

MINISTRY OF ENVIRONMENT AND FOREST
NATIONAL REDD+ SECRETARIAT

Regional REDD+ Awareness Creation Workshop



National REDD+ Secretariat
Committed to making Ethiopia ready
to the global REDD+ mechanism

Benishangul Gumuz Regional State, Assosa
February 12-13/2015

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😊 Climate change & the Role of Forests

(Yidnekachew Habte, REDD+ Strategy TF Member)

Climate change & the Role of Forests to Climate Change



What are the signs that climate change is occurring?



What causes climate change?



What is the role of forests in climate change?

What is Climate Change?

What are the signs of Climate Change?

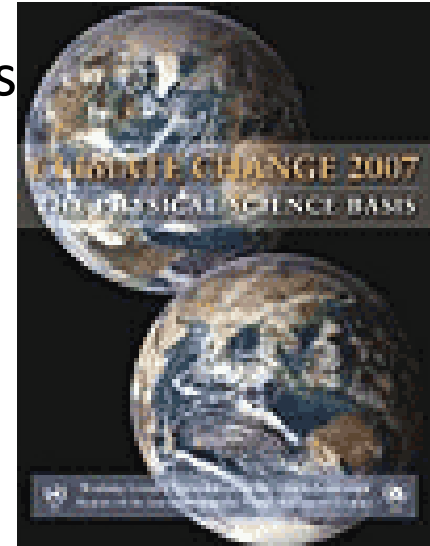


What is Climate Change?

- **Climate Change** = Any significant change in measures of climate (such as temperature or precipitation) lasting for an extended period of time (typically decades)
- **United Nations Forum Convention on Climate Change (UNFCCC)** defines Climate Change as ‘a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere’

Climate Change is happening

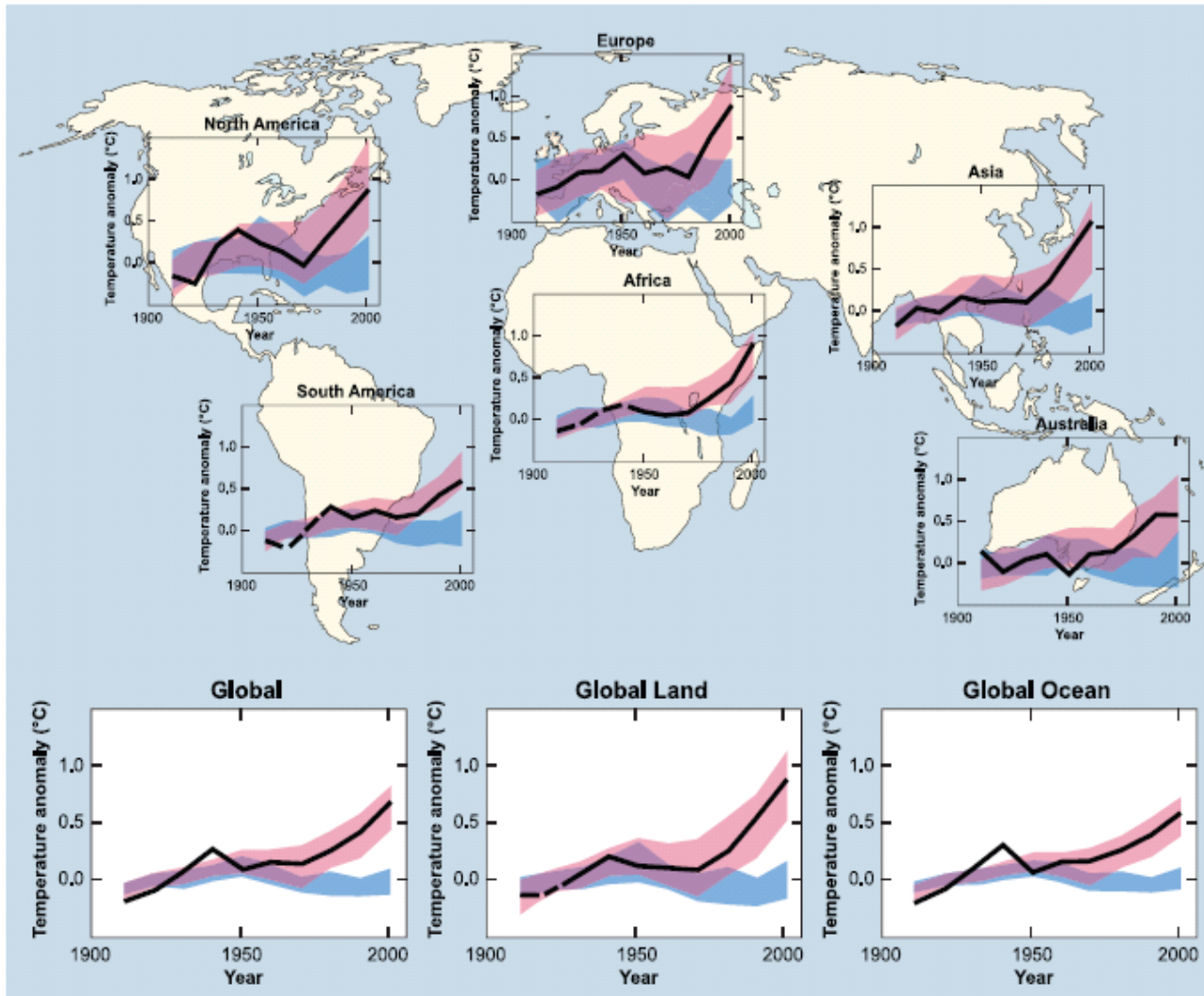
“Warming of the climate system is **unequivocal**, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level” (IPCC Fourth Assessment Report, 2007)



“Most of the observed increase in global average temperatures since the mid 20th century is very likely **due to observed increases in anthropogenic greenhouse gas concentrations**” (IPCC, 2007)

Global and continental temperature change

Global and continental temperature change



Observed
temperatures

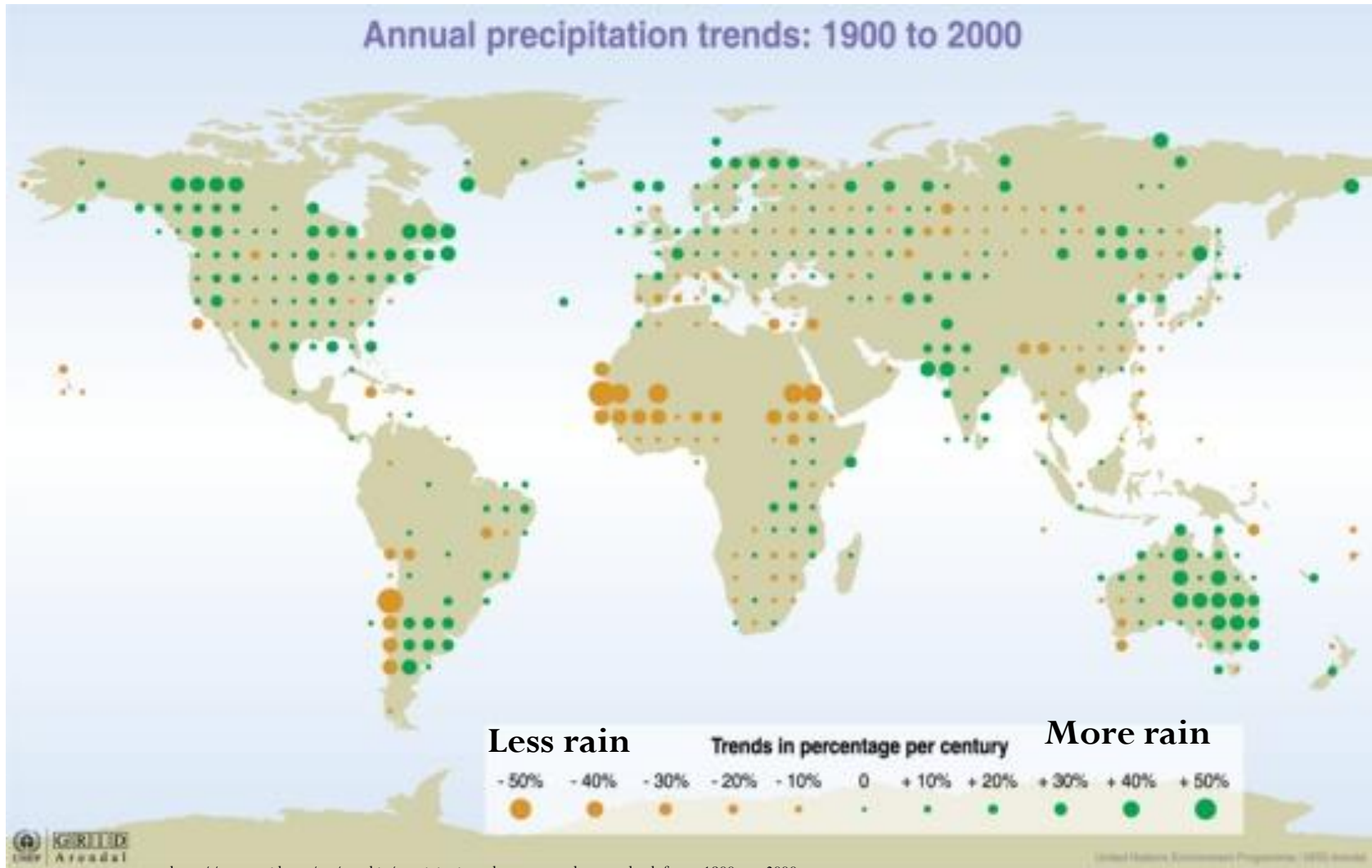


Model predictions
(including natural
and human drivers)



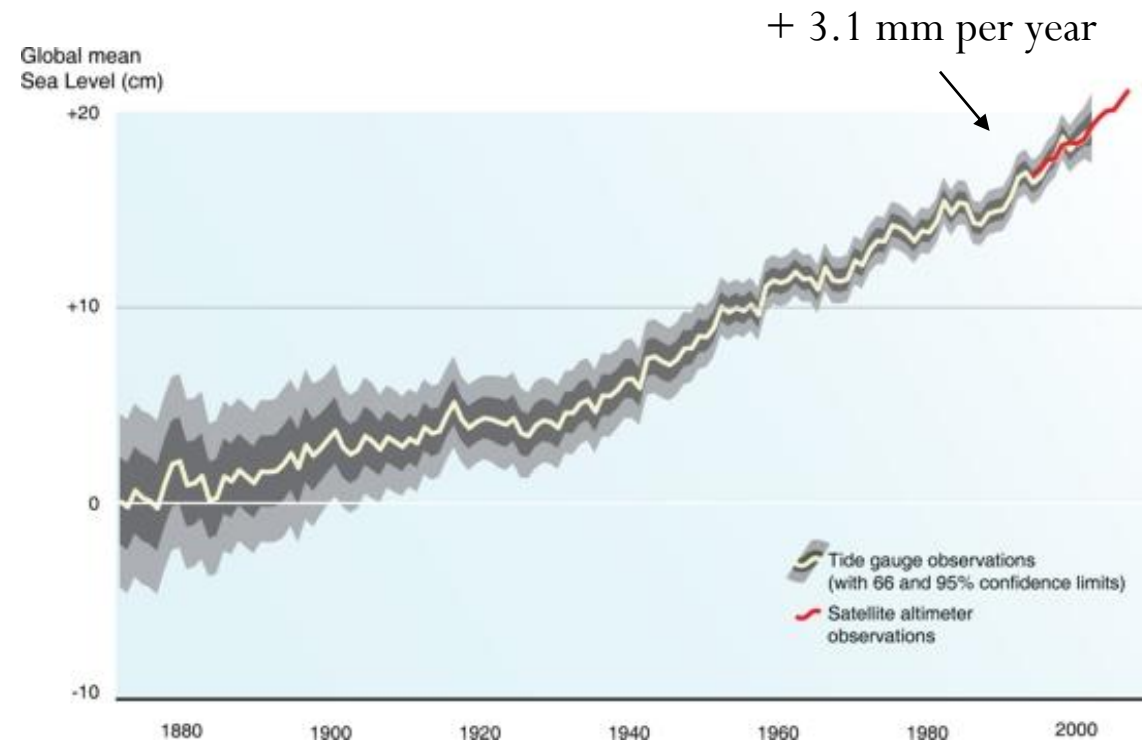
Model
predictions
(including only
natural drivers)

Changes in precipitation patterns



http://maps.grida.no/go/graphic/precipitation_changes_trends_over_land_from_1900_to_2000

Rising sea levels



<http://maps.grida.no/go/graphic/trends-in-sea-level-1870-2006>

Global mean sea level rise from 1870 - 2006



- Sea levels are rising due to thermal expansion and melting glaciers and ice caps
- Average global sea levels have risen 17 cm during 20th century and may rise 28-58 cm by 2100

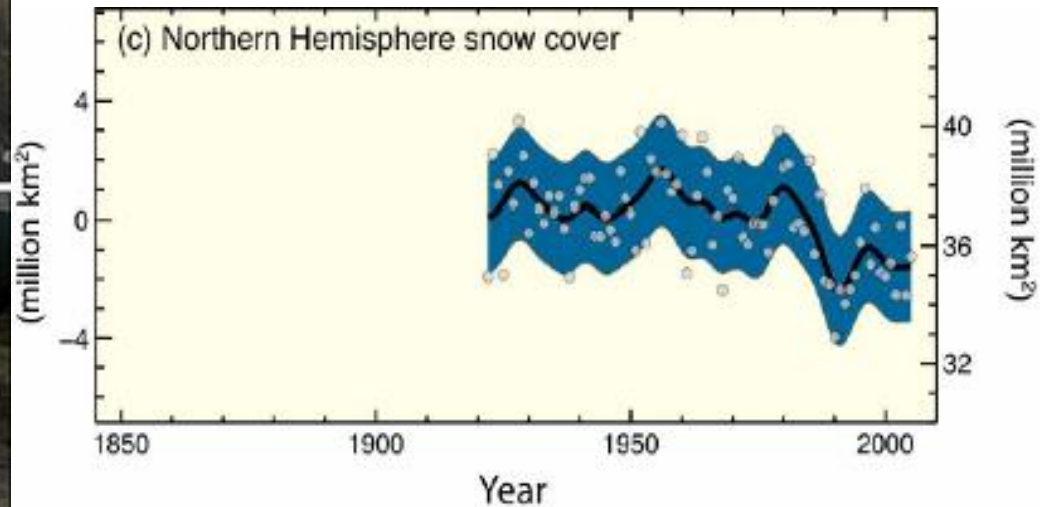
More extreme weather events



Decreasing snow cover and melting glaciers



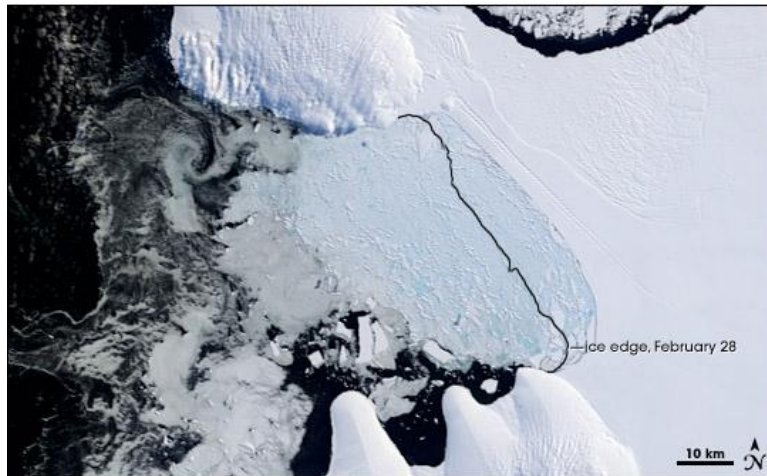
Decreasing snow cover



Warming of poles and loss of sea ice



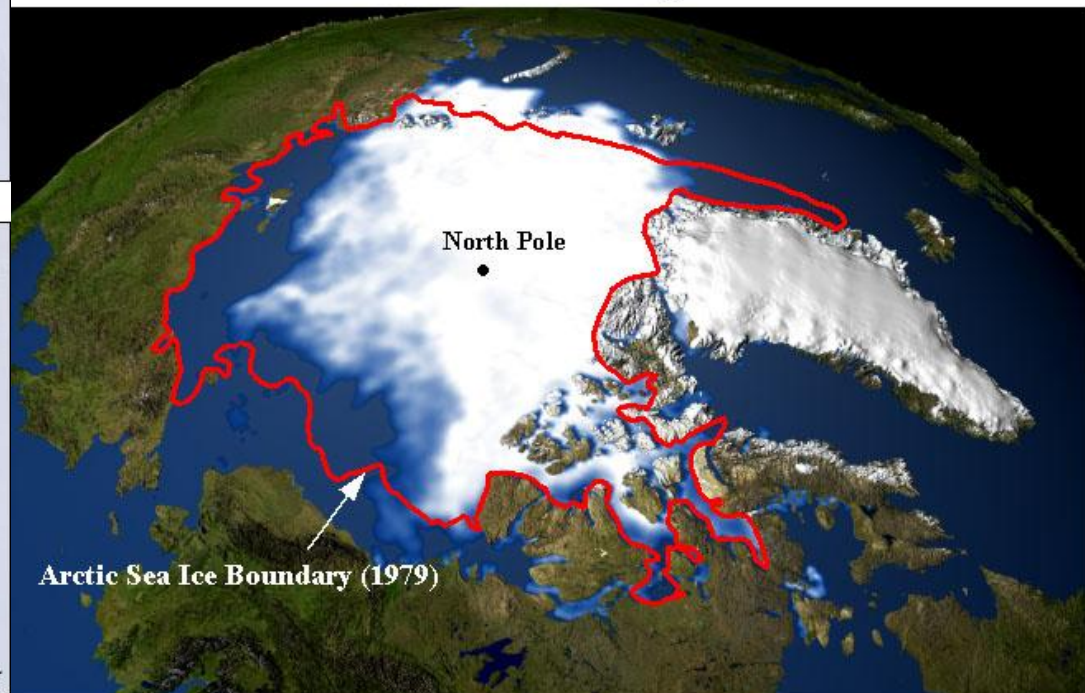
February 28, 2008



March 17, 2008

Arctic Sea Ice Loss: Greater than Land Area of
 Texas, California, and Maryland Combined

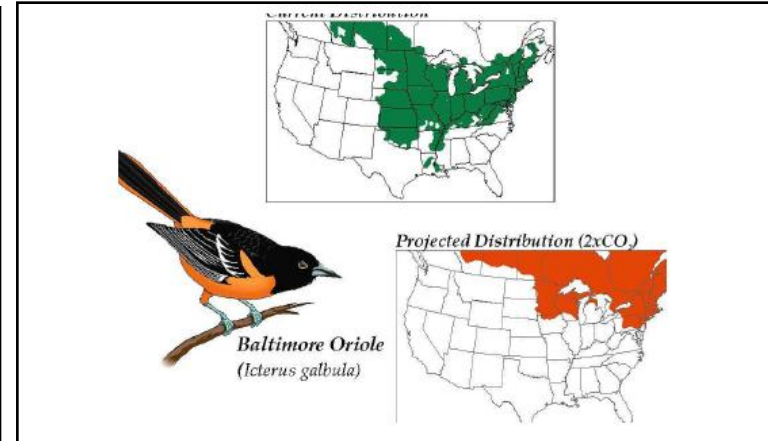
2003 vs. 1979 Comparison



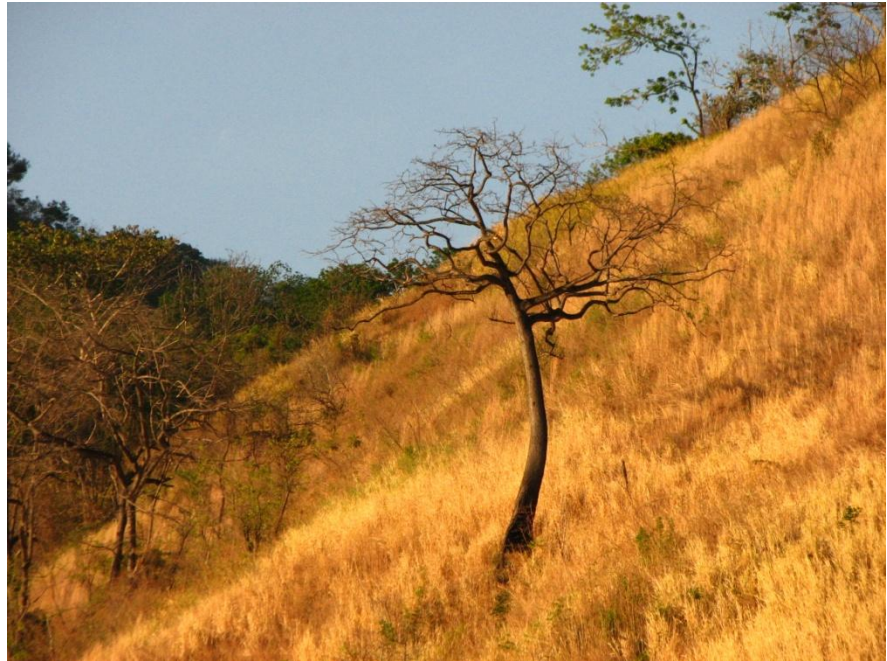
Collapse of Wilkins Ice Shelf, Antarctica

Changes in ecosystems

- Earlier timing of spring events
- Poleward and upward shifts in plant and animal communities
- Loss of polar and montane habitats

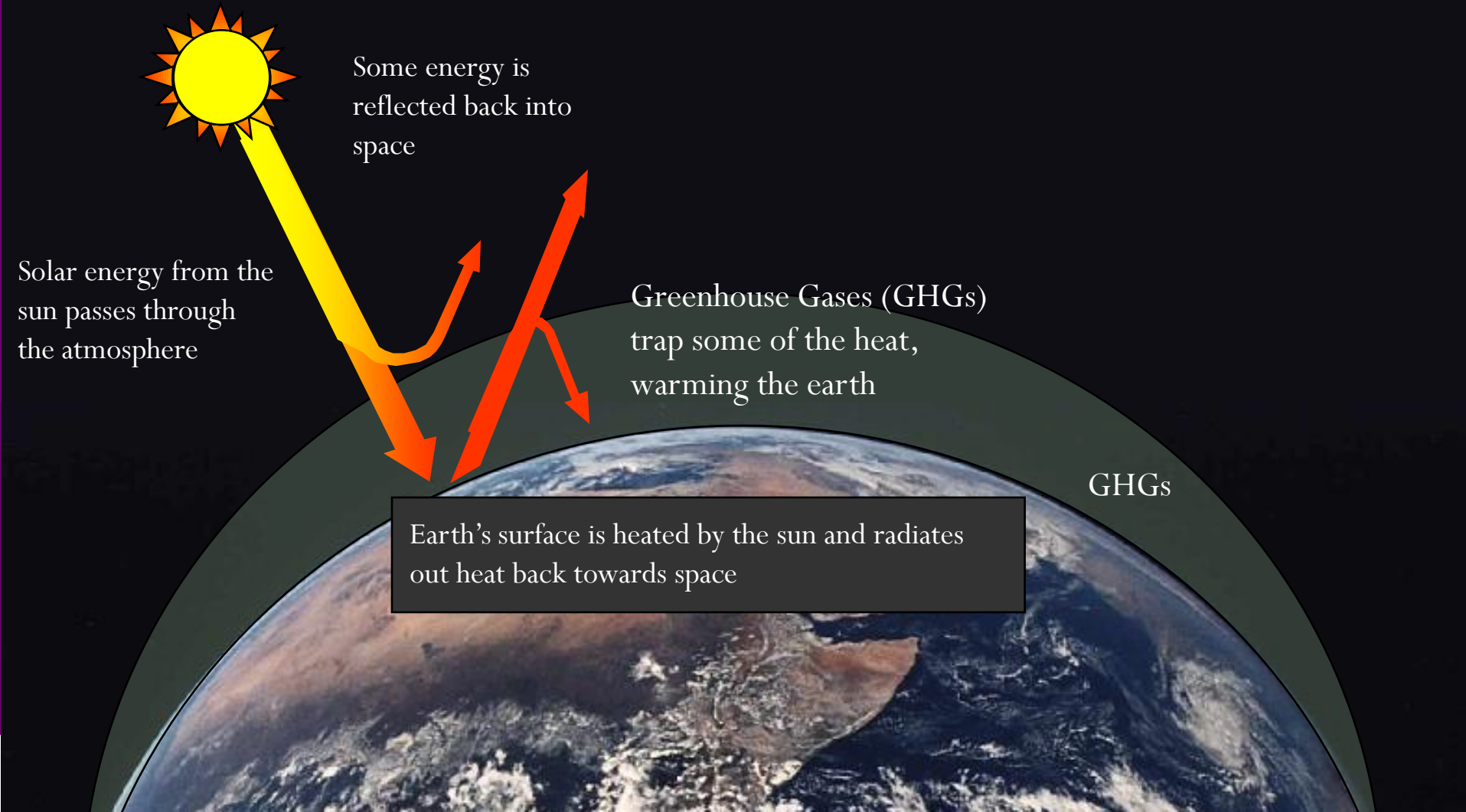


What causes climate
change and where are
greenhouse gas emissions
occurring?

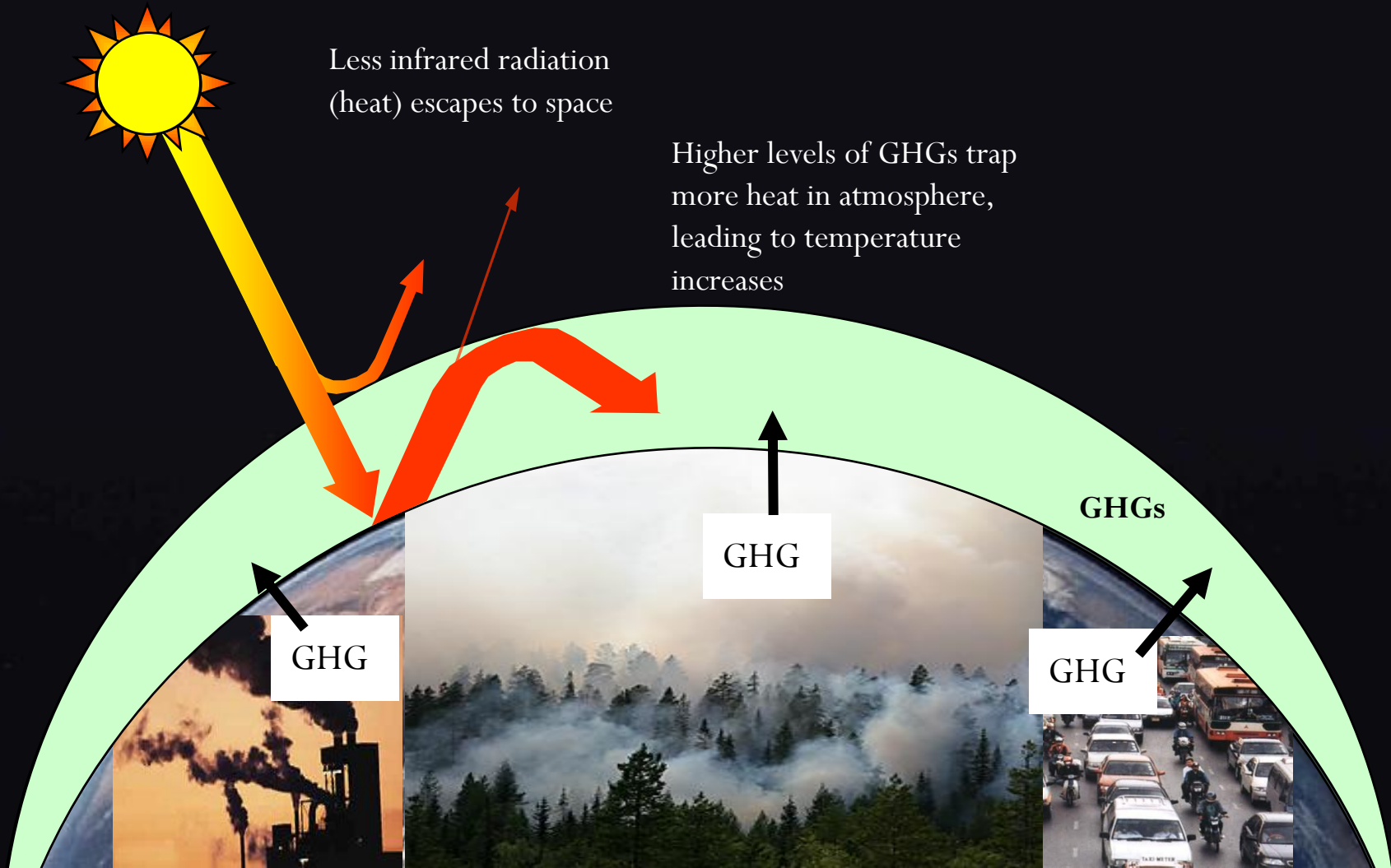


What is causing climate change?

The natural greenhouse effect



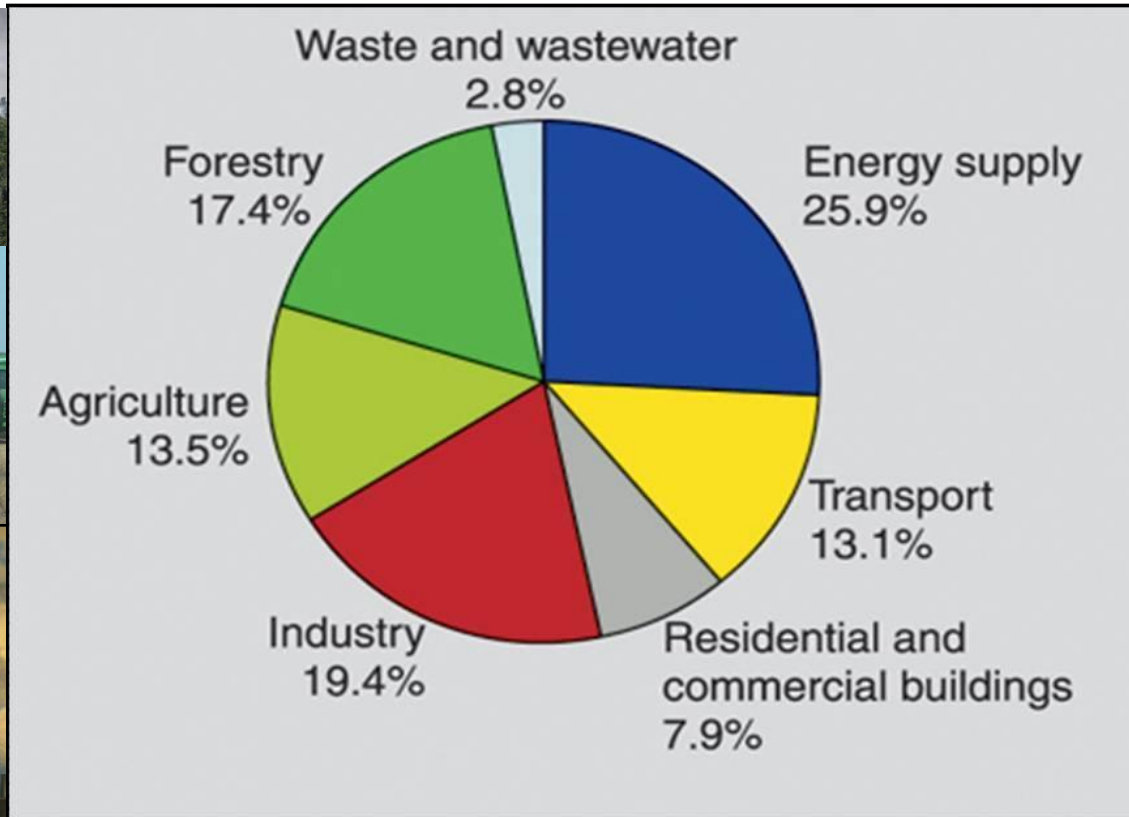
The enhanced greenhouse effect



What human activities generate GHGs?

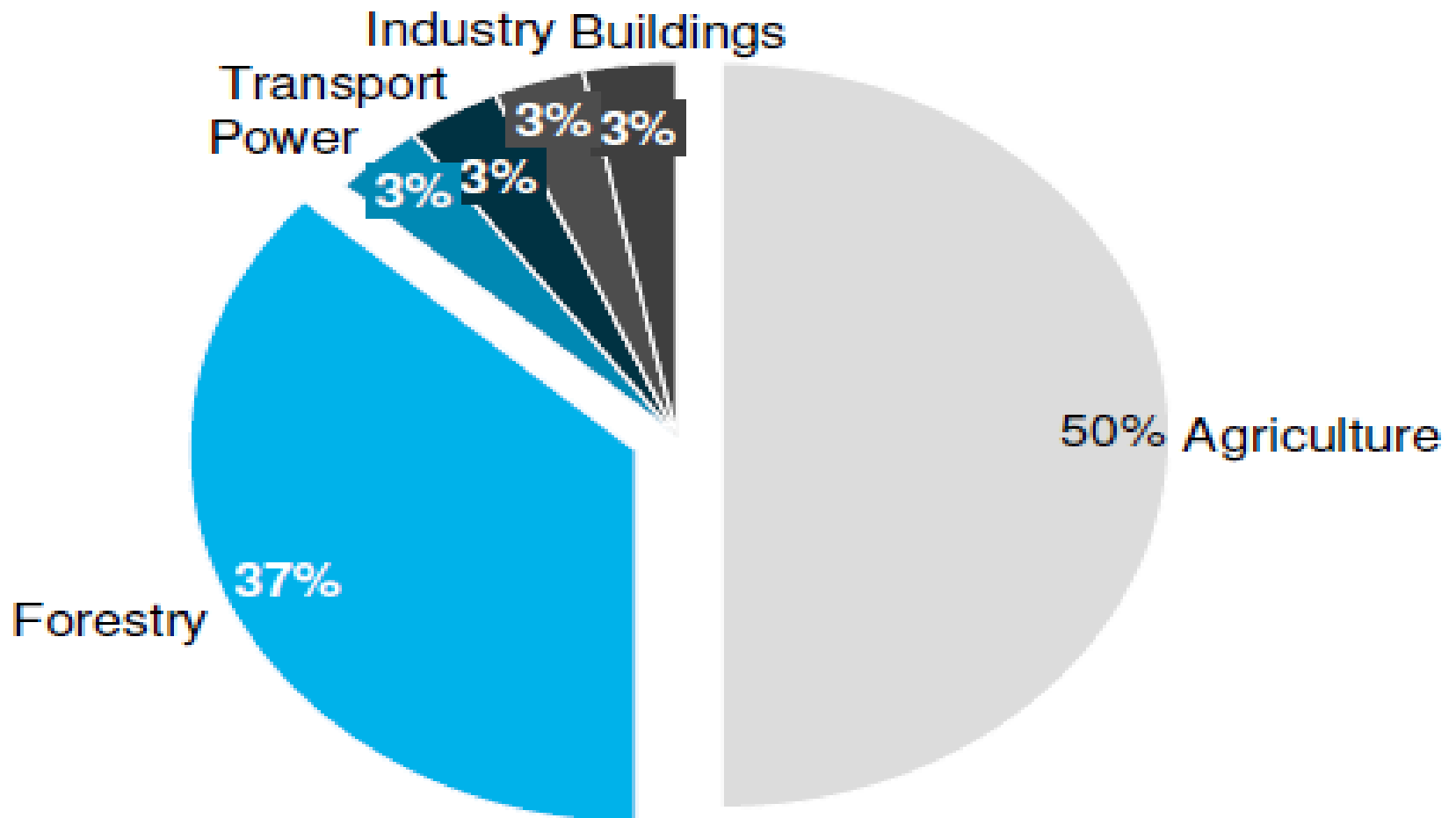
Greenhouse Gas	Industrial Sources	Land Use Sources
Carbon dioxide (CO ₂)	fossil fuel combustion and cement manufacturing	Deforestation and burning of forests
Methane (CH ₄)	Landfills, coal mining, natural gas production	Conversion of wetlands Rice paddies Livestock production
Nitrous oxide (N ₂ O)	Fossil fuel combustion Nitric acid production	Fertilizer use Burning of biomass
Hydrofluorocarbons (HFCs)	Industrial processes Manufacturing	---
Perfluorocarbons (PFCs)	Industrial processes Manufacturing	---
Sulphur hexafluoride (SF ₆)	Electrical transmission and distribution systems	----

Which sectors produce greenhouse gases?

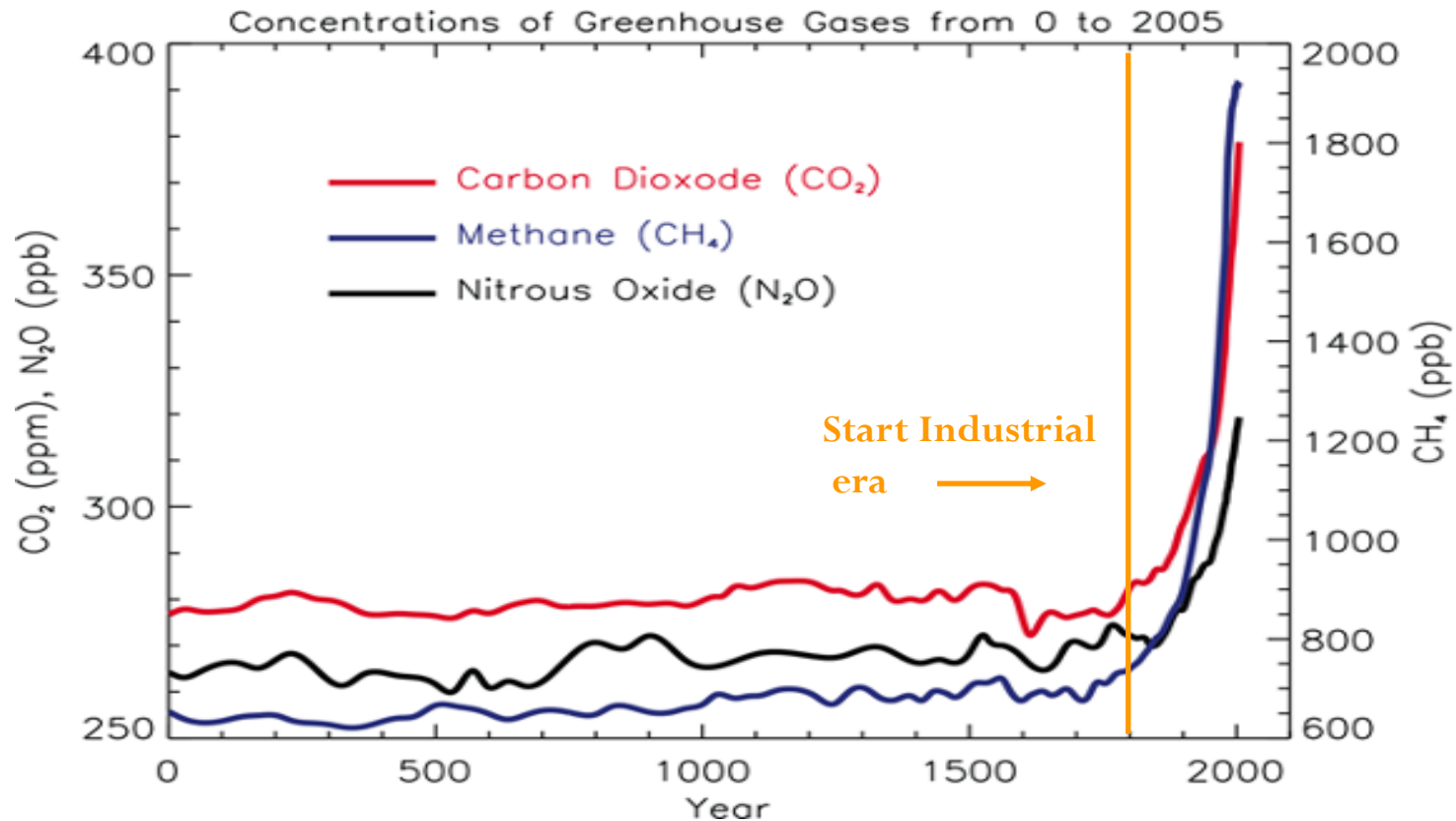


Which Sectors Produce Greenhouse Gases

Total GHG emissions of ~150 Mt CO₂e in 2010



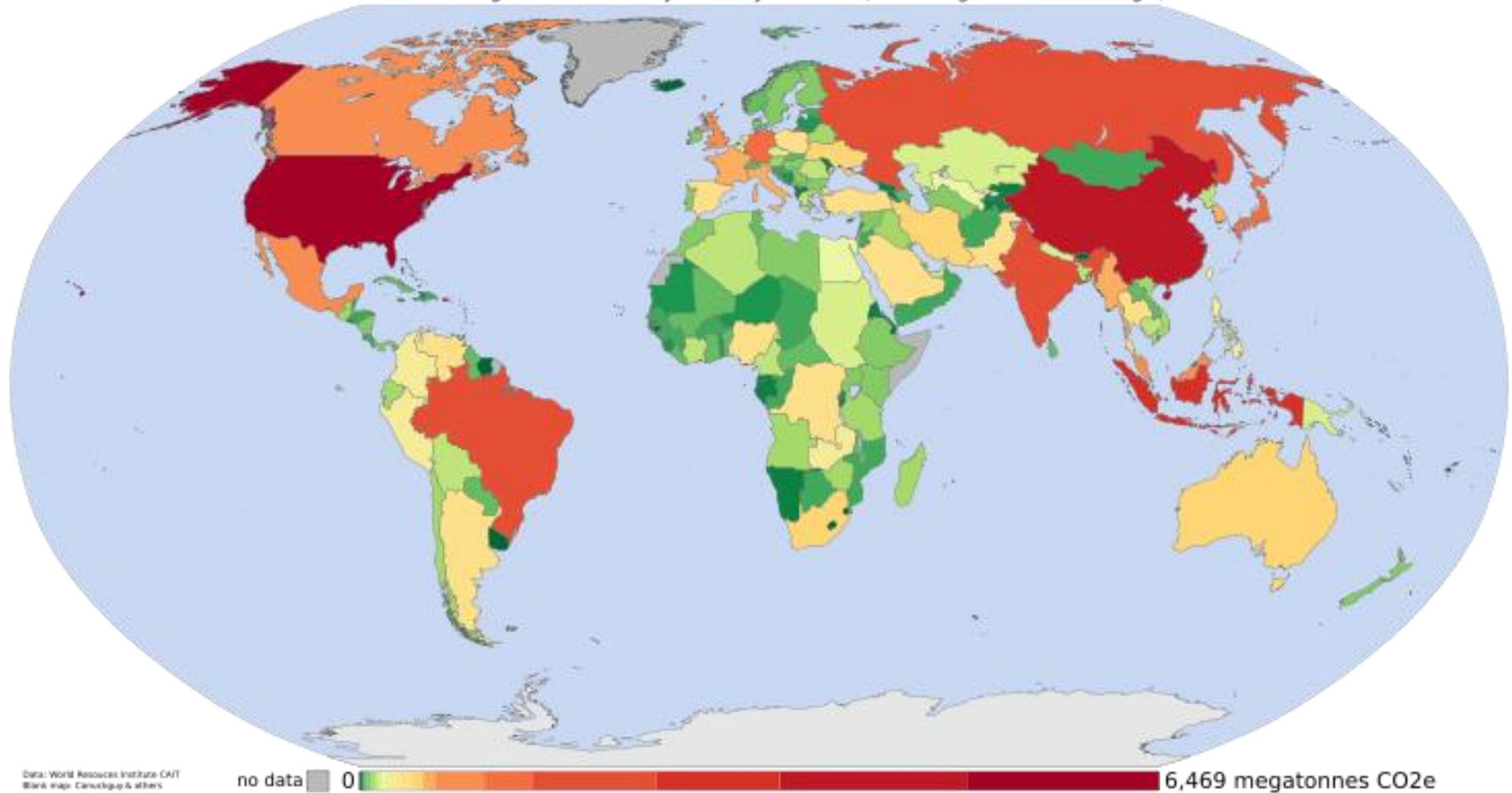
How rapidly are GHG concentrations rising?



- CO₂ levels are the highest in last 650,000 years
- In the last 50 yrs, CO₂ levels have grown more rapidly than ever before
- CO₂ levels are increasing 1.5- 2 ppm/yr

Where are greenhouse gases being emitted?

Greenhouse gas emissions by country in 2000 (including land-use change)

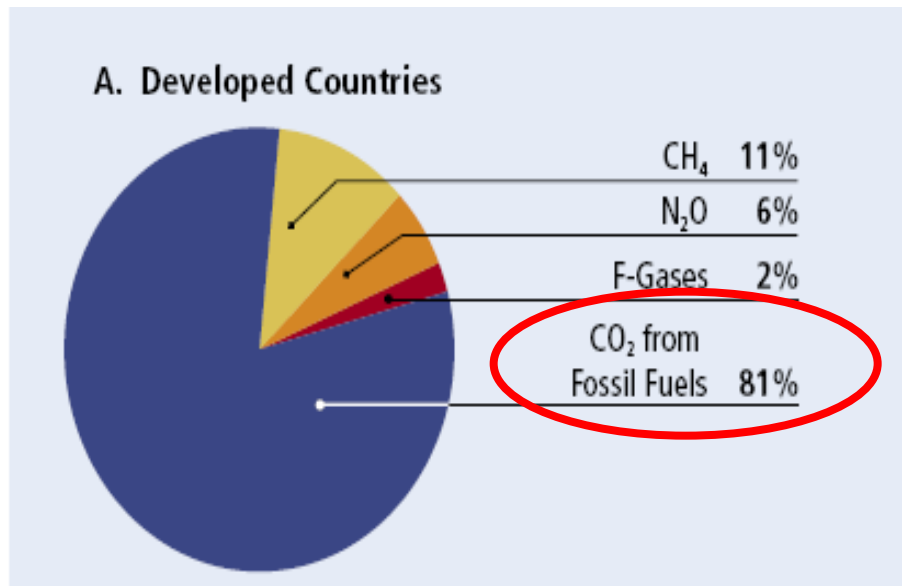


Low
emissions

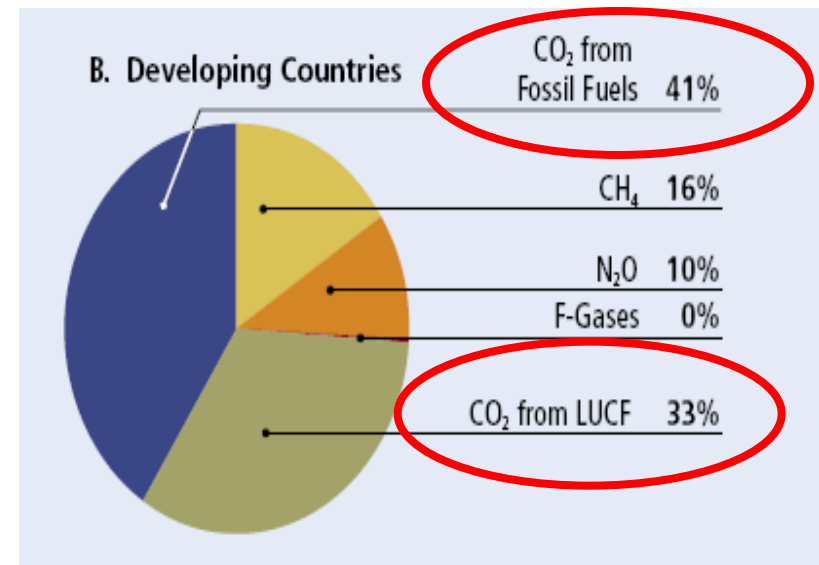
High
emissions

Sources of emissions

The sources of emissions differ across developing versus developed countries



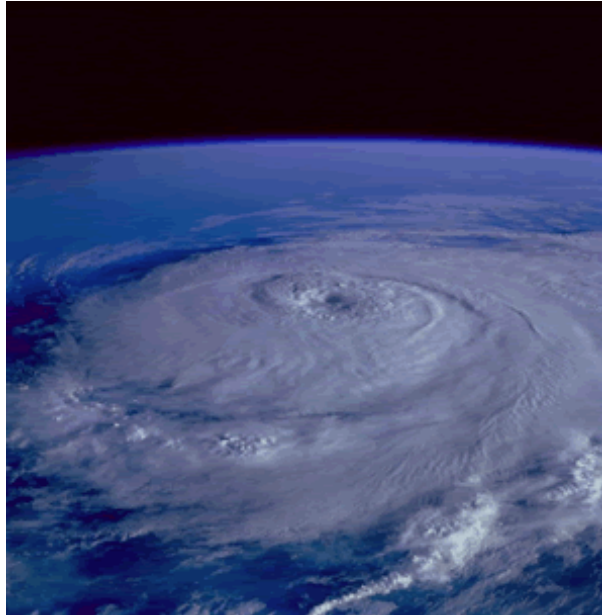
Greatest source of GHG = fossil fuels



Land use change (deforestation) is a major source
(second only to fossil fuels)

Source: World Resource Institute (Navigating the numbers)

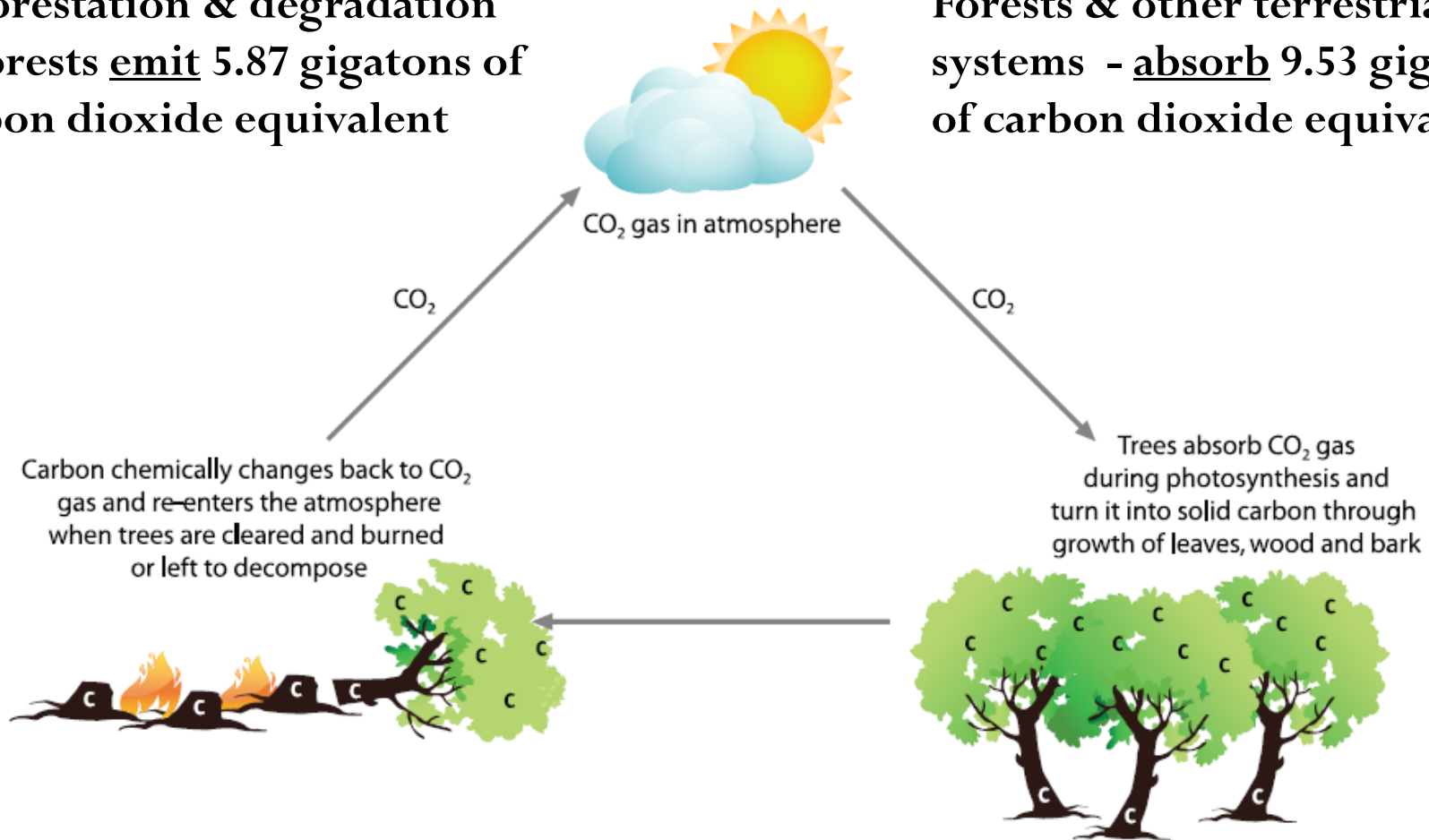
Forests in the global carbon cycle



Forests Store and Emit Carbon

Deforestation & degradation
of forests emit 5.87 gigatons of
carbon dioxide equivalent

Forests & other terrestrial
systems - absorb 9.53 gigatons
of carbon dioxide equivalent



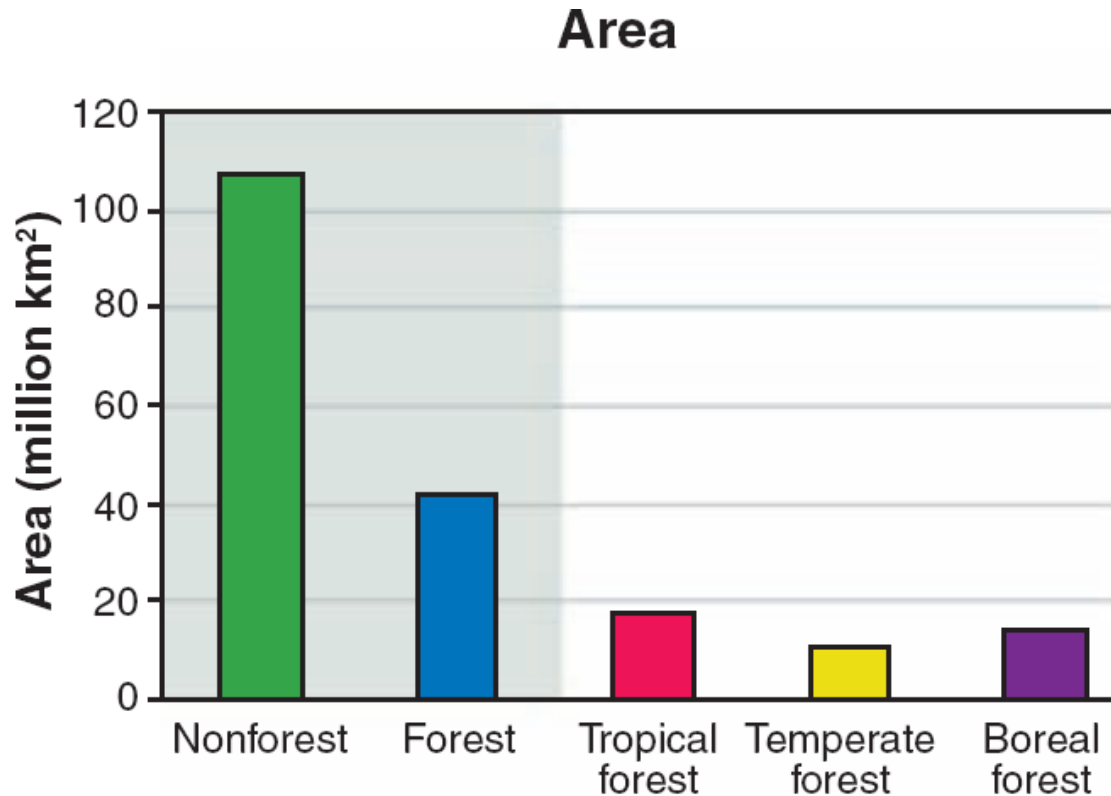
Extent of forests globally



30% of earth's land surface is
forest (4 billion hectares)

Forest area by biome

Area forest cover



Tropical	16~17 M km2
Temperate	9~10 M km2
Boreal	15~16 M km2

Forest carbon globally

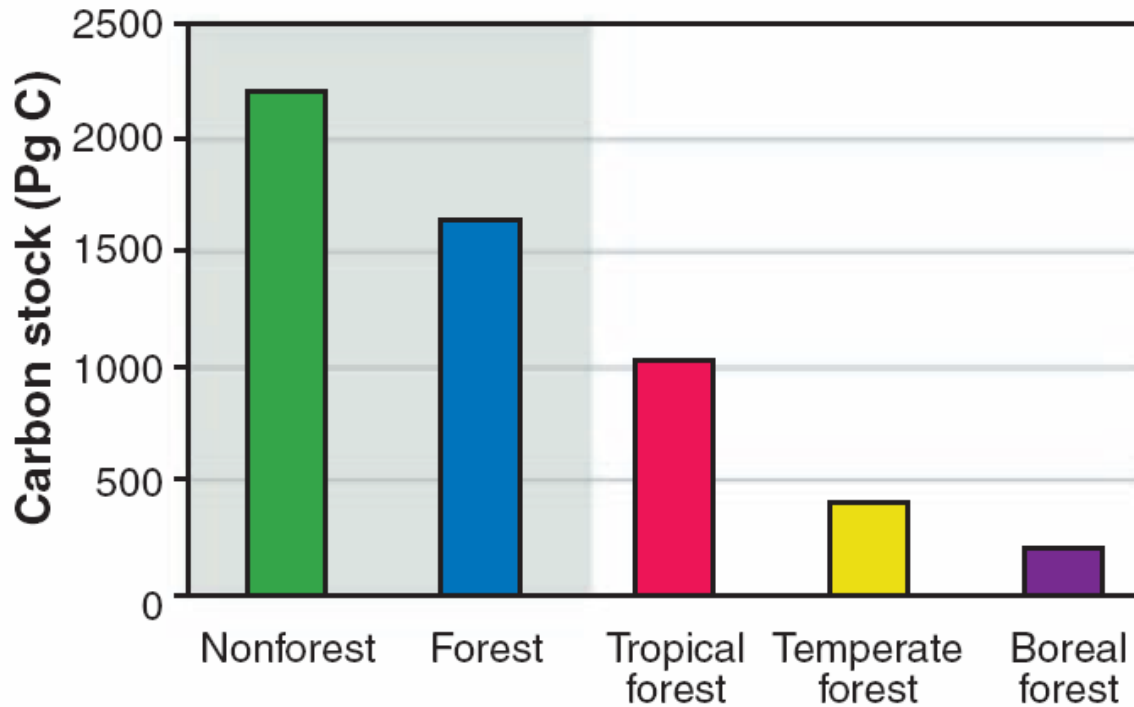


45% of terrestrial carbon is stored
in earth's forests

Carbon stock by biome

% terrestrial C

Global carbon



Tropical ~25%

Temperate ~10%

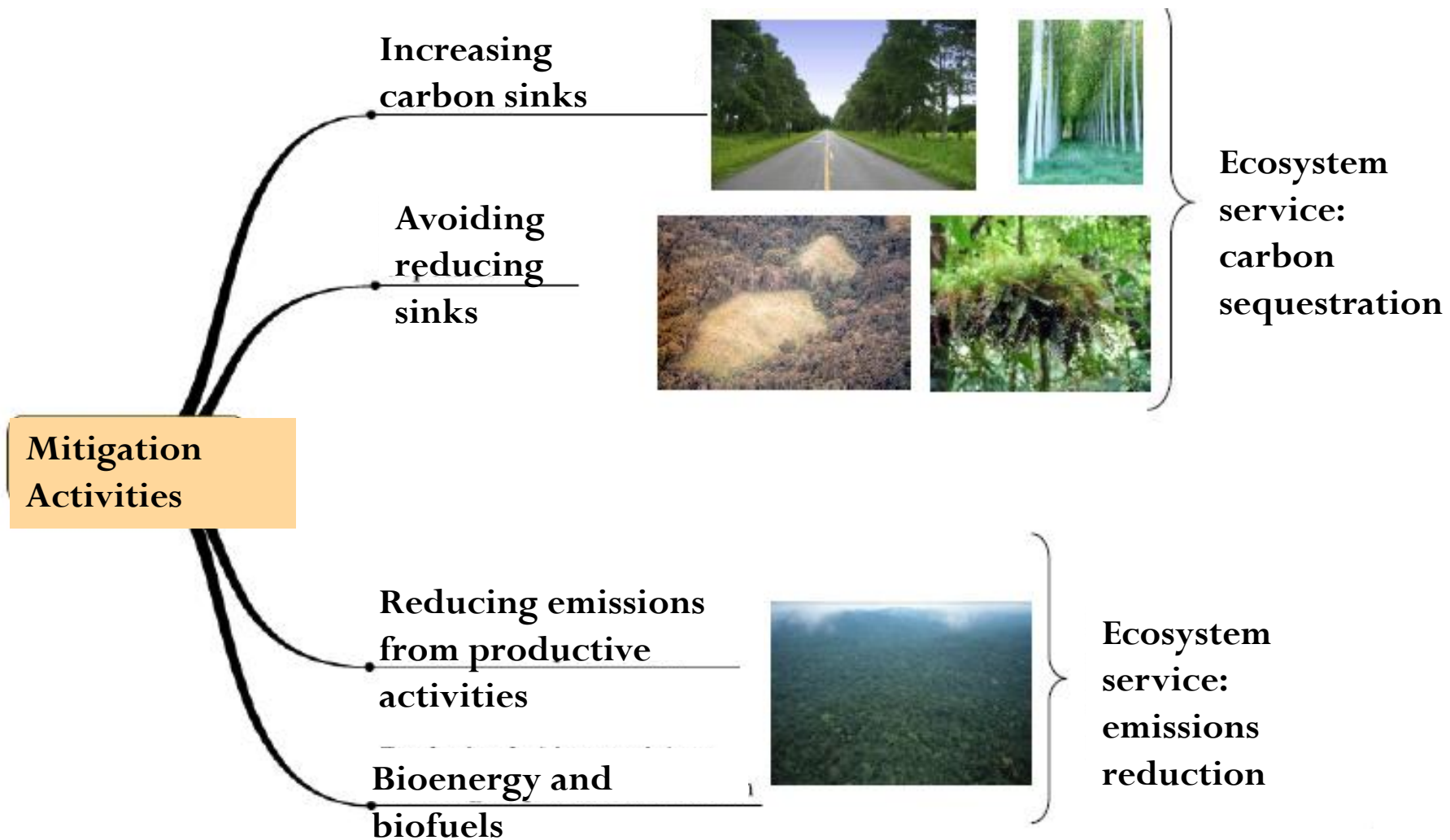
Boreal ~5%

- Forests absorb 2.6 gigatons C (9.5 gT CO₂) per year
- Emissions from tropical deforestation 1.5 gigatons C per year

Climate change mitigation through forestry



Options for mitigating climate change

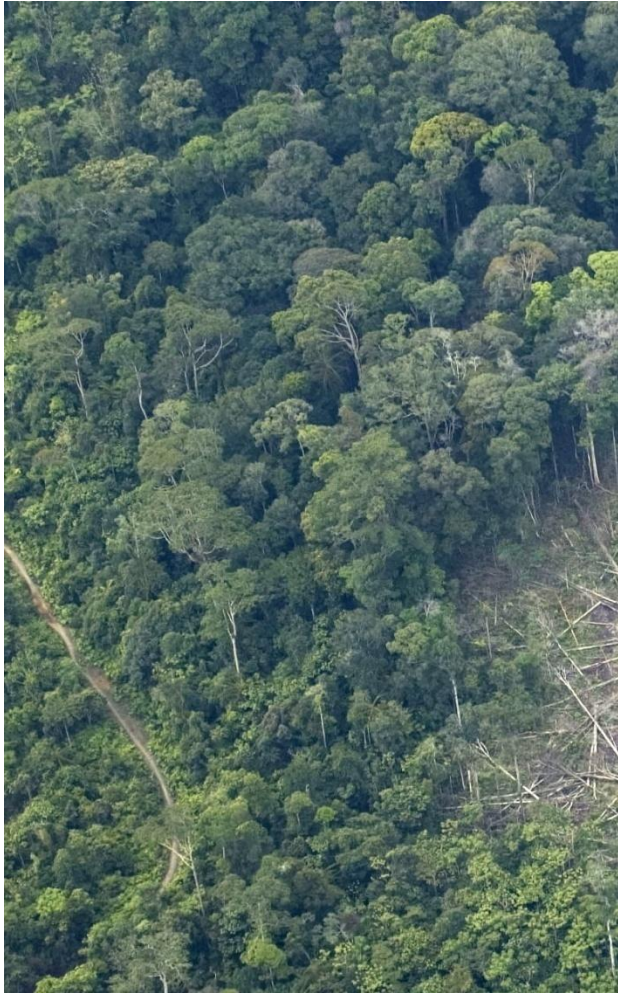


Rates of carbon sequestration: Afforestation/Reforestation



Planted Forest Type	t C/ha/yr Captured	t CO ₂ /ha/yr captured
Boreal – 60 year rotation	½ - 2	2 - 7
Temperate – 15 to 60 year rotation	2 – 7	7 - 26
Tropics – Eucalyptus, 5 – 16 year old	4 - 14	15 – 51
Tropics – Teak, 25 – 75 years old	2 – 4	7 - 15
Tropics – Pine, 5 – 30 years old	3 - 12	11 - 44

Rates of emissions reductions: Avoided Deforestation



Tropical Forest Type	t C/ha avoided	t CO2/ha avoided
Africa - lowland moist forest	155-200	569 - 734
Africa - seasonal forest	60-70	220 - 257
Africa - dry forest	25-50	92 - 184
America - lowland moist forest	90-155	330 - 569
America - secondary or logged	63-95	231 - 350
Asia - lowland moist forest	95-200	350 - 734
Asia - dry forest	22-40	81 - 147

A brief history of REDD

A brief history of REDD

- **Early 1990s:** Deforestation 1/5 of GHG emissions
- **2001** - COP7: Avoided deforestation too difficult to include in CDM (+ no additionality). Only A/R
- **2005** - COP11: 2 year consultation period for RED
- **2006:** Stern report says REDD is big & cheap (& easy?)
- **2007** - COP13: RED(D) included in Bali Action Plan
- **2007:** Norway's Climate-Forest initiative, NOK 15 billions
- **2008+:** FCPF (World Bank), UNREDD, other initiatives

A brief history of REDD

- **2009** - COP15: some progress for REDD+, interim financing
- **2010**: COP 16 confirms earlier decisions on REDD+; safeguards and Ref. levels; REDD+ partnership
- **2011**: COP 17: REDD part of commitment for all parties? Financing to be explored. Pilots and national policy reforms
- **2012**: COP 18 and SBSTA - not much new, a lot of bracket text for safeguards, MRV etc. - verification problem
- **2013**: SBSTA progress on MRV, Verification solved, progress on financing, but in fact not much new commitment

an incentive mechanism to reduce deforestation and forest de

in developing countries

REDD+ - Conservation of forests, sustainable management and enhancing carbon stock

Appropriate policy, institutional and management arrangement will be made to protect D & D through the consultation and participation of all stakeholders including local communities so that emission reductions from D & D can be achieved.

Alternative livelihood development for local communities and incentives from emission reduction payments.

The Core Idea of REDD+

