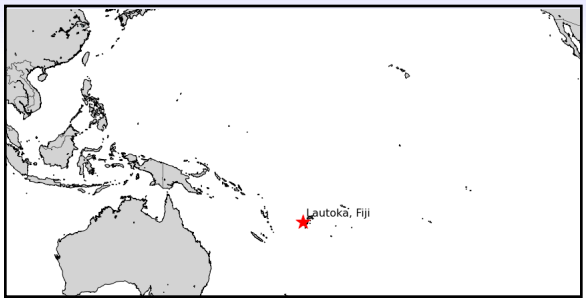
Last Updated: 8/30/24

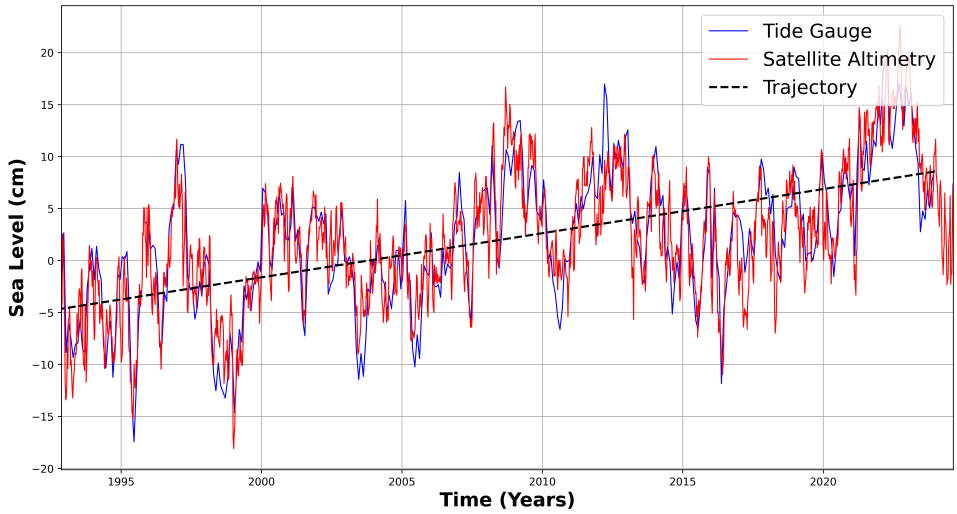
Sea Level Summary for Lautoka, Fiji

Additional detail can be found at sealevel.nasa.gov/flooding-analysis-tool-pacific-islands.



Sea level change is a critical concern for coastal communities around the world, and understanding its nature is essential for preparedness, planning, and mitigation efforts. This summary provides an overview of sea level changes observed in the present and those possible in the future for Fiji. This summary is prepared by the NASA Sea Level Change Team and uses authoritative and publicly-available data from satellites, tide gauges and the IPCC 6th Assessment Report. Projections of future flooding are produced by the University of Hawaii, with support from the NASA Sea Level Change Team.

Sea Level Has Risen in Recent Decades



Key Points

- Global warming is causing sea level to rise almost everywhere.
- From 1993 to present, a 31-year time period, sea level rose 13 cm.
- In addition to sea level rise, there are significant ups-and-downs from year-to-year that can lead to big, but temporary shifts in sea level.
- Sea level will continue to rise and isn't returning to where it was in the past.

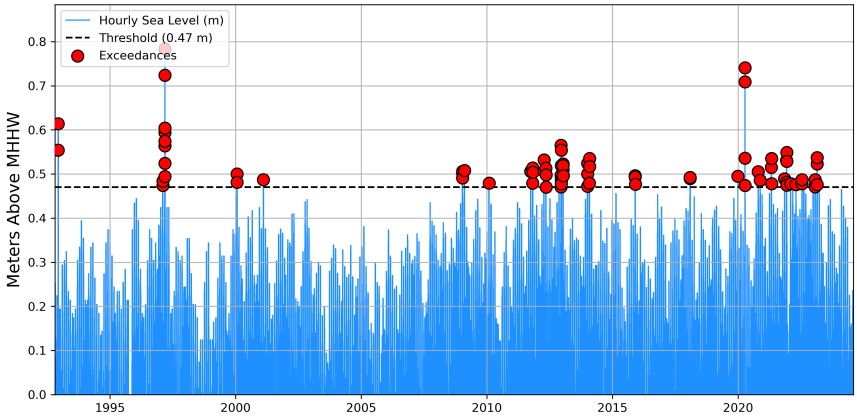
What does this show?

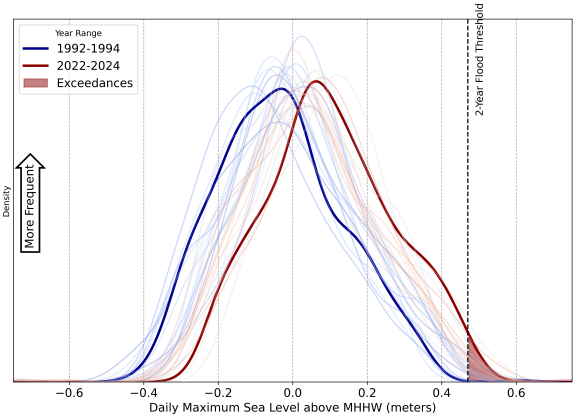
Instruments here on Earth and in space are used to measure sea level change. Comparisons between the data from the instruments give confidence in our understanding of sea level change. Tide gauges measure the height of the sea relative to land, while satellite altimeters just measure the ocean. Subsidence or uplift of coastal lands can cause differences.

Daily Sea Levels are Getting Higher and Increasing Flooding

Key Points

- As sea levels rise, flooding will start to occur more often and with worsening severity.
- From the tide gauge records, many coastal locations are exceeding thresholds that indicate flooding may be occurring more frequently. The maximum height of sea level each day is shifting higher.





What does this show?

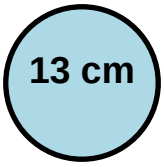
Tide gauges take hourly measurements and allow us to track daily changes in sea level. Because of sea level rise, we see that the maximum height of sea level each day is increasing.The graphs above show daily sea level relative to the average high tide, or mean higher high water (MHHW). We can see that sea level in the past has exceeded thresholds that indicate flooding may be occurring, and these exceedances will increase as sea level rises.

Sea Level Summary for Lautoka, Fiji

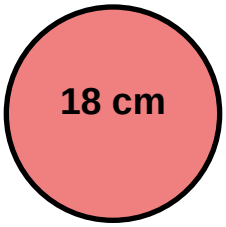
Sea Level Rise Guaranteed in the Near-Term, Future Rise Depends on Greenhouse Gas Emissions

Key Points

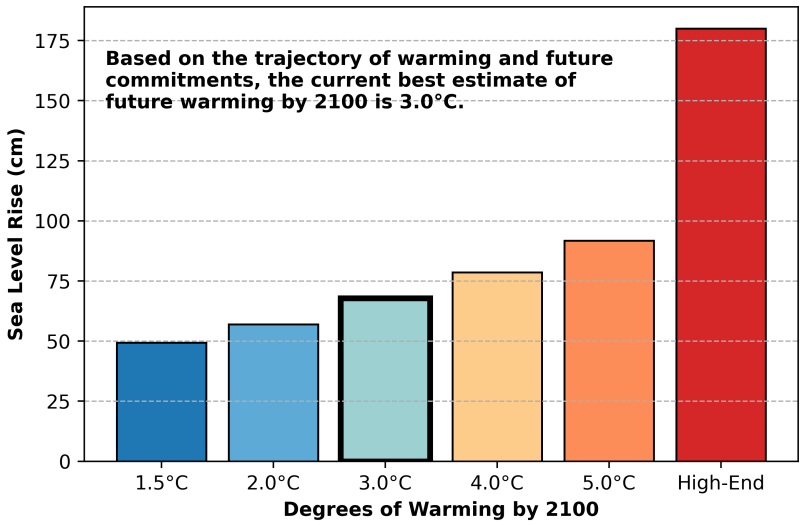
- Across all emissions pathways, sea level will rise as much or more by 2050 as occurred in the previous three decades.
- Beyond 2050, the amount of sea level rise that Fiji will see is heavily dependent upon future emissions.
- Fiji is expected to see around 68 cm of sea level rise under a 3.0°C scenario by 2100.



Sea level rise over last 30 years



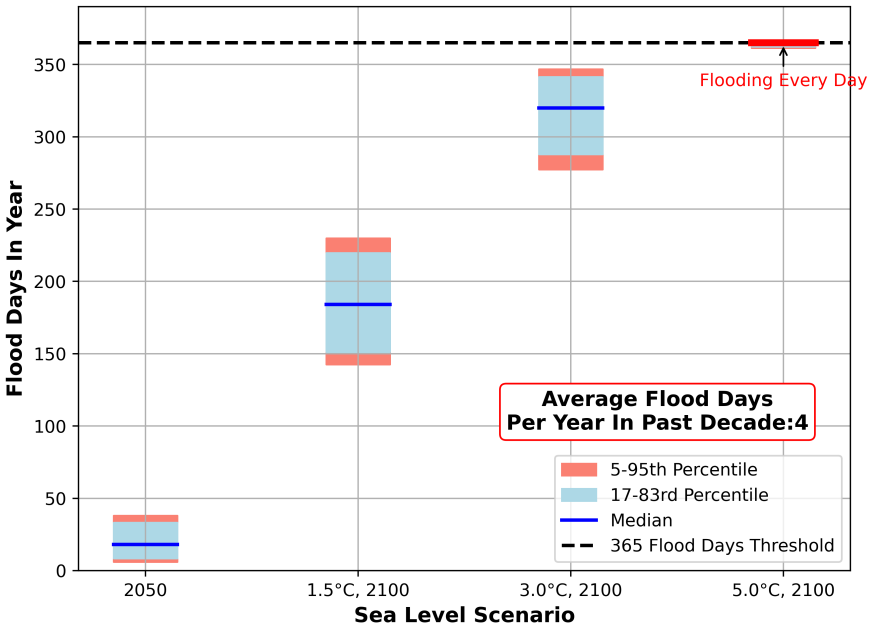
Sea level rise over next 30 years



What does this show?

The range of possible sea level in the next three decades is narrow, showing certainty in what will occur in the near-term. Sea level rise will be as much or more in the next three decades as we've seen in the previous three.After that, higher emissions and warming will lead to substantially higher amounts of sea level rise. In a possible worst case scenario, high warming will trigger rapid ice sheet loss and sea level rise could approach 2 meters by 2100.

Sea Level Rise Will Lead to a Dramatic Increase in the Frequency of Flooding



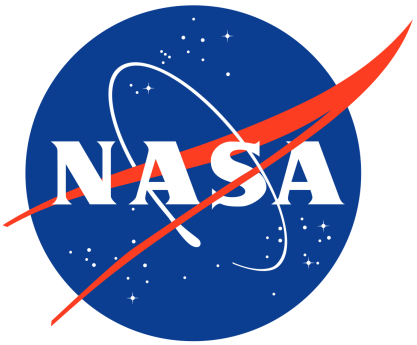
Key Points

- By 2050, Fiji could see an order of magnitude increase in the amount of flooding that occurs relative to the past decade.
- Beyond 2050, future sea level rise will cause a large increase in the frequency and severity of episodic flooding in Fiji within the 21st century.
- Across all future scenarios and under the assumption of no additional protections, Fiji will likely experience more than 100 days of flooding every year by the end of the century.

What does this show?

This chart shows the number of high tide flood days that is expected in 2050 and in 2100 under three different warming scenarios. A flood day is classified as an exceedance of the 2-year flood threshold as estimated from the tide gauge. Such exceedances occur now during exceptionally high tides and storm events, but will occur even more often as sea levels rise. If the number of days reaches 365, then that means that the sea level has risen high enough that high tide will exceed the flood threshold every day.

This summary was developed with funding from NASA by scientists on the NASA Sea Level Change Team. For additional information on the analysis approach and framing, please refer to the comprehensive NASA Sea Level Change Team assessments for Tuvalu and Kiribati (1-2). The observations of sea level were obtained from NASA PO.DAAC (3), Permanent Service for Mean Sea Level (4), and the University of Hawaii Sea Level Center (5). The projections of future sea level rise from the IPCC 6th Assessment Report (6) were used in this analysis. Finally, the flooding day projections were produced by scientists at the University of Hawaii Sea Level Center using the methods of Thompson et al. (2021;7).



For more information, please visit:
sealevel.nasa.gov/pacific-islands-flooding-tool/

Citations:

1. NASA Sea Level Change Team, (2023) Assessment of Sea Level Rise and Associated Impacts for Tuvalu, N-SLCT-2023-01 Technical Report, pp 18. Doi: 10.5281/zenodo.8069320.
2. NASA Sea Level Change Team, (2024) Assessment of Sea Level Rise and Associated Impacts for Kiribati, N-SLCT-2024-02 Technical Report, pp 18. Doi: 10.5281/zenodo.11480739.
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