



Remote sensing time series of an inundated saltmarsh

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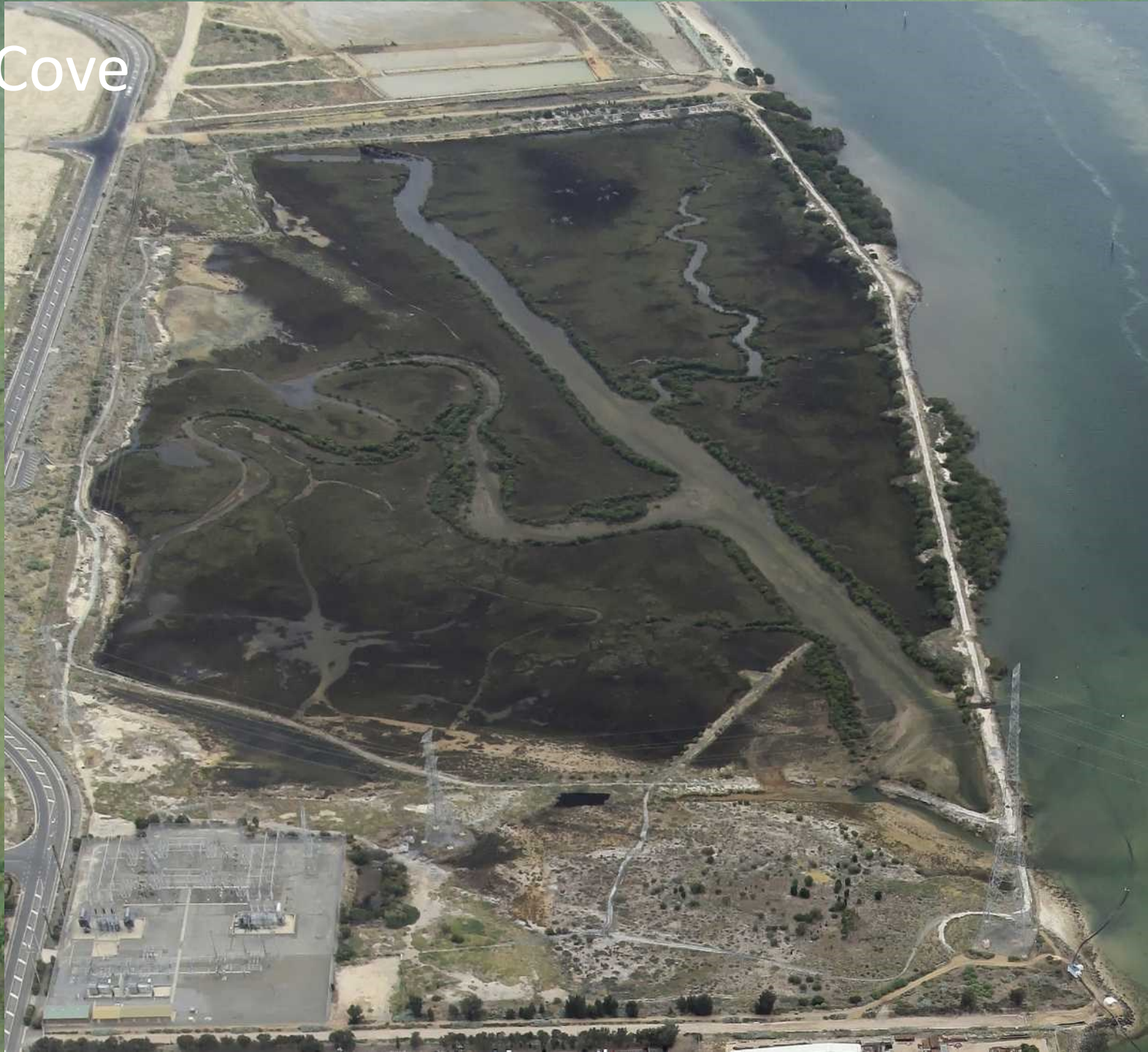
- Research institute based at Parafield airport near Adelaide
- Originally focussed on in-situ atmospheric sensing
- Now dominated by remote sensing
- Have multiple dedicated aircraft and comprehensive sensor suite



Mutton Cove



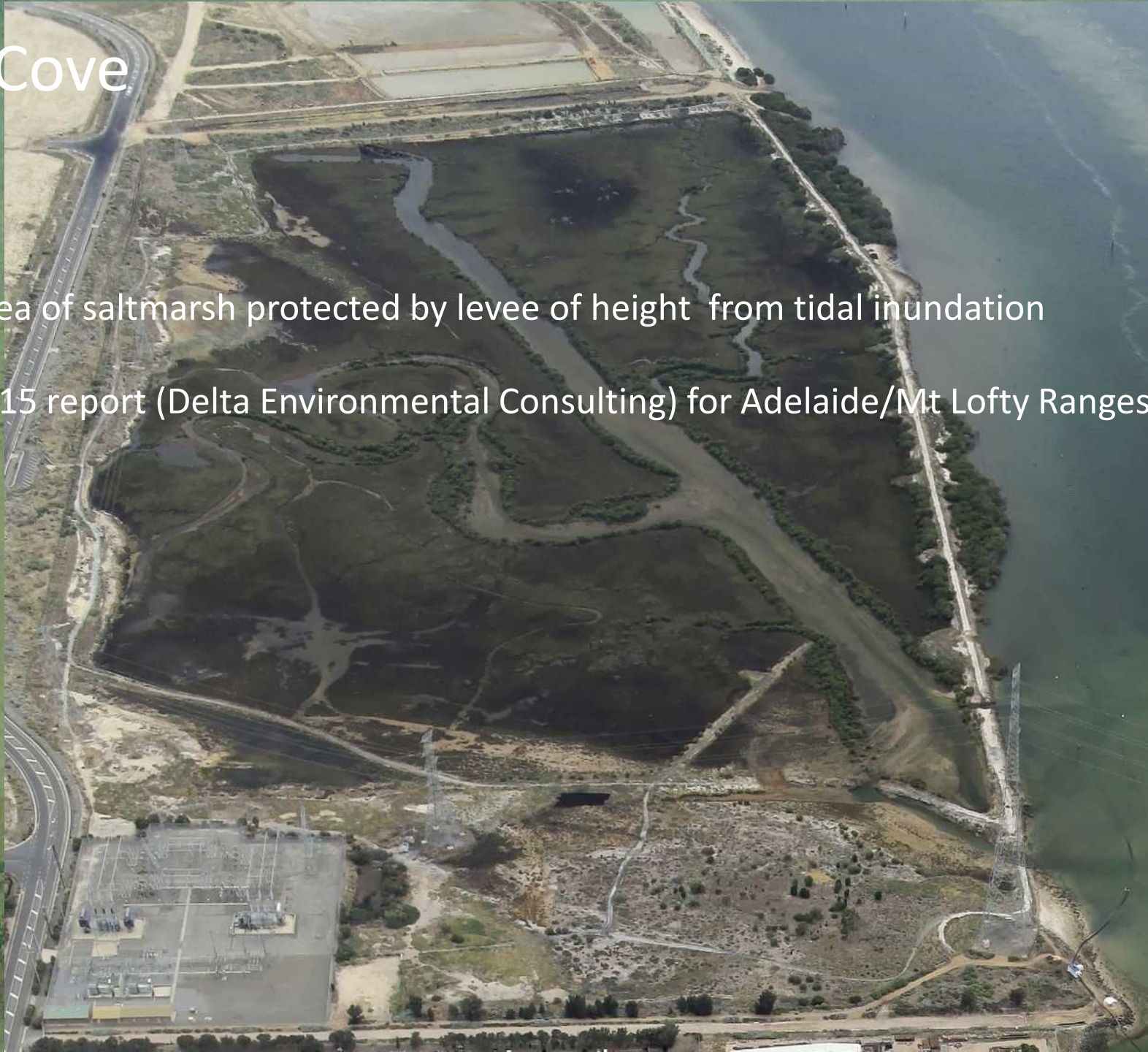
Mutton Cove



Mutton Cove

Area of saltmarsh protected by levee of height from tidal inundation

2015 report (Delta Environmental Consulting) for Adelaide/Mt Lofty Ranges



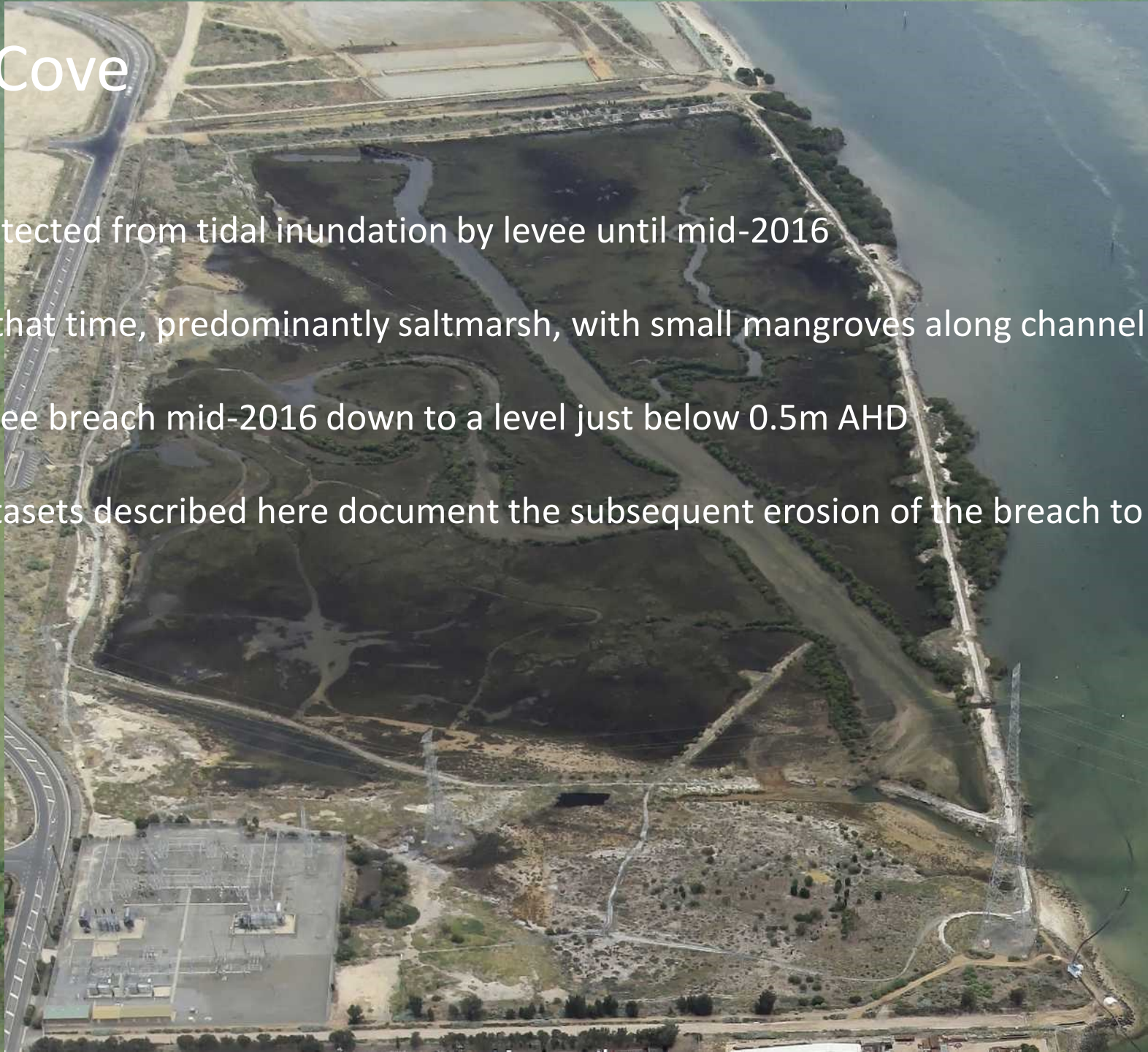
Mutton Cove

Protected from tidal inundation by levee until mid-2016

At that time, predominantly saltmarsh, with small mangroves along channel

Levee breach mid-2016 down to a level just below 0.5m AHD

Datasets described here document the subsequent erosion of the breach to



Breach allows regular tidal ingress



Photograph by Port Adelaide Resident's Environment Protection Group, July 2016

HK-36 Eco-Dimonas, EOS & OBS

- Normally operate with two crew – pilot + scientist





Relevant instrumentation

→ Full waveform lidar

- Riegl Q680i (1064nm)

→ Conventional RGB aerial photography

- Canon EOS 5D mk4 DSLR

→ Bathymetric lidar

- Riegl VQ820 (532nm)

→ VNIR hyperspectral linescanner

- (modified) AISA Eagle 2, ~500 bands, 400 - 1000nm

→ Thermal imager

- FLIR A615 640x480 uncooled microbolometer array

→ Precision inertial and GPS navigation units
linked to all instrumentation



Repeated sensing flights



161221	180725
170120	180824
170531	180930
170630	181108
171012	181217
171121	190306
171220	190402
180201	190608
180222	190704
180321	190730
180423	190830
180621	

In the order of monthly dataset



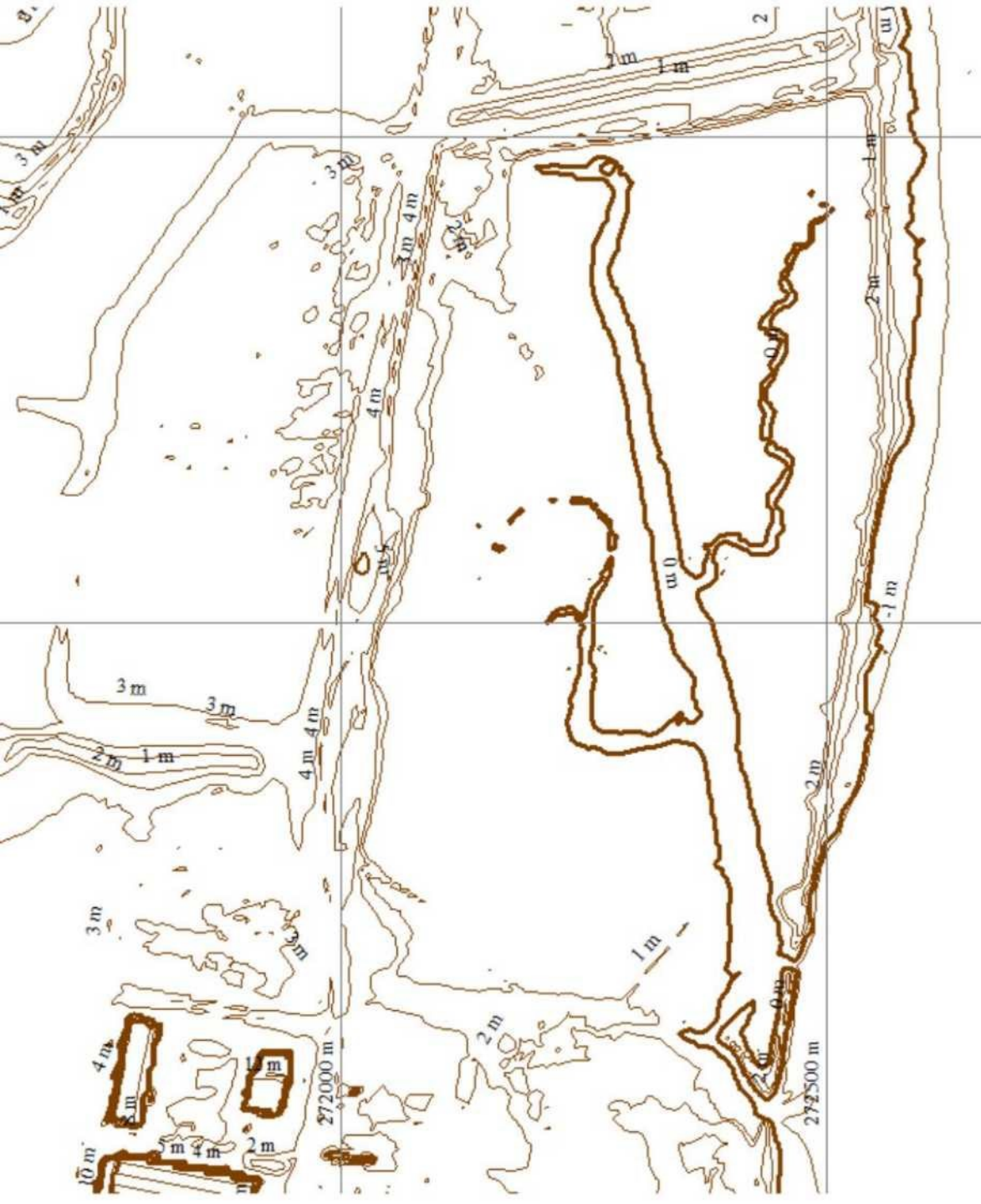
Repeated sensing flights



Q860i lidar and RGB imagery flights

Other instrumentation irregular





Contour map
of terrain model
available through
time

Tidal inundation



Modeled here with ~once per year maximum

Approximately 1m water depth across marsh

Most of the marsh plain now inundated

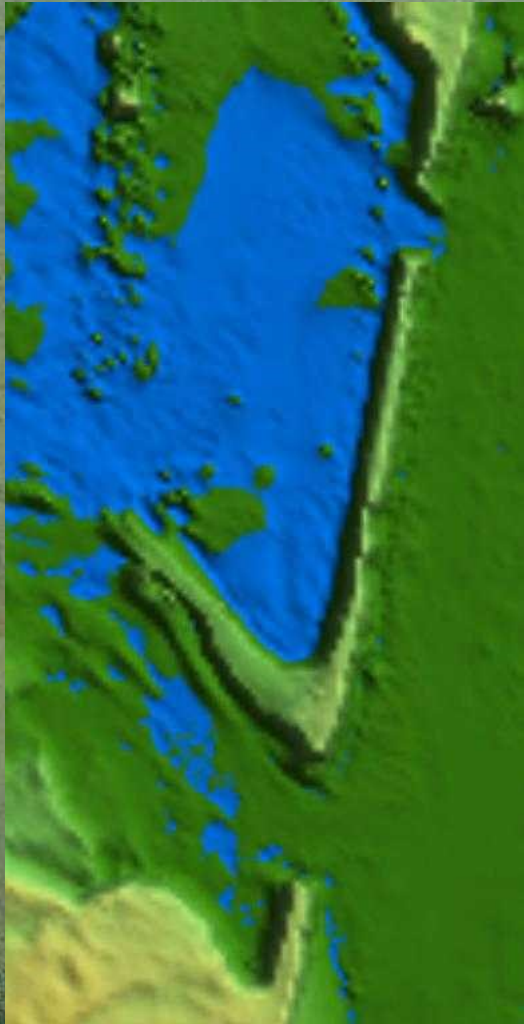


Tidal inundation

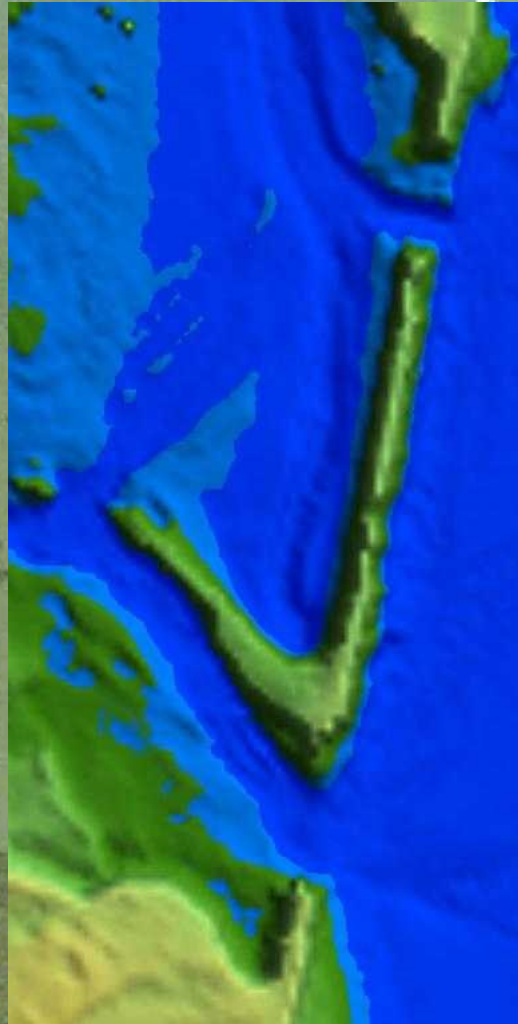
Dec 2017
Site fully inundated



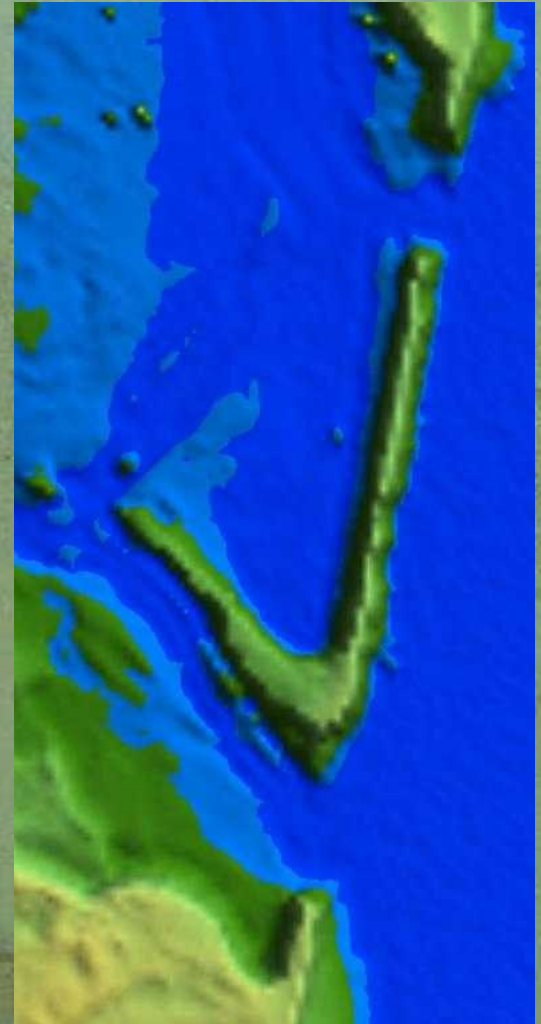
Lidar records erosion of breach



Dec 2016

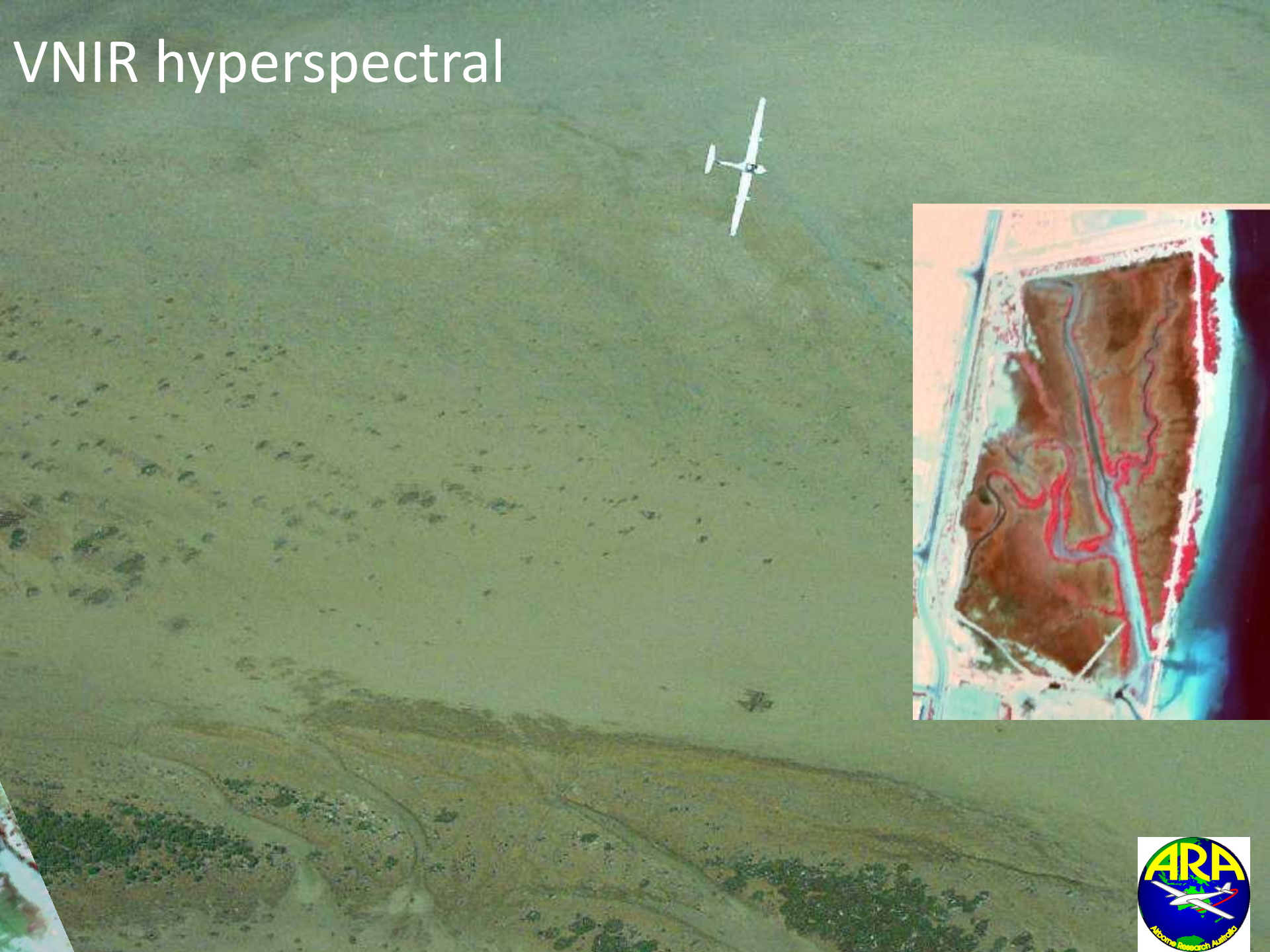


Mar 2018



Aug 2019

VNIR hyperspectral



Aerial photography



Jan 2017



June 2017

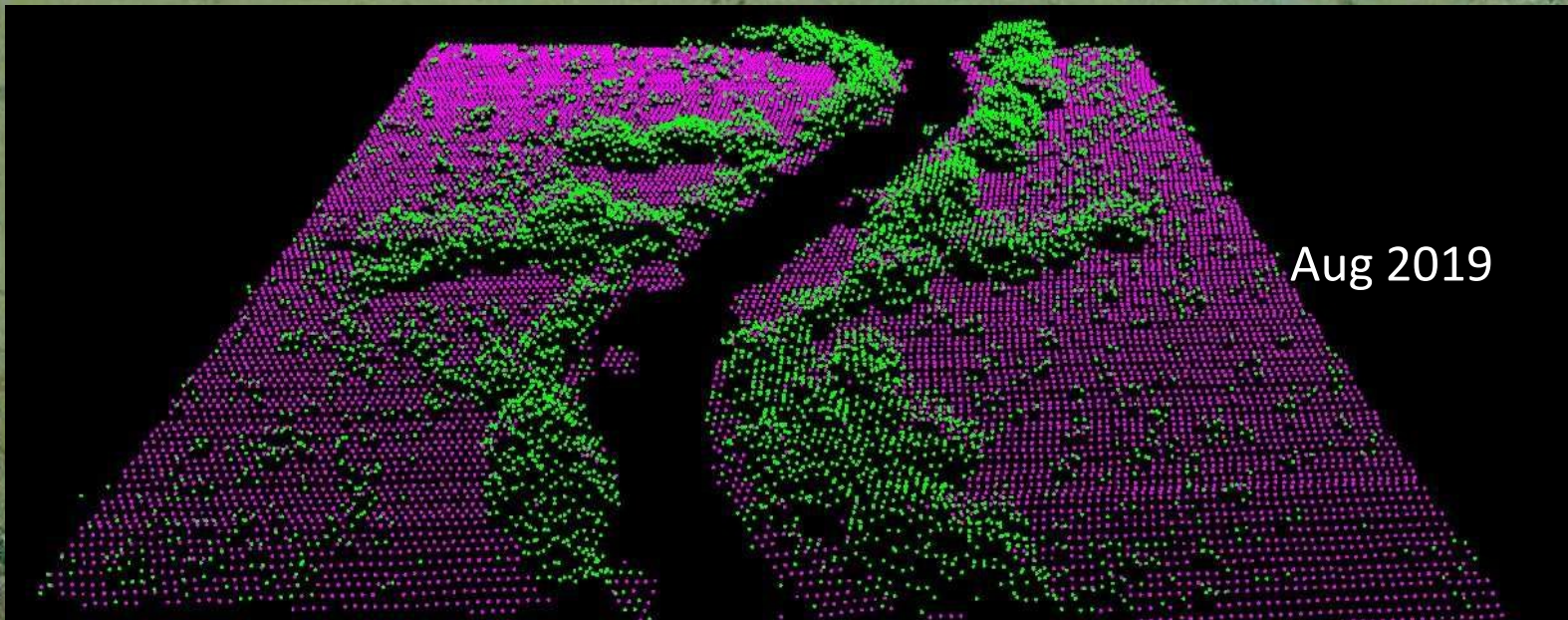
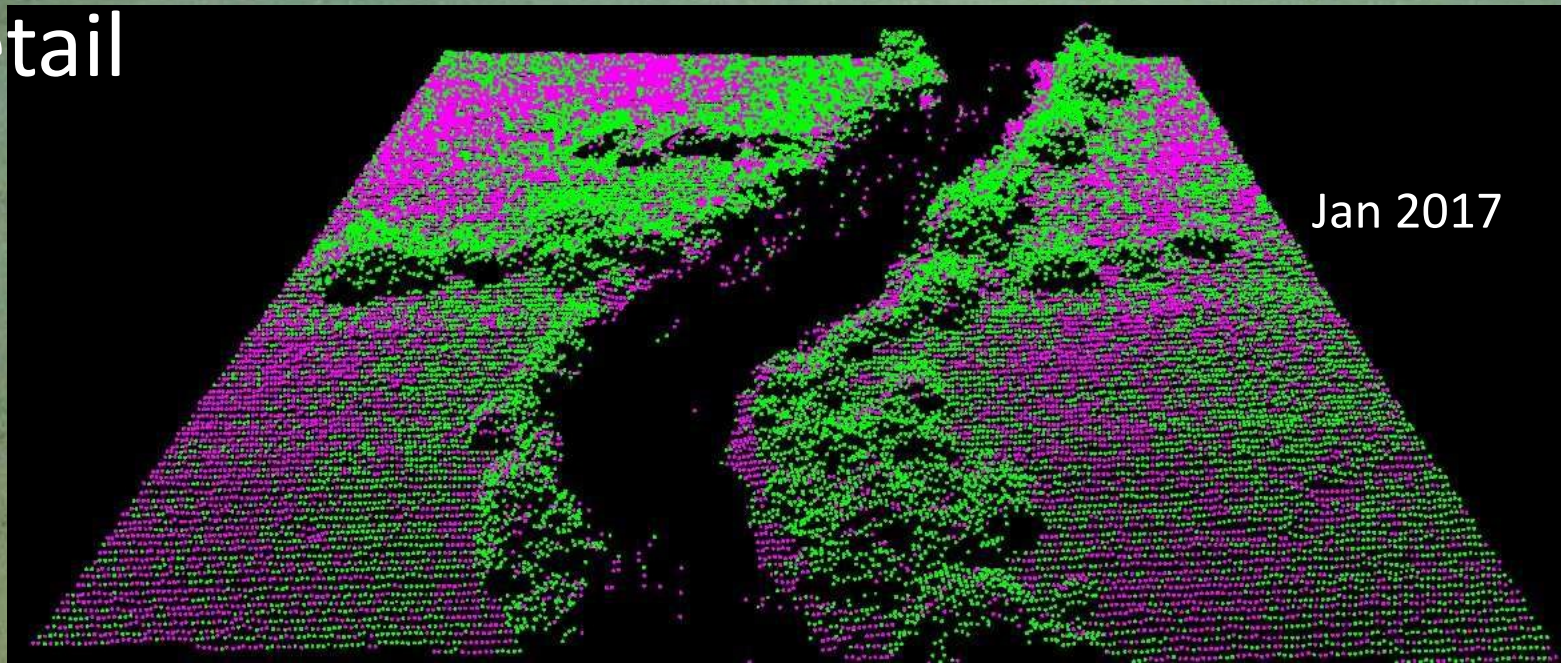


Jun 2018

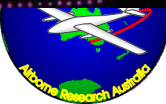


Aug 2019

Lidar detail



Lidar shows reduction in samphire and growth of mangroves



More work!

→ Correlate

