

HALLET REEF (UNION REEFS)

9°55'59.31"N, 114°31'24.41"E

Geographic area

Hallet Reef is a shallow coral reef platform located on the northern side of Union Reefs, between Holiday Reef (just under 2NM northeast) and Hughes Reef (just under 1NM southwest). It has the shape of a tear drop with a length of 2.2km (north-south axis) and a largest width of 1.5km (west-east axis) and includes a central lagoon. Areas masked by clouds have been examined on satellite images viewable on Google Earth from 2 February 2004, 26 February 2014 and 26 January 2015 for visual interpretation.

Land area above water

There is no above-water land visible on this 2011 satellite image. The most recent satellite image viewable on Google Earth (26 January 2015) shows that some narrow sand banks may occasionally form in the northwestern part of the reef flat in an area that, on the basis of the bathymetry calculations derived from the 12 November 2011 high resolution satellite data, is likely to be 50cm deep or less at Mean Sea Level.

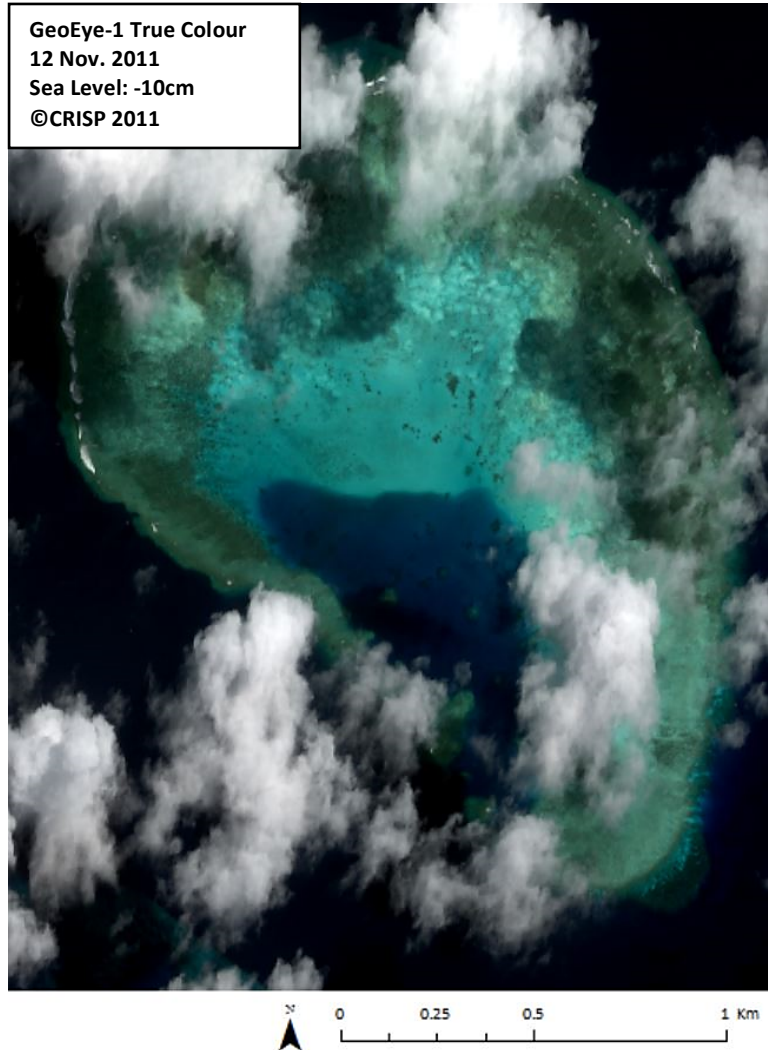
Human infrastructure

There are no man-made structures visible on this reef platform as at 26 January 2015.

Intertidal and submerged area

The aerial coverage of the coral reef area is 2.81km² comprising 2.11km² of reef flat, 0.35km² of reef slope and 0.35km² of lagoon. It has a shallow and wide reef flat in the north that curves around the central lagoon. The shallowest part of the reef flat is a 200-250m band along the reef slope; it is 1-2m deep when the sea level is 10cm below Mean Sea Level. Small areas that may be less than 1m deep are expected to uncover at Lowest Astronomical Tide. The transition area between the shallow outer part of the reef flat and the lagoon is a sand-dominated back reef, which is around 3m deep. The lagoon, which is approximately 1km long and 500m wide, is 4-6.5m deep. It is open to the sea through three narrow breaks in the southwestern part of the coral reef that are 30-50m wide.

On 26 February 2014, a 30m vessel was visible in the lagoon, another 20m vessel is located less than 100m from an entrance to the lagoon and followed by three 10m vessels. In 2011, whilst this reef showed no sign of construction activity, severe dredging marks could be seen in the shallowest part of the reef flat (0.55km²). More recent imagery from Google Earth shows that more dredging activities were carried out prior to 26 January 2015. Deep circular dredging marks are visible on most of the reef flat.

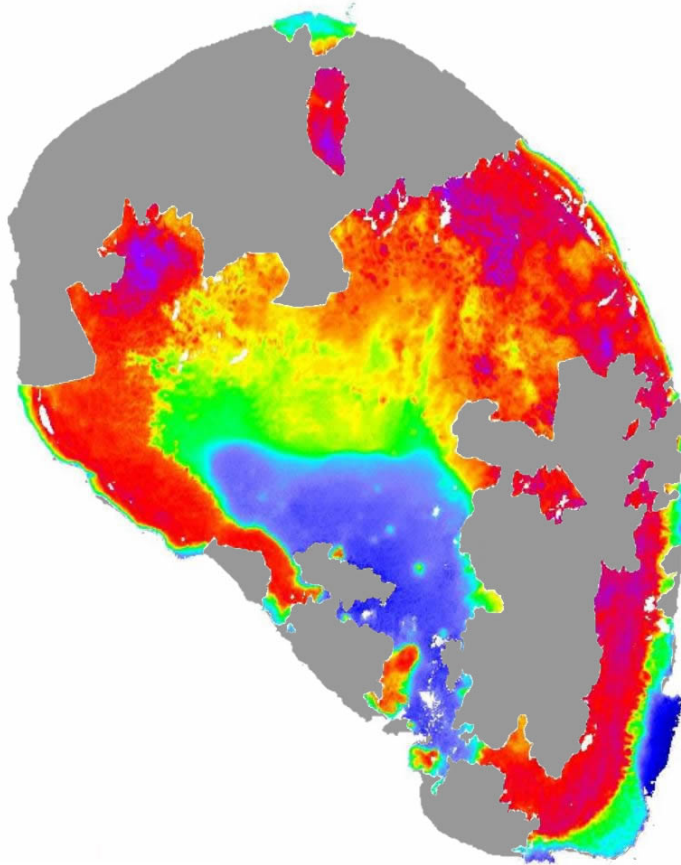


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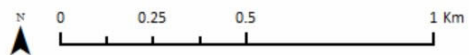
9°55'59.31"N, 114°31'24.41"E

Derived from GeoEye-1 satellite data captured on 12 November 2011 [Sea Level: -10cm]

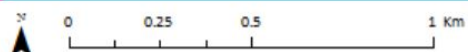
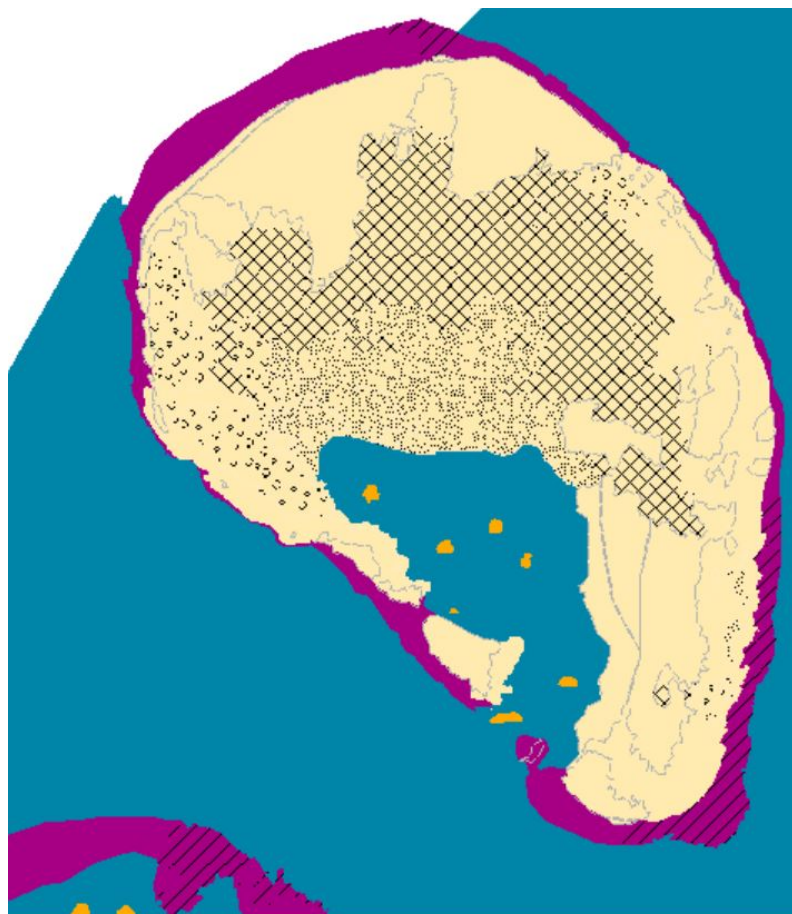
Bathymetry Map*



* Areas in grey show the outer boundary of the feature where bathymetry could not be calculated due to cloud cover, waves or other limiting factors.



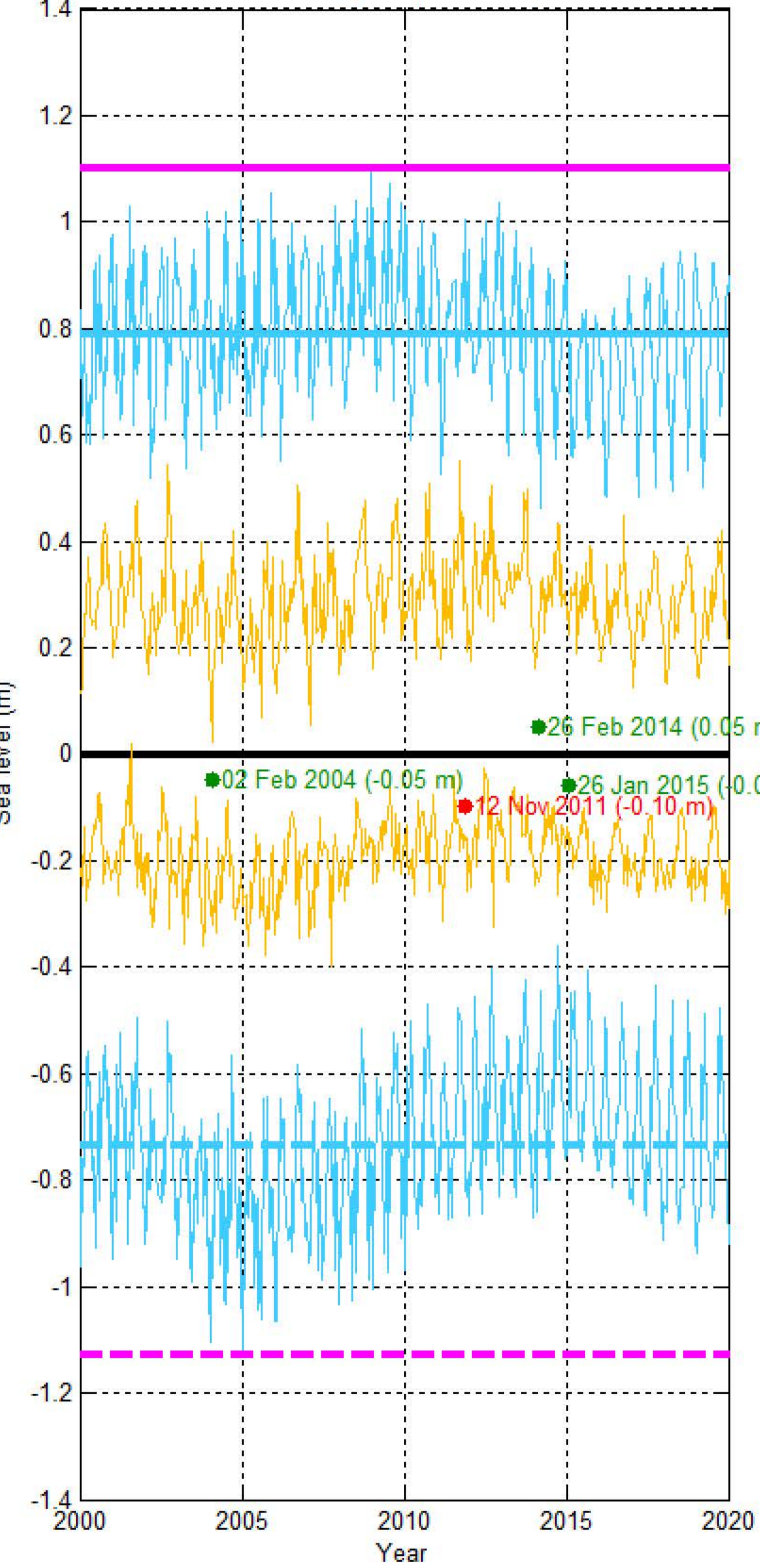
Habitat Classification and Land Cover Map



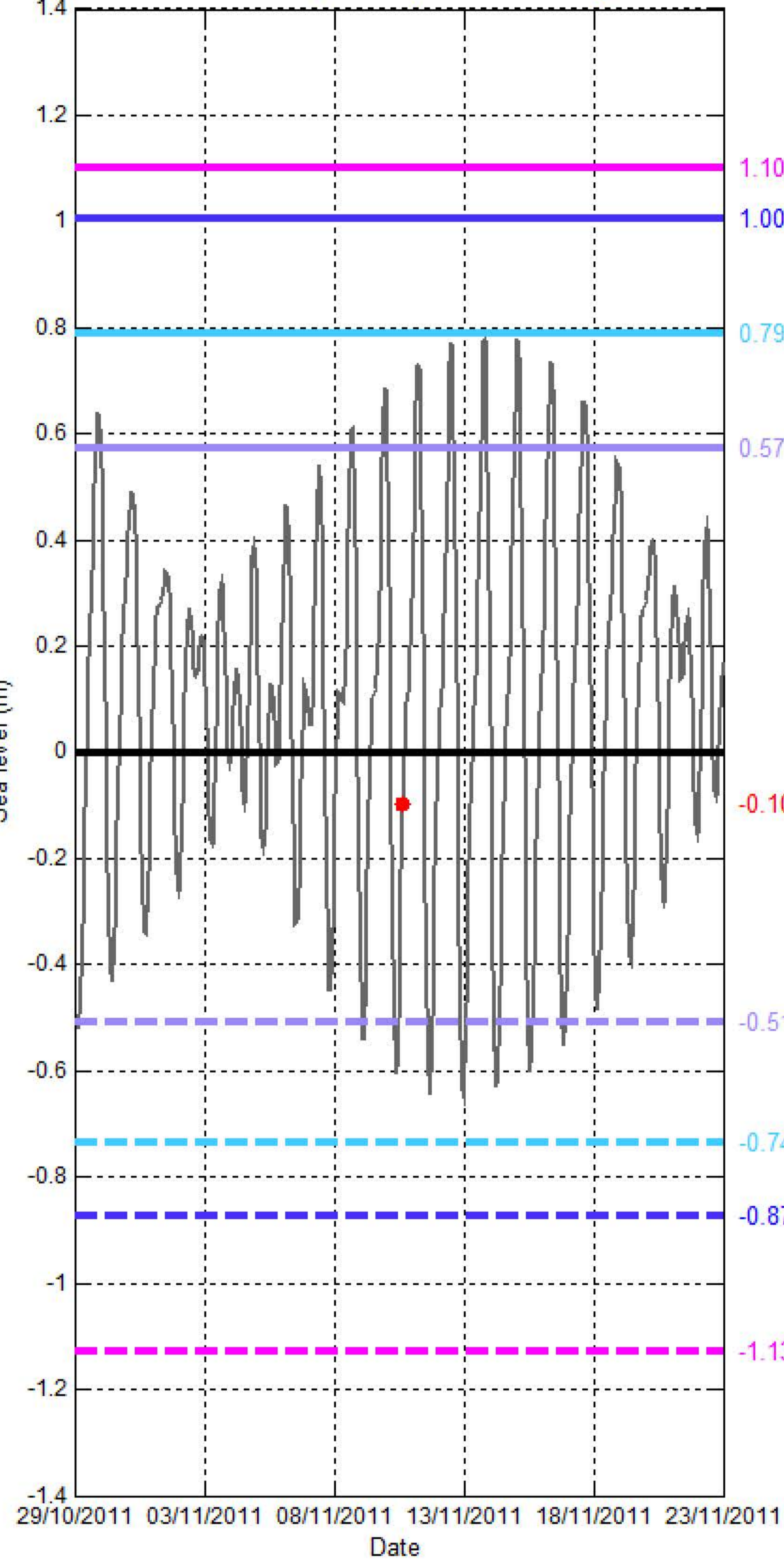
Sea level (SL) at HALLET REEF (UNION REEFS)

[9°55'59.31"N, 114°31'24.41"E]

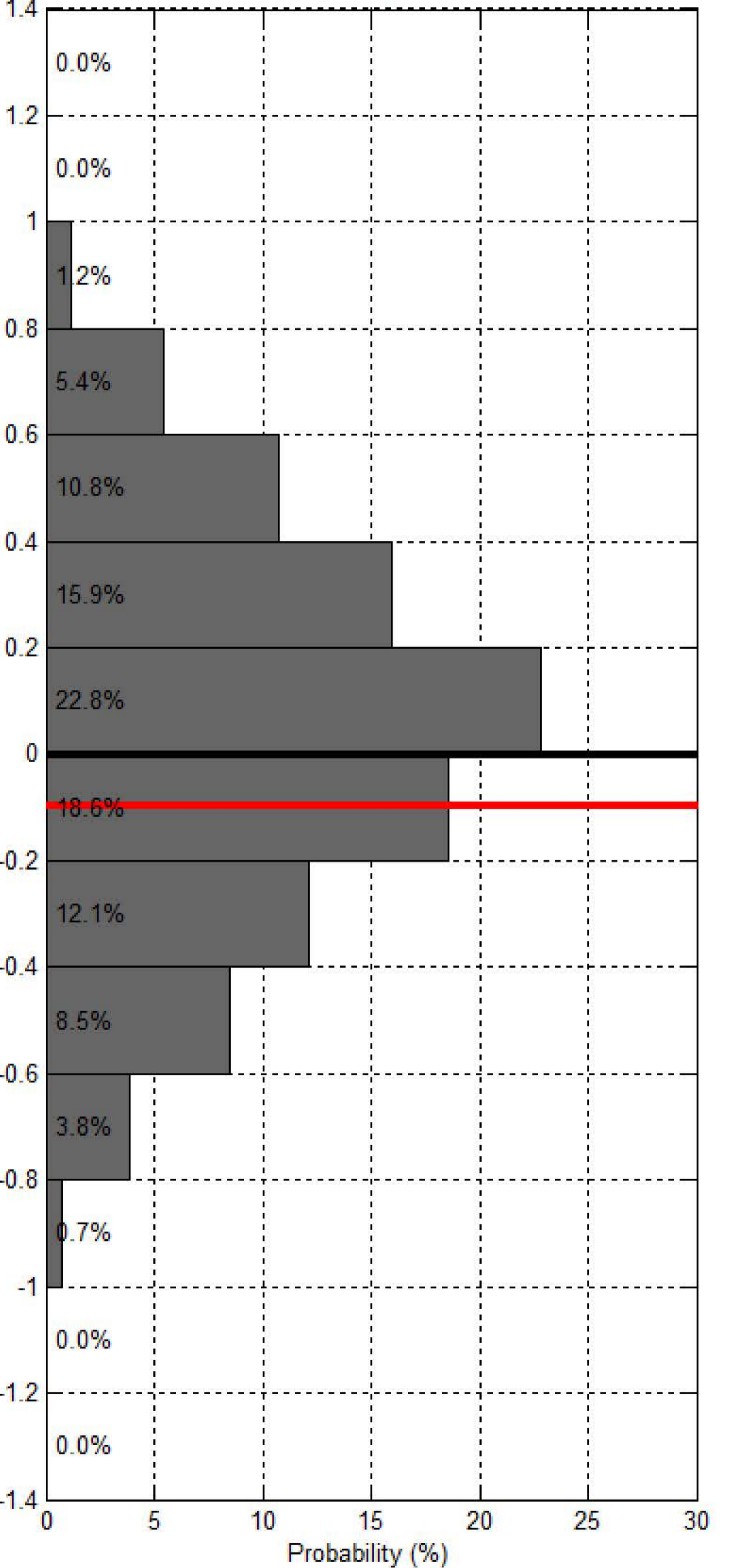
Sea level at spring/neap tide at UNION REEFS - HALLET REEF over 20 years (2000-2020)



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



Probability of sea level at UNION REEFS - HALLET 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