

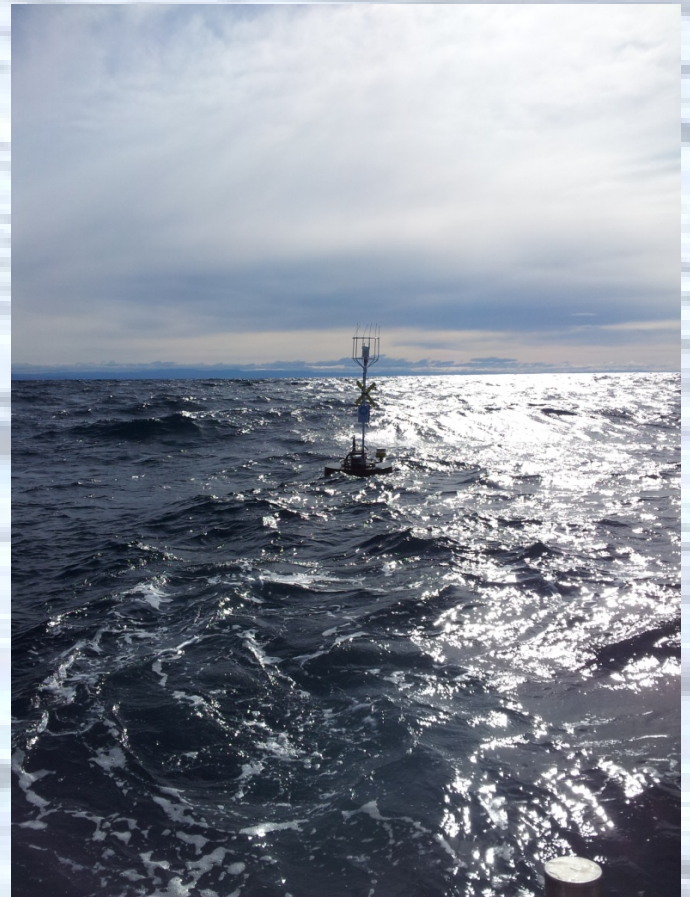
Preliminary analysis of fluorescence sampling techniques from Maria Island National Reference Station

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Outline

Background

- Maria Island National Reference Station (NRS)
- Fluorometry and turbidity sensors (FLNTU), High Performance Liquid Chromatography (HPLC), Water Quality Monitors (WQM)

Research Aim

Methods

Preliminary Results

Further analysis

Maria Island National Reference Station

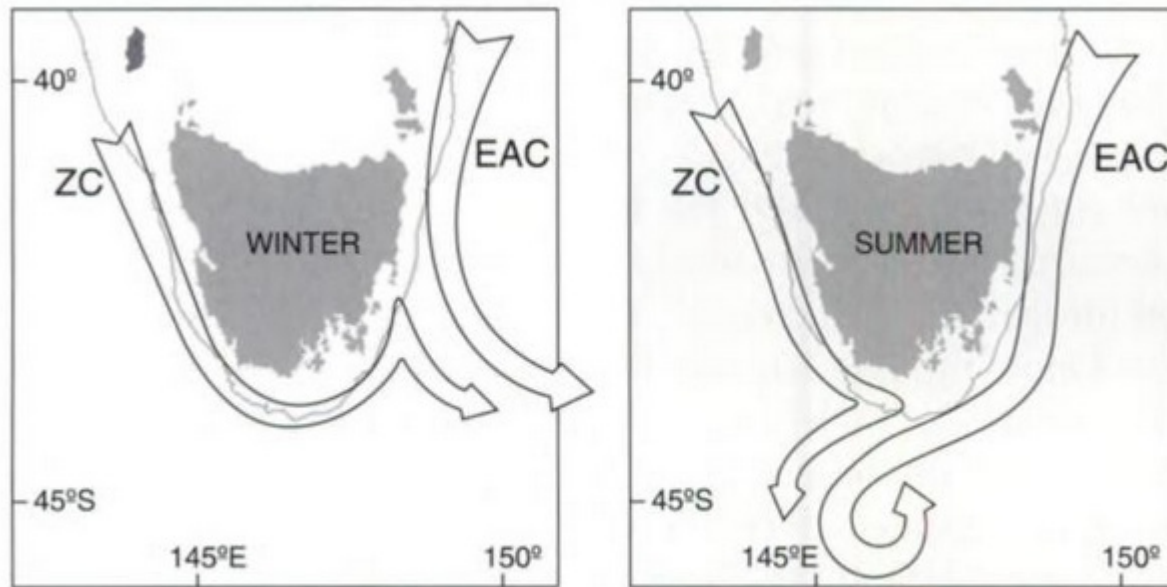


Established in 1944

One of the longest operational
time series in the Southern
Hemisphere

Modern instrument dataset
2008-2012

General circulation of major currents affecting Maria Is NRS



ZC = Zeehan Current EAC = East Australian Current

Cresswell, 2007

Sampling Techniques

In Situ Water Quality Monitor (WQM)

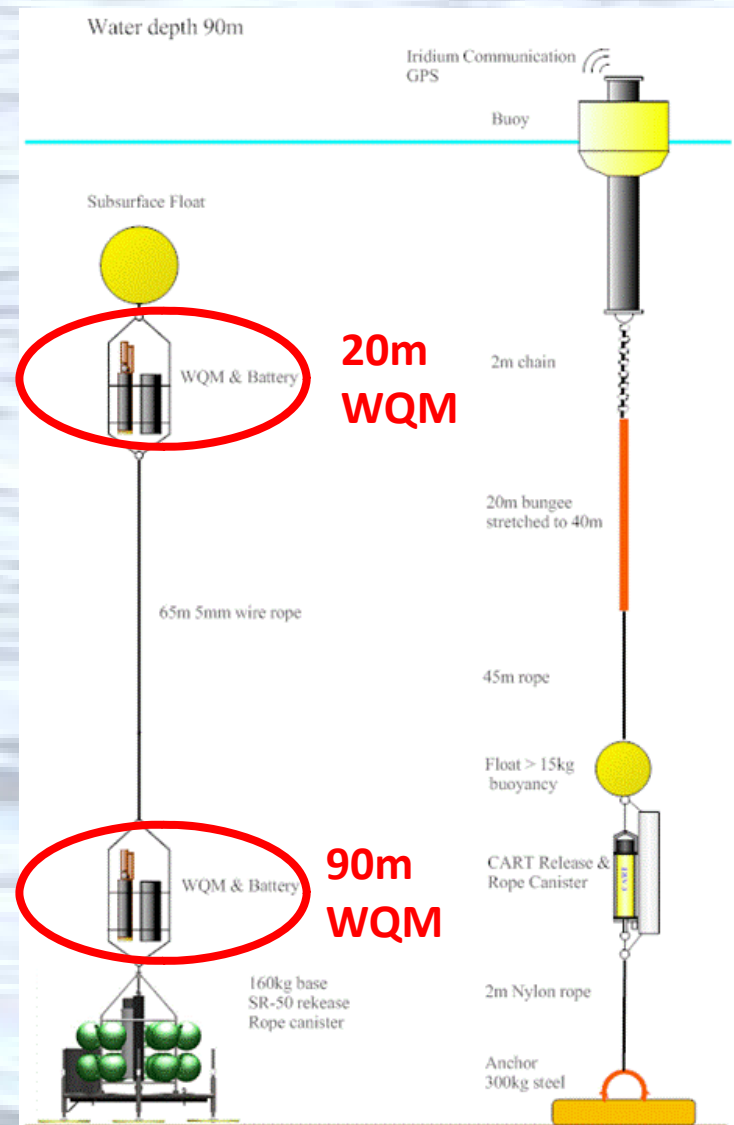
- Moored sensor at 20m and 90m
- Diurnal samples (every 15 minutes)

Profiling Fluorescence and Turbidity (FLNTU) sensor

- Attached to a CTD profiler
- Profiles water column

Profiling High Performance Liquid Chromatography (HPLC)

- Profiles water column
- Integrated water column sample (0-50m)



Maria Island National Reference Station

Oceanographic parameters of interest

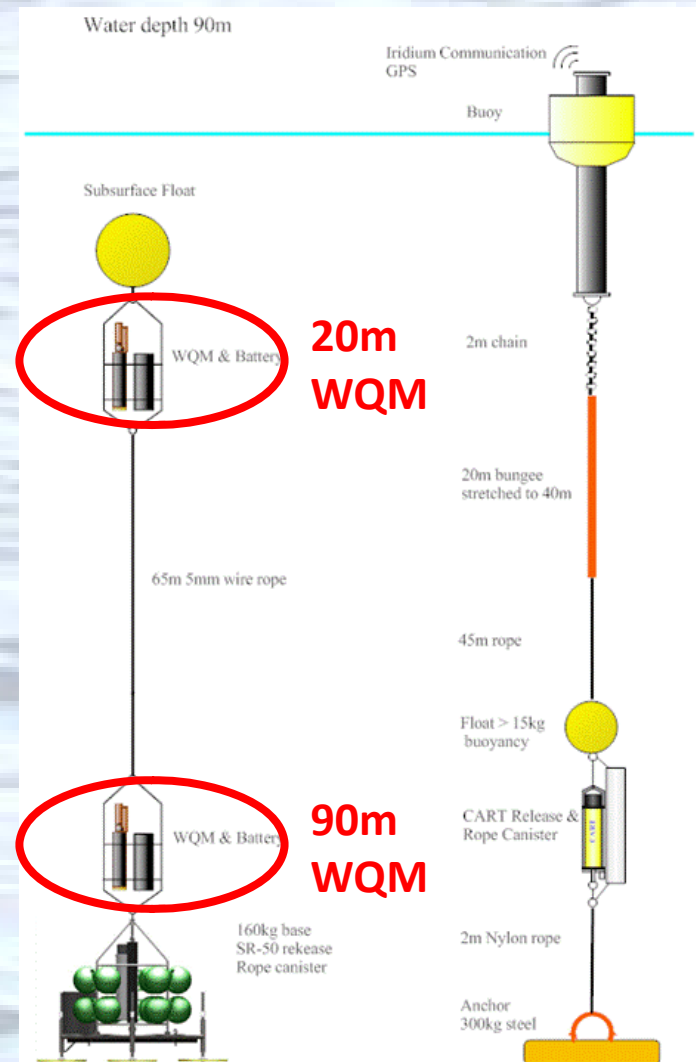
- Fluorescence (Chl-*a*)
- Temperature
- Salinity

WQM depth allocation previously determined by anecdotal evidence

Test against 38 months of boat-based profiling data

Cross-validate the quality of independent methods

Publicly accessible data



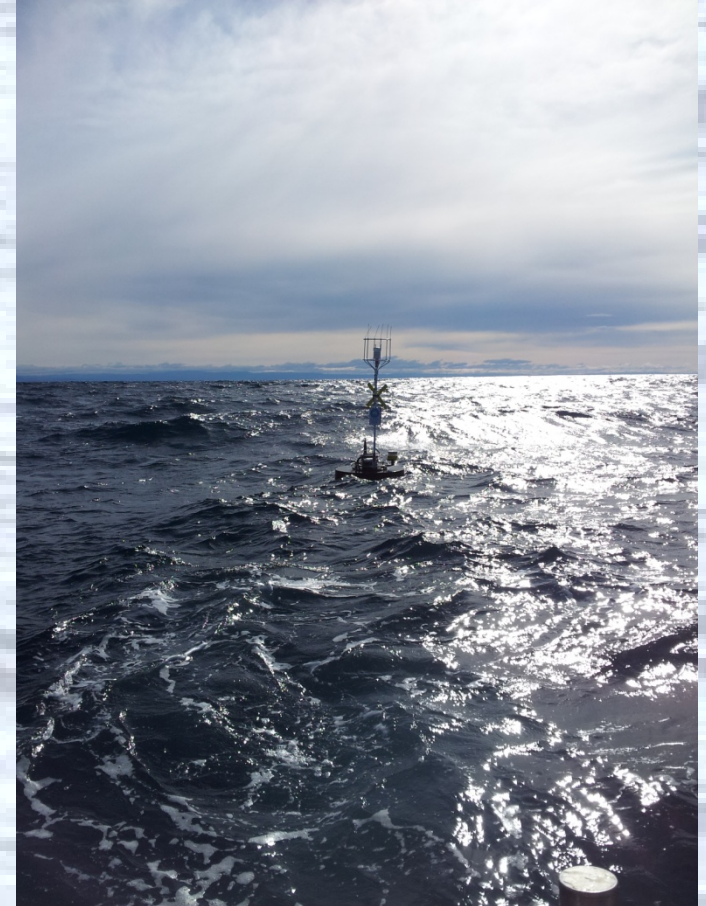
Aims

Compare independent fluorometry techniques

- *In situ* WQM
- Profiling FLNTU
- Profiling HPLC

Efficiency of WQM depth locations

Seasonal and interannual distribution of Chl-*a*



Methods

Analyse:

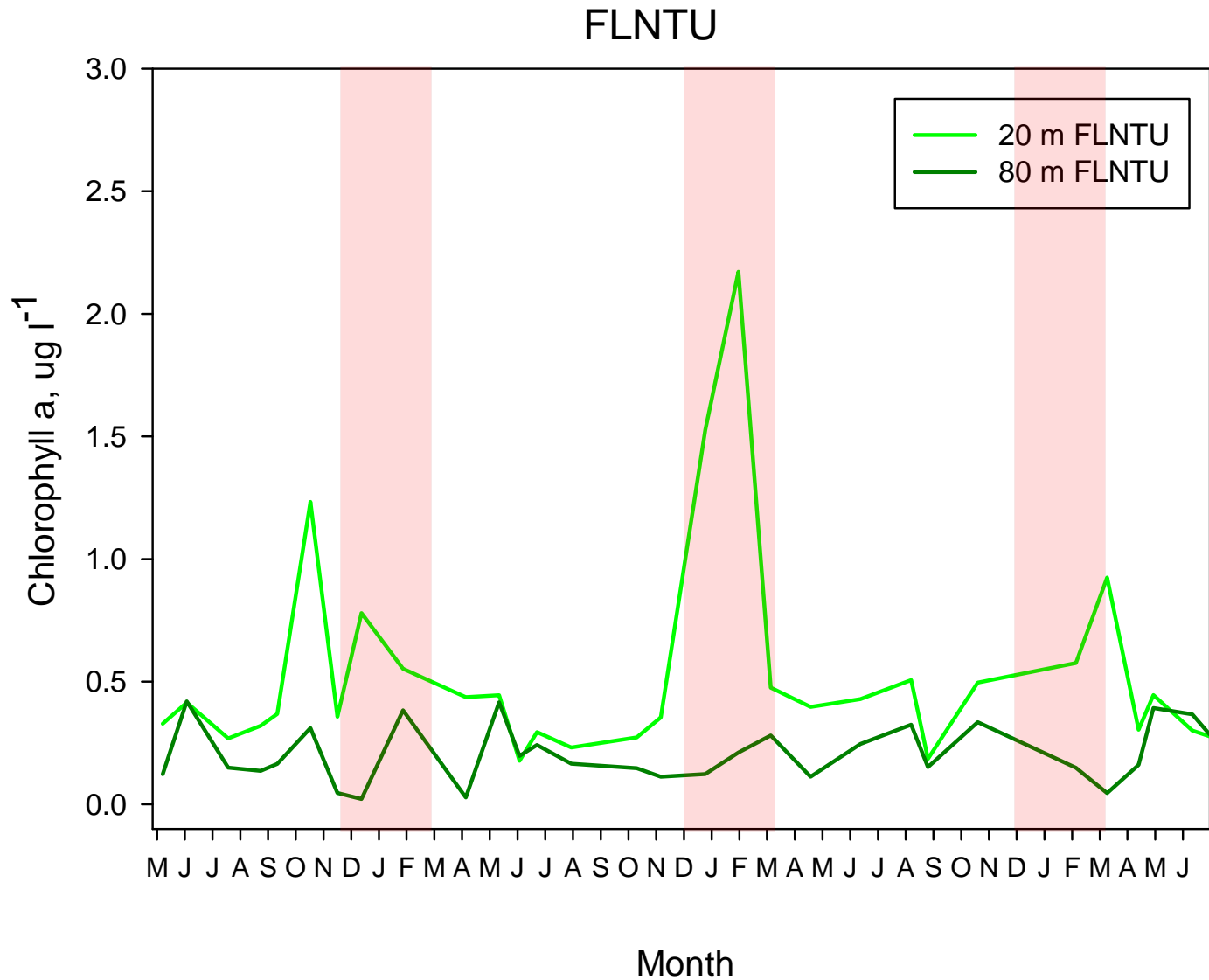
- Monthly FLNTU profiling data
- Monthly HPLC profiling data
- *In situ* WQM data → extract relevant day
- Compare FLNTU, HPLC and WQM Chl-a data

Chlorophyll *a*

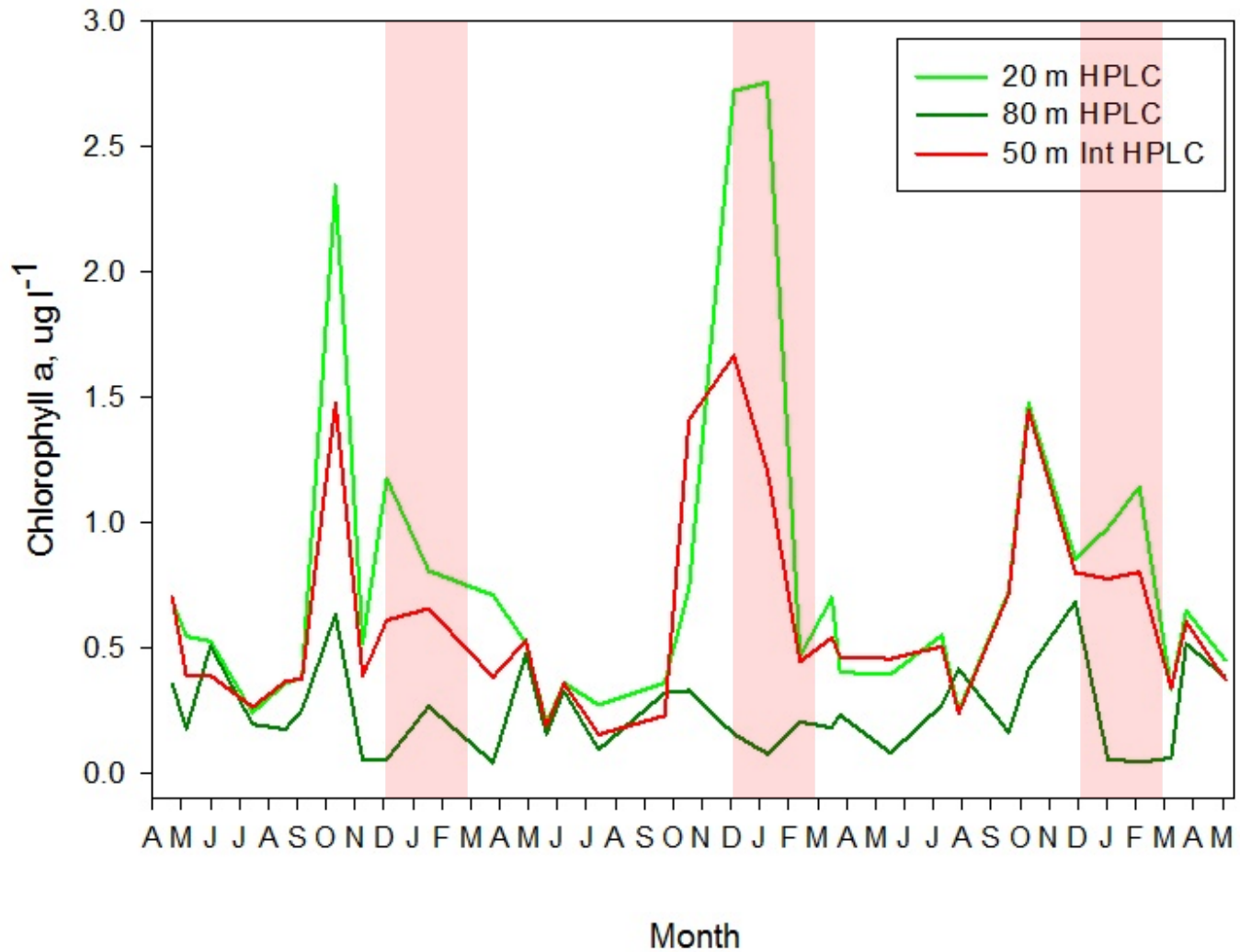
Date	Depth	FLNTU	HPLC	WQM
06.05.09	20m	0.33	0.55	0.45
06.05.09	80-90m	0.12	0.34	0.2

- Analyse seasonal and interannual Chl-a distributions and trends

FLNTU Profiles



HPLC



In situ WQM



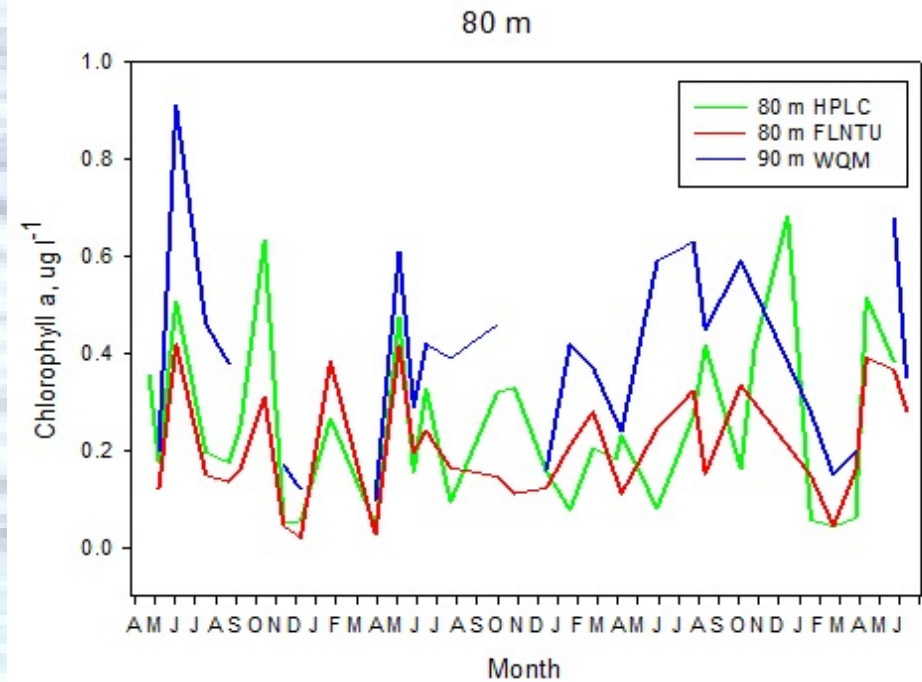
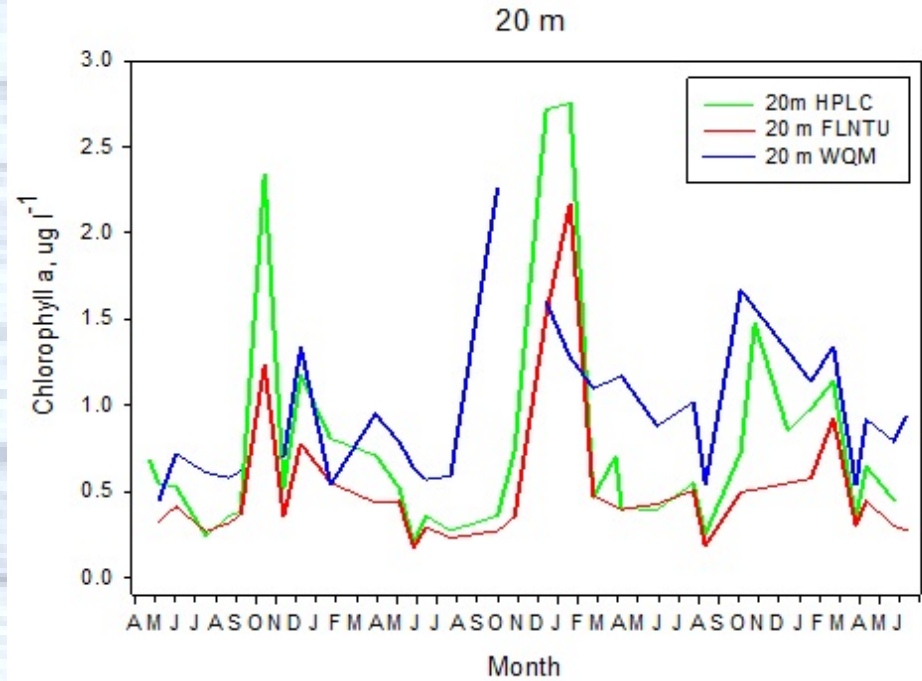
3-way Comparison

All techniques follow a similar trend

In Situ WQM missing important data

Can we rely on a single technique?

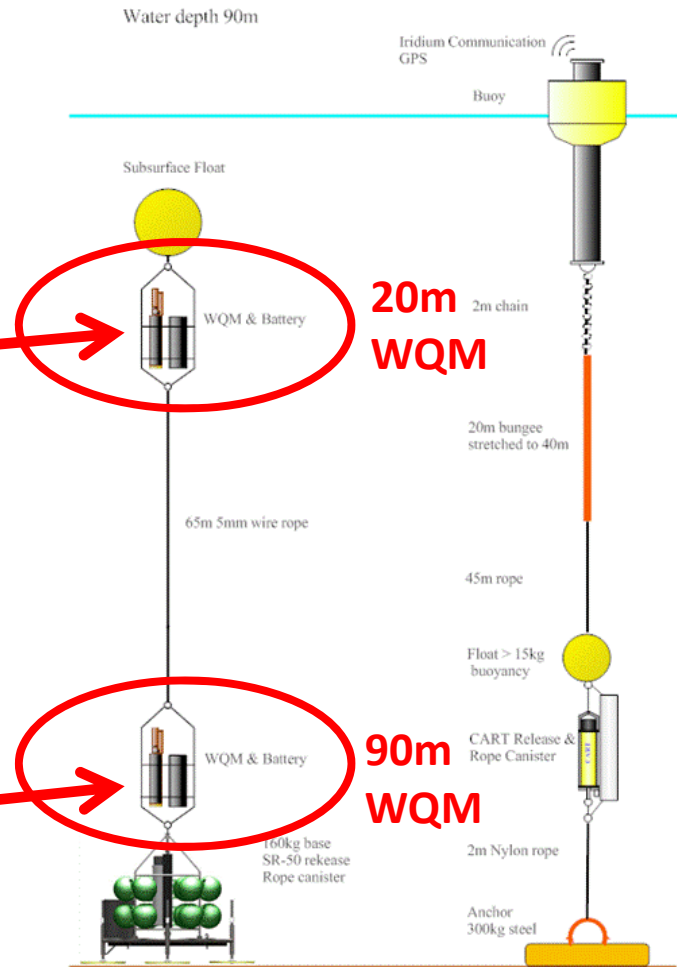
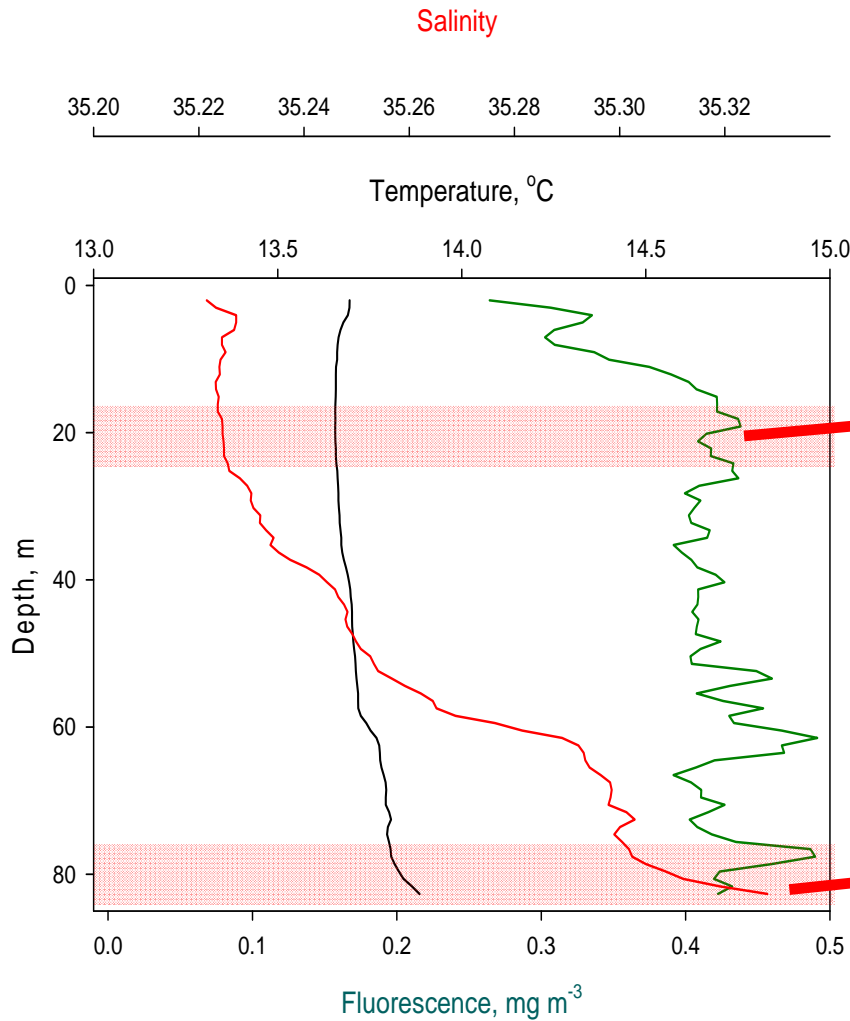
True representation of Chl-a unknown



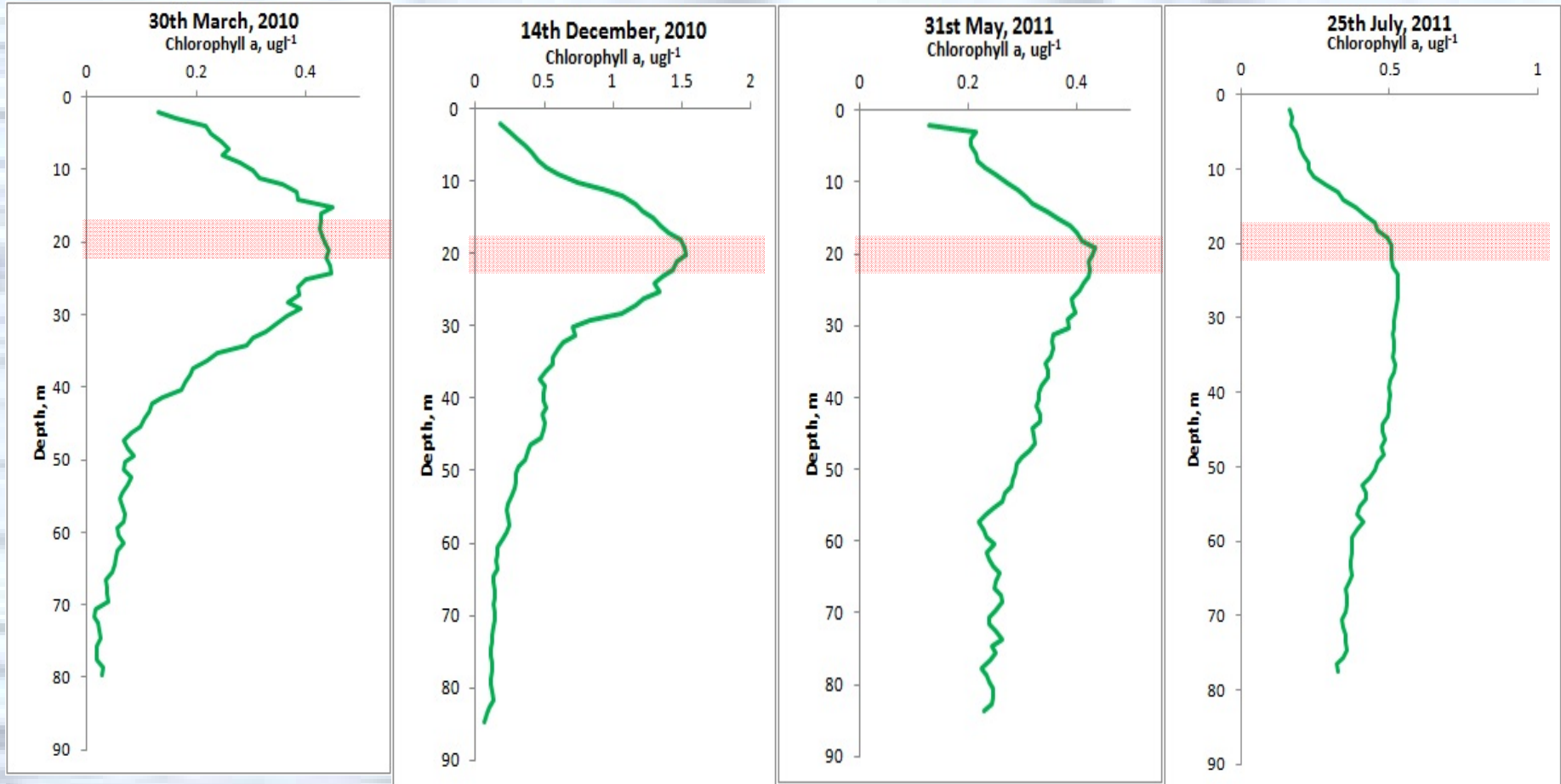
Efficiency of WQM depth locations

FLNTU Profile

01.06.09



Efficiency of WQM depth locations



Further analysis and research

Currently scaled down to focus on a single NRS

Scale up to look at all NRSs around Australia

Consistent, precise and accurate long term data series on which to base observations

Thank you!