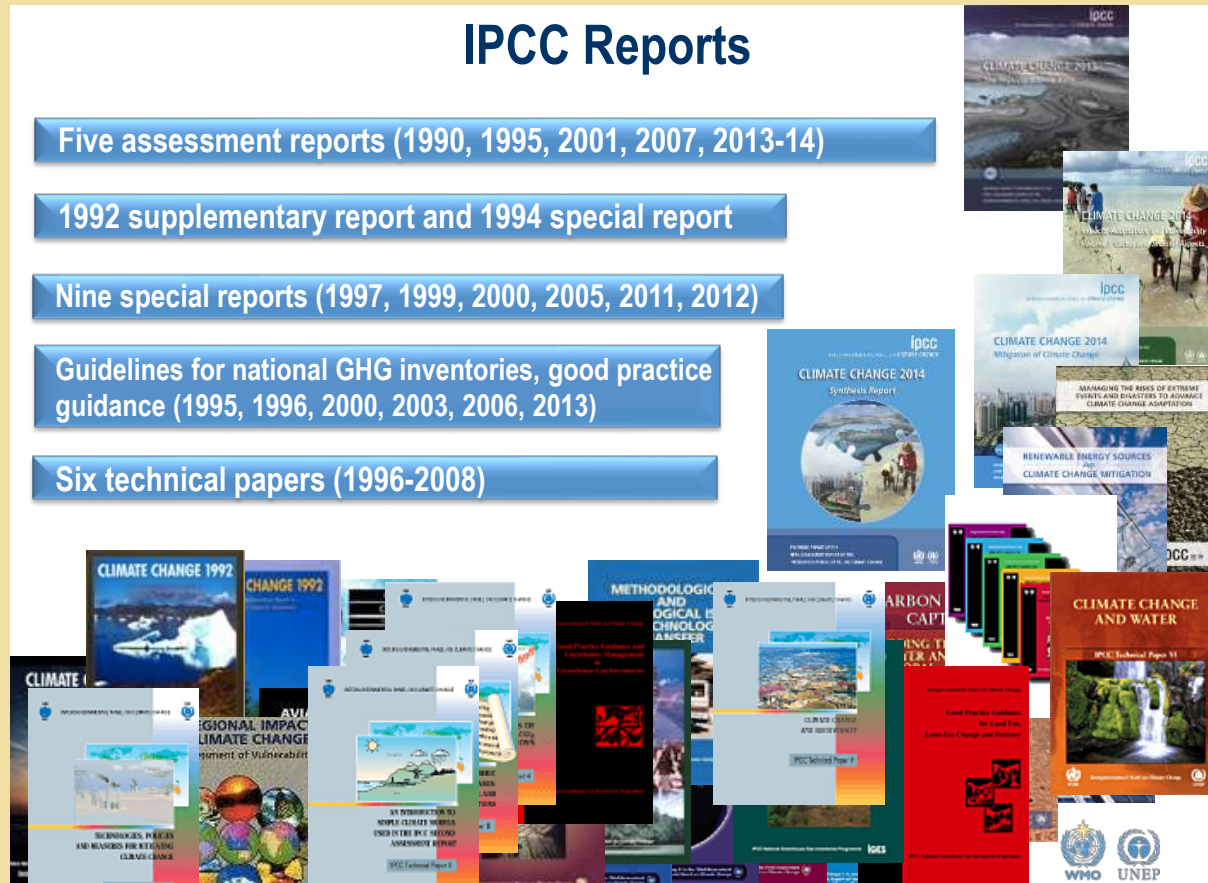


Lecture 2: IPCC Introduction

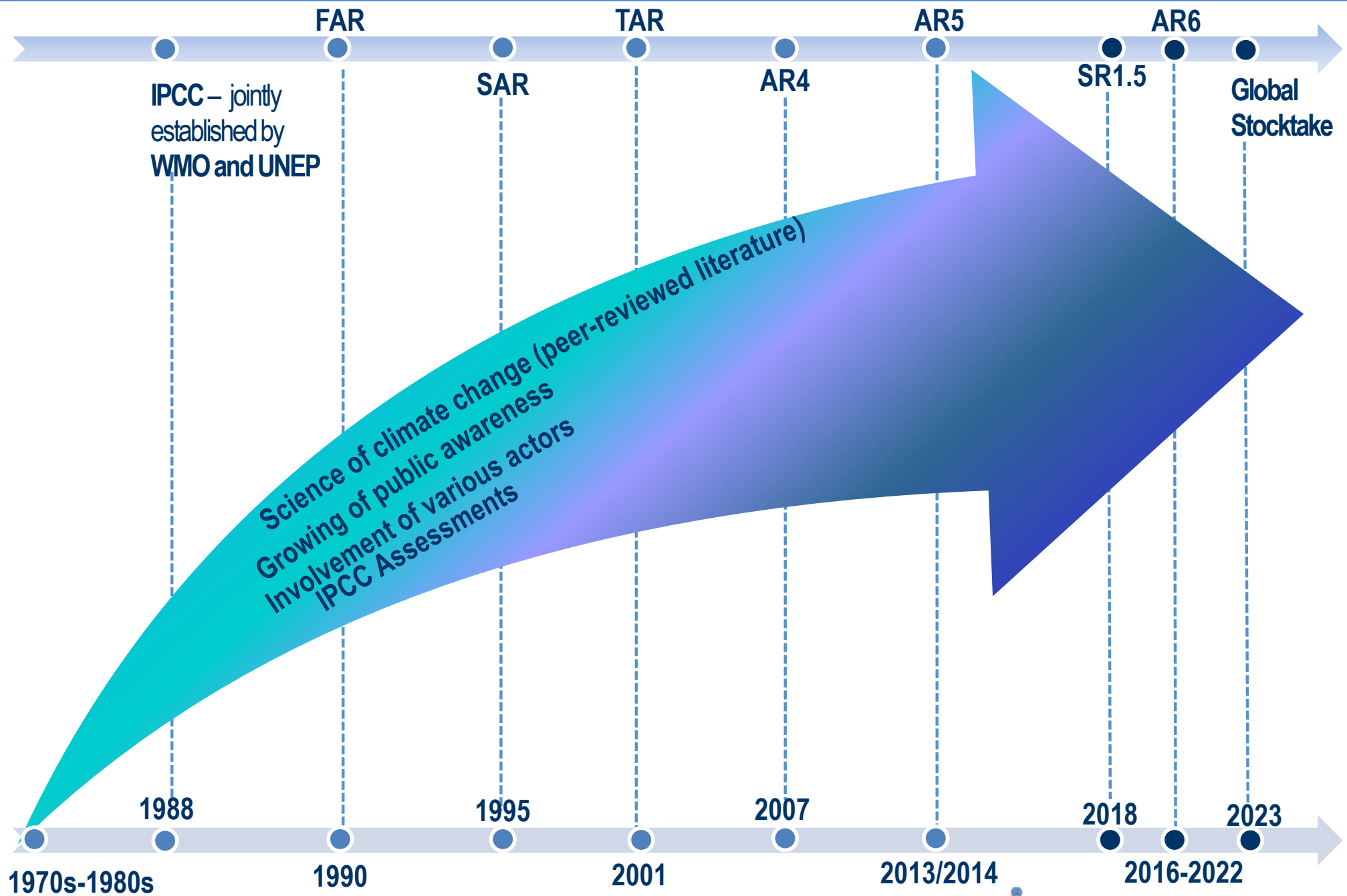
Six technical papers (1996-2008)



IPCC



The Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental body of the United Nations, dedicated to providing the world with an objective, scientific view of climate change and its political and economic impacts.

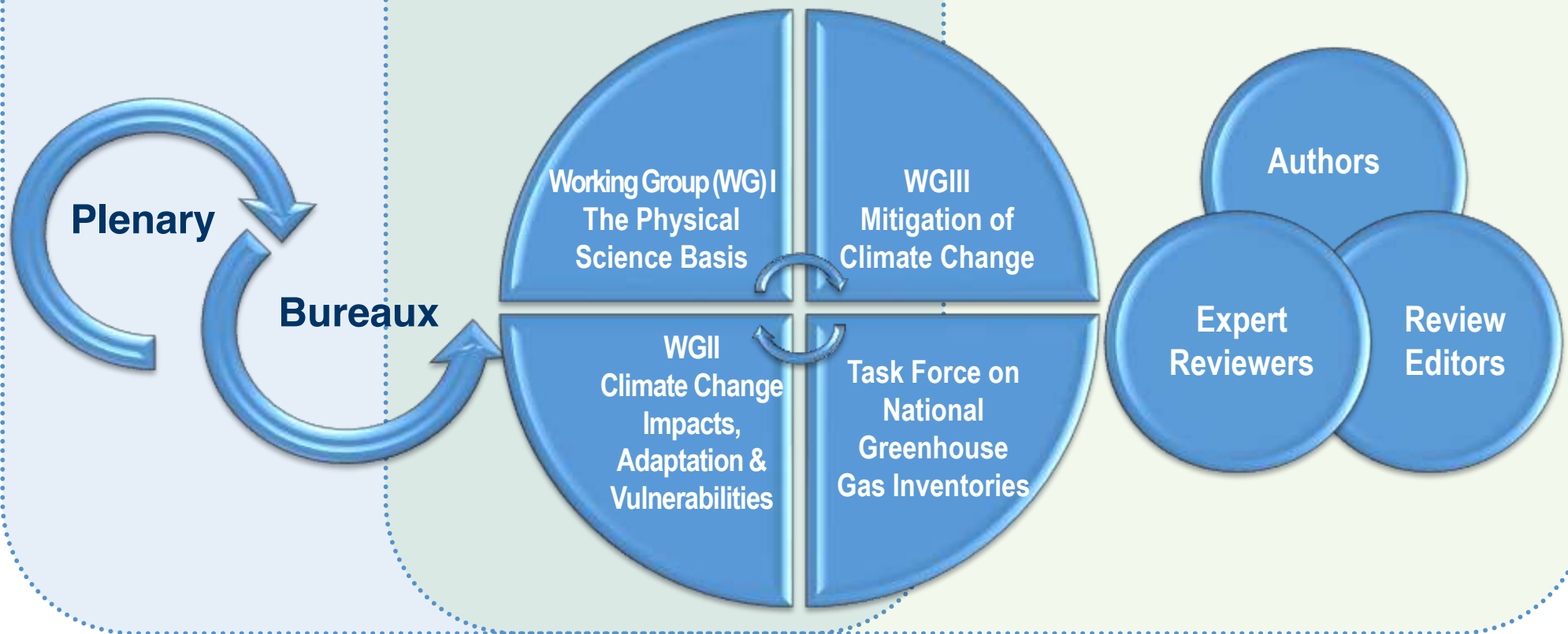


Science/Policy Interface

IPCC – jointly established by **WMO** and **UNEP**, action endorsed by the **UN General Assembly**

Intergovernmental Panel: 195 member States appointing National Focal Points

Hundreds of **scientists and experts from around the world** are involved in the preparation of IPCC reports



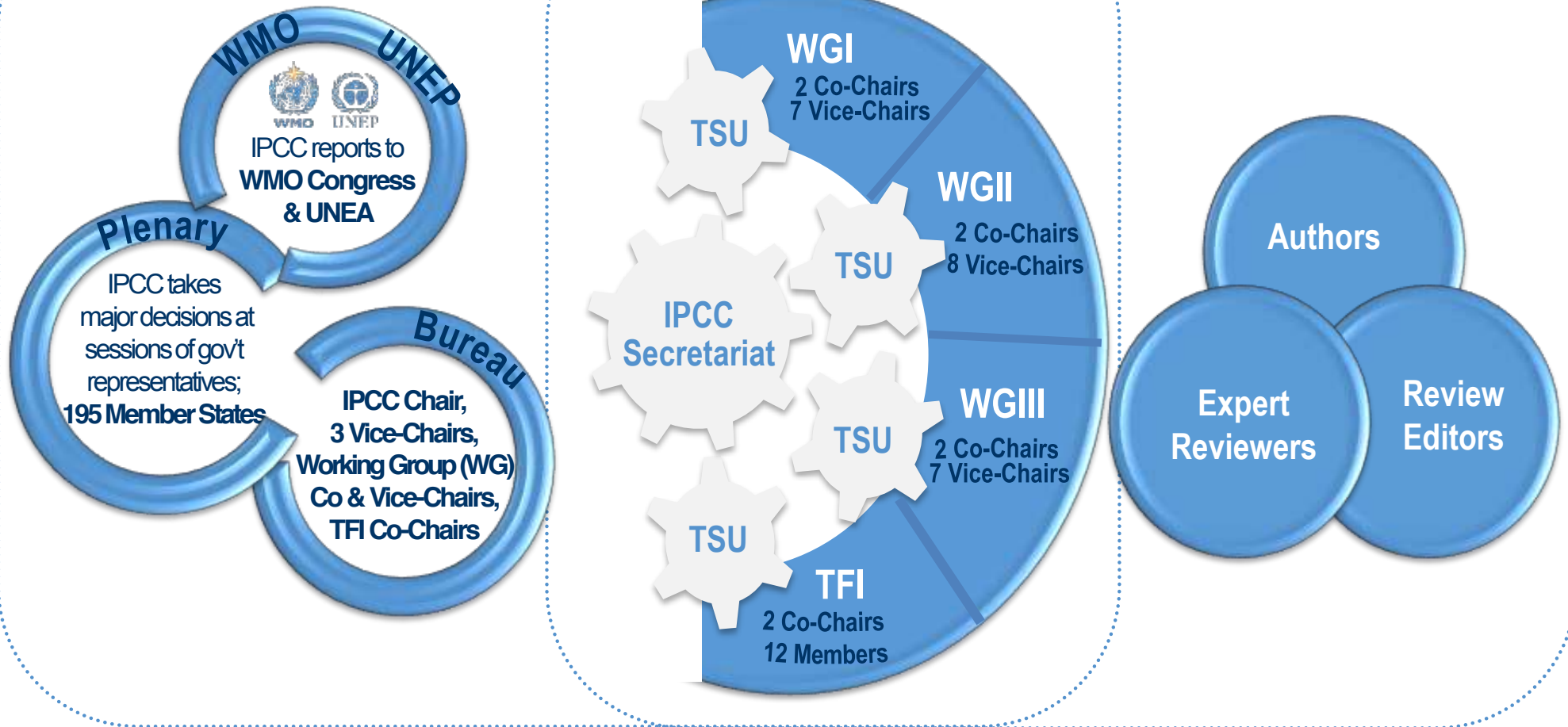
ipcc

INTERGOVERNMENTAL PANEL ON climate change



IPCC Governance

IPCC: science and policy work together to provide rigorous and balanced scientific information on climate change



The role of the IPCC is ...

“... to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation.”

“IPCC reports should be neutral with respect to policy, although they may need to deal objectively with scientific, technical and socio-economic factors relevant to the application of particular policies.”

Principles Governing IPCC Work, paragraph 2

Source: <http://www.ipcc.ch/pdf/ipcc-principles/ipcc-principles.pdf>

IPCC Reports

Five assessment reports (1990, 1995, 2001, 2007, 2013-14)

1992 supplementary report and 1994 special report

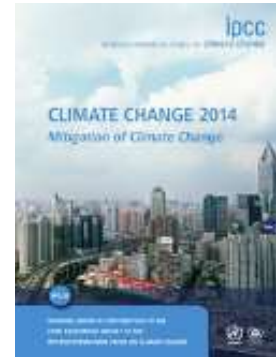
Nine special reports (1997, 1999, 2000, 2005, 2011, 2012)

Guidelines for national GHG inventories, good practice guidance (1995, 1996, 2000, 2003, 2006, 2013)

Six technical papers (1996-2008)



Achievements: 2013/2014 Fifth Assessment Report



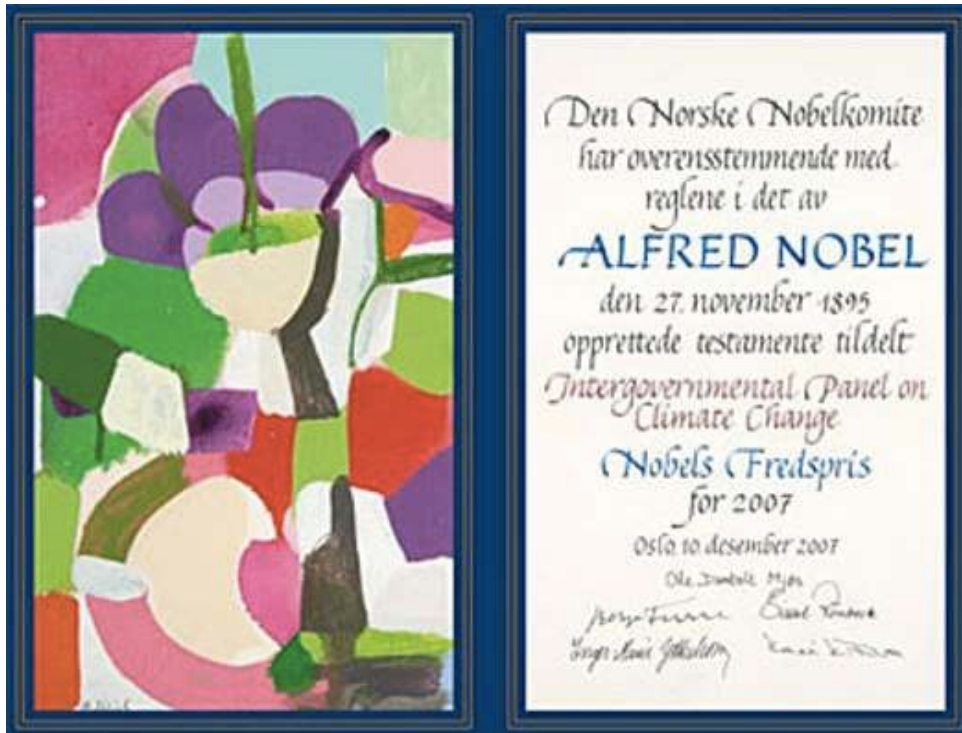
Key messages

Human influence on the climate system is clear

The more we disrupt our climate, the more we risk severe, pervasive and irreversible impacts

We have the means to limit climate change and build a more prosperous, sustainable future

Achievements: 2007 Nobel Peace Prize



The **Intergovernmental Panel on Climate Change** and Albert Arnold (Al) Gore Jr. were awarded the **Nobel Peace Prize**

"for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change".

1

Introduction

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Key Concepts in Climate Science



✧ Weather vs. Climate

Weather

describes the conditions of the atmosphere at a certain place and time with reference to temperature, pressure, humidity, wind, and other key parameters (meteorological elements).

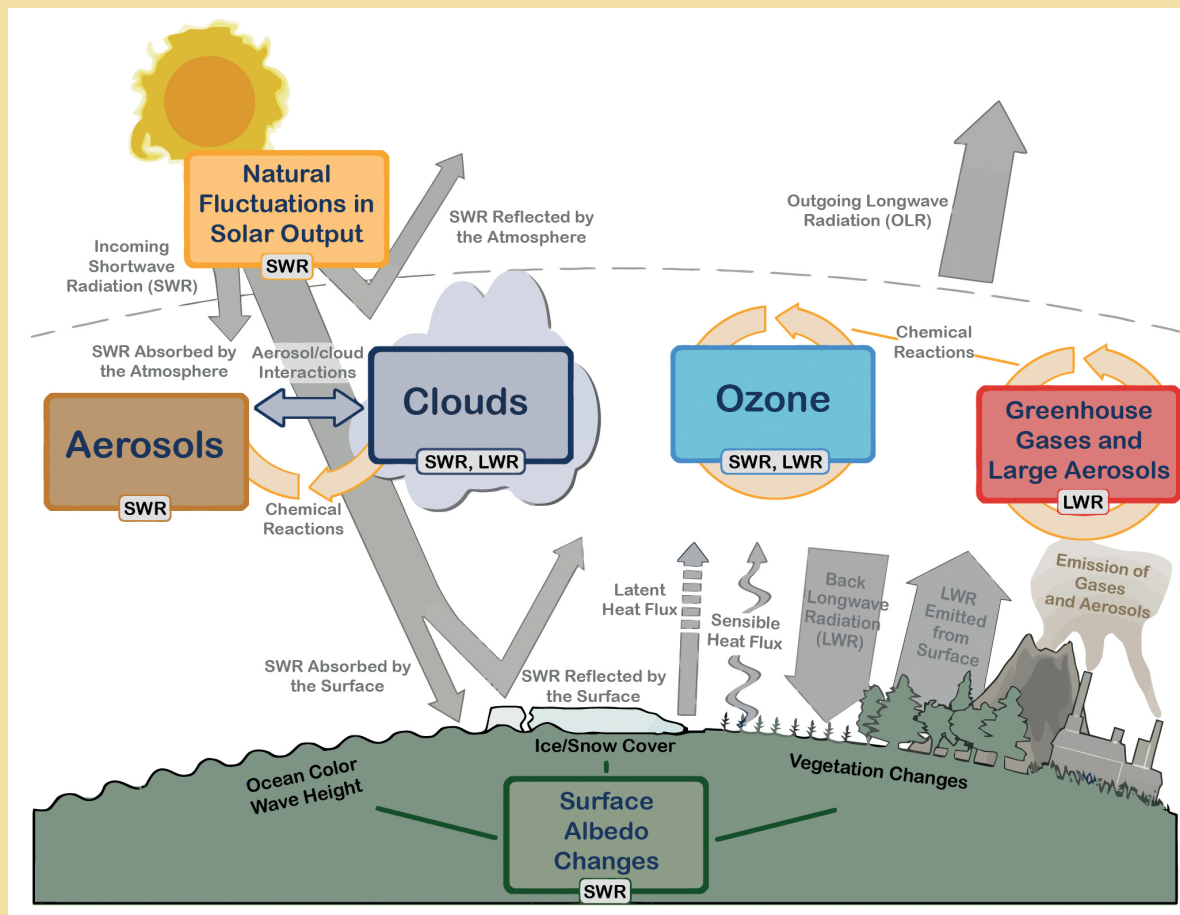
Climate

the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years.

30 years - World Meteorological Organization

Key Concepts in Climate Science

✧ Energy Pathways



The Sun provides its energy to the Earth primarily in the **tropics and the subtropics**; it's then redistributed to middle and high latitudes by **atmospheric and oceanic transport** processes

Key Concepts in Climate Science

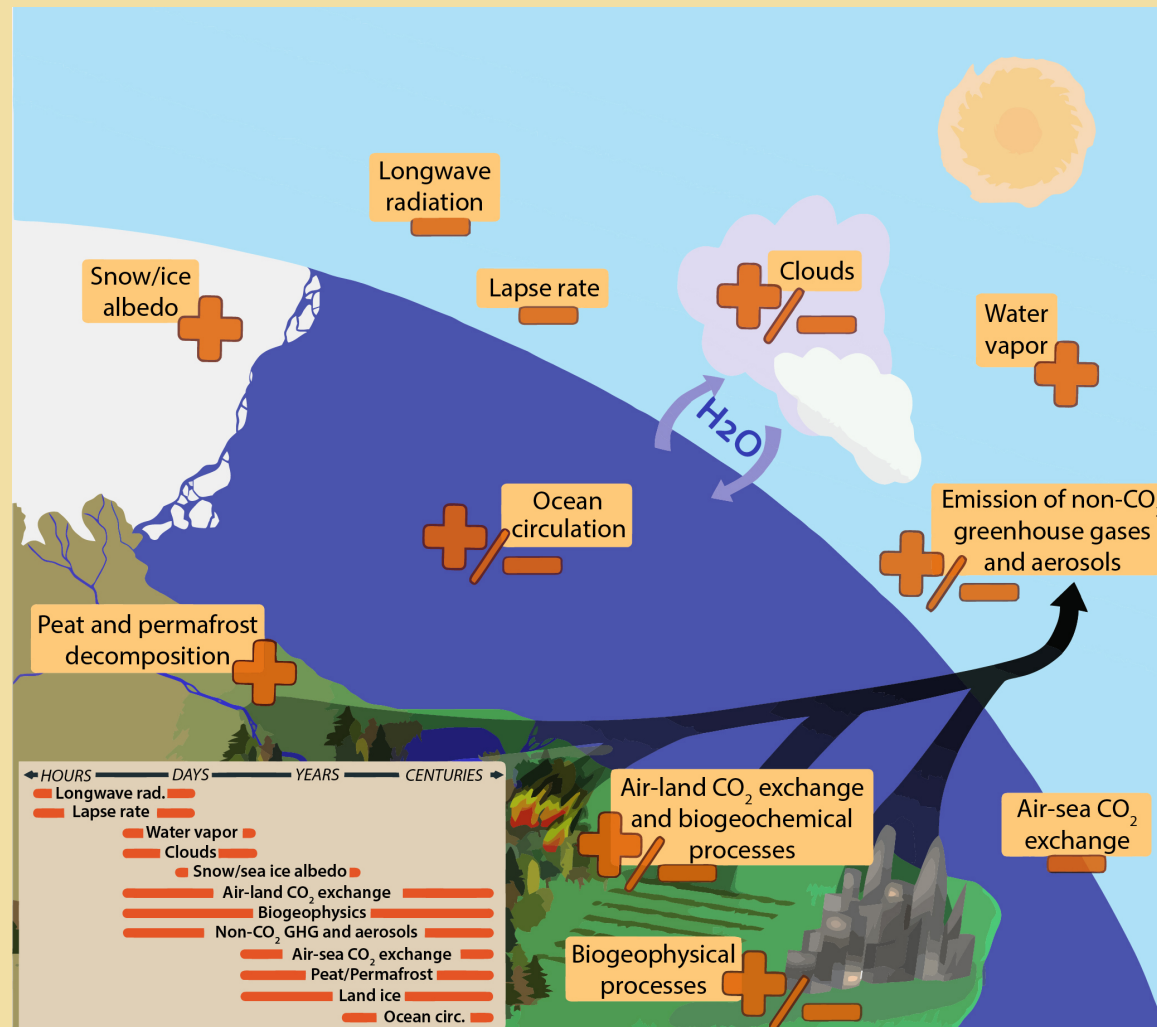


✦ Radiative Forcing (positive vs. negative)

a measure of the net change in the energy balance in response to an external perturbation

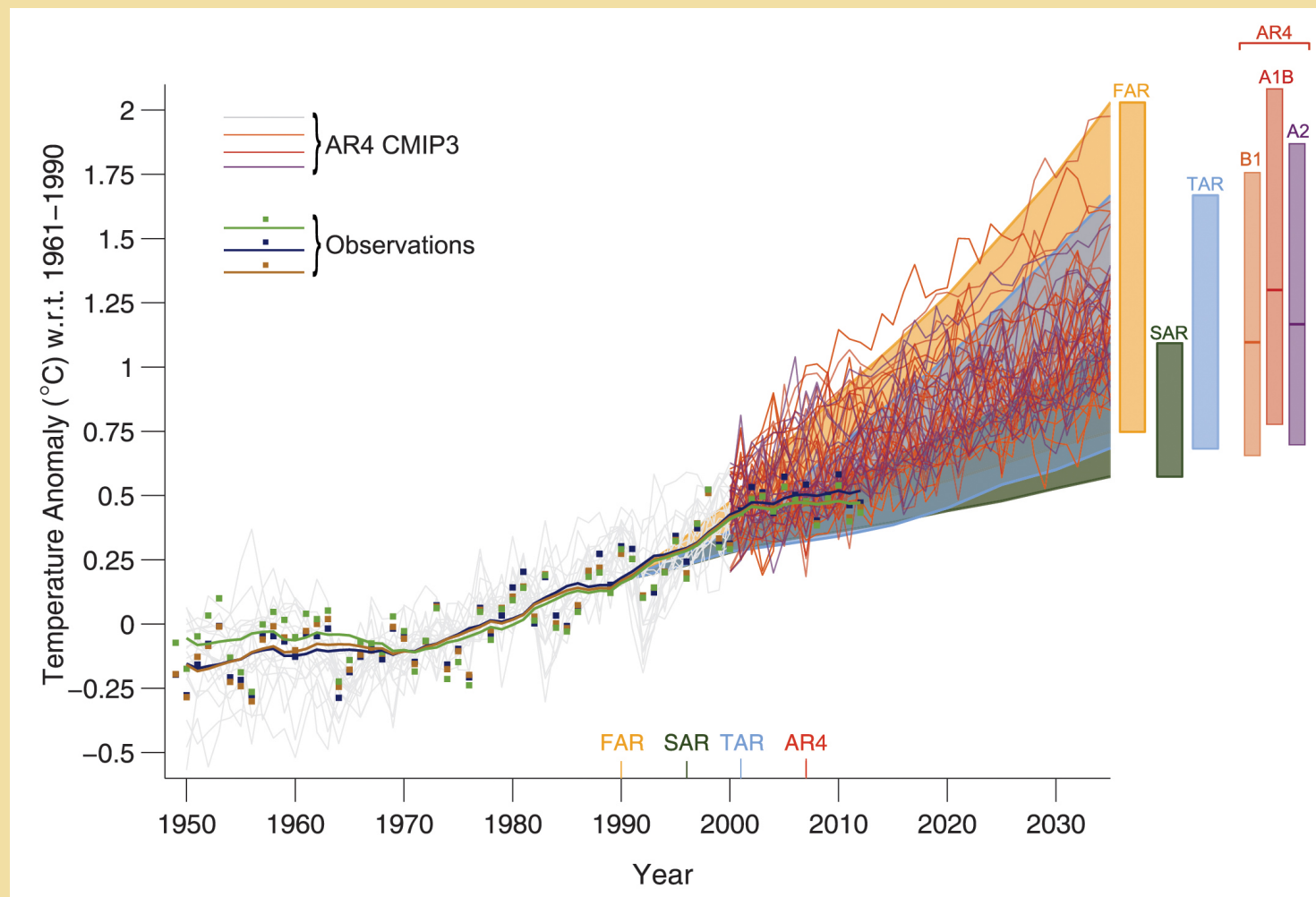
Key Concepts in Climate Science

✦ Complex internal feedbacks (positive vs. negative feedbacks)



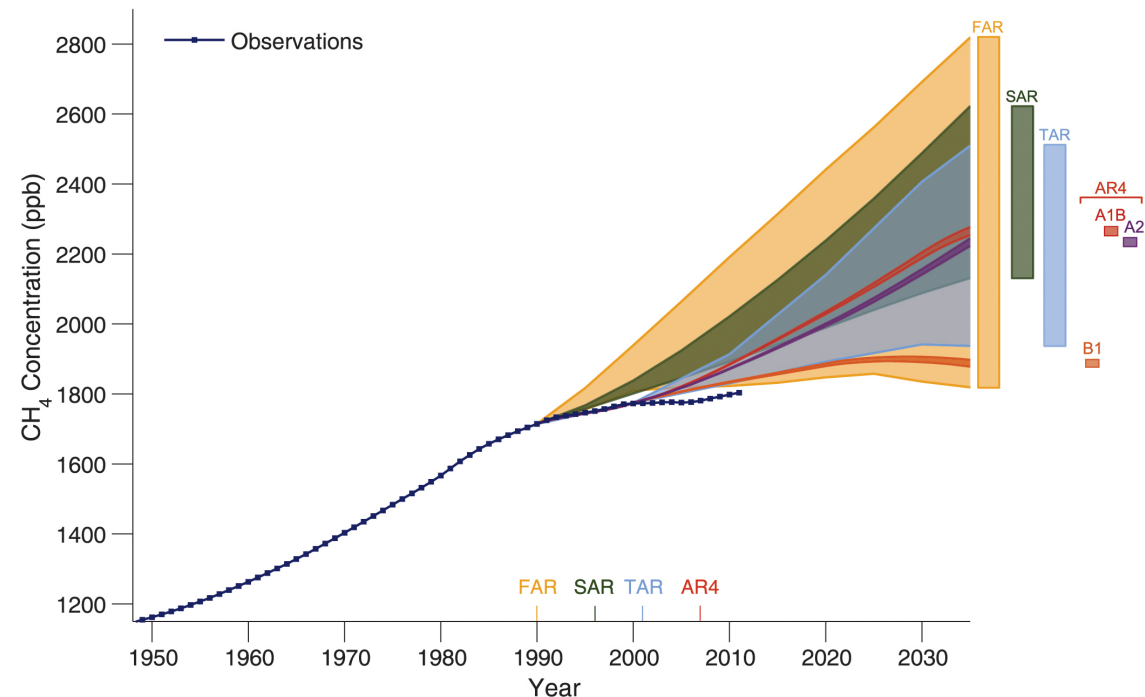
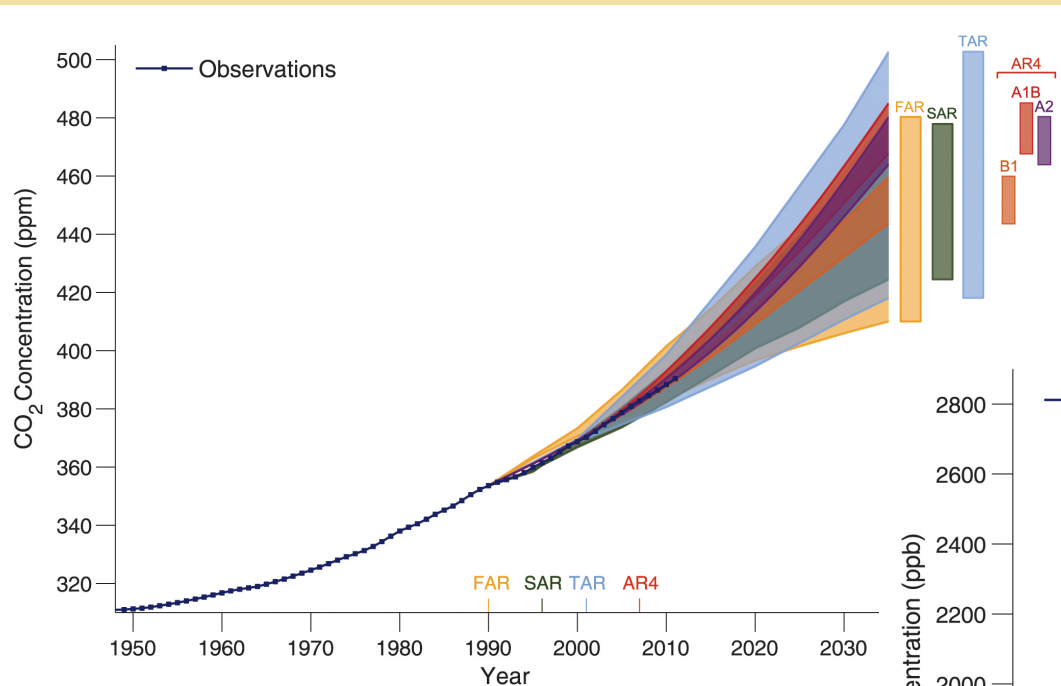
Indicators of Climate Change

✧ Global and regional surface temperatures



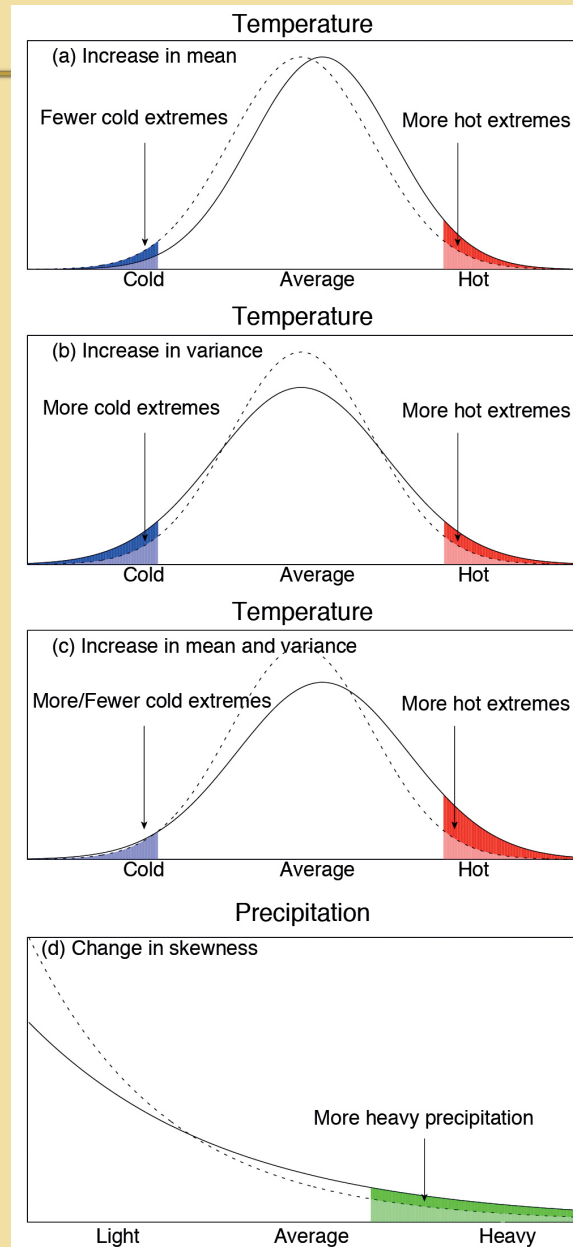
Indicators of Climate Change

✧ Greenhouse Gas Concentrations



Indicators of Climate Change

✦ Extreme Events



Treatment of Uncertainties



Science always involves uncertainties.

For observations:

Statistical variation, inherent randomness, instrument bias

For future projections:

Scenario uncertainty

Model uncertainty (not model spread)

Internal variability and initial condition uncertainty

Forcing and boundary condition uncertainty

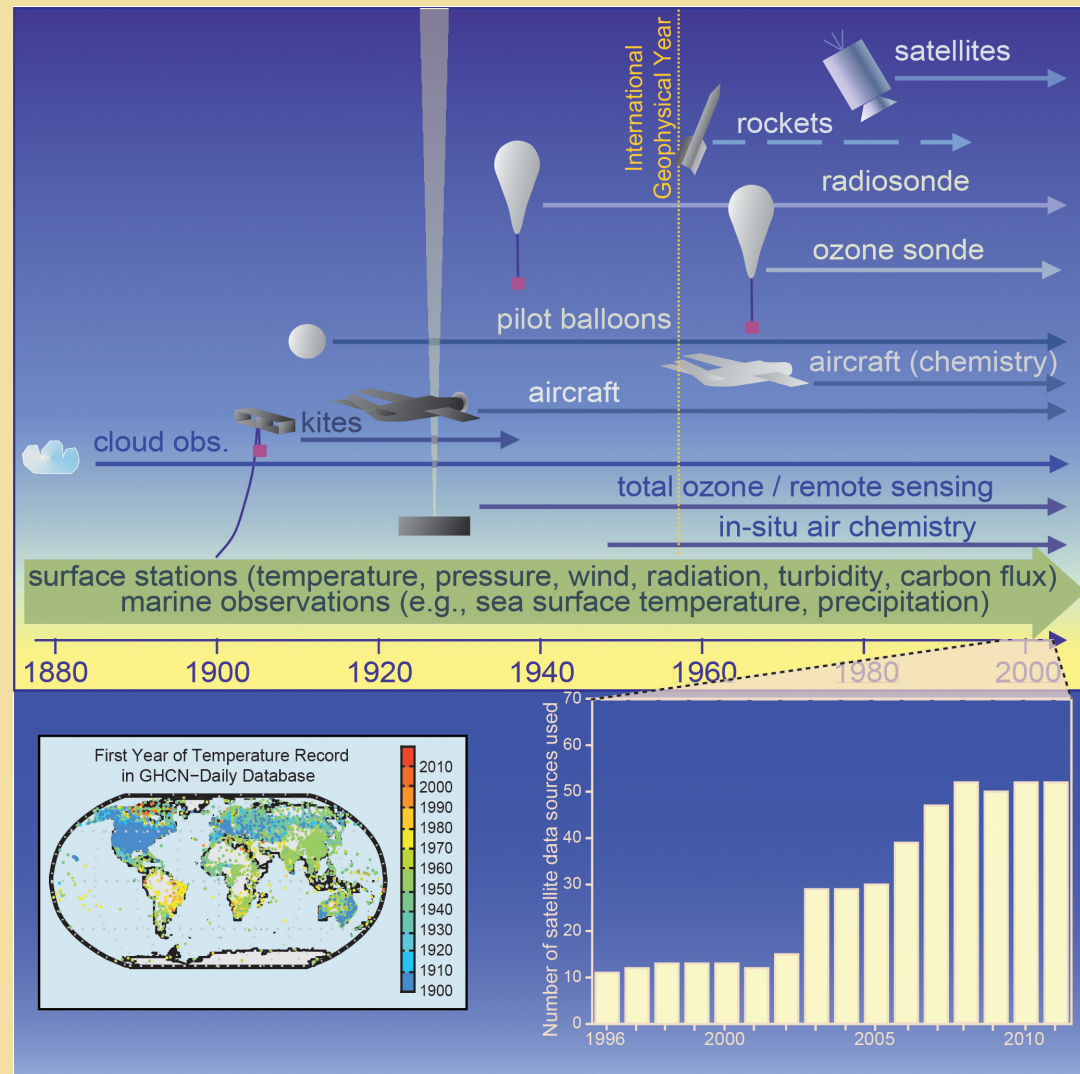
Treatment of Uncertainties



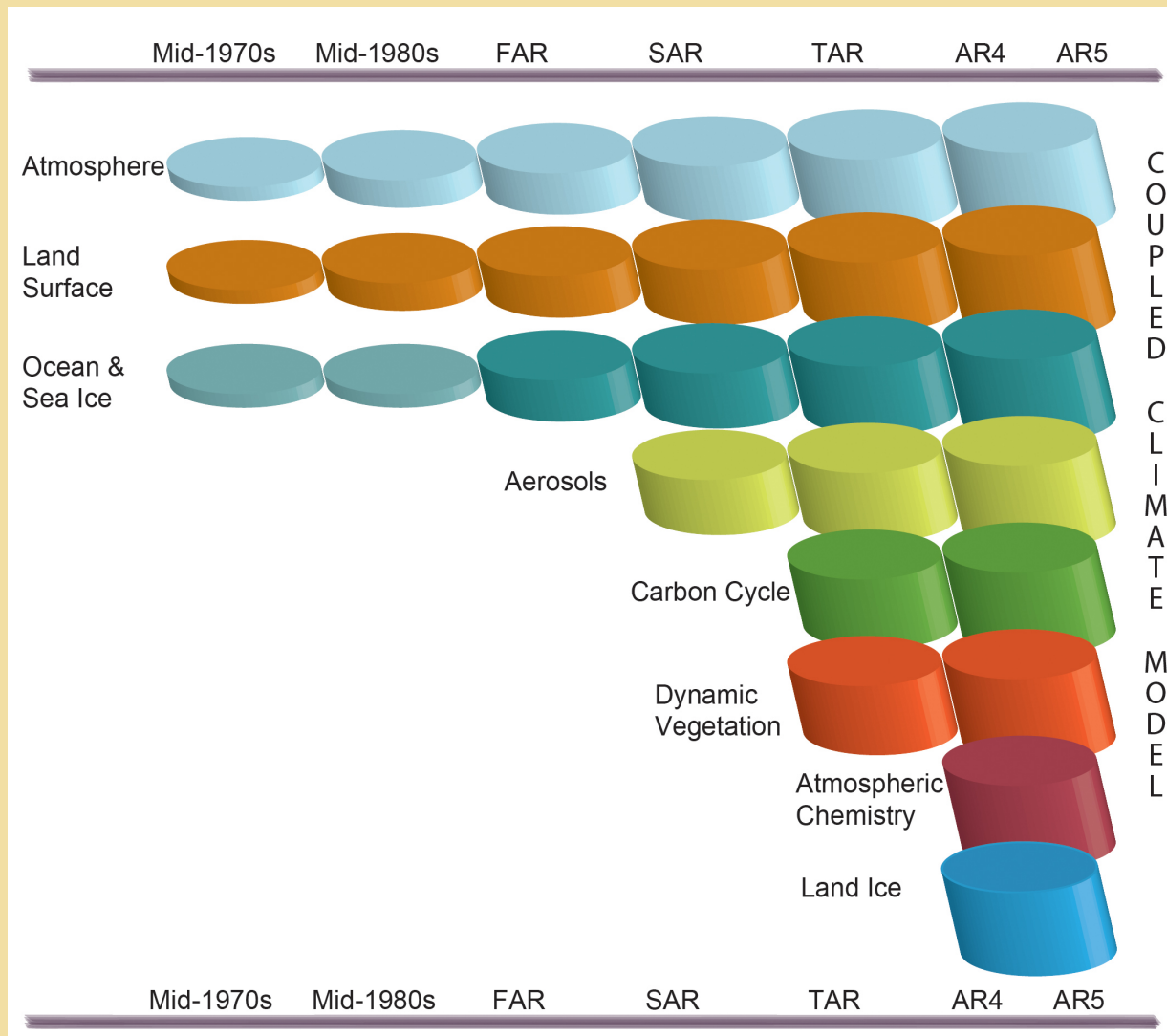
For IPCC AR5

- Confidence in the validity of a finding, based on the type, amount, quality, and consistency of evidence (e.g., data, mechanistic understanding, theory, models, expert judgment) and the degree of agreement. Confidence is expressed qualitatively.
- Quantified measures of uncertainty in a finding expressed probabilistically (based on statistical analysis of observations or model results, or expert judgement).

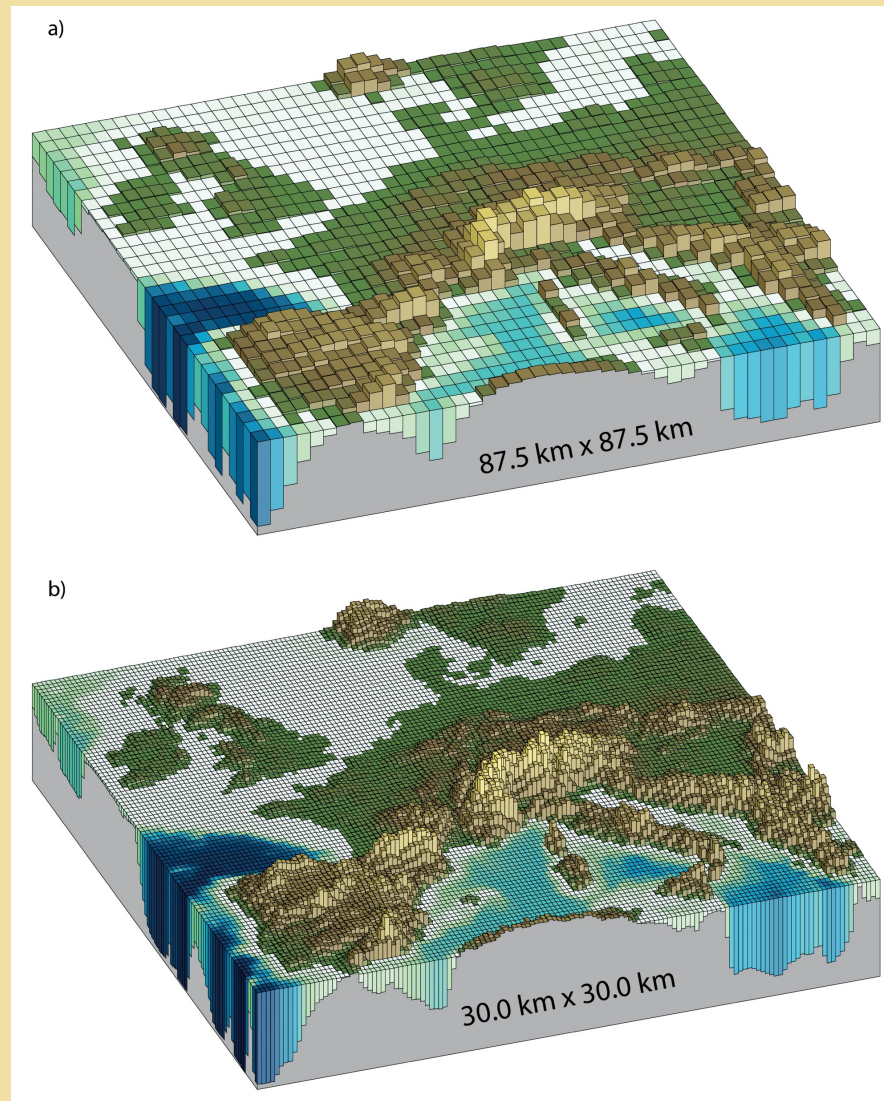
Advances in Measurement and Modelling Capabilities



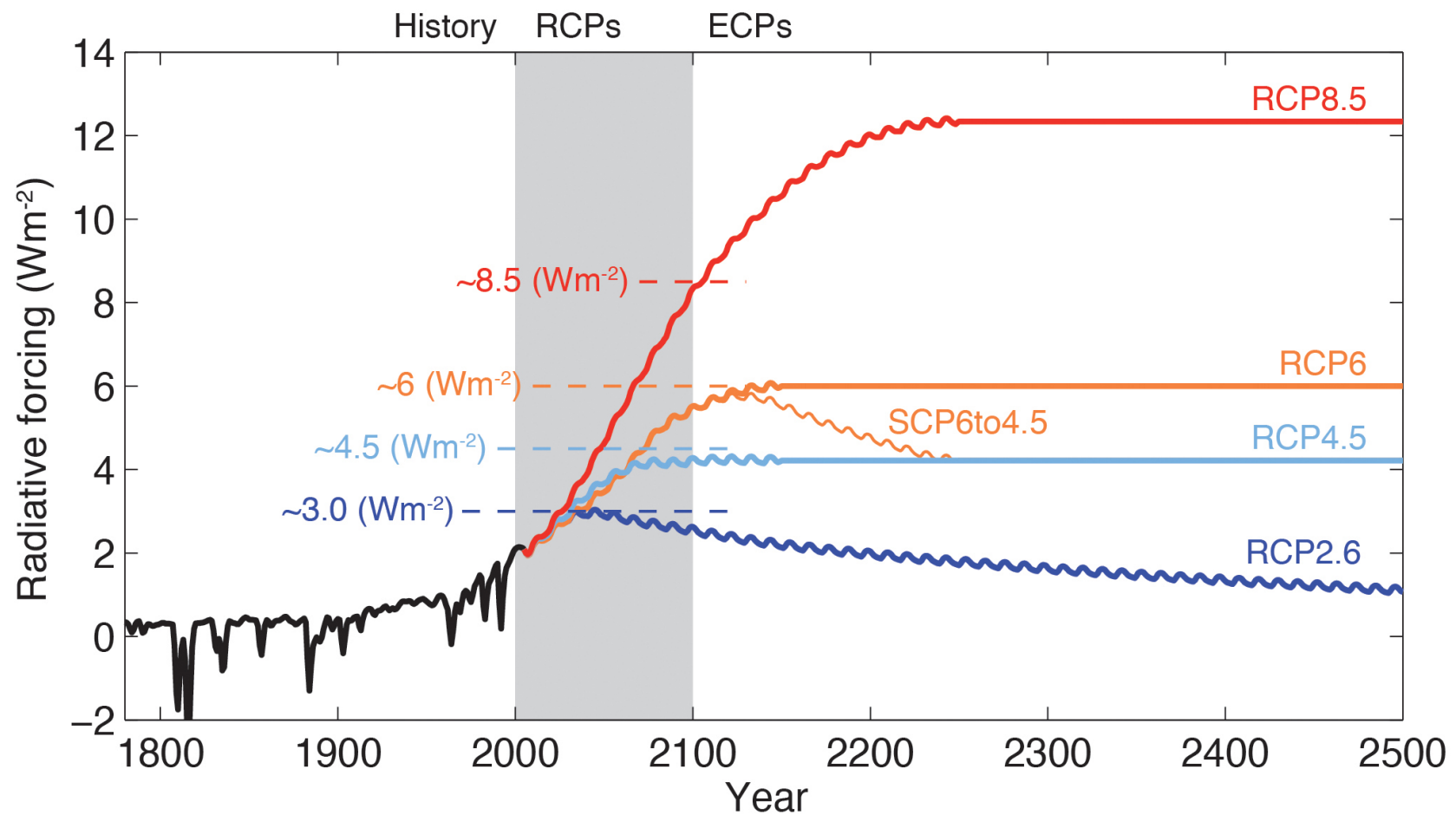
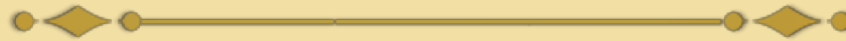
Advances in Measurement and Modelling Capabilities



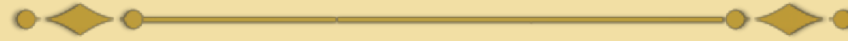
Advances in Measurement and Modelling Capabilities



RCPs



Reading Assignment



WG1AR5_Chapter01_FINAL