

COLLINS REEF (UNION REEFS)

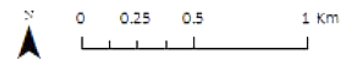
9°46'14.16"N, 114°15'26.96"E

Geographic area

Collins Reef is a shallow oval coral reef platform located in the southwestern end of Union Reefs immediately northwest of Johnson South Reef (around 1.7NM), which is the southernmost feature of Union Reefs. The closest shallow reef north of Collins Reef is Loveless Reef (around 4NM). Collins Reef appears connected to Johnson South Reef by deeper coral stretches that are 6-10m deep if not deeper in some places. Collins Reef extends over 5km along its northwest-southeast axis and 1.4km along its northeast-southwest axis.

Land area above water

A small above-water sand bank is visible in the 18 January 2012 satellite data, which measures around 52m by 11m. However, there is no sand bank visible in the same location in the 17 February 2006 image viewable on Google Earth. The latter shows a differently shaped sand bank over 220m southeast of the sand bank observed in the 18 January 2012 satellite image. In the 17 December 2012 satellite image, the January 2012 sand bank appears to have shifted another 10m northwest, a substantial distance that is almost the width of this sand bank. In the 23 October 2014 satellite image, a sand bank is visible 20m west; and in the 4 March 2015 satellite image, a sand bank is visible another 15m west. This data shows that these sand banks are dynamic under the combined effect of astronomic tides, storm surges and wind-waves. Furthermore, on the basis that the 18 January 2012 satellite data was captured when the sea level was 4cm below Mean Sea Level, the sea level is expected to be higher at Mean High Water Spring by over 80cm, which may be sufficient to submerge these small and low lying sand banks.



Human infrastructure

A circular structure with a diameter of 50m is located in the north of the central part of the reef flat. It has a tower in the middle (10m diameter) and is surrounded by concreted seawalls. No beach or gentle slope is visible. At Mean Sea Level, it is surrounded by water that is 1-2m deep. The western and eastern sides are slightly shallower (1.1-1.4m) than the northern and southern sides (which are closer to 1.6-2m). Access to this structure appears to be through any one of the three jetties. The two largest jetties are 10m long and located symmetrically in the north and south where the water is deepest. Pronounced spurs and grooves are visible on the reef slope.

Intertidal and submerged area

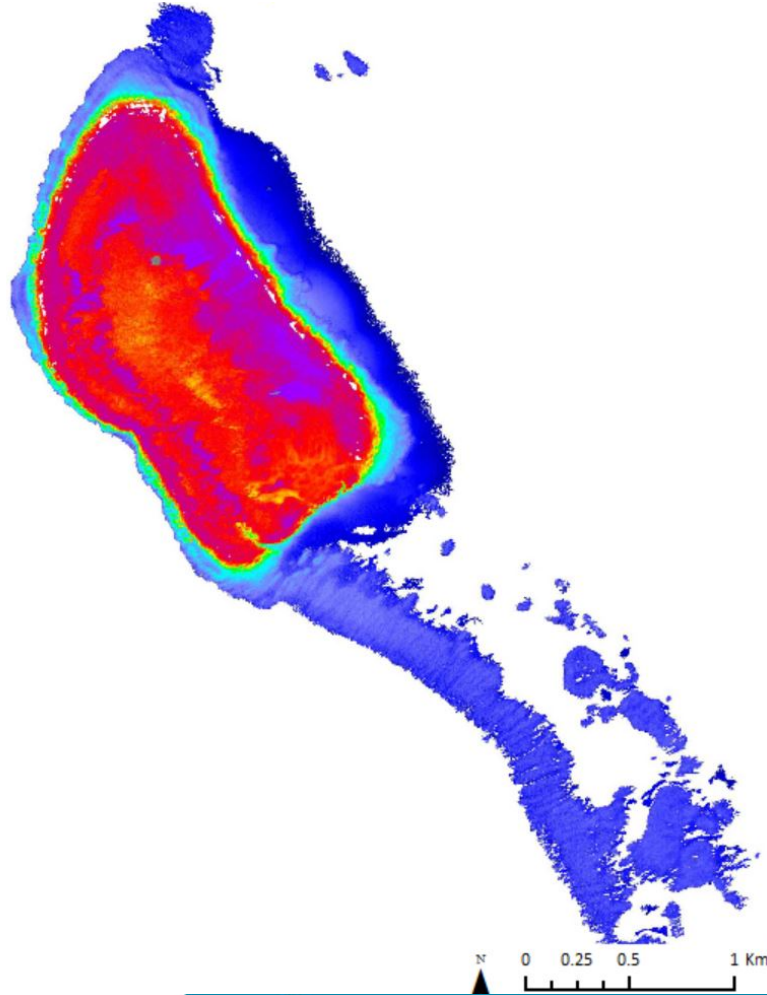
This coral reef platform is composed of a reef flat of 2.05km² surrounded by a reef slope of 2.71km². There is no lagoon. The northeastern side of the reef flat is sand-dominated over 1.7km (0.45km²) and is up to 1.5m deep although it has several unstable sand banks, all of which are submerged or just awash at the time of capture of the 18 January 2012 satellite data. None of the satellite images examined show clear signs of dredging activities and the wreck mentioned in nautical charts could not be seen.

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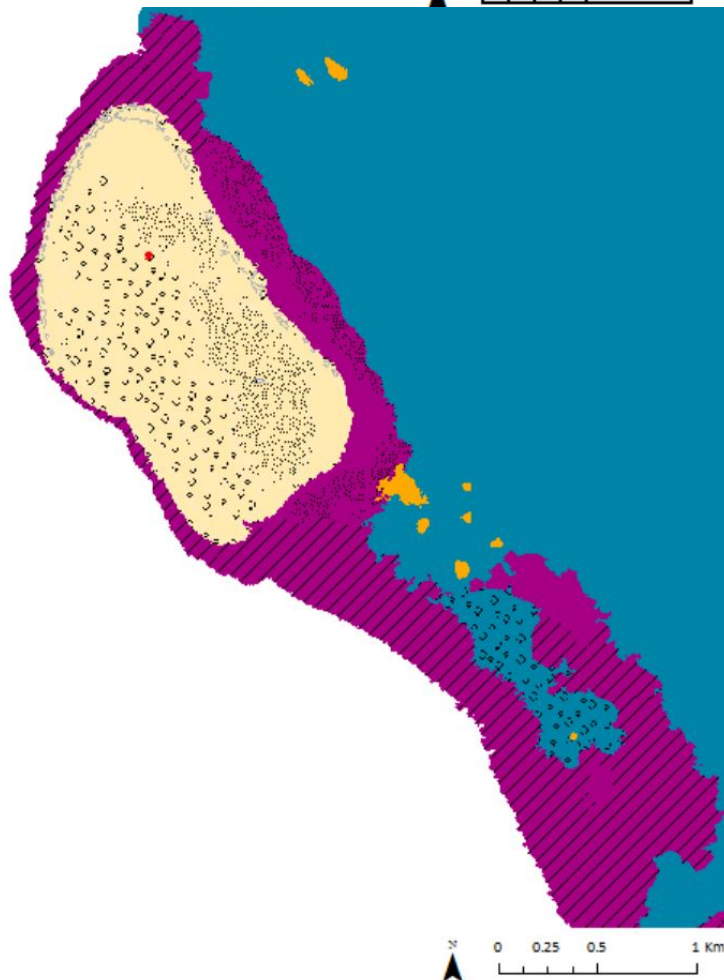
9°46'14.16"N, 114°15'26.96"E

Derived from WorldView-2 satellite data captured on 18 January 2012 [Sea Level: -4cm]

Bathymetry Map



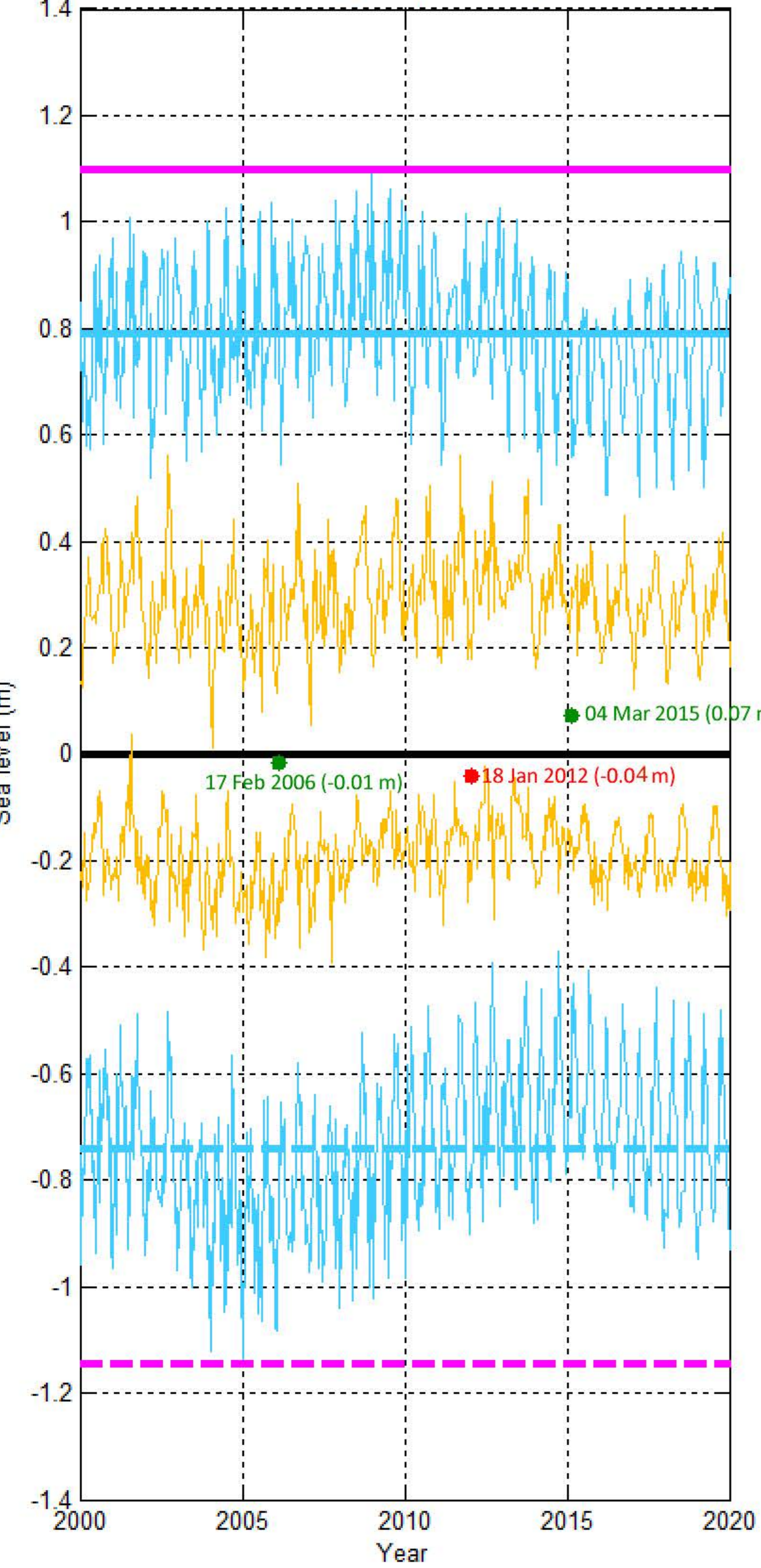
Habitat Classification and Land Cover Map



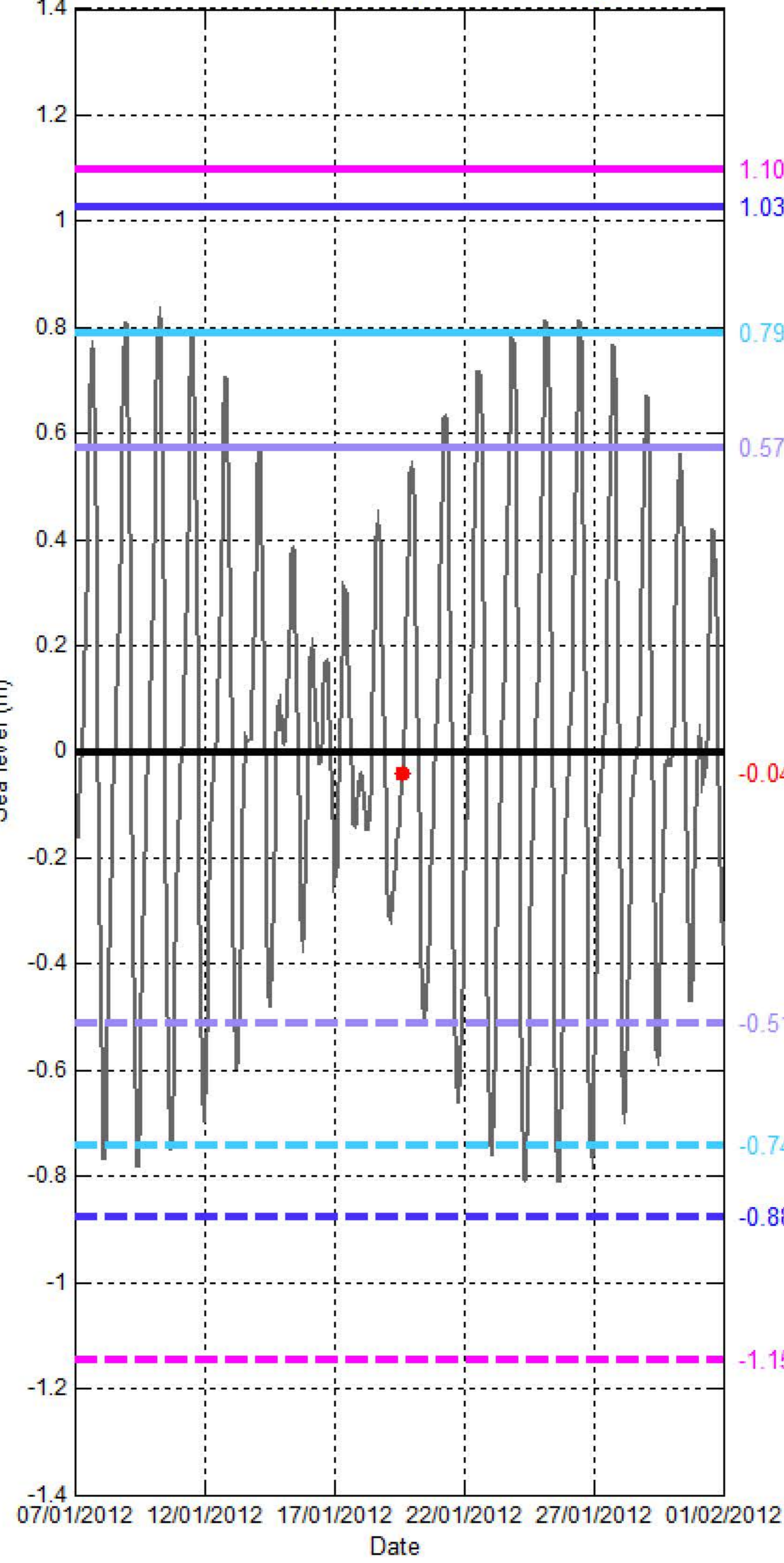
Sea level (SL) at COLLINS REEF (UNION REEFS)

[9°46'14.16"N, 114°15'26.96"E]

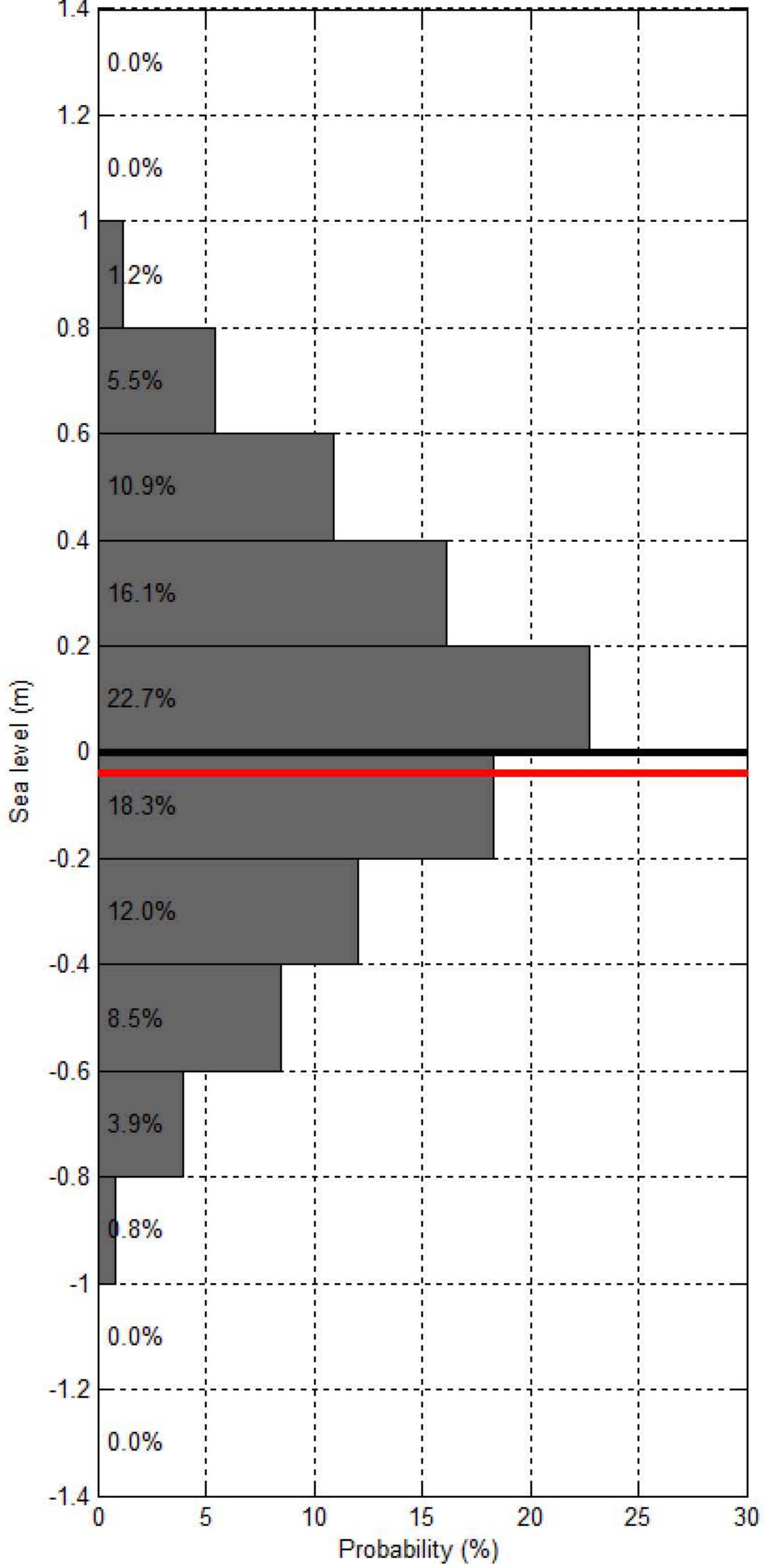
Sea level at spring/neap tide at UNION REEFS - COLLINS REEF over 20 years (2000-2020)



Sea level at UNION REEFS - COLLINS REEF within 20 days of Project Satellite Image



Probability of sea level at UNION REEFS - COLLINS REEF over 20 years (2000-2020)



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