

# ***Systematic Observations, Data, Climate Methods and Tools - Availability, Applicability, Accessibility***

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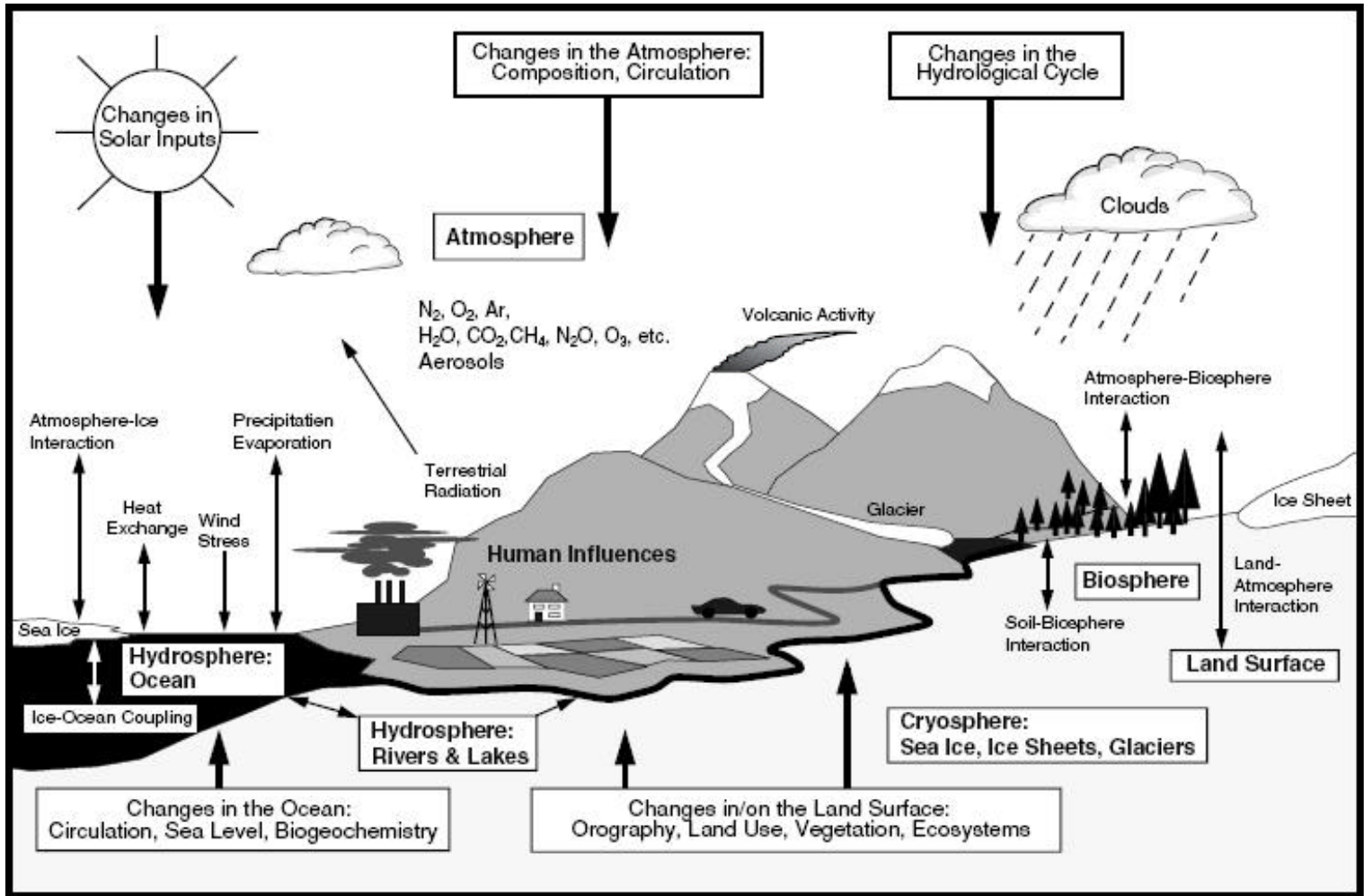
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# The Climate System

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- Climate observations are required on all climate components
  - **Atmosphere:** its circulation, terrestrial and solar radiation, and the atmospheric processes
  - **Oceans:** There is a constant exchange of heat, momentum and water between ocean and the atmosphere.
  - **Land surface:** including its vegetation and seasonal snow cover
  - **Cryosphere** and
  - **Biosphere**
- A balance/equilibrium in the processes between the climate components maintains the climate system.
- To study the state of the climate and hence its variability and change we therefore require a set of systematic observations.

# The Climate System



Schematic view of the components of the global climate system (bold), their processes and interactions (thin arrows) and some aspects that may change (bold arrows). (IPCC, 2001)

# Systematic Observations

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- Systematic observations simply refer to observations taken at standard preset times and places.
- They are essential for:
  - monitoring the climate system,
  - detecting and attributing climatic change,
  - improving the understanding of the dynamics of the climate system and its natural variability and
  - providing input for climate models.
- These observations of the climate system are carried out by National Meteorological Centres and specialised centres.

# Systematic Observations

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To facilitate and coordinate systematic observations the World Meteorological Organisation (WMO) with its arm, the Global Climate Observing System (GCOS), maintains collaboration among the nations in carrying out the systematic observations.

GCOS ensures that the observations and information needed to address climate-related issues are obtained and made available to all potential users through its arms:

- GCOS Global Upper Air Network (GUAN),
- GCOS Global Surface Network (GSN) and the
- Global Atmosphere Watch (GAW) network
- Global Ocean Observing System ([GOOS](#)),
- Terrestrial Observing System ([GTOS](#))

# Observing Networks: Situation Analysis

- Africa regularly experiences negative climate-related outcomes such as disasters, disease outbreaks, water shortages and food crises due to a combination of climate variability/change and vulnerability to climate-related hazards.
- Climate variability/change create risks in many climate sensitive sectors including agriculture, livestock, water resources and health. It affects the welfare and livelihoods of people.
- The role of land cover changes - some natural and some human-related - in modifying regional climates is perhaps most marked (Xue, 1997).

# Observing Networks: Situation Analysis

- It is therefore necessary and essential to devise measures that can help to better understand the climate of the region, its variability, change and extremes.
- This can be realised through establishment and maintenance of adequate observing networks, producing homogenous quality data for climate analysis.
- It is the responsibility of the nations and the international community to assist develop such networks over the region.

# Remaining Gaps, Needs And Concerns

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- There is marked inadequacy in the ground-based (and upper air) observing systems over the African region (Washington, et al., 2004).
- There are many observations of the climate system being taken today. However there are issues related to limited access of these parameters.
- High density networks are difficult for many countries to implement and sustain, particularly for least developed countries, small islands and countries with economies in transition (GCOS, 2003).



# Remaining Gaps, Needs And Concerns

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- Many African states are not in a position to participate fully in global observing systems. Problems include;
  - Lack of trained personnel
  - Expensive consumables
  - Inadequate telecommunications
  - Absence of equipment
- In addition, there is limited capacity to draw benefits from the current observations.

# The Role Of Local, National, Regional And International Actors

- Increase participation of nations in enhancing national, regional and international planning, reporting and coordination (GCOS, 2003), and in line with the SBSTA conclusions (FCCC/SBSTA/2005/L.17).
- Provide effective access to climate data and improve its quality:
  - achieve global coverage for in situ networks, particularly in the oceans and essential variables in the terrestrial domain;
  - routinely provide high quality integrated climate products;
  - climate change studies require data for change and rates of change, hence high quality homogeneous datasets
  - maintain a homogeneous record; the operation of individual networks be monitored on a continuous basis and ensure that proper standards are being maintained and that observations are being received at designated centres.

# The Role Of Local, National, Regional And International Actors

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- Strengthening capacity building for generating, managing processing and analysis data sets (1/CP.10).
- Improve the availability of GCMs, including their outputs and results.
- In addition, start thinking of African scenario models; we are using Models designed for developed countries, how well do they represent our situation? (e.g., ENSO).

# The Role Of Local, National, Regional And International Actors

- Most importantly, try to find ways of mobilising the Buenos Aires Programme of Work on Adaptation and Response Measures, requesting the SBSTA to:
  - Implementation of the programme of work by undertaking initial activities
  - Consider and elaborate additional activities and modalities
  - etc...
- Time's running, and so continued vulnerability, but the problems faced by African states in systematic observations are still pertaining, it is therefore necessary to make moves towards solving these problems.

# The UNFCCC Process in Facilitating Data Availability and Access

- To address the evident gap in data, UNFCCC can assist in the emphasis for coordination efforts among the nations on

- capacity building,
- training, research and
- development

to provide for continent-wide monitoring. This will make available reliable climate observations which can then be transformed into useful products for climate monitoring.

- To continue implementation of Articles 4.1(g) and 5 in cooperating with the Global Climate Observing System ([GCOS](#)) secretariat of the World Meteorological Organization ([WMO](#)) and other agencies participating in WMO's Climate Agenda.

Thank You