

TopoBaty 2014

Testing LIDAR mapping in the coastal zone of Norway

Background

The Norwegian Hydrographic Service (NHS) has established a small pilot project, TopoBaty 2014, to see whether the new generation of topobathymetric lasers can be used to survey the Norwegian coastal zone. In addition to close the gap between sea and land, one wants to look at where this method, if proven applicable, can be more cost efficient than traditional surveying. One goal is to gather sufficient knowledge to be able to plan future surveys, including where this method is suitable for the purpose, economically favorable and what to consider when preparing calls for tenders.

Description

Ten small areas close to Stavanger have been selected for this project, se Figure 1. These were all surveyed during three days in April 2014.

Three of the areas are within a NHS test field with a well established reference surface. These areas were surveyed with different settings and NHS will get the raw wave form data sets in addition to processed and classified data to the deepest depth the laser could reach.

The other areas represent typical challenges for the Norwegian coastline such as steep mountains, beaches, harbors, river deltas and challenging water quality or seabed conditions. For these areas NHS has asked for processed data down to 5 meters below chart datum (typically 5.6 meters below mean sea level in these areas). Digital Terrain Models will be delivered for all areas.

The data and an extensive report from the contractor commenting also on future surveys are to be delivered by the end of August 2014. The final report from the project will be available in November.

Results

There are currently only some preliminary results from the surveys. It seems like the penetration of the laser varies quite a lot. Most places reaching the 5 meters we asked for, but for some spots there are only data down to 2-3 meters. Lyngholmen, one of the test areas shown in Figure 2, has such spots. On the other hand, the laser did reached at least 12 meters depth in Frafjord, a steep mountain down in the fjord shown in Figure 3. Note that these are preliminary data that need to be further processed and classified.

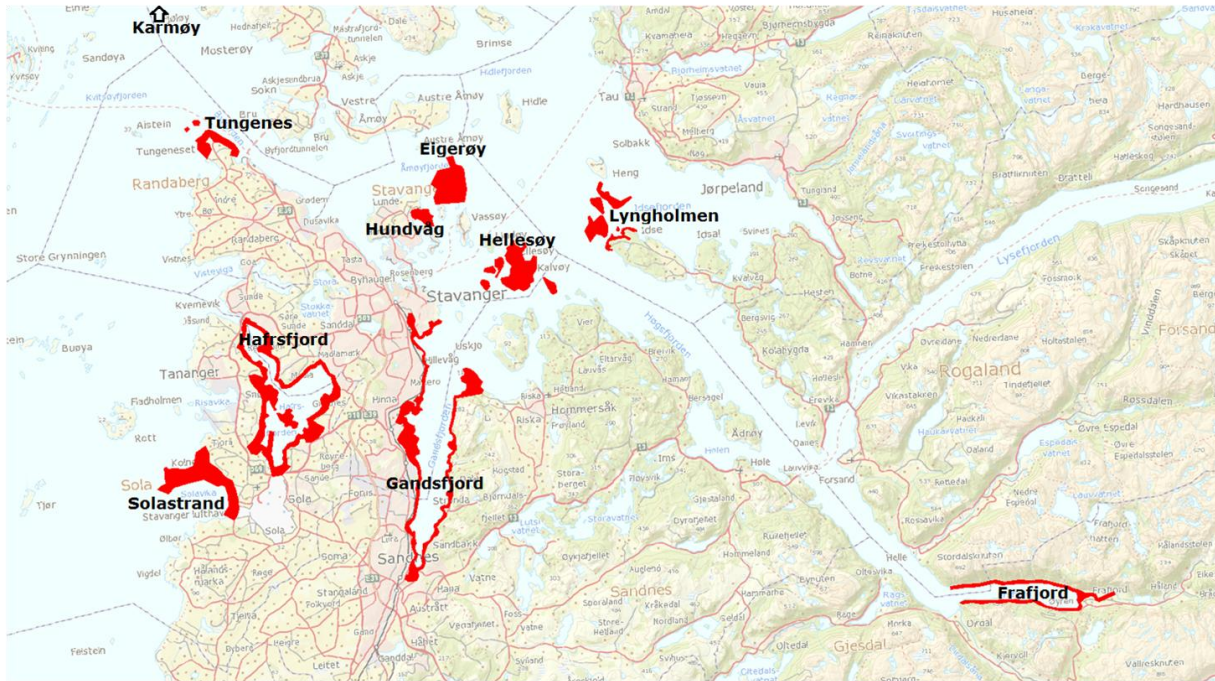


Figure 1: The project includes ten areas, each is less than 7 km²

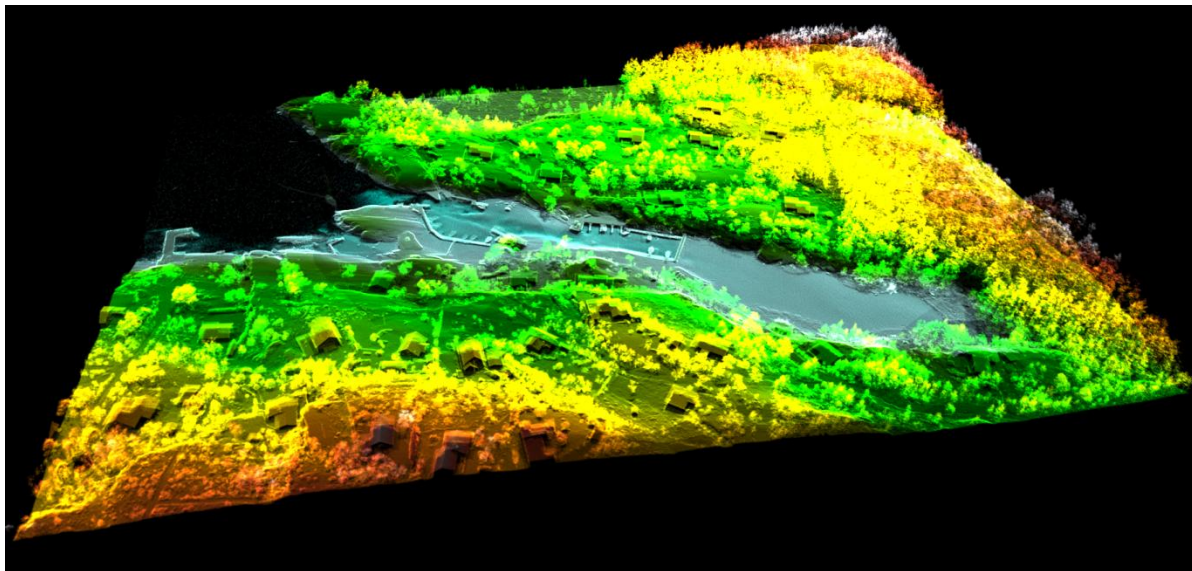


Figure 2: A harbor at Lyngholmen. Depth range varies from 2-3 meters in areas with bad reflectivity down to 5-6 meters for most parts

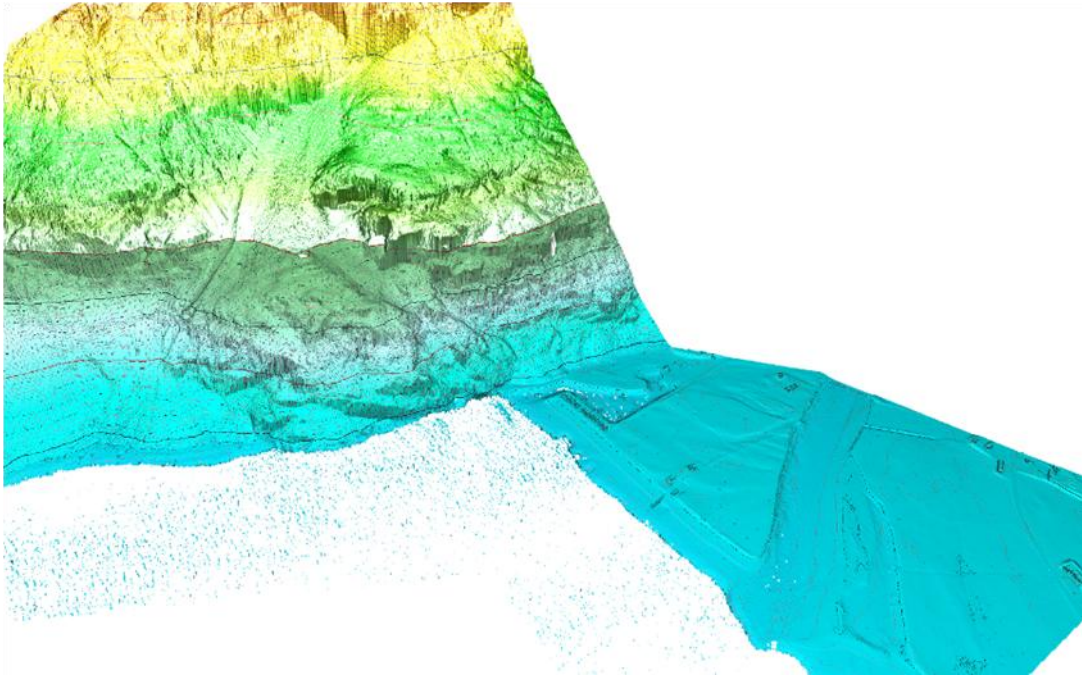


Figure 3: Frafjord, with a river delta and a steep mountain. Depths down to at least 12 meters

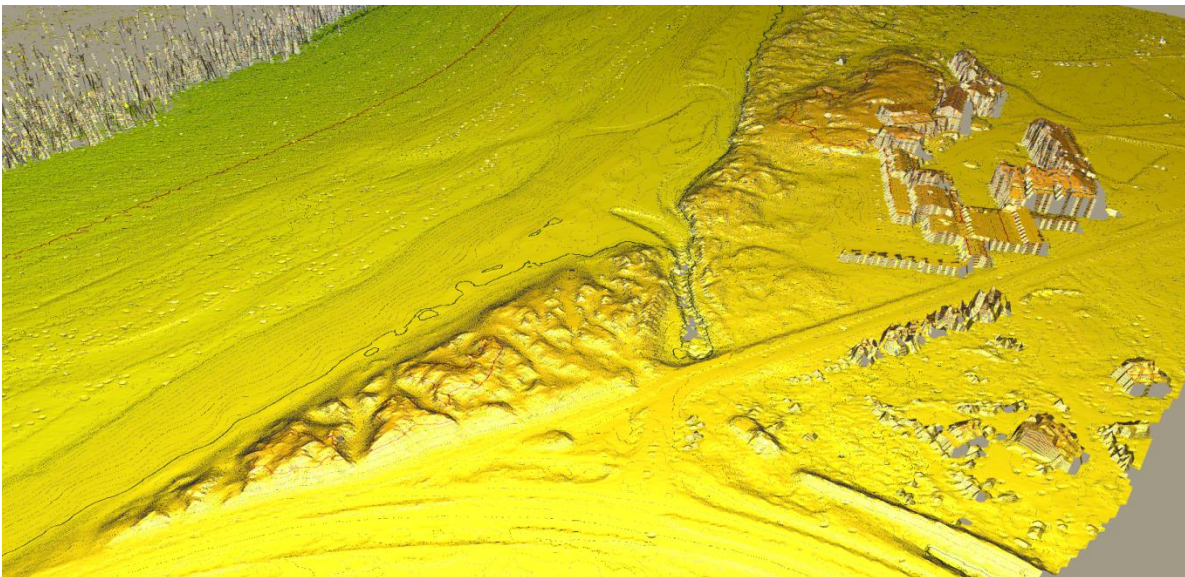


Figure 4: Solastrand, a beach area with some buildings. Good coverage down to 8-9 meters