

Rising Sea Level

The past shows the future;
A coastal catastrophe lies ahead, for centuries.

By John Englander

Sea Level:

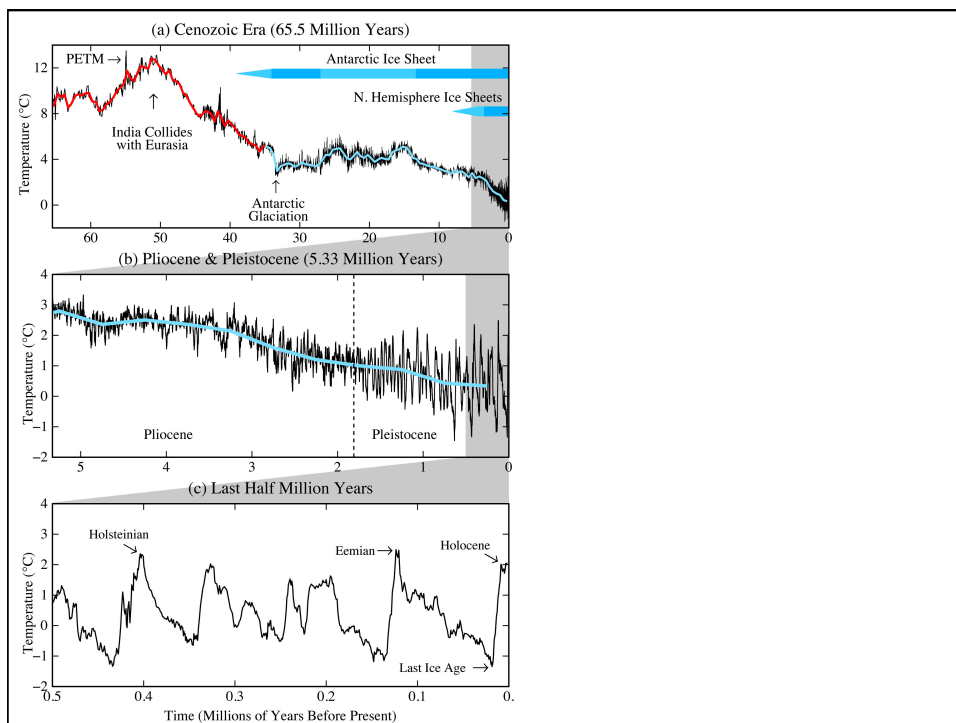
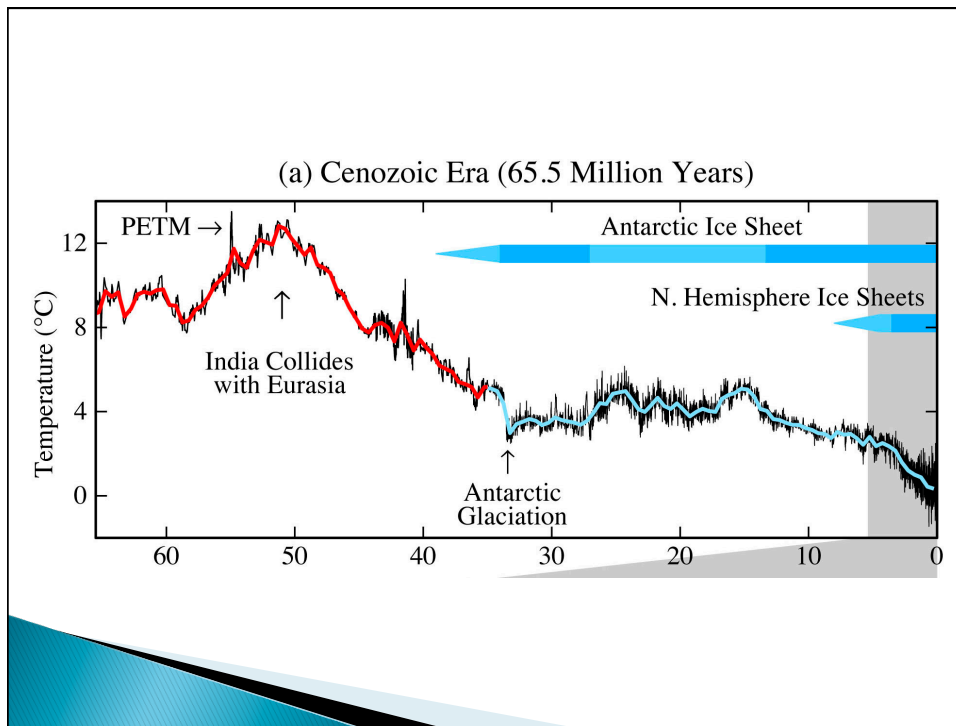
1. Adjusts to LONG TERM global temperature change.
2. Proof of major climate shifts.
3. Slow response. Due to heat in the system, we can slow it, but not stop it.
4. Should change our perspective about what lies ahead.

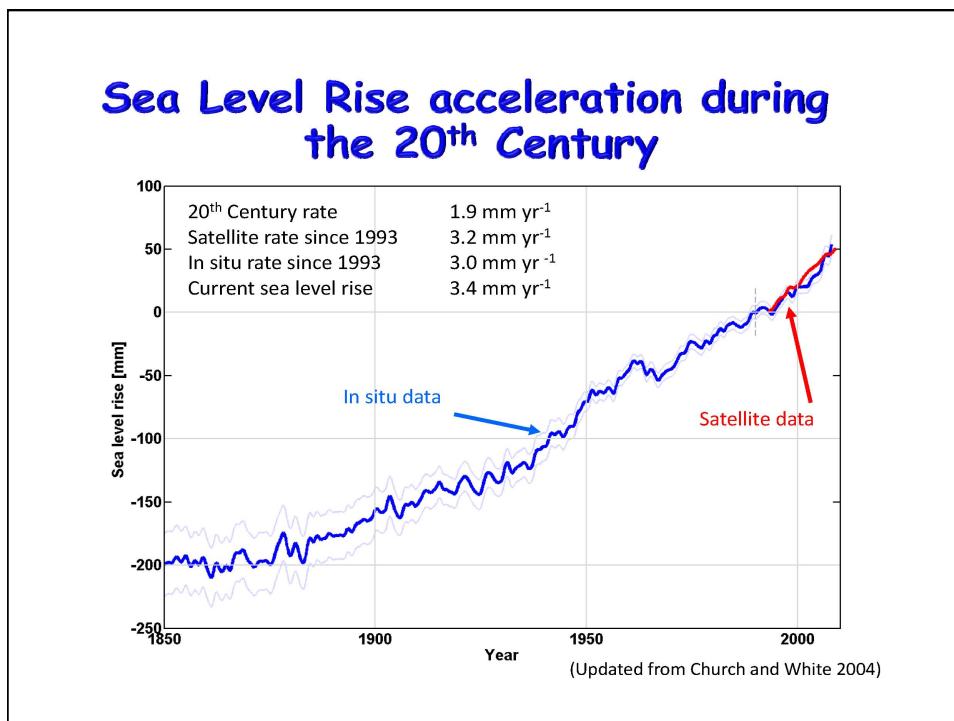
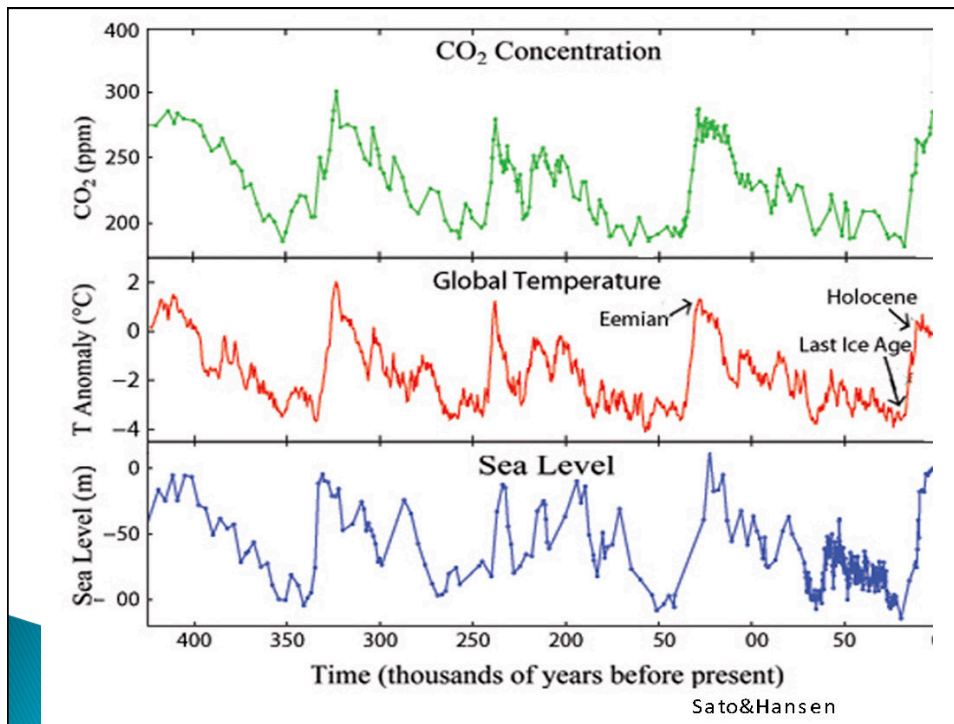
- ▶ Sea Level
- ▶ Temperature
- ▶ CO₂ levels

CO₂ “Greenhouse Effect”
transparent to light; heat barrier

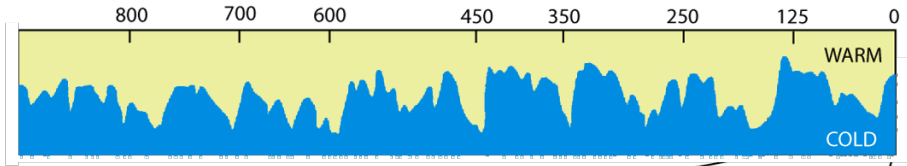
Fourier
1826





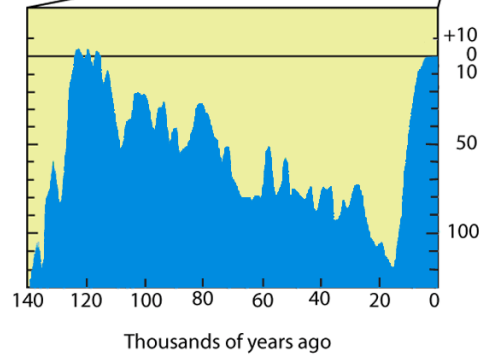


800,000 year sea level record with pattern of 120 meters (400 ft) change

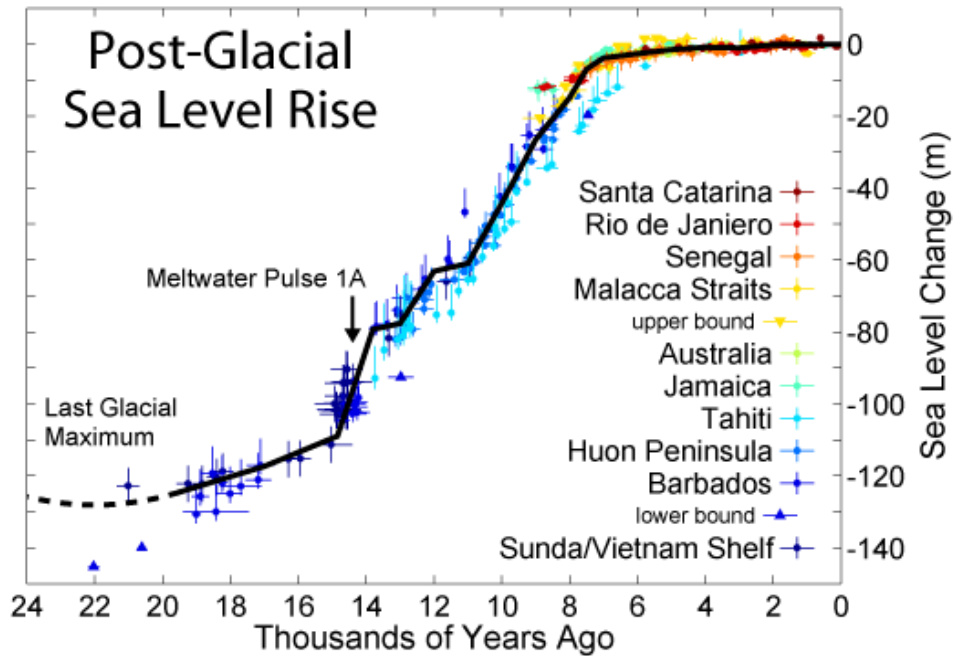


Note:

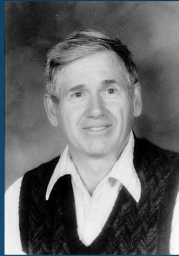
1. Pattern of SL follows the pattern of ice ages, as would be expected from melting ice sheets.
2. 100,000 year cycle is approx 80 kyr drop and fast 20 kyr rise.
3. By historic pattern we should be entering phase of SL decline, that would accompany SLOW cooling towards next ice age.



Post-Glacial Sea Level Rise



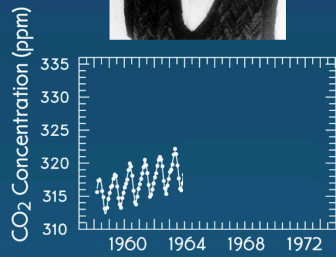
The Mauna Loa CO₂ Record



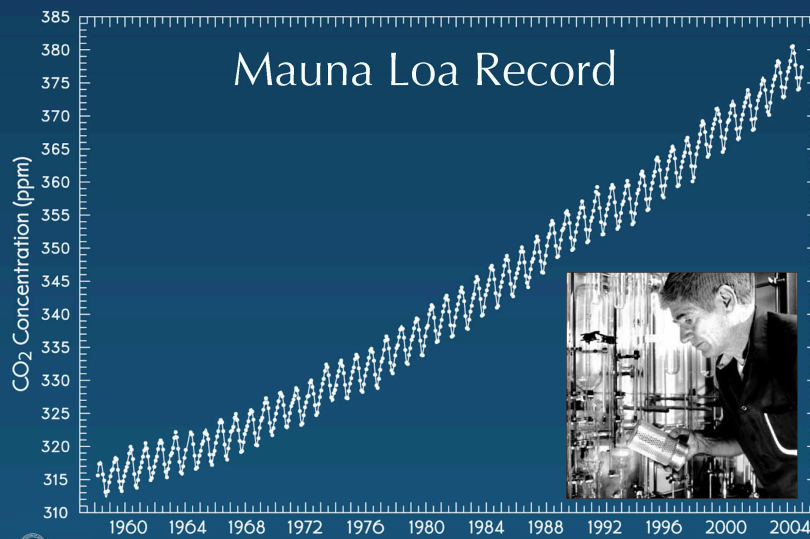
Charles D. Keeling (1928-2005)



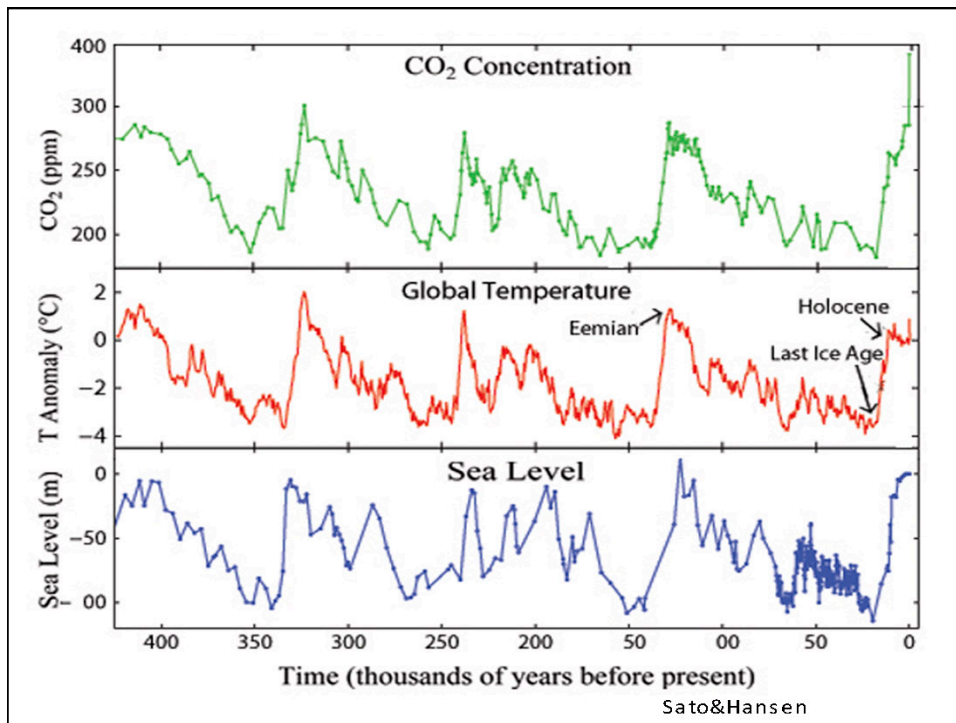
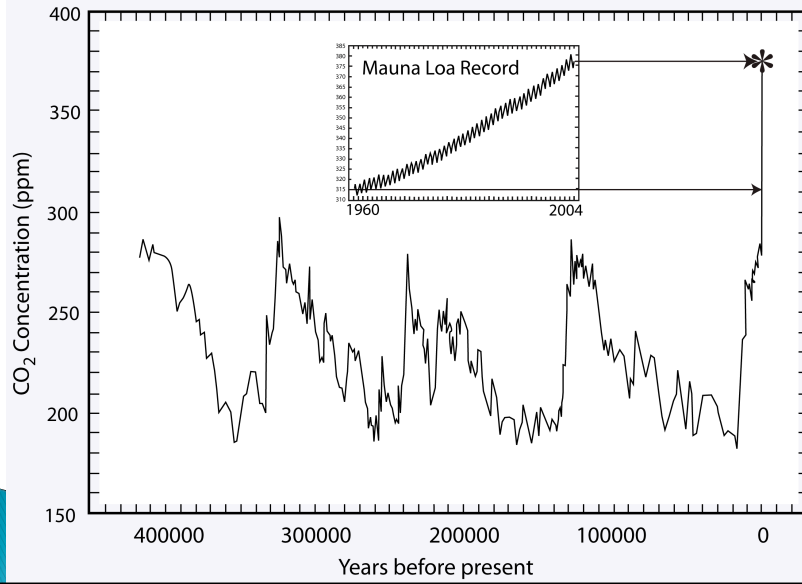
*Image credit: Publication of the National Oceanic & Atmospheric Administration (NOAA), NOAA Central Library.
Photo Date: 1982 February; Photographer: Commander John Bormiak, NOAA Corps (ret.)*

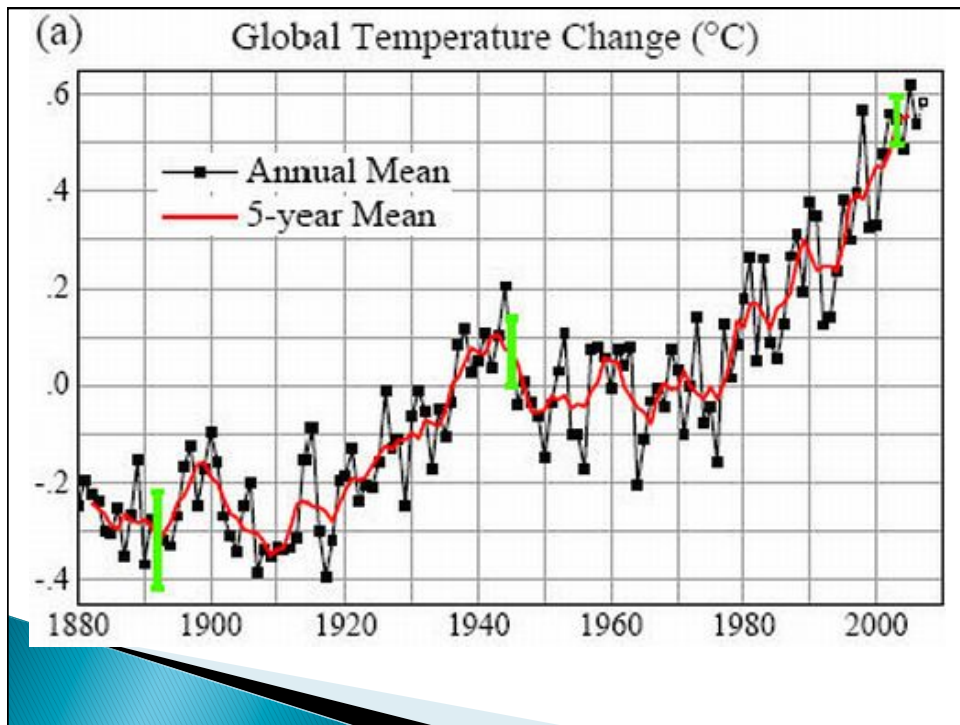
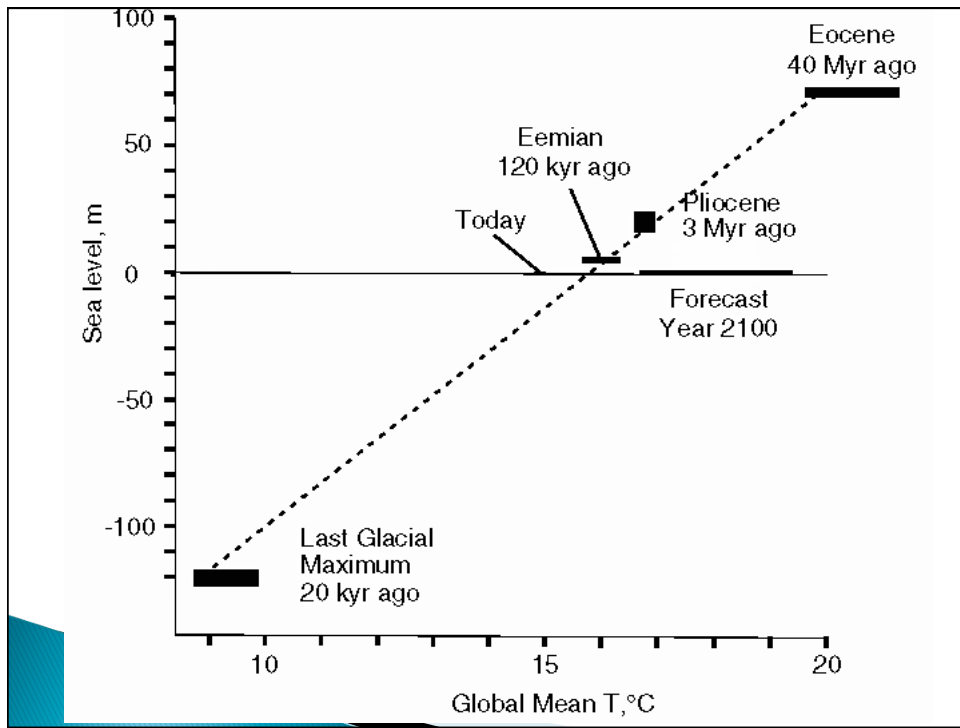


Mauna Loa Record



CO₂ over past 420 thousand years

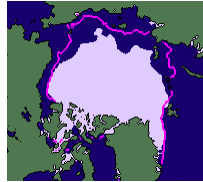




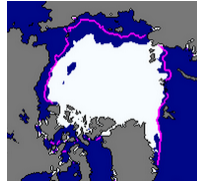
Arctic Sea Ice Change



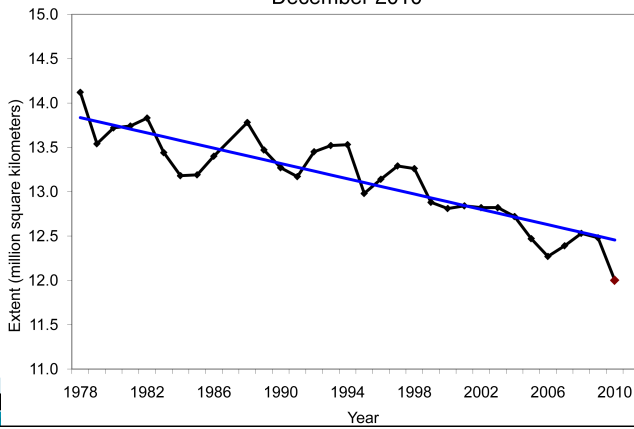
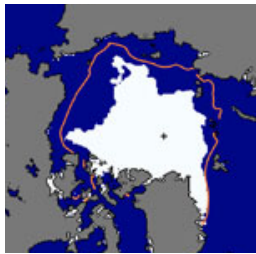
2002



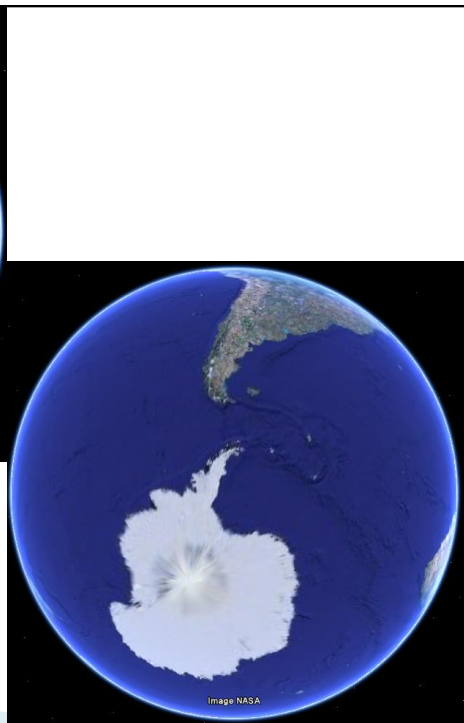
201



Average Monthly Arctic Sea Ice Extent
December 2010



National Snow and Ice Data Center



- ▶ Polar Ice Cap will be gone by 2050; 1st time in 3 million years. Will not affect sea level, but proves unprecedented warming.
- ▶ When Greenland and Antarctica melt entirely —MANY centuries, possibly millennia, SL will rise 265 feet globally.
- ▶ This century: min 3 ft. NOTE: IPCC-AR4 misunderstood; 6 feet or more is possible.
- ▶ Next century worse; By 2100 we could have SLR of a foot per decade

- ▶ The measurements of melting in Antarctica will improve this decade, making the projections more solid.
- ▶ Coastal property premiums will soon turn into discounts, with huge economic impacts.
- ▶ The national security implications of major sea level rise GLOBALLY are staggering and effectively permanent.

Summary / Conclusions:

- ▶ Sea Level change follows long term temperature; the ocean is a huge heat sink.
- ▶ Stable SL of last 6,000 years creates disbelief.
- ▶ SL will rise greatly, next few centuries.
- ▶ Effects, cost, and dislocation will be devastating.
- ▶ Coastal property values could start discounting next decade.
- ▶ Delay makes it worse; Intelligent Adaptation needed.

“Intelligent Adaptation”

1. Deal with the range of projections.
2. Consider the geology as well as the topography; situations vary widely.
3. A long term perspective, though challenging, will yield better ROI.
4. Recognize inevitable limits to government aid due to scale of global coastal disaster.
5. Anticipate coastal property devaluation’s impacts on people, companies, and governments at various levels.

ACCO Book Offer

***High Tide On Main Street:
Rising Sea Level and the Coming Coastal Crisis***

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