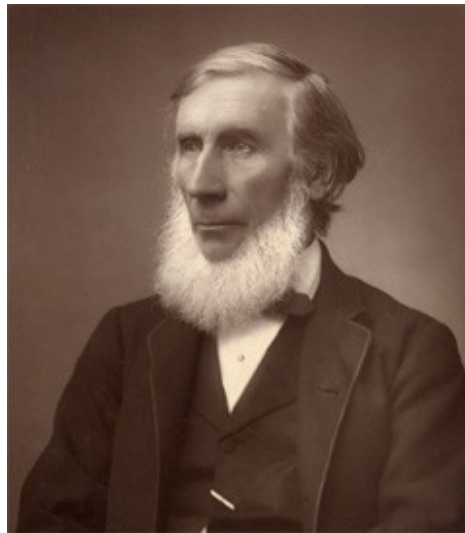


Globální oteplování

- Historie výzkumu GO
- Měření CO₂
- Měření globální teploty
- Skleníkový jev
- Zpětné vazby
- Globální cirkulace atmosféry
- Emisní scénáře

Historie výzkumu globálního oteplování

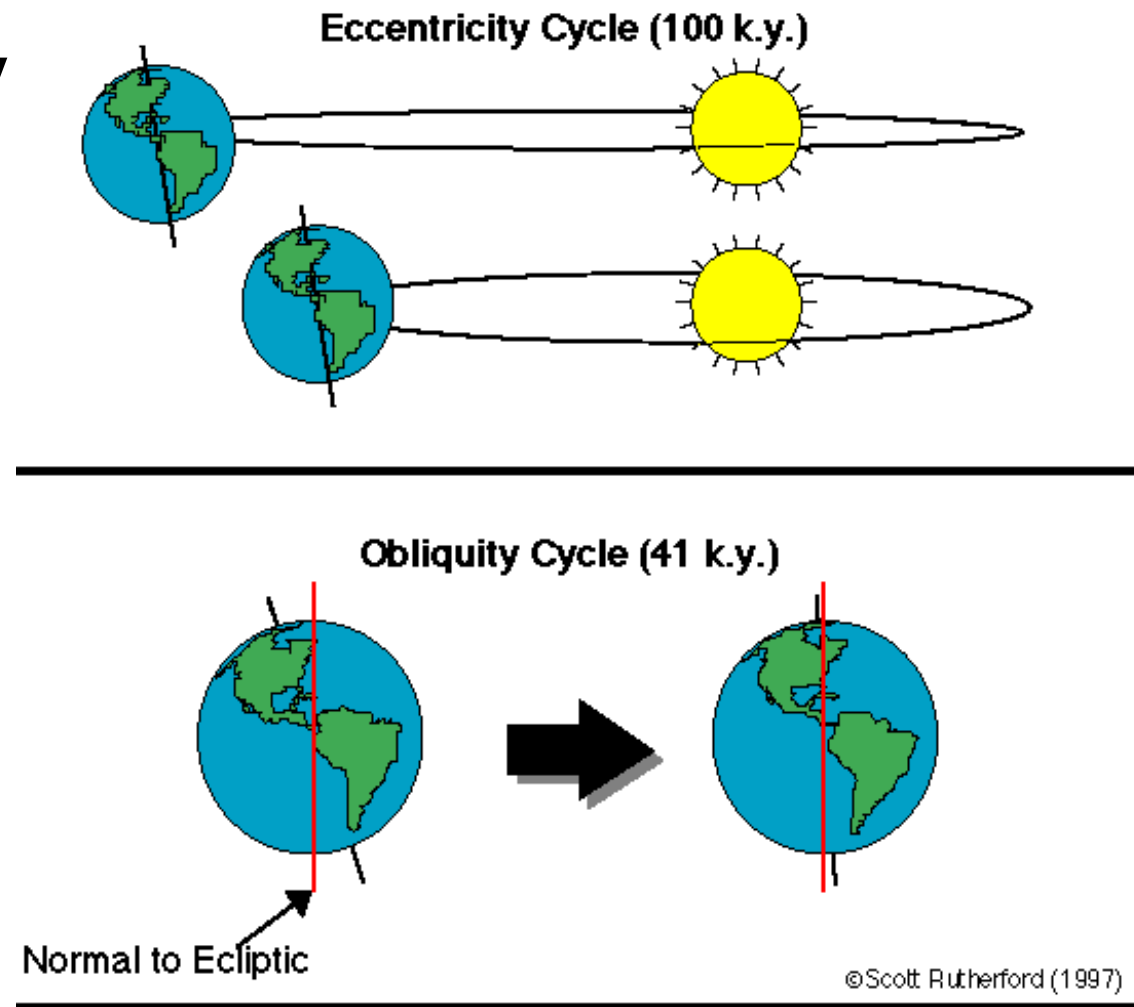
- 1824 – Joseph Fourier (formuloval skleníkový jev)
- 1859 – John Tyndall (proměřil účinnost skleníkových plynů)
- 1894 – Svante Arrhenius (spočítal „citlivost klimatu“)



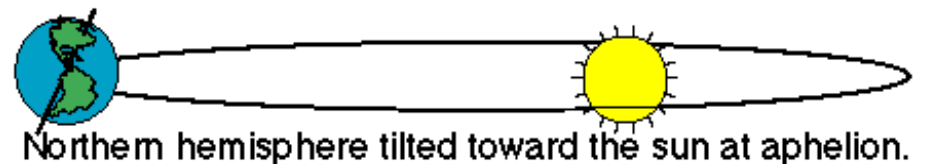
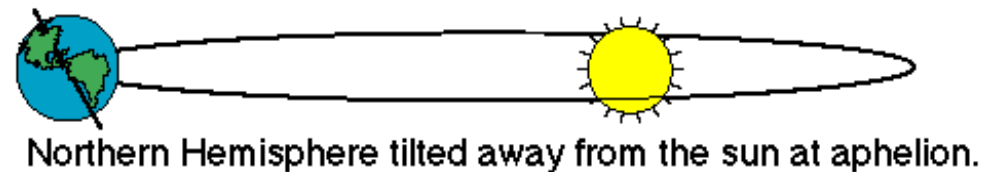
Milankovitchovi cykly 1879-1958

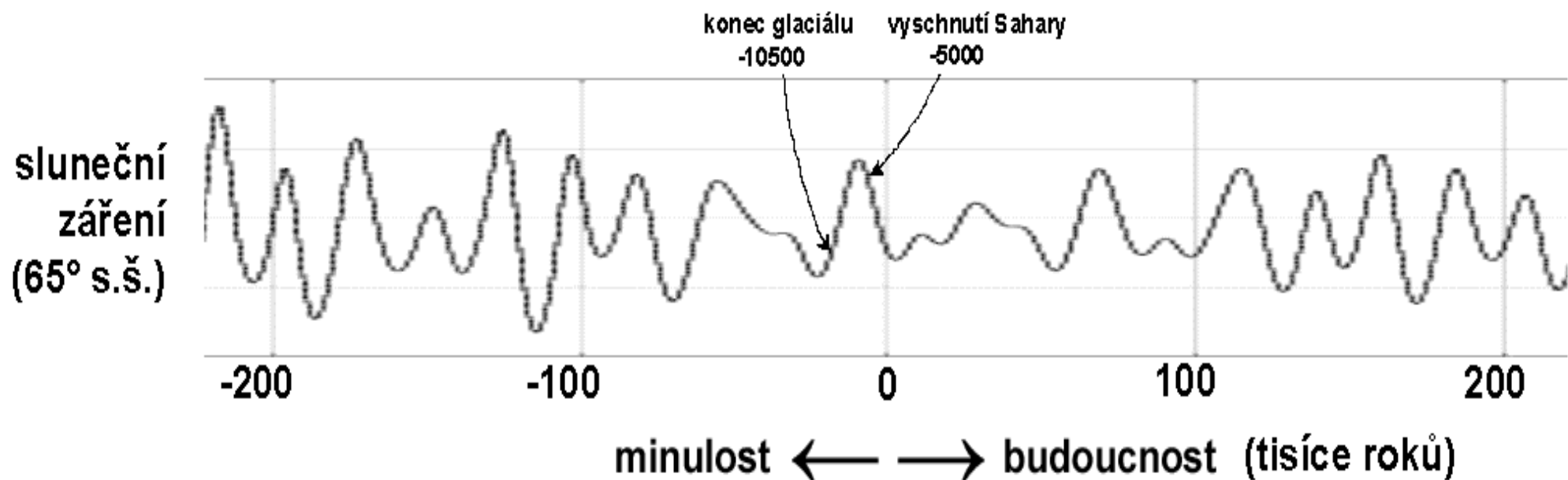
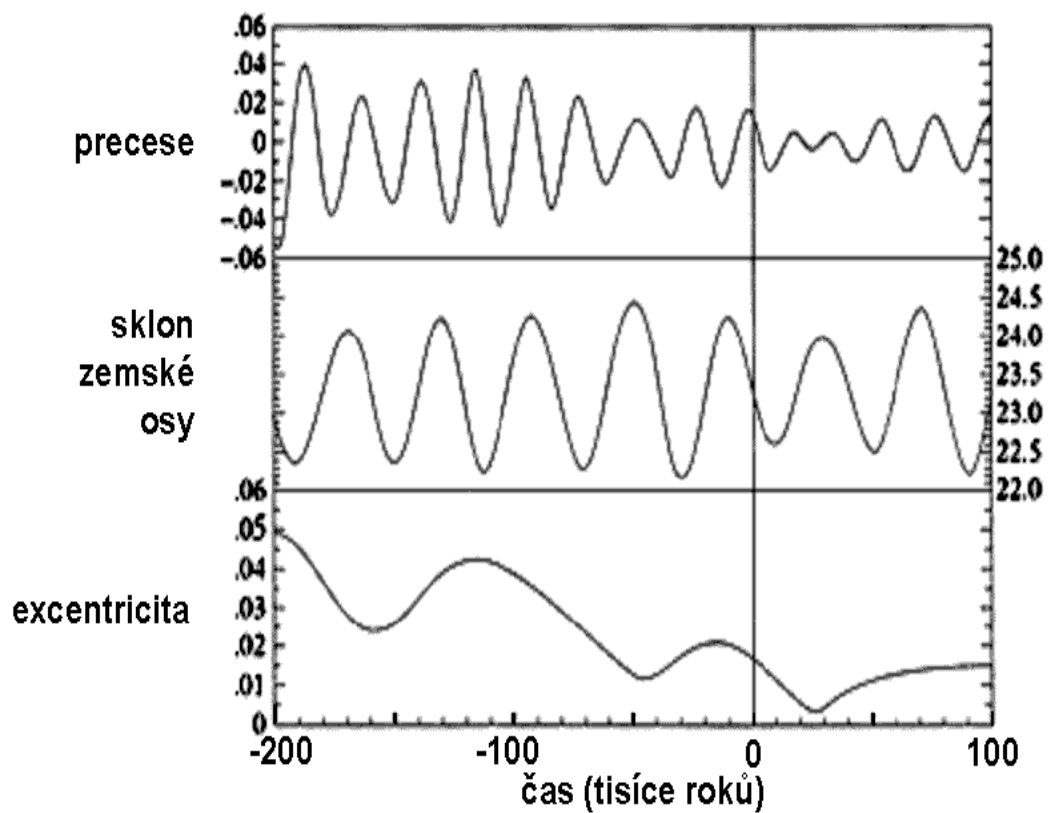


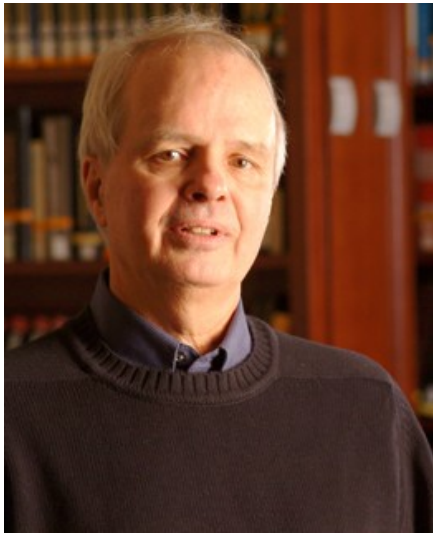
- excentricita
- sklon osy
- precese



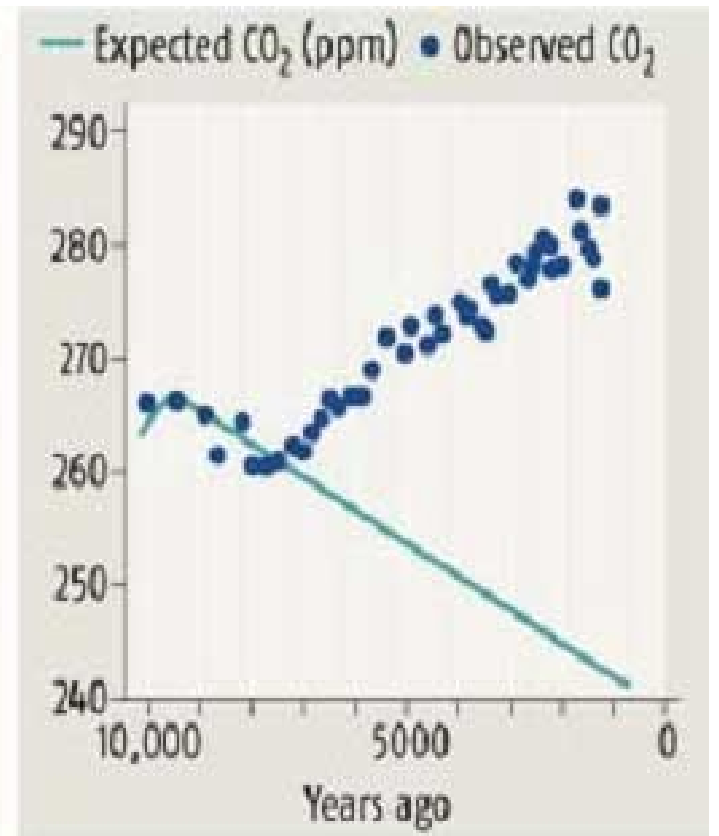
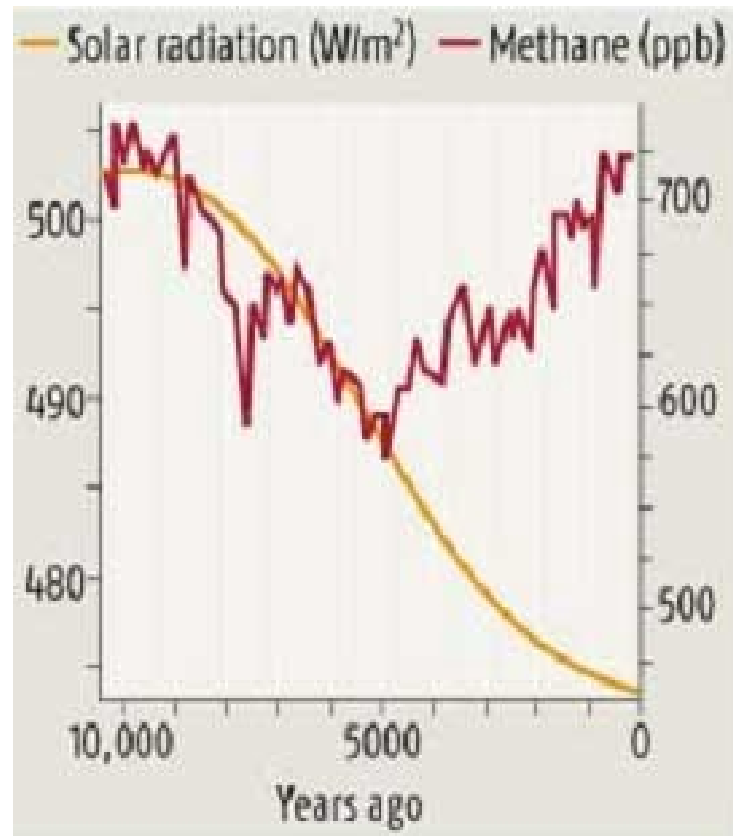
Precession of the Equinoxes (19 and 23 k.y.)



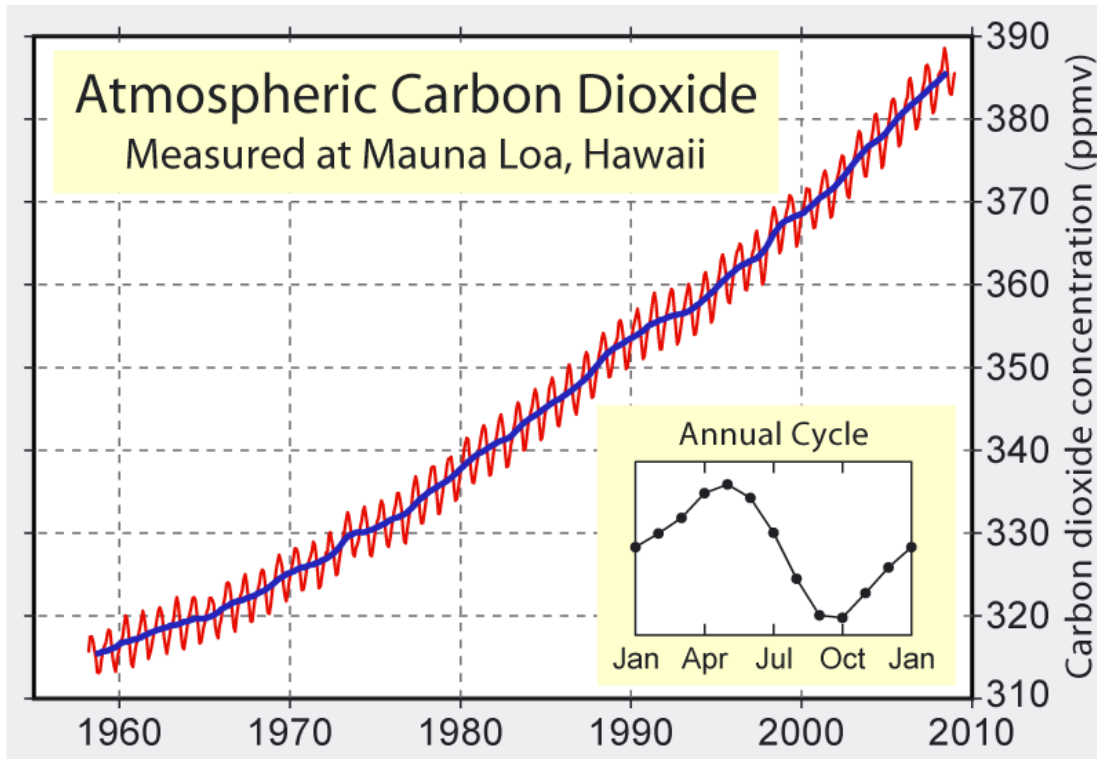




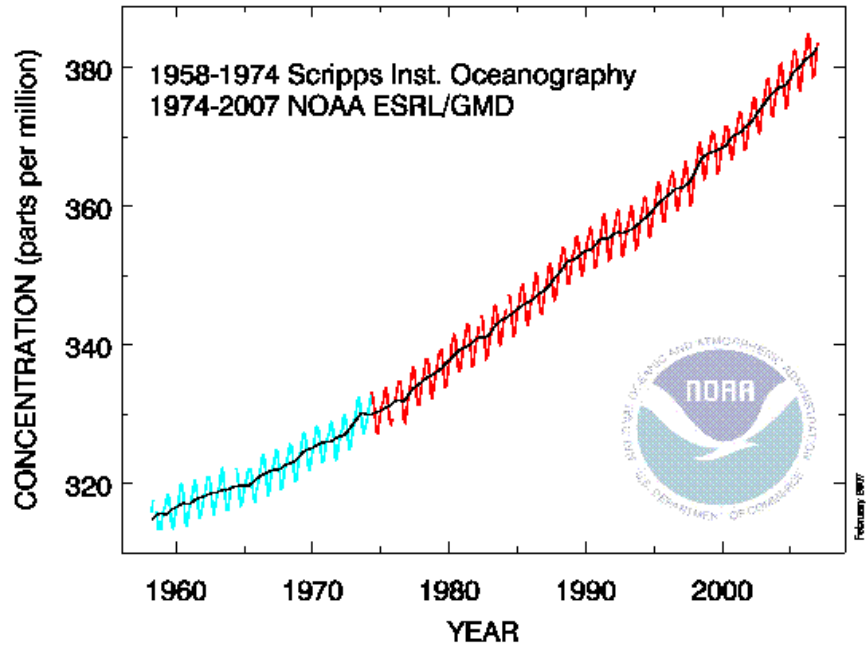
William
Ruddiman



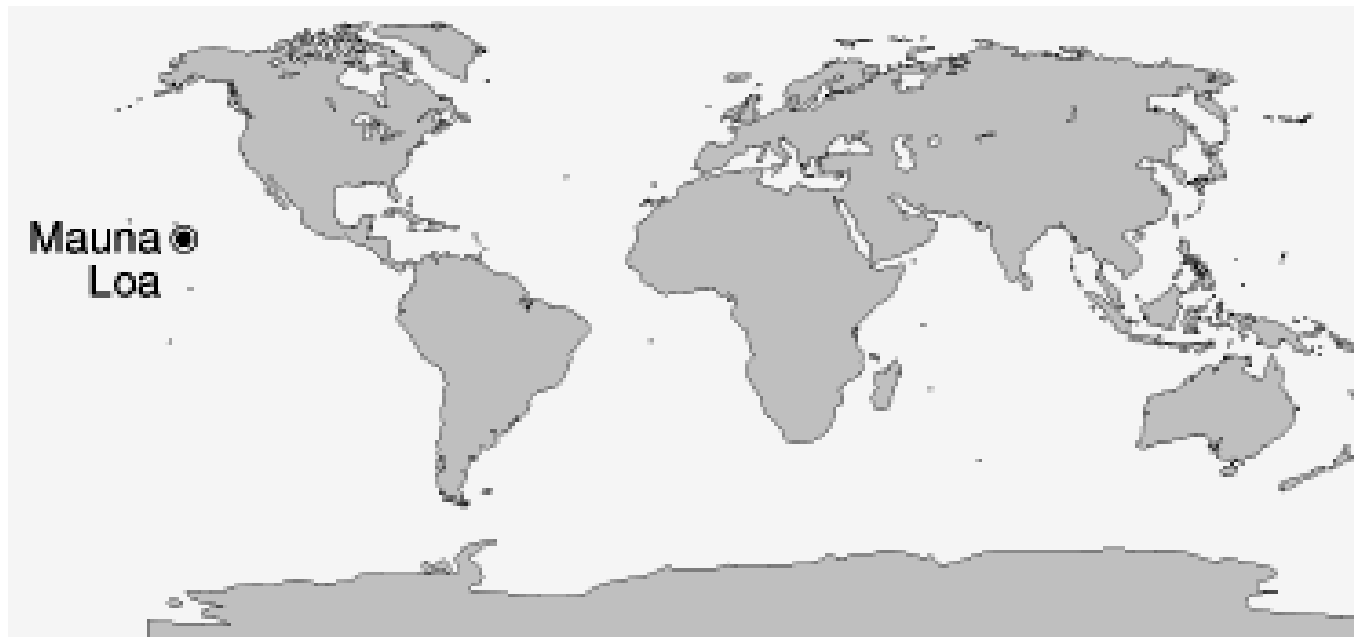
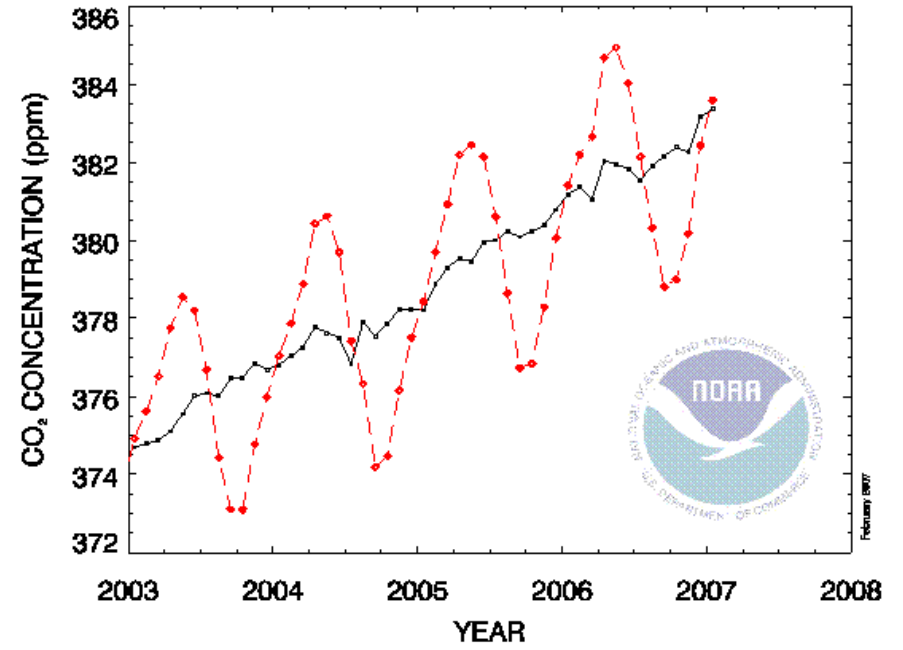
Charles David Keeling - 1958



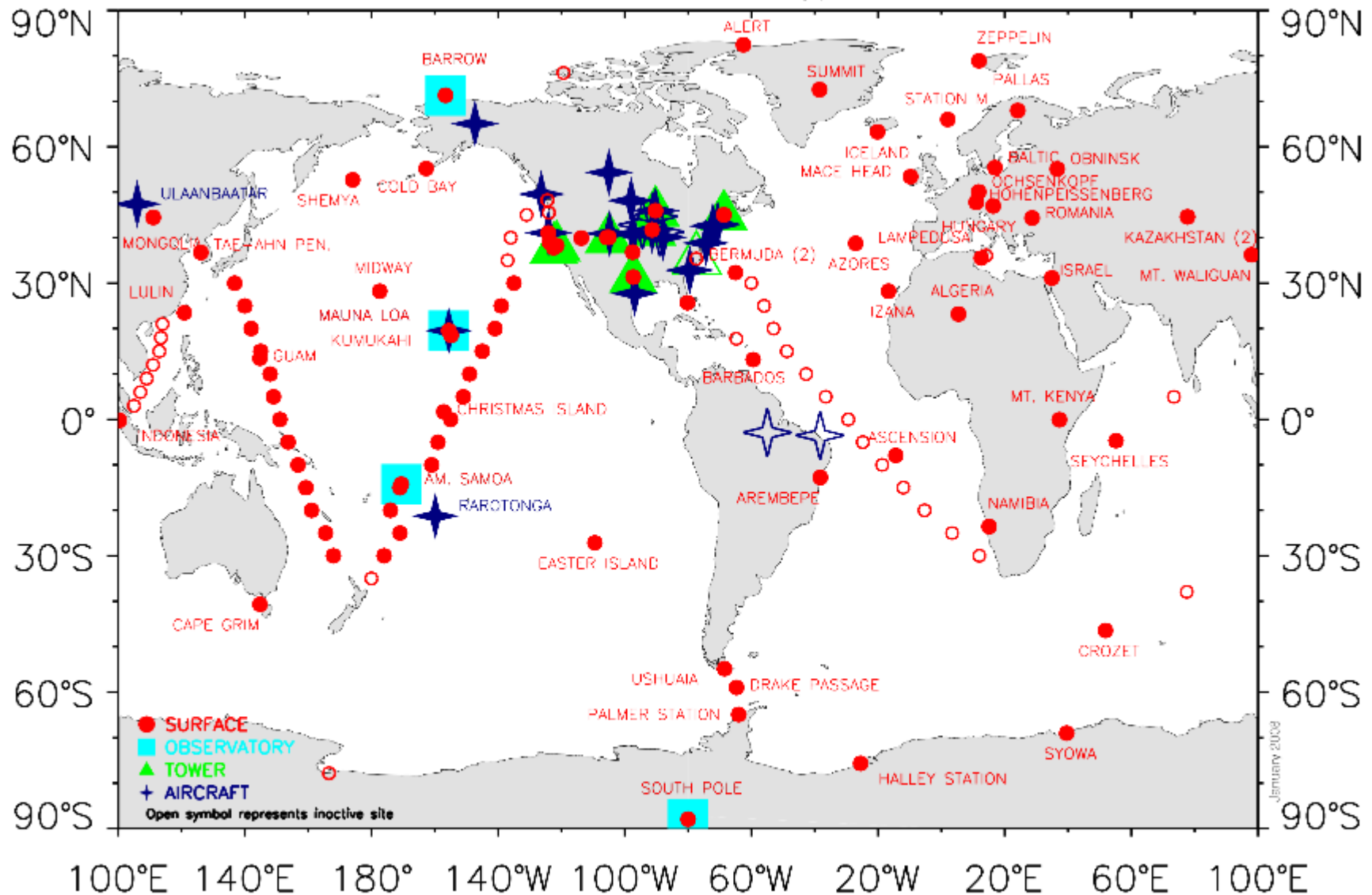
Atmospheric CO₂ at Mauna Loa Observatory



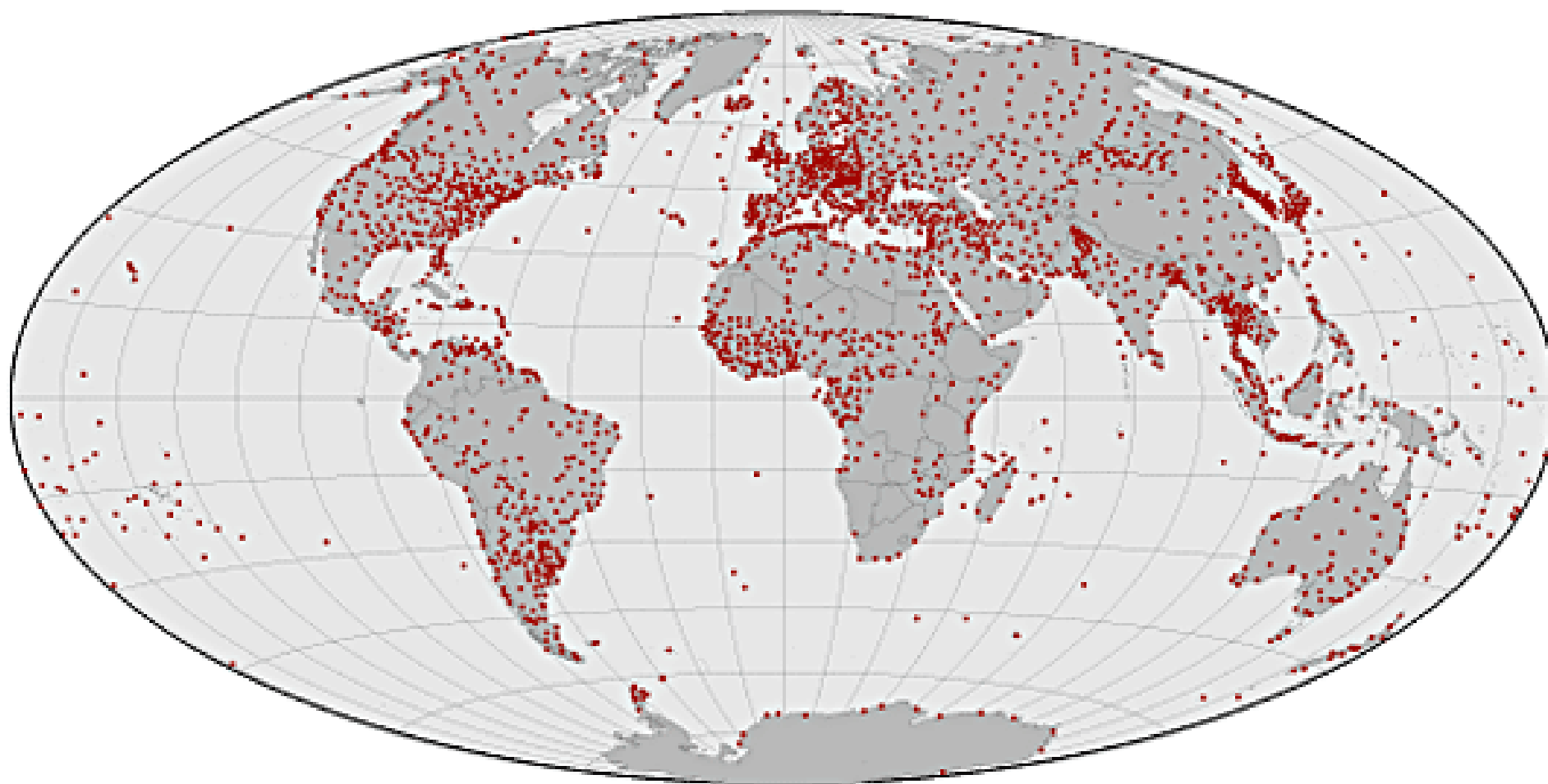
RECENT MONTHLY MEAN CO₂ AT MAUNA LOA



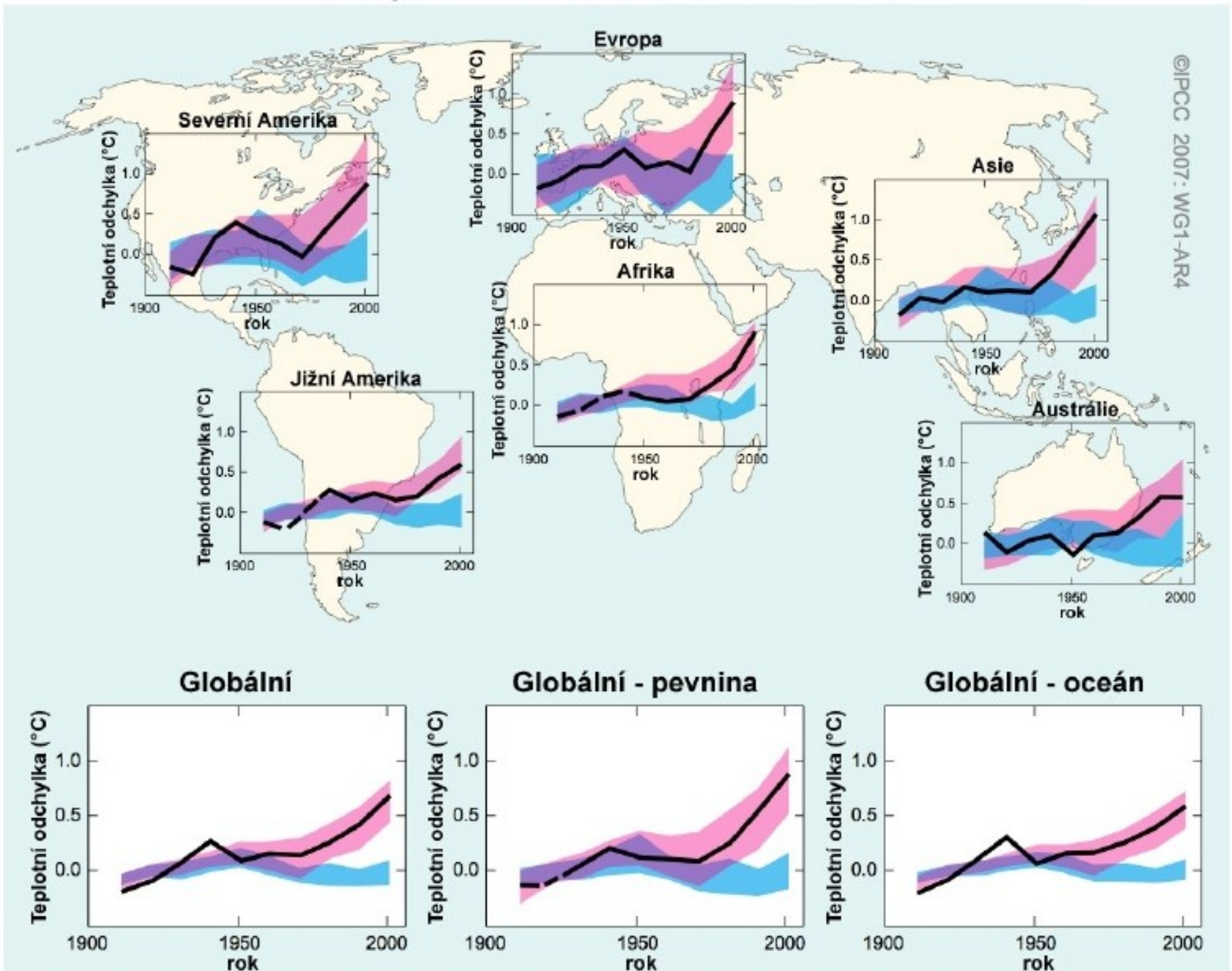
Měření CO₂: The NOAA Earth System Research Laboratory global cooperative air sampling network



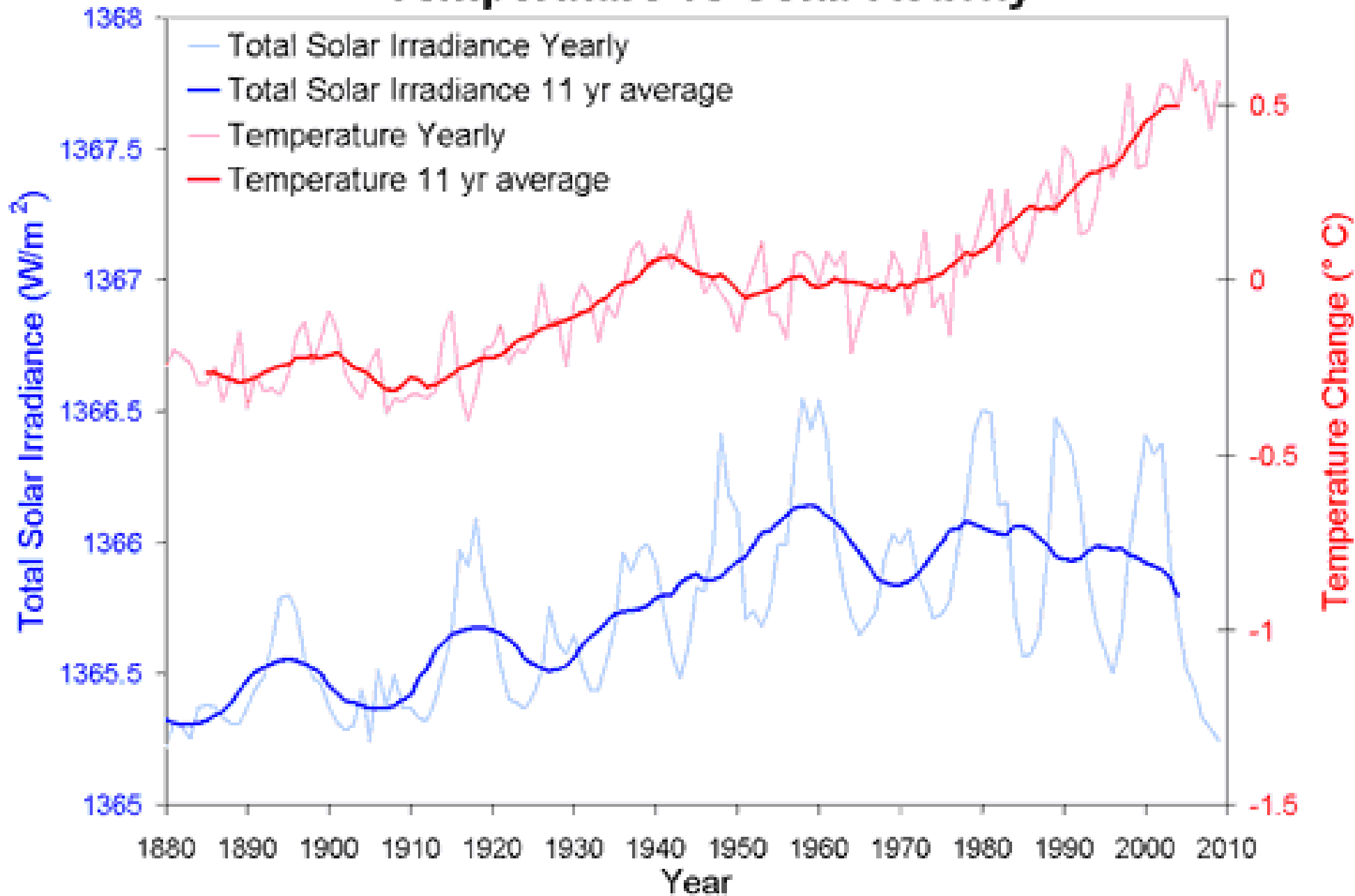
Sít' meteorologických stanic



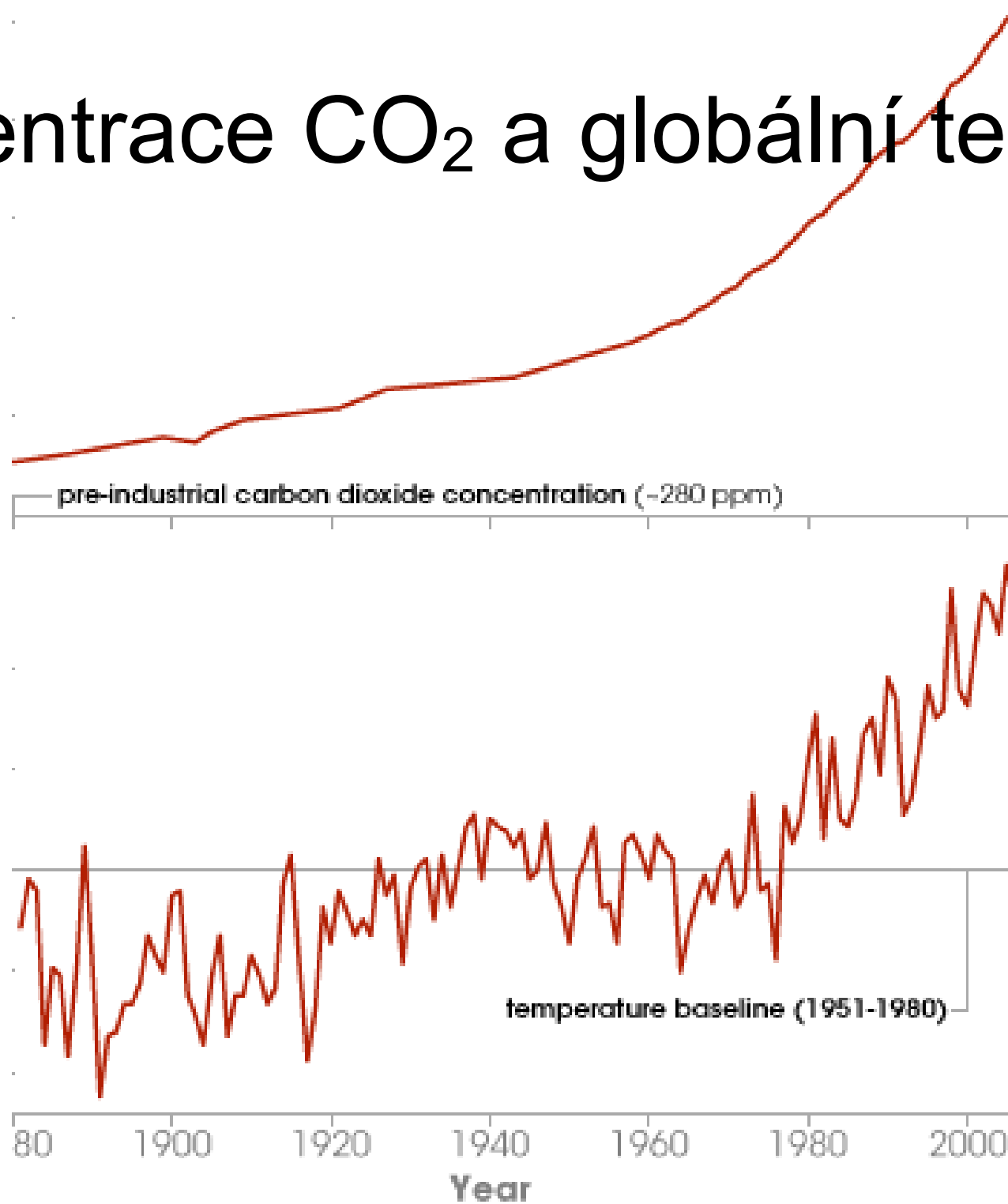
Změna globálních a kontinentálních teplot



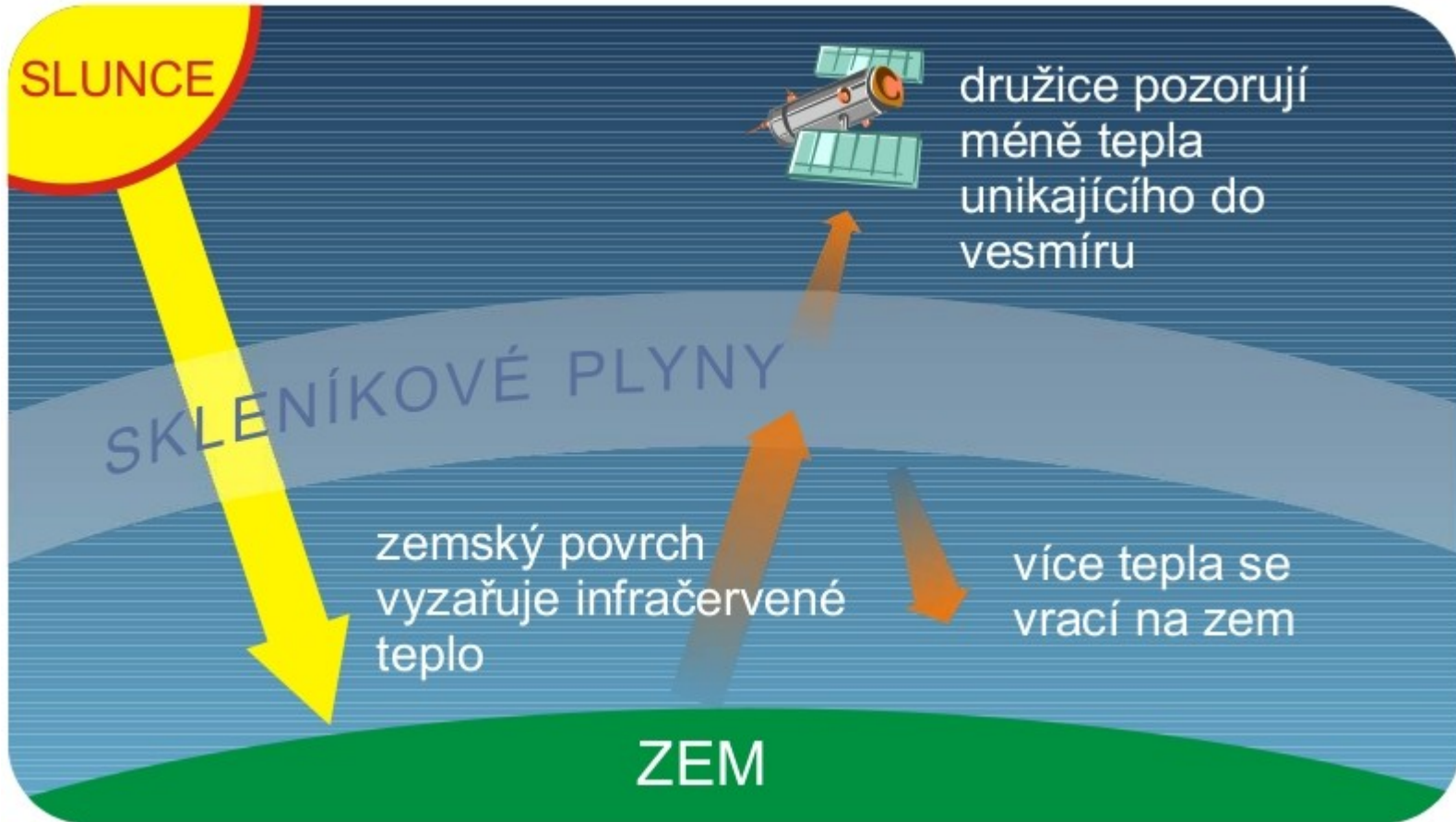
Temperature vs Solar Activity



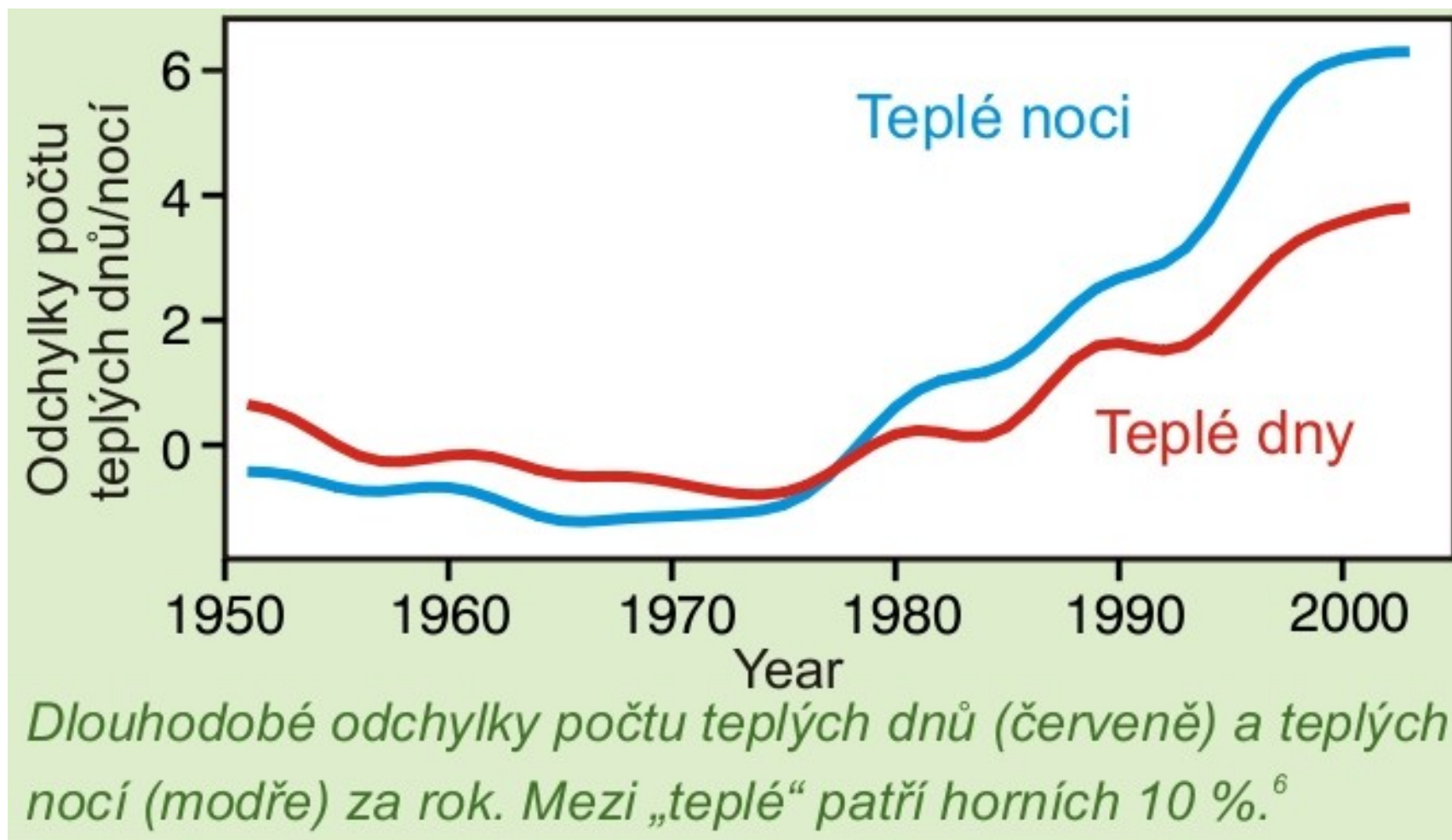
Koncentrace CO₂ a globální teplota



Skleníkový efekt

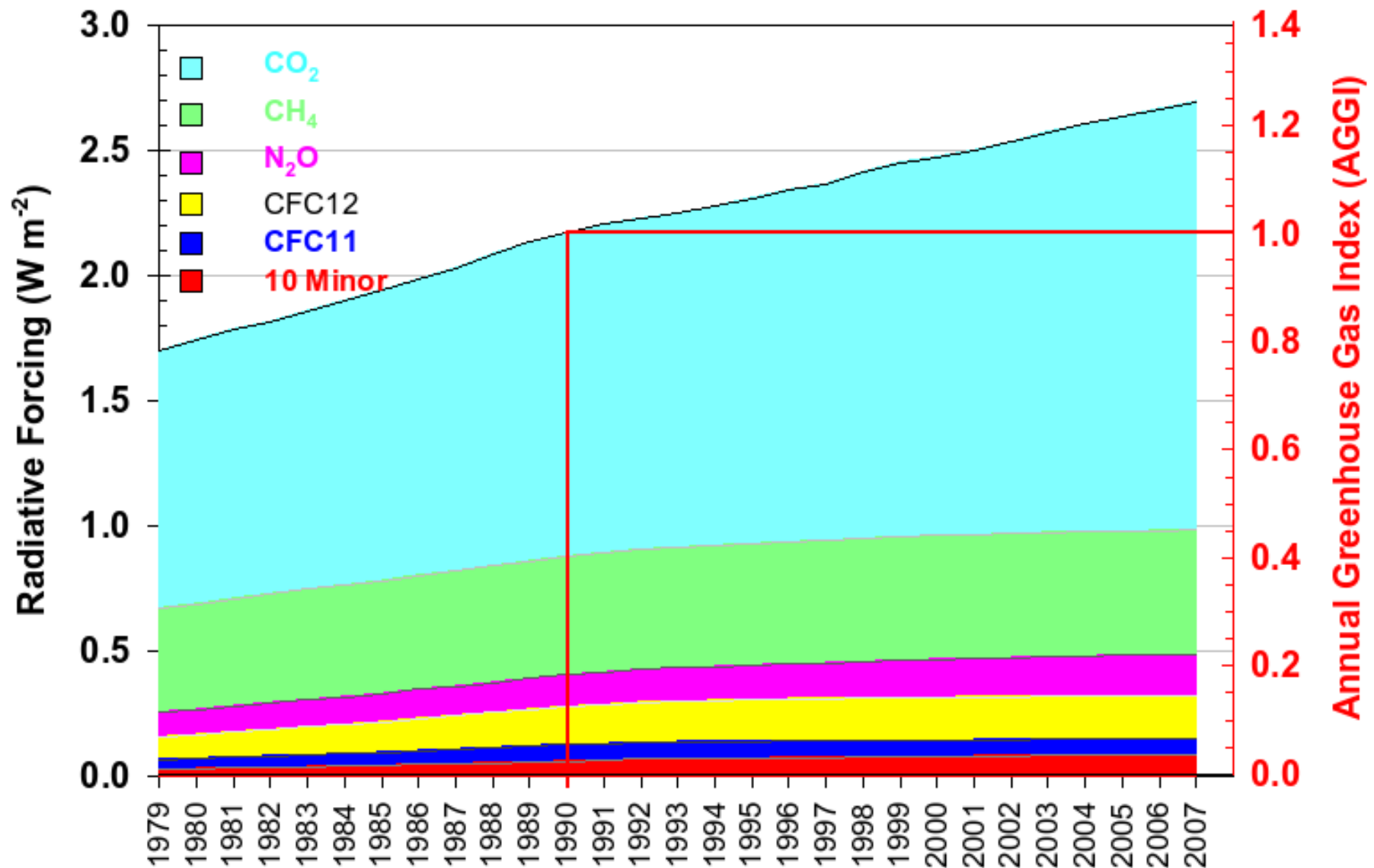


Noci se oteplují rychleji než dny



Skleníkové plyny

NOAA Annual Greenhouse Gas Index



<http://www.esrl.noaa.gov/gmd/aggi>

Příklad pozitivní zpětné vazby



Příklady klimatické zpětné vazby

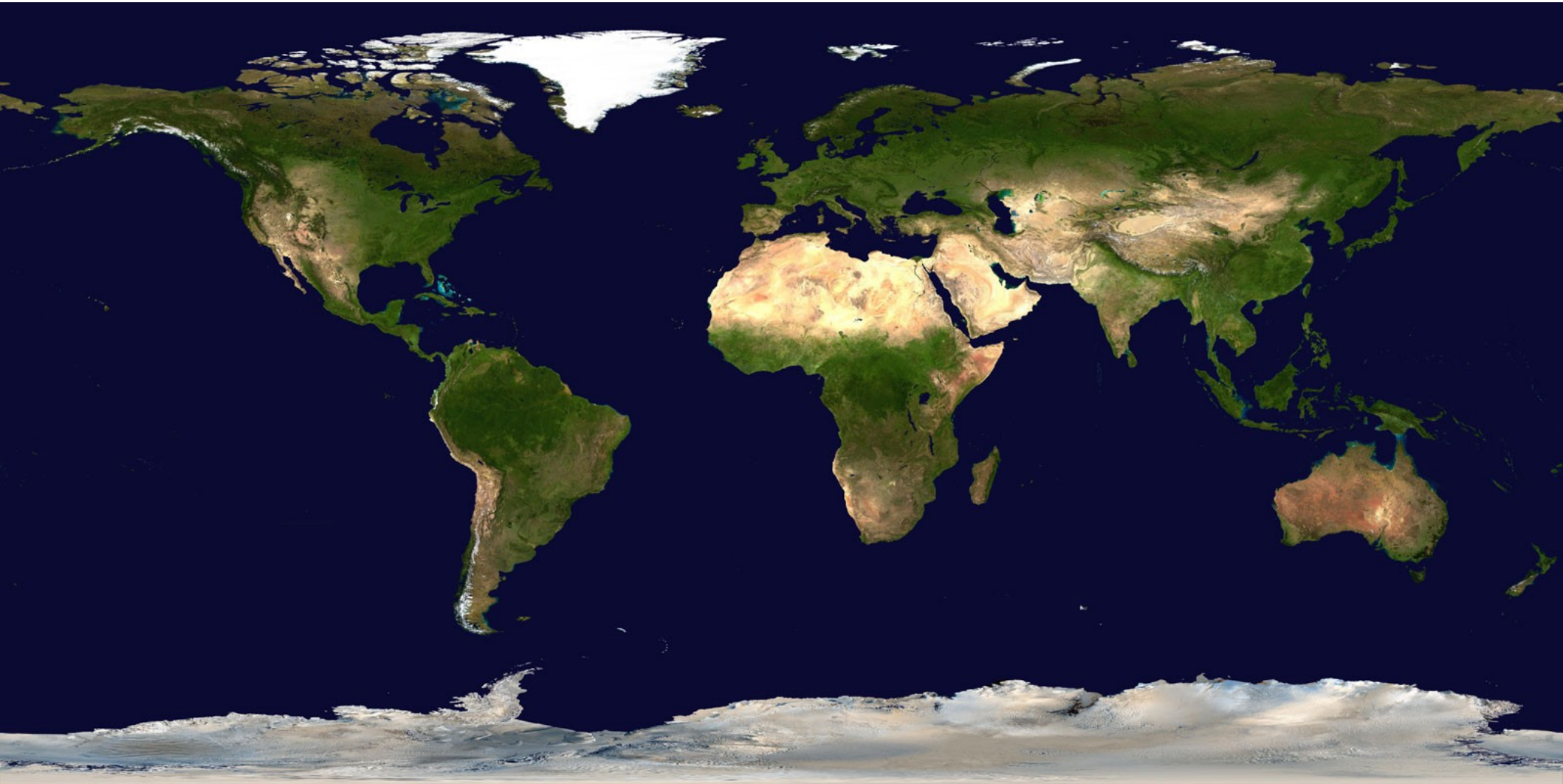




Indikátory oteplování se světa

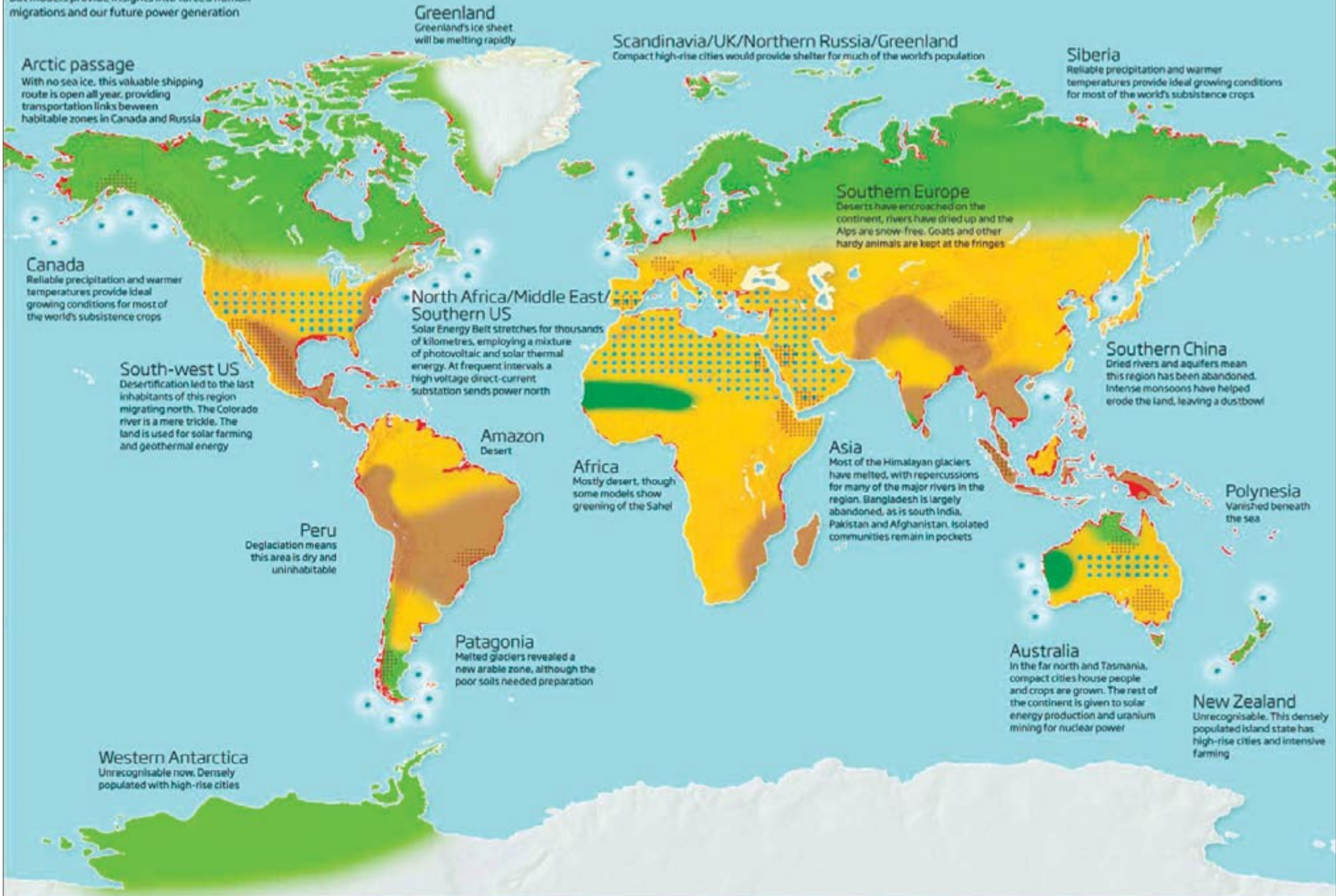


Parmesan & Yohe 2003³², NOAA³⁴



The world: 4°C warmer

No one knows exactly what this world will look like, but models provide insights into forced human migrations and our future power generation



Food-growing zones / Compact high-rise cities

Uninhabitable desert

Uninhabitable due to floods, drought or extreme weather

Potential for reforestation

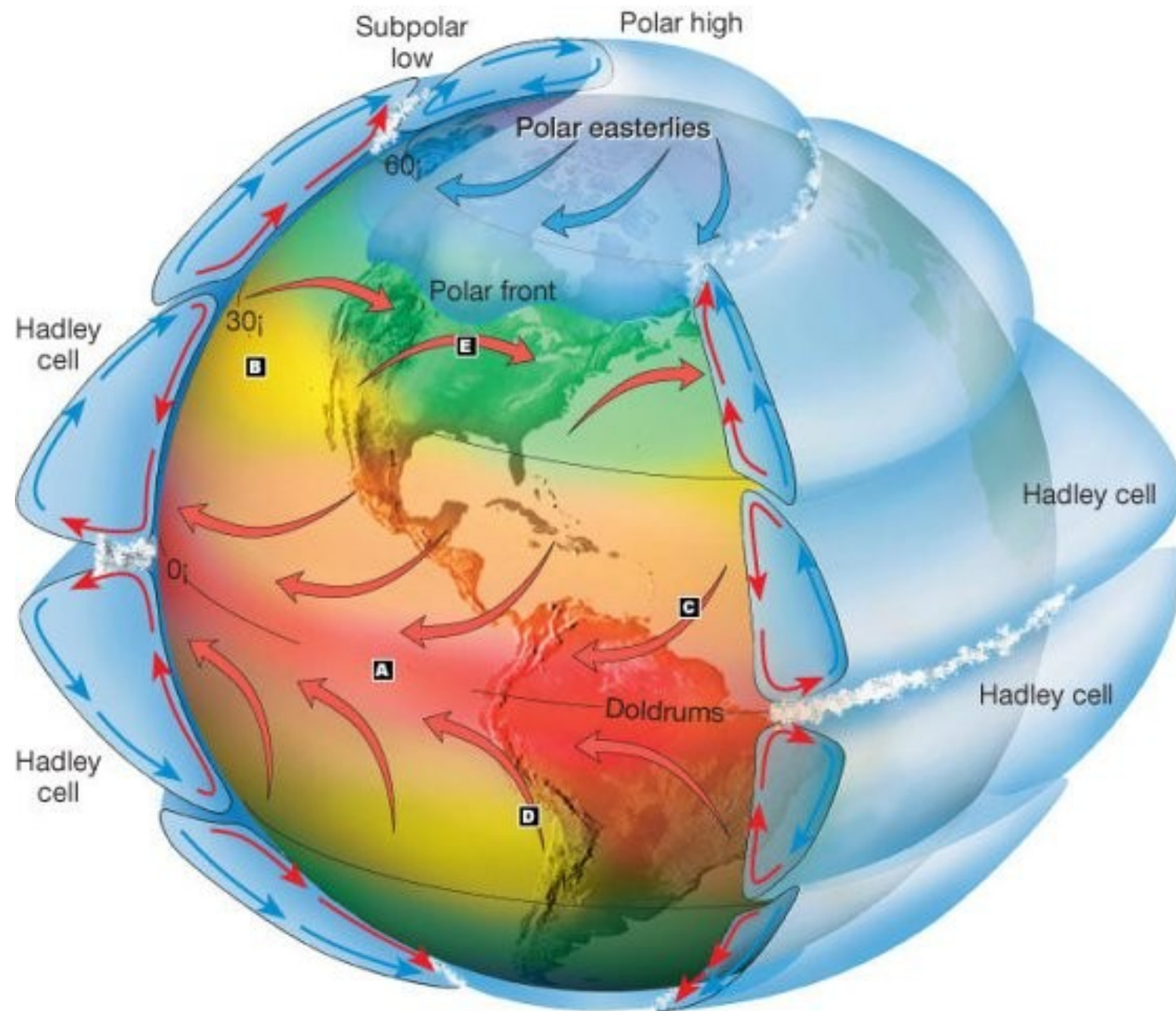
Land lost due to rising sea levels, assuming a 2-metre rise

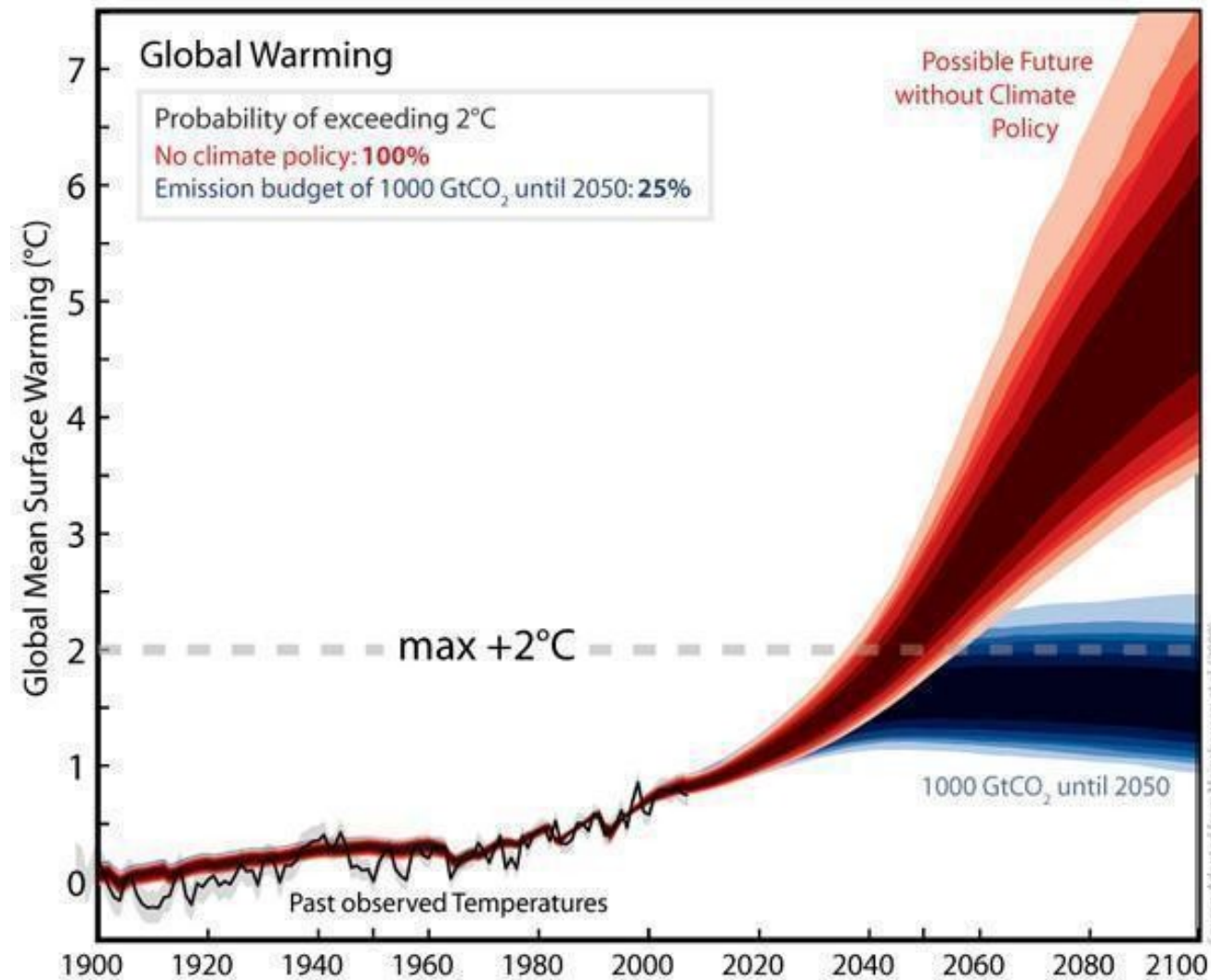
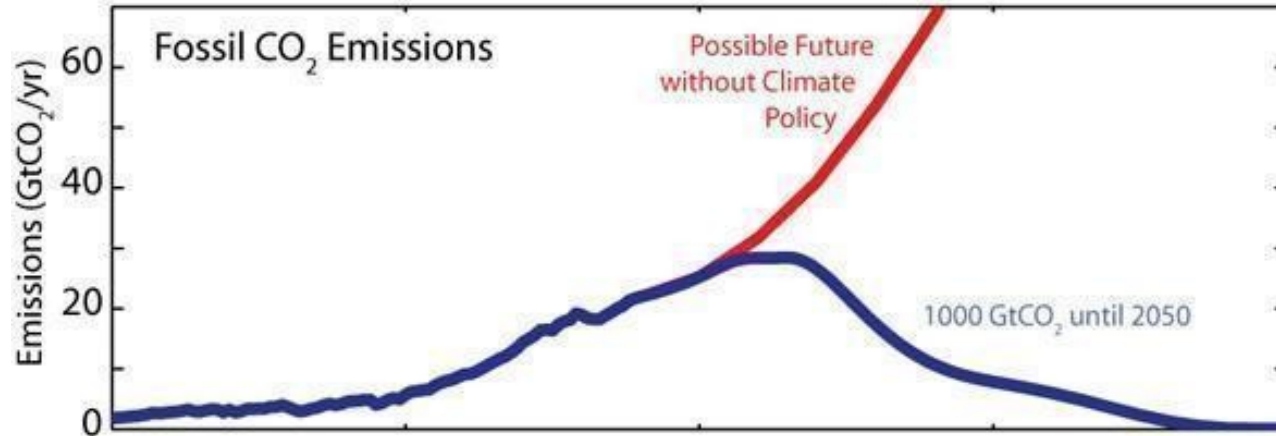
Solar energy

Geothermal energy

Wind energy

Globální cirkulace atmosféry

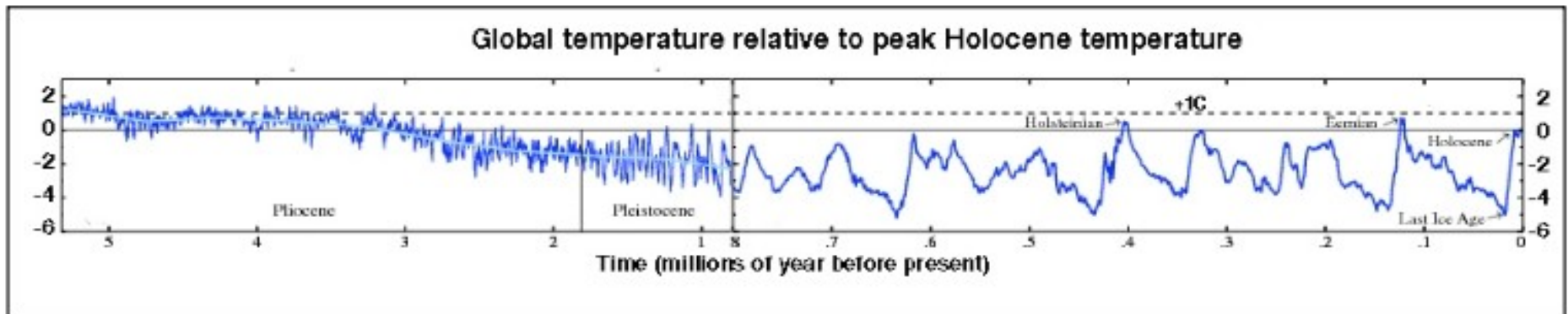
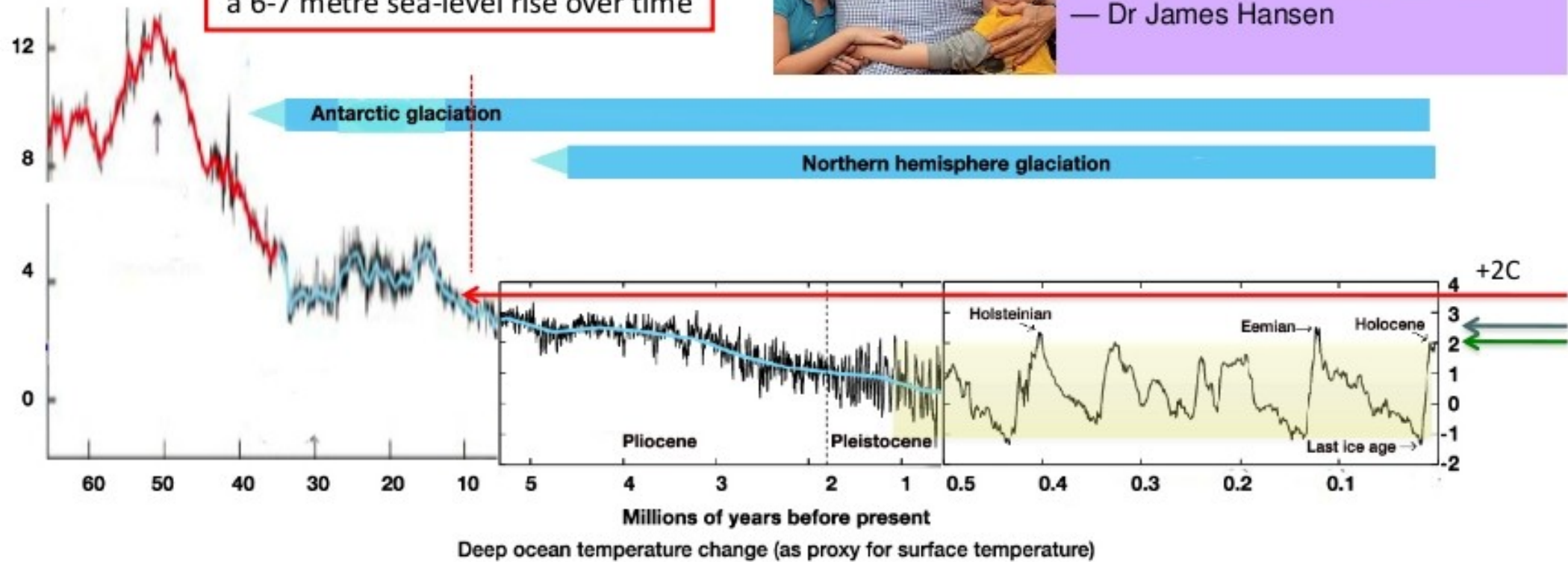




... which is sufficient for large parts of Greenland and West Antarctic ice sheets to be lost, leading to at least a 6-7 metre sea-level rise over time



"Goals to limit human-made warming to 2° C.. are not sufficient – they are prescriptions for disaster" — Dr James Hansen



Kritické emise CO₂ z fosilních paliv

