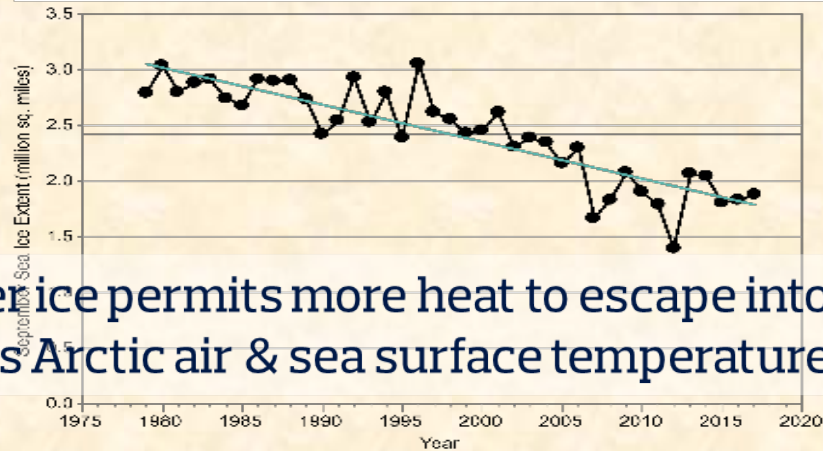
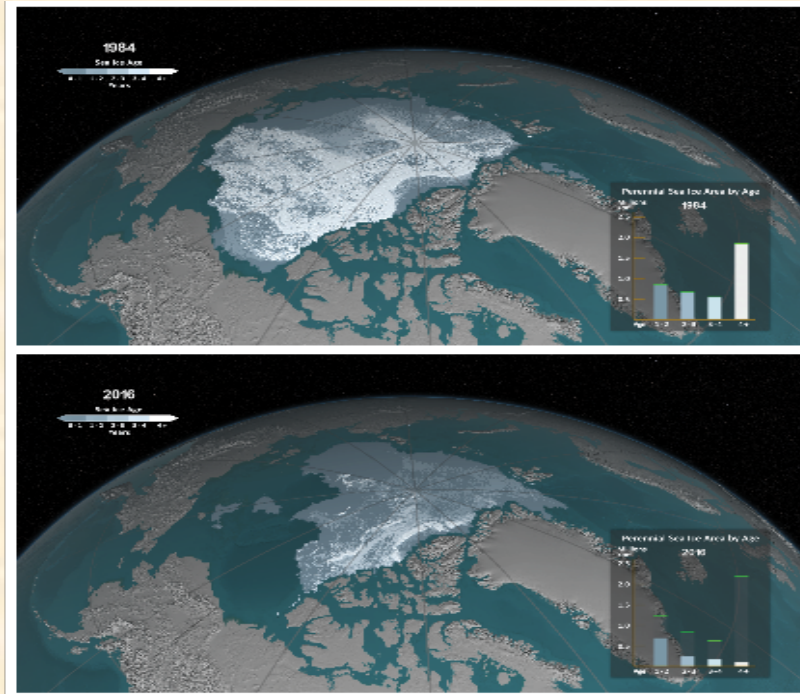


Climate Change Impacts

What's Changing With the Climate?

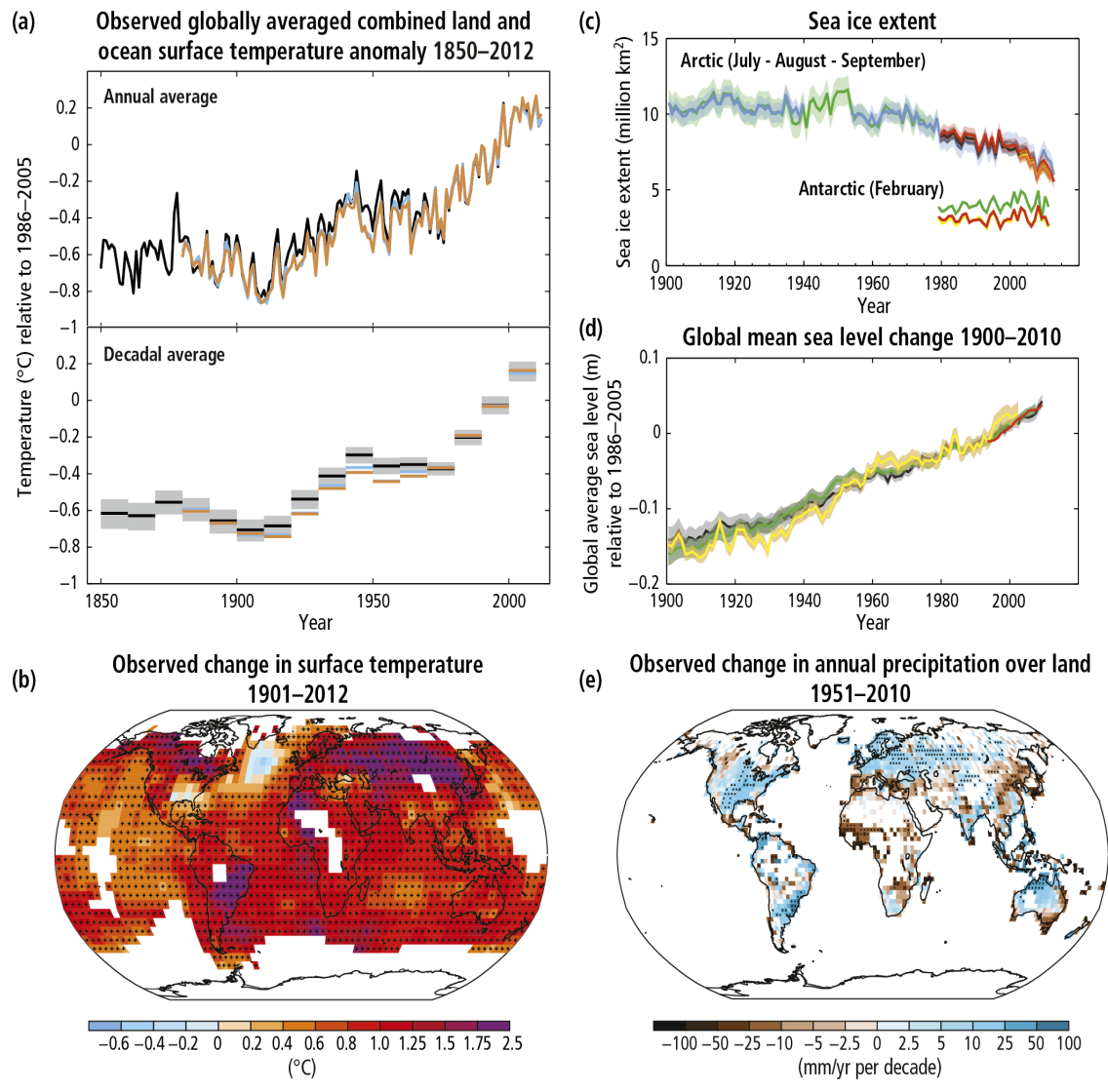
- ✓ Rising Sea Levels / Rapid Warming of Polar Regions;
- ✓ More Extreme Weather Events;
- ✓ Rising Ocean and Surface Temperatures
- ✓ Increases in Coastal Flooding
- ✓ Changes in Hurricane **Intensity**
- ✓ Increased Wildfires – see Australia and CA.

Shrinking Arctic Ocean Ice



Younger & thinner ice permits more heat to escape into the atmosphere. This causes Arctic air & sea surface temperatures to warm.

Fig. 2.7 – Ch. 2 – Hayhoe, K., D.J. Wuebbles, D.R. Easterling, D.W. Fahey, S. Doherty, J. Kossin, W. Sweet, R. Vose, and M. Wehner, 2018: Our Changing Climate. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 72–144. doi: 10.7930/NCA4.2018.CH2



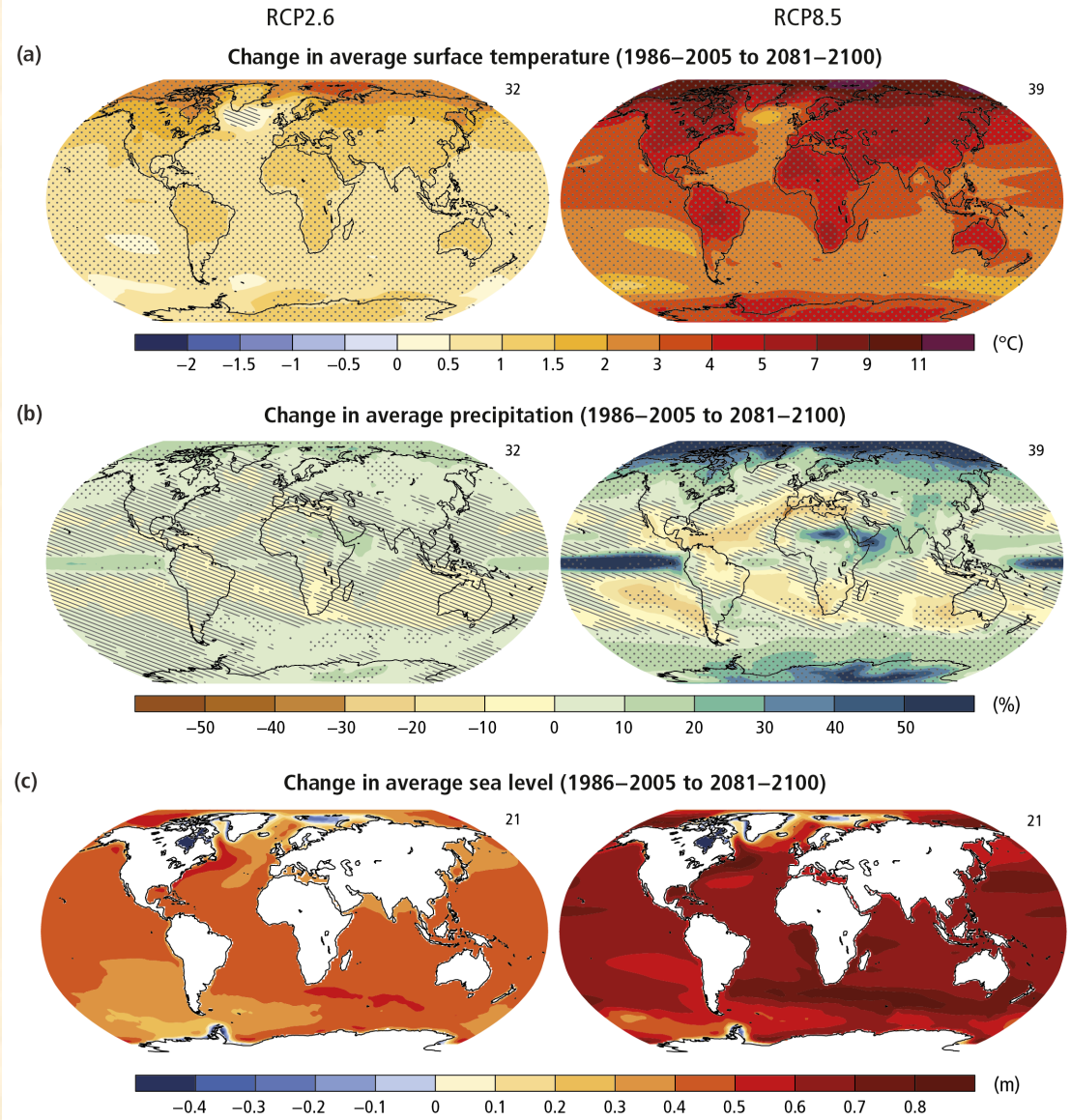
Observed Changes

- (i) Surface Temperature;
- (ii) Precipitation; and
- (iii) Sea Level

Fig. 1.1 – Ch. 2 – Observed Changes and Their Causes: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]IPCC, Geneva, Switzerland,

Projected Changes

- (i) Surface Temperature;
- (ii) Precipitation; and
- (iii) Sea Level



Source: Fig. 2.2 – Ch. 2 – Future Climate Changes, Risk and Impacts: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)] IPCC, Geneva, Switzerland,

Increased Potential for Heavy Precipitation Events

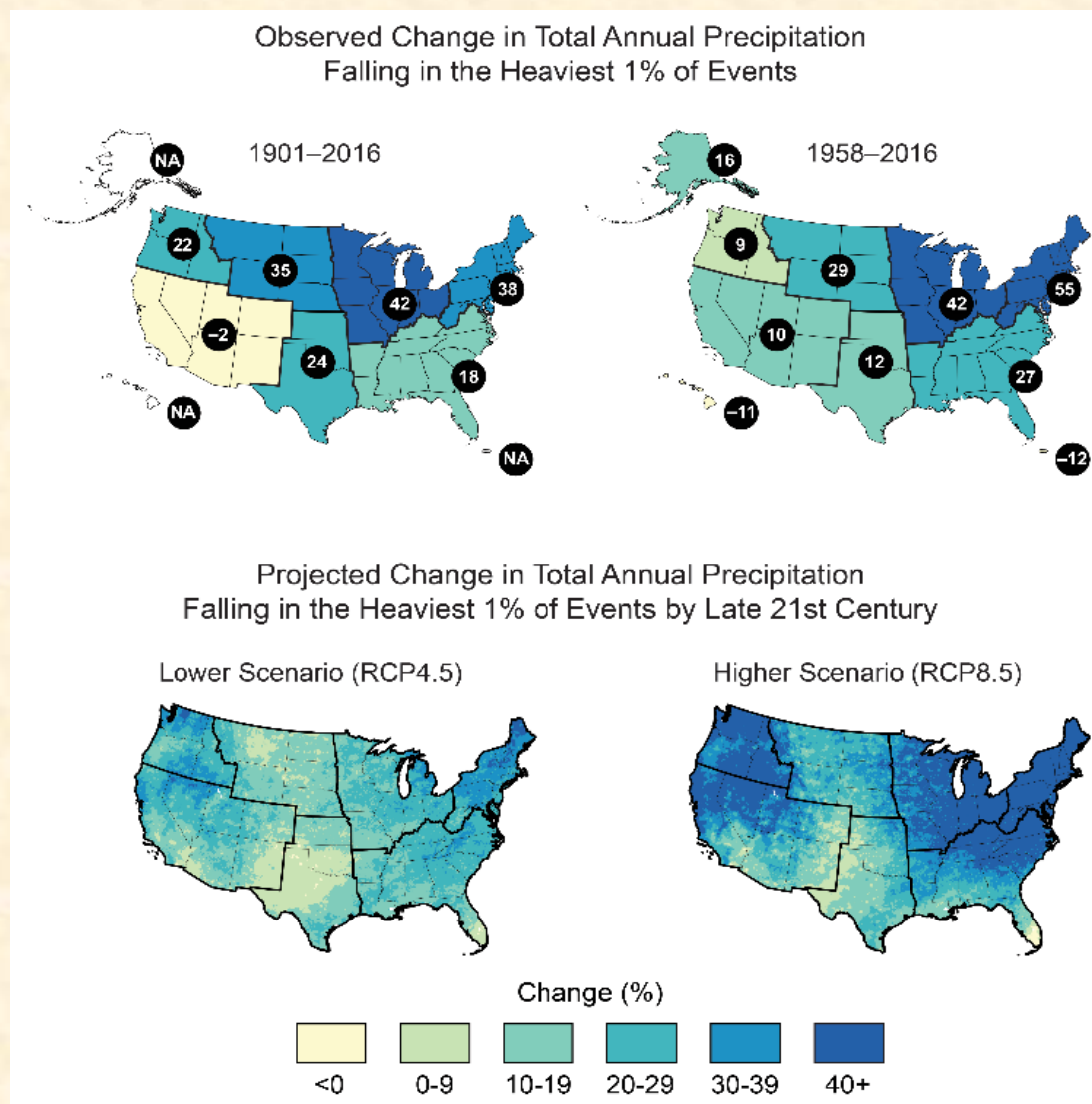


Fig. 2.6 – Ch. 2 – Hayhoe, K., D.J. Wuebbles, D.R. Easterling, D.W. Fahey, S. Doherty, J. Kossin, W. Sweet, R. Vose, and M. Wehner, 2018: Our Changing Climate. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 72–144. doi: 10.7930/NCA4.2018.CH2

Projected Changes in Annual Average US Temperature

INCREASING
UNITED STATES
TEMPERATURES

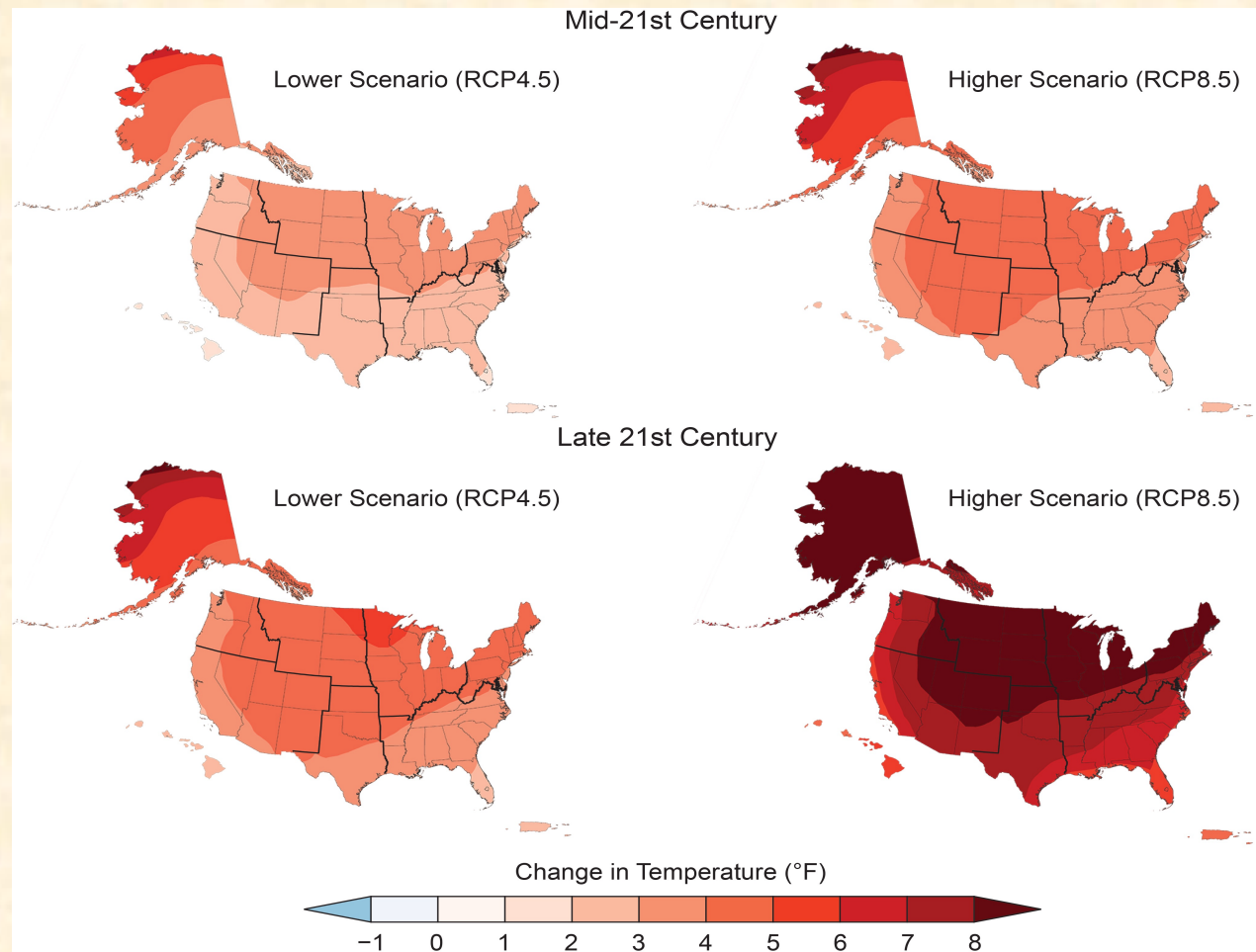


FIG. 1.3: USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: **Fourth National Climate Assessment**, Volume II: Report-in-Brief [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 186 pp. doi: 10.7930/NCA4.2018.RiB.

INCREASING WILDFIRES

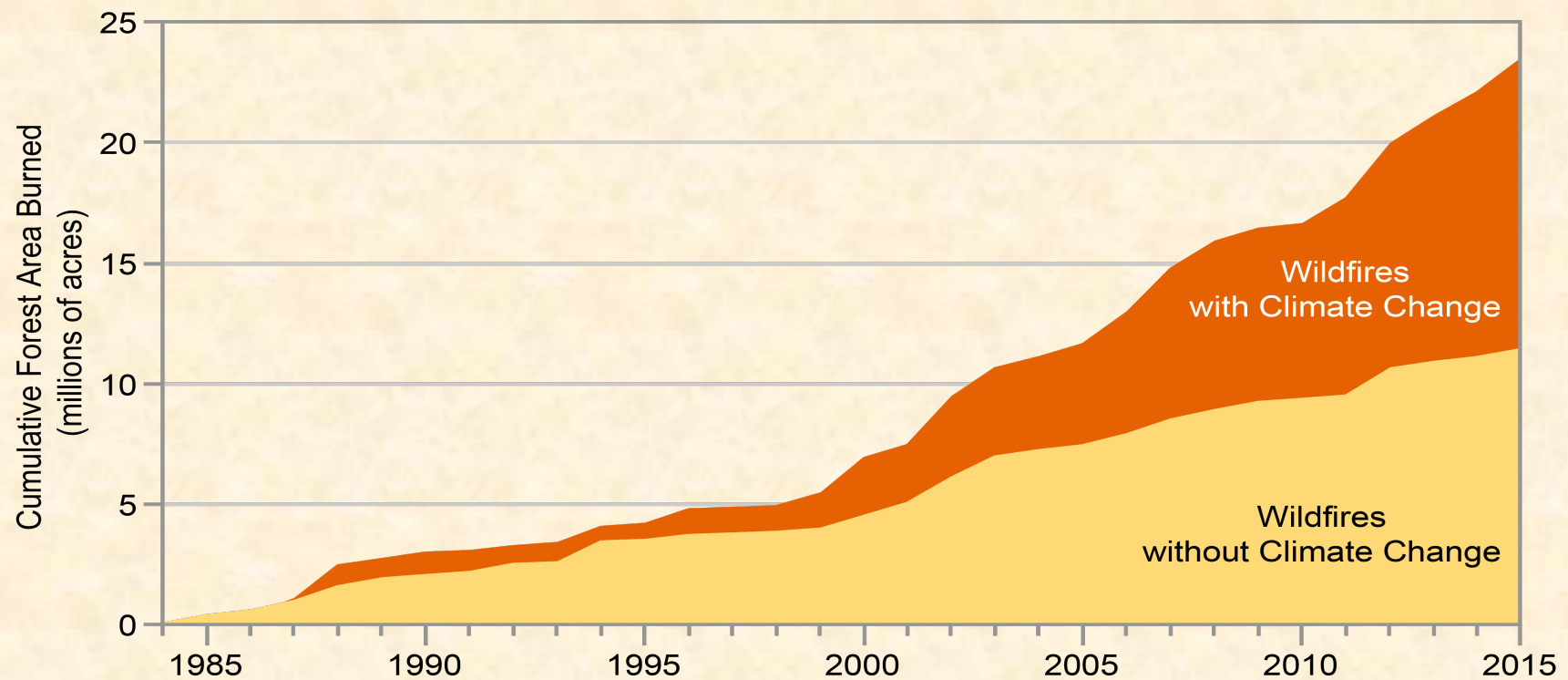


Figure 25.4 USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: **Fourth National Climate Assessment**, Volume II: Report-in-Brief [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 186 pp. doi: 10.7930/NCA4.2018.RiB. (Source: adapted from Abatzoglou and Williams 2016).

INCREASING WILDFIRES



Figure 1.5 USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: **Fourth National Climate Assessment**, Volume II: Report-in-Brief [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 186 pp. doi: 10.7930/NCA4.2018.RiB. image credits: (left) NASA; (right) Master Sgt. David Loeffler, U.S. Air National Guard.

Historical and Projected Sea-Level Rise

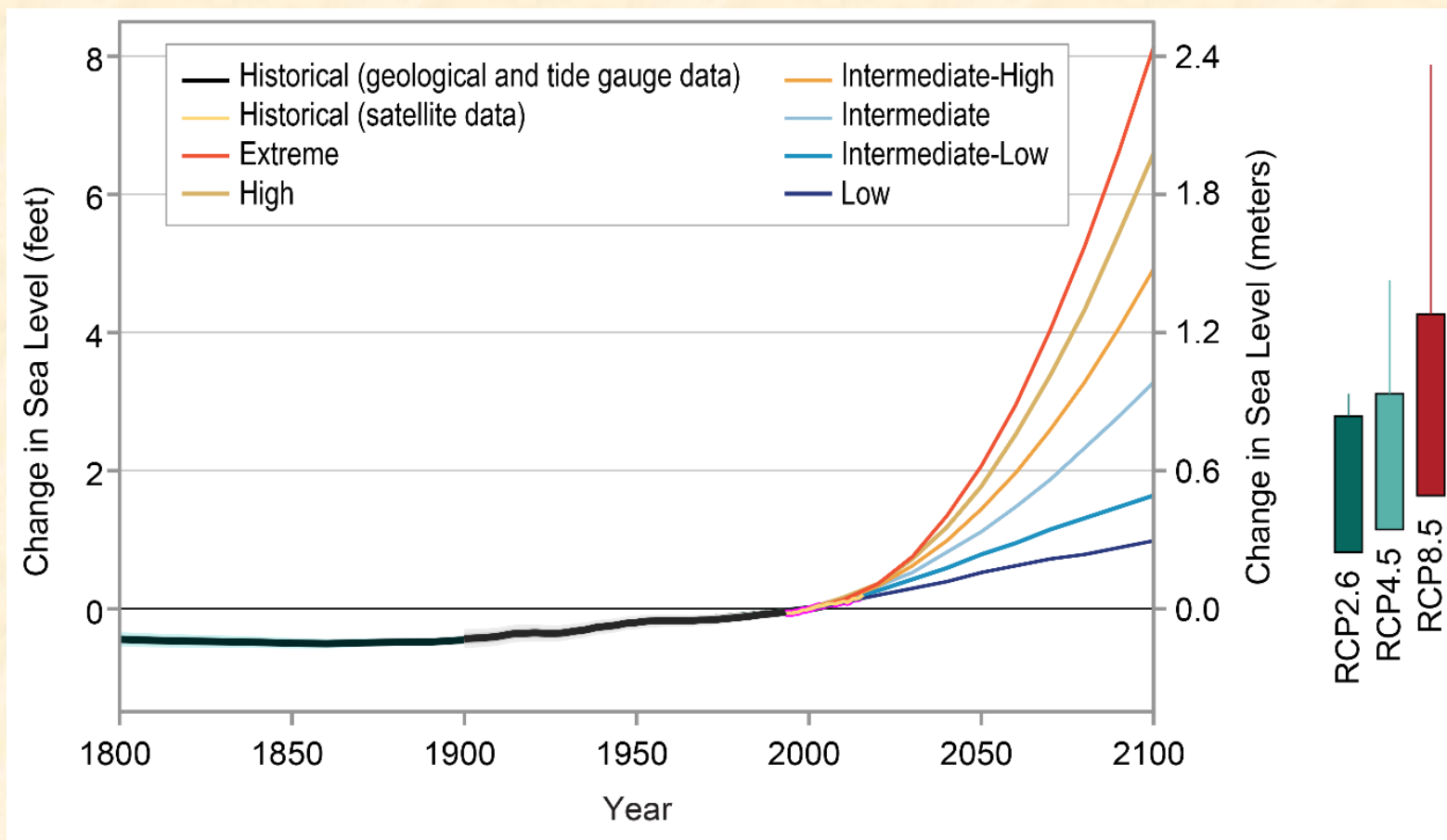
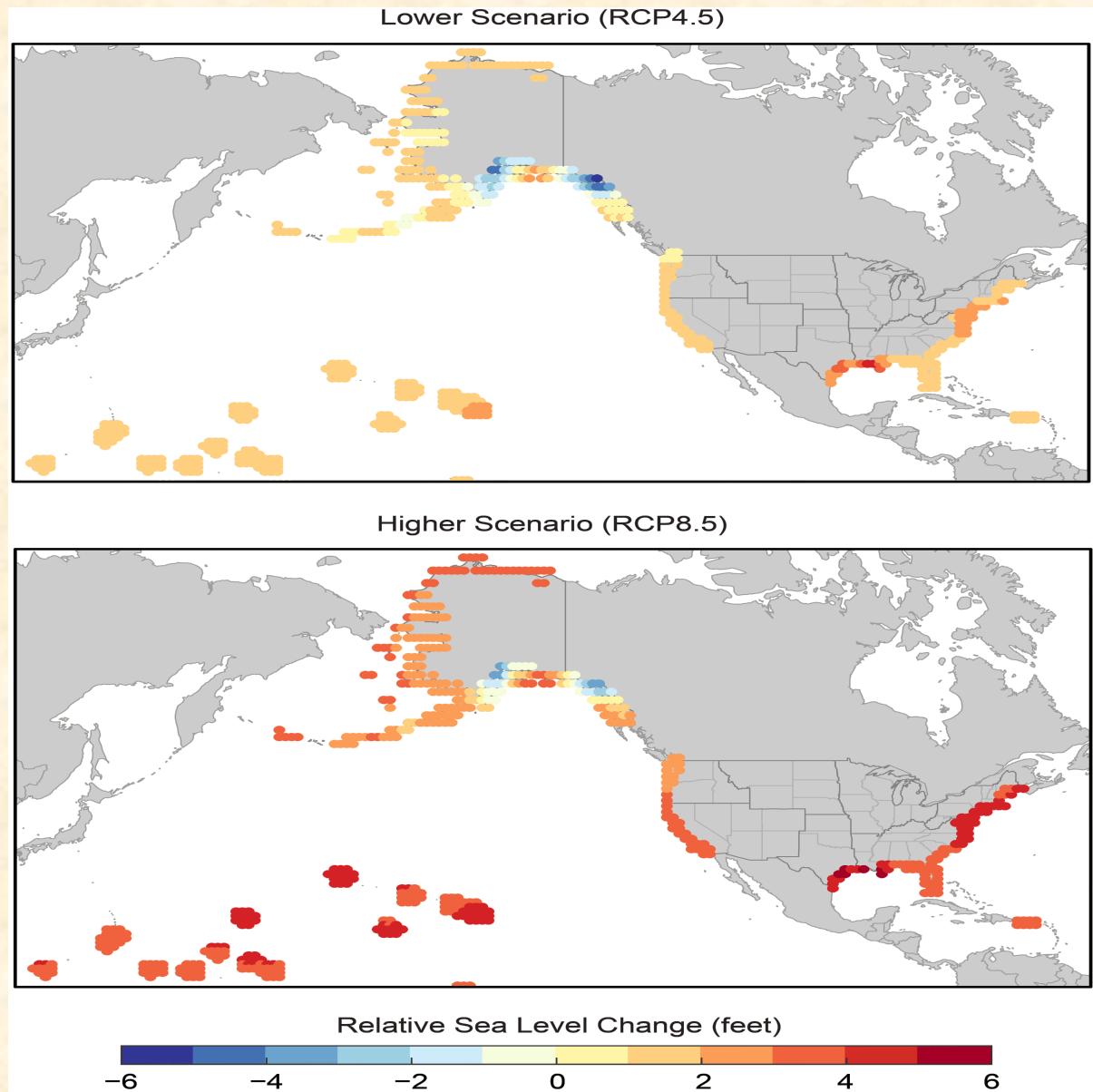


Fig. 2. – Ch. 2 – Hayhoe, K., D.J. Wuebbles, D.R. Easterling, D.W. Fahey, S. Doherty, J. Kossin, W. Sweet, R. Vose, and M. Wehner, 2018: Our Changing Climate. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 72–144. doi: 10.7930/NCA4.2018.CH2

Projected United States Coastal Sea-level Rise -

Figure 1.4 USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: **Fourth National Climate Assessment**, Volume II: Report-in-Brief [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 186 pp. doi: 10.7930/NCA4.2018.RiB. Source: adapted from CSSR, Figure 12.4.



SE US – Annual Number of High Tide Flooding Days – Current / Projected

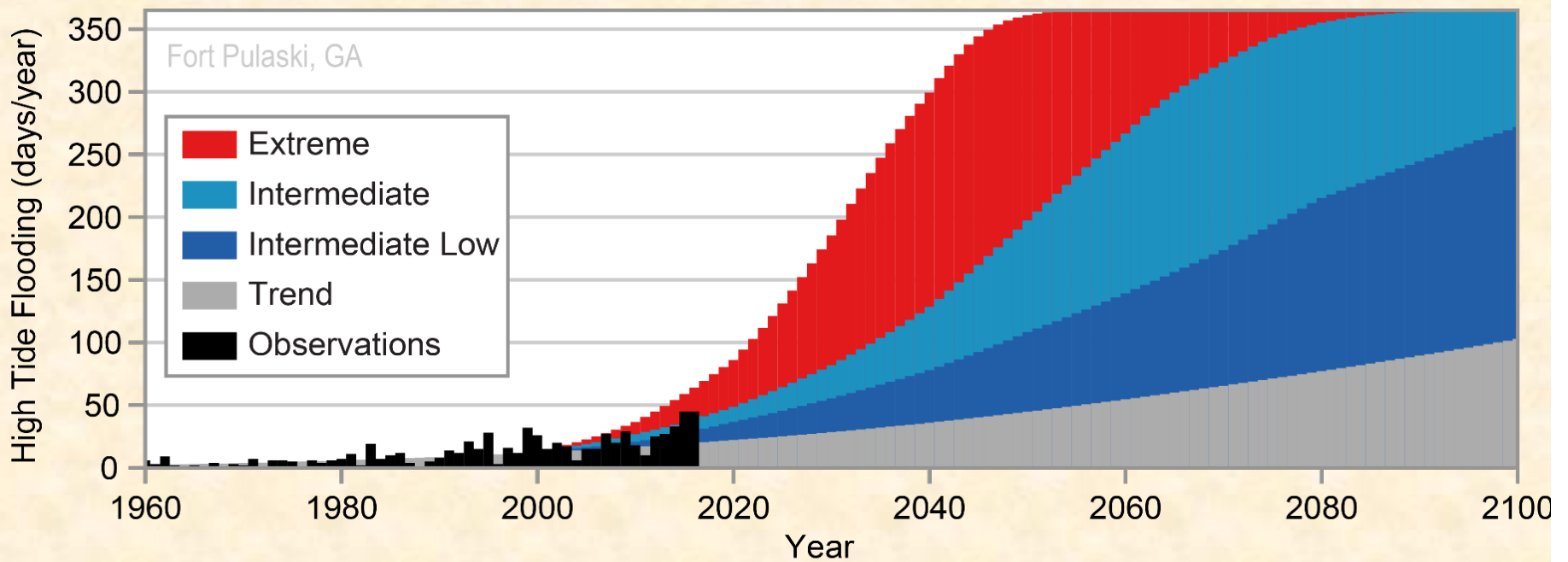


Fig. 19.7 – Ch. 19 Carter, L., A. Terando, K. Dow, K. Hiers, K.E. Kunkel, A. Lascrain, D. Marcy, M. Osland, and P. Schramm, 2018: Southeast. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 743–808. doi: 10.7930/NCA4.2018.CH19