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South China Sea Disputes: Can Satellite Imagery Help?

By Youna Lyons

Synopsis

Satellite imagery makes publicly available information about the disputed islands and rocks in the Spratlys. It can also shape the scope of the debate.

Commentary

TO WHAT extent do the Spratlys comprise features that qualify to be islands or rocks under international law and therefore subject to appropriation? Satellite imagery of geographical features in the sea offers a greater degree of visual clarity of what an island or rock may look like and of their location relative to each other.

Distinguishing islands and rocks

To qualify as an island or a rock under international law a feature, which is surrounded by water, must be a naturally formed area of land and above water at high tide. These two conditions are cumulative and both can be usefully informed by satellite imagery.

With respect to the second condition, a satellite image showing a vegetated feature will undoubtedly demonstrate that it remains above water at high tide as a feature submerged at high tide, even occasionally, cannot present terrestrial vegetation. However, if a satellite image shows a barren sand bar, cay or reef just above water, complementary information is necessary to determine whether this area of land is always above water or whether it is submerged at high tide.

If a feature is submerged at high tide and dries at low tide, it is a low tide elevation (not an island or a rock) and it cannot be appropriated. If it is located within 12 nautical miles of the coastline, it is deemed to be a part of that coastline. As a result, the 12 nautical miles territorial sea can be calculated from this low tide elevation instead of being calculated from the coastline.

The verification of whether a feature can qualify as a rock or an island also involves an examination of whether the feature in question is naturally formed or whether it is a man-made feature. In the latter situation two questions arise: was the feature built on a submerged feature or low tide elevation to extend vertically above water at high tide; or does the feature consist of land reclamation on a naturally formed area of land above water, even of a small size.

For this analysis satellite images will also be very informative. As an example, areas of land which have been reclaimed tend to exhibit noticeably different shapes than the rest of the feature. Similarly, coastal works designed to limit natural erosion are often visible.

Spratly Islands

A review of the features of the Spratlys (which are claimed by four to six claimants) would be particularly informative. Of the 130 or more features in the Spratlys, the various reports available relate that up to 25% to 30% of these features are above water at high tide.

Google Earth further shows that the combined surface area of the 13 largest features in the Spratlys total less than two square kilometre of dry land. This is less than half of Sentosa Island, a small island attached to Singapore Island. The largest island of the Spratlys, Itu Aba, is itself less than half a square kilometre.

The greater part of all other features visible in Google Earth may uncover at low tide or remain always submerged. Some of these features also present man-made artificial structures, some of which rest on a small portion of a submerged feature or on a small area of reclaimed land.

Islands and rocks on atolls

Satellite images make it possible to zoom out from any given feature to the surrounding islands, reefs and low tide elevations. Such images clearly show that the Spratlys are not one archipelago but a collection of atolls located on seamounts. Many of the very small islands and rocks in the Spratlys were once part of a single atoll, the surrounding reef of which subsided over time. The now submerged parts of the atoll remain visible on satellite images if they have not subsided below 10 to 20 metres (depending on the satellite resolution and water clarity).

This raises the question whether these partly submerged atolls can still be treated as atolls and whether the inside lagoon can in some circumstances constitute internal waters of the State having sovereignty over the island on the atoll. Another question which arises is whether the outer side of the atoll ring can determine the baseline of the territorial sea or whether each rock or island in the atoll should have its own baseline and territorial sea. Where the atoll is mostly submerged, it seems that the latter solution will be preferred.

Satellite imagery is, however, no panacea. It only contributes to the debate of what is a rock, what is an island and what is neither but may be a low tide elevation. Google Earth does not determine sovereignty over islands or rocks. It does not determine the extent of the maritime zone to which an island or rock may be entitled.

It may however, limit the temptation of claimants to make spurious allegations which could be disproved by a single Google Earth picture and thus call into question the credibility of the claim.

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