

## One Sheet

### Sea Level Rise

July 2021 Prepared by Rev. Richenda Fairhurst  
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#### Explaining the basics:

The basics of global sea levels, [Is sea level rising?](#) from NOAA.

A great breakdown and explainer [Sea Level Rise Explained](#) from National Geographic.

And a short video with the essentials, [Rising Tides: Understanding Sea Level Rise](#), from NASA.

**How much rise? 20 -30 feet.** [We can do something about it](#), from The Guardian.

**How many people effected?** 400-600 million.

**Warming & Melting Trends:** Arctic ice (floating) impacts sea level rise less than does land-based ice, such as in Antarctica, Greenland, and mountain glaciers. Melting mountain glaciers not only raise sea levels, but impact drinking water, irrigation, wildlife and regional biodiversity.

- **Ice loss** from 2010 rose to 1.2 trillion tons per year, a 60% increase from the 1990s. [And it's going to get worse](#), Washington Post.
- **Arctic Ice and permafrost.** A warming Arctic includes melting of seasonal snowfall in addition to the 'old ice' that stabilized the permafrost. Loss of snow cover means the sun's rays do not reflect off the snow ([albedo effect](#)), but instead are absorbed by exposed soil, warming the arctic even more. [Climate Change: Arctic Sea Ice](#).
- **Ice Sheets.** "The Antarctic and Greenland ice sheets contain more than 99 percent of the freshwater ice on Earth." [Quick Facts on Ice Sheets](#) from NSIDC

#### Consequences. Rising sea levels effect infrastructure, groundwater, farms and soils

- **Soils.** Rising oceans bring saltwater into what otherwise had been freshwater farm systems. "[Climate Change is making soils saltier forcing farmers to find new livelihoods](#)" from The Conversation breaks out the challenge, adaptation strategies, and migration.
- **Wild lands & forests.** Rising oceans also bring salt water to wildlands, impacting freshwater ecosystems such as forests and wetlands. [Coastal Forests Face Rising Sea Levels](#), USDA.
- **Infrastructure.** Higher water tables impact residential structures and infrastructure such as roads, bridges and pipelines, along the coast. "[Increased roadway fatigue, reduced sewer and septic drainage, and the potential for mobilizing contaminants in soils...](#)" (uark.edu)
- **Coastal Storms and High Tides.** As rising seas impact flooding from storms, storm surges, and high tides, run off and flooding is made worse—[What is High Tide Flooding?](#) (NOA)—even on a sunny day when [there's not a cloud in the sky](#), NPR.

**Economics and adaptation:** A cost breakdown of building seawalls & necessary mitigation, [Who will pay for the huge costs of holding back rising seas?](#) From Yale Climate Connections.

#### Impacts to human lives and cultures

Flooding, landslides, melting permafrost in [the Yup'ik village of Mertarvik](#) in the Yukon Delta.

**The People of Kirbati** seek new homeland and [climate-refuge on Fiji](#), from the Guardian. Listen to the first hand account, [Humanizing Climate Change](#), a TEDtalk from Dr. Michael Roman.