2008.4.14-16 GEOSS AP Symposium
at Mirai-kan, Tokyo, Japan

Theme and Task of Parallel Session 1: Monitoring and Predicting Climate Change

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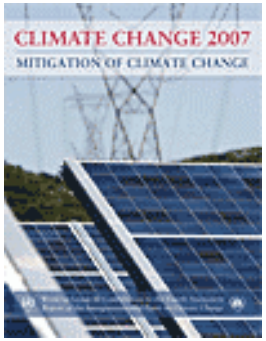
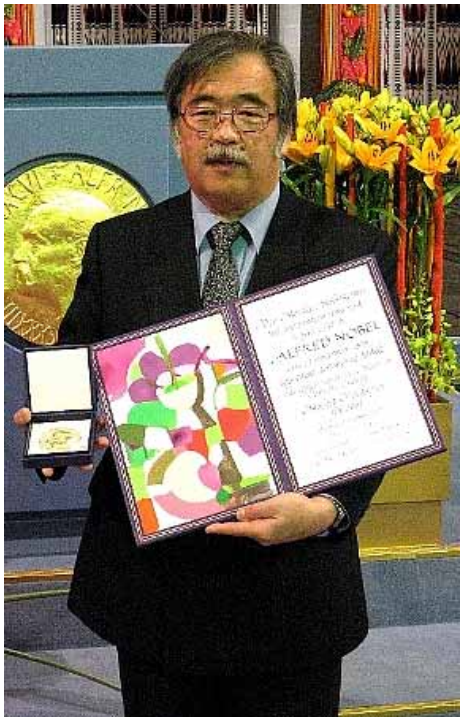
AR4 Publication



- WG1 The Physical Science Basis, published and pdf from IPCC web, 2.75kg
- WG2 Impacts, Adaptation and Vulnerability, published and pdf available from IPCC web, 2.65kg
- WG3 Mitigation of Climate Change, published and pdf from IPCC web, 2.1kg

Total 7.5kg



IPCC AR4 is based on the direct observation of recent climate change

Since the TAR, progress in understanding how climate is changing in space and in time has been gained through:

- improvements and extensions of numerous datasets and data analyses
- broader geographical coverage
- better understanding of uncertainties, and
- a wider variety of measurements

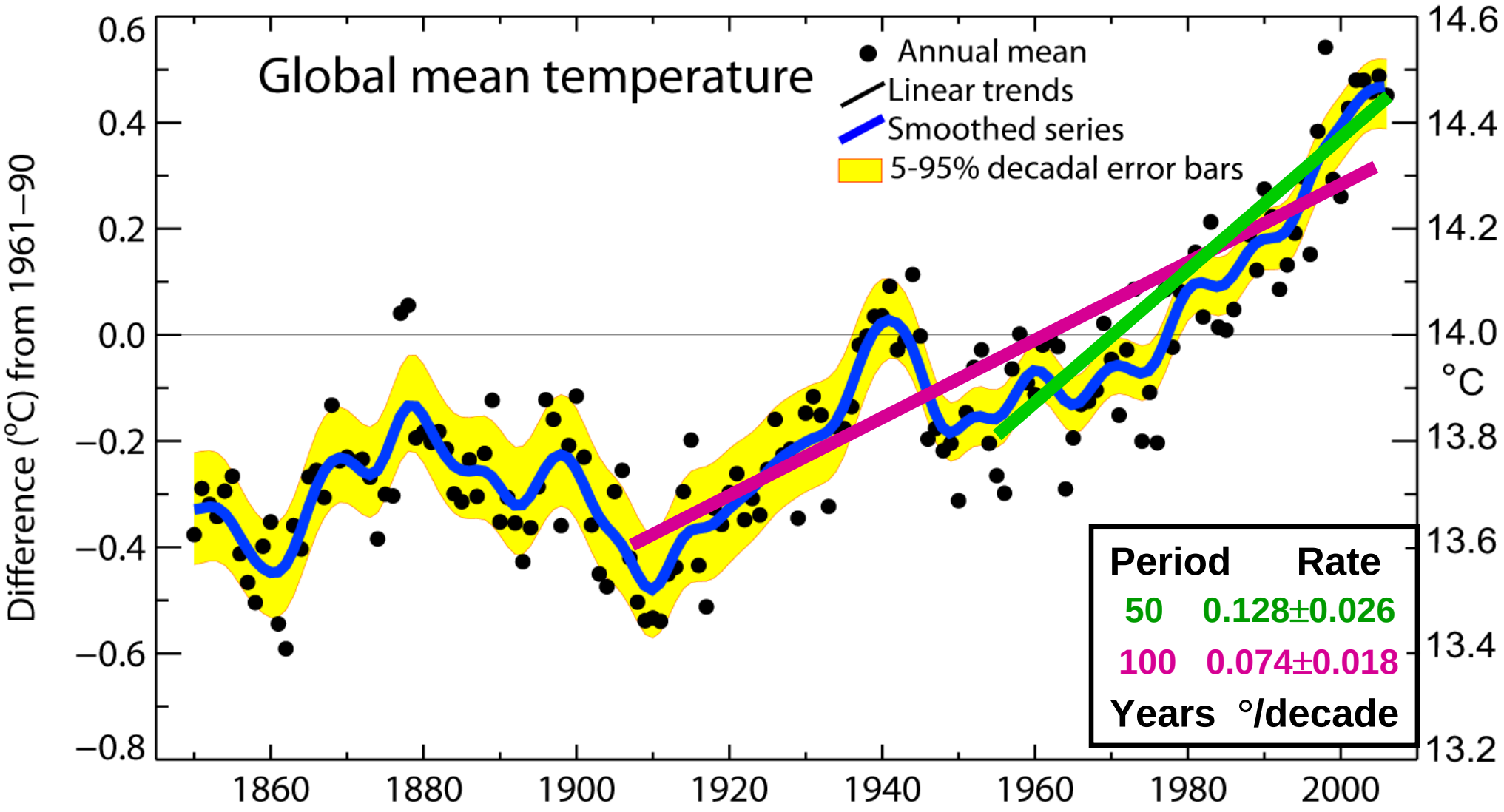
from IPCC web site

Direct Observations of Recent Climate Change

Warming of the climate system is **unequivocal**, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level.

from IPCC web site

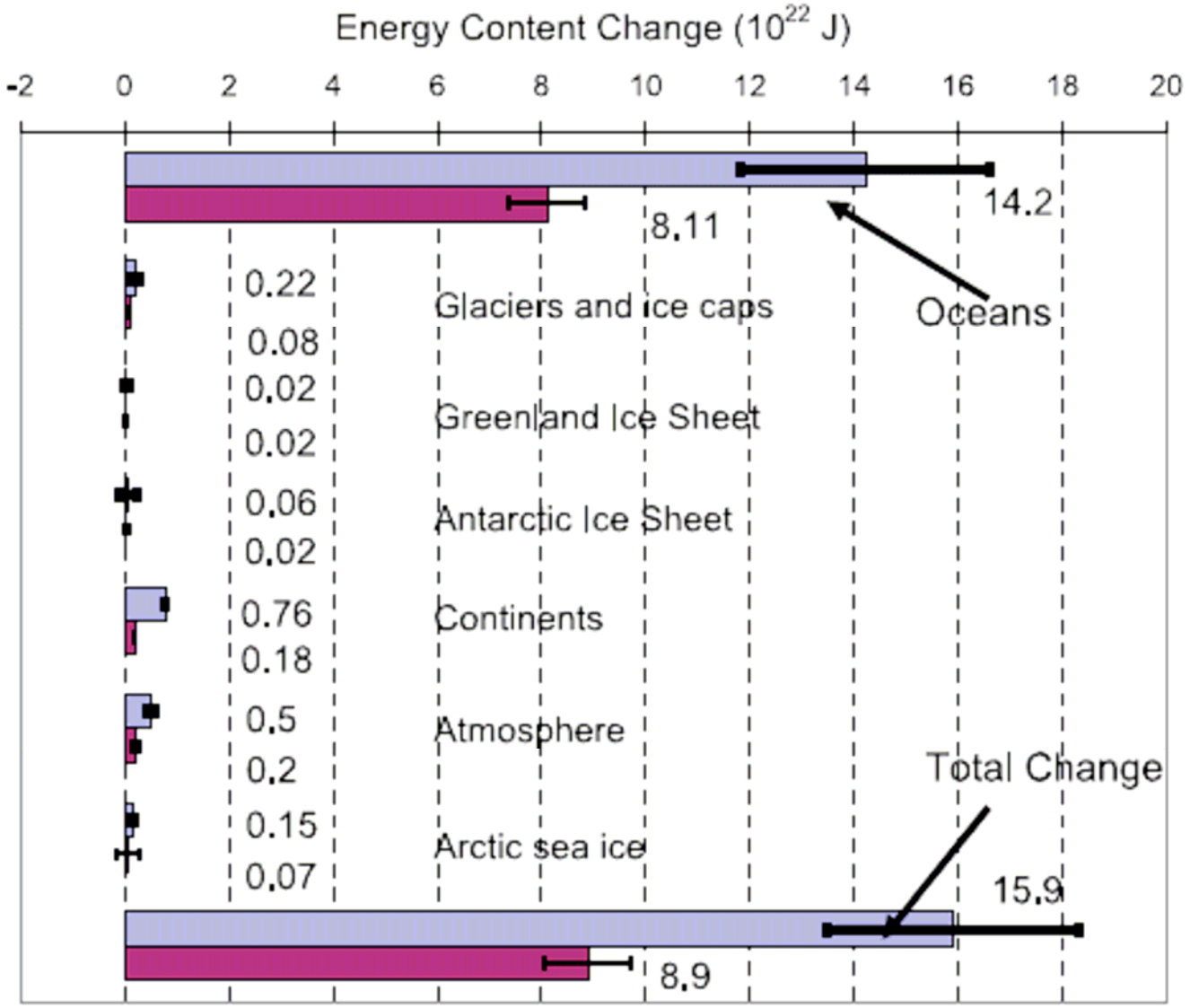
Global mean temperatures are rising faster with time



from IPCC web site

Energy content in the climate system

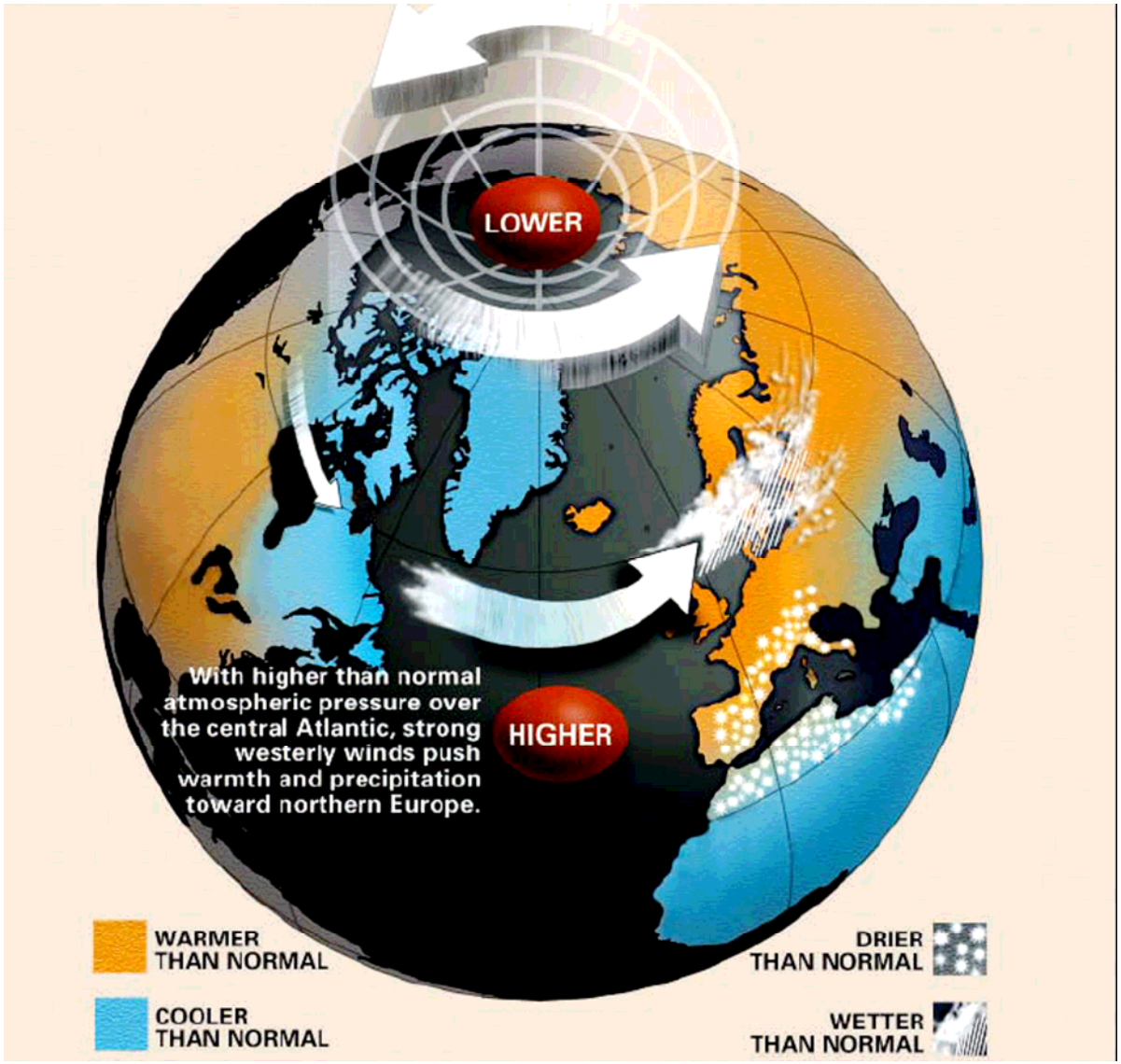
- Recent ocean obs. using ships and buoys detected the heat content rise of upper 3000m of the global ocean.
- It accounts about 90% of the heat content rise. Especially the recent 10 year heat content rise is close to half of change in 42 years for 1961-2003.
- Ocean surface 700m showed approx. 0.1 C temp. rise.



from IPCC AR4

Circulation change

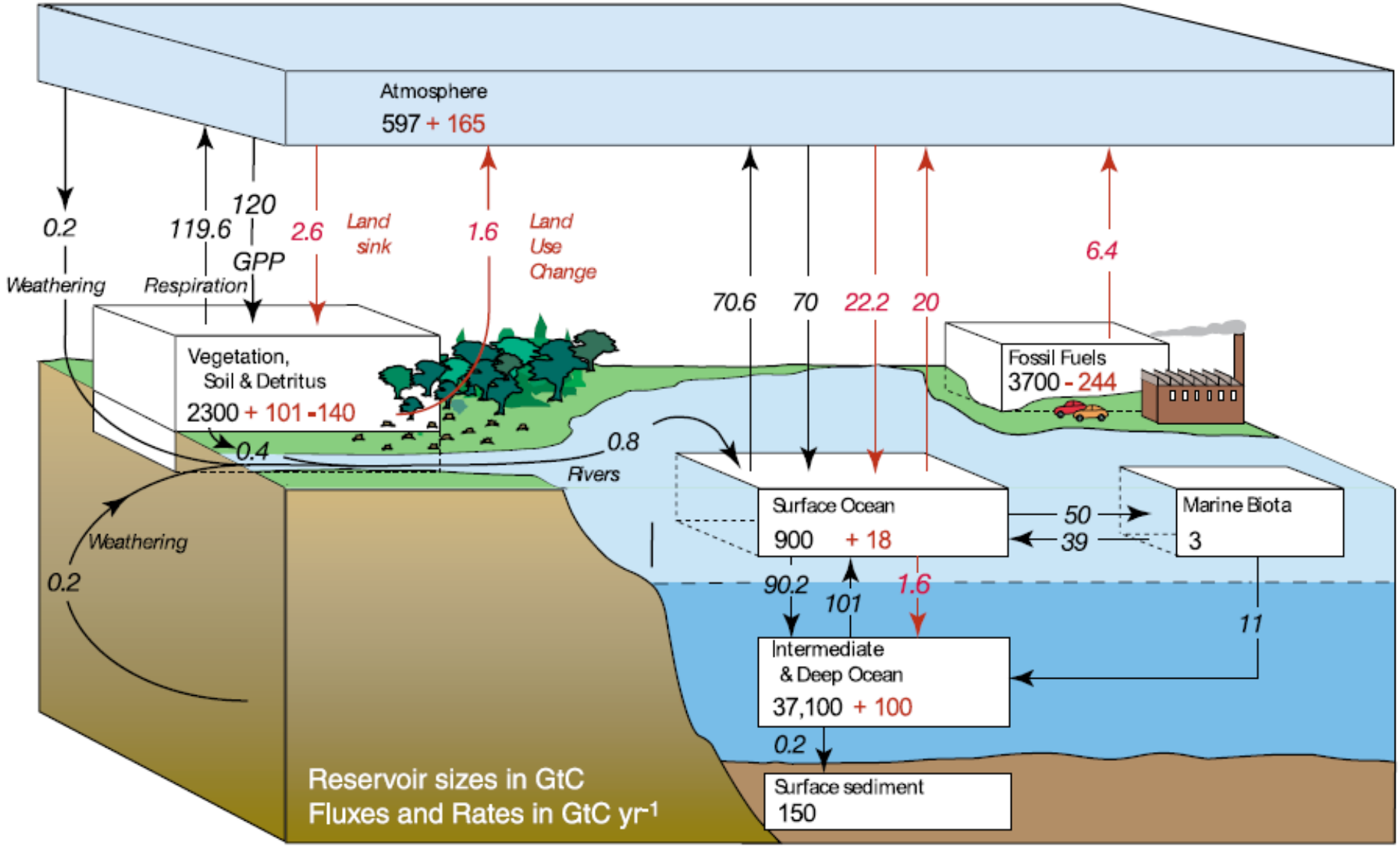
- Climate change is affecting storm tracks, winds and temperature patterns
- Anthropogenic forcing has likely contributed



from IPCC AR4

Carbon cycle: key for prediction of climate change feedback

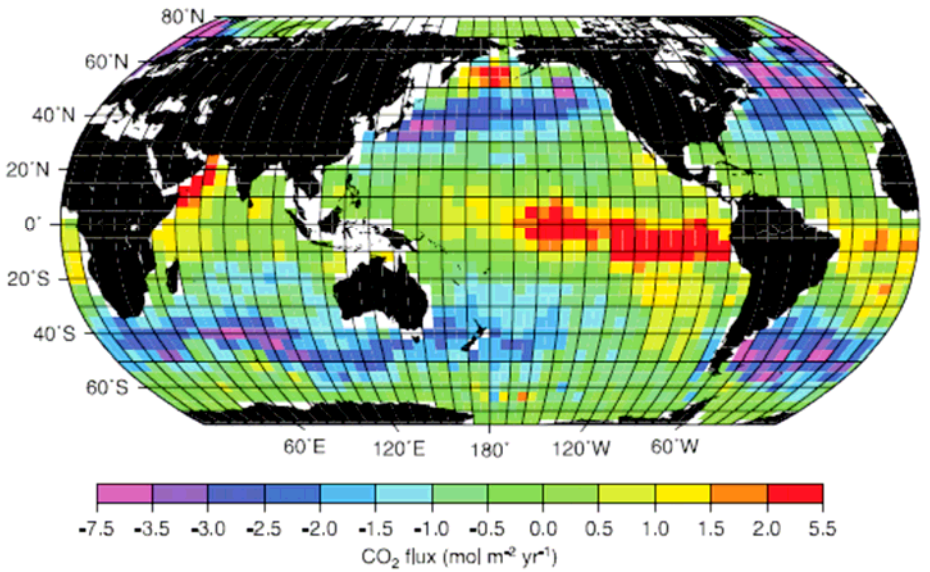
from IPCC AR4

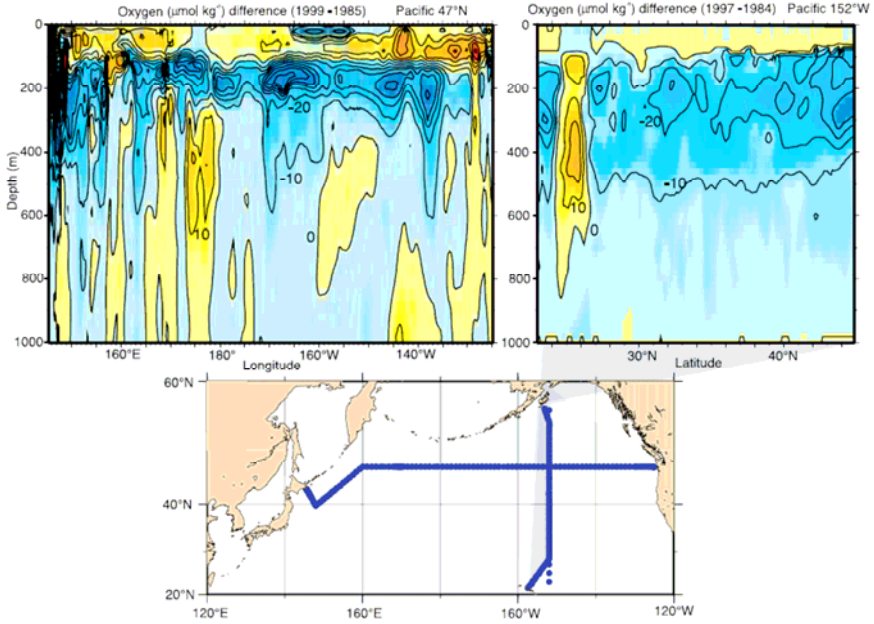


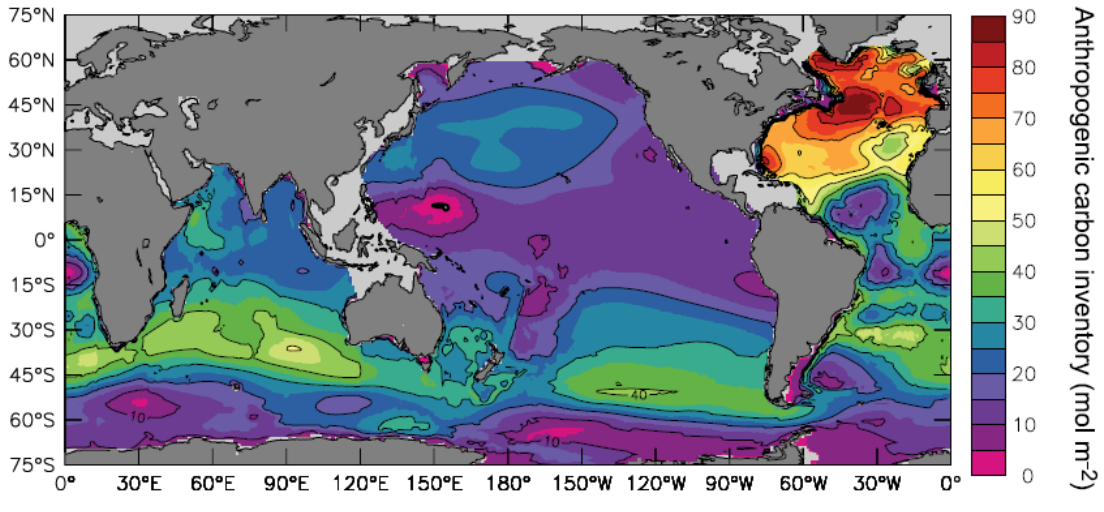
International data integration activity for climate observation

- Ocean CO_2 flux from global data set of pCO_2 measurement
- Carbon storage observation in global ocean water column
- North Pacific decadal change of dissolved O_2 (US-Japan data set)

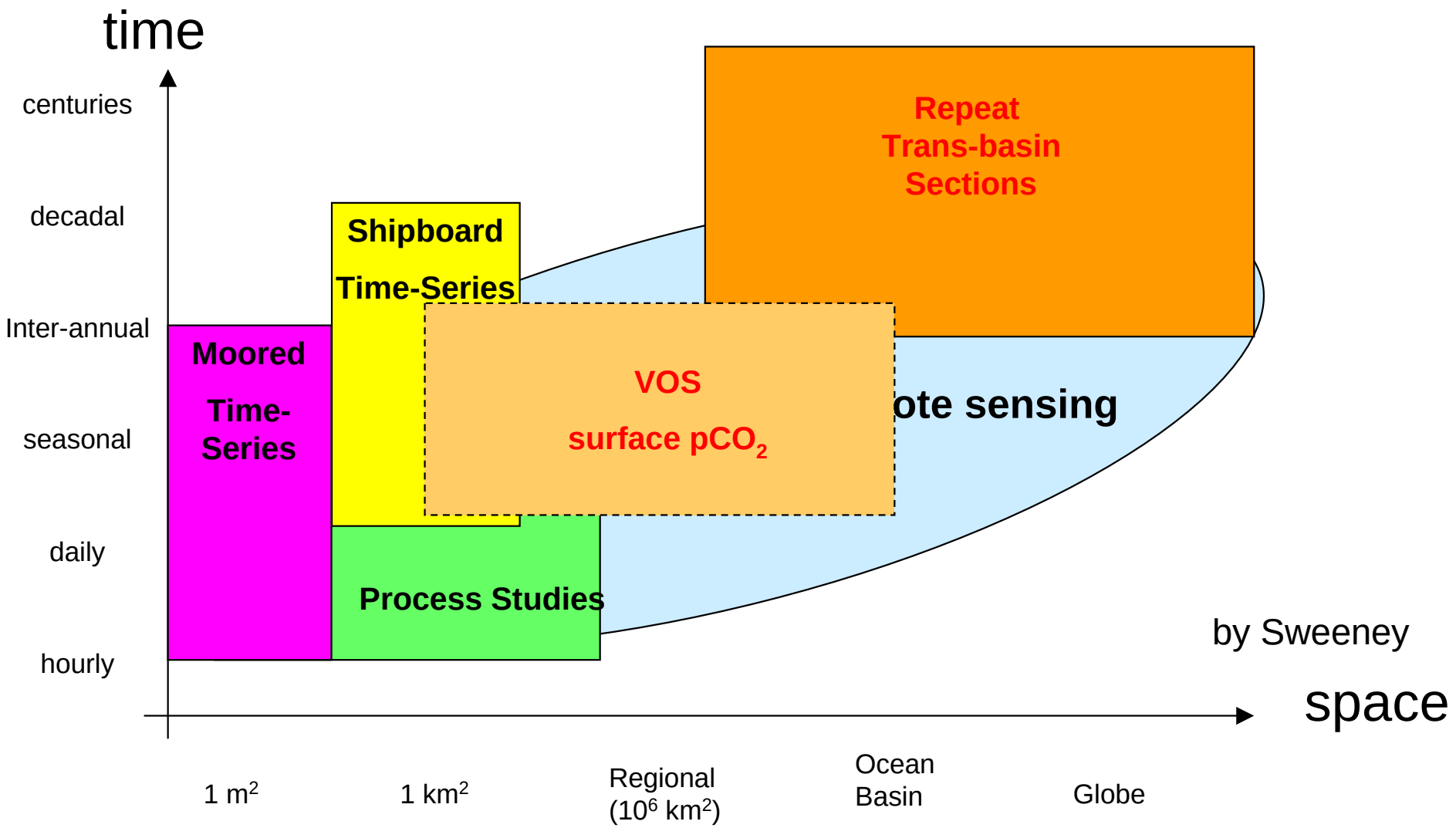
from IPCC AR4





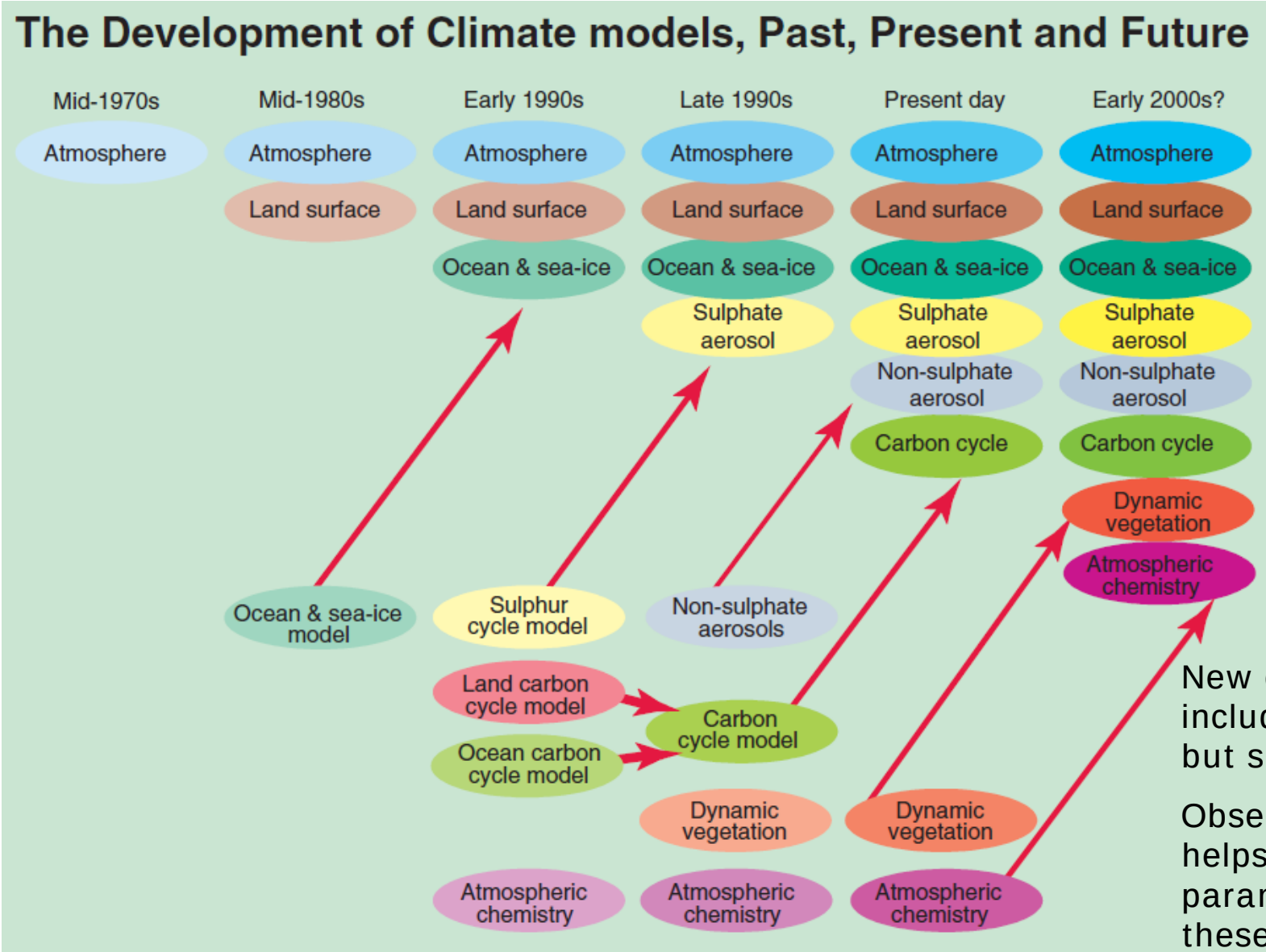


Multi-scale observational platforms and sensors, e.g. ocean observation



Diff. space & time scales, data coverage & anal. methods → consistent synthesis
Needs for long term maintenance of global network of multi-scale platforms!!

Needs from climate model

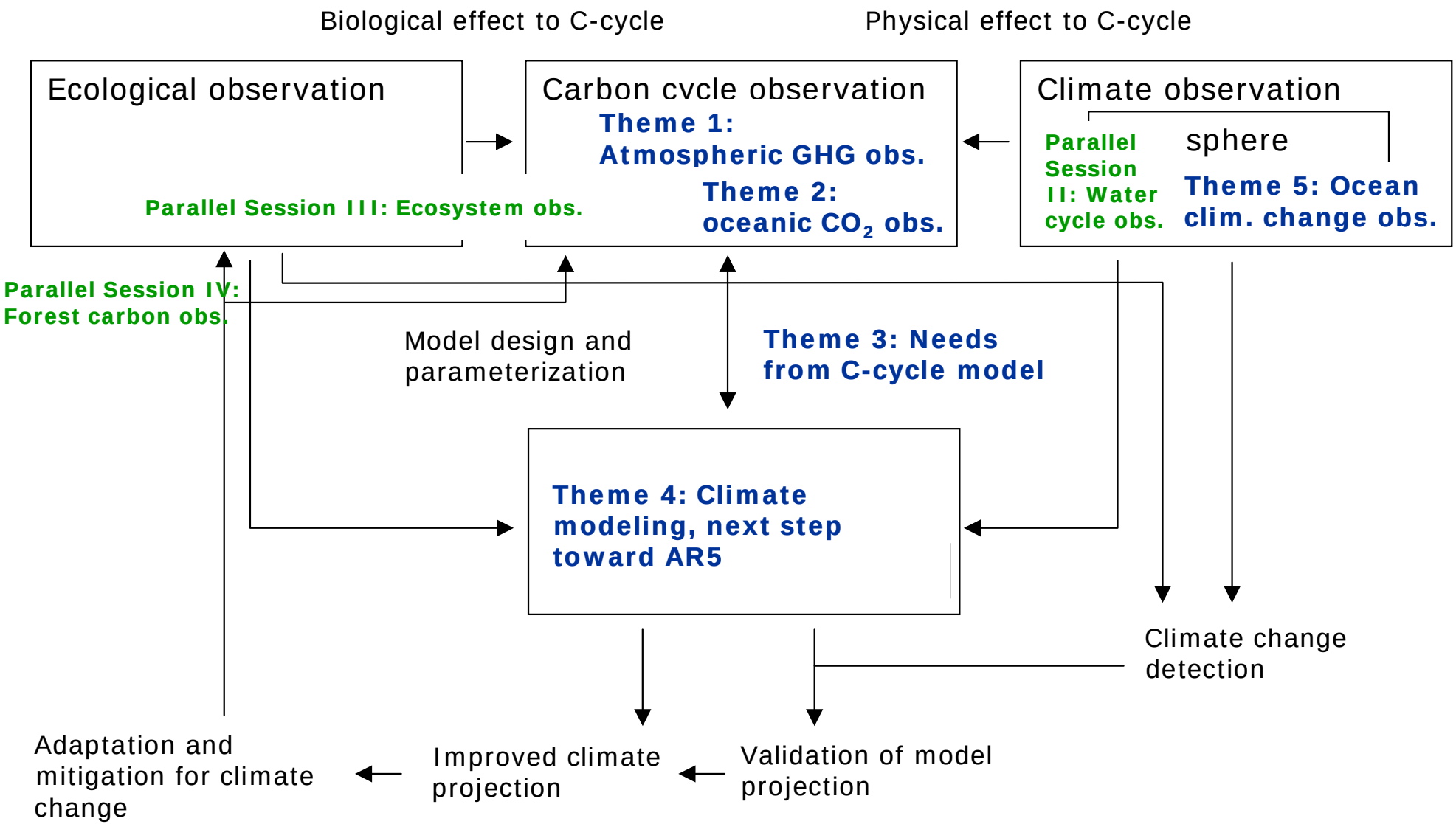


from IPCC TAR

New components were included partly in AR4, but still insufficient.

Observational evidence helps design and parameterization for these components.

Our session in GEOSS AP symposium: Monitoring and predicting climate change



2nd GEOSS Asia-Pacific Symposium

Monitoring and Predicting Climate Change

10:20-14:20 ***Green house gases (GHGs) observation***

10:20-11:20 International collaboration in the atmospheric GHGs observation in Asia-Pacific region

Japan's contributions to GAW

K. Suda (JMA, Japan)

Current activities and future plans for climate change observation

S. Kim (KMA, Korea)

GHG observation by various platforms

T. Machida (NIES, Japan)

2nd GEOSS Asia-Pacific Symposium

Monitoring and Predicting Climate Change

10:20-14:20 ***Green house gases (GHGs) observation***

11:20-12:20 Ocean carbon observation, status and future of network in Pacific and Indian Oceans

Developing an autonomous buoy for surface CO_2 measurement

S. Watanabe (JAMSTEC, Japan)

Decadal and longer-term changes of the CO_2 in the ocean

M. Ishii (MRI, Japan)

Time-series observations in the northern Indian Ocean

VVVS Sarma (NIO, India)

2nd GEOSS Asia-Pacific Symposium

Monitoring and Predicting Climate Change

10:20-14:20 ***Green house gases (GHGs) observation***

13:20-14:20 Needs from carbon cycle modeling

Needs in GHG observations from ocean carbon cycle modeling

M. Kawamiya (JMASTEC, Japan)

Data utilization by terrestrial carbon cycle modeling

A. Ito (NIES, Japan)

GOSAT and its contribution to global carbon source/sink studies using atmospheric inverse models

T. Matsunaga (NIES, Japan)

2nd GEOSS Asia-Pacific Symposium

Monitoring and Predicting Climate Change

14:20-16:40 ***Climate observation and modeling***

14:20-15:20 Atmospheric climate change observation and modeling, AR4 achievement and next step to AR5

The Asian Monsoon Years and the establishment of the International Monsoon Panel under WMO/WCRP

T. Yasunari (Nagoya-U., Japan)

Future climate change projection: achievement and plan

S. Emori (NIES, Japan)

Earth observation of clouds and aerosols for climate modeling

T. Nakajima (U-Tokyo, Japan)

2nd GEOSS Asia-Pacific Symposium

Monitoring and Predicting Climate Change

14:20-16:40 ***Climate observation and modeling***

15:40 -16:40 Ocean climate change observation and monitoring, future direction for global coverage

Recent progress in the in-situ ocean observing system in the Asia-Pacific area

K. Mizuno (JAMSTEC, Japan)

Coordinating internationally to observe the global ocean for climate

S. W. Thurston (NOAA, USA)

Ocean climate change monitoring through Nusantara Earth Observation Network (NEONET) in Indonesia

F. Syamsudin (BPPT, Indonesia)

16:40-17:30 ***General discussion and wrap up session summary***

Discussion in climate change session

- Asia-Pacific activity in climate and carbon cycle observation
- Interaction and coordination between climate observation and carbon cycle observation
- Needs from climate change modeling
- Asia-Pacific networking of climate and carbon cycle observation