

The Effect of Sea Level Rise

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Introduction

Many coastal cities around the world are experiencing more flooding than ever before. Global mean sea level has risen about 8–9 inches since 1880, with about a third of that coming in just the last two and a half decades.

Rising sea levels are causing severe damage in many communities, costing them a lot of money and resources. Also, it is negatively affecting the environment and life in the ocean. In this poster we will address why this is happening.

Why is the Ocean Important?

- Produces more oxygen than the Amazon
- Transports heat from the equator to the poles, regulating our climate and weather patterns. If it was not for oceans, climate change would have already made earth unsustainable for life.
- The ocean produces over half of the world's oxygen, more oxygen than the Amazon produces and absorbs 50 times more carbon dioxide than our atmosphere

OUR WORLD OCEAN provides

THE AIR WE BREATHE

>50% The ocean produces over half of the world's oxygen and stores 50 times more carbon dioxide than our atmosphere.

CLIMATE REGULATION

70% Covering 70% of the Earth's surface, the ocean transports heat from the equator to the poles, regulating our climate and weather patterns.

TRANSPORTATION

76% Percent of all U.S. trade involving some form of marine transportation.

RECREATION

From fishing to boating to kayaking and whale watching, the ocean provides us with so many unique activities.

ECONOMY

\$282 billion Amount the U.S. ocean economy produces in goods and services. Ocean-dependent businesses employ almost 3 million people.

FOOD

The ocean provides much more than just seafood. Ingredients from the sea are found in surprising foods such as peanut butter and soy milk.

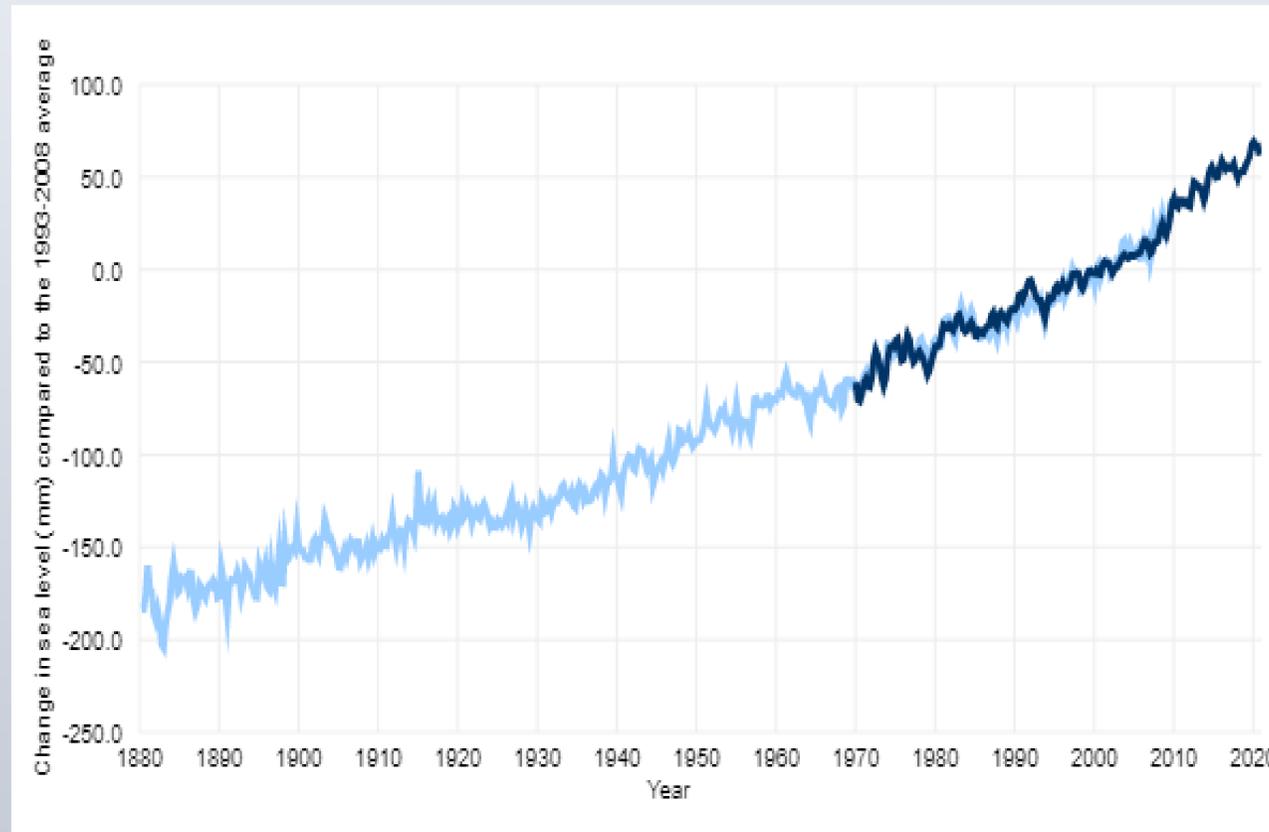
MEDICINE

Many medicinal products come from the ocean, including ingredients that help fight cancer, arthritis, Alzheimer's disease, and heart disease.

Source: First Street Foundation • Structural damage refers to residential properties with 1-4 units. (JOHN HANCOCK/GLOBE STAFF)

WHY ARE SEA LEVELS RISING

- The rising water level is mostly due to a combination of meltwater from glaciers and ice sheets and thermal expansion of seawater as it warms. In 2019, global mean sea level was 3.4 inches above the 1993 average, the highest annual average in the satellite record (1993-present).
- The volume of the ocean is expanding as the water warms
- Ice loss from the Greenland Ice Sheet increased seven-fold from 34 billion tons per year between 1992-2001 to 247 billion tons per year between 2012 and 2016.



Source: The light blue line shows seasonal (3-month) sea level estimates from Church and White (2011). The darker line is based on University of Hawaii Fast Delivery sea level data.

Negative Effects

- **Altering ocean currents:** This leads to organism and animal migration patterns being altered detrimentally. Many animals and organisms depend on ocean currents for reproduction and nutrients. Currents also play a role in maintaining climate.
- **Acidity:** The ocean is becoming more acidic as the water climate warms and greenhouse gasses flood the atmosphere.
- In the past 200 years alone, ocean water has become 30 percent *more acidic*, faster than any known change in ocean chemistry in the last 50 million years

Why Sea Level Matters

- In the United States, almost 40% of the population lives in relatively high population-density coastal areas, where sea level plays a role in flooding, shoreline erosion, and hazards from storms.
- Globally, 8 of the world's 10 largest cities are near a coast
- In urban settings along coastlines around the world, rising seas threaten infrastructure necessary for local jobs and regional industries. Roads, bridges, subways, water supplies, oil and gas wells, power plants, sewage treatment plants, landfills and more are all at risk
- In the natural world, rising sea level creates stress on coastal ecosystems that provide recreation, protection from storms, and habitat for fish and wildlife, including commercially valuable fisheries.
- As seas rise, saltwater is also contaminating freshwater aquifers, many of which sustain municipal and agricultural water supplies and natural ecosystems.



(click link for interactive map)

<https://coast.noaa.gov/slr/>

Bibliography

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