

# ADCP Measurements on the WAP shelf: Year 1

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# Topics

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- Summarize ADCP measurements
  - ADCP configuration
  - Status of processing
  - Quality of data
- Preliminary results
  - Major circulation features
  - Mixing proxies

# ADCP Data

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- Ensemble and Single Ping data collected on all cruises.

## Setup:

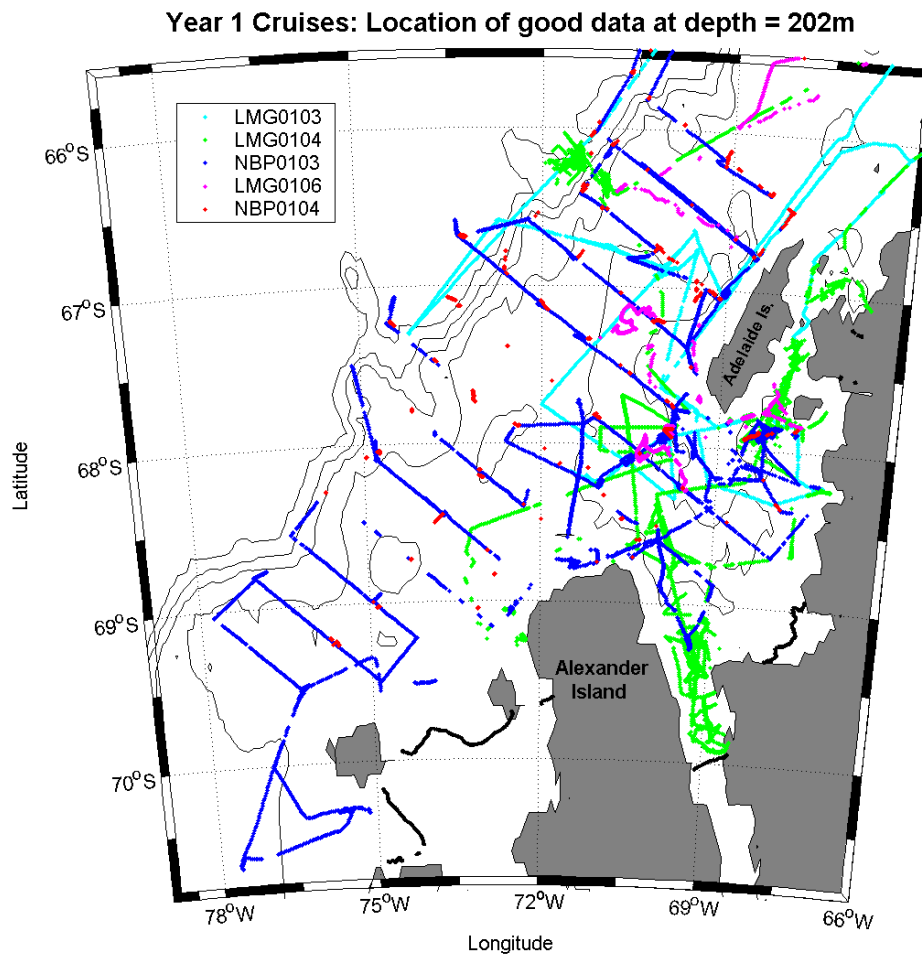
- 5 min ensembles, 8 m depth bins
- Pulse length (~ vertical averaging scale)
  - 16 m (Gould: mooring and fall cruises)
  - 8 m (All other cruises)

## Summary of Data

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- Good regional coverage and valuable “process” data from Gould process sites.
- In general, 300m-400m depth coverage.
- Substantial data loss (entire profiles) when underway in ice and in bad weather.

# Location of good ADCP data: Year 1



# Status of Processing

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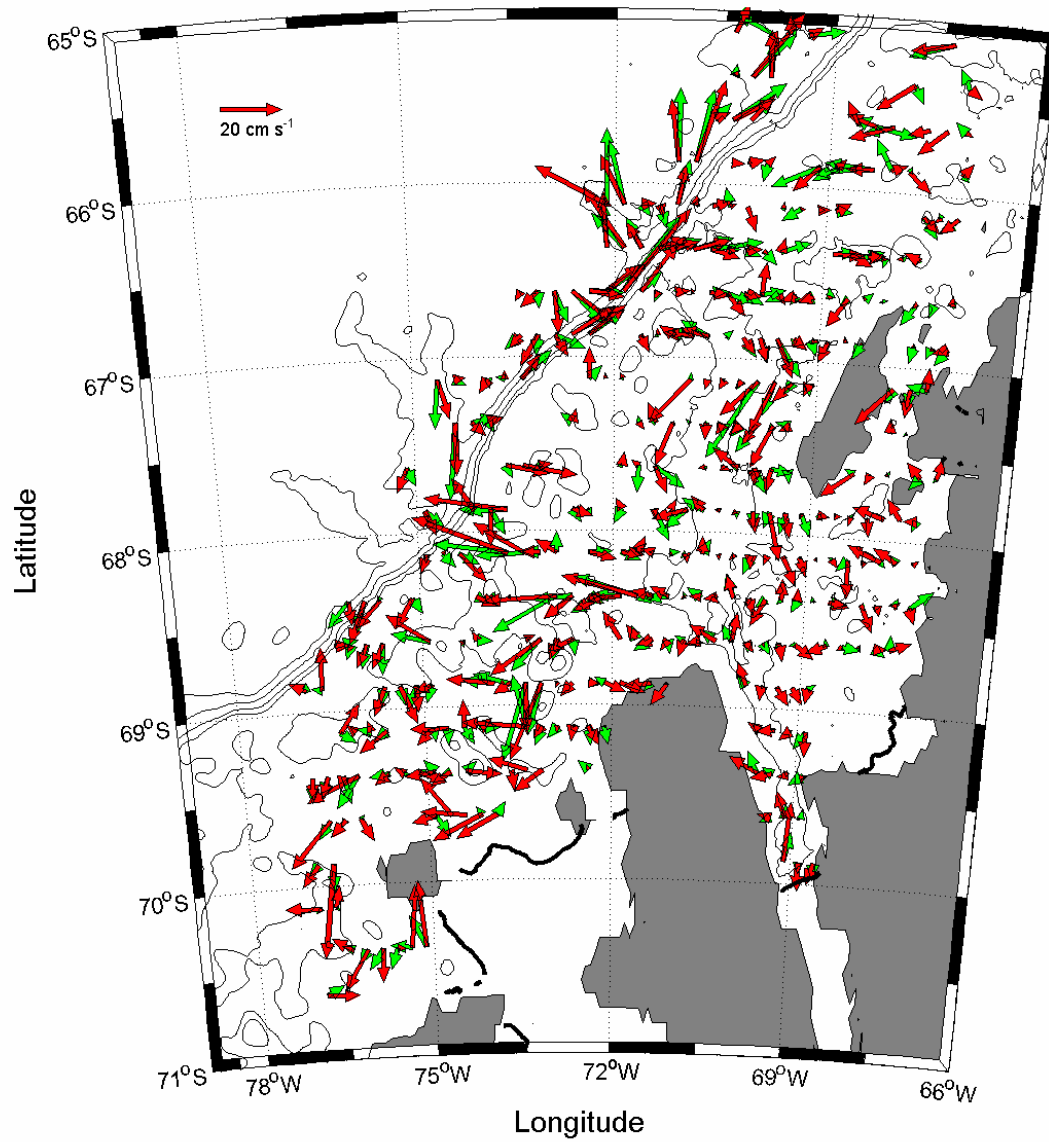
- ADCP data from GLOBEC I and II data have been processed.
- ADCP data from the first mooring cruise is still being processed.
- MAT files available at [http://www.esr.org/globec/adcp\\_data.html](http://www.esr.org/globec/adcp_data.html).
- Data will be also served with JGOFS software.
- Additional editing is required on all data sets.

# Preliminary Results

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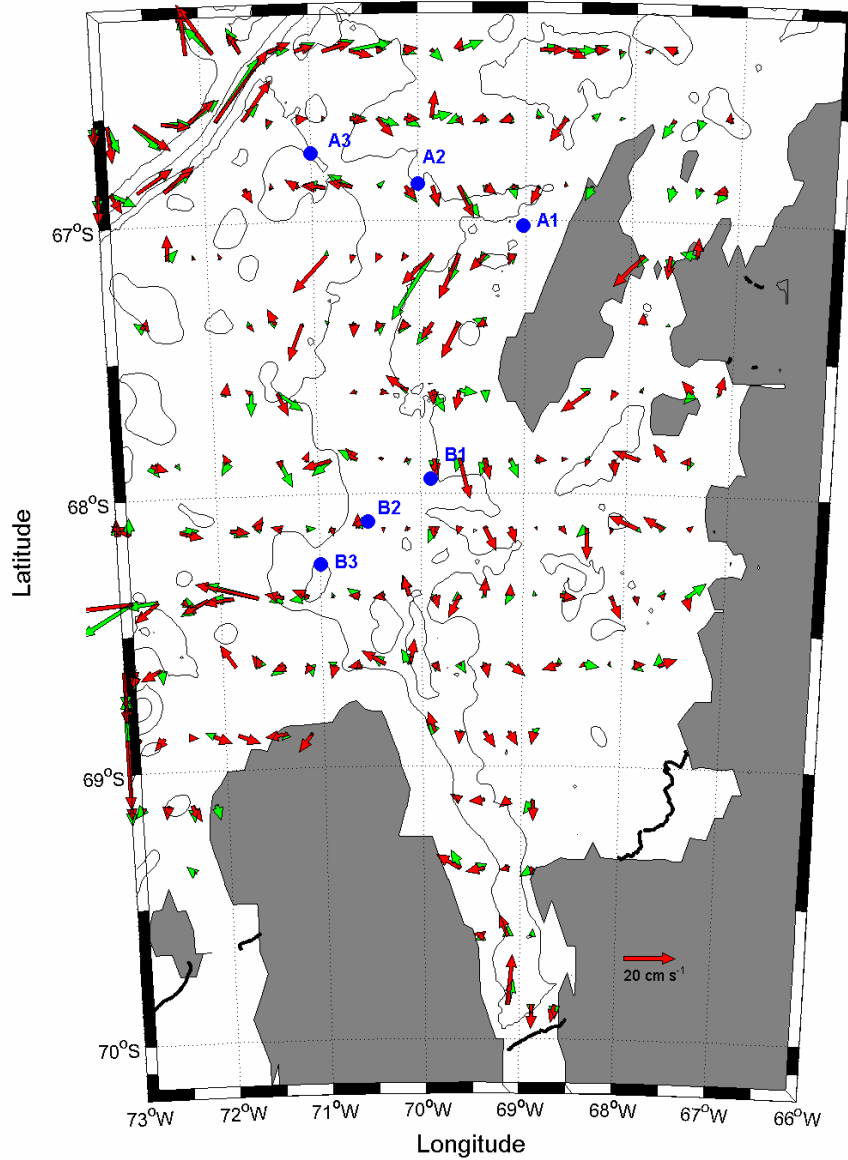
- Circulation features from ADCP
- Mixing proxies (diffusivity inferred from Richardson numbers)

**ADCP currents**  
green: depth ~ 205m red: depth ~ 100m



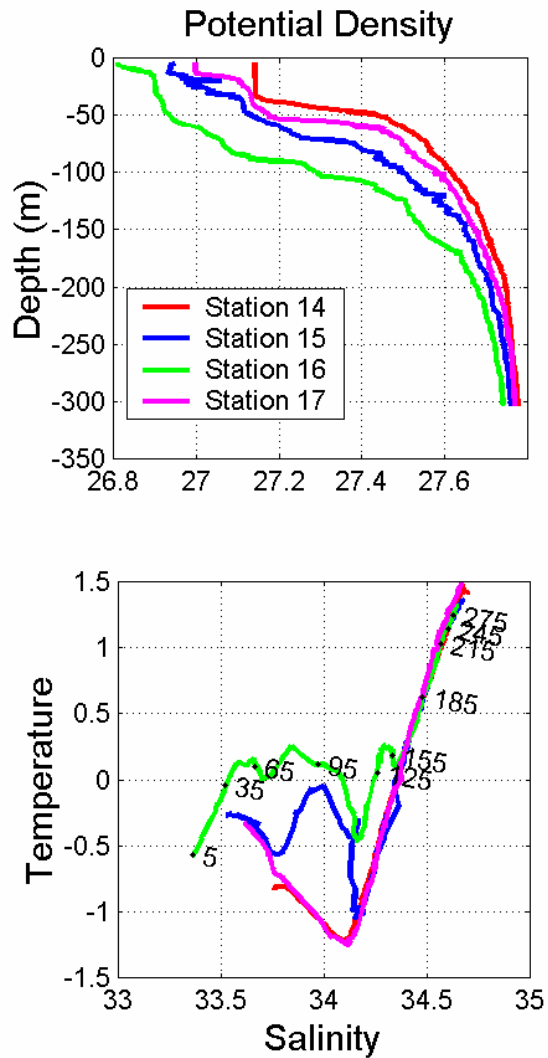
**Gridded Data**  
**1/4° x 1/4°**

ADCP currents  
green: depth ~205m red: depth ~ 100m

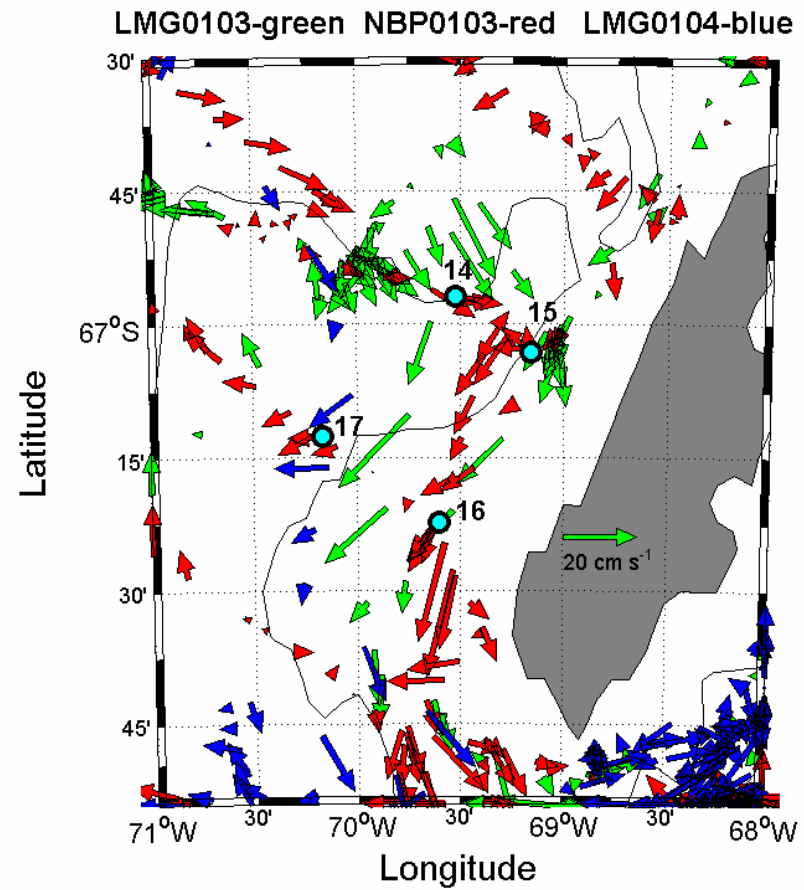


Gridded Data  
1/4° x 1/4°

# Coastal Current

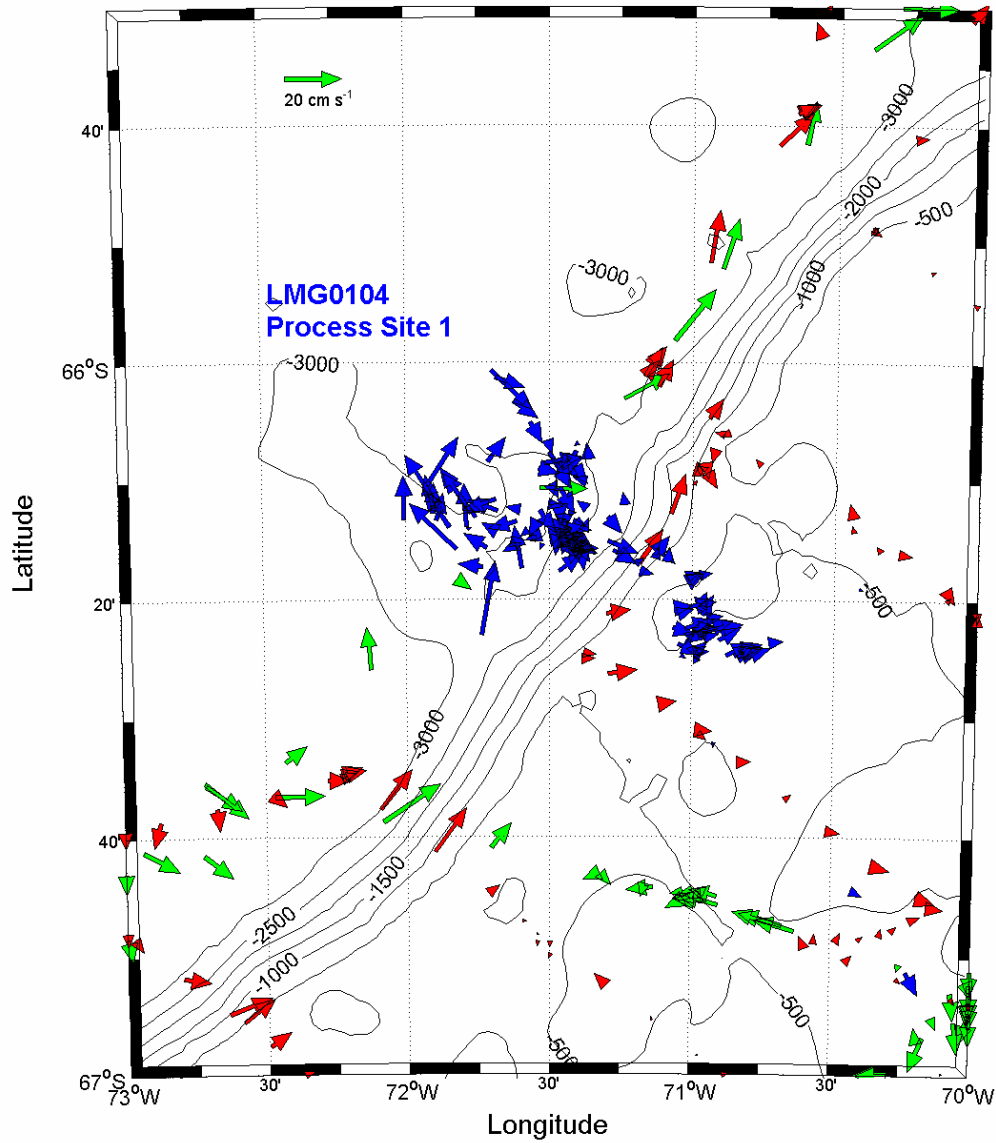


## ADCP currents at depth ~ 100m



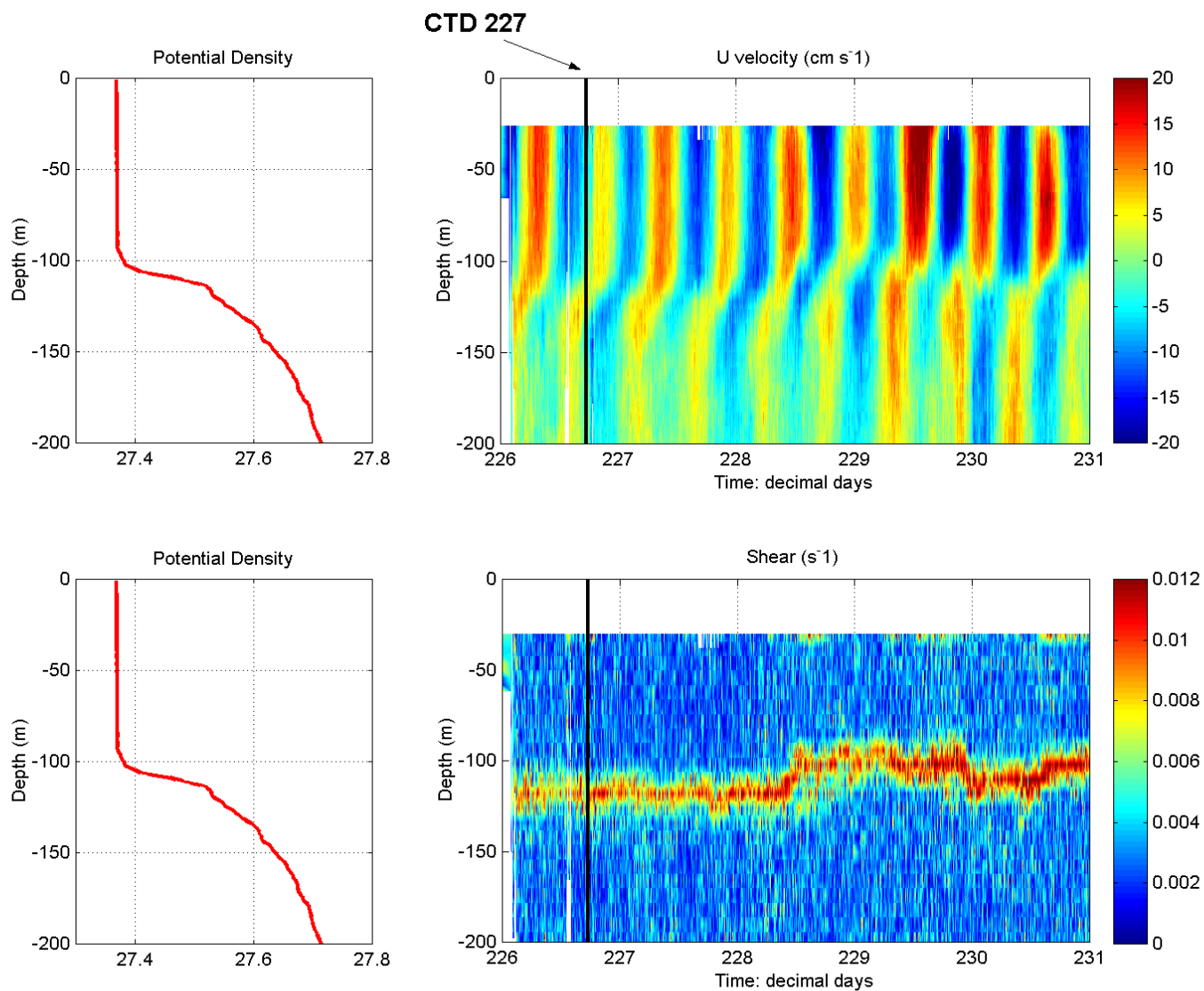
## ADCP currents at depth ~ 205 m

LMG0103-green NBP0103-red LMG0104-blue



## Currents at Shelf Break

# Near-Inertial Motion: LMG0106 Site 3 off Adelaide Is.



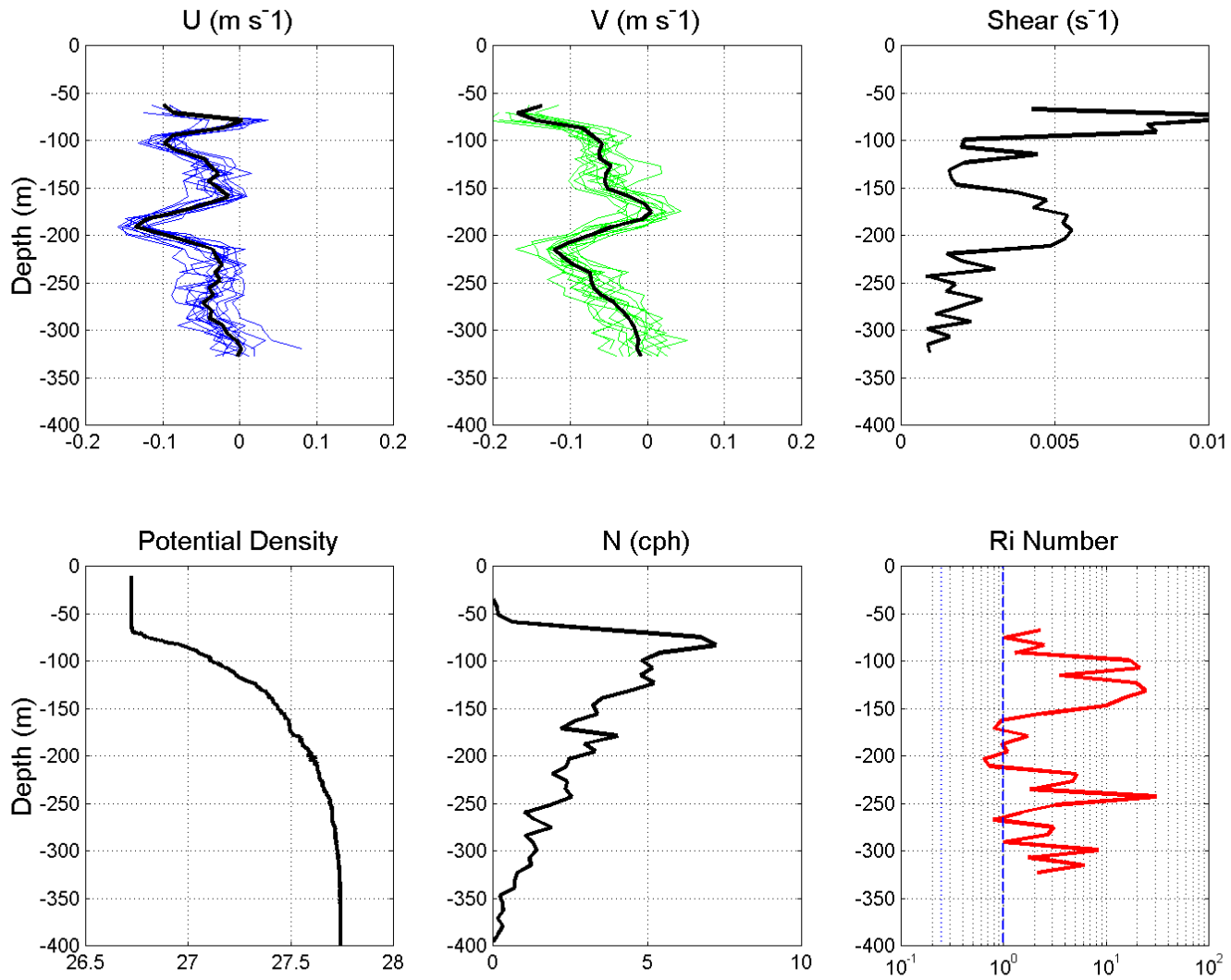
## Mixing

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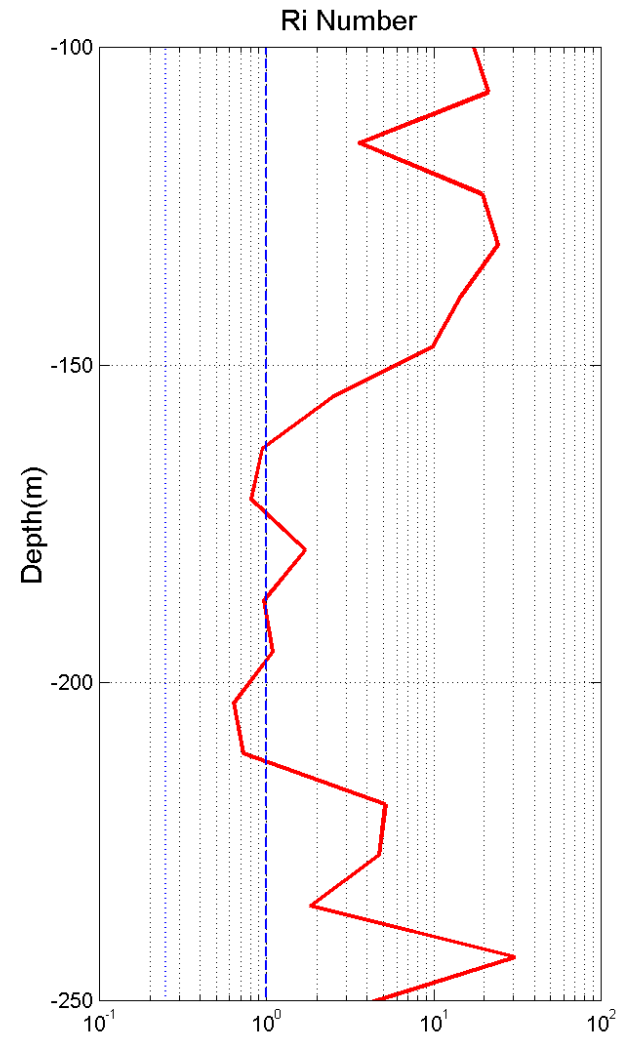
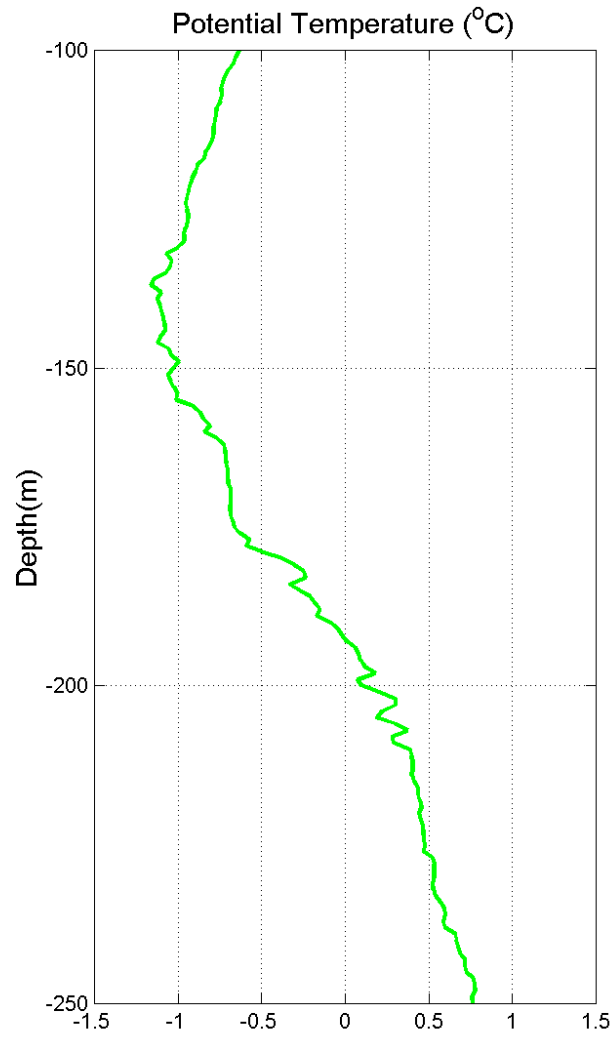
- Evidence of strong shear in much of the total ADCP record.
- Richardson number ( $Ri$ ) obtained from ADCP and CTD can indicate potential for mixing.

$$Ri = \frac{g}{\rho_o} \frac{\Delta\rho / \Delta z}{(\Delta U / \Delta z)^2}$$

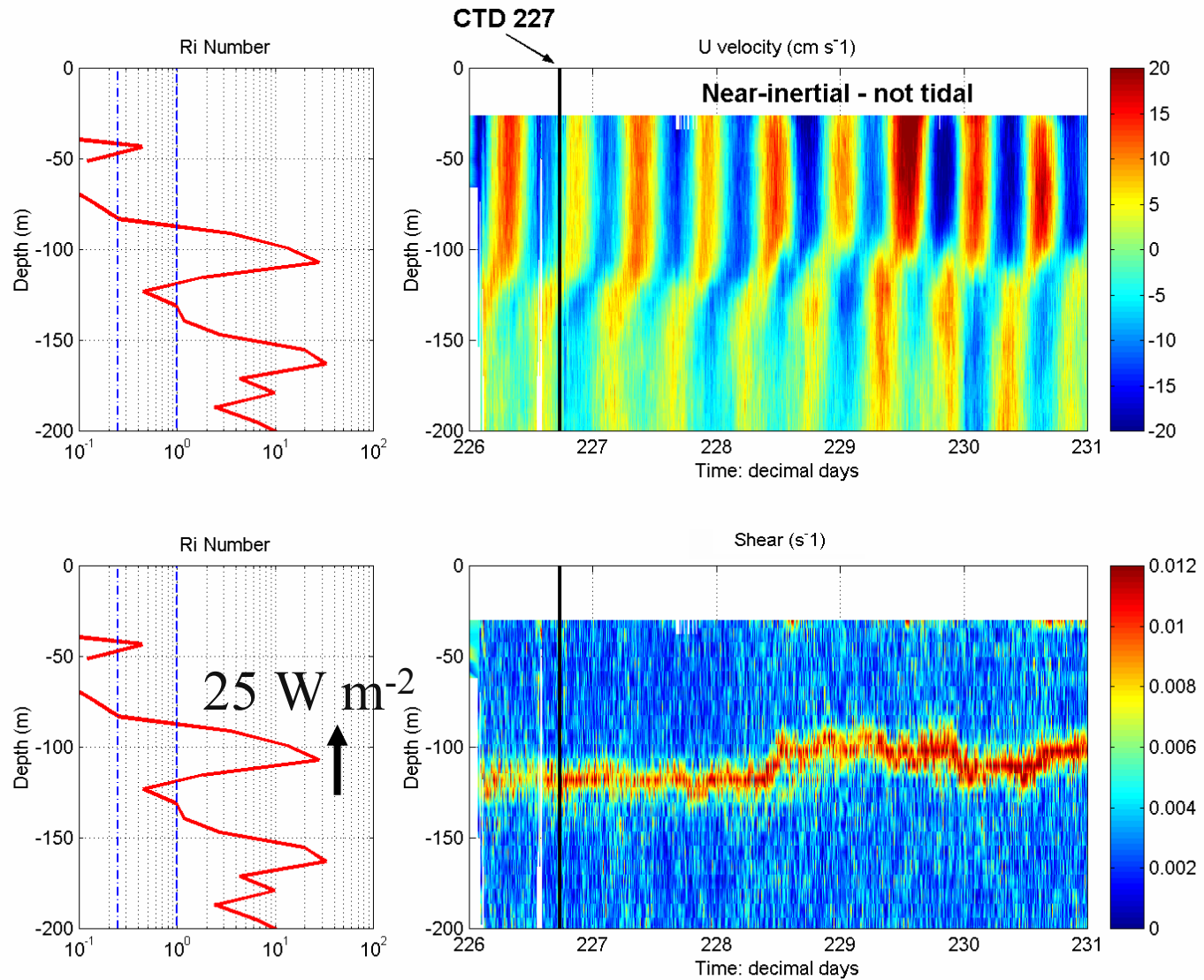
# NBP0103 Station 76



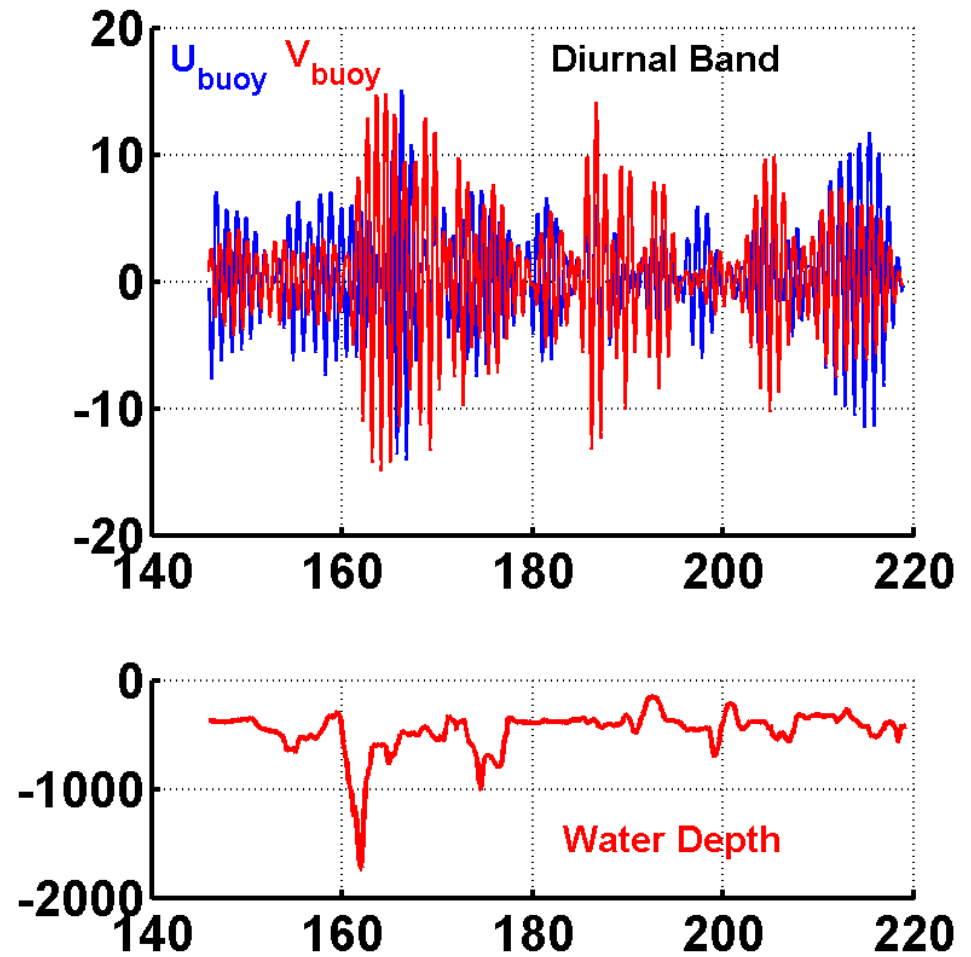
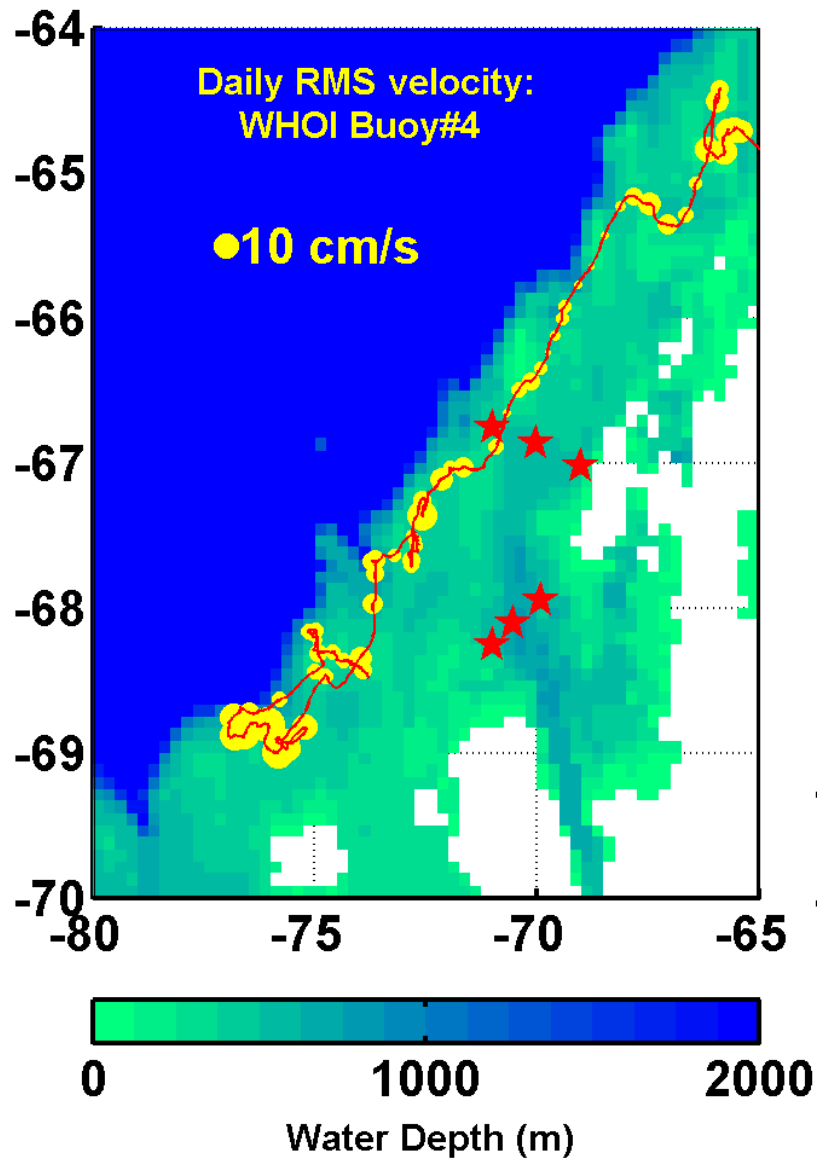
# NBP0103 Station 76



# Near-Inertial Motion: LMG0106 Site 3 off Adelaide Is.



# Diurnal Tides Near the Shelf Break



## Next Steps

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- Identify additional ADCP datasets.
- Additional editing.
- Remove tides.
- Extend mixing study to entire data set.

# Acknowledgements

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*Eric Firing, Jules Hummon, and Teri Chereskin* have provided us with invaluable assistance in the configuration and support of the shipboard systems, as well as initial processing.