

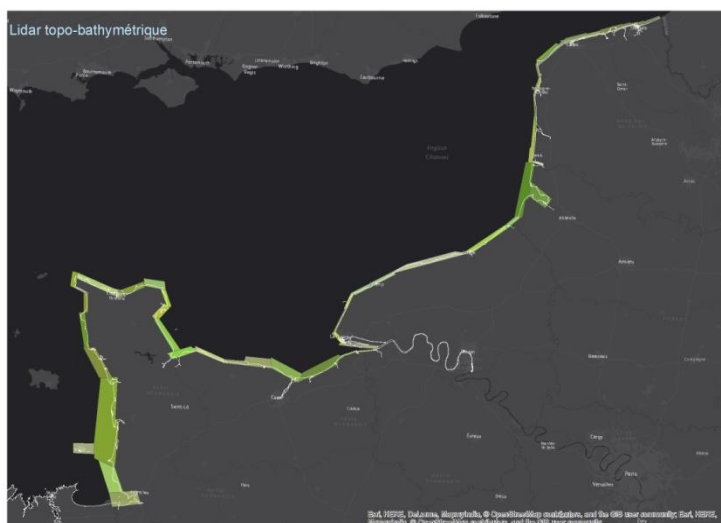
Litto3D®: SHOM's coastal survey in Normandy & North of France

In the so-called "Litto3D®" project, SHOM has been surveying the coastlines of the metropolitan France and some overseas territories since 2009 (first test were lead in 2005). One of the main objectives was to create a continuous dataset on earth and at sea, and airborne bathymetric lidar have been used to fulfill this requirement.

The lidar performances are limited by the environmental conditions, especially water turbidity. French turbid coastlines are still to be surveyed. But two recent technological breakthroughs have occurred:

- On the hardware side, topo-bathymetric lidar arrived on the market: they function with less power than the "pure" bathymetric lidar, but with a higher frequency which offers a denser points cloud ;
- On the software side, dedicated turbid and muddy water algorithms have enhanced the sea-bottom detection results.

With SHOM's partners in Normandy & North of France, a feasibility study was conducted in April 2015, using the AHAB-Leica HawkEye III machine. It is a 3-in-1 system as it contains a green deep channel (bathymetric lidar), a green shallow channel (topo-bathymetric lidar) and a red topo channel (topographic lidar). Surprisingly, in places where no sea-bottom detection was expected, the results were outstanding. For example in "Baie des Veys" which is the mouth of 3 rivers, the lidar penetrated down to 7m, and even down to 12m on a cross-line. The results were similar in Courseulles (D-Day beaches) and Deauville (west of Seine's mouth).



Topo-Bthymetry survey coverage (Phase 1)

The study's conclusion being positive, SHOM and its partners decided to plan a major operation along the Channel coastline: a coastal survey from Baie du Mont-Saint-Michel (western Normandy) to the Belgian border will start at the end of August 2016 and will (hopefully) be finished on mid-2017. The expected coverage goes down from the 5 meters isobaths and up to 400 m (plan view) inland.

At the beginning, SHOM used to subcontract the acquisition and the processing of its bathymetric lidar surveys. SHOM progressively took in charge the full processing. And now, SHOM will also be in charge of the acquisition, having the responsibility over the full workflow. A lidar capability is rented, via a full service contract, including HawkEye III + plane + pilot(s). SHOM's crew will plan the survey and operate the lidar, like our hydrographers do for any MBES surveys. The topo-bathymetric datasets will be processed by the specialized team Litto3D® in Brest.