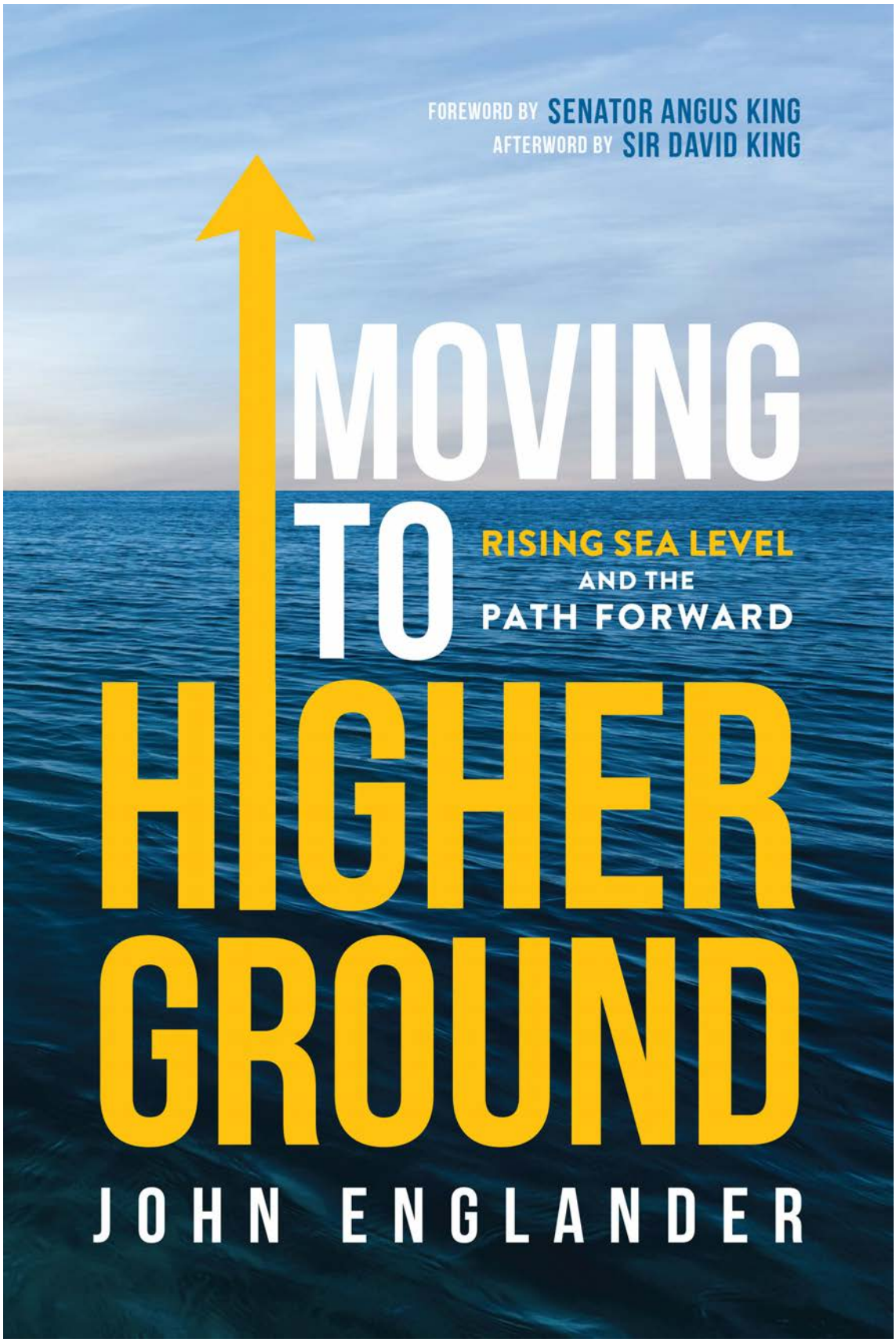

Color Images from *Moving to Higher Ground* by John Englander
www.movingtohigherground.com

"I guess we'll have to move inland."

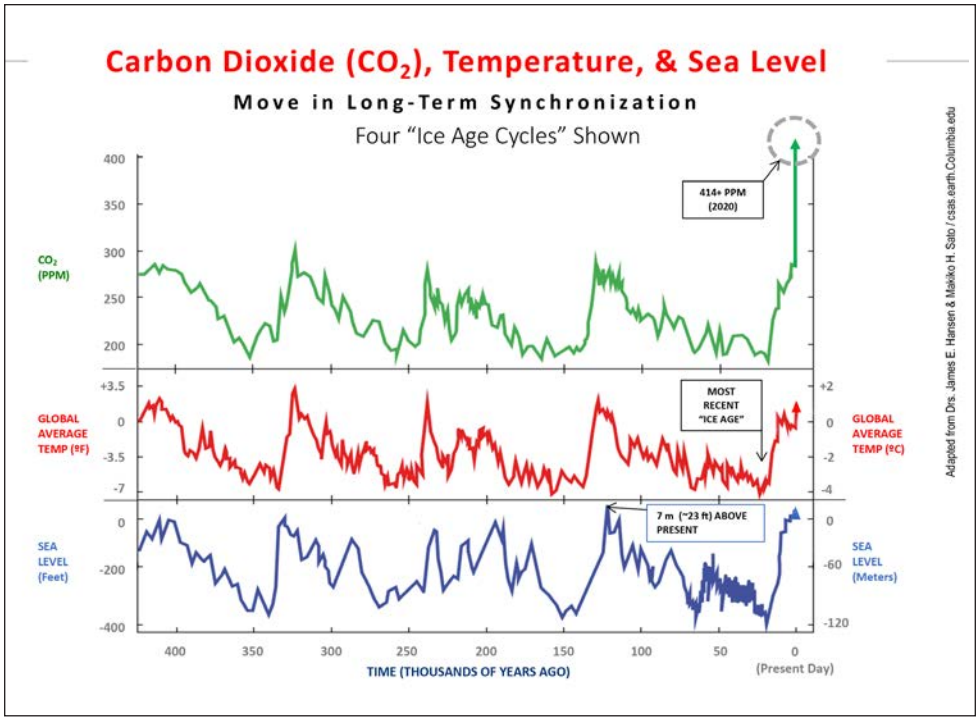

Figure 1 (Page 12). The four most recent natural ice age cycles can be seen in the ***global average temperature*** *record, the middle of the three lines in this graph. Approximately every 100,000 years, temperature, CO_2 (top line), and sea level (bottom line) cycle in close synchronization. Today, with the level of CO_2 above 400 parts per million (ppm), both temperature and sea level are rising, as expected, with a lag time. (John Englander graphic adapted from the work of Drs. James E. Hansen and Makiko Sato.)*

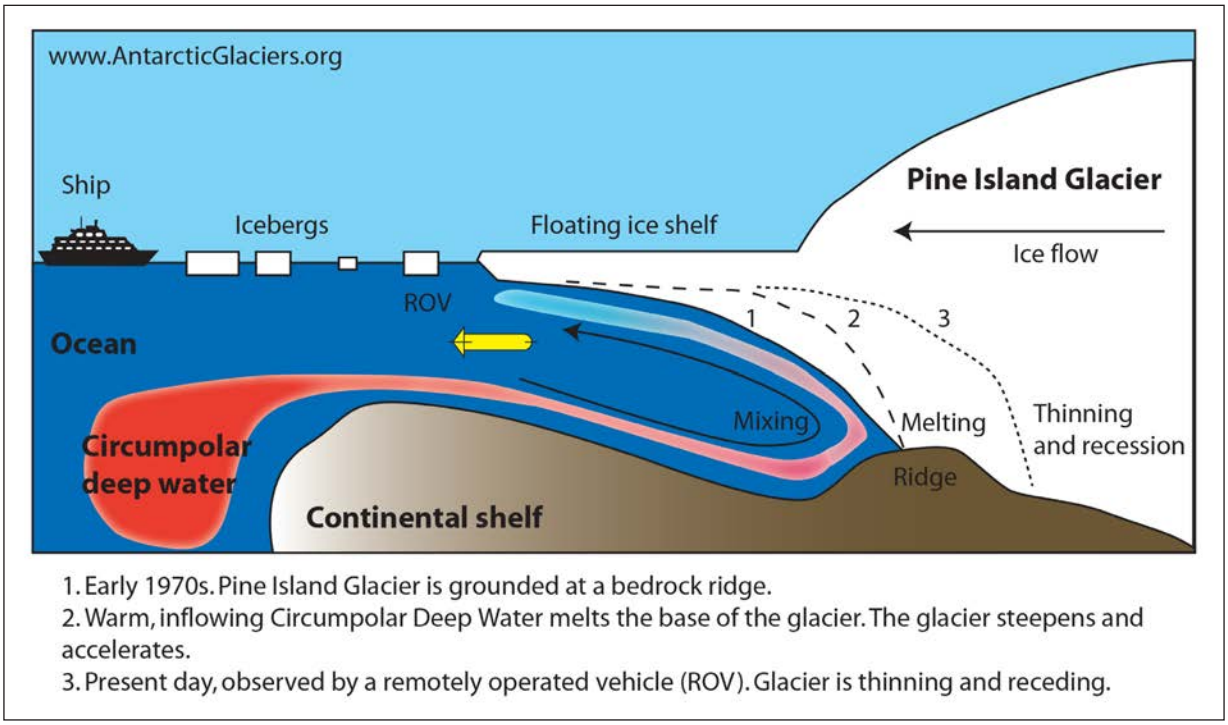

Figure 2 (Page 25). Cross-section illustration of Pine Island Glacier, one of the largest in Antarctica, to help distinguish the glacier, the ice shelf, and icebergs. Note how the ice is being eaten away on the underside; the distance is tens of miles. When this single glacier fully slides into the sea, global sea level will rise approximately 1.5 feet (0.5 meters). It is not possible to accurately predict when that will occur due to the complex and enormous forces involved and unknowns such as the actual rate of planetary warming. (Graphic courtesy Bethan Davies, www.antarcticglaciers.org.)

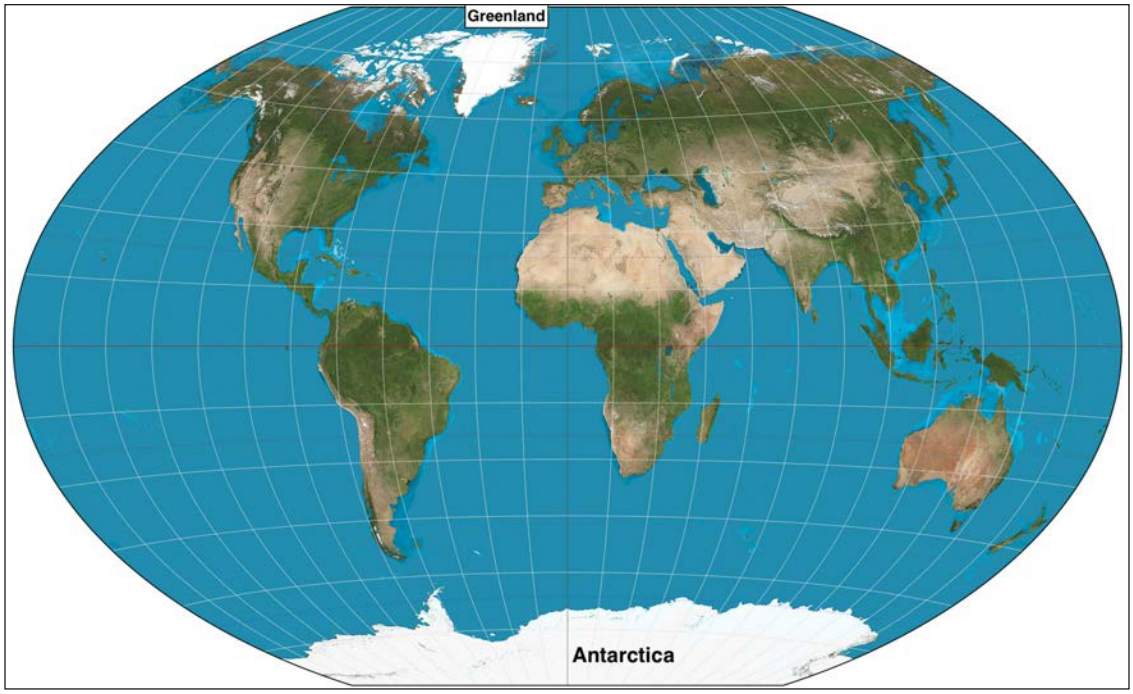

Figure 3 (Page 28). If all the ice on Greenland and Antarctica melts, global sea level would be more than 200 feet (60 meters) higher than present. Those two areas contain about ninety-eight percent of the total ice on land and are the dominant factors influencing future sea level rise. Both are melting faster than projections. Once we recognize the massive significance of Greenland and Antarctica to coastlines all over the world, these desolate and inhospitable regions take on a whole new significance. (Image: Winkel triple projection—Wikimedia Commons derived from NASA.)

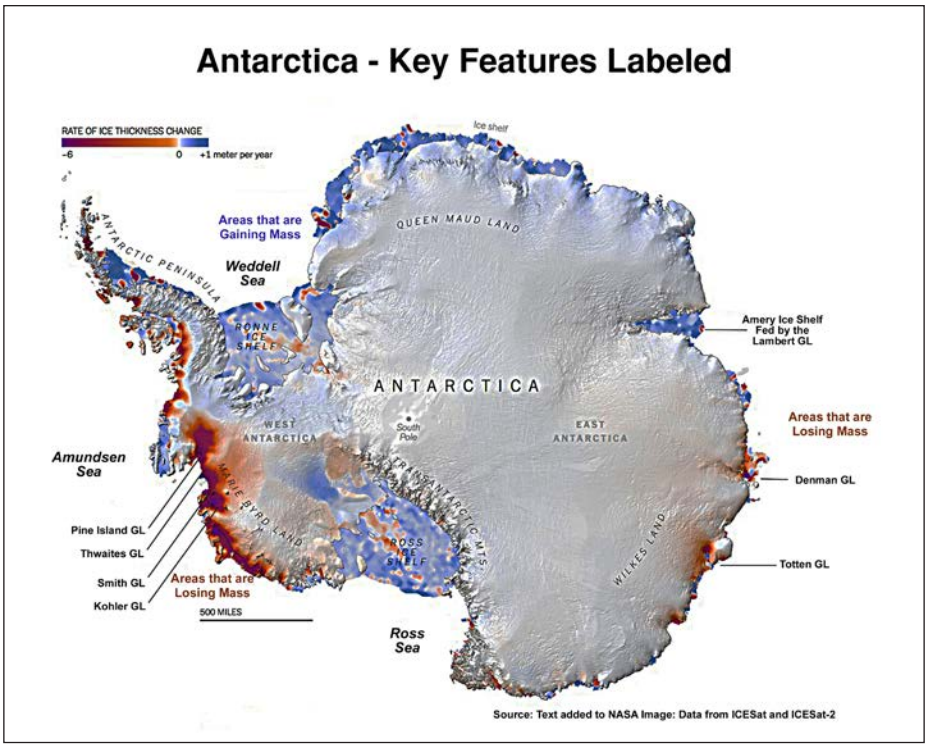

Figure 4 (Page 30). Different parts of Antarctica have vastly different potential to affect sea level rise. By themselves, the huge glaciers draining into the Amundsen Sea will add as much as 10 feet to global sea level as they eventually slide into the sea. It is not possible to accurately predict when that will occur. Recent measurements show the Thwaites and Pine Island Glaciers are showing significant signs of movement.

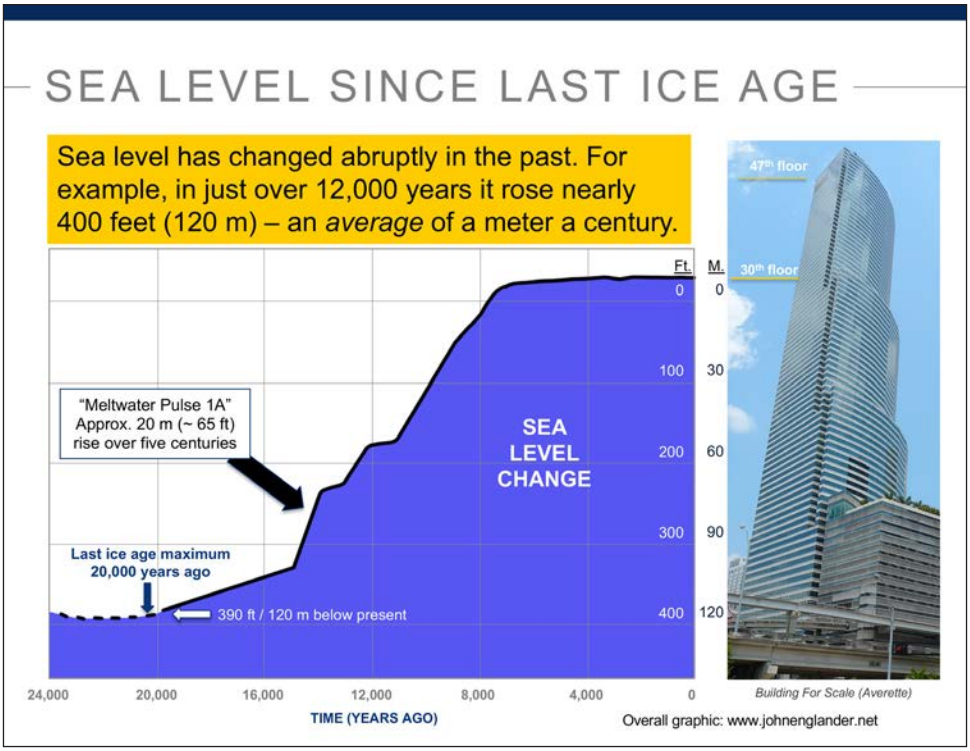

Figure 5 (Page 35). Since the peak of the last ice age 20,000 years ago, sea level rose almost 400 feet (120 meters), at times abruptly, reaching the present level about five thousand years ago. That is equal to the thirtieth floor of a typical commercial building. If all the remaining ice melts, global sea level would rise another seventeen floors, 212 feet (65 meters).

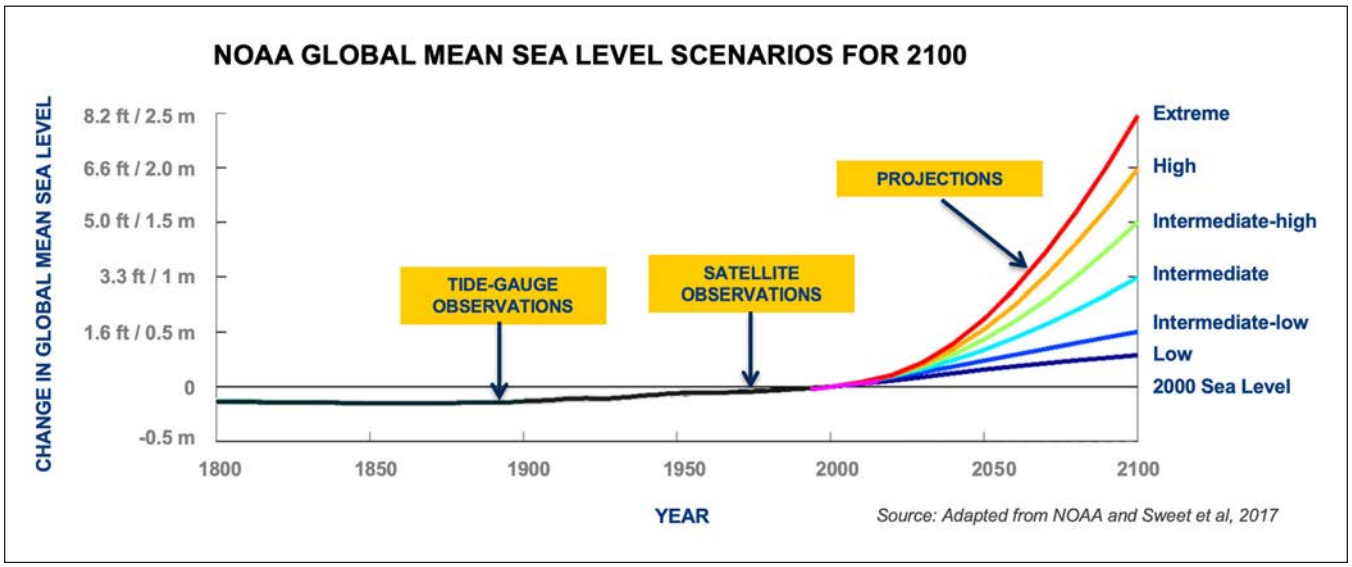

Figure 6 (Page 44). Sea level rise cannot be predicted with any certainty. This official 2017 US government graphic shows a wide range of curving lines for possible sea level rise, demonstrating the difficulty of predicting SLR in future decades. Also, it will not likely follow any smooth curved line. In the past the rate of sea level rise has changed abruptly, and it is likely to do so in the future, particularly with the current changing rates of ice melting on Greenland and Antarctica.

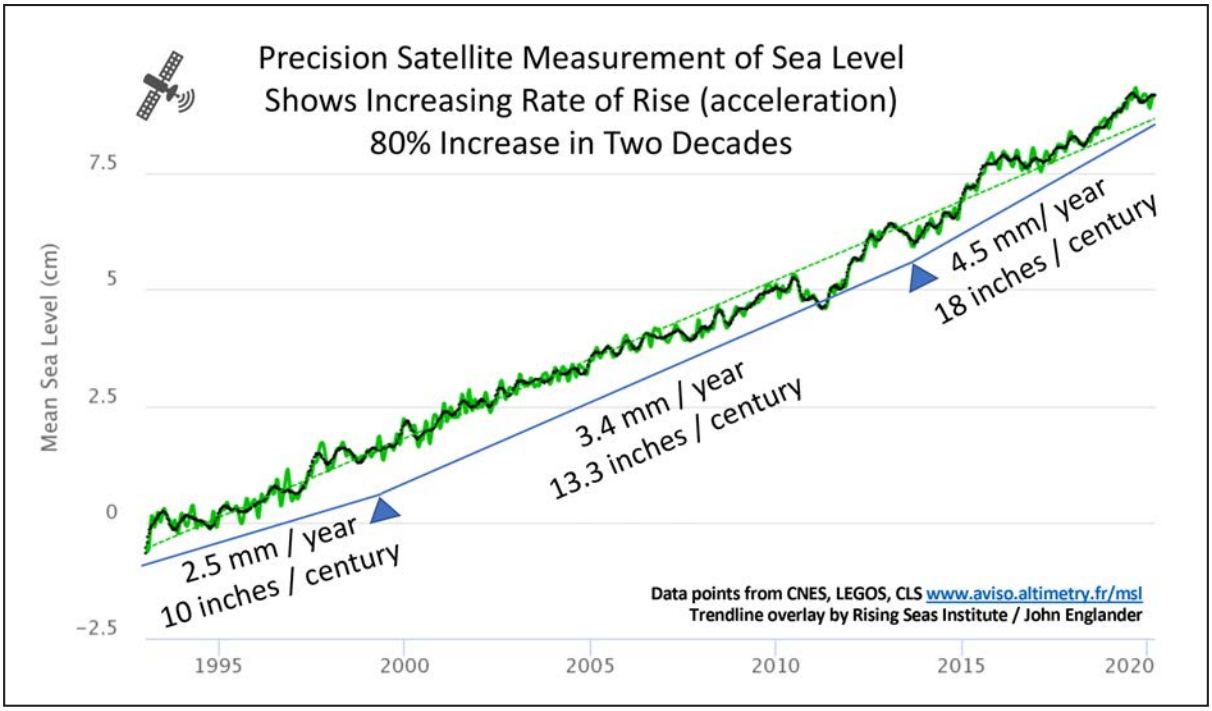

Figure 7 (Page 54). Starting in 1992, satellite altimetry has yielded much more precise sea level data. The squiggly line is the actual data points. The three trendline segments show that the rate has increased from 2.5, to 3.4, to 4.5 mm a year, a significant increase in slope. In inches those rates would mean an increase from 10 inches, to 13.3 inches, to 18 inches in a century. It is this rapid increase in the rate of SLR that has scientists concerned.

"Is this what they mean by adaptation?"

"9-Box Matrix" – Planning height guidance for sea level rise, plus a margin of safety

Risk Sensitivity	30 Years*	50 Years	100 Years
Low	**30 cm (1 ft)**	**60 cm (2 ft)**	**2 m (7 ft)**
Medium	**60 cm (2 ft)**	**1.3 m (4 ft)**	**4 m (13 ft)**
High	**1 m (3 ft)**	**2 m (7 ft)**	**6 m (20 ft)**

* Reference year for projection = 2020, i.e., first column is approximately the year 2050

Figure 8 (Page 98). The latest simple information sheet with the matrix and a graph are available at the website of the Rising Seas Institute: https://risingseasinstitute.org/englander9boxmatrix/. Note: this may be updated from time to time.

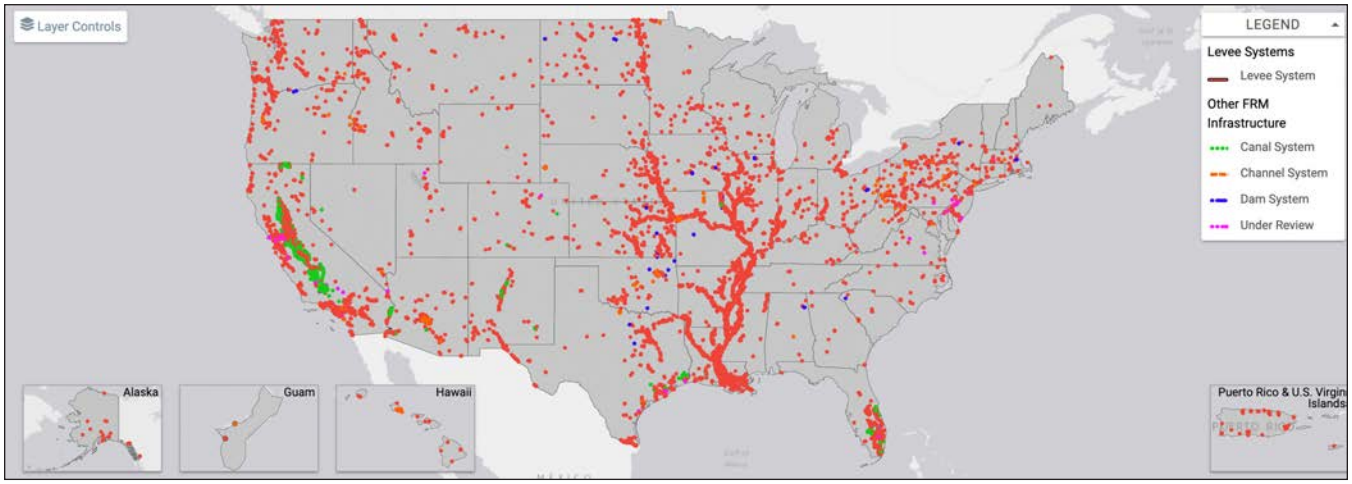

Figure 9 (Page 109). The US has 29,500 miles of levees, shown in black (red on the colored PDF download version), with an average age of fifty-five years. Most are not engineered for rising sea level, nor for the extreme rains and runoff now happening. Interactive map is at https://levees.sec.usace.army.mil/#/.

Figure 10 (Page 20). Communities on floats and raised platforms have been proposed but are not likely scalable for tens of millions. Photo Credits: Seasteading Institute and Borges Architects

Figure 11 (Page 123). HafenCity (Hamburg) has created a new city that is flood-resilient to 30 feet (9.5 meters) of water. Photo Credit: HafenCity Press Office

"Our old neighborhood sure has changed."

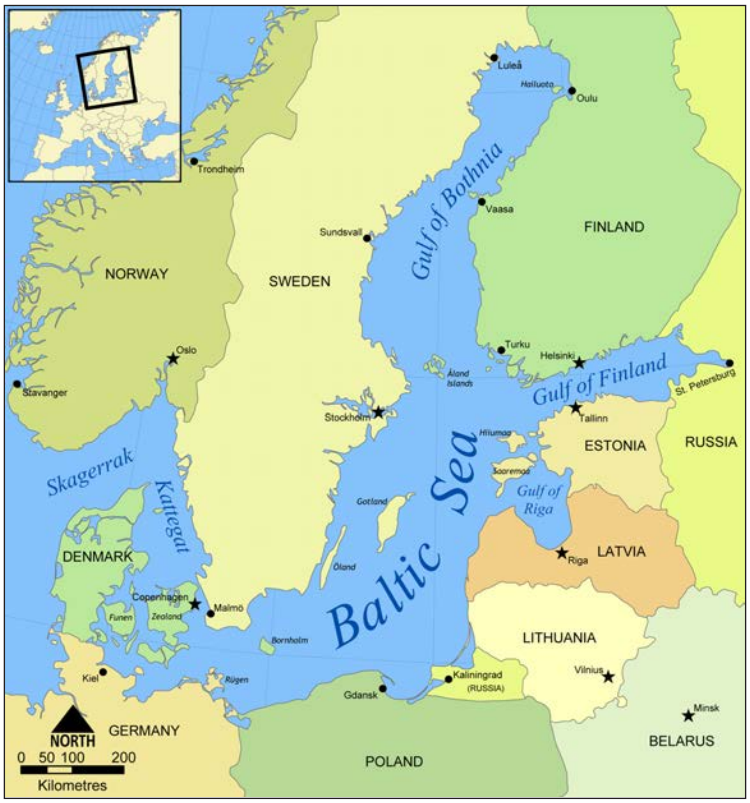

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Figure 12 (Page 188). The last house on Holland Island in the Chesapeake Bay. The owners held on until 2009, a year before it fell into the bay. (Photo Credit: baldeaglebluff.)