

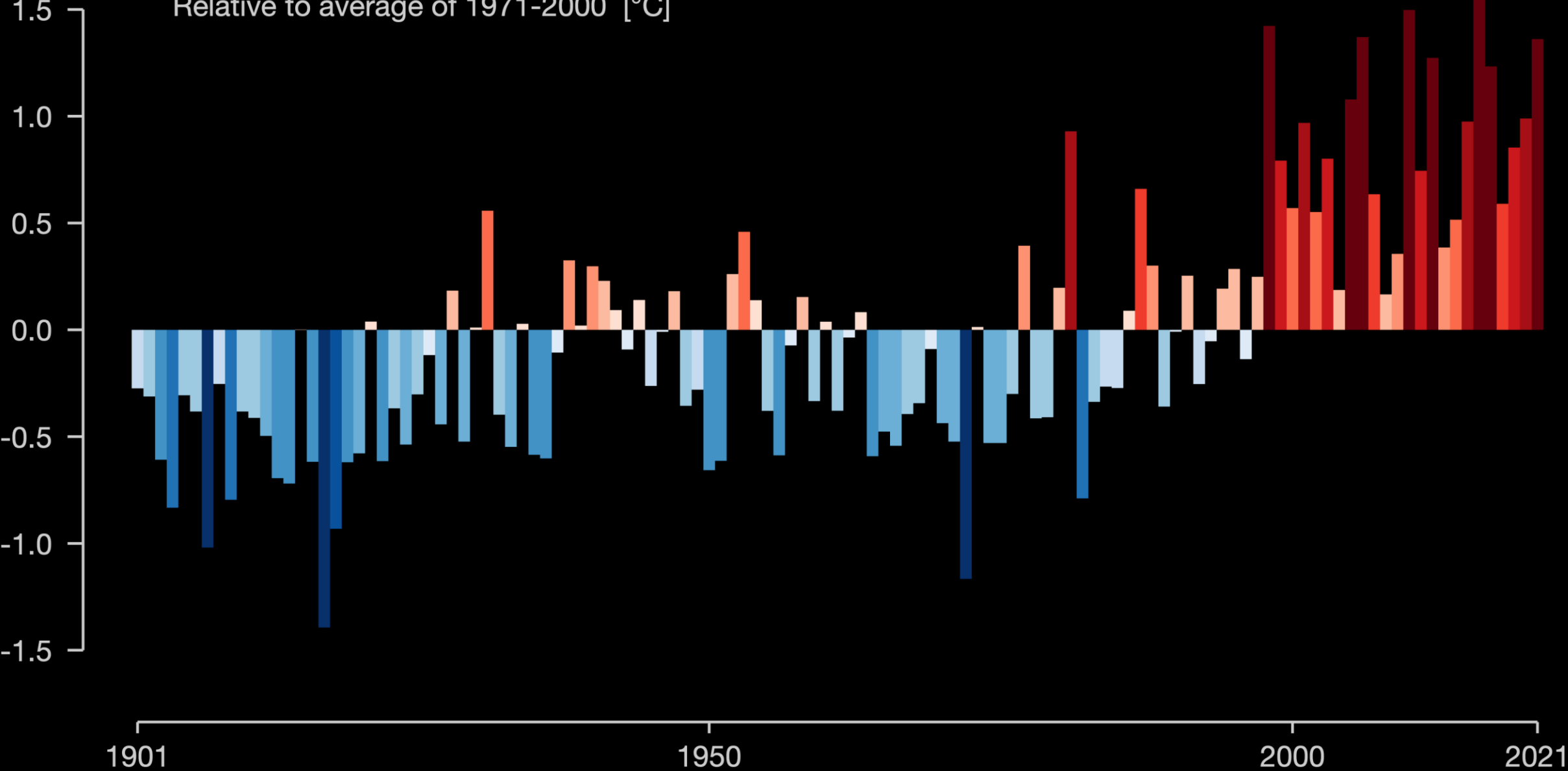


# *Sea Level Rise in California*

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# Temperature change in North America

Relative to average of 1971-2000 [°C]





# WHY IS SEA LEVEL RISING?

Since the early 1990s, global mean sea level has risen by about 8 cm – this is because of several factors.



## ICE

The ice sheets that cover Greenland and Antarctica hold about 99% of Earth's freshwater, with the potential to raise sea level dramatically.



## WARMING

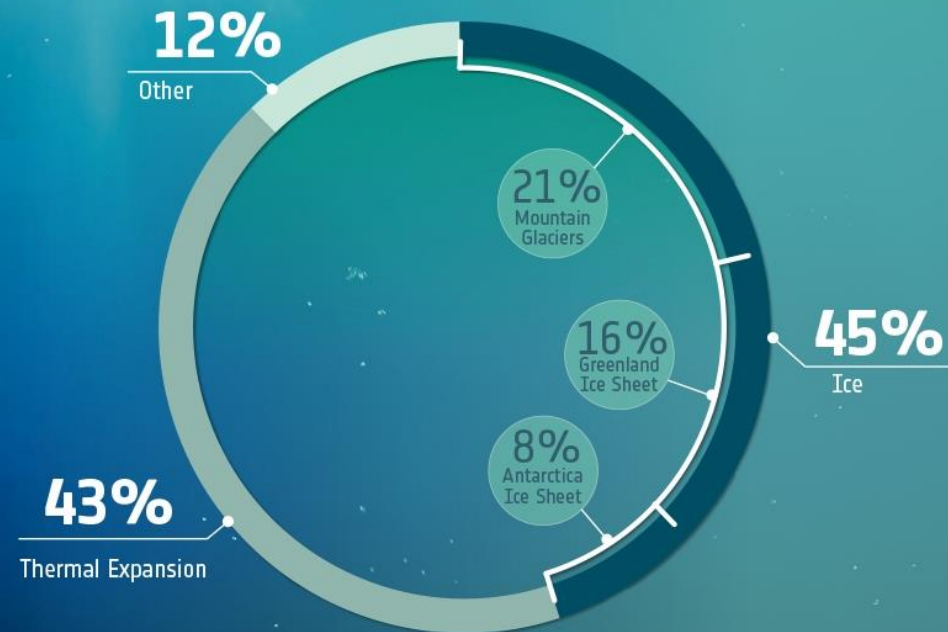
The average global temperature has increased by about 1°C over the last 150 years. This is largely because of greenhouse gases being emitted into the atmosphere.



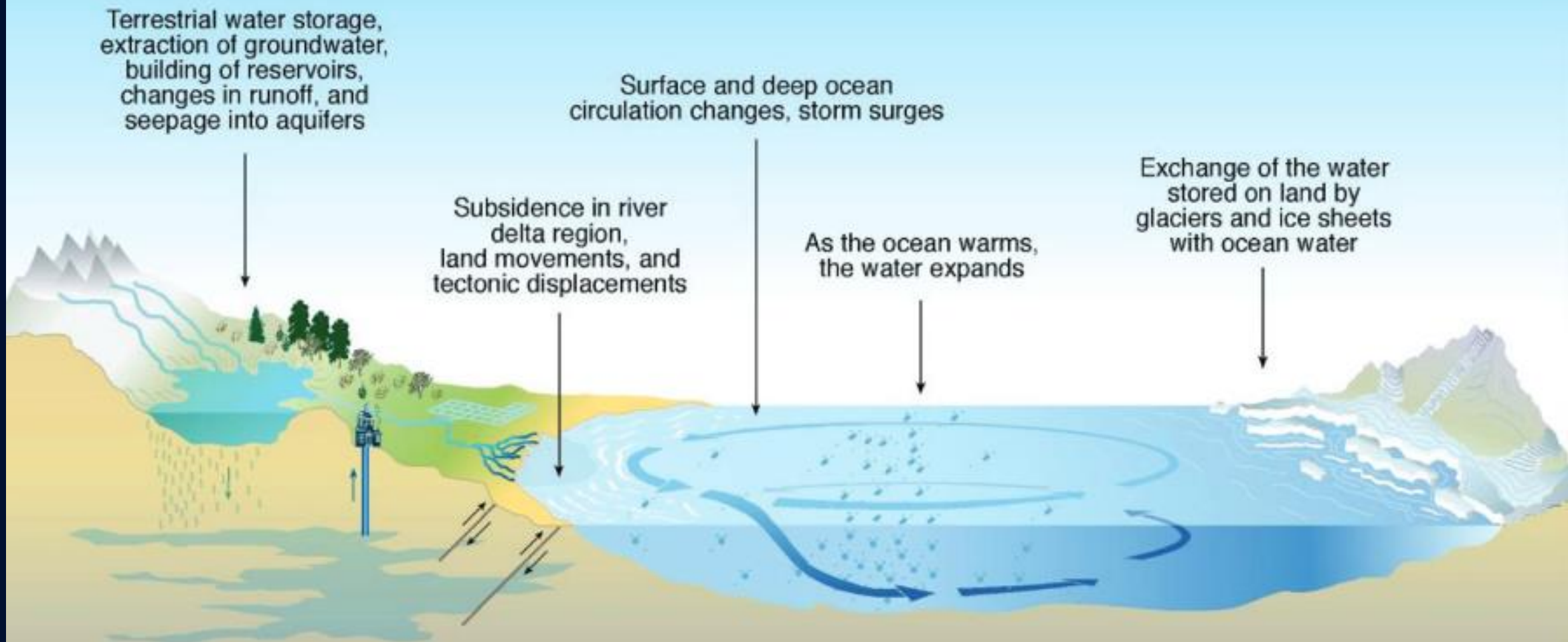
## THERMAL EXPANSION

As the ocean warms in response to climate change, seawater expands and, as a result, sea level rises.

CONTRIBUTORS TO SEA-LEVEL RISE  
(1993-2015)

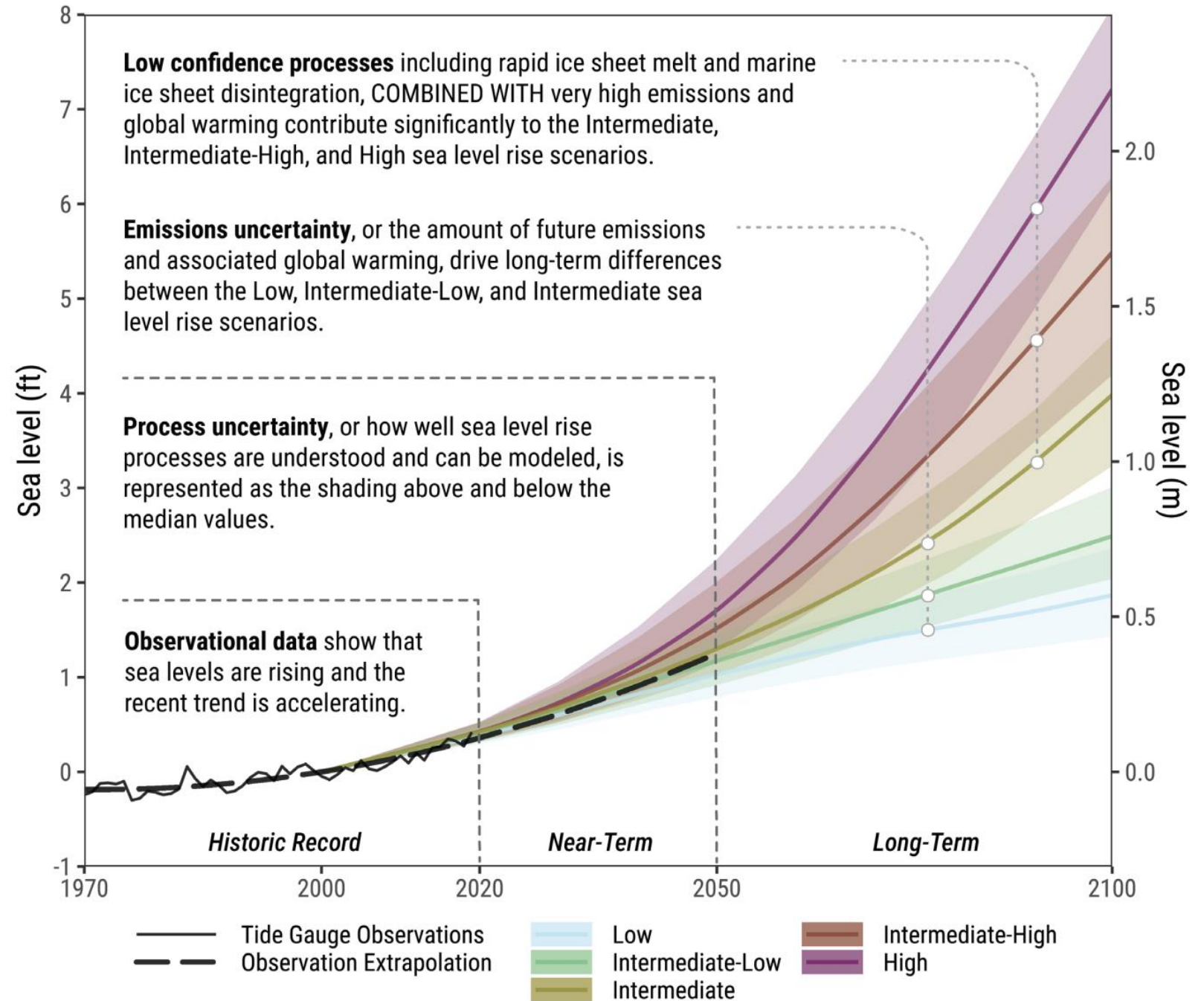


# What causes the sea level to change?

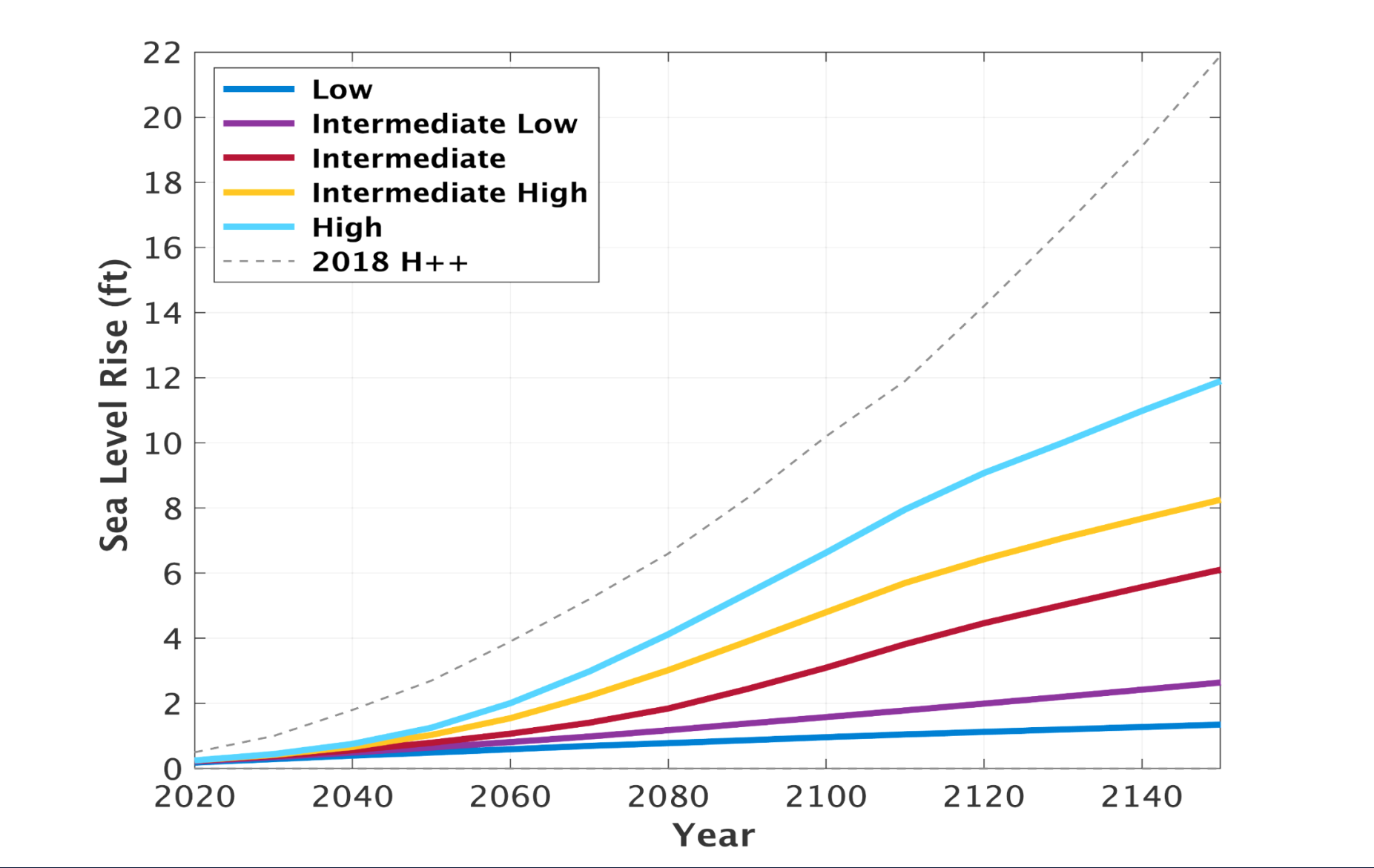









# Federal Sea Level Rise Projections



# California Sea Level Scenarios



# Federal Technical Report Key Findings

-  10 – 12 inches in next 30 years (2020 – 2050)
-  More damaging flooding
-  Emissions matter
  -  Current emissions: **2 feet likely** (2020 – 2100)
  -  Uncurbed emissions: **3.5 – 7 feet possible** (2020 - 2100)

But coastal flooding is more than just sea level rise.



# King Tides & Sunny Day Flooding



# Coastal Erosion





# Pacifica's coastal erosion problem, 5 years later

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MORE VIDEOS

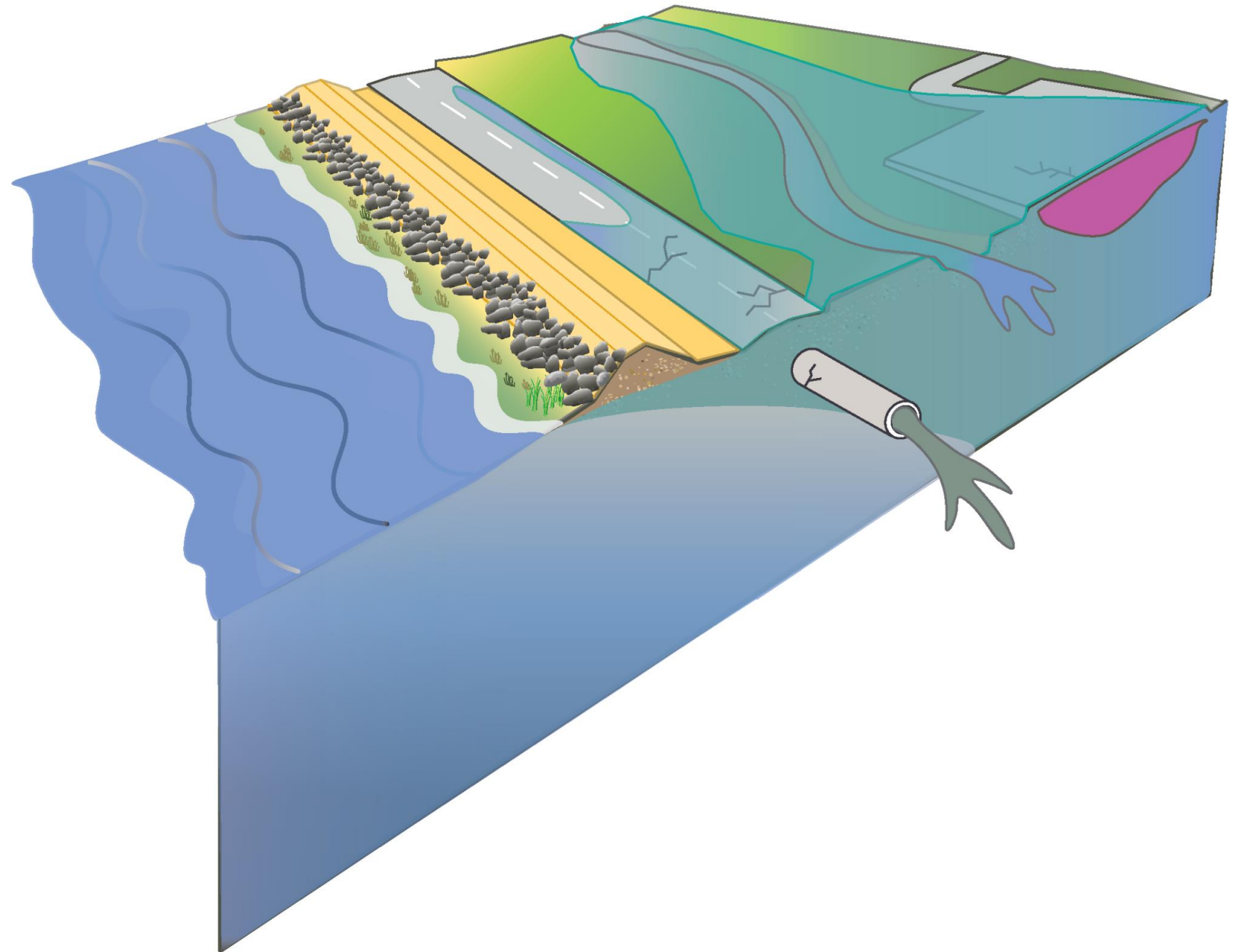
11:15 54°



0:17 / 2:16

CC HD YouTube

# Groundwater Table Rise





# Groundwater Table Rise

<https://storymaps.arcgis.com/stories/80c2e4ff9a04461f98780a7505779131>

SCIENCE

## US Navy Acknowledges Rising Toxic Groundwater Threat at SF Superfund Site

KQED



By Ezra David Romero Mar 7 [Save Article](#)



A view of the former Hunters Point Naval Shipyard from the Lennar at the Shipyard housing development on Feb. 25, 2022. (Beth LaBerge/KQED)

The U.S. Navy, for the first time, has acknowledged what Bay Area climate scientists and residents have asked the agency to look into for years: that in just over a decade, potentially toxic groundwater could surface at a San Francisco Superfund site partly because of human-caused climate change.

# Guest column: Groundwater scarcity threatens Ventura County agriculture

**Camilla Lewis and Beatrice Barnes** Your Turn

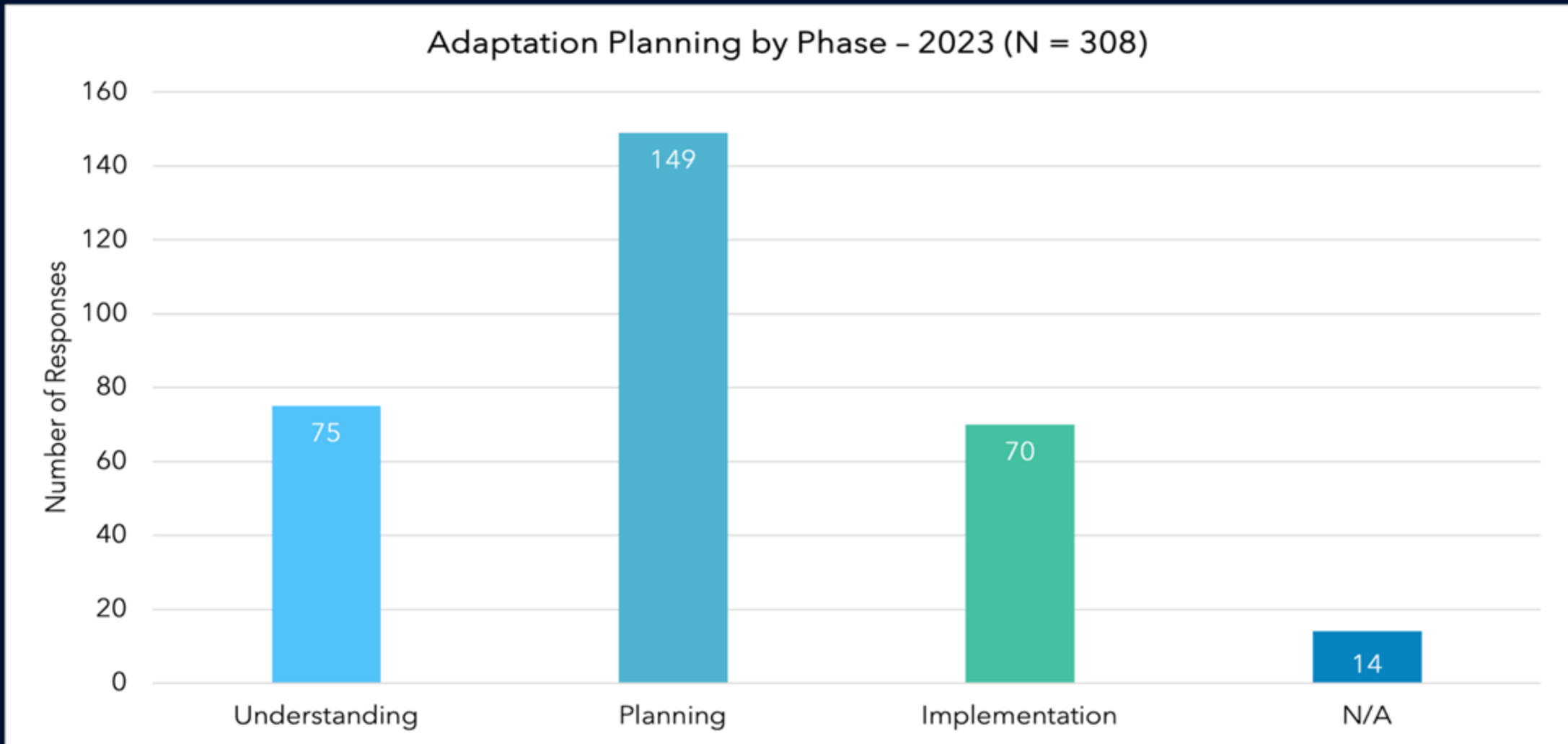
Published 10:00 a.m. PT April 23, 2023

## Groundwater Table Rise

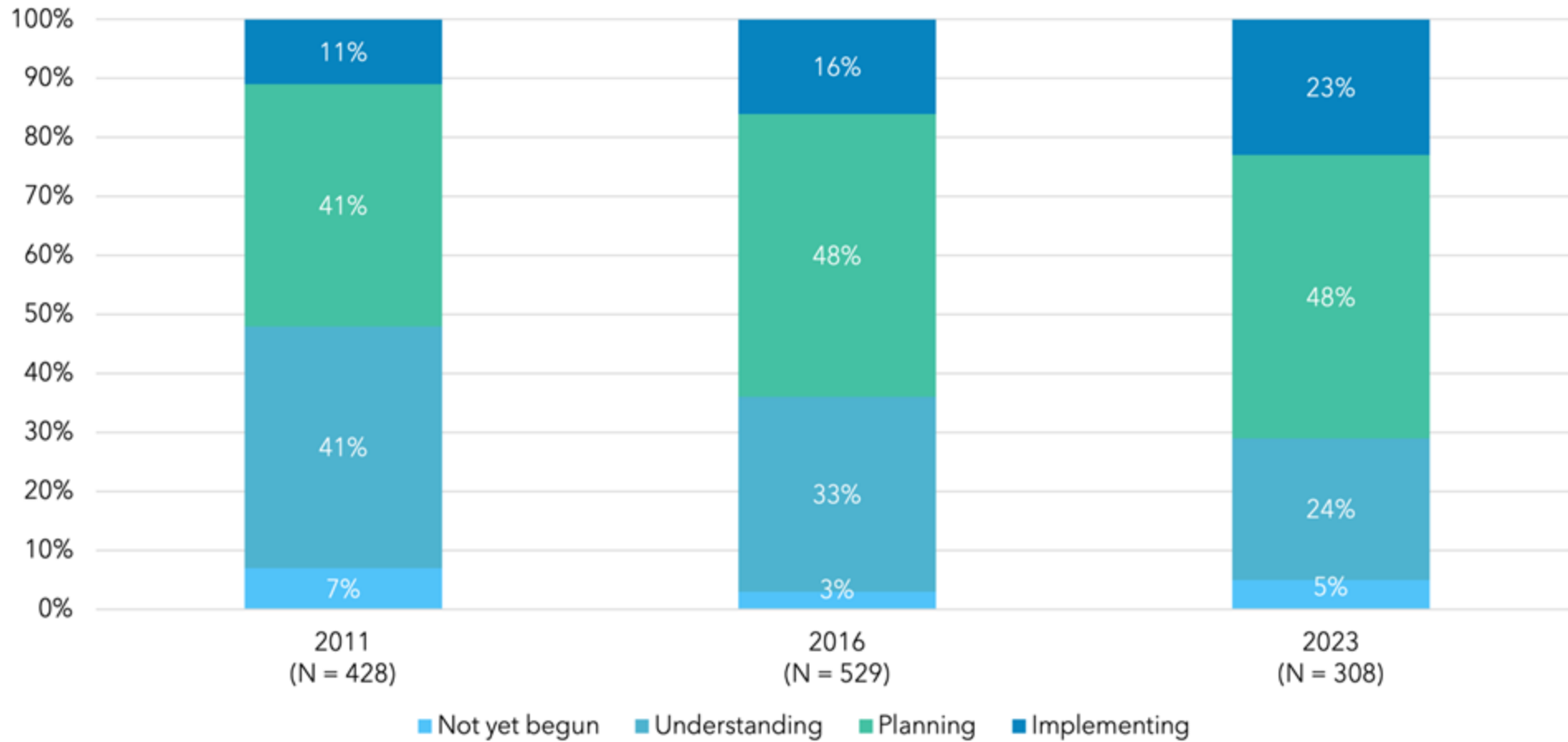


To make matters worse, aquifers near the ocean in the Oxnard Subbasin have begun to experience saltwater intrusion, another issue caused by overpumping. When groundwater stores drop below sea level, ocean water is sucked into the aquifer, polluting the freshwater and making it unsuitable for agricultural use. With rising sea levels caused by global warming, this issue will be exacerbated, further promoting freshwater deficits.

# The good news!

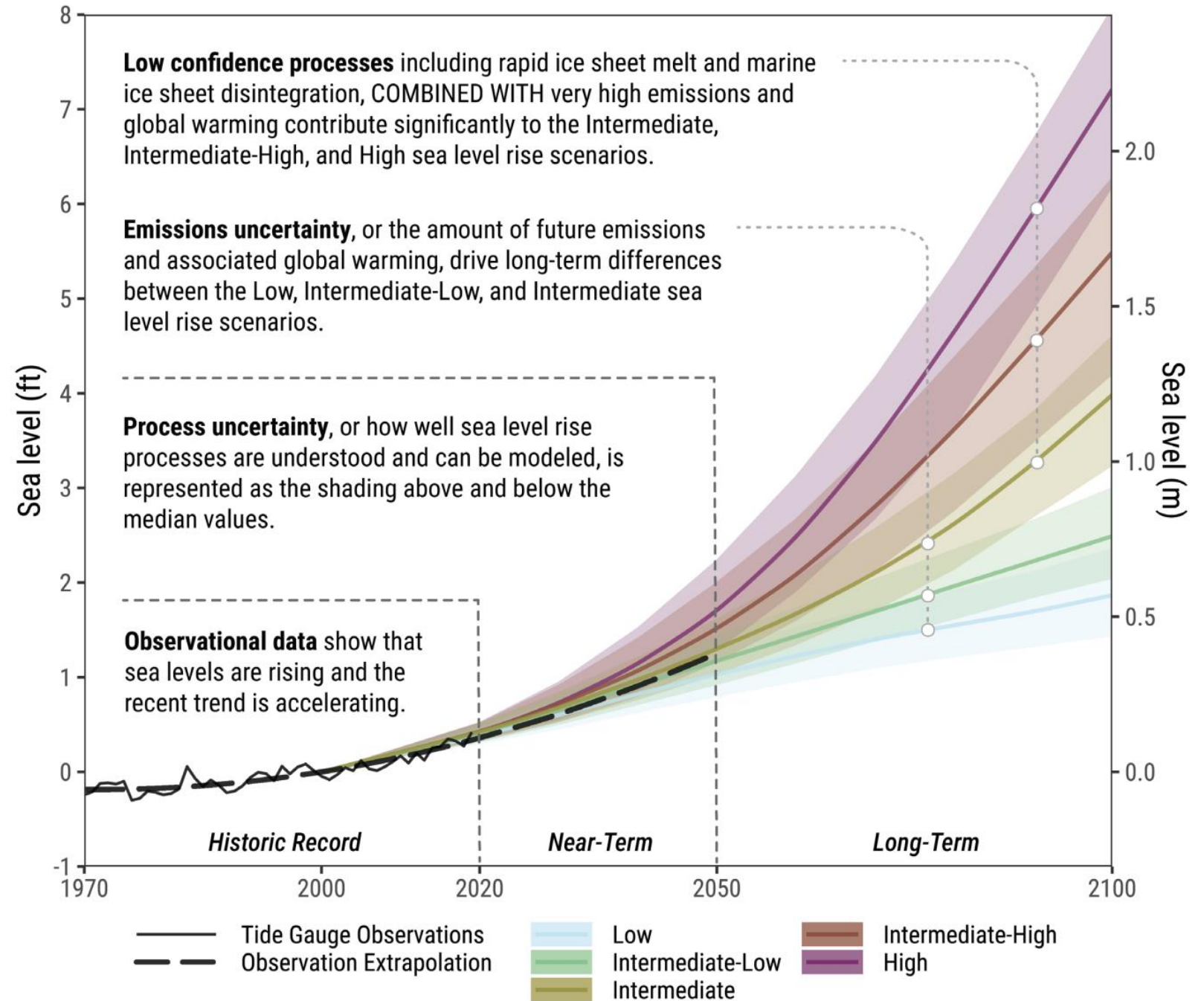


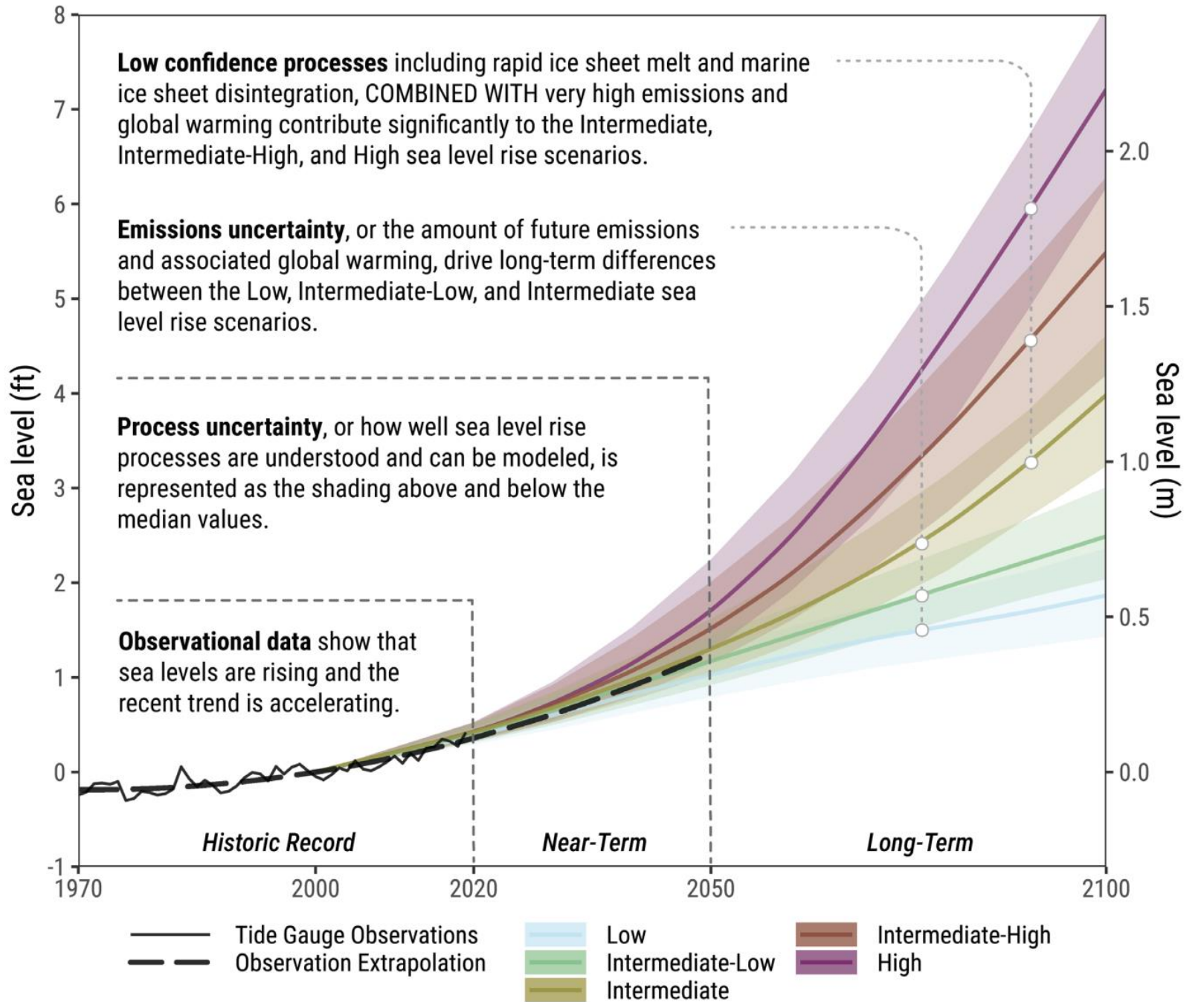
Adaptation Planning by Phase





# BOTH Climate Mitigation & Climate Adaptation Necessary







*Thank you!*

