



## Sea level rise with warming above 2 degree

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Holding the increase in the global average temperature to below 2 °C above pre-industrial levels, and pursuing efforts to limit the temperature increase to 1.5 °C, has been agreed by the representatives of the 196 parties of United Nations, as an appropriate threshold beyond which climate change risks become unacceptably high. Sea level rise is one of the most damaging aspects of warming climate for the more than 600 million people living in low-elevation coastal areas less than 10 meters above sea level. Fragile coastal ecosystems and increasing concentrations of population and economic activity in coastal areas, are reasons why future sea level rise is one of the most damaging aspects of the warming climate. Furthermore, sea level is set to continue to rise for centuries after greenhouse gas emissions concentrations are stabilised due to system inertia and feedback time scales. Impact, risk, adaptation policies and long-term decision making in coastal areas depend on regional and local sea level rise projections and local projections can differ substantially from the global one.

Here we provide probabilistic sea level rise projections for the global coastline with warming above the 2 degree goal. A warming of 2°C makes global ocean rise on average by 20 cm, but more than 90% of coastal areas will experience greater rises, 40 cm along the Atlantic coast of North America and Norway, due to ocean dynamics. If warming continues above 2°C, then by 2100 sea level will rise with speeds unprecedented throughout human civilization, reaching 0.9 m (median), and 80% of the global coastline will exceed the global ocean sea level rise upper 95% confidence limit of 1.8 m. Coastal communities of rapidly expanding cities in the developing world, small island states, and vulnerable tropical coastal ecosystems will have a very limited time after mid-century to adapt to sea level rises.