



Providing a baseline for future change along Australia's coastline

Spatial Information Day / Adelaide – 25th October 2019

Providing a Baseline for Future Change Along Australia's Coastline

01

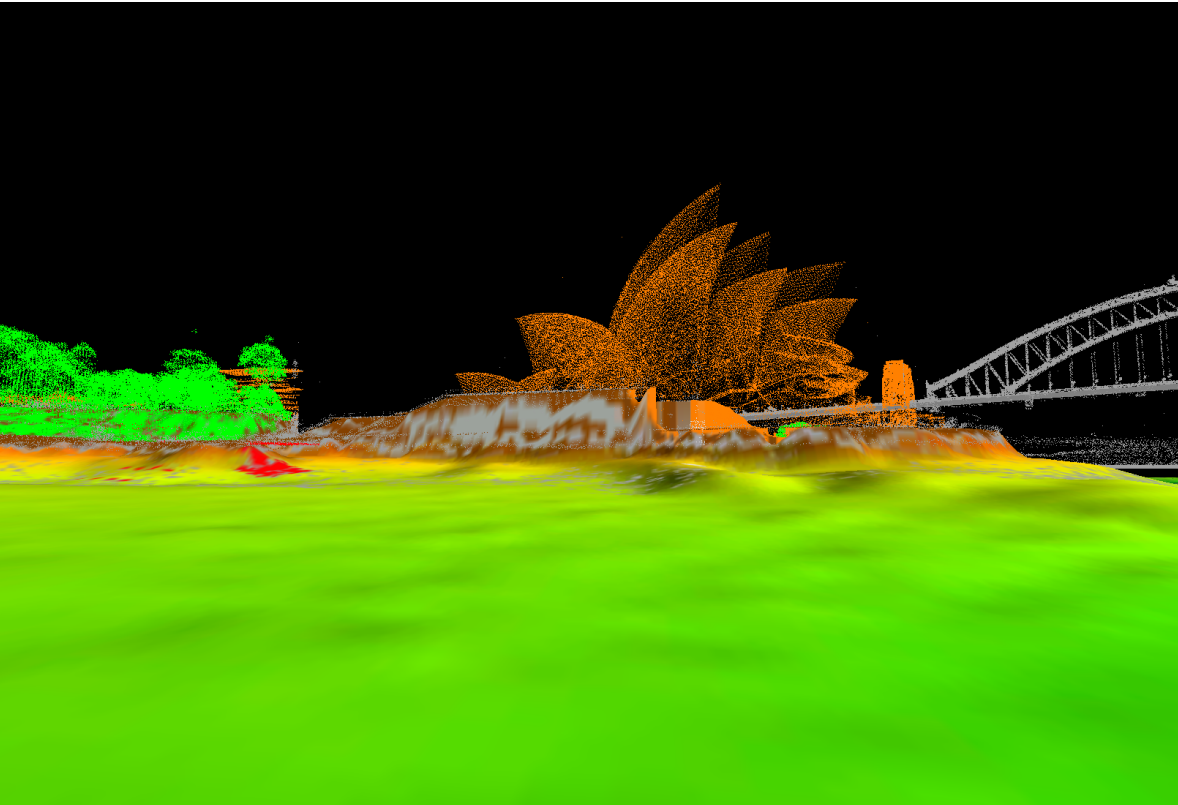
Sample #1: ALB
Survey of the Entire
Coast of NSW

02

Sample #2: Gold Coast –
ALB Baseline and SDB
Monthly Monitoring

03

Summary / Comparison
of each Technical
Solution



1. Sample #1: ALB Survey of the Entire Coast of NSW

Survey Example – NSW Coastline ALB Survey

Client:

NSW Government Office of Environment and Heritage (OEH)

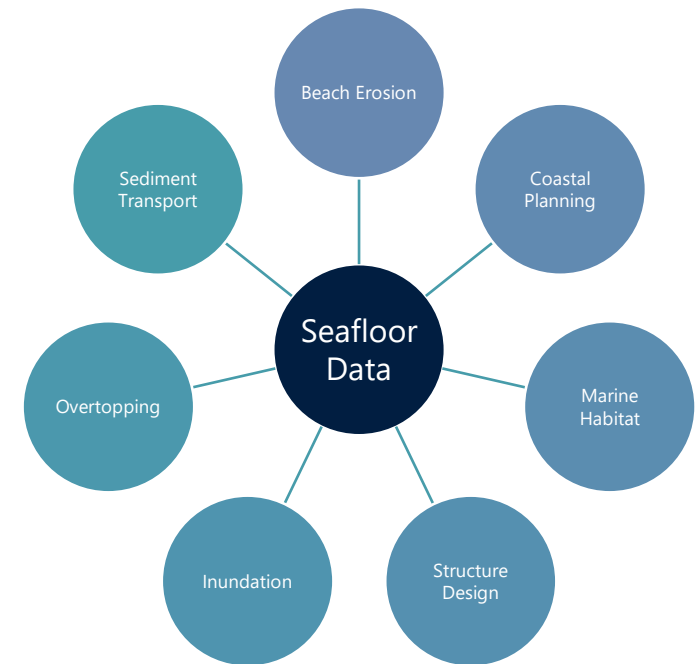


Interest from a wide range of other entities (FrontierSI, universities, local councils...)

Objective:

Acquiring a state wide, continuous, high resolution and accurate reference dataset over the entire length of the NSW coastal zone (~1,200 linear km), covering:

- Terrestrial areas within 200m of the MHW
- Seaward to extinction depth of the LiDAR beam



Survey Example – NSW Coastline ALB Survey

Coastal Management
2016 Storm Damage –
(Courtesy of UNSW)



Survey Example – NSW Coastline ALB Survey



Fugro's LADS HD ALB
Sensor

PhaseOne iXU-RS 100MP
Camera

RIEGL VQ-820-G ALB
Sensor

Cessna 441 tail number
VH-VEH



Brisbane

Sydney

Canberra

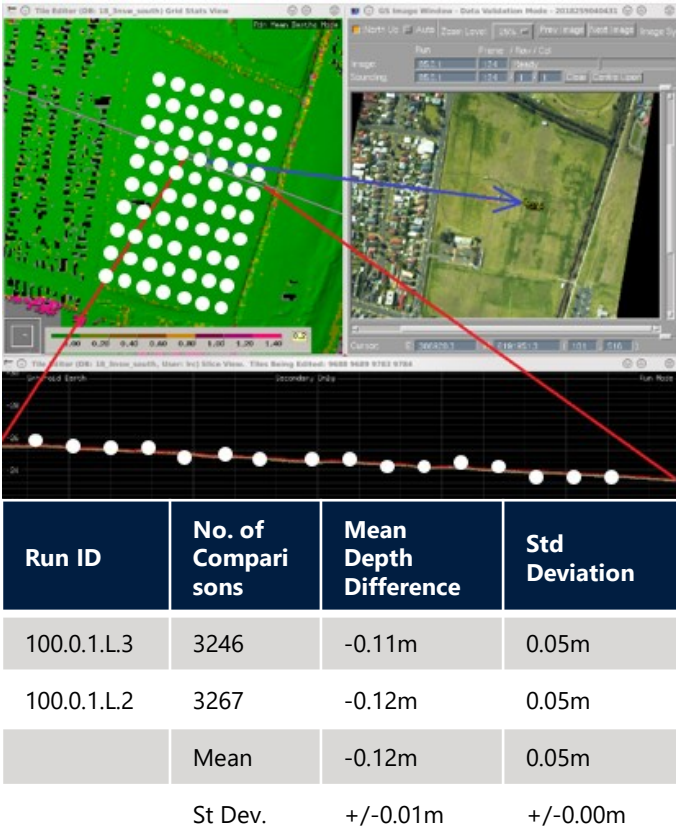
Melbourne

© 2018 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus

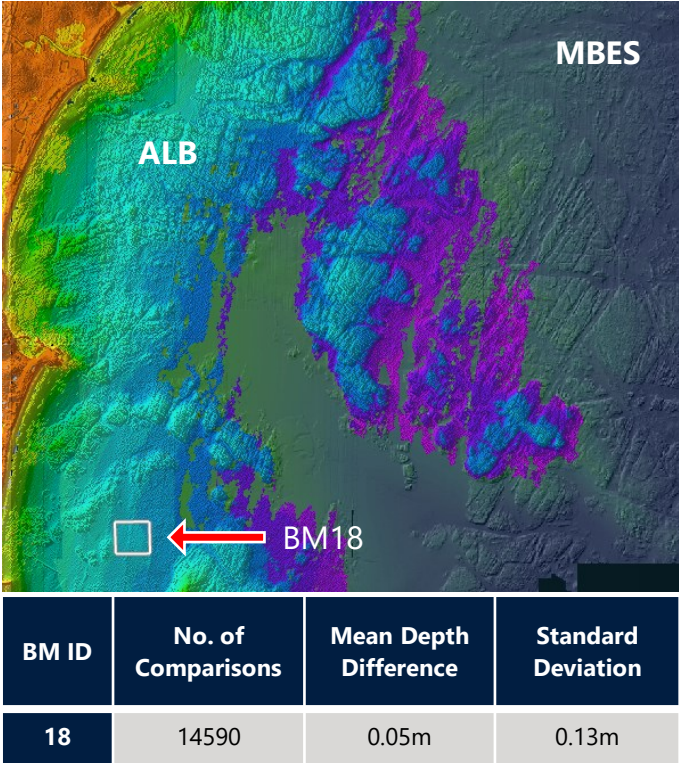
Google Earth

Survey Example – NSW Coastline ALB Survey

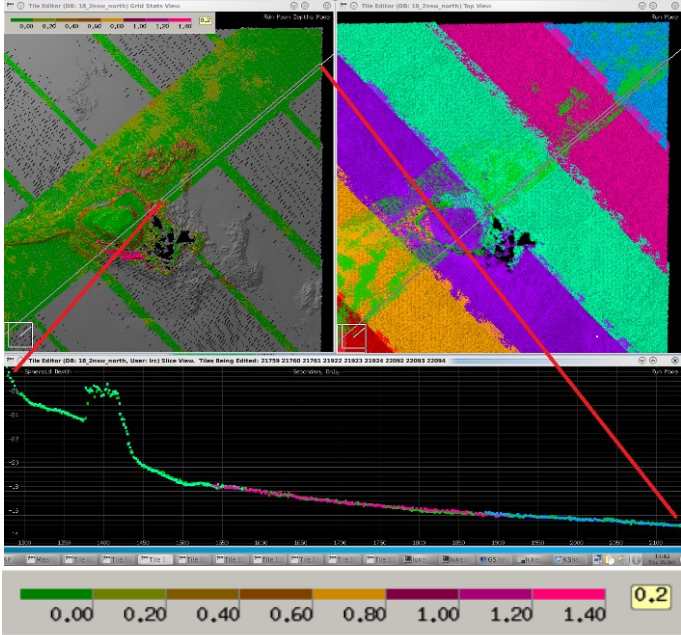
Dry Benchmarks
(absolute accuracy check)



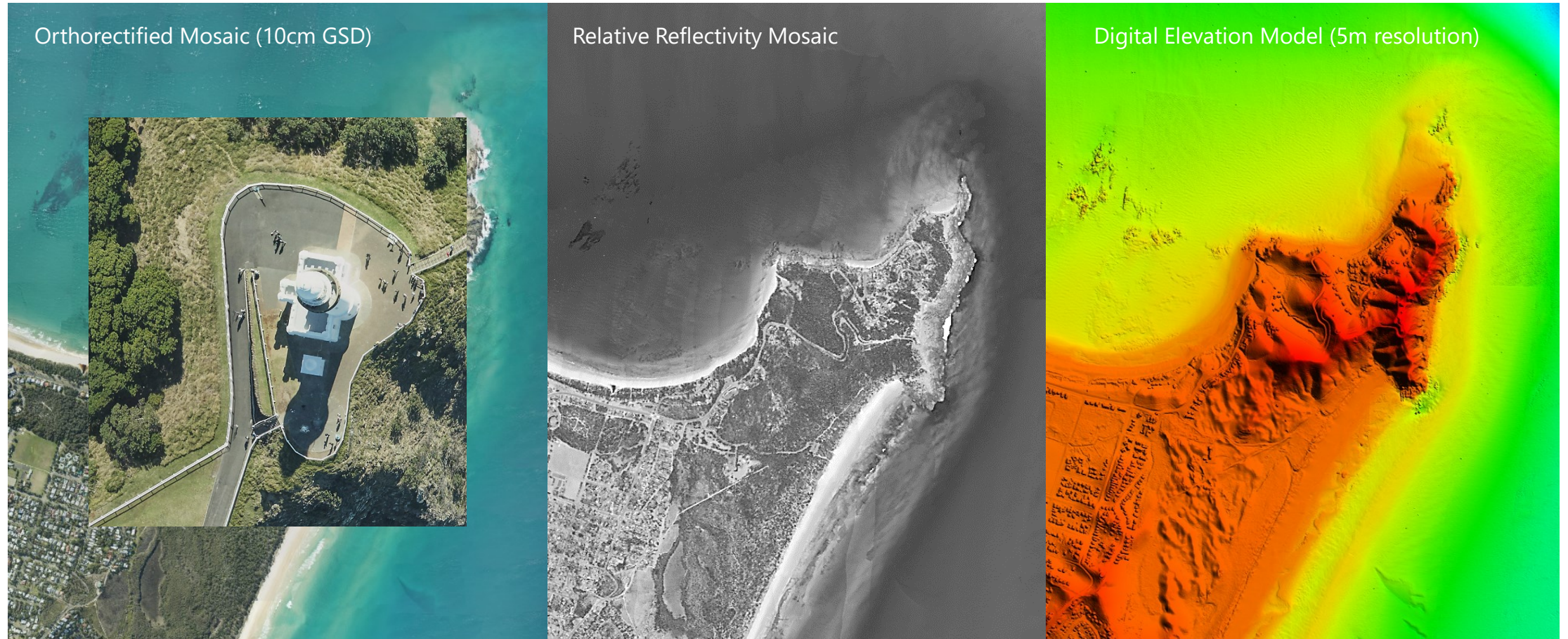
Wet Benchmarks
(absolute accuracy check)



Internal Overlap
(relative accuracy check)



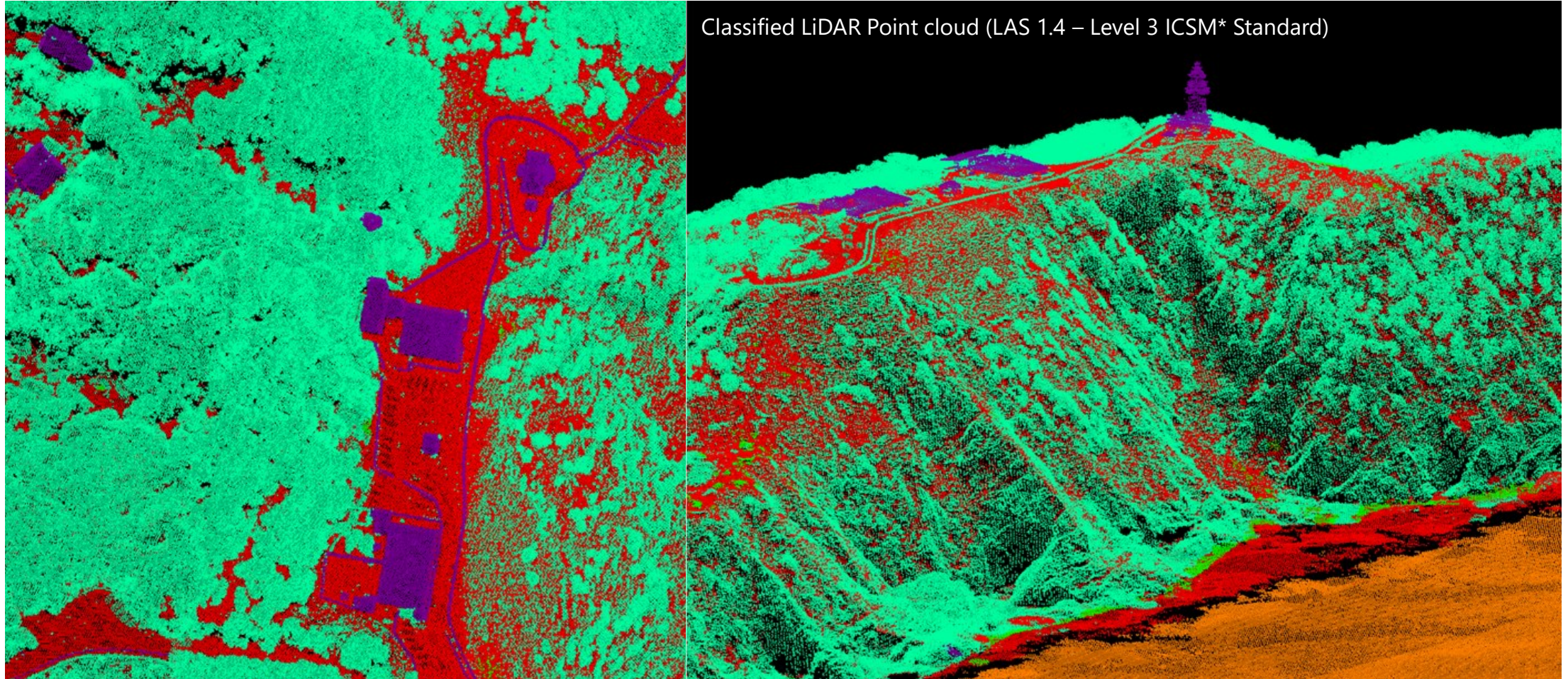
Survey Example – NSW Coastline ALB Survey

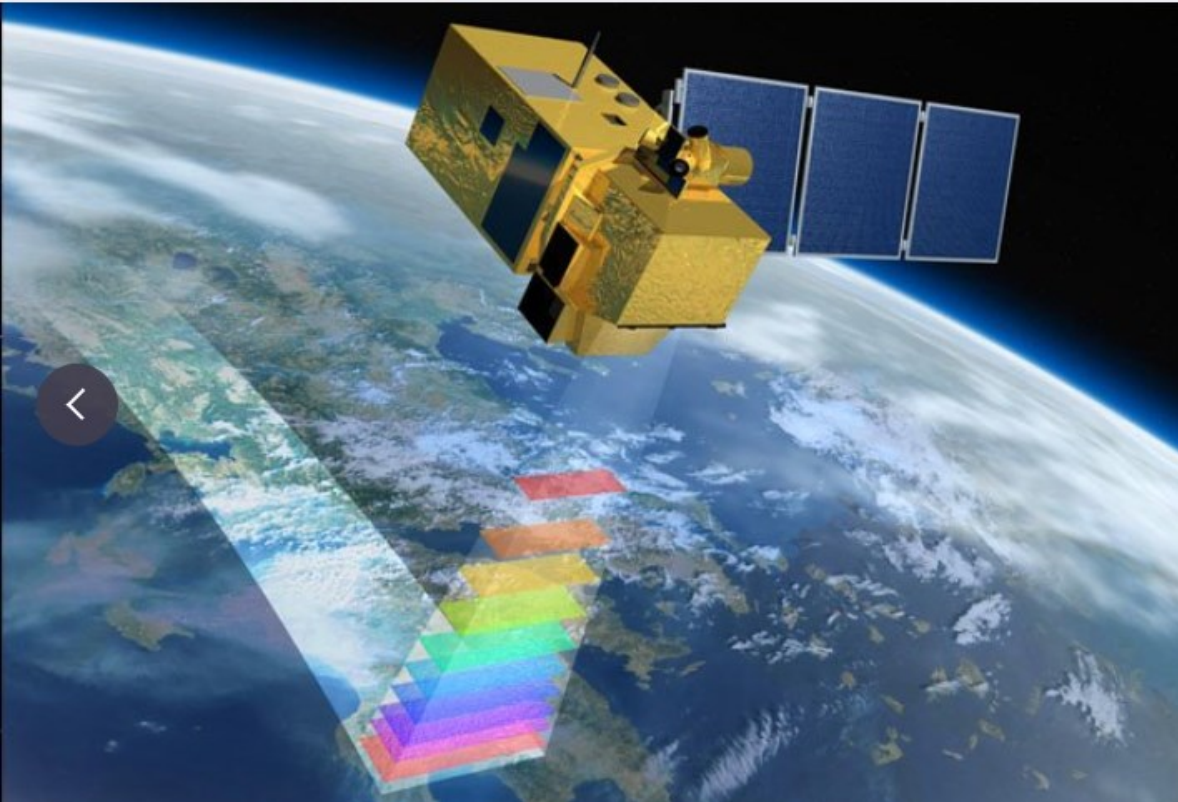


Survey Example – NSW Coastline ALB Survey



Survey Example – NSW Coastline ALB Survey





2. Sample #2: City of Gold Coast – ALB and SDB Monthly Monitoring

Survey Example – Gold Coast

Client:

- Council of the City of Gold Coast

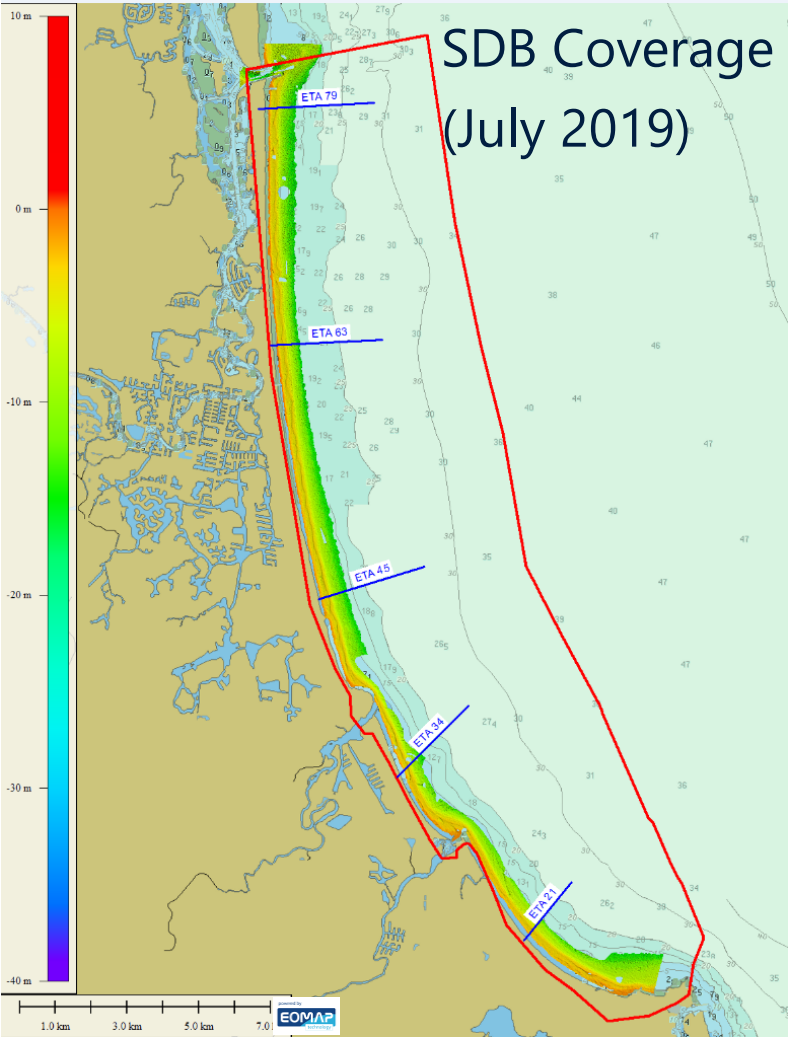
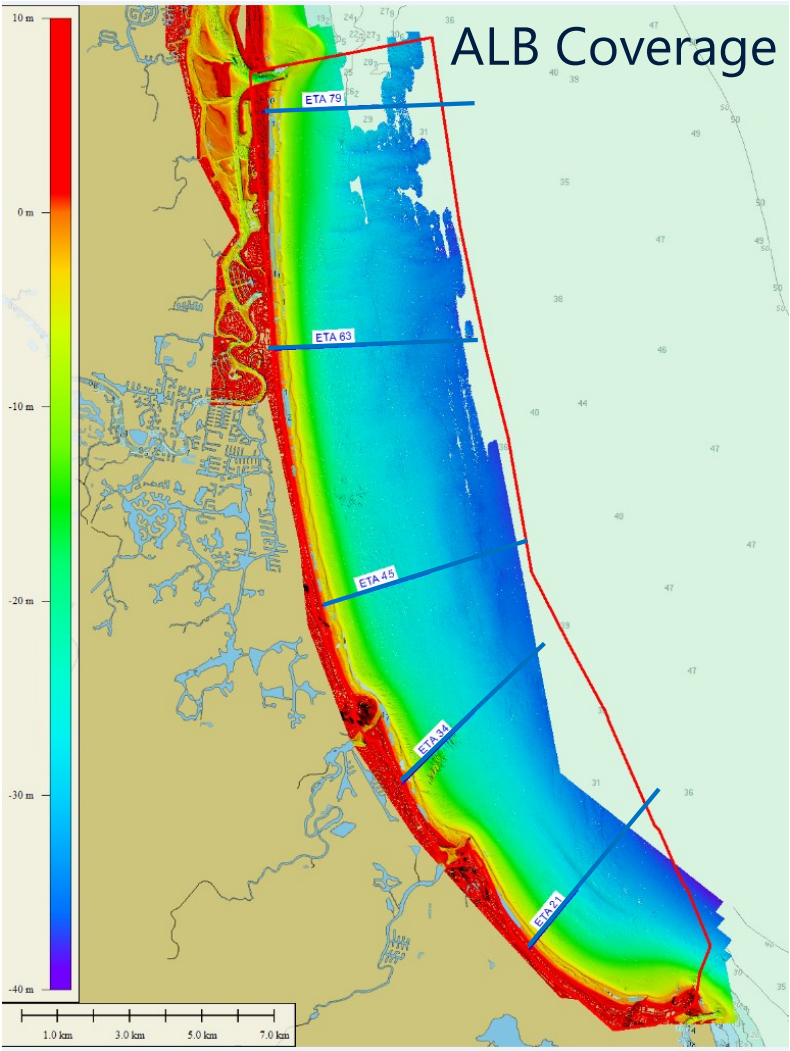
Objective:

- Monitor coastal dynamics over 12 months
- July 2019 to June 2020

Services Provided:

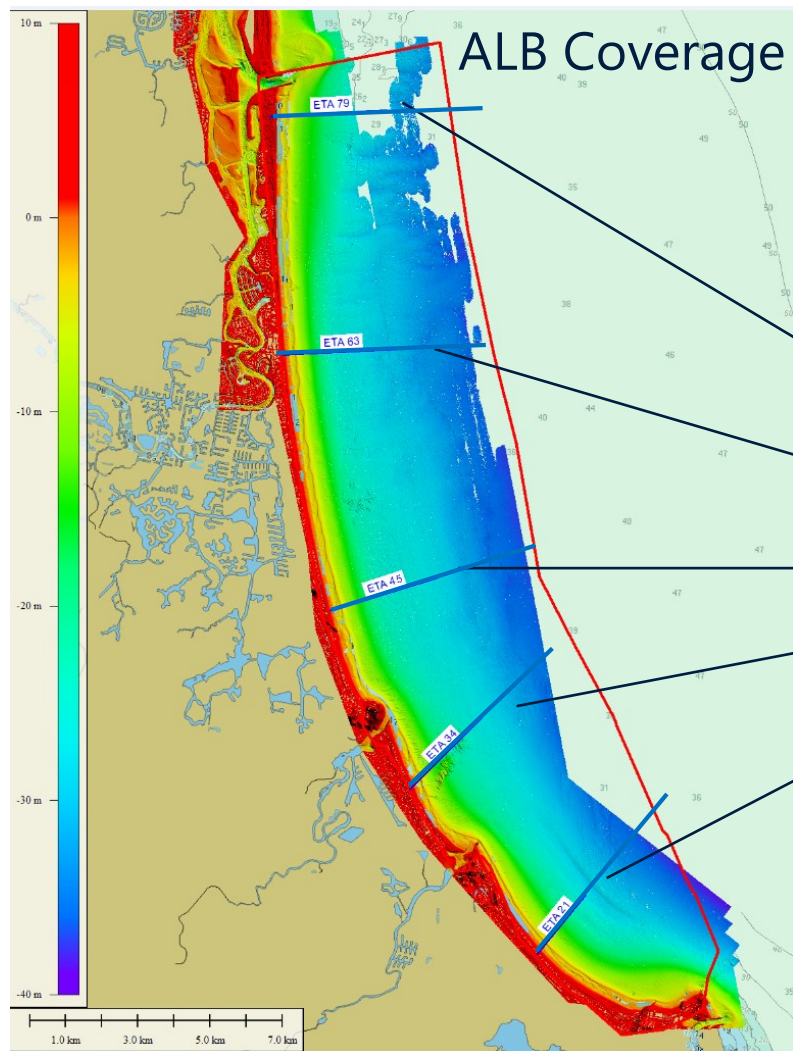
- Benchmark ALB survey
 - 11th to 13th July 2019
 - 3x flights
- Monthly SDB monitoring
 - SENTINEL-2 Imagery
 - 10m resolution derived using eolytics from EOMAP
 - Supported by regular SBES surveys (GCCC)

Survey Example – Gold Coast / Achieved Coverage

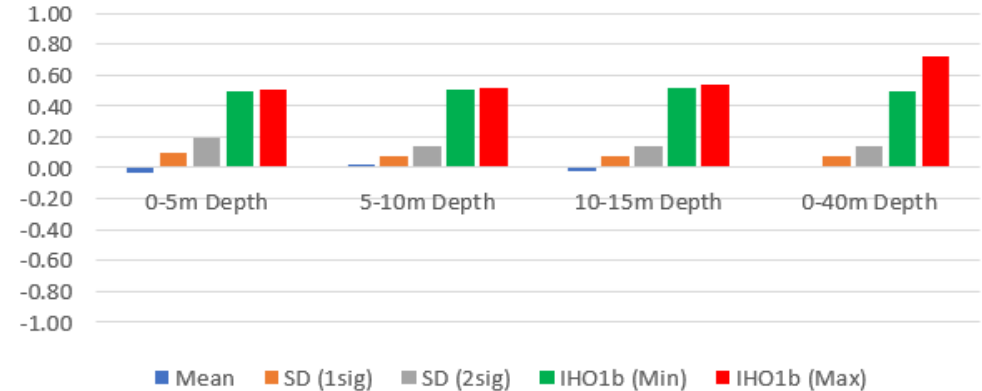


	ALB	SDB
Resolution	3x3m	10x10m
Max Depth	~35-40m	~7-12m

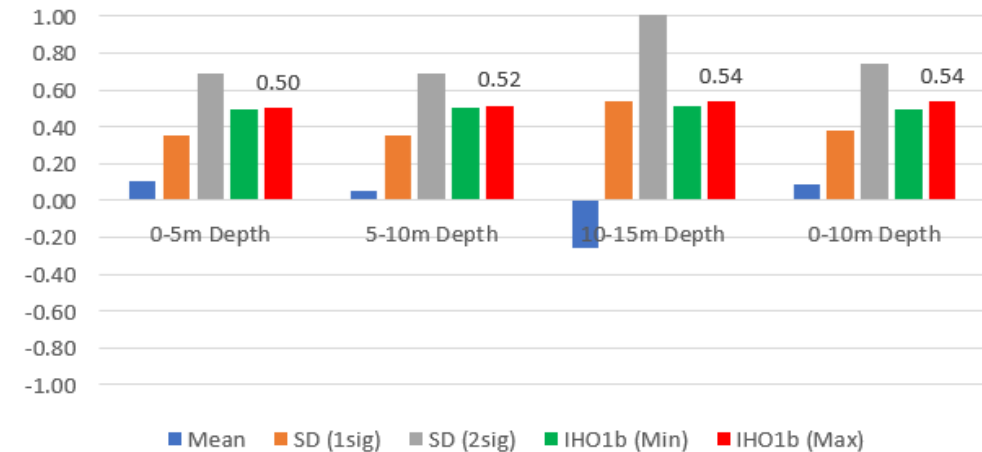
Survey Example – Gold Coast / Achieved Accuracy

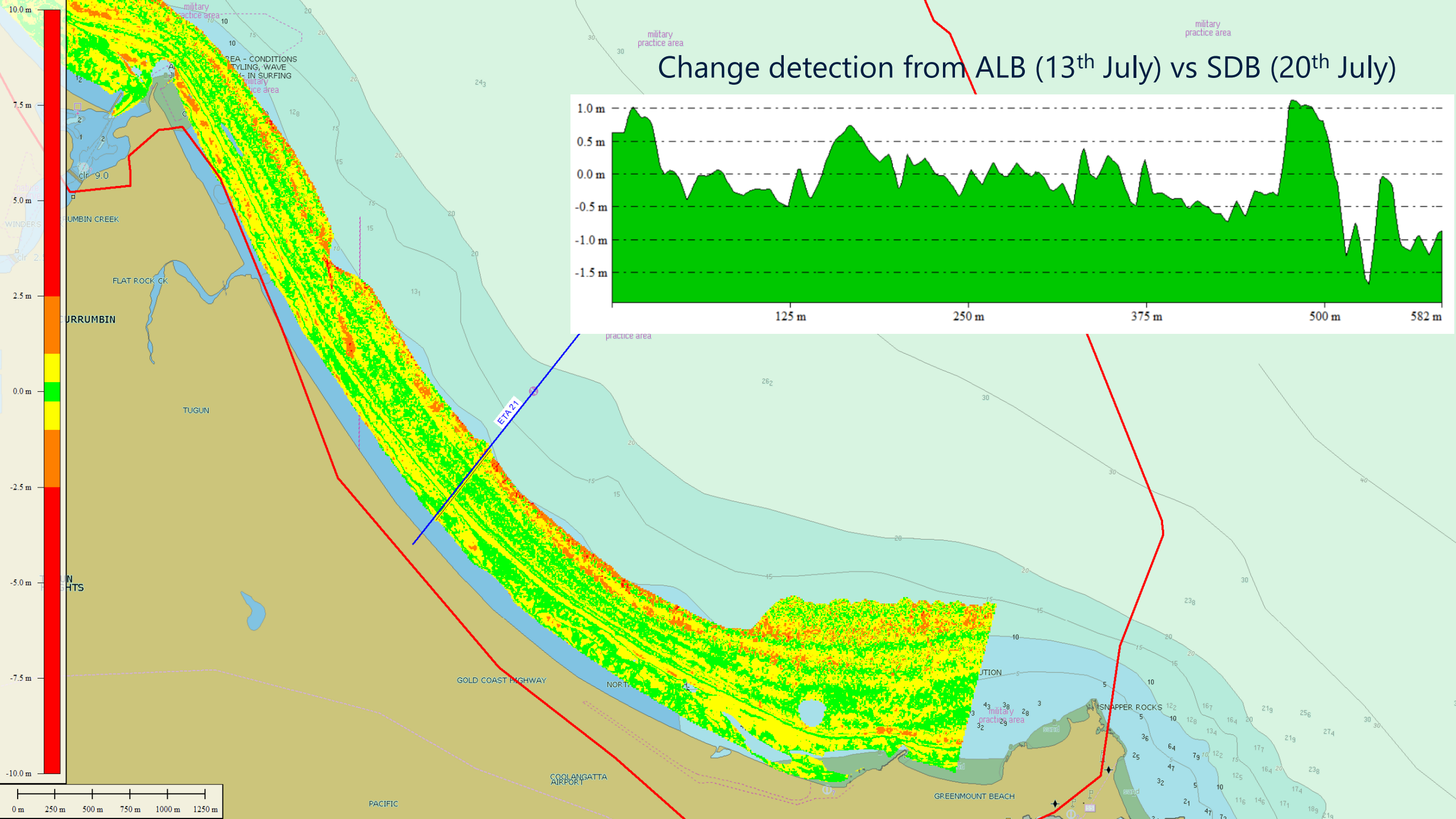


08 July SBES vs 07 July ALB

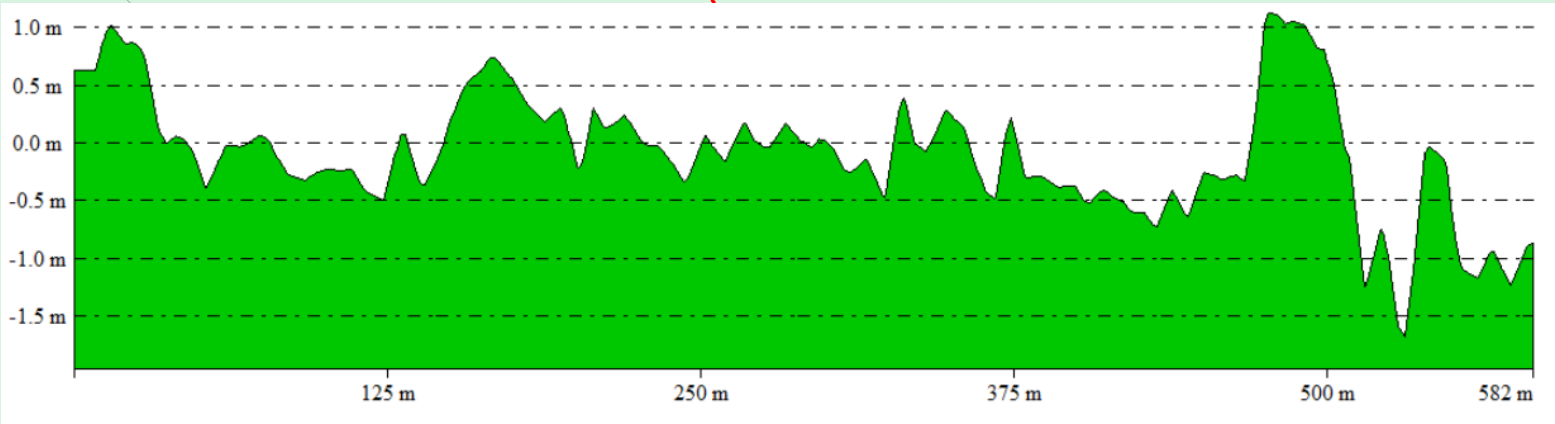


23 July SBES vs 20 July SDB

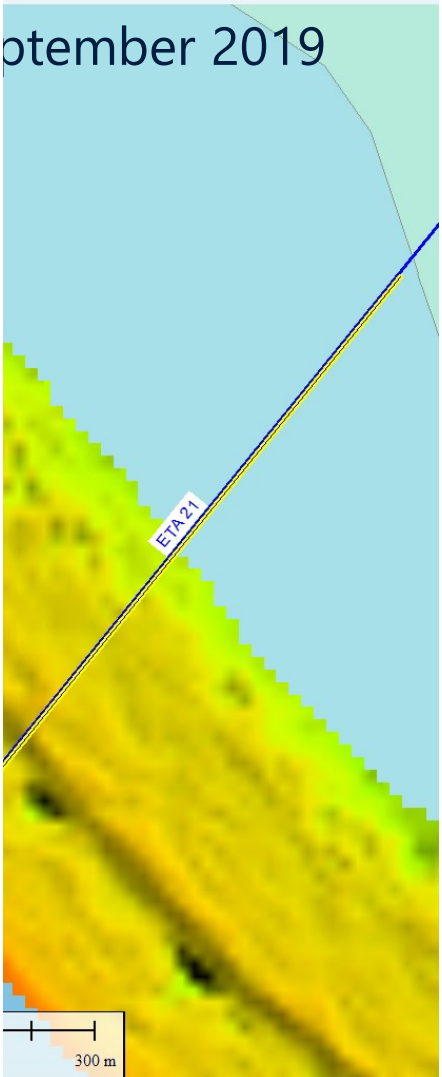
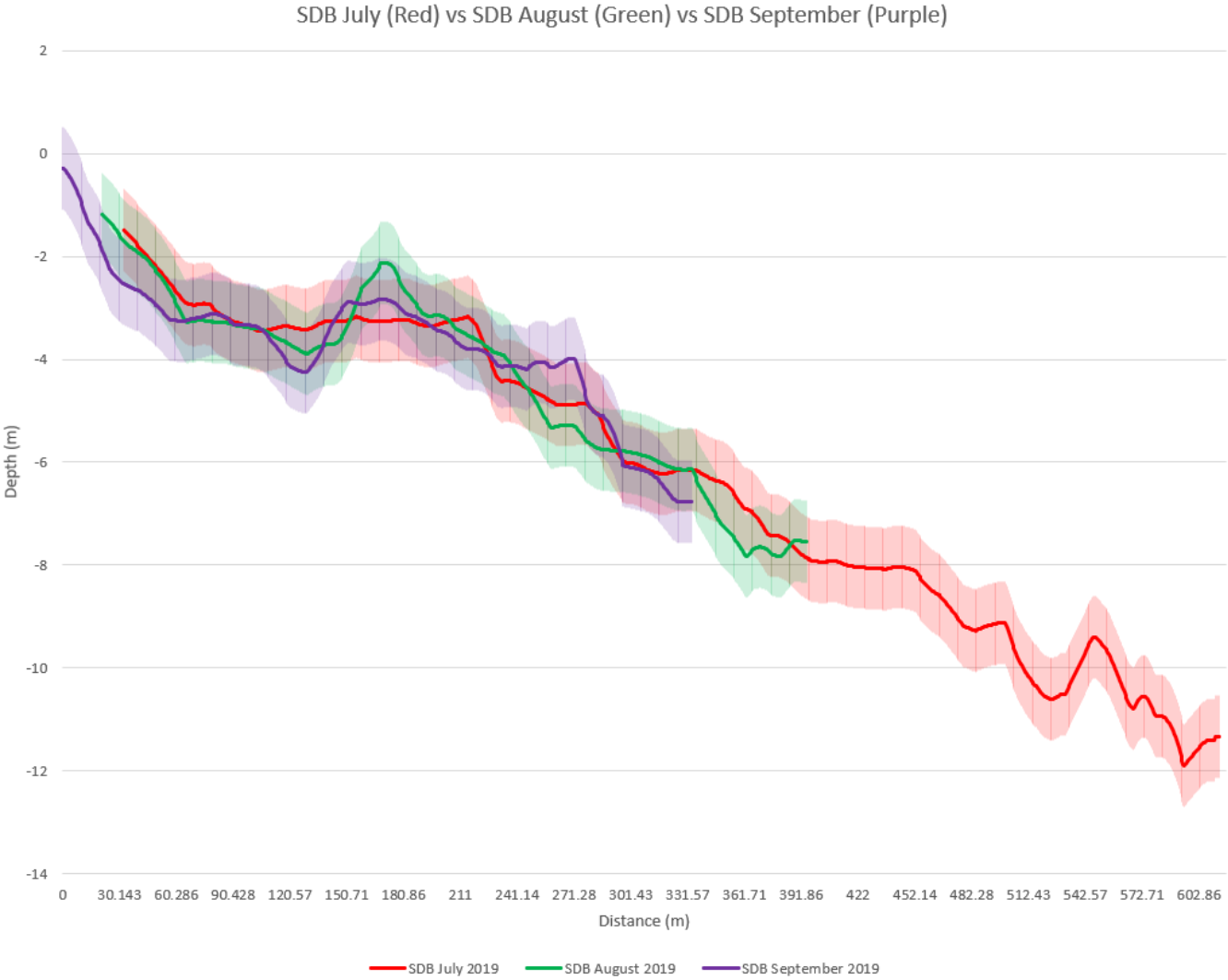
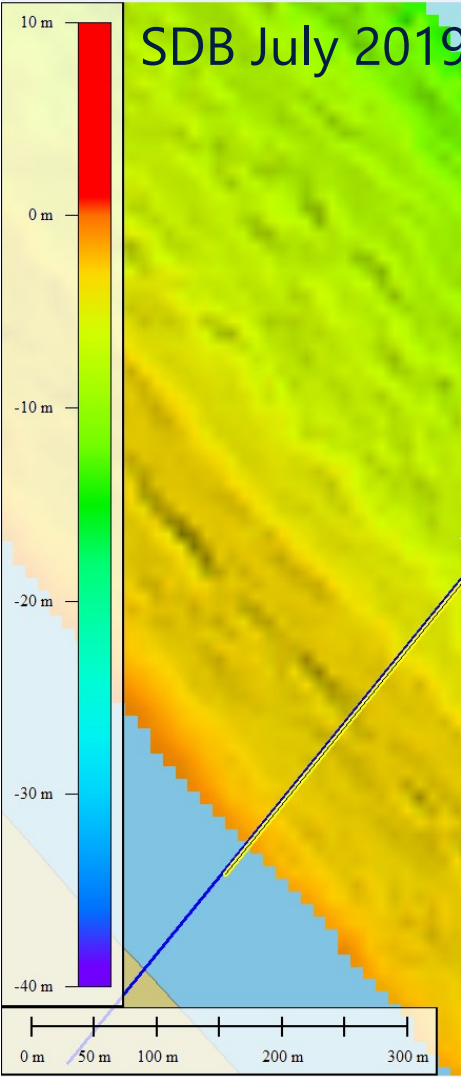


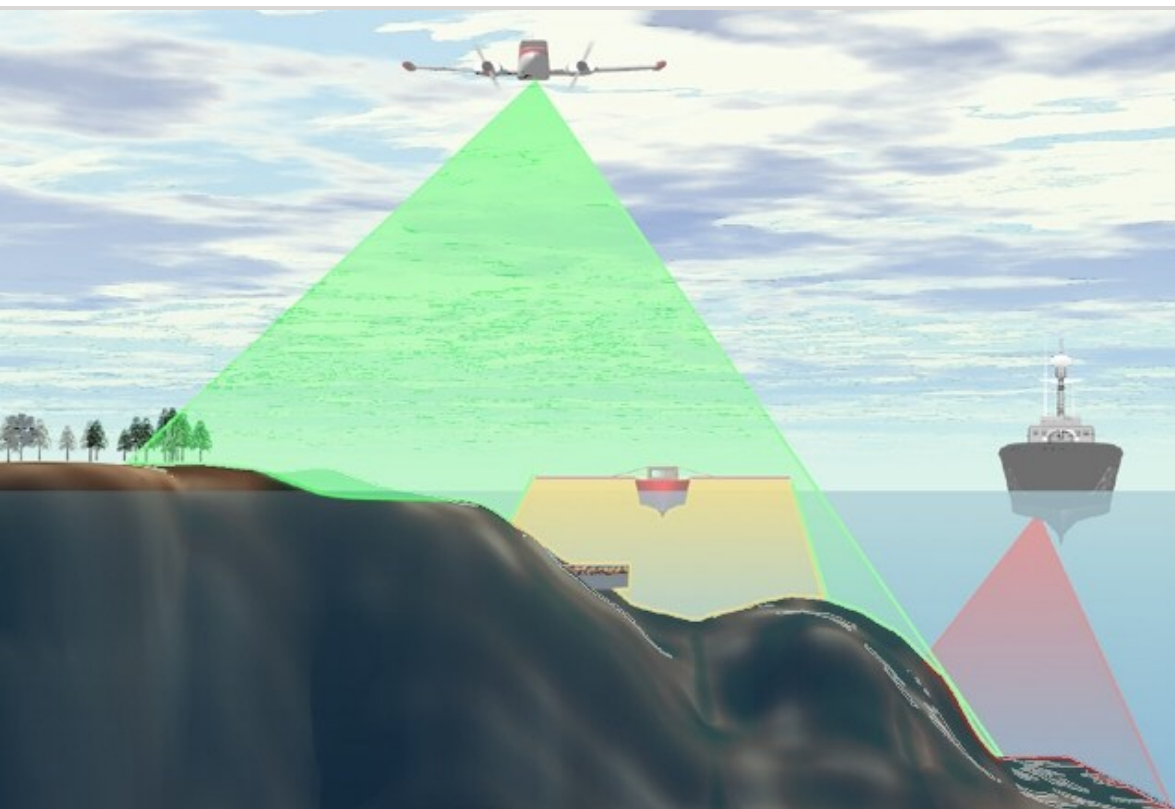


Change detection from ALB (13th July) vs SDB (20th July)



Gold Coast ALB & SDB Survey / Change detection





3. Summary Comparison of each Technical Solution



Summary / Comparison of each Technical Solution

SBES transect Solution:

Pros	Cons
Low Cost (If area of Interest easily accessible with a small vessel)	No full coverage (Area of interest)
Provide accurate profile measurement (irrespective of the environmental)	No continuous/seamless topo-bathy coverage

SDB Survey Solution:

Pros	Cons
Low Cost (Irrespective of the area accessibility and size, particularly for repetitive surveys)	Depth performance largely impacted by environmental conditions
Provide better coverage than SBES transects	Accuracy not meeting IHO 1b standard; only detecting gross changes > > 1 – 2 m
	Gaps in the coverage due to surf / clarity / non reflective seabed

ALB Solution:

Pros	Cons
Cost effective and very efficient solution for large scale coastal surveys	Only cost effective for reasonably large areas (> ~50 - 100 SqKM); Suggesting ALB campaign rather than ad hoc postage stamps
Dense coverage up to laser extension depth (Up to 80m pending conditions, ~40m in the Gold Coast example)	Depth measurement performance impacted by water. (Risk mitigated by strong focus/management during data collection)
Provide accurate (compliant with IHO1a) & continuous topo-bathy coverage	



Thank you

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