



PRECISION DREDGING IN THE MALDIVES

COPERNICUS SENTINEL 2 DATA IS HELPING A DREDGING COMPANY IN THE MALDIVES TO IMPROVE ITS EFFICIENCY AND REDUCE ENVIRONMENTAL DAMAGE.

GEOFF SAWYER REPORTS

Compromising 26 atolls and more than 1,000 islands, the Maldives is the lowest lying country in the world. The atolls are separated by channels that are subject to constant change caused by strong currents and an increase in the frequency of violent storms. The channels require recurring dredging to ensure access to ships and to protect the island areas that hide reefs just under its coastal surfaces.

Hydrological maps guided dredging activities in the past but when these became obsolete for the modern precision dredgers, satellite imaging surfaced as a replacement. Data coming from Sentinel 2 can be used as an inexpensive way to gather necessary information, thanks to the open and free data policy of the EU.

German service provider EOMAP uses the data to derive hydrographic and aquatic environmental information, including satellite-derived bathymetry and seafloor mapping. The innovative wide swath (290km) high-

resolution (10m) multi-spectral imagery with 13 spectral bands can 'see' down to the sea bottom and enables the measurement of water depth and the mapping of underwater features, including reefs, vegetation and the sea-bed. The biggest advantage of Sentinel 2 data is that new maps can be generated almost every other day, so that a more up-to-date chart can be produced if required. Moreover, satellite data is non-intrusive and may show long-term trends.

Van Oord, a Dutch dredging company, uses these maps to help plan and manage their operations. However, much of the area where Van Oord operates is protected environment. Large areas of coral are often not visible on alternative maps, yet present a hazard to dredging operations as both a danger to Van Oord's ships and a liability if coral is damaged. Better knowledge of the area through satellite data helps Van Oord control its costs and reduce the risk of collision with coral reefs

or running aground in the shallows.

Another beneficiary of the service is the Maldives' government, which profits through improved defences and open sea lanes. The environment is also protected better through NGOs watching for destruction or disturbance of sensitive ecological ecosystems.

However, the main beneficiaries are the country's citizens: more effective sea-defences reduce the risk of flooding or damage to their homes and businesses by storms.

Where good hydrological charts exist, operations are easy to plan and execute; where they do not, the use of satellite imagery can be effective in all tropical regions where the sea is clear and the bottom is visible from satellite images.

The protection of coral reefs and sea vegetation is a key objective, given the threat arising from global climate change. For Van Oord, knowledge of their location enables preventative measures. For local governments and environmental organisations, having the same information can provide reassurance that the companies are not taking undue risks and that these valuable ecosystems remain protected.

Geoff Sawyer is EARSC secretary general (www.earsc.org)