South West Pacific Hydrographic Commission

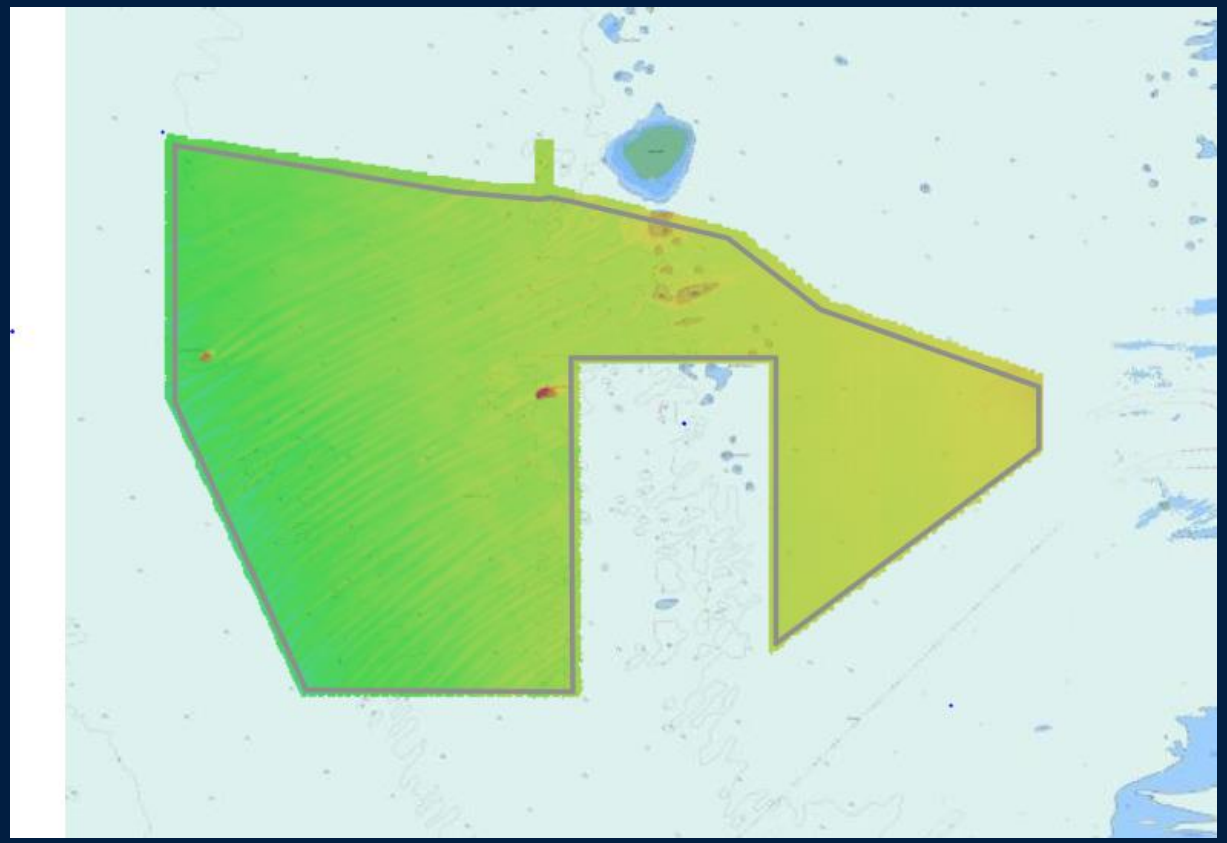
NADI 2024

Paul Seaton – Director Hydrography and Coastal Resilience

Hydroscheme Industry Partnership Program - 2023

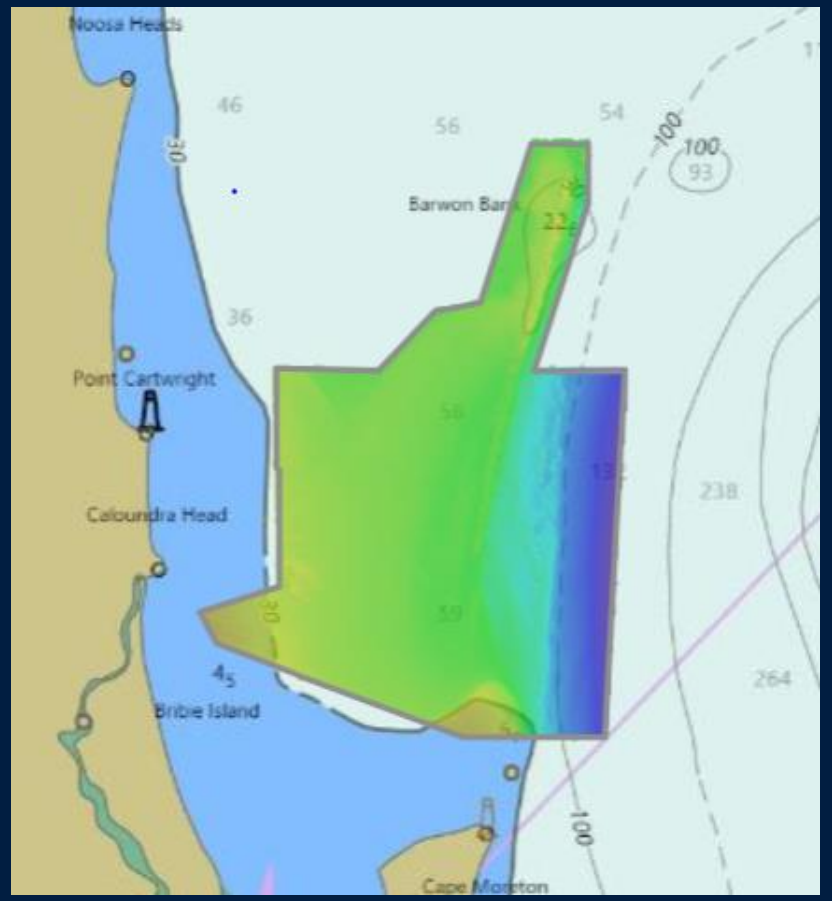
SI 1017 Varzin Passage to Merkara Shoal

468 NM² Airborne Lidar Bathymetry



SI 1021 Approaches to Moreton Bay

380 NM² MBES



AMC Search & Fugro CatA Programme MoU

Australian Maritime College and Fugro are working towards an CatA Program.

Expected to launch in Q1 2025 and open to people already in the industry or those wanting to commence a career in Hydrographic Survey.

To express interest in the program, please email

amcs.courses@utas.edu.au.

UN Ocean Decade of Ocean Science

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

THE NIPPON FOUNDATION-GEBCO SEABED 2030

14 LIFE BELOW WATER

DITTO
Digital Twins of the Ocean

The connection between SDGs & Fugro's goals:

To support…

Communities

Understand the impact of fast and slow onset hazards

Infrastructure

Ensure safe and resilient coastal infrastructure

Nature

Enhance the management and monetisation of natural capital

… to plan, monitor and act for coastal hazard preparedness

Land and marine spatial Geo-data acquisition

Satellite remote sensing technologies

Bathymetry, topography

Marine surveys

Hydrographic/oceanographic properties

Airborne LiDAR surveys

Bathymetry, topography, 3D buildings and assets

Sea'ties Regional Workshop July 2023

30 YEARS SPREP PROE

pacific climate change centre

OCEAN & CLIMATE PLATFORM

SEA'TIES
SHARING SOLUTIONS WITH COASTAL CITIES TO TACKLE SEA LEVEL RISE

BOX 1

Fugro: Developing digital tools to support climate adaptation planning in the Pacific

Fugro is a world-leading Geo-data company with a vision to co-design digital solutions for coastal communities and decision-makers globally, empowering them to improve coastal adaptation management via data-driven insights. LiDAR (Light Detection and Ranging) is commonly used to measure both topographically and bathymetrically across the coastal interface. Creating a high-resolution (cm-scale), full-coverage, three-dimensional representation of coastal infrastructure, vegetation, ground elevation and water depths, as well as vitally supporting higher fidelity hydrodynamic coastal modelling. Authorities can use such information for different applications, such as urban planning and risk assessment from climate-induced hazards, including sea level rise and floods to a much higher degree of accuracy, reducing uncertainty and improving the quality of decision making. The 3D visualisation of the LiDAR data enables easy communication of the risks to ensure political and coastal community engagement and awareness. One success story in the Pacific region is the use of Fugro's LiDAR data in Tuvalu's Coastal Adaptation Plan (TCAP). With this data set, numerous products were derived by The Pacific Community (SPC). These products include: a Digital Elevation Model (bathymetry and topography), inundation models for different climate projections, shoreline change over time and risks on different assets. These valuable products pushed the boundaries regarding precision, beyond what can be done with open-access data, or observations at specific points in space. Such a solution can be rolled out across the Pacific with the acquisition of LiDAR and other remote sensing datasets.

TUGRO

Exploring your challenges together

Voyage is a toolkit of workshops and rapid prototyping methods that can be applied to explore potential future scenarios and enable discovery of digital solutions to meet your needs

Voyage co-creation process

Understand your Geo-data challenges

Map your needs through discovery workshop

Explore solution possibilities with our experts

Rapidly test ideas through VirGeo® Lab

Deliver tailored solution to meet your needs

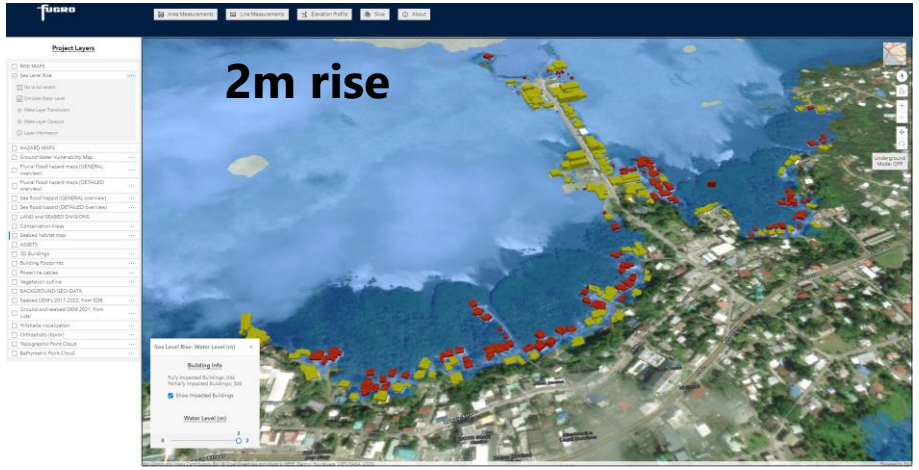
1.5 hours to 1 day workshop

1 week to 2 months prototyping

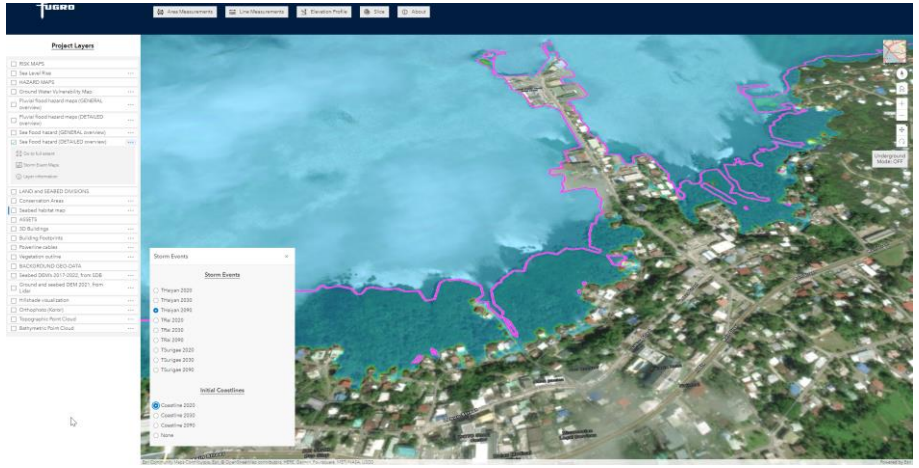
1 month to 12 months development

Component 2: MODEL

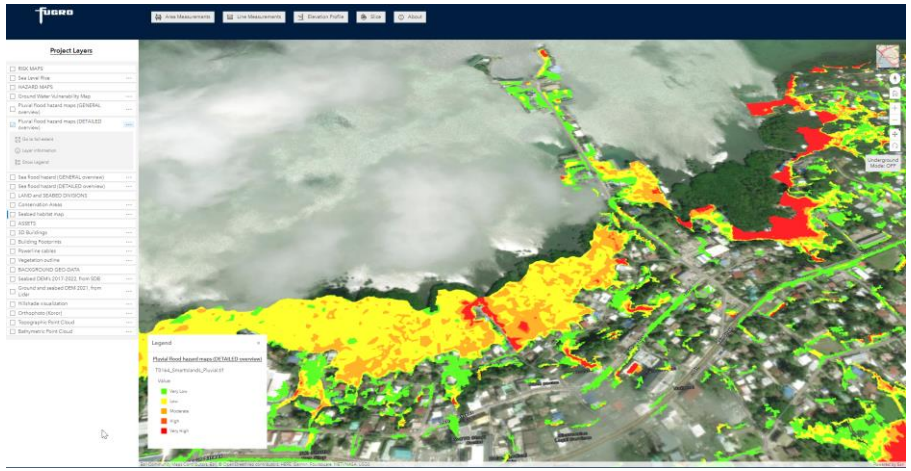
Coastal hazard impact and scenario analytics



Sea level rise simulator
Showing the number of buildings fully or partially inundated



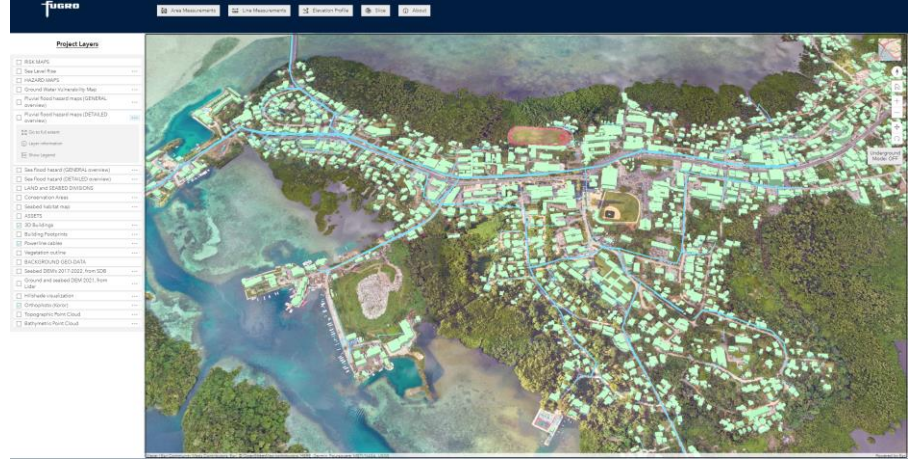
Current and future scenario coastal floods
Combining actual event flood extent (from Fugro's hydrodynamic models) + sea level rise



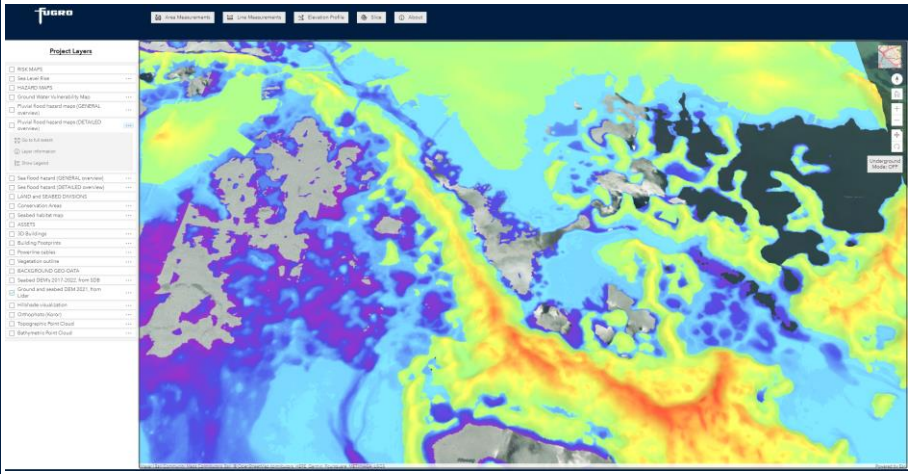
Pluvial floods
For a 1 in 100-year event (from Fugro's models)

Component 1: MAP

3D spatial mapping & land use assessment



Digital Surface Model
High-resolution (cm- to m-scale) of 3D assets, both natural and built

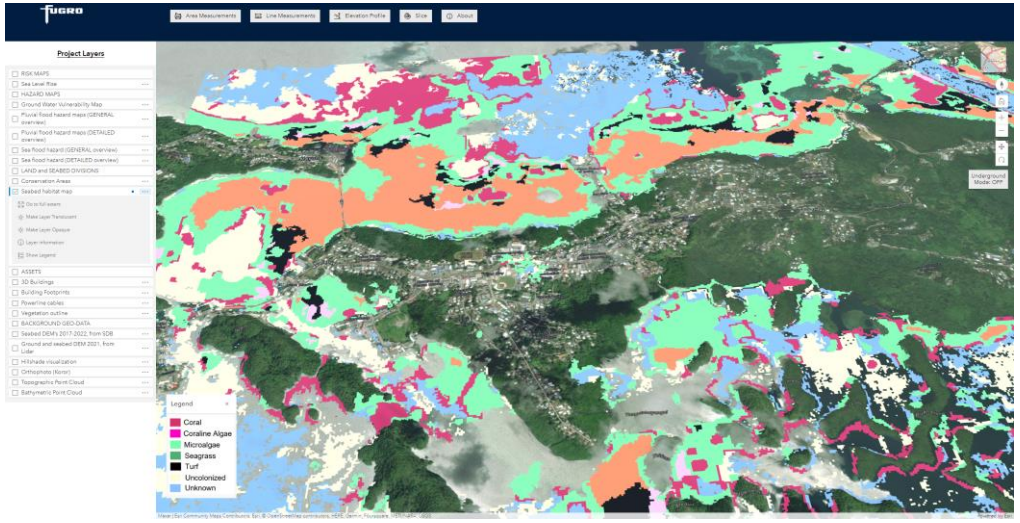


Digital Elevation Model
Bare-earth and marine surface elevation (without assets)

Sense.Lidar asset classification
Vegetation, buildings, ground, cable lines etc.

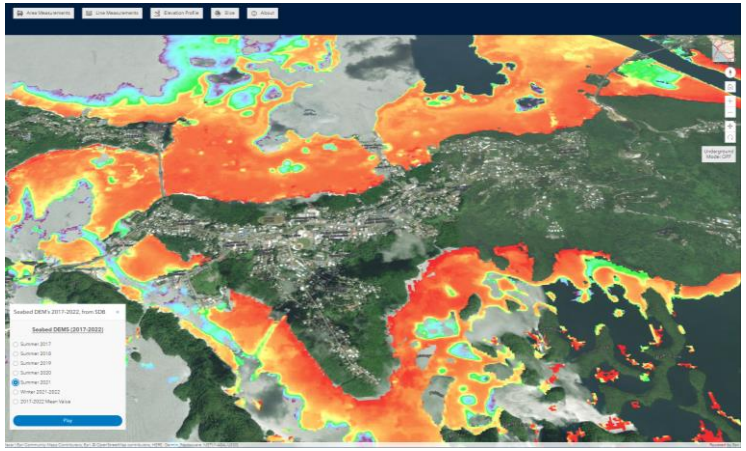
Component 3: MONITOR

Change detection and adaptation monitoring

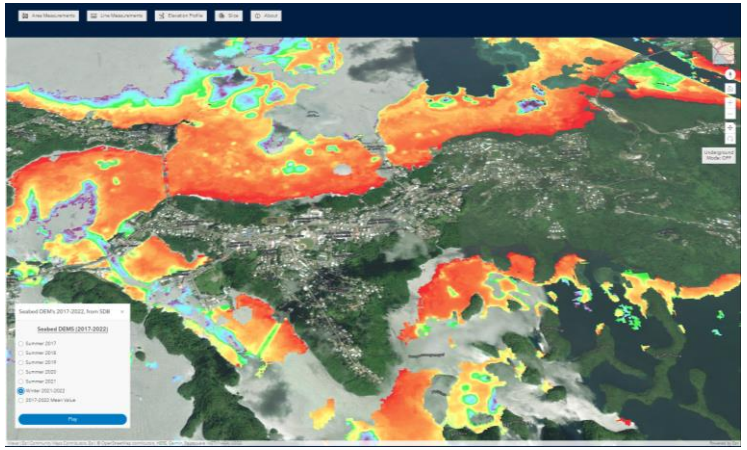


Seabed habitat classification
From Sentinel-2 satellite subsurface reflectance data & Fugro SatAnalytics

Summer 2021



Winter 2021



Satellite-derived Digital Elevation Model
Time-series from 2017 - 2022

SmartCoast: Coastal Management Digital Twin

SmartCoastt: a research-industry collaboration between James Cook University, EOMAP and Fugro, to co-design a coastal management digital twin to supports mangrove management for small island communities in Torres Strait islands utilising EO-lidar data fusion.

RAMMS 2.0

Rapid Airborne Multibeam Mapping System

Enhanced 60 Hz / Machine Learning

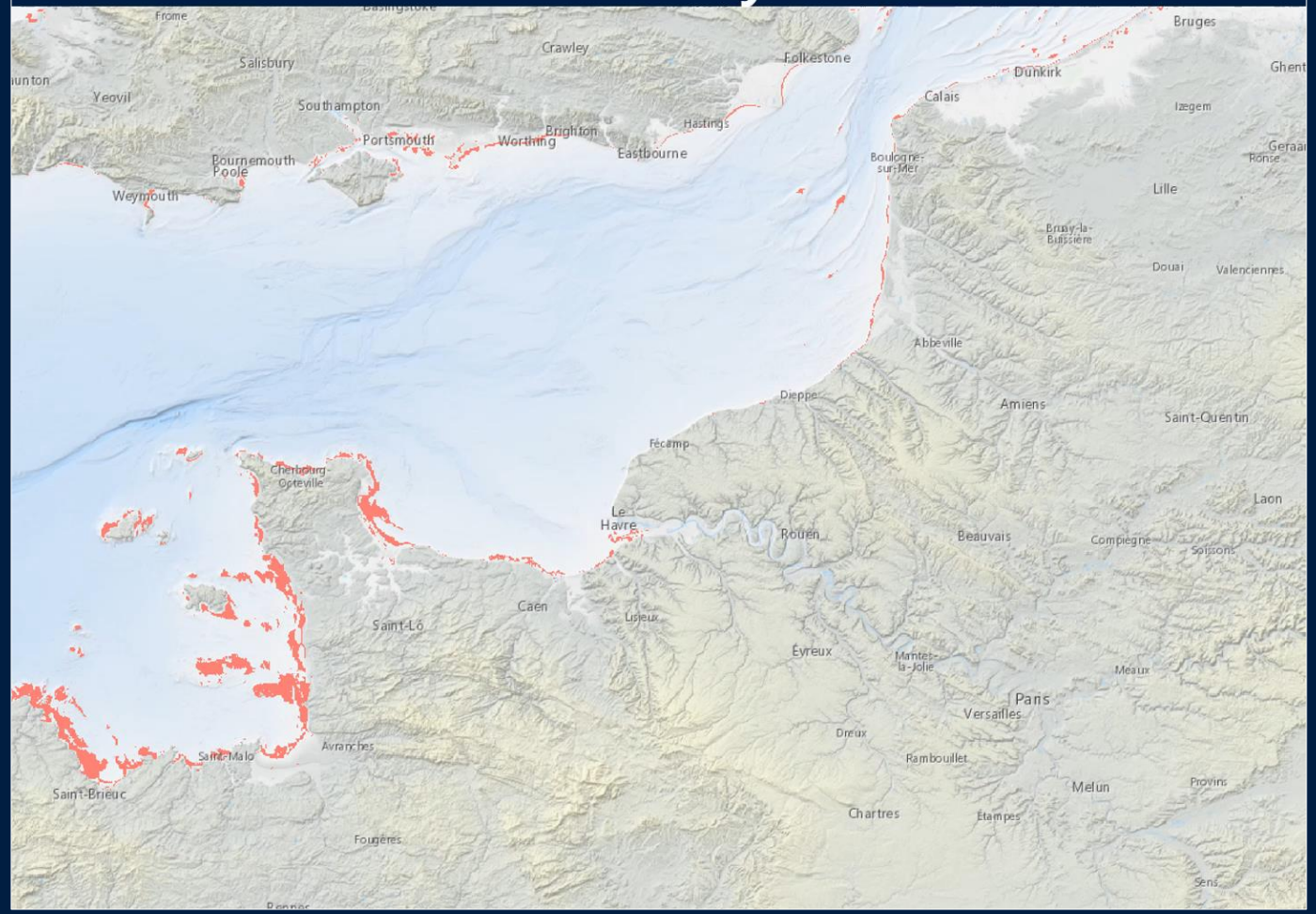
Compatible with uncrewed solutions

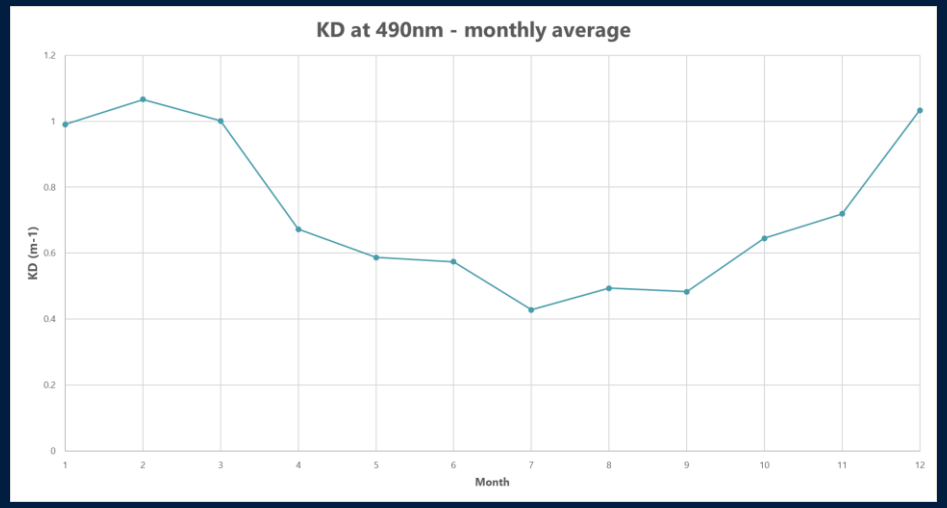
Dual lasers

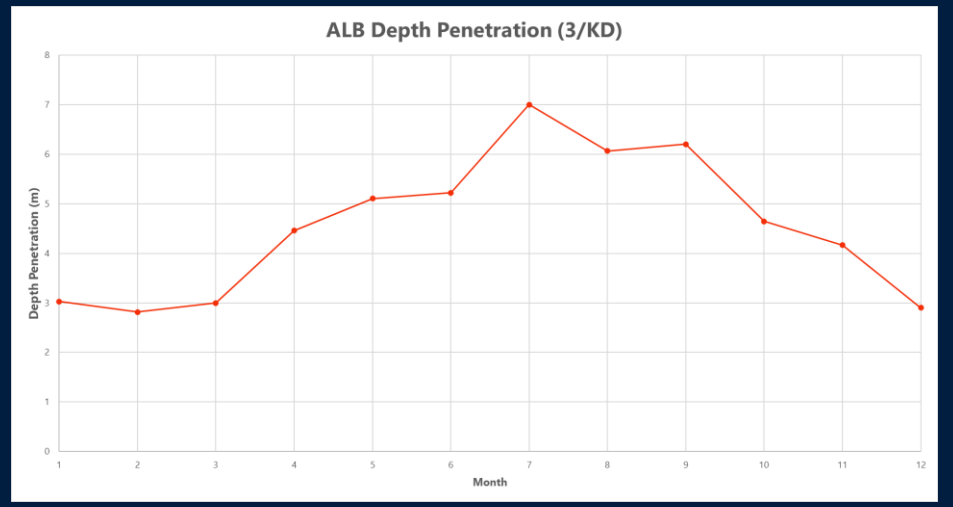
Full water column

Pre-engagement leveraging from the SatAnalytic tool

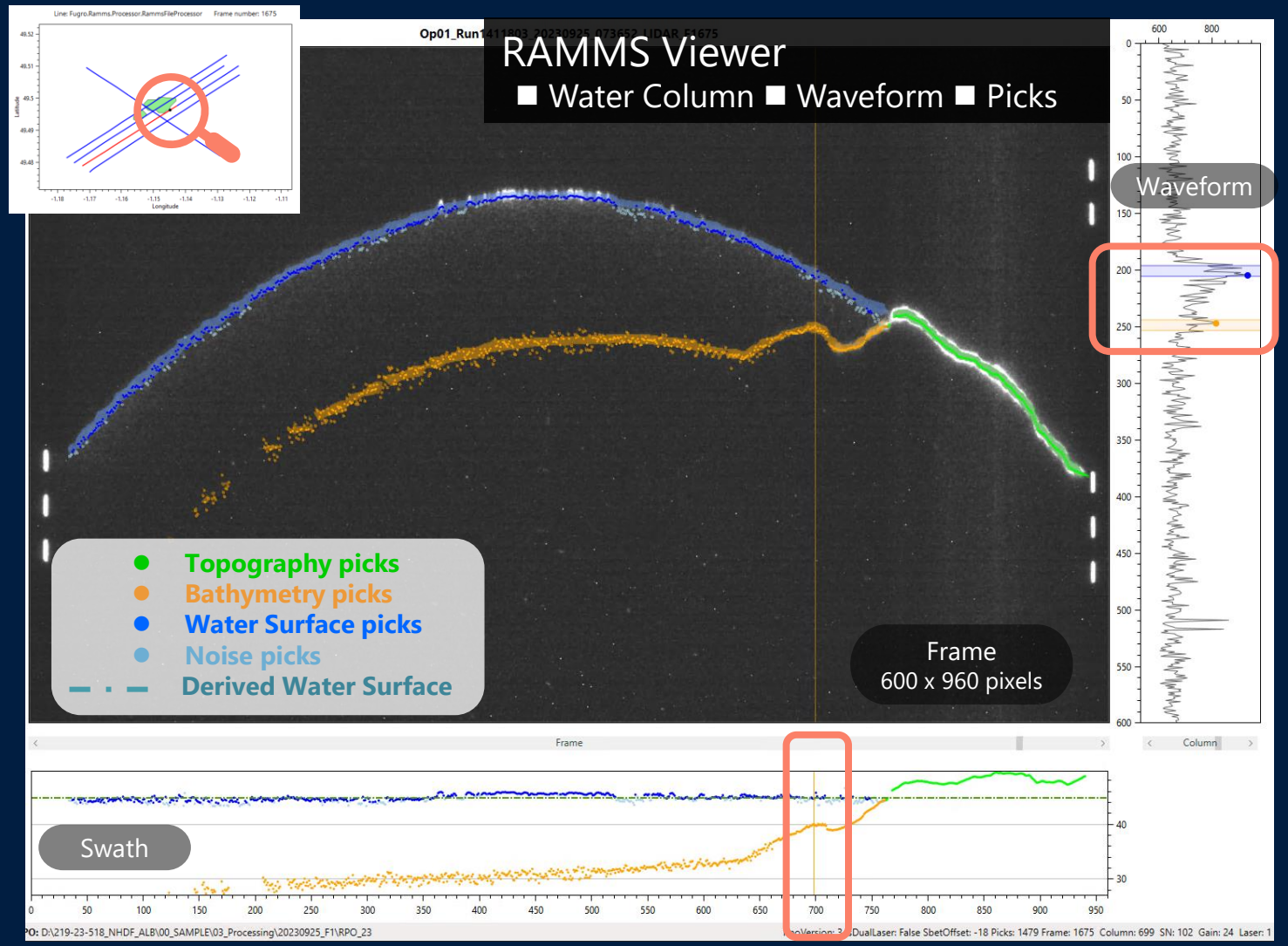
January

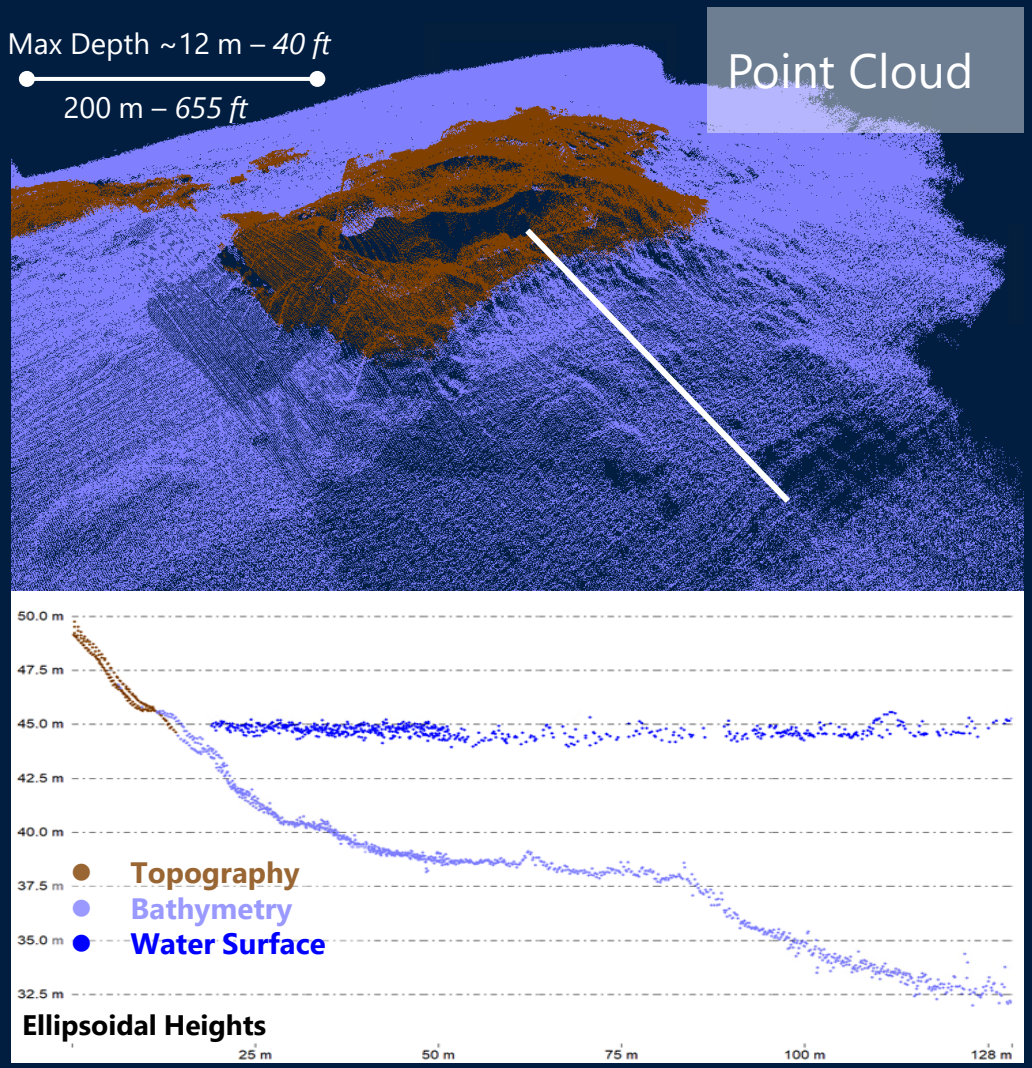




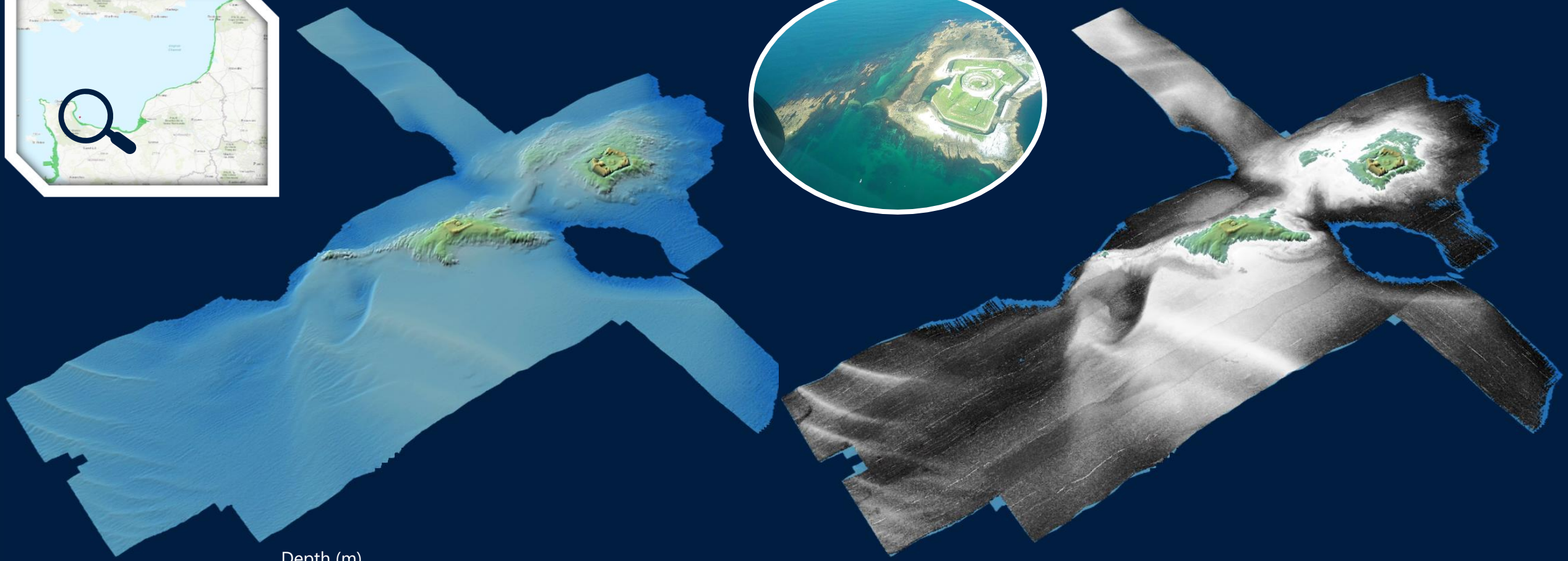


Machine Learning Data Classification





Implementation: Preliminary Results (Seamless topo-bathy)



Réseau d'observation du Littoral
Normandie - Hauts-de-France

FUGRO

FUGRO

Unlocking **Insights**
from **Geo-data**