

Climate is a Generalist Discipline,

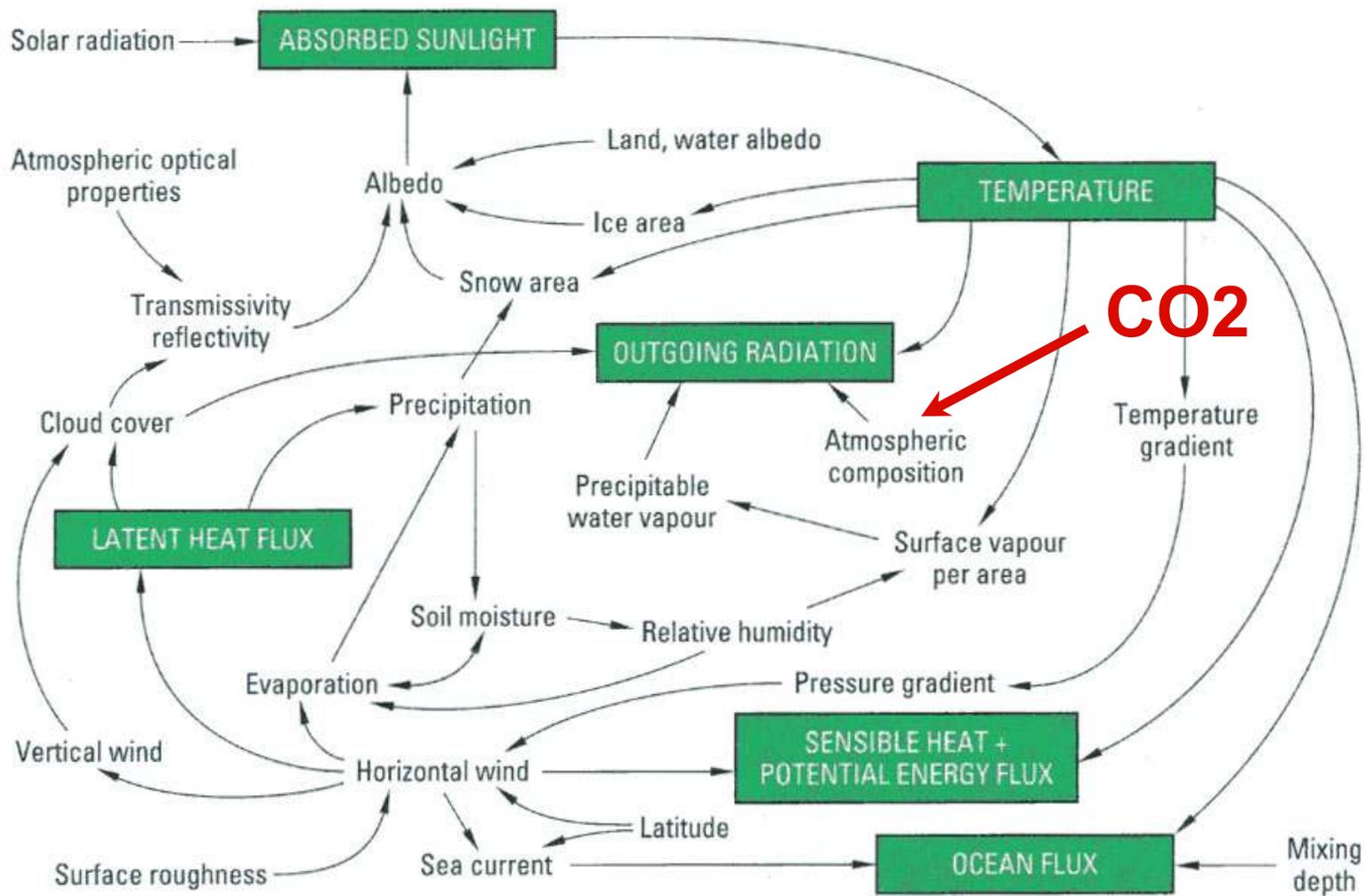
in an age of specialization.

Generalist/Specialist

- Alexander von Humboldt, last “universal” person died 1859.
- Same year Charles Darwin published “On the Origin of Species.”
- Natural Sciences, Humanities.
- Within each section a proliferation of divisions.
- Some issues transcend all divisions - Water.
- Interdisciplinary Studies.

Climate: Reverse Gestalt?

- Sum of the parts are less than the whole
- Each specialist has a piece of the climate puzzle
- We have no box top, or as Essex and McKittrick note no general climate theory.
- We don't even have the corner or edge pieces.
- Other pieces in disciplinary color piles.



A simple diagram illustrates some of the complexity of climate. Why the focus on such a minute part of this entire system?

Focus on temperature?

- Change name of planet from Earth to Water
- Tree rings , ice cores, glaciers, growth and melt.
- Droughts single most important impact on flora and fauna.
- Wind.

**Unless we announce disasters no one will
listen.**

Sir John Houghton, First Chairman of the Intergovernmental Panel on Climate Change (IPCC)

**In order to manage risk you must
scare people.**

Lord Givens, Advisor to Tony Blair

Exploitations?

- Michael Crichton wrote about exploitation of fear.
- Exploitation of lack of knowledge.
- Everybody talks about the Weather, but few know what they are talking about.
- Confusion: switch from global warming to climate change.

Global warming can mean colder, it can mean drier, it can mean wetter, that's what we're dealing with.

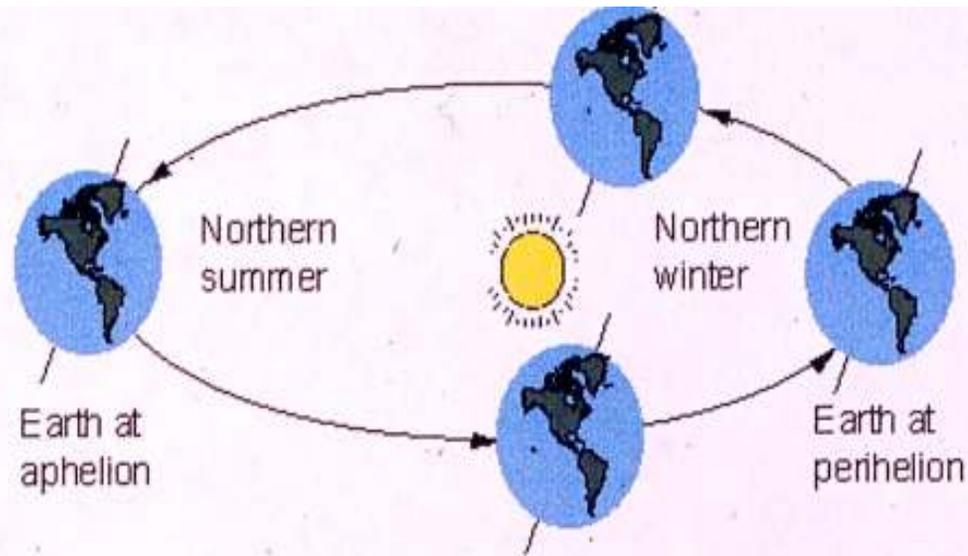
Steven Guilbeault, Greenpeace, 2005



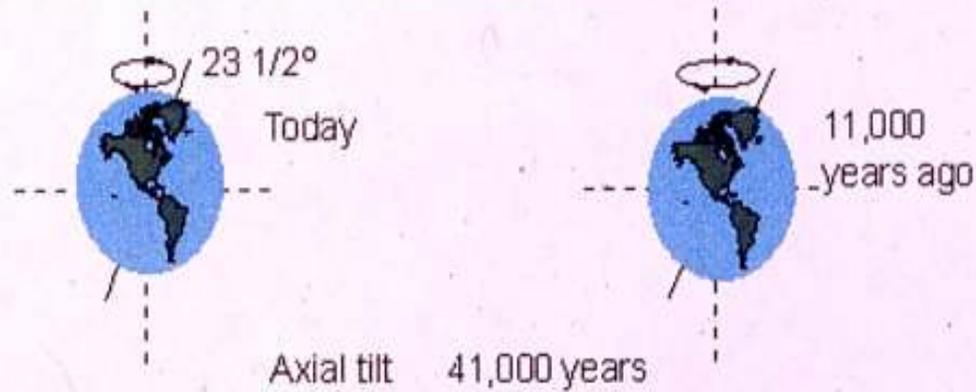
"WE ARE ANTICIPATING ANOTHER 8-12 INCHES OF GLOBAL WARMING TODAY!"

Change

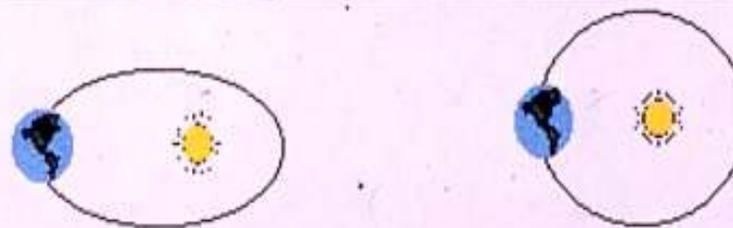
- Entire underpinning of western scientific view of the world is Uniformitarianism.
- The concept that change is gradual over long periods of time.
- In reality change is naturally dramatic and rapid, but not necessarily chaotic.
- Allows people to say changes we see are ‘not natural’.
- **What is natural is presented as unnatural:** the proof is it is outside any previous record - this means they always appear right.



Precession of the equinoxes 19,000-23,000 years



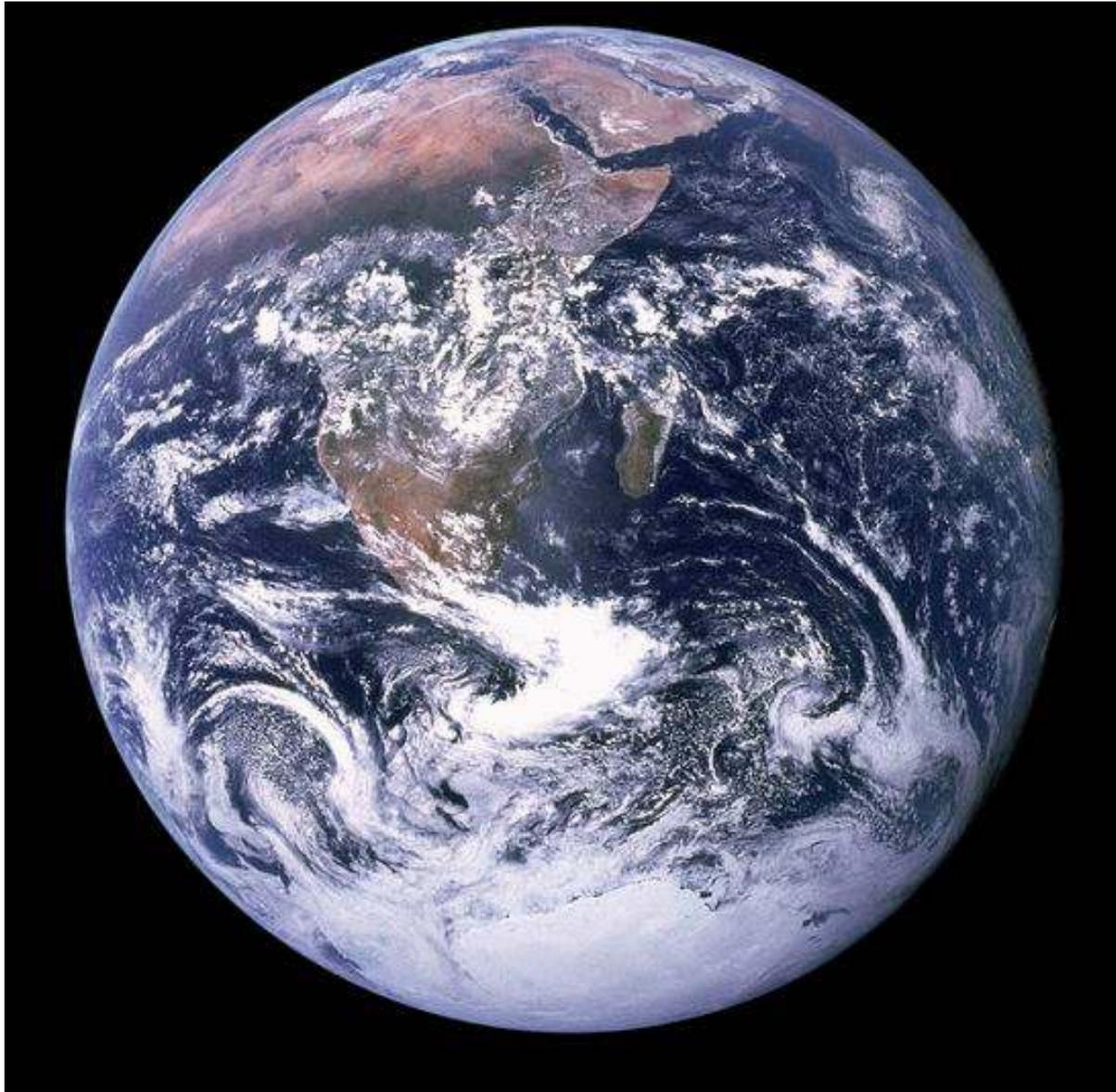
Collectively known as the
Milankovitch Effect



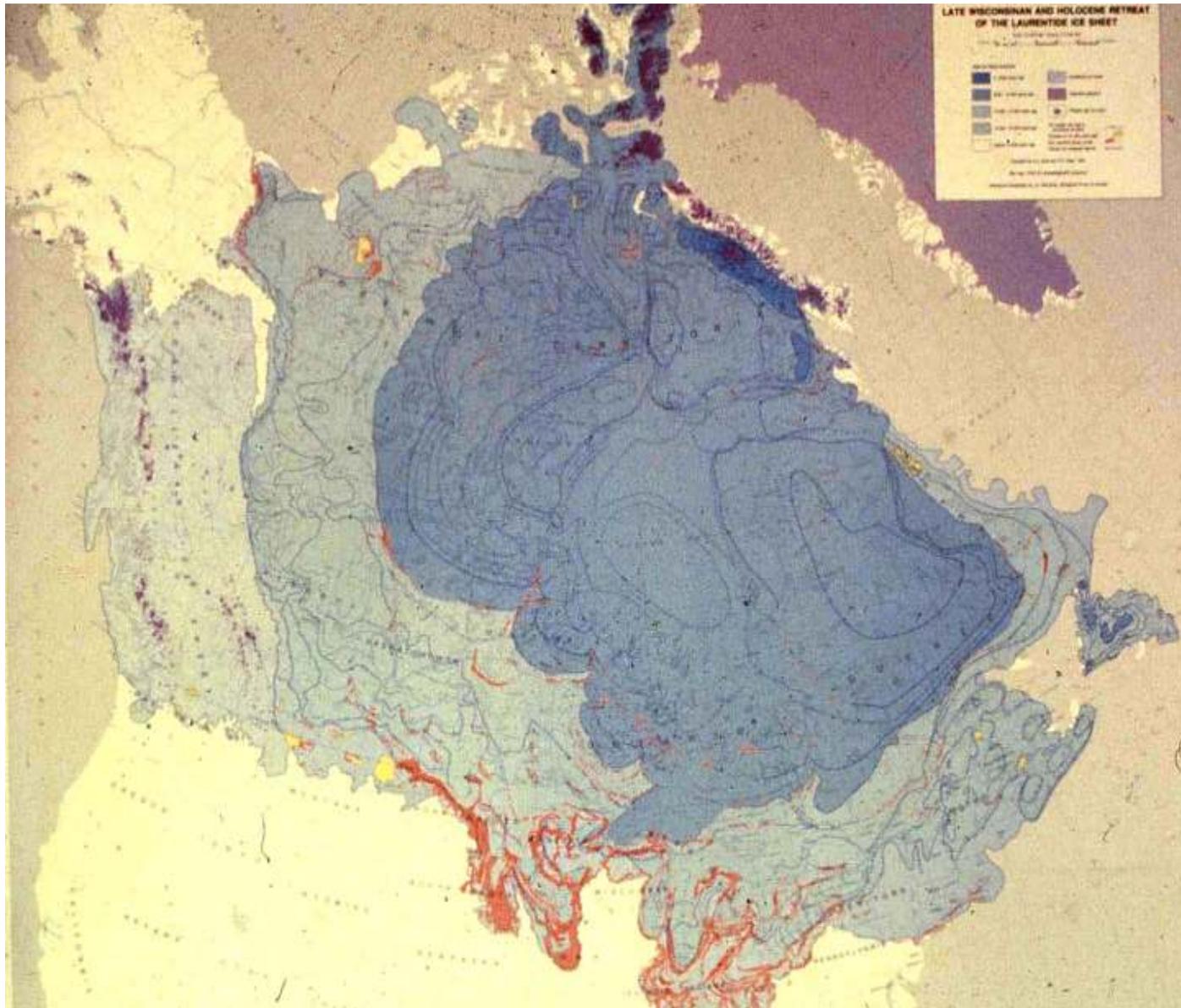
Ellipticity of the earth's orbit 90,000-100,000 years



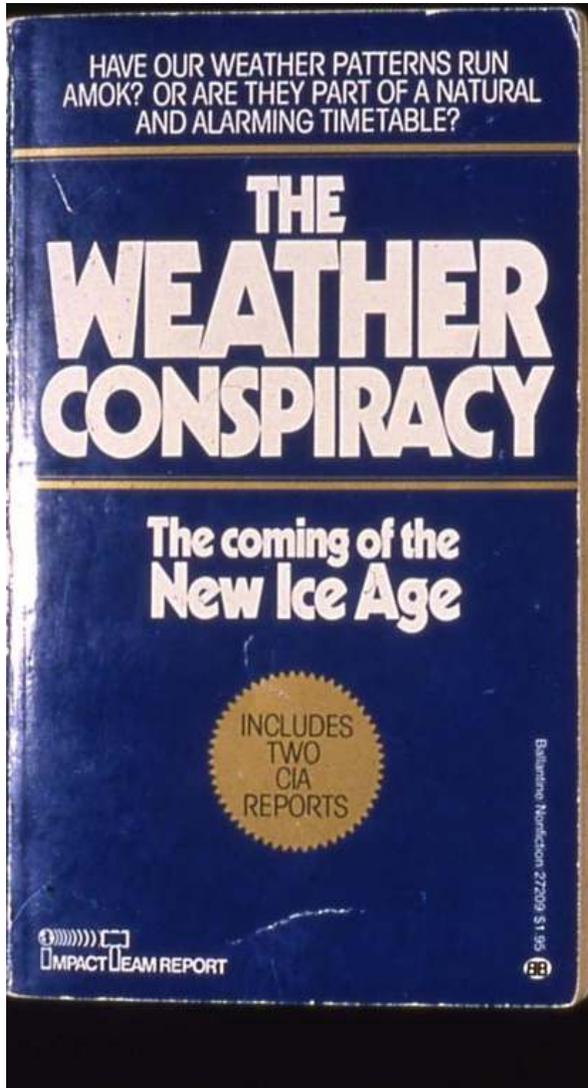
Symbolism (Paradigm shift.) 19th Century: J.M.W. Turner's "The Fighting Temeraire"



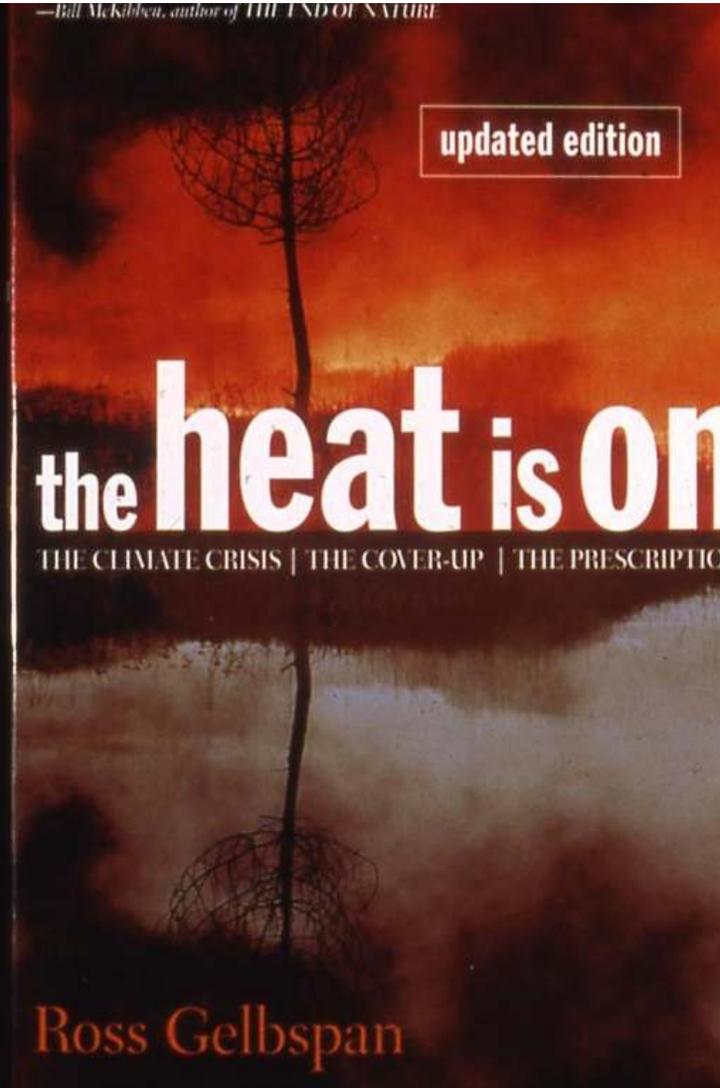
Symbol of Environmentalism -
Earth from Apollo 8



Wisconsin Ice Sheet maximum just 22,000 years ago. Sea level 150 m than today. Ice melted in approximately 5000 - 6000 years. Major cause; sun/earth changes.



1970



1990

Just 20 years

1970 - 2007

- It is cold fact: the global cooling presents humankind with the most important social, political, and adaptive challenge we have had to deal with for ten thousand years. Your stake in the decisions we make concerning it is of ultimate importance; the survival of ourselves, our children, our species.

- The Cooling* by Lowell Ponte (1976)



Map View. Robinson Projection

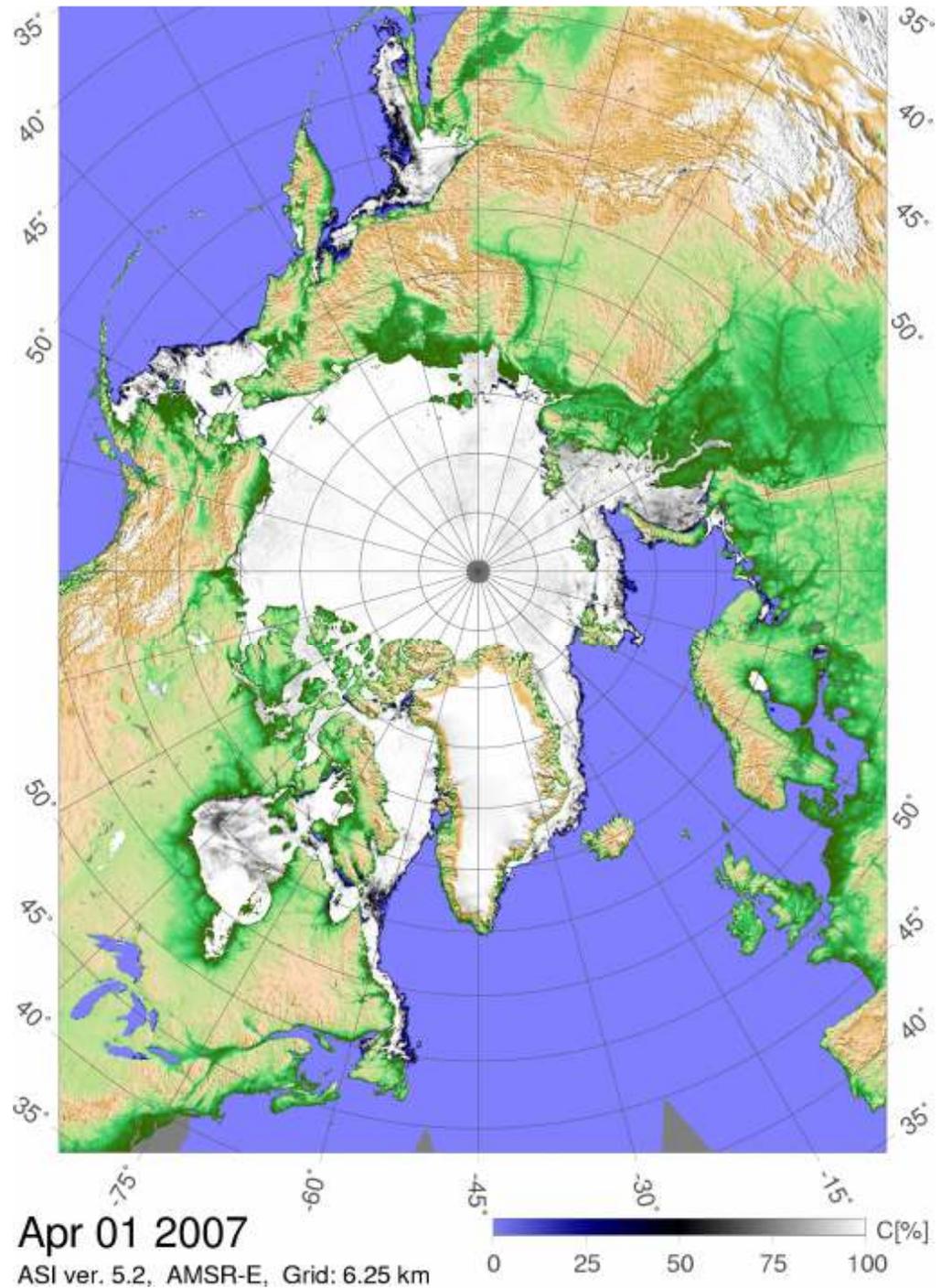
Source: Infoplease web page.

John Dee:
Map 16th
Century



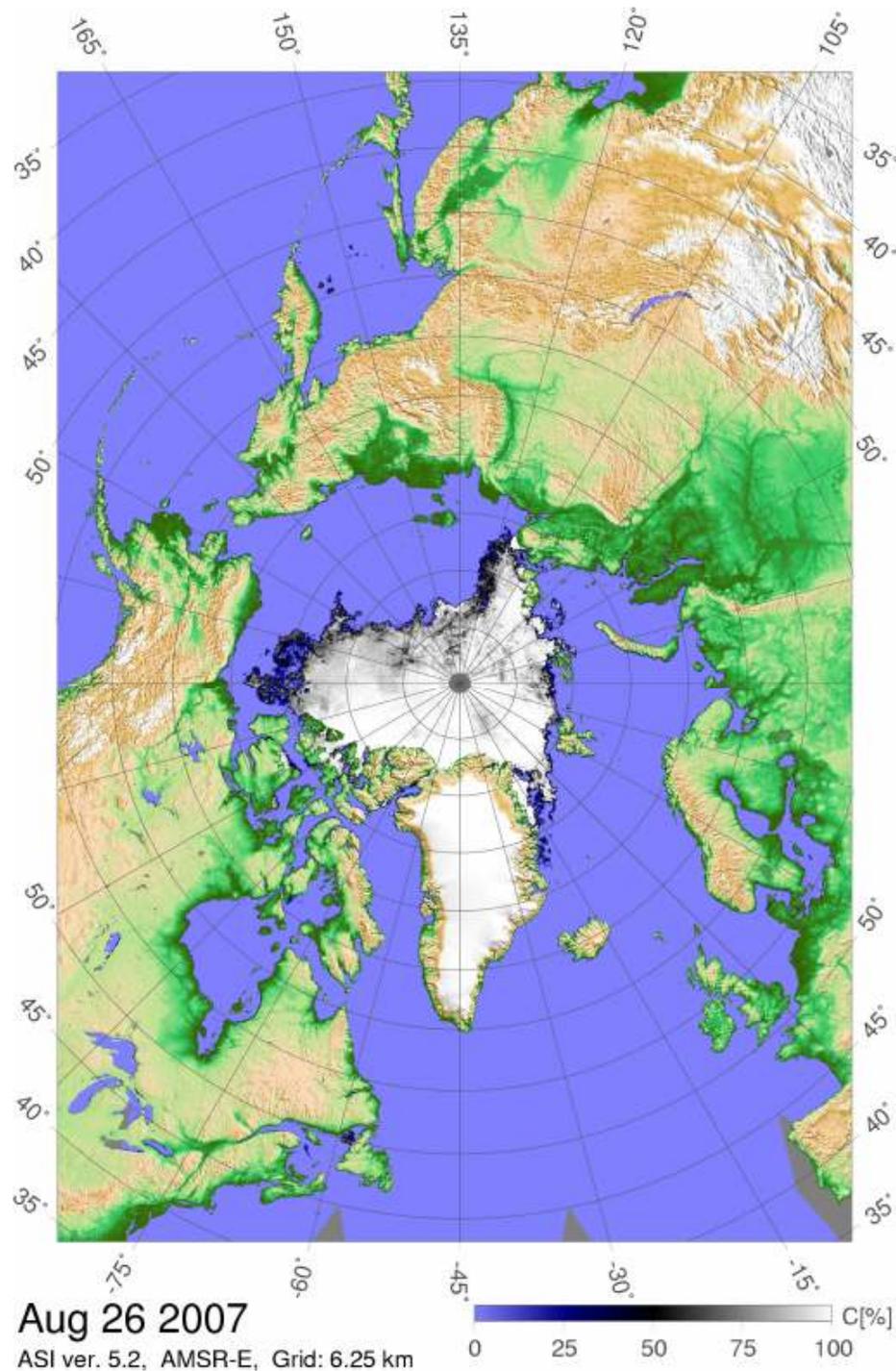
**Ice conditions
April 01, 2007
Approximately
16 million km²**

Source: AMSR-E Sea Ice Maps

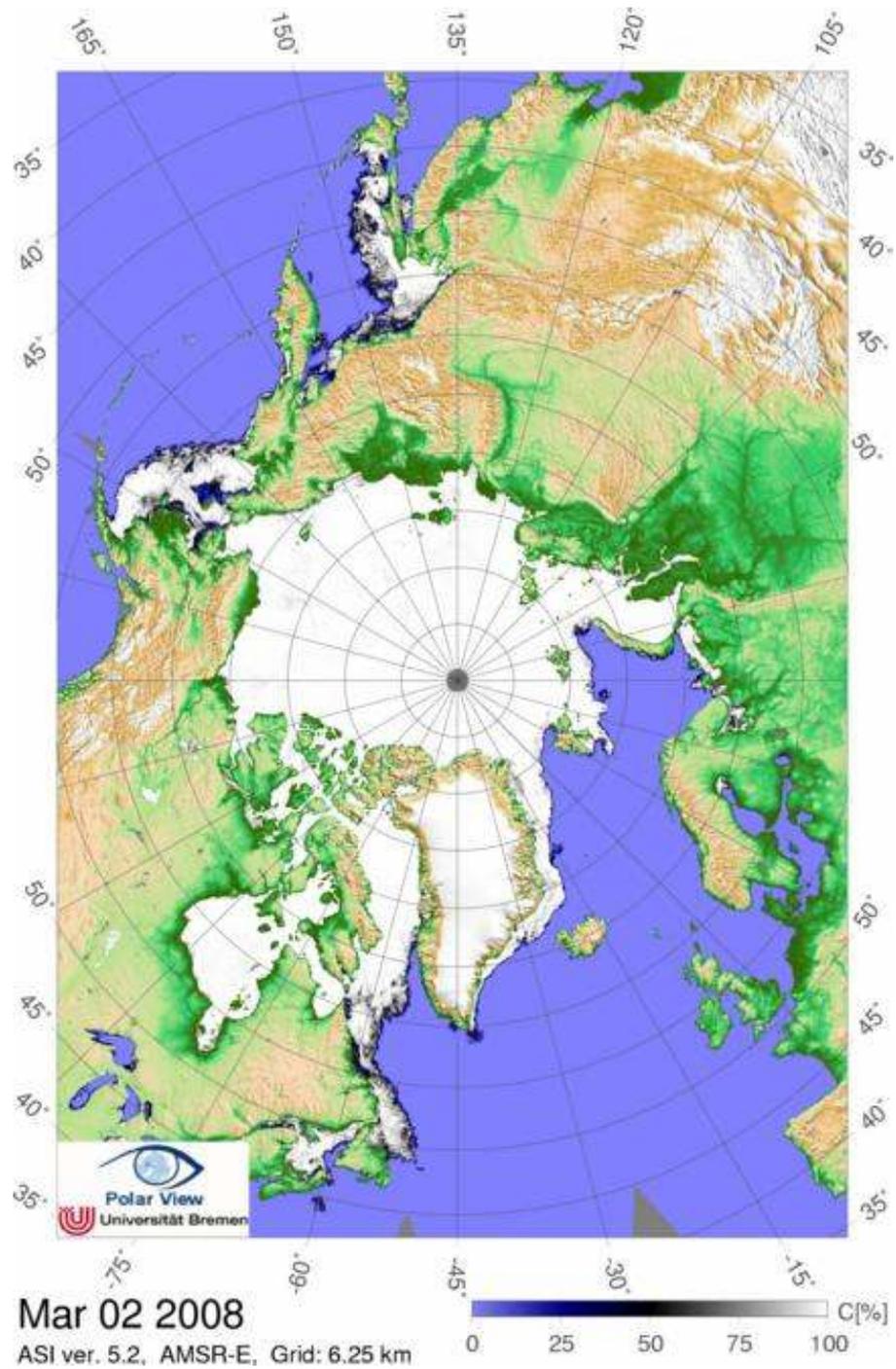


**Ice conditions
August 26, 2007**

**Every summer at least
10 million km² of ice
melts - an area equal to
the United States**



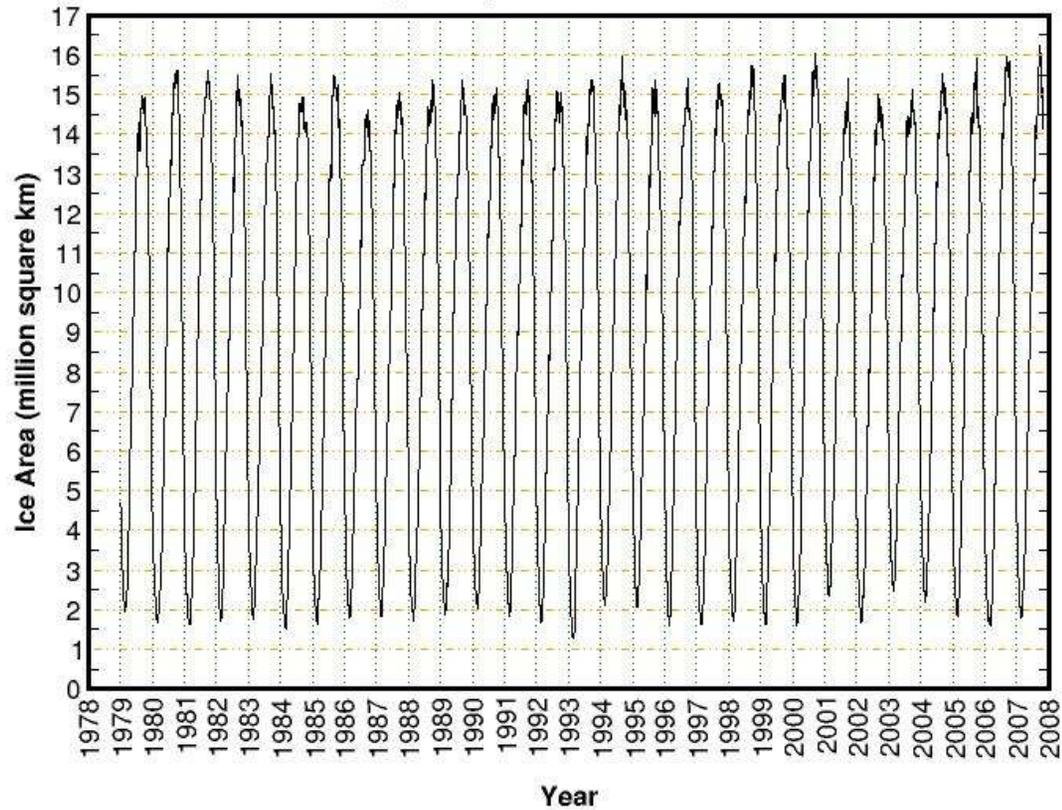
Ice conditions March 2, 2008



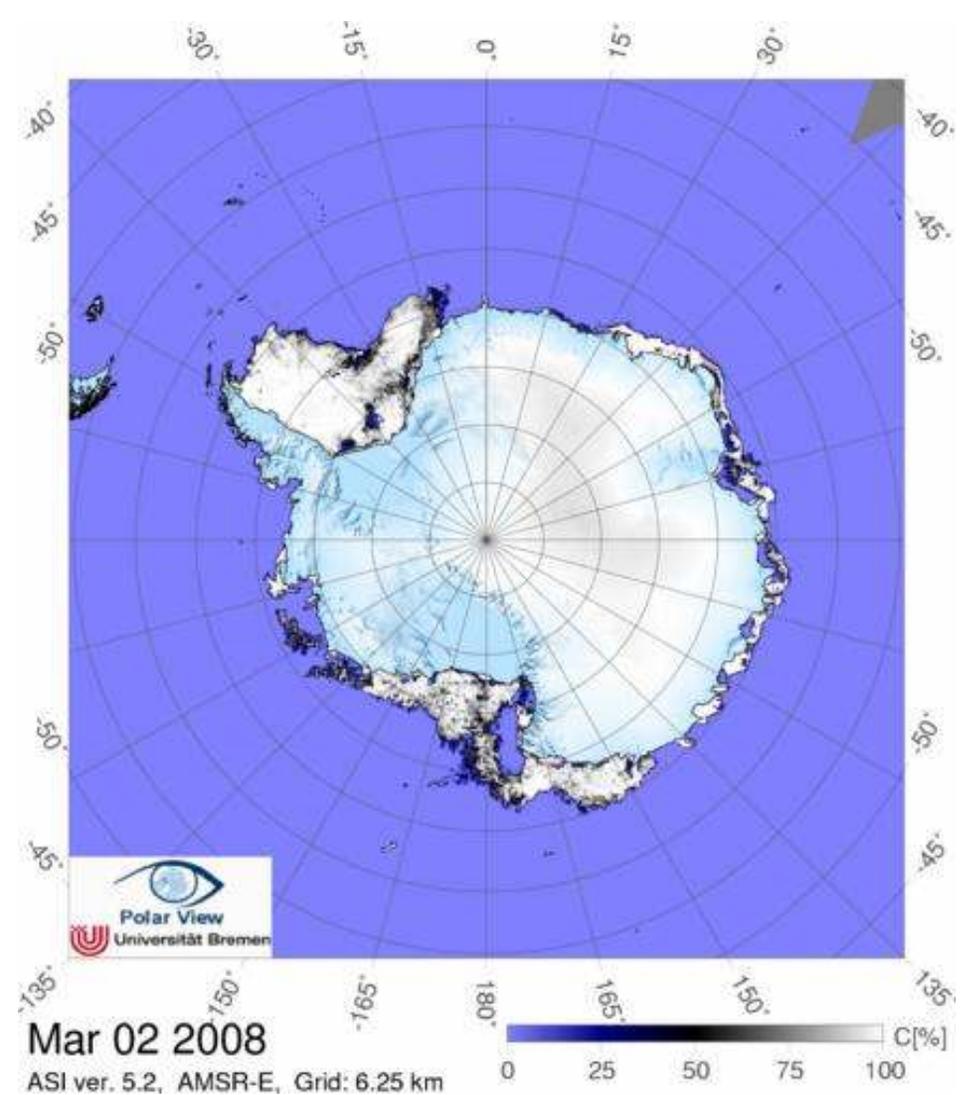
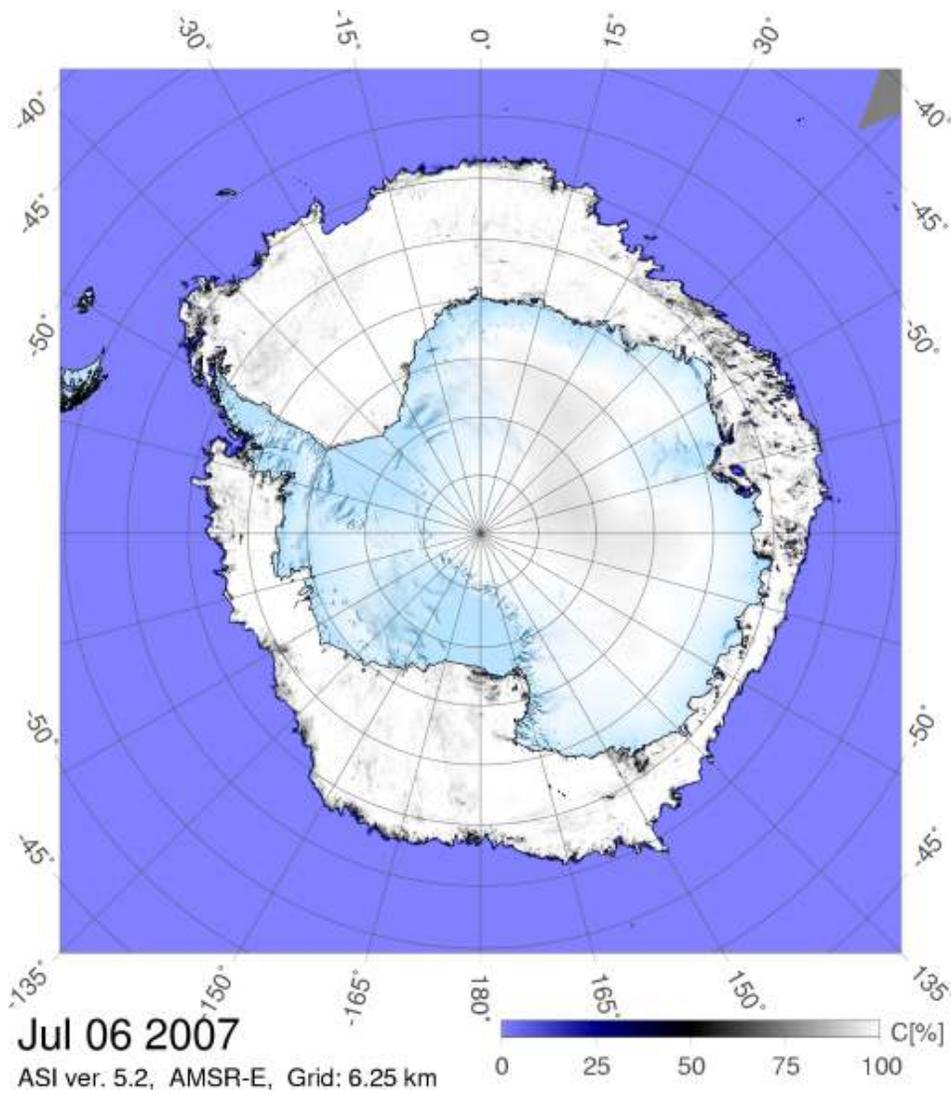
Antarctica

Southern Hemisphere Sea Ice Area

Data provided by NSIDC: NASA SMMR and SSM/I

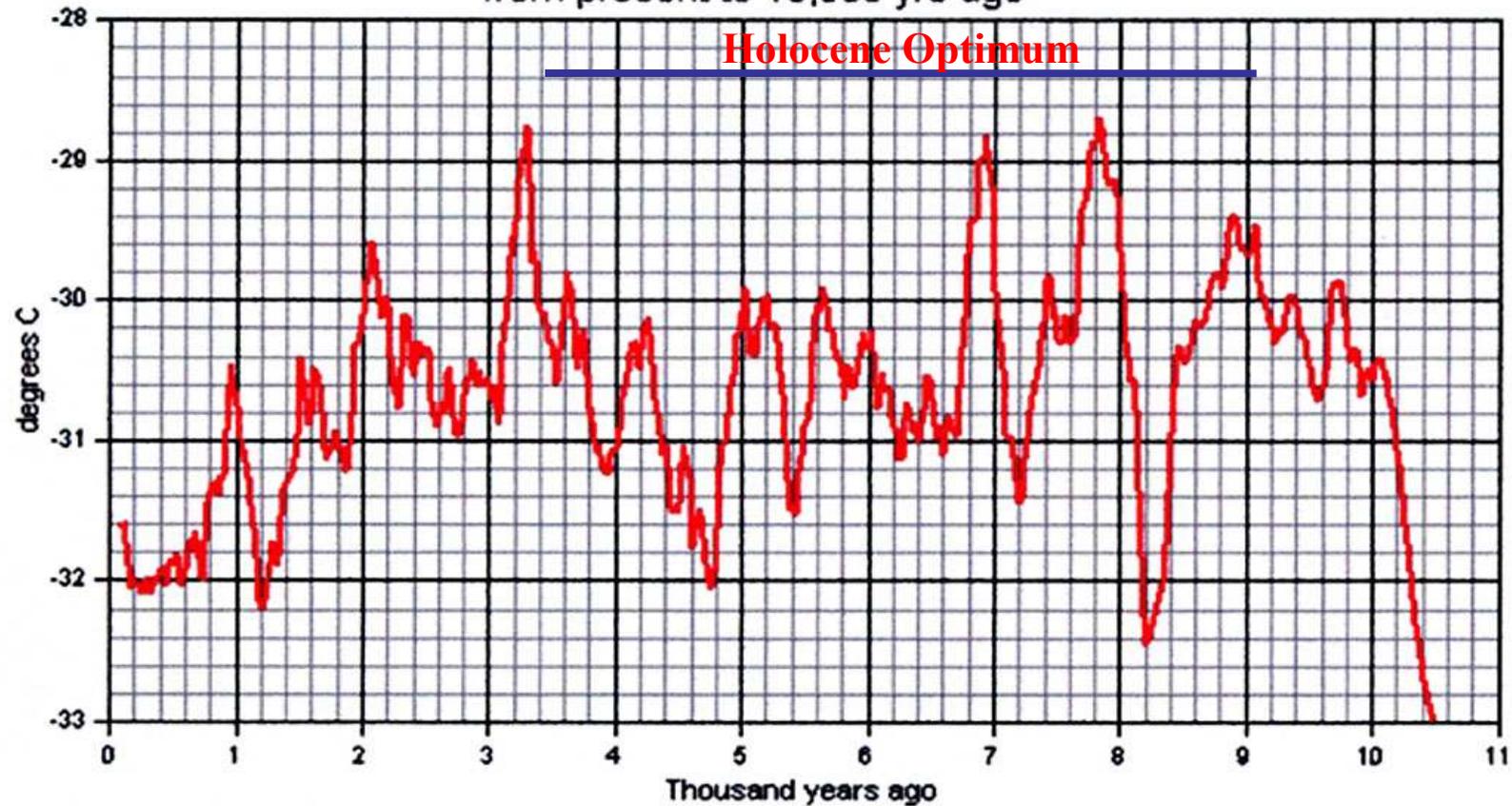


Antarctic Sea Ice extent 1978 - 2007



ANTARCTICA

Greenland temperatures (GISP ice-core) from present to 10,500 yrs ago

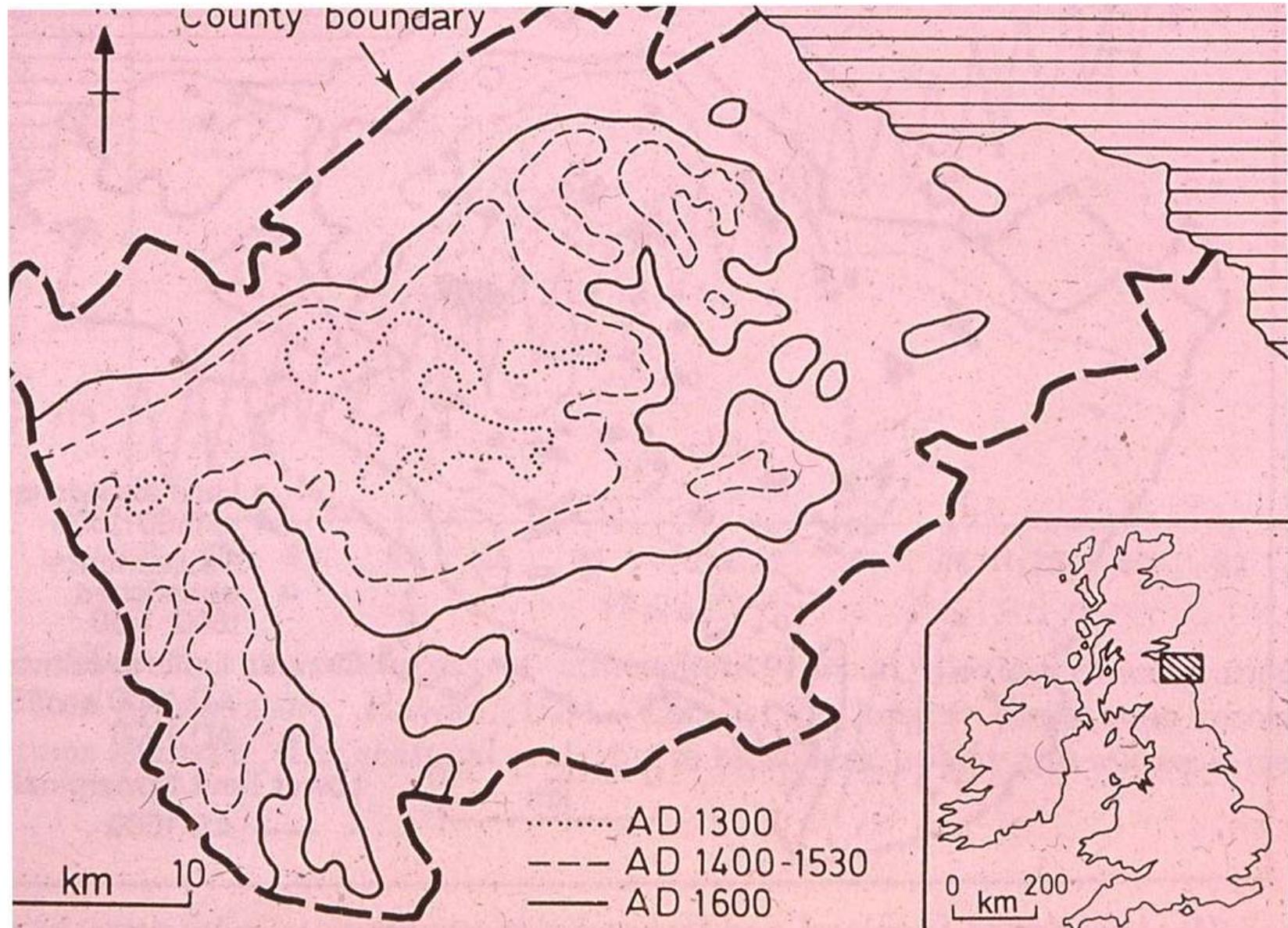


Temperature curve, 10,500 years (right) to present from ice cores in Greenland. Note dramatic warming to high around 8000 years ago then another warm peak 3200 years ago, both warmer than today.



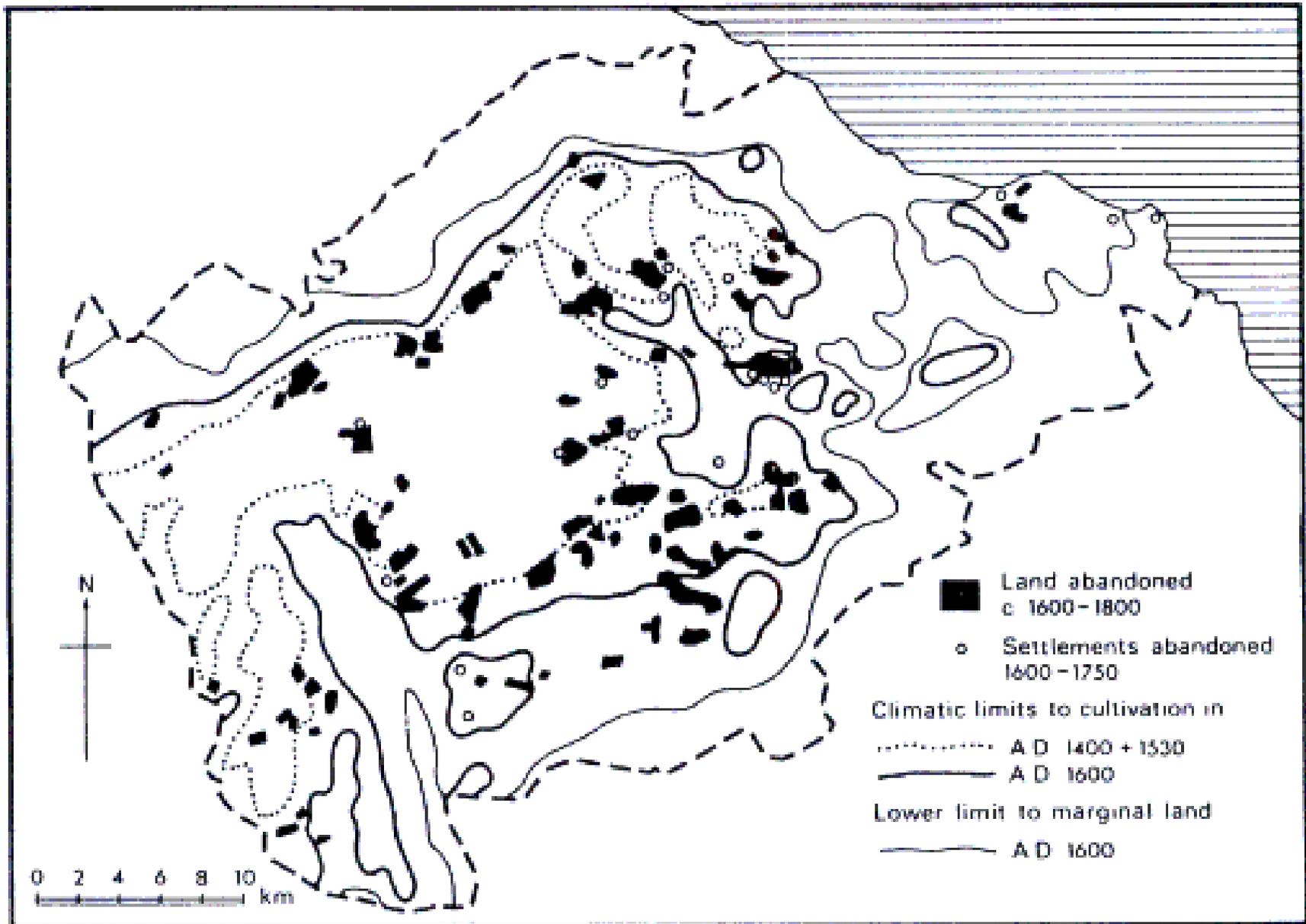
White Spruce 100 km north of current tree line - Radiocarbon Date 4940 ± 170 :

Courtesy of Professor Ritchie



There are over 3000 deserted medieval villages in England.

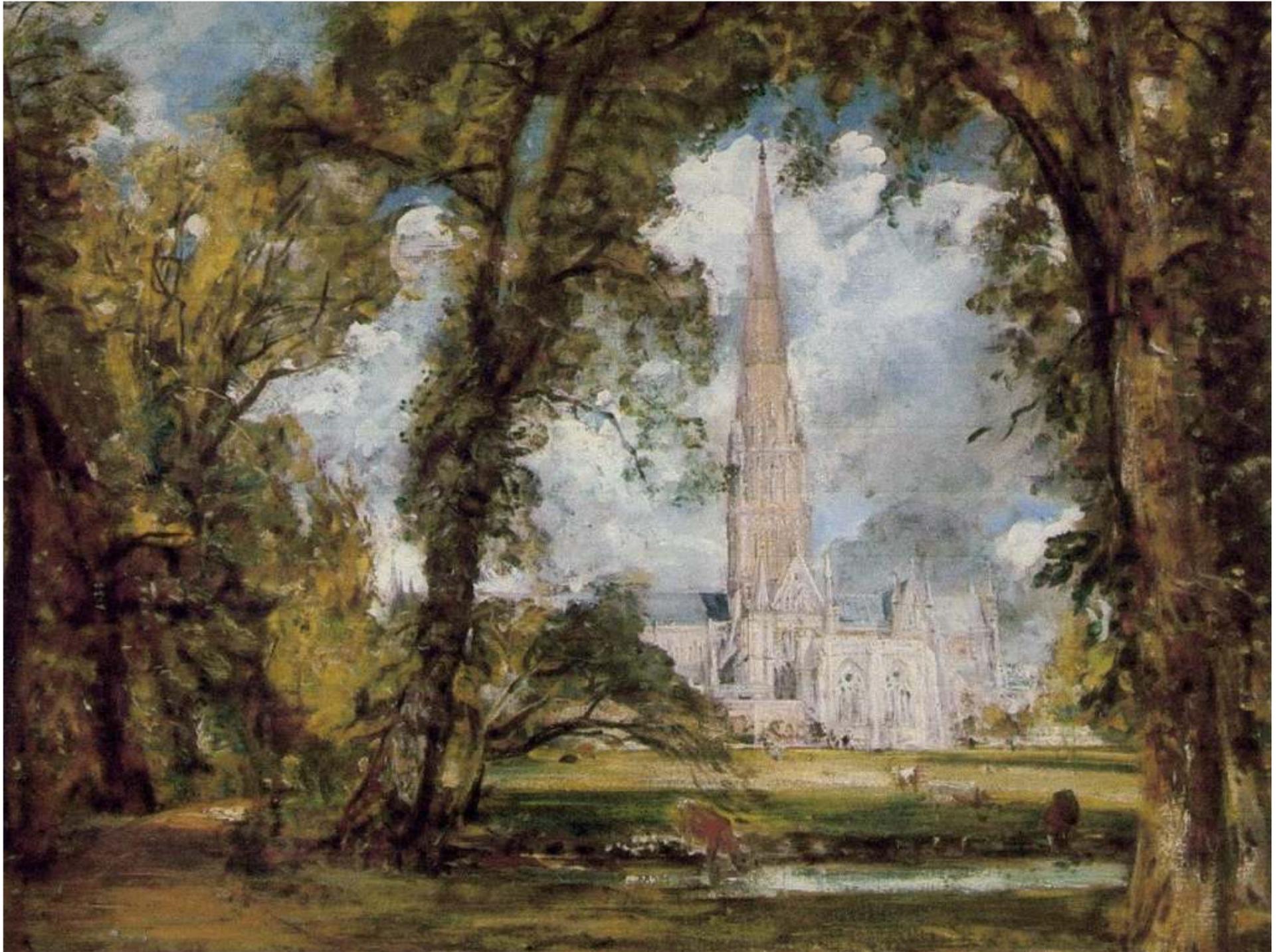
Source; Martin Parry. "The Impact of Climatic Variations on Agricultural Margins." 1978

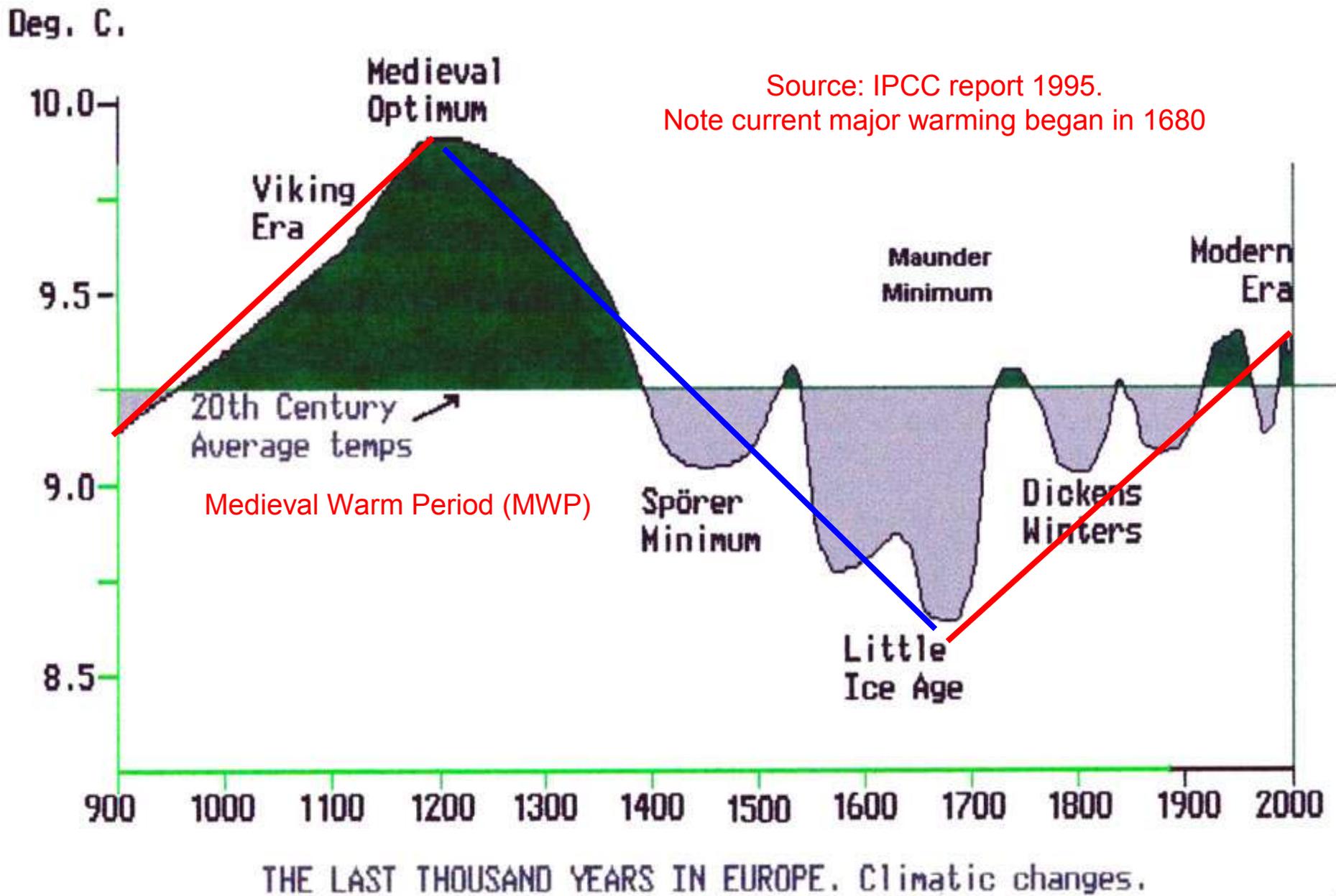


Source; Martin Parry. "The Impact of Climatic Variations on Agricultural Margins." 1978



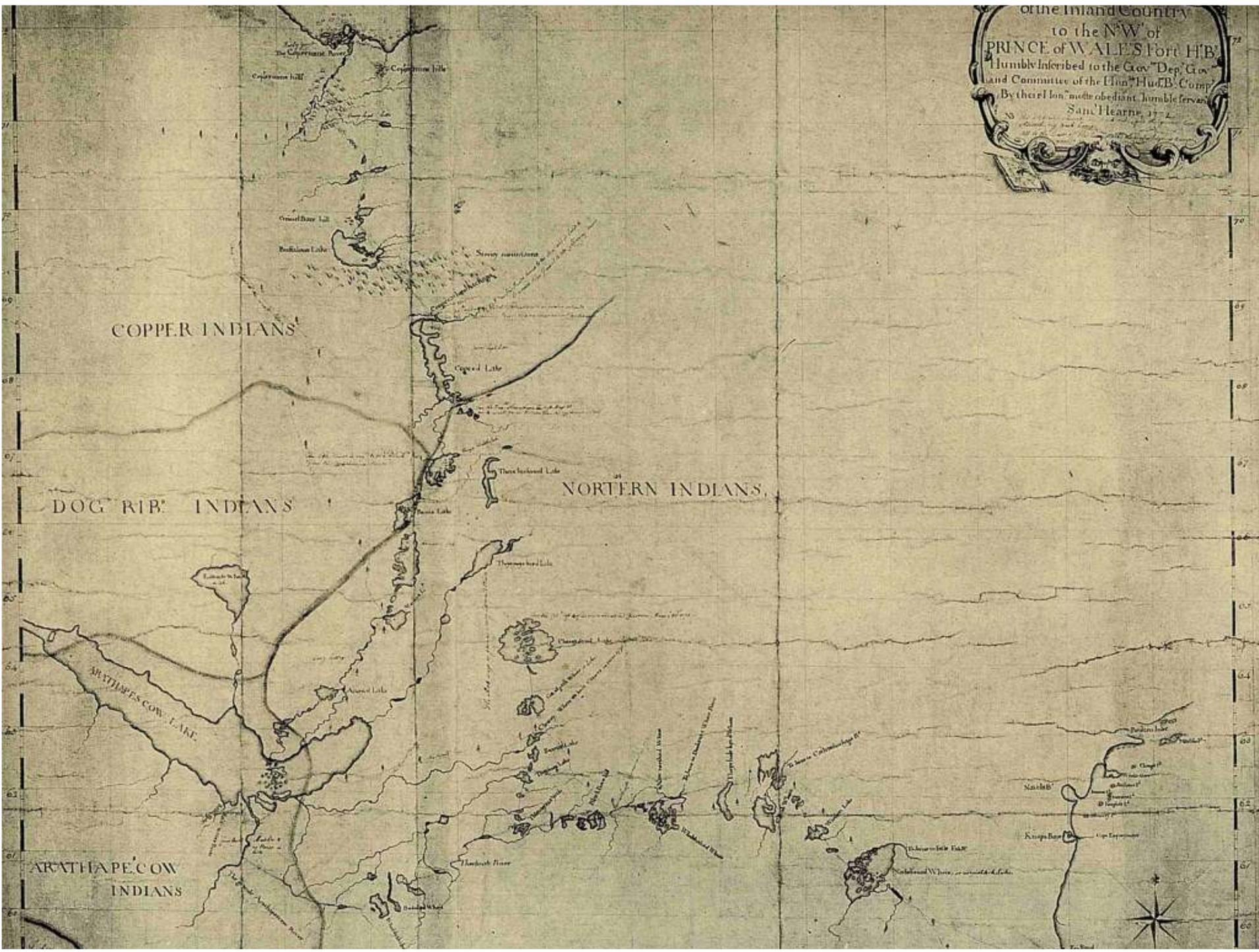
Aerial photograph of the medieval village of Wharram Percy, Yorkshire.

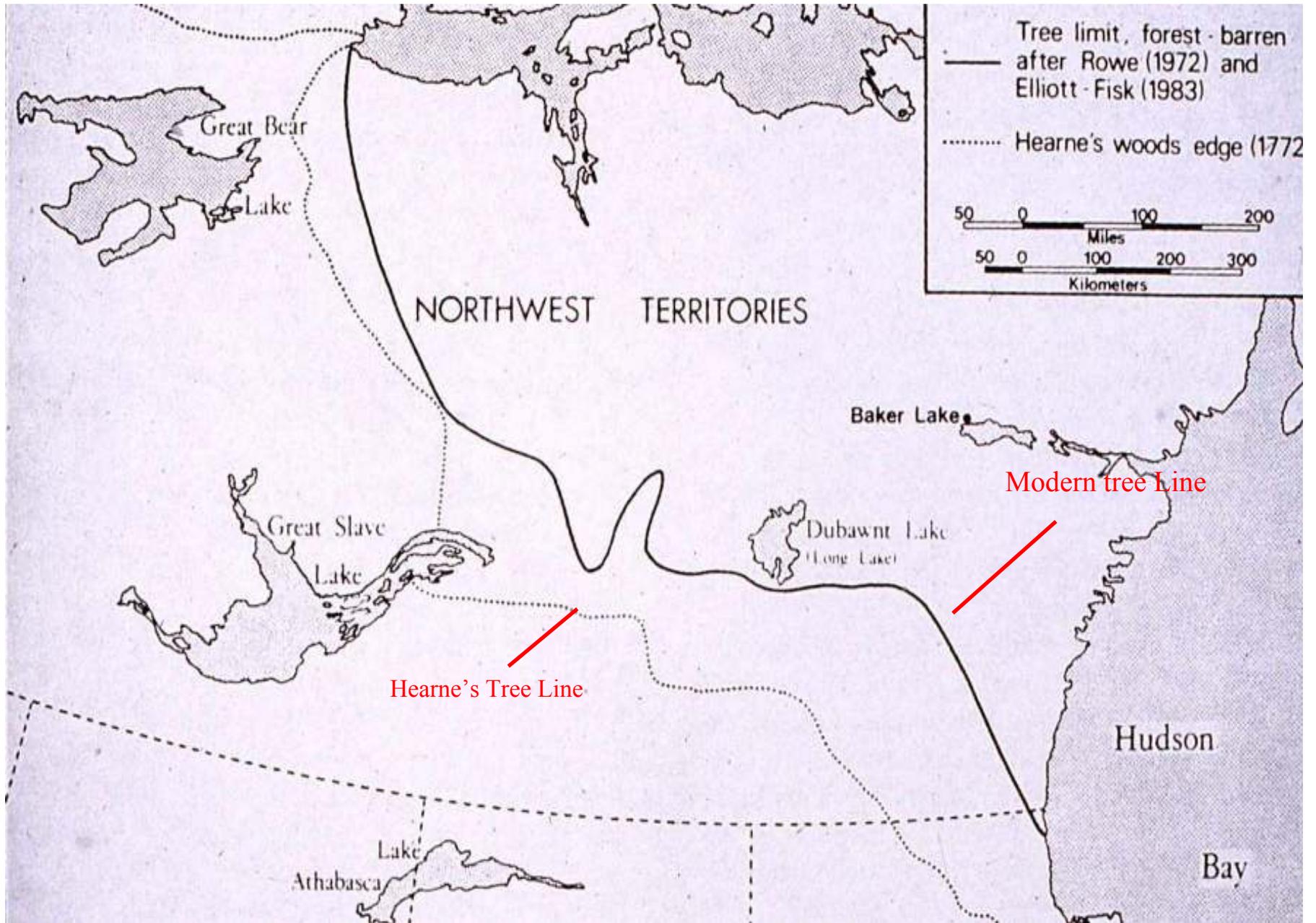




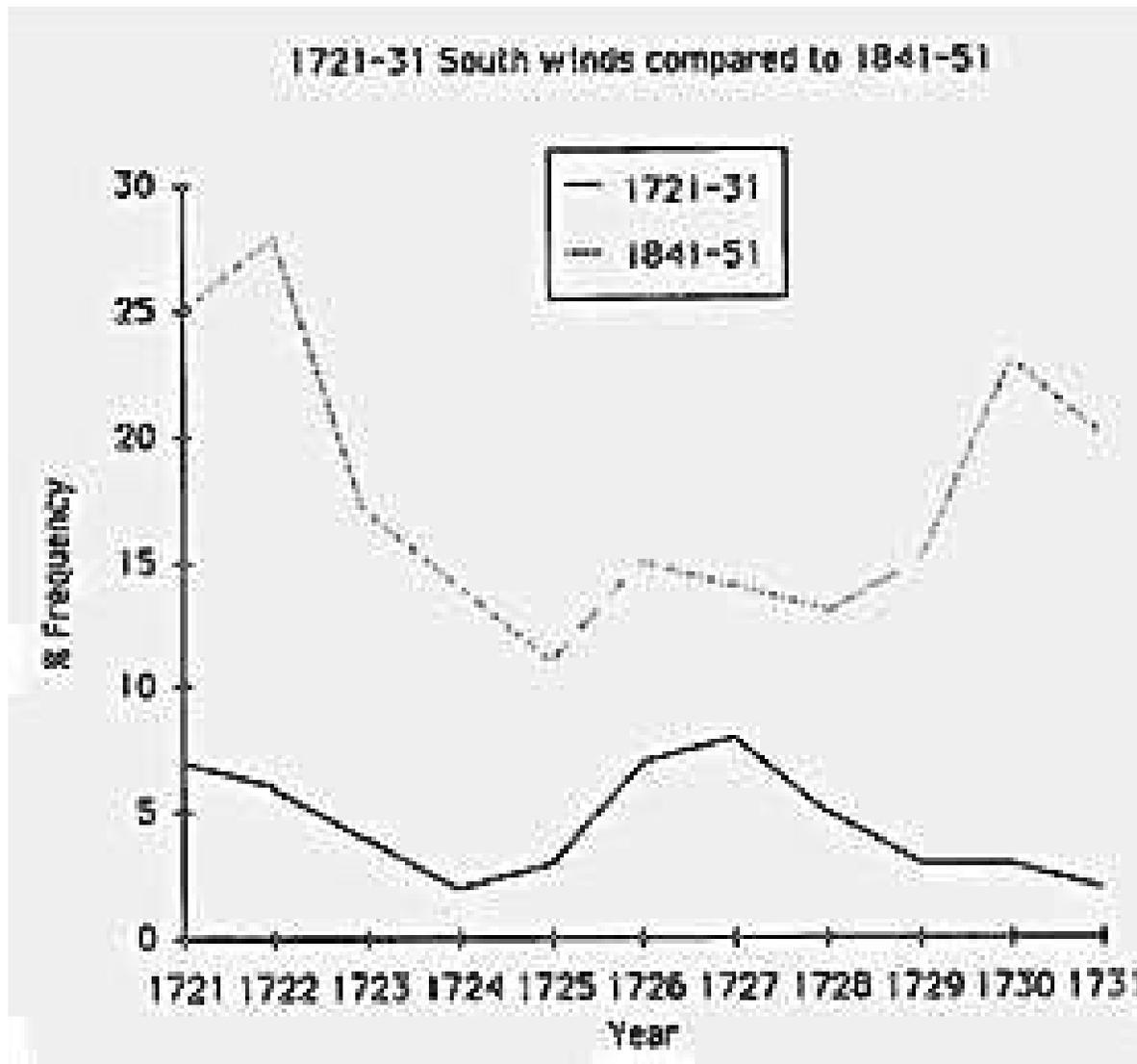
Source: Intergovernmental Panel on Climate Change 1997.

of the Inland Country
 to the N^W of
 PRINCE OF WALES FORT H^B
 Humbly Inscribed to the Gov^r Dep^y Gov^r
 and Committee of the Hon^{ble} Hud^B Comp^y
 By their Hon^{ble} most obedient humble servants
 Sam^l Hearne 1742





Tree line moved as much as 300 km in 200 years as global temperature rose.



Source: Ball, T.F. 1983, The Migration of Geese as an indicator of Climate Change in the Southern Hudson Bay Region Between 1715 and 1851. *Climatic Change*, Vol 5, No 1, 83-93.



Thames in London painted by Jan Grifier in 1683; The Year of the Great frost

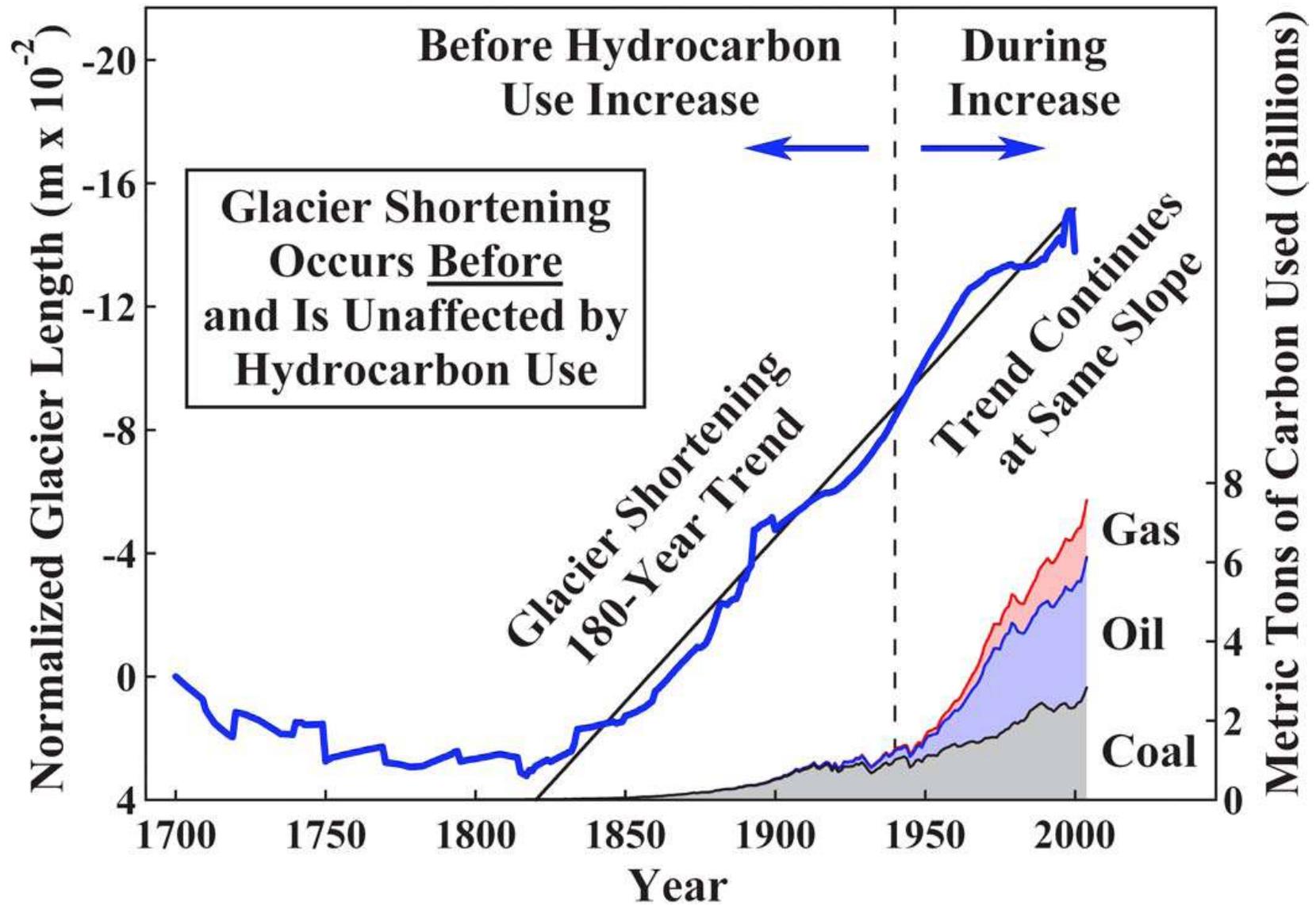


The Frozen Thames 1683 - Anonymous



Symbolism 16th century: Breughel

Winter Scene with Bird Trap



Source: ARTHUR B. ROBINSON, NOAH E. ROBINSON, AND WILLIE SOON *Environmental Effects of Increased Atmospheric Carbon Dioxide* Journal of American Physicians and Surgeons (2007) 12, 79-90.



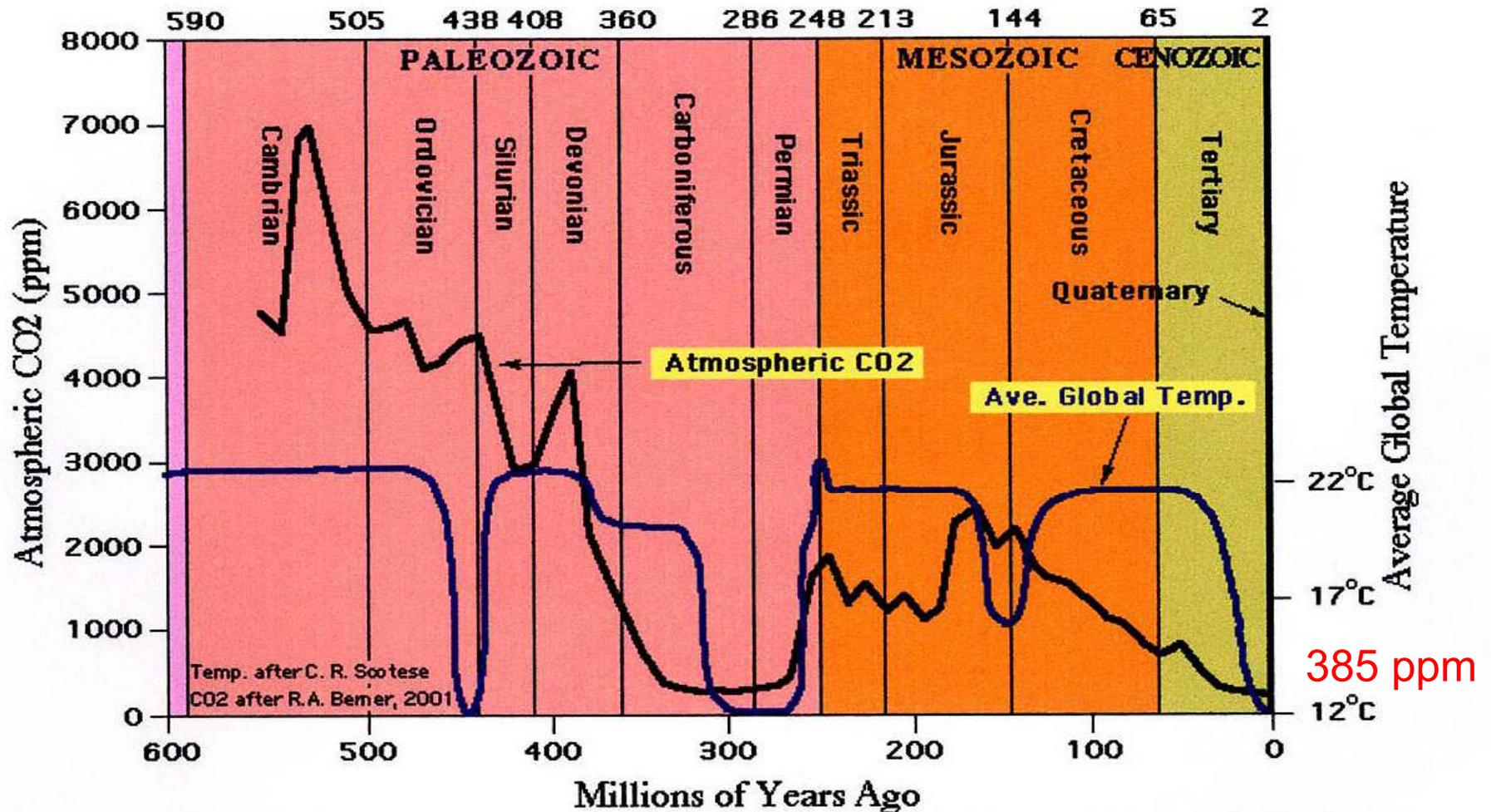
The Argentière Glacier, French Alps, Circa 1850 Source : Emmanuel Leroy Ladurie 1971





Trengwainton Gardens, Cornwall, England.
Main wall built 16th century. Sloping gardens
built around 1820





Late Carboniferous to Early Permian time (315 mya -- 270 mya) is the only time period in the last 600 million years when both atmospheric CO₂ and temperatures were as low as they are today (Quaternary Period).

*Temperature after C.R. Scotese
CO₂ after R.A. Berner, 2001 (GEOCARB III)*

Note (black line) CO₂ is the lowest in 600 million years.
It does not correlate with temperature (blue line) at any point.

Plants

- Most function best 1000 ppm to 1200 ppm.
- Reduce below 250 ppm plants start to die.
- Commercial greenhouses adding 1000 to 1200 ppm to increase yields by a factor of four. Plants use less water.
- No plants; no oxygen; no life.

Leo Tolstoy's (1828 -1910)
explanation?

"I know that most men, including those at ease with problems of the greatest complexity, can seldom accept even the simplest and most obvious truth if it be such as would oblige them to admit the falsity of conclusions which they delighted in explaining to colleagues, which they have proudly taught to others, and which they have woven, thread by thread, into the fabric of their lives."



Pieter Breughel:
The Harvesters.

There are no farms in the cities, but no cities without farms.