



Nauru

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International  
CLIMATE  
CHANGE  
ADAPTATION  
Initiative

# Climate Change Observations and Projections

The island of Nauru is situated south of the equator at 0° 30' S, 166° 56' E. A raised atoll, it is approximately 6km long (NE-SW) and 4km wide (NW-SE), with a maximum elevation of 71m and total area of 22km<sup>2</sup>.

The main economic sector of Nauru was the mining and export of phosphate - over 80% of the land has now been mined. Residential areas are found along the coastal rim of the island.

Some of Nauru's major concerns with the change in climate are water, sanitation and coastal erosion.



Buada Lagoon



Damage to Nauru's coastline from high seas



Anibare Bay

The main climate extreme Nauru experiences is drought, which can last as long as 36 months. Droughts usually occurs during La Niña events, when the surrounding sea temperature is lower, resulting in less cloud and rainfall.

## Projections for Nauru over 21<sup>st</sup> Century

There is 'very high confidence' that Nauru's surface air temperature and sea surface temperature will continue to increase. By 2030, under a high emissions scenario, this increase in temperature is projected to be in the range of 0.3-1.3°C (Figure 4).



Map of Nauru

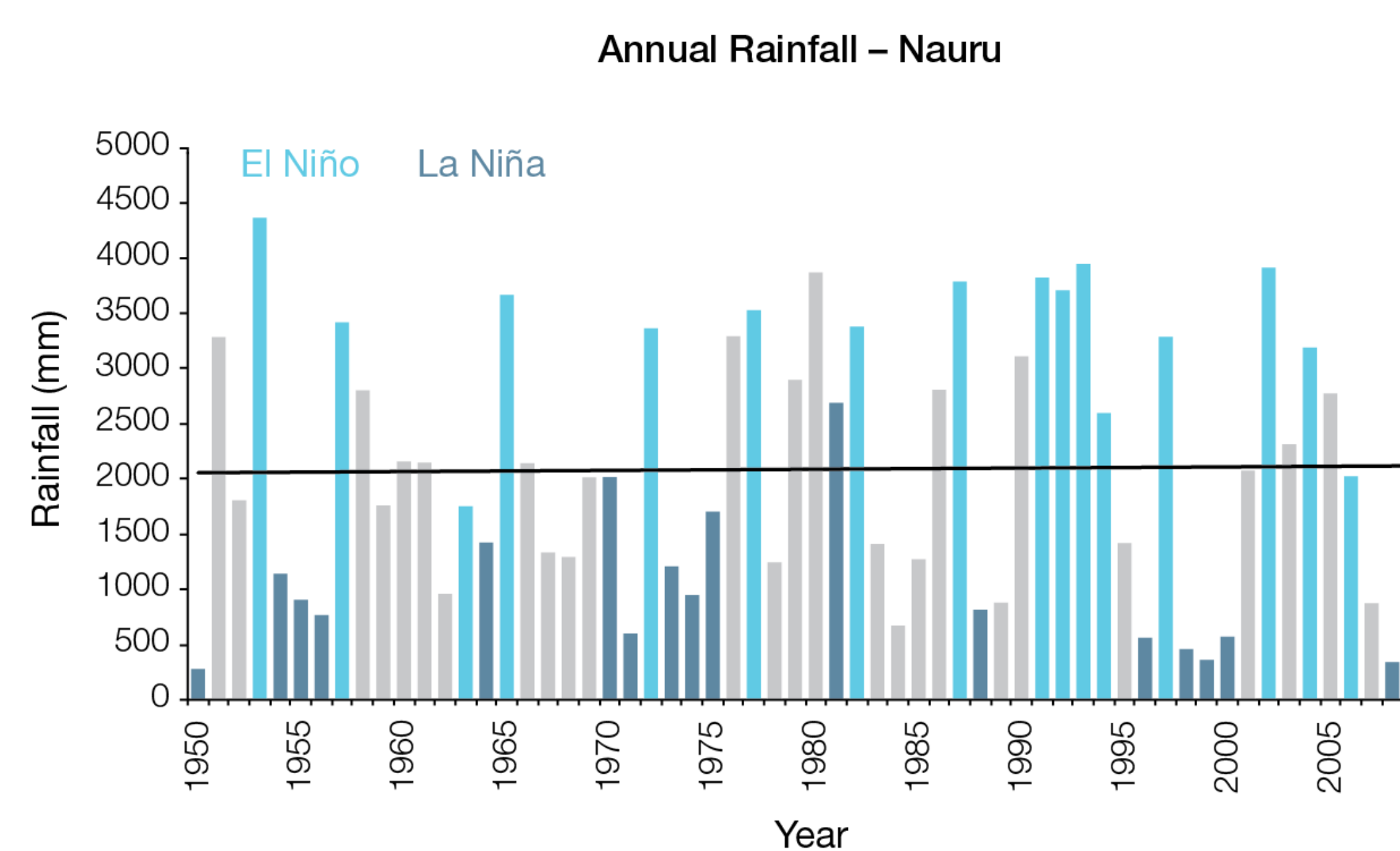


Figure 2: Annual rainfall at Nauru. Light blue and gray bars denote El Niño, La Niña and neutral years respectively. Note the rainfall trends are not statistically significant.

Satellite data indicate the sea level has risen near Nauru by about 5 mm per year since 1993. This is larger than the global average of 2.8-3.6 mm per year. This higher rate of rise may be related to natural fluctuations that take place year to year or decade to decade caused by phenomena such as the ENSO.

## Projected climate

### Methods

Climate projections have been derived from up to 18 global climate models from the CMIP3 database, for up to three emissions scenarios, B1 (Low), A1B (Medium), A2 (High) and three 20 year periods (Figure 3). These models were selected based on their ability to reproduce important features of the current climate.

For Nauru, projections will refer to an average change over the broad geographic region encompassing Nauru and the surrounding ocean, and so do not represent a value specific to any actual location (such as a town in Nauru).

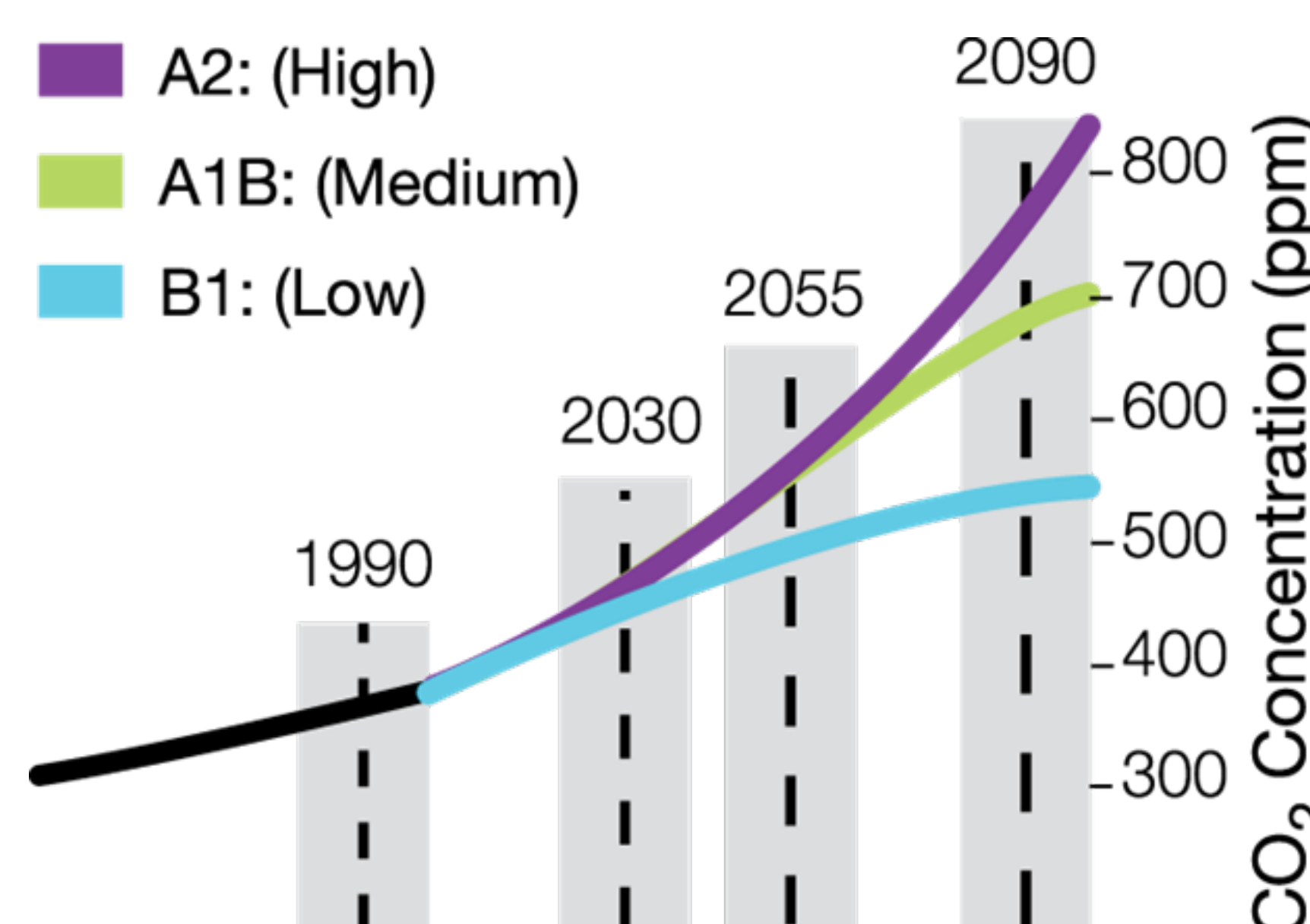


Figure 3: CO<sub>2</sub> concentrations (ppm) associated with 3 Intergovernmental Panel on Climate Change emissions scenarios: low emissions (B1-blue), medium emissions (A1B-green) and high emissions (A2- purple)

	2030 (°C)	2055 (°C)	2090 (°C)
Low emissions scenario	0.2-1.2	0.7-1.9	0.9-2.5
Medium emissions scenario	0.2-1.4	0.9-2.3	1.7-3.5
High emissions scenario	0.3-1.3	1.0-2.2	2.2-3.8

Figure 4: Projected annual average air temperature changes for Nauru for three emissions scenarios and time periods

There is also 'very high confidence' that the intensity and frequency of days of extreme heat will increase.

There is 'high confidence' that annual and seasonal mean rainfall will increase, and that the intensity and frequency of days of extreme rainfall will increase.

There is 'moderate confidence' that the incidence of drought will decrease.

There is 'very high confidence' that the mean sea-level will continue to rise (Figure 5). By 2030, under a high emissions scenario, this rise in sea level is projected to be in the range of 4-14cm. This sea level rise, combined with natural year-to-year changes, will increase the impact of storm surges and coastal flooding.

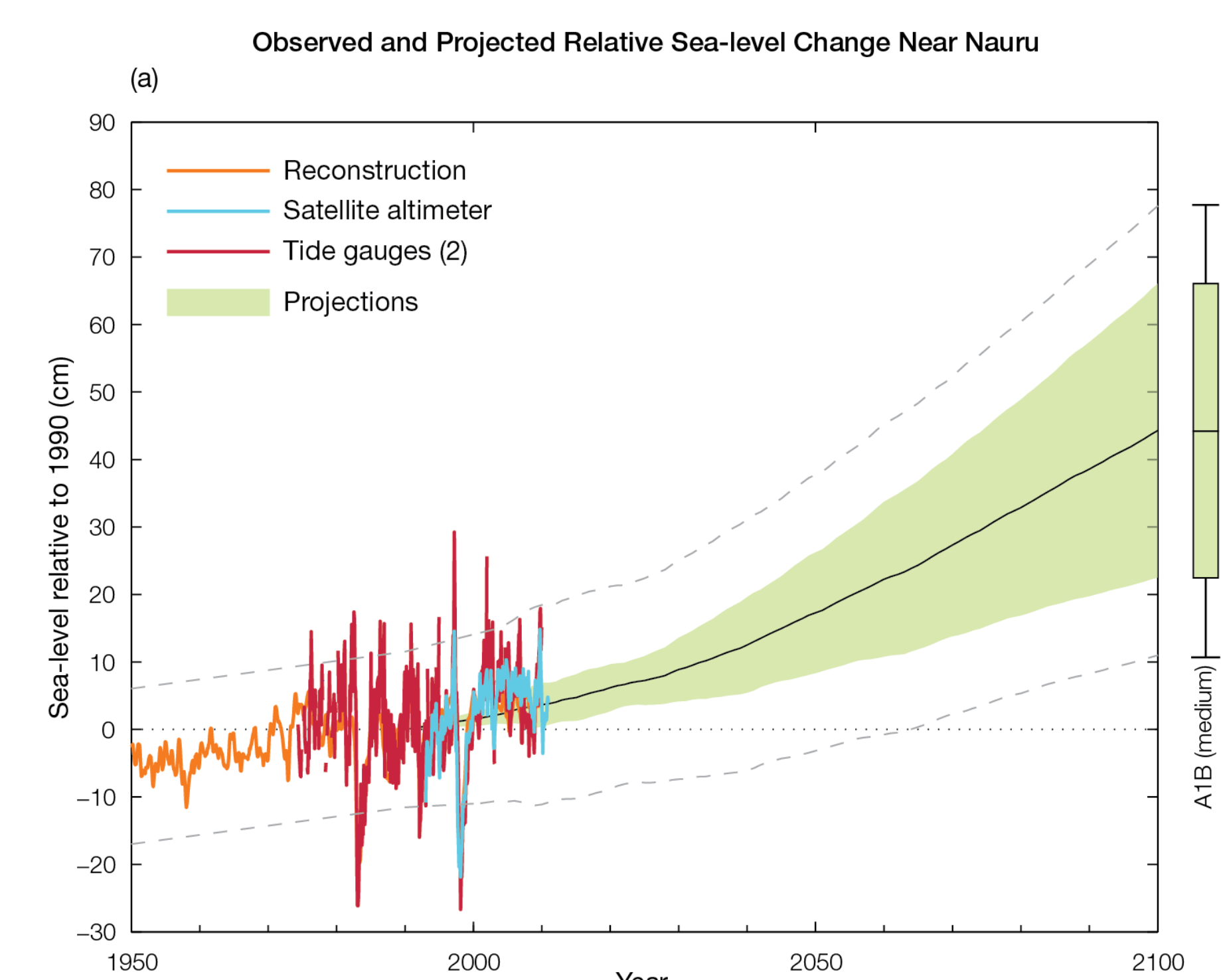


Figure 5: Observed and projected relative sea level change near Nauru

## Acknowledgement

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