

A High Resolution Accurate Seamless Coastal Model of 650+ km, North of France

Laurent Pronier, Benoit Cajelot and Jean Louis Carme (France)

Key words: Coastal Zone Management; Hydrography; Laser scanning; Reference systems; Risk management; Airborne Lidar Bathymetry (ALB)

SUMMARY

Fugro, a key player in coastal monitoring geo-solutions enabling resilient coastal communities, infrastructure, and natural capital, is currently undertaking the ALB (Airborne LiDAR Bathymetry) survey of the northern French coastline from the famous Mont-Saint-Michel to the Belgium border. The challenging environmental conditions available within this project area which includes high tidal range (>10m), strong tidal streams, highly variable weather conditions combined with a mostly sedimentary type of seabed is making this area particularly complex to survey with ALB technology.

In this paper, we show case how ALB solution eco-system which includes the Fugro satellite analytic tools for pre-planning, the Fugro RAMMS (Rapid Airborne Multibeam Mapping System) for data acquisition and data processing leveraging from machine learning algorithm, as well as the Fugro Virgeo WebGIS platform for client engagement and delivery, is enabling the production of an accurate, high resolution coastal morphological model of this area. This model, combined hydro-dynamic information, enables hazard identification in terms of submersion and flooding for example, streamline the production of adaptation response strategy and participate to the evaluation of the adaptation strategy outcome. Finally, to solve the uncertainty of the geoid model at sea, we show how it is possible to rely on airborne LiDAR data and a combination of tide gauge data, GNSS data and a hydrodynamic model to estimate dynamic sea topography and finally validate the application of the geoid model nearshore ensuring the most accurate connection between the sea level and the land.

A High Resolution Accurate Seamless Coastal Model of 650+ km, North of France (12631)
Laurent Pronier, Benoit Cajelot and Jean Louis Carme (France)

FIG Working Week 2024

Your World, Our World: Resilient Environment and Sustainable Resource Management for all
Accra, Ghana, 19–24 May 2024