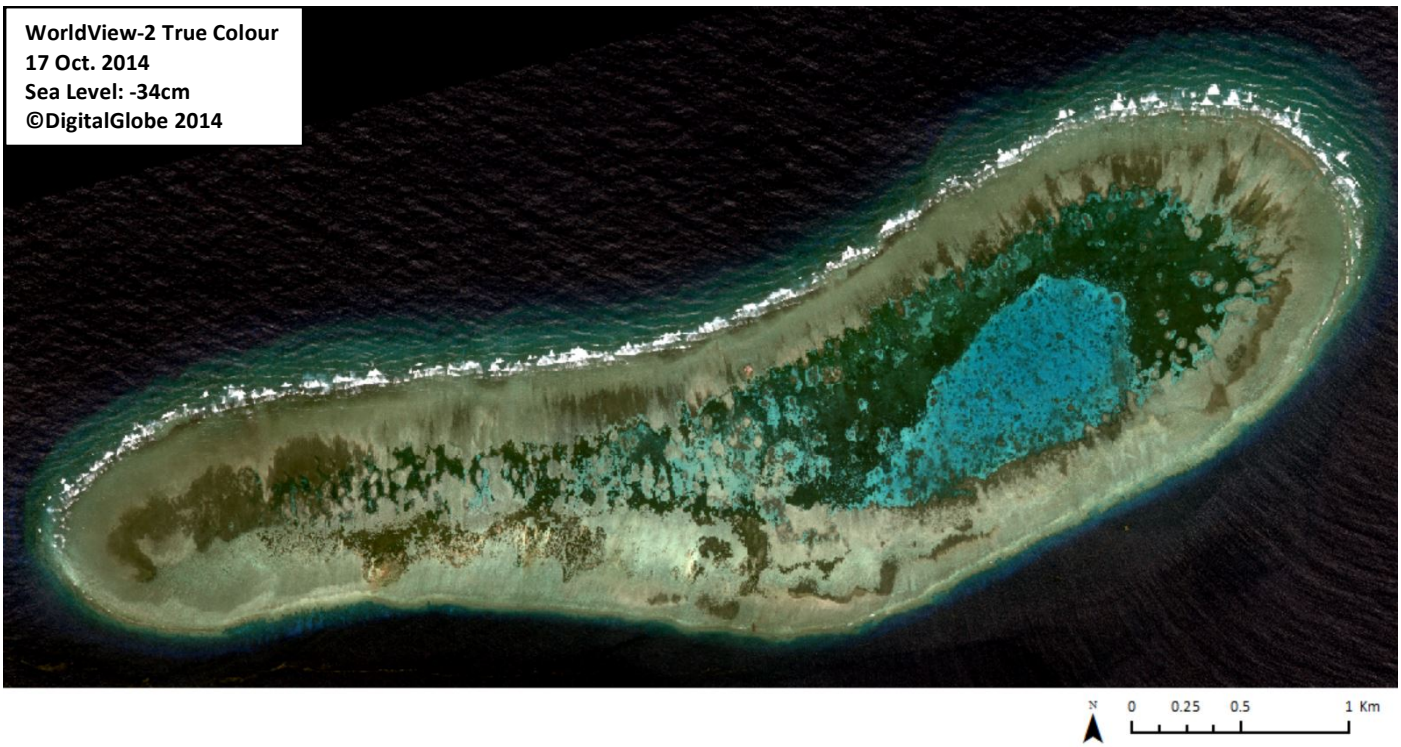
LADD REEF

8°40’04.692”N, 111°40’28.16”E

Geographic area

Ladd Reef is an oceanic coral atoll that has developed on top of a seamount in the western part of the Spratlys. It is located 225NM east of Vietnam’s mainland and 300NM or more north of the islands of Borneo and Palawan. The closest shallow geographic feature is Spratly Island, around 13NM southeast. The atoll extends 6.5km on its southwest-northeast axis and reaches 1.8km on its northwest-southeast axis.



Land area above water

There are numerous above-water strips of rocky reef on the southwestern and northeastern sides of the reef flat in the 17 October 2014 satellite image that was captured at low tide, 34cm below Mean Sea Level. In this image, the entire reef flat is very shallow. It is all around 1m deep with many areas being 50cm deep or less. However, none of these above-water areas are more than 40m wide (the two largest are 100m by 20m and 15m by 40m). They are therefore likely to be submerged at Mean High Water Spring when the sea level is expected to increase by 1.10m.

Human infrastructure

Three man-made structures can be observed on the northern side of the reef flat. The largest is a 15m-long diameter tower built on a wider base with a 30m-long diameter. It is located in the centre of the northern side of the reef flat, 220m from the start of the reef slope. The second man-made structure is a beacon (possibly a lighthouse) located 1km west-southwest from the tower. The third one is a 6m by 6m structure that resembles a platform or container and is located on the northwestern reef flat, 250m south of the reef crest.

Intertidal and submerged area

The aerial coverage of this atoll is 10km^2 comprising 7.36km^2 of reef flat, 1.93km^2 of reef slope, and 0.7km^2 of lagoon. The shallow (1m or less) part of the reef flat is a 200-500m wide band on the outer part of the reef flat along the start of the reef slope. Areas that are 75cm deep or less are expected to uncover at Lowest Astronomical Tide. The inner part of the reef flat (the back reef) includes very shallow coral heads and ridges that extend from the reef flat, as well as deeper sandy areas that are 1.5-3m deep. Distinctive patches of seagrass/algae can be observed on the back reef that cover a total area of 1.52km^2. The lagoon is 4-5m deep and characterised by a reticulate reef system that includes numerous shallow coral heads and patch reefs that are 20m wide or more. The reef slope extends 200-300m seaward along the northeastern, northern and northwestern sides of the atoll. On the southern side, it does not extend more than 30-60m. However, pronounced spurs and grooves are visible all around, as well as sand terraces at a depth of 5-6m (especially visible along the northern side). Two-metre-deep grooves that stretch the length of the reef slope can also be observed.

There is a wreck on the southern side of the atoll. No dredging marks are visible in the 17 October 2014 satellite image

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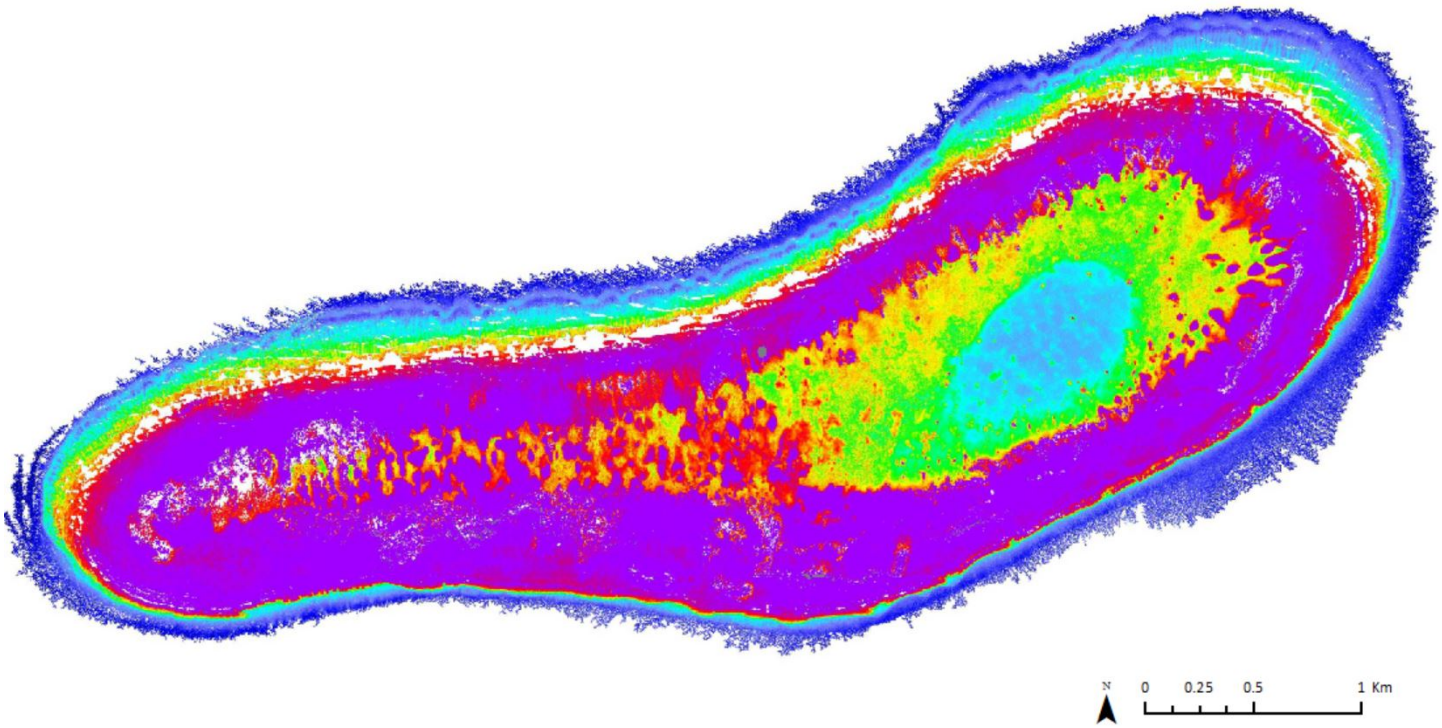
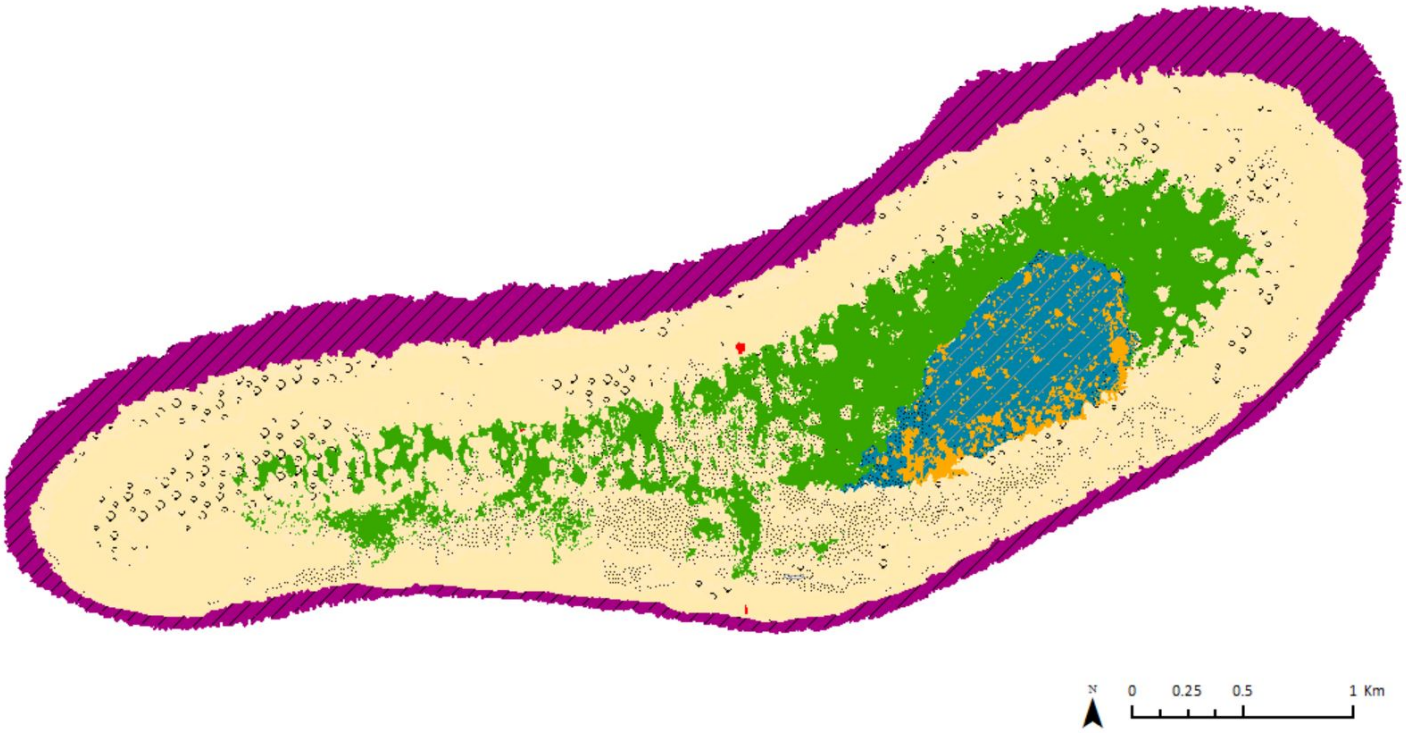
Derived from WorldView-2 satellite data captured on 17 October 2014 [Sea Level: -34cm]

Bathymetry Map



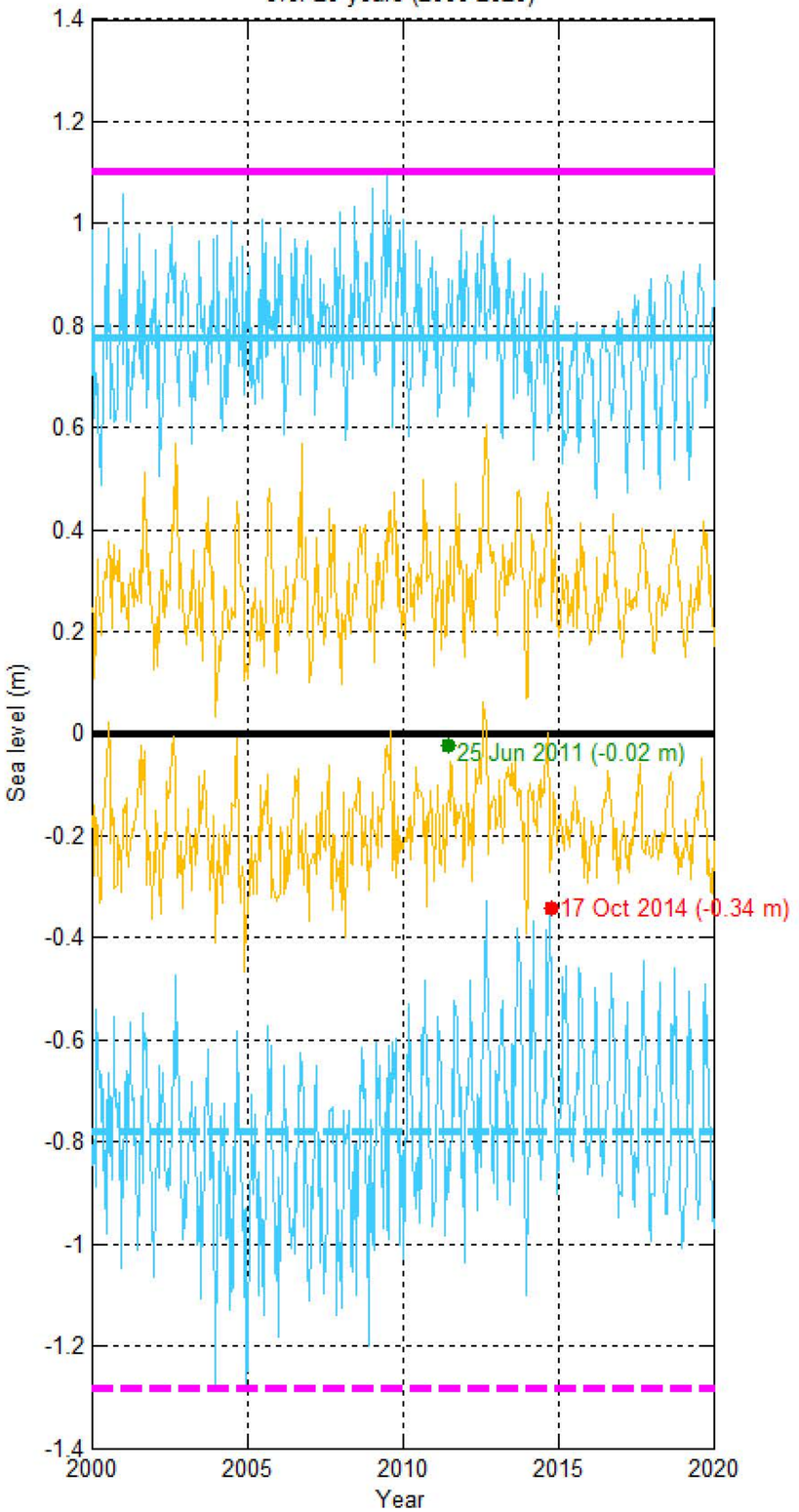
Habitat Classification and Land Cover Map



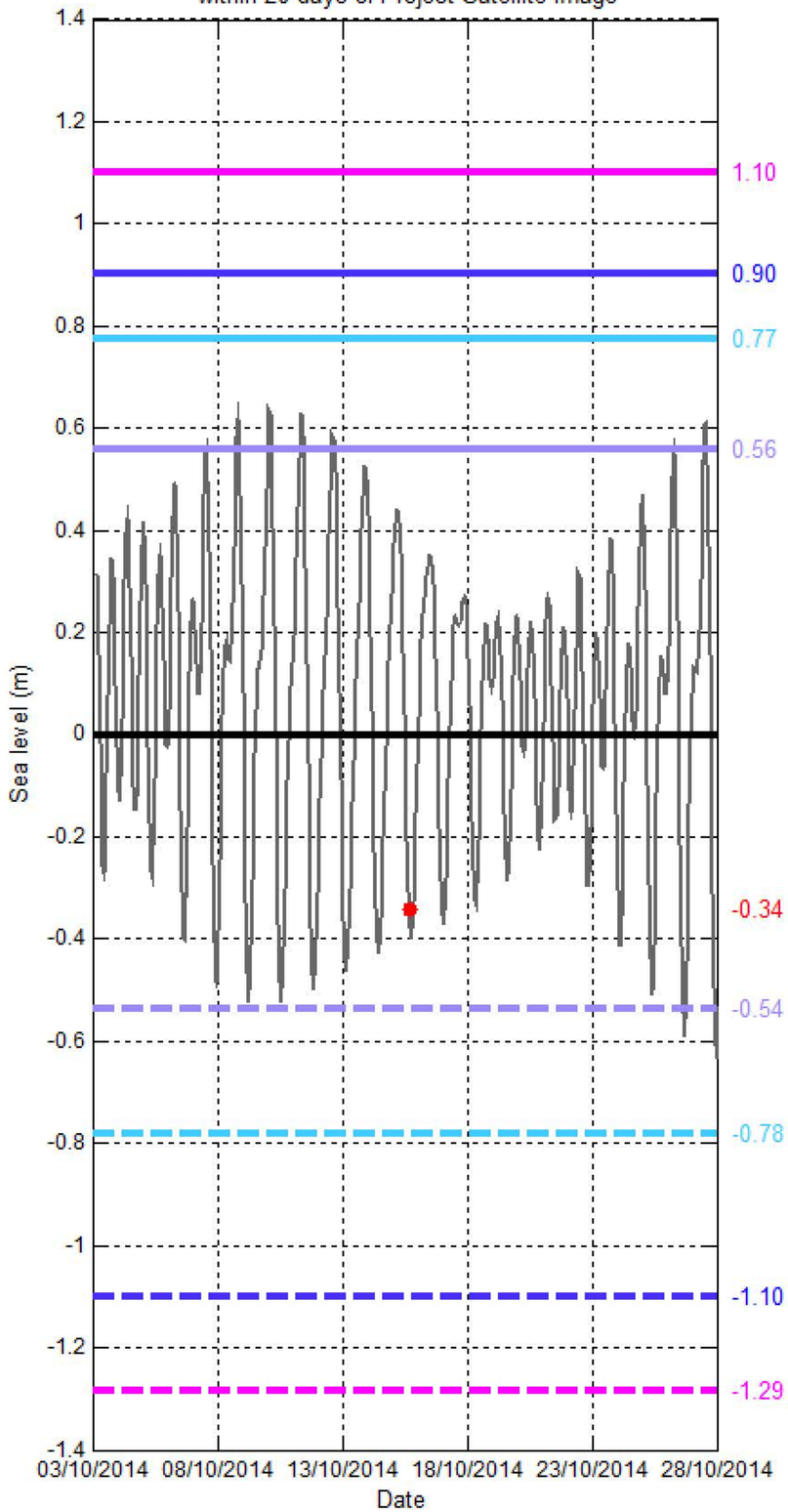
Sea level (SL) at LADD REEF

[8°40'04.69"N, 111°40'28.16"E]

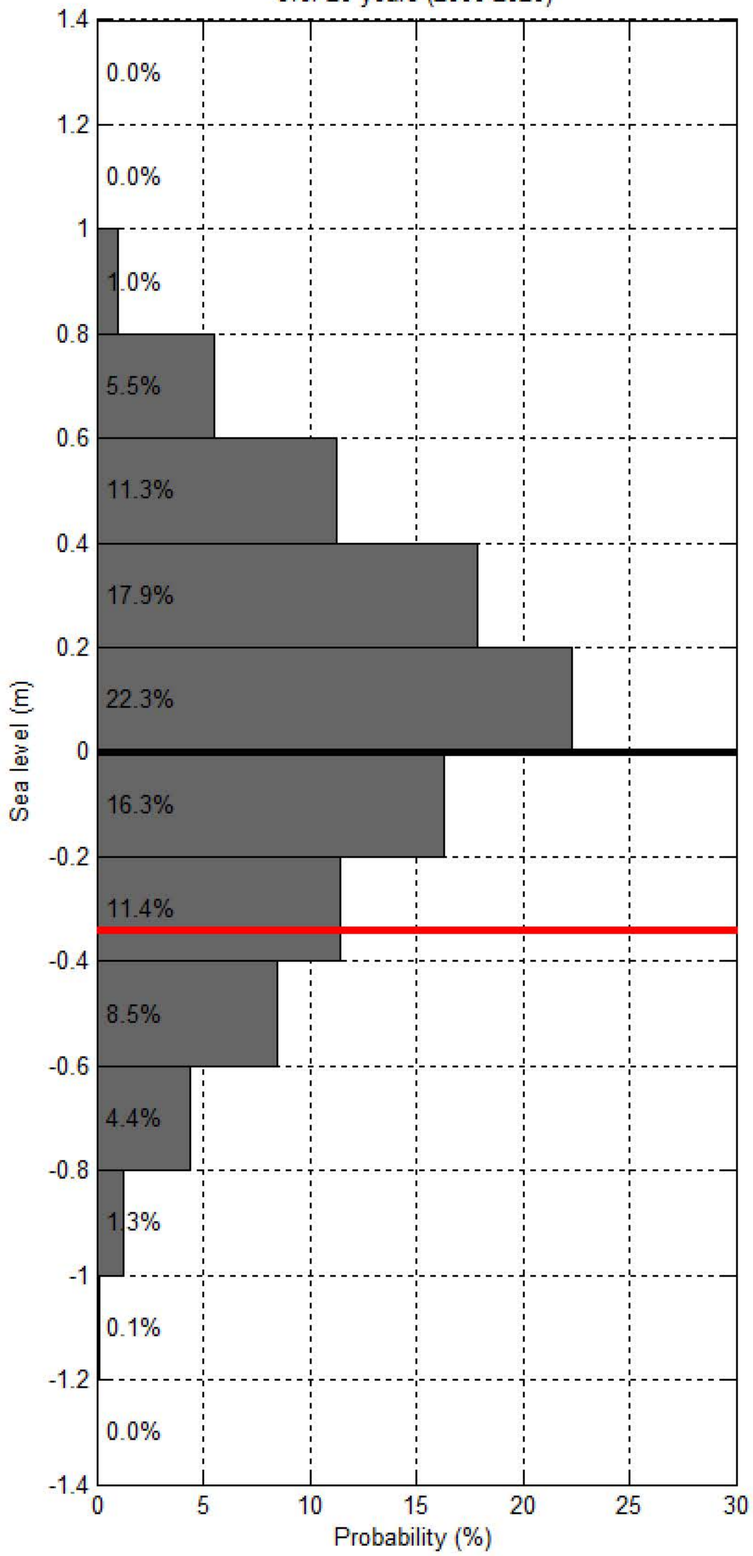
Sea level at spring/neap tide at
LADD REEF
over 20 years (2000-2020)



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



Probability of sea level at
LADD 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