Reef sites

Chronic small-scale oil pollution in Addu Atoll (Maldives)

Fig. 1 Oil plumes originating from the location of the *British Loyalty* (yellow spot) on three different satellite images (near-infra-red/green/blue composites). Images show the plumes taking different direction according to surface currents and wind

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On 9 March 1944, a German U-Boot torpedoed the 134-metre-long tanker *British Loyalty* in the lagoon of Addu (Seenu) Atoll (Stoddart 1966). The boat, with three oil tanks ruptured, was repaired and used as a moored oil storage. Eventually, on 15 January 1946, it was towed and sunk next to Hithadhoo Island, in 33 m of water at 73°07'24"E and 0°38'12"S. The wreck became a locally famous dive site, well documented on Internet.

Oil release was reported until the 1960s. Afterwards, reports suggest the wreck became oil-proof, but one of us (A.N.) witnessed the leak in 1986, and divers confirmed in 2010 that droplets still rose from the wreck. Furthermore, recent Landsat and IKONOS satellite imagery (30- and 4-metre resolution, respectively) confirmed the release of oil between at least March 2000 and May 2004. Figure 1 illustrates the most obvious plumes, revealed by dark surface patterns on images, all originating from the same source point corresponding to the wreck position. Leaks were no longer detectable in satellite data taken after May 2004, indicating the leaks had either stopped or slowed to levels undetectable from space (Klemas 2010). The wreck has probably not leaked consistently. One windless Landsat image (5 January 2001), for instance, does not show any signs of oil. Other images in 1999 and after 2004 are too cloudy or windy to conclude whether oil was present or not. Whether the spill has been permanent or intermittent, and since when, will remain unclear. The long-term effects on the lagoon ecosystem are unknown and likely minor since the plume path is variable, reducing the net exposure of any one area to the pollution. Furthermore, the two north and south passes are likely to promptly flush the oil oceanwards. Given the current interest in estimating the risks of oil spills from scattered Second World War wrecks, especially in Western Pacific Ocean lagoons, identification of point sources using archived imagery could be a cost-effective technique to flag sensitive spots.

References

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