SPICE Mooring Data Report
Description and Quality Control

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1. Scientific Objectives

1.1 Introduction

Within the international Southwest Pacific Ocean Circulation and Climate Experiment (SPICE) program (*Ganachaud et al.* [2014]), scientific efforts are made to understand the Southwest Pacific ocean circulation and its influence on the equatorial current system. A key motivation of SPICE is to obtain a quantitative view of the mean and variability of the equatorward South Pacific western boundary current transit through the main exit straits of the Solomon Sea to the equatorial Pacific, as well as the sea water transformations when transiting through the Solomon Sea. Each pathway possibly means different water mass combinations, and implies a different time scale for water to reach the equator. The ratio of transport through each of the straits may also vary with time. The time variability of those pathways is the focus of the MoorSPICE program through a France-USA collaboration. It consists of approximately an 18-month deployment of current meter and T/S sensors moorings within the Solomon Sea (Figure 1). A pair of up and down looking Acoustic doppler Current Profilers (ADCPs) near the surface is set on the moorings, which have been deployed more-or-less simultaneously in Vitiaz Strait (USA), St. Georges Channel (USA) and Solomon Strait (France) in July-August 2012 during the Pandora cruise on the R/V L'Atalante. The moorings were recovered during the MoorSPICE cruise in March 2014 on the R/V Thompson, and redeployed for a final recovery in July-August 2015 as part of the Cassiopée cruise.

This report details the quality control of the mooring data collected during MoorSPICE in the outflow straits of the Solomon Sea.

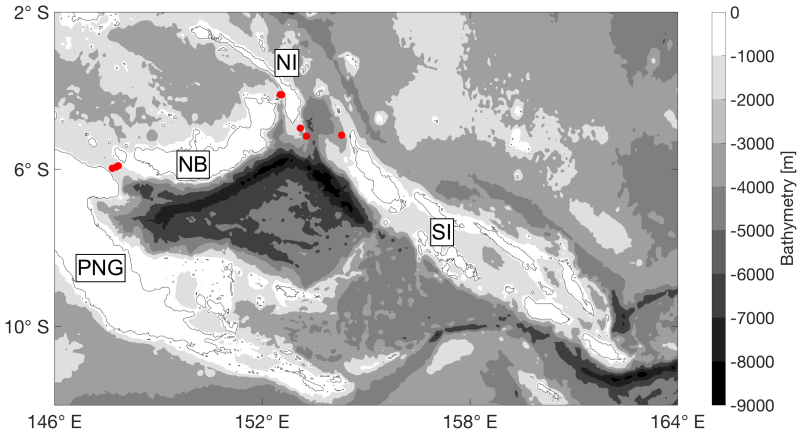


Figure 1: Solomon Sea bathymetry (grey shading) and locations of MoorSPICE moorings (red dots). "PNG" and "NB" abbreviate the Papua New Guinea and New Britain, while "NI" and "SI" correspond to New Ireland and Solomon Islands, respectively.

1.2 Deployment 1

The moorings for deployment 1 were deployed during the Pandora cruise (July-August 2012) and recovered during the MoorSPICE cruise (March 2014). Table 1 gives the date and time for the deployment and recovery of each mooring, in addition to position and bottom depth. Mooring locations are depicted as red dots in Figure 1.

Table 1: Deployment and recovery details for deployment 1 moorings.

Mooring	Date/Time Deployed	Anchor Drop Position	Ranged Position	Depth	Date/Time Recovered
Solomon Strait M1 (West)	21/07/2012 UTC 01:30	153° 05.910'E, 4°57.653'S	153° 06.024'E, 4° 57.48'S	2050 m	06/03/2014 UTC 23:01
Solomon Strait M2a (Middle)	16/07/2012 UTC 04:17	153°16.020'E, 5°09.403'S	153° 16.864'E, 5° 09.853'S	2559 m	06/03/2014 UTC 01:45
Solomon Strait M2b (Middle)	15/07/2012 UTC 22:11	153°19.937'E, 5°09.448'S	153° 19.937'E, 5° 09.448'S	2710 m	06/03/2014 UTC 02:24
Solomon Strait M3 (East)	18/07/2012 UTC 01:52	154°17.934'S, 5°08.507'S	154° 17.975'E, 5° 08.283'S	2627 m	04/03/2014 UTC 20:35
St. Georges East	20/07/2012 UTC 05:55	152° 33.86'E, 4° 06.37'S	152° 33.86'E, 4° 06.17'S	1433 m	08/03/2014 UTC 06:35
St. Georges West	20/07/2012 UTC 00:47	152° 31.155'E, 4° 06.925'S	152° 31.116'E, 4° 06.82'S	1243 m	07/03/2014 UTC 23:53
Vitiaz East	28/07/2012 UTC 01:06	147° 50.266'E, 5° 55.129'S	147° 50.05'E, 5° 54.96'S	900 m	13/03/2014 UTC 20:30
Vitiaz Middle	28/07/2012 UTC 13:06	147° 46.894'E, 5° 56.829'S	147° 46.68'E, 5° 56.64'S	1130 m	15/03/2014 UTC 02:15
Vitiaz West	28/07/2012 UTC 06:00	147° 40.188'E, 5° 56.873'S	147° 39.96'E, 5° 58.69'S	980 m	14/03/2014 UTC 20:05

2. General Quality Control Methods

Three 'quality levels' were defined for this dataset to preserve each iteration of the quality control process for future use. These levels are Raw, Level 0 and Level 1. Raw data requires that:

- Observations are in physical units using the pre-cruise calibration coefficients.
- The entire time series is preserved. No obvious spikes or out-of-water data has been removed.

Level 0 data requires that:

- The beginning of each time series was trimmed to a time when the observations are no longer changing due to the falling mooring and pressure (when available) is relatively steady at (or near) the prescribed deployment depth. The pressure record of nearby sensors was utilized if the sensor in question did not record pressure.
- Each time series was trimmed to end at the last measurement made prior to the mooring being released.
- Unrealistic spikes in temperature, conductivity/salinity, velocity, and pressure were removed.
- ADCP observations have undergone the full quality control process described in chapter 7.
- Velocity 'drop-out' periods for RCM 7 are set to nan.

Level 1 data requires that:

- Observations are corrected for sensor drift when pre- and post-deployment calibrations were available for temperature and/or conductivity observations.

The following sections describe instrument-type quality control in greater detail.

3. Aanderaa RCM 7 Quality Control

Aanderaa Recording Current Meters Model 7 (RCM 7) were deployed on Solomon Strait moorings M1, M2b, and M3 (see Appendix A for deployment details). The RCM 7 consists of a vane and recording unit with a rotor, thermistor, and pressure sensor. The vane enables the RCM 7 to align itself with the direction of the flow, thus the magnetic orientation gives direction of the velocity. The magnitude is determined from the speed of the rotor due to the local flow rate. For recording intervals of 10 minutes, which was the typical interval for this deployment, speed and direction were sampled every 12 seconds and vector-averaged. For longer recording intervals, speed and direction is sampled every 1/50 of the recording internal. This configuration allows for relatively accurate estimates of in-situ velocity when flow speeds are sufficiently strong. The accuracy errors associated with both speed and direction are directly related to the current speed and are detailed in Table 2.

Table 2: Aanderaa current speed and direction accuracy errors.

	Current Speed Range $[cm/sec]$	Error
Direction	5-100	$\pm 5°$
	2.5-5 and 100-200	$\pm 7.5°$
Speed	2-250	$\pm 1 cm/sec$ or $\pm 2\%$ whichever is greater

RCM 7 performed generally well during deployment 1 with no sustained pressure or temperature sensor failures. Three sensors had velocity 'drop-outs' with sustained periods of suspicious near-zero current speeds. These instrument are:

- RCM 07962, Solomon M1
- RCM 10097, Solomon M1
- RCM 10100, Solomon M3

These observations were set to nan in level 0. Corresponding error time series for speed and direction were generated for each instrument time series and is included as an error structure in all RCM 7 level 0 data files.

4. Aquadopp Quality Control

Aquadopp current meters were utilized on nearly every mooring and recorded velocity, temperature and pressure. Aquadopps consistently performed well with no systematic issues. All Aquadopp data underwent standard level 0 processing.

5. Seabird 56/37/39 Quality Control

Standard level 0 processing was applied to all Seabird data. For instruments that underwent pre- and post-deployment calibrations, a linear correction was applied to the record using the estimated drift. The calibration information for each variable is included as a structure for each level 1 file. Sensor drifts are also noted in Appendix A. Seabird 37's deployed on Vitiaz Middle, Vitiaz West, and St. Georges East were set to sample every minute but did not have sufficient memory and thus all stopped recording in August 2013.

6. RBR and SIO T-Loggers Quality Control

RBR thermistors were deployed on Solomon Strait moorings while SIO T-Loggers were deployed on St. Georges Channel and Vitiaz Strait moorings. In general, RBR thermistors performed very well producing good quality data with no instrument failures. Several SIO T-Loggers failed over the course of the deployment, however those that were recovered in working order or with a dead battery produced good quality data.

7. Quality control of ADCP velocity

7.1 Introduction

The traditional quality control (QC) of the Acoustic Doppler Current Profilers (ADCPs) is mainly focused on the Percent Good (i.e. ratio of good pings per total pings) threshold. During the International Nusantara STratification ANd Transport (INSTANT) program [*Cowley et al.*, 2008], it was determined that additional quality control was required for moored ADCPs, especially for the upward-looking ADCPs, where upper bins are contaminated by the surface reflection and need to be removed without retaining near surface "good" data. A new QC procedure was firstly implemented by *Crout et al.* [2006] by the National Data Data Boy Center (NDBC) based on Ocean Observer 38 kHz and Workhorse 75 kHz ADCPs for deployments in the Gulf on Mexico. During INSTANT, Workhorse Longranger 75 kHz and 300 kHz were deployed in the narrow straits of the Indonesian Seas. A revised QC procedure was recommended with different thresholds [see Appendix 2, *Cowley et al.*, 2008], especially for the Percent Good test.

In the frame of the Southwest Pacific Ocean and Climate Circulation Experiment (SPICE) program [*Ganachaud et al.*, 2014], moored subsurface upward and downward looking ADCPs were deployed in the northern passages of the Solomon Sea (i.e. Vitiaz and Solomon Straits, and St Georges Channel) between July 2012 and March 2014. These ADCPs were also Workhorse Longranger 75 kHz and 300 kHz, and were deployed in narrow straits influenced by strong tidal currents. Thus, an additional QC is implemented for the SPICE moored ADCPs, following the INSTANT procedure. Beforehand, ADCP data were converted into depth bins to determine where the surface is, and data above the surface were removed.

7.2 QC procedure description

The QC procedure consists of six tests, where data in each bin can be flagged as fail, suspect or pass depending on defined threshold values (Table 3). As the INSTANT data QC, we chose a conservative approach, where suspected data are designated as failed. For tests 1 to 5, the tests are carried out for each cell with the binary condition: 0=pass; 1=fail. The results are summed, and if the sum is larger than 2 (i.e. the cell has failed 2 out of 5 tests) the cell is removed. Test 6 (the echo amplitude) is a surface detection test to remove surface data from each cell. Thus, rejection of cells can occur for one or two reasons:

- **Two out of the five tests that comprise the sum of tests 1 to 5 fail (OTfails)**
- **Failure of the echo amplitude test 6 (EAfail)**

Relevant ADCP raw data (i.e. pitch, roll, pressure and temperature) are firstly checked to identify strong horizontal and/or vertical displacements over time. Comments about dates when there are obvious problems in the record of the ADCP raw data are gathered into a separate table for each mooring, associated with some basics statistics. A particular attention is given to pitch and roll variations, as potential damages can be induced to the ADCP data.

Table 3: Tests and associated thresholds used to quality control the moored ADCP velocity fields.

Tests:	Error Velocity ($m.s^{-1}$)	Percent Good	Correlation Magnitude	Vertical Velocity ($m.s^{-1}$)	Horizontal Velocity ($m.s^{-1}$)	Echo Amplitude (counts)
$RDI300^1$ kHz	0.15	>80%	>110	<0.2	<2	30
$RDI75^1$ kHz	0.15	>50%	>64	<0.2	<2	25
$RDI75^2$ kHz	0.15	>50%	>110	<0.2	<2	25

[1]Standard

[2]Vitiaz Strait

7.3 Implementation of QC Procedure

7.3.1 Case 1: Solomon Strait M1 (upward RDI 300 kHz)

- Instrument type: RDI 300 kHz
- Instrument target depth: 80 m
- Instrument Serial Number: 5307
- Instrument vertical bin size: 4 m
- Instrument Deployment Date/Time (UTC): 07/21/2012 01:30
- Instrument Recovery Date/Time (UTC): 03/06/2014 23:01

The RDI 300 kHz in Solomon Strait M1 are 40 bins for 14253 time realizations. Pitch and roll variations (Figure 2a,b) are lower than 10 to 15 degrees over time, but strong vertical variations occurred in pressure (from 100 to 400 dbar, Figure 2c) and temperature (from 10° to 30°C, Figure 2d) are observed. The average, standard deviation, and range values for the different parameters used in each QC test (Figure 3), were used to preliminary choose corresponding thresholds.

The echo amplitude (EA) test 6 contributes to 45-54% of total fails in bins 25-40 for the different threshold values (20, 25, 30 and 35 counts). The EAfail increases to 50-60% in bins 21-25 for each threshold and no EAfail below bin 21, where the surface is likely detected (see the discontinuity of the echo amplitude mean profile, Figure 3f).

The percent good, correlation magnitude and error velocity parameters are not independent of other tests, they are related. For all threshold values of 10%, 30%, 50% and 80%, the percent good contributes nearly 100% to OTfails in all bins, as the correlation magnitude with thresholds of 50, 64, 75 and 110. Both Percent good and correlation magnitude contribute to ∼50% of total failures in upper bins.

The error velocity test shows little differences between each threshold value in bins 30 to 40 with minor contributions (1-10%) to OTails. Highest contributions to OTfails are observed in bins 19-20. For the vertical velocity test, there are negligible differences between the threshold values, contributing 1-3% to OTfails above bin 20. For the horizontal velocity test, negligible contributions (5-15%) to OTfails are also observed, impacting mostly bins 19-23.

We suggest to use similar QC thresholds than those used during INSTANT for the Workhorse 300 kHz ADCPs. The recommended thresholds for the six QC tests are shown in Table 3, where bad bins are mostly observed between bins 30-40. A comparison of the zonal velocity before and after QC is shown in Figure 4a,b with significant differences occurring in bins 20-40.

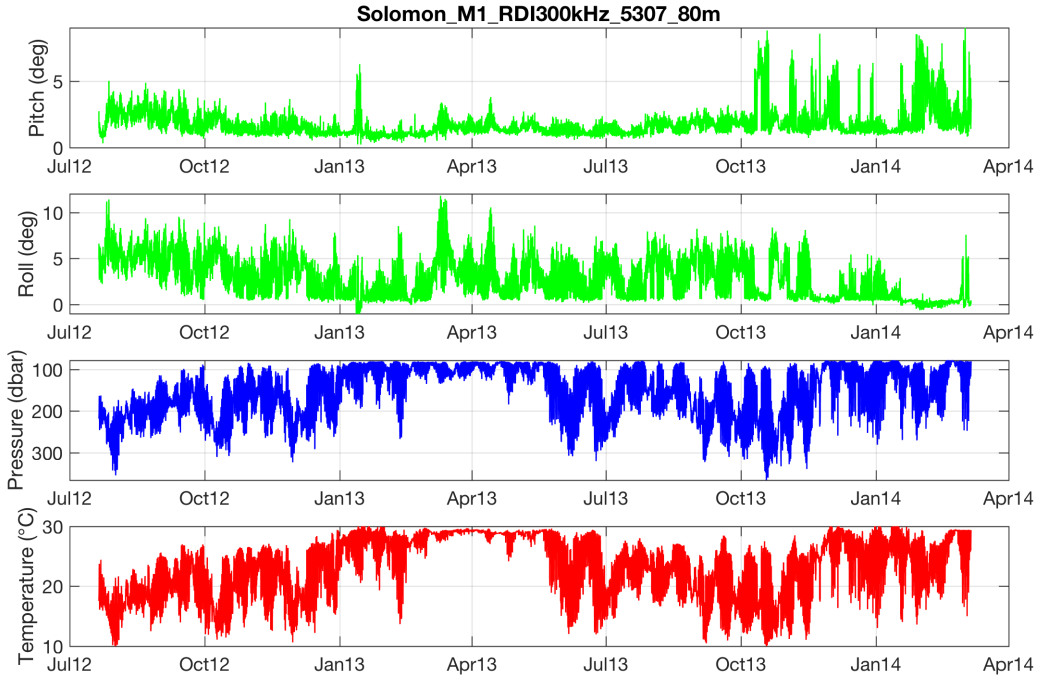


Figure 2: Solomon Strait M1 RDI 300 kHz (upward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

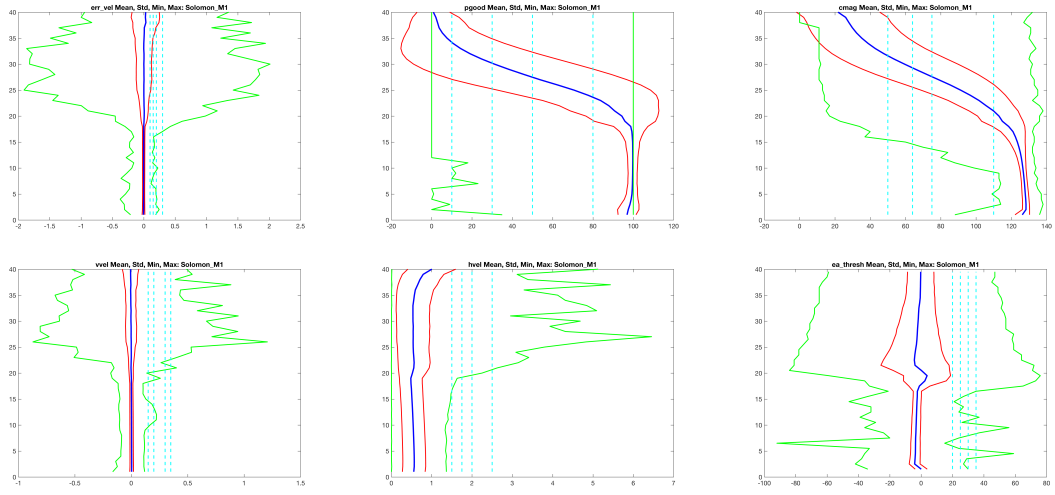


Figure 3: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Solomon Strait M1 RDI 300 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

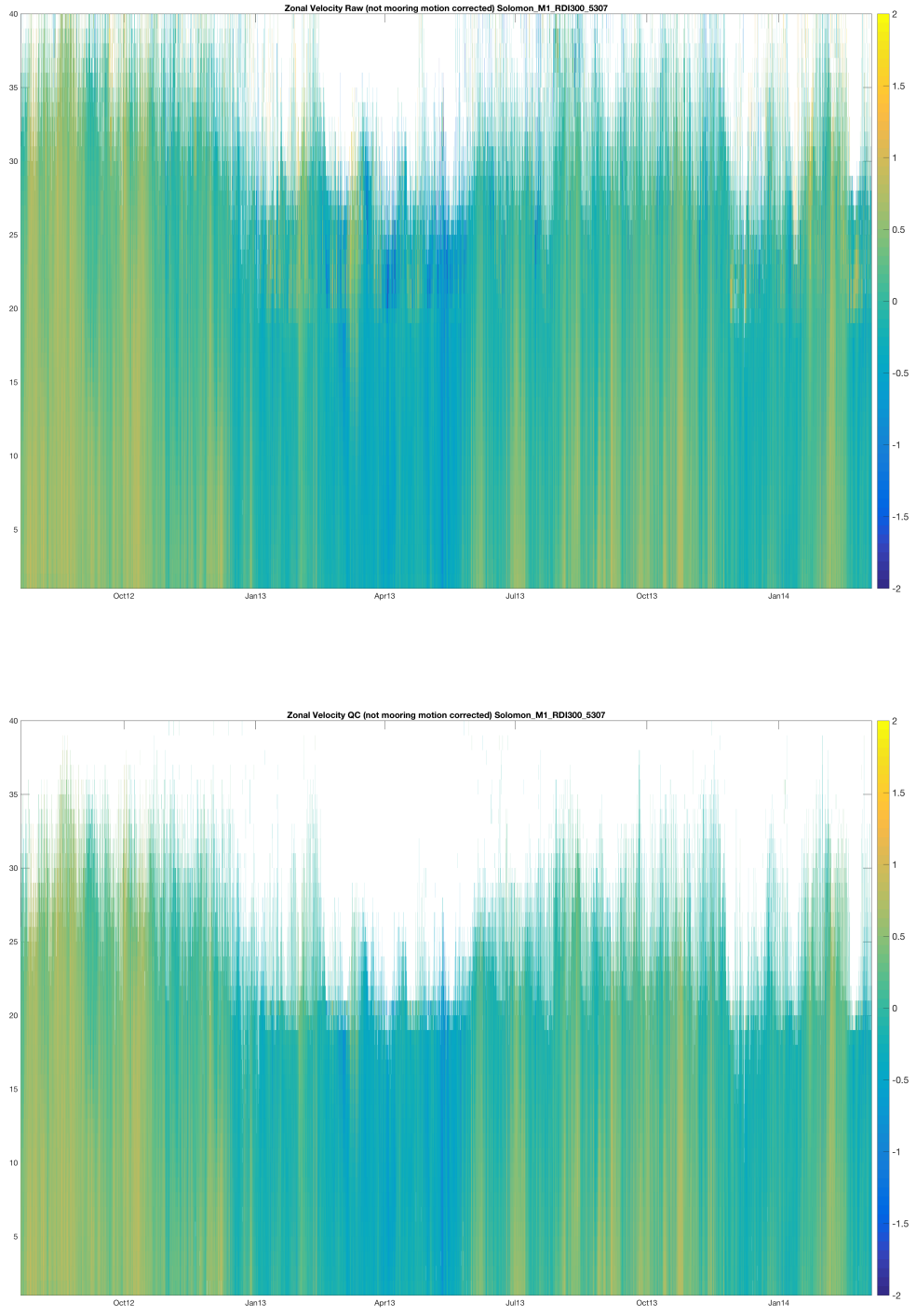


Figure 4: Comparisons of zonal velocity ($m.s^{-1}$) in Solomon Strait M1, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 300 kHz ADCP.

7.3.2 Case 2: Solomon Strait M1 (downward RDI 75 kHz)

- Instrument type: RDI 75 kHz
- Instrument target depth: 102 m
- Instrument Serial Number: 3427
- Instrument vertical bin size: 20 m
- Instrument Deployment Date/Time (UTC): 07/21/2012 01:30
- Instrument Recovery Date/Time (UTC): 03/06/2014 23:01

The RDI 75 kHz in Solomon Strait M1 are 30 bins for 14431 time realizations. Pitch and roll variations (Figure 5a,b) are lower than 10 to 20 degrees. Similar vertical variations are observed in pressure (Figure 5c) and temperature (Figure 5d) than those with the upward RDI 300 kHz. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 6.

The EA test contributes ∼100% to total fails in bins 16-26, representing few cells in term of absolute numbers for thresholds of 20 (∼50 cells) and 25 (∼10 cells). No EAfail is found for thresholds 30 and 35. We suggest that an appropriate threshold is 25 counts, as used in INSTANT QC for all RDI 75 kHz.

The percent good and correlation magnitude stay at 100% in most upper bins for the different threshold values in OTfails. The failure rate appear to be insensitive to the choice of thresholds for both percent good (from 10% to 80%) and correlation magnitude (from 50 to 110), suggesting that the rejected values are likely near zero for the percent good and below 50 for the correlation magnitude, and hence bad values. Due to this threshold insensitivity, we decide to follow INSTANT choices for the RDI 75 kHz. Percent good and correlation magnitude thresholds are set to 50% and 64, respectively.

For the error velocity and the vertical velocity, few cells in term of absolute numbers are rejected in OTfails, and no cells are rejected for the horizontal error velocity test. Hence, we stick with INSTANT recommended thresholds of 0.15, 0.2 and 2 $m.s^{-1}$, respectively.

The new QC parameters are shown in Table 3. No significant cell removal was detected, as the sum of the OTfails is mostly lower than 2 and only few cells are rejected through the EA test. Hence, no major differences are found between the zonal or meridional velocities before and after QC (Figure 7a,b).

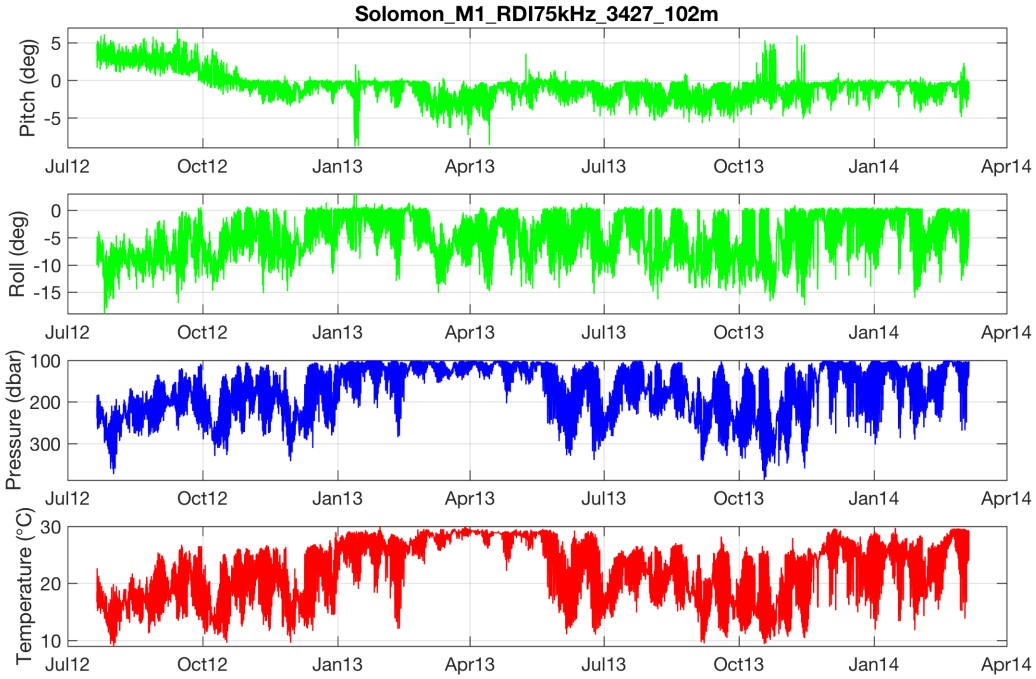


Figure 5: Solomon Strait M1 RDI 75 kHz (downward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

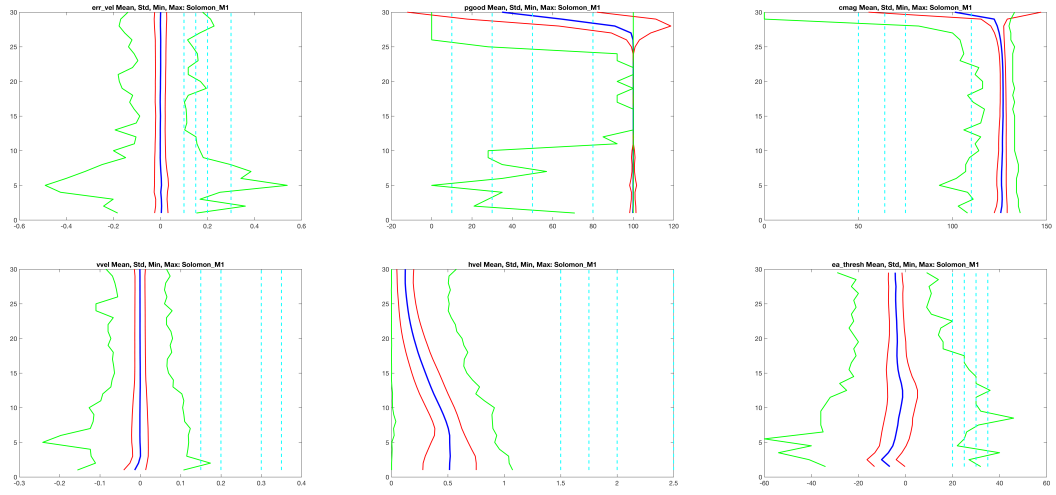


Figure 6: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Solomon Strait M1 RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

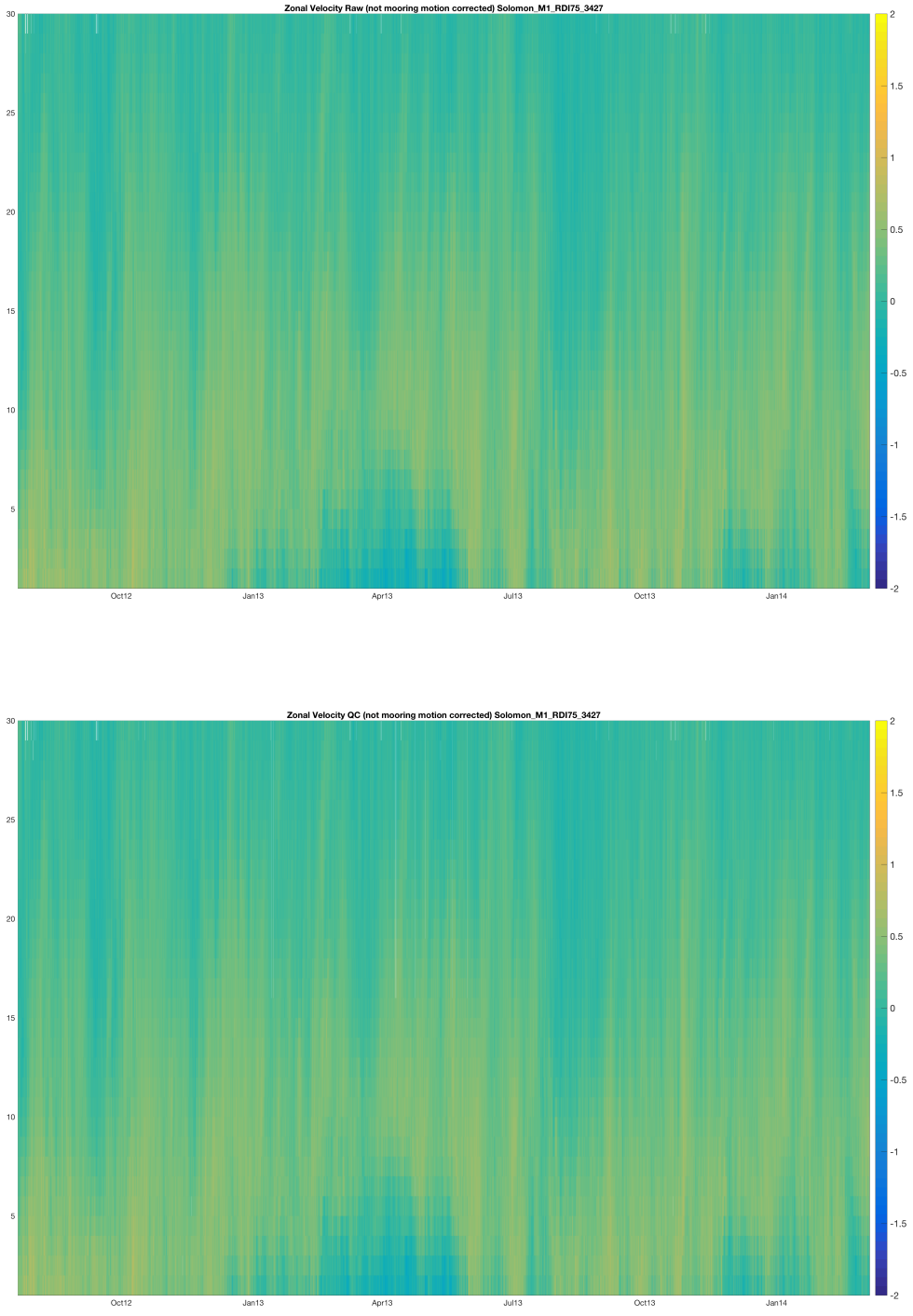


Figure 7: Comparisons of zonal velocity ($m.s^{-1}$) in Solomon Strait M1, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 75 kHz ADCP.

7.3.3 Case 3: Solomon Strait M2a (upward FlowQuest 300 kHz)

- Instrument type: FlowQuest 300 kHz
- Instrument target depth: 80 m
- Instrument Serial Number: 40005
- Instrument Deployment Date/Time (UTC): 07/16/2012 04:17
- Instrument Recovery Date/Time (UTC): 03/06/2014 01:45

The upward FlowQuest 300 kHz data could not be retrieved because of technical problems, and so no quality control was performed on this instrument.

7.3.4 Case 4: Solomon Strait M2b (upward RDI 75 kHz)

- Instrument type: RDI 75 kHz
- Instrument target depth: 400 m
- Instrument Serial Number: 1066
- Instrument vertical bin size: 20 m
- Instrument Deployment Date/Time (UTC): 07/15/2012 22:11
- Instrument Recovery Date/Time (UTC): 03/06/2014 02:24

The RDI 75 kHz in Solomon Strait M2b are 30 bins for 14356 time realizations. Pitch and roll variations (Figure 8a,b) are lower than 5 degrees. Vertical variations in pressure (<100 dbar, Figure 8c) and temperature (<5°C, Figure 8d) are observed with the downward RDI 75 kHz. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 9.

For the EA test, the EAfail stay at 100% in bins 18-30 and no EAfail is found in bins 1-15 for the different threshold values. Differences are found in percent failure in bin 16 (12-73%) and bin 17 (23-77%) for each threshold (20, 25, 30 and 35), where high EAfail is associated with low threshold values. A QC threshold of 25 counts is found to be appropriate for the RDI 75 kHz in Solomon Strait M2b, as in INSTANT for the RDI 75 kHz cases.

As in Solomon Strait M1, the percent good and the correlation magnitude stay mostly at 100% in upper bins 18 to 30, where both percent good and correlation magnitude contribute only to ∼1% of total fails. Percent failures appear to be again, insensitive to the choice of threshold values. Thus, we stick with the Solomon Strait M1 criteria used for the RDI 75 kHz in Solomon Strait M2b.

For the error velocity, cell rejection is mostly occurring in bins 19-30 in OTfails for each threshold values, with significant differences in term of absolute numbers. The percent failure drops off ∼50% from the threshold values of 0.15 $m.s^{-1}$ to 0.2 $m.s^{-1}$. We decide to use 0.15 threshold, as the RDI 75 kHz in Solomon Strait M1. The vertical velocity test exhibits few rejected cells in OTfails in terms of absolute numbers with highest values for the 0.15 threshold criterion. The horizontal velocity test exhibits also few rejected cells, except at the middle bins 19-21 for each threshold value. We stick with previous thresholds for both vertical and horizontal tests (0.2 $m.s^{-1}$ and 2 $m.s^{-1}$, respectively).

The corresponding QC parameters are shown in Table 3, and the zonal velocities before and after QC are shown in Figure 10a,b. Obvious differences occur in bins 18-30, where the revised thresholds retain more cells.

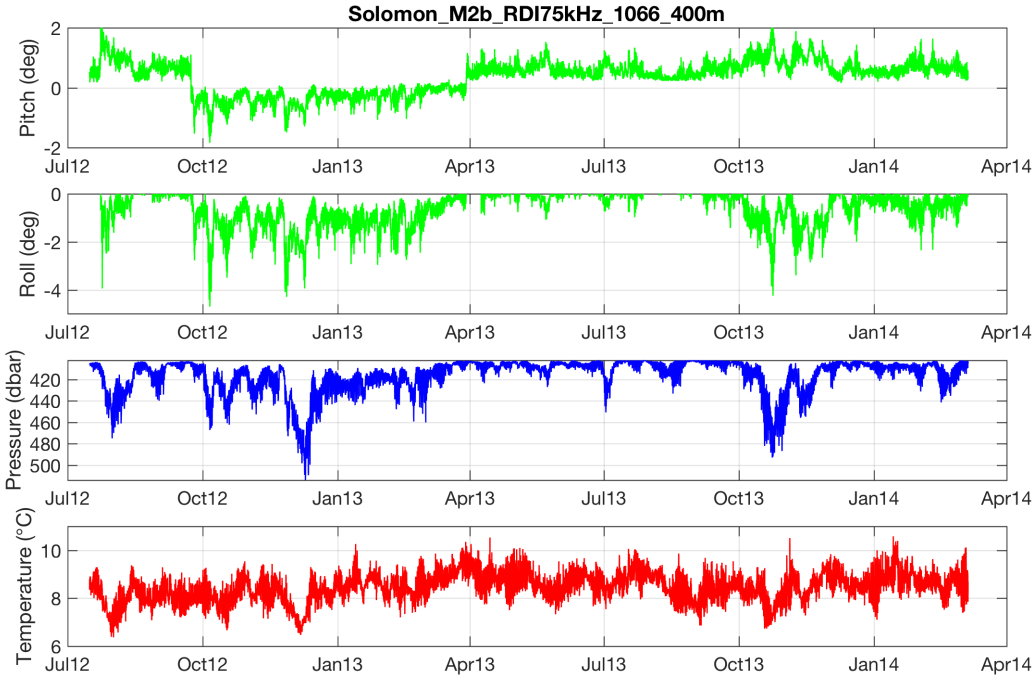


Figure 8: Solomon Strait M2b RDI 75 kHz (downward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

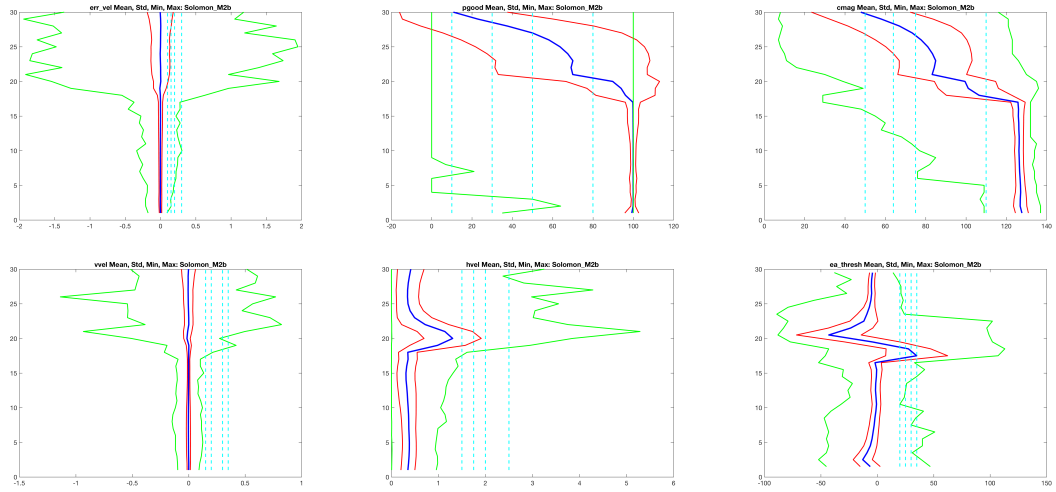


Figure 9: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Solomon Strait M2b RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

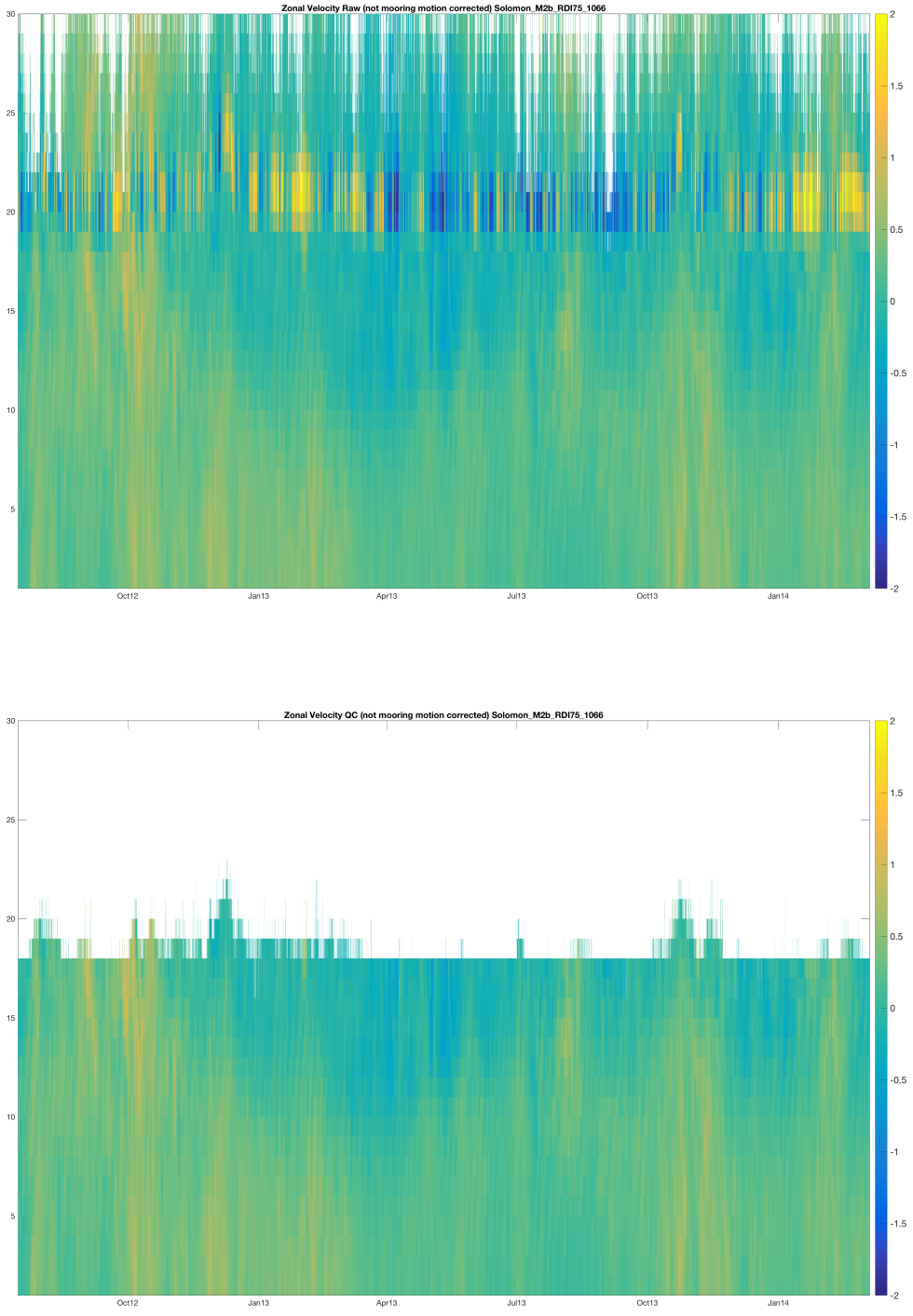


Figure 10: Comparisons of zonal velocity ($m.s^{-1}$) in Solomon Strait M2b, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 75 kHz ADCP.

7.3.5 Case 5: Solomon Strait M3 (upward RDI 300 kHz)

- Instrument type: RDI 300 kHz
- Instrument target depth: 80 m
- Instrument Serial Number: 12143
- Instrument vertical bin size: 4 m
- Instrument Deployment Date/Time (UTC): 07/18/2012 01:52
- Instrument Recovery Date/Time (UTC): 03/04/2014 20:35

The RDI 300 kHz in Solomon Strait M3 are 40 bins for 14331 time realizations. Pitch and roll variations (Figure 11a,b) are lower than 5 degrees over time, and some punctual vertical variations in pressure (<50 dbar, Figure 11c) and temperature (<5°C, Figure 11d) are observed. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 12.

The EA test results in 2-5% failure in middle bins 20-30 for each threshold value, and no EAfail below bin 20, where the surface is likely detected (see strong discontinuity of the mean profile, Figure 12f). A 30 threshold that was found appropriate for the RDI 300 kHz used in Solomon Strait M1, is also suitable for this RDI 300 kHz used in Solomon Strait M3.

The percent good contributes 100% to OTfails for each threshold value in upper bins 25-40, which is nearly similar to the correlation magnitude. Both tests contribute to ∼90% of the total fail in most upper bins. As for the RDI 300 kHz in Solomon Strait M1, we suggest to use a 80 percent good and a 110 correlation magnitude.

The error velocity test exhibits rejected cells mostly in bins 18-28 for each threshold value in OTfails. The vertical and horizontal velocity tests rejects cells mostly around bin 25 for the different thresholds in OTfails. As in Solomon Strait M1, the QC threshold criteria that were found appropriate for the RDI 300 kHz (Table 3), are also suitable for the RDI 300 kHz in Solomon Strait M3.

The zonal velocities are shown before and after QC (Figure 13a,b). The differences occur mostly above bin 18, where the revised thresholds retain most of the cells near the sea surface.

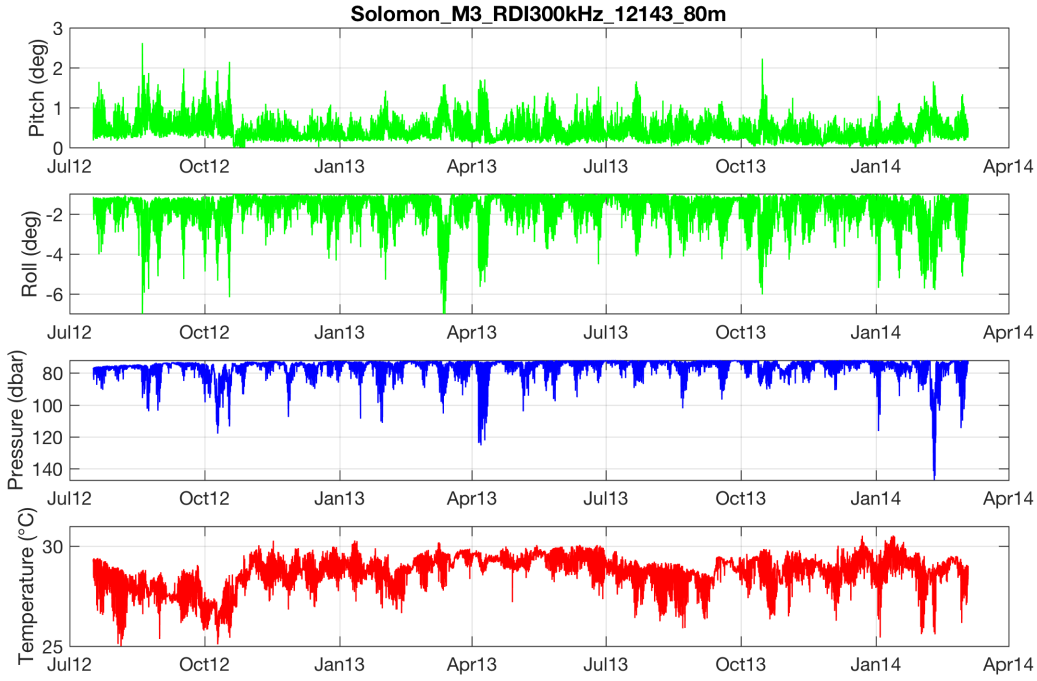


Figure 11: Solomon Strait M3 RDI 300 kHz (upward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

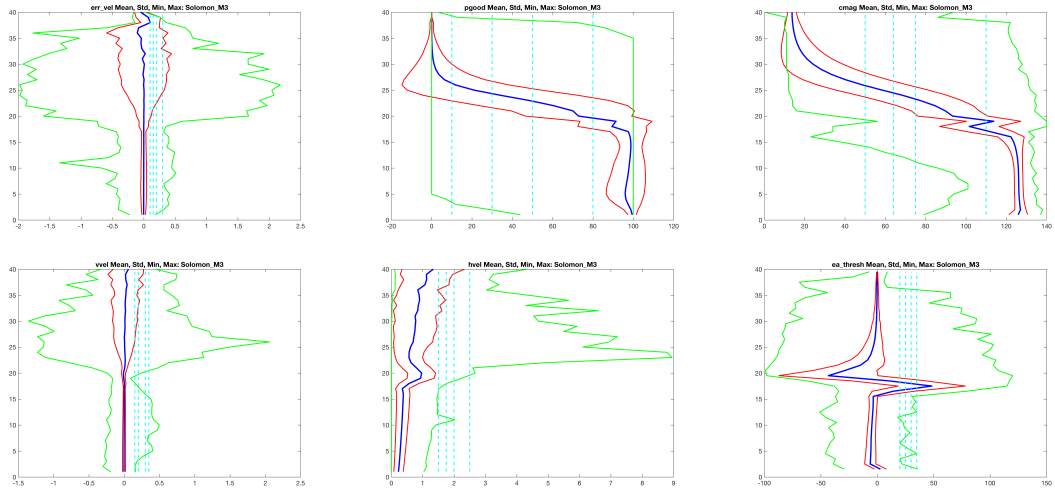


Figure 12: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Solomon Strait M3 RDI 300 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

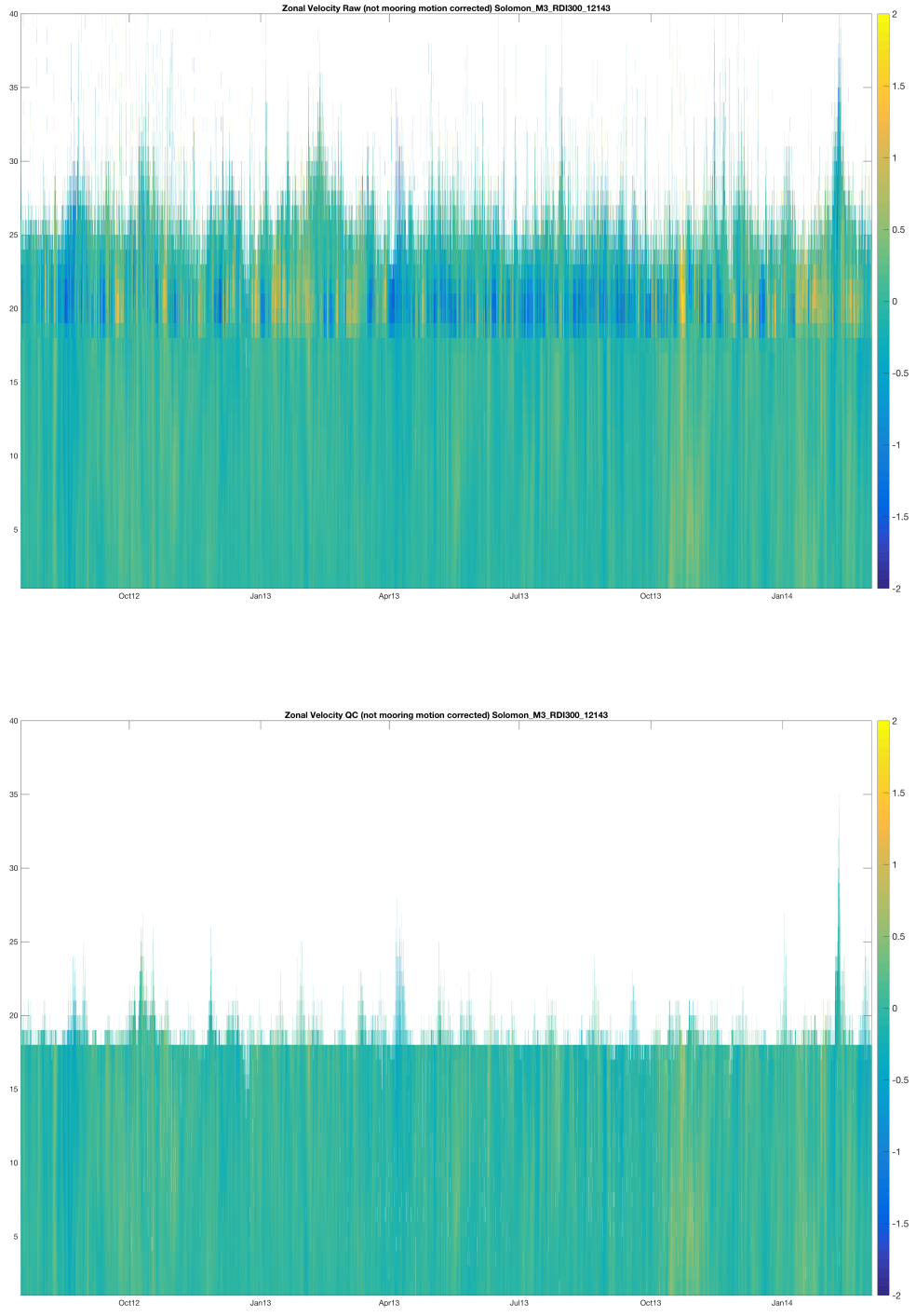


Figure 13: Comparisons of zonal velocity ($m.s^{-1}$) in Solomon Strait M3, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 300 kHz ADCP.

7.3.6 Case 6: Solomon Strait M3 (downward RDI 75 kHz)

- Instrument type: RDI 75 kHz
- Instrument target depth: 102 m
- Instrument Serial Number: 14215
- Instrument vertical bin size: 20 m
- Instrument Deployment Date/Time (UTC): 18/07/2012 01:52
- Instrument Recovery Date/Time (UTC): 04/03/2014 20:35

Inter-comparison between this instrument and nearby velocity sensors in section 8.5 indicate that the magnitude of the observed velocity by this ADCP is biased low, while the direction of the observed velocities by this ADCP are correct. This may be due to instrument ringing or faulty electronics in the sensor. Due to time constraits and limited expertise, the exact nature of the issue was not determined and the data was not used in the mooring velocity analysis. While the data is not utilized in future analysis, the quality control information and some intercomparison figures are inculded in the report for completeness.

The RDI 75 kHz in Solomon Strait M3 are 30 bins for 10625 time realizations. Pitch and roll variations (Figure 14a,b) are lower than 5 and 10 degrees respectively. Vertical variations in pressure (<50 dbar, Figure 14c) and temperature (<5°C, Figure 14d) are observed with the downward RDI 75 kHz. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 15.

The EA test shows percent failures in bins 20-30 to total fails, rejecting few cells in terms of absolute numbers for thresholds 20, 25 and 30, but no EAfail is found for the 35 threshold. We suggest an appropriate threshold of 25, consistent with those for RDI 75 kHz in Solomon M1 and M2b.

The percent good contributes 100% to OTfails and the correlation magnitude occurs in nearly 100% of cases for the different threshold values in upper bins. For the error velocity test, few cells in term of absolute numbers are rejected in OTfails, and no cells are rejected for the vertical and horizontal velocity tests.

The QC threshold criteria previously used in M1 and M2b for the RDI 75 kHz (Table 3), are also used for the RDI 75 kHz in Solomon Strait M3. The zonal velocities before and after QC (Figure 16a,b) exhibit little differences, as the sum of OTfails is mostly lower than two and only few bad cells are detected through the EA test. Similar results are found with the meridional velocity field, and so are not shown.

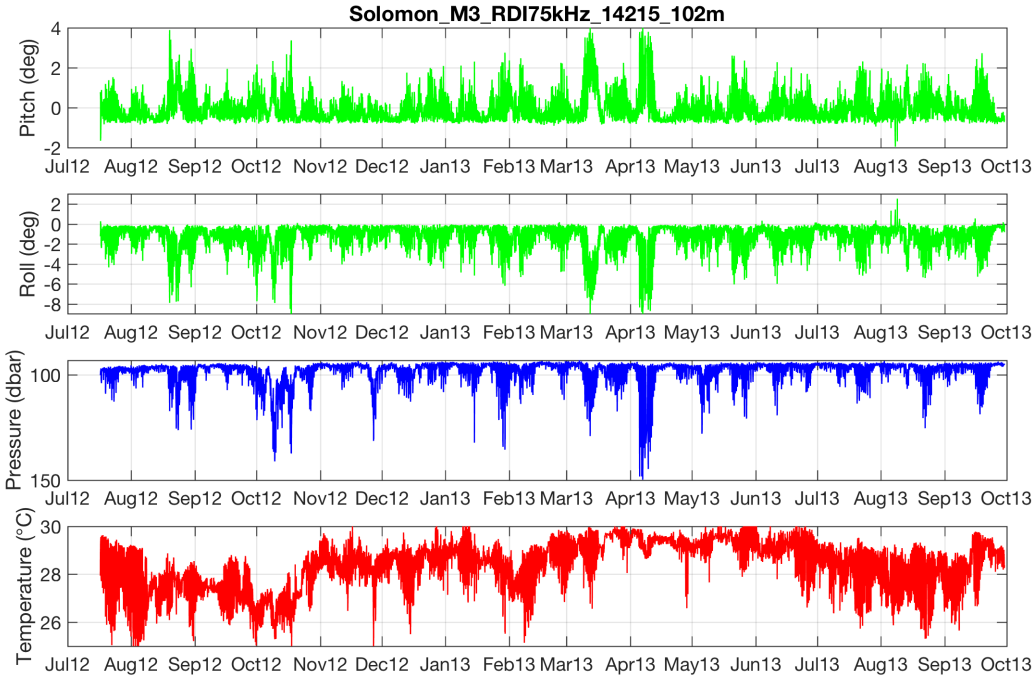


Figure 14: Solomon Strait M3 RDI 75 kHz (downward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

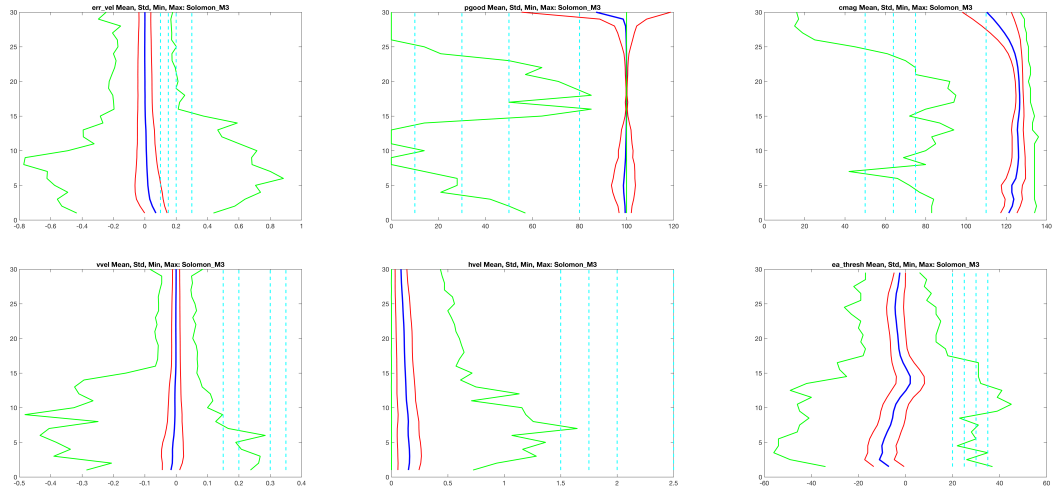


Figure 15: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Solomon Strait M3 RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

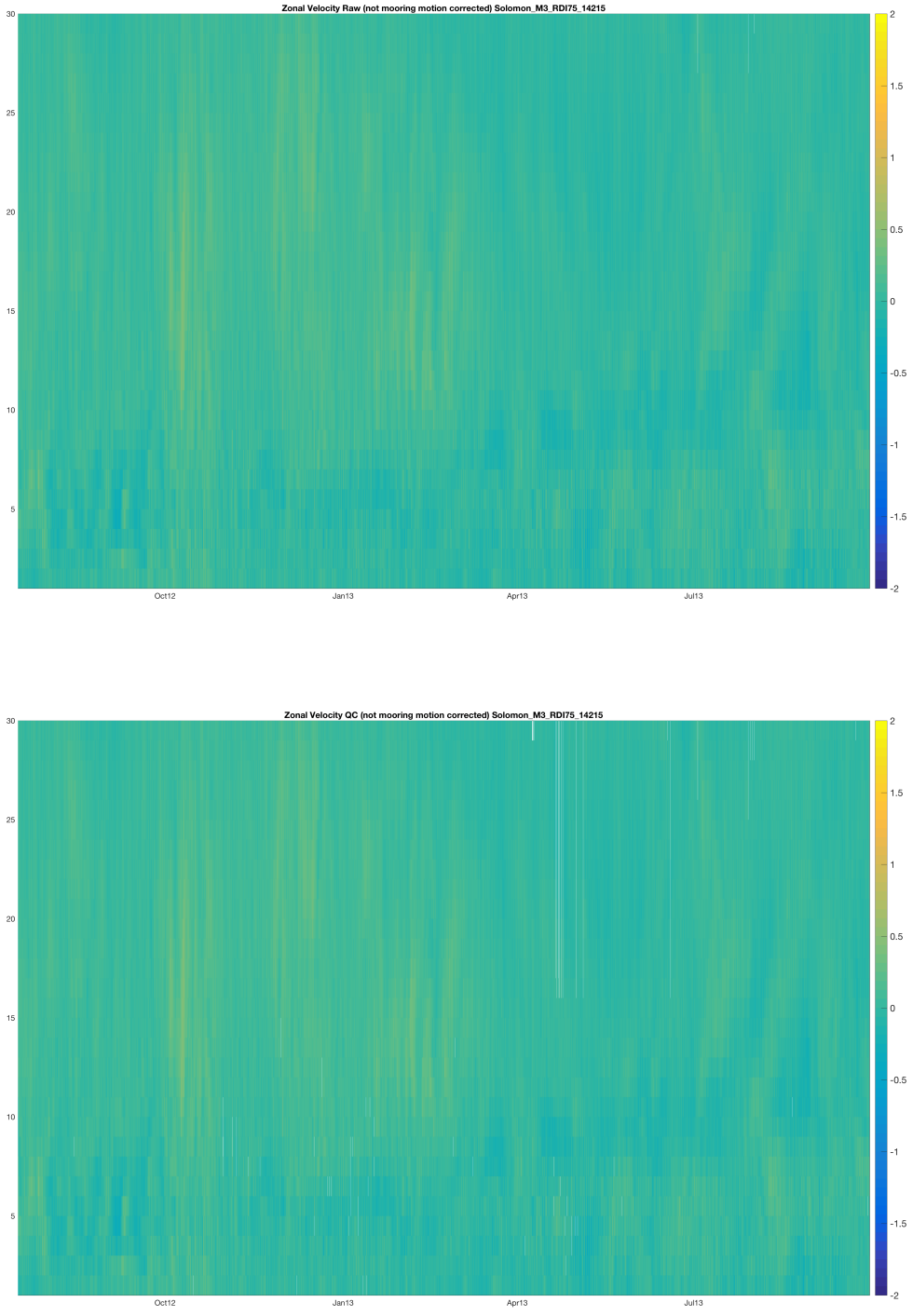


Figure 16: Comparisons of zonal velocity ($m.s^{-1}$) in Solomon Strait M3, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 75 kHz ADCP.

7.3.7 Case 7: St Georges East (upward RDI 300 kHz)

- Instrument type: RDI 300 kHz
- Instrument target depth: 152 m
- Instrument Serial Number: 16832
- Instrument vertical bin size: 8 m
- Instrument Deployment Date/Time (UTC): 07/20/2012 05:55
- Instrument Recovery Date/Time (UTC): 03/08/2014 06:35

Inter-comparison between the upward facing ADCP, downward facing ADCP and single point current meter velocity observations indicated that the 300 kHz ADCP had a faulty compass. As the two ADCPs were deployed on the same syntactic float, pitch and roll from the two instruments was used to determine the angular offset between the two instruments. The upward ADCP's velocity observations were transformed back into beam coordinates using pitch, roll and the original compass heading. These velocities were then transformed back to earth coordinates using the upward ADCP's pitch and roll, in addition to the downward ADCP's compass heading plus the instrument offset determined from pitch and roll. The raw velocity direction from the two ADCP without and with the correction are shown in Figure 17.

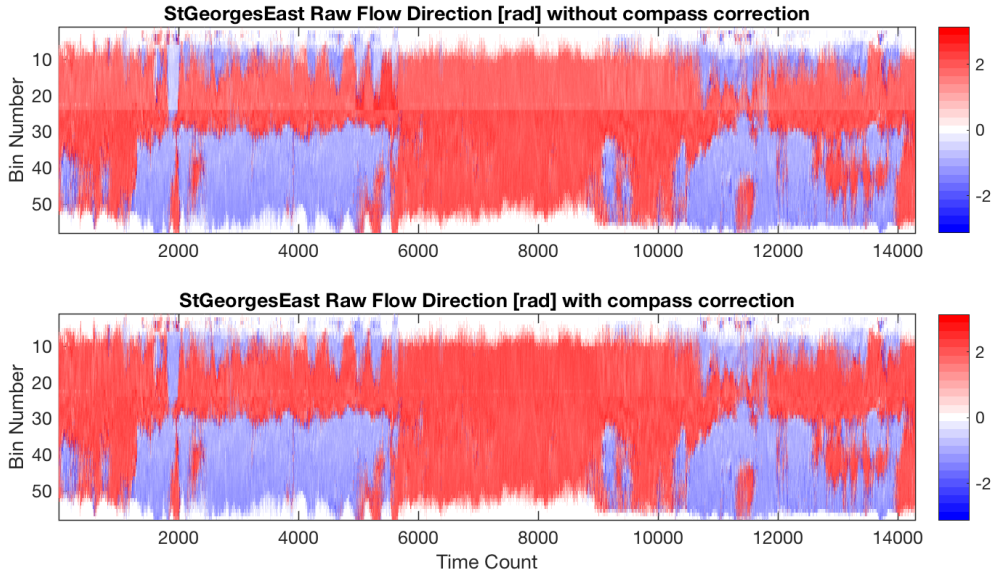


Figure 17: St Georges Channel East raw ADCP velocity direction the is (top) uncorrected and (bottom) corrected for the 300 kHz ADCP compass error.

The RDI 300 kHz in St Georges East are 23 bins for 28834 time realizations. Pitch and roll show strong variations lower than 25 degrees (Figure 18a,b), except between February and April 2013, where strong variations of ±20 degrees are observed. Special attention will be dedicated to ADCP data between February-April 2013 to identify potential damages. Vertical variations in pressure can reach 500 dbar, especially between April-July 2013 (Figure 18c). Temperature variations (Figure 18d) are mostly lower than 10°C, and they can reach 20°C between April-July

2013. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 19.

The EA test results in 6-35% failure to total fails in bins 19-23 for the different threshold values, and EAfail contributes ∼1% below bin 19. The percent good stays at 100% for each threshold value in all bins. The correlation magnitude occurs in nearly 100% cases of OTfails, except in bin 13 for a 50 threshold. Due to relative insensitivity, we stick again with a 80% percent good and a 110 correlation magnitude.

As for the error velocity test, little differences are found between the different thresholds, contributing ∼1-7% to OTfails in all bins. Vertical and horizontal tests reject few bins with percent failures of 0-2% for each threshold. Thus, we suggest using the QC criteria that were found suitable for M1 and M3 RDI 300 kHz (Table 3).

The zonal velocities are shown before and after QC in Figure 20a,b. The differences occur mostly in bins 13-23, where the revised thresholds retain more cells. Between February-April 2013, strong raw zonal velocities (>100 $cm.s^{-1}$) are observed in most upper bins but are retained after QC. Similar strong meridional velocities are observed during February-April 2013 in raw data, but there are also retained after QC (not shown).

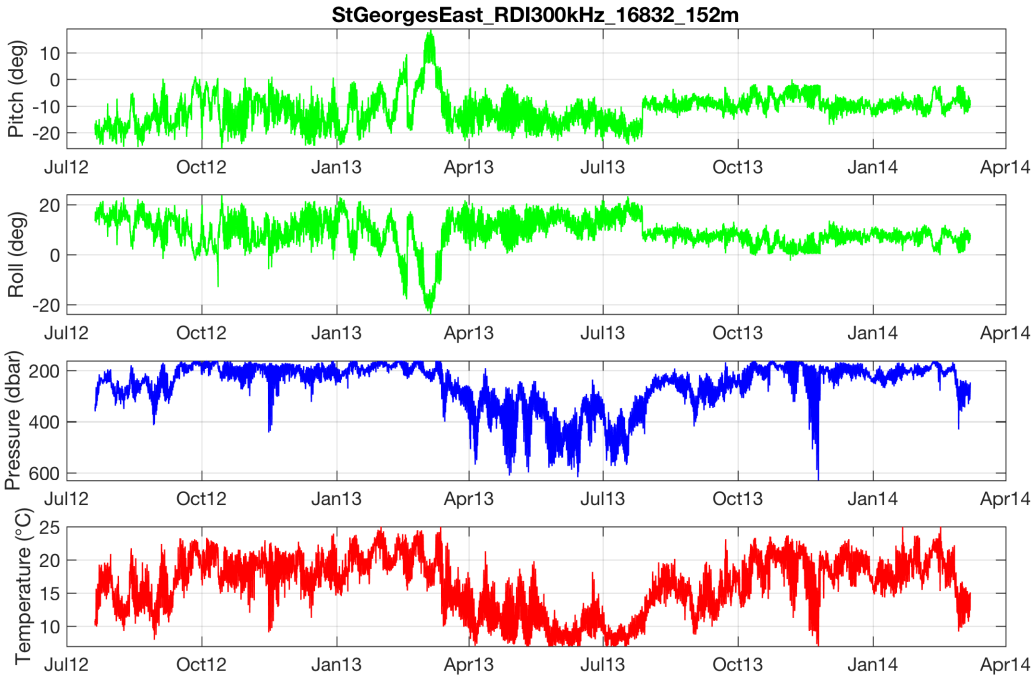


Figure 18: St Georges Channel East RDI 300 kHz (upward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

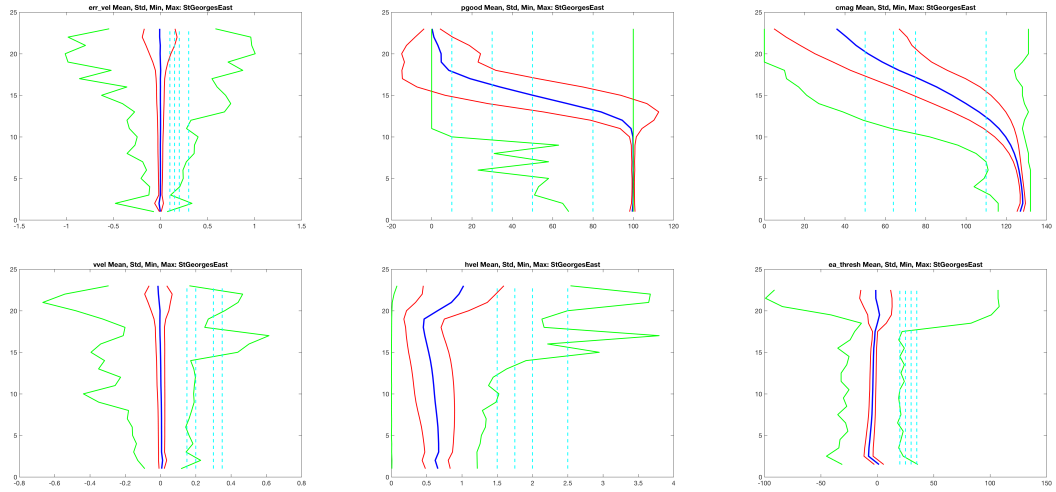


Figure 19: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Solomon Strait M3 RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

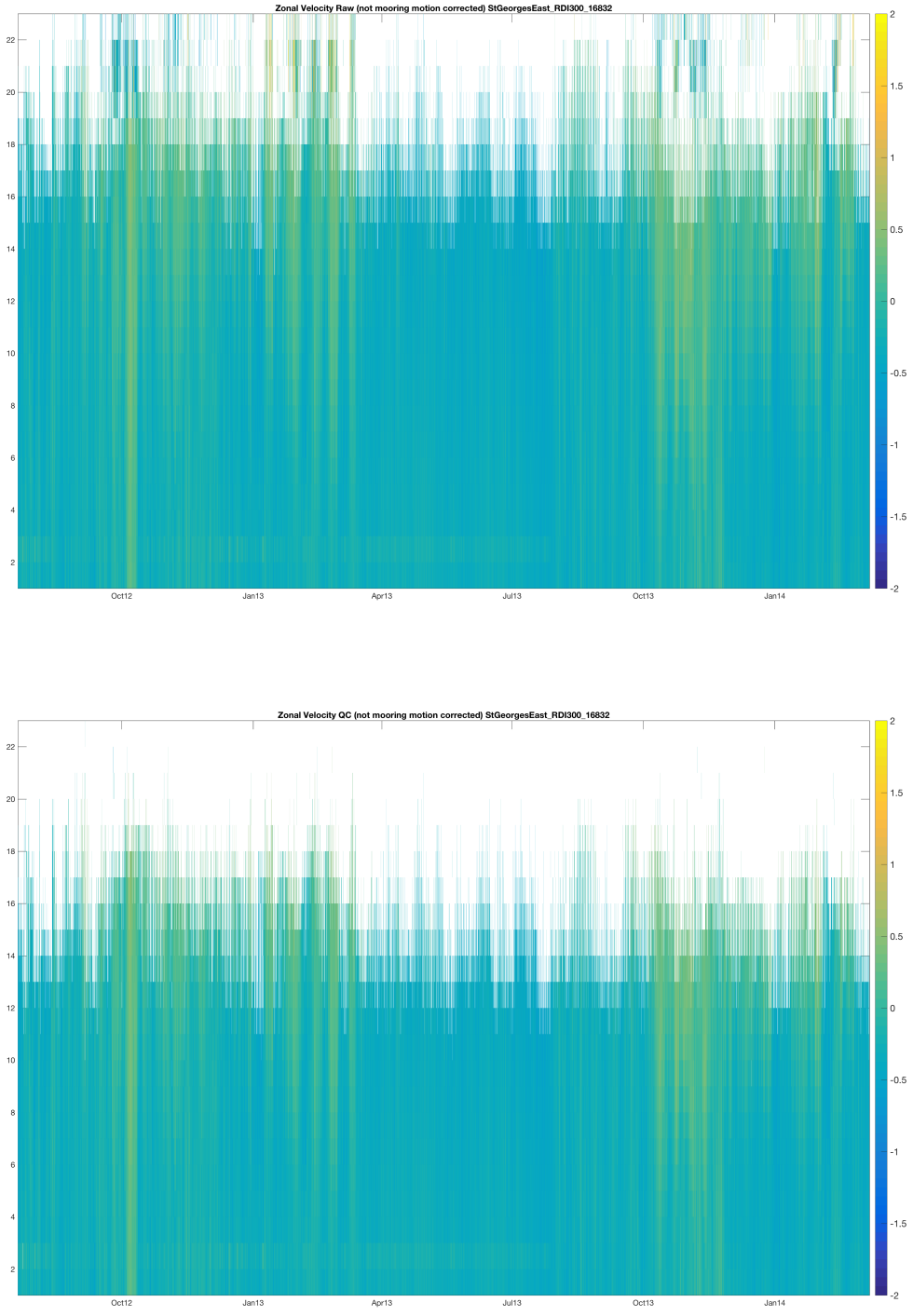


Figure 20: Comparisons of zonal velocity ($m.s^{-1}$) in St Georges Channel East, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 300 kHz ADCP.

7.3.8 Case 8: St Georges East (downward RDI 75 kHz)

- Instrument type: RDI 75 kHz
- Instrument target depth: 154 m
- Instrument Serial Number: 16768
- Instrument vertical bin size: 20 m
- Instrument Deployment Date/Time (UTC): 07/20/2012 05:55
- Instrument Recovery Date/Time (UTC): 03/08/2014 06:35

The RDI 75 kHz in St Georges East are 35 bins for 14445 time realizations. Pitch and roll show variations lower than 25 degrees (Figure 21a,b), except between February and April 2013, where strong variations of ±20 degrees are observed. Special attention will be again, dedicated to ADCP data between February-April 2013 to identify potential damages. Vertical variations in pressure can reach 500 dbar from April-July 2013 (Figure 21c). Temperature varies less than 10°C (Figure 21d) but variations can reach 20°C between April-July 2013. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 22.

The EA test shows percent failures of 1% to total fails in all bins for a threshold of 20 counts, and EAfail of 1% only in bin 35 for a 25 threshold. No EAfail is found for the 30 and 35 threshold values. Percent good contributes 100% to OTfails in all bins for each threshold value. The correlation magnitude test contributes also ∼100% to OTfails in all bins.

For the error velocity test, percent failure contributes 1-11% in all bins to OTfails for a threshold of 0.1 $m.s^{-1}$. Only few cells in term of absolute numbers are rejected (0 to 40 cells) for the other threshold values (i.e. 0.15, 0.2 and 0.3 $m.s^{-1}$). The vertical velocity test rejects only one cell in OTfails with a threshold of 0.15 $m.s^{-1}$ from bins 31 to 34, and no cells in all bins with the other thresholds. As for the horizontal velocity test, no cells are rejected for the different cases.

Thus, the relative insensitivity to the choice of thresholds for the different tests, lead us to use the same QC criteria that were previously found appropriate for the RDI 75 kHz in Solomon Strait M1, M2b and M3 (Table 3). Zonal velocities before and after QC (Figure 23a,b) show few differences, although few cells were retain mostly between bins 25-35. Between February-April 2013, zonal and meridional velocities are lower than 50 $cm.s^{-1}$ in most upper bins, similar to those observed during dates without strong pitch and roll.

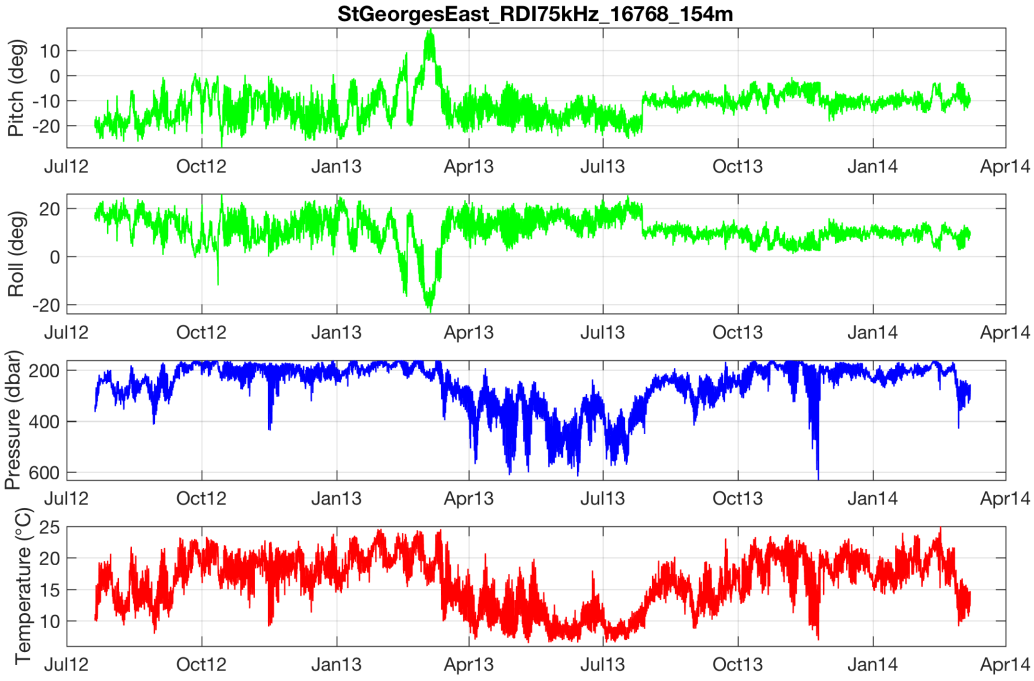


Figure 21: St Georges Channel East RDI 75 kHz (downward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

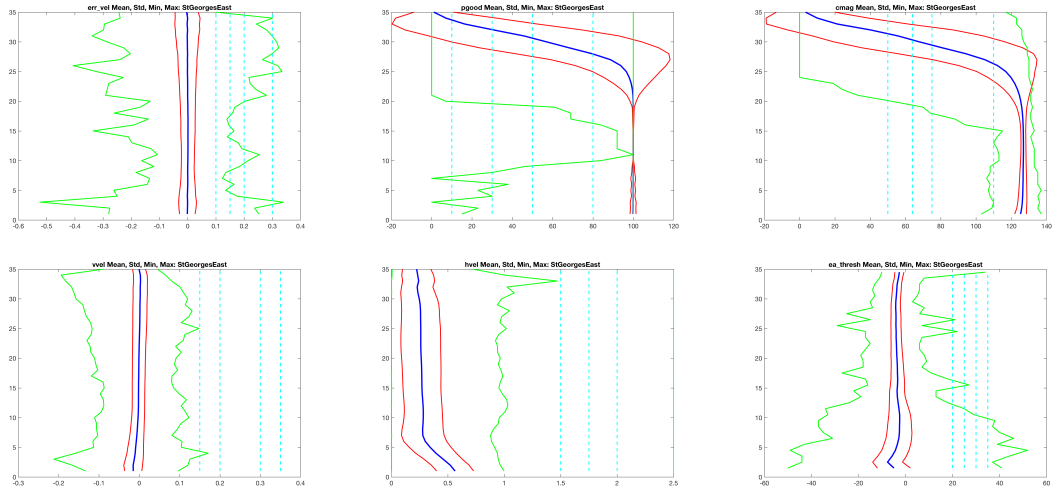


Figure 22: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the St Georges Channel East RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

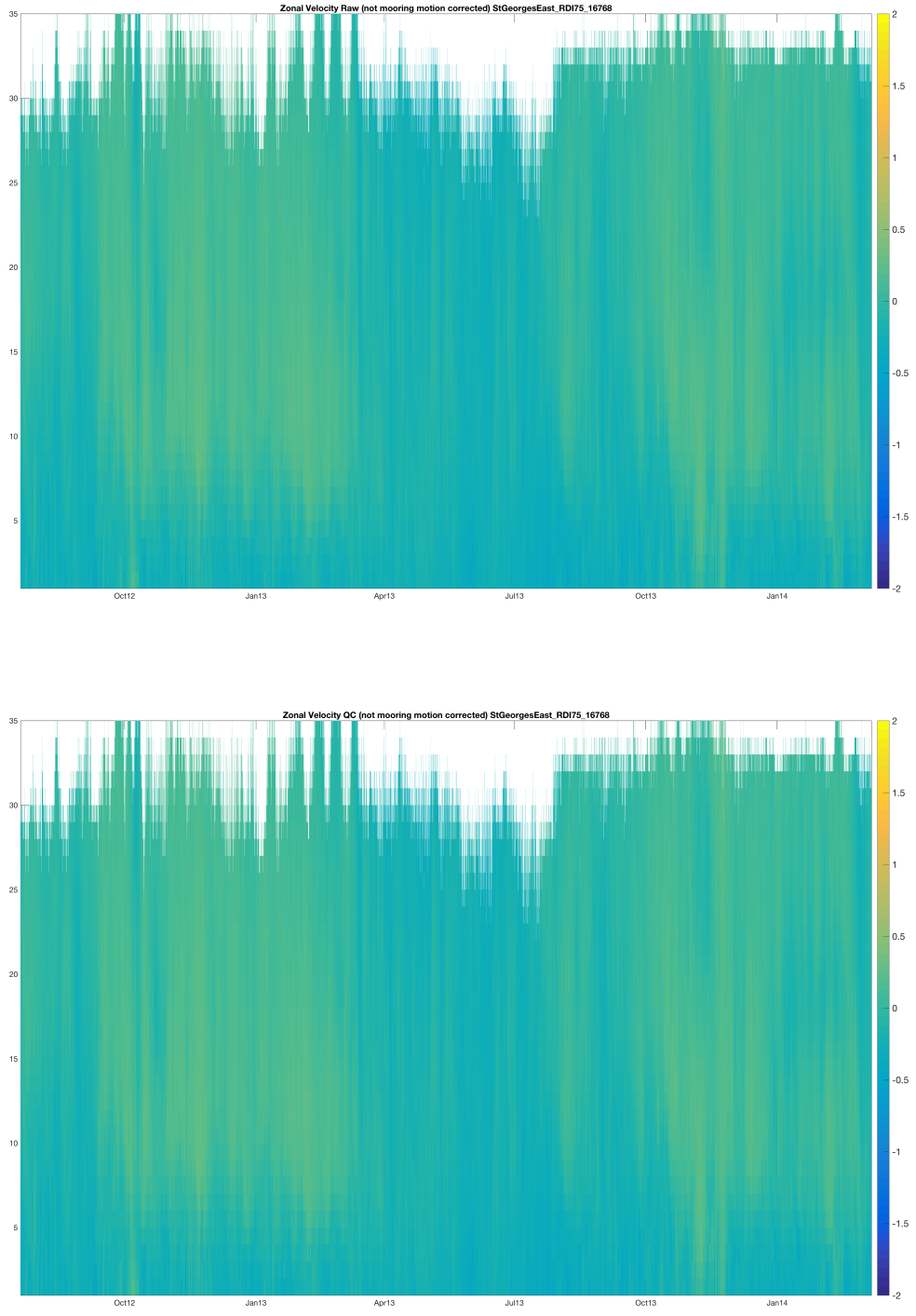


Figure 23: Comparisons of zonal velocity ($m.s^{-1}$) in St Georges Channel East, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 75 kHz ADCP.

7.3.9 Case 9: St Georges West (upward RDI 300 kHz)

- Instrument type: RDI 300 kHz
- Instrument target depth: 152 m
- Instrument Serial Number: 16833
- Instrument vertical bin size: 8 m
- Instrument Deployment Date/Time (UTC): 07/20/2012 00:47
- Instrument Recovery Date/Time (UTC): 03/07/2014 23:53

Inter-comparison between the upward facing ADCP and downward facing ADCP observations, in addition to the previously found issues with a 300 kHz ADCP compass, indicated that this 300 kHz ADCP also had a faulty compass. As the upward and downward facing ADCPs were deployed on the same syntactic float, pitch and roll from the two instruments was used to determine the angular offset between the two instruments. The upward ADCP's velocity observations were transformed back into beam coordinates using pitch, roll and the original compass heading. These velocities were then transformed back to earth coordinates using the upward ADCP's pitch and roll, in addition to the downward ADCP's compass heading plus the instrument offset determined from pitch and roll. The raw velocity direction from the two ADCP without and with the correction are shown in Figure 24.

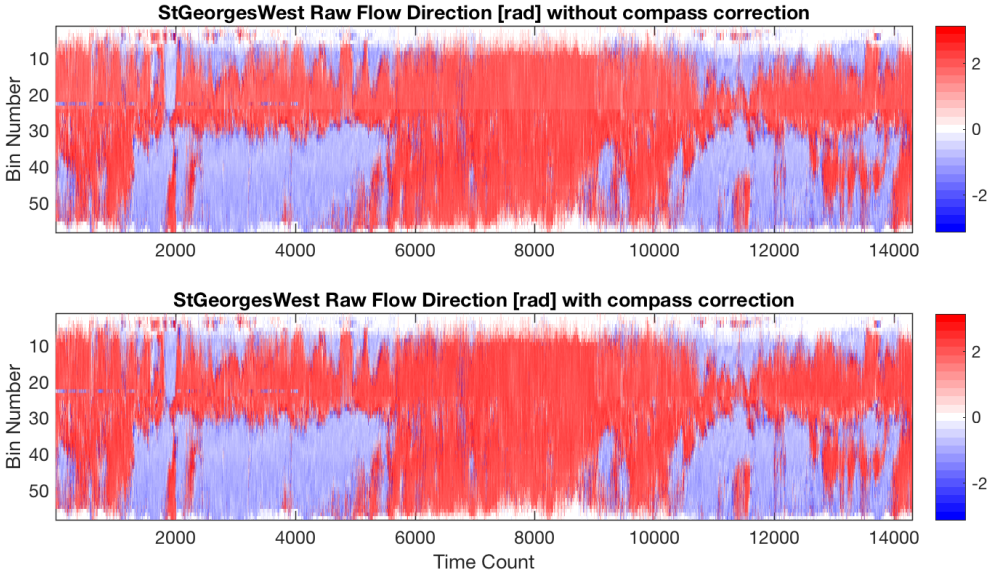


Figure 24: St Georges Channel West raw ADCP velocity direction the is (top) uncorrected and (bottom) corrected for the 300 kHz ADCP compass error.

The RDI 300 kHz in St Georges West are 23 bins for 28835 time realizations. Pitch and roll variations (Figure 25a,b) are lower than 25 and 10 degrees, respectively. Vertical variations in pressure can reach 500 dbar between April-August 2013 (Figure 25c). Temperature can vary from 5° to 25°C (Figure 25d), mostly from March to July 2013. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 26.

The EA test exhibits percent failures (∼10-50%) in bins 19-23 to total fails for each threshold, and no EAfail is found below bin 19. Percent good contribution to OTfails stays at ∼100% in all bins, for each threshold value. The correlation magnitude test contributes to ∼100% in all bins for threshold values of 75 and 110. As for the error velocity test, little contributions of 1-9% to OTfails are found in all bins for the different threshold values. Vertical and horizontal tests, are responsible for 1-3% of OTfails in all bins.

We decide to use similar QC threshold criteria than those used for the RDI 300 kHz in Solomon Straits and St Georges East (Table 3). Zonal velocities are shown before and after QC (Figure 27a,b). The differences occur mostly in bins 16-23, where the revised thresholds retain some higher velocities, especially when pitch looks clearly suspicious (i.e. between July 2012 to February 2013). However, high zonal velocities (∼1 $m.s^{-1}$) remain in all bins during October 2012, and so likely require further investigation.

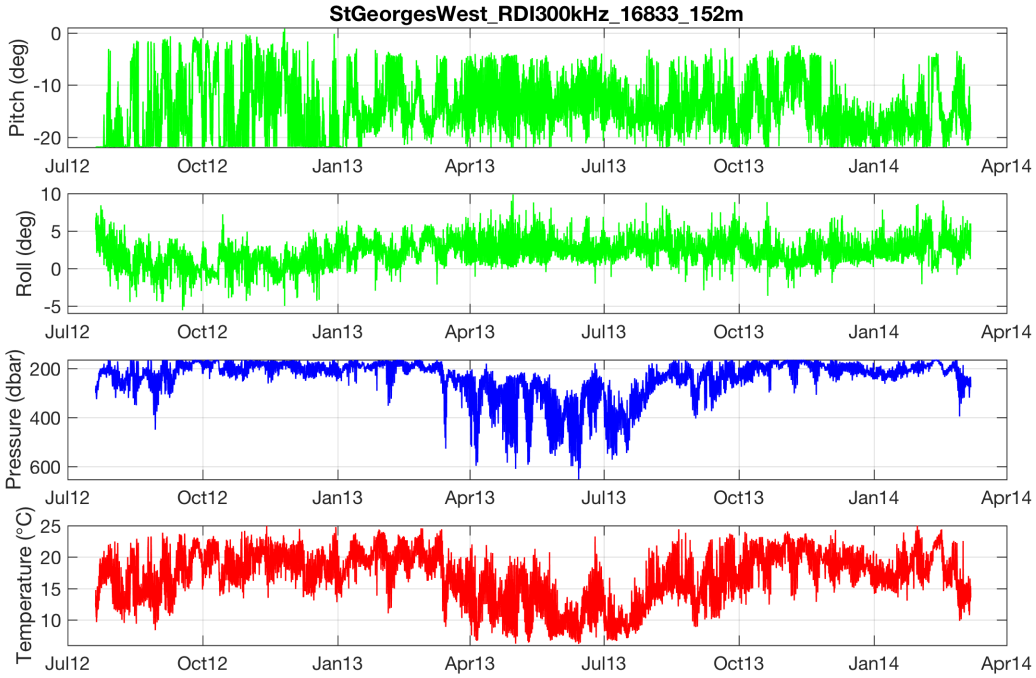


Figure 25: St Georges Channel West RDI 300 kHz (upward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

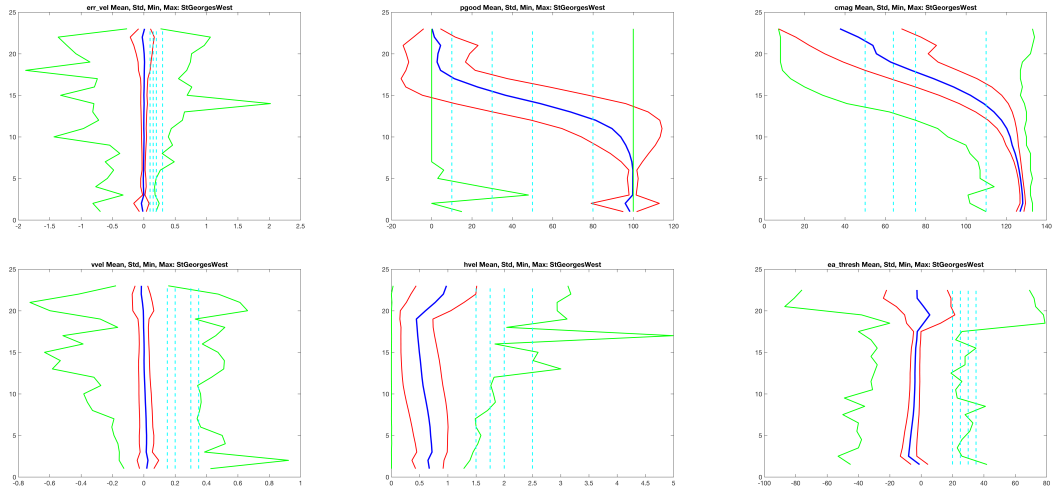


Figure 26: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the St Georges Channel West RDI 300 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

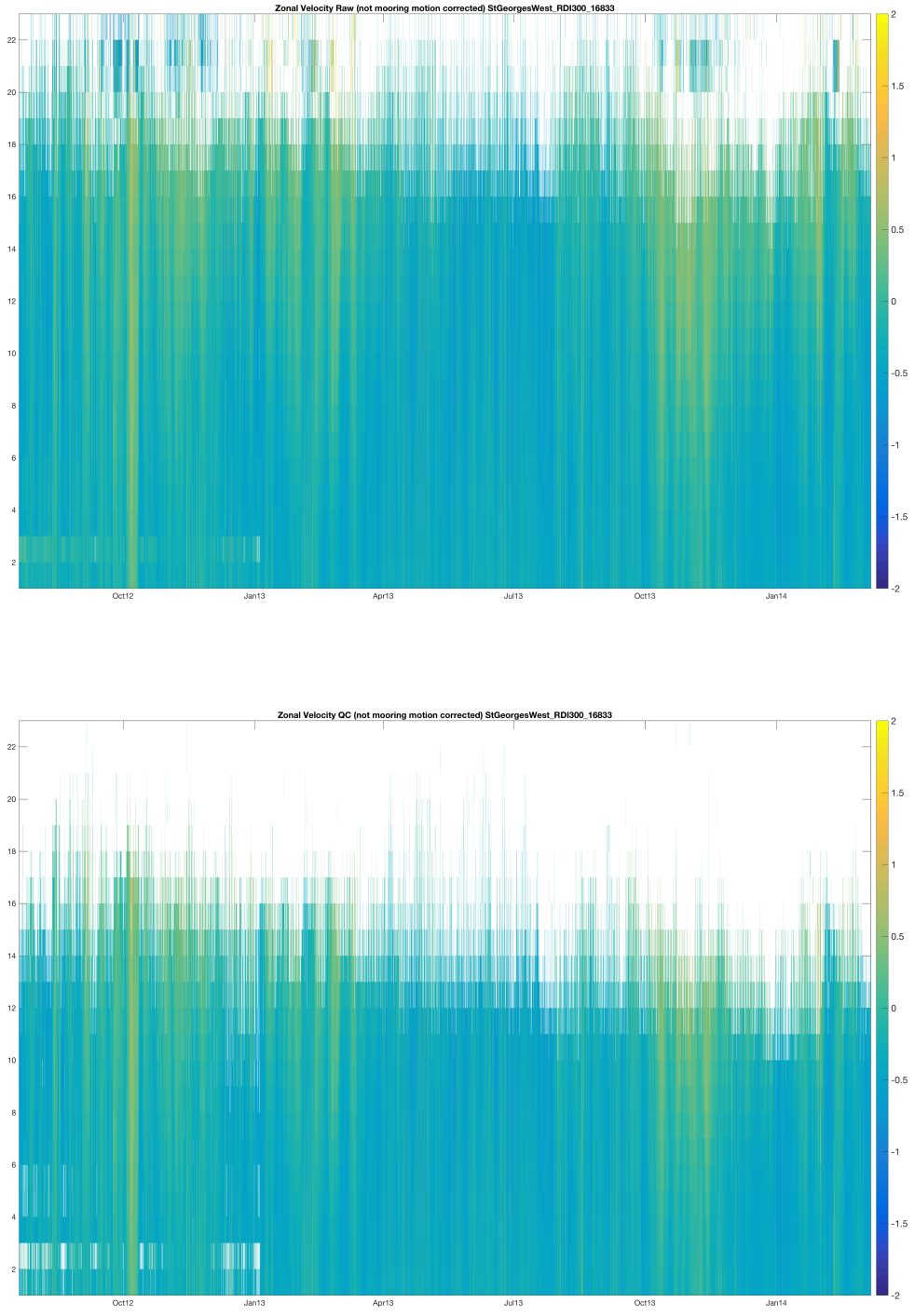


Figure 27: Comparisons of zonal velocity ($m.s^{-1}$) in St Georges Channel West, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 300 kHz ADCP.

7.3.10 Case 10: St Georges West (downward RDI 75 kHz)

- Instrument type: RDI 75 kHz
- Instrument target depth: 154 m
- Instrument Serial Number: 8866
- Instrument vertical bin size: 20 m
- Instrument Deployment Date/Time (UTC): 07/20/2012 00:47
- Instrument Recovery Date/Time (UTC): 03/07/2014 23:53

The RDI 75 kHz in St Georges West are 35 bins for 14450 time realizations. Pitch and roll variations (Figure 28a,b) are again, lower than 25 and 10 degrees, respectively. This ADCP had a faulty pressure sensor, however as the up and downward facing ADCPs were deployed on the same float at a vertical offset of 2.25 m the upward ADCP's pressure record was used with a 2.25 dbar offset. Vertical variations in pressure can reach 400 dbar between April-August 2013 (Figure 28c). Temperature variations are lower than 20°C (Figure 28d), mostly between March-April 2013. The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 29.

The EA test exhibits an EAfail of 3-6% in most upper bins 30-35 for the different thresholds. The EAfail can vary from 8% (for a threshold of 35) to 43% (for a threshold of 20) in lower bins. We decide to use a threshold of 25, as in Solomon Straits and St Georges East for the RDI 75 kHz. Percent good contributes ∼100% in OTfails in all bins for the different thresholds, as the correlation magnitude test with a threshold value set to 110. For the error velocity test, all thresholds result in little percent failures of 0-7% in bins 28-35, and 21-56% in most lower bins. The vertical test is associated with only cell rejected in bin 27 for a threshold of 0.15 $m.s^{-1}$, and no cell are rejected with the horizontal velocity test for the different threshold values.

We decide to stick with the QC threshold criteria established in Solomon Straits and St Georges East for the RDI 75 kHz (Table 3). Zonal velocities before and after QC (Figure 30a,b) show few differences, and few cells are retained in bins 25-35. The strong pitch variations do not seem to impact both zonal and meridional velocity fields.

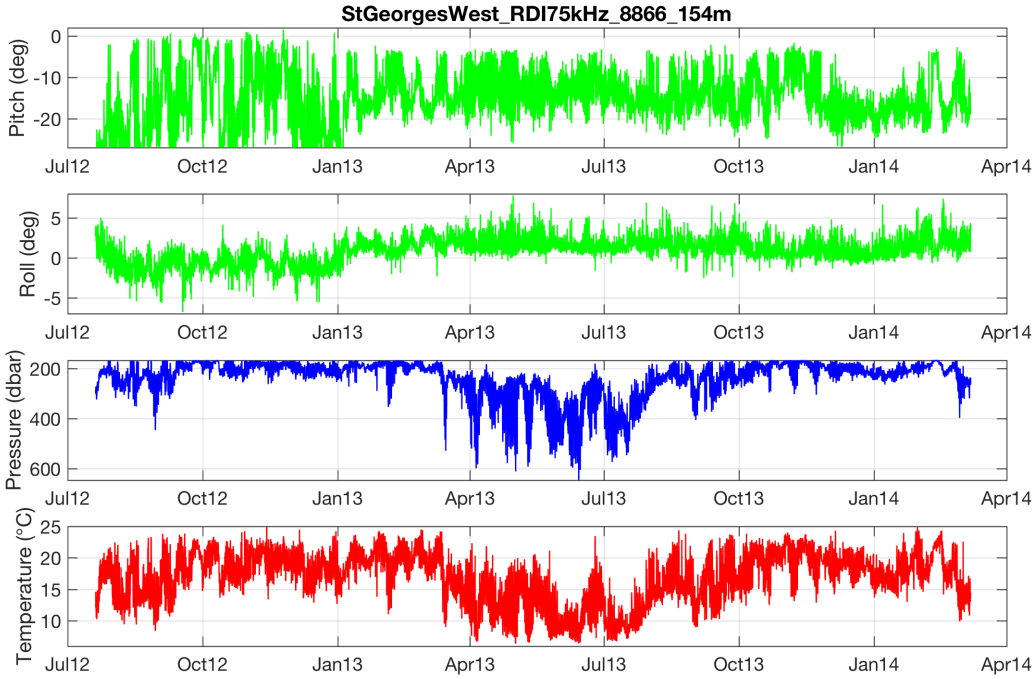


Figure 28: St Georges Channel West RDI 75 kHz (downward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

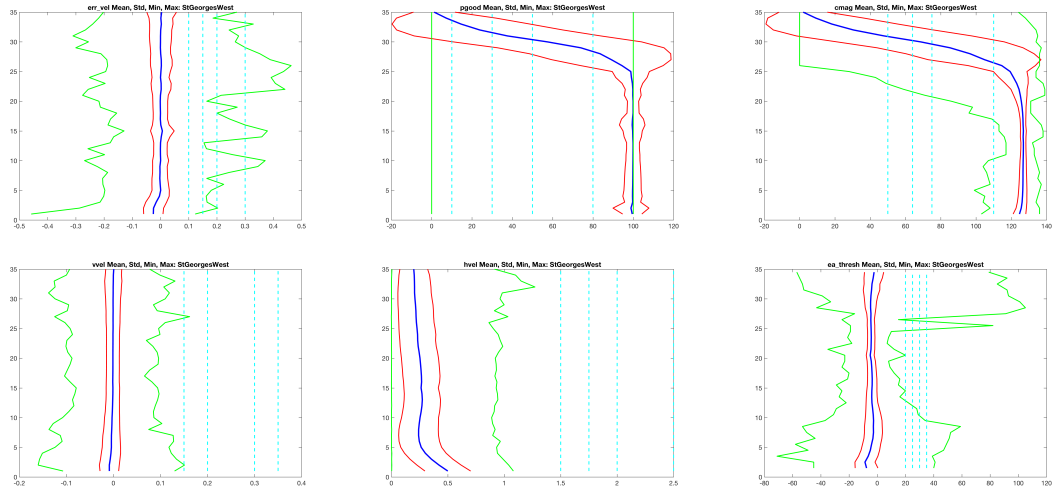


Figure 29: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the St Georges Channel West RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

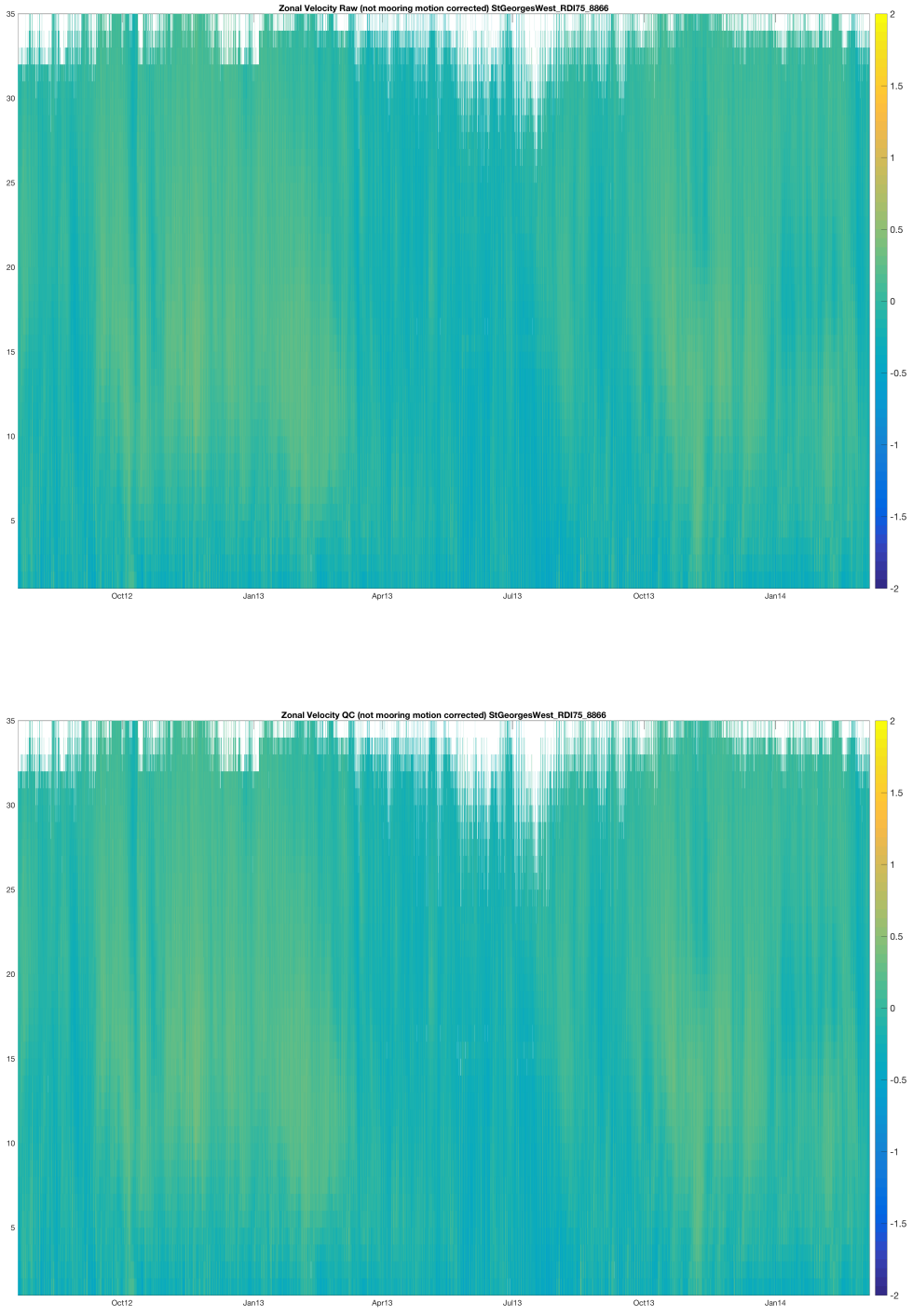


Figure 30: Comparisons of zonal velocity ($m.s^{-1}$) in St Georges Channel West, (top) raw zonal velocity and (bottom) QC zonal velocity of the RDI 75 kHz ADCP.

7.3.11 Case 11: Vitiaz Strait Middle (upward RDI 75 kHz)

- Instrument type: RDI 75 kHz
- Instrument target depth: 332 m
- Instrument Serial Number: 8998
- Instrument vertical bin size: 4 m
- Instrument Deployment Date/Time (UTC): 28/07/2012 13:06
- Instrument Recovery Date/Time (UTC): 15/03/2014 02:15

The upward RDI 75 kHz in Vitiaz Strait Middle are 109 bins for 27283 time realizations. Pitch and roll variations (Figure 31a,b) are lower than 10 and 30 degrees, respectively. Strong roll is mostly observed during August-November 2012, where data might warrant further investigation. Vertical variations in pressure can reach 200 dbar (Figure 31c), mostly from April to August 2013. Temperature variations are lower than 10°C (Figure 31d). The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 32.

The EA test exhibits an EAfail of 65-87% in upper bins 90-110, but it appears to be relatively insensitive to the choice of threshold values. As for the percent good test, percent failures contribute sim100% to OTfails for each threshold. The correlation magnitude is responsible for $\sim$100% of OTfails in the top most upper bins 105-109 for thresholds 50, 64 and 75, and in bins 95-109 for a 110 threshold.

For the error velocity test, all thresholds result in percent failures of 0-25% to OTfails in bins 90-109. Percent failures are ranged from 30-60% in bins 70-89 (for a 0.15 threshold), and 30-50% (for a 0.2 threshold). The vertical velocity test shows little differences between the different threshold values with minor contributions (1-10%) to OTfails, mainly in most lower bins. As for the horizontal velocity test, few percent failures are found for each threshold, mostly in middle bins 85-95.

Most of the QC criteria used for the previous RDI 75 kHz are found to be appropriate for the upward RDI 75 kHz in Vitiaz Strait, except for the correlation magnitude. A 110 threshold is found to be more suitable (based on mean profile from Figure 32c). The new QC parameters are shown in Table 3, and the zonal velocities are shown before and after QC in Figure 33a,b. Some of the higher velocities are retained in surface bins, but also between bins 60 to 90 from August to November 2012, where strong roll variations have been observed.

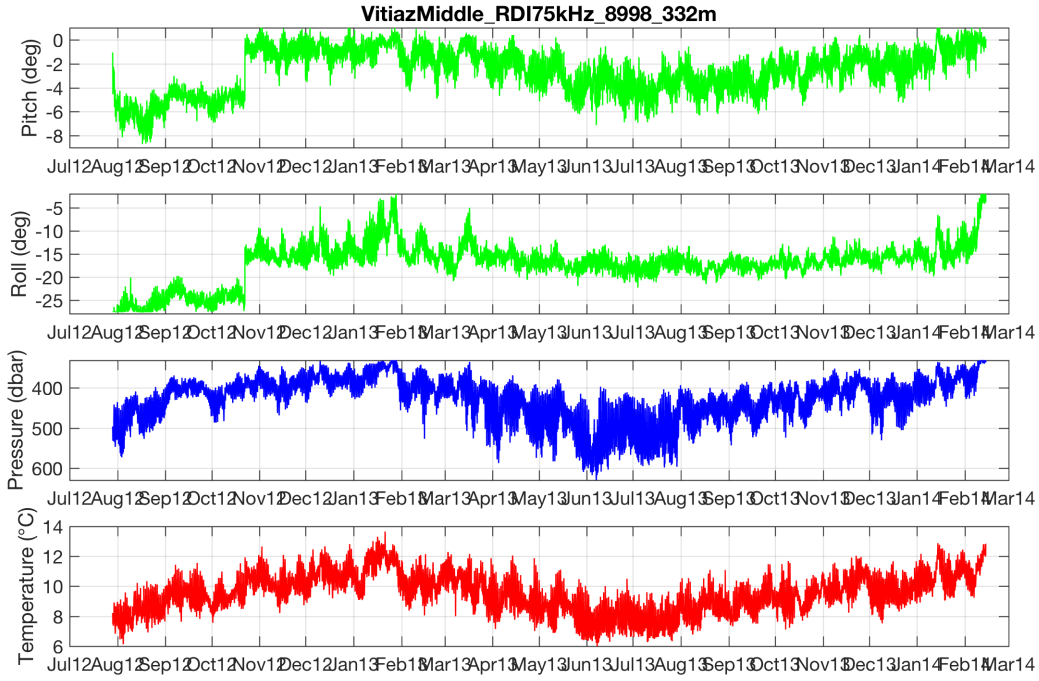


Figure 31: Vitiaz Strait Middle RDI 75 kHz (upward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

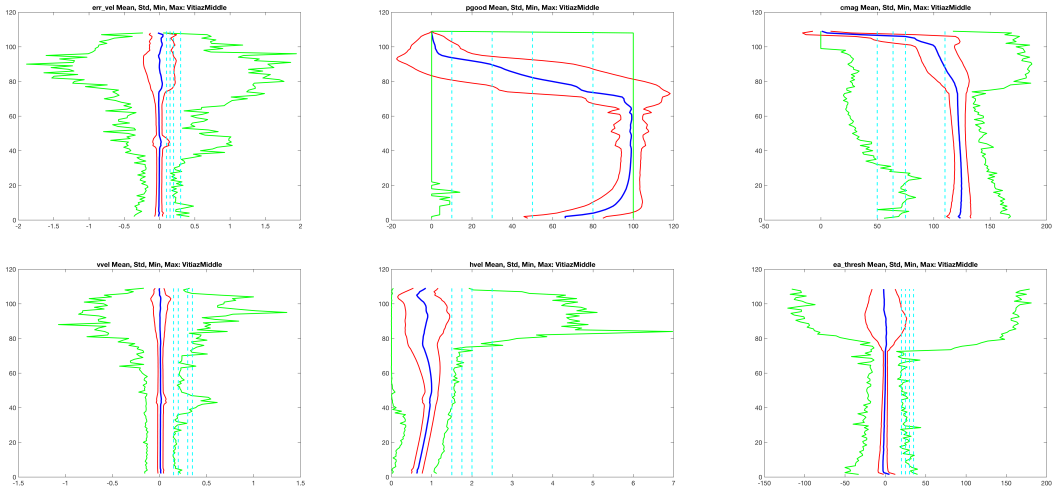


Figure 32: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Vitiaz Strait Middle upward RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

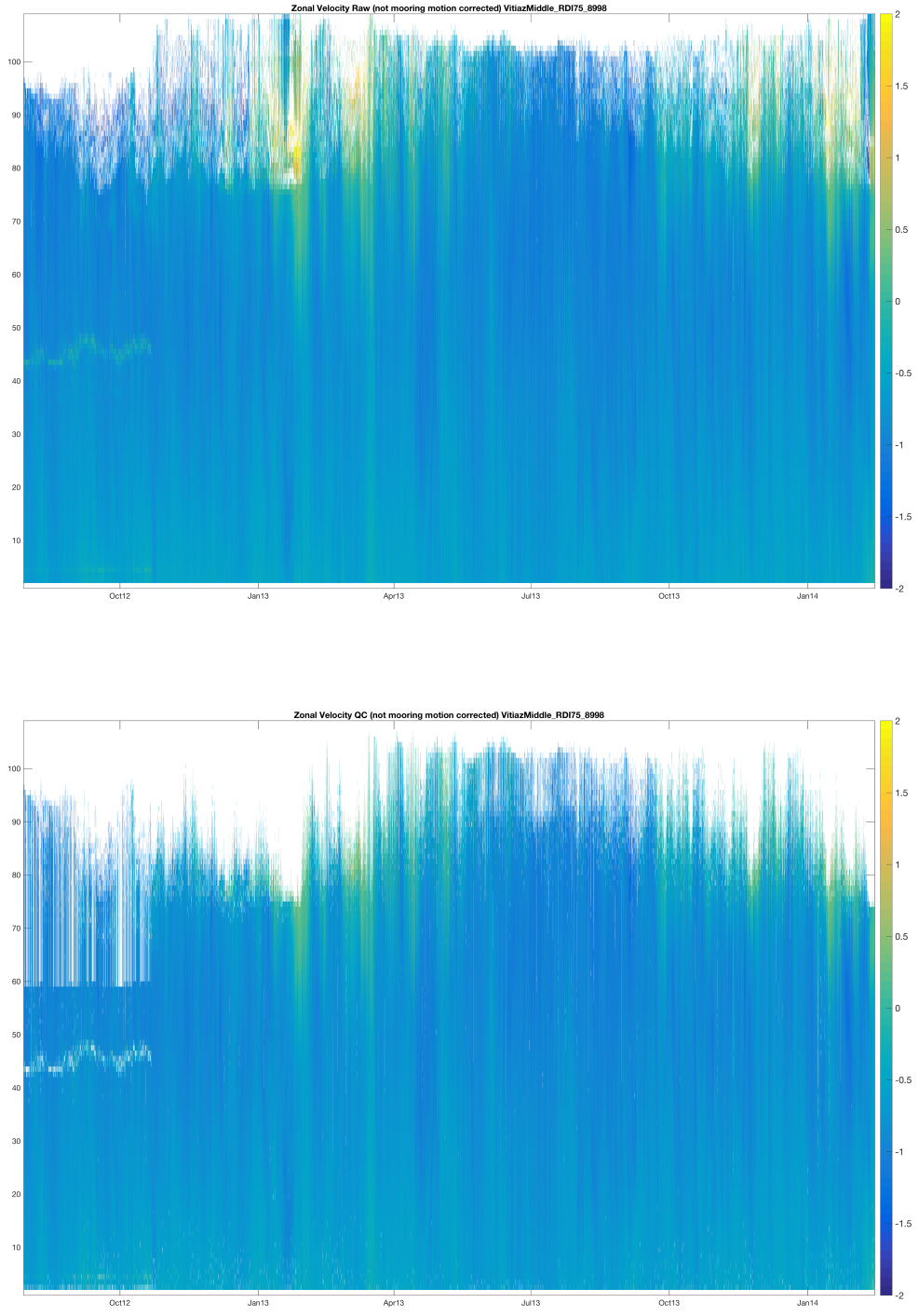


Figure 33: Comparisons of zonal velocity ($m.s^{-1}$) in Vitiaz Strait Middle, (top) raw zonal velocity and (bottom) QC zonal velocity of the upward RDI 75 kHz ADCP.

7.3.12 Case 12: Vitiaz Strait Middle (downward RDI 75 kHz)

- Instrument type: RDI 75 kHz
- Instrument target depth: 334 m
- Instrument Serial Number: 16811
- Instrument vertical bin size: 20 m
- Instrument Deployment Date/Time (UTC): 07/28/2012 13:06
- Instrument Recovery Date/Time (UTC): 03/15/2014 02:15

The downward RDI 75 kHz in Vitiaz Strait Middle are 35 bins for 14408 time realizations. Pitch and roll variations (Figure 34a,b) are lower than 10 and 30 degrees, respectively. Strong roll is also observed during August-November 2012, and data might warrant further investigation. Vertical variations in pressure can reach 200 dbar (Figure 34d), and temperature variations are lower than 10°C (Figure 34c). The average, standard deviation, and range values for the different parameters used in each QC test are shown in Figure 35.

The EA test exhibits an EAfail of 47-94% in upper bins 31-35 for the different thresholds. EAfail can vary from 33-52% in bins 25-31, but EAfail is again, relatively insensitive to the choice of threshold values. Percent good contribution to OTfails stays at 100% in all bins for each threshold value. The correlation magnitude is only responsible for 100% of OTfails in most upper bins, for thresholds of 50, 64 and 75. However, OTfails occur in nearly 100% cases in all bins for a threshold of 110.

The error velocity results mostly in percent failures in bins 25-31 ranging from 3% to 38% (for a 0.15 threshold) and 2-28% (for a 0.2 threshold). The vertical velocity and horizontal tests are responsible for ∼1% of OTfails in all bins, and are insensitive to the choice of threshold values.

We found appropriate to use similar QC criteria than those previously used for the upward RDI 75 kHz in Vitiaz Strait Middle (Table 3). Zonal velocities before and after QC are shown in Figure 36a,b. The differences occur in most upper bins 30-35, where the revised thresholds retain more cells. Between August-November 2012, zonal and meridional velocities are lower than 50 $cm.s^{-1}$ in most upper bins, similar to those observed at time where roll variations are higher than 20 degrees.

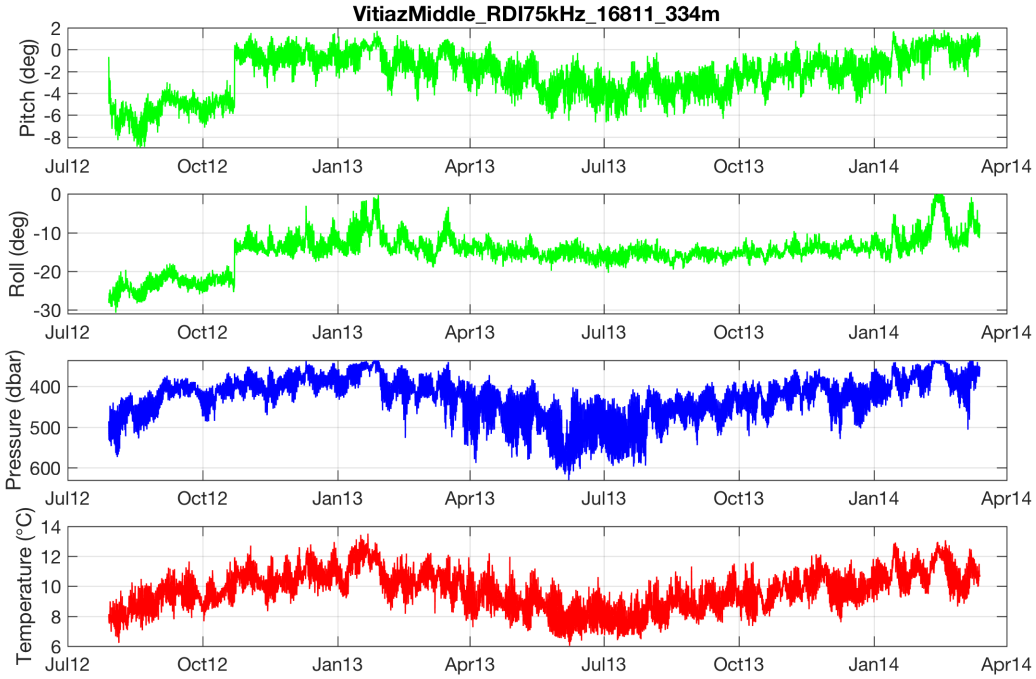


Figure 34: Vitiaz Strait Middle RDI 75 kHz (downward) raw data of (a) pitch; (b) roll; (c) pressure and (d) temperature timeseries.

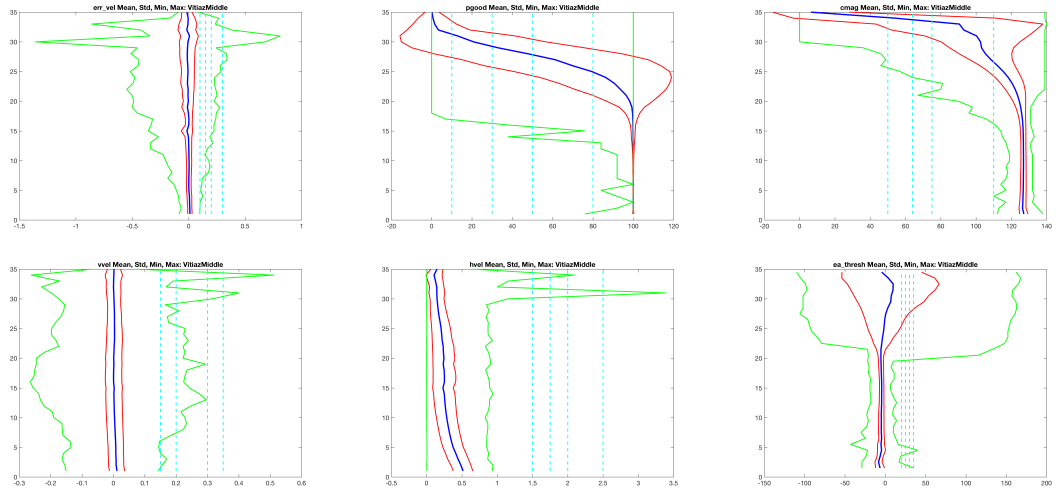


Figure 35: Mean (thick blue line), standard deviation (red lines) and minimum and maximum (green lines) of the (a) error velocity ($m.s^{-1}$); (b) percent good; (c) correlation magnitude; (d) vertical velocity ($m.s^{-1}$); (e) horizontal velocity ($m.s^{-1}$) and (f) echo amplitude (counts) for the Vitiaz Strait Middle downward RDI 75 kHz ADCP versus bin. The four threshold values used in each QC test are marked by cyan lines in panels (a) to (f).

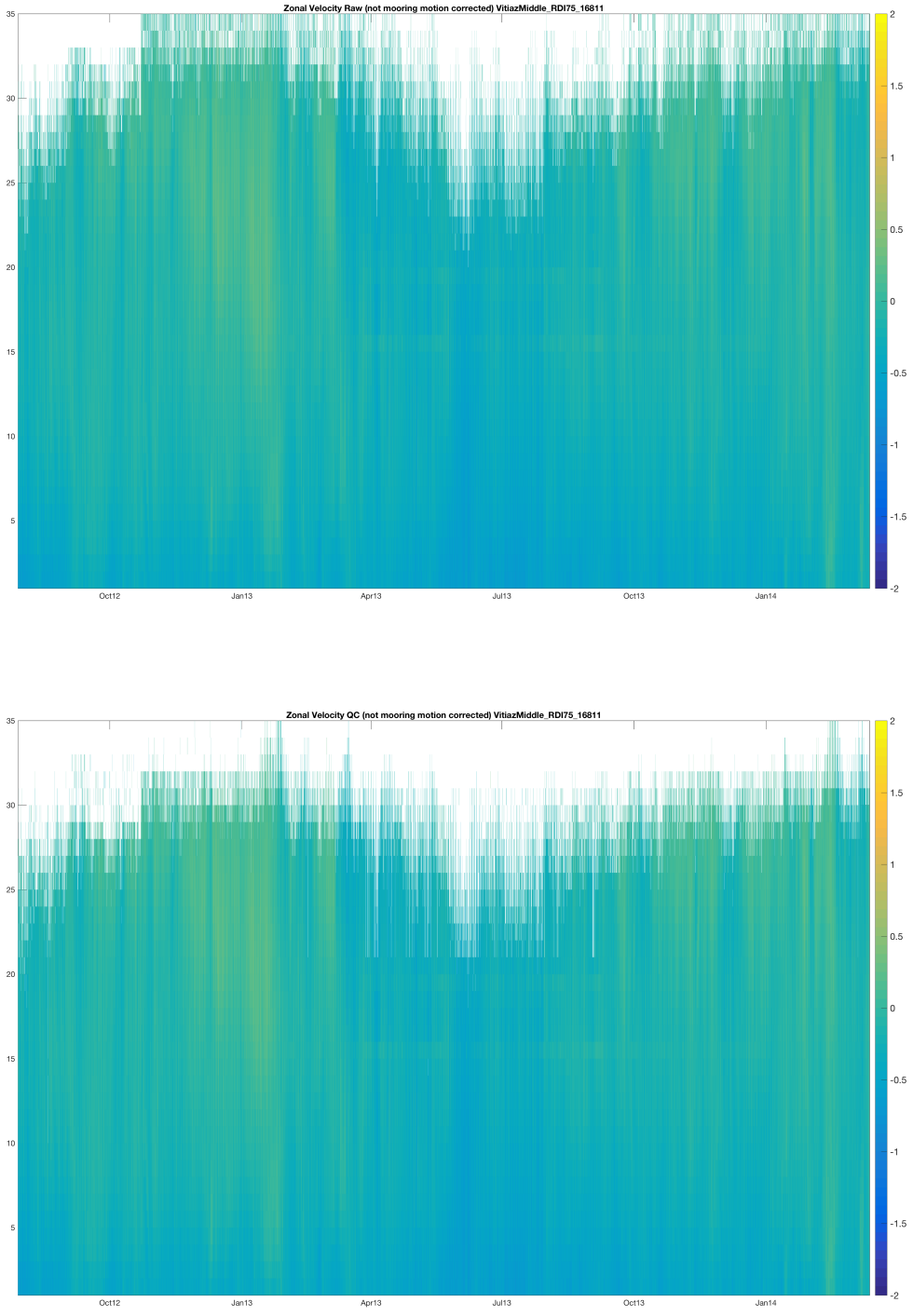


Figure 36: Comparisons of zonal velocity ($m.s^{-1}$) in Vitiaz Strait Middle, (top) raw zonal velocity and (bottom) QC zonal velocity of the downward RDI 75 kHz ADCP.

7.4 Conclusions

The moored ADCPs were deployed between the two SPICE cruises, Pandora (July-August 2012) and MoorSPICE (March 2014), were quality controlled using six tests associated with specific thresholds. Similar set of thresholds than during INSTANT were found to be appropriate in the Solomon Sea straits, except at Vitiaz Strait Middle for the correlation magnitude test (see Table 3). These new QC parameters retain spurious velocities in both velocity fields, especially those due to surface reflection in the surface bins.

8. Overall Mooring Quality and Data Coverage

8.1 Introduction

The following Sections and Figures show discuss the overall quality of each mooring and the data coverage for the duration of the first 1.5-year deployment of MoorSPICE (July 2012 to March 2014). The relative quality of all good data for each mooring is discussed and compared for consistency in observations. All additional processing due to inconsistencies in observations of nearby instruments are detailed in these sections. The following figures use only good data, after initial quality control, unless otherwise specified. The following figures are shown for each mooring:

- Temperature time series for each instrument, filtered and subsampled to daily values.
- Velocity time series for each single point current meter and every 5th bin of ADCP observations, filtered and subsampled to daily values.
- Profiles of the mean and standard deviation of zonal velocity, meridional velocity, and temperature for all instruments and the associated mean and standard deviation of pressure for each instrument. Each ADCP bin is treated as an individual instrument.
- Profiles of the mean and standard deviation of velocity magnitude and direction for all instruments and the associated mean and standard deviation of pressure for each instrument. Each ADCP bin is treated as an individual instrument.
- The full depth and time series of each mooring for temperature, zonal velocity, and meridional velocity.

8.2 Mooring: Solomon M1

Inter comparison between Solomon M1 velocity and temperature sensors is quite good. In Figure 37, temperature variability due to mooring motion is very consistent between sensors with temperature decreasing with depth from sensor to sensor. In Figure 38, variation of speed and magnitude is again consistent in time from sensor to sensor with the magnitude of the flow generally decreasing with depth. The consistency between sensors is supported in Figures 39 and 40 with deployment averaged observations for each sensor. Velocity observations are generally consistent with only slight discrepancies near the transducer of the downward looking ADCP compared the the single point current meters. The full depth- and time series of temperature, zonal and meridional velocity filtered to daily values is shown in Figure 41.

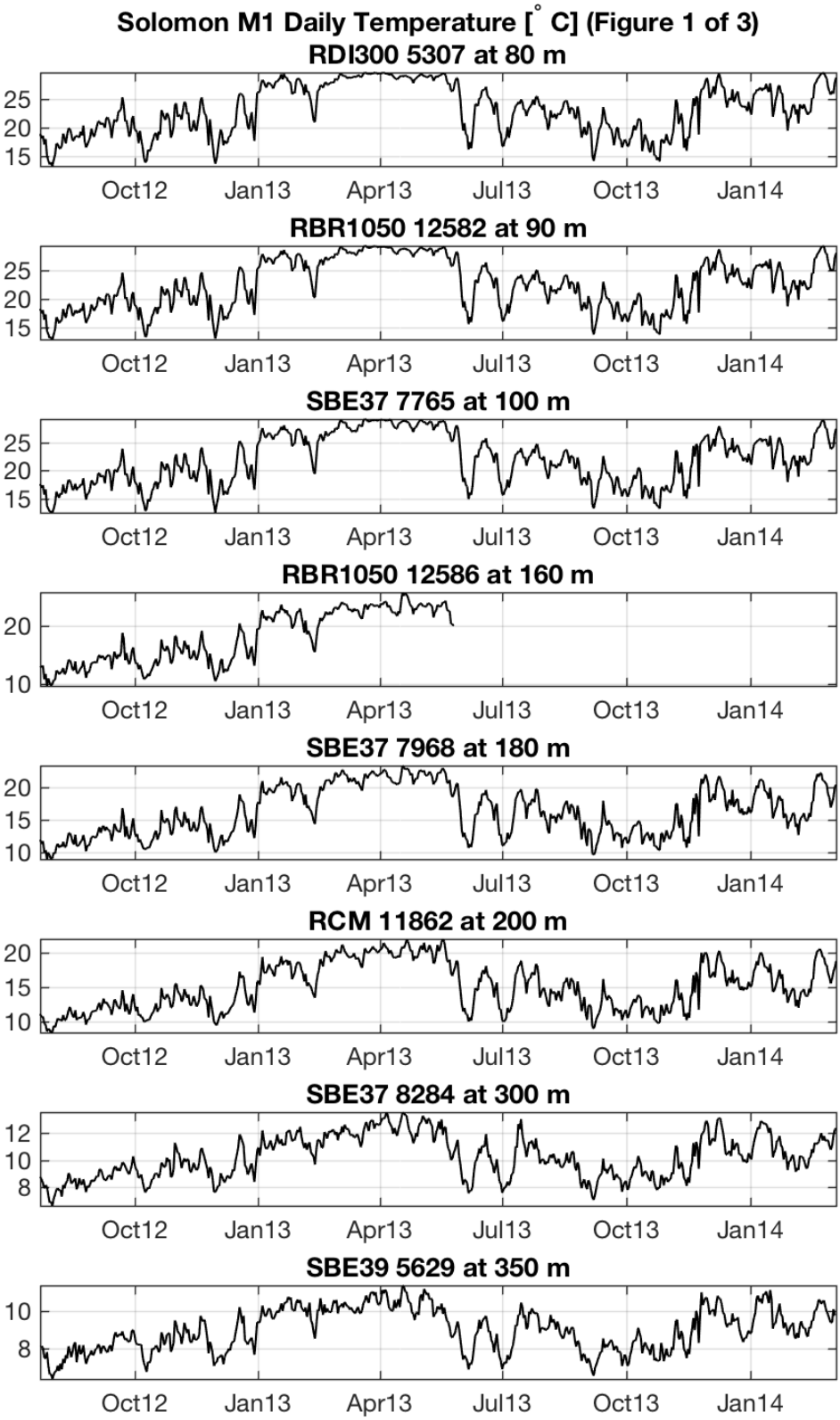
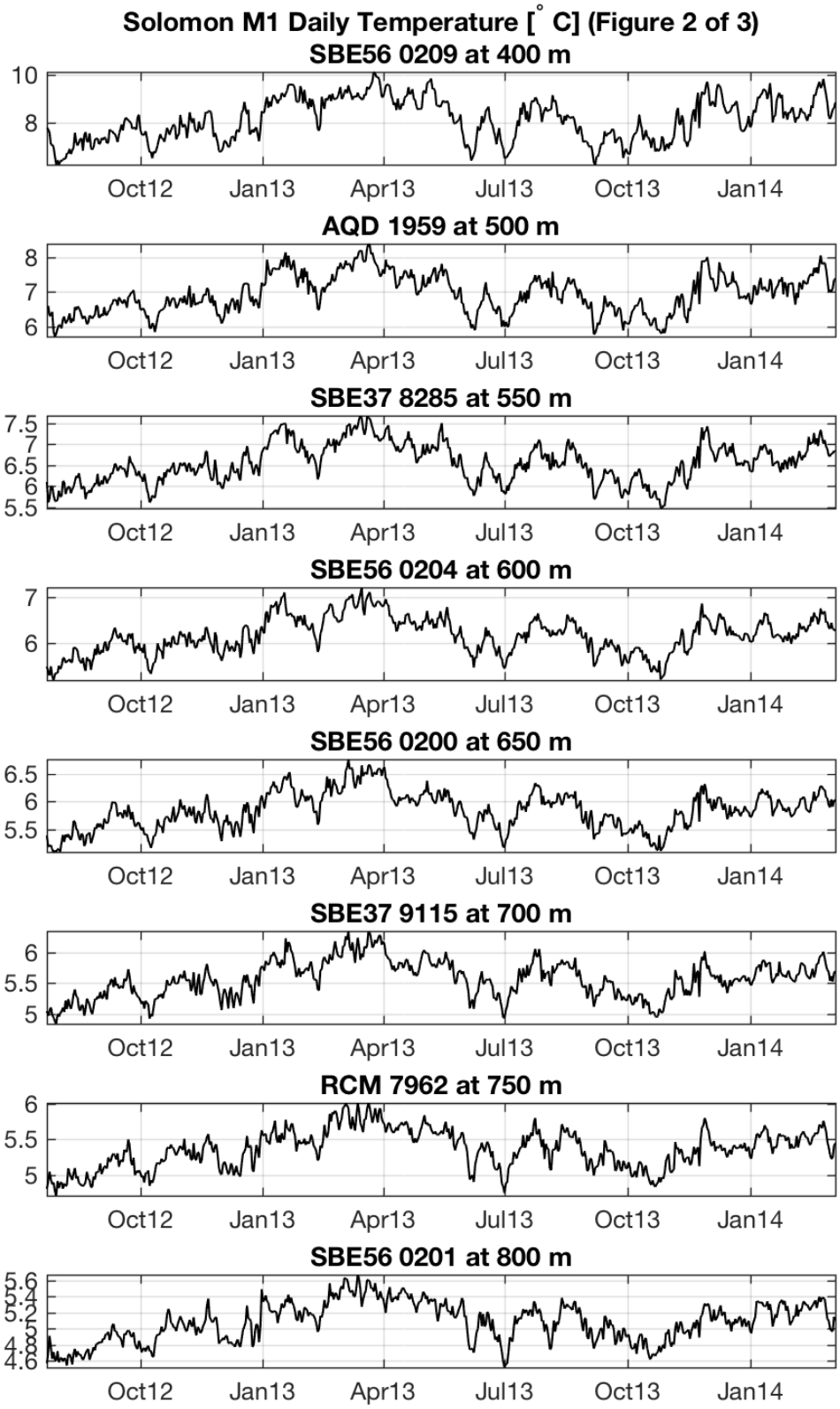
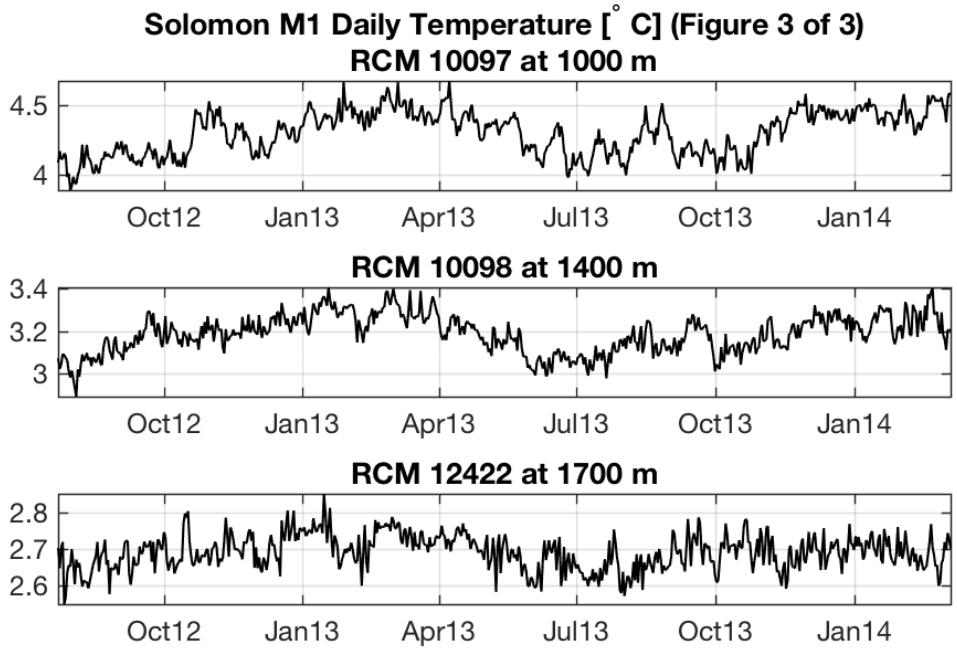


Figure 37: Temperature time series for each instrument on Solomon M1 filtered and subsampled to daily values. Depth given is the planned depth of the observation.


Solomon M1 Daily Temperature [° C] (Figure 2 of 3)
SBE56 0209 at 400 m
10
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
AQD 1959 at 500 m
8
7
6
SBE37 8285 at 550 m
7.5
7
6.5
6
5.5
SBE56 0204 at 600 m
7
6
SBE56 0200 at 650 m
6.5
6
5.5
SBE37 9115 at 700 m
6
5.5
5
RCM 7962 at 750 m
SBE56 0201 at 800 m
5.6
5.4
5.2
5
4.8
4.6


Solomon M1 Daily Temperature [° C] (Figure 3 of 3)
RCM 10097 at 1000 m
4.5
4
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RCM 10098 at 1400 m
3.4
3.2
3
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RCM 12422 at 1700 m
2.8
2.7
2.6
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14

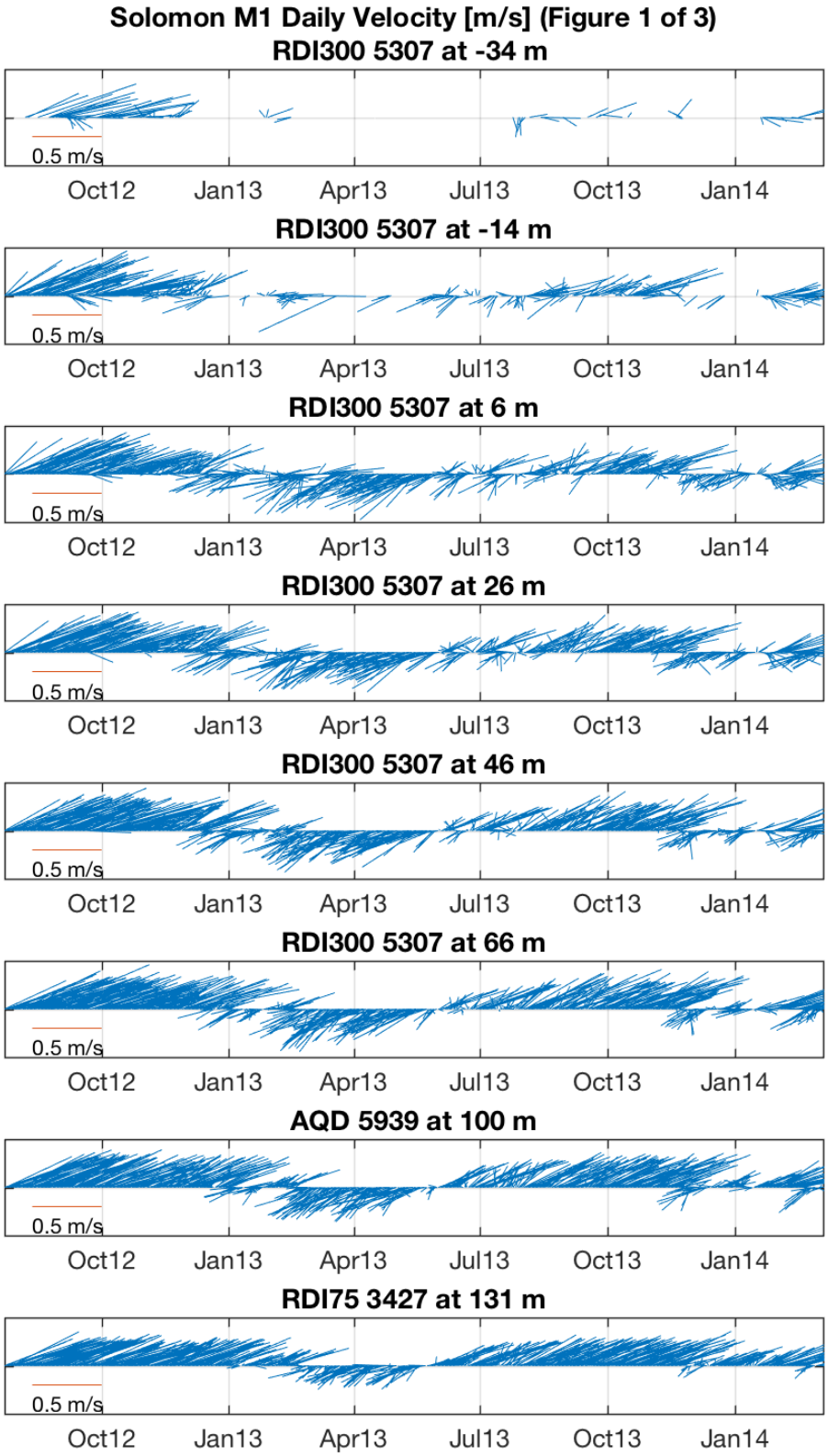
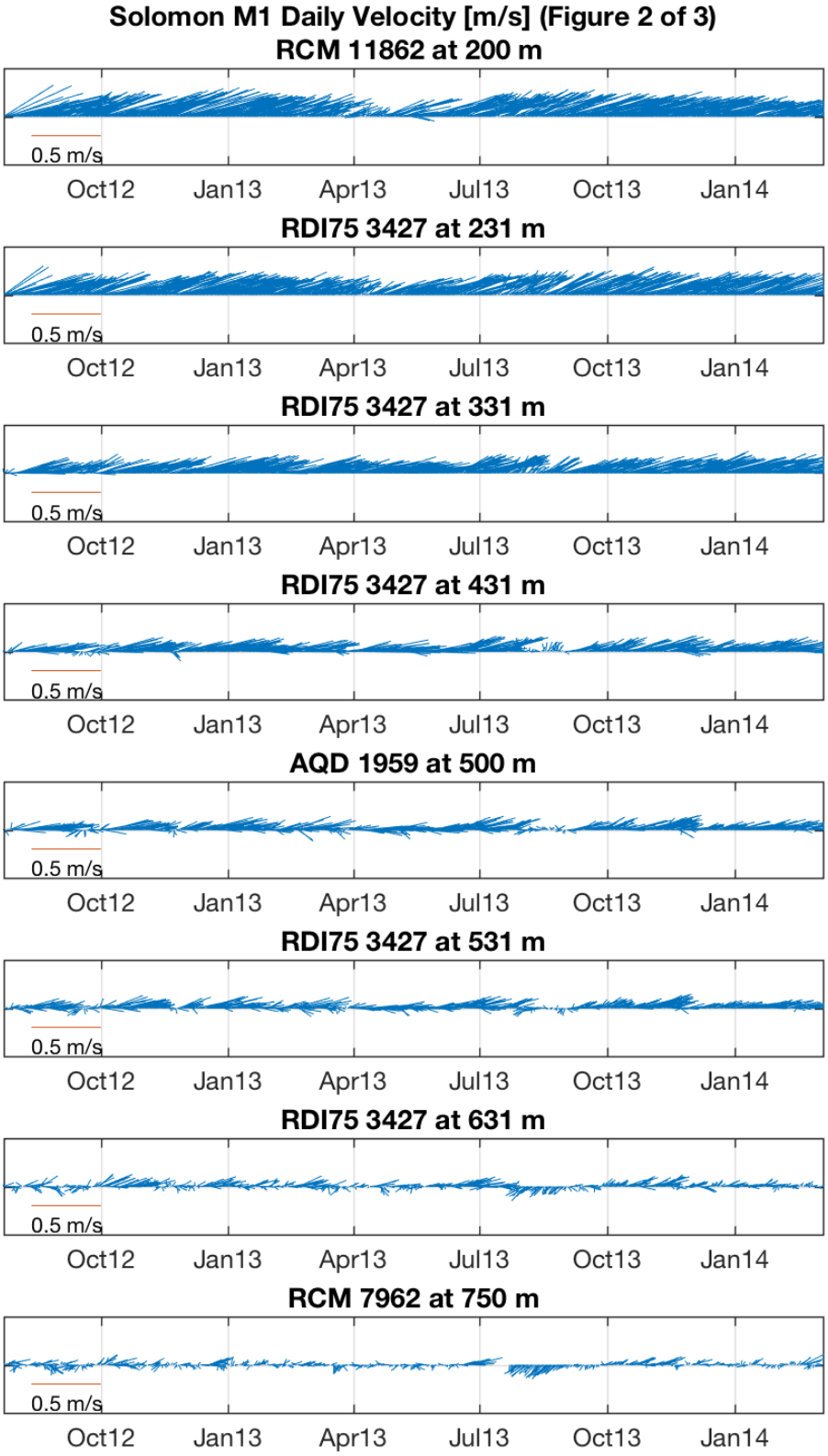
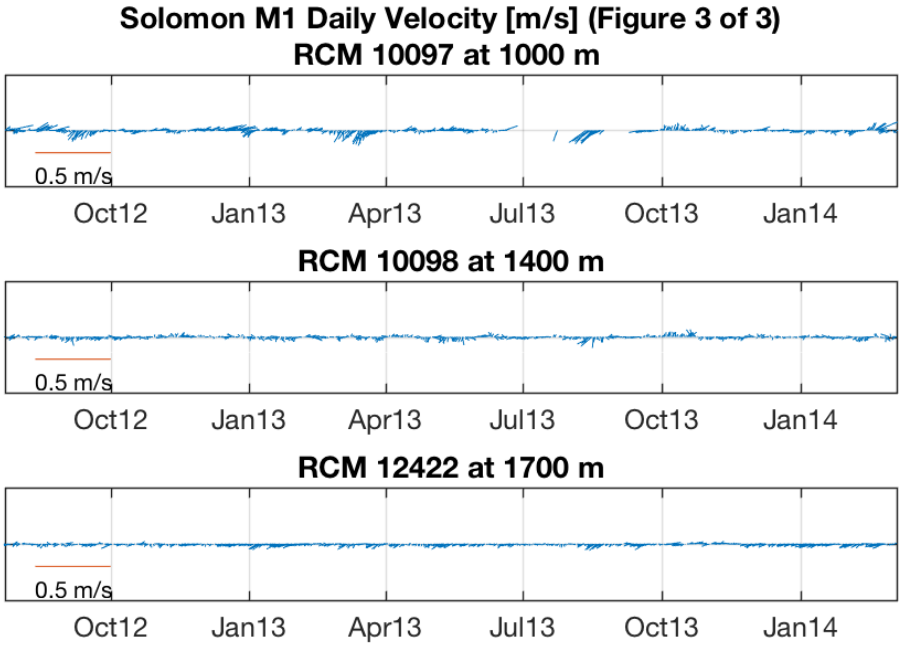


Figure 38: Velocity time series for each instrument on Solomon M1 filtered and subsampled to daily values. Depth given is the planned depth of the observation.


Solomon M1 Daily Velocity [m/s] (Figure 2 of 3)
RCM 11862 at 200 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 3427 at 231 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 3427 at 331 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 3427 at 431 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
AQD 1959 at 500 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 3427 at 531 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 3427 at 631 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RCM 7962 at 750 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14



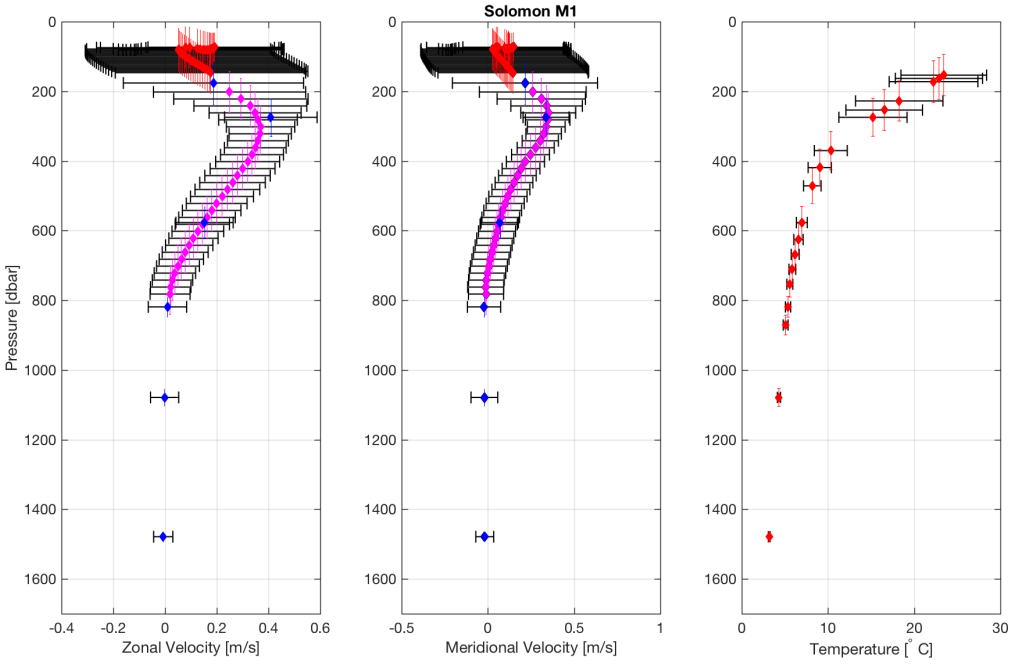


Figure 39: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the Solomon Strait M1 at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

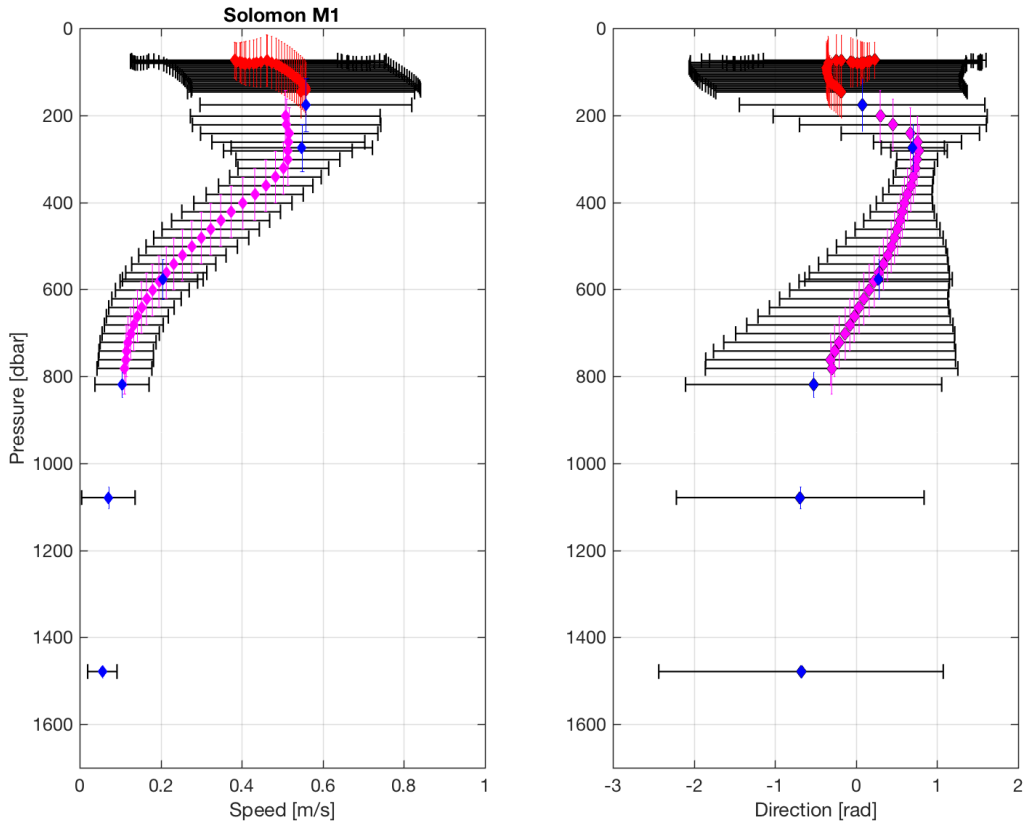


Figure 40: Mean (colored diamonds) and standard deviation (black lines) of the velocity (a) magnitude and (b) direction for the Solomon Strait M1 at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

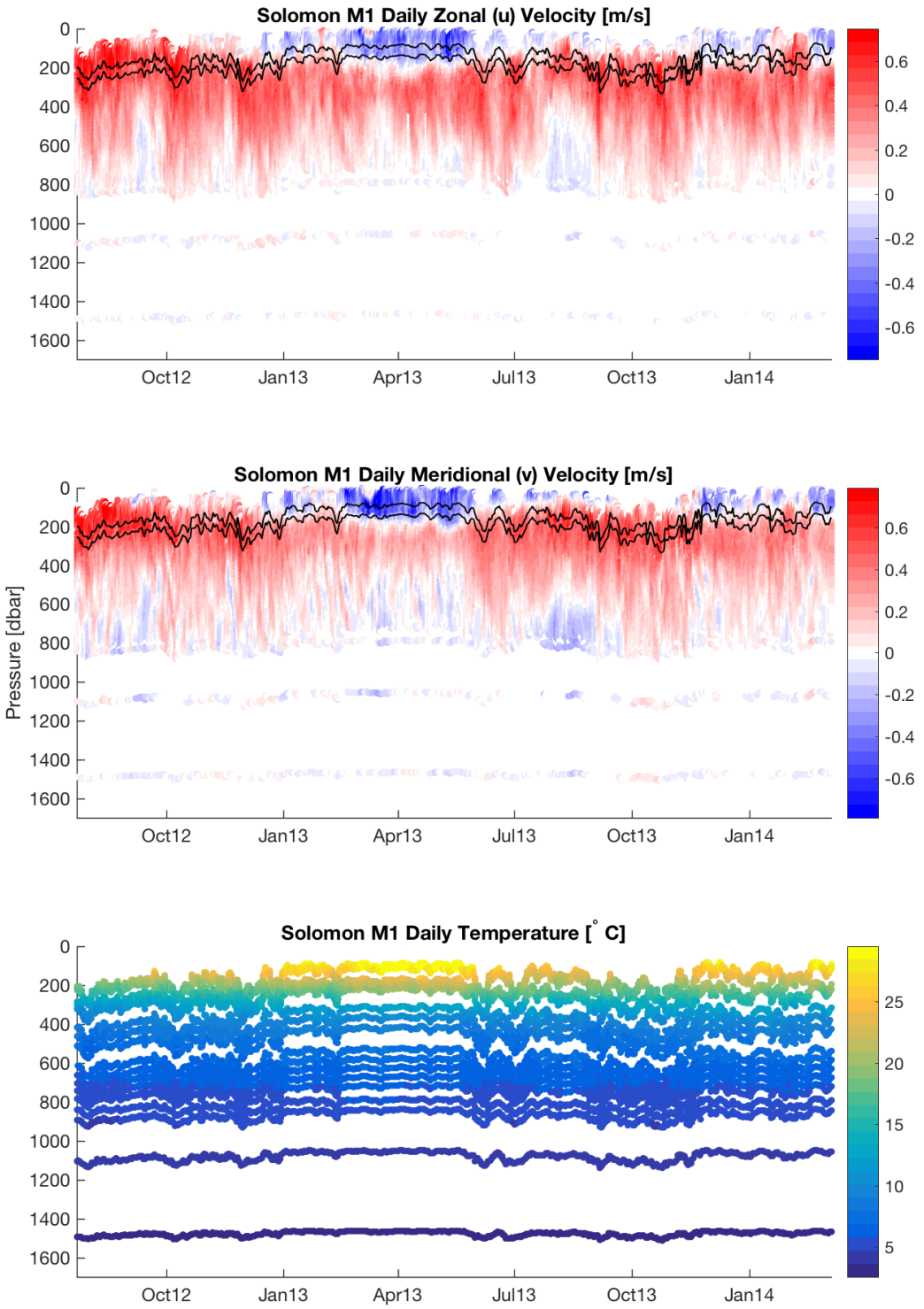


Figure 41: Solomon Strait M1 depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

8.3 Mooring: Solomon M2a

Mooring M2a has consistent and nearly full-depth temperature coverage during the entire deployment (Figure 42). Temperature features due to mooring motion are consistent in time and additional variability is visible likely from natural variability. Though there is only one single point current meter on the mooring (Figure 43), it's features are consistent with those observed at similar depths on M2b (Figure 47). Mean profiles of the observations at M2a are shown in Figure 44 and an orderly temperature profile is resolved. The standard deviation of instrument pressure is small for Solomon M2a resulting in a temperature record within the top 100 m for the entire duration of the deployment period in addition to nearly full-depth coverage (Figure 45).

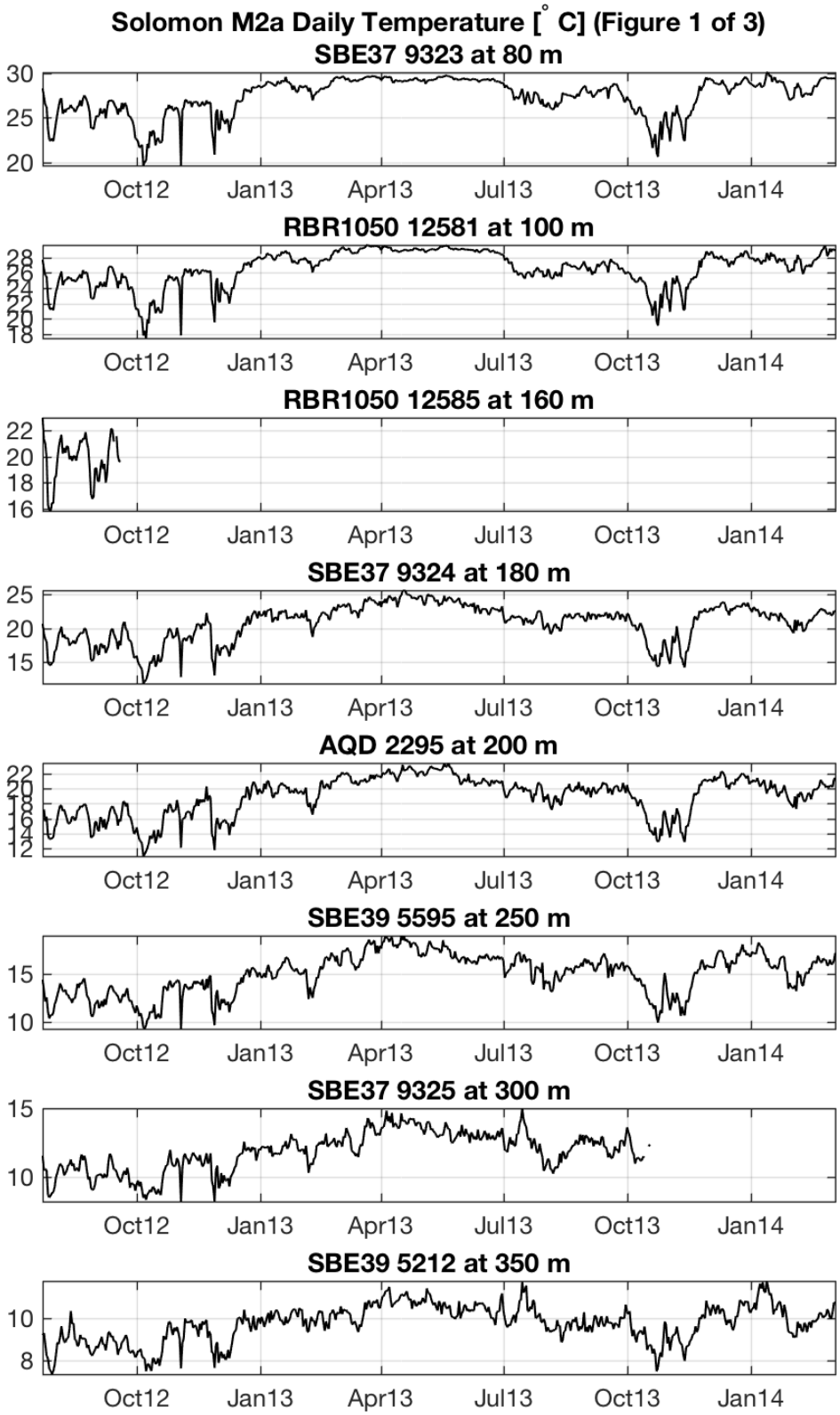
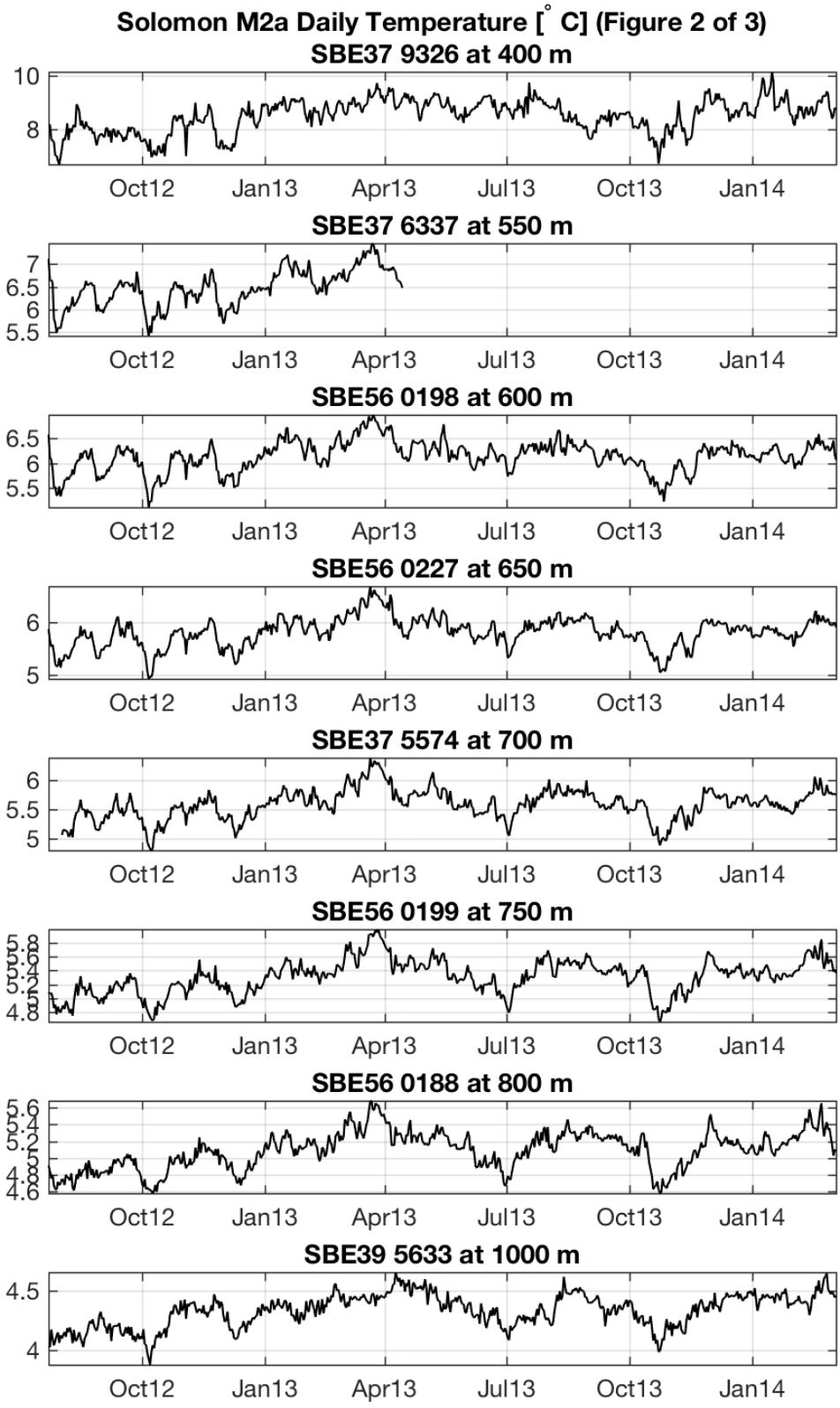
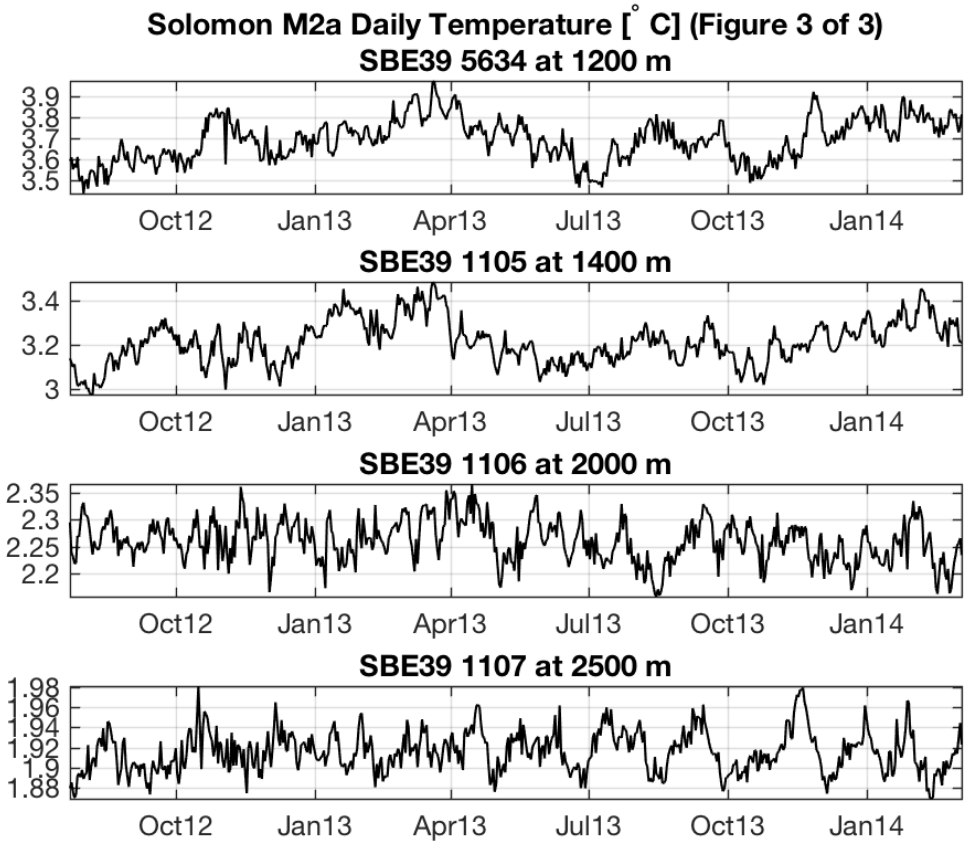


Figure 42: Temperature time series for each instrument on Solomon M2a filtered and subsampled to daily values. Depth given is the planned depth of the observation.


Solomon M2a Daily Temperature [° C] (Figure 2 of 3)
SBE37 9326 at 400 m
10
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE37 6337 at 550 m
7
6.5
6
5.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 0198 at 600 m
6.5
6
5.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 0227 at 650 m
6
5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE37 5574 at 700 m
6
5.5
5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 0199 at 750 m
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 0188 at 800 m
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE39 5633 at 1000 m
4.5
4
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14



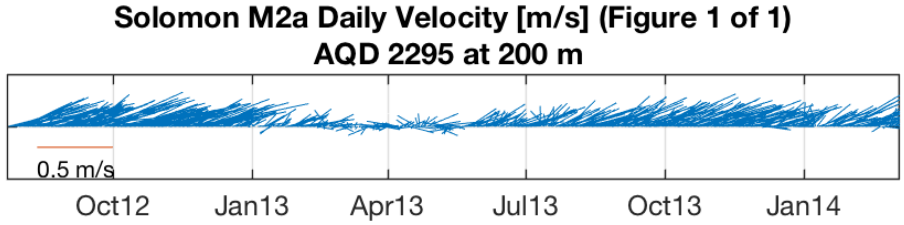


Figure 43: Velocity time series for each instrument on Solomon M2a filtered and subsampled to daily values. Depth given is the planned depth of the observation.

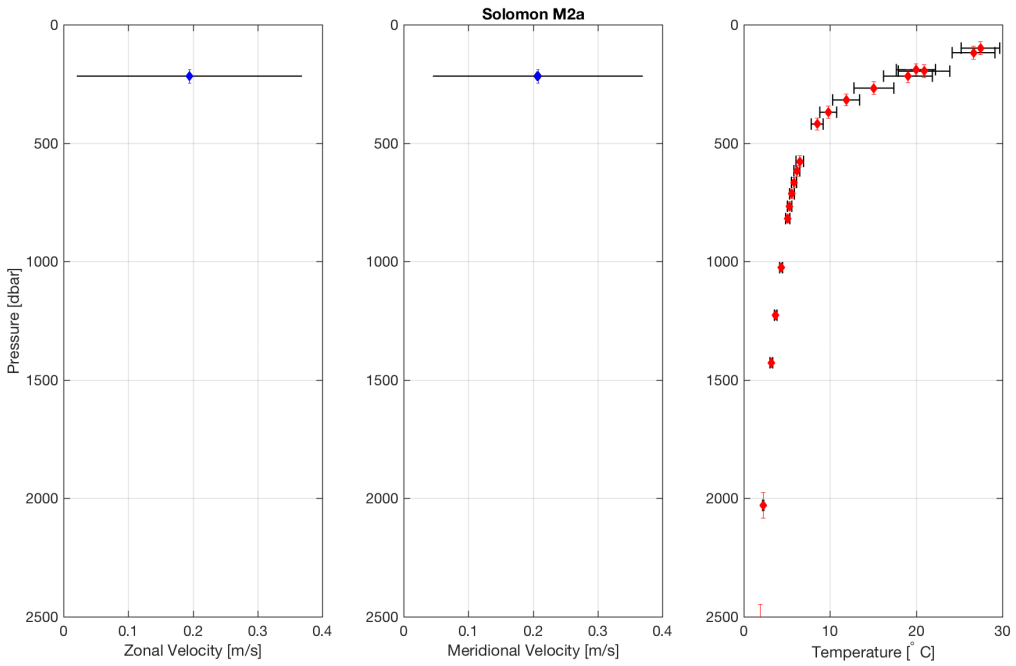


Figure 44: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the Solomon Strait M2a at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

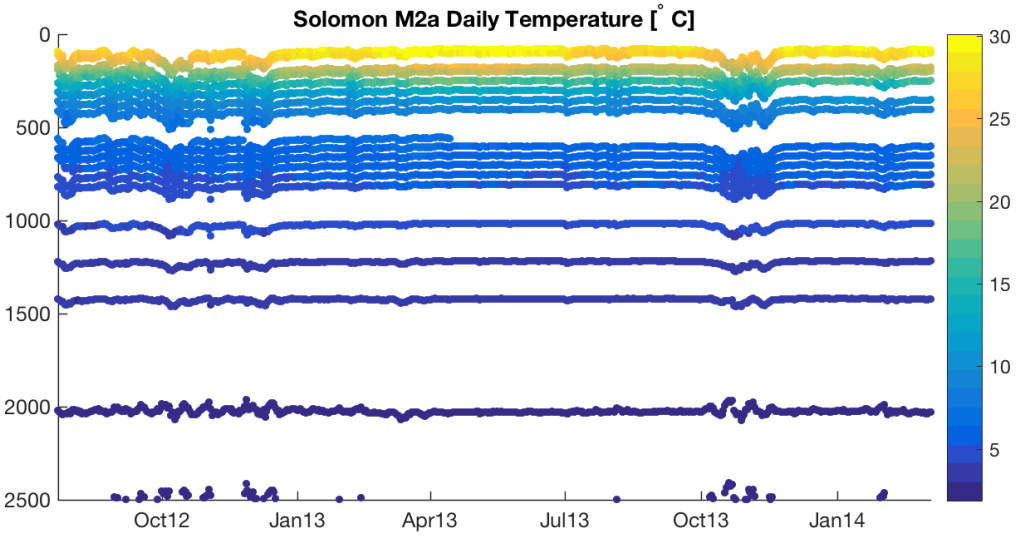


Figure 45: Solomon Strait M2a depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

8.4 Mooring: Solomon M2b

Temperature was resolved coarsely in the vertical by the velocity sensors on Solomon M2b and features due to mooring motion are generally consistent across sensors (Figure 46). Velocity observations are also compatible across instruments and magnitude decreases substantially with depth as expected though many low-frequency features persist over multiple current records (Figure 47). The mean profiles of velocity are well resolved with minimal variability due to mooring motion (the standard deviation of pressure is relatively low compared to other moorings) and a mean temperature profile is resolved that is comparable to that measured on M2a (Figures 48). Figure 49 indicates that while the variability of the magnitude decreases monotonically with depth, directional variability is high near the surface and increases significantly below 400 m. The local minimum in directional variance is likely due to a mean current dominating the flow structure.

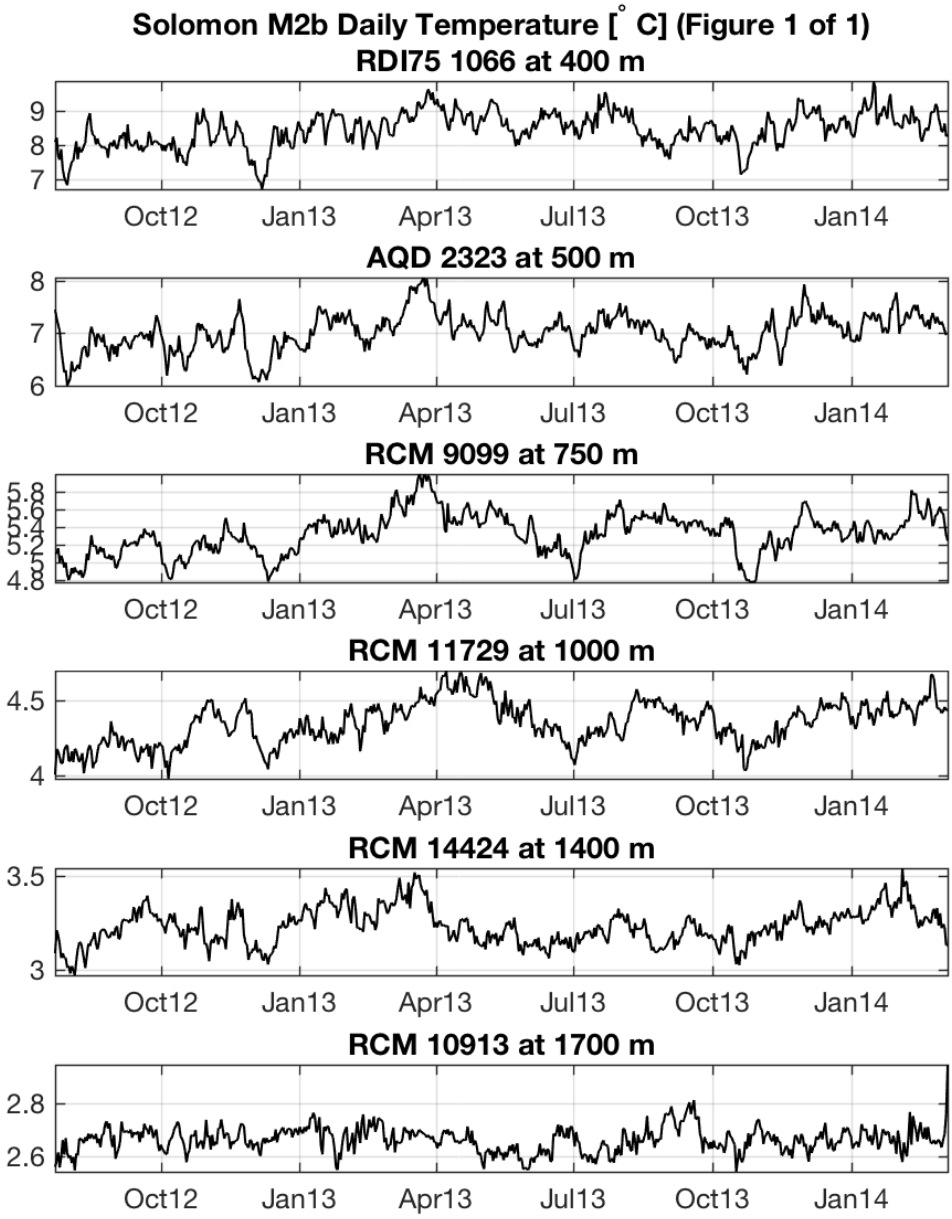


Figure 46: Temperature time series for each instrument on Solomon M2b filtered and subsampled to daily values. Depth given is the planned depth of the observation.

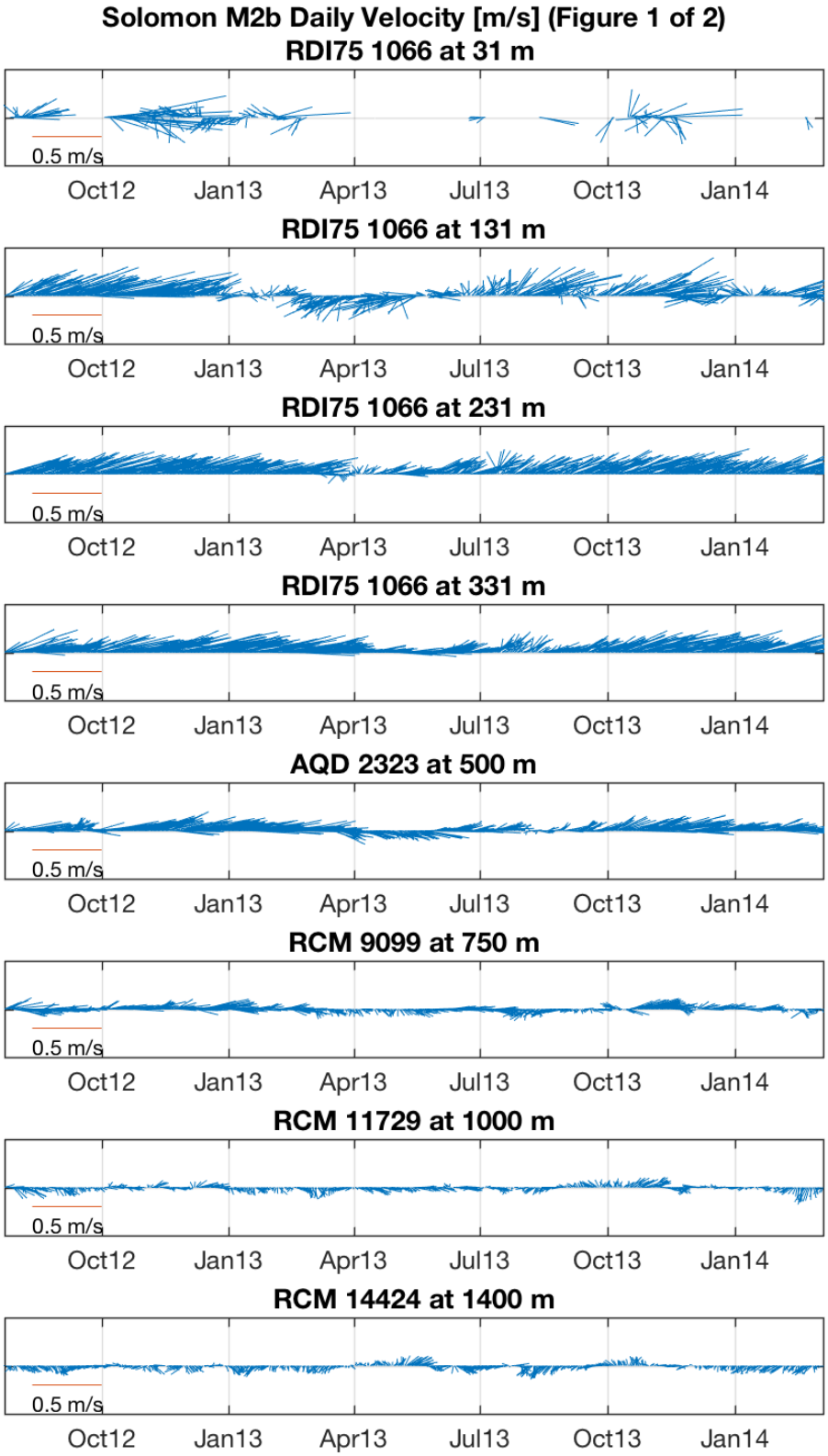
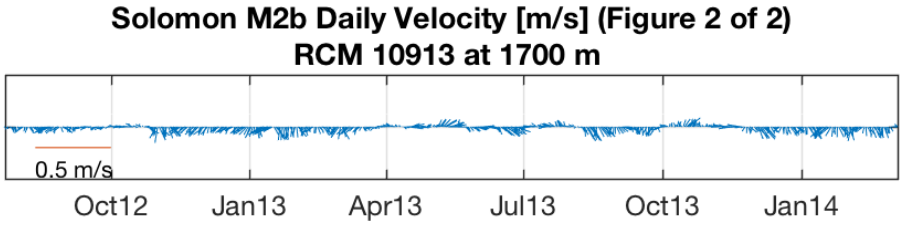


Figure 47: Velocity time series for each instrument on Solomon M2b filtered and subsampled to daily values. Depth given is the planned depth of the observation.



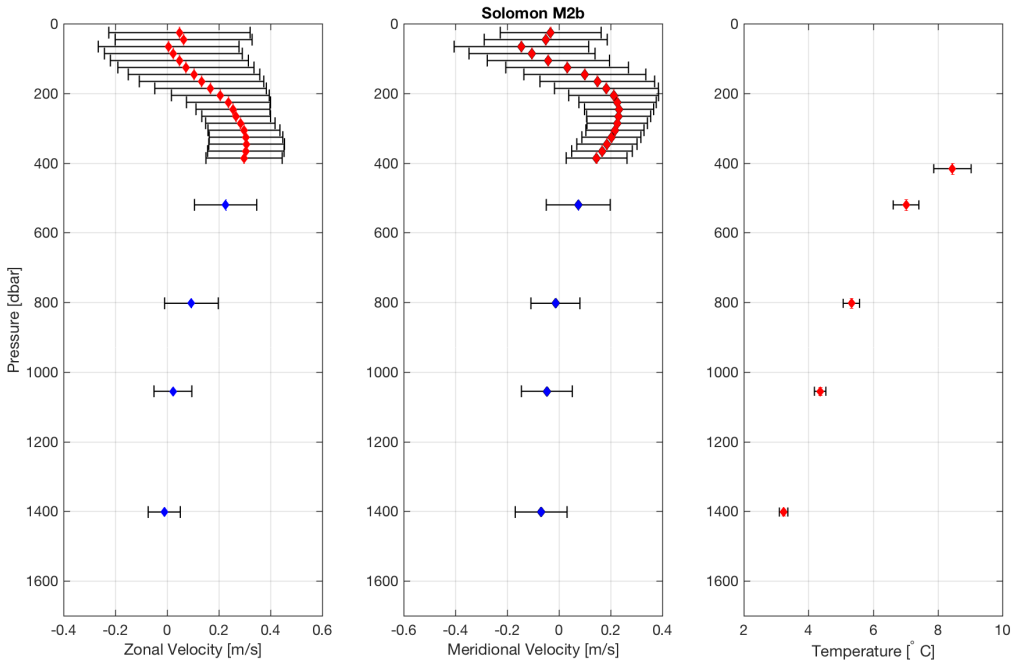


Figure 48: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the Solomon Strait M2b at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

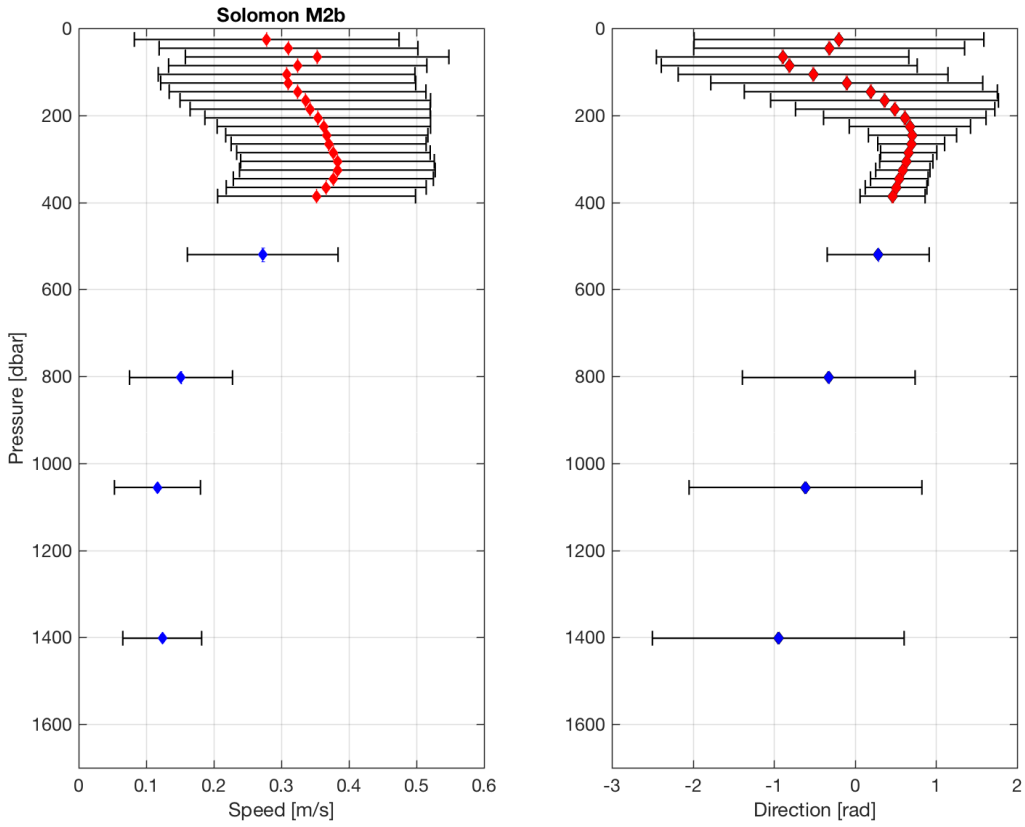


Figure 49: Mean (colored diamonds) and standard deviation (black lines) of the velocity (a) magnitude and (b) direction for the Solomon Strait M2b at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

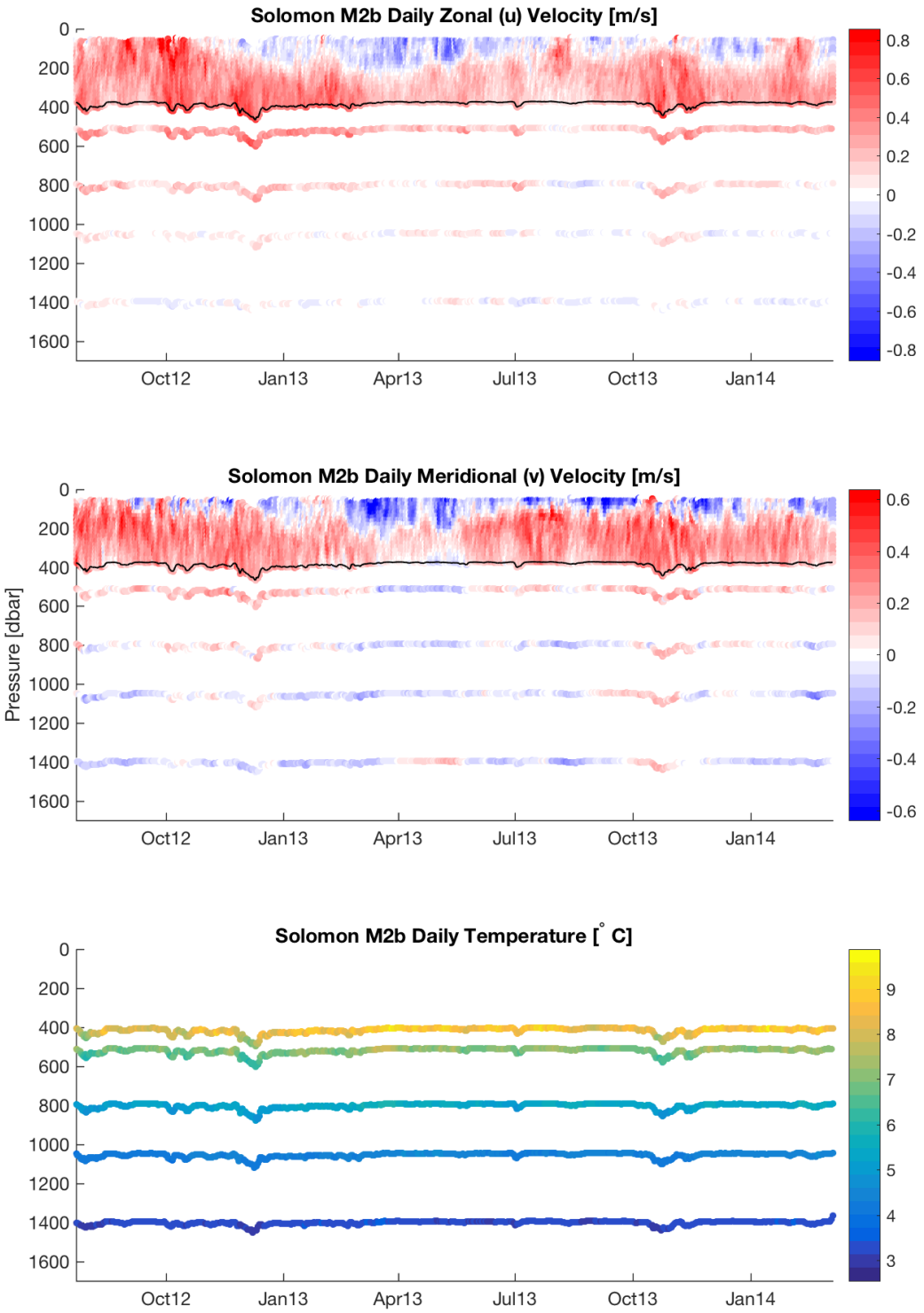


Figure 50: Solomon Strait M2b depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

8.5 Mooring: Solomon M3

Temperature is well resolved vertically and in time from 80 to 2000 m (Figure 51). Features between sensors due to mooring drawdown seem to be consistent though differences in the low-frequency variability are also present. Velocity is also well resolved from the surface to 1700 m, however the sensor spacing does increase with depth (Figure 52). Profiles of mean zonal and meridional velocity display the mismatch in the observed velocity by the downward facing ADCP (magenta diamonds) and the overlapping single point current meters (blue diamonds, Figure 53). While the means of the instruments in question are comparable, the two shallower single point current meters and the upward facing ADCP have significantly larger standard deviations compared to the downward looking ADCP, particularly the bins closest to the transducer. This discrepancy is highlighted in Figure 54 where there is a significant low bias of the downward looking ADCP compared to the single point current meters and the deepest bins of the upward looking ADCP. As the downward looking ADCP failed in October 2013, a mean profile is additionally calculated using only the time period of the deployment prior to the instrument failure to achieve the most comparable statistics between the different instruments (see Figure 55). Figure 55 finds very good agreement between the observed direction of the different sensors but the bias in magnitude remains. **Due to the significant mismatch between sensors, time constraints and our inability to determine the precise nature of the issue, data from the downward looking ADCP was not included in the final mooring dataset.** Figure 56 shows the final quality controlled dataset that can be used to estimate the full-depth velocity time series for Solomon M3. Low frequency variability of velocity is visually coherent between the different sensors and the magnitude decreases substantially with depth, within reason.

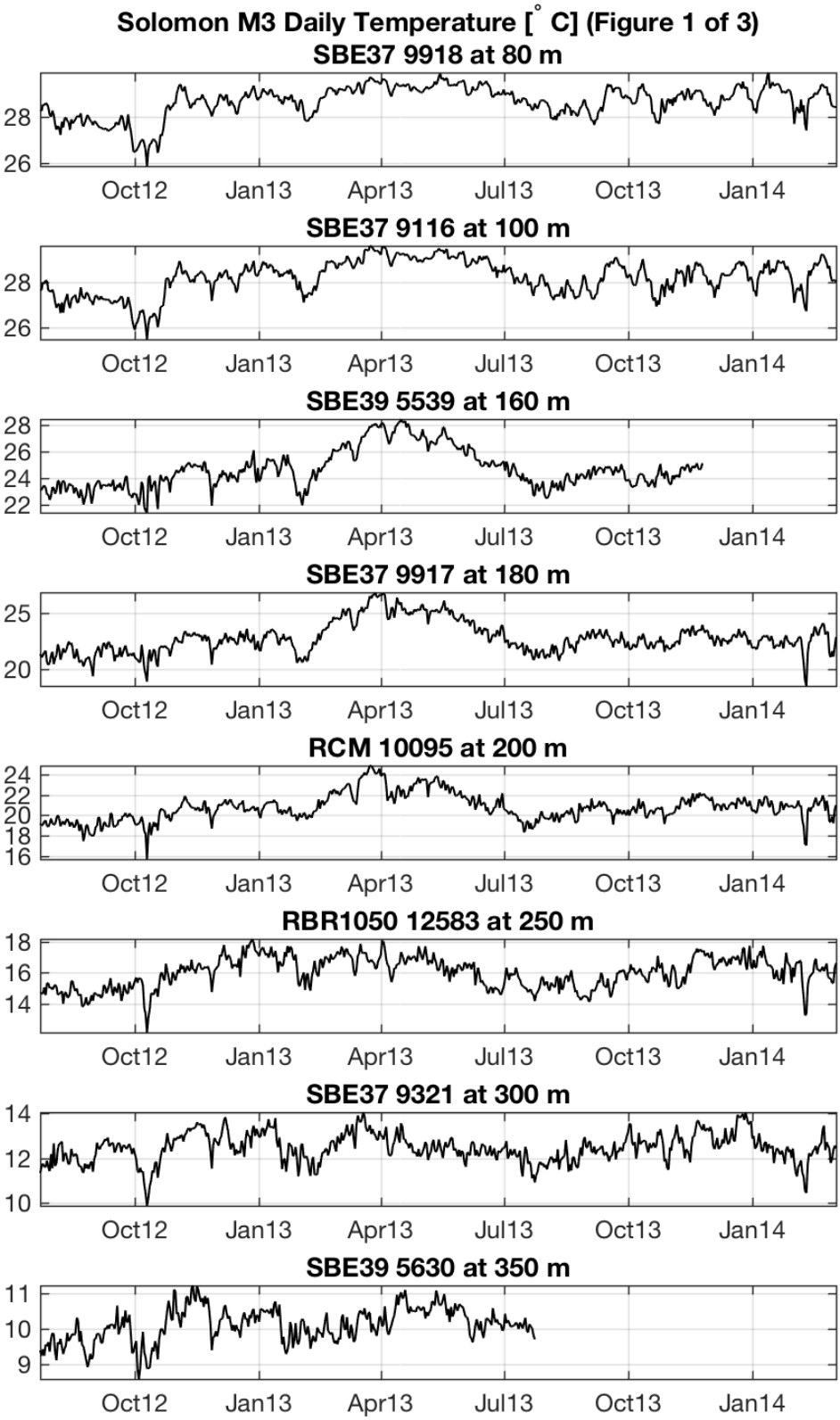
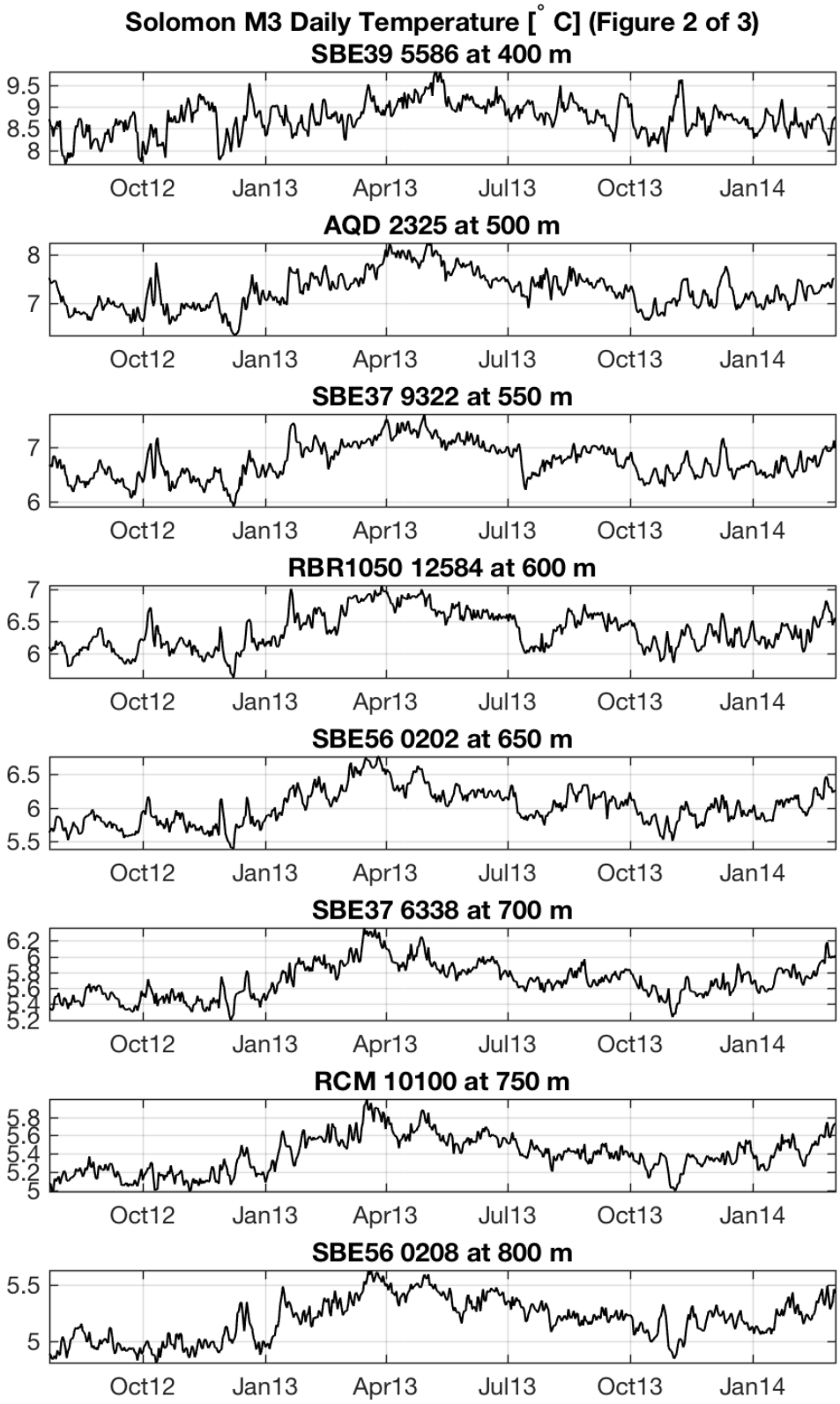
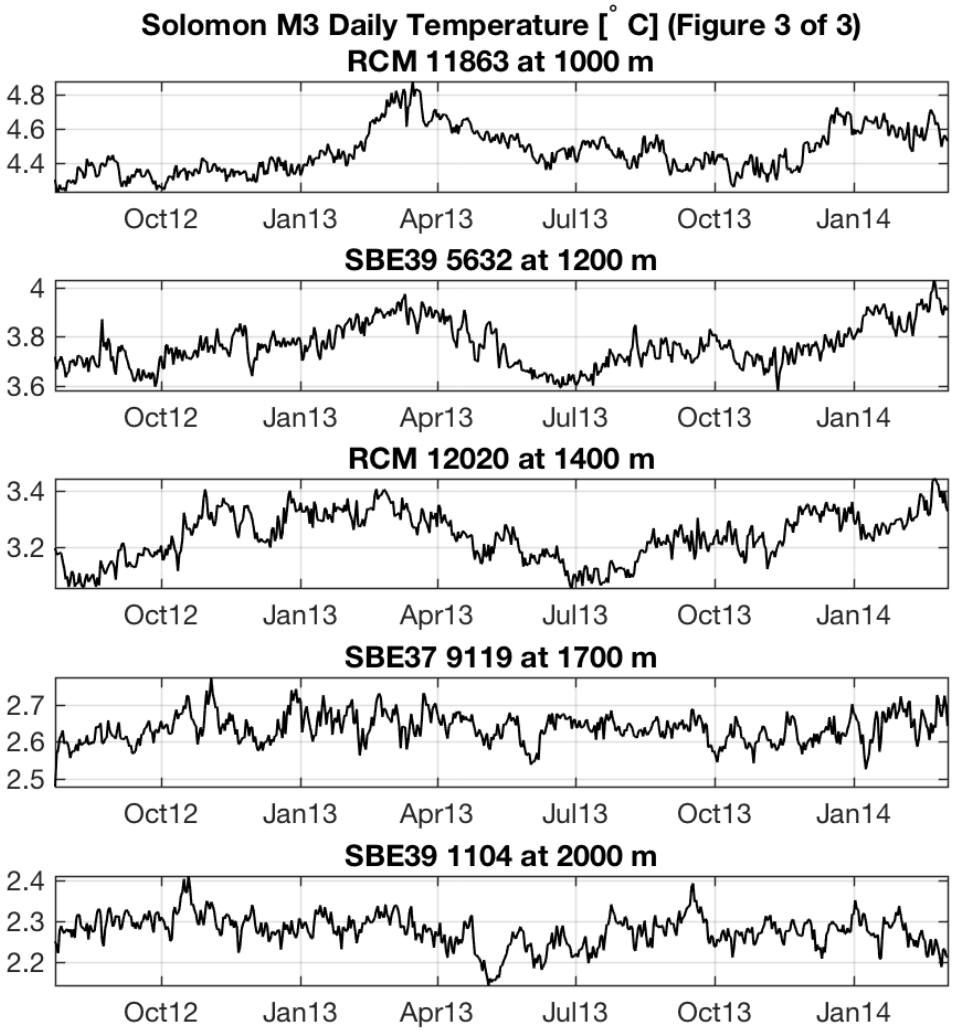


Figure 51: Temperature time series for each instrument on Solomon M3 filtered and subsampled to daily values. Depth given is the planned depth of the observation.


Solomon M3 Daily Temperature [° C] (Figure 2 of 3)
SBE39 5586 at 400 m
9.5
9
8.5
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
AQD 2325 at 500 m
8
7
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE37 9322 at 550 m
7
6
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RBR1050 12584 at 600 m
7
6.5
6
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 0202 at 650 m
6.5
6
5.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE37 6338 at 700 m
6.2
5.4
5.2
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RCM 10100 at 750 m
5.8
5.6
5.4
5.2
5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 0208 at 800 m
5.5
5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14


Solomon M3 Daily Temperature [° C] (Figure 3 of 3)
RCM 11863 at 1000 m
4.8
4.6
4.4
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE39 5632 at 1200 m
4
3.8
3.6
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RCM 12020 at 1400 m
3.4
3.2
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE37 9119 at 1700 m
2.7
2.6
2.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE39 1104 at 2000 m
2.4
2.3
2.2
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14

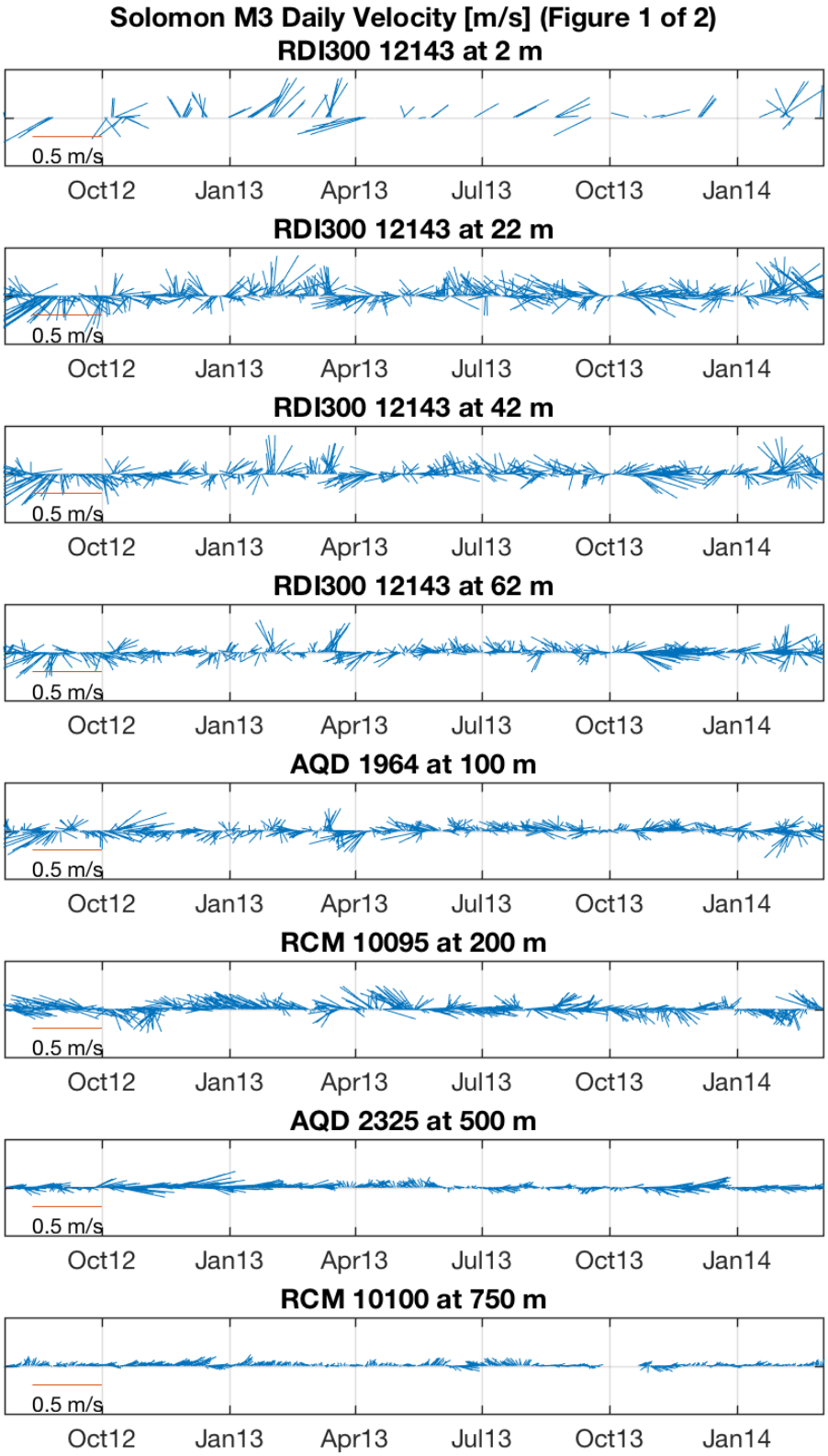
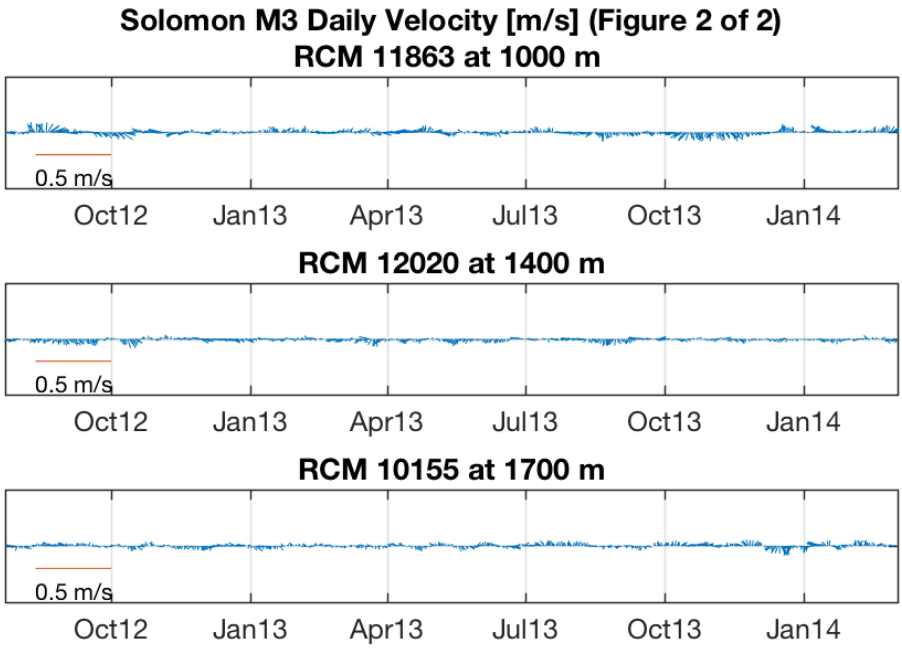


Figure 52: Velocity time series for each instrument on Solomon M3 filtered and subsampled to daily values. Depth given is the planned depth of the observation.



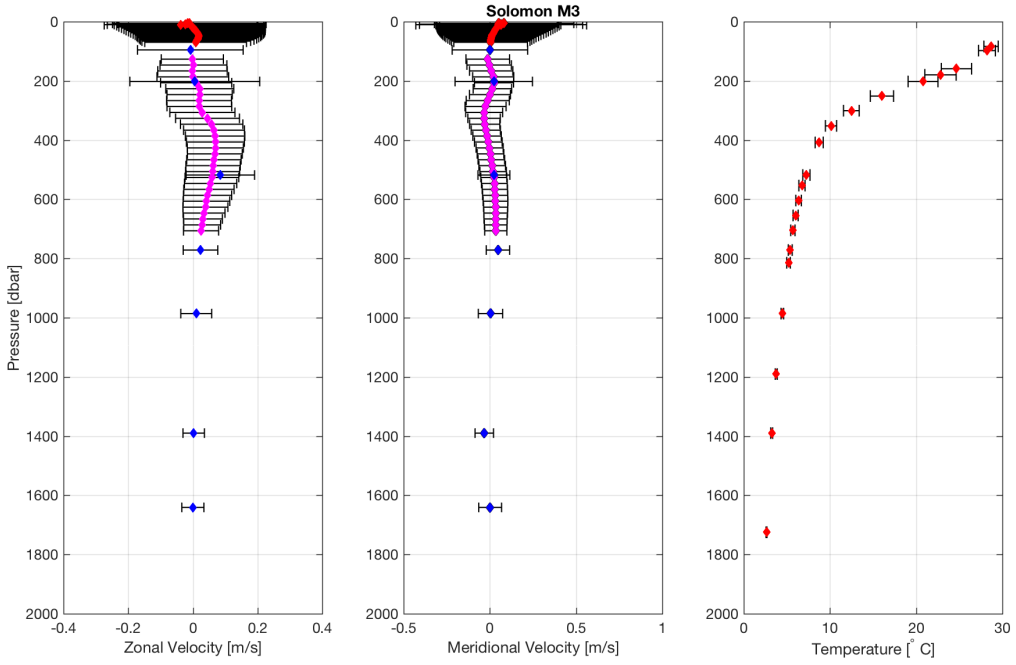


Figure 53: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the Solomon Strait M3 at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

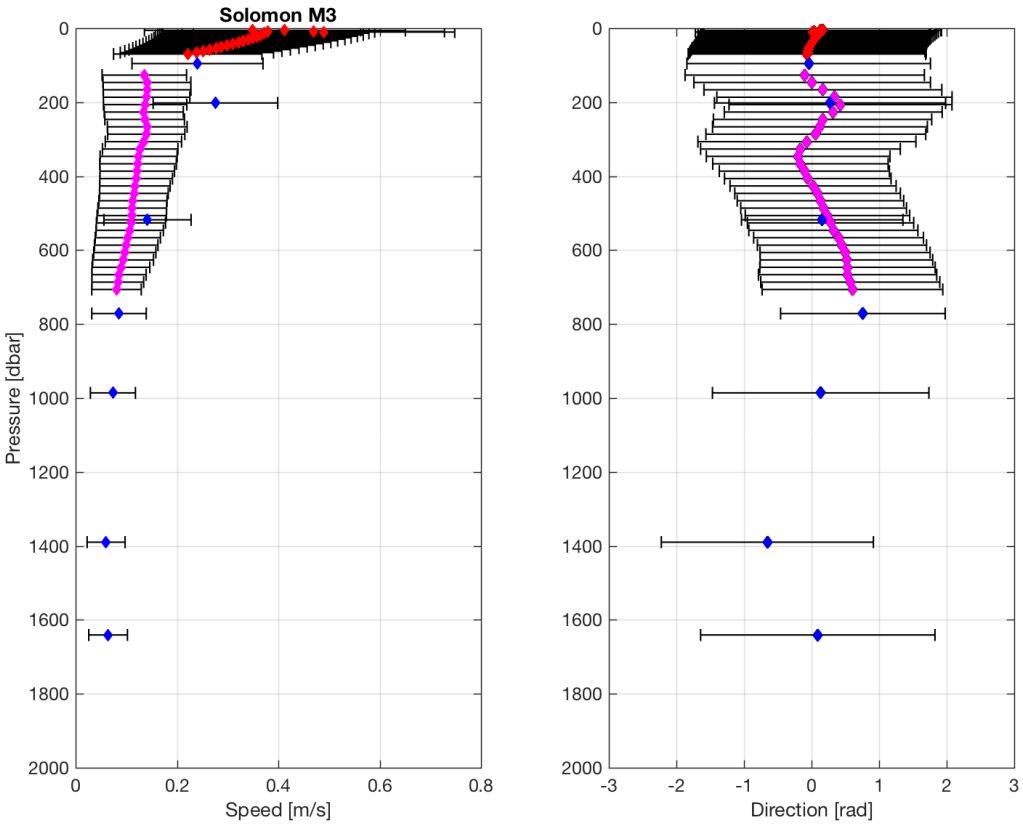


Figure 54: Mean (colored diamonds) and standard deviation (black lines) of the velocity (a) magnitude and (b) direction for the Solomon Strait M3 at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

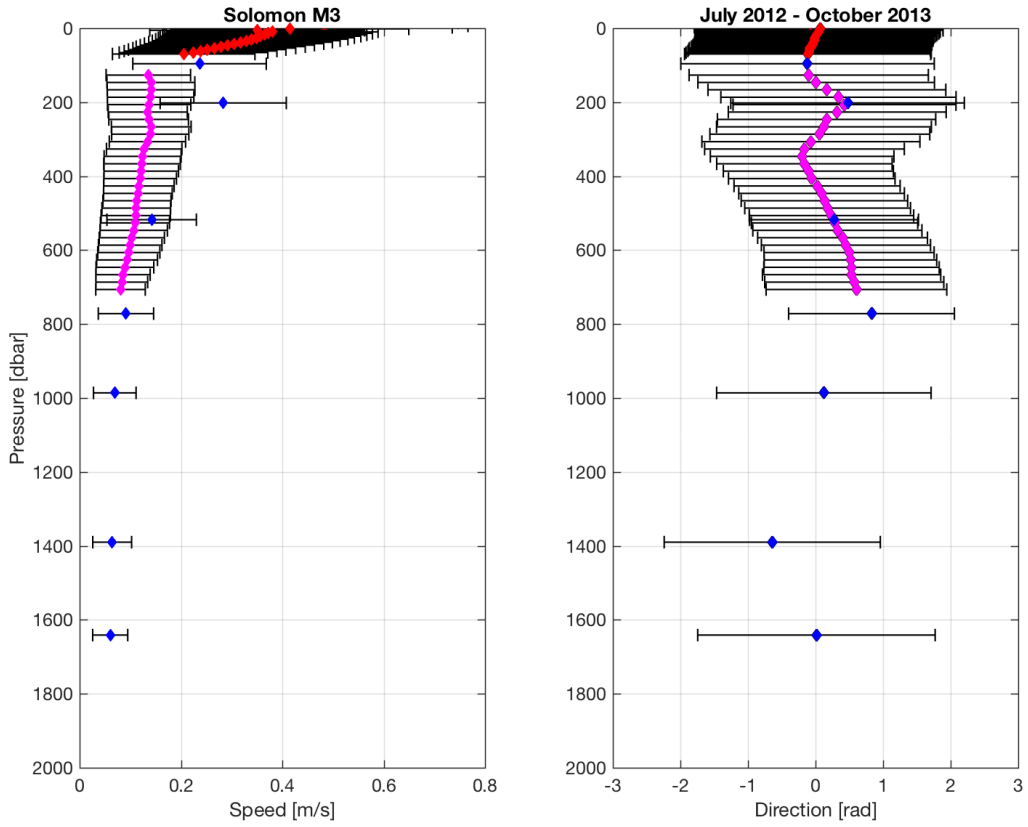


Figure 55: Mean (colored diamonds) and standard deviation (black lines) of the velocity (a) magnitude and (b) direction for the Solomon Strait M3 at the corresponding mean pressure for each record from July 2012 until October 2013, prior to the downward ADCP failure. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

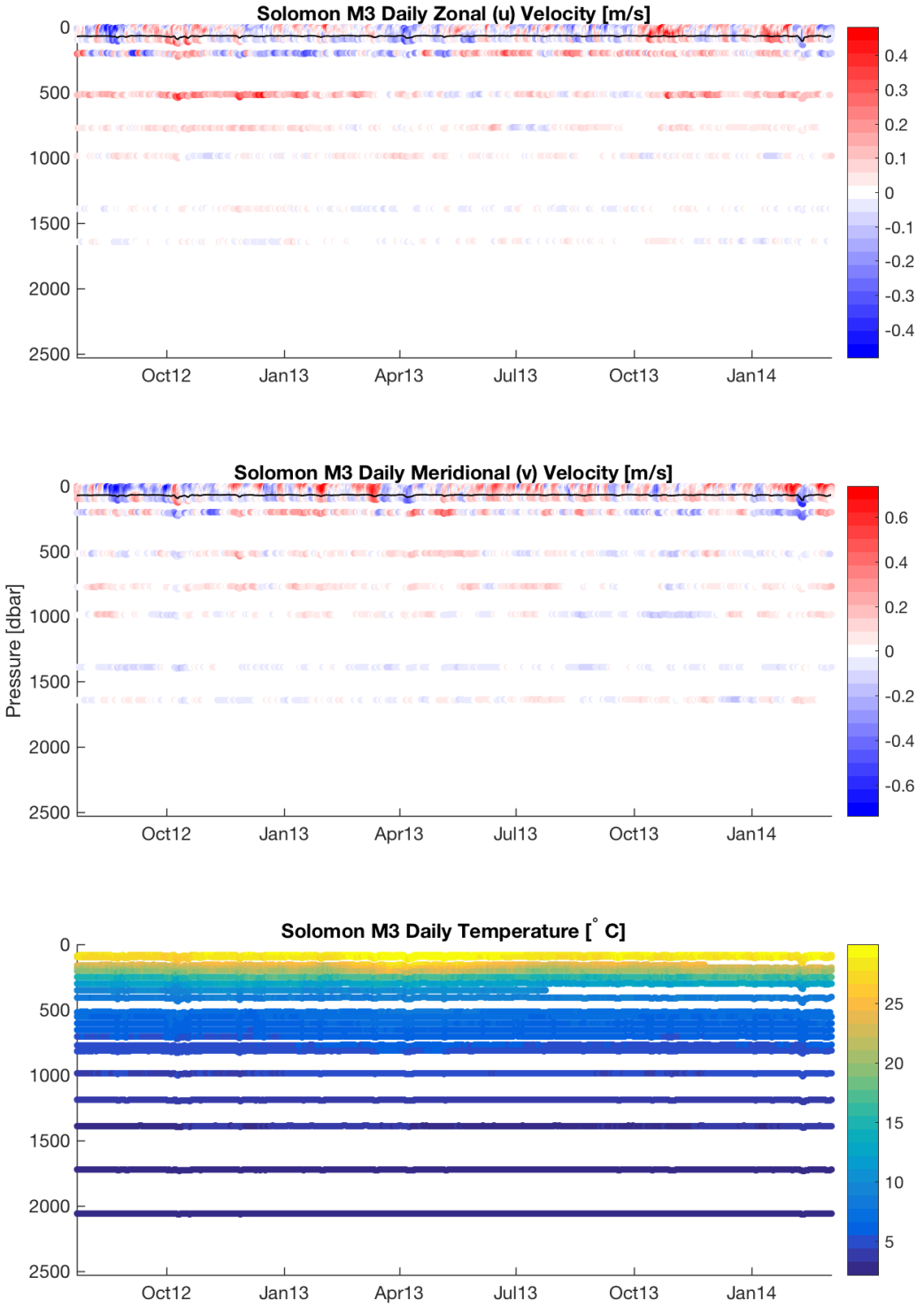


Figure 56: Solomon Strait M3 depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

8.6 Mooring: St George's East

Temperature coverage at St. George's East is generally good however all the SBE37 instruments stopped around September 2013 due to data storage issues (Figure 57). Records are generally well correlated with nearby sensors and the missing observations may be recreated using a predictive model. Velocity observations are well resolved in time and depth and there is good agreement between sensors (Figure 58). Mean profiles confirm the consistency between instruments with resolved and consistent observations between instruments (Figures 59 and 60), as does the daily filtered and subsampled full time and depth record (Figure 61).

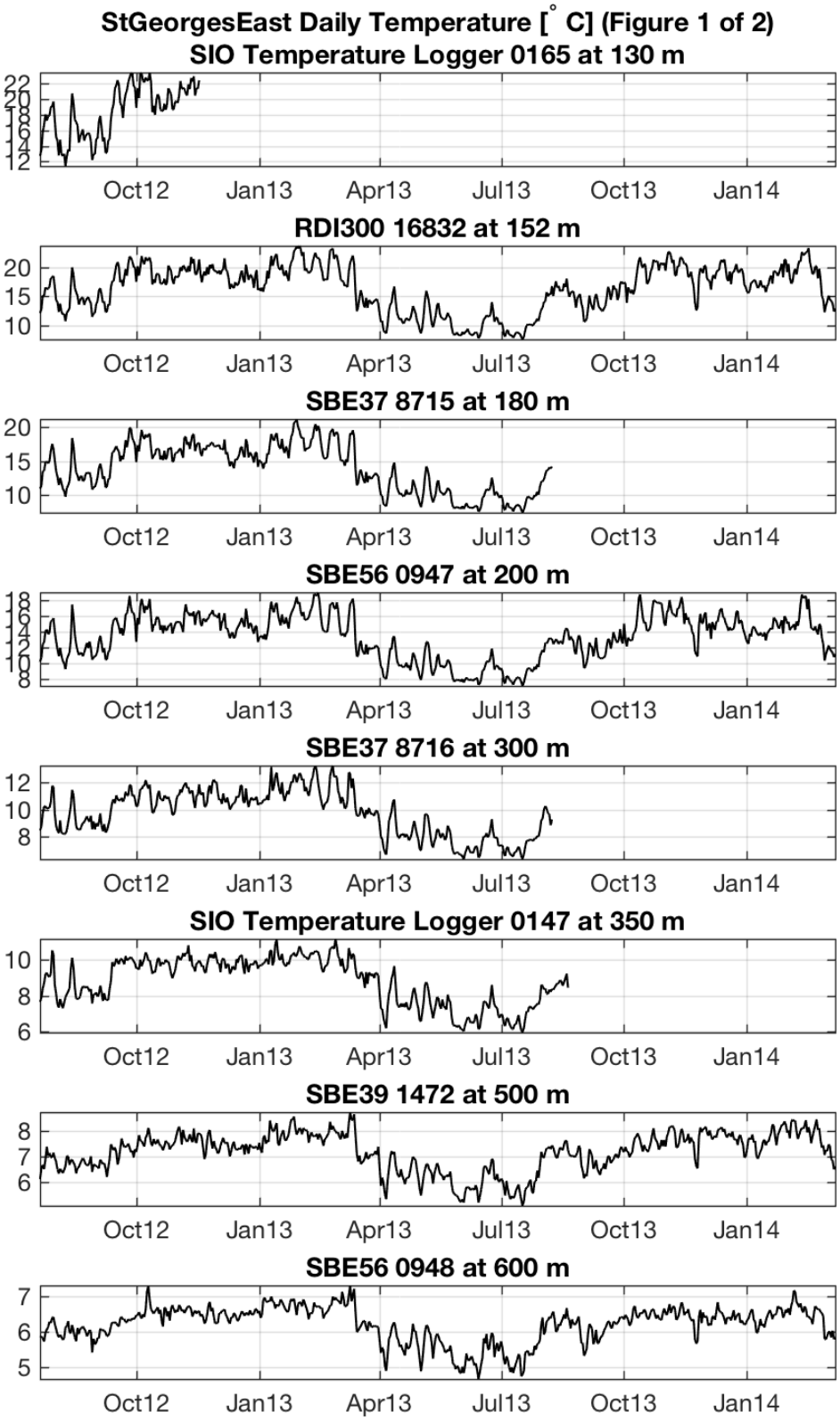
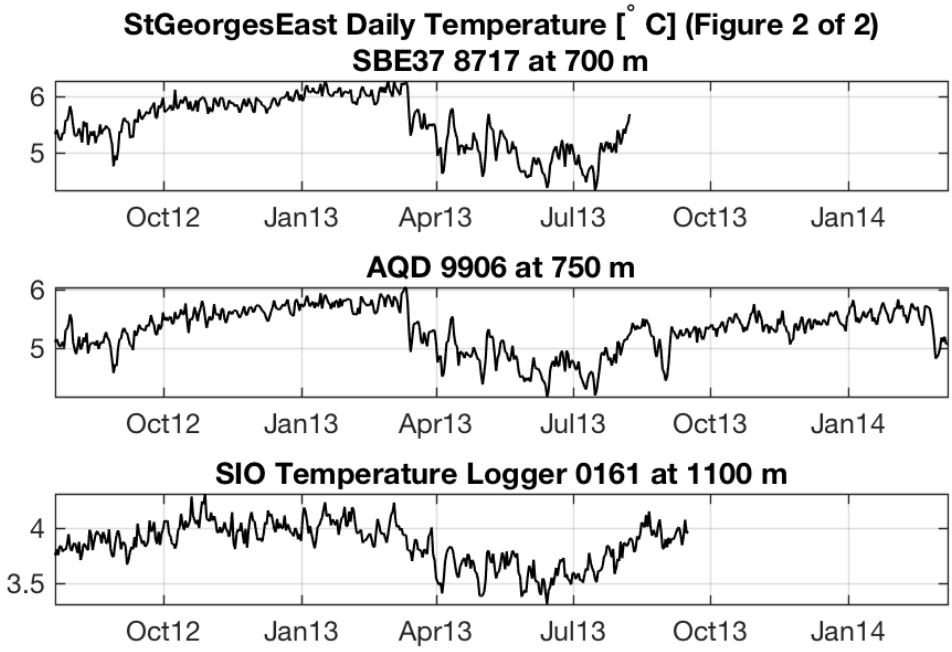


Figure 57: Temperature time series for each instrument on St George's East filtered and subsampled to daily values. Depth given is the planned depth of the observation.


StGeorgesEast Daily Temperature [° C] (Figure 2 of 2)
SBE37 8717 at 700 m
6
5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
AQD 9906 at 750 m
6
5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SIO Temperature Logger 0161 at 1100 m
4
3.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14

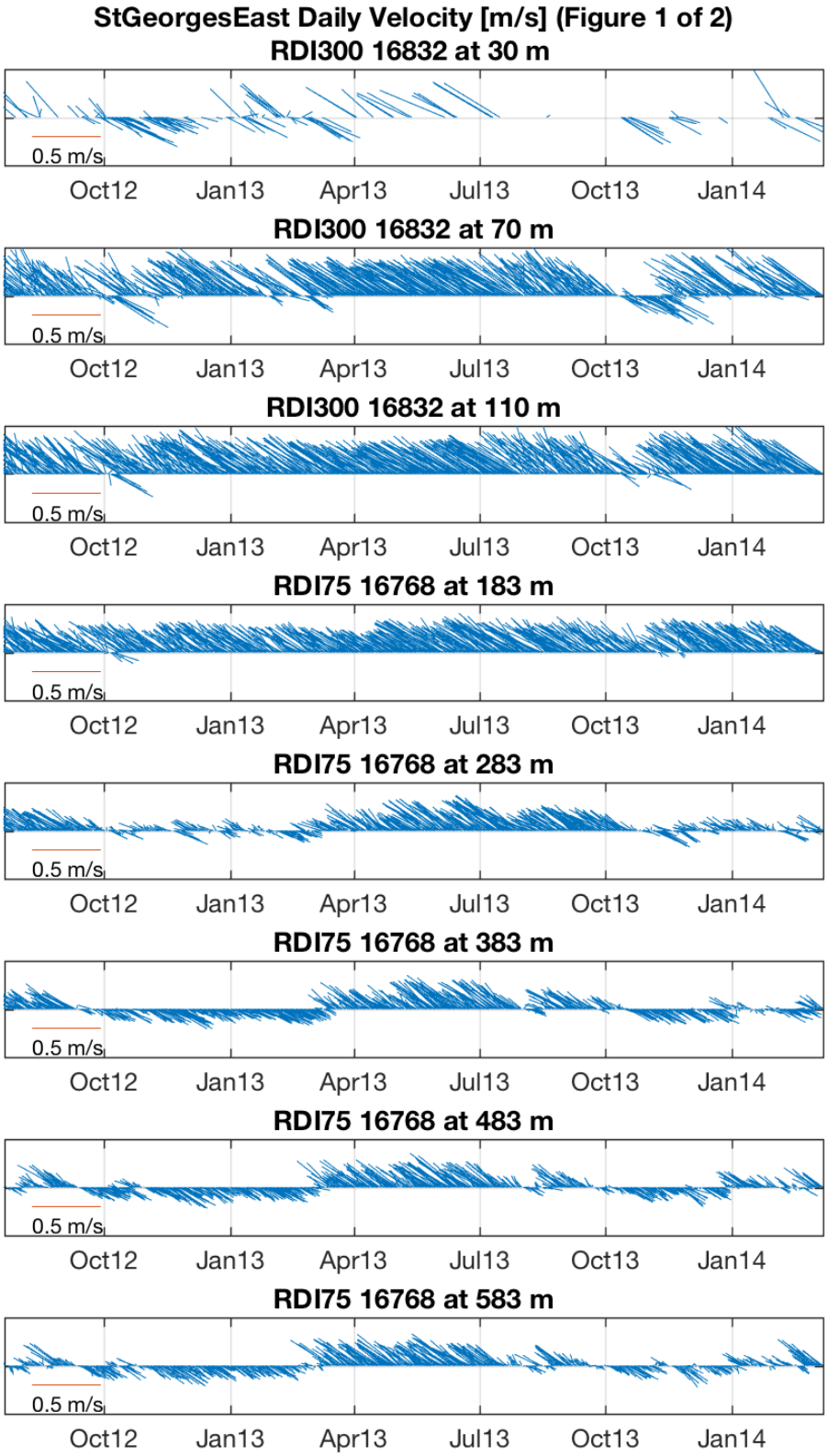
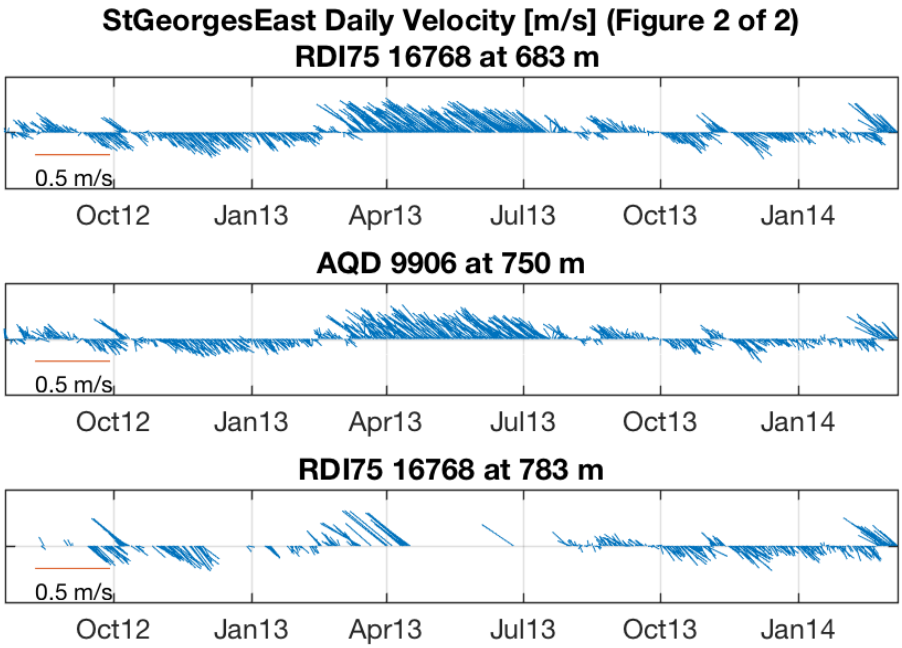


Figure 58: Velocity time series for each instrument on St George's East filtered and subsampled to daily values. Depth given is the planned depth of the observation.



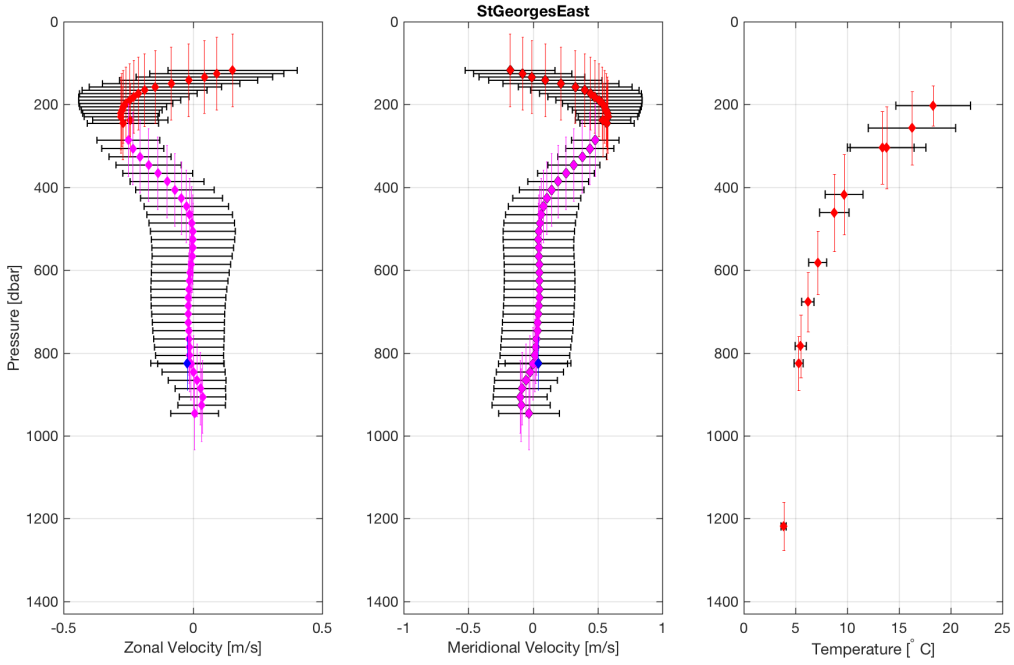


Figure 59: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the St George's East at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

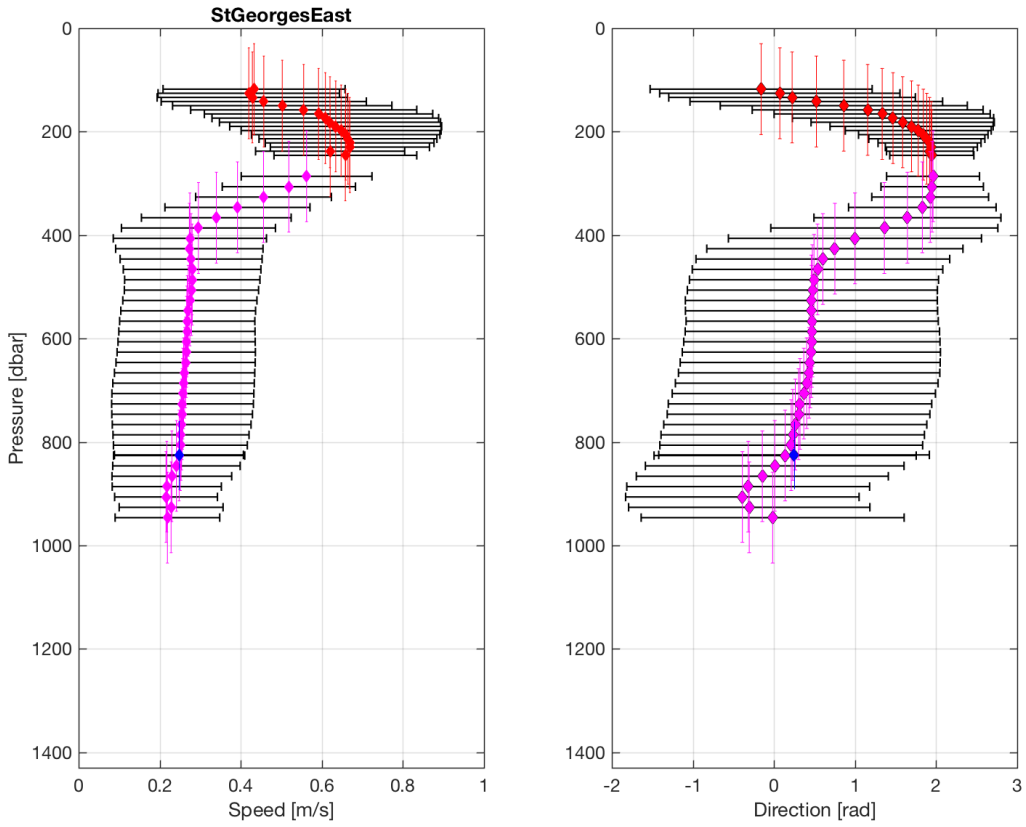


Figure 60: Mean (colored diamonds) and standard deviation (black lines) of the velocity (a) magnitude and (b) direction for the St George's East at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

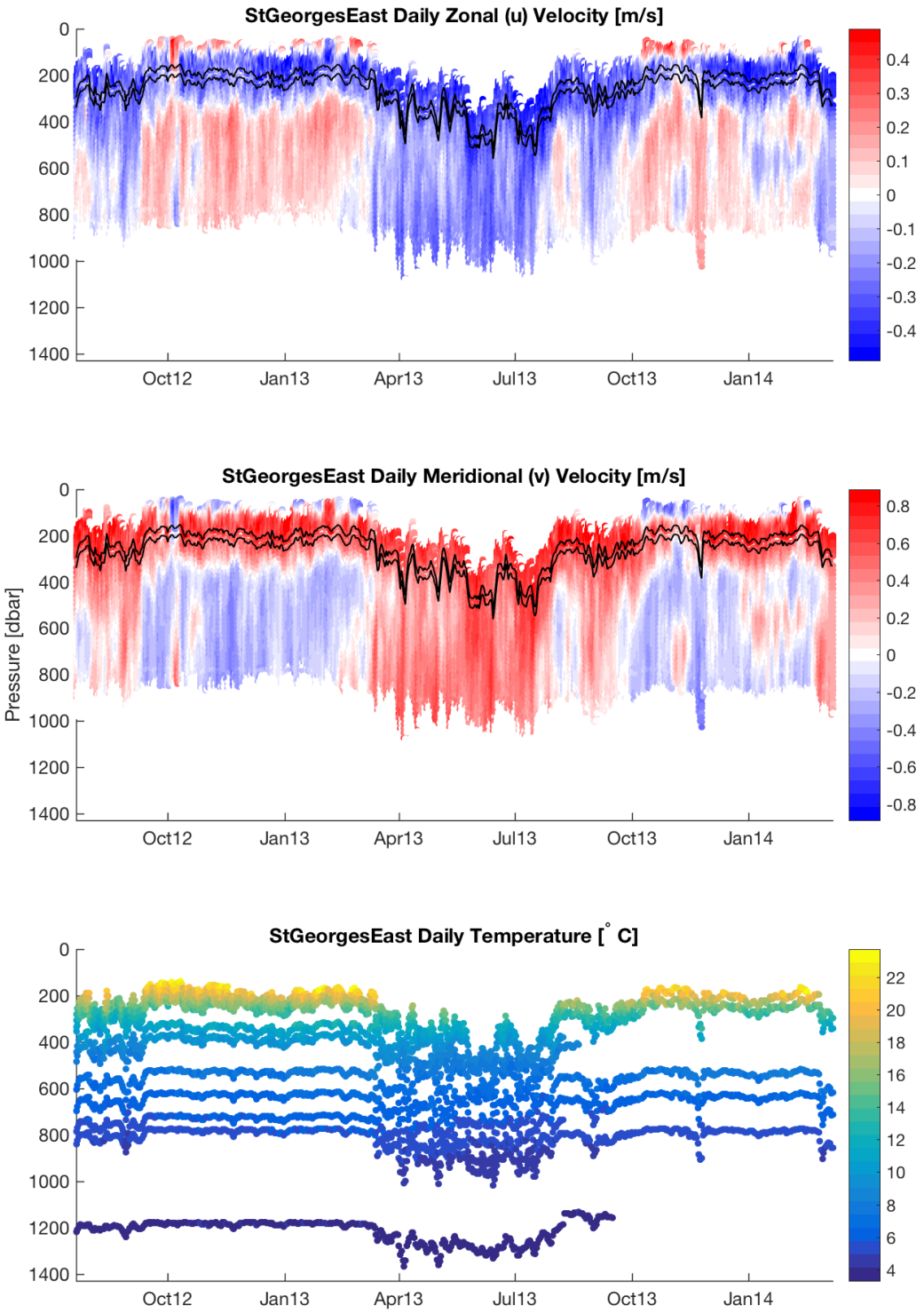


Figure 61: St George's East depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

8.7 Mooring: St George's West

With the exception of the SIO t-loggers, the temperature record is well resolved in time with coarse vertical sampling (Figure 62). Velocity records are consistent from instrument to instrument (Figure 62). Mean profiles resolve nearly full-depth coverage of velocity with a coarse but consistent temperature record (Figures 64 and 65). The full depth and time record from St. George's West (Figure 66) has a strong resemblance to that of St. George's East (Figure 61), including similar patterns of draw down, likely related to the low frequency dynamics and strong full depth currents.

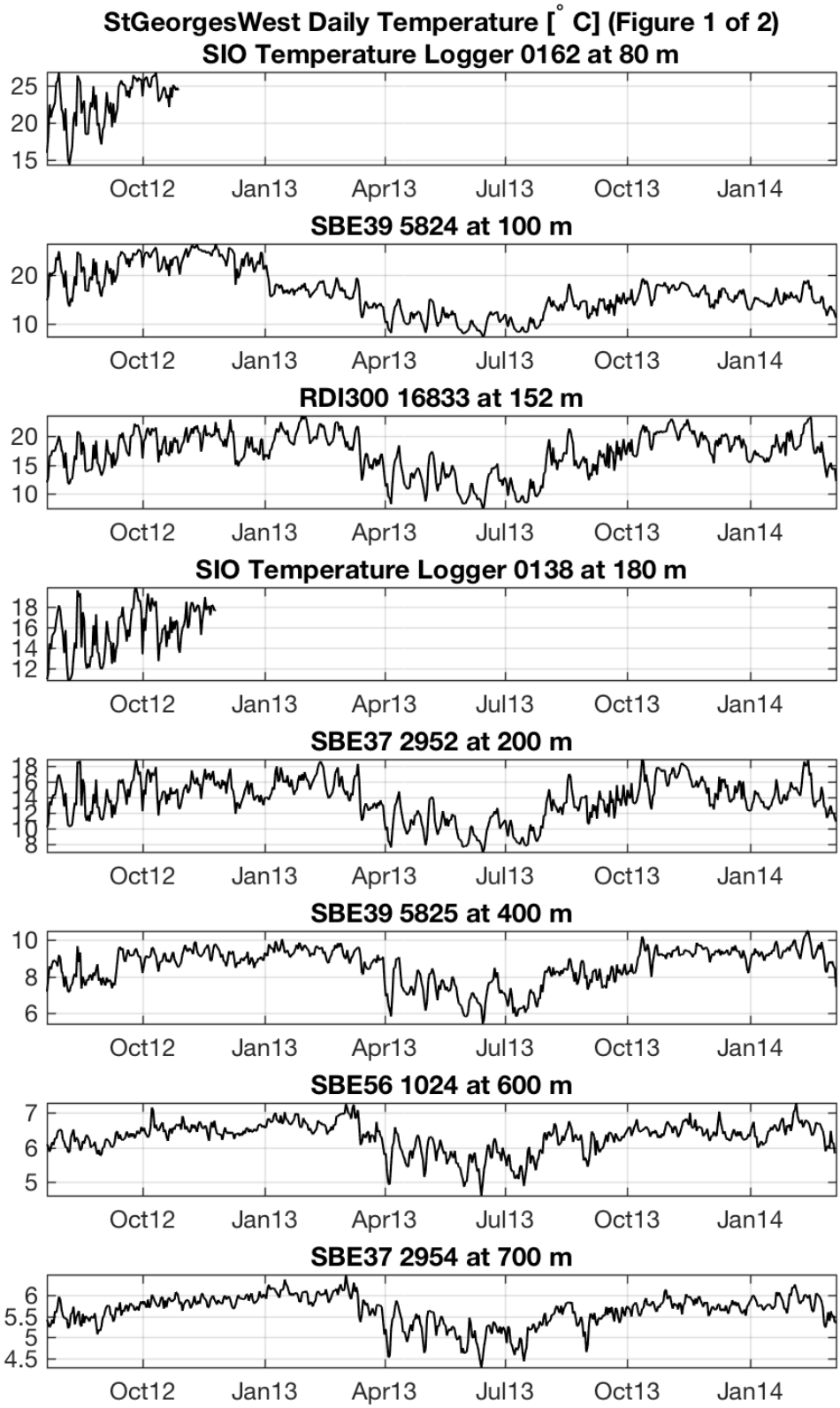
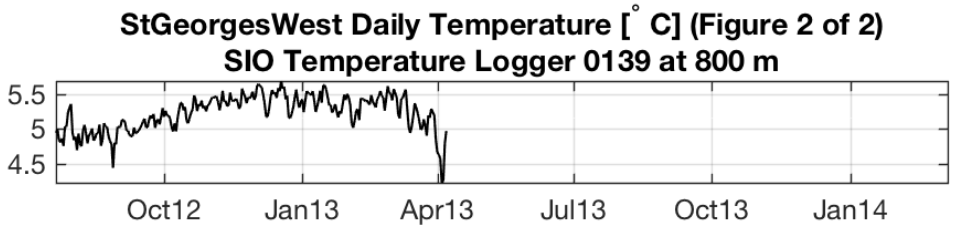


Figure 62: Temperature time series for each instrument on St George's West filtered and subsampled to daily values. Depth given is the planned depth of the observation.


StGeorgesWest Daily Temperature [° C] (Figure 2 of 2)
SIO Temperature Logger 0139 at 800 m
5.5
5
4.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14

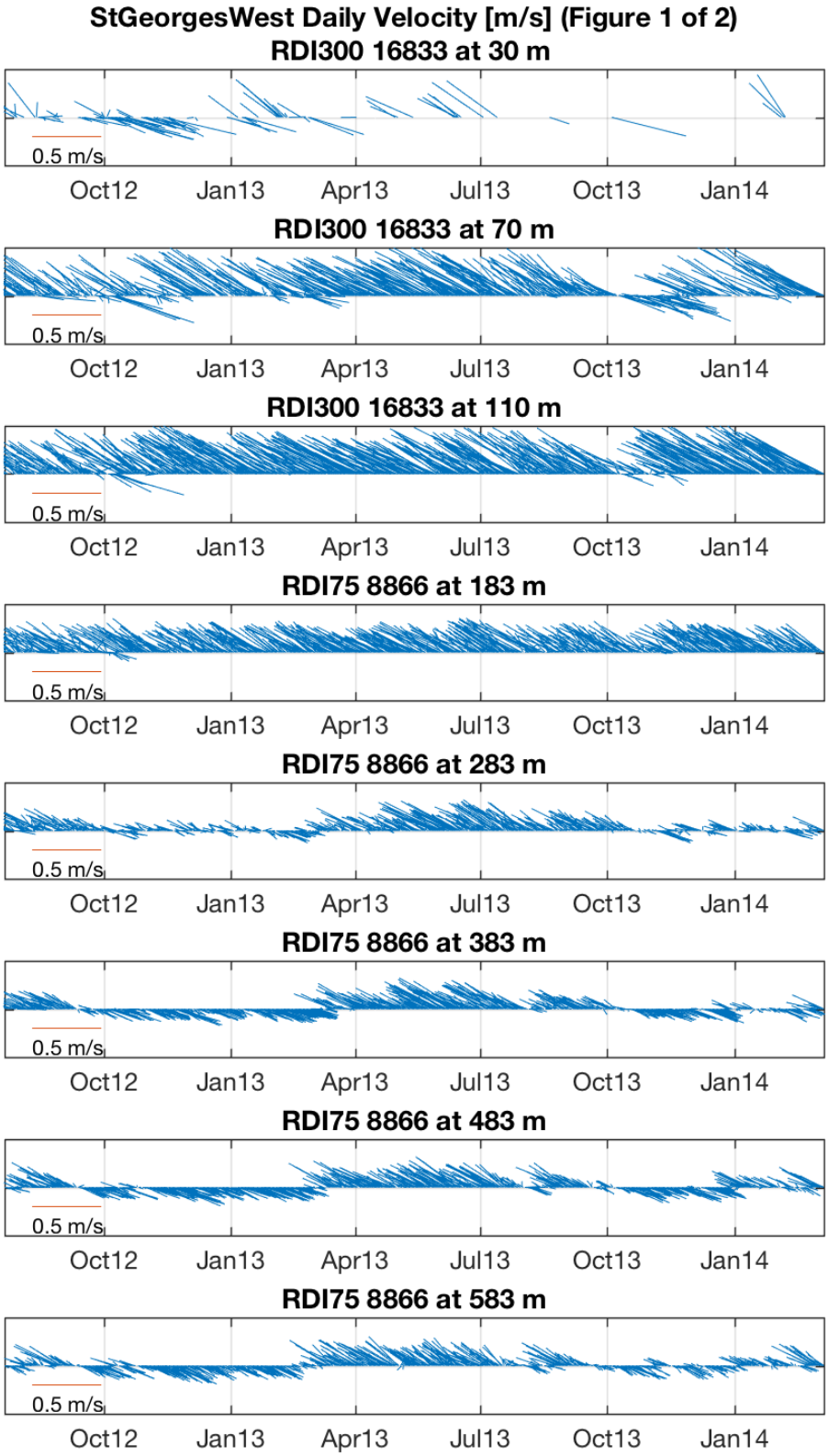
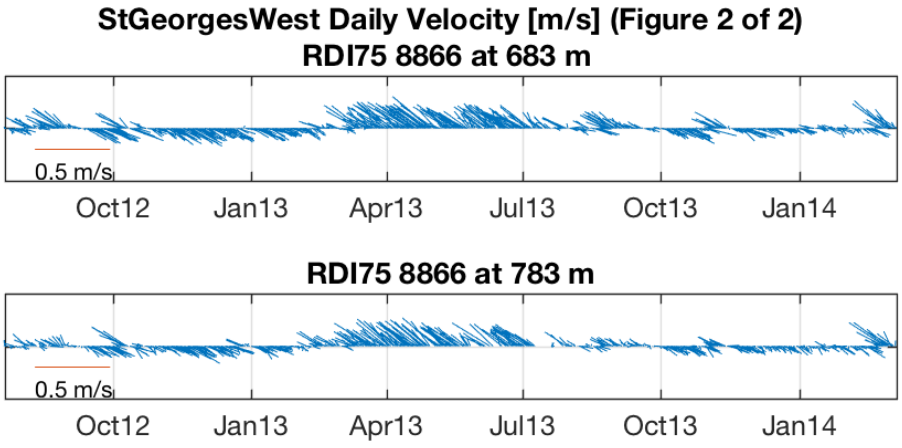


Figure 63: Velocity time series for each instrument on St George's West filtered and subsampled to daily values. Depth given is the planned depth of the observation.



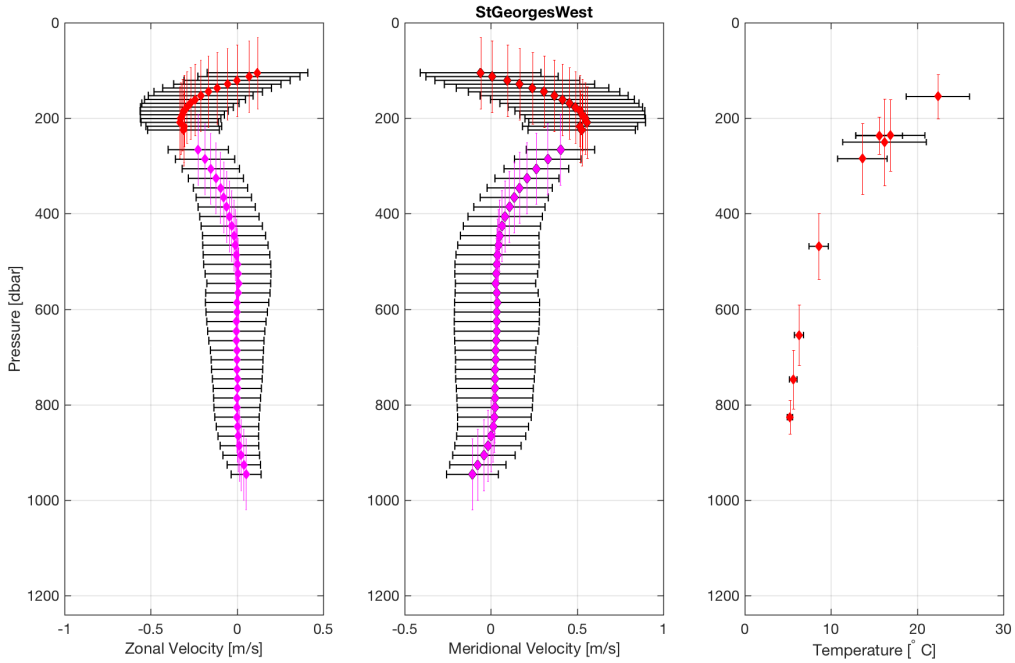


Figure 64: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the St George's West at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

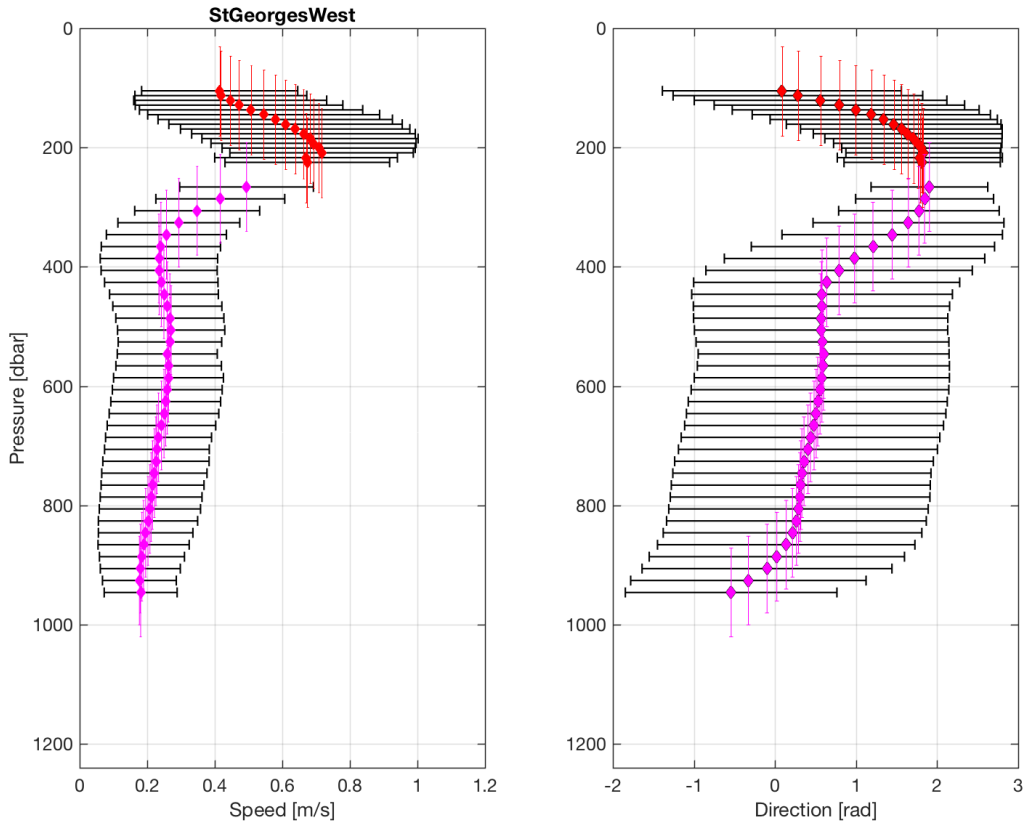


Figure 65: Mean (colored diamonds) and standard deviation (black lines) of the velocity (a) magnitude and (b) direction for the St George's West at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

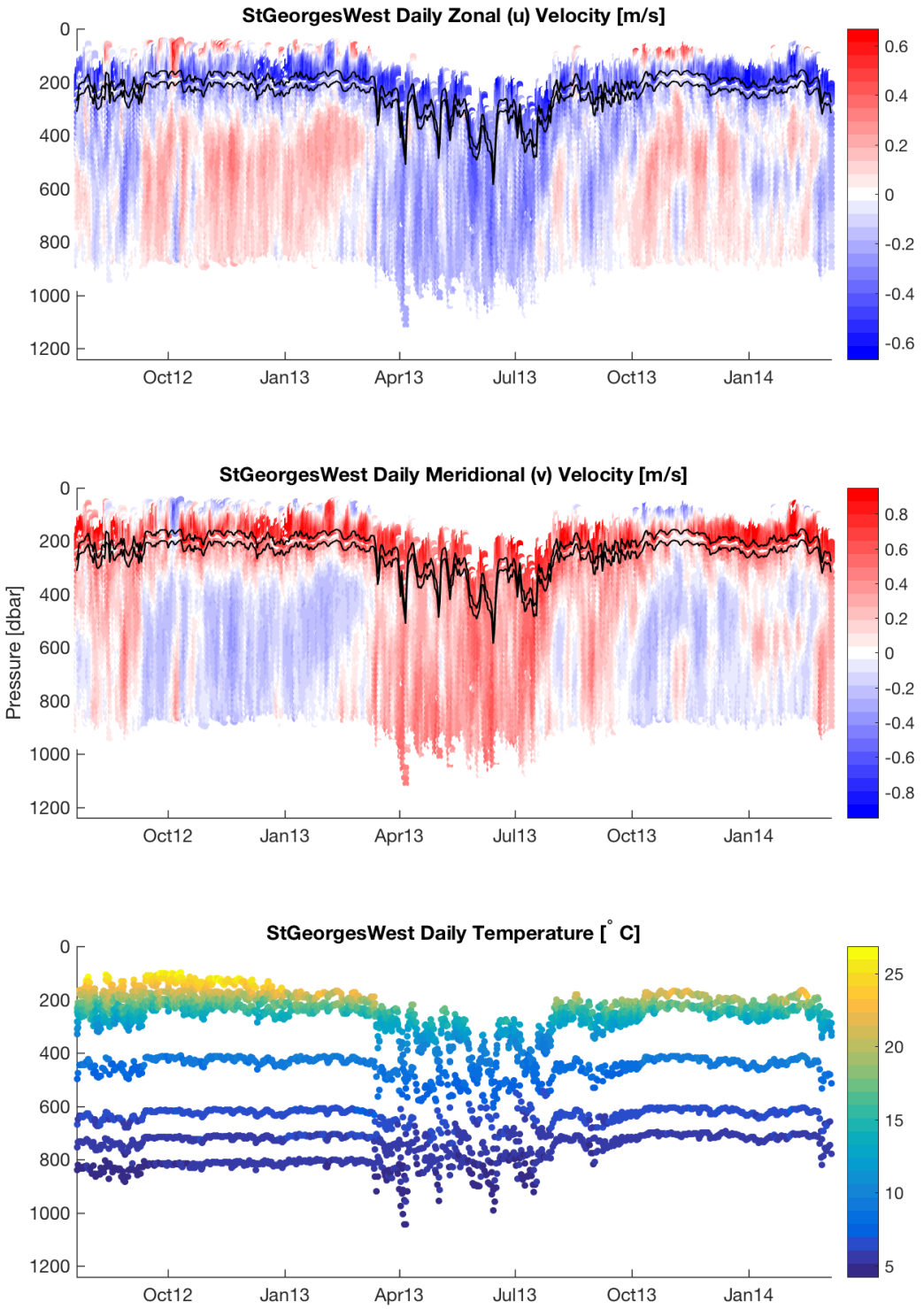


Figure 66: St George's West depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

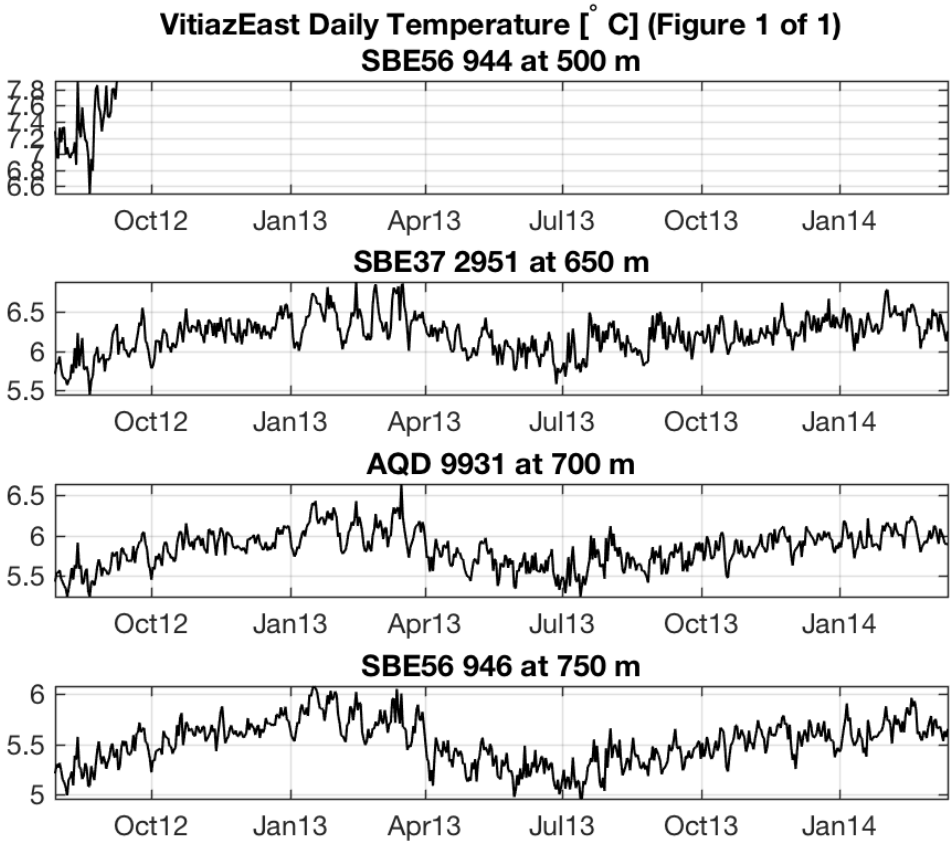


Figure 67: Temperature time series for each instrument on Vitiaz East filtered and subsampled to daily values. Depth given is the planned depth of the observation.

8.8 Mooring: Vitiaz East

The data from Vitiaz East is minimal due to instrument loss and mooring failure, however the recovered temperature records are consistent amongst themselves (Figure 67) and the single velocity record is consistent with observations at similar depths made at the other moorings within Vitiaz Strait (Figure 68). Mean profiles show considerable variability in temperature and velocity even though mooring motion is quite small (Figure 69), which is visualized nicely in Figure 70.

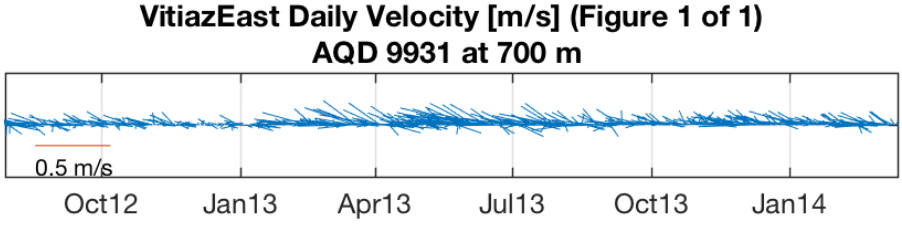


Figure 68: Velocity time series for each instrument on Vitiaz East filtered and subsampled to daily values. Depth given is the planned depth of the observation.

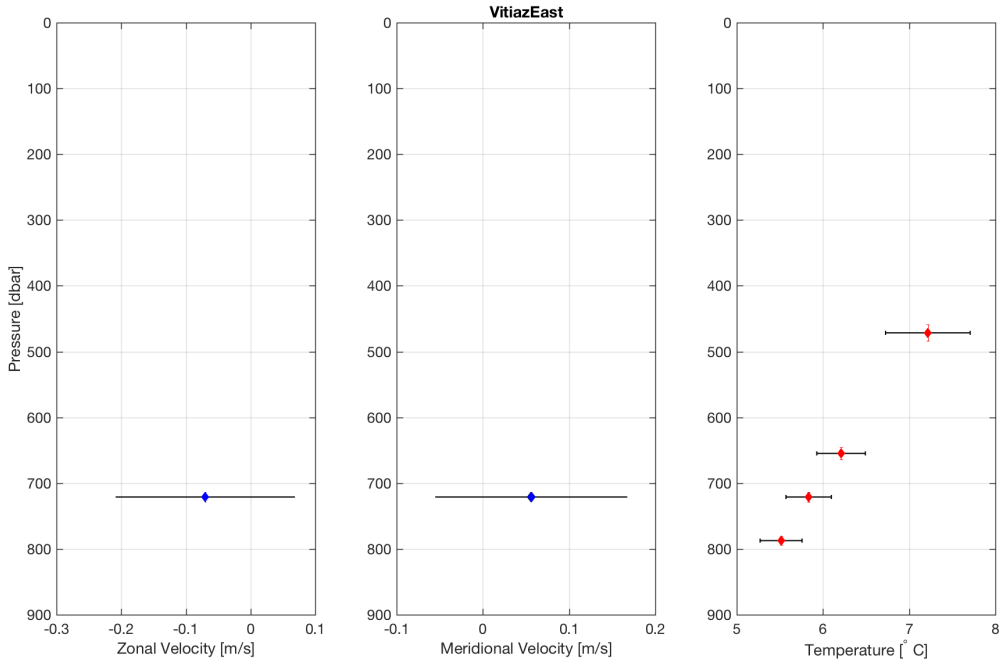


Figure 69: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the Vitiaz East at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

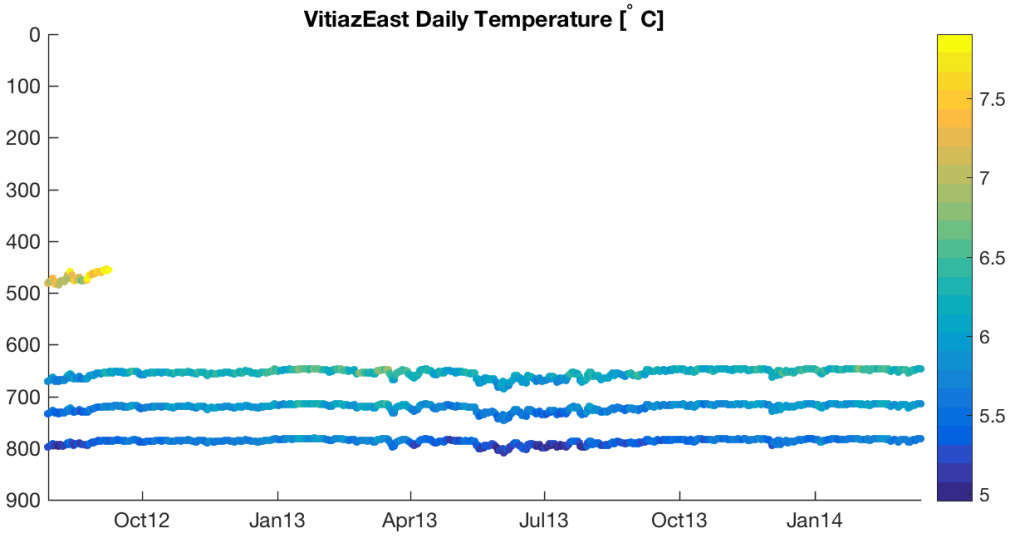


Figure 70: Vitiaz East depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

8.9 Mooring: Vitiaz Middle

Prior to the mooring line breaking, the Vitiaz Middle mooring had high vertical resolution of temperature, particularly near the surface (Figure 71). Regardless, the mooring achieves very good vertical and temporal resolution of temperature below 250 m, capturing both the high frequency resolution due to mooring motion and the lower frequency natural variability. Velocity observations also have very high vertical resolution with deep observations confirmed by single point current meters and good coverage in time (Figure 72). This agreement in velocity observations between instruments is confirmed in the mean profiles of Figures 73 and 74. The variance of the flow direction is minimal near the mid-depth velocity magnitude maximum, suggesting that the mean undercurrent is relatively steady over the deployment period. Full time and depth coverage for temperature, zonal and meridional velocity is well resolved with only a small gap in velocity in the last months of the deployment period when the upward facing ADCP failed (Figure 75).

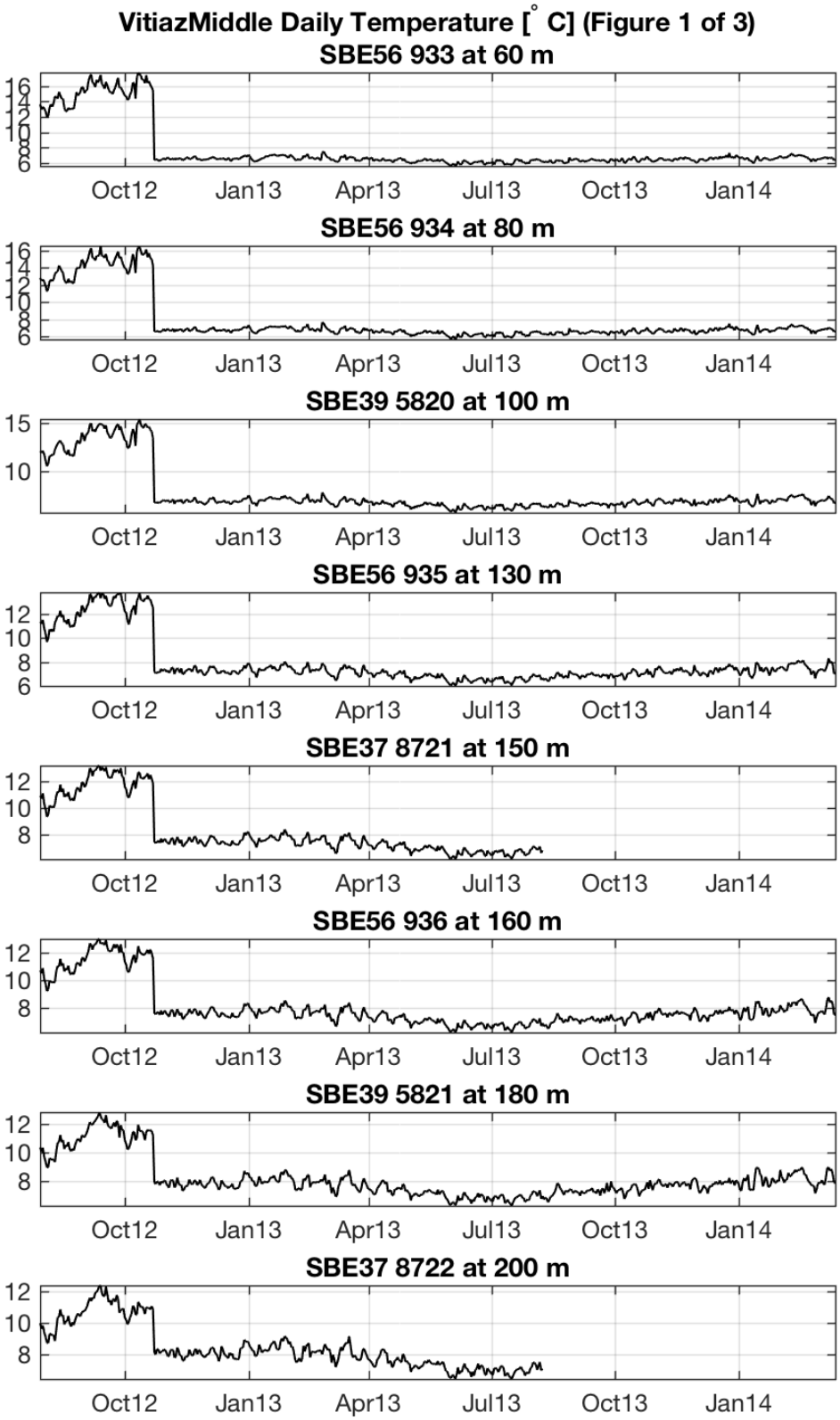
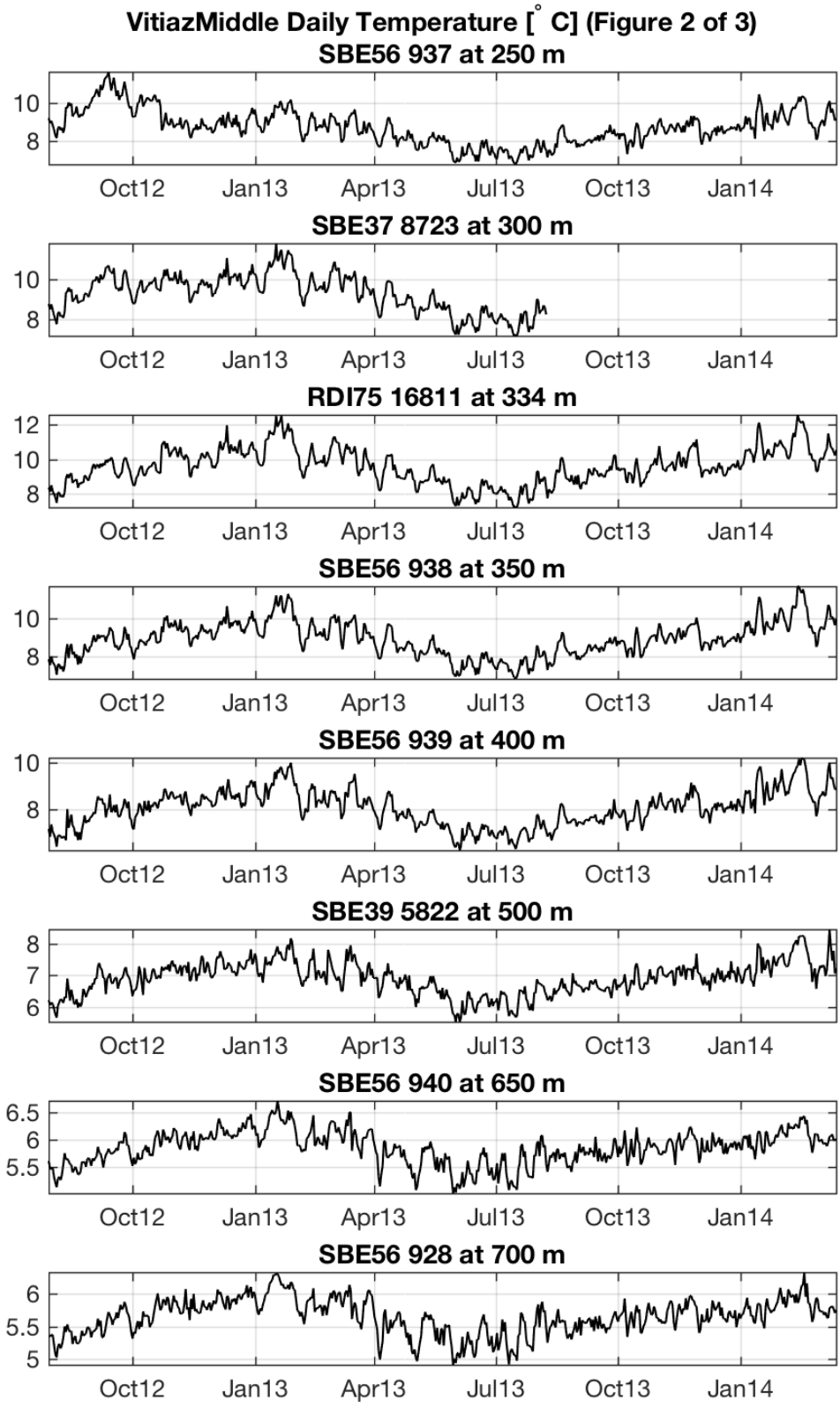
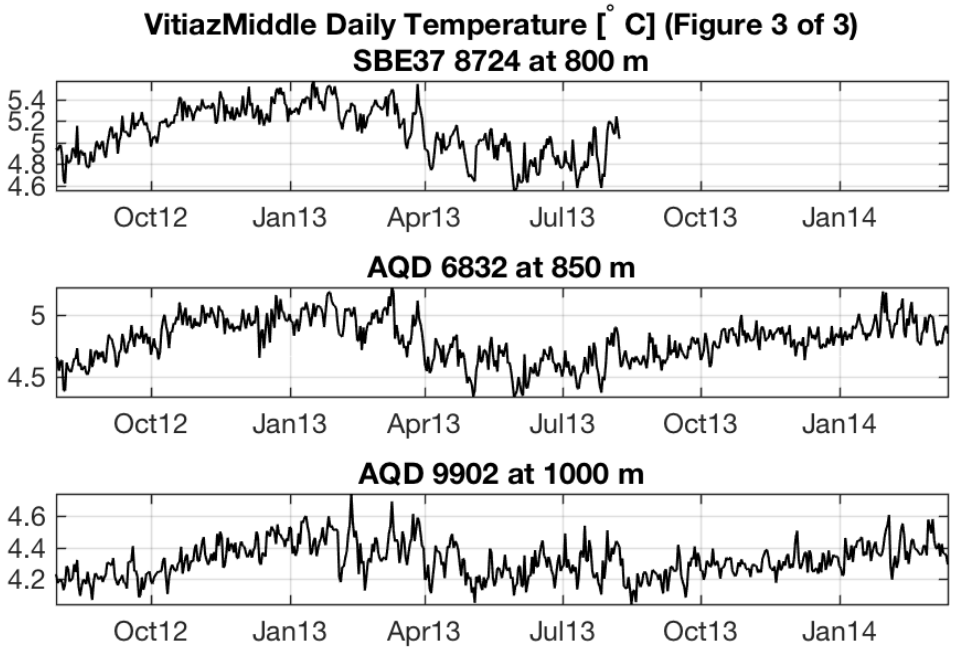


Figure 71: Temperature time series for each instrument on Vitiaz Middle filtered and subsampled to daily values. Depth given is the planned depth of the observation.


VitiazMiddle Daily Temperature [° C] (Figure 2 of 3)
SBE56 937 at 250 m
10
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE37 8723 at 300 m
10
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 334 m
12
10
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 938 at 350 m
10
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 939 at 400 m
10
8
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE39 5822 at 500 m
8
7
6
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 940 at 650 m
6.5
6
5.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
SBE56 928 at 700 m
6
5.5
5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14


VitiazMiddle Daily Temperature [° C] (Figure 3 of 3)
SBE37 8724 at 800 m
5.4
5.2
5
4.8
4.6
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
AQD 6832 at 850 m
5
4.5
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
AQD 9902 at 1000 m
4.6
4.4
4.2
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14

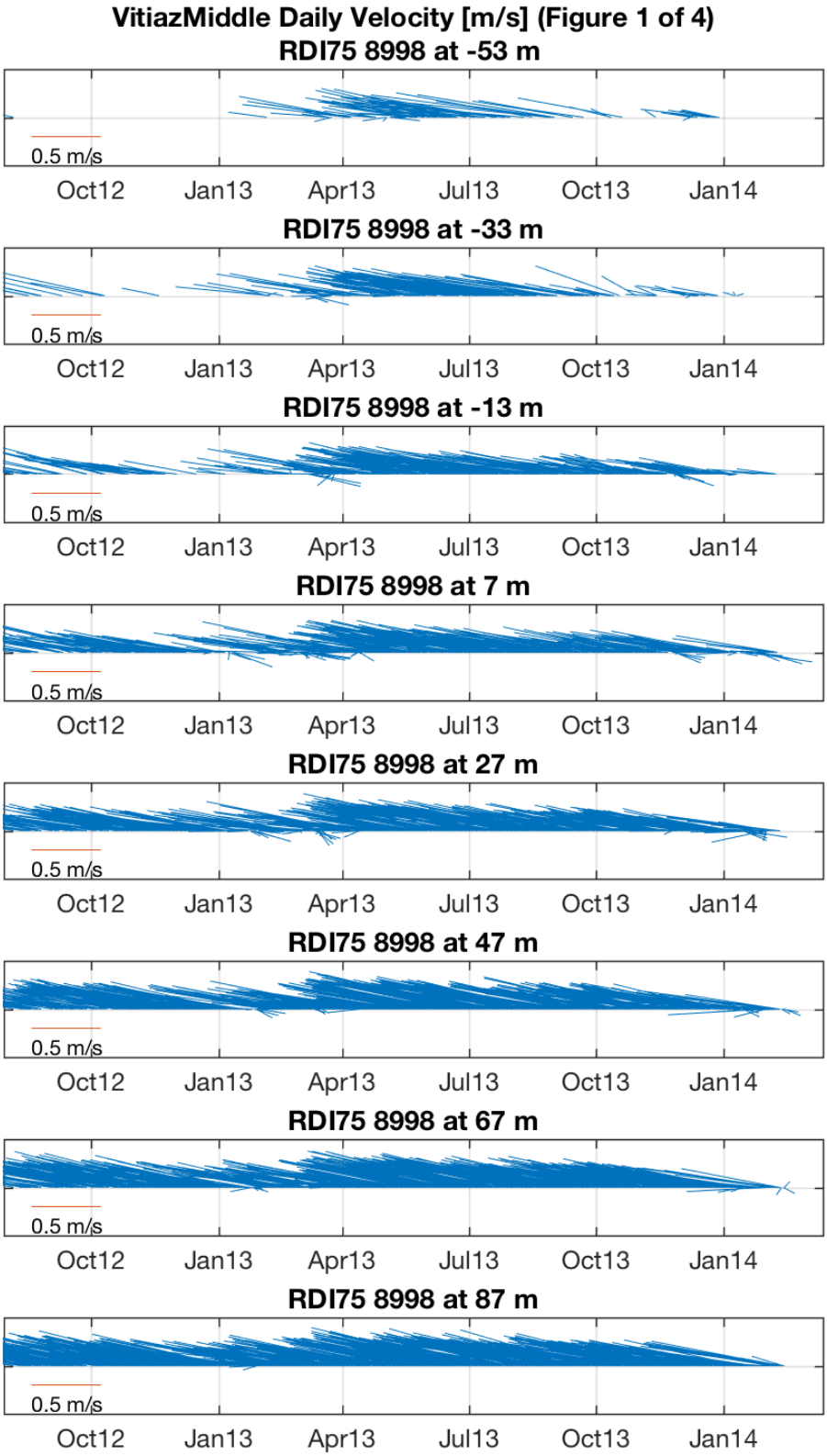
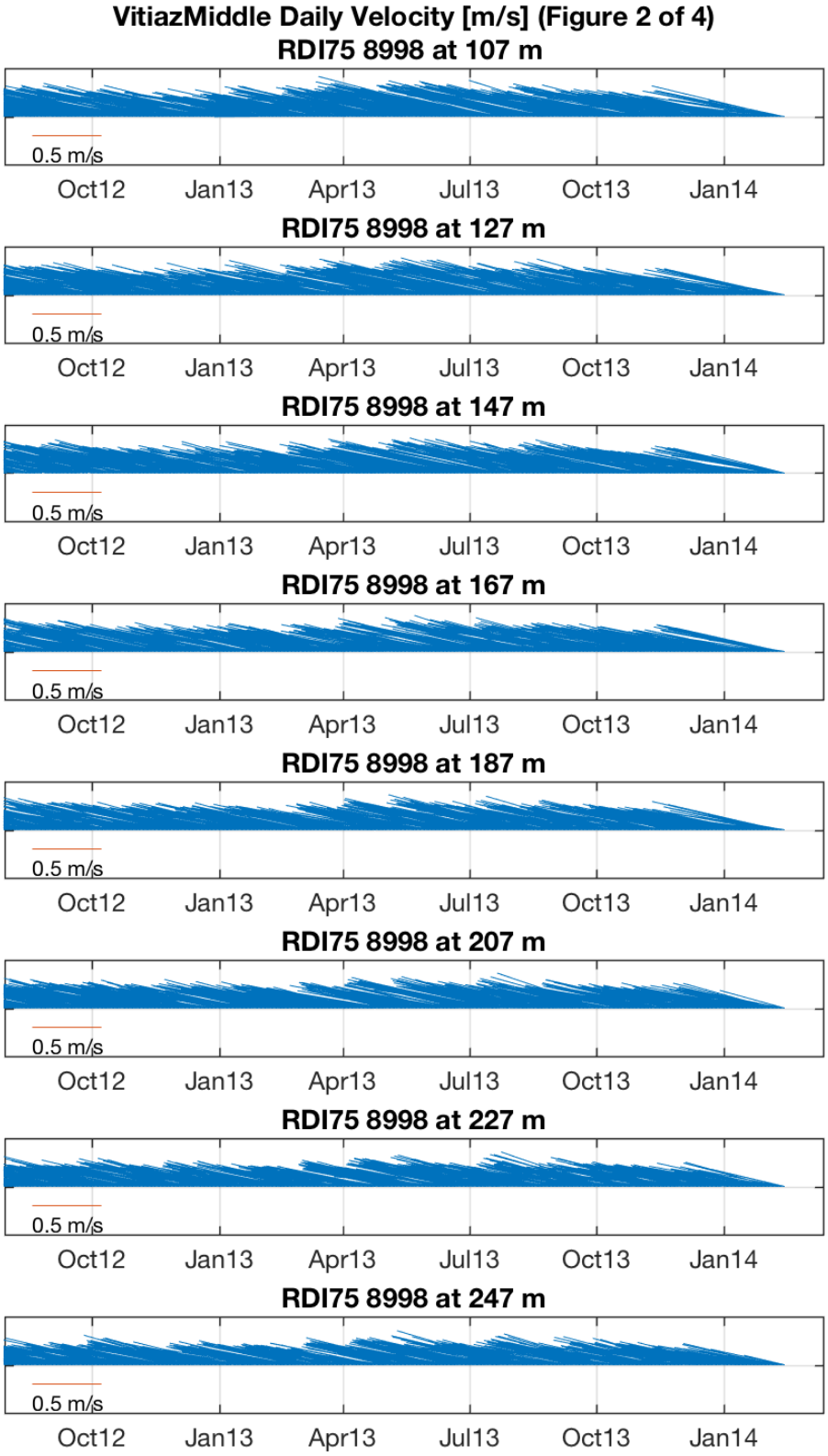
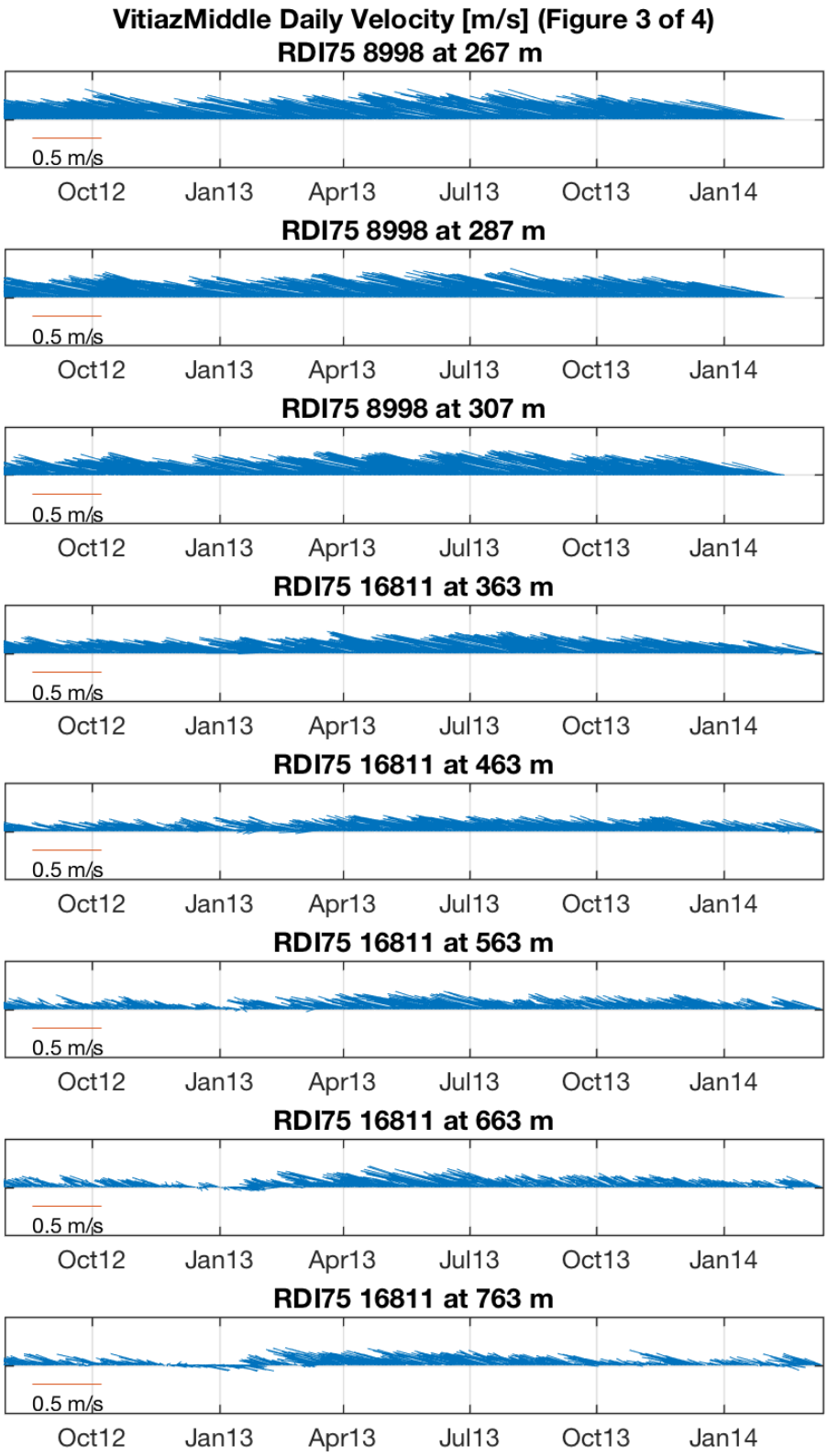
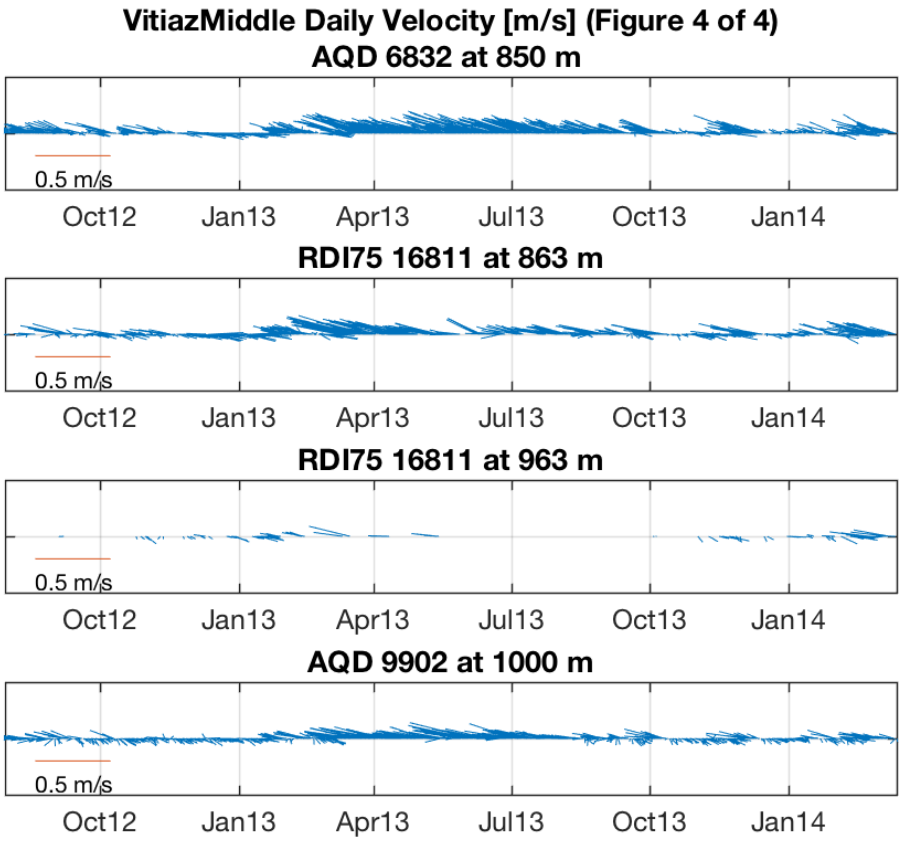


Figure 72: Velocity time series for each instrument on Vitiaz Middle filtered and subsampled to daily values. Depth given is the planned depth of the observation.


VitiazMiddle Daily Velocity [m/s] (Figure 2 of 4)
RDI75 8998 at 107 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 127 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 147 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 167 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 187 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 207 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 227 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 247 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14


VitiazMiddle Daily Velocity [m/s] (Figure 3 of 4)
RDI75 8998 at 267 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 287 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 8998 at 307 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 363 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 463 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 563 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 663 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 763 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14


VitiazMiddle Daily Velocity [m/s] (Figure 4 of 4)
AQD 6832 at 850 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 863 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
RDI75 16811 at 963 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14
AQD 9902 at 1000 m
0.5 m/s
Oct12
Jan13
Apr13
Jul13
Oct13
Jan14

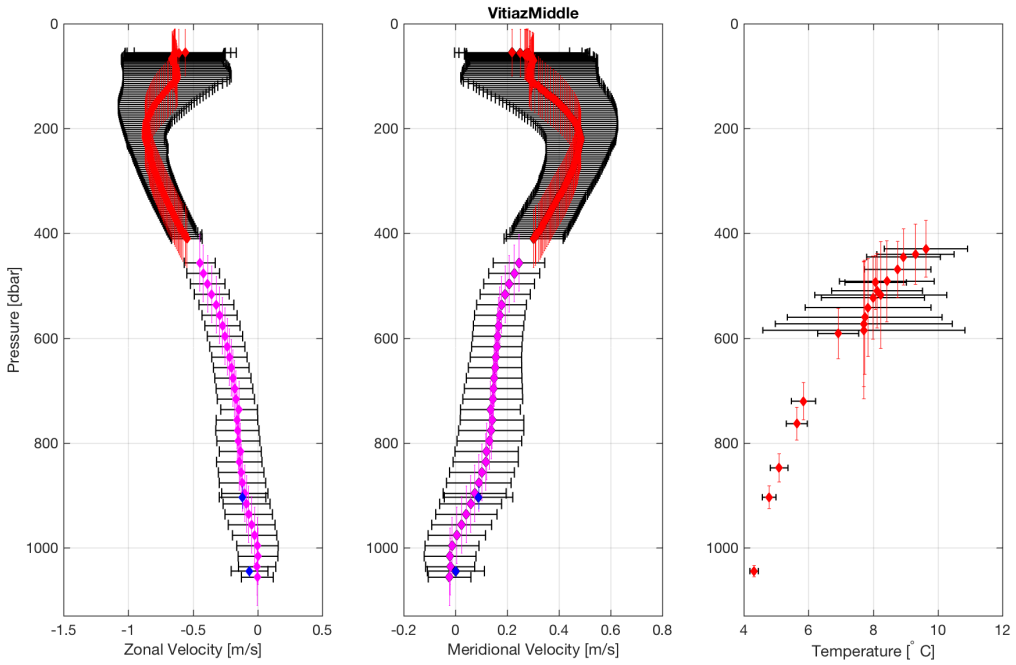


Figure 73: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the Vitiaz Middle at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

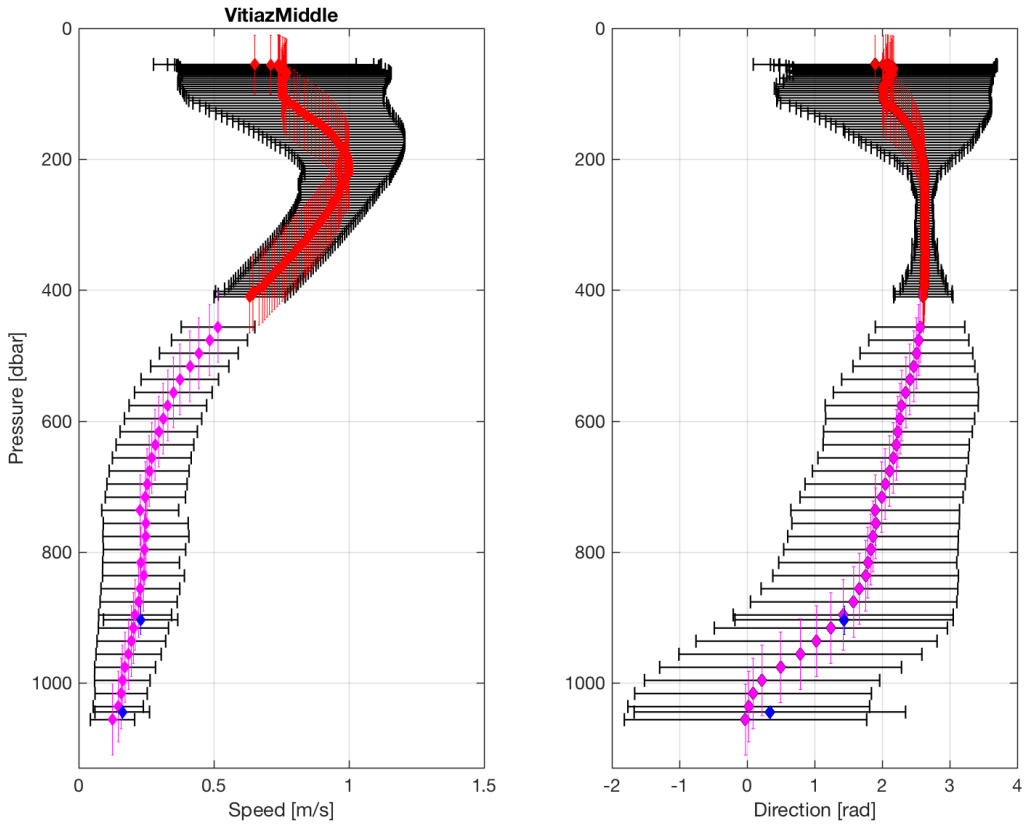


Figure 74: Mean (colored diamonds) and standard deviation (black lines) of the velocity (a) magnitude and (b) direction for the Vitiaz Middle at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

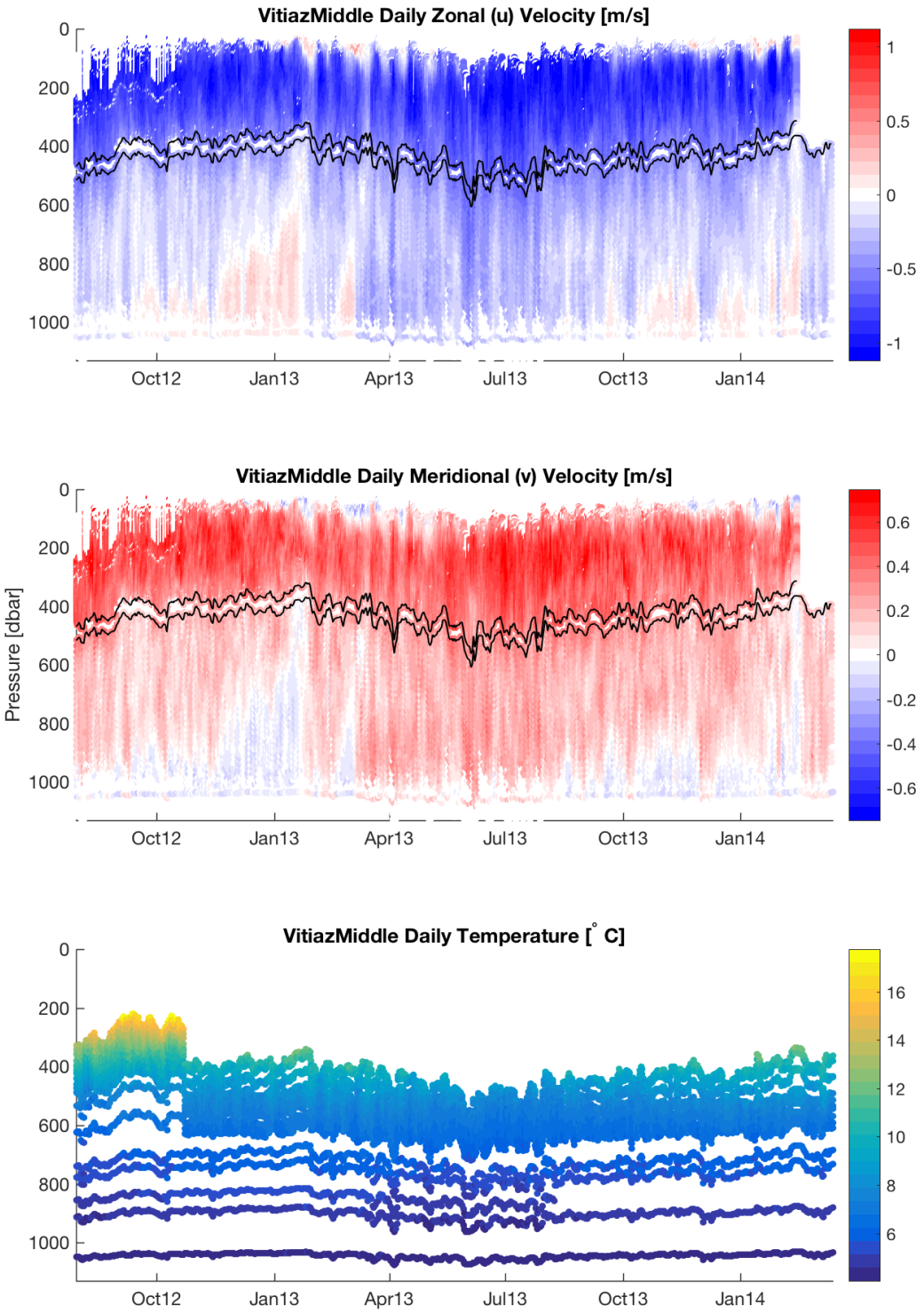


Figure 75: Vitiaz Middle depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

8.10 Mooring: Vitiaz West

The data from Vitiaz West is minimal due to instrument loss and mooring failure, however the recovered temperature records are consistent amongst themselves and resolve intermediate water mass temperature variability (Figure 76). The single velocity record is consistent with observations at similar depths made at the other moorings within Vitiaz Strait and will help resolve deep cross-strait velocity structure (Figure 77). Mean profiles show considerable variability in velocity even though mooring motion is quite small while temperature is more variable due to many of the instruments falling after the deployment's halfway point (Figure 78). This falling event is visualized nicely in Figure 79.

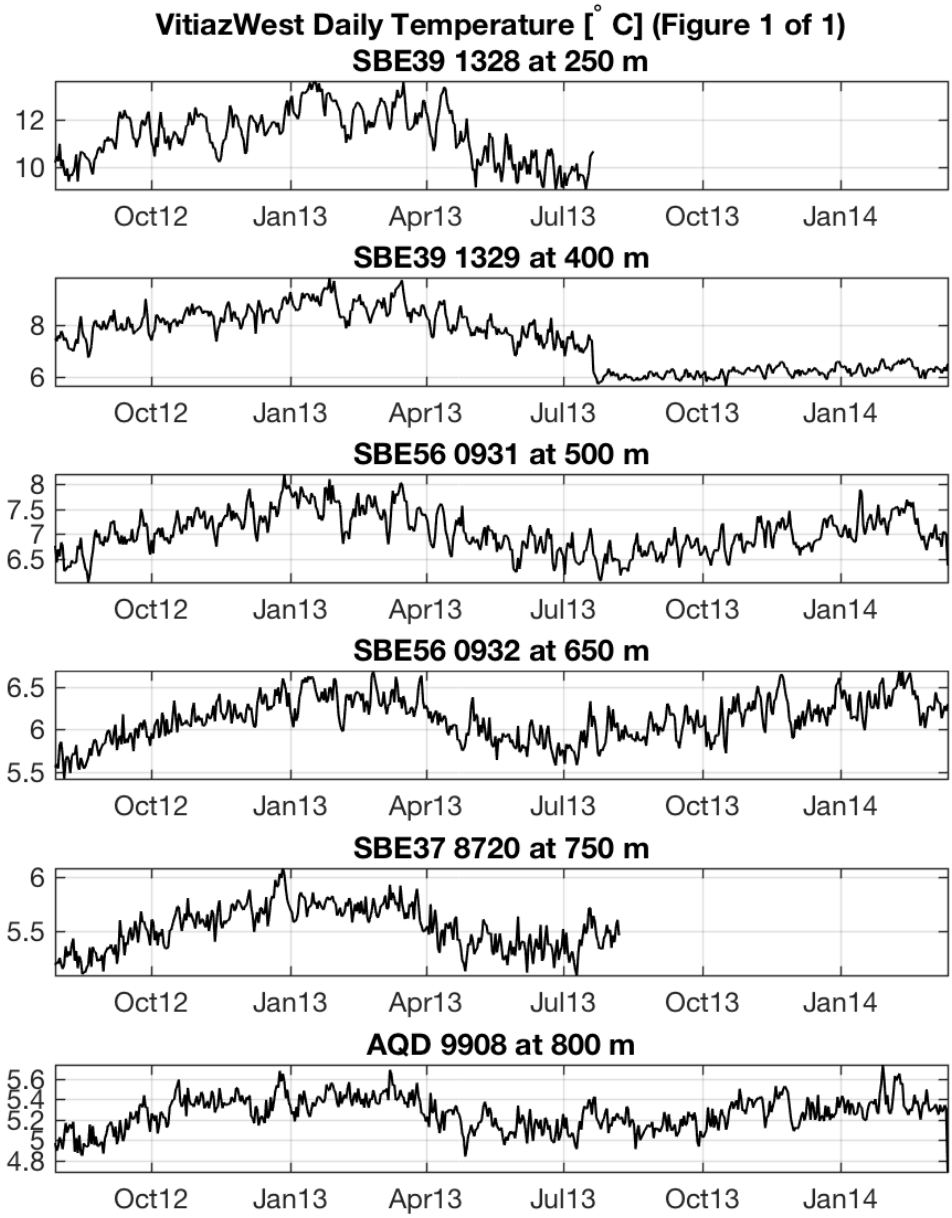


Figure 76: Temperature time series for each instrument on Vitiaz West filtered and subsampled to daily values. Depth given is the planned depth of the observation.

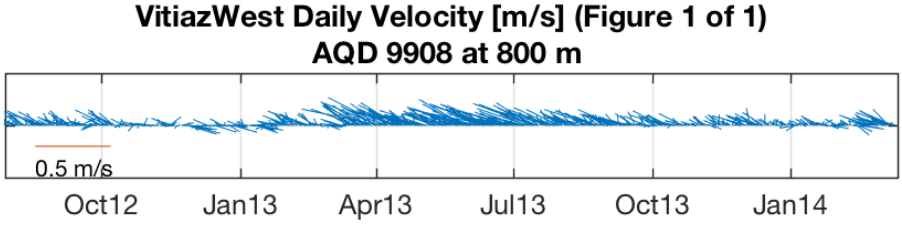


Figure 77: Velocity time series for each instrument on Vitiaz West filtered and subsampled to daily values. Depth given is the planned depth of the observation.

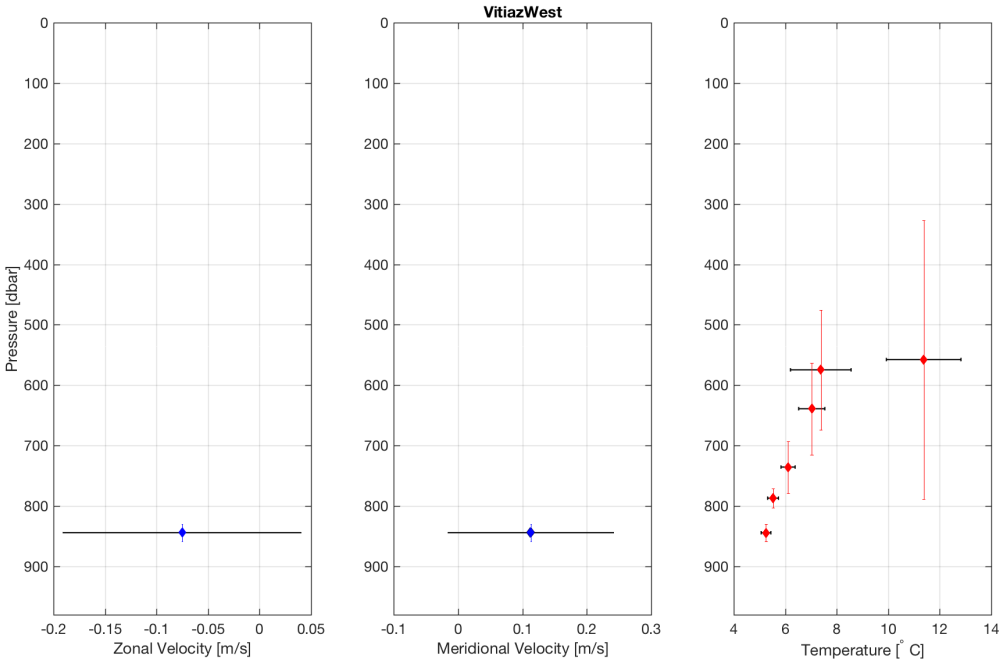


Figure 78: Mean (colored diamonds) and standard deviation (black lines) of the (a) zonal velocity; (b) meridional velocity and (c) temperature for the Vitiaz West at the corresponding mean pressure for each record. Diamonds are color-coded for velocity statistics, with red for upward facing ADCP values, magenta for downward facing ADCP values, and blue for single point current meters. Note the standard deviation of the pressure (matching colored lines).

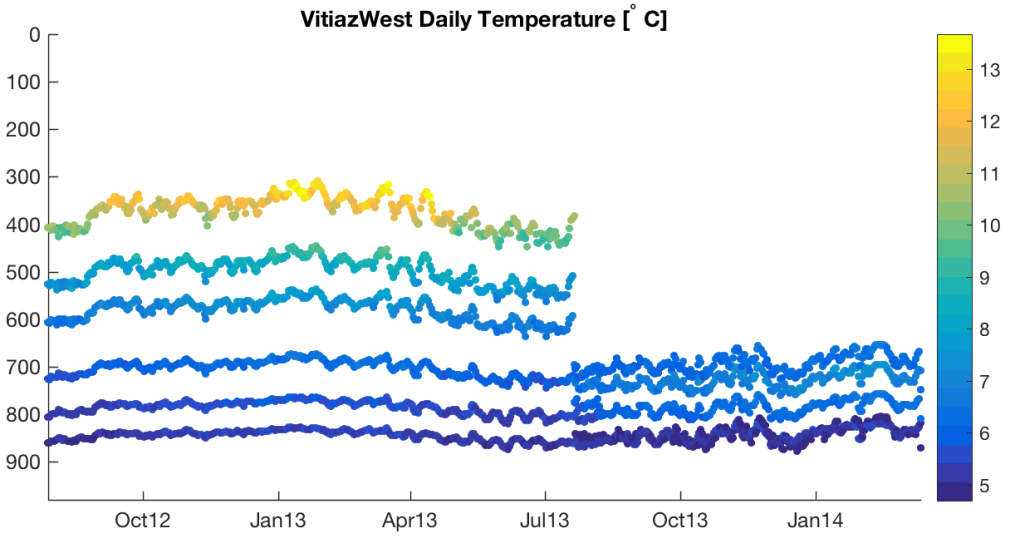


Figure 79: Vitiaz West depth-time series of the (a) zonal velocity; (b) meridional velocity and (c) temperature along pressure with observations filtered and subsampled to daily values. Black lines give the pressure record for the ADCP transducers.

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Appendix A - Quality control notes

Vitiaz East

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sampling Period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SBE39-1471	51 m	Temperature	Instrument lost											
		Pressure												
SIO-T Plastic TL-134	80 m	Temperature	Instrument lost											
SBE39-5828	100 m	Temperature	Instrument lost											
		Presure												
SIO-T Plastic TL-135	130 m	Temperature	Instrument lost											
SBE37-2949	160 m	Temperature	Instrument lost											
		Conductivity												
		Pressure												
SBE56-0941	180 m	Temperature	Instruments lost											
SBE56-0942	200 m	Temperature	Instruments lost											
		Pressure												
SBE39-1004	250 m	Temperature	Instrument lost											
		Pressure												
RDI75-16849	320 m	Velocity	Instrument lost											
		Temperature												
RDI300	320 m	Velocity	Instrument lost											
		Temperature												
SIO-T Alum TL 142	400 m	Temperature	Instrument was dead											
SBE56-0944	500 m	Temperature	Mooring line broke on 08/09/2012 around 09:34 UTC and sensor fell ~70 m. Redeployed on Solomon M3.	28/07/2012 01:30:59	14/03/2014 20:59:59	60	22			7.2745	0.7824	5.5982	9.6398	degrees C
SBE37-2951	650 m	Temperature	OK	28/07/2012 01:30:01	14/03/2014 20:59:59	300	115	-0.00015	Degrees C/year	6.2097	0.2942	5.0659	7.4825	degrees C
		Salinity						-0.00010	PSS78/month	34.4819	0.0201	34.0837	34.9474	PSS78
		Pressure								654.7114	9.0730	645.7300	711.1540	dbars
Aquadopp-SN9931	700 m	East Velocity	OK	28/07/2012 01:30:00	14/03/2014 06:30:00	1800	72			-0.0698	0.1385	-0.7890	0.4120	m/s
		North Velocity								0.0567	0.1117	-0.3830	0.6860	m/s
		Temperature								5.8338	0.2653	4.8300	7.7100	degrees C
		Pressure								721.0248	7.6739	713.0380	769.6270	dbars
SBE56-0946	750 m	Temperature	OK, Redeployed on Solomon M3.	28/07/2012 01:30:59	14/03/2014 20:59:59	60	28			5.5136	0.2517	4.4730	6.5637	degrees C

Vitiaz Middle

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SBE39-5819	51m	Temperature	Instrument lost											
		Pressure												
SBE56-0933	60m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~540 m.	29/07/2012 01:00:59	14/03/2014 01:59:59	60	10			7.7147	3.1240	5.0620	21.2168	degrees C
SBE56-0934	80m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~500 m.	29/07/2012 01:00:59	14/03/2014 01:59:59	60	5			7.7129	2.7366	5.0869	20.1607	degrees C
SBE39-5820	100m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~460 m.	29/07/2012 01:00:00	14/03/2014 02:00:00	600	83			7.7391	2.3936	5.1911	19.1071	degrees C
		Pressure								560.3933	109.0652	215.1350	751.5630	dbars
SBE56-0935	130m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~400 m.	29/07/2012 01:00:59	14/03/2014 01:59:59	60	6	0.0030	Degrees C/year	7.8392	1.9465	5.3422	17.0783	degrees C
SBE37-8721	150m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~360 m.	29/07/2012 01:00:01	08/08/2013 08:38:01	60	41	-0.00023	Degrees C/year	8.2371	2.0430	5.4288	16.1289	degrees C
		Pressure								517.8582	101.9930	256.8070	721.3720	dbars
		Salinity						0.0000	PSS78/month	34.6115	0.1632	34.1901	35.2872	PSS78
SBE56-0936	160m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~340 m	29/07/2012 01:00:59	14/03/2014 01:59:59	60	0	0.0029	Degrees C/year	7.9901	1.5954	5.4383	16.0195	degrees C
SBE39-8722	180m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~300 m.	29/07/2012 01:00:00	14/03/2014 02:00:00	600	76			8.1220	1.4053	5.4991	15.1746	degrees C
		Pressure								509.7708	70.9797	279.0740	701.9460	dbars
SBE37-8722	200m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~260 m.	29/07/2012 01:00:01	08/08/2013 08:38:01	60	35	-0.00035	Degrees C/year	8.4228	1.4676	5.5717	14.4184	degrees C
		Pressure								491.7266	77.5308	292.2850	689.4950	dbars
		Salinity						-0.00010	PSS78/month	34.6155	0.1157	33.9679	35.1357	PSS78
SBE56-0937	250m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~160 m.	29/07/2012 01:00:59	14/03/2014 01:59:59	60	26	0.0029	Degrees C/year	8.7545	1.0333	5.8789	12.9630	degrees C
SBE37-8723	300m	Temperature	Mooring line broke on 22/08/2012 at 15:31 and sensor fell ~60 m.	29/07/2012 01:00:01	08/08/2013 08:38:01	60	34			9.3092	1.2024	6.0110	13.0751	degrees C
		Pressure								440.1669	57.7408	344.6530	631.8630	dbars
		Salinity								34.6786	0.0979	34.0866	35.4100	PSS78
ADCP 75kHz-8998	332m	East Velocity	Mostly good data up to bin 80. Mind jump in roll during August-November 2012. Further in time, instrument is very steady, little spinning. Flow looks barotropic in this time series. Basic statistics were made on averaged bins 89-109. Bin closest to transducer is bad and was removed.	28/07/2012 23:00:00	14/02/2014 10:59:59	1800	375			-0.6027	0.0877	-1.8760	1.2340	m/s
		North Velocity								0.2819	0.1016	-1.5110	1.6110	m/s
		Pitch								-2.6072	1.8191	-8.6900	1.2700	degrees
		Roll								-17.1149	4.3543	-27.6200	-1.5900	degrees
		Temperature								9.4685	1.2918	5.9400	13.6500	degrees C
		Pressure								429.2364	55.4168	330.7960	629.2020	dbars
ADCP 75kHz-16811	334m	East Velocity	Variable vertical structure, likely seeing the bottom between bins 25-30. Mind jump in roll during August-November 2012. Statistics were made on averaged bins 15-35.	29/07/2012 00:10:24	14/03/2014 01:10:24	3600	124			-0.1233	0.0345	-0.8510	0.4830	m/s
		North Velocity								0.0958	0.0327	-0.6430	0.6610	m/s
		Pitch								-2.3115	2.1968	-9.0600	1.8500	degrees
		Roll								-15.0456	4.5218	-30.7000	0.1200	degrees
		Temperature								9.6328	1.3013	6.0300	13.5100	degrees C
		Pressure								429.6092	54.6866	334.6130	630.0650	dbars
SBE56-0938	350m	Temperature	OK	29/07/2012 01:00:59	14/03/2014 01:59:59	60	45			8.9407	1.1500	5.8723	12.9461	degrees C
SBE56-0939	400m	Temperature	OK	29/07/2012 01:00:59	14/03/2014 01:59:59	60	26			8.0793	0.9587	5.4282	11.3363	degrees C
SBE39-5822	500m	Temperature	OK	29/07/2012 01:00:00	14/03/2014 02:00:00	600	89			6.9203	0.6447	4.8217	10.4218	degrees C
		Pressure								591.4039	48.3737	511.8970	766.0510	dbars
SBE56-0940	650m	Temperature	OK	29/07/2012 01:00:59	14/03/2014 01:59:59	60	29			5.8468	0.3838	4.5288	7.4011	degrees C
SBE56-0928	700m	Temperature	OK	29/07/2012 01:00:59	14/03/2014 01:59:59	60	7			5.6401	0.3339	4.4748	7.0993	degrees C
SBE37-8724	800m	Temperature	OK	29/07/2012 01:00:01	08/08/2013 08:38:01	60	31	-0.00014	Degrees C/year	5.0948	0.2842	4.1552	6.6142	degrees C
		Pressure								847.8786	27.0364	811.9030	934.6330	dbars
		Salinity						-0.00020	PSS78/month	34.4942	0.0144	34.1767	34.7906	PSS78
AQD-6832	850m	East Velocity	OK	29/07/2012 01:00:00	14/03/2014 02:00:00	1800	-98			-0.1164	0.1829	-0.6720	0.3580	m/s
		North Velocity								0.0894	0.1374	-0.3490	0.5930	m/s
		Temperature								4.7853	0.2189	4.0500	5.7400	degrees C
		Pressure								903.8567	21.8439	875.3230	983.7700	dbars

Vitiaz Middle

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SIO-T Alum TL-123	900m	Temperature	Instrument was dead											
AQD-9902	1000m	East Velocity	OK	29/07/2012 01:00:00	14/03/2014 02:00:00	1800	-51			-0.0622	0.1441	-0.6590	0.3250	m/s
		North Velocity								0.0017	0.1135	-0.3290	0.5340	m/s
		Temperature								4.3209	0.1360	3.7900	3.7900	degrees C
		Pressure								1044.8100	10.8423	1030.4540	1084.0250	dbars

Vitiaz West

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	mple period (se	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SBE39 3931566-1326	51m	Temperature	Instrument lost											
		Pressure												
SIO-T Plastic TL-128	60m	Temperature	Instrument lost											
SIO-T Plastic TL-129	80m	Temperature	Instrument lost											
SBE39 3931566-1327	100m	Temperature	Instrument lost											
		Pressure												
SBE56 00927	130m	Temperature	Instrument lost											
ADCP 300kHz 3517 (up 146)	152m	Velocity	Instrument lost											
		Temperature												
ADCP 75kHz 16711 (down 574m)	154m	Velocity	Instrument lost											
		Temperature												
SBE37-8718	180m	Temperature	Instruments lost											
		Pressure												
		Salinity												
SBE37-8719	200m	Temperature	Instrument was dead											
		Pressure												
		Salinity												
SBE39-1328	250m	Temperature	Mooring line broke July/August 2013 and sensor fell ~550 m to ~800 m depth.	28/07/2012 06:20:00	13/03/2014 18:40:00	600	85			8.9398	3.2115	4.3747	15.6642	degrees C
		Pressure								557.6422	230.5115	265.9110	902.5100	dbars
SBE56-0929	300m	Temperature	Instrument was dead											
SBE39-1329	400m	Temperature	Mooring line broke July/August 2013 and sensor fell ~250 m.	28/07/2012 06:20:00	13/03/2014 18:40:00	600	113			7.3793	1.1824	5.2930	11.2471	degrees C
		Pressure								574.2883	98.9212	412.0840	750.9560	dbars
SBE56-0931	500m	Temperature	Mooring line broke July/August 2013 and sensor fell ~50 m.	28/07/2012 06:15:59	13/03/2014 18:44:59	60	19	0.0029	Degrees C/year	7.0255	0.5122	5.3710	9.2589	degrees C
SBE56-0932	650m	Temperature	OK	28/07/2012 06:15:59	13/03/2014 18:44:59	60	14			6.1074	0.2834	5.0679	7.0204	degrees C
SBE37-8720	750m	Temperature	OK	28/07/2012 06:15:01	08/08/2013 08:22:01	60	32	-0.00031	Degrees C/year	5.5241	0.2213	4.6304	6.4081	degrees C
		Pressure								787.0828	16.1786	752.4910	843.4250	dbars
		Salinity						0.0000	PSS78/month	34.4847	0.0144	34.1894	34.7622	PSS78
AQD-9908	800m	East Velocity	OK	28/07/2012 06:30:00	13/03/2014 20:00:00	1800	86			-0.0754	0.1159	-0.5820	0.4400	m/s
		North Velocity								0.1130	0.1292	-0.3970	0.6040	m/s
		Temperature								5.2539	0.1871	4.5500	6.7700	degrees C
		Pressure								844.2066	14.3402	817.7490	888.7970	dbars

St Georges East

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SBE39 5826	51m	Temperature	Instrument was lost											
		Pressure												
SIO-T Plastic TL-164	80m	Temperature	Instrument was lost											
SBE39 5827	100m	Temperature	Instrument was lost											
		Pressure												
SIO-T Plastic TL-165	130m	Temperature	Mooring line broke and sensor fell ~40 m, after sensor died. High variablity near end of time series.	20/07/2012 06:10:00	17/11/2012 02:07:00	60	n/a [1]			18.3020	3.6139	8.3480	25.3630	degrees C
ADCP 300kHz 16832	152m	East Velocity	This ADCP has a faulty compass and velocity data has been corrected accordingly. Mostly good data quality but strong pitch and roll are recorded, especially between February-April 2013. Some regions of high relfectivity > 20 bins. Statistics were made on averaged bins 3-23. Swift jump in pitch and roll in late July 2013, likely due to the mooring line breaking.	20/07/2012 07:34:24	08/03/2014 04:34:24	1800	-11			-0.0178	0.0219	-0.7420	0.6390	m/s
		North Velocity								0.0411	0.0390	-1.4700	0.9950	m/s
		Pitch								-12.0615	6.0995	-29.1000	19.0900	degrees
		Roll								11.0945	6.3259	-23.5800	25.9600	degrees
		Temperature								16.1771	4.2290	6.4900	25.2700	degrees C
		Pressure								258.7202	88.5145	160.6880	631.2460	dbars
ADCP 75kHz 16768	154.25m	East Velocity	Large shifts in heading 2-3/13 and 12/13. Mostly good data but again, strong pitch and roll are recorded with strongest variations in February-April 2013. Statistics were made on averaged bins 15-35. Swift jump in pitch and roll in late July 2013, likely due to the mooring line breaking.	20/07/2012 06:20:00	08/03/2014 03:20:00	3600	100			-0.0924	0.0510	-0.7550	1.0100	m/s
		North Velocity								0.4984	0.1289	-1.0980	1.5040	m/s
		Pitch								-11.3008	5.9302	-26.4300	18.6300	degrees
		Roll								9.1949	6.2612	-24.1600	23.7200	degrees
		Temperature								16.2545	4.2441	6.5100	25.3000	degrees C
		Pressure								256.9745	88.2792	161.0350	630.0410	dbars
SBE37-8715	180m	Temperature	OK	20/07/2012 06:10:01	08/08/2013 08:38:01	60	29	-0.00044	Degrees C/year	13.8092	3.8061	6.0644	23.1267	degrees C
		Pressure								304.0480	99.5012	191.4720	646.8700	dbars
		Salinity						0.0000	PSS78/month	35.0838	0.3351	33.9955	36.3703	PSS78
SBE56-0947	200m	Temperature	Redeployed on Solomon M2.	20/07/2012 06:10:59	08/03/2014 03:59:59	60	4			13.3720	3.1034	5.8865	21.4120	degrees C
SIO-T Alum TL-146	250m	Temperature	Instrument was lost											
SBE37-8716	300m	Temperature	OK	20/07/2012 06:10:01	08/08/2013 08:38:01	60	37	-0.00045	Degrees C/year	9.6943	1.8411	5.0836	15.0264	degrees C
		Pressure								417.4015	97.5457	311.5370	755.9780	dbars
		Salinity						0.0000	PSS78/month	34.7206	0.1511	33.7881	36.2145	PSS78
SIO-T Alum TL-147	350m	Temperature	OK	20/07/2012 06:10:00	20/08/2013 14:34:00	60	n/a [2]			8.7504	1.4314	4.9070	12.7000	degrees C
SBE39-1472	500m	Temperature	OK	20/07/2012 06:10:00	08/03/2014 04:00:00	600	117			7.1436	0.8699	4.4280	9.12255	degrees C
		Pressure								581.7546	76.6338	513.3870	956.7630	dbars
SBE56-0948	600m	Temperature	Redeployed on Solomon M2.	20/07/2012 06:10:59	08/03/2014 03:59:59	60	23			6.1920	0.5975	4.1109	7.8118	degrees C
SBE37-8717	700m	Temperature	Salinity is stable but noisy.	20/07/2012 06:10:01	08/08/2013 08:38:01	60	17	-0.00023	Degrees C/year	5.5034	0.5432	3.7401	6.8616	degrees C
		Pressure								783.6201	75.9442	712.5010	1067.6260	dbars
		Salinity						-0.00010	PSS78/month	34.4997	0.0157	34.2674	34.7494	PSS78
AQD-9906	750m	East Velocity	OK	20/07/2012 08:30:00	08/03/2014 00:30:00	1800	-30			-0.0215	0.1408	-0.5460	0.5100	m/s
		North Velocity								0.0390	0.2546	-0.7780	0.8290	m/s
		Temperature								5.3001	0.4426	3.7200	6.4900	degrees C
		Pressure								825.0296	65.3653	770.6560	1160.3540	dbars
SIO-T Alum TL-160	800m	Temperature	Instrument was lost											
SIO-T Alum TL-161	1100m	Temperature	OK	20/07/2012 07:45:00	16/09/2013 06:17:00	60	n/a [3]			3.8513	0.2547	2.9270	4.7650	degrees C

St Georges West

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SBE39 5823	51m	Temperature	Instrument was lost											
		Pressure												
SIO-T Plastic TL-162	80m	Temperature	Logger dies before line break.	20/07/2012 06:00:00	28/10/2012 02:47:00	60	n/a [4]			22.3932	3.6855	9.7710	28.5540	degrees C
SBE39-5824	100m	Temperature	Line breaks around 1/13 and instrument falls ~100 m.	20/07/2012 01:00:00	07/03/2014 21:00:00	600	70			16.2102	4.8579	5.9299	27.5660	degrees C
		Pressure								250.5660	90.4729	114.5500	675.2340	dbars
SIO-T Plastic TL-163	130m	Temperature	Instrument was lost											
ADCP 300kHz 16833	152m	East Velocity	This ADCP has a faulty compass and velocity data has been corrected accordingly. Data is mostly good up to ~ bin 18. Strong pitch was recorded and seems to have a suspicious threshold of 0. Statistics were made on averaged bins 3-23. Pitch and roll show decreased variability after mooring line broke in early January 2013.	20/07/2012 00:47:00	07/03/2014 23:53:00	1800	69			-0.1767	0.0568	-1.0150	0.9430	m/s
		North Velocity								0.5170	0.1069	-0.9150	1.6500	m/s
		Pitch								-14.4038	5.2285	-21.9900	0.8300	degrees
		Roll								2.1630	1.6733	-5.5800	9.8900	degrees
		Temperature								16.8862	4.0176	6.2000	25.0200	degrees C
		Pressure								236.0698	75.3098	163.4340	652.4300	dbars
ADCP 75kHz 8866	154.25m	East Velocity	Nice looking signal to noise, instrument rotated a lot early on in deployments, generally good data up to ~ bin 33. Recoreded pitch looks also suspicious with a threshold of 0. Statistics were made on averaged bins 15-35. Instrument had faulty pressure reccord. Used the pressure record of ADCP 16833 with a 2.25 m offset. Pitch and roll show decreased variability after mooring line broke in early January 2013.	20/07/2012 00:47:00	07/03/2014 23:53:00	3600	-28			-0.0052	0.0284	-0.6560	0.5620	m/s
		North Velocity								0.0352	0.0373	-0.6690	0.9420	m/s
		Pitch								-14.7091	6.1916	-27.3100	1.6000	degrees
		Roll								0.9368	1.5450	-6.7700	7.8200	degrees
		Temperature								16.8344	3.9903	6.3900	24.9900	degrees C
		Pressure								236.0756	75.3084	163.4360	644.0771	dbars
SIO-T Alum TL-138	180m	Temperature	OK	20/07/2012 06:00:00	25/11/2012 23:35:00	60	n/a [5]			15.5749	2.7566	7.5000	22.1670	degrees C
SBE37-2952	200m	Temperature	OK	20/07/2012 01:00:00	07/03/2014 21:00:00	300	161	-0.00033	Degrees C/year	13.6406	2.8962	5.7079	21.3906	degrees C
		Pressure								284.9576	75.1341	213.2610	697.4400	dbars
		Salinity						-0.00060	PSS78/month	35.0607	0.2536	33.8791	36.4412	PSS78
SBE39-5825	400m	Temperature	OK	20/07/2012 01:00:00	07/03/2014 21:00:00	600	88			8.5684	1.1224	4.7711	11.0620	degrees C
		Pressure								468.3599	69.3782	408.4690	829.6300	dbars
SBE56-1024	600m	Temperature	OK	20/07/2012 01:00:59	07/03/2014 20:59:59	60	27			6.2843	0.5345	4.1240	7.8721	degrees C
SBE37-2954	700m	Temperature	OK	20/07/2012 01:00:01	07/03/2014 21:00:00	300	186	-0.00038	Degrees C/year	5.6185	0.4467	3.8333	6.8513	degrees C
		Pressure								725.6175	23.2001	697.9760	930.9600	dbars
		Salinity						-0.00020	PSS78/month	34.5035	0.0177	34.3218	34.7616	PSS78
SIO-T Alum TL-139	800m	Temperature	OK	20/07/2012 06:00:00	08/04/2013 16:58:00	60	152			5.2379	0.3145	3.7940	5.9830	degrees C

Solomon M1

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SBE39-5528	80m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:10:00	08/03/2014 12:40:00	600	72			23.4118	4.9708	9.7387	30.5495	degrees C
ADCP300-5307	80m	East Velocity	Location of reflective layer (likely the surface) is highly variable. Likely due to mooring drawdown, suggested by strong variations in pressure and temperature. Statistics were made on averaged bins 20-40.	21/07/2012 01:30:00	06/03/2014 23:01:00	3600	540			0.0627	0.0484	-1.6320	1.4540	m/s
		North Velocity								0.0039	0.0621	-1.9690	1.4460	m/s
		Pitch								1.7985	1.0300	0.2400	9.1800	degrees
		Roll								2.8340	2.1238	-1.1700	11.8100	degrees
		Temperature								23.3412	4.9358	9.8100	30.3000	degrees C
		Pressure								153.5330	60.6668	77.9470	366.4980	dbars
RBR-12582	90m	Temperature	OK, Redeployed on Solomon M2.	21/07/2012 02:20:00	07/03/2014 00:30:00	600	128			22.8607	5.0658	9.2321	30.4607	degrees C
SBE37-7765	100m	Temperature	OK	22/07/2012 00:00:01	06/03/2014 23:20:01	600	3	0.00001	Degrees C/year	22.2401	5.1595	8.8133	30.4257	degrees C
		Pressure								172.2248	60.4575	97.8540	384.8090	dbars
		Salinity						0.00140	PSS78/month	35.5021	0.2252	34.6053	35.9787	PSS78
AQD-20377	100m	East Velocity	OK	23/07/2012 00:30:00	06/03/2014 03:00:00	1800	35			0.1874	0.3541	-0.9170	1.0150	m/s
		North Velocity								0.2147	0.4252	-0.9760	0.9630	m/s
		Temperature								22.2536	5.1351	8.8700	30.2500	degrees C
		Pressure								176.0675	61.4738	100.8780	389.6940	dbars
ADCP75-3427	102m	East Velocity	Lots of mooring drawdown, again with strong pressure and temperature variations but most data is good. Statistics were made on averaged bins 10-30.	21/07/2012 01:30:00	06/03/2014 23:01:00	3600	830			0.1573	0.0430	-0.3560	0.7570	m/s
		North Velocity								0.0816	0.0363	-0.4710	0.6750	m/s
		Pitch								-0.6836	1.8331	-8.8600	6.7800	degrees
		Roll								-5.0251	3.9626	-19.4300	3.1900	degrees
		Temperature								22.3074	5.1490	8.9000	29.8800	degrees C
		Pressure								174.2237	60.3490	100.1570	386.5010	dbars
RBR-12586	160m	Temprerature	OK, Redeployed on Solomon M2.	21/07/2012 02:00:00	26/05/2013 15:20:00	600	n/a [6]			18.2495	5.0728	7.2901	28.2457	degrees C
SBE37-7968	180m	Temperature	OK	22/07/2012 00:00:01	06/03/2014 23:20:01	600	35	-0.0007	Degrees C/year	16.5229	4.4478	7.0462	25.2097	degrees C
		Pressure								253.7458	58.9592	181.5560	461.0850	dbars
		Salinity						0.00090	PSS78/month	35.3090	0.3832	34.4174	35.9561	PSS78
RCM7-11862	200m	East Velocity	Redeployed on Solomon M2.	21/07/2012 01:30:00	06/03/2014 22:30:00	3600	274			0.4087	0.1866	-0.2566	0.9509	m/s
		North Velocity								0.3376	0.1409	-0.2359	0.9397	m/s
		Temperature								15.2106	4.0565	6.8500	23.4900	degrees C
		Pressure								274.7174	55.7295	206.0600	466.6300	dbars
SBE39-5536	250m	Temperature	Instrument was broken											
		Pressure												
SBE37-8284	300m	Temperature	OK	22/07/2012 00:00:01	06/03/2014 23:10:00	600	-19	0.00023	Degrees C/year	10.3239	1.9122	6.2286	17.6281	degrees C
		Pressure								370.1733	55.2942	302.2230	565.3140	db
		Salinity						0.00020	PSS78/month	34.7609	0.1587	34.3491	35.4279	PSS78
SBE39-5629	350m	Temperature	OK	22/07/2012 00:10:01	05/03/2014 07:30:01	600	101	0.00007	Degrees C/year	9.0420	1.3526	5.9736	13.5572	degrees C
		Pressure								418.9647	53.2574	353.3200	607.6600	dbars
SBE56-0209	400m	Temperature	OK, Redeployed on Vitiaz B.	22/07/2012 00:00:00	06/03/2014 23:19:59	600	42			8.1818	1.0262	5.6424	11.7623	degrees C
AQD-20151	500m	East Velocity	Irregular sampling in middle	23/07/2012 00:30:00	06/03/2014 02:20:03	1800	124			0.1524	0.1144	-0.6380	0.5590	m/s
		North Velocity								0.0686	0.1122	-0.4340	0.4910	m/s
		Temperature								6.9641	0.6432	4.9800	9.5500	degrees C
		Pressure								576.9454	47.1751	518.9410	745.9970	dbars
SBE37-8285	550m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:00:01	06/03/2014 23:20:01	600	31			6.5792	0.5475	4.8886	8.6574	degrees C
		Pressure								625.5871	45.6624	569.3230	789.0470	dbars
		Salinity								34.4949	0.0258	31.8880	34.6225	PSS78
SBE56-0204	600m	Temperature	OK, Redeployed on Vitiaz B.	22/07/2012 00:00:00	06/03/2014 23:19:59	600	22			6.1936	0.4683	4.7413	7.9351	degrees C
SBE56-0200	650m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:00:00	06/03/2014 23:19:59	600	35			5.8643	0.4049	4.5470	7.4032	degrees C
SBE37-9115	700m	Temperature	Large salinity spike over 2.5 day period and ones of shorter duration removed.	22/07/2012 00:00:01	06/03/2014 23:20:01	600	29	-0.00005	Degrees C/year	5.5745	0.3543	4.4163	7.0516	degrees C
		Pressure								753.8319	37.3669	708.3160	889.6200	dbars
		Salinity						0.0000	PSS78/month	34.4940	0.0156	34.4420	34.5563	PSS78

Solomon M1

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
RCM7-7962	750m	East Velocity	Questionable velocities in July 2013, possibly due to low flow rates.	21/07/2012 01:30:00	06/03/2014 22:30:00	3600	762			0.0093	0.0774	-0.2223	0.3747	m/s
		North Velocity								-0.0214	0.0975	-0.4076	0.3279	m/s
		Temperature								5.3674	0.3173	4.4100	6.5300	degrees C
		Pressure								819.0270	30.0409	781.3100	924.2800	dbars
SBE56-0201	800m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:00:00	06/03/2014 23:19:59	600	15			5.0915	0.2888	4.2252	6.1946	degrees C
RCM7-10097	1000m	East Velocity	Questionable velocities in June to Sept 2013, possibly due to low flow rates.	21/07/2012 01:30:00	06/03/2014 22:30:00	3600	-924			-0.0012	0.0544	-0.3167	0.2728	m/s
		North Velocity								-0.0175	0.0756	-0.4084	0.3609	m/s
		Temperature								4.3061	0.1918	3.6000	4.9500	degrees C
		Pressure								1078.9353	25.9675	1047.1200	1171.9500	dbars
SBE39-5631	1400m	Temperature	Not logging: low battery. Redeployed on Solomon M3.	22/07/2012 00:10:01	18/12/2012 01:20:01	600	-101			3.1318	0.0958	2.7226	3.4467	degrees C
		Pressure								1449.4657	11.5958	1424.2570	1487.6990	dbars
RCM7-10098	1400m	East Velocity	OK, Redeployed on Solomon M2.	21/07/2012 01:30:00	06/03/2014 21:30:00	7200	-376			-0.0068	0.0410	-0.1740	0.1871	m/s
		North Velocity								-0.0183	0.0546	-0.2830	0.1975	m/s
		Temperature								3.1864	0.1025	2.7500	3.5600	degrees C
		Pressure								1478.8470	14.3005	1459.9200	1530.4000	dbars
RCM7-12422	1700m	East Velocity	OK, Redeployed on Solomon M2.	21/07/2012 01:30:00	06/03/2014 21:30:00	7200	-91			-0.0178	0.0375	-0.1987	0.1441	m/s
		North Velocity								-0.0305	0.0379	-0.1955	0.1345	m/s
		Temperature								2.6916	0.0734	2.4100	2.9500	degrees C
		Pressure								1774.4805	7.6822	1763.9900	1804.2600	dbars
SBE37-7969	1700m	Temperature	Irregular sample period towards the end. Redeployed on Solomon M2.	22/07/2012 00:00:01	26/02/2014 00:10:00	600	22			2.6246	0.0738	2.2960	2.9345	degrees C
		Pressure								1738.7034	7.8470	1728.9310	1767.3540	dbars
		Salinity								34.6205	0.0043	34.5902	34.6457	PSS78

Solomon M2a

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
ADCP-FQ40005	80m	East Velocity	Data are not available.				1039							m/s
		North Velocity												m/s
		Pitch												degrees
		Roll												degrees
		Temperature												degrees C
		Pressure												dbars
SBE37-9323	80m	Temperature	Near end there is some non-uniform sampling. Redeployed on Solomon M2	22/07/2012 00:00:01	05/03/2014 21:10:00	600	32			27.4467	2.2356	14.6191	30.6254	degrees C
		Pressure								98.9682	27.3543	77.0700	248.9270	dbars
		Salinity								35.4152	0.2084	34.4677	35.9446	PSS78
RBR-12581	100m	Temperature	OK, Redeployed on Solomon M2.	16/07/2012 03:20:00	05/03/2014 21:10:00	540	141			26.6557	2.4740	12.6663	30.2895	degrees C
RBR-12585	160m	Temperature	OK, Redeployed on Solomon M2.	16/07/2012 03:30:00	19/09/2012 02:20:00	600	n/a [7]			20.2895	2.4310	12.3845	25.9647	degrees C
SBE37-9324	180m	Temperature	OK, Redeployed on Solomon M2.	22/07/2012 00:00:01	05/03/2012 21:10:00	600	19			20.9127	2.9903	9.0501	28.3885	degrees C
		Pressure								196.1393	27.1822	174.3610	345.350	dbars
		Salinity								35.6312	0.2131	34.6436	35.9415	PSS78
AQD-2295	200m	East Velocity	OK	23/07/2012 00:30:00	06/03/2014 02:00:00	1800	116			0.1946	0.1739	-0.7760	0.9110	m/s
		North Velocity								0.2075	0.1625	-0.7310	0.7540	m/s
		Temperature								19.0446	2.8360	8.7400	25.4300	degrees C
		Pressure								217.2383	27.7589	194.7170	364.9530	dbars
SBE39-5595	250m	Temperature	OK, Redeployed on Solomon M3.	22/07/2012 00:10:01	05/03/2014 21:10:01	600	74			15.0926	2.3204	7.6952	21.8422	degrees C
SBE37-9325	300m	Temperature	Irregular in the end. Redeployed on Vitiaz B.	22/07/2012 00:00:00	19/10/2013 17:38:24	600	n/a [8]			11.8755	1.5675	6.9255	16.4837	degrees C
		Pressure								317.7802	24.9222	297.0380	461.6660	dbars
		Salinity								34.8768	0.1355	34.4816	35.2989	PSS78
SBE39-5212	350m	Temperature	OK	22/07/2012 00:10:01	05/03/2014 07:30:01	600	78	0.00003	Degrees C/year	9.7938	0.9813	6.3469	13.4997	degrees C
		Pressure								369.6220	25.8704	348.8210	508.9730	dbars
SBE37-9326	400m	Temperature	OK, Redeployed on Solomon M2.	22/07/2012 00:00:01	05/03/2014 21:10:00	600	29			8.5156	0.6913	5.9090	10.7678	degrees C
		Pressure								419.6269	25.2178	399.3580	554.2610	dbars
		Salinity								34.6017	0.0503	34.4599	34.7829	PSS78
SBE37-6337	550m	Temperature	Some irregularities in the middle and in the end. Redeployed on Vitiaz A.	23/07/2012 00:00:01	14/05/2013 07:00:00	600	8			6.4952	0.4452	4.9843	7.9145	degrees C
		Pressure								577.2423	23.8808	551.8980	688.6620	dbars
		Salinity								34.4930	0.0222	34.4013	34.5930	PSS78
SBE56-0198	600m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:00:00	05/03/2014 21:09:59	600	31			6.1539	0.3461	4.8444	7.4672	degrees C
SBE56-0227	650m	Temperature	OK, Redeployed on Vitiaz B.	22/07/2012 00:00:00	05/03/2014 21:09:59	600	6			5.8271	0.3103	4.76655	7.0643	degrees C
SBE37-5574	700m	Temperature	Noisy salinity in 10/12 and 2/14. Raw file doesn't begin until August 1, 2012, likely programming error.	01/08/2012 00:00:32	05/03/2014 21:11:18	600	210	0.00017	Degrees C/year	5.5902	0.2854	4.5573	6.8688	degrees C
		Pressure								714.3762	20.1623	698.5040	819.5370	dbars
		Salinity						0.00020	PSS78/month	34.4897	0.0186	34.3026	34.6318	PSS78
SBE56-0199	750m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:00:00	05/03/2014 21:09:59	600	12			5.3126	0.2685	4.4096	6.4543	degrees C
SBE56-0188	800m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:00:00	05/03/2014 21:09:59	600	6			5.0995	0.2513	4.2488	6.1034	degrees C
SBE39-5633	1000m	Temperature	OK, Redeployed on Solomon M2.	22/07/2012 00:10:01	05/03/2014 07:30:01	600	80			4.3312	0.1760	3.5587	4.9990	degrees C
		Pressure								1026.0271	15.8688	1013.4160	1110.9660	dbars
SBE39-5634	1200m	Temperature	OK, Redeployed on Solomon M2.	22/07/2012 00:10:01	05/03/2014 07:30:01	600	126			3.7038	0.1577	2.9929	4.2709	degrees C
		Pressure								1226.7814	13.4247	1216.1050	1301.8710	dbars
SBE39-1105	1400m	Temperature	OK	22/07/2012 00:10:01	05/03/2014 07:20:02	600	70	0.00008	Degrees C/year	3.1983	0.1699	2.5704	3.7534	degrees C
SBE37-4293	1700m	Temperature	Instrument was dead											
		Pressure												
		Salinity												
SBE39-1106	2000m	Temperature	OK	22/07/2012 00:10:01	05/03/2014 07:20:02	600	36	-0.00070	Degrees C/year	2.2545	0.0776	2.2018	2.6212	degrees C
SBE39-1107	2500m	Temperature	OK	22/07/2012 00:10:01	05/03/2014 07:20:01	600	-76	0.00014	Degrees C/year	1.9145	0.0324	1.8366	2.0776	degrees C

Solomon M2b

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
ADCP75-1066	400m	East Velocity	Two sudden shifts in heading, 10/12 and 4/13. Good data with low mooring motions. Statistics were made on averaged bins 10-30.	15/07/2012 22:11:00	06/03/2014 02:24:00	3600	206			0.0875	0.0592	-0.8720	1.7460	m/s
		North Velocity								0.0389	0.0869	-1.5900	0.9420	m/s
		Pitch								0.3655	0.5464	-1.8400	2.4300	degrees
		Roll								-0.5537	0.7208	-4.7000	0.4300	degrees
		Temperature								8.4553	0.5908	6.3700	10.5800	degrees C
		Pressure								416.2701	15.8986	401.7730	514.1920	dbars
AQD-20570-2	500m	East Velocity	OK	23/07/2012 00:30:00	06/03/2014 01:30:00	1800	65			0.2265	0.1217	-0.1370	0.6290	m/s
		North Velocity								0.0748	0.1248	-0.3760	0.4930	m/s
		Temperature								7.0181	0.4055	5.5700	8.5900	degrees C
		Pressure								520.3487	15.8272	506.2260	618.7820	dbars
RCM7-9099	750m	East Velocity	OK, Redeployed on Solomon M3.	16/07/2012 00:00:00	06/03/2014 03:00:00	3600	-162			0.0944	0.1040	-0.2664	0.4468	m/s
		North Velocity								-0.0127	0.0953	-0.2963	0.3188	m/s
		Temperature								5.3263	0.2537	4.5500	6.2200	degrees C
		Pressure								802.9038	14.1355	789.3600	890.0500	dbars
RCM7-11729	1000m	East Velocity	OK, Redeployed on Solomon M3.	16/07/2012 00:00:00	06/03/2014 03:00:00	3600	-726			0.0235	0.0748	-0.2299	0.2818	m/s
		North Velocity								-0.0460	0.0990	-0.4289	0.3241	m/s
		Temperature								4.3589	0.1843	3.7600	5.0200	degrees C
		Pressure								1055.3621	12.4808	1043.0900	1131.6900	dbars
RCM7-12424	1400m	East Velocity	OK	16/07/2012 00:00:00	06/03/2014 02:00:00	7200	-456			-0.0106	0.0649	-0.2200	0.2494	m/s
		North Velocity								-0.0685	0.1015	-0.3627	0.3373	m/s
		Temperature								3.2313	0.1410	2.8400	3.8100	degrees C
		Pressure								1402.2416	10.0909	1391.4600	1463.9500	dbars
RCM8-10913	1700m	East Velocity	OK	16/07/2012 00:00:00	06/03/2014 02:00:00	7200	-605			-0.0052	0.0600	-0.2454	0.1998	m/s
		North Velocity								-0.0843	0.1110	-0.4235	0.3557	m/s
		Temperature								2.6560	0.0942	2.3000	3.2000	degrees C
		Pressure								1728.5549	7.9922	1714.9600	1778.1000	dbars

Solomon M3

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
ADCP 300kHz-SN12143	80m	East Velocity	Strong reflection around bin 20, likely the surface. Data around and above that bin may be questionable but good data overall with low mooring motions. Statistics were made on averaged bins 20-40.	18/07/2012 01:52:00	04/03/2014 20:35:00	3600	774			-0.0419	0.0300	-0.6680	1.0850	m/s
		North Velocity								0.0753	0.0349	-1.0820	1.4230	m/s
		Pitch								0.4414	0.2608	-0.0900	2.6200	degrees
		Roll								-1.6871	0.7435	-7.4300	-0.6500	degrees
		Temperature								28.7103	0.8004	24.7900	30.5400	degrees C
		Pressure								76.2970	5.7908	71.7370	146.9650	dbars
SBE37-9918	80m	Temperature	OK	22/07/2012 00:00:01	04/03/2014 20:40:01	600	44			28.6786	0.8375	24.7047	30.6700	degrees C
		Pressure								83.6700	6.0232	78.9070	160.4950	dbars
		Salinity								35.3164	0.2286	34.3648	36.0162	PSS78
SBE37-9116	100m	Temperature	OK, Redeployed on Solomon M3.	23/07/2012 00:00:01	05/03/2014 20:40:01	600	45			28.1983	0.9821	23.5226	30.4444	degrees C
		Pressure								97.7382	6.0103	92.9210	174.4930	dbars
		Salinity								35.3164	0.2286	34.3648	36.0162	PSS78
AQD-SN20151	100m	East Velocity	OK.	23/07/2012 00:30:00	04/03/2014 00:15:02	1800	46			-0.0079	0.1646	-0.5850	0.7250	m/s
		North Velocity								-0.0010	0.2199	-0.8050	0.6920	m/s
		Temperature								28.1538	0.9698	23.6100	30.3500	degrees C
		Pressure								95.4895	6.3742	88.3190	172.3330	dbars
ADCP 75kHz-SN14215	102m	East Velocity	While data appears OK, the velocity magnitude is biased low compared to adjacent ADCP and current meters suggesting faulty transducer/s. Small mooring motions. Statistics were made on averaged bins 10-30.	16/07/2012 23:14:48	29/09/2013 22:18:11	3600	563			0.0510	0.0237	-0.6940	1.0940	m/s
		North Velocity								0.0096	0.0255	-0.9800	0.6020	m/s
		Pitch								-0.0481	0.6716	-1.9500	4.2300	degrees
		Roll								-1.2693	1.2286	-9.2700	2.5300	degrees
		Temperature								28.3868	1.0058	24.7700	30.3800	degrees C
		Pressure								98.2620	5.4855	92.8690	149.8490	dbars
SBE39-5539	160m	Temperature	OK	22/07/2012 00:10:01	05/03/2014 07:30:01	600	47	-0.00007	Degrees C/year	24.6628	1.7934	18.2662	29.1306	degrees C
SBE37-9917	180m	Temperature	OK	22/07/2012 00:00:01	04/03/2014 20:40:01	600	29			22.8112	1.8569	15.4071	28.7491	degrees C
		Pressure								179.6111	5.7998	175.1380	253.1050	dbars
		Salinity								35.7809	0.1041	35.2117	36.1039	PSS78
RCM7-10095	200m	East Velocity	OK.	17/07/2012 04:00:00	04/03/2014 21:00:00	3600	870			0.0086	0.2028	-0.6765	0.6366	m/s
		North Velocity								0.0207	0.2259	-0.6831	0.7303	m/s
		Temperature								20.7830	1.7629	13.5800	27.2700	degrees C
		Pressure								202.1138	5.3628	197.4200	267.8800	dbars
RBR-12583	250m	Temperature	OK, Redeployed on Solomon M3.	19/07/2012 00:10:00	04/03/2014 20:40:00	600	49			16.0053	1.3458	10.5143	21.6783	degrees C
SBE37-9321	300m	Temperature	OK, Redeployed on Solomon M3.	22/07/2012 00:00:01	04/03/2014 20:40:01	600	50			12.4737	0.9518	8.9188	16.2569	degrees C
		Pressure								300.7293	5.4454	296.5070	368.4790	dbars
		Salinity								34.9309	0.0836	34.6386	35.2929	PSS78
SBE39-5630	350m	Temperature	OK	22/07/2012 00:10:01	24/07/2013 17:50:01	600	89	0.00001	Degrees C/year	10.1178	0.6674	7.8632	13.9408	degrees C
		Pressure								351.9783	5.0545	347.9700	394.8920	dbars
SBE39-5586	400m	Temperature	OK, Redeployed on Solomon M3	22/07/2012 00:10:01	04/03/2014 20:50:01	600	51			8.7489	0.4809	7.0793	11.3412	degrees C
AQD-2325	500m	East Velocity	OK, Redeployed on Vitiaz A.	23/07/2012 00:30:00	04/03/2014 00:00:00	1800	-20			0.0849	0.1062	-0.2860	0.5930	m/s
		North Velocity								0.0234	0.0931	-0.3540	0.4950	m/s
		Temperature								7.2667	0.4222	6.0600	8.7500	degrees C
		Pressure								518.0511	4.8020	514.2010	575.2120	dbars
SBE37-9322	550m	Temperature	OK	22/07/2012 00:00:01	04/03/2014 20:40:01	600	52	-0.00003	Degrees C/year	6.7525	0.3583	5.7625	8.4275	degrees C
		Pressure								553.7017	4.5337	550.0970	607.7180	dbars
		Salinity						-0.00070	PSS78/month	34.4921	0.0244	34.4147	34.5980	PSS78
RBR-12584	600m	Temperature	OK, Redeployed on Solomon M3.	19/07/2012 00:10:00	04/03/2014 20:40:00	600	53			6.3575	0.3238	5.4796	7.7683	degrees C
SBE56-0202	650m	Temparature	OK, Redeployed on Vitiaz B	22/07/2012 00:10:00	04/03/2014 20:49:59	600				6.0151	0.2959	5.1899	7.1469	degrees C

Solomon M3

Instrument/ Serial Number	Depth	Data	Comments	Start Data	End Data	Sample period (sec)	Clock Drift (sec)	Sensor Drift	Units of Sensor Drift	Mean	STD	Range-Low	Range-High	Units
SBE37-6338	700m	Temperature	OK, Redeployed on Vitiaz A.	22/07/2012 00:00:01	04/03/2014 20:50:00	600	54			5.6969	0.2539	5.0385	6.8187	degrees C
		Pressure								705.0294	3.9731	701.8520	751.8300	dbars
		Salinity								34.4978	0.0200	34.4427	34.5620	PSS78
RCM7-10100	750m	East Velocity	Questionable velocities in Oct 2013, likely due to low flow rates.	17/07/2012 04:00:00	04/03/2014 21:00:00	3600	37			0.0227	0.0531	-0.2517	0.3053	m/s
		North Velocity								0.0443	0.0675	-0.2030	0.3236	m/s
		Temperature								5.3878	0.2282	4.7700	6.2400	degrees C
		Pressure								771.5359	3.5749	767.2100	809.5000	dbars
SBE56-0208	800m	Temparature	OK, Redeployed on Vitiaz B	22/07/2012 00:10:00	04/03/2014 20:49:59	600	55			5.1916	0.2083	4.4638	6.0707	degrees C
RCM7-11863	1000m	East Velocity	Questionable velocities in January 2014, likely due to low flow rates. Redeployed on Solomon M3.	17/07/2012 04:00:00	04/03/2014 21:00:00	3600	-971			0.0105	0.0488	-0.1725	0.2159	m/s
		North Velocity								0.0033	0.0712	-0.2454	0.2598	m/s
		Temperature								4.4693	0.1509	4.0500	5.0900	degrees C
		Pressure								986.1478	3.0419	982.6800	1018.9200	dbars
SBE39-5632	1200m	Temperature	OK, Redeployed on Solomon M3	22/07/2012 00:10:01	04/03/2014 20:50:01	600	56			3.7650	0.1188	3.3370	4.2884	degrees C
		Pressure								1190.3905	2.6051	1188.0680	1219.8580	dbars
RCM7-12020	1400m	East Velocity	Questionable velocities in January 2014, likely due to low flow rates. Redeployed on Solomon M2	17/07/2012 04:00:00	04/03/2014 20:00:00	7200	-1101			0.0025	0.0352	-0.1467	0.1390	m/s
		North Velocity								-0.0322	0.0563	-0.2398	0.1691	m/s
		Temperature								3.2399	0.1110	2.9300	3.6000	degrees C
		Pressure								1389.9201	2.1631	1387.4301	1411.5900	dbars
RCM8-10155	1700m	East Velocity	OK	17/07/2012 04:00:00	04/03/2014 20:00:00	7200	-657			-0.0002	0.0361	-0.1416	0.1126	m/s
		North Velocity								0.0014	0.0692	-0.2637	0.2161	m/s
		Temperature								2.6151	0.0599	2.4100	2.8200	degrees C
		Pressure								1640.7769	2.3477	1635.1900	1658.4600	dbars
SBE37-9119	1700m	Temperature	OK	22/07/2012 00:00:01	04/03/2014 20:40:01	600	57	-0.00020	Degrees C/year	2.6367	0.0593	2.4350	2.8779	degrees C
		Pressure								1724.7886	1.6942	1723.1530	1743.2420	dbars
		Salinity						0.0000	PSS78/month	34.6162	0.0033	34.6029	34.6289	PSS78
SBE39-1104	2000m	Temperature	OK	22/07/2012 00:10:01	04/03/2014 20:50:02	600	58	0.00006	Degrees C/year	2.2785	0.0542	2.0611	2.5453	degrees C

Notes

[1] Battery dead before recovery

[2] Battery dead before recovery

[3] Battery dead before recovery

[4] Battery dead by recovery

[5] Battery dead before recovery

[6] Battery dead by recovery

[7] Battery dead by recovery

[8] Battery dead by recovery