Mapping coastal areas using airborne green laser

This is a short summery of the project report summing up the experiences with the full scale survey of shallow coastal areas using airborne green laser conducted by the Norwegian Mapping Authority during 2017.

The technology using green laser sensors to survey shallow waters is currently not able to provide a full coverage. The green laser does not give returns if the seabed is dark, and in this survey, the coverage is less than half of the planned seabed area.

In the areas where we acquire data, we get a high point density, returns from greater depths than the required 5 meters below chart datum, and good accuracy when compared to existing data.

There is a lot to benefit from improving the classification for laser data in coastal areas. This was improved a great deal during the project, but can (and will) be developed further based on these experiences.

There is less to gain from improving how the survey was conducted. However, one should look into using a combination of supplementary sensors for coastal mapping. In particular, combining green laser and hyperspectral sensors looks promising.
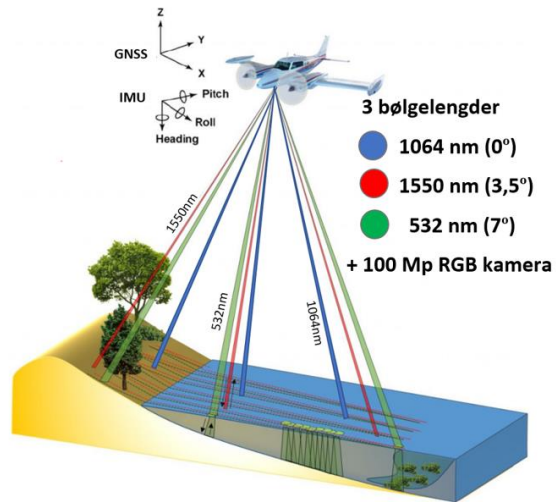
The datasets from this project are available through the web portal høydedata.no. This portal also includes topographic laser data (including all data sets related to the Norwegian Elevation Modell). For the region on Sunnmøre (south of Ålesund) where this project was run, all available high resolution bathymetric data have also been include in the portal. Here one can see that the project has partly managed to cover the gap between the existing topographic and bathymetric datasets, in particular for some of the islands.

Direct link to the green laser data sets:
https://hoydedata.no/LaserInnsyn/?x=15712&y=6932213&level=9&utm=33&projects=876&layers=&raster=8:100&background=wmtsTopo2Graatone
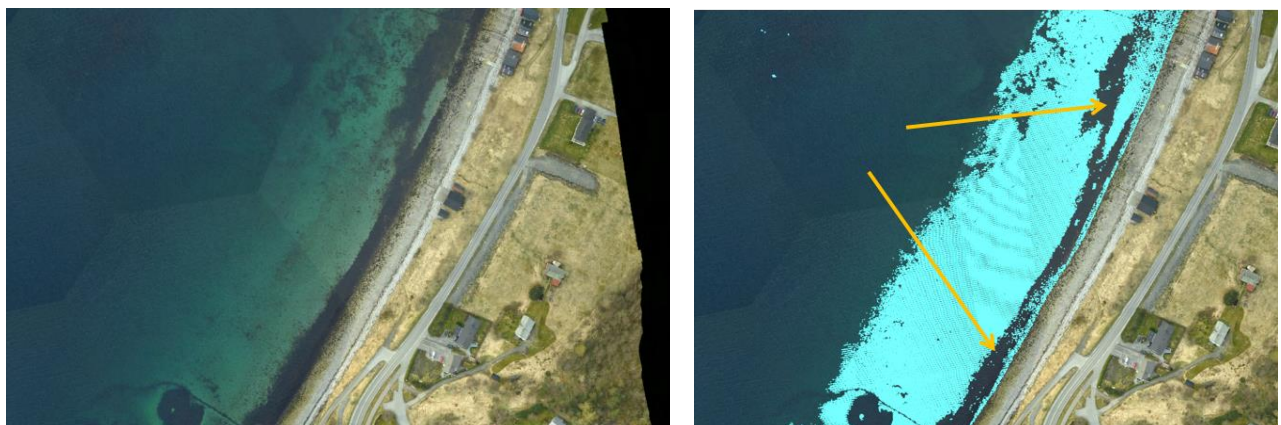
Figur 1: The survey was conducted by TerraTec using the Optech Titan sensor

Figur 2: The survey area south west of Ålesund

Figur 3: Good coverage from bright seabed but no returns from the dark parts