Activity 20C: Sea Level Rise and Climate Change

Navigate to **NASA Sea Level Change**.

1. What is the latest measurement for sea level? *Remember to include units!*

2. Examine the graph showing satellite data from 1993-present.

    a. What can you interpret from this graph?

    b. What is the current rate of sea level change? *Remember to include units!*

Global mean sea level has risen about 8 inches (20 cm) since 1880; three of those eight inches occurred in the last 25 years. The rising water level is 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 (86.4 mm) above the 1993 average, earning the distinction as the highest annual average in the satellite record (1993-present) (**Figure 20.13**).

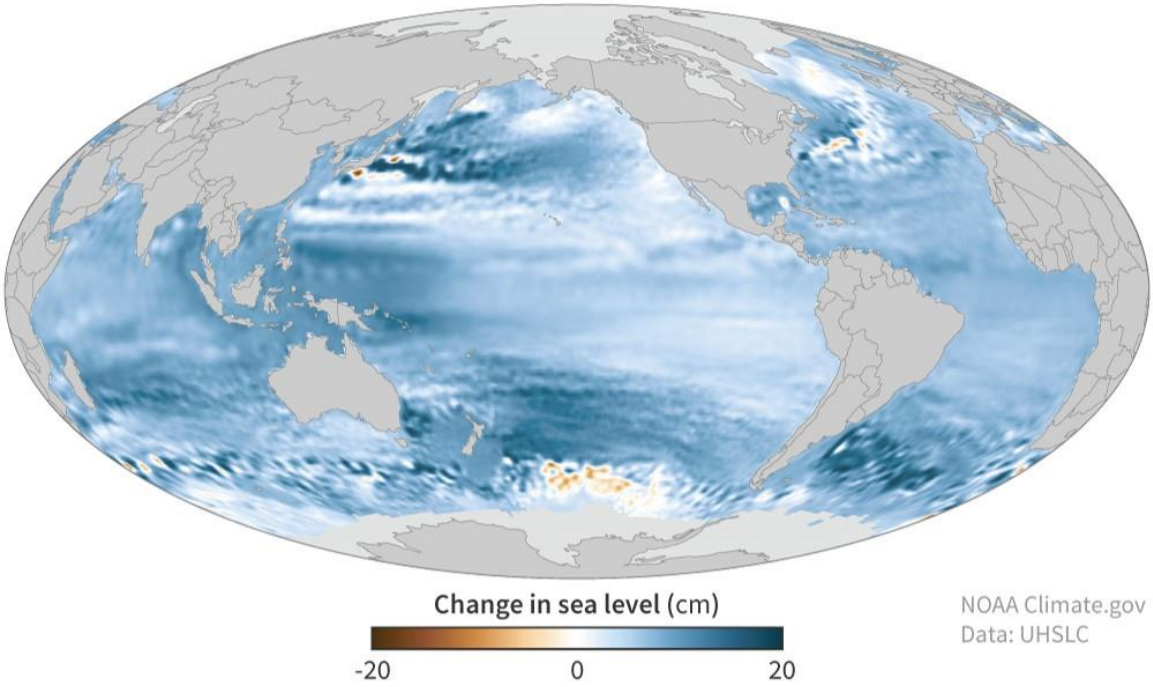

Figure 20.13: Sea Level Change between 1993 and 2019, mean sea level has risen across most of the world ocean (blue colors). In some ocean basins, sea level has risen 6-8 inches (15-20 centimeters). Rates of local sea level (dots) can be amplified by geological processes like ground settling or offset by processes like the centuries-long rebound of land masses from the loss of ice age glaciers. (Public Domain; Philip Thompson, University of Hawaii/NOAA via Climate.gov)

Navigate to the **NOAA - Sea Level Rise Viewer**. Your instructor will provide a coastal community for you to zoom into on the map. Click the "Sea Level Rise" icon along the left-hand toolbar. With this tool you can select how much sea level will rise.

3. Raise sea level to 1 ft. Along the top toolbar there is a "Legend Toggle" available, click this so you can see what all the symbols and colors signify. Are there significant changes in your assigned community?

4. Keep raising sea level in 1-foot intervals, until you reach the 10 ft water level. As you raise sea level take note of what areas are vulnerable or impacted by coastal flooding, low lying, etc. Summarize your findings for your community.

5. How do you think this will impact the people in your selected community?

The demands of increasing human population along our coastlines create competition with coastal habitat preservation and with recreational and commercial uses of the coast and nearshore waters. As climate changes over the coming century, the problems facing coastal communities will likely worsen. Good management and policy decision making require baseline information on the rates, trends, and scientific understanding of the processes of coastal change on a regional to national scale.

It can be challenging for the public, conservationists, and policy makers to agree on how to combat rising sea level while saving structures, the environment, and their communities. Planning and mitigation are never easy. There are many questions that must be considered; for example: What decisions are required? How are they agreed upon? Who should be involved? How much will it cost? Will the natural environment be impacted? All are important questions, and only represent a fraction of those asked in real scenarios.

6. Visit **The Ocean Game from the LA Times** and strategize to successfully save your hypothetical community. Once you have completed the game, summarize what you learned below.

7. Read this article from the LA Times for additional information about rising sea level and California. Summarize your thoughts on this topic below.