hundreds of gigatons of carbon generated by human activity?

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I was surprised by Spencer Weart's comments on my previous letter. I had explained that when floating sea ice melts, the sea level would actually go down and not up, as the general public has been led to believe. I further stated that the Vostok and Dome-C ice cores from Antarctica show that the main Antarctic ice mass has not melted in the past 730 000 years. That evidence would seem to remove most of the planet's ice as a possible factor in coastal flooding in the event of global warming.

Instead of addressing those statements, Weart chose to introduce a completely different situation, namely what happens when the ocean's mean temperature rises—something I never mentioned.

Of course, warming the ocean could raise the sea level due to expansion, as evidently happens during El Niño events, but no one suggests that ocean warming could raise ocean levels by tens of meters and flood low-lying areas. Increased evaporation has apparently lowered ocean levels in some warmed areas.

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Weart replies: A notable feature of climate science is that most of its issues, unlike most questions in physics, involve evidence and arguments that are scattered among many specialties. People in one specialty are rarely familiar with the details of evidence from another, and the public grasps still less. A letter in this space of a few centimeters must miss a lot, and both letter writers are correct that I failed to go into details of serious concern—for example, I mentioned carbon isotopes only in passing. I thank Edouard Bard for rightly pointing out that the Suess effect was historically the most important demonstration that human activity is rapidly adding CO_2 to the atmosphere. His letter offers this and other good ways to answer some questions raised by uninformed people who can grasp physics arguments.

George Smith's concerns are among many issues in the study of sea-level rise, a subject that scientists have discussed for half a century without reaching consensus on all points. Still, nearly all students of the topic have come to agree that the rise in the next couple of centuries will almost certainly be greater than zero, with a significant component due to thermal expansion; the expansion, in fact, is the surest thing in the whole business. Experts have also long agreed, as Smith rightly says, that the main Antarctic ice dome will not play a significant role in the next few centuries. Still under discussion is a possible large component of future sea-level rise caused by the slow collapse of other ice sheets—West Antarctica and Greenland. In the last five years, new field evidence has caused some experts to change their opinion of such a collapse from "highly unlikely, scarcely worth worrying about," to "possible, worth seriously worrying about." (For history and references, see http://www.aip.org/history/climate/floods.htm, end of page.)

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