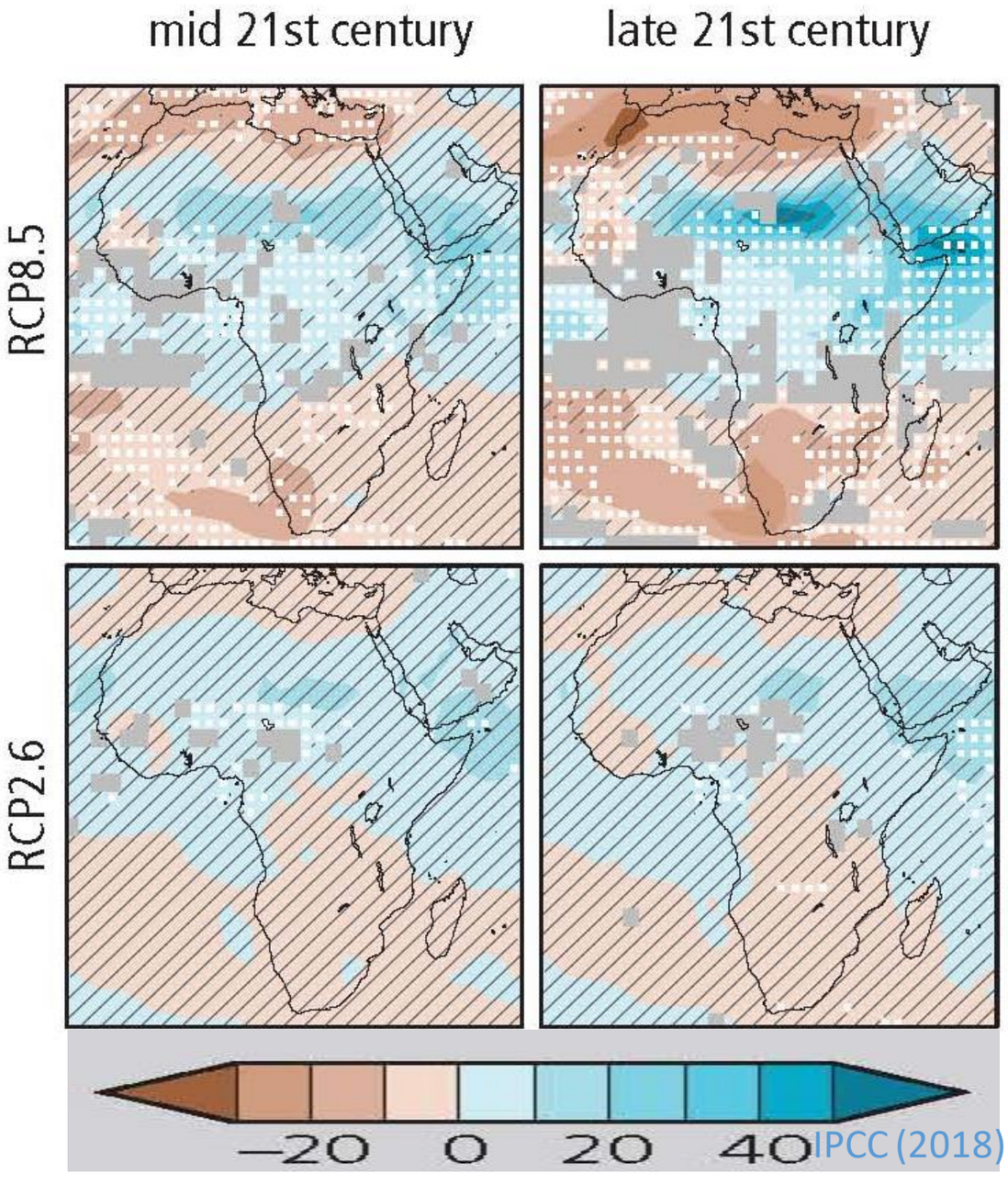
5th assessment report of IPCC prediction on Mean Temperature

- **The CMIP5 projection for mid and late 21st century is**
  - **1-2°C under RCP2.6**
  - **1-6°C under RCP8.5**



IPCC (2018)

Climate Projection *(Cont'd)*



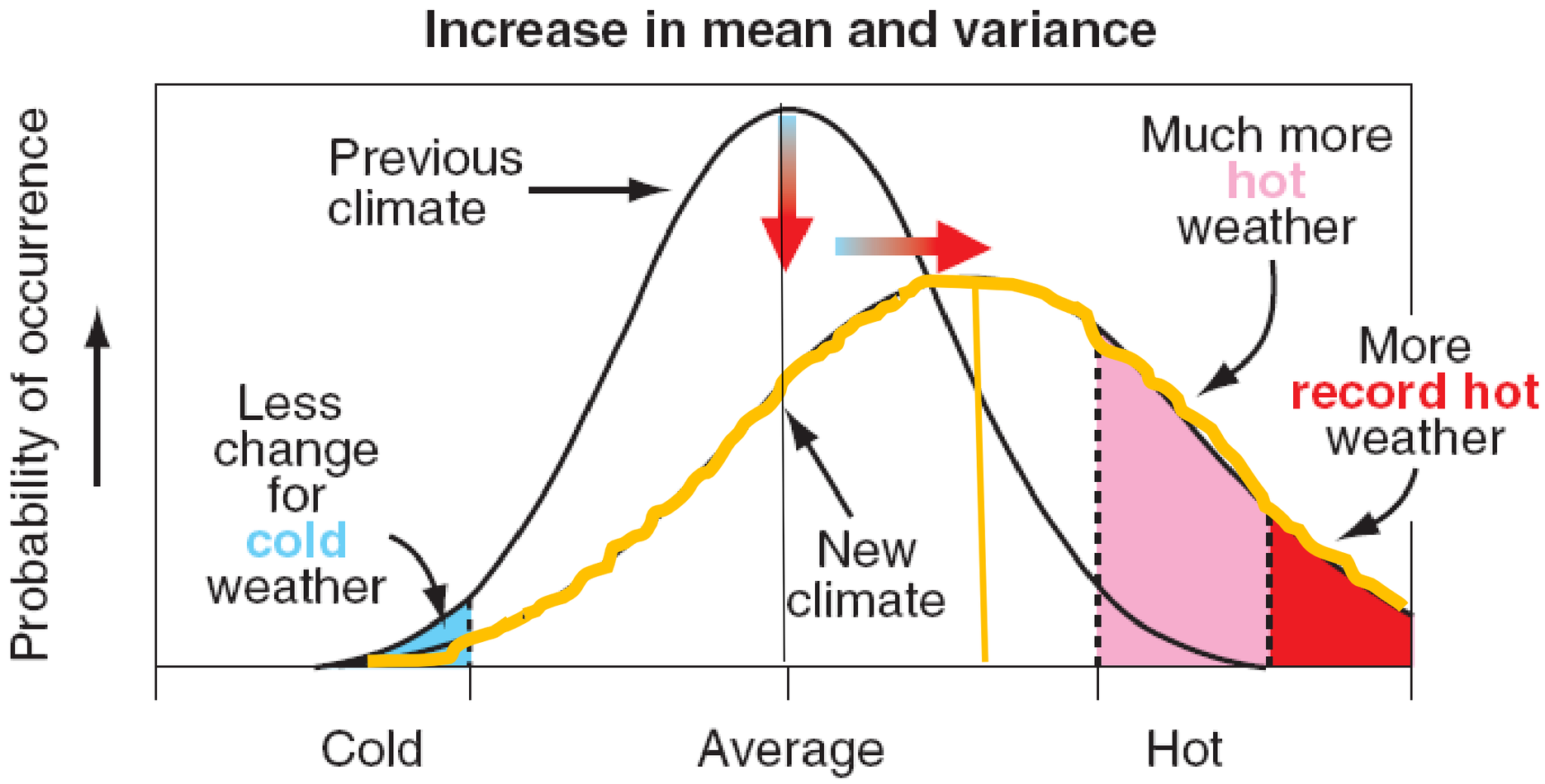
IPCC (2018)

Mean annual rainfall

- **predicted to vary geographically but will**
  - **decrease along the Mediterranean coast by 20%, extending into the northern Sahara (*Boko et al., 2007*).**
  - **increase in tropical and eastern Africa by around 7% (*Case, 2006*).**
  - **decrease in southern Africa by up to 40%.**

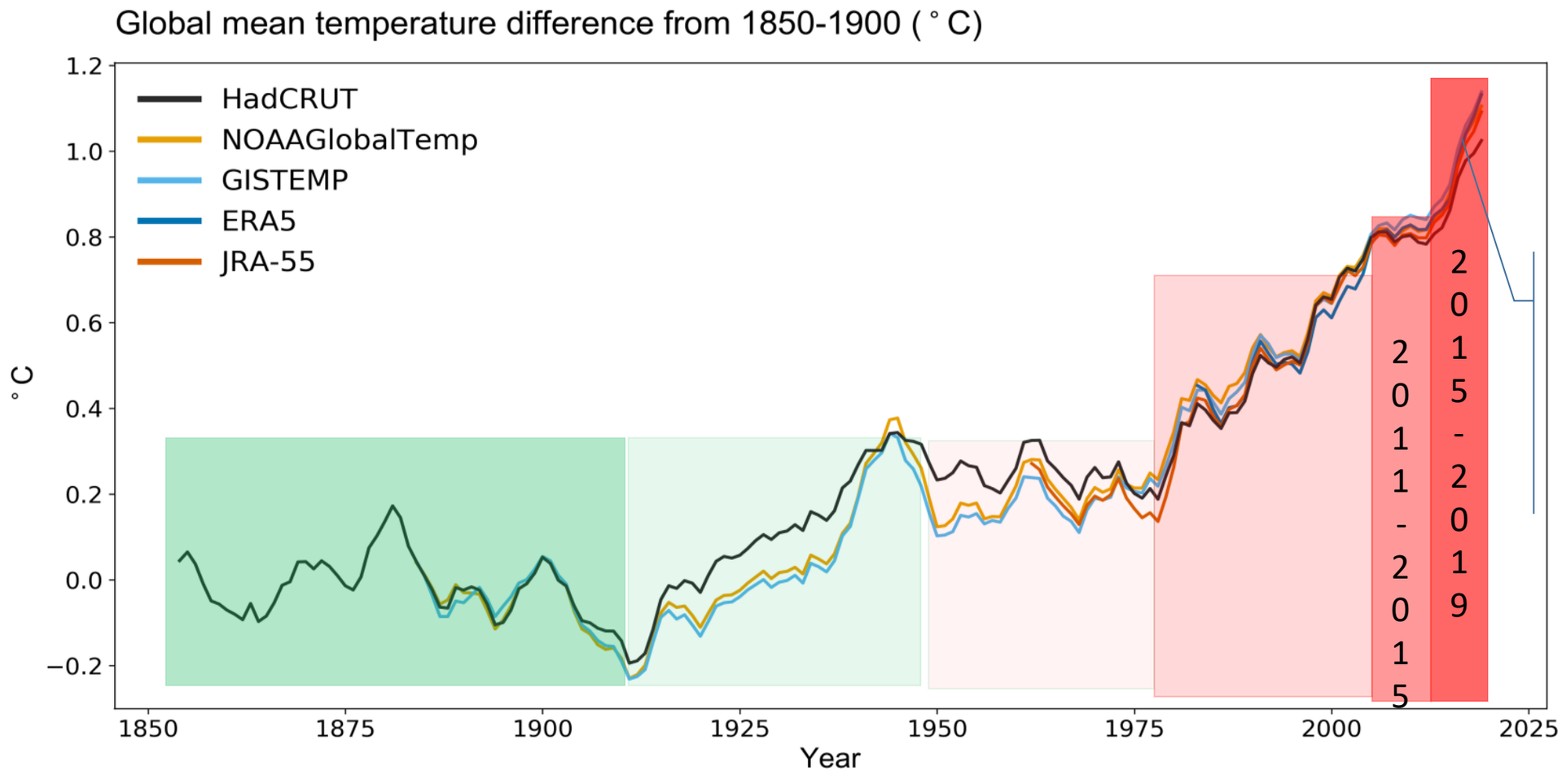
Climate Projection *(Cont'd)*

Trends and Concerns



Climate Projection *(Cont'd)*

Global mean temperature differences from 1850 to 2019



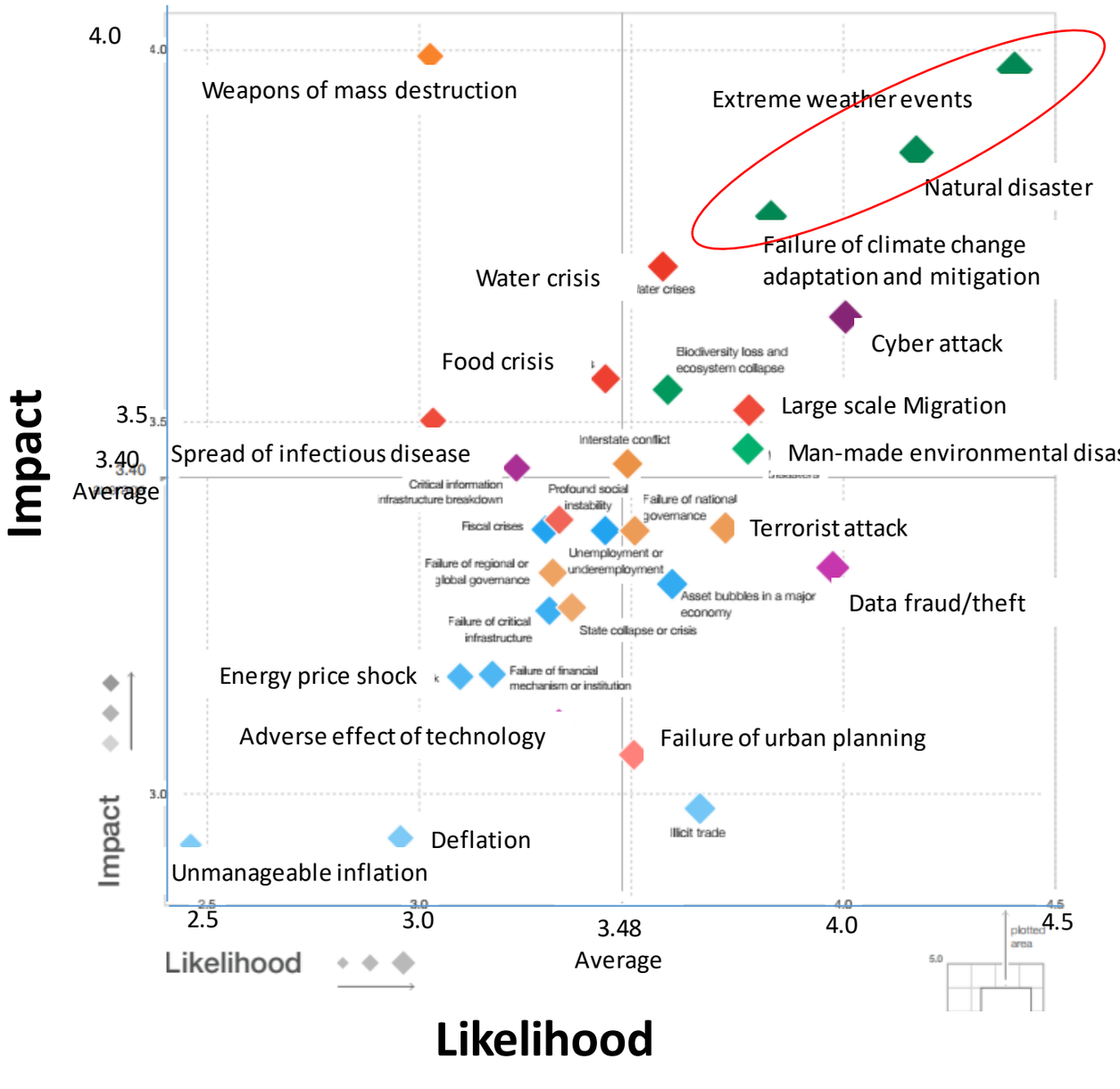
1.1 °C increase above pre-industrial period (1850-1900)

OR

0.2°C warmer than 2011-2015

Climate Projection *(Cont'd)*

Global developmental risks

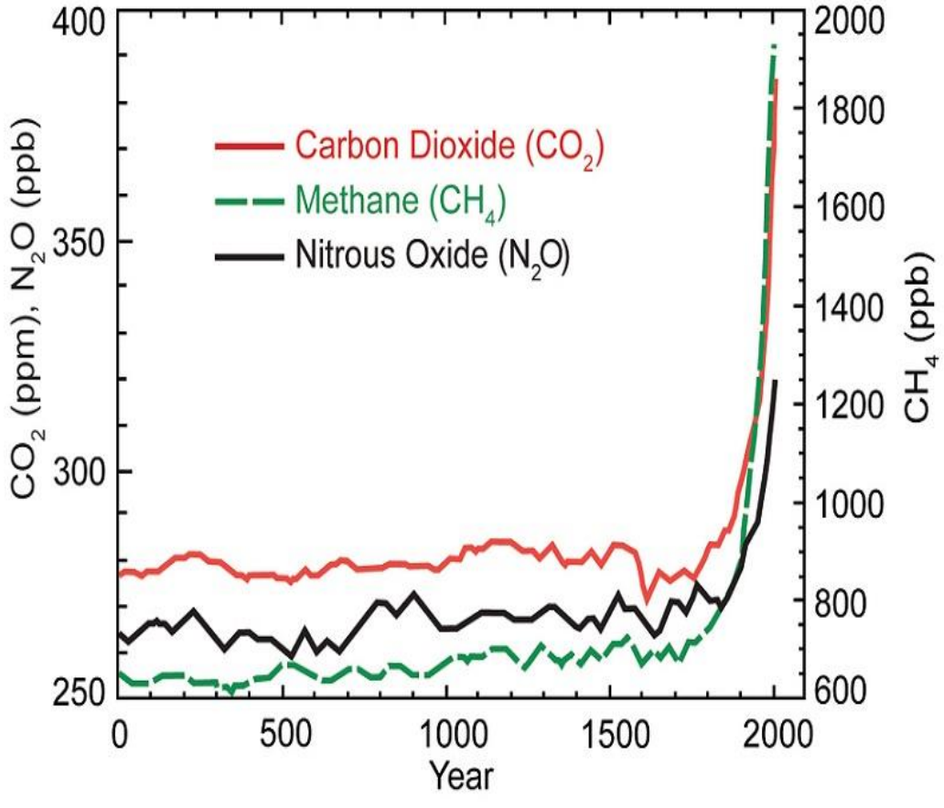


Likelihood

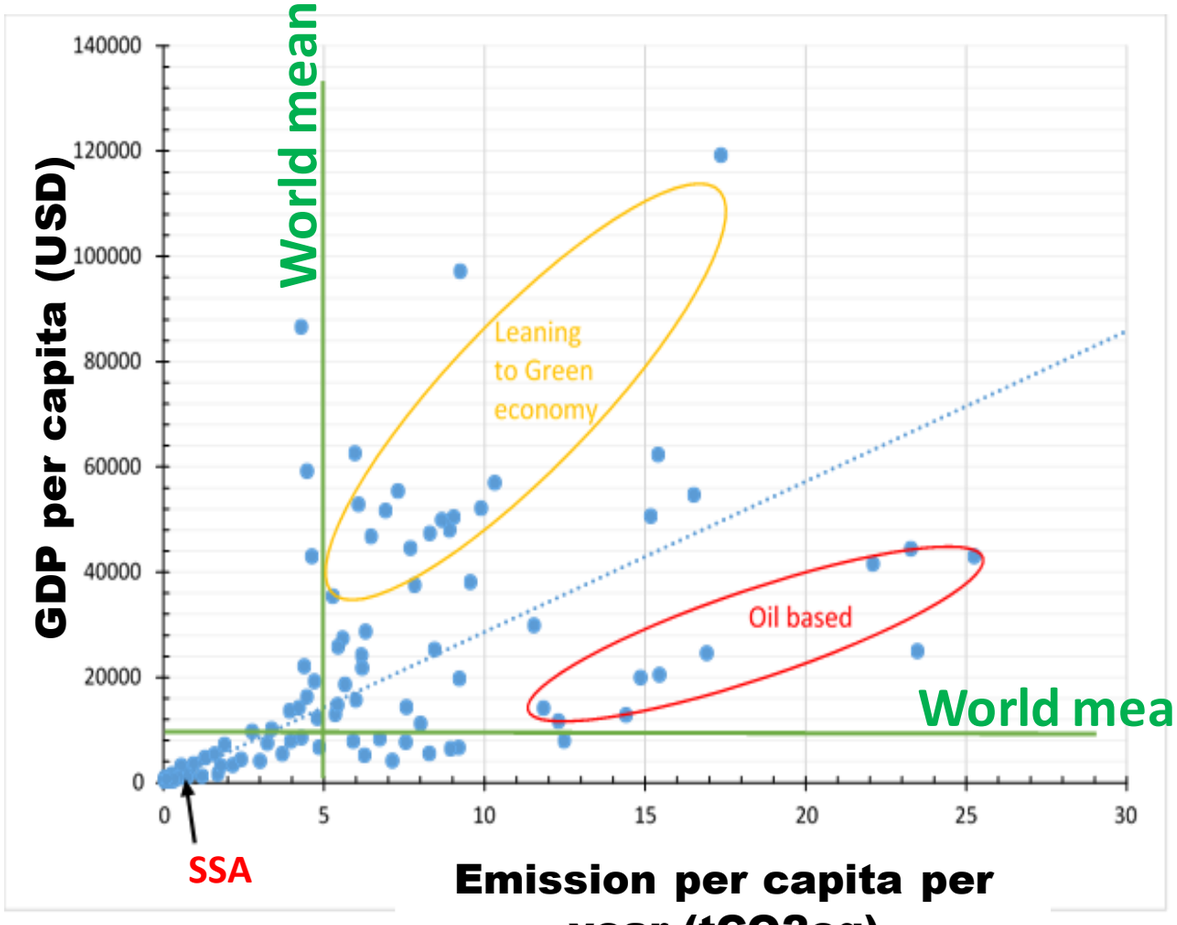
- **Hydro meteorological hazards (extreme events) include drought, floods, heavy wind, heat waves and others;**
- **Natural disaster**
- **Failure of the climate change adaptation and mitigation measures**

Climate Projection *(Cont'd)*

Causes of global warming



Atmospheric CO_2 concentrations have increased by more than 40% since pre-industrial times, from approximately 280 parts per million by volume (ppmv) in the 18th century to over 400 ppmv in 2015 (EPA, 2017).



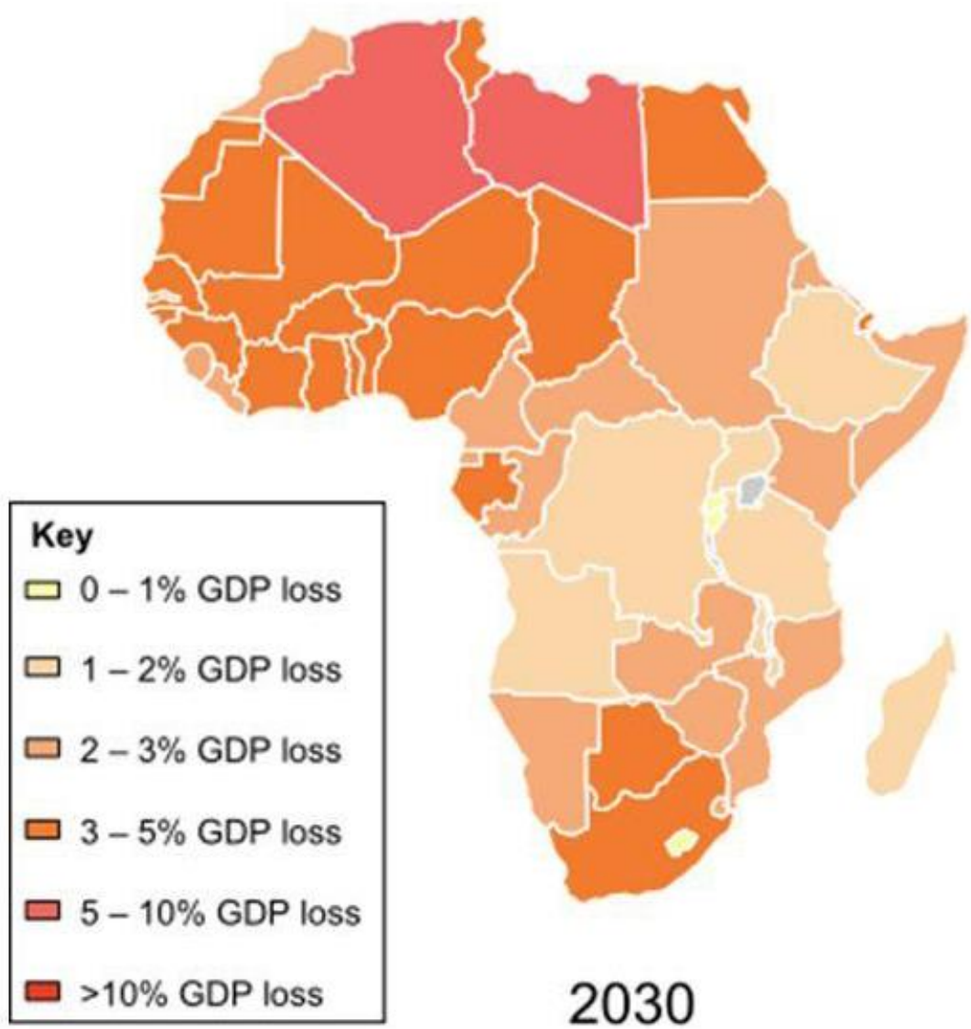
Part 2

Impacts of Climate Change in Africa

Climate Impacts in Africa

Africa's GDP

Most African countries projected to loss 3-5% GDP to climate change by 2030, with greater variation in sub-regions



Climate Impacts *(Cont'd)*

Africa's Agriculture

By 2050, potential mean production losses for sub–Saharan Africa are predicted to be high (*Schlenker and Lobell, 2010*).

Climate Impacts *(Cont'd)*

Africa's Water

By 2050, a 50% reduction in water availability across most Southern and Western Africa

12 countries would be limited to 1,000–1,700 m3 per person per year, and the population at risk of water stress (<1000m³) could be up to 460 million people, mainly in western Africa.

Climate Impacts *(Cont'd)*

Africa's human security and conflicts

Since 1980, more than 420,000 Africans have died and direct economic damages total at least US$ 9 billion (*EM-DAT*)

Climate Impacts *(Cont'd)*

Africa's Infrastructure

Failure to integrate climate change in the planning and design of policy, for example, have greater impact in energy and transportation infrastructure sector.

- **almost entirely infrastructure invested in Africa (~70 billion/year) are without climate risk assessment, reducing the lifetime and safety of the infrastructure (*WISER Business case*).**

Part 3

Climate Information Services (CIS)

Climate Projection *(Cont'd)*

Weather : ***Example: Weather forecasts fishermen use to decide if it is safe to fish on a given day.***

Climate Information: ..What the weather is at a given time and place...

Climate information service Example: SMS weather alert system to fishermen in Saint Louis, Senegal

CIS: Basic, intermediate and advanced based on complexity of the information but play similar role in decision making

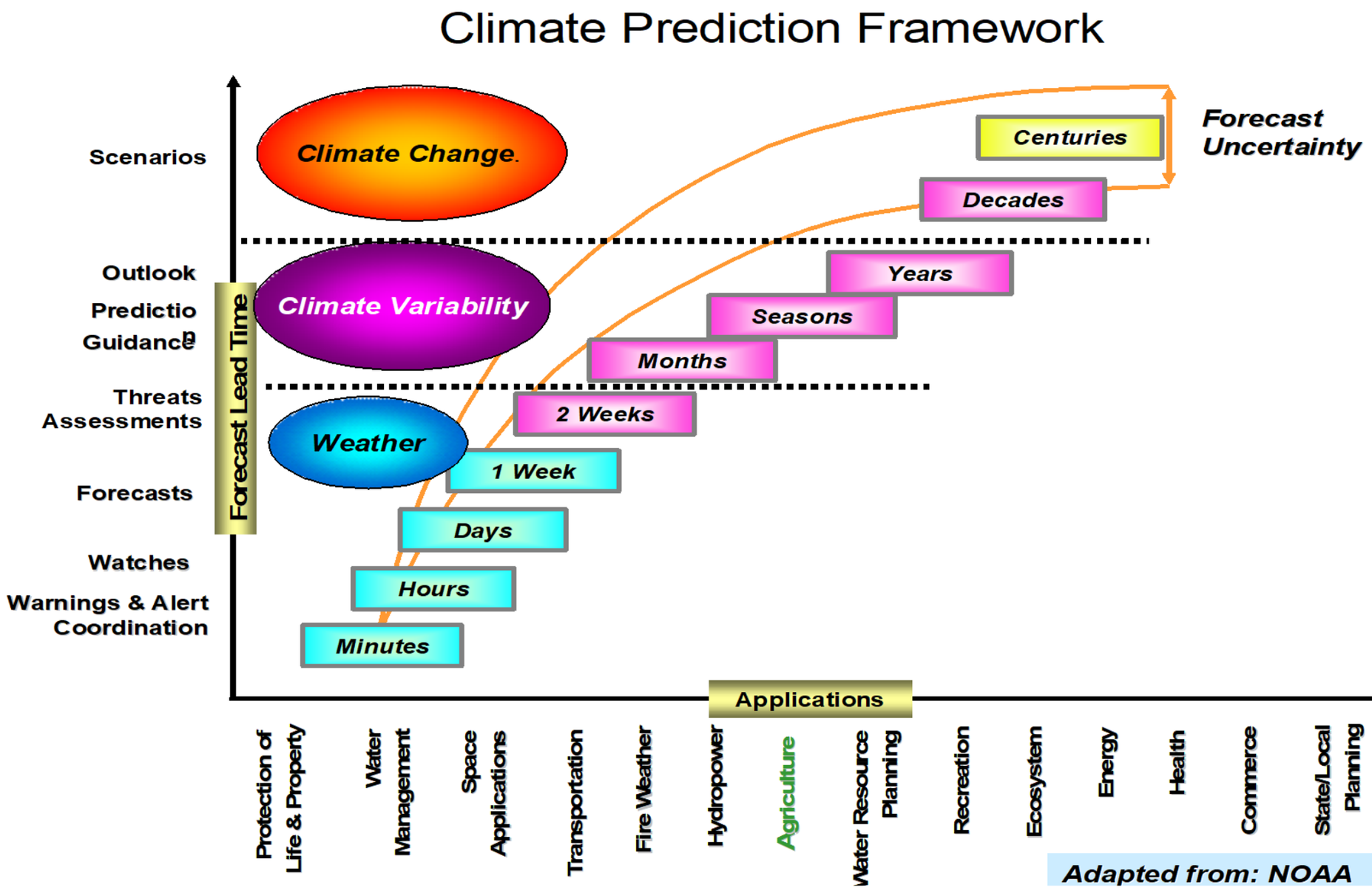
Climate Projection *(Cont'd)*

Climate information services are tools and processes that enable decision-makers and user communities to assess, and prevent or prepare for, potential impactful weather or climate events.

Providers of climate information and services collect, analyze and package climate and weather data.

Climate information is produced at national, regional and international levels.

Climate Projection *(Cont'd)*



Climate Projection *(Cont'd)*

Climate information products

Climate information is collected, assessed and assembled into products that are disseminated to users and services.

Some of the more common representations of climate information are forecasts, climate models and climate scenarios.

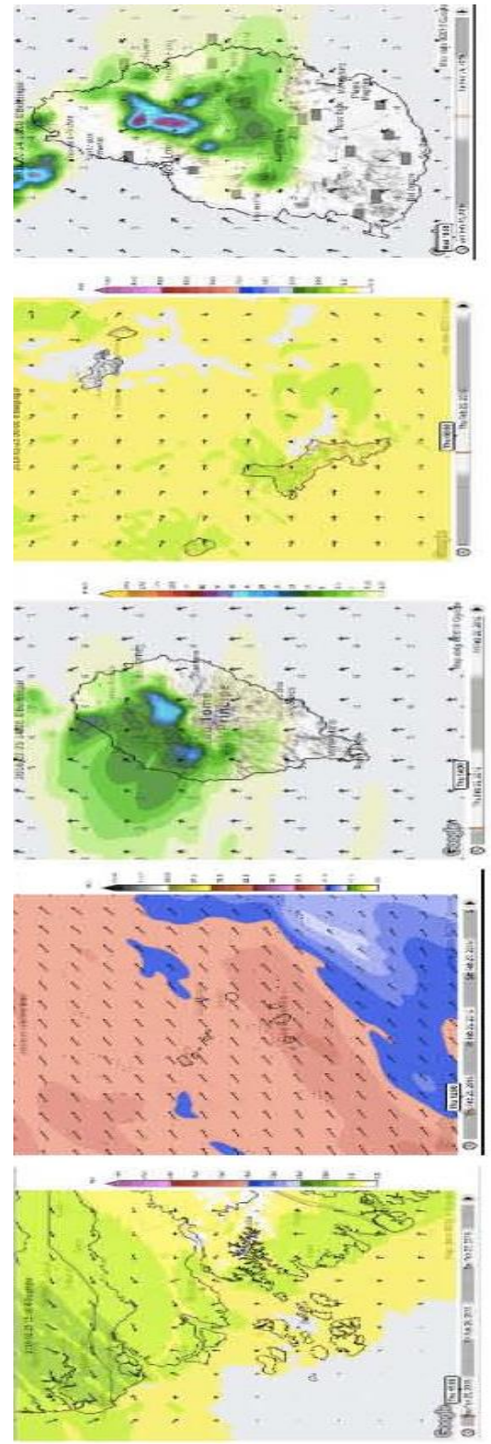
Climate Information Services *(Cont'd)*

What is CIS?

Accumulation of knowledge about the past, present and future of climate system

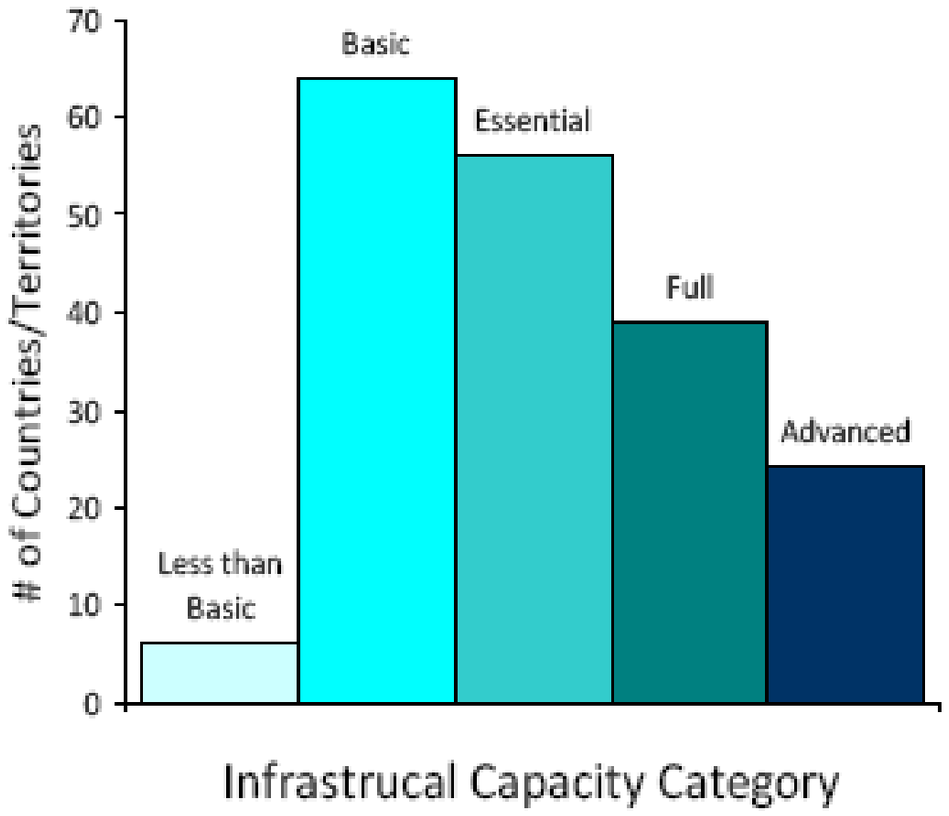
The development and delivery of a range of "PRODUCTS" and "ADDVICES" involves:

- **Historical climate data sets**
- **Climate monitoring**
- **Climate watches**
- **Monthly/Seasonal/Decadal climate predictions**
- **Climate change projections**



Climate Information Services *(Cont'd)*

Examples of climate services based on predictions



- **Expected future temperature**
- **Precipitation scenarios**
- **Changing frequency of extreme weather events**
- **Sea-level changes**
- **Snow, glacier and sea ice coverage**
- **Growing seasons**
- **Potential impacts of climate change on the natural environment and major business and public sectors**

State of climate services in Africa

(compared to global average)

-- **Basic systems (observing network, forecasting, data and data sharing)**

\+ **Governance**

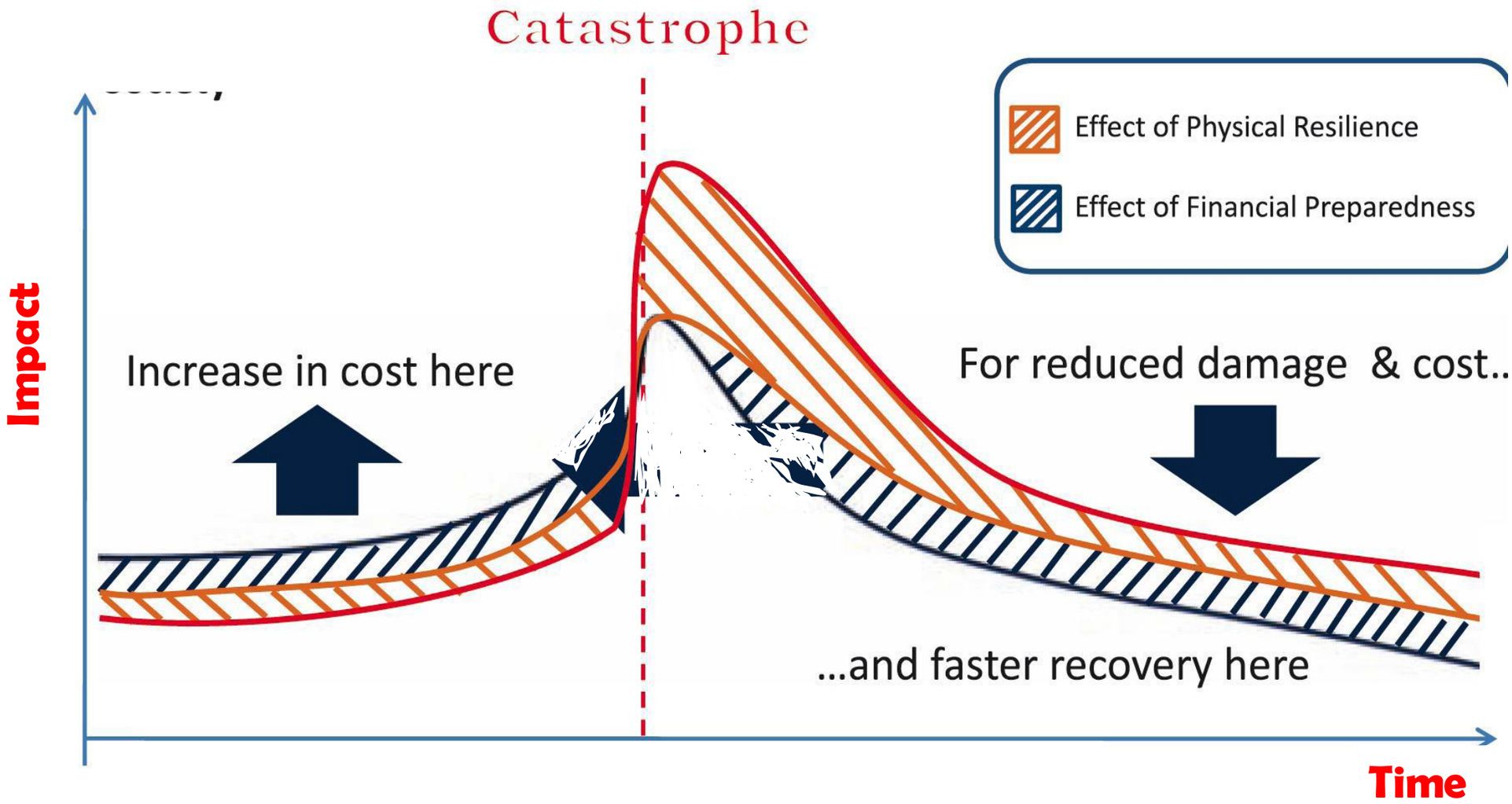
\- **User interface**

++ **Capacity development**

\+ **Provision and application od CIS**

\- **Monitoring and evaluation**

Climate Information Services *(Cont'd)*



- **20-40% of ODA projects (by value) are exposed to climate risks and if such risks are not considered, results delivered today may not be sustained in the future (*The World Bank*)**

Climate Information Services *(Cont'd)*

Addressing these extremes requires:

- ✓ **the involvement of diverse stakeholders NMHSs observe, forecast, and issue warnings for expected weather, climate, and water threats;**
- ✓ **Close collaboration between experts in climate science and related fields and policy-makers;**
- ✓ **Provision of end-users with timely, tailored climate-related information and knowledge products.**

Climate Information Services *(Cont'd)*

the Weather and Climate Services in Africa, however,

- ✓ **Do not meet <u>users needs</u> (***e.g., drought and flood warning systems are not effective***);**
- ✓ **Do not meet the <u>new standards</u> set by international agencies;**
- ✓ **Are <u>donor-funded</u> programmes (***piecemeal, short-lived and not well targeted***)**
- ✓ **not <u>widely available</u> and, even where available, it is not used effectively in decision-making (***only 20%***).**

"…availability of quality and timely CIS are essential to manage weather risks and build resilience in Africa!"

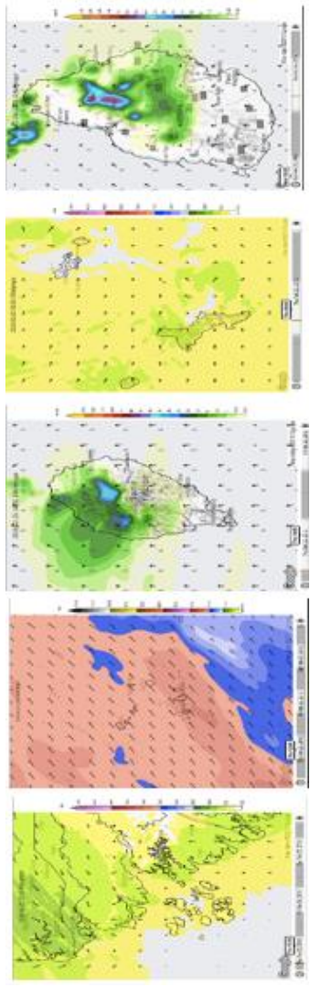
Climate Information Services *(Cont'd)*

WISER

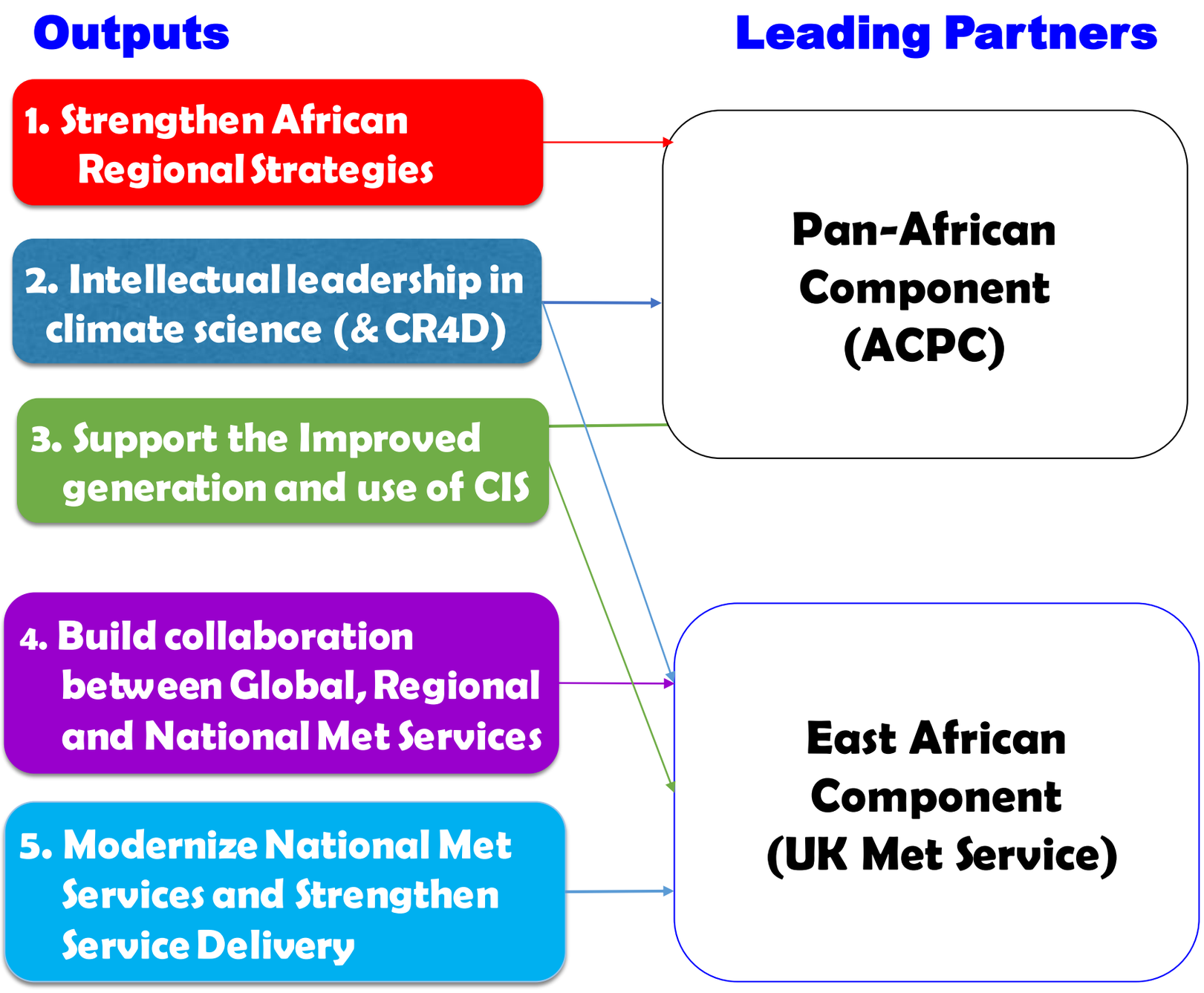
Weather and Climate Information Services for Africa

Aimed at improving the generation, uptake and use of weather and climate information across Sub-Saharan Africa.

Part 4: WISER Programme



WISER Overview *(Cont'd)*



WISER Deliverables

Output 1: Strengthened enabling environment for the generation, uptake and use of weather and climate services to support development

Indicator(s)	Milestone since 2016	Progress (as at June 2019)
1.1. Number of NMHS and RCCs with modernisation plans focusing on improved service delivery	5	6
1.2. Funds attracted by WISER to improve the generation, uptake and use of CIS	£25m	£20
1.3. Number of joint analysis, learning initiatives and platforms support for the delivery of weather and climate services	26	35

WISER Deliverables *(Cont'd)*

Output 2: Intellectual leadership in climate research in Africa through innovative evidence generation and learning built

Indicator(s)	Milestone since 2016	Progress (as at June 2019)
2.1 Number of post-doc research (CR4D) supported	15	21
2.2 Number of knowledge management outputs including strategy	7	7

WISER Deliverables *(Cont'd)*

Output 3: Improved data at historical, present and future timescales and better production systems to support the generation of CIS

Indicator(s)	Milestone since 2016	Progress (as at June 2019)
3.1 Number of NMHS and RCCs with new/upgraded data sets suitable for the production of CIS	7	7
3.2 Number of NMHS & RCCs with new and upgraded technology and hardware for production of CIS	3	3

WISER Deliverables *(Cont'd)*

Output 4: Strengthened global-regional-national networks and partnerships to support the improved generation, uptake and use of climate information

Indicator(s)	Milestone since 2016	Progress (as at June 2019)
4.1 Number of global, regional and national forums and/or processes initiated or made more relevant	5	11

WISER Deliverables *(Cont'd)*

Output 5: Strengthened capacity of and integration between producers, collaborators and users that provide improved service development and delivery at national, sub-national and community levels through co-production

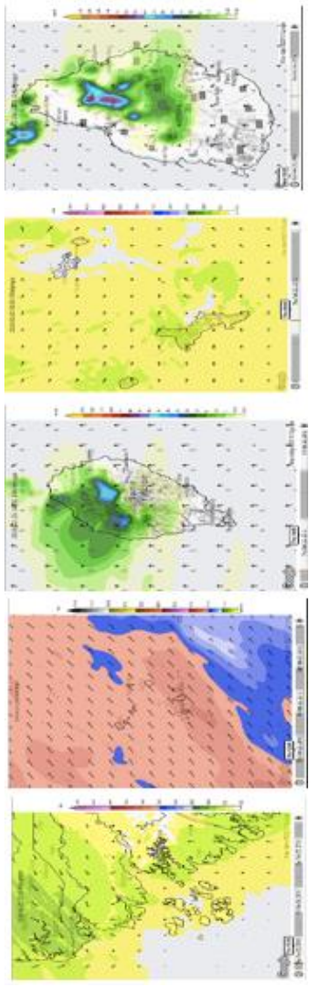
Indicator(s)	Milestone since 2016	Progress (as at June 2019)
5.1 Number of co-production processes supported to improve CIS and access for decision making	15	22
5.2 Number of people in user and producer trained in areas related to development, co-production and use of climate services	300	677

WISER Deliverables *(Cont'd)*

Long-term impacts of WISER (*by 2030*)

- **At least 24 million people receiving climate and weather information services;**
- **1.6 million people benefitting from reduced impact of weather-related disasters;**
- **Economic benefit of over £190 million in terms of avoided damages;**
- **Achieving a benefit-to-cost ratio of between 3:1 and 6:1.**

WISER
Weather and Climate Information Services for Africa



Part 5: Lesson Learned

Lessons Learned

- There are <u>numerous but fragmented initiatives</u> which seek to support the production and uptake of CIS on the continent but are NOT coordinated;
- The <u>policy and legislative environment does not provide sufficient incentives</u> for the uptake and use of CIS;
- <u>Lack of strategies</u> for CIS communication produced from the numerous initiatives and interventions;
- <u>Weak collaborative research platform</u> in the continent for co-designing, co-resourcing and co-producing user-driven climate information and services;

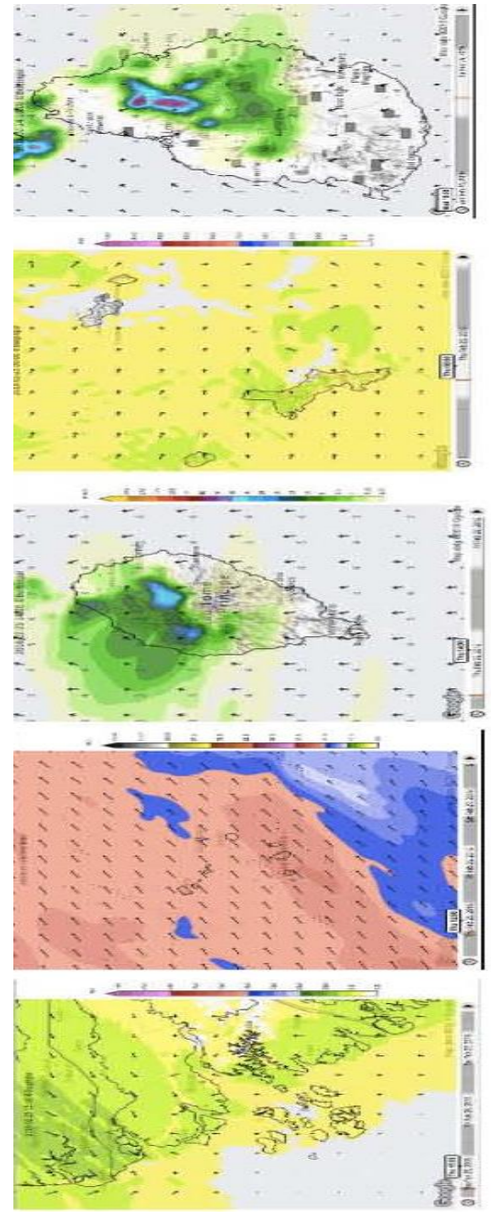
Lessons Learned *(Cont'd)*

- **Lack of well-developed arguments on the benefit of climate information presented to ministries of finance, planning, environment;**
- **Over-dependence on limited-term project work, with the benefits lost after the project closes;**
- **Lack of donor coordination of investments;**
- **Limited representation from NMHSs in the process of developing National Strategies/Plans resulting in limited integration of climate services.**

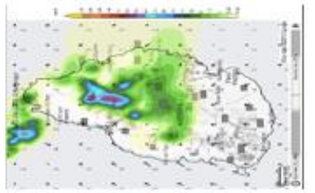
Climate Impacts *(Cont'd)*

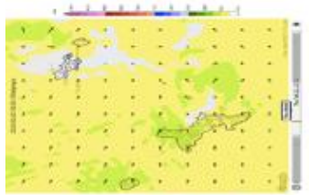
The proper utilization of Climate Information Services (CIS) could help Africa in:

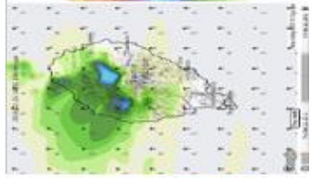
- ✓ **building resilience to climate change**
- ✓ **facilitating climate-smart decision**
- ✓ **guiding adaptation and mitigation planning**
- ✓ **supporting scenario planning**
- ✓ **identifying hotspot or areas with high potentials of future vulnerability**
- ✓ **guiding long-lived, large scale investment**
- ✓ **informing interventions in NDC,...**

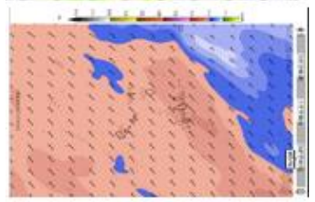


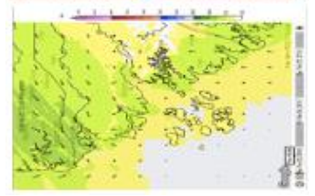
Conclusion











Hence, let's invest in Hydro-Meteorological infrastructure and institution to build resilience in economy, ecosystem and society

Thank You!

Mercy!