Most climate change projections end at the end of this century. When the IPCC issued its first report, however, 2100 was 110 years in the future. Looking that far ahead right now would bring us closer to 2150 than to 2100. We're only beginning to get a sense of the impacts of climate change that far ahead.

What happens if we get to net zero? Basically, the temperature will tend to stick at the same level for a long time. Some of the CO2 will get slowly absorbed into the ocean over a long period of time, but the ocean will also gradually release some of the heat it has been absorbing. The two effects will more or less cancel out. Additional warming could happen, however, if the higher temperature triggered other sources of warming such as methane release from permafrost.

Changes in the oceans will continue over a long period of time. We have a fairly good, though still incomplete, ability to predict changes in sea levels and other ocean phenomenon. According to the most recent IPCC report (AR6), the oceans will continue to warm during the rest of this century and quite likely until 2300 even under low emission scenarios. By 2150, global sea level will rise even in a low-emission scenario between a foot beyond today's level and three feet (but perhaps as much as six feet). (AR6 9-9) That doesn't take into account aspects of the process we don't understand yet, such as possible acceleration in ice loss. With warming between 1.5° and 2°, non-polar glaciers will eventually shrink by half, as will the top ten feet of permafrost.

What about *really* long-term sea level rise? The longer the time span the greater the uncertainty, but the projections are still worth considering. Even if we keep warming at 1.5-2.0 °C, sea level will continue to rise for thousands of years. At 1.5°C of warming, sea level would rise seven to ten feet over the next two thousand years years (roughly 4000 AD). At 2°C, we'd be talking about nine to fifteen feet.

Even after two thousand years, sea level rise would continue. Over the next ten thousand years, the figures go to 18-22 feet for the lower temperature and up to a possible 40 feet for the higher one. I dislike the phrase "jaw dropping" – lots of people would need maxillary surgery if that happened as often as the phrase gets used. (AR6 9-121) Still, the extremely long-term sea level rise projections seem to fall in the jaw-dropping category. Archaeologists might have to use diving equipment to investigate any of today's major coastal cities. Instead of the Bay being about five miles from my Oakland house, it would be a short walk.

The projections I've given involve relatively *optimistic* scenarios, where we succeed

in keeping warming below 2°. Things would be worse at higher levels of warming. It's also important to keep two additional facts in mind: First, sea level rise will be higher in some places and lower in others. Second, wave action and storm surges reach further inland than the areas that show up as being within "X feet" of sea level.

But honestly, you might be thinking, why should we care about these scenarios many years after we are all gone? Part of the reason is the simple interest in looking into the future beyond what we will ever be able to see directly. Another part is the knowledge that, in just a few decades, 2150 will be within the planning horizon for major infrastructure.

But in a deeper sense, these projections are a reminder about the indelible impact our actions are having on the planet. The 20th and 21st centuries — for better or worse — are going to leave their imprint on the physical world for a very long time to come.