

## WEST REEF

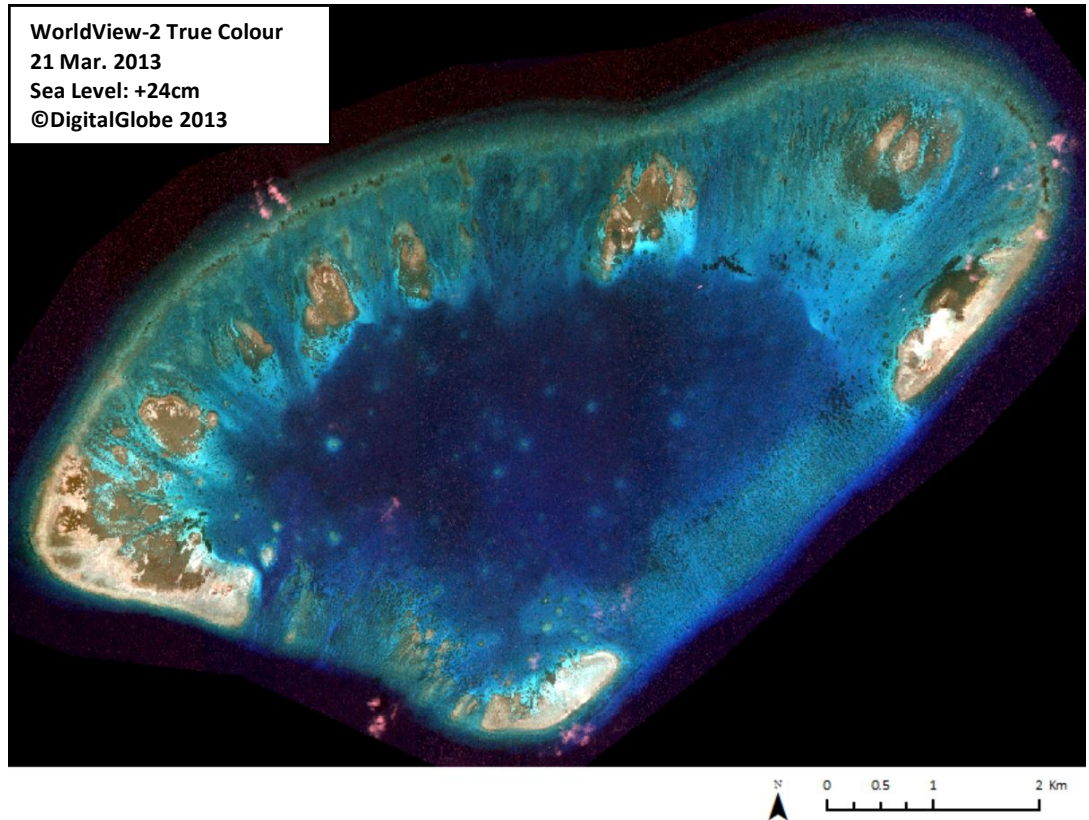
8°51'46.56"N, 112°13'26.13"E

### **Geographic area**

West Reef is an oceanic coral atoll that has developed on top of a seamount in the western part of the Spratlys. It is sometimes referred to as one of the London Reefs, along with Central Reef and East Reef, although they do not appear to be geographically connected to each other. Nautical charts indicate that they stand on separate seamounts and that the seabed between them is more than 1500m deep. This atoll is located around 240NM from Vietnam's mainland (southeast) and over 280NM from the islands of Palawan and Borneo (west and northwest, respectively). The closest shallow geographic features is Central Reef (less than 6NM northeast), East Reef (17NM east) and Spratly Island (19NM southwest). The overall atoll is shaped like a broad-based triangle, where the base extends over 10km along the northeast-southwest axis and the height from the southernmost tip to the opposite base reaches 6km.

### **Land area above water**

There are no above-water land areas in the 21 March 2013 satellite image apart from a 75m-long by 30m-wide sandy and rectangular platform contiguous to a higher rectangular and concreted platform with several buildings. It seems to be construction work for an extension to the existing platform. This is confirmed by subsequent satellite images viewable on Google Earth from 1 March 2014 and 22 November 2014, where an artificial island that extends 500m along its northeast-southwest axis and 170m along its northwest-southeast axis can be clearly seen.



### **Human infrastructure**

Three clusters of connected offshore platforms can be observed on three shallow reef flats of this mostly submerged atoll. The largest cluster is located on the northeastern reef flat where three towers (15m diameter on a wider base) form an equilateral triangle, 40m from each other and 200m southeast of the built-up platform described above where four buildings can be observed. The second cluster is located on the reef flat that forms the western tip of the atoll; four similar towers are visible, three of which are connected by bridges and positioned in a triangle. The fourth one is 60m west. The third cluster is located on the second reef flat from the east along the northwest-facing side of the atoll, where two similar towers are also connected by a 40m bridge. At each cluster, several jetties facilitate access from the sea to one or several towers.

### **Intertidal and submerged area**

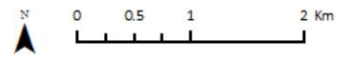
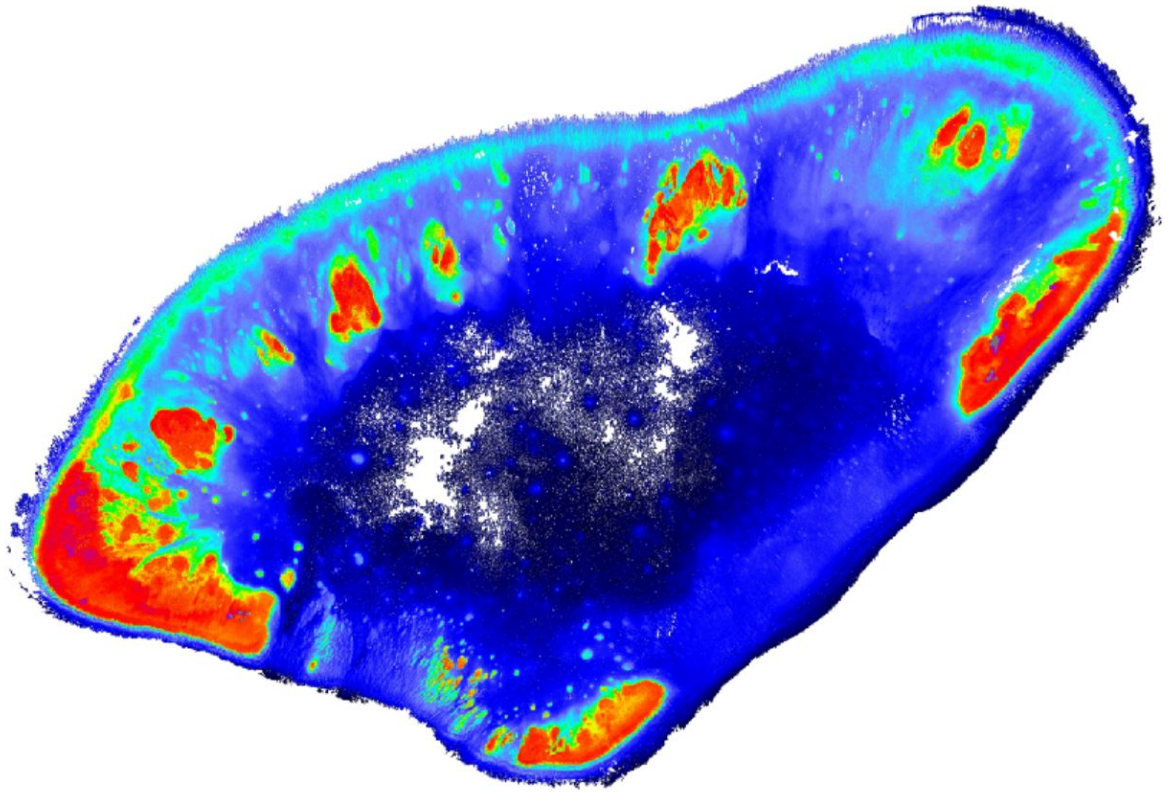
The aerial coverage of the atoll is 43.96 km<sup>2</sup> that comprises a lagoon of 25.92km<sup>2</sup>, nine reef flats of unequal size ( 5.95km<sup>2</sup> overall) and a reef slope (12.08km<sup>2</sup>). However, reef flats are 1-2m deep when the sea level is 24cm above Mean Sea Level. All areas that are 1.5m deep or less are therefore expected to uncover at Lowest Astronomical Tide, which concerns primarily the three reef flats where offshore installations have been constructed; they are also the largest. The reef slope does not extend more than 100-200m seaward of the atoll. Although the lagoon does not support a full reticulate reef system (72% of the lagoon), numerous shallow coral heads and knolls are visible at 5-7m depth or less, where the surrounding water is 9-10m deep (18.67km<sup>2</sup> total).

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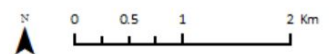
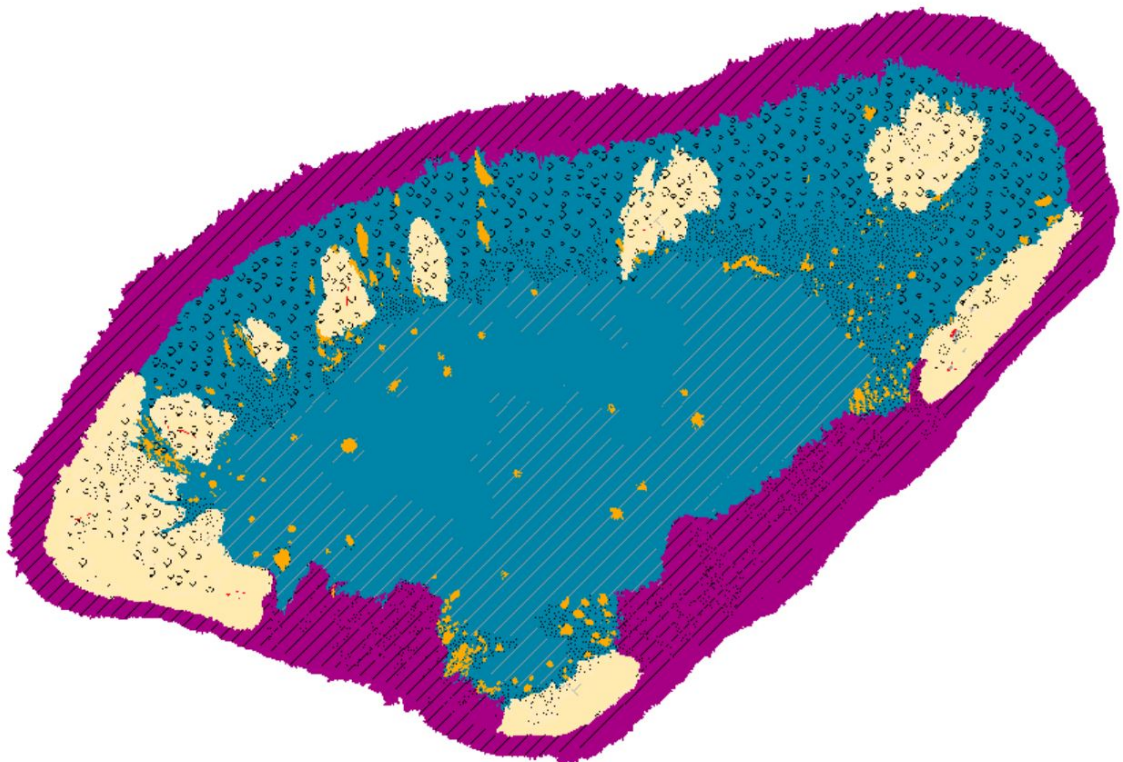
8°51'46.56"N, 112°13'26.13"E

Derived from WorldView-2 satellite data captured on 21 March 2013 [Sea Level: +24cm]

### Bathymetry Map



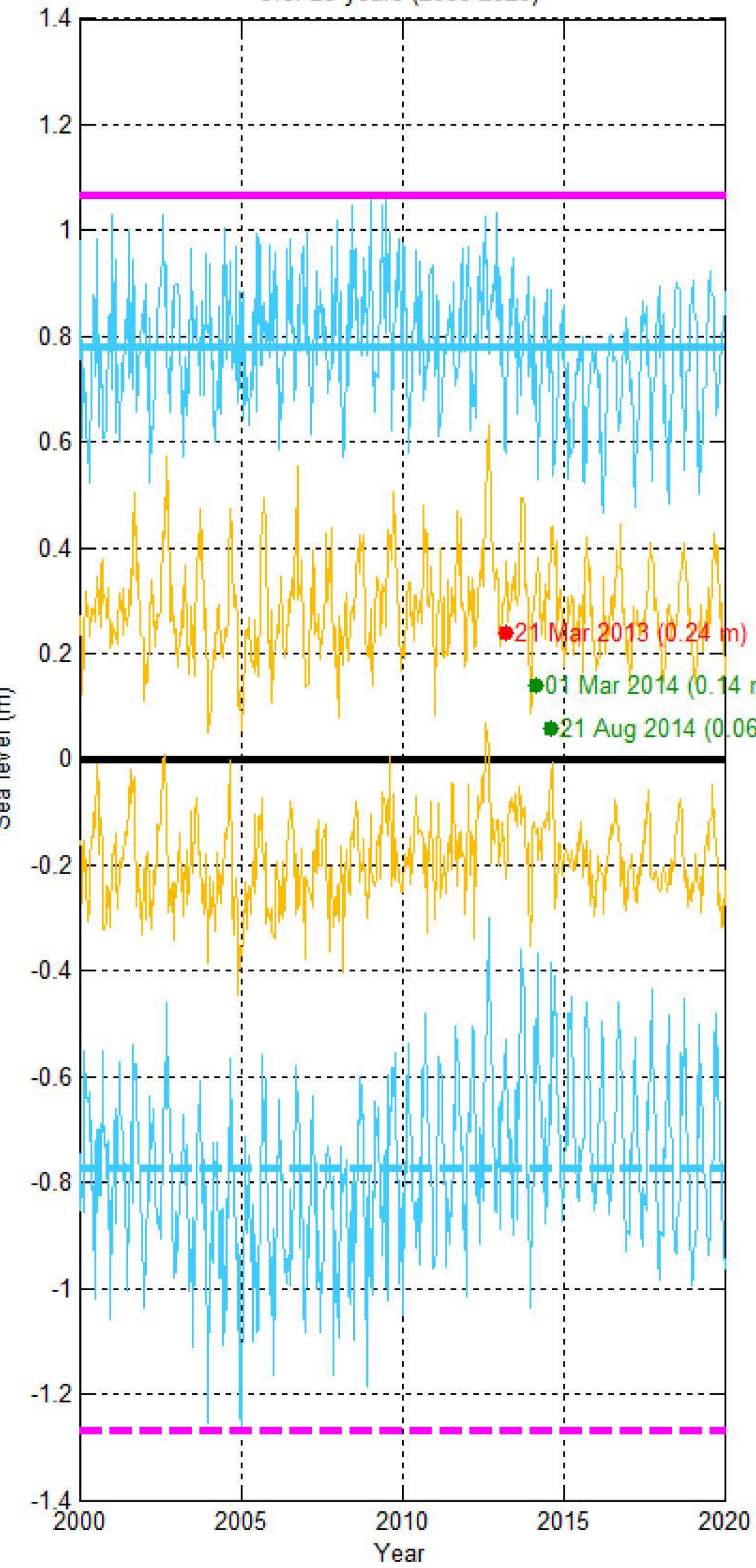
### Habitat Classification and Land Cover Map



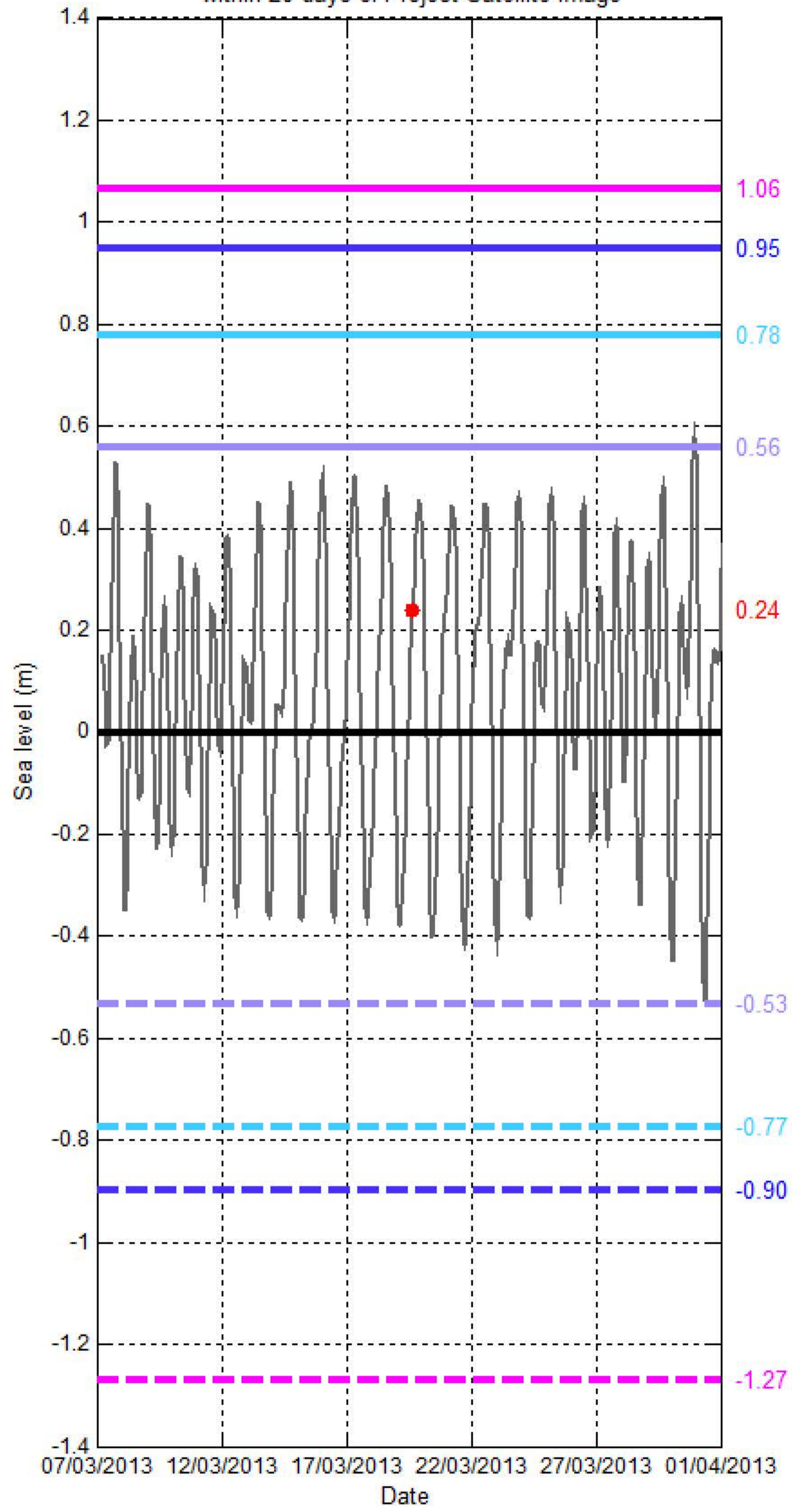
# Sea level (SL) at WEST REEF

[8°51'46.56"N, 112°13'26.13"E]

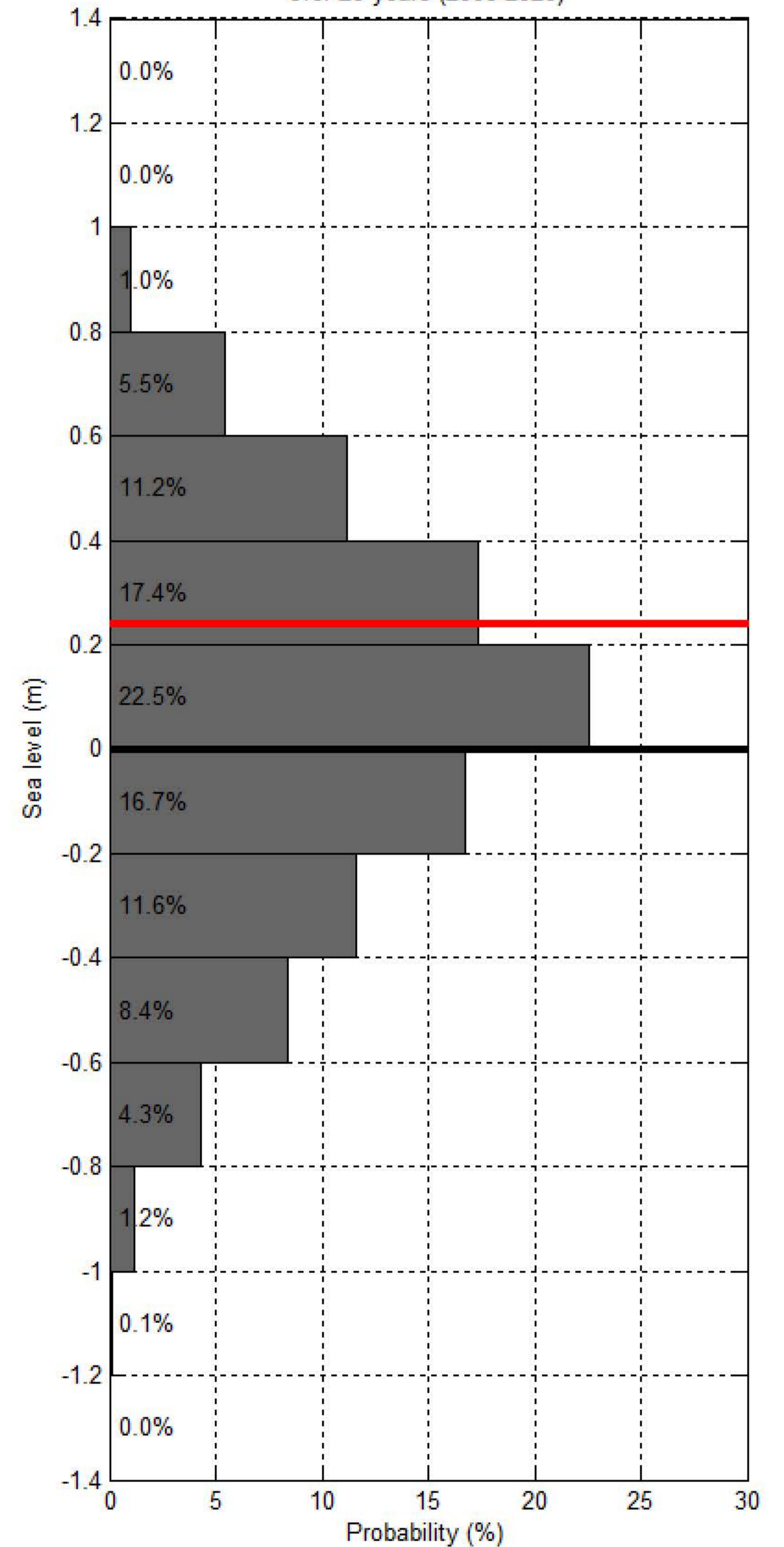
Sea level at spring/neap tide at WEST REEF over 20 years (2000-2020)



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



Probability of sea level at WEST 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