

Sea levels in and around Sydney Harbour 1886 to 2018

(shorter version)



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Executive Summary

1. *There has been NO significant sea level rise in the harbour for the past 120 years, and what little there has been is about the height of a matchbox over a century.*
2. *Along the northern beaches of Sydney, at Collaroy there has been no suggestion of any sea level rise there for the past 140 years. Casual observations from Bondi Beach 1875 to the present also suggest the same benign situation.*
3. *A rush to judgement by local councils and State Governments by legislating harsh laws and building covenants along our coastlines now seems misplaced.*
4. *The falsehoods and mendacity of the IPCC and climate alarmists should be rejected out of hand, and efforts be made to ensure that science, not propaganda, defines our school curricula in matters of climate and sea levels*



1: The Tide-gauge sea-level arrangements in Sydney Harbour

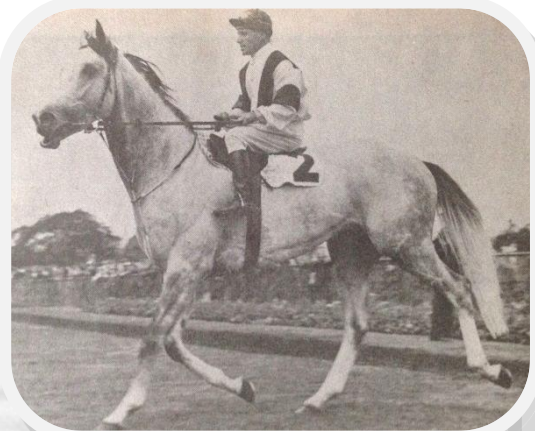
Our story of sea levels in Sydney Harbour, like the temperature story, also begins at the time of the First Fleet in 1778, when Captain Arthur Phillip turned his attention to building his new colony. From Sydney Cove he had a reasonable view of an island of rock sitting in the blue harbour waters a short distance away, and which was destined to become the site of tidal gauges in the harbour.

This island, about 1 km northeast of Sydney Cove, and only a few hundred square metres in area, was named “Rock Island” by Phillip. Not only did Captain Phillip have competent recorders of temperature with him in the First Fleet—he also had stonemasons and plenty of penal labour, and so he set to work quarrying the top from Rock Island in order to supply the new colony with building stone.

Although much smaller than the infamous Alcatraz, Philip also used the island for punishing convicts for perceived wrongdoings, and the meagre rations associated with this punishment gave rise to the alternative name ‘Pinchgut’. With the island (Figure 1) now flattened, it became a splendid foundation for some fort building. The Fort was designed in 1839, and was built between 1841 and 1857, (You et al., 2009) characterised by the rounded **Martello Tower** design popular in European fort-making in the 19th Century.

As an aside, this style of architecture should not be confused with an Australian thoroughbred racehorse also called ‘Martello Towers’, a champion who famously won four Class 1 events in 1959, including the ABC Derby at Randwick in Sydney. His grand dam was named ‘Fort Denison’, so in 1956 the owners of this young foal quite logically named the grey champion ‘Martello Towers’, shown here in racing fitout in 1959.

Figure 1: Rock Island, or Pinchgut, or Fort Denison, in 1885, built in the style of Martello Towers.



The modern-day Fort Denison is shown in Figure 2. The first tide gauge was installed as Station 65, which operated from 1886 to 1993. A PSMSL location map, Figure 3 below, suggests that this station was not actually on or at Fort Denison, but on the nearby shoreline at Cremorne Point. It was replaced over a period by Station 196, Fort Denison 2, which operated from 1914 to 2013.



Figure 2: View of Fort Denison in Sydney Harbour, looking west through the Sydney Harbour Bridge; Observatory Hill, site of early to modern temperature measurement, is located west of the freeway, behind the Opera House.

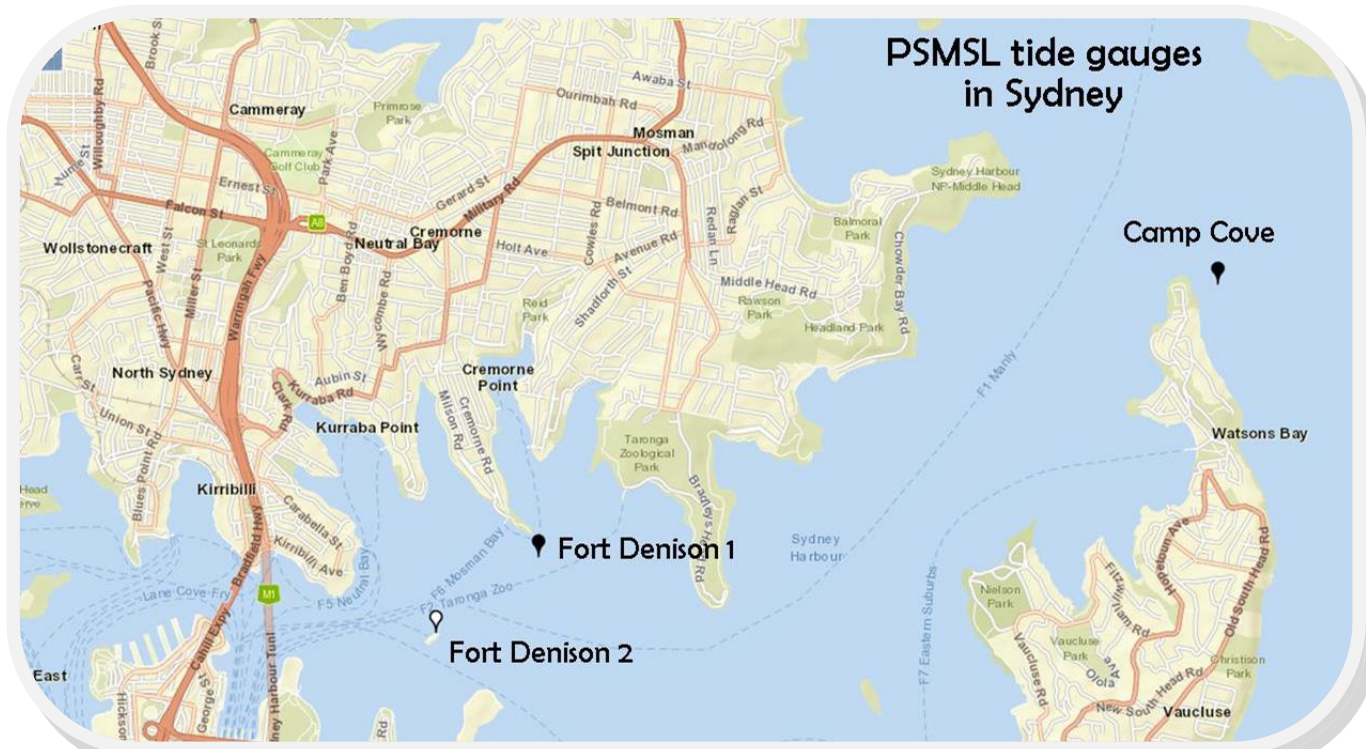


Figure 3: Location map of the three tide gauges, Sydney Harbour; the main two are named Fort Denison 1 and 2, and this map from the website of PSMSL — <http://www.psmsl.org/data/> suggests that Fort Denison 1 was located near Cremorne Point, and not actually on Fort Denison Island.

2. The Advent of Sea Level Alarmism around Sydney

With current tide gauge records showing a benign sea level regime, there is less public alarmism in 2018-19 about sea levels generally in New South Wales. To their credit, current governments have removed alarmist-type comments from many of their development guidelines, but it was not always thus. From 2008 there were Labor (i.e. Left-wing) governments entrenched in power federally (Prime Minister Rudd) and at State Level (Premier Nathan Rees).

In 2008 the State (Labor) government of NSW undertook a study of Fort Denison and its long term future in light of IPCC-predicted sea level rises. Watson and Lord (2008) produced a report on the so-called 'vulnerability' of Fort Denison based on sea level rises due to climate change of from around 4-38cm and 16-89cm by 2050 and 2100, respectively. They noted that the Fort could cope with up to 20cm of sea level rise, but beyond that the Fort would require major internal reconstruction to cope with rising sea levels.

This seduction of State Governments by the IPCC resulted in the state government adopting as policy sea level benchmarks of 40cm above 1990 levels by 2050, and 90cm above 1990 levels by 2100. These levels were proscribed and mandated to apply to local council development decisions up and down the NSW coastline, resulting in confusion and despair as property owners saw their coastal land devalued overnight, with the looming prospect of houses and property being demolished and removed from coastal land threatened by projected sea level rise. With the election of a Conservative state government in 2011, this policy was reviewed, resulting in its removal. The following new guidelines were introduced, passing responsibility for coastal management to local councils viz.

“Councils will be responsible for selecting a medium to long term sea level rise scenario that is appropriate for their local situation. Depending on competent scientific opinion, Councils may choose from low or high sea level rise projections. “

Despite this apparent relaxation of harsh planning laws, there remains a level of alarmism within bureaucracies and both state political parties. Aspiring politicians appear quick to declare that ***‘climate change is real and the science is settled’***, despite all evidence to the contrary. The issue of climate catastrophe was trotted out in full view during major severe coastal storms in June 2016, which had strong wind directions, (and hence strong wave actions) from the northeast.



These storms produced major erosion along Collaroy beach, where major house and unit development flourished right along the original dune system. Large rock walls are the only defence available against storm-induced erosion that has happened periodically through recent history. Rising sea levels had no influence on this erosional mayhem at Collaroy (see Figures 5,6, and 7)

Figure 4: Collaroy beach viewed to the NNW, 1920s; note the holiday home development along the tops of active dune systems. It was this area that suffered most in storms directed from the NE.



Figure 5:
Historic beach
erosion at
Collaroy in the
1920s. View to
South

Figure 6: Beach erosion
at Collaroy beach, 6th
June 2016; note
swimming pool as
reference point



Figure 7: Same beach
erosion as in Figure 6, 6th
June 2016; note
swimming pool as
reference point. Current
regulations along the
coast do not allow any
future building along the
dune foreshore

3: The Tide-gauge sea-level record in Sydney Harbour

We have seen earlier the locations of tide gauges in Sydney Harbour. From these gauges there is a continuous recording of sea levels in the harbour for about 130 years, from 1886 to the present. A graphical representation of observations is shown in Figures 8 (Station 65) and Figure 9 (Station 196). This data comes from the Permanent Service for Mean Sea Level, or PSMSL, based in the UK at Liverpool. The data here is also used by NOAA in its contribution to Sea Level discussion.

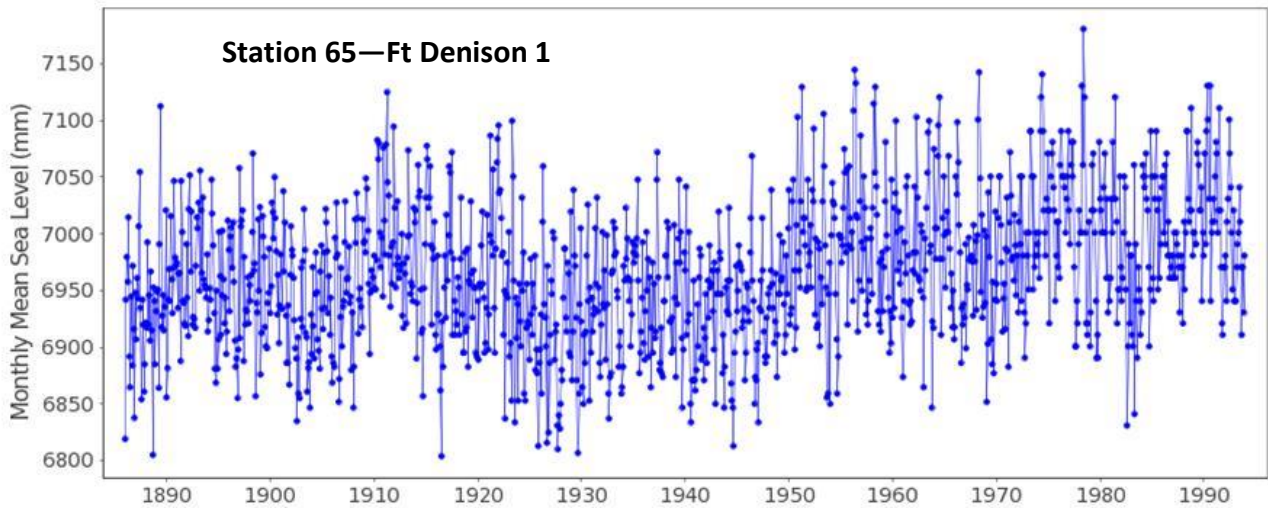


Figure 8: Sea level data from Station 65 at Fort Denison 1, Sydney Harbour, 1886-1993 —data source PSMSL.

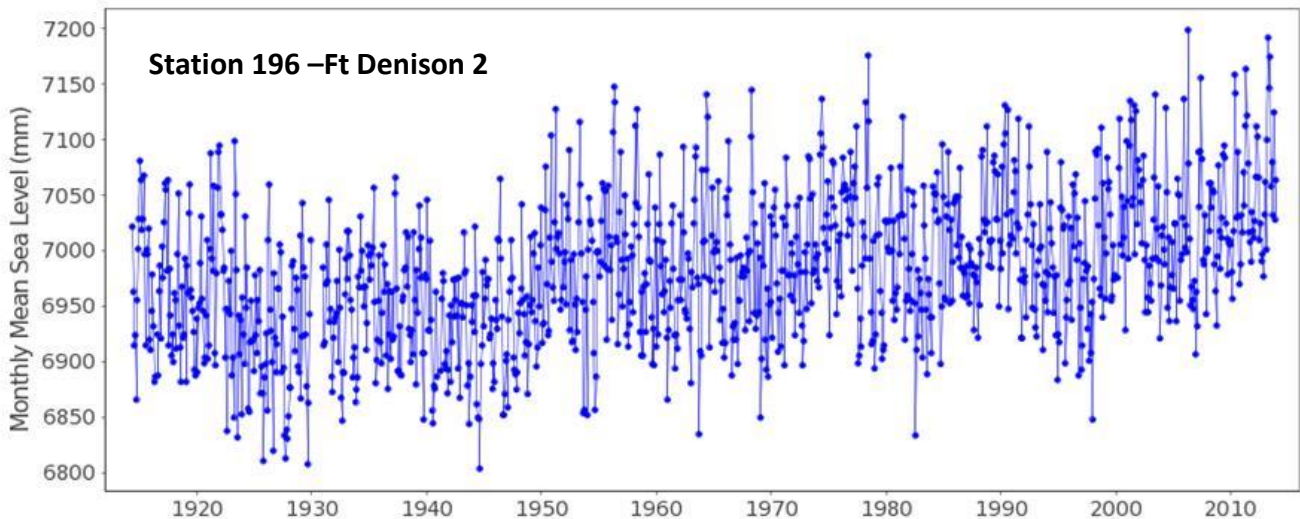


Figure 9: Sea Level data from station 196 at Fort Denison 2, Sydney Harbour, 1914—2017; data source PSMSL.

Data for the Camp Cove station is shown in Figure 10 below. The record for Camp Cove is relatively short, being the 41 years from 1948 to 1989. Of all three available records, this Camp Cove data shows statistically ZERO sea level rise.

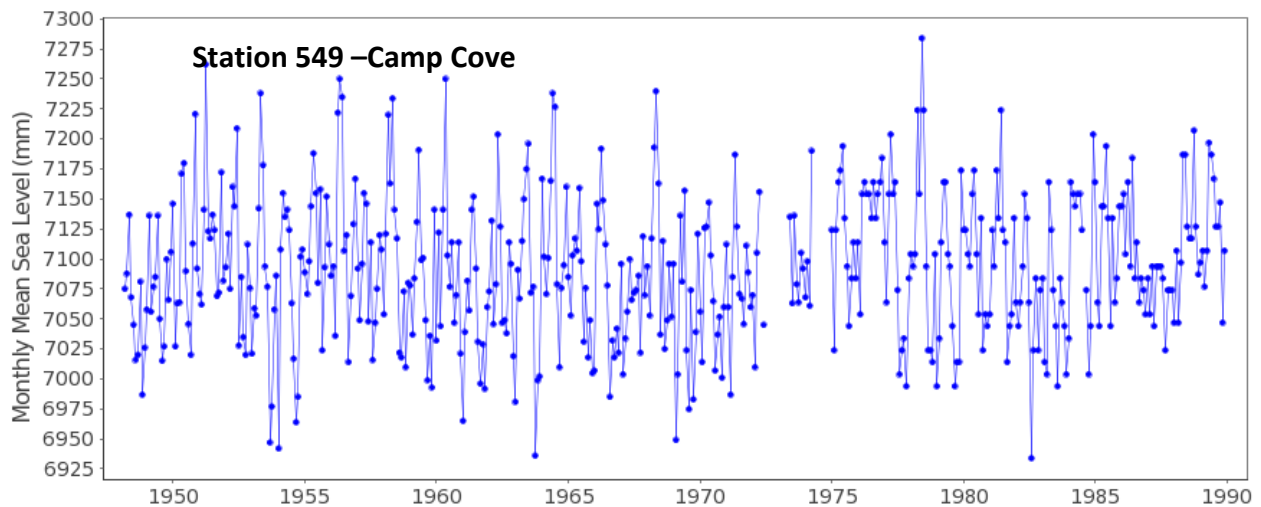


Figure 10: Sea Level data from station 196 at Camp Cove, Sydney Harbour, 1948—1989; data source PSMSL

The NOAA data (<http://tidesandcurrents.noaa.gov>) is shown in Figure 11 below, and appears to combine readings from the two stations 65 and 196 on Fort Denison, providing a sea level record of 124 years from 1886 to 2010. The trend of 0.65mm/yr is below the world average of about 3.1mm/year, and indicates long term stability of the coastal environment in the vicinity of Sydney.

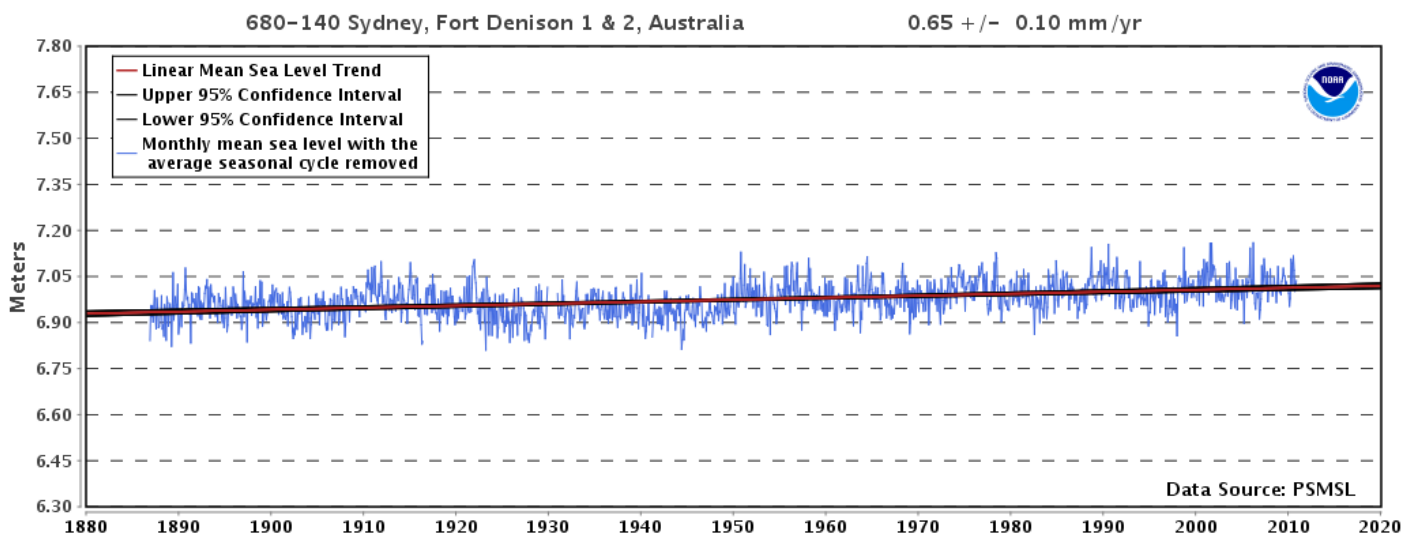
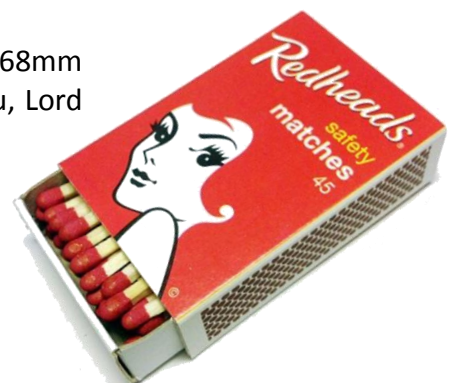


Figure 11: Sea level data combined from two stations on Fort Denison, 1886-2007; the linear regression is given as 0.65 ± 0.10 mm per year (Watson 2011)

Watson (2011) reported that Fort Denison showed sea level rise of 68mm between 1940 and 2000, with a decelerating trend of 0.04mm/yr. You, Lord and Watson (2009) reported a linear regression trend of 0.63 ± 0.14 mm/year, which over a century is 63mm, or about the height of a matchbox. These trends are BELOW global estimates of sea level rise of about 3.1 ± 0.4 mm /year reported by Judith Curry in 2018.



The tide gauge observations for Sydney and environs are replicated in many other places across the globe. One example used here because of the longevity of the recording is for Honolulu, where sea level rise is close to 1.5mm/year, measured over the period 1905 to the present.

As depicted in Figure 12, the sea level patterns appear independent of CO₂ emissions.

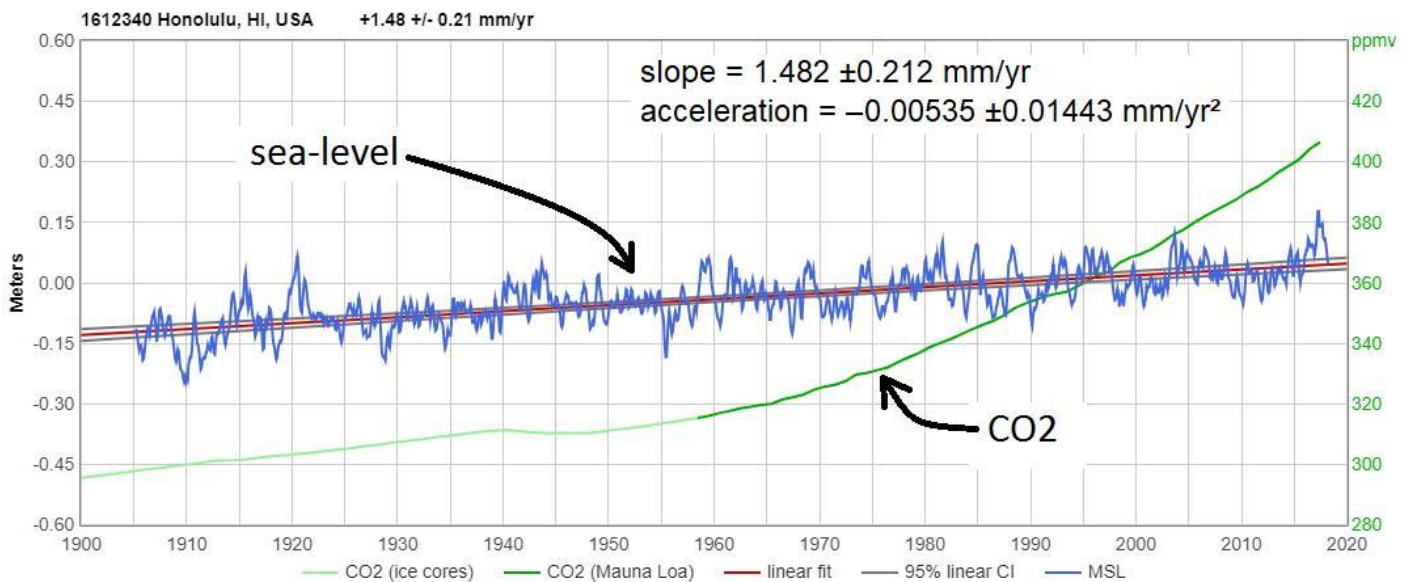


Figure 12: Tide gauge data for Honolulu, 1905 to 2018 from PSMSL)

4: Sea level observations for Collaroy beach and Long Reef Headland, 1875 to 2018

Sydney is famous for its beaches, located as they are so close to one of the world's great cities. Office workers may take a short ride from the city after work, to enjoy white sandy beaches and curling cooling blue Pacific Ocean waves at the end of a long summer's day.

There are no tide gauges on these beaches, but there are long-standing markers which provide visual, everyday observations about whether the coastal landscape has been bedevilled and altered by sea level change in the lifetime of most Sydney residents since the mid-19th Century. Most attention is given to Collaroy beach, about 20km north of Fort Denison in Sydney Harbour, but similar conclusions can be drawn for Bondi beach. Locations of both Collaroy and Bondi beaches are shown in Figure 13.

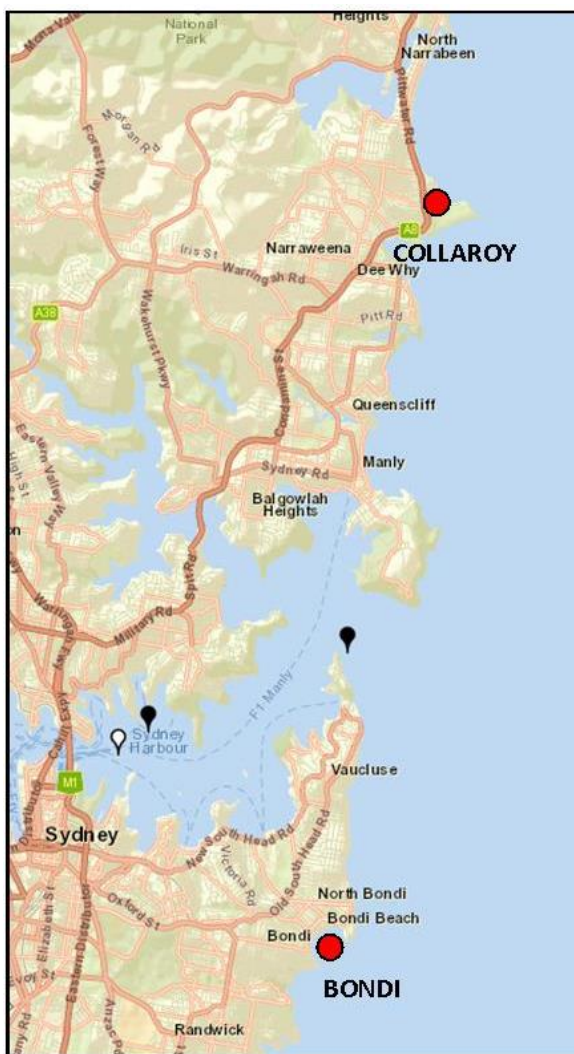


Figure 14: The Long Reef headland at Collaroy, viewed looking to the west. Collaroy beach is to the right.

Figure 13: Location of Collaroy and Bondi relative to tide gauges in Sydney Harbour

Figure 14 above shows the Long Reef (or Collaroy) headland, comprised of reddish shales and sandstone capped by the scenic but wind-swept Collaroy golf course. Collaroy beach is to the right (north), and Dee Why beach to the left, or south. At low tide the Long Reef provides a

scenic platform for rock fishers and beachwalkers; in the early days of Sydney town, from the early 1800s, fishermen used to launch their fishing dories from Collaroy beach, which was relatively calm in the lee of the headland, protected from the prevailing southeasterly swell. The fishermen and others built a few small huts in the lee of the headland, and one such hut has survived from 1875 to the present, thus providing a benchmark for rough estimation of any sea level movements.

The Fisherman's Hut at Collaroy basin

Local council records report a sturdy fisherman's hut was built in 1875 on the north side of Long Reef headland to support their fishing activities offshore. They constructed the hut above the high water mark for that time in 1875, and this hut remains intact today, while other cabins have come and gone. Figure 15 shows the hut in the far distance in 1907. It stands as testimony to a very stable sea level in this area of eastern Australia for over 140 years.

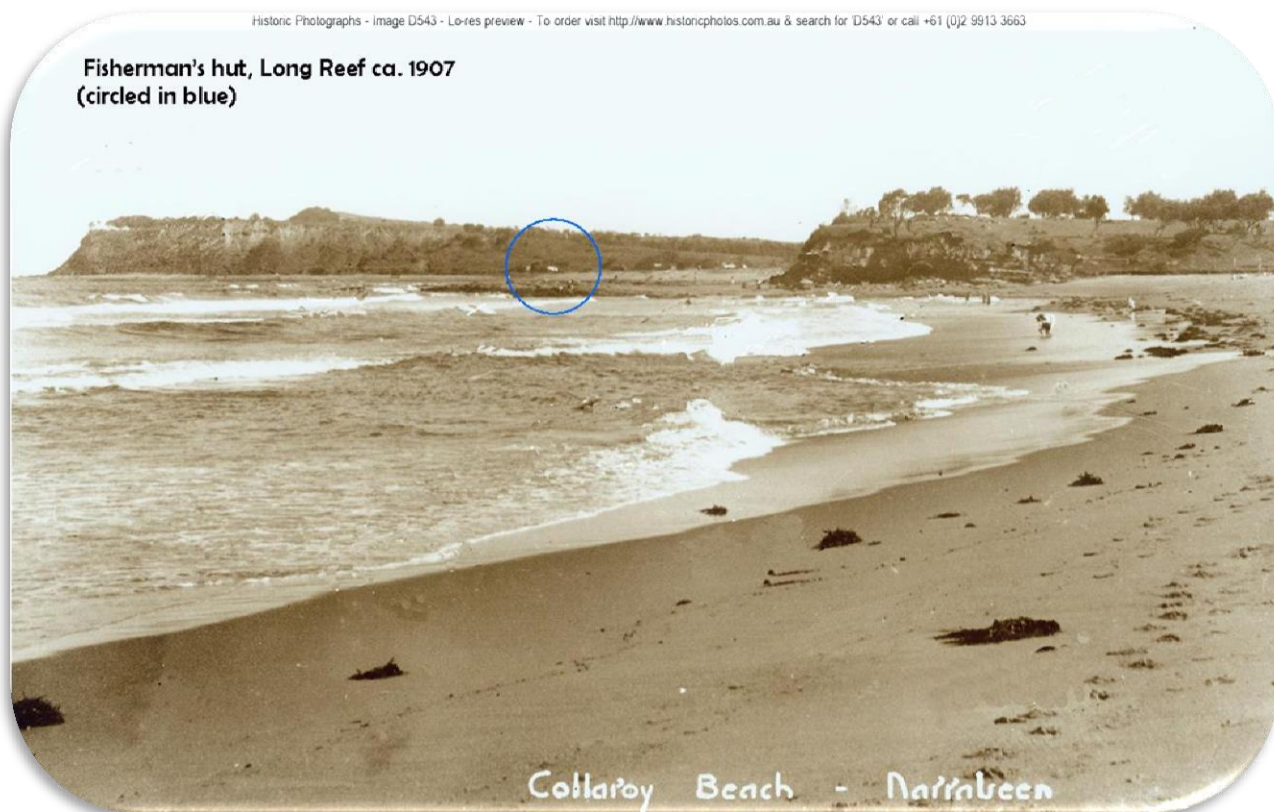


Figure 15: Long view of the Fisherman's Hut (circled in blue) at Long Reef, Collaroy—photo taken 1907

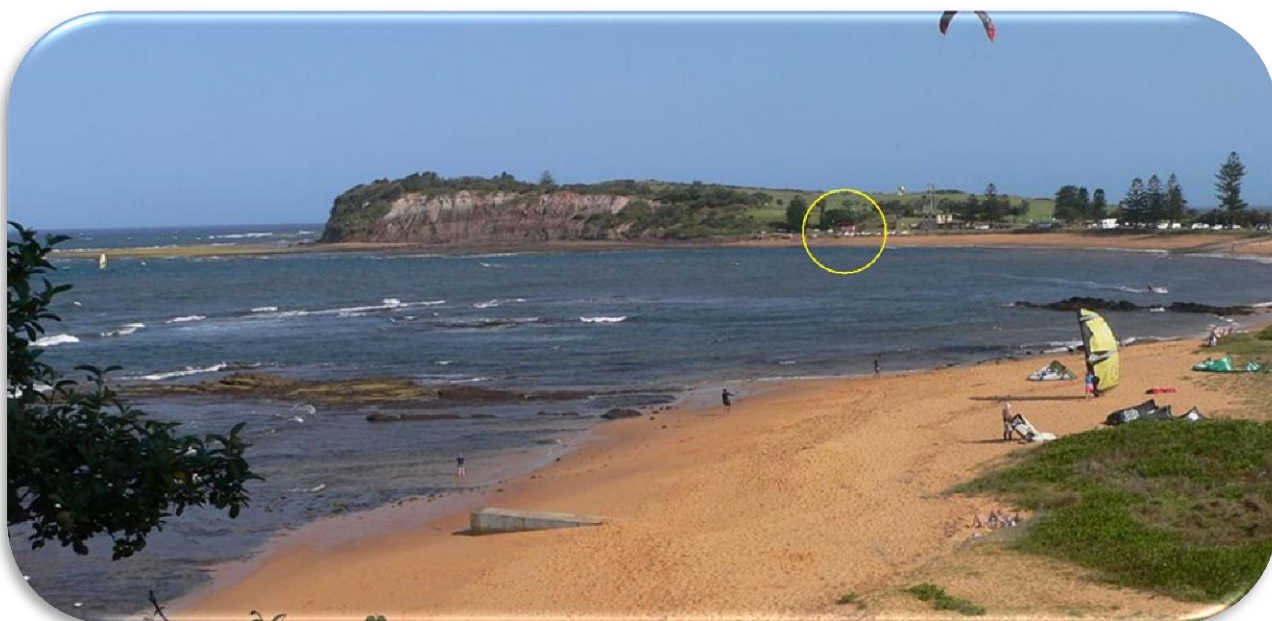


Figure 16: A similar view to Figure 14, of the Fisherman's Hut at Long Reef, Collaroy, circled in yellow—photo taken 2014. There is no obvious change in beach morphology over the period 1907 to 2014, but Norfolk pines have grown.

Images of the Fisherman's hut built in the 1870s are listed in Warringah Shire archives and reports (e.g. Haskonning Australia Pty Ltd 2014), and Figures 17 and 18 show the hut in 1936 and 1950, respectively. Figure 19 shows a recent image taken in January 2014. In all cases, the situation to the eye is that there has been no demonstrable change to sea levels or the high tide marks in all of the period 1875 to the present, or about 140 years. This parallels and is consistent with the almost insignificant amount of sea level change presented for Sydney Harbour.



Figure 17: View of the Fisherman's Hut at Long Reef, Collaroy—photo taken 1936

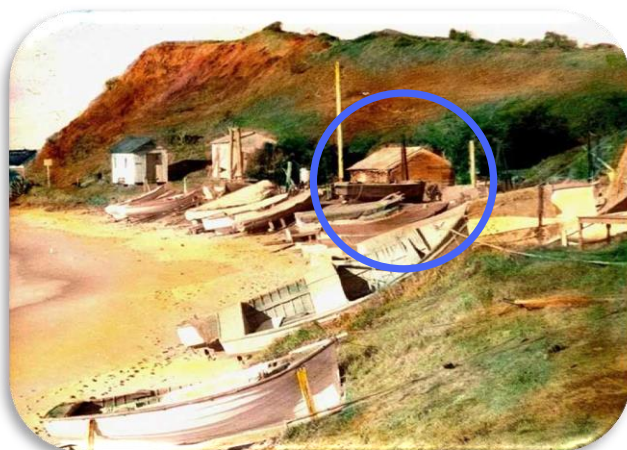


Figure 18: View of the Fisherman's Hut at Long Reef, Collaroy—photo taken 1950s



Figure 19: View of the Fisherman's Hut at Long Reef, Collaroy—photo taken Jan. 2014 (GMD); in all images, the high water mark comes to within 1.5 metre or so of the grassy bank, but there are NO observable effects of any sea level rise, or indeed coastal erosion, in any of these images

5: The Mendacity of the IPCC and Climate Alarmists

Well-informed people know that the IPCC and other alarmist individuals and organisations constantly make exaggerated claims of global catastrophe that are unsupported by true scientists, but which are repeated constantly as a mantra of climate virtue designed to frighten the weak and the gullible, including politicians; the threat of rising sea levels forms a significant part of this commentary, which is described here as an act of MENDACITY (Noun) and/or MENDACIOUS (Adjective).

A Dictionary definition is as follows:

Mendacity *noun*: **untruthfulness.**

Synonyms: lying, dishonesty, deceit, deception, dissembling, insincerity, disingenuousness, hypocrisy, fraud, double-dealing, two-timing, duplicity, perjury, perfidy, falsity, hollowness. . . .

That should do. Our **POSTER CHILD** for **MENDACITY** is former Maldives President Mohammed Nasheed, who famously held an underwater cabinet meeting in the Maldives in November 2009. The meeting, chaired by President Mohamed Nasheed, took place around a table 5 metres underwater. Bubbles ascended from the face masks the president and the Cabinet wore, and fish swam around them. At the meeting, the Cabinet signed a declaration calling for global cuts in carbon emissions that will be presented before a U.N. climate summit in Copenhagen, Denmark, in December 2009. **Asked what would happen if Copenhagen fails, the president said, "we are all going to die."**

Nasheed has since been ousted from office, and the new Maldives government is front and centre in promoting high-class tourism on islands only centimetres above the high tide mark. The lying and hypocrisy is rank, as illustrated in Figures 20 and 21 below .



Figure 20: President Nasheed of the Maldives signing his 'deathwish' petition to the IPCC in 2009, and presented to COP Copenhagen December 2009

Figure 21: The RAFFLES Tourist resort ('Meradhoo') on the Maldivian island of Gaafu Alifu Atoll, February 2019



7: CONCLUSIONS regarding Sea Levels

1. Long term tide gauge records in Sydney Harbour show that there has been NO significant sea level rise in the harbour for the past 120 years, and what little there has been is about 0.65mm pa, or about the height of a matchbox over a century.
2. This compares with global sea level rise measurements from satellites of about 3.4mm pa; some of the sea level data may or may not allow for rising sea or sinking land, and there remains uncertainty about satellite altimetry as applied to sea levels.
3. The stability of sea levels in and around Sydney Harbour is also reflected in unchanged coastal morphology along the beaches at Collaroy, using reference benchmarks built in 1875.
4. The story of Sydney Harbour is also reflected in tide gauge measurements from places as far afield as Honolulu. This stability has been with us for at least the past 200 years, and possibly for at least a century ahead, given that our planet is likely to be entering a cooling phase at the end of Solar Cycle 24.
5. Those in the IPCC and centres of alarmism constantly exaggerate the degree of projected sea level rise, using models which hugely over-emphasise the role of CO₂. This is done to frighten gullible populations and to deflect the political class into taking expensive and unnecessary actions against the best economic and social interests of the country. The Maldives is such an example of 'crying wolf' in order to attract greater climate funding to its government.
6. All efforts should be made to allow scientific truth to flourish in all of our school curricula, in spite of 'progressive' alarmist attitudes that are thought to be rampant in the teaching profession.

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References and Citations

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