Systematic observation under the UNFCCC: Supporting the implementation of the Paris Agreement

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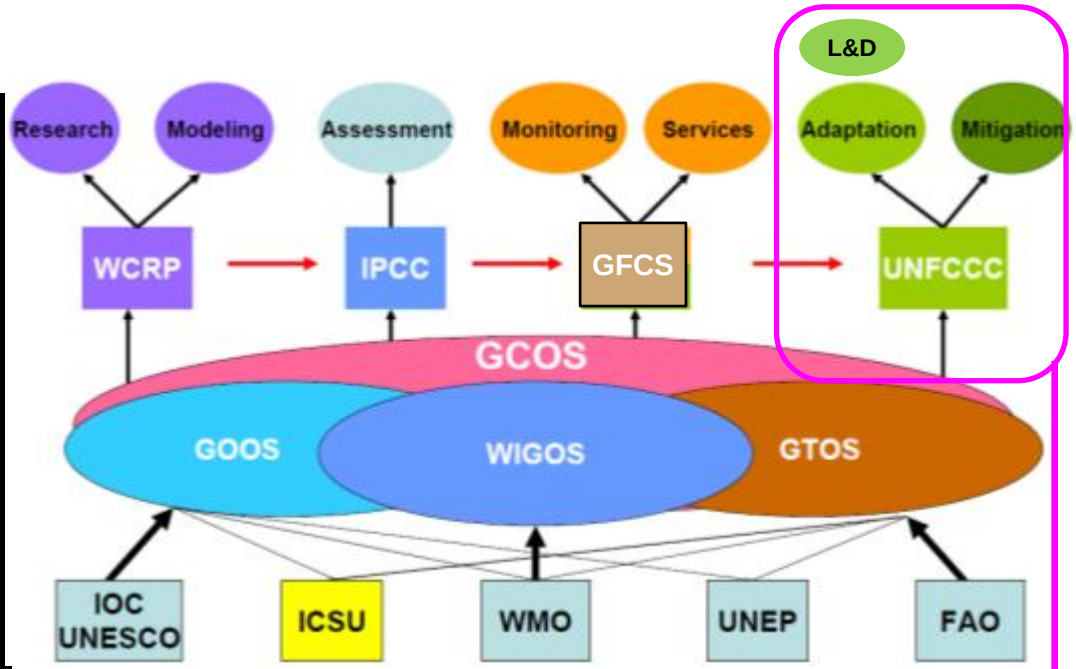
- **Contents**

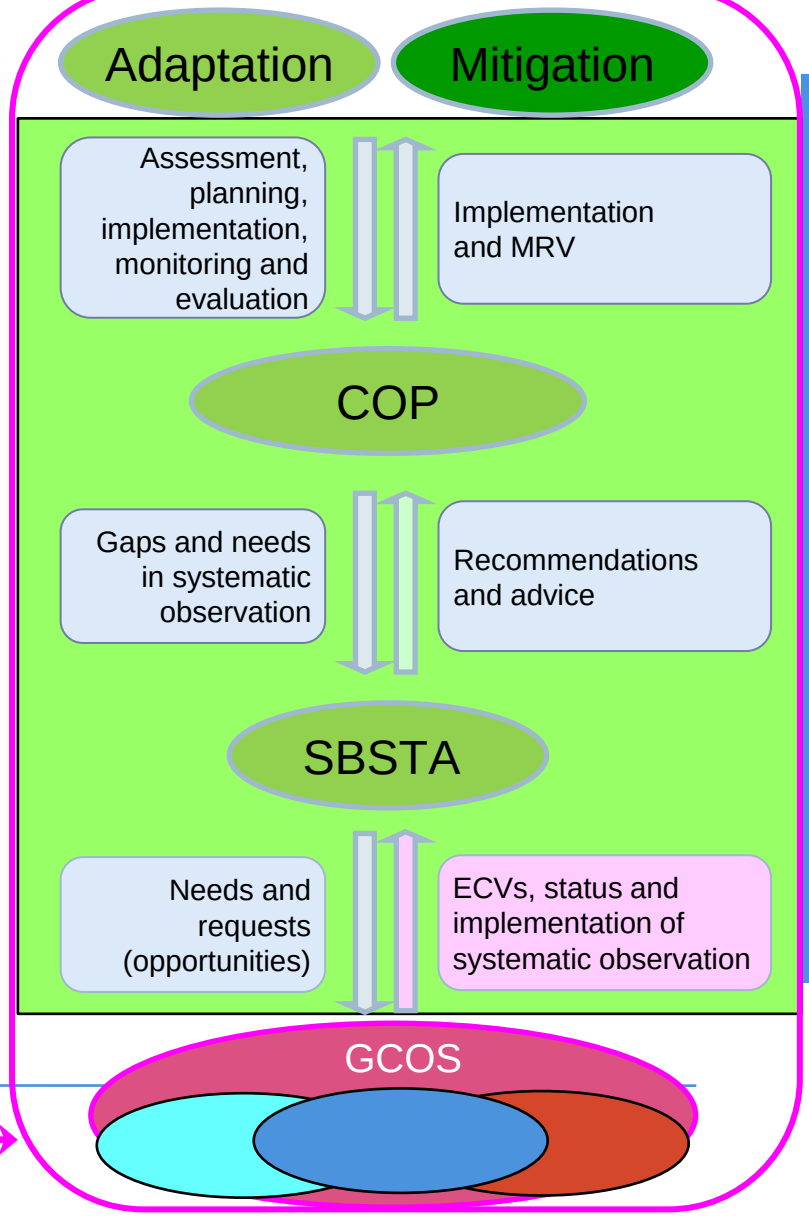
- Systematic observation of the Earth's climate system plays an essential role in **understanding** changes in the climate system, as well as in **projecting** future changes, which are fundamental for informing climate policymaking
- For example, due to systematic observation:
  - Scientists can now **better track changes** in land cover, ice sheets, water resources, sea level, extreme events and human activities such as urban growth, land change, agriculture, deforestation and dam and other infrastructure construction that impact the environment
  - People can **see the changes** that are happening due to climate change on images from space, which are a powerful way to illustrate these changes
  - Decision makers can **better manage disasters**, including from those attributable to climate change, because they are better supported with accurate and timely information for decision making (from disaster risk reduction to disaster response and recovery)
  - Modellers can **better project changes**, including for the near-term and the regional level, due to improved continuity, space and time sampling and accuracy of Earth observations. Such results enhanced the policy relevance of the IPCC's Fifth Assessment Report

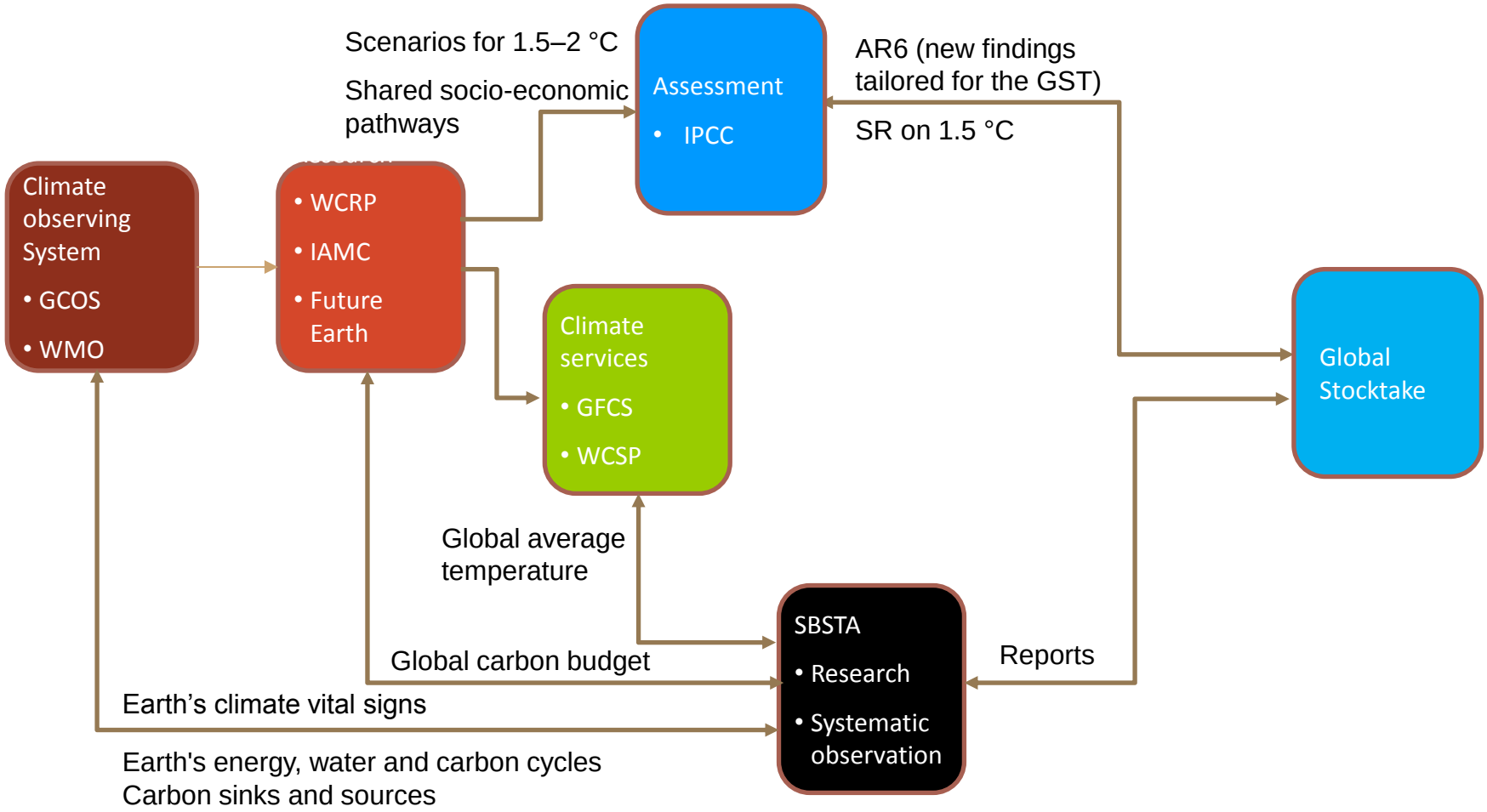


United Nations Framework Convention on Climate Change Convention Articles 4 & 5:

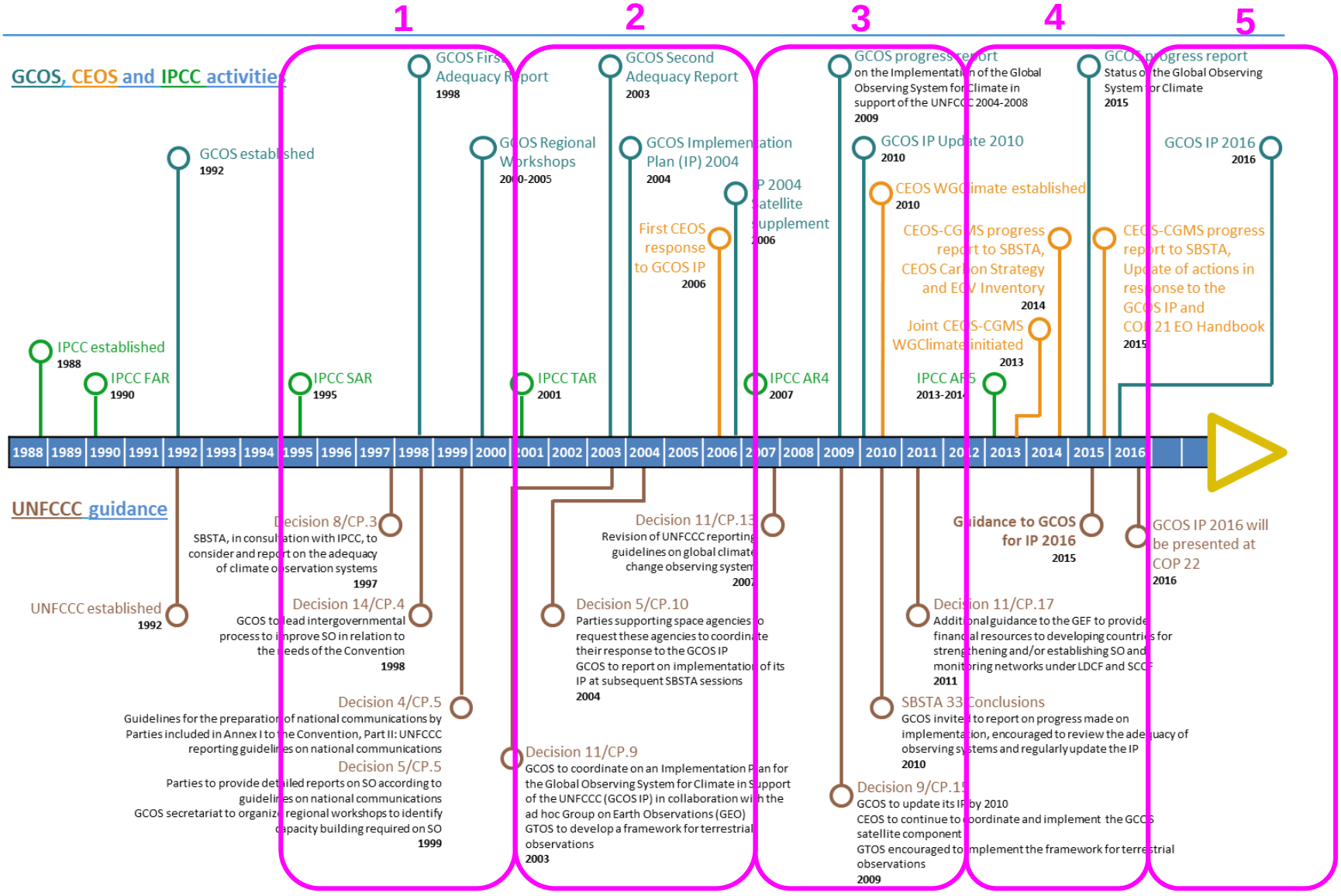
- Promote and cooperate in SO of the climate system and exchange of information
- Support and strengthen SO
- Improve capacity for SO

…particularly in developing countries




Scenarios for 1.5–2 °C
Shared socio-economic pathways
Assessment
• IPCC
AR6 (new findings tailored for the GST)
SR on 1.5 °C
Climate observing System
• GCOS
• WMO
• WCRP
• IAMC
• Future Earth
Climate services
• GFCS
• WCSP
Global Stocktake
Global average temperature
SBSTA
• Research
• Systematic observation
Reports
Global carbon budget
Earth's climate vital signs
Earth's energy, water and carbon cycles
Carbon sinks and sources

Systematic observation | Overview – the GCOS and IPCC assessment cycles and the UNFCCC guidance



See: <http://unfccc.int/files/science/workstreams/systematic_observation/application/pdf/systematicobservation_2015_1_informationnote.pdf>

Paris climate conference – a game changing outcome

- Climate change **mitigation** is now firmly **founded on national action**. This reflects the current reality of climate change politics and economics.

- Governments locked in the upper limit of global warming of **2 °C** and agreed to pursue efforts to limit the increase to **1.5 °C** as an important statement of solidarity with vulnerable countries and an investment in future generations (from science informs policy, to policy directs scientific focus).

- Provided the **policy certainty** that the business sector has been seeking. A legal agreement "global peaking" and a "balance" between global emissions and removals, i.e. climate neutrality (important also for **carbon fluxes**).

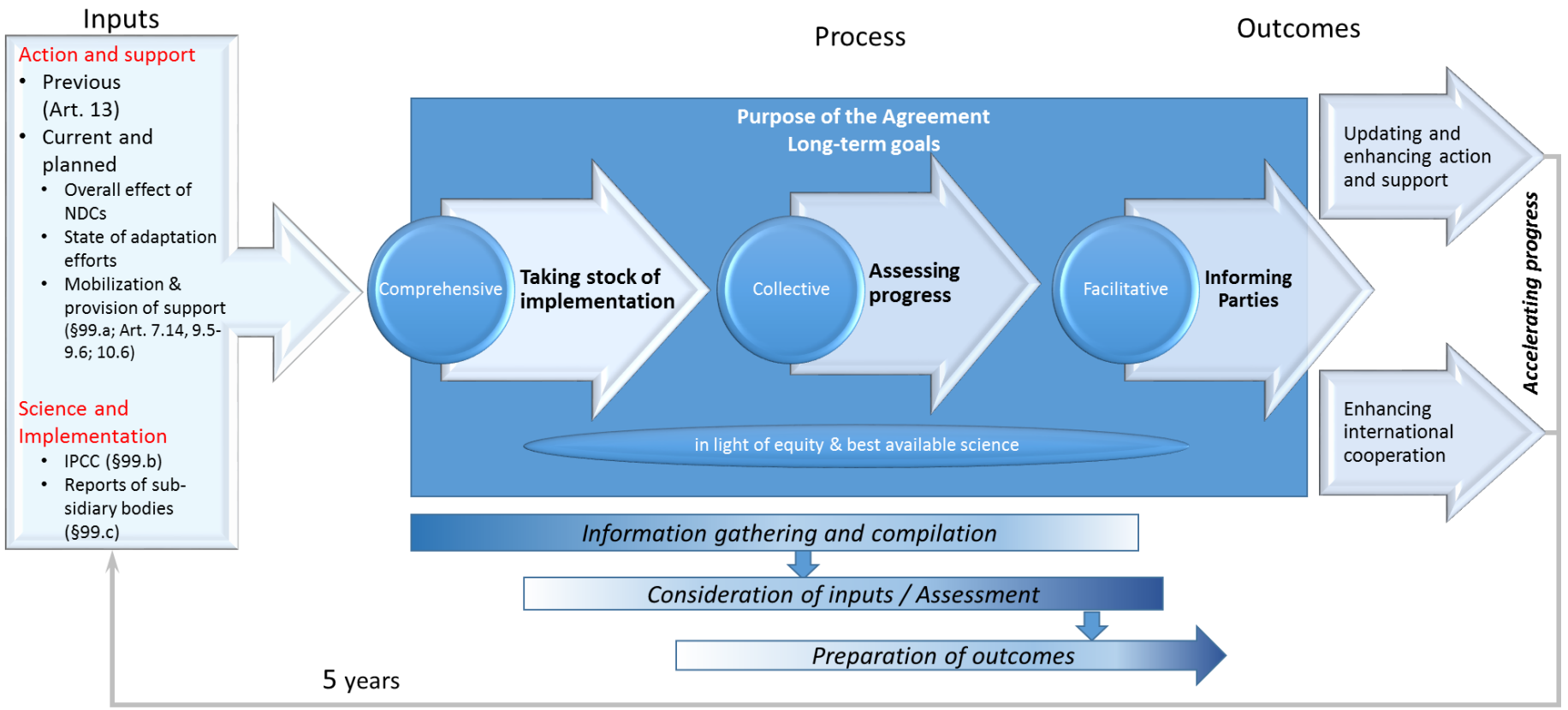
- Climate **adaptation and loss and damage** have become pillars of the climate change regime. The NAP decision established a process to assess progress and invited relevant organizations to continue efforts to coordinate support for the NAP process.

PARIS2015
CONFÉRENCE DES NATIONS UNIES SUR LES CHANGEMENTS CLIMATIQUES
COP21·CMP11

- An **enhanced transparency framework** for all – Nationally Determined Contributions
  - Mitigation
  - Adaptation (NAPs)
  - Finance

- **Means of implementation** – reaffirmed the $100 billion USD goal from the Copenhagen Climate Change Conference and enhanced attention to reporting and assessment of support to developing countries; recognition of the possibility of developing countries providing such support; and robust outcome on capacity-building to enable developing countries to fulfil their undertakings

- **Global stocktake** – every five years to systemize moving to more ambitious action (clear direction and no “backsliding”)


Inputs
Action and support
• Previous (Art. 13)
• Current and planned
• Overall effect of NDCs
• State of adaptation efforts
• Mobilization & provision of support (§99.a; Art. 7.14, 9.5-9.6; 10.6)
Science and Implementation
• IPCC (§99.b)
• Reports of sub-sidiary bodies (§99.c)
Process
Purpose of the Agreement
Long-term goals
Comprehensive
Taking stock of implementation
Collective
Assessing progress
Facilitative
Informing Parties
in light of equity & best available science
Outcomes
Updating and enhancing action and support
Enhancing international cooperation
Accelerating progress
Information gathering and compilation
Consideration of inputs / Assessment
Preparation of outcomes
5 years

The Agreement emphasizes the strengthening of scientific knowledge in regards to adaptation

Article 7, para 7

"Parties should strengthen their cooperation on enhancing action on adaptation, taking into account the Cancun Adaptation Framework, including with regard to:

…

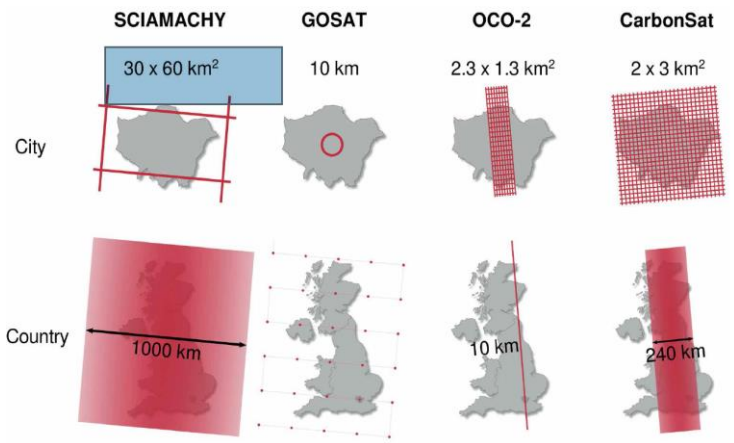
c) Strengthening scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making …"

- **The Paris Agreement brings new transparency and review arrangements in regards to mitigation, adaptation and the global stocktake**

- **Some details still need to be decided, including**
  - The inputs and modalities for the global stocktake – how to effectively aggregate efforts and take stock of progress based on information on where we need to be at, collectively provided by IPCC, and information on where countries are at, provided by Parties

  - **Aligning the cycles of scientific information**
    - Stocktake mandated every five years
    - IPCC assessment occurs every five to seven years
    - GCOS implementation plan produced (to date) every five to six years

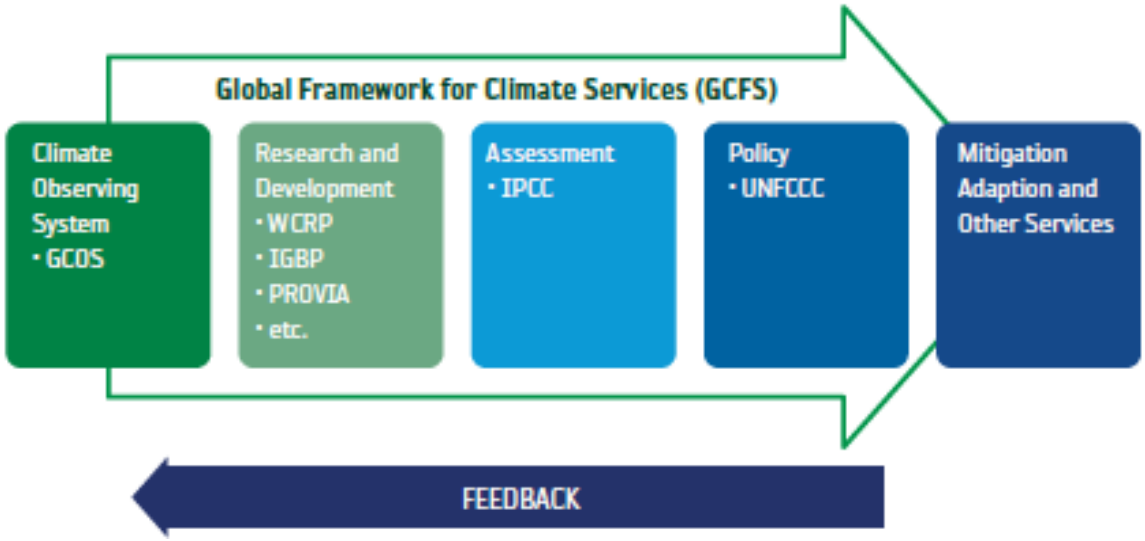
- The scientific community tells us that satellite remote sensing of column CO_2 and CH_4 mixing ratio with global coverage and forthcoming integrated carbon observation systems (e.g., WMO IG^{3}IS) will open new possibilities for **quantification and attribution of regional-scale fluxes** and **quantification of strong local sources of CO_2 and CH_4.** These new developments could:
  - Allow for a better understanding of the carbon cycle and a top-down quantification and attribution of greenhouse gas emissions and sinks
  - Support the transparency framework by allowing Parties to verify and validate the uncertainties in their GHG inventories (bottom up) and for better planning
  - Support the global stocktake and the aggregation of the collective mitigation efforts by Parties

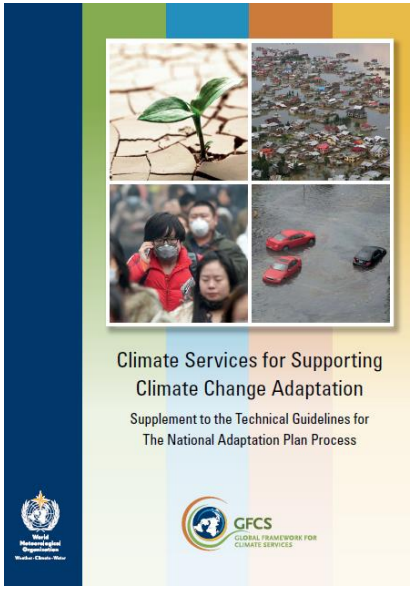


Opportunities

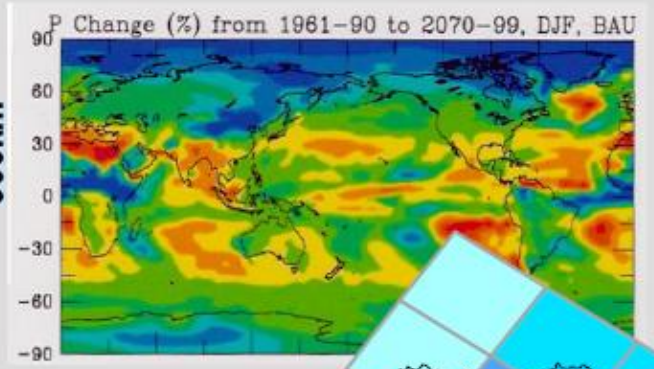
- **Provide climate indicators for decision-making at national and sub-national level**
- **Improve early warning**
- **Improve access to data for NAPs and loss and damage planning**
- **Increase understanding of relevant global weather phenomena, such as El Niño and La Niña**

- **Strengthen the support of the systematic observations for provision of climate services**
- **GFCS – Supporting national decision-making and NAPs**





General Circulate Models supply...



300km

50km

Regional models supply

Impact models require ...

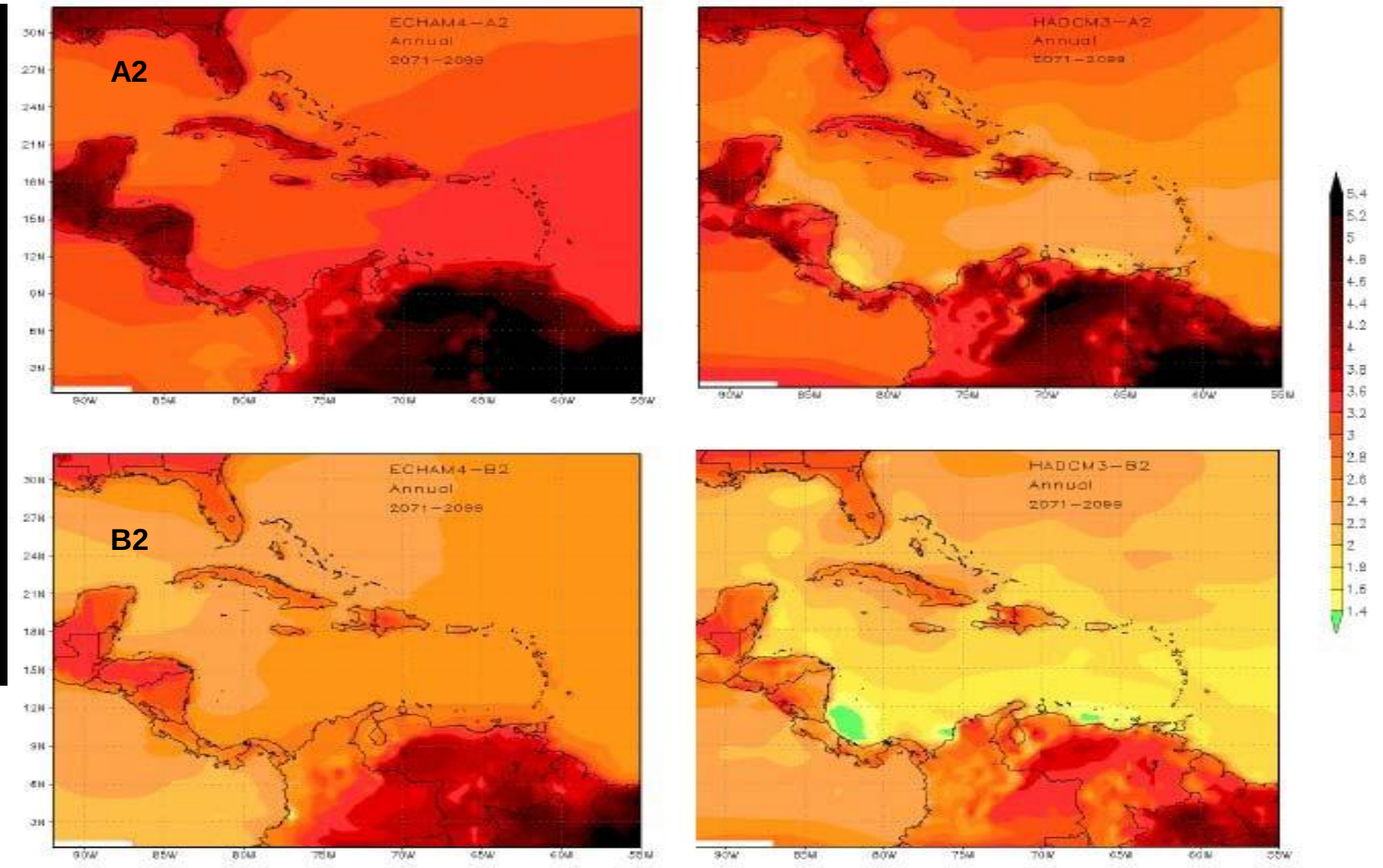
10km

1m

Point

2

1 °C - 4 °C warming (relative to 1960–1990 mean) projected by end of century



- **High-quality observations are the foundation for solid decision-making on future action on climate change**
- **Some opportunities for systematic observation:**
  - Better liaise with SBSTA and other implementation bodies, including identifying the negotiating items under which systematic observation is required and provide relevant information to stakeholders and regional hubs, including via the Adaptation Committee, Nairobi work programme, LEG and the L&D Ex Com
  - Contribute to improving the transparency framework and support the global stocktake
  - Identify ways to improve consistency in national reporting of RSO to the UNFCCC
  - Identify indicators and other climate services that could support adaptation decision making and be incorporated into adaptation reporting cycle by all Parties
  - Support the technical examination process (pre-2020 ambition)

Thank you!