

Which Pacific territories are most threatened by rising sea levels and climate change ?

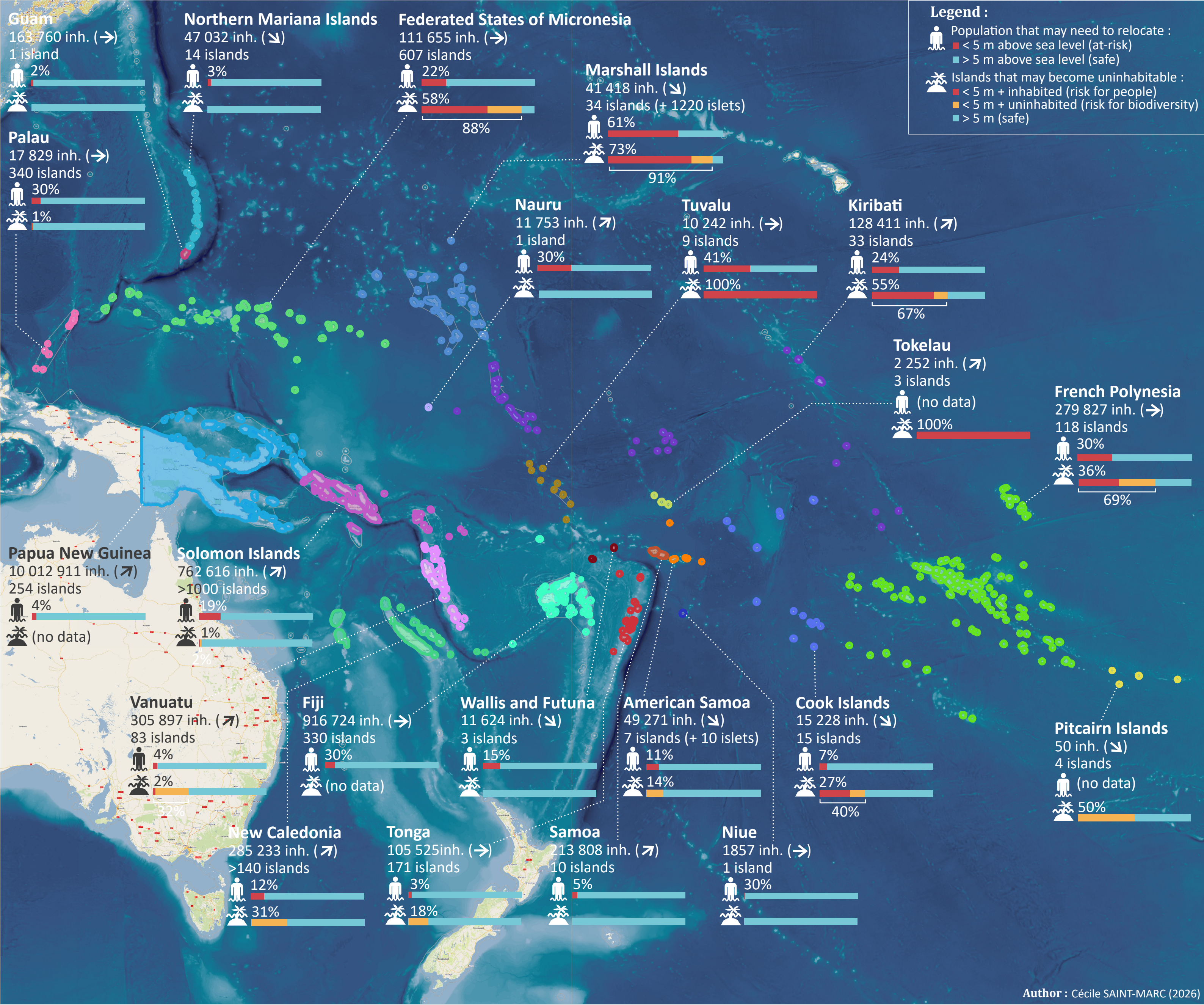
According to the IPCC, sea level is forecast to rise by 1 meter by 2100. Observations show that global mean sea level increased by 0.20 m between 1901 and 2018.

- This rise is mainly due to:
- Ice melt: due to the increase in global temperature, glaciers all around the world and the Greenland and Antarctic ice sheets are melting.
 - Thermal expansion of oceans: as water warms, it expands, and for such large volumes as the oceans, this causes the sea level to rise.
 - Changes in salt content: when freshwater is added to an ocean region, the water becomes less dense and expands, occupying more volume and raising the local sea level.
 - Land water consumption: in many places, groundwater from non-recharging aquifers is consumed by humans, and this water eventually ends up in the oceans, adding to global sea-level rise.

This rise threatens low-elevation islands (less than 5 meters above sea level), not only because land will be permanently submerged. Other risks induced by the sea-level rise are:

- coastal erosion,
- storms, that often trigger coastal flooding (they are planned to be more frequent and intense due to climate change),
- spring tides that will periodically add to global sea-level rise,
- contamination of freshwater sources by saltwater,
- subsidence of atolls (no more coral growth due to the increase in sea temperature),
- the El Niño-Southern Oscillation, which occurs every 2 to 7 years and triggers an expansion of the West Pacific and a contraction of the East Pacific.

Some Pacific country will become hinospitable. Tuvalu, Tokelau, Marshall Islands, the Federated States of Micronesia, Kiribati and French Polynesia are particularly exposed. Thousands of people will need to be relocated before the end of the century.



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"Sea-level rise will continue for millennia, but how fast and how much depends on our future greenhouse gas emissions." (IPCC)

Together, let's limit the temperature rise to +2°C by stopping using fossil fuels before 2035.

Data sources :

Pacific Dataviz Challenge 2026 data sources :

- Annual Shorelines - Landsat, 30 m (https://stac-browser.digitalearthpacific.org/collections/dep_ls_coastlines)
- Population growth (https://stats-sdmx-disseminate.pacificdata.org/rest/dataflow/SPC/DF_NMDI_POP/1.0?references=all)

Other data sources :

- IPCC (2023). "AR6 Synthesis Report : Climate Change" (https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_LongerReport.pdf)
- Wikipedia (<https://en.wikipedia.org/>)
- NASA "Understanding sea level" (<https://sealevel.nasa.gov/understanding-sea-level/global-sea-level/thermal-expansion/>)
- Encyclopedia Britannica (<https://www.britannica.com/>)

Data sources aggregated by AI (Gemini) :

- Tonga Statistics Department (<https://tongastats.gov.to/>)
- Geonames.org (<https://www.geonames.org>)
- NGA Sailing Directions - Pub. 126 (Pacific Islands) (<https://msi.nga.mil/home>)
- National Statistical Office of Papua New Guinea. National Population and Housing Census. (<https://www.nso.gov.pg/census-surveys/national-population-housing-census/>)
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- B.E. Sawe (2017). "Largest Islands In The Federated States Of Micronesia". (<https://www.worldatlas.com/articles/largest-islands-in-the-federated-states-of-micronesia.html>)
- FSM Statistics Office. "FSM Population and Housing Census". (<https://stats.gov.fm/>)