

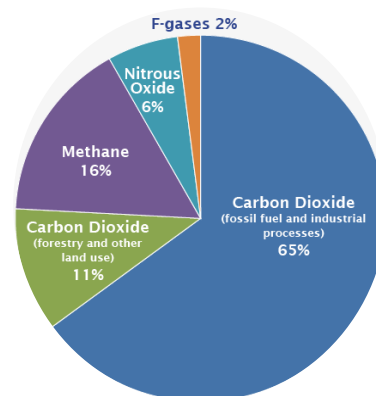
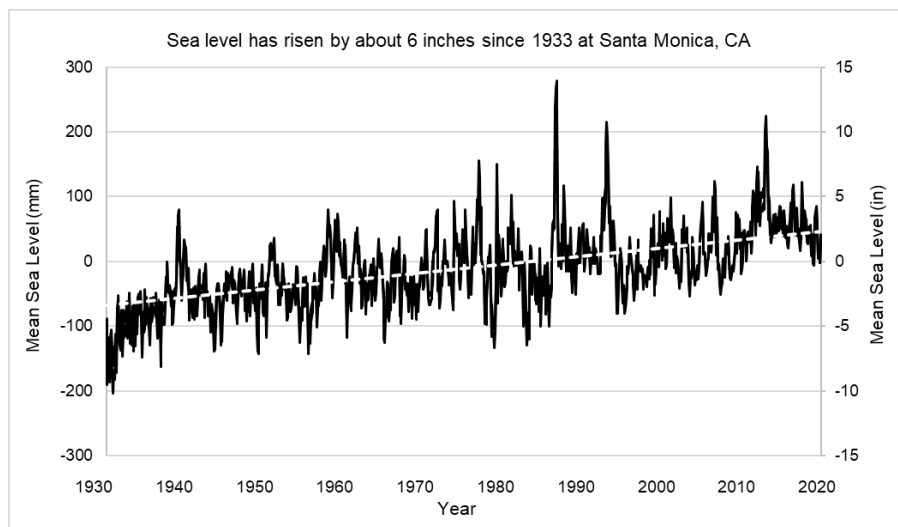


Sea levels are rising.

Global sea level is rising at an accelerated rate in response to our changing climate. There are two phenomena related to climate change that contribute to rising sea levels:

- **Thermal expansion:** global atmospheric and ocean temperatures are rising, and water expands as it absorbs heat.
- **Ice melt:** melting glaciers and ice sheets increase freshwater runoff into oceans.

Greenhouse gases trap heat in our atmosphere resulting in rising ocean temperatures. Sources of greenhouse gases include the use of fossil fuels such as coal, oil, and natural gas to power our societies, which releases carbon dioxide and methane into the atmosphere. Other methane sources include emissions from landfills and agriculture.



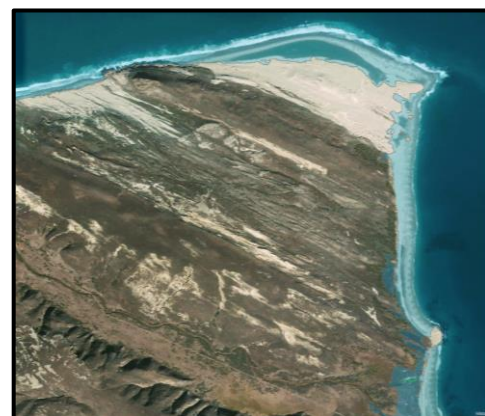
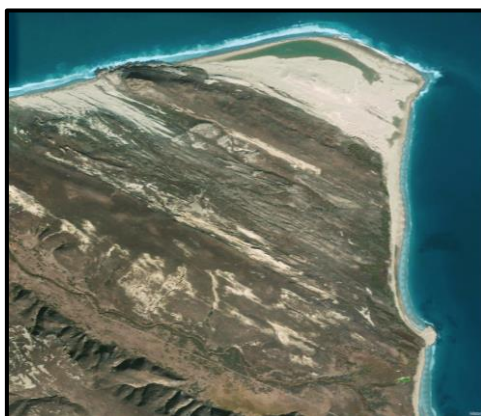
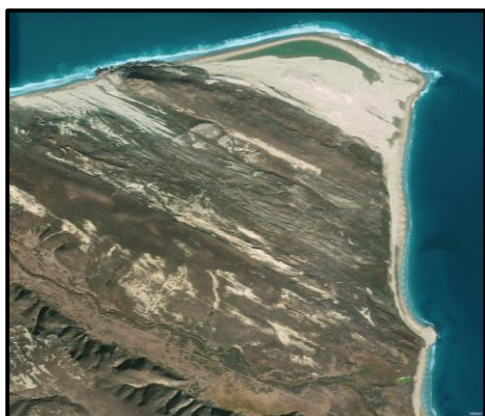
Global greenhouse gas emissions by gas

Since 1933, sea level has risen by over 6 inches near Channel Islands National Park based on data from the Santa Monica, CA tide gauge (operated by the National Oceanic and Atmospheric Administration; NOAA). In this region, sea level could rise by an additional 5.61 feet by 2100.

What is the future of sea level rise at Channel Islands National Park?

NOAA Projections ¹	2050	2100
Intermediate Low	+0.66 ft	+1.44 ft
Intermediate	+1.12 ft	+3.31 ft
Intermediate High	+1.64 ft	+5.61 ft

This table shows projected sea level heights at the park compared to today's mean sea level. These projections were developed by NOAA in 2022 based on different climate change scenarios, which are based on different greenhouse gas emission levels. They can aid in park planning by helping managers determine which resources are most threatened by sea level rise.



From left to right, these images show the Skunk Point area of Santa Rosa Island with its current water level, with two feet of sea level rise, and with six feet of sea level rise. This low-lying sandy area has high vulnerability to the impacts of sea level rise.



How is sea level rise impacting Channel Islands National Park?

Channel Islands National Park includes five islands along with their ocean environments. The park features unique natural resources, such as the largest breeding colonies of seabirds in southern California, including 80% of the U.S. breeding population of Scripps's murrelets. Cultural resources distinctive to the Channel Islands are also protected within the park, including archaeological artifacts and the sites of ancient ecosystems and the indigenous Chumash and Tongva peoples. Rising sea levels and increased storm surge can result in damage to infrastructure and cultural resources, erosion of coastal cliffs, and inundation of habitat for seabirds, marine mammals, and other species.

- Two-thirds of the San Miguel Island coast and the Sandy Point and Skunk Point sections of Santa Rosa Island are highly vulnerable to sea level rise impacts because they feature sedimentary rock formations, exposed sandy stretches of beach, and high waves. The rest of the park's shorelines feature rock cliffs and steep slopes, which are vulnerable to sea cave flooding.
- Sea level rise poses a threat to the Scripps's murrelet, Ashy storm-petrel, and western snowy plover breeding populations within the park because they nest in the low-lying coastal areas that could be inundated by rising sea levels. Other animals that live in this coastal habitat and could be impacted include seals, sea lions, and the endangered black abalone. For example, elephant seal pups can sometimes get swept off narrow beaches by big winter waves, which will become more common as sea levels rise.
- Cultural resources throughout the Channel Islands are threatened by erosion, including sea cliff retreat. Sea level rise in low-lying coastal areas could also damage Chumash village sites and historic ranching infrastructure.



The low-lying Skunk Point on Santa Rosa Island is highly vulnerable to sea level rise [NPS].



Elephant seals and pups on a beach on San Miguel Island. [NPS].



Sea level rise will greatly alter the rocky intertidal habitats at the park [NPS].



The top image on the left shows Chumash paddlers reaching the shores of Santa Cruz Island after paddling a tomol (sewn plank canoe) during a ceremonial crossing [NPS]. The bottom image on the left is a picture of coastline at the Cathedral Cove overlook on East Anacapa Island that is vulnerable to sea cliff retreat [NPS].



Archaeological sites on the Channel Islands are nationally significant and vulnerable to impacts from climate change. These impacts represent not only a loss of archaeological resources but also a loss of sites with high levels of cultural importance to direct descendants.

What can you do to help?

- Reduce your carbon footprint: power down electronics or reduce your thermostat. Go to carbonfootprint.com to calculate your carbon footprint and find ways to make changes.
- Volunteer with organizations working to protect coastal habitats that provide natural defenses against sea level rise.
- Support climate mitigation and adaptation policies. Contact your representatives in Congress to let them know you care.
- Visit coastal areas and support the parks and communities that are taking actions to prepare for sea level rise.

Additional Resources

1. [Sea Level Rise Viewer](#): NOAA SLR viewer tool to access local sea level rise projections at tide gauges and visualize sea level rise scenarios (2022).
2. [NOAA Tides & Currents](#): Access water levels, tide predictions, and other conditions along coasts.
3. [NOAA Coastal Flood Exposure Mapper](#): A tool to visualize coastal hazards as well as societal, infrastructure, and ecosystems exposure to those hazards
4. [Channel Islands Climate Change Report](#): This 2020 report provides information on climate trends, impacts, and future risks related to climate change.
5. [California Coastal Hazards Map](#): A tool to visualize sea level rise projections and storms for California.

Note: The sea level rise projections, storm surge projections, and other information presented here are for general educational and awareness purposes only. They should not be used for site-specific analysis, navigation, permitting, or legally binding activities.