Sea Level Rise

With sea level rise, existing problems only get worse

What affects local sea level daily, weekly and monthly?

- Tides (including king tides).
- Weather (storms, typhoons).
- El Niño (can temporarily lower sea level).
- Eddies (circulating water masses).

King Tides

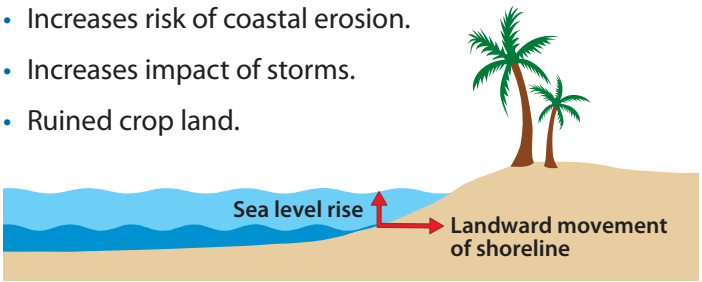
The two highest tides of the year, one in winter, one in summer, occur naturally and are not caused by climate change. These unusually high tides provide a glimpse of what the future may hold when sea level is higher.

How is sea level measured?

- Tide gauge stations.
- Satellites can be used to detect mm scale changes in sea level over time.
- The rate of global sea level rise (SLR) has accelerated recently.
- Insular Pacific tide gauge stations show a rate of SLR of ~4 mm per year from 1993–2009.

How does sea level rise affect Pacific Islands?

- Coastal flooding (inundation) — 2 cm SLR can flood meters of land (see diagram below).
- Loss of drinking water — intrusion into aquifers.
- Increases risk of coastal erosion.
- Increases impact of storms.
- Ruined crop land.

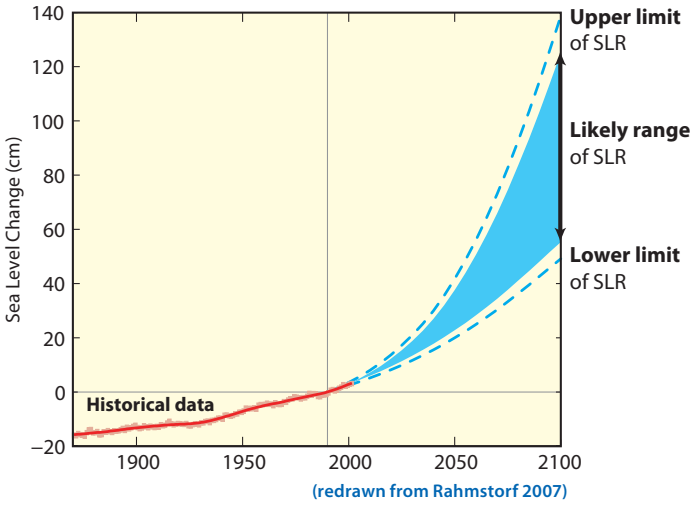


What causes global sea level rise?

- Climate Change.
- Melting ice from alpine glaciers, Greenland, and Antarctica.
- Thermal expansion of ocean water — water expands as global temperature increases.

Future sea level

- Predictions of future sea level rise vary due to ice sheet and glacier dynamics.
- It is currently appropriate to prepare for a one meter increase in sea level by 2100.



(redrawn from Rahmstorf 2007)

Look for other PacIOOS & Sea Grant factsheets to find out how you can prepare for sea level rise!

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