DIVE LOG
Lau Basin 05

CRUISE -TUIM07MV
WHOI DSV JASON II

The following log is a transcribed version of the original hand written dive log. Dates and time are GMT (Fijian time is GMT +12hrs.). Additional information is available at the WHOI Virtual Van site: http://4dgeo.whoi.edu/virtualvan/

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DIVE 154 Kilo Moana
-20.150000 -176.200024

6/11/05 GMT
NOTE: local time (FIJI) is GMT +12hrs.

23:40	on bottom
23:50	settling out at south end of KM
00:12	Vrienhoek marker j2140 6953 10647

	next to flat good sized mussel patch
	(earlier small patch @ 6960 10629 on chimney edge)
00:15	dropping weight 6945 10644
00:22	marker 5 down in crevice behind Vrienhoek marker – probably got knocked off ledge
	marker is lightly faded –no longer very reflective
	nav reset on marker 5
	x6952 y10640 d2622 h074
00:32	setting up to sample x6950 y10640
	temp probe 2.4 ambient 4.2 ~ 10 cm into bed 4.3 ~ 15 cm into bed
	mussel pot
	scoop
	can see gray area where scoop has been taken
	temp. in shimmering waters among mussels 5.0-5.1 20cm deep
	up to 6.7 @ 10cm in and still going up – getting tugged by Media
00:51	temp 10.2 @ surface of mussels in shimmering flow- target for major water sampler
00:52	major yellow 2 event #126
01:00	mussel pot C
	ram was adjusted for majors – no longer hits stops on mussel pots- need adapter anti-rotation bar bag closed anyway, ring left behind. Difficult to look inside – looks like quite a bit left, including crabs that rapidly moved in.
01:08	second mussel pot D
	using port arm to adjust ram, could not adjust ram, using port arm to hold pot in place. As pot is placed shrimp scatter
	resetting motion limits on stbd arm – otherwise can't reach far enough to put pot down in front of basket.
01:26	pot closed-left behind a lot of mussels – good image in science cam.
01:29	recover rings
01:34	setting crab traps
01:35	scoops of mussels into stbd swing box.
01:50	moving crab trap to better position
	already one crab in trap
	decided to leave trap in place
	nope gonna move it!
01:59	heading to marker 2 – target area to sample later?
	Oops – marker by bucket lid is marker #2
	Resetting Doppler
	6947 10640 3m N of marker 2
02:21	found marker 1
	x6964 y10666
	Doppler x6967 y10655
	Reset Doppler 6969 10661
	Heading towards marker5
	Testing scorpio camera- can't find marker 5

03:44	tether management
	camera test end
4:00	target 8 biota @ x6945 y10619
4:07	x6957 y10616 small snail patches @base of structure
4:16	x6961 y10631 small snail / mussel patch
	Surveying around structures for good area to sample- just small patches of mixed mollusks, lots of anemones both large and small
4:36	looking for another area
	target 9 x6962 y10659
	near marker 1
	few patches of snails
5:07	near marker 1 preparing temp probe
	T – 15.7 , 13C
	in hole 22.2C
5:16	temp probe away
5:19	collect Ifrmeria 7 or 8 from small clump
5:37	to marker 2
6:19	collect Alvinaconcha from chimney
	(on deck 8:36)

DIVE 155 Kilo Moana
-20.055947 -176.132798

6/13/05 GMT

21:50	on bottom at marker 1
	reset nav +/- 3-4 meters at marker 1 x-y
22:00	at marker 4 reset nav
22:24	scanning Alvinoconcha
22:12	still scanning
23:30	attempting snail pot- did not close.
23:40	preparing to collect
23:57	done bio sampling – all into stbd biobox
00:02	small chimney temp.=252 C
00:09	preparing for major T ~ 252 C
00:21	major
00:26	temp at upper source 211C
00:34	scanning again on collection scar
01:31	done scanning, setting up to slurp
01:54	done slurping scale worms from sampling site, moving to port to temp survey and sample Allvinellids
02:50	moving North and looking around
02:59	at marker 6
	chimney complex lots of shrimp and scale worms, pillow basalt covered w/ anemones lots of paralvinellids
	2 zoarcids
	north side of marker 6
03:38	marker 29
	heading 123 degrees x 6921 y 10790
	shift change setting up to photo survey
	lazer on marker x 6922 y10789
	heading 123 degrees
04:35	finished close up pics (~ 3.2mX4.4m 40cm steps)
	1-2m Alt
04:42	up to 5m redo the grid (1m steps) 3m X4m
05:01	heading south to marker 2 to get crab trap
05:24	picking up crab traps – into port biobox
	x6950 y10644
05:44	setting up to do survey
	x6969 y10648
	down HMI on
	pixel-fly
	strobe on
	DSC strobe off
	Testing 3m
05:58	over marker 28 seset nav x6967 y10647

	start survey
05:59	Step size 0.4m moving forward stepping stbd.
6:01	stepping 0.4m stbd
6:06	end of survey
	setting up to take majors
6:29	6957 10647 2616 250
	small crevice part way up chimney complex.
	177.8 degrees C max temp
	major yellow
6:40	finishing yellow major
6:43	dumping weights
6:53	leaving bottom

DIVE 156 Kilo Moana
-20.053192 -176.133460

J- day 163 6/14/05 GMT

Dive aims

1	search for transponder
	found weights, wire, and terminal shackle but no transponder
2	move to marker 28 (southern image mosaic) over anemones
02:58	resetting nav directly over marker with lazer
	x6968 y10648 d2625 h246
	chem. Probe not reliable
	using Jason temp probe
3:38	witching to collections- temp. anomalies apparent so w will come back and do it right w/ chem. Probe
	x6963 y10639 rock w/ anemones port biobox
	slurped some worms
04:56	major sampling at marker 2
	x6958 y10634 h294
	sulfide chimney w/ white microbial covering
	small new sulfide pipe @ orifice
	temp 313.6 C
	blue sampler #3
5:27	polynoid attacking shrimp on science cam
	temp in fluid from knocked over beehive with paralvinella: 25.8C
	major sampler white top#1 fired @ 5:34:26
5:27	more good polynoid hunting footage @ 05:36
5:49	tubeworms, barnacles
6:01	close –up of tube worms
6:09	mussels in stbd biobox (barnacles on it)
6:13	trying to collect tubeworms
6:43	took pix w/ scorpio camera
6:52	leaving bottom

DIVE 157 Tow Cam
-20.053065 -176.132999

6/15/05 GMT

Tommy on

21:42	on bottom, depth of 2712 m. In area of pillow basalt, wedding sponges, whip corals, no vent fauna.
21:55	at N chimney complex, setting up for major
21:59	HiT probe in clear chimney water, 289 C to 311
22:13	took major 2(yellow) in clear, shimmering water. At chimney complex by marker 8
22:28	temp in black smoke 325.1
22:38	fired major 1(white) in black smoke
22:41	looking for M8, benchmarking, X=+2 meters
22:49	heading to M7
22:51	hydrothermal beds on basalt
22:59	M7, lots of biology
23:02	7m east of M7, mussels and anemones, snails
23:27	M31 deployed, X=6675, Y=5541 (?). Centering for mosaic, heading 206, alt. 2.0-2.5 m
00:18	stepping back to se if we end up over marker we do 17 cm off setting up for mosaic w/DSC & pixelfly
00:51	12 images 008-023
00:59	tether management moving to marker 9
1:30	chem scans tube worm collection (see fig in original dive log) x=6524, y=5621
2:11	chem probe finished
2:12	tube worm collection from upper right clump (see fig) into stbd biobox
2:50	transit to marker 31
2:54	chem scan mosaic field near marker 31

scan	position	temp.	description
140	1	2.5	mussel/ base anemone base of marker
150	2	2.5	small anemone on top of rock
160	2	large peak @ end of last scan	
170	3	3,4	among bathy.
180	4	7	among Ifre.
190	5	3,4	among bathy.
200	6	14	among Ifre. Stained white
210	7	8,9	among bathy.
220	8	4	large anemone
230	9	4,5	mussels & barnacles
240	10	2.5	mussels & anemones

	250	11	4	large anemone
	260	12	3,4	large anemone
	270	13	3	small anemone
	280	14	3	among bathy.
	290	15	3	large anemone & bathy.
	300	16	4,5	among bathy.
	310	17	4,5	among bathy.

Shift change Gabby

2:54	Scan	position	temp	description
	320	18	3	anemones
	330	19	3	anemones
	340	20	3	bare rock
	350	21	2.5	anemones
	360	22	2.5	bare rock

no notes

(0ff bottom 04:06)

DIVE 158 aborted due to AIS chem. Probe failure

DIVE 159 Tow Cam
-20.099942 -176.136191
6/17/05 GMT

Gabby on

0245 on bottom
0254 start work

scan	position	temp	description
0	23	3.5-4.0	Ifremeria and anemone didn't g
scan reboot			
0	24	4.5-4.7	mussels and anemones
10	25	4.5-5.1	mussels
20	26	38-45.0	Ifremeria source of flow?
30	27	50	crack
40	28	3.9	anemones on mussels
50	29	3.4	anemones on mussels
60	30	5.1	under rock anemones mussels
70	31	4.4-4.5	anemones
80	32	3.5-3.7	mussels and Ifremeria
90	33	5.5	barnacles Eochionolasmus
100	34	5.7-6.0	barnacles
110	35	3.9	mussels
120	36	4.0	anemones on barnacles
130	37	3.9	large anemone on side of rock
140	37	3.9	rescan of 130
150	37	3.9	rescan of 130
160	38	3.5	on mussels
N/S	39	6.7	temperature (no scan)
N/S	40	3.4	temperature (no scan0
N/S	41	3.2	temperature (no scan)
N/S	42	12.9	temperature (no scan)

shift change end Gabby/Start Kevin

0533 Major 1 collected sample x=d=2704 h=076
0538 major with yellow tape 3? Collecting in Alviniconcha d=2704 y=075
0548 collecting snails at base put in port biobox with scoop net d=2704 h=075
0551 second scoop
0554 collecting Ifremeria at top into port biobox get any? 0
0600: Collecting tubeworms in port box ~1,2. X=6594, Y=5532, 076°
0603: Collecting tubeworms in port box, several. Same X,Y,heading.
0654: Collecting mussels and ifremeria with mussel pot 'C'.

X=6553, Y=5404, 226°. Ended at 0700, some dead mussel hanging from bottom of pot but otherwise looked closed and ‘intact’

0708: Collecting ifremeria with circular net. X=6553, Y=5401, 225°.
Net’s bottom was ripped – collection aborted 0712

0715: Net mesh appears intact, so attempting to try to net up some ifremeria . Same
X,Y,heading.

0733: Ifremeria temperature 8.0, 7.35, 12.7, 8.0 I areas of collections for Childress

0741: Mussel pot ‘D’ attempt on Bathymodiolus brevior on vertical chimney wall.
X=6549, Y= 5401, 222°
(Off bottom 08:12)

DIVE 160 Abe
-20.760885 -176.190958
6/18/05 GMT

switched to 24 hour ops
southern end of site

23:38	on bottom reset nav marker 15
	surveying bottom
	good mussels x=2131y301
	thick mounds
	possible mussel pot site
	collecting rock w/ barnacles into port biobox - high flow community
00:21	taking temp =@ spires =32 C
	broke tip off
	trying to find temp spike for source of floe lots of dead organisms
00:35	getting temp. @ white paralvinella 15.1-19.1 C
	d=2132 h=330 x=7866y=8016
00:45	collect chimney w/ paralvinella into port biobox mussels as well
00:55	taking temp. at mussel clump possible source flow
	90.8-124.6-126.1-153.1 C
01:09	taking major #1 white at same site
01:17	setting out crab trap d= 2132y=325x=7866y8015
01:30	collecting Urophychus ? crab into strb box
	general description
	scattered small rocks , mussels w/ Ifremeria dominant in some areas
	numerous small chimneys and spires. Lots of Uroptychus & few galithaids
	moving NE
01:47	lollipops and sponge
01:47	resetting LBL
02:17	can't find northern site moving to marker 19
02:24	exploring around marker 19, alvinochoncha , mussels spire
02:26	checking nav exploring site
03:04	slurping polynoids, good for small pixelfly mosaic, dropping marker 7
03:29	ideal for collecting, big patch of Ifr. Spires to right, drop target 8
	chimney @ southern extent of area
	mussel as well. D=2144 h=084x7006y7987
	going north
03:43	alvinoconcha & Ifer.
03:50	going N on the right (east) of biological community

0358:	**shift change Gaby off, Kevin on**
0359:	Very smoky water, low visibility. X=7889, Y=7999, 241°
0401:	Approaching chimney, looks extinct or very diffuse flow.X=7884, Y=7996, 133°
0403:	Aerial view of chimney. X=7986, Y=7996, 003°

0413: Target 7 & 8 small whites spires & chimneys, abundant ifremeria, some potable, some alvinoconcha and mussels. Perhaps very small ifremeria patches for mosaics.

0416: Southern edge of marker 19 chimney complex, more ifremeria possibly potable, eelpouts, ifremeria, munidopsis, austinograea, limpets-X=7896, Y=8009, 054°

0418: Alvinoconcha also

0420: Ifremeria on left, alvinoconcha on right depth=2133

0427: hydroids and glass sponge on periphery of vents. Not so many anemones like in northern sites. X= 7906, Y=8013, 349°

0428: Smoker site, same XY, 278°

0430: Bacteria in cracks, scattered mussels, galatheids, limpets, eelpout. X=7401,
Y=8010, 279°

0431: 2 smokers

0434: square marker

0435: heading to marker 18, 152°

0452: lots of chimneys, some diffuse flow. X=7915, Y=7999, 163°

0454: Target 9 chimneys, not much diffuse flow, possibly extinct site or 'extinguishing' site. X=7917, Y=7993, 163°

0457: Some ifremeria, alvinoconcha on chimney spires

0500: Interesting area, more active, potential area for mosaics, some disarticulated shells. X=7919, Y=7972, 327°

0506: mounds of dead snails and dead mussels.

0507: mussels around diffuse flow though on walls with crabs, limpets, several eelpouts. X=7916, Y=7967, 015°

0509: lots of live alvinoconcha and mussels at base of structures, lots of verrucomorph barnacles on spires

0510: mixed ifremeria and mussels with several crabs, mirocaris. Some mussels have lots of verrucomorph barnacles.

0515: dropping target #10 rich biology. X=7921, Y=7977 a lot of everything

0528: setting up for photo mosaic

0530: dropping marker 32 X=7922, Y=7978, depth=2142, 338°

0548: drop marker 49 X=7923, Y=7981, 338°

0601: aerial view of mosiaced area 1.2x1.2 meter. X=7923, Y=7980, 339°

0616: Shell hash area, diffuse flow over hash. X=7939, Y=7981, 062°

0620: stalked sponges, shrimp, macrourid on periphery X=7943, Y=7989, 001°

0630: mixed ifremeria, mussel on slope X=7943, Y=7981, 150°

0632: target 13, x, y, heading as above. Name: 'steep slope', periphery again has sponges and galatheids

0636: flange structure X=7938, Y=7968, 193° Marker 18

0640: small mussels underneath flange

0641: target 14: X=7938, Y=7968, 194°, The REAL marker 18 depth=2141

0644: scattered small mussels and shrimp on top of flange. X=7934, Y=7965, 136°. Mussels are actually more present than I thought, they blend well with surrounding rock.

0647:	anemone on mussel shell, lots of bacterial mat in the area, several pockets of mussels on the verge of being big enough to pot, might be too small though (06:48-06:50)
0652:	Disarticulated shells, nice lava flows here. X=7921,Y=7967, 283°
0654:	Mostly mussels, some alvinoconcha
0655:	Ifremeria and alvinoconcha X=7914, Y=7970, 002°
0659:	gorgonians? X=7916, Y=7960, 090°
0702:	Back to marker 18 flanges X=7928, Y=7960, 288°
0724:	fish close-up
0739:	on western side of site, nice fault scarp. X=7829, Y=7957, 288°
	shift change Kevin off, Tommy on
07:50	Going into the hole
08:15	M32, Mussels, snails and eels
08:31	heading to condom
08:45	investigating possible biota, X=7870, Y=7845. Stick-like sponges, small mussel patch
08:55	Snails, mussels, etc at M16
08:58	M21, X=7831, Y=7773
09:04	At condoms, assorted snails and mollusks
09:17	reset nav on marker A, looking for mosaic site.
0940	X=7834, Y=7764, high density, highly assorted bio field
0957	moving condom 1 east, X=7854, Y=7765
1012	moving condom 3 east, lots of shrimp beneath condom
1014	moving condom 2
1034	reset nav at marker A, preparing to mosaic
1039	M52 set as corner (see diagram in notes for placement)
1042	M51 placed in snails
1043	M50 placed in mussels and snails
1049	M49 deployed
1051	mosaicing w/ heading of 270
1053	Crab wrestling
	Shift change Gabby on
11:57	starting line to fill in holes x=7025 y=7768
	over marker 52 d=2143 h=271
12:05	mosaic @3m alt. Same track
12:16	track 1 done
12:33	end track 3
12:50	end track 5 x=7017 y=7769
13:09	6.25 lines ending 3m mosaic
13:06	moving to marker 18
	change of plans
	going to mosaic sponges and corals
13:34	dropping marker 30 x=7830,y=7795
	d=2146,h=270

	putting out short markers
13:40	short 48 x=7827 y=7796 , d=2147y=271
	short 46 same xy
	short 53 same xy
	5m pixelfly mosaic
13:48	aligning w/ 30
13:59	change to 7m to avoid lifting
	1m increments
	scorpio as well
14:02	starting line 1
14:09	line 2
	change to 0.5m steps @ lower alt.
14:18	line 3
14:33	line 4 x=7819 y=7796
15:06	moving marker
15:20	new site x=7804 y=7805
15:37	new mosaic pixelfly
1558:	<u>shift change Gaby off, Kevin on</u>
1624:	"Cirripede field" X=7802, Y=7807 on side, X=Y=7804 on the side, heading 315° (see picture in notebook page 27)
1626:	Starting mosaic at marker 53, same X, Y, heading as above
1643:	Starting 5m high mosaic from southern end of cirripede field (see picture page 27 for drawing and detailed X, Y coordinates).
1657:	leaving mosaiced area and transiting south
1817:	X=7672, Y=7528, 274° Chimney site with scattered mussels, diffuse flow at bases of chimneys
18:28	X=7658, Y=7520, 089° 3 patches of mussels, not potable, lots of shimmering water, bacterial mats
1837:	neat looking chimney structure X=7667, Y=7517, 265°, larger mussel bed, not potable though. Small white chimneys with scale worms, alvinellids, crabs and mussels-no snails though
1841:	target 15 mussels chimneys X=7666, Y=7517, 266°
1845:	crabs on chimney on white part, mussels and diffuse flow in pocket on top. Also alvinellids, scale worms, limpets, shrimp X=7666, Y=7512, 209°
1851:	Smokers, lots of shrimp X=7660, Y=7506, 179°
1855:	start temperature probe in active flow "grey smoker" HiT=305.2
1905:	Water sampling Red4, chimney has lots of worms
1940:	2 individuals of ifremeria x=7664, y=7498, 261°
1943:	**<u>shift change Kevin off, Tommy on</u>**
1953	X=7665, Y=7480, lots of vent fish. Flange with snails, few mussels
1959	heading south
2002	M20, resetting nav
2006	Bio under flange, anemones, crabs, snails, isolated mussels

2010	hunting barnacles, lots of shrimp on chimney, primarily in the red areas, X=7650, Y=7467
2024	dead chimney complex w/ diffuse flow
2025	looking under flanges, X=7660, Y=7858, anemones and mussels
2033	snails, some mussels, X=7665, Y=7454. N of M20, mussels on chimneys. Chimneys and smokers. Alvinelids, scale worms, mussels, no snails. Activity continues S. M20 area very active, full spectrum of animals. Tending SE activity continues, generally smaller strata (?), same fauna, but pretty
2045	30m S of M20. More chimney structure w/ mostly dead pockets of activity. Few snails, lots of mussels, scattered dead shells at the base of structures
2050	mussels on top of chimney
2053	small chimney w/ barnacles, collecting in port biobox, X=7648, Y=7422
2103	sample collected, small chimney put in crate
2110	black smoker w/ barnacles and other biota. 50 m S of M20, beehive, snails, barnacles
2125	60m S of M20 chimneys die out
2130	heading for Target #8
2238	looking for Target #8, X=7881, Y=7995
2252	at M19, X=7895, Y=8015, beehive, shimmering water, alvinelids, scale worms, mussels, black smokers
2302	slurping alvinelids
2307	crab vs slurp
2312	beehive temp=292.7, 294.5
2326	firing major 2 at beehive
2331	black smoker S. of beehive (M19), X=7900, Y=8010, Temp= 309.8, major #3, may not have fired properly
2350	target 7 worm spires? Looking for small mussels temp. probe x= 7089 y=7994 d=2144 h= 092 temp.= 4C second location t= 8.9C third t=7C, 4th t=6.9C temp among snails 20.5C, second reading t= 18.9C
00:18	collecting mussels 2 grabs stbd biobox
00:27	collecting snails same site
00:32	temp. probe snails and mussels x=70934 y=7989 t=7.7C t2= 12.6C, t3=12.0C
00:46	Uroptychus (actually Paralomis sp.)
00:53	heading to target 8 for Alvinachocha
01:10	collecting Alvin. Into stbd biobox x=7890,y=7905, d=2143, h=100
01:22	collecting more Alvin. by hand into stbd box
01:27	taking temp. in flow t=158.2C x=7090 y=7986

	t2=13.9C, t3 in snails =5.5-6.0 C
	looking for Alvin.
01:41	collecting small Alvin. X=7894,y=7989,d=2142,h=176
	into stbd biobox t=21.1C
01:53	going to marker 15 to get crab trap
02:07	retrieving crab trap x=7864,y=8019
	d=2133,h=10
02:21	leaving bottom

DIVE 161 Tu'I Malila
-21.989099 -176.568102

6/19/05 GMT

1920:	Kevin on
1925:	Touch bottom X=1579, Y=3055, 234°
1934:	Large mussel community, diffuse flow area, lots of shell hash too X=1566, Y=3055, 237°
	Shift change Tommy on
1946	Setting nav on M24
1953	X=1567, Y=3046, bull's eye, mussels, ifrem and Alvin. Large patch, zoned, but not uniformly. Doing temp and e-chem
1958	T and chem in mussels (see diagram in notes)
1959	bottom edge of mussels
2002	mussel-ifrem interface
2006	mussel-ifrem interface
2008	center of ifrem
2011	ifrem-alvin interface, mussels on overhang above diffuse flow, eels beneath
2014	center of Alvin
2021	mussels above Alvin, good location for Jim's exp
2025	diffuse flow in crack above site, barnacles
2031	M8, X=1156, Y=3046
2035	X=1565, Y=3045, center of Alvin
2036	interface, T=23.4, brown crabs
2037	center of ifrem, T=?
2100	center of Alvin, T=35.7
2105	interface
2107	center of ifrem, T=9.7
2113	looking for black smoke
2116	scattered mussels beds on fractured, flat basalt, X=1970, Y=3037
2131	M25, vent with flange, flow under flange, not much bio, worms and snails, scale worms and para-Alvinela
2159	doing e-chem at flange (see diagram in notes)
2201	N to M25
2226	back to 24
2254	X=1152 Y=3045, possible site for bull's eye exp, possible mosaic area
2312	deployed M43, X=1554, Y=3053, heading 277 at marker A
	shift change Gabby on
2350	looking for Alviniconcha next to Ifremeria to clear x=1555 y=3059 d=1888 h=200

2355	taking temp in Ifremeria 9.1C
	2nd temp 20.9C
	3rd temp closer to boundary between Alviniconcha and Ifremeria=15.8C
	4th =19.1C
	5th at boundary =27.8C
	6th temp=21.5C
	7th in Alviniconcha 3.4C
	8th=6.5C
	9th at other boundary 12.2C
	0011 10th temp in flow =47.6C
	11th =40-44C
0018	t=9.5
	under clump 4.3
	to right of Alviniconcha 9.1C
0024	center of Alviniconcha near top t=12.3C
	t=20.8C
0027	clearing out Alviniconcha
	Alviniconcha under Ifremeria
	Shrimp
	Temp on cleared rock 12.4-15.3C
0036	clearing more snails x=1556 y=3053? D=1888 h=199
0044	watching cleared rock
	shrimp left
0116	marker 43
	snail site to right and down h=200
	chem. Probe
0120	scan 260
0122	scan 270
0124	scan 280
0128	putting out short #36 to right of clearing x=1554 y=3055 d=1889
	drawer out
0134	marker 24 reset nav
0140	placing #44,42,33 x=1554 y=3047 d=1887 h=177
0149	starting mosaic lateral .05m
0209	running again with pixel fly
0233	pixel fly and scorpio at higher alt
0248	mosaic done
0300	checking on snail clearing
0305	checking out area
0312	possible site for clearing exp x=1553 y=3048 d=1886 h=227
	isolated clump of snails
	possible thermistors
	4m NW of mosaic starting point
	pillow basalt w/window
0321	sediment and snail area Ifremeria and Alviniconcha x=1563 y=3034
	good flow

	12m SE of mosaic
	temp measure w/chem
	T in seawater above 11.0C
0328	temp in hole 36.2C
	5cm from bottom of hole t=38.1C
	on the side 37.5C
	left side 43.2C
	left edge 44.6C
	Ifremeria 19-20C
0335	2nd temp=14.2-17.5C dropped to 9.2C
	another t=30.8-31C
	getting chem. Probe
0339	32C scan 290
0343	42.5C scan 300 in hole
0350	taking pixel flys of area not going to work too much flow
0354:	**shift change Gaby off, Kevin on**
0356:	took a series of scorpios X=1564, Y=3022, 124°
0400:	X=1563, Y=3020, 119° bacterial mound? In diffuse flow. Stephane says feeding films from a terebellid
0412:	light staining on rocks, investigating. X=1556, Y=3017, 270°
0414:	"Dara Fish" X=1554, Y=3019, 243°
0416:	Back to marker site 24. X=1558, Y=3025, 020°. Well-defined mussel beds, alvinoconcha beds. Jagged topography-not mussel potable or mosaicable. Very abundant fauna, excellent rich site
0423:	reset nav to marker 24 X=1556, Y=3047, 145° "Window to the subsurface biosphere" is 10m closer that thought to mosaic site. Discrete patches of alvinoconcha with mussels surrounding them and in between patches.
0426:	decent aerial footage of site on Brow Cam
0428:	"Yellow brick road" of mussels X=1570, Y=3044, 126°. Site characterization: Roughly 6x3m, jagged topography, discrete patches of alvinoconcha surrounded by mussels in the NxNW area of site, only mussels as move toward south, "road" of mussels leading uphill to more discrete patches of mussels, periphery marked with gorgonians/sponges on top of local high points. Areas in SW have anemones on rocks.
0440:	collecting rocks with sponges? on it, several amphipods (at minimum 3) on it – port biobox
0449:	suctioning off sponges X=1573, Y=3037, 102°. Lollipops are present-suctioned one, stopped 0504, suction sampler 2 used
0507:	leaving site
0513:	Arrive at flange, marker 25 X=1570, Y=3013, 180°
0529:	Mosiacing flange
0541:	finish mosaic
0543:	setting down in front of flange. X=1567, Y=2991, 045°
0600:	leaving flange area, heading to marker 22

0624: approaching extinct/fossil chimneys, very short and nondescript, no flow visible. X=1601, Y=3120, 001° depth=1892

0628: Chimney X=1603, Y=3152, 001°. Around 20m south of Marker 22, diffuse flow, mussels at base

0631: target 10 at chimney X=1602, Y=3164, 359° at southern end of northern end of the site "twin towers" (see drawing page 42), white on the chimneys, diffuse flow, one vent read over 159°C

0640: Eosipho-like gastropod, white polynoid, austinograea

0643: alvinocaris, mirocaris

0646: polynoid, crab. Abundant megafauna on chimneys, 90% ifremeria, a few mussels, lots of shrimp.

0701: scale worms

0707: avlinellids? Chemical sniffer X=1602, Y=3167, 336°

0725: Site officially called the "Sprires of St. James"

0736: looking at spire with alvinellids X=1603, Y=3168, 313°

0742: collecting a spire – collapsed, collection failed

0743: collecting a spire again

0745: **shift change Tommy on**

0759 White scale worm slurped

0805 another white worm, got away

0833 done worm hunting

0837 exploring chimney complex, trying to get to white chimney

0845 worms on backside of complex

0858 enough worms

0902 heading to M22

0904 M22, X=3489, Y=5618, heading 226

0914 trying echem in ifrem

0923 trying echem in mussels

0939 echem in mussels, T=4.3

0945 resetting nav

0953 moved around structure, collected small chimney

1000 circling structure, side opp mkr, lots of ifrem, shrimp, worms, mussels. Mkr side, more sparse. Site description: assorted spires of all sizes, most shimmering, some black smoke. Might be good for a major.

1007 Surveying W of M22. Hill, lots of debris, looks like a land slide. Heading 274, no bio or vents. .5 m from M22, 10m from struct.

1010 N 10m, X=1586, Y3185, 34m from M22, still just talus

1013 heading 90 (east), back toward structure, dead shells

1020 X=1610, Y=3185, still heading east

1022 found some flanges and chimneys. 15m E of M22, X=1610, Y=3182, heading 155. Live and dead mussels, snails, shrimp, diffuse flow, alvinelid, scale worms, Target 12, not very useful, lots of rust

1028 chimneys near flange, ifrem, mussels, not very active

1032 temp in small chimneys, T=50.6, chem. In same area. Temp near mussels =11C, chem. Scans T=61.2C
1052 going around chimney, back at M22
1059 heading S.E., exploring
1106 at St. James spire, line of old spires that runs from St. James to little spire, mostly dead, some still active, mussels, ifrem
1115 M27, bed of live and dead mussels
1124 M26 X=1605, Y322n of marker 26
1153 heading to marker 24 sw
1202 marker 27 dead mussel shells
1236 looking for area of sponges and anemones
finally found some
1343 pulling out marker 45 x=1544 y=3045
1355 mosaic 3m alt. Changed to 3.5 –4 m pixelfly
1417 scorpio

1556: **shift change Kevin on**
1559: Scan #35, temp=2.6°C
1604: Scan #38, temp=3.0°C, *scans done in triplicate
1610: Scan #42, temp=2.6°C
1612: Sponge with amphipod associates
1616: Scan #45, temp=2.6°C
1627: At marker 39 X=1544, Y=3043, 263°
1635: At marker 38 X=1542, Y=3041
1636: Scan #48, temp=7.1°C in shimmering water
1640: anemone
1642: bacteria
1645: Shrimp, not exactly like mirocaris, has stalked eyes. Scan #51, temp=6.0°C
1652: Scan #54, temp=2.8°C
1659: Scan #57
1704: Organism looks like amphipod with 6 long legs (think daddy long legs) and a long pair of antennae. Scan #60
1721: Scan #63, temp=2.5°C, scanner not appearing to work correctly
1811: collecting rock with lollipop and anemone X=1540, Y=3046, 286° into port biobox
1824: Collecting shrimp with suction sampler X=1533, Y=3045, 262°
1837: Collecting rock with anemones on it. Same X, Y in port biobox
1844: Heading south to marker 14
1852: X=1531, Y=2997, 278°. Flanged structure, looks like shelf fungus on trees
1857: Sediment and small chimney at base of hill
1900: diffuse flow from top of chimney X=1517, Y=2995, 280°. Smoke out top, bottom 90% dead
1908: white chimneys with alvinellids, shrimp X=1517, Y=3003, 237°

1910:	X=1517, Y=3001, 236°. Target 16: base of slope; sedimented diffuse flow upslope to west, field of old spires with active tops and flanges, biota=alvinellids, shrimp are dominants, no snails or mussels
1918:	placing marker 40 on top of spire X=1511, Y=3000, 239°
1921:	White scaleworm
1923:	target 17 where marker 40 is
1925:	encircling periphery of chimney field, isolated very occasional snails, one mussel, lots of shrimp, alvinellids on smoking chimneys by marker 40
1927:	small black smoker on side of chimney structure
1929:	tons of snails on chimney wall SW 10m of marker 40 *may want chemistry X=1502, Y=2995 appears to be southern limit of vent field
1945:	**shift change Kevin off Tommy on**
1950	lone chimney, fairly inactive, X=1503, Y=2930
1952	slurping scale worm
1956	more chimneys W, X=1503, Y=2925, not very active
2000	at M14, X=1490, Y=2993, heading=256
2004	preparing to collect major, small chimney on larger, dead chimney. Beehivish, not much smoke, T=294, yellow major #2
2036	slope near vents, X=1491, Y=2918, bacterial mats, tubeworms, mussels, anemones
2044	scooping small black things from seds
2059	heading down slope NE, looking for sed pockets
2110	heading to M24
2114	spoon worm, X=1506, Y=2933, bare slope, some rust, white filled cracks
2118	moving to image worms
2127	trying to suck worms from holes
2138	heading to M24
2144	X=1516, Y=2955, assorted dead stuff on slope
2149	flanges and chimneys, X=1534, Y=2976, diffuse flow beneath flange, abundant alvinelids, scale worms, mosaic site. Thick bio-film ? and tubes from terrabellids on the side of the flange structure
2306	heading to M24
2333	at M24, collecting bio samples, X=1565, Y=3046
2338	taking temp in lower mussels, T=6.6C, interface with ifrem, T=7.9C, Ifrem T=21.2C, deeper in ifrem, T=24.9
2343	interface with Alvin, T=28.6
2348	T=27.4C interface x=1566 y=3046 in mussels above snails 12.4C area with Ifremeria, Alviniconcha, and Bathymodiolus top of Alviniconcha 23.4C bottom left 21.9C in Ifremeria clump 16.4C marker 24 community on rock/boulder x=1565 y=3044 d=1886 h=193
0003	trying to collect
0011	collecting Alviniconcha, mussels, Ifremeria crabs in starboard biobox

	Alviniconcha under Ifremeria
0022	taking pics of crab feeding frenzy
	fantastic video on pilot cam
0040	going to marker 36 to check on snail clearing
	both snails have filled in
0056	knocking snails of again “Dara’s racetrack”
	going to “windows” target 9
0120	renamed “Dara’s Smoking Hole” x=1562 y=3037 d=1882 h=120
0128	blue major #3 above hole in flow
0136	white major #1 in hole
0144	heading North
0205	looking around St James’ Spire for active smoking (Ha Ha) x=1600 y=3169
	near marker 22
0218	Just south of marker rust spire with heavy venting and mussels
	knocking over spire to get to flow
0222	T=267.2C in hole
0234	red major #4 in hole
	cleaning drawer
0244	off bottom leaving

DIVE 162 Tu'I Malila
-21.989275 -176.568071

6/21/05 GMT

1731:	**on bottom, Kevin on**
1740:	stick sponges X=1575, Y=3033, 123°
1745:	Chem scanning sponge
1756:	Approaching thermoster site-marker 45. Tons of ifremeria with some mussels covered in Olgasolaris and Lepetodrilus, a few crabs, small patch of large alvinoconcha right at lip of smoking hole
1807:	deploying thermoster array T1 X=1573, Y=3053, 132°, d=1883
1814:	pulled pin, putting 1st thermoster pair in the hole, thermoster #3 with T1 float on it (White-float).
1819:	deploying 2nd thermoster pair above hole. One end (short) on top of mussel, other end (long) between alvinoconcha. White-no-float near mussel and alvinoconcha right on edge.
1832:	White-no-float fell over, repositioning
1835:	repositioning white-no-float to right of hole in between snail (short) and mussel (long)
1840:	positioning thermoster #2 with PSU float (=grey-float)on edge of bed pointing inwards (right side Jason facing 123°) between Ifremeria on both ends.
1846:	positioning last thermoster between edge and hole, both ends in alvinoconcha = Grey-no-float, in mussels on one end
1853:	temp-probing near grey-no-float and chemical scan
1854:	Chemical scan 0-9, temp=3.5°C
1859:	Chemical scan 10-19, temp=17-24 between grey-no-float and the hole above the bed in the water column
1902:	chemical scan 20-29, same position as above
1905:	chemical scan 30-39, between white-no-float and grey-float, temp=28.6-31.1 right in the snails
1909:	chemical scan 40-49, near white-no-float about 1-2 inches off the ground, temp=7.2-11.7
1913:	chemical scan 50-59 near white-no-float right on the ifremeria temp=3.4-4.0
1925:	background chemical scan 60-69 temp=2.6°
1926:	background chemical scan 70-79 temp=2.6°
1947:	at snail races x=1561, y=3050 depth=1888 243° Marker 36
	Shift change Kevin off, Tommy on
1953	Ifrem. Replaced Alvin. at racetrack.
1959	Temp @ bottom of ifrem = 22.5
	1 last Alvin T=25.8
2009	middle of ifrem, right side T=14.2
2010	center, top of shells T=12.9

2013 upper right T=10.7
2014 upper right, by mussels-ifrem interface T=12.7
2016 mussels T=9.9
2019 rock beneath ifrem T=21.7
2021 displaced ifrem, bottom of patch T=31.7
2022 hole from displaced ifrem, next to another T=?
2027 chem, rock beneath ifrem, near Alvin
2034 setting up at mosaic field, heading 134, M44, doing T @ C
2100 mosaic at M44
pt1 in mussels (10), 2 alvin, 1 ifrem T=4.4, scan 110-
pt 2 heading 132, edge of 1 alvin, 3 mussels T=8.5-5.7 scab120-
pt3 clump of Alvin T=6.3-11.7, scan 130-
pt4 2 mussels, 1 Alvin, bare rock 7.9-5.4 scan 140-
2115 pt5 edge of ifrem and bare rock T=3.4-3.7 scan 150-
pt 6 bare rocks, 2 white scaleworms T=2.6-2.8 scan 160-
pt7 ifrem patch T=3.6-7.8 scan 170-
pt 8 mussels, ifrem T= 4.5-4.6 scan 180-
2208 pt18 patch of ifrem T=11.3-6.4 scan 280-
pt19 anemone, bare rock T=4.5-5.0 scan 290-
pt20 bare rock w/ whitish stain T=3.9-4.2 scan 300-
pt21 patch of ifrem-edge w/bare rock T=4.4-4.0 scan 310-
pt22 bare rock w/ white coating T=4.4-4.0 scan 320
2230 collected rock with large white tubeworm
2235 pt 23 clump of Alvin-black, correlate chem./Temp with color? T=5.8 scan 330-
pt 24 edge of ifrem and rock-ifrem w/barnacles T=3.3-3.7 scan 340-
pt 25 bare rock, close to terebelid T=3.0 scan 350-
pt 26 mussels by ifrem
2245 pt 27 alvin patch T=10.5-16.3 scan 370-
pt28 ifrem-alvin interface T=7.1-5.7 scan 380-
pt 29 ifrem T=4.1-4.5 scan 390-
pt30 ifrem T=3.7-5.0 scan 400-
pt 31 ifrem with white coating T=3.6-4.2 scan 410-
pt32 sediment T=4.0-4.1 scan 420-
pt33 alvin. T=3.5-4.0 scn 430-
pt 34 alvin T=5.6-7.1 scan 440-
pt 35 ifrem surrounded by Alvin, interface T=6.1-7.4 scan 450-
pt 36 ifrem-sed interface, white coating T=4.4-4.7 scan 460-
2316 pt 37 ifrem T=3.8-4.2 scan 470-
pt 38 ifrem T=5.0-7.0 scan 480-
pt 39 ifrem, mussels and bare rock with barnacles T=5.5-6.3 scan 490-
pt 40 T=? scan 500-
shift change Gabby on

2347 scan 560 water scan
scan 570 water

2357	#46	scan 580	T=5.9C	Alviniconcha on rock with small barnacles
2359	47	scan 590	4.9-5.8	edge of rock next to Eosipho
	48	scan 600	4.8-10.0	Ifremeria
	49	scan 610	3.9-4.1	top of Ifremeria and small mussels
	50	scan 620	4.7-5.0	left of Ifremeria next to rocks some Eosipho
	51	scan 630	5.5-5.9	bare rock few Mirocaris
	52	scan 640	7.0-9.5	Alviniconcha
0017	53	scan 650	4.2-6.0	side of rock near Alviniconcha
	54	scan 660	8.2-13.2	Alviniconcha
	55	scan 670	8.1-8.6	Alviniconcha
	56	scan 680	8.7-10.6	Alviniconcha
	56	scan 690	4.7-7.3	same location
0037	moving near marker 43			
	base of marker at edge of Alviniconcha and rock			
	57	scan 700	3.6-5.0	
	58	scan 710	26.8-28.3	in Alviniconcha
	59	scan 720		same
	60	scan 730	3.5-4.3	bare rock
	61	scan 740	3.8-4.0	bare rock
	62	scan 750	7.6-12.5	mussels, Ifremeria, rocks, Alviniconcha
	63	scan 760	4.8-5.2	mixed patch mostly Alviniconcha
	64	scan 770	12.8	edge of rock and Ifremeria in mixed patch
	65	scan 780	4.8-13.1	on mussel among Ifemeria and rocks
	66	scan 790	3.8-4.1	rocks
	67	scan 800	3.4-3.8	boulder
	68	scan 810	3.6	lower boulder
	69	scan 820	3.7-6.2	rock on edge of mussels and Ifremeria
	70	scan 830	10.1-12.8	Ifremeria and Eosipho
	71	scan 840	17.5-19.7	Ifremeria and Alviniconcha
	72	scan 850	4.3-6.2	Ifremeria
	73	scan 860	6.8-10.5	Ifremeria
	74	scan 870	5.4	close to mussels
	75	scan 880	3.5-3.9	rock near scale worm
	76	scan 890	3.6	on rock with bacterial mat?
	77	scan 900	3.2	rock in sediment
	78	scan 910	5.4-6.0	Ifremeria
	79	scan 920	3.5-3.7	rock
	pick up and more 3m			
	80	scan 930	9.5-10.9	mussels and Ifremeria near marker 42
	81	scan 940	3.7-4.2	mussels and Ifremeria

0225	82	scan 950	3.1-3.3	sediment
	83	scan 960	3.3-3.4	reddish sediment
0232	84	scan 970	3.5-4.0	left of marker of boulder
	cleaning electrodes			
	moving to new site marker 45			
	0259 x=1544 y=3043 d=1884 h=253			
	location12	scan 980	3.2	bare rock next to gorgonian?
	13	scan 990	3.5-3.7	between rocks
	14	scan 0	2.8-4.8	rocks
	15	scan 10	2.6-2.7	more rocks
	16	scan 20	3.4-3.5	
0326	17	scan 30	8.9-?	x=1544 y=3044 rocks falling
	18	scan 40	3.1-3.5	rocks
	19	scan 50	11.2-12.6	marker 39 slipped
	20	scan 60	3.8-4.5	
	21	scan 70	7.2-10.6	
	22	scan 80	4.8	
	23	scan 90	3.2-4.0	

03:50 **Gabby off/Kevin on**

0404: 24 Scan 100, t=2.7° on stick sponge, *scan 100 was repeated (=scan 110)
0411: 25 Scan 120, t=3.5° on stick sponge
0415: 26 Scan 130, t=2.9° on lollipop
0419: 27 Scan 140, t=2.6-2.9° on stick sponge
0424: 28 Scan 150, t=3.0 on anemone
0433: 29 Scan 160, t=3.0 on stick sponge
0436: 30 Scan 170, t=2.9-4.4 on anemone
0439: 31 Scan 180, t=5.9-6.2 on anemone
0448: 32 Scan 190, t=2.5 on coral
0452: 33 Scan 200, t=2.7 in crack on lollipop
0455: 34 Scan 210, t=2.6 on stick sponge
0505: 35 Scan 220, t=2.6 on seafloor
0511: 36 Scan 230, t=2.6 in crevice
0517: 37 Scan 240, t=3.0 in crevice by marker 39
38 Scan 250, t=3.1
0544: 39 Scan 260, t=2.6
40 Scan 270, t=2.7
0558: 41 Scan 280, t=3.2-3.6 in crevice with anemones
0608: 42 Scan 290, t=4.0
0612: 43 Scan 300, t=2.6
0616: 44 Scan 310, t=2.6 background seawater scan
0623: heading to mushroom flange
0642: approaching mushroom flange X=1534, Y=2975, 040°
0650: positioned for chemistry X=1534, Y=2977, 068°
0701: 01 Scan 320, t=8.0-19.5 edge of flange
0703: 02 Scan 330, t=3.1-3.7 on flange – rust part, shrimps with polynoids

0706: 03 Scan 340, t=12.7-13.5 under flange
0707: 04 Scan 350, t=7.1 White and rust substrate with shrimps
0710: 05 Scan 360, t=5.1 black and rust part
0715: 06 Scan 370, t=4.5 white part
0718: 07 Scan 380, t=5.5
0720: 08 Scan 390, t=5.5 top of small flange
0722: 09 Scan 400, t=8.7 edge of small flange
0730: 10 Scan 410, t=13.0-18.2 on alvinellids. New position →X=1534, Y=2976, 029°
0731: Scan 420 same site t=12.0-16.5
0734: 11 Scan 430, t=5.2-11.5 edge of alvinellids flange
0736: 12 Scan 440, t=3.3 middle of flange
0739: 13 Scan 450, t=4.5 edge of brown deposit with shrimps
0741: 14 Scan 460, t=4.5 on rust part
0743: 15 Scan 470, t=3.5 on black part

shift change Kevin off, Tommy on

p18 scan 500- T=5.6-8.5 rock with white dep, new edge
p19 scan 510- T=6.7-5.2 rock with white dep, near S. edge
p20 scan 520- T=20.5-26.0 edge of flange, alvinelid tubes
scan 530
p21 scan 540 T=5.4-4.6 near rock overhang, with red coating
p22 scan 550 T=3.5-8.0 white dep near flange edge
p23 scan 560 T=6.2-5.2 white dep at flange edge, schrimp and scale worms
p24 scan 570 T=4.2-3.5 rock w/ black and red coating
0826 p25 scan 580 T=5.4-12.5 white dep, diff. flow
p26 scan 590 T=3.5-3.9 rock w/ black coating
0836 terrabelids in rocks w/ seds and tubes X=1534, Y=2979, Heading=128
0840 scan 600 T=2.7 terrabellid tentacles
collecting with slurp
p27 scan 610 T=14.5-20.5 flange edge
p28 scan 620 T=29.0 lower on flange, terrabelid
p29 scan 630 T=3.0 under flange
chemistry in white-filled cracks?
0955 at M24, preparing for mussel pots
1000 mussel pot f, Alvin.
1016 arm problems, abandoning spot
1040 pot F again, Alvin
1054 crab feast on broken Alvin
1101 next collection spot
1113 pot E mussels

shift change Tommy off, Gabby on

1200 letting Jason cool - Hydraulics overheating
1204 recovering ring for F x=1564 y=3054

1213	taking pictures with scorpio Stephane			
1227	new mussel pot D Alviniconcha x=1562 y=3055 d=1986 h=142			
	few Alviniconcha still in scar			
	Ifremeria falling in			
	Crabs move in fast			
1242	retrieving metal bar and ring			
1309	mussel pot C mussels x=1570 y=3046 d=1885 h=163			
	retrieved ring			
1330	mussel pot B Ifremeria not working bad spot try again			
1342	x=1576 y=3049 d=1886 h=160 some mussels Ifremeria and Alviniconcha			
	left in scar-a lot of bare rock			
1350	retrieving ring			
1421	mussel pot A x=1577 y=3045 d=1883 y=145			
	Ifremeria –may have malfunctioned didn't release ring			
1429	moving toward marker 45?			
1436	trying to empty net into starboard bio box –has rock inside?			
1437	Oxygen down on chem sensor			
1454	at mosaic site to do chem			
	looking for hotspots			
1458	44	scan 640	7.4-8.3	
	45	scan 650	9.4-11.2	
	46	scan 660	17.7-18.2	between rocks
	47	scan 670	12.3-12.9	
	48	scan 680	14-15.1	
	49	scan 690	6.2	
	50	scan 700	4.2-4.7	
	51	scan 710	4.6-7.1	rock with anemones
	52	scan 720	16.0-17.3	
	53	scan 730	8.0-10.0	
1545	54	scan 740	5.4-11.5	
1554	55	scan 750	5.1-5.8	
15:56	**- shift change Gaby off /Kevin on**			
16:09	- Looking for fauna to collect			
16:15	- Collecting rock with small anemones			
16:23	- Suction sampling area X=1537, Y-3032, 269°			
17:11	- Collecting rocks with fauna on it			
17:16	- Collecting rock with Brisingid and coral on it			
17:26	- Collecting anemones on talus with basket net dumped into port biobox			
18:15	- Arrived at spires X=1607, Y=3161, 336°			
18:30	- Photo mosaic vertically "St. James Spires"; mosaicing and chemical sniffing			
19:14	- Location 00, Scan 760, T=2.9 background scan			
19:16	- Location 01, Scan 770, T=3.3-4.9 10cm from base of Ifremeria			
19:20	- Location 02, Scan 780, T=3.6-4.5 Bare rock iron stained			
19:23	- Location 03, Scan 790, T=3.3 on white part			

19:28	- Location 04, Scan 800, T=4.0-4.9 on mussels
19:30	- Location 05, Scan 810, T=4.6 on edge of rust part & white part
19:34	- Location 06, Scan 820, T=6.8-7.4 midslope on Ifremeria
19:35	- Location 06, Scan 830, T=8.7-9.9 Do over
19:40	- Location 07, Scan 840, T=29.2-35.2 midslope on small white flange with polynoids
19:46	- Location 08, Scan 850, T=2.8-3.6 on mussel, midslope on right
	shift change Kevin off, Tommy on
1951	pt9 scan 860 T=10.4-21.7 edge of flange
	pt10 scan 870 T=3.3-7.2 in ifrem
	pt11 scan 880 T=2.9-3.2 in ifrem
	pt 12 scan 890 T=5.5-6.3 mussel, ifrem interface
	pt 13 scan 900 T=4.6-5.4 mussels
	pt14 scan 910 T=2.8-3.0 rock at top of chimney
	pt15 scan 920 T=10.0-20.5 top of diff. flow from chimney
	scan 930 T=77-89
2049	Temp and chem. From sample site
2056	scan 940 T=3.1-3.6 rusty mussels and ifrem
2100	scan 950 T=4.8-8.2 ifrem
2110	collecting mussels and ifrem in port side biobox from St James spire
2117	heading to M24
2201	at M24
2210	chem and temp at sample site
2215	bottom of ifrem on raceway, near Alvin
	scan 960 T=19.7-28.4
	scan 970 T=23.2-29.4
2220	scan 980 T=46.5-51.1 under ledge
	scan 990 T=3.9 rock under ledge
2224	scan 0 T=3.1 rock with ifrem (e-chem filename J2-162-B)
2226	scan 10 T=5.2-5.4 lower on rock, near crack
2231	scan 20 T=3.8 in ifrem
2236	scan 30 T=13.3-11.6 in ifrem by Alvin
2250	clearing ifrem to find Alvin beneath
2254	T near Alvin=14.1
2259	Moving to 24 for collections
2319	collecting mussels , Ifremeria stbd biobox
	(off bottom 23:44)

Dive 162 - additional notes from Kevin Zelnio's notebook on mussel potting at TM

1040:	Mussel pot F, ifremeria dominant. Aborted Ifremeria, looking at alvinoconcha.
1047:	Retry mussel pot F on alvinoconcha, successful, several crabs jumped in ring. Can smell broken snails flesh from distance??
1059:	Brow cam zoom in on ring, some ifremeria underneath alvinoconcha, 5-7 alvinoconcha left. X=1564, Y=3052, 160°.
1113:	Trying mussel pot E on mussels
1123:	Successful, lots of mussels hanging out of pot, around 10 mussels or so left in ring, a couple of alvinoconcha under mussels, down to rock, one alvinoconcha fell in bucket, another is resting on top of pot
1229:	Collecting alvinoconcha in mussel pot D, went in deep
1233:	Broke anti-rotation bar
1235:	Down to bare rock, 7-10 alvinoconcha left, a few ifremeria at bottom
1308:	Trying mussel pot C on mussels, mussel pot slid a little down the side of the rock but appears to have enclosed the mussels
1315:	Lots of mussels left in ring, rock in upper left corner of ring, 20-25 mussels left, nothing under the mussels but more mussels here
1330:	Collecting ifremeria in mussel pot B, bordered by alvinoconcha and bathymodiolus on the lower left
1336:	Not deep enough, repositioning
1340:	Found new position, pot closed
1346:	Alvinoconcha on bottom, 7-10 ifremeria left, around 7 alvinoconcha on right side, bare rock. X=1576, Y=3048, 146°
1408:	Collecting ifremeria in mussel pot A, surrounded by alvinoconcha on left, rock on right
1412:	Collection aborted, not deep enough
1418:	Mussel pot fell, bag looks slightly off the lip
1420:	New collection for ifremeria, mussels on left rock on right, ring didn't fire, recovering with ring intact, 2 ifremeria on outside of pot fell off outside bucket though, didn't make it all the way through, tons of snails at bottom

DIVE 163 Abe
-20.763123 -176.191279

6/23/05 GMT

Gabby on

1405	marker A looking for Stacy's larvae traps x=7820 y=7779 d=2142 h=265 possible periphery site
1417	found them x=7861 y=7765 d=2147 h=209
1419	setting down crate with thermister
1423	going back to marker A
1432	looking for possible crab trap sites
1448	target 24 crab trap x=7839 y=7765 d=2153 h=77 rocky peaks with mussels, galethieds and bythograids about halfway between marker A and larvae traps
1458	looking for snail derby site
1500	marker 16
1506	x=7834 y=7777 d=2154 h=272 possible site clearing off surface T=24.4C in Ifremeria only two Alviniconcha T=24.6C
1515	knocking snails off top layer bare rock under no layer of Alviniconcha under Ifremeria looking for new site
1521	going North to target 10 **shift change Gabby off/Kevin on**

1636:	at rich bio X=7825, Y=7977 140°. Mussel patches, lots of ifremeria but in small discrete patches on chimneys. Chimneys are white, not much rust, a few beehive structures
1645:	Chimney with mussels interspersed with ifremeria, site is about 10m long north-south, diffuse flow no smokers
1647:	large flange with several spires on it, only a few individual mussels scattered about, crabs anemone, diffuse flow
1650:	mussel bed on chimney slope
1654:	mussels on points/edges, ifremeria on slope.
1658:	setting up for temp and chem.
1715:	snail raceway X=7939, Y=7986, 253° d=2137, altitude=2.1
1721:	01 Scan 00 t=8.5-10.0 on ifremeria
1726:	02 scan 10 t=18.2 on crab
1737:	flicking snails off chimney-ifremeria and alvinoconcha, mostly alvinoconcha.
1741:	frame grab of culled site after culling (at 52nd second)
1744:	scorpio frame grab of culled site

1749: view of chimney zoomed out
1847: mosaic site from ABE-marker 53, X=7805,y=7804, 288°
1903: 01 scan 20 t=2.9-4.1 in barnacles
1906: 02 scan 30 t=4.9-5.8 crevice, shimmering water
1910: 03 scan 40 t=2.5 stick sponge
1911: 03 scan 50 t=2.5 rescan on stick sponge
1915: 04 scan 60 t=2.8 in crevice/rubble
1924: paralomis
1925: 05 scan 70 t=2.5stick sponge
1928: 06 scan 80 t=2.7 rubble
1933: fish hanging out with barnacles
1935: 07 scan 90 t=3.5 barnacles
1940: 08 scan 100 t=3.2 rock
1951: 09 scan 110 t=3.0

….

2356	9	scan 310	6.2-6.6	in mussels and Ifremeria
	10	scan 320	5.2-7.0	rock
	10	scan 330	6.7-7.7	redo scan on different scale
	11	scan 340	5.9-6.4	rock close to Eosipho and Ifremeria
	12	scan 350	4.0-4.3	barnacles
	13	scan 360	5.0-5.9	between Alviniconcha, Ifremeria, mussels
	14	scan 370	5.5-6.9	Ifremeria
0016	15	scan 380	4.6-12.6	Alviniconcha
	15	scan 390	13.9-15.1	1 μA scale
	15	scan 400	15.5-17.5	10 μA scale
	16	no scan	73.9	rock between Alviniconcha too hot for scan
	17	scan 410	12.4-16.4	Alviniconcha
	18	scan 420	3.8-4.1	Alviniconcha under Ifremeria
	19	scan 430	8.7-23.9	Alviniconcha
	20	scan 440	21.8-22.7	Alviniconcha near Ifremeria
	21	scan 450	26.3-35.5	on rock between Alviniconcha
	22	scan 460	4.6-5.8	Ifremeria surrounded by Alviniconcha
	23	scan 470	40.6-43.3	bedrock with Paralvinella
	24	scan 480	6.7	Alviniconcha
	25	scan 490	42.1-46.6	edge of rock and Alviniconcha
0112	26	scan 500	10.4-13.1	Alviniconcha
	27	scan 510	3.7-4.2	
	28	scan 520	4.3-4.5	Ifremeria
	29	scan 530	24.6-25.4	Alviniconcha
	30	no scan	103.9-105.6	rock
0127	31	scan 540	21.8-31.0	Alviniconcha
	32	scan 550	4.6-5.6	Ifremeria
	33	scan 560	4.0-4.7	edge of Ifremeria and rock

	34	scan 570	20.2-20.9	small patch of Ifremeria among Alviniconch
	35	scan 580	7.8-9.4	mussel and shrimp
	36	scan 590	12.9-14.1	edge between mussels and snails
	37	scan 600	15.3-17.9	Alviniconcha
0153	38	scan 610	9.1-11.0	between Alviniconcha and Ifemeria
	39	scan 620	5.2-5.9	Ifremeria
	40	scan 630	11.0-13.7	Alviniconcha
	41	scan 640	4.5-5.2	mussels on rock
0200	moving closer to marker 47			
	42	scan 650	7.3-11.6	rock between Alviniconcha and Ifemeria
	43	scan 660	5.3-7.7	Ifremeria
	wriggle probe			
0234	44	scan 670	2.9-3.4	rock and mussels
	45	scan 680	6.9-8.3	rock mussel Ifremeria Alviniconcha
	46	scan 690	14.9-26.8	Alviniconcha
	47	scan 700	6.6-10.0	Ifremeria surrounded by Alviniconcha
	48	scan 710	4.1-5.4	on rock with Ifremeria
	49	scan 720	5.8-6.5	mussels and Ifremeria
	50	scan 730	5.3-6.1	mussels and anemones
	51	scan 740	4.3-6.1	mussels
	52	scan 750	6.8-8.1	bare rock
	53	scan 760	3.8-4.0	rock with barnacles
0300	54	scan 770	4.9-10.0	under overhang rock nest Ifremeria mussels
	55	scan 780	3.8-4.3	edge of rock near mussels problem?
	56	scan 790	3.9-4.1	rock with barnacles
0312	57	scan 800	4.3-4.5	mussels
	58	scan 810	8-28.7	rock near Ifremeria
	59	scan 820	10.6-16.4	Ifremeria next to mussels
	60	scan 830	4.3-5.8	rock
	61	scan 840	4.4-4.8	mussels
	62	scan 850	5.3-5.8	base of marker 47 on rock near Ifremeria
0327	63	scan 860	6.8-8.8	mussels and snails
	64	scan 870	3.2-3.4	rock
	65	scan 880	9.1-11.6	Ifremeria
	66	scan 890	5.3-9.6	mussels
0338	67	scan 900	3.8-4.1	barnacle near Ifremeria and Eosipho
	68	scan 910	4.7	crack in rock near mussels and barnacles
	69	scan 920	4.0-4.1	Ifremeria rock and mussels
0356	looking around for mussel pot sites			

shift change Gabby off Kevin on

0527	temp in ring on sediment southern edge 4.4-4.7C			
	location 73	scan 970	4.8-4.9	
0534	74	scan 980	6.8-7.4	southern edge inside scar
0536	75	scan 990	20.1-22.0	western edge inside scar

0538 shooting pixel fly of scar
0546 picking up ring

additional Mussel pot notes from 163:

0405: at mosaic site near marker 47 X=7824, Y=7766, 270°, d=2144. MP-D over mussels. Barnacles, mirocaris and paralomis seen. Slight slip on rachet. Ifremeria to the left, rock to the bottom & top, mussels on right.
0411: rock in pot, ring couldn't be taken off, picked up and placed in bucket with ring
0413: bare rock, little left, no mussels left, no other species under mussels
0425: MP-E on ifremeria patch next to MP-D scar surrounded by rock to the left and bottom, mussels top and right some mussels and 1 alvinoconcha mixed in, miracaris
0428: string broke, ring releases failed, collection failed, everything fell out of bag
0434: taking pixelflys of MP-D site
0453: setting up for temp and chem. scan on ifremeria patch
0459: location 70 mussel pot site for MP-C scan on ifremeria scan #930 t=8.1-10.0
0501: rescan, 940 t=10.0-11.1
0503: location 71 15-20cm to the left of last scan on ifremeria, scan 950 t=7.5-10.8, location 72 scan 960 t=6.0-6.8
0509: MP-C on ifremeria patch, bordered by other ifremeria all around, mirocaris seen
0513: one ring didn't release, will try to release manually with manipulator arm
0517: manual release worked
0519: MP-C has rock in it as well
0520: Bare rock, 6 small alvinoconcha at bottom, nothing else
0527: temp in ring on sediment t=4.4-4.7, location 73 scan 970 t=4.8-4.9 southern edge
0534: location 74 scan 980 northern edge t=6.8-7.4
0536: western edge of inside ring, location 75 scan 990 22.0-20.1
0538: shooting pixelfly of ring
0546: picking up the ring
0600: location 76 scan 00 t=4.4
0602: scan 10 t=4.4 another scan at same site
0604: location 77 scan 20 t=5.3

0611: captured paralomis, put in port biobox
0624: coming down to pot up some ifremeria X=7826, Y=7765, 304° depth=2148
0629: 78 scan 30 t=5.8 on ifremeria, next mussel pot site
0633: 79 scan 40 t=7.0-7.9
0650: MP-F on ifremeria patch, surrounded by other ifremeria
0655: one release didn't go off, trying to trigger release manually
0701: one ifremeria on mussel pot outside, several ifremeria left over, a few alvinoconcha on bottom, bare rock on bottom, a few mussels on bottom, crabs invaded
0713: 80 scan 50 t=42.6-43.1 in MP-F scar
0716: 81 scan 60 t=11.5-20.4

shift change Jeff on

07:54:49 Mussel pot B used to collect Alvin. (white snails). Mostly Avlin. at bottom after MP collection. Approximately 17 snails at 2 layers – bottom half of ring. At top half just bare rock. After collection temperature = 20.4ºC. Scans 60-90.
08:38:40 MP A used to collect mussels at 08:59. Scan 100 at 0912, temperature = 5.7ºC in center of ring A.
09:05 Slurped worms from ring A
09:15 At 11 o'clock in ring A, temperature=7.2ºC, scan 120

no notes taken

shift change Gabby on

1219 chimney field
looking for vertical chimney with bio to mosaic
1226 possible site x=7914 y=7994 d=2141 n=173
1248 shimmering pool x=7927 y=7985 d=22141 h=173
shrimp around edge
taking pictures
1326 marker 32 Dara's Christmas Tree?
1342 mosaicing spire x=7914 y=7994 d=2143 h=190
1351 getting ready for chemistry starting at bottom and working up

	position			
	1	scan 140	5.0-6.5	on rock near lip to right of crab
	2	scan 150	7.5-9.7	clump of Ifremeria
	3	scan 160	18.9-21.6	2 o 3 dark Alviniconcha and crab
	4	scan 170	6.6-7.1	scale worms on rock in crevice
	5	scan 180	4.6-4.9	rock
1422	6	scan 190	7.5-8.1	mussels under rock
	7	no scan	123.0-219.0	white rock edges Alvinellids
1431	8	scan 200	8.5	Ifremeria some dark Alviniconcha

	9	scan 210	8.6-9.9	dark Alviniconcha surrounded by Ifremeria
1443	10	scan 220	5.7-6.4	rock with barnacles
	11	scan 230	3.8-4.3	rock higher up with barnacles
	12	scan 240	6.8-11.8	Ifremeria clump
	13	scan 250	7.3-9.6	Ifremeria edge of clump
	14	scan 260	5.4-6.1	rock with barnacles
	15	scan 270	9.6-10.3	Ifremeria
	16	scan 280	6.5-7.1	barnacles on rock
	17	scan 290	6.0-6.5	very top of spire
1519	18	scan 300	3.1-3.4	bare rock top left
1521	19	scan 310	3.4-3.9	rock ledge

end of chem on spire mosaic

1530 heading to snail raceway

shift change Gabby Off/ Tommy on

1548 snail raceway, X=7940, Y7985, heading 256, frame grab and scorpio

1557 temp and chem.

1639 preparing to scoop

1643 scooping ifrem, trying for brown

1647 scooping more mussels

1650 mussels

1657 scooping snails that fell at beginning of dive, stb

1700 knocking off snails, looking for Alvin

1756 collected Alvin, X=7935, Y=7987, heading 215, stb

1842 at M17, X=7833, Y7756, M=231

1853 collecting alving at marker A or 24? X=7838, Y=7767, heading 290, depth 2142, M51

1904 bottom left side of mosaiced large Alvin patch, severely impacted by collection. Alvin collected in port biobox

DIVE 164 Kilo Moana
-20.053064 -176.133542

6/25/05 GMT

	Gabby on
1103	marker 29
1130	storing thermister location 11m from marker 6 h=296
1152	Gabby on/Jeff off
1155	looking for snails to collect
1219	very tall spire x=6938 y=10742 d=2606 h=191
	~20m high with mussels, holthuroids
	Target 12 good site for photo mosaic
1248	possible snail site x=6935 y=10731 h=012
	still looking
1253	marker 4
1324	measure temp x=6944 y=10728 d=2618 h=071
	in dark Alviniconcha 18.8-19.6C
	open spot among Alviniconcha 20C
	rock under Alviniconcha patch 25.6C
	Ifremeria 12.5C
	Alviniconcha near bare rock 8.9
1345	clearing and collecting into starboard bio box dark alviniconcha
	x=6945 y=10733 d=2618 h=030
1409	T=12.6C
	looking around
1420	new snail raceway x=6948 y=10731d=2618 y=014
	T=32.1C Alviniconcha
	9.8-12.3 Ifremeria between mussels and Alviniconcha
	12.5-17.4C Alvinconcha near Ifremeria
	17.6C lover Alviniconcha
1427	clearing raceway between marker and crab trap
1440	testing chem sensor
1446	putting out marker E x=6948 y=10731 h=009 d=2618
1454	putting out crab trap
	heading to Stacy's mosaic site
	shift change Tommy on
1625	M28, getting ready to drop markers for mosaic
1636	placed M3
1845	done mosaicing, positioning for bio sampling, sampling rocks with anemones
1900	sampling, X=6967, Y=10663, heading 9
1907	slurping shells off a rock, anemones, gastropods, etc

shift change Jeff on

20:10	X=6960, Y=10640, Depth: 2623m – Stalk barnacles
20:25	X=6959, Y=10641, Depth: 2621m – Collected stalk barnacles from side of inactive chimney and placed in biobox #4 (port side box). Sample also has two mussels.
20:44	X=6959, Y=10640, Depth: 2623m – Collected 2, possibly 3, stalk barnacles and rock/chimney? These were placed in port biobox.
20:46	X=6959, Y=10640, Depth: 2623m – Collected manipulator full of stalk barnacles and placed into port biobox.
20:52	X=6959, Y=10640, Depth: 2623m – Collected more stalk barnacles and placed into port biobox.
20:58	X=6960, Y=10641, Depth: 2624m – Scorpio of scale worms on side of chimney.
21:16	X=6959, Y=10640, Depth: 2620m – Scorpio of worms/shrimp on chimney.
21:46	X=6954, Y=10622, Depth: 2628m – Temperature measurement of Alviniconctta on pillar. First site = 10.1ºC and 2nd site = 8.5ºC and 3rd site = 10ºC
22:04	MP C, without anti-rotation bar and outer ring, used to collect black Alviniconctta on side of pillar. Temperature of scar at site 1 = 12.4ºC, at site 2 = 9.5ºC and at site 3 (above rock) = 6.3ºC.
22:16	Heading to marker 2.
22:22	Near marker 2 – mosaic pillar with Scorpio (vertical profile: up line and then down line).
22:36	X=6947, Y=10632, Depth: 2623m – Deployed marker D at site of mosaic, 5-10m south of marker 2.
22:39	Placed rock with rust into port biobox.
22:46	Scorpio of sea star.
22:54	At J2-140 #A marker.
	22:59 Temperature of site for MP; site 1 = 2.6ºC, site 2 = 2.6ºC (temperature taken in mussels). At base of mussel, white covered snails; temperature = 12.7ºC.

shift change Gabby on

2349	looking at scar
2351	retrieving ring going to marker 4?
2357	marker D resetting nav
0015	marker E snail race Alviniconcha back
0020	Picking up crab trap but in port bio box
0027	collecting Ifremeria and mussels x=6943 y=10722 d=2619 h=008
0045	looking for mussel pot sites
0101	going to mosaic tall spire x=6943 y=10724 d at top=2605 h=359 multiple scans up and down

0249	finish mosaic
0257	marker E snail raceway
	clearing snails again h=51
	T=10.8C on Alviniconcha
	Higher and to the right on Alviniconcha 12.7C
	Trying to knock off ony Alviniconcha
0315	heading to marker 6
	taking more pics of spre before we go
0334	taking frame grab of snail raceway we didn't look at
	x=6945 y=10731 h=014 or x=6943 y=10732 h=058
0350	going to marker 29
	past marker 29
4:01	**shift change kevin on**
4:36	deployed marker F
5:40	line 1 of mosaic
5:42	line 2 of mosaic
5:45	line 3 of mosaic
5:45	line 4 of mosaic
5:52	line 5 of mosaic
5:53	line 6 of mosaic
5:59	line 7 of mosaic
6:02	line 8 of mosaic
6:06	line 9 of mosaic
6:10	finished survey
6:22	fixed major yellow #2 in black smoker
6:27	temp. in orifice of black smoker = 30.2 C
6:30	left bottom