SUBI REEF

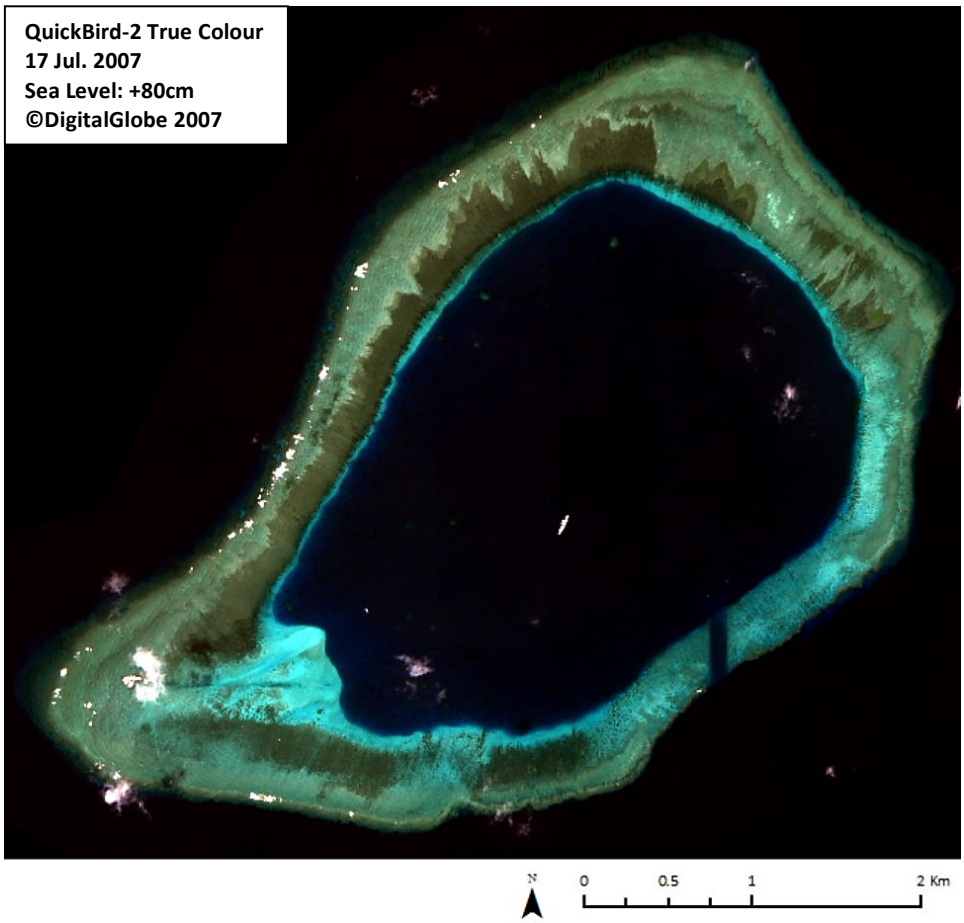
10°55’26.49’’N, 114°05’00.13”E

Geographic area

Subi Reef is an oceanic coral atoll that has developed on top of a seamount on the northwestern edge of the Spratlys, southwest of Thitu Reefs. It is located over 230NM northwest of the island of Palawan, around 280NM northwest of the island of Borneo and over 290NM east of Vietnam’s mainland. The closest shallow geographic features are Thitu Reefs: the southwesternmost unnamed reef on Thitu Reefs is 7NM northeast; Thitu Island is 12.8NM northeast. The atoll extends nearly 6km on its northeast-southwest axis and reaches 3.6km on its northwest-southeast axis. Landsat imagery and global topography databases suggest that the seamount it has developed on may be connected to that of Thitu Reefs, but a hydrographic survey would be necessary to confirm this.

Land area above water

There are no above-water land areas visible in the 17 July 2007 satellite image or on satellite images viewable on Google Earth dated 9 April 2005, 3 July 2014 and 26 January 2015.



Human infrastructure

On 17 July 2007, a large building is visible on the southwestern end of the reef flat. Shaped like the letter ‘L’, it is 115m long overall by 15m wide. It includes a 20m-diameter tower that resembles a meteorological station. Southeast of the building, a circular landing platform connects to the building by a jetty; on the southern side of the building, two rectangular platforms connect to the building. Two man-made channels are visible on the southwestern reef flat, which connect the building to the lagoon and to the open sea. They are 10m wide: one is 2-3m deep and the other one is around 3-4m deep. A 150m-wide and 15m-deep channel connecting the open sea to the lagoon has also been cut through the southeast-facing reef flat. The 2015 satellite image also shows ongoing dredging and construction work on the reef flat. More recent imagery shows that an above-water platform has been constructed over 10km of the submerged reef flat, comprising around 75% of it [images available on http://amti.csis.org/subi-reef-tracker/].

Intertidal and submerged area

This coral atoll is composed of a reef flat (6.93km^2), a reef slope (1.87km^2) and a lagoon (7.38km^2). The reef flat is a 13.5km-long band that separates the lagoon from the reef slope. The northwest-facing side is 350-500m and shallowest with a depth of 1.2-2m. The southeast-facing side is narrowest (around 300m) and deepest at 2.5-4m. The reef flat is larger at the southwestern end of the reef (where the buildings have been constructed) and this area is 2-3m deep and characterised by a sandy back reef along the lagoon. Parts of the reef flat that are 1.89m deep or less, being a large part of the northwest facing reef flat, are expected to uncover at Lowest Astronomical Tide. The depth of the centre of the lagoon could not be calculated. Its banks are very steep: the sides reach a depth of more than 10m in a distance of less than 50m. Before the land-filling activities started, a coral reef bottom could be seen in parts of the lagoon, especially its northern, western and southern sides. However, dredging activities in the lagoon that are visible in satellite images are likely to have adversely impacted them. Dredging marks and areas of degraded coral reef are visible in the 2007 satellite image: 0.29km^2 and 0.16km^2, respectively. Later land-filling activities on the northwestern and southwestern reef flats resulted in the creation of a new above-water land area where, in 2007, living coral areas totalling 1.56km^2 seemed to be in good condition.

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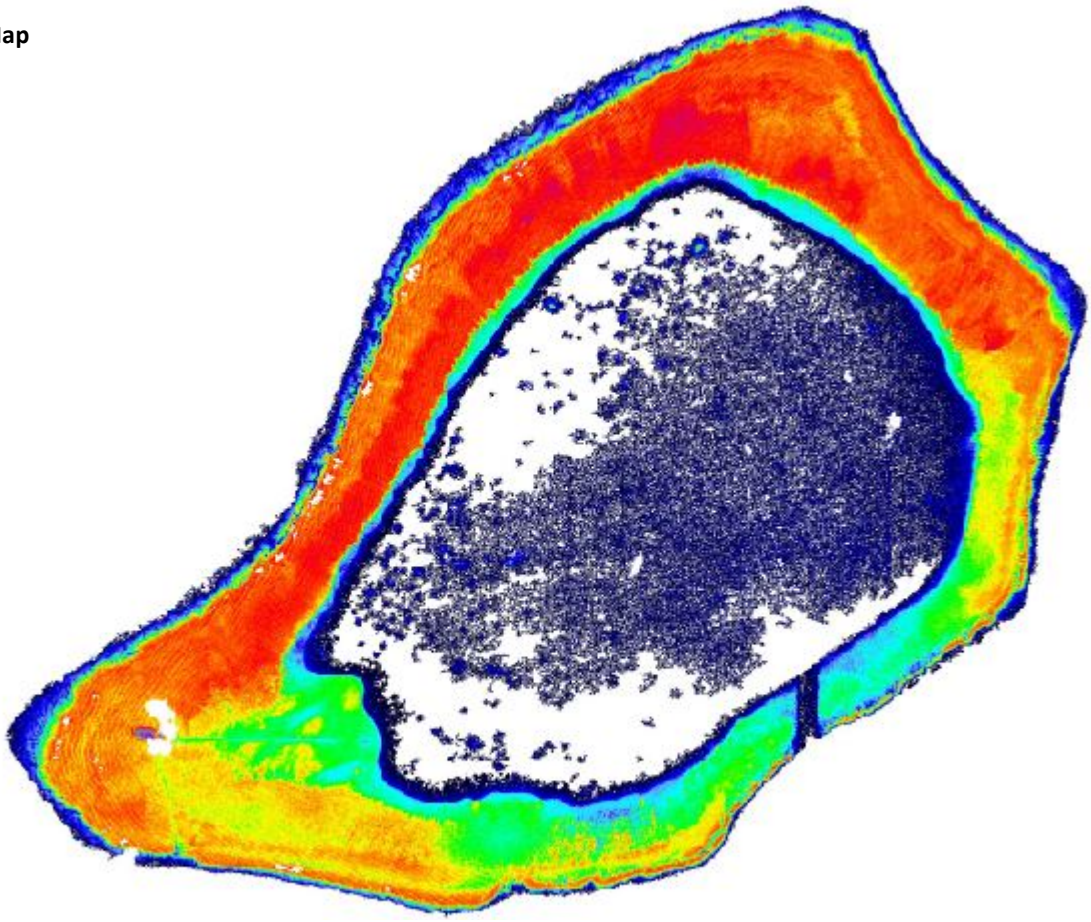
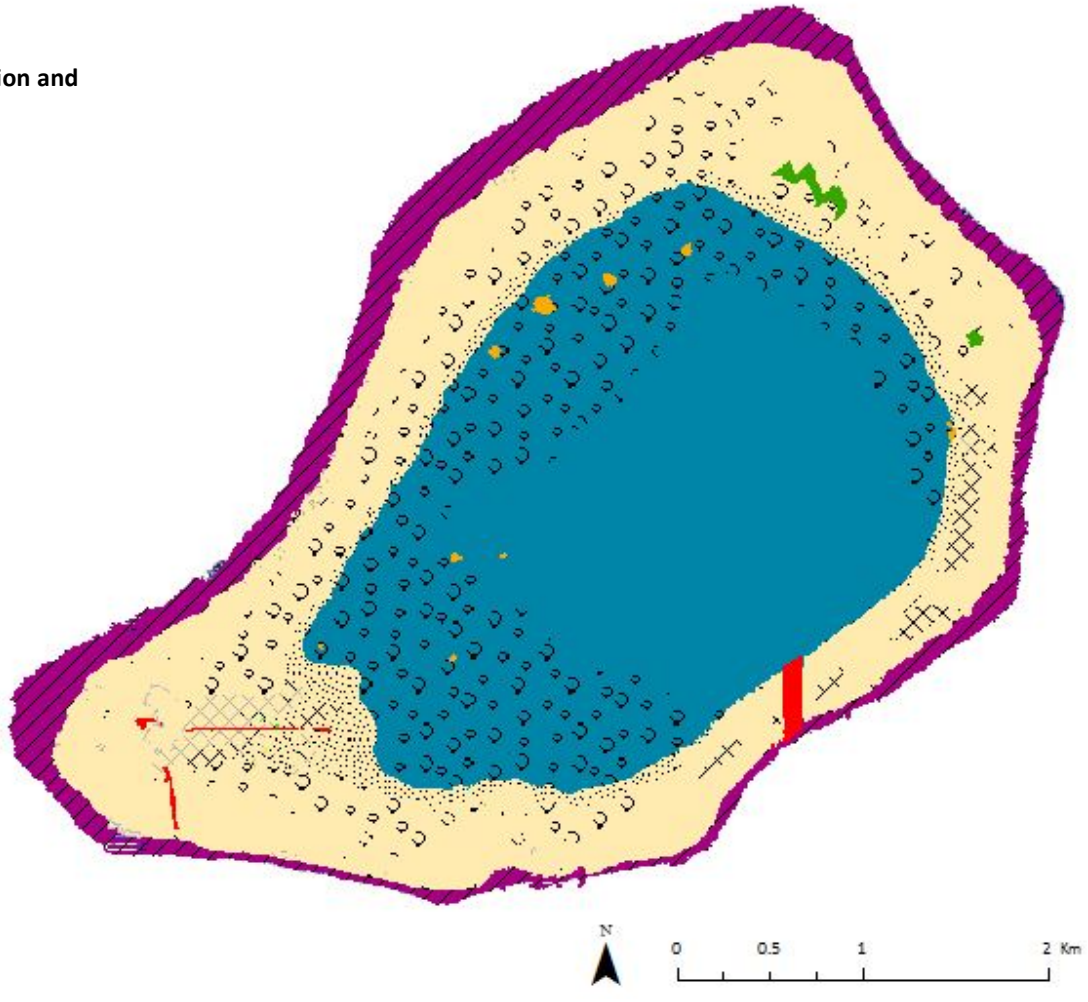
Derived from QuickBird-2 satellite data captured on 17 July 2007 [Sea Level: +80cm]

Bathymetry Map



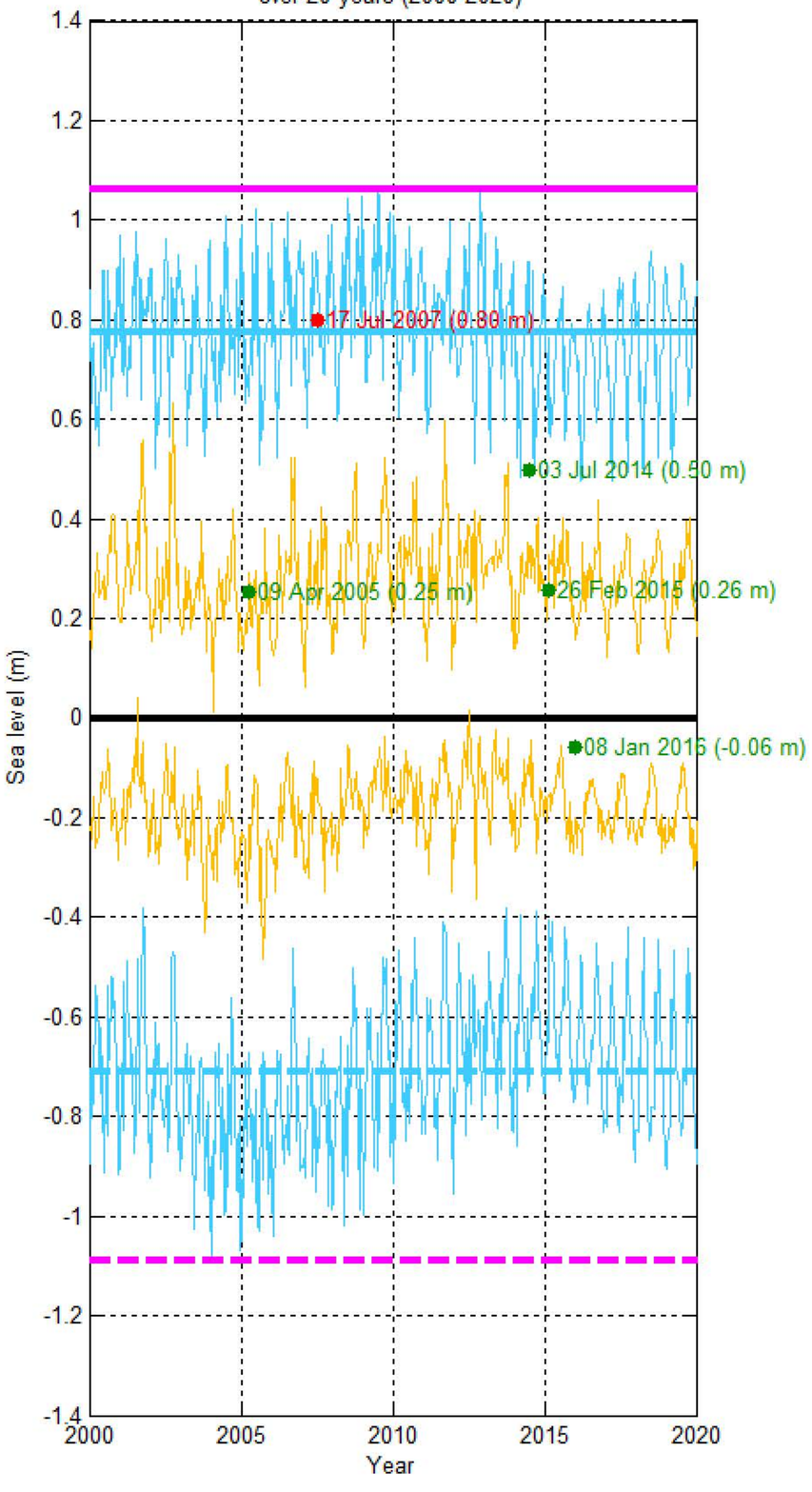
Habitat Classification and Land Cover Map



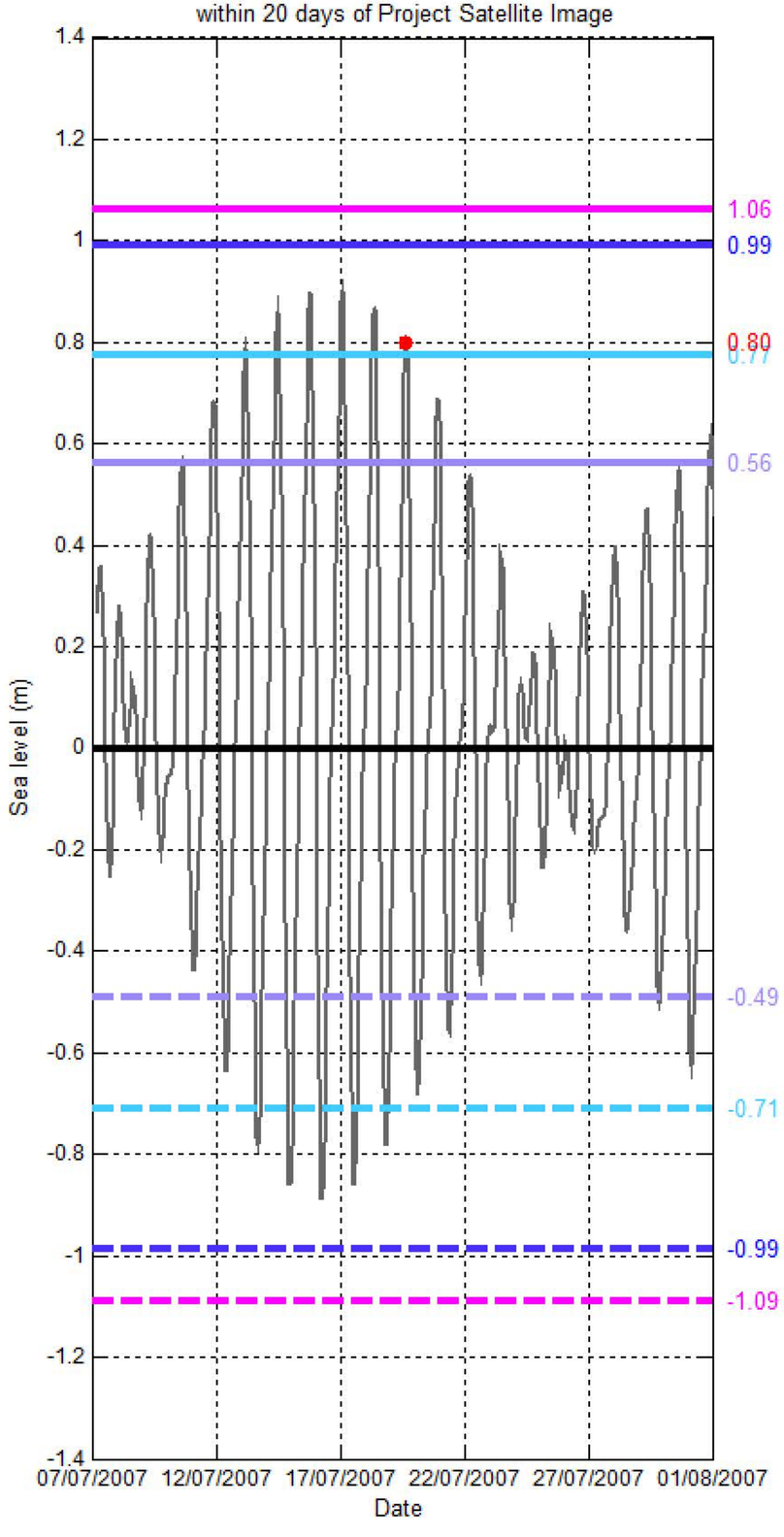
Sea level (SL) at SUBI REEF

[10°55'26.49"N, 114°05'00.13"E]

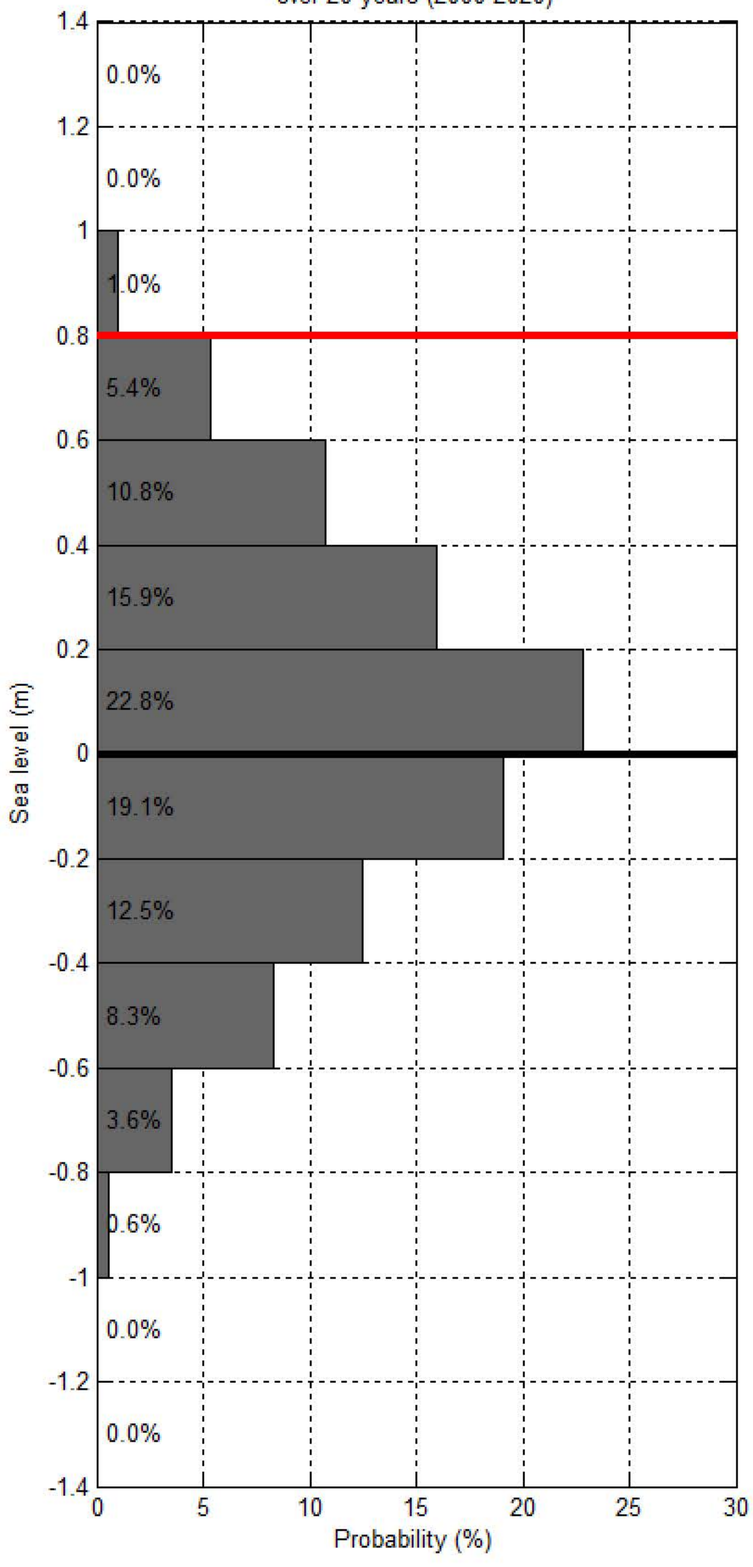
Sea level at spring/neap tide at
SUBI REEF
over 20 years (2000-2020)



Sea level at
SUBI REEF
within 20 days of Project Satellite Image



Probability of sea level at
SUBI REEF
over 20 years (2000-2020)



Hourly sea level
Mean Sea Level
SL at spring tide
SL at neap tide
SL at Mean High Water Spring
SL at Mean Low Water Spring
SL at highest tide of the year
SL at lowest tide of the year
SL at Mean Higher High Water
SL at Mean Lower Low Water
SL at Highest Astronomical Tide
SL at Lowest Astronomical Tide
Project Satellite Image
Google Earth and Landsat satellite images