

Th CTDw SOLAS/SAGE Voyage TAN0403 SURFACE PHYSICS METADATA

Downward Profiling Temperature Microstructure (SCAMP) MetaData

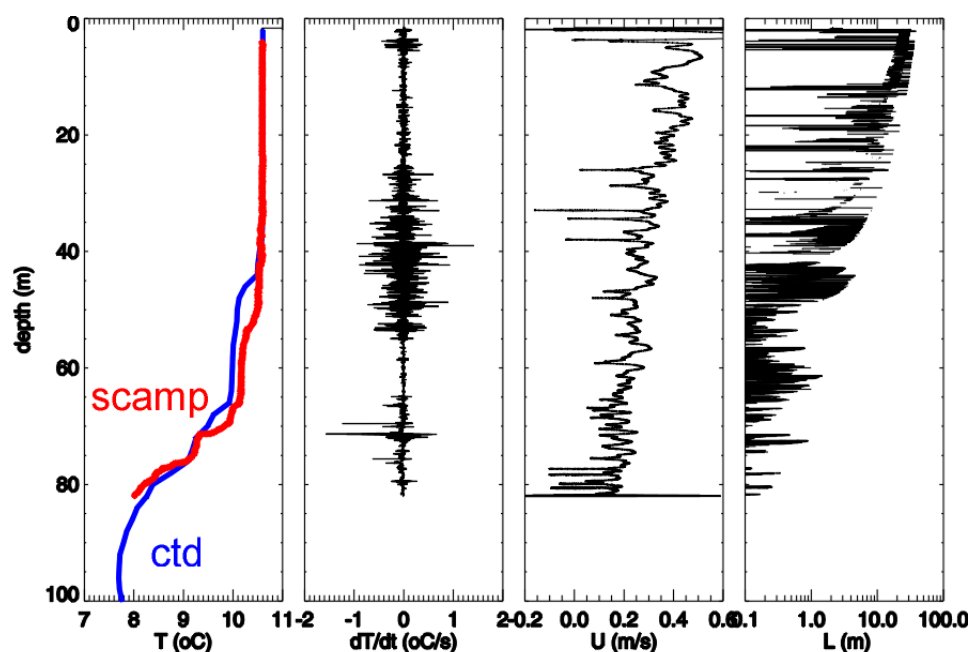
Data Contact Person: Craig Stevens

Temperature microstructure profiles were recorded using a SCAMP profiler essentially recording temperature and conductivity every 1-5mm in the water column down to between 60 and 100 m depending on conditions.

This will enable the following:

- (1) medium-quality estimate of vertical diffusivity/energy dissipation
- (2) good quality estimate of Thorpe lengthscales (eddy scale) between about 12m and the base of the profile – and hence an estimate of the actual “mixed layer”
- (3) high resolution temperature structure
- (4) indication of perturbations in profile near water surface for validation of Gerris modelling of flow distortion under a vessel.

Note: Because of ship motion and drift (waves >5m on occasion) the profile speed is faster and more variable than a typical application of this device. Processing for Kt and epsilon will require tight quality control. I am much more confident of overturn lengthscales.



scamp2an0016_04apr04_0624.eu u3649_1.dat
scampQD3 Fri Apr 09 19:43:06 2004

Example of SCAMP profile: left panel shows temperature from SCAMP and CTD, second panel shows temperature gradient microstructure, third panel shows profiler drop speed and righthand panel shows Thorpe lengthscales. The Thorpe scale shows perhaps eddies of 30m near the surface dropping steadily with depth.

Profiles were recorded in between most gas/biology CTD pairs.

Date	Time-NZST	Station
04mar26	1007	U535
04mar26	1055	U537
04mar26	1300	U539 from workboat
04mar27	0947	U556
04mar30	1914	U582
04mar31	1750	U599
04apr01	0853	U608
04apr01	1605	U616
04apr02	0814	U624
04apr02	1621	U630
04apr03	0815	U637
04apr04	0824	U650
04apr04	1517	U654
04apr05	0749	U664
04apr05	1616	U669
04apr06	0804	U678
04apr07	1122	U692 from workboat
04apr07	1613	U701
04apr08	0800	U709
04apr09	0810	U724
04apr09	1727	U731
04apr10	0454	U735

Improvements:

- Better drag "brush"
- Profiler-end line storage

Workboat SCAMP Deployments

The work boat was used for a number of normal scamp deployments. In addition the workboat was utilised for a number of other tasks described elsewhere including SkinDeep & Tramp profiling and high resolution gas sampling.

In addition to these and the over-the-side SCAMP profiles there were 5 shallow (30m) casts from the workboat to look at vessel-induced mixing. This took place on the evening of the 7apr04 during station U704.

Files 04apr07

1906

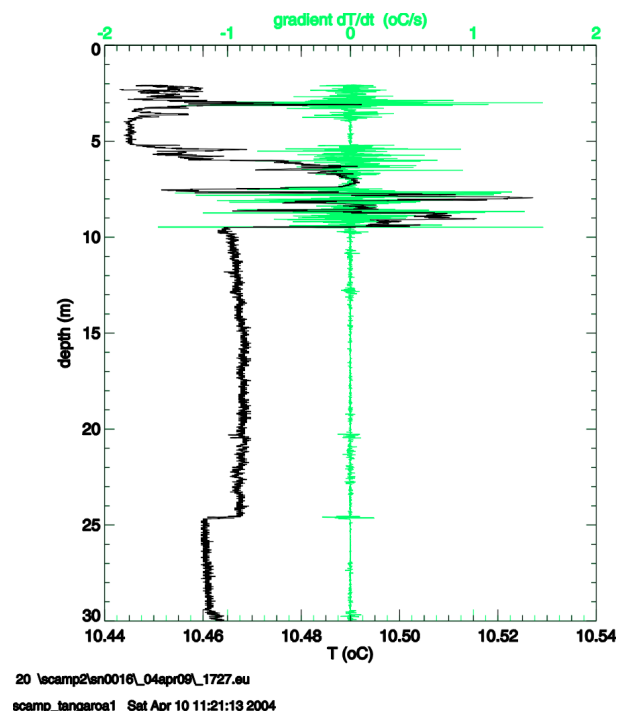
1920

1928

1946

1937

The topic of water flow disturbance by the vessel and the implications for sampling is one we plan to follow up on.



Scamp profile showing temperature and temperature gradient profiles...the strong signal at around 9.5 m is very unusual and probably indicative of underflow...draught(?) of Tangaroa ~6m. Almost all over the side profiles exhibited similar structure. Certainly the profiles from the workboat did not have such structure.

Improvements:

Conduct experiment during warming period when there is more signal to distort.

Better all-weather laptop/PDA?

μSPAR MetaData

Data Contact Person: Craig Stevens/Murray Smith

This NIWA-built Lagrangian drifter is in development. It contained:

GPS/VHF locator beacon

2x Seamon temperature loggers (nominal 1 and 4.5m depths).

Dobie Tattletale logger recording Xbow 3xaccelerometer and pressure.

The data provide a measure of the wave heights as well as near-surface stratification. Ultimately it will also contain a Vector Velocimeter but this voyage involved development of deployment techniques and evaluation for protective guards.

Each deployment generated 2 thermistor files and a number of tattletale files (10 minute files every 15 minutes at 16 Hz).

It had 5 deployments

#	Date	time	Station
1	23mar...	not deployed at sea....	
2	31mar04	1141-1338	U591
	upper therm	2T1254.dat	
	lower therm	2T1255.dat	
	tattletale	FD01237.acc-FD011515.acc	
3	03apr04	1839-2023	U642
	upper therm	3T1254.dat	
	lower therm	3T1255.dat	
	tattletale	FD031625.acc-FD032030.acc	
4	05apr04	2156-1441 (07apr)	U672
	upper therm	4T1254.dat	
	lower therm	4T1255.dat	
	tattletale	FD051242.acc-FD071515.acc	
5	08apr04	0929 09apr04 1420	U711
	upper therm	5T1254.dat	
	lower therm	5T1255.dat	
	tattletale	FD080850.acc-FD091445.acc	

Improvements:

Buoyancy foam in remaining cavity

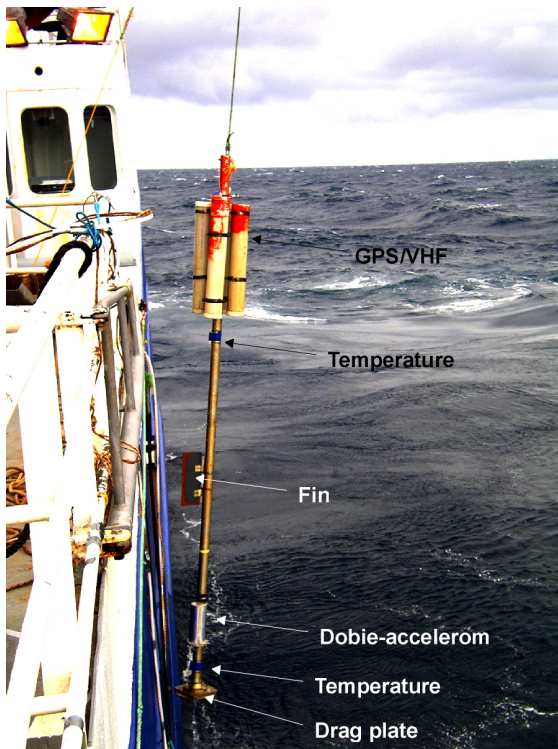
Guard for Vector

Guard for aerial

Better mount for DOBIE

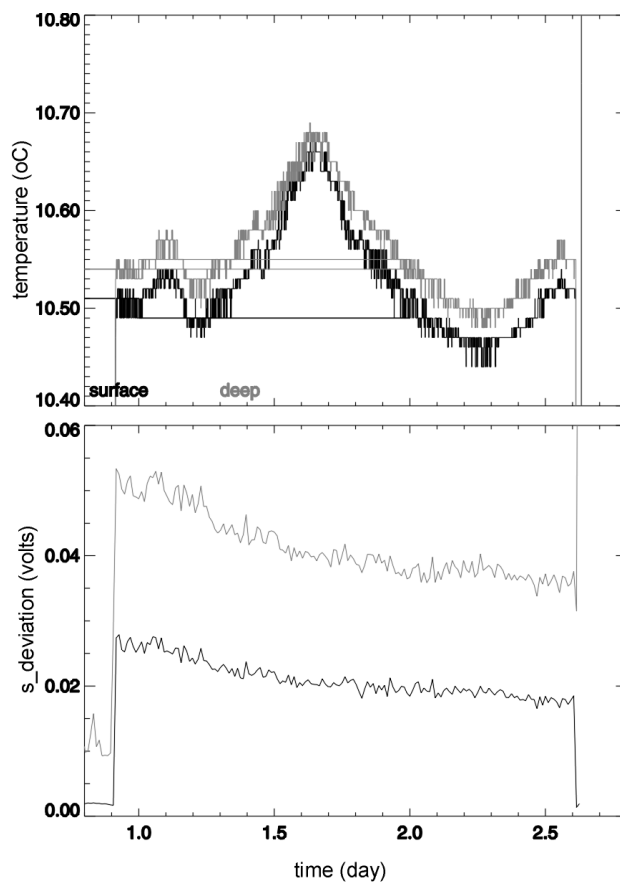
Better download for DOBIE

Anemom?



μ Spar being recovered showing the instrument locations.

Data from μ Spar over nearly a 2 day period.



Top panel: temperatures

Bottom panel: standard deviation of pressure and vertical accelerometer. Both are in raw volts units as calibrations are yet to be included.

Beacon MetaData

Data Contact Person: Craig Stevens/Ed Abraham

BIGEYE GPS/VHF drifters were deployed to aid in tracking the patch.

Files:

NIWA03	solas_03b.txt
NIWA15	solas_15recover.txt
NIWA20	solas_20b.txt
NIWA04	solas_04b.txt

Deployment History:

NIWA20	U519	deploy	25mar04	0849
NIWA15	U525	deploy	25mar04	1437
NIWA20	U548	retrieved	27mar04	0020
NIWA20	U551	deploy	27mar04	0223
NIWA03	U586	deploy	30mar04	2350
NIWA03	U631	retrieve	02apr04	1943
NIWA03	U638	deploy	03apr04	0944
NIWA03	U737	recover	10apr04	0318

These data were recorded in various files on board Tangaroa however the best quality comes from the on-drifter loggers. 03, 15 & 20 were drogued at 20m with a 4m sail.

NIWA03 a veteran of FeCycle did the job...it had some water inside on recovery as well as losing its aerial upon recovery.

NIWA15 was not recovered (possibly was run over during injection) so no post-file exists. We do have the VHF recvd data and these have been compiled into a single file.

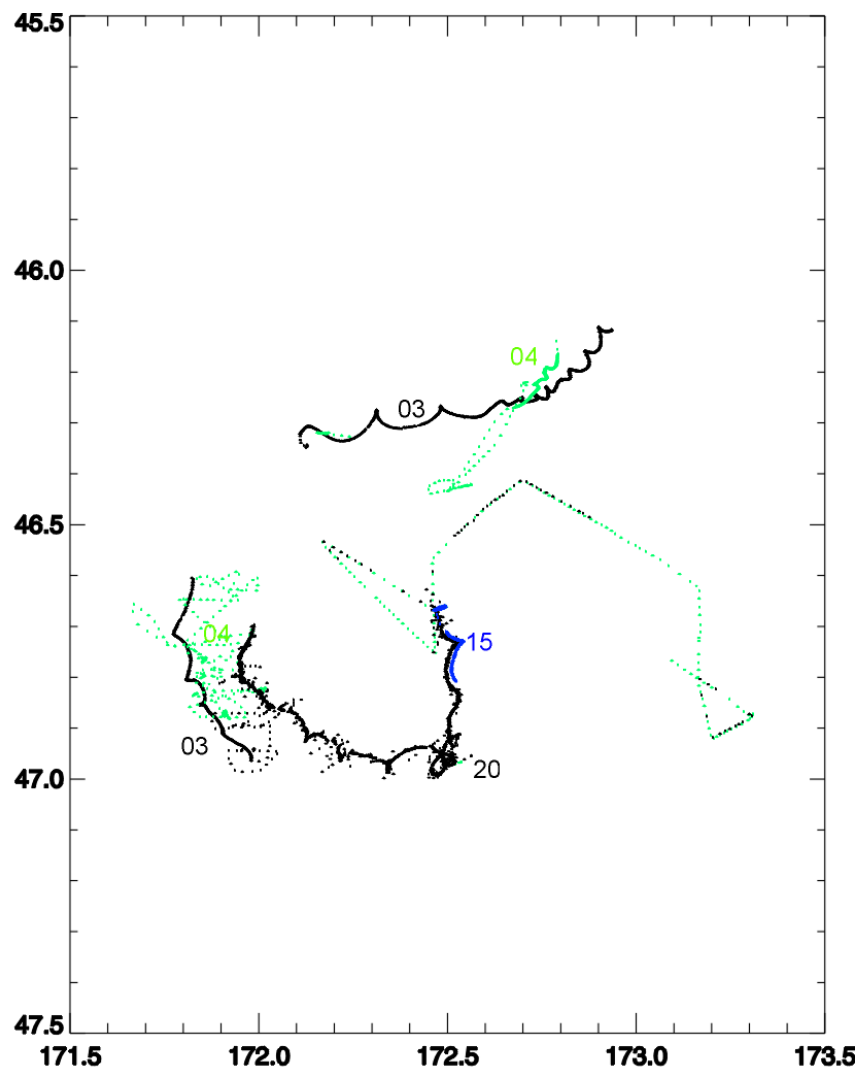
NIWA20 data are very erratic – it has a different buoyancy to earlier versions so for its initial deployment it lay on its side. This was corrected but its data quality is low and will require removal of poor quality fixes.

NIWA04 data comes from the μ spar beacon and so has different drift characteristics as well as being only deployed for short periods.

Drogue transmitted timestamps are NSDLST so times in GPS NMEA strings must be brought back one hour.

Improvements:

- Transmit NMEA data containing date and quality
- Look at better actual GPS
- Improved ballasting for buoy



file: c:\datalogger\solas_beacon\solas_03b.txt
file: c:\datalogger\solas_beacon\solas_20b.txt
buoy_load1 Tue Apr 13 13:40:49 2004

Drogue tracks for 3 drifters plus segments of μ Spar deployment (04).

TRAMP MetaData

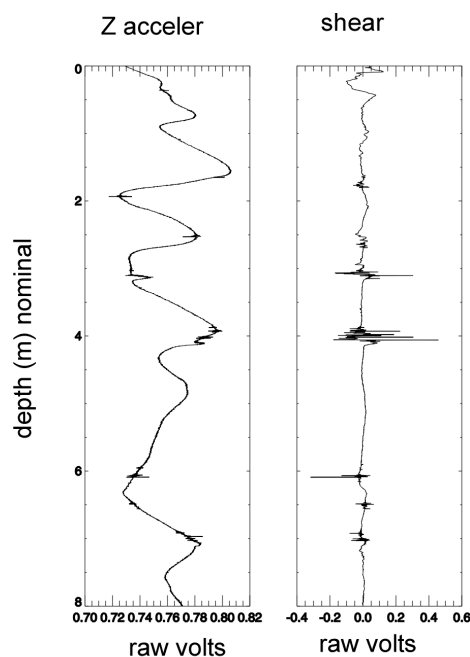
Data Contact Person: Craig Stevens

The first sea-trials of the TRAMP microstructure profiler were conducted. Effort was concentrated on getting the SUCA engine working satisfactorily consequently there were only a few successful data-taking deployments.

It resolves temperature and shear from 8 m to the surface. When working properly it resolves around 45 profiles an hour.

ddmmyy	hhmmss	
310304	075439	GOOD FILE thru chance !!! #1
060404	115302	no diving...
070404	150041	partial diving
080404	085042	good file
140404	122900	good file

The files are with a directory for each deployment under a directory for each day. Each deployment contains 16 data files data.CXX in binary with a parameters.txt setup file.



Clear indications of wave-effects on the tether line are shown in these profiles and will need to be addressed in future deployments.

tramp_proplot1 Thu Apr 08 19:09:57 2004

Improvements:

- Noise
- Tether
- Extra sensors
- Power up/down
- Better fairing
- Log battery voltage

Skindeep MetaData

Data Contact Person: Brian Ward WHOI

The Skin Depth Experimental Profiler (SkinDeEP) is an autonomous, self-contained, hydrodynamic instrument capable of making repeated, high-resolution profiles within the ocean's upper decameter. Autonomous profiling operation is accomplished through SkinDeEP's ability to change its density: positive buoyancy is achieved by pumping air from inside the body of the profiler into an external, neoprene, inflatable sleeve; the instrument sinks when the sleeve is deflated by returning the air to the interior. The sensors are mounted some distance from the top endcap and data are recorded only during the ascending phase of the profile so as to minimize disruption of a naturally occurring scalar structure by the presence of the instrument.

The sensors deployed on SkinDeEP during the SAGE cruise were as follows:

- Temperature: measured with a fast-responding FP07 thermistor
- Conductivity: measured with 2 sensors to provide accurate low spatial resolution conductivity, and a high-resolution low accuracy sensor
- Fluorescence/turbidity: measured with a FT2-D fluorometer/ turbidity sensor
- Irradiance: measured with a ED-50 3-channel sensor (470, 555, and 683 nm)

SkinDeEP was attached to an Iridium/GPS float, which provided its position onboard via the iridium network.

SkinDeEP was deployed during SAGE on two occasions, but recovered only after the first deployment. During its second deployment, which lasted for three days, the float was recovered, but the line to which SkinDeEP was attached had been cut. The profiler was lost.

Data availability from SkinDeEP are for the following times:

Mar30 11:17 UTC to Mar31 15:00. A total of approximately 250 profiles were acquired during this deployment.



SkinDeEP being deployed from the WorkBoat.