

New York Under Water, pt 2: What Does a 2-Meter Sea Rise Look Like?

This is part 2 of a series of posts about climate change, rising sea levels, and science fiction. See part 1 [here](#) and part 3 [here](#). Incidentally, if you are a climate change denier, my footnote at the end of this post is for you.

If you find stark sea level change and "submerged city" hard to envision, you can see what a 6-foot sea level rise (or more) looks like at this delightful (for some value of "delight") Google Earth-based [flood map](#).

In this map, south Manhattan Island (northeast corner of map) protrudes into the upper Hudson Bay. Liberty Island (bottom left corner of map) is submerged, although most of the statue still stands above water. Ellis Island is encroached upon, and will eventually sink beneath the waves.

The Colgate Center on the Jersey shore, and the Hudson River Park, just north of the map picture, are now *in* the river, not flanking it. On this bit of Manhattan, from the Police Museum in the southeast, to the financial district south and west of the World Trade Center memorial, the business heart of New York is under 6 feet or so of water. The south end of Broadway is lapped by waves.

Changes on this scale are radical by any measure, and potentially catastrophic. They will not be limited to New York, but will affect any coastal location of low-enough elevation to be flooded with a 2-meter rise in sea water. It is a virtual certainty that we will see a 1-meter increase by 2100, and highly likely that it will be 2 meters.

Depending on the rate of global warming and ice melt in the coming decades, there is a strong possibility it could exceed even that measure. For instance, if the Antarctic Ice Sheet should melt and detach from the continent, [the ocean will rise disproportionately in other regions of the globe](#), and North America can expect to see a sea rise of *20 feet or more*. (Try the 7 meter flood level on the map, and see what that looks like in contrast to 2.) It is not unimaginable that we will see significant sea level change by mid-century. 2050 is only forty years from now: well within most of our lifetimes.

Change

Sea change of this magnitude will have concrete, expensive, and disruptive impact on human life. A large portion of the world's population lives in coastal areas. Even a 1-meter rise will affect 100 million people worldwide; higher sea level rises will affect even more. A 2-meter rise in seas (much less the higher levels that are, in fact, a strong possibility over the next century and beyond) is enough to submerge huge expanses of commercial and residential real estate, dispossessing people, forcing migrations away from coastal areas, and putting an end to the productive use of developed land along coast lines and flood-susceptible waterways.

Such change is the stuff of science fiction. It is not surprising that ordinary people are not thinking about or discussing what changes on this scale are likely to look like, and what impact they are likely to have. As the scientists at [Real Climate](#) observe, "The problem is not that people think that we will get 6 meters of sea level rise this century, it's that they don't think there'll be anything to speak of."

On the one hand such things seem unimaginable: we have no equivalent to events on this scale within our living memory, and anything approaching it (the Biblical Flood; the sinking of Atlantis) has long since been relegated to the realms of myth and legend. On the other hand, to discuss this scenario that scientists are now calling "unstoppable" is to make it real **now**, and that is a place a great many people don't want to go. Parties with vested interests in denying or downplaying climate change have now fogged the field with enough obfuscation and flat-out lies that many uninformed folks can't, or won't, figure out what the scientific consensus is on the topic.[1]

Frankly, it is a disconcerting scenario to think about, much less actually deal with. No wonder so many would rather avoid these concepts entirely. Avoidance won't matter in the end, though. When the Washington Mall is knee deep in water, Congress is flooded, and some of the best industrial/commercial real estate in New York, Los Angeles, and the San Francisco Bay area is unusable possibly as soon as mid-century, there will be plenty of "dealing with it" then.

Are these scenarios unrealistic? Although it boggles the imagination, weirdly, the answer is "probably not." These places may not be under water by 2050, but by the end of this century it is entirely likely that they will be. Remember: we are now dealing with an [unstoppable](#) rise of the sea. Our best minds and specialists in this field calculate that we are past the tipping point, and we are not capable of halting this process.

Rate of Change

The current best estimate of the rate of change is constructed with a number of unavoidable "unknowns": what will the effect of broad-scale warming be on the integrity of polar ice sheets? Should they melt faster than expected, or break free of the land mass of the Antarctic, for instance, this changes a slew of variables that will impact ice melt and sea rise calculations. If other transient events occur, from volcanic explosions to significant changes in global weather systems, these, too, can affect the rate of sea rise. Once the "unknowns" become known variables, and hard numbers (or reasonable estimates) are plugged into those formulas, then it is possible that we could be looking at surprisingly large and even rapid sea level change rates.

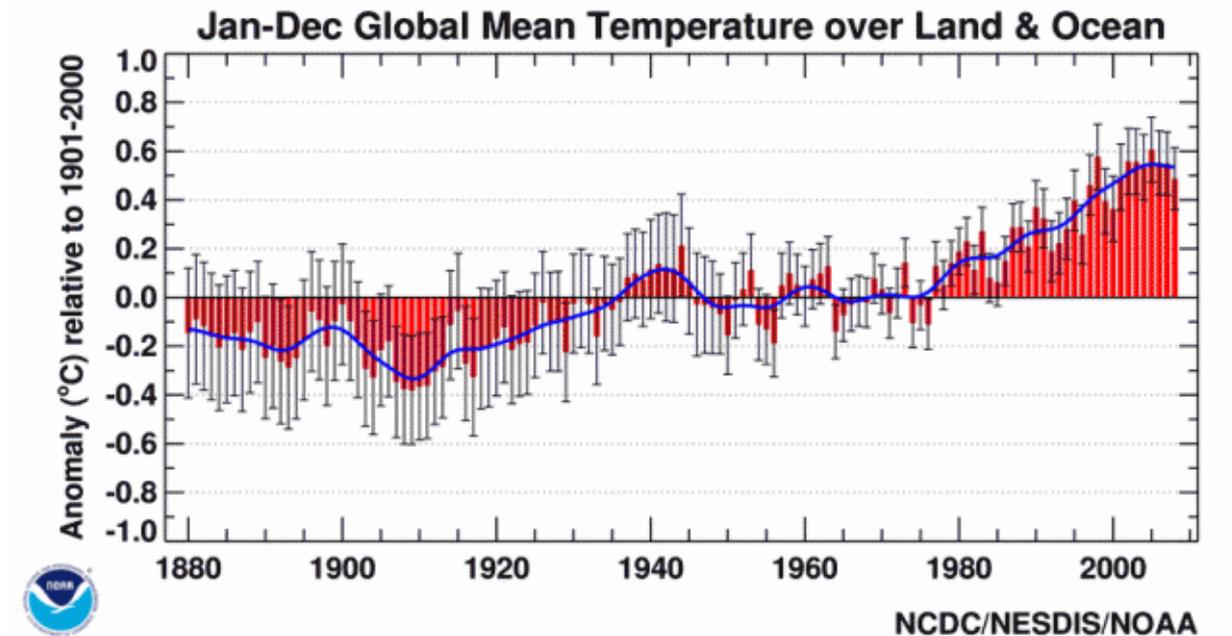
Climatologists note that the 2-meter rise is a **basement** for the expected sea change, but the actual rate, as the data collects and events unfold, may well be much higher.

Right now, the latest calculations suggest the globe is warming faster than we expected. In the range of variables, our current temperature trend is closer to the high-end curve of possibilities, threatening a steeply accelerating rate.

Only time will tell how this will play out in fact, but from the models and data right now, things

argue only for all the change discussed here, and more.

Next post in this series: [Global Warming in Science Fiction](#)



1. There is an overwhelming body of scientific work on the subject, and the preponderance of evidence is clear. **I'm not going to argue the massive body of science that exists on this point.** I've read a lot of it, read many climate denial arguments and the science responses to them, and am personally satisfied about the science consensus and the technical qualifiers that attach to any predictive claims about climate outcomes. In short, I've done my intellectual and scientific due diligence. I encourage anyone who wants to take an informed stance on this subject to do the same, not simply parrot factoids garnered on the interwebs or take them at face value.

My interest in this and other climate change posts I may make is to take the current science consensus as starting point, and use that as springboard to ask, "what if?" In this case: "What if this kind of massive earth change happens? What does it mean for Life on Earth, or at least in coastal areas of America?" I find that a fascinating question, and one very germane to the subjects science fiction deals with.

For readers who wish to become more informed on the science side of the subject, I invite you to take a look at what leading climatologists have to say at RealClimate.org. It is a blog, technical paper resource, and discussion community inhabited by professional climatologists who render climate science into understandable language for the educated layperson. They also take pains to address in detail the many mistaken claims coming out of the climate denial ranks. I also recommend googling around the resources at NOAA, the UN and the Potsdam Institute for Climate Impact Research, the intellectual home of climatologist Stefan Rahmstorf whose sea level rise estimates inspired this series of posts.