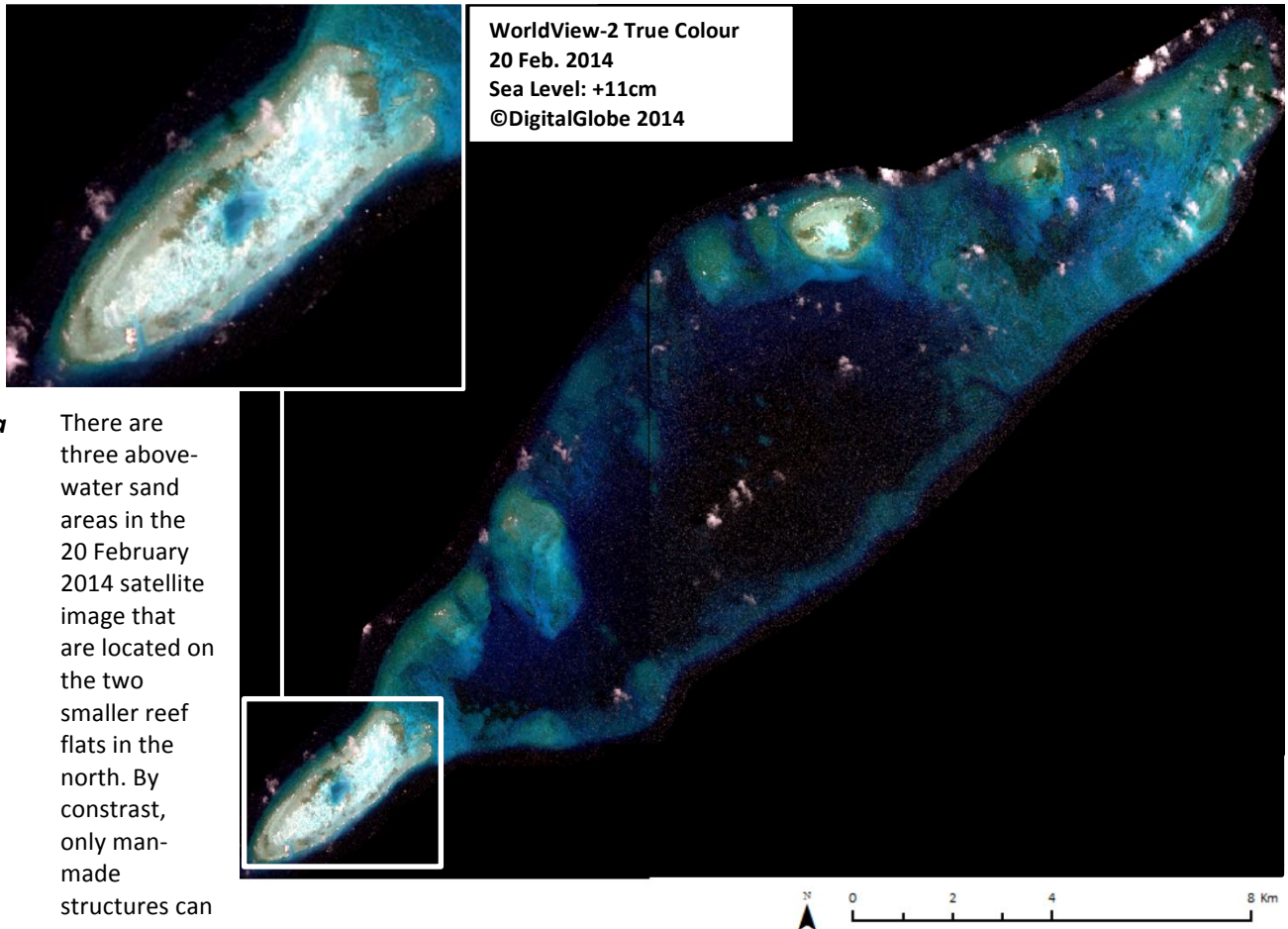


FIERY CROSS REEF

9°36'58.65"N, 112°58'15.99"E

Geographic area

Fiery Cross Reef is an oceanic coral reef atoll located on the western edge of the Spratlys, more than 250NM from Vietnam's mainland and the islands of Palawan and Borneo. The closest shallow geographic feature is Cuarteron Reef, around 40NM south. In the northeastern direction, Western Reef and Discovery Great Reef are around 50NM away. Maralie Reef is also around 50NM away in the southeastern direction. Fiery Cross Reef resembles a broad-based triangle with a base that stretches 26.5km (northeast-southwest axis) and a height of 7.2km (northwest-southeast axis) at the widest part of the atoll. It has three shallow reef flats, a northernmost one, a central one and a southern one.



Land area above water

There are three above-water sand areas in the 20 February 2014 satellite image that are located on the two smaller reef flats in the north. By contrast, only man-made structures can be observed

on the larger southern reef flat. The three above-water sand areas are all of comparable size. The northernmost reef flat has one sand bank that is around 70m by 40m (2700m²); the central reef flat has two sand banks with opposite geometrical shapes that have an area of 2,000m² and 4,000m². It is unclear whether they would remain above water if the sea level was to increase by 72cm as expected at Mean Higher Water Spring. However, when compared to the 23 August 2004 satellite image viewable on GoogleEarth, the visible sand banks are in a different location, which suggests that they are of a dynamic nature under the combined effect of astronomic tides, storm surges and wind-waves.

Human infrastructure

Several man-made structures are visible on the southern reef flat: a man-made platform that is 200m by 130m and located at the southwestern end of the southeast-facing side of the atoll, along a 230m long by 80m wide man-made channel that is 3.5-4m deep. Three beacons can also be observed on the southern side of this reef flat. However, more recent imagery shows that an above-water platform has been constructed over the entire southern reef flat and that a deep harbour has also been constructed on the northeast-facing side [images available at <http://amti.csis.org/subi-reef-tracker/>].

Intertidal and submerged area

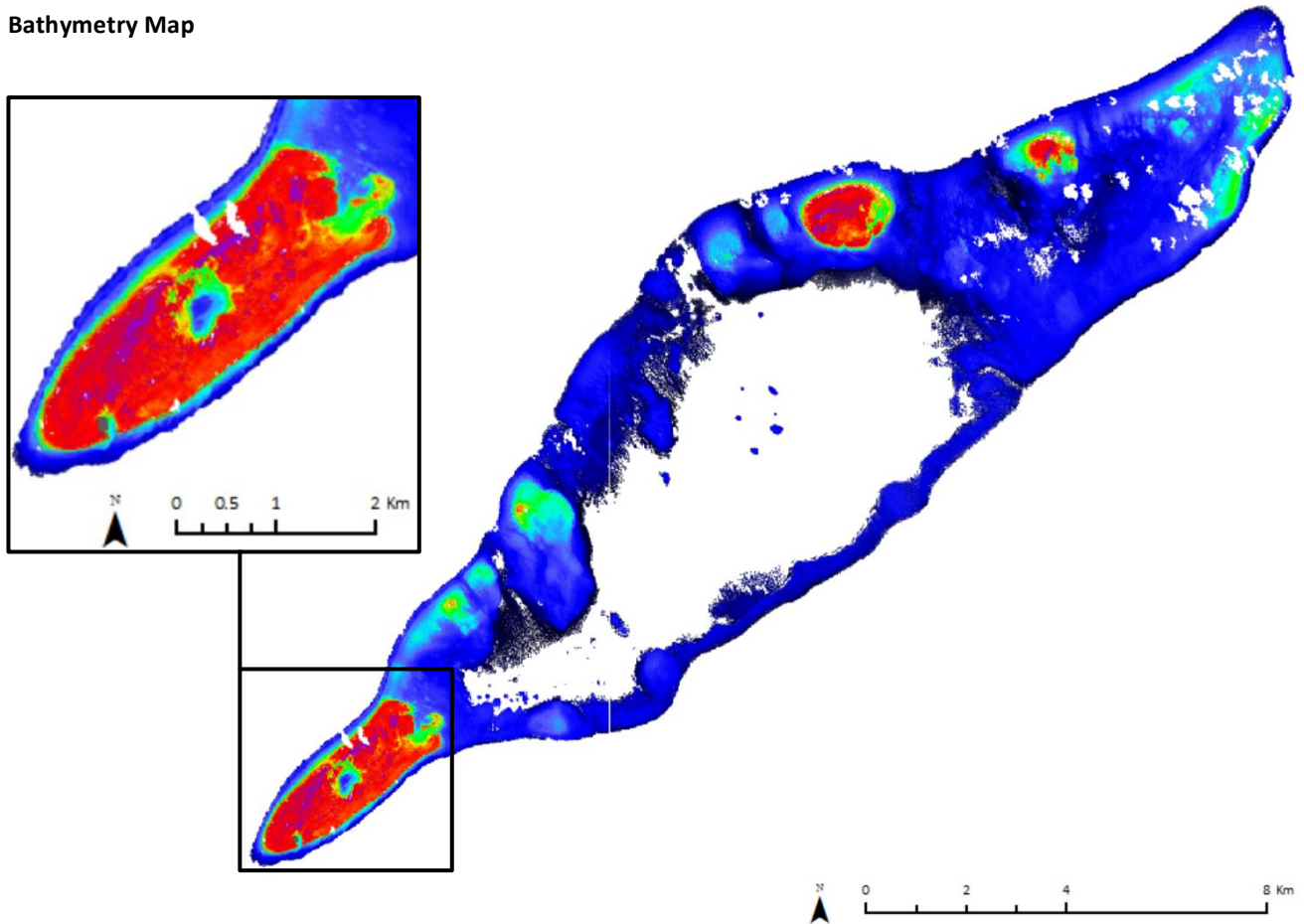
The aerial coverage of the atoll is 114.6km² and is composed of four reef flats (together 6.49km²), two large lagoons and a small lagoon in the middle of the southern reef flat (together 57.28km²) and a reef slope (50.3km²). The reef flats are of uneven depth from less than 1-2m, partly due to the extensive dredging evidenced by the circular dredging marks but also likely due to their natural morphology. On the southern reef flat, 126 5m-long dredgers are visible; on the central reef flat, 10 such dredgers are visible. Areas that are 1.34m deep or less are expected to uncover when the sea level decreases to the level of the Lowest Astronomical Tide. On 23 November 2014, all four reef flats have dredging marks. The reef flats are connected by the deeper reef system of the feature's reef slope, where pronounced spurs and grooves can be seen. Coral heads and knolls are visible throughout the two largest lagoons, the depth of which could not be calculated.

FIERY CROSS REEF

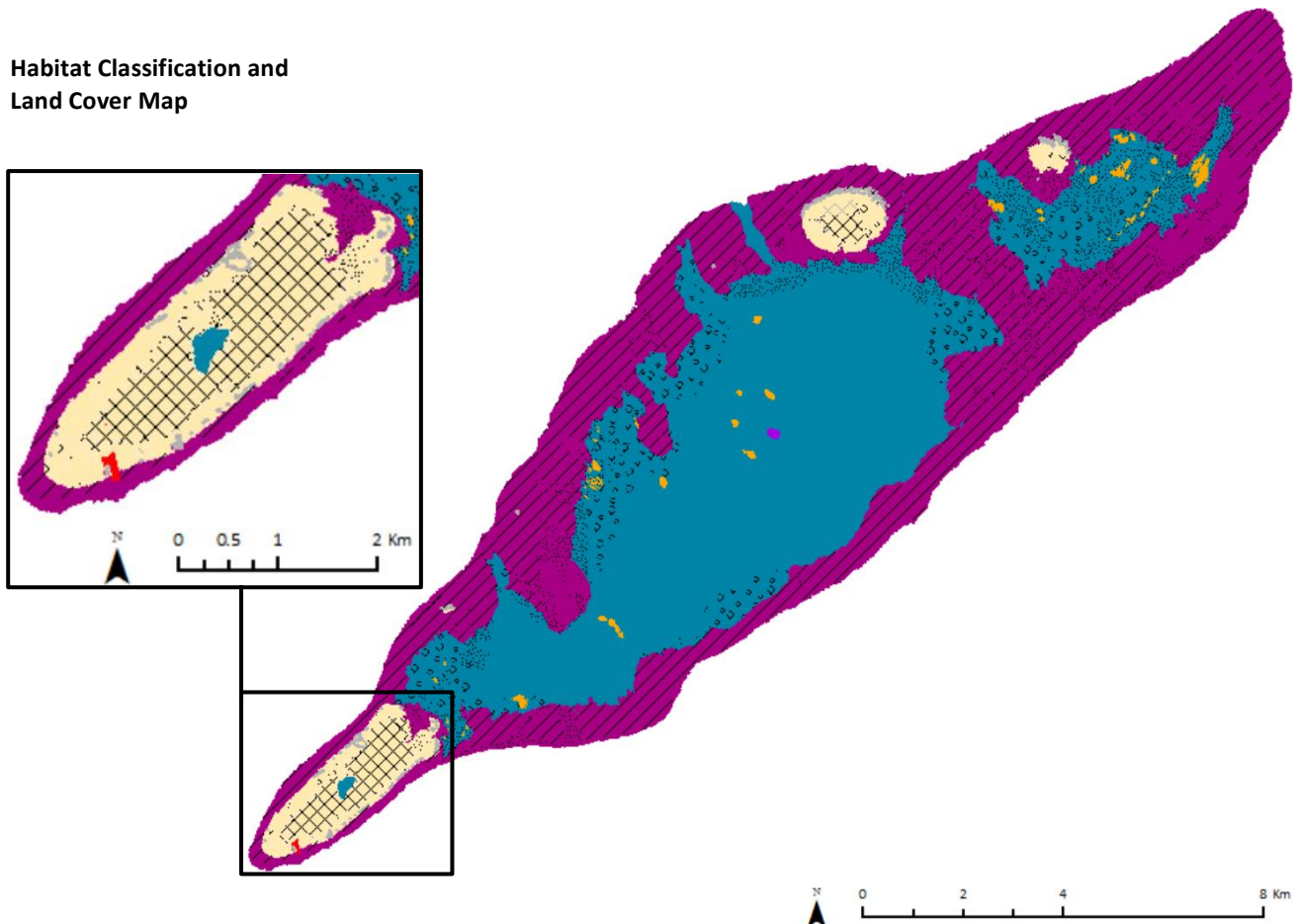
9°36'58.65"N, 112°58'15.99"E

Derived from WorldView-2 satellite data captured on 20 February 2014 [Sea Level: +0.11m]

Bathymetry Map



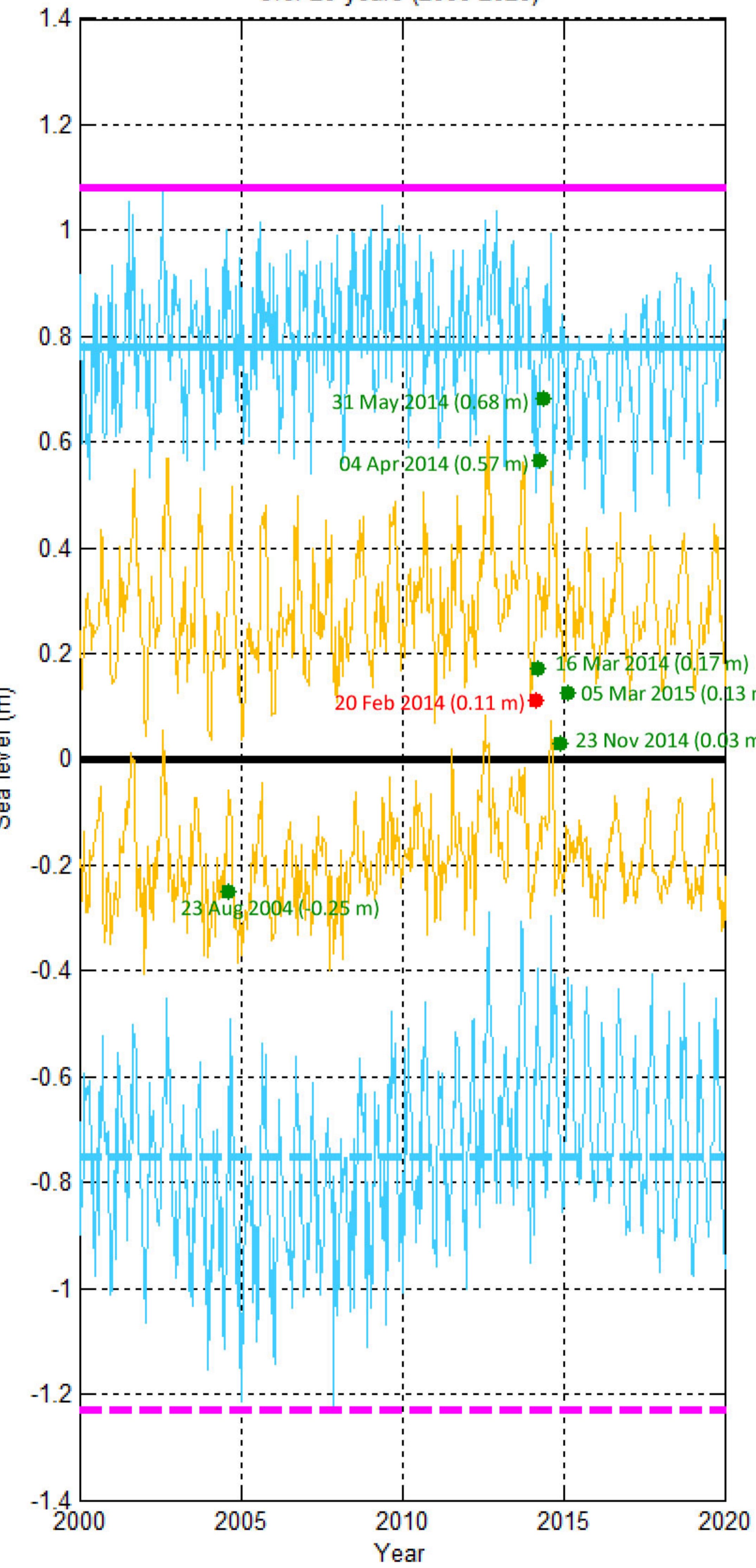
Habitat Classification and Land Cover Map



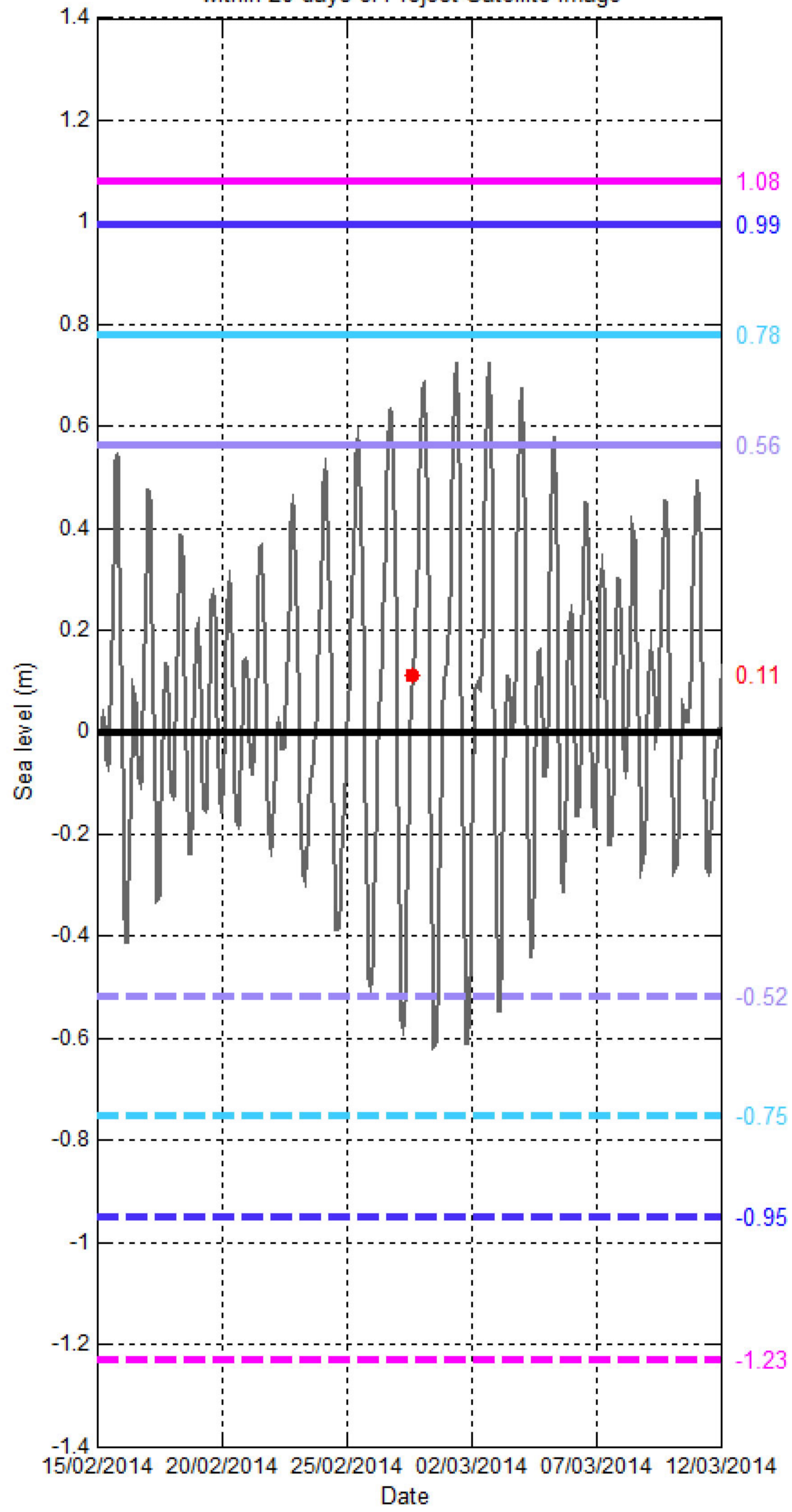
Sea level (SL) at FIERY CROSS REEF

[9°36'58.65"N, 112°58'15.99"E]

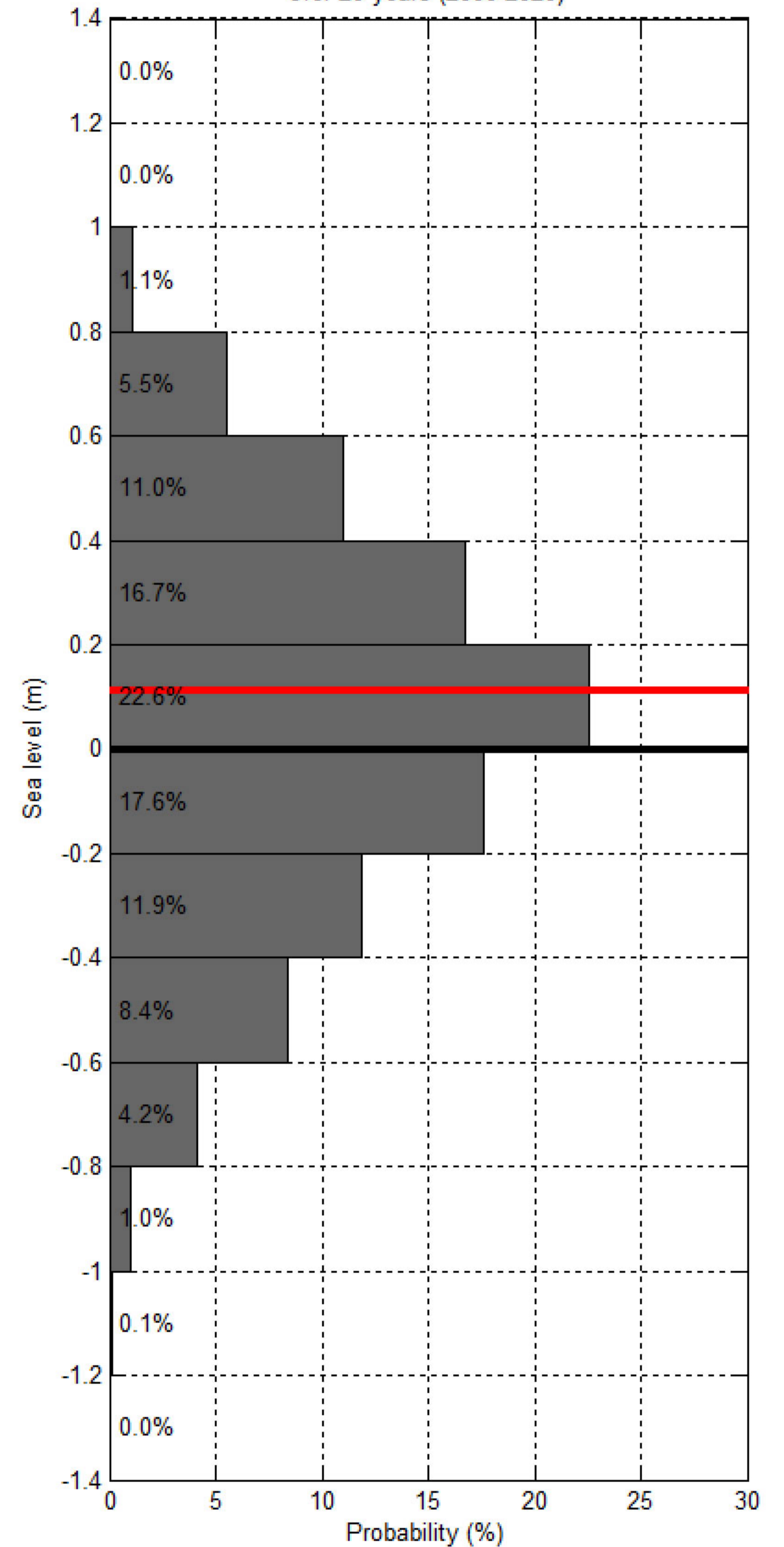
Sea level at spring/neap tide at FIERY CROSS REEF over 20 years (2000-2020)



Sea level at FIERY CROSS REEF within 20 days of Project Satellite Image



Probability of sea level at FIERY CROSS 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