Sea Level – Dire Assumptions

Implications for catastrophic high sea levels given computer model predictions of global temperature are extremely troublesome. The IPCC projects that temperatures, using modest emission reductions, will be 2 to 3 degrees warmer by the turn of the 21st century, than global temperatures are today. James Hansen, the Director of the NASA Goddard Space Institute – which is the US climate modeling agency, makes a direct correlation between sea level and projected temperature by the turn of the 21st century:

"The global mean temperature three million years ago was only 2–3 degrees C warmer than today, while the sea level was 25 ± 10 m higher." This 25 ± 10 m in plain English is 15 to 35 meters, or 50 to 114 feet – of sea level rise, this century.

Dr. Hansen makes this correlation twice (likely for extra emphasis) in his 2007 paper Scientific Reticence and Sea Level Rise.

The IPCC graph of sea level for the last 140,000 years shows that sea level during the last interglacial period was approximately the same as today.

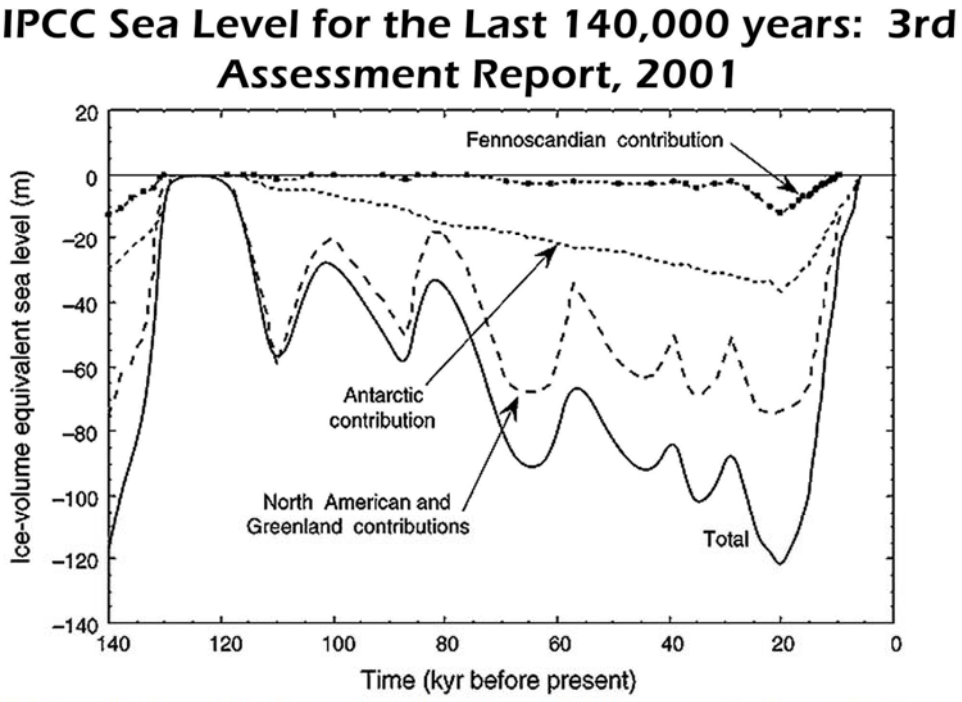
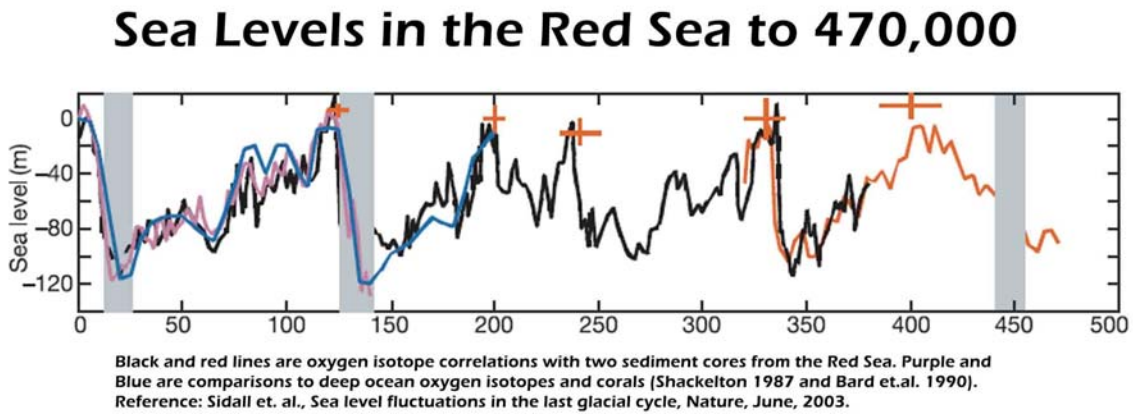


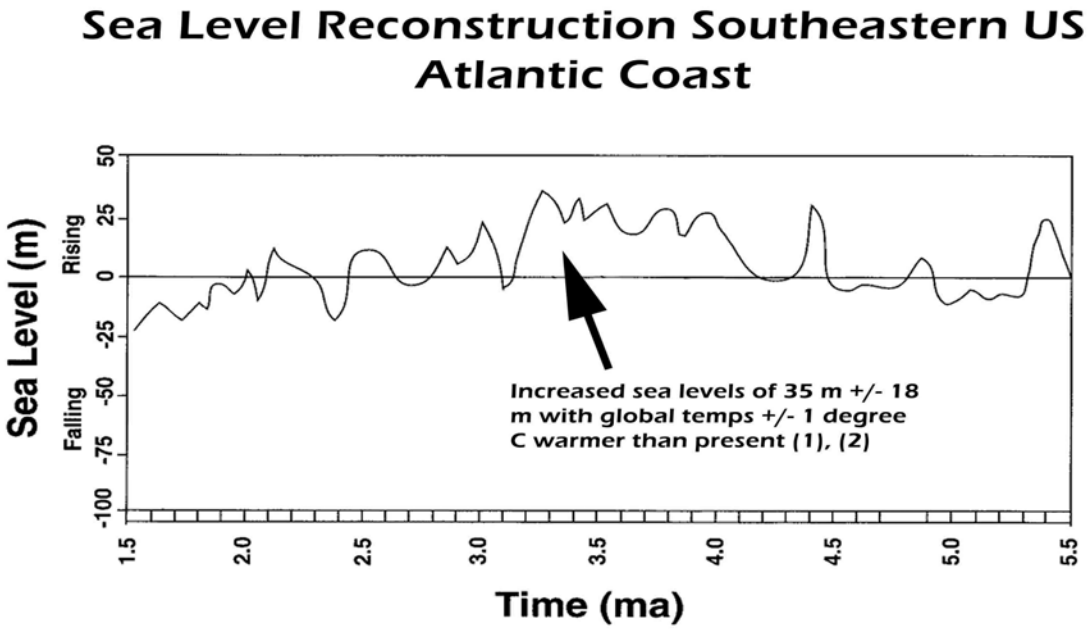
Figure 11.4: *Estimates of global sea level change over the last 140,000 years (continuous line) and contributions to this change from the major ice sheets: (i) North America, including Laurentia, Cordilleran ice, and Greenland, (ii) Northern Europe (Fennoscandia), including the Barents region, (iii) Antarctica. (From Lambeck, 1999.)*

Sidall, et. al., have determined sea level in the Red Sea for the last 470,000 years using oxygen isotope correlation. This image shows that sea level is now at or near its historical high stand for the period.



Black and red lines are oxygen isotope correlations with two sediment cores from the Red Sea. Purple and Blue are comparisons to deep ocean oxygen isotopes and corals (Shackelton 1987 and Bard et.al. 1990). Reference: Sidall et. al., Sea level fluctuations in the last glacial cycle, Nature, June, 2003.

Krantz (1991) looked at sea stand – ancient tidal benches – for the period 1.5 to 5.5 million years ago. The warm period between 2.5 and 3.5 million years ago is known as a "super-interglacial" and is assumed to be similar to projected middle 21st century climate. Sidall and colleagues estimate that sea level during this period was 35 m +/-18 m, which is 22 to 53 meters, or 72 to 173 feet, which is a bit higher than Dr. Hansen's numbers.



Reference: (1) Krantz, D. E. 1991. A chronology of Pliocene sea-level fluctuations: the U.S. Middle Atlantic Coastal Plain Record. (2)Hansen, et.a l., Global Temperature Change, Proceedings of the National Academy of Science, September, 2006.

Global temperature is directly tied to sea level. What we are seeing now across the planet is a temperature that is rising at an unprecedented rate in the historic and the paleo thermometry record and greenhouse gas concentrations that are higher than anything in 20 million years. Carbon dioxide levels are rising at a rate comparable to that seen in one of several mass extinctions on the planet. The greenhouse gas concentration is rising so fast that temperature and ice sheet equilibrium have not yet caught up. Projections of the IPCC and the Goddard Space Institute and the UK Met Hadley Center – which represent by far the bulk of the climate modeling on the planet, show that given significant advances in emission reductions, our planet will still warm 2 to 3 degrees C in the next century.

These projections are coming from climate models that are currently under significant scrutiny because of conservative projections of Arctic sea-ice extent, Greenland ice sheet melt and discharge acceleration, carbon dioxide emission increases, carbon dioxide ocean sink decreases, and Antarctic ice mass balance.

The message cannot be over-emphasized: *the threat to the planet because of global temperature rise and increased sea level is dire*. The injustice that the IPCC has done to sea level projections given their reticent consensus structure is, although appropriate to standard scientific investigation, not appropriate for such a high risk scenario, regardless of the probability.

Logical inference of projected global temperature and the best sea level / temperature analog in the scientific record (the mid Pliocene) should be heeded as extremely significant. Given the extraordinary rate of climate change relative to the scientific record, and knowing that dynamical changes of ice sheets have been a normal working mode for temperature / ice sheet balance across the planet, logic dictates much more alarming planetary scenarios than are forthcoming in most major computer climate projections. Academia is advocating conservative climate projections. Dr. Hansen is leading a rapidly increasing body of climate and Earth scientist who are extremely concerned about near term sea level increases in a planetary warning.

Flooding from sea level does not recede. Once flooded, assets, homes, entire places and their histories are completely lost. The scope of relatively near term climate change today is quite similar too periods in the not so distant geologic past where sea levels were enormously higher than at present.