

**ADCP RAPPORT TECHNIQUE
MISE EN PLACE D'UNE VERSION RE-ACTUALISEE
DE CODAS3
ET
NOUVELLE EXPLOITATION DES DONNEES DE LA
CAMPAGNE JADE 92**

AVRIL 94

Annie KARTAVSEFF & Elodie KESTENARE

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*          MISE EN PLACE D'UNE VERSION RE-ACTUALISEE DE CODAS3      *  
*                      ET                                           *  
*          NOUVELLE EXPLOITATION DES DONNEES DE LA CAMPAGNE JADE 92 *  
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*  
*          AVRIL 94 - AK & EK                                       *  
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*****  
1. INSTALLATION D'UNE NOUVELLE VERSION DE CODAS3 SUR LE RESEAU  
*****
```

05-07 avril

Transfert (ftp noio.soest.hawaii.edu)
de /home/noio/programs/codas3 et /home/noio/programs/gyro
sur le reseau sous le repertoire

/usr/ulyse/ADCP/programs

Notes de Julie concernant une eventuelle compilation du code:

*** 05 avril ***

About CODAS: I don't think that you should have to recompile everything since all the Sun4 binaries are in that package (codas3/bin/sun4), and I presume you are running on a Sparc 10, SunOS4.1.x. Or are you on Solaris2.x? If you do have to recompile, you have to start by setting up the appropriate directories: codas3/bin/'arch' and codas3/lib/'arch'. Then compile the libraries using the codas3/makelib script (7 libs in all). Finally, compile each executable by running the .csh script in each directory: it is just plain 'adcpsect.csh'. Note that if the 'arch' command is not available on your system, then you may need to make changes to the compilation scripts by replacing 'arch' with whatever your lib and bin target subdirectories have been named. If that is not too clear, I'll try to be more explicit next time.

*** 07 avril ***

I hope you are not downloading CODAS directory by directory--there is a compressed tar file available that should speed things up for you (/home/noio/ftp/pub/codas3/codas3.tar.Z). You should have no trouble running on a Sparc 10, 4.1.x. That is much like "nene". Regarding 'arch' (note the backquote symbol, NOT single quote): that is a SunOS command that returns a string reflecting the machine architecture, = sun4 in the case of Sparcs. In a shell script, using 'arch' returns the result of the command, so:

```
set l = codas3/bin/'arch'
```

```
results in: l = codas3/bin/sun4
```

In any case, you are not running Solaris yet (which uses a different command to check machine architecture) so don't worry about it. The shell scripts as they stand should be directly useable.

*** voir aussi note.doc ***

En principe, il n'y a pas lieu de compiler le code apres un tranfert

sur un Sun 4 (sauf pour des modifications personnelles bien entendu...)

+++++

Pour les traces des isolignes ("contour"), programme fortran independant de CODAS3

--> creation du repertoire (et sous-repertoires)

 /usr/ulyse/ADCP/programs/contour

Attention, dans l'executable "contour", changement de la variable

set_contour_path = /usr/ulyse/ADCP/programs/contour

(au lieu de /home/song/local/contour de la version hawaiienne)

+++++

Dans le path:

 /usr/ulyse/ADCP/programs/codas3/bin/sun4
 /usr/ulyse/ADCP/programs/contour/bin/sun4

Les scripts matlab (fichier *.m version 4.0) de CODAS3 sont sous le repertoire

 /usr/ulyse/ADCP/programs/codas3/matlab/matlab4

--> dans le .cshrc:

setenv MATLABPATH /usr/ulyse/ADCP/programs/codas3/matlab/matlab4

+++++

Utilisation de Matlab 4.0 sur Eole uniquement

verifier dans le path: /usr/local/mlib/matlab

ou bien lancer la commande:

 setenv MATLAB /usr/local/mlib/matlab

Pour charger Matlab sur eole, lancer la commande

matlab

+++++

08-11 avril

Tests du nouveau code installe avec les donnees "demo" d'Hawaii
Sous /usr/ulyse/ADCP/programs, creation d'un directory "test"
avec la commande:

 adcptree test /usr/ulyse/ADCP/programs

Une "simulation" a ete effectuee en suivant les instructions de "/usr/ulyse/ADCP/programs/codas3/adcp/demo/process.doc", decrivant toutes les etapes (pas a pas) du post-processing.

--> Pas de probleme releve

Toutefois, changement du path pour tracer les cartes dans /usr/ulyse/ADCP/programs/codas3/adcp/demo/vector/vector.cnt

A noter qu'il n'y a pas de modification notable dans le traitement des

donnees (par rapport a l'ancienne version du lodyc datant de 1991) exceptee la partie Edition (des mauvais bins et profils) qui est maintenant interactive...

2. TRAITEMENT DES DONNEES JADE 92

++++
Avancement des donnees avant avril 94
++++

Annie (KARTAVSEFF) s'est chargee du traitement entre juin et octobre 92:

La campagne a ete separee en 8 sections

md9201 (time_ranges: 92/02/19 17:01:25 to 92/03/03 01:39:00)
md9202 (time_ranges: 92/03/05 11:18:57 to 92/03/07 14:31:26)
md9203 (time_ranges: 92/03/07 14:35:26 to 92/03/11 06:55:25)
md9204 (time_ranges: 92/03/11 06:57:25 to 92/03/14 01:17:25)
md9205 (time_ranges: 92/03/14 01:19:25 to 92/03/15 12:16:21)
md9206 (time_ranges: 92/03/15 12:18:23 to 92/03/17 04:58:23)
md9207 (time_ranges: 92/03/17 05:22:22 to 92/03/18 20:10:22)
md9208 (time_ranges: 92/03/20 15:00:41 to 92/03/22 09:45:12)

et 3 repertoires "bottom-track": bot9201, bot9208 et bot9209

Pour chaque section:

- * creation des fichiers navigation (celle-ci n'ayant pas ete acquise simultanement avec les donnees ADCP sur le PC, au cours de la campagne)
- Les fichiers resultants ont l'extension .gps s'il n'y a pas eu de "trou" a combler par des positions "transit" et .edf dans le cas contraire.
- En resume, les fichiers des sections 2, 3, 5, 6 et 8 ont l'extension .gps
- 1, 4 et 7 ont l'extension .edf
- * scanning des donnees;
- * chargement de la base (load);
- * edition des mauvais bins et/ou profils, en particulier suppression des "bottom-reflection";
- * calibration par water-track et bottom-track;
- a noter en particulier que les resultats pour "bot9208" sont aberrants (phase de l'ordre de -9 degres): il n'y a pas de reelle explication, si ce n'est que ce bottom-track a ete effectue immediatement apres un arret d'acquisition (escale a Sumba) et laisse supposer qu'une erreur de manipulation (ou dans l'acquisition des parametres) a ete faite lors de la remise en route de l'ADCP;
- * calcul de la vitesse du navire par rapport au fond.

Brice (BOUFFARD) a exploite les donnees de l'ADCP, au cours de son stage (avril a juin 93):

- * integration de la navigation dans les differentes bases de donnees;
- * qualite des donnees;
- * plots (vecteurs et contours) pour differentes sections et plus particulierement, analyse des resultats sur la section Australie-Bali (md9201) et le chenal de Timor (md9203).

Le post-processing des donnees est donc complet. Ceci dit, certaines parties sont a reprendre (c'est l'objectif du traitement en avril 94) en particulier la calibration pour diverses raisons:

- dans quelle mesure est-il possible de tenir compte de la derive du gyrocompas (qui induit une derive non negligeeable sur la phase)
- le water-track a ete effectuee dans chacune des 8 sections et les differents resultats ont ete pris en compte selon une moyenne ponderee mais il est preferable de calculer une calibration sur l'ensemble de la campagne (voir plus loin).

D'une facon generale, il n'est pas conseille de scinder une campagne en sections pour le traitement meme si le nombre considerable de fichiers "pingdata", (en particulier les ensembles au cours de l'acquisition sont de 2 minutes!) peut effrayer... Cela occupe de l'espace disque (creation d'autant de "database" et de sous repertoires associes que de sections), oblige a des runs repetes des memes programmes pour les differentes sections et demande un certain nombre de manipulation de fichiers (concatenation) entre autres pour calculer une calibration sur l'ensemble de la campagne simultanement.

++++
Travail effectuee en avril 94
++++

11 avril

* bilan des travaux effectues ulterieurement:
- reprendre la calibration (par water-track) et integrer dans la mesure du possible une correction due a la derive du gyrocompas;
- corriger la vitesse du son a partir de la temperature du transducteur et des donnees CTD (temperature et salinite). En fait, cette etape ne sera pas effectuee par la suite.

* creation d'un arbre (avec la nouvelle version de CODAS3) qui reunira les resultats communs aux differentes sections, sous /usr/ulyse/ADCP:

adcptree ALL /usr/ulyse/ADCP/programs

12 avril

* mise en place sur /usr/ulyse/ADCP/JADE2 du directory /don_gaia/ADCP/COQ, copie laissee par Brice (disque optique de Robert M.)

*** calibration ***

Dans un premier temps, il faut "annuler" la calibration effectuee precedemment (avec amplitude = 0.98 et phase = -2) pour chaque section: --> utilisation de l'option unrotate!

exemple: cd md9201/cal/rotate

vi unrotate.cnt

```
////////////////////////////////////  
DB_NAME:                ../../adcpdb/a9201  
LOG_FILE:                a9201.unrot  
TIME_RANGE:              all  
OPTION_LIST:  
  water_and_bottom_track:  
    amplitude=           0.98
```

```
angle_0=          -2.    /* in degrees */
unrotate!
end
```

```
end
```

```
////////////////////////////////////
```

```
rotate unrotate.cnt
```

```
idem pour les sections md9202 a md9208 ...
```

Recherche des decelerations/accelerations (arrivee/depart stations)
pour 5, 7, 9 & 11 ensemble-windows:

exemple: cd md9201/cal/watertrk

```
=====
timslip timslip.cn5      ----> output: a9201_5f.cal
timslip timslip.cn7      ----> output: a9201_7f.cal
timslip timslip.cn9      ----> output: a9201_9f.cal
timslip timslip.cn11     ----> output: a9201_11f.cal
```

idem pour les sections md9202 a md9208 ...

==> pour chaque ensemble-window, concatenation des fichiers des
8 sections dans /usr/ulyse/ADCP/ALL/cal/watertrk
et suppression des commentaires '%' par la commande
grep -v '%' nom_fic1 > nom_fic2

```
5 fixes      ----> all192_5f.cal
7 fixes      ----> all192_7f.cal
9 fixes      ----> all192_9f.cal
11 fixes     ----> all192_11f.cal
```

dans /usr/ulyse/ADCP/ALL/cal/watertrk, sous matlab run adpcal.m
(apres edition) pour chaque ensemble-window.

13 avril

*** calibration ***

En fait, les ensembles sont de deux minutes donc un peu courts pour
utiliser 5, 7, 9 & 11 ensemble-windows
---> nouvelle recherche de calibration en considerant 13, 15 et 17
ensemble-windows: comme precedemment, run de timslip pour chaque
ensemble-window et dans chaque section puis concatenation des
resultats dans /usr/ulyse/ADCP/ALL/cal/watertrk:

```
13 fixes     ----> all192_13f.cal
15 fixes     ----> all192_15f.cal
17 fixes     ----> all192_17f.cal
```

dans /usr/ulyse/ADCP/ALL/cal/watertrk, sous matlab run adpcal.m
(apres edition) pour chaque ensemble-window.

*** navigation ***

Trace des "cruise-tracks" pour chaque section (dans le repertoire
/nav, sous matlab, utilisation de cruistrk.m avec le fichier .gps
ou .edf selon la section considerée)

Cela permet de mettre en evidence un probleme avec le fichier a9208.gps
(section md9208) ou un point est aberrant:

time=81.0000153 compris entre 81.9993439 et 82.0007095
--> modification dans a9208.edf en prenant time=82.0000153

Les fichiers de positions etant assez brutes, test en utilisant un filtre median (10 minutes) sous matlab -voir script medfilt.m-
Sous /usr/ulyse/ADCP/JADE2/GPS:
--> fichier a9208.med: temps, longitude et latitude filtrees
idem pour les sections md9201 a md9207
Après conseil auprès de Julie, il vaut mieux utiliser les fichiers bruts de positions (ie .gps ou .edf) que les positions filtrees, et éventuellement éditer ces fichiers bruts pour supprimer les points aberrants par exemple au moment du calcul de la vitesse du navire par rapport au fond (les plots de la couche de référence absolue peuvent mettre en évidence ce genre d'anomalie)

14-15 avril

*** calibration par bottom-track ***

Tranfert de bot9201/nav/b9201.edf et bot9201/cal/botmtrk/b9201.btm
sous ALL/cal/botmtrk

refabsbt refabsbt.cnt01

sous matlab, runbtcal.m

idem pour bot9208 et bot9209

==> on retrouve les resultats d'Annie, et en particulier une phase aberrante pour bot9208, dont une explication a ete suggeree ci-avant (i.e. une erreur de manipulation a pu etre faite au redemarrage de l'acquisition apres une escale)

La calibration par bottom-track est abandonnee, d'autant plus que le bottom-track demande une modification des parametres d'acquisition: par consequent, le bottom-track n'est pas fait dans les memes conditions que celles des donnees acquises au cours de la campagne (opinion Eric Firing)

*** couche de reference absolue & chargement de md9203 ***

Dans chaque section, avec les donnees non calibrees, calcul de la couche de reference absolue et obtention du fichier des vitesses et positions absolues lissees (extension .sm)
---> concatenation dans all92.sm sous /usr/ulyse/ADCP/ALL/nav

==> il y a un probleme de temps (non monotonique croissant) dans la section 3.

Après contrôle de a9203.scn, on constate qu'il s'agit de temps dupliques pour les fichiers pingdata.113 et pingdata.114 (le second ayant les memes dates et heures d'acquisition que le premier mais avec des valeurs erronees)
Il faut alors faire un nouveau chargement de la database pour la section md9203, en supprimant le fichier pingdata.114 et APRES S'ETRE ASSURE D'AVOIR BIEN EFFACE tous les fichiers .blk sous md9203/ping.
D'autre part, le contrôle de a9203.scn permet de constater qu'il y a une petite anomalie avec le fichier pingdata.90 qui debute le 07/03/92 alors que le fichier pingdata.89 termine le 08/03/92: les profils 1 a 3 du fichier pingdata.90 sont aussi supprimes lors du chargement de la database:
---> loadping loadping.cnt sous md9203/load
---> cleanscn a9203.scn a9203.cln sous md9203/scan
---> lstblock a9203 a9203blk.lst sous md9203/adcpdb

Il est donc necessaire de faire une nouvelle edition des "bad profiles or bins". Pour eviter cette partie fastidieuse, recuperation du fichier a9203upd.in cree par Annie.

sous md9203/edit:

```
---> updscan ../adcpdb/a9203 a9203upd.in
---> botmpas3 ../adcpdb/a9203
---> last_85 ../adcpdb/a9203
```

18-19 avril

*** calibration & derive du gyrocompas ***

+ sous md9201/nav, nouvelle estimation des vitesse et position absolues lissees (run adcpsect, refabs et smoothr)

```
--> a9201.nav, a9201.ref, a9201.sm
```

note: il est preferable de recommencer cette etape, car les anciennes versions (datant d'avant avril 94) incluait la calibration et par consequent les utiliser auraient pu preter a confusion

+ sous md9201/cal/watertrk, nouvelle recherche des arrivees/departs stations:

```
13 fixes ----> output: a9203_13f.cal
15 fixes ----> output: a9203_15f.cal
17 fixes ----> output: a9203_17f.cal
```

idem pour les sections md9202 a md9208...

====> concatenation des fichiers .sm de chacune des 8 sections dans all92.sm sous ALL/cal/watertrk

====> concatenation des fichiers issus de timslip pour chaque ensemble-window de chacune des 8 sections (avec suppression des commentaires '%') sous ALL/cal/watertk

```
13 fixes ----> all92_13f.cal
15 fixes ----> all92_15f.cal
17 fixes ----> all92_17f.cal
```

sous matlab, adpcal.m apres modification du script:

```
---> sauvegarde du temps, de l'amplitude et la phase apres edition des "bad values".
```

```
====> fichier calib_edit.mat contenant la variable cali = [ temps amplitude phase];
```

Ce fichier sera utilise par la suite pour tenter de corriger la derive de la phase avec la latitude (due au comportement du gyrocompas)

Le fichier cree ci-dessus est renomme comme suit:

```
cal_15edit.mat pour 15 fixes
cal_17edit.mat pour 17 fixes
```

Pour chacun des deux fichiers, fit de la phase en fonction de la latitude. Voir figures pour les resultats de ces fits.

```
+++++
+ A noter que cette tentative de correction de derive est effectuee plus a
+ titre indicative et par curiosite que par souci d'efficacite. En effet,
+ primo: si le gyrocompas est particulierement sensible aux changements
+ de vitesse meridienne du bateau et aux arrivees/departs de station, c'est
+ moins vrai en ce qui concerne la latitude. De plus, la campagne n'a pas
+ eu lieu sur une grande section en latitude (entre 19S et 8.5S environ mais
+ plus particulierement entre 12S et 8.5S)
+ secundo: une veritable correction pourrait etre validee si le navire
+ disposait d'un systeme Ashtech GPS3DF receiver (ou equivalent) qui
```



```
>> clg
>> clear all
>> load cal_15edit.mat
>> whos
```

| Name | Size | Elements | Bytes | Density | Complex |
|------|----------|----------|-------|---------|---------|
| cali | 137 by 3 | 411 | 3288 | Full | No |

Grand total is 411 elements using 3288 bytes

```
>> t15=cali(:,1);
>> amp15=cali(:,2);
>> ph15=cali(:,3);
>> clear cali
>> load cal_17edit.mat
>> t17=cali(:,1);
>> amp17=cali(:,2);
>> ph17=cali(:,3);
>> whos
```

| Name | Size | Elements | Bytes | Density | Complex |
|-------|----------|----------|-------|---------|---------|
| amp15 | 137 by 1 | 137 | 1096 | Full | No |
| amp17 | 142 by 1 | 142 | 1136 | Full | No |
| cali | 142 by 3 | 426 | 3408 | Full | No |
| ph15 | 137 by 1 | 137 | 1096 | Full | No |
| ph17 | 142 by 1 | 142 | 1136 | Full | No |
| t15 | 137 by 1 | 137 | 1096 | Full | No |
| t17 | 142 by 1 | 142 | 1136 | Full | No |

Grand total is 1263 elements using 10104 bytes

```
>> clear cali
>> load all92.sm
>> tsm=all92(:,1);
>> lonism=all92(:,6);
>> latsm=all92(:,7);
>> clear all92
>> whos
```

| Name | Size | Elements | Bytes | Density | Complex |
|--------|------------|----------|--------|---------|---------|
| amp15 | 137 by 1 | 137 | 1096 | Full | No |
| amp17 | 142 by 1 | 142 | 1136 | Full | No |
| latsm | 15249 by 1 | 15249 | 121992 | Full | No |
| lonism | 15249 by 1 | 15249 | 121992 | Full | No |
| ph15 | 137 by 1 | 137 | 1096 | Full | No |
| ph17 | 142 by 1 | 142 | 1136 | Full | No |
| t15 | 137 by 1 | 137 | 1096 | Full | No |
| t17 | 142 by 1 | 142 | 1136 | Full | No |
| tsm | 15249 by 1 | 15249 | 121992 | Full | No |

Grand total is 46584 elements using 372672 bytes

```
>> igood=find(latsm<=90);
>> size(igood)
```

ans =

```
15067      1
```

```
>> ibad=find(latsm > 90);
>> size(ibad)
```

ans =

```
182      1

>> lat15=table1([tsm(igood) latsm(igood)],t15);
>> size(lat15)

ans =

137      1

>> fit15=polyfit(lat15,ph15,1);
>> fit15

fit15 =

-0.0989   -3.1205

>> phi_fit15=polyval(fit15,lat15);
>> std(phi_fit15)

ans =

0.1603

>> plot(lat15,ph15,'.')
>> hold on
>> plot(lat15,phi_fit15,'--')
>> xlabel('latitude')
>> ylabel('phase')
>> title('JADE2 phase (15 fixes: 137 pts edites) & fit (ordre 1)')
>> gtext('fit = - 3.1205 - 0.0989 * latitude (std = 0.1603)')
>> orient portrait
>> print fit15.ps
>> !lp fit15.ps
>> clg
>> lat17=table1([tsm(igood) latsm(igood)],t17);
>> size(lat17)

ans =

142      1

>> fit17=polyfit(lat17,ph17,1)

fit17 =

-0.1229   -3.3744

>> phi_fit17= polyval(fit17,lat17);
>> std(phi_fit17)

ans =

0.1982

>> plot(lat17,ph17,'.')
>> hold on
>> plot(lat17,phi_fit17,'--')
>> xlabel('latitude')
>> ylabel('phase')
>> title('JADE2 phase (17 fixes: 142 edites) et fit (ordre 1)')
>> gtext('fit = - 3.3744 - 0.1229 * latitude (std = 0.1982)')
>> orient portrait
>> print fit17.ps
>> !lp fit17.ps
```

>> whos

| Name | Size | Elements | Bytes | Density | Complex |
|-----------|------------|----------|--------|---------|---------|
| amp15 | 137 by 1 | 137 | 1096 | Full | No |
| amp17 | 142 by 1 | 142 | 1136 | Full | No |
| ans | 1 by 1 | 1 | 8 | Full | No |
| fit15 | 1 by 2 | 2 | 16 | Full | No |
| fit17 | 1 by 2 | 2 | 16 | Full | No |
| ibad | 182 by 1 | 182 | 1456 | Full | No |
| igood | 15067 by 1 | 15067 | 120536 | Full | No |
| lat15 | 137 by 1 | 137 | 1096 | Full | No |
| lat17 | 142 by 1 | 142 | 1136 | Full | No |
| latsm | 15249 by 1 | 15249 | 121992 | Full | No |
| lonsm | 15249 by 1 | 15249 | 121992 | Full | No |
| ph15 | 137 by 1 | 137 | 1096 | Full | No |
| ph17 | 142 by 1 | 142 | 1136 | Full | No |
| phi_fit15 | 137 by 1 | 137 | 1096 | Full | No |
| phi_fit17 | 142 by 1 | 142 | 1136 | Full | No |
| t15 | 137 by 1 | 137 | 1096 | Full | No |
| t17 | 142 by 1 | 142 | 1136 | Full | No |
| tsm | 15249 by 1 | 15249 | 121992 | Full | No |

Grand total is 62396 elements using 499168 bytes

```
>> clear ans
>> save fit15_17.mat
>> quit
```

198667 flops.

```
////////////////////////////////////
```

===> utilisation des resultats pour la calibration 17 ensemble-windows:

```
-----
phase = -2. et amplitude = 0.973
-----
```

En effet, comparativement aux resultats obtenus avec 15 (ou 13) ensemble-windows, si les amplitudes sont quasiment identiques dans tous les cas, ce n'est pas le cas pour la phase avec 17 ensemble-windows:

- les valeurs moyenne et median sont plus proches;
- le trend est inferieur;
- la deviation standard est plus faible (mais neanmoins elevee 0.92)

Fit "17 fixes" $\hat{=}$ $-3.3744 - 0.123 * \text{latitude}$ (std = 0.1982) sur 142 points

===> construction du fichier .ang qui va permettre par la suite de corriger les donnees:

considerant la phase = -2., la correction due a l'erreur du gyrocompas (fichier .ang) est

```
-----
-1.37 - 0.123 * latitude
-----
```

Voir ci-dessous le "journal" matlab "diary.ang" sur la methode utilisee pour obtenir ce fichier:

```
////////////////////////////////////
```

```
>> load fit15_17.mat
>> whos
```

| Name | Size | Elements | Bytes | Density | Complex |
|-------|----------|----------|-------|---------|---------|
| amp15 | 137 by 1 | 137 | 1096 | Full | No |
| amp17 | 142 by 1 | 142 | 1136 | Full | No |

| | | | | | |
|-----------|------------|-------|--------|------|----|
| fit15 | 1 by 2 | 2 | 16 | Full | No |
| fit17 | 1 by 2 | 2 | 16 | Full | No |
| ibad | 182 by 1 | 182 | 1456 | Full | No |
| igood | 15067 by 1 | 15067 | 120536 | Full | No |
| lat15 | 137 by 1 | 137 | 1096 | Full | No |
| lat17 | 142 by 1 | 142 | 1136 | Full | No |
| latsm | 15249 by 1 | 15249 | 121992 | Full | No |
| lonsm | 15249 by 1 | 15249 | 121992 | Full | No |
| ph15 | 137 by 1 | 137 | 1096 | Full | No |
| ph17 | 142 by 1 | 142 | 1136 | Full | No |
| phi_fit15 | 137 by 1 | 137 | 1096 | Full | No |
| phi_fit17 | 142 by 1 | 142 | 1136 | Full | No |
| t15 | 137 by 1 | 137 | 1096 | Full | No |
| t17 | 142 by 1 | 142 | 1136 | Full | No |
| tsm | 15249 by 1 | 15249 | 121992 | Full | No |

Grand total is 62395 elements using 499160 bytes

```
>> latgap=table1([tsm(igood) latsm(igood)],tsm(ibad));
>> size(latgap)
```

ans =

```
182    1
```

```
>> lat(ibad)=latgap;
>> clear lat
>> latsm(ibad)=latgap;
>> angle = -0.123 * latsm - 1.37;
>> whos
```

| Name | Size | Elements | Bytes | Density | Complex |
|-----------|------------|----------|--------|---------|---------|
| amp15 | 137 by 1 | 137 | 1096 | Full | No |
| amp17 | 142 by 1 | 142 | 1136 | Full | No |
| angle | 15249 by 1 | 15249 | 121992 | Full | No |
| ans | 1 by 2 | 2 | 16 | Full | No |
| fit15 | 1 by 2 | 2 | 16 | Full | No |
| fit17 | 1 by 2 | 2 | 16 | Full | No |
| ibad | 182 by 1 | 182 | 1456 | Full | No |
| igood | 15067 by 1 | 15067 | 120536 | Full | No |
| lat15 | 137 by 1 | 137 | 1096 | Full | No |
| lat17 | 142 by 1 | 142 | 1136 | Full | No |
| latgap | 182 by 1 | 182 | 1456 | Full | No |
| latsm | 15249 by 1 | 15249 | 121992 | Full | No |
| lonsm | 15249 by 1 | 15249 | 121992 | Full | No |
| ph15 | 137 by 1 | 137 | 1096 | Full | No |
| ph17 | 142 by 1 | 142 | 1136 | Full | No |
| phi_fit15 | 137 by 1 | 137 | 1096 | Full | No |
| phi_fit17 | 142 by 1 | 142 | 1136 | Full | No |
| t15 | 137 by 1 | 137 | 1096 | Full | No |
| t17 | 142 by 1 | 142 | 1136 | Full | No |
| tsm | 15249 by 1 | 15249 | 121992 | Full | No |

Grand total is 77828 elements using 622624 bytes

```
>> plot(latsm,angle, '.')
>> angfile = [tsm angle];
>> save all92.ang angfile /ascii
>> plot(tsm,angle, '.')
>> axis([50 60 -0.4 1])
>> plot(tsm,angle, '.')
>> save angl7.mat
>> hold on
>> plot(tsm,latsm, 'x')
```

```
>> quit
```

```
77379 flops.
```

```
////////////////////////////////////
```

Dans chaque section:

- construction du fichier .ang (a partir de all92.ang) correspondant a la periode considerée
- nouveau run de timslip pour 17 fixes afin de s'assurer que la phase est toujours de -2 (dans le cas contraire, cela signifierait soit qu'une erreur s'est produite dans la mise en oeuvre soit que cette methode "ne tient pas la route").

exemple:

```
=====
```

```
cd md9201/cal/rotate
```

```
vi rotnav.cnt
```

```
////////////////////////////////////
```

```
INPUT_NAV_FILE: ../../nav/a9201.nav
```

```
OUTPUT_NAV_FILE: a9201rot.nav
```

```
INPUT_ANGLE_FILE: a9201.ang
```

```
end
```

```
////////////////////////////////////
```

```
rotate rotnav.cnt
```

```
cd md9201/cal/watertrk
```

```
timslip timsrot.cn15 ----> output: a9201_15frot.cal
```

```
timslip timsrot.cn17 ----> output: a9201_17frot.cal
```

idem pour les sections md9202 a md9208

```
cd ALL/cal/watertrk
```

```
concatenation des fichiers a920*_15frot.cal des 8 sections
```

```
concatenation des fichiers a920*_17frot.cal des 8 sections
```

dans chaque cas, sous matlab, adcp.cal.m

Pour 17 fixes, la phase est bien de l'ordre de -2, la deviation standard n'a pas tellement diminuee (de l'ordre de 0.9). Par contre, le trend sur la phase est divise par deux donc amelioration notoire meme si le trend reste important:

```
phase = -2.00 + -0.0185 (t - 69.5), t variant de 51.91 a 81.29
```

```
+++++
```

```
+ Il est donc decide qu'en plus des parametres de calibration
```

```
+ 
```

```
+ amplitude = 0.973 et phase = -2.
```

```
+ 
```

```
+ le fichier .ang est applique a la base de donnees de chaque section.
```

```
+++++
```

```
21 avril
```

```
-----
```

```
*** calibration definitive des donnees ***
```

```
exemple: cd md9201/cal/rotate
```

```
=====
```

94/05/04
10:22:39

jade92.doc

14

- 1) rotate rotate.cnt1 avec option time_angle_file: a9201.ang
---> output de controle: a9201.rot1

- 2) rotate rotate.cnt2 avec option amplitude = 0.973
 phase = -2.
---> output de controle: a9201.rot2

idem pour les sections md9202 a md9208

*** Couche de reference absolue et "smooth file" ***

exemple: cd md9201/nav

=====

| | | |
|------------------------|-----|----------------------|
| adcpsect adcpsect.cnt1 | --- | output: a9203rot.nav |
| refabs refabs.cnt1 | --- | output: a9203rot.ref |
| smoothr smoothr.cnt1 | --- | output: a9203rot.sm |

- notes 1) epaisseur de la couche de reference: bin 2 a 14
2) utilisation d'une fenetre d'une heure pour le filtre;
du coup, les resultats sont tres lisses
(essai avec une 1/2 heure mais le lissage reste trop bruite)

sous matlab, run callrefp.m

idem pour les sections md9202 a md9208

note: sur md9202, test pour l'epaisseur de la couche de reference.
Le but est de conserver une couche de reference suffisamment
epaisse tout en conservant de lentes variations de la vitesse.
Les essais en utilisant une couche definie entre les bins 5 et 14
montrent qu'il n'y a pas de reelle difference avec celle obtenue
entre les bins 2 a 14; c'est pourquoi, c'est cette derniere qui
a ete utilisee pour calculer la vitesse du navire r/o au fond.

22 avril

Differentes bidouilles dont

- essais de lissage de la vitesse du navire r/o au fond avec une fenetre de largeur 1/2 heure
- utilisation de la nouvelle version pour editer les profils, suite a un doute a propos de la suppression des "bottom-reflection": en fait, tout etait ok, mea culpa (EK)

25 avril

recu message de Julie a propos de l'edition:

```
++++++  
Regarding your database:  the PROFILE_FLAGS (34) will show only the results  
from running the 'badbin' program--which is usually for flagging  
individual bins that are contaminated by some glitch or by the  
CTD wire interference; certainly not the bottom problem.  The bottom  
flagging (dbupdate, botmpas3 & last_85) will show in the ANCILLARY_2.  
max_amp_bin, ANCILLARY_2.last_good_bin, and ACCESS_VARIABLES.last_good_bin  
(showdb variables 38 and 39, resp.) If Annie already did a previous  
pass at editing, then your current editing session should show the  
bad bins that she already flagged in the database using 'badbin' as being
```

marked by white 'x'; the bottom editing should also be evident as long as you set USE_LGB = 1; in setup.m. I just checked and realized that I did leave something out in init.m that you should fix: change line 93 to:

```
IBAD_AMP = flagamp(AMP .* BADACC, AMP_THRESHOLD);
```

so that you will no longer see the '*' marks on your plots if they have already been edited in the database. Note that you will see the bad data still, unless PLOTBAD is set to 0 (use 'pb' to toggle this on/off). Sorry about that.

+++++

```
==> sous /usr/ulyse/ADCP/programs/codas3/matlab/matlab4  
modifications de init.m
```

*** integration de la navigation dans chaque base de donnee ***

Dans chaque section, sous /nav:

```
putnav putnav.cnt
```

*** qualite des donnees ***

La qualite est interessante sur des periodes de temps ou les passages stations/underway sont reguliers.

Pour cette campagne, cela restreint la periode de temps a la premiere section (md9201)

25-26 avril

*** vecteurs ***

Pour chaque section, trace des vecteurs sur 9 couches d'epaisseur differente (plot de la "cruise track" associee):

- 0 a 25 m
- 25 a 75 m
- 75 a 125 m
- 125 a 175 m
- 175 a 225 m
- 225 a 275 m
- 275 a 325 m
- 325 a 375 m
- 375 a 425 m

note: + la densite de donnees est souvent relativement faible pour les deux dernieres couches; l'interet de les tracer est justement de se rendre compte de la profondeur atteinte par l'ADCP.

+ les resultats des sections md9205, md9206 et md9207 ont ete concatenes compte tenu de leur faible extension spatiale (en longitude et latitude).

*** stick ***

L'interet d'utiliser une grille temporelle pour extraire des resultats est moindre pour des campagnes ou il y a continuellement des stations (dans ce cas d'ailleurs, on ne trace que le courant en fonction du temps, les autres parametres: harmonic, mean_trand, semi diurnal, diurnal, inertial etant a 0). Par contre,

pour les campagnes ou il y a de courts transits et plusieurs jours de station a la meme position, la representation par "stick" s'avere interessante.

Au cours de JADE 92, il n'y a pas eu de stations continuellement repetees pendant un (ou plusieurs) jour(s) en un point fixe.

Toutefois, il y a des zones (dans le chenal de Timor en particulier), ou la navire a peu evolue (spatialement) pendant un ou deux jours, ces zones etant soumises d'ailleurs a des fortes variations -marees-journalieres.

La representation par stick a ete utilisee pour les zones:

- md9203
- md9204
- md9205
- md9207

avec une restriction de l'intervalle de temps (voir plots).

28-29 avril

*** isolignes ***

La liste complete de toutes les sections tracees de 0 a 300 m (la densite de donnees est trop faible au dela) est plutot rebarbative (chaque section md920* ayant ete subdivisee en plusieurs sections, d'autres ayant ete concatenees, etc...).

Ceci dit la construction de la grille spatiale se fait soit a longitude fixee, soit a latitude fixee (contrairement a ce que Brice a fait)

exemple: cd md9204/grid

=====

- grille en latitude (longitude "disabled")

vi llgridc1.cnt

```
////////////////////////////////////  
dbname:      ../adcpdb/a9204  
output:      123E.lat  
year_base:   1992  
step_size:   1  
lat_origin:  -0.0125 /* center bins on integral degrees */  
lat_increment: 0.025 /* grid by 1/40 degree latitude */  
lon_origin:  -0.0125  
lon_increment: 1000 /* disabled */  
time_ranges:  
  92/03/11 06:57:25 to 92/03/14 01:17:25  
////////////////////////////////////
```

- grille en longitude (latitude "disabled")

vi llgridc2.cnt

```
////////////////////////////////////  
dbname:      ../adcpdb/a9204  
output:      12S.lon  
year_base:   1992  
step_size:   1  
lat_origin:  -0.0125  
lat_increment: 1000 /* disabled */  
lon_origin:  -0.0125 /* center bins on integral degrees */  
lon_increment: 0.025 /* grid by 1/40 degree longitude */  
////////////////////////////////////
```

time ranges:

92/03/11 06:57:25 to 92/03/14 01:17:25

//

=====
REMARQUES IMPORTANTES
=====

1> Le choix des increments en longitude et/ou en latitude des grilles spatiales (pour les vecteurs et les isolignes) permettent de moyenner les donnees (et donc les ensembles) entre elles. Par exemple, pour les ensembles de 2 minutes de la campagne, une discretisation d' 1/40 ieme de degre (en longitude ou latitude) moyennera les donnees sur 4 a 8 minutes (voire beaucoup plus) selon la vitesse du bateau.

2> Lorsque les grilles spatiales ou temporelles sont construites, les donnees ADCP sont extraites avec le programme 'adcpsect' (dans /vector, /contour ou /stick).
Ce programme cree des fichiers matlab ("nomfic_uv.mat" et "nomfic_xy.mat") regroupant d'une part les composantes du courant (colonnes impaires pour la composante zonale u et paires pour la composante meridienne v) a chaque profondeur, et d'autre part les coordonnees spatiales (x,y,z) et temporelle des donnees extraites. Ces fichiers sont particulierement pratiques pour une analyse plus poussee des courants (extraction de telle donnee, a telle date, a telle profondeur, etc...).

13 fixes unrotated

Time range 51.91 to 81.29

Calculation done at 94- 4-20 11:56

delta-u min = -100.00, max = 100.00;

delta-v min = -100.00, max = 100.00

clip_amp = 0.04, clip_ph = 3.0

clip_dt = 60, clip_var = 0.250

Number of edited points: 122 out of 172

amp = 0.9732 + -0.0002 (t - 69.3)

phase = -2.09 + -0.0198 (t - 69.3)

| | median | mean | std |
|-----------|---------|---------|--------|
| amplitude | 0.9740 | 0.9732 | 0.0166 |
| phase | -2.0770 | -2.0862 | 1.0487 |
| nav - pc | -3.0000 | -2.6557 | 9.5975 |
| var | 0.0795 | 0.0922 | 0.0670 |
| min var | 0.0735 | 0.0831 | 0.0548 |
| delta-u | -0.7500 | -0.4363 | 3.6483 |
| delta-v | 1.4850 | 0.2913 | 4.6034 |

15 fixes unrotated

Time range 51.91 to 81.29

Calculation done at 94- 4-20 11:59

delta-u min = -100.00, max = 100.00;

delta-v min = -100.00, max = 100.00

clip_amp = 0.04, clip_ph = 3.0

clip_dt = 60, clip_var = 0.250

Number of edited points: 137 out of 170

amp = 0.9735 + -0.0002 (t - 69.7)

phase = -2.03 + -0.0409 (t - 69.7)

| | median | mean | std |
|-----------|---------|---------|---------|
| amplitude | 0.9740 | 0.9735 | 0.0160 |
| phase | -1.9710 | -2.0282 | 1.0695 |
| nav - pc | -2.0000 | -3.4453 | 12.1631 |
| var | 0.0890 | 0.0954 | 0.0710 |
| min var | 0.0850 | 0.0839 | 0.0497 |
| delta-u | -0.7000 | -0.4423 | 3.3911 |
| delta-v | 1.1600 | 0.0103 | 4.6097 |

17 fixes unrotated

Time range 51.91 to 81.29

Calculation done at 94- 4-20 12: 1

delta-u min = -100.00, max = 100.00;

delta-v min = -100.00, max = 100.00

clip_amp = 0.04, clip_ph = 3.0

clip_dt = 60, clip_var = 0.250

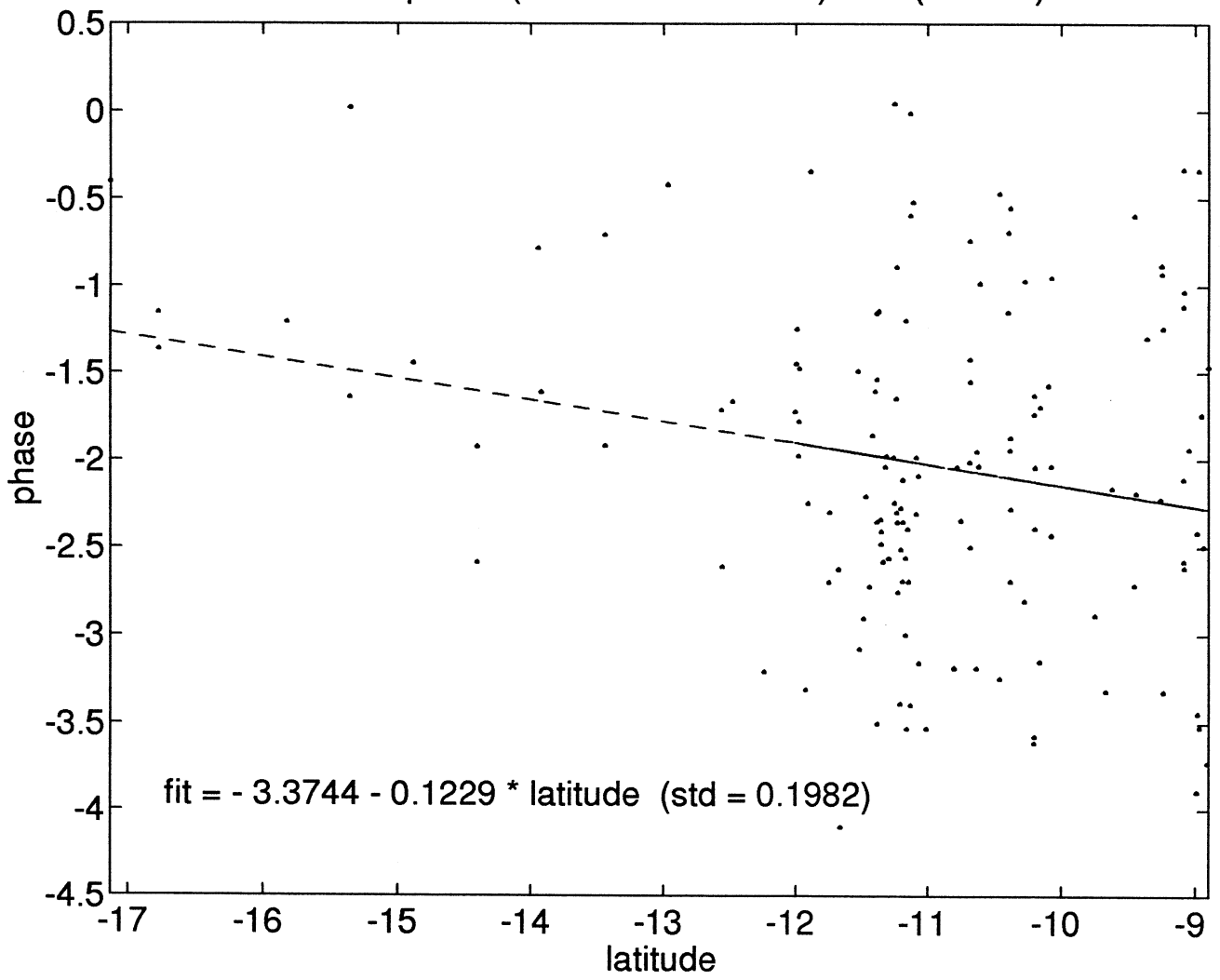
Number of edited points: 142 out of 174

amp = 0.9731 + -0.0002 (t - 69.5)

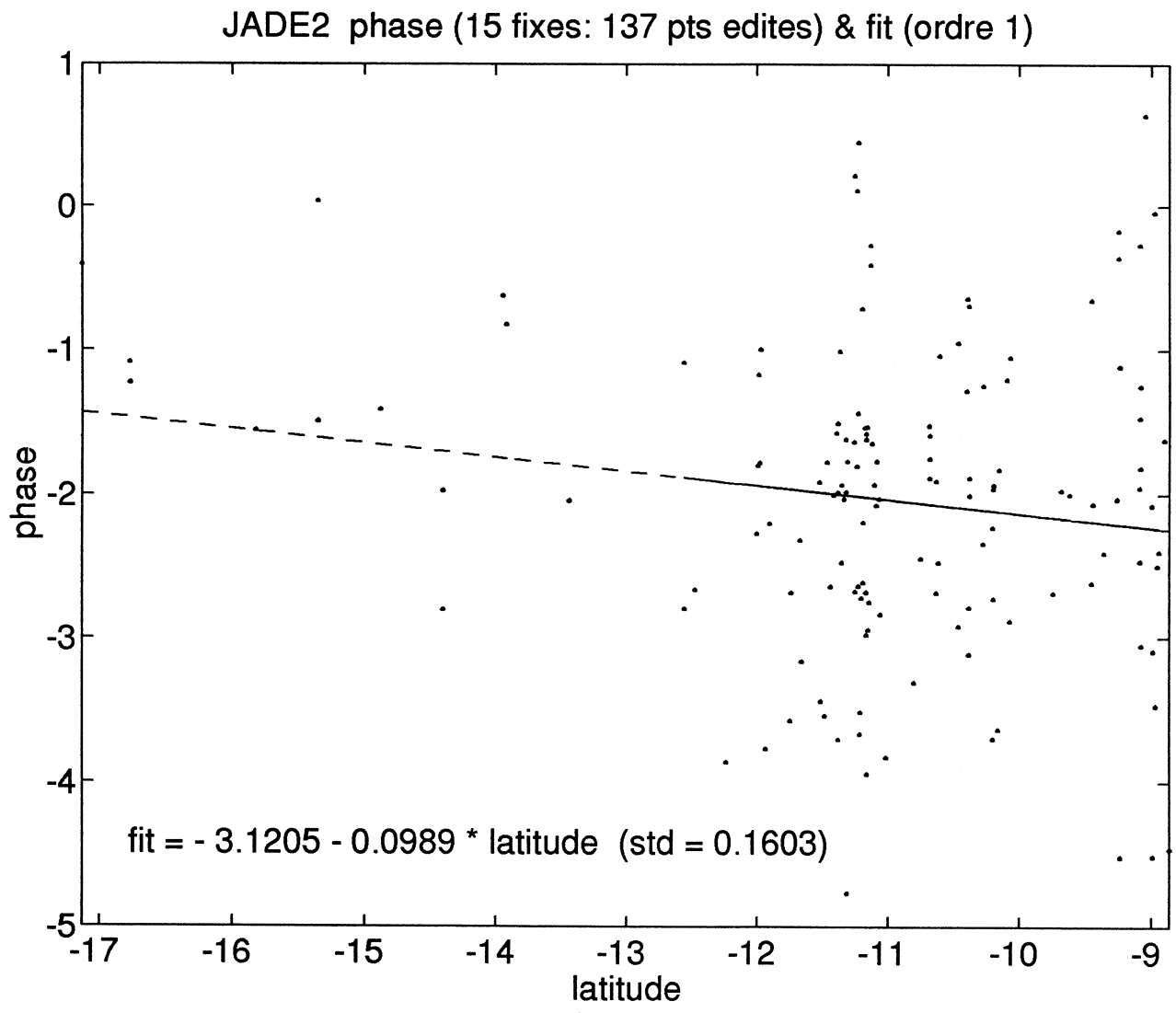
phase = -2.01 + -0.0386 (t - 69.5)

| | median | mean | std |
|-----------|---------|---------|---------|
| amplitude | 0.9730 | 0.9731 | 0.0138 |
| phase | -2.0365 | -2.0110 | 0.9215 |
| nav - pc | -1.0000 | -2.4437 | 11.3790 |
| var | 0.0905 | 0.0929 | 0.0642 |
| min var | 0.0830 | 0.0845 | 0.0512 |
| delta-u | -0.3700 | -0.0294 | 3.4617 |
| delta-v | 0.6850 | 0.0075 | 4.4775 |

JADE2 phase (17 fixes: 142 edites) et fit (ordre 1)



20 Avril 94



15 fixes rotated

Time range 51.91 to 81.29
Calculation done at 94- 4-20 17:31
delta-u min = -100.00, max = 100.00;
delta-v min = -100.00, max = 100.00
clip_amp = 0.04, clip_ph = 3.0
clip_dt = 60, clip_var = 0.250

Number of edited points: 137 out of 170
amp = 0.9736 + -0.0002 (t - 69.7)
phase = -2.02 + -0.0198 (t - 69.7)

| | median | mean | std |
|-----------|---------|---------|---------|
| amplitude | 0.9740 | 0.9736 | 0.0160 |
| phase | -1.9240 | -2.0177 | 1.0580 |
| nav - pc | -1.0000 | -3.4526 | 12.1310 |
| var | 0.0880 | 0.0951 | 0.0709 |
| min var | 0.0840 | 0.0837 | 0.0495 |
| delta-u | -0.7000 | -0.4423 | 3.3911 |
| delta-v | 1.1600 | 0.0103 | 4.6097 |

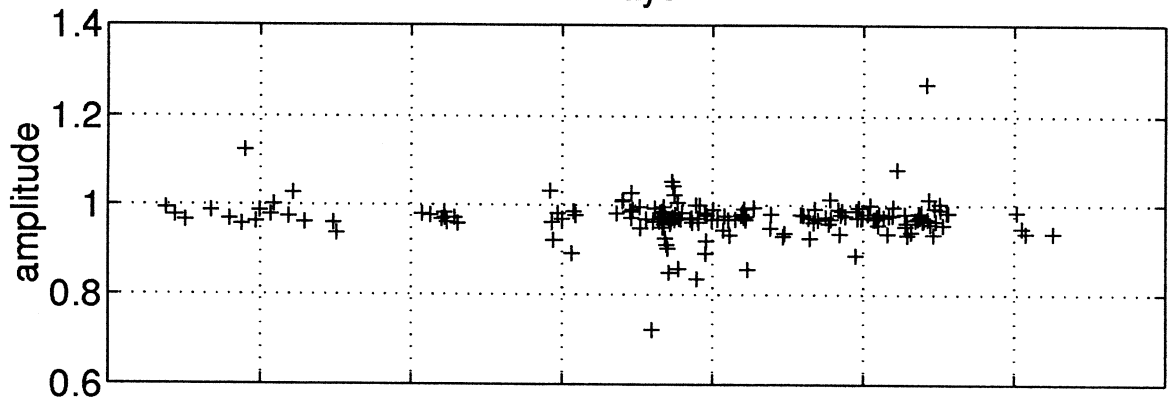
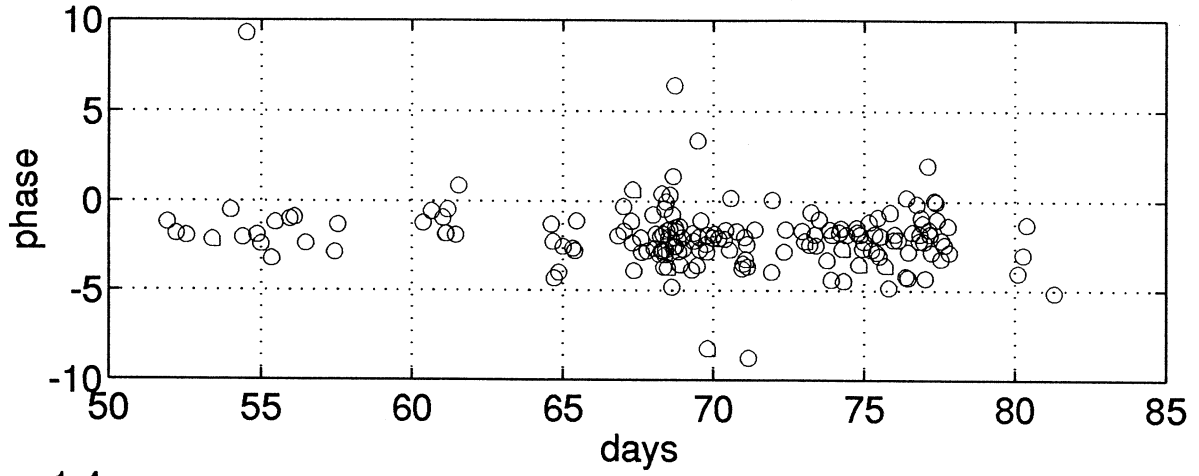
17 fixes rotated

Time range 51.91 to 81.29
Calculation done at 94- 4-20 16:43
delta-u min = -100.00, max = 100.00;
delta-v min = -100.00, max = 100.00
clip_amp = 0.04, clip_ph = 3.0
clip_dt = 60, clip_var = 0.250

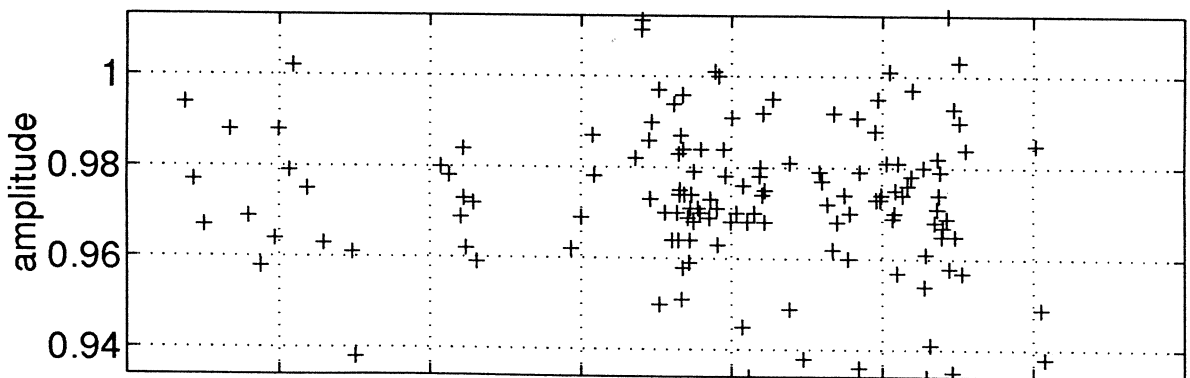
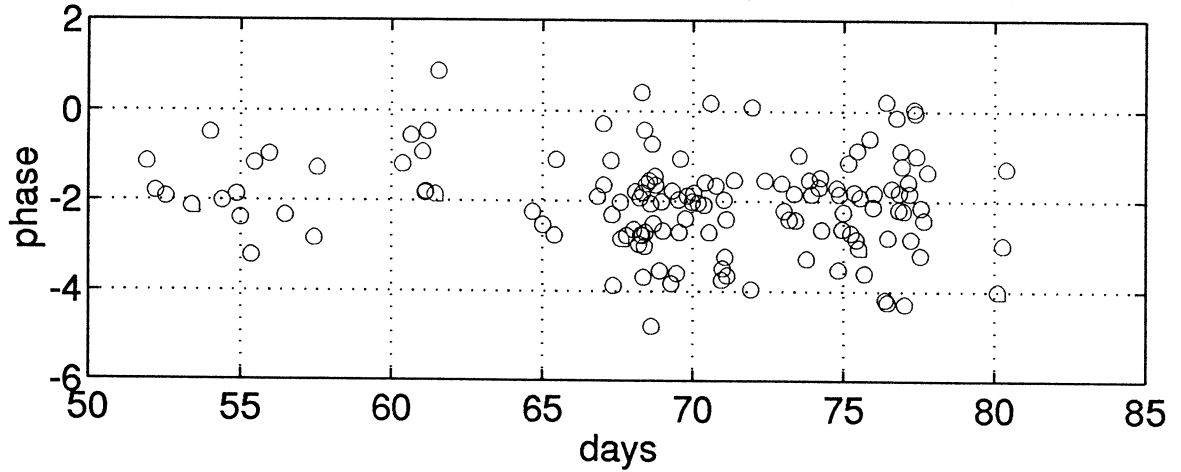
Number of edited points: 142 out of 174
amp = 0.9731 + -0.0002 (t - 69.5)
phase = -2.00 + -0.0185 (t - 69.5)

| | median | mean | std |
|-----------|---------|---------|---------|
| amplitude | 0.9730 | 0.9731 | 0.0137 |
| phase | -2.0270 | -2.0047 | 0.9000 |
| nav - pc | -1.0000 | -2.4366 | 11.3609 |
| var | 0.0910 | 0.0928 | 0.0642 |
| min var | 0.0825 | 0.0843 | 0.0511 |
| delta-u | -0.3700 | -0.0294 | 3.4617 |
| delta-v | 0.6850 | 0.0075 | 4.4775 |

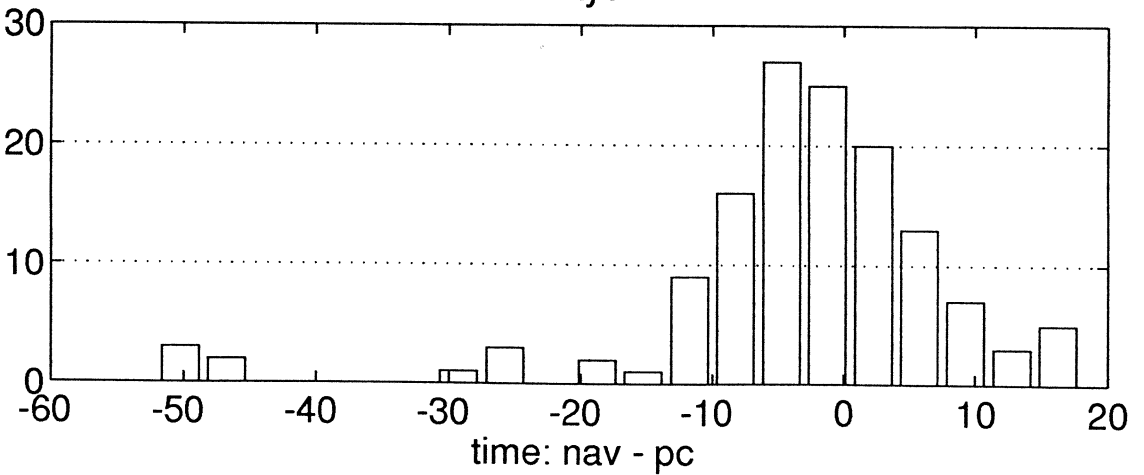
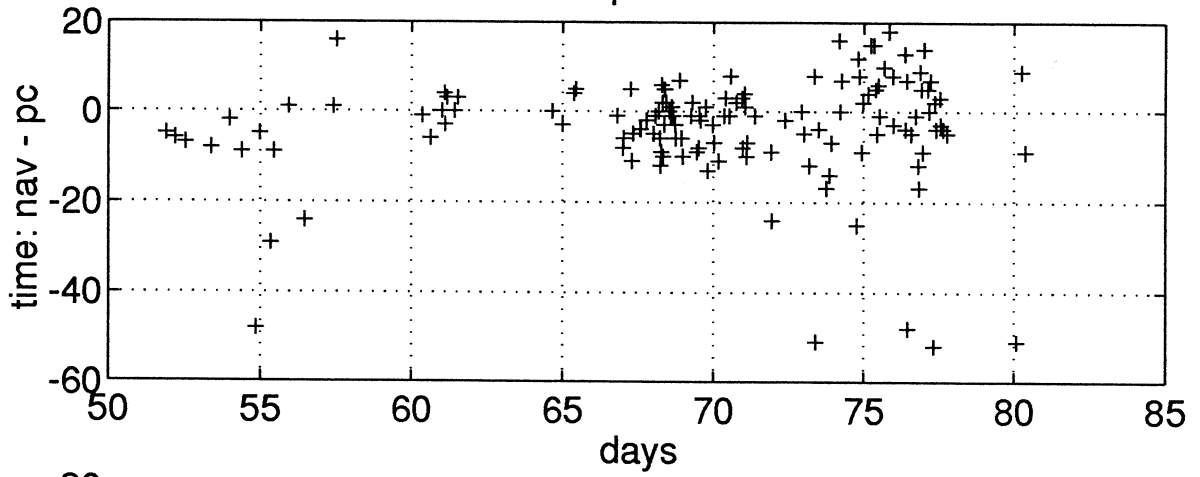
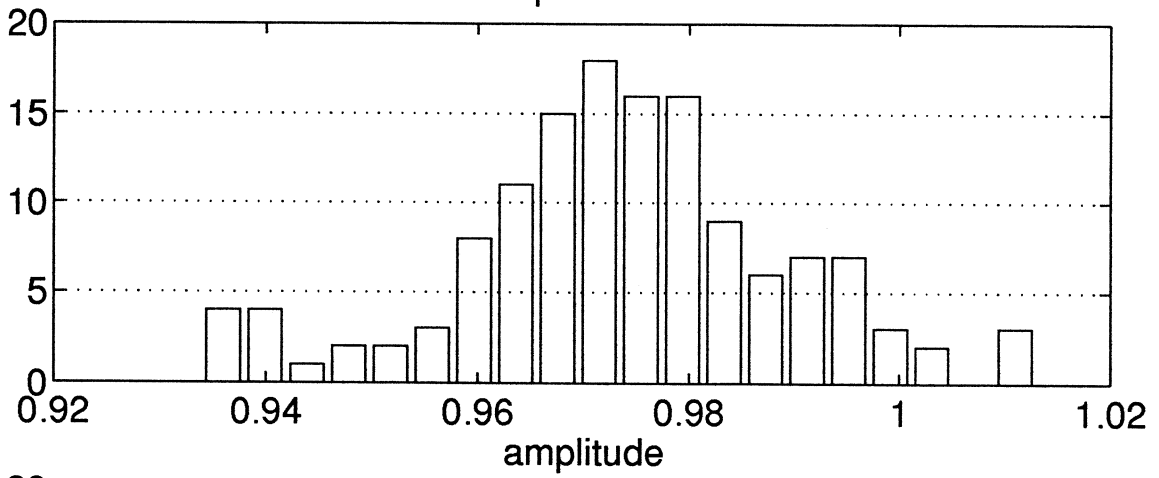
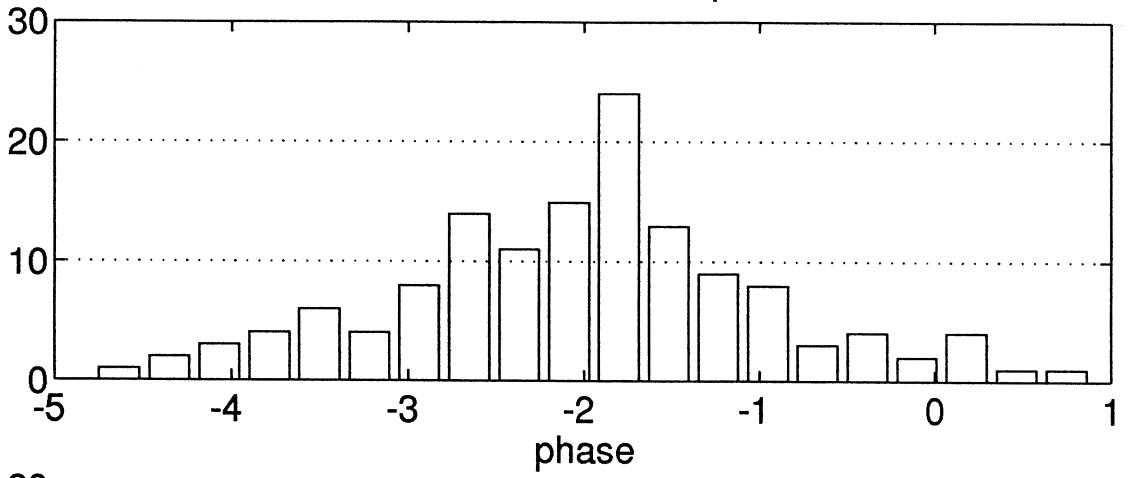
15 fixes rotated unedited, npts = 170



15 fixes rotated edited, npts = 137

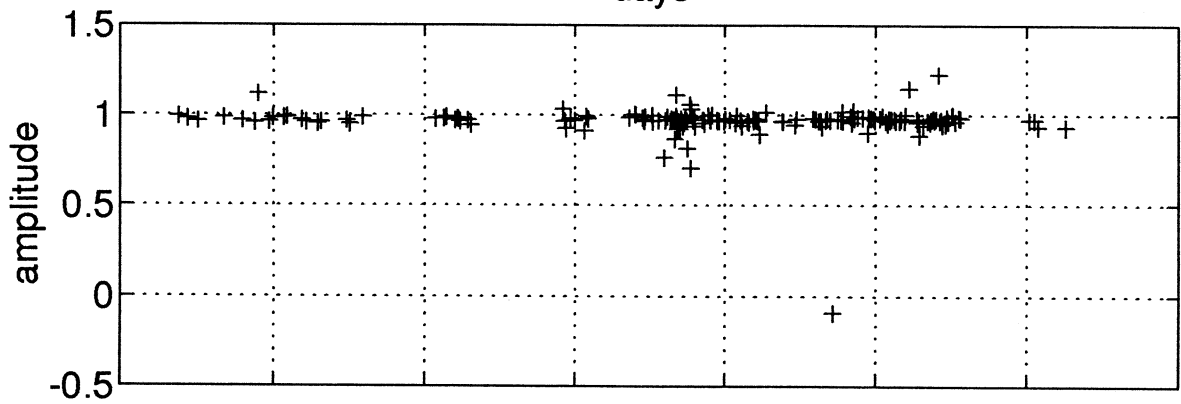
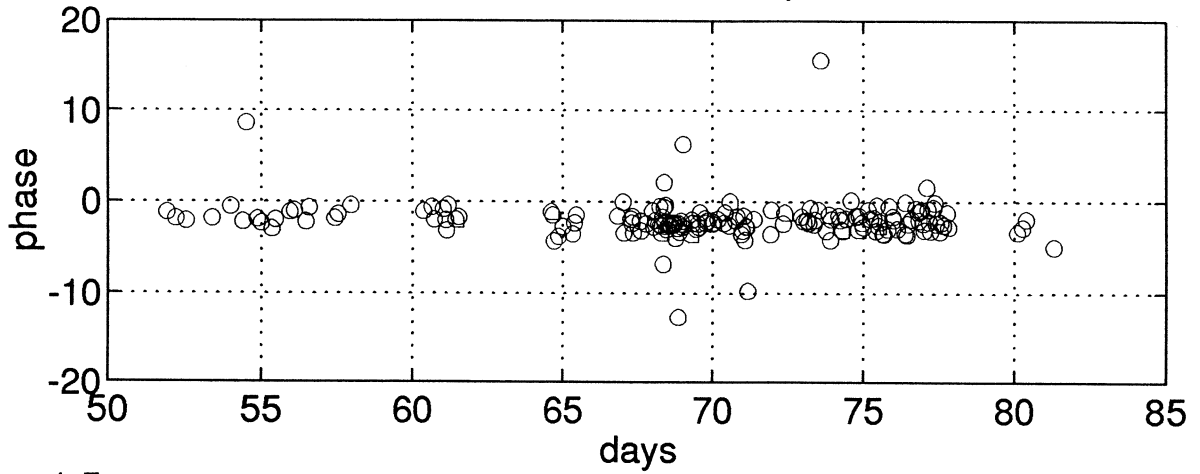


15 fixes rotated edited, npts = 137

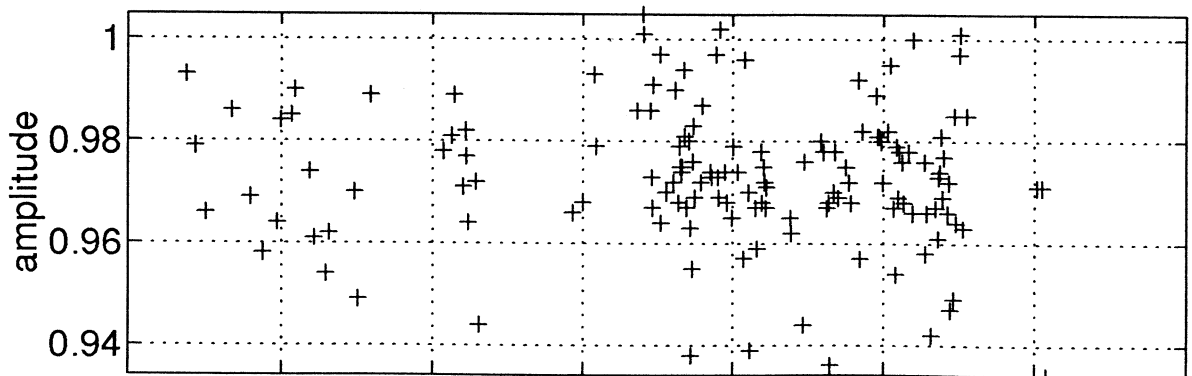
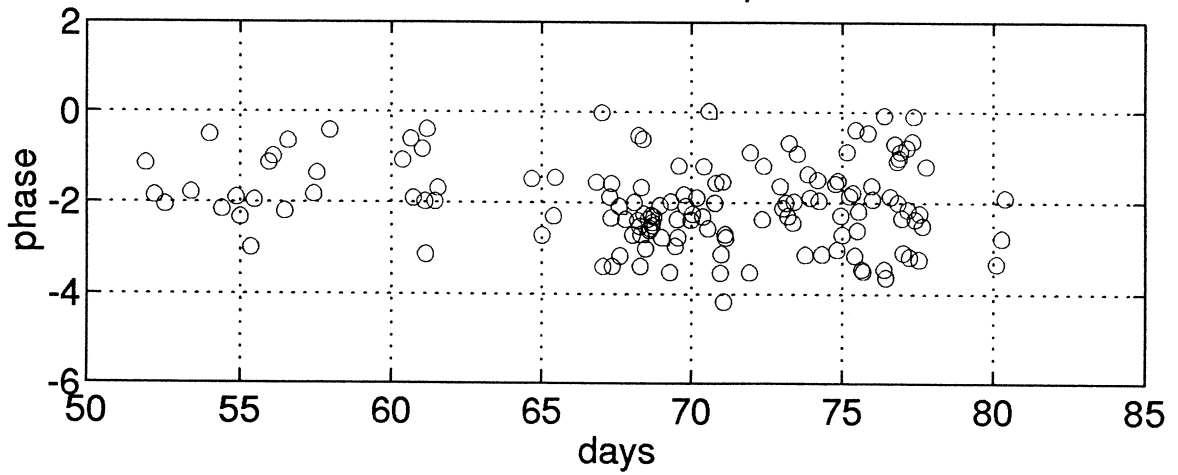


94-4-20 17:31

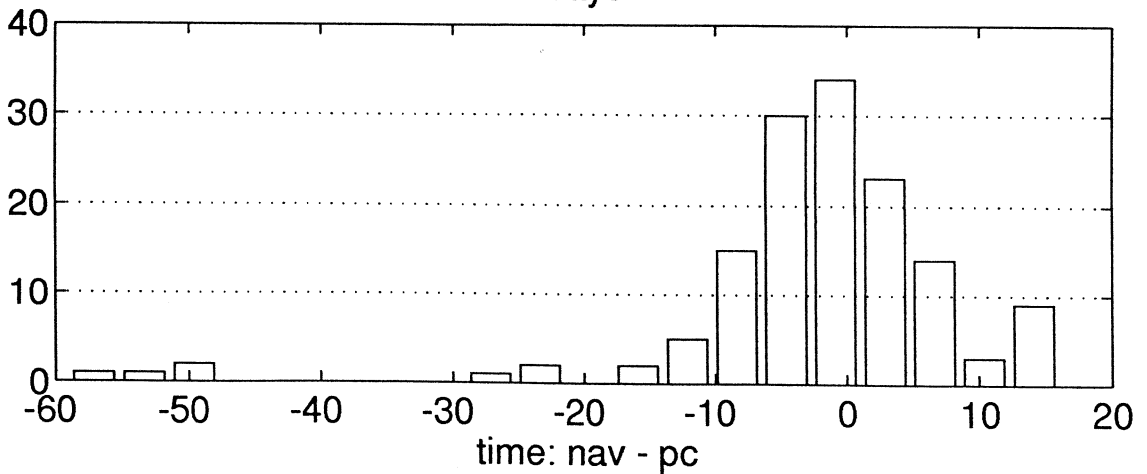
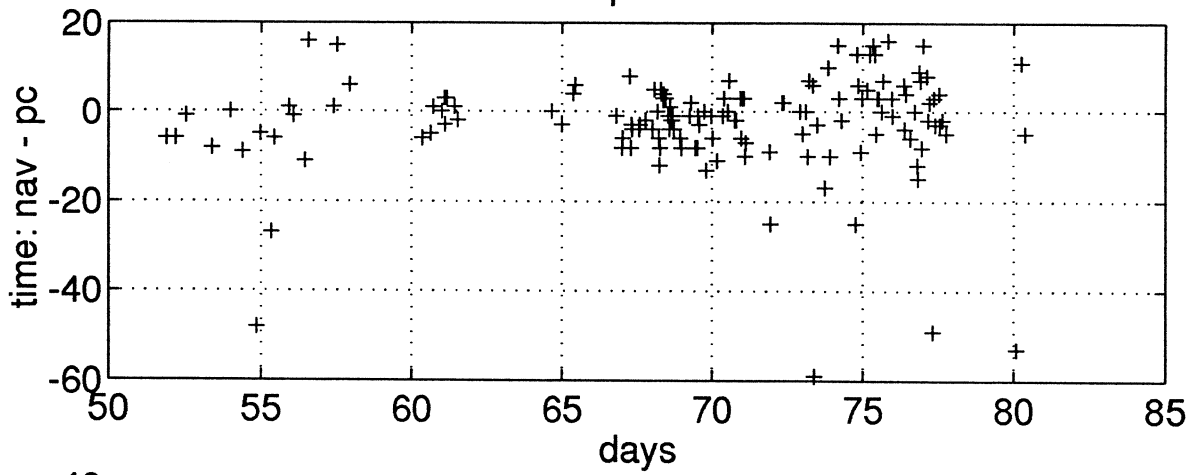
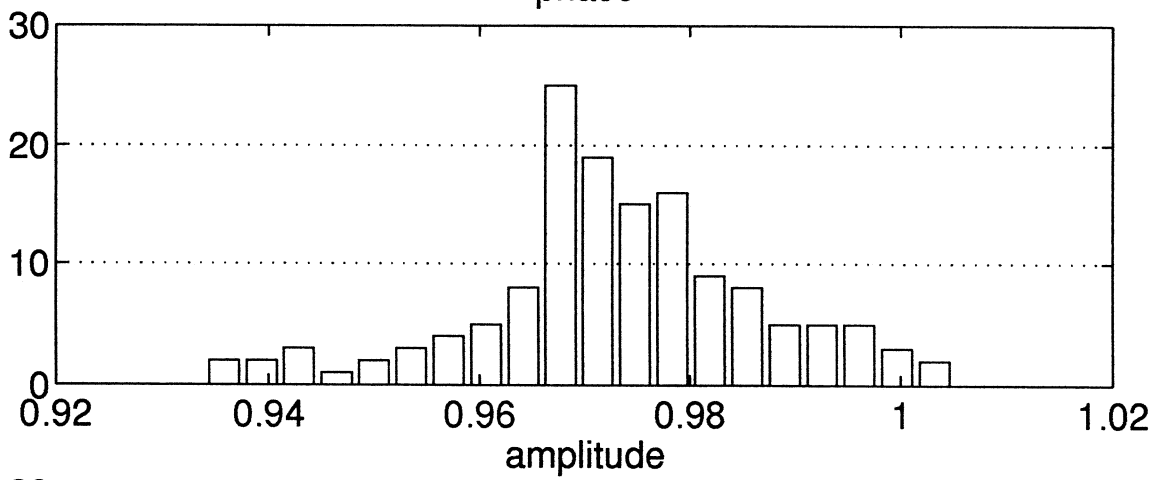
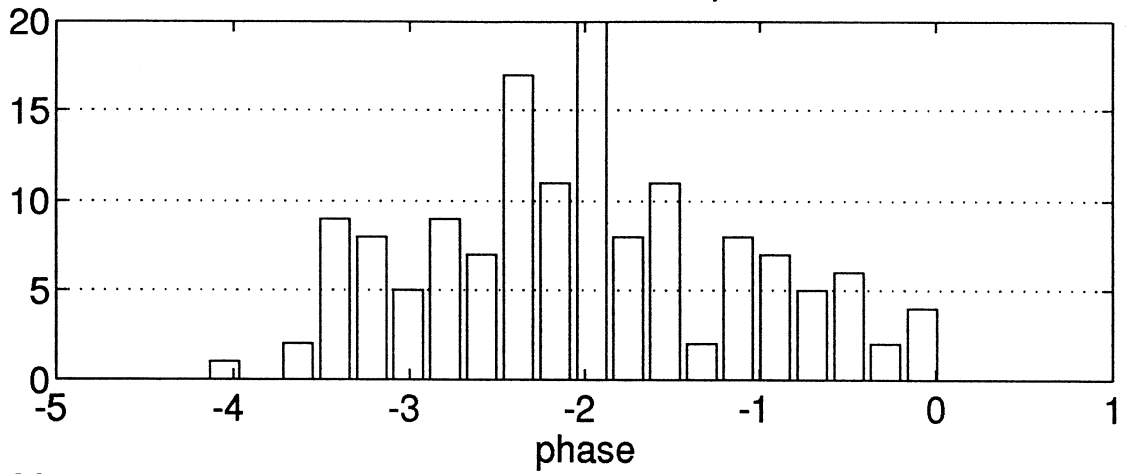
17 fixes rotated unedited, npts = 174



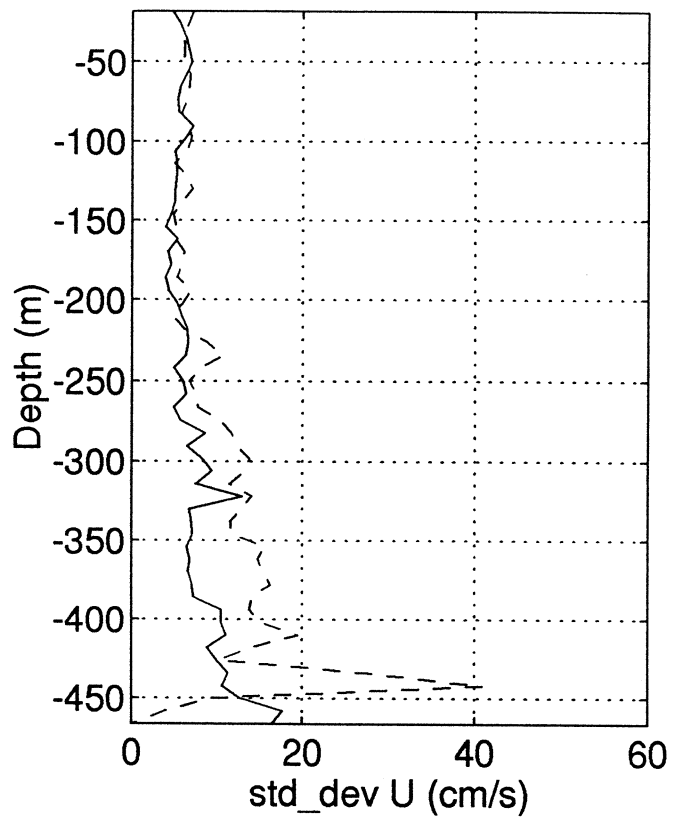
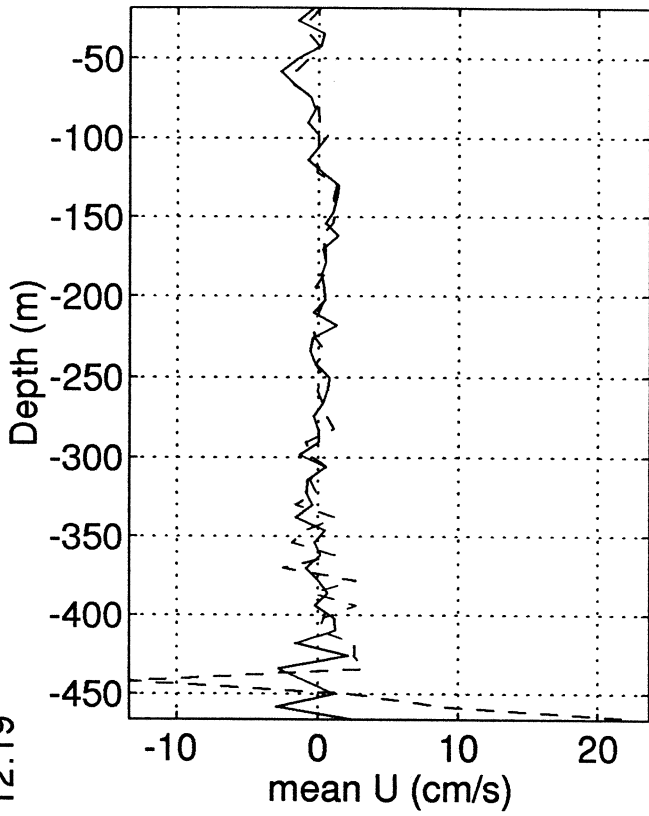
17 fixes rotated edited, npts = 142



17 fixes rotated edited, npts = 142

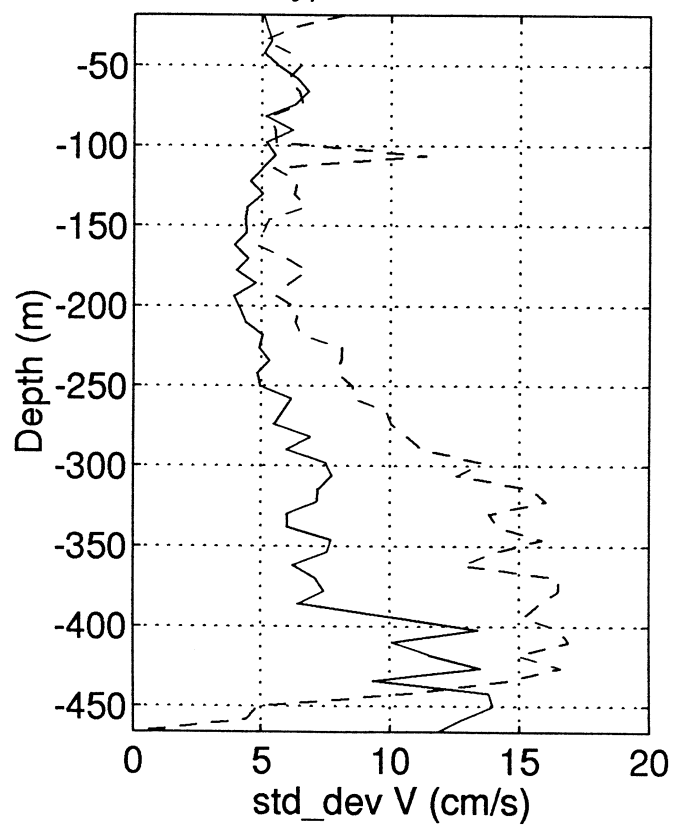
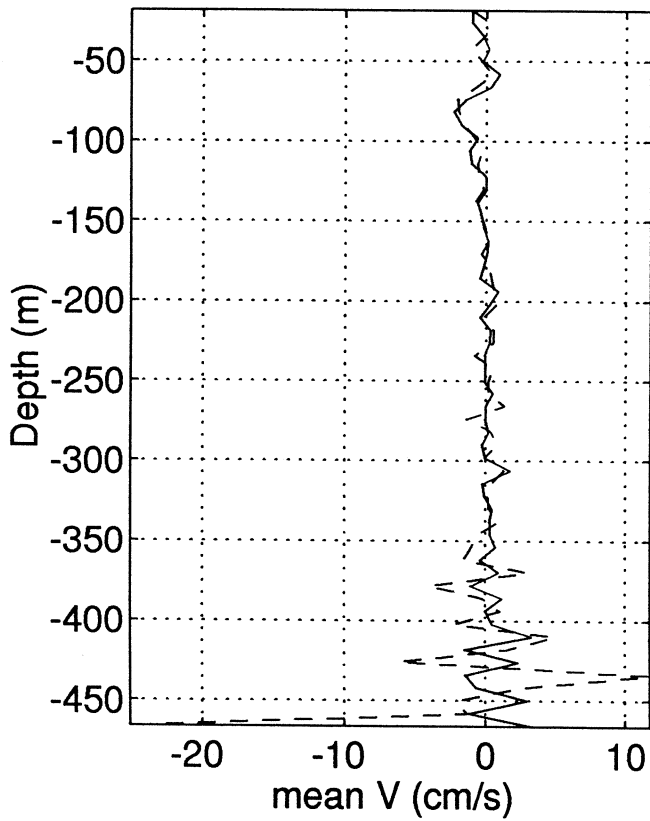


U component, ADCP JADE a9201 diff: 1
(Solid: On Station; Dash: Underway)



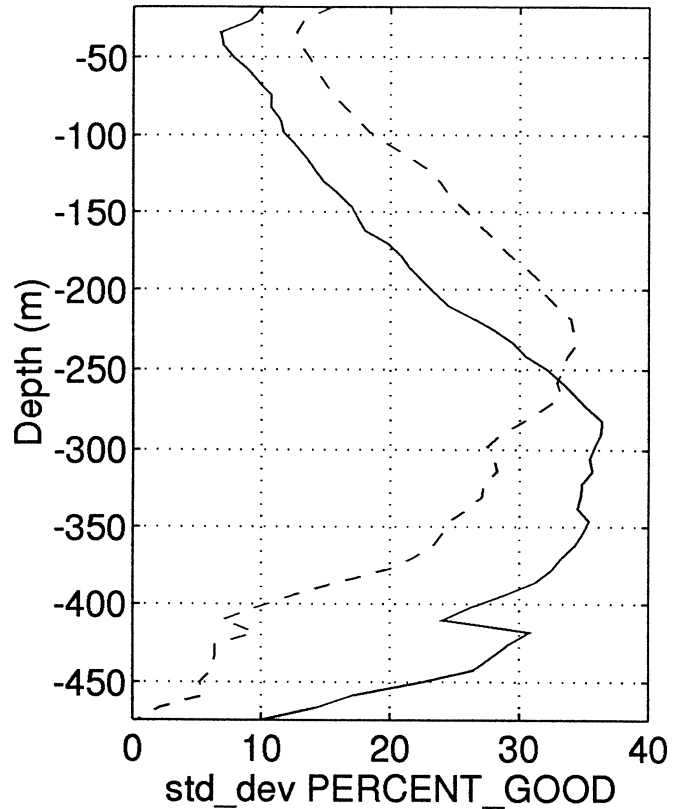
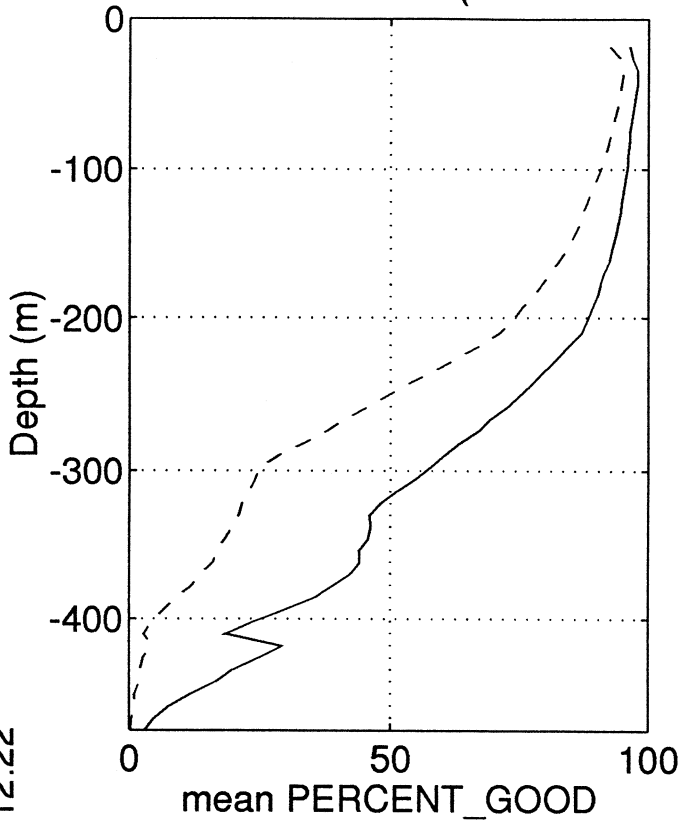
94- 4-25 12:19

V component, ADCP JADE a9201 diff: 1
(Solid: On Station; Dash: Underway)

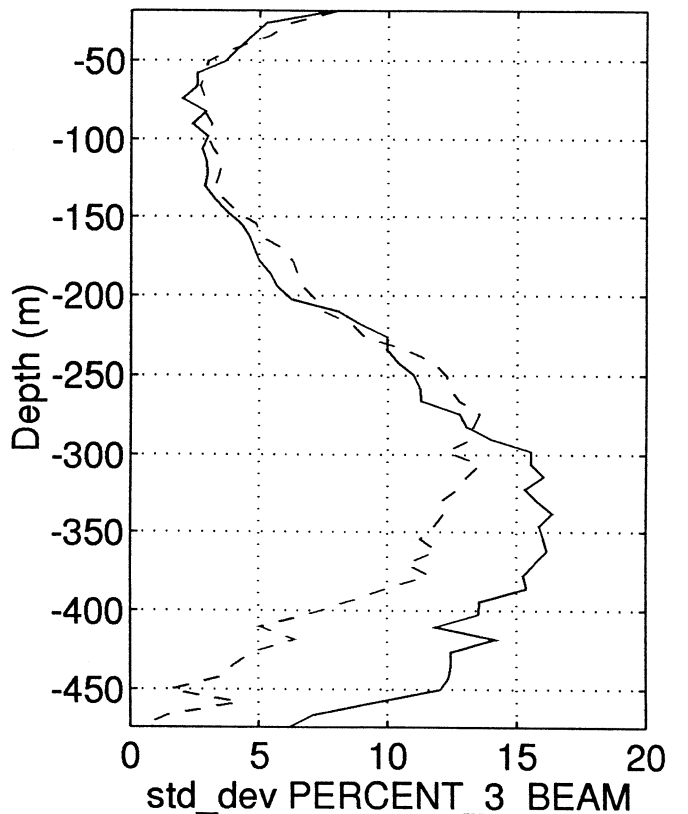
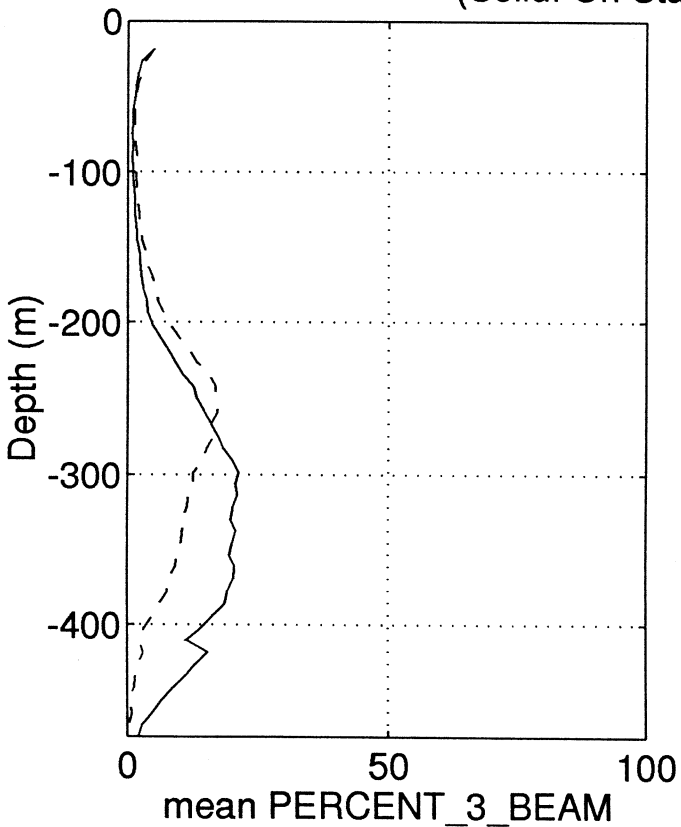


94- 4-25 12:22

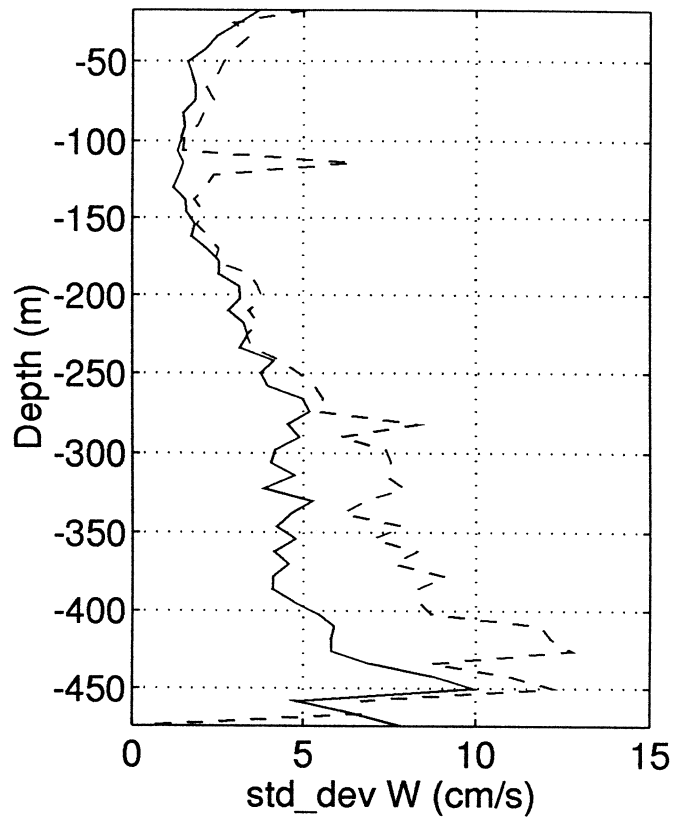
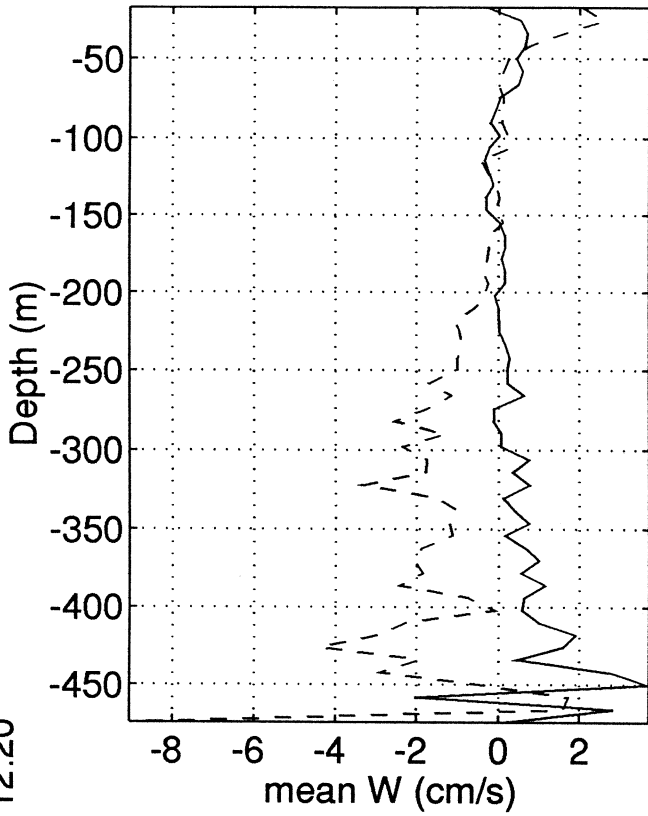
PERCENT GOOD, ADCP JADE a9201
(Solid: On Station; Dash: Underway)



PERCENT 3 BEAM, ADCP JADE a9201
(Solid: On Station; Dash: Underway)

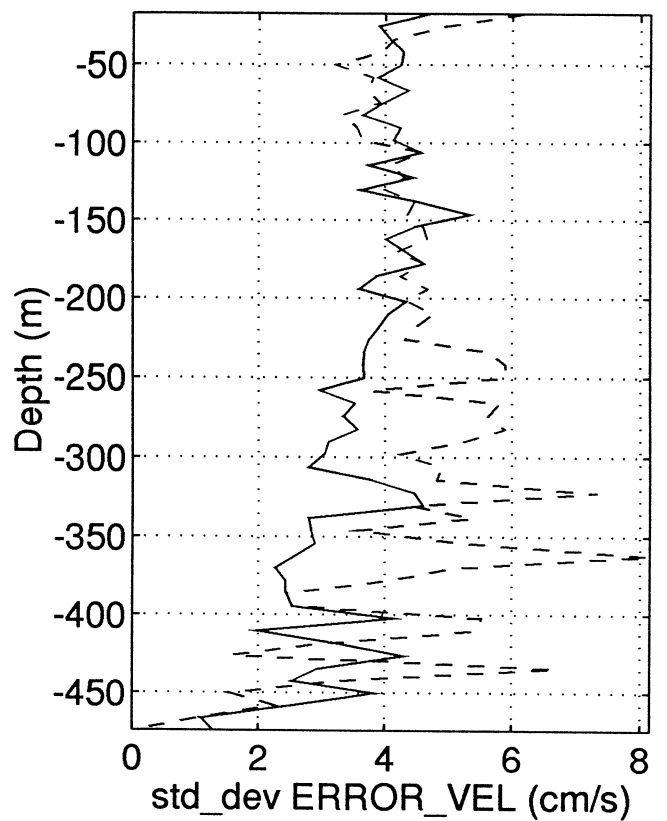
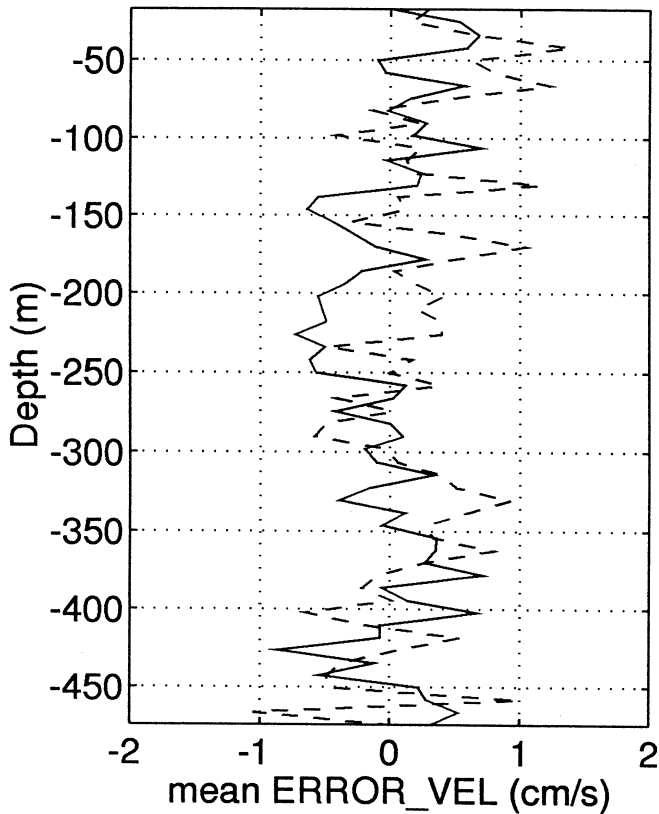


W component, ADCP JADE a9201
(Solid: On Station; Dash: Underway)

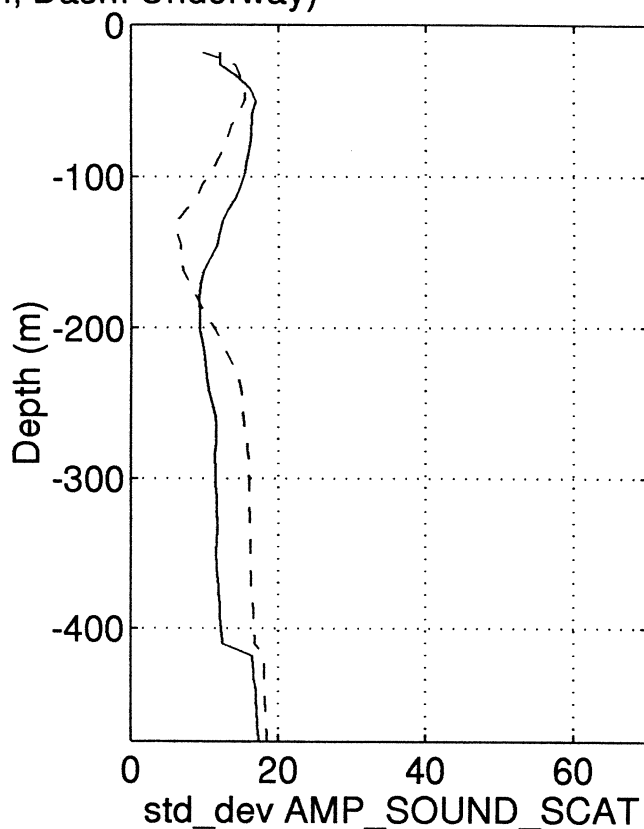
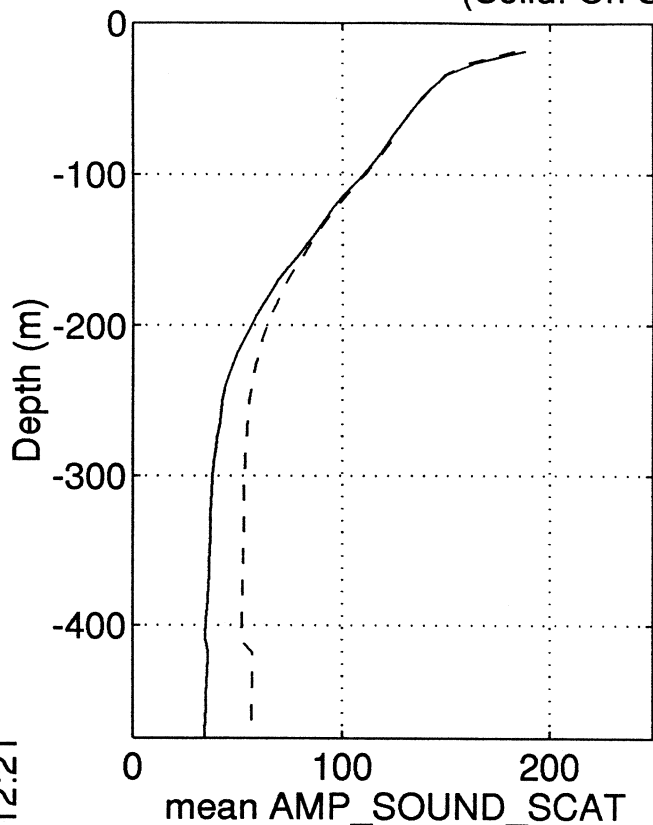


94- 4-25 12:20

ERROR VELOCITY, ADCP JADE a9201
(Solid: On Station; Dash: Underway)

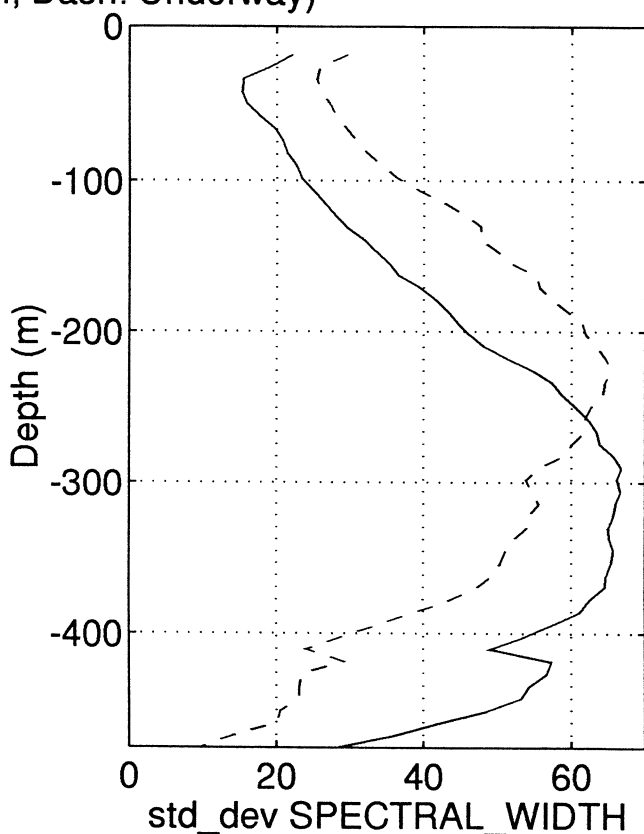
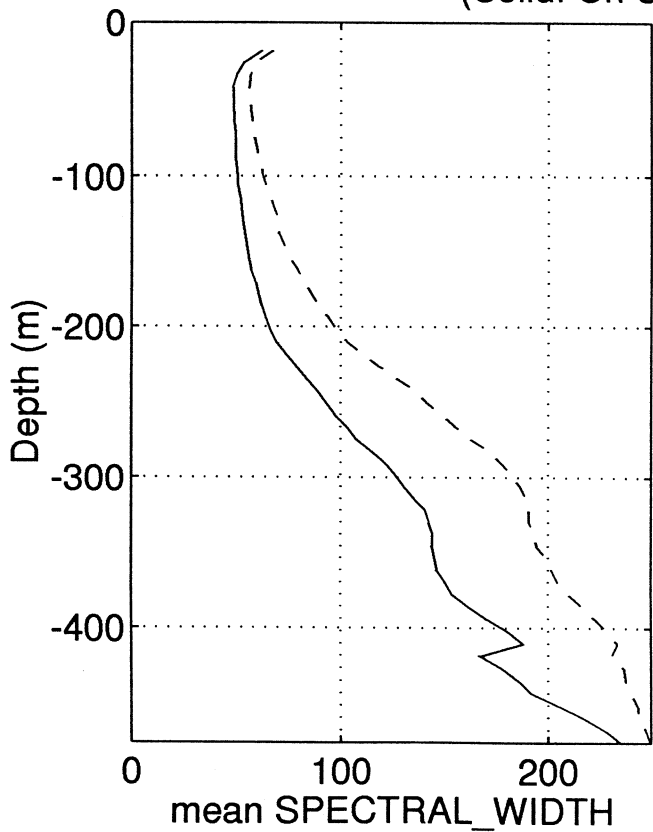


AMPLITUDE, ADCP JADE a9201
(Solid: On Station; Dash: Underway)

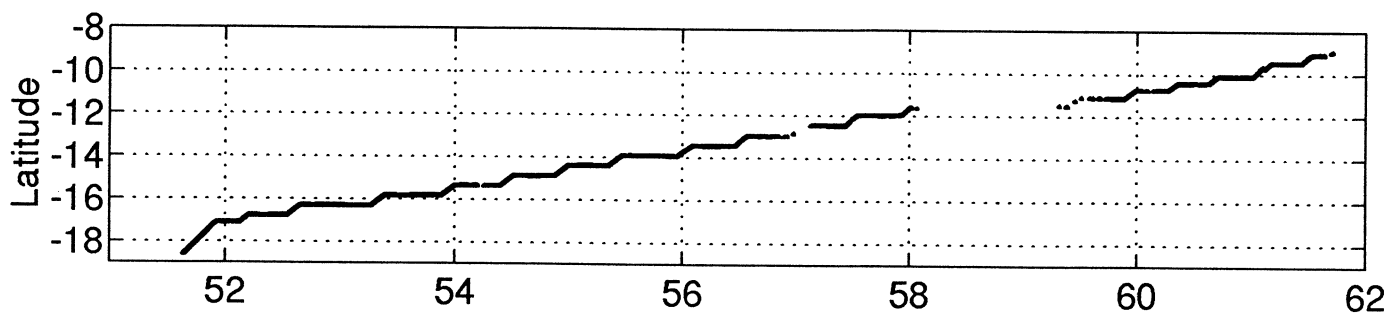
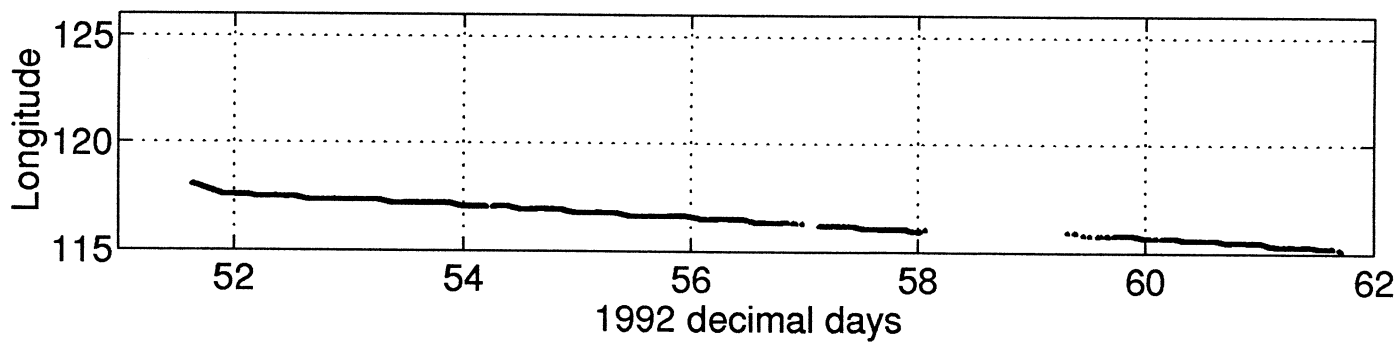
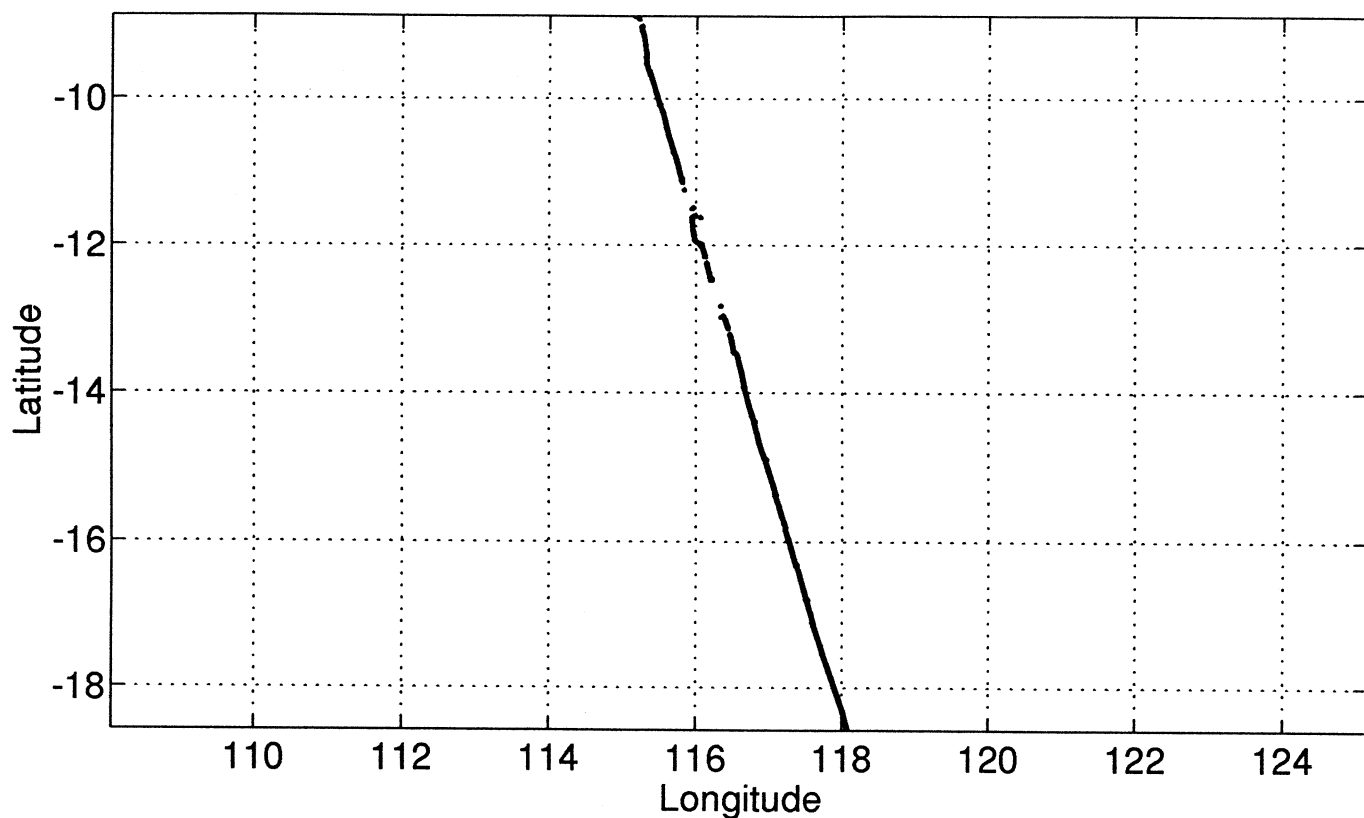


94- 4-25 12:21

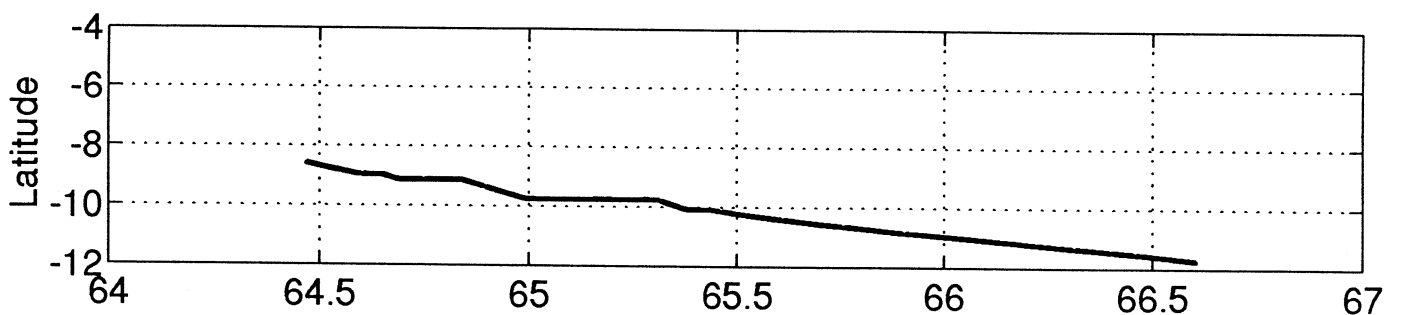
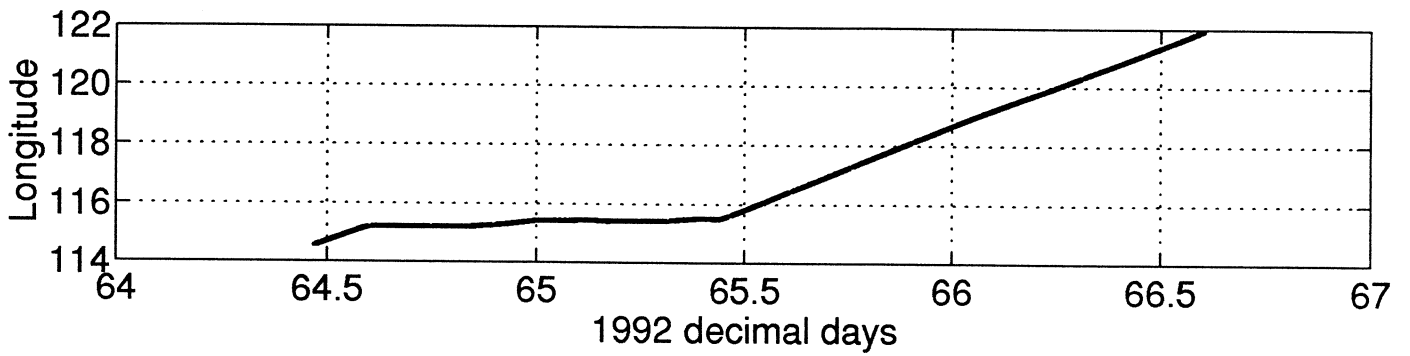
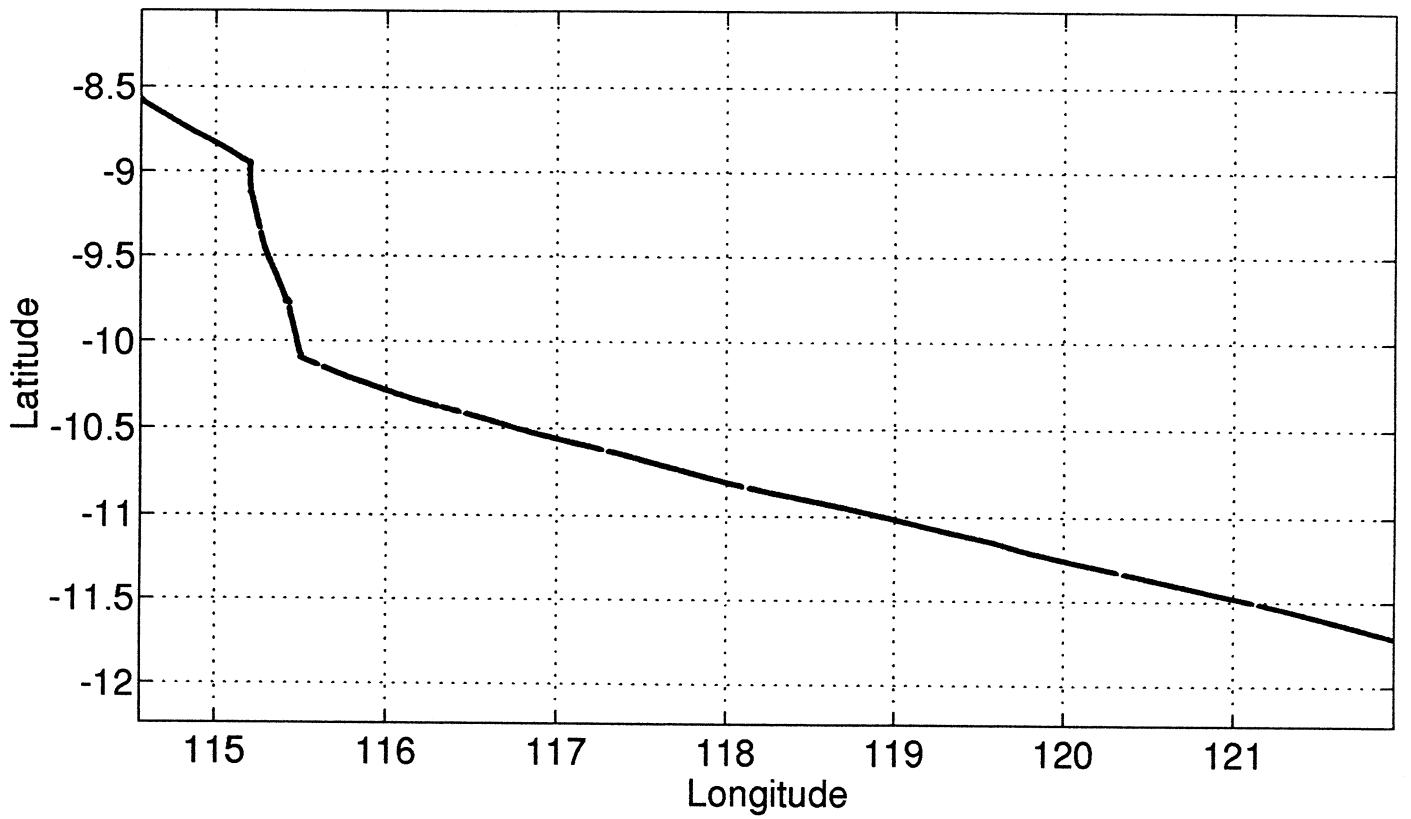
SPECTRAL WIDTH, ADCP JADE a9201
(Solid: On Station; Dash: Underway)



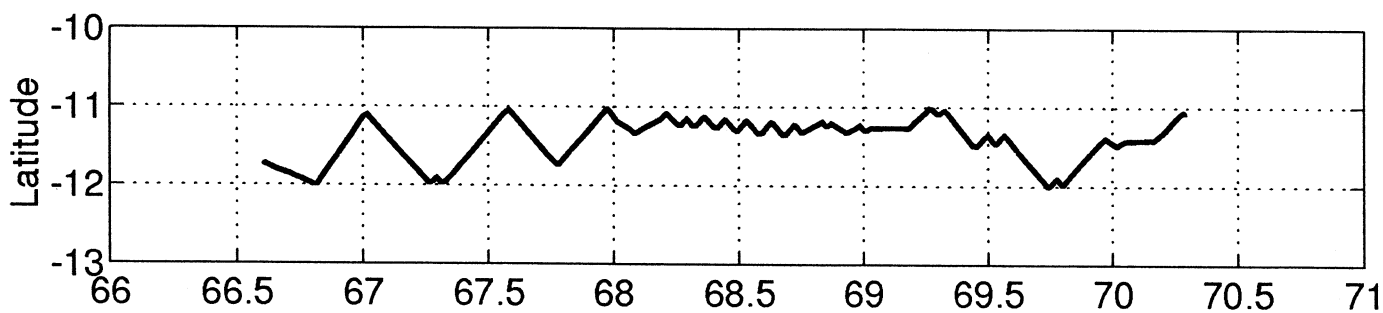
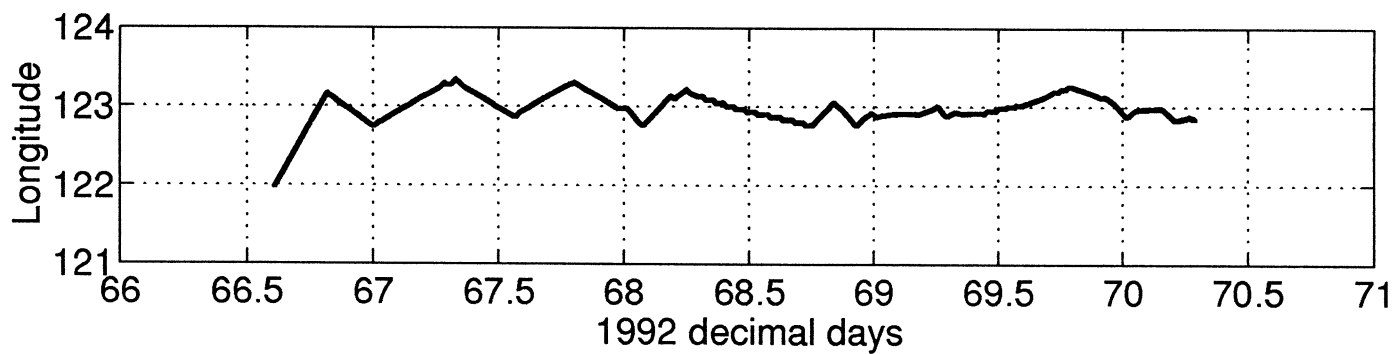
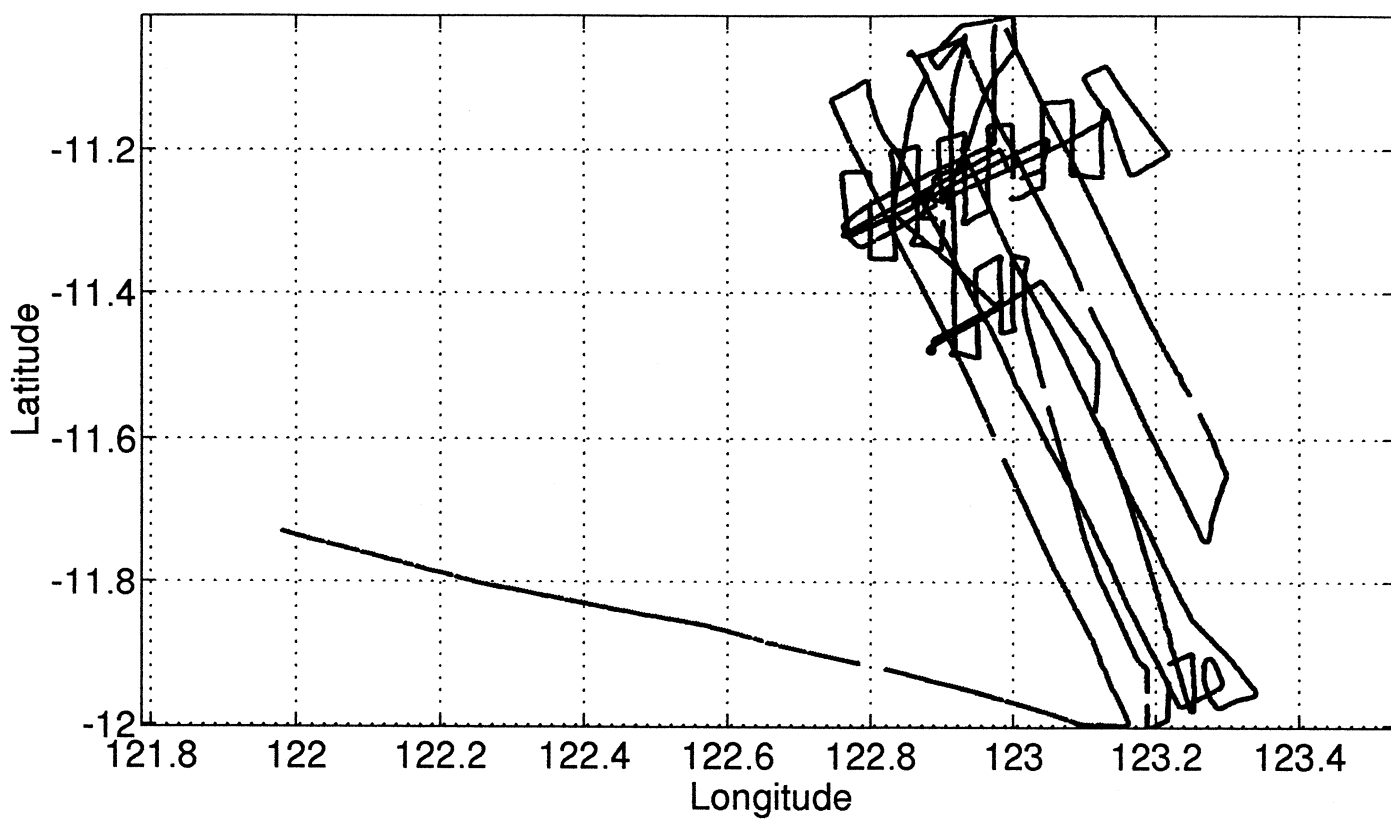
JADE2 a9201 (.edf): Cruise Track (1992/02/21 15:22:01 to 1992/03/02 1 7:03:01)



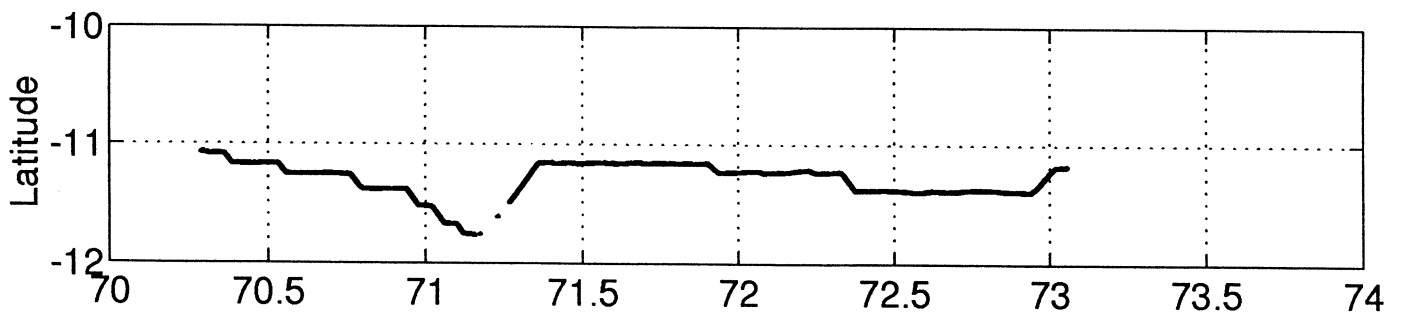
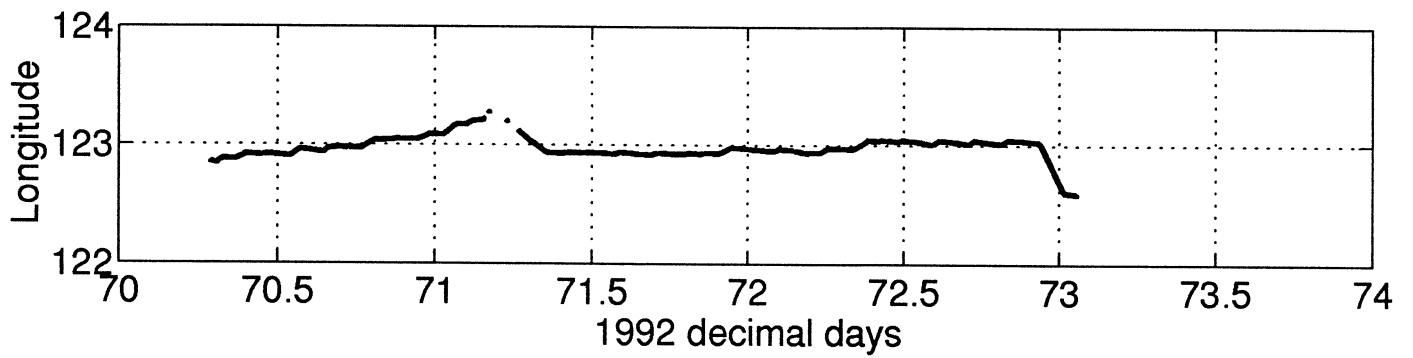
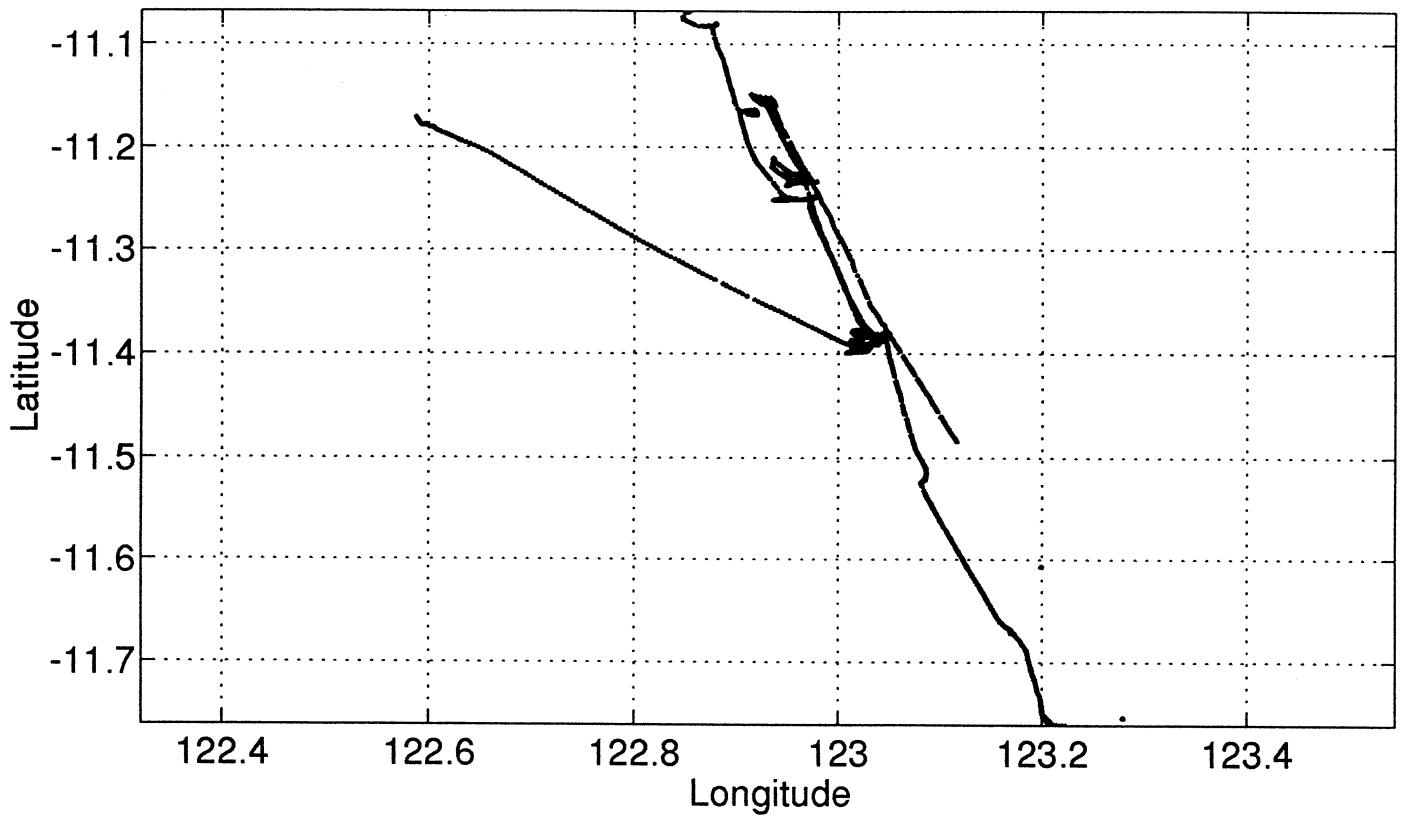
JADE2 a9202 (.gps): Cruise Track (1992/03/05 11:19:03 to 1992/03/07 14:26:01)



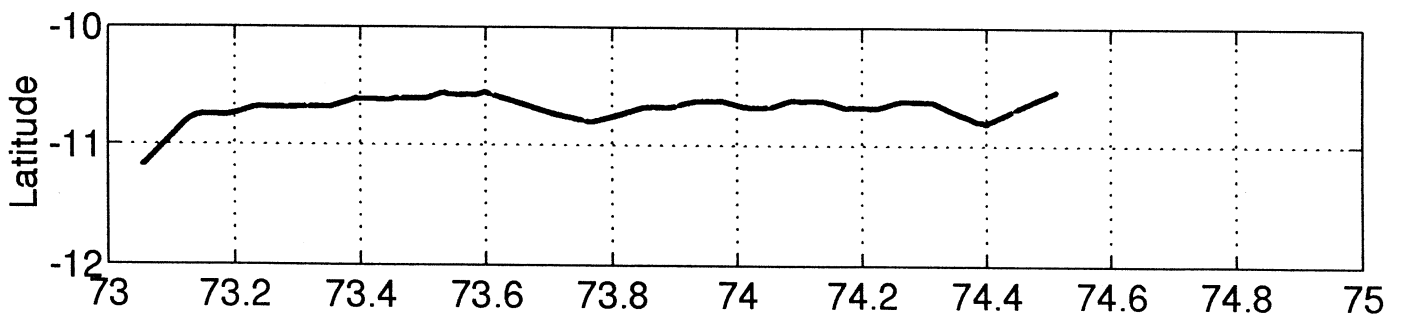
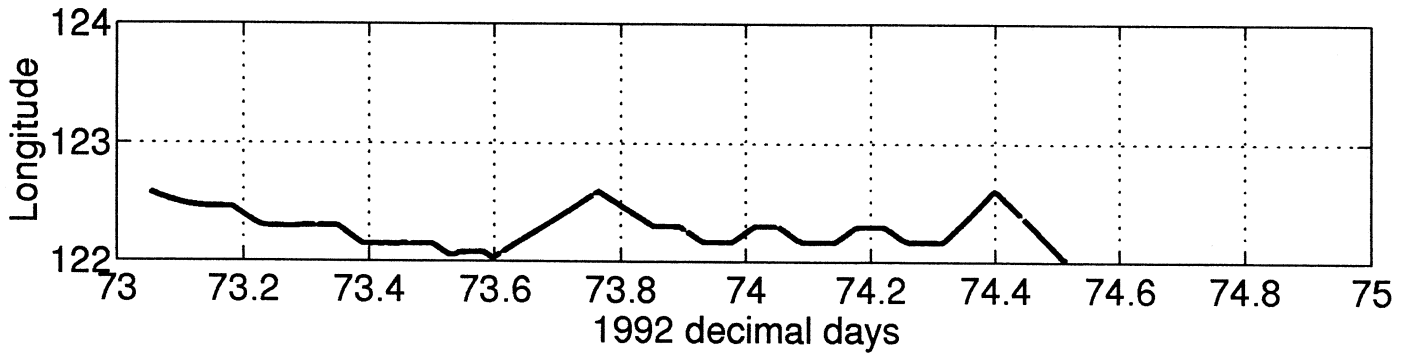
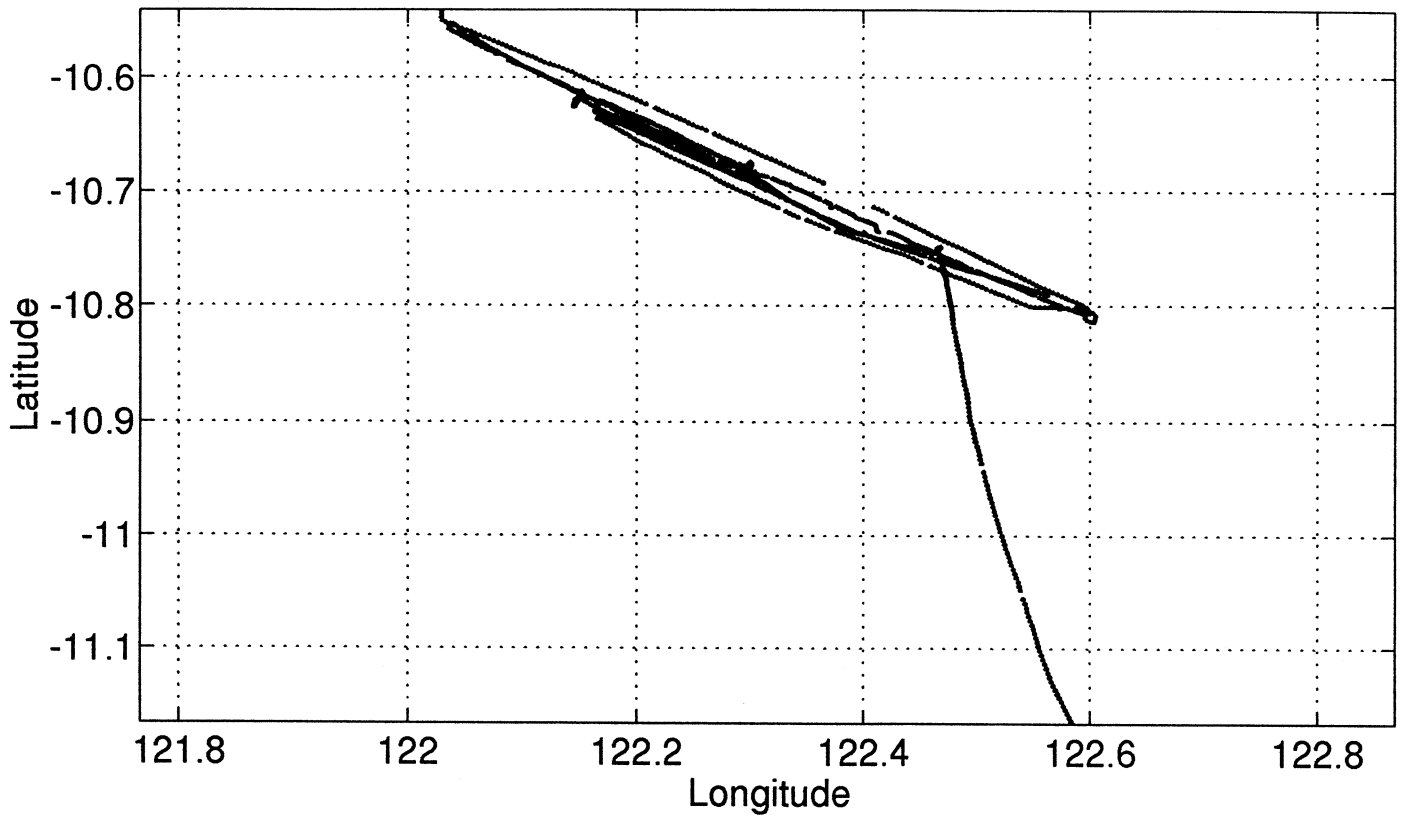
JADE2 a9203 (.gps): Cruise Track (1992/03/07 14:37:01 to 1992/03/11 0 6:55:03)



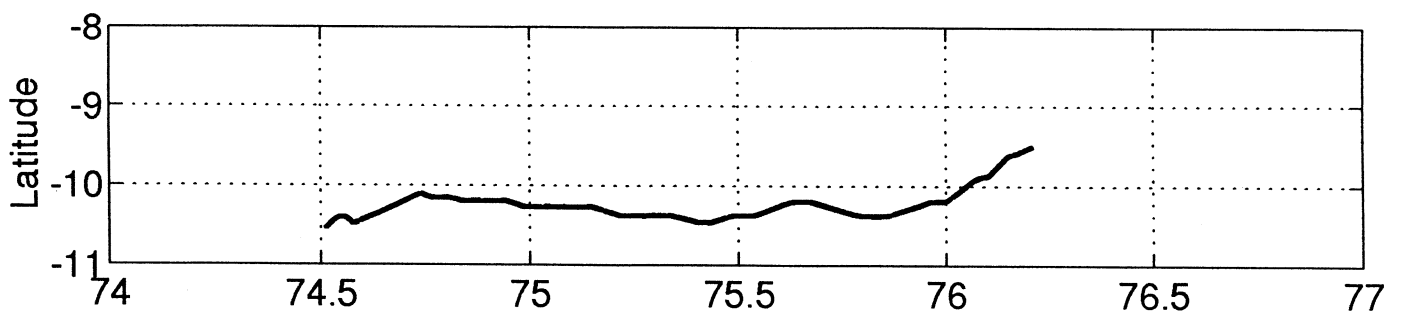
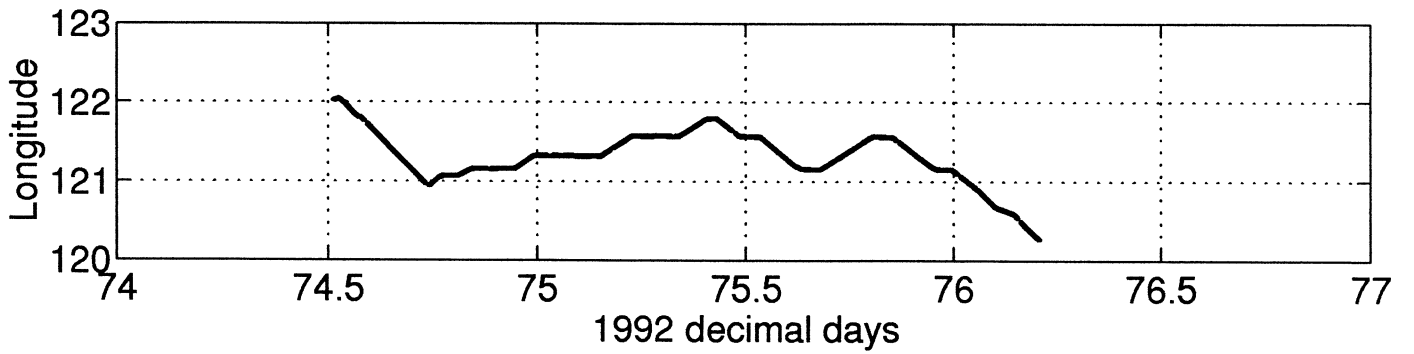
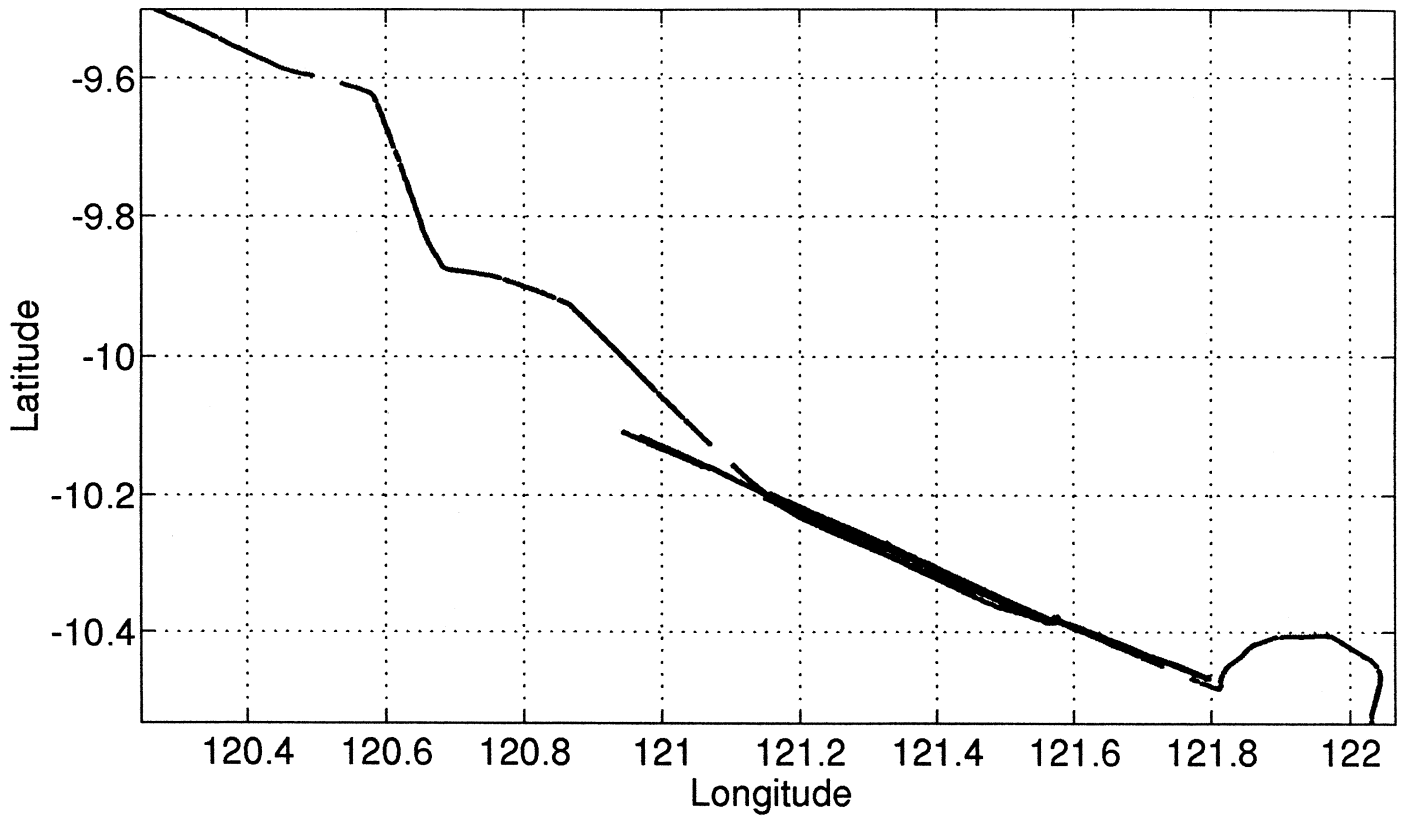
JADE2 a9204 (.edf): Cruise Track (1992/03/11 06:58:01 to 1992/03/14 0 1:18:01)



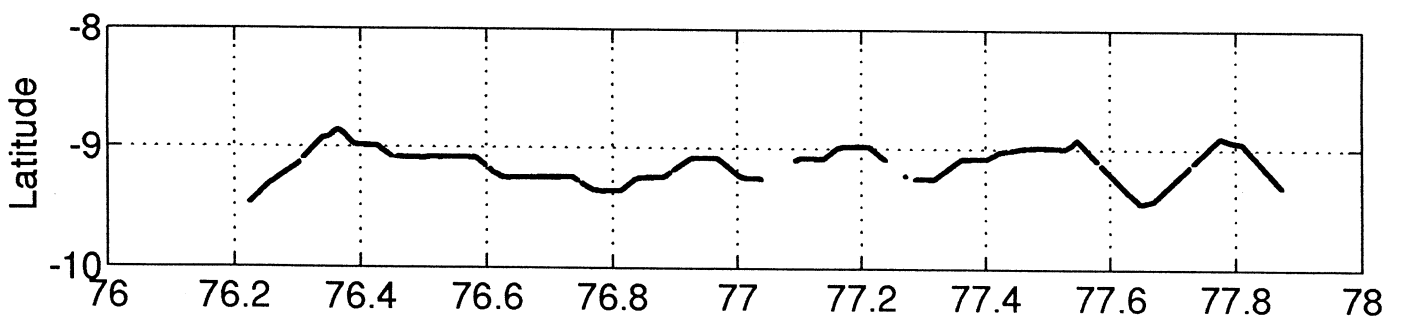
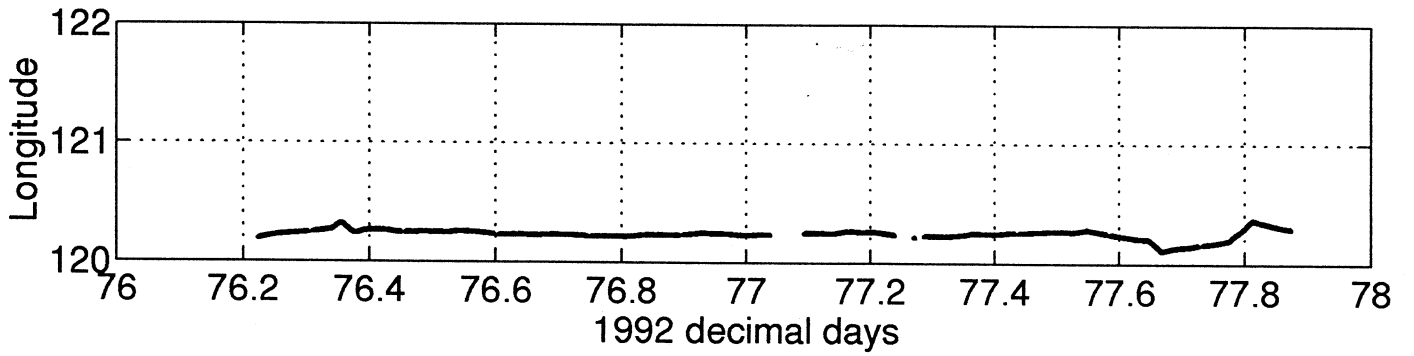
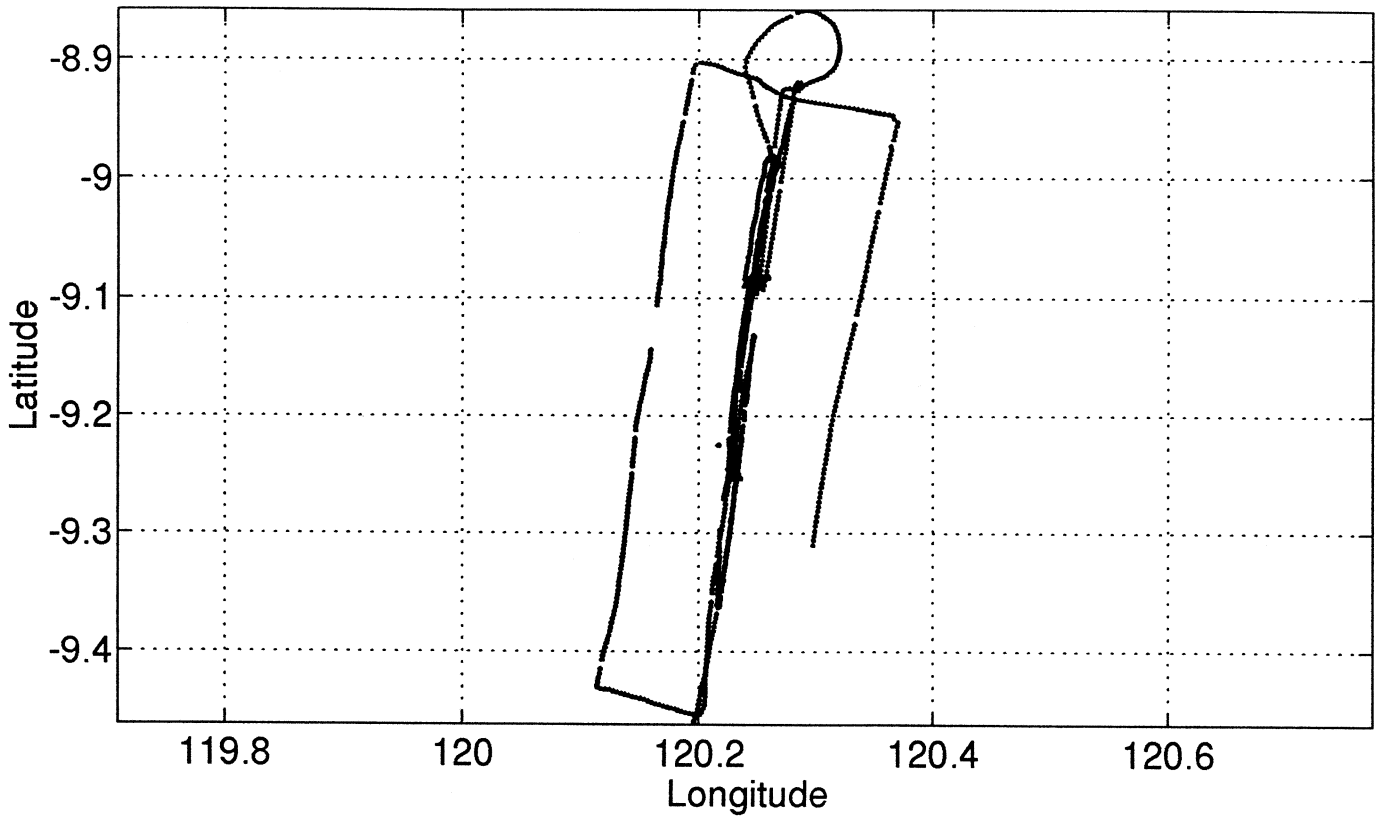
JADE2 a9205 (.gps): Cruise Track (1992/03/14 01:20:01 to 1992/03/15 1 2:16:01)



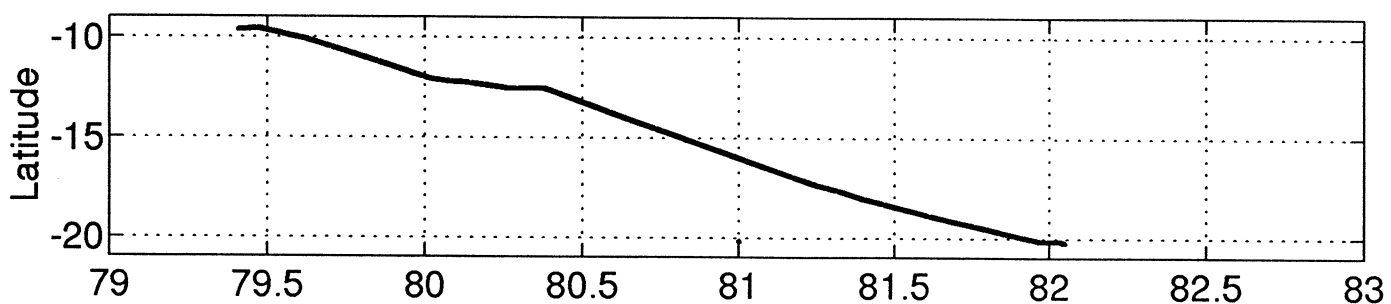
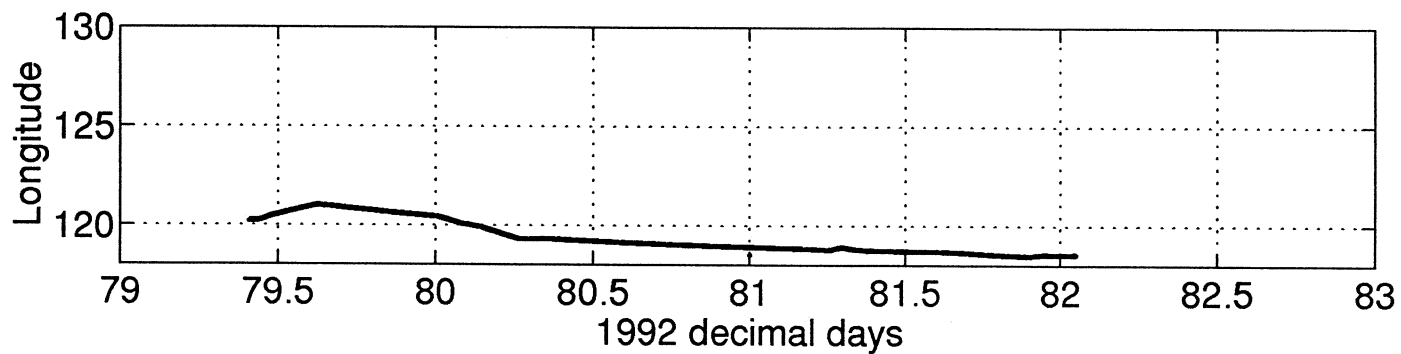
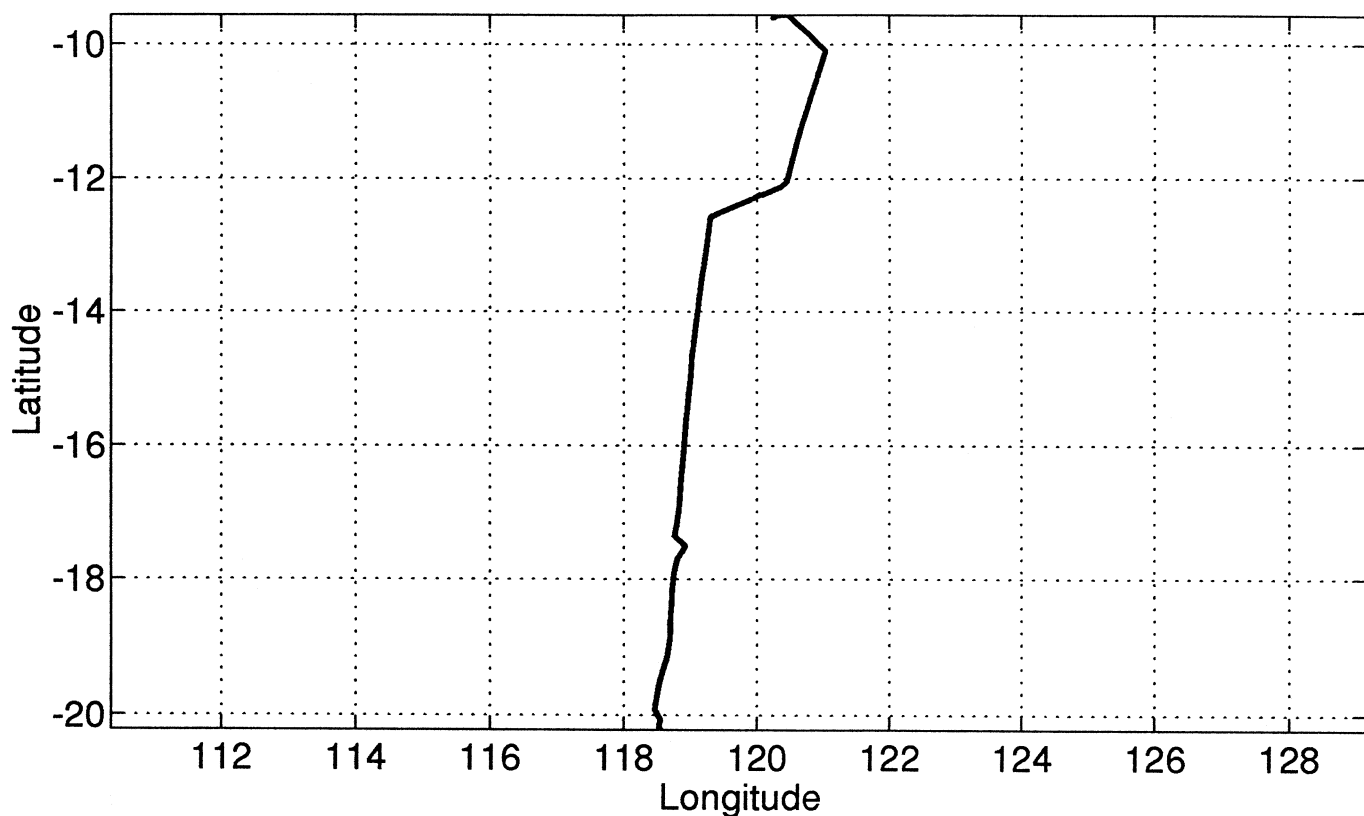
JADE2 a9206 (.gps): Cruise Track (1992/03/15 12:19:03 to 1992/03/17 0 4:58:01)



JADE2 a9207 (.edf): Cruise Track (1992/03/17 05:24:03 to 1992/03/18 2 0:57:01)

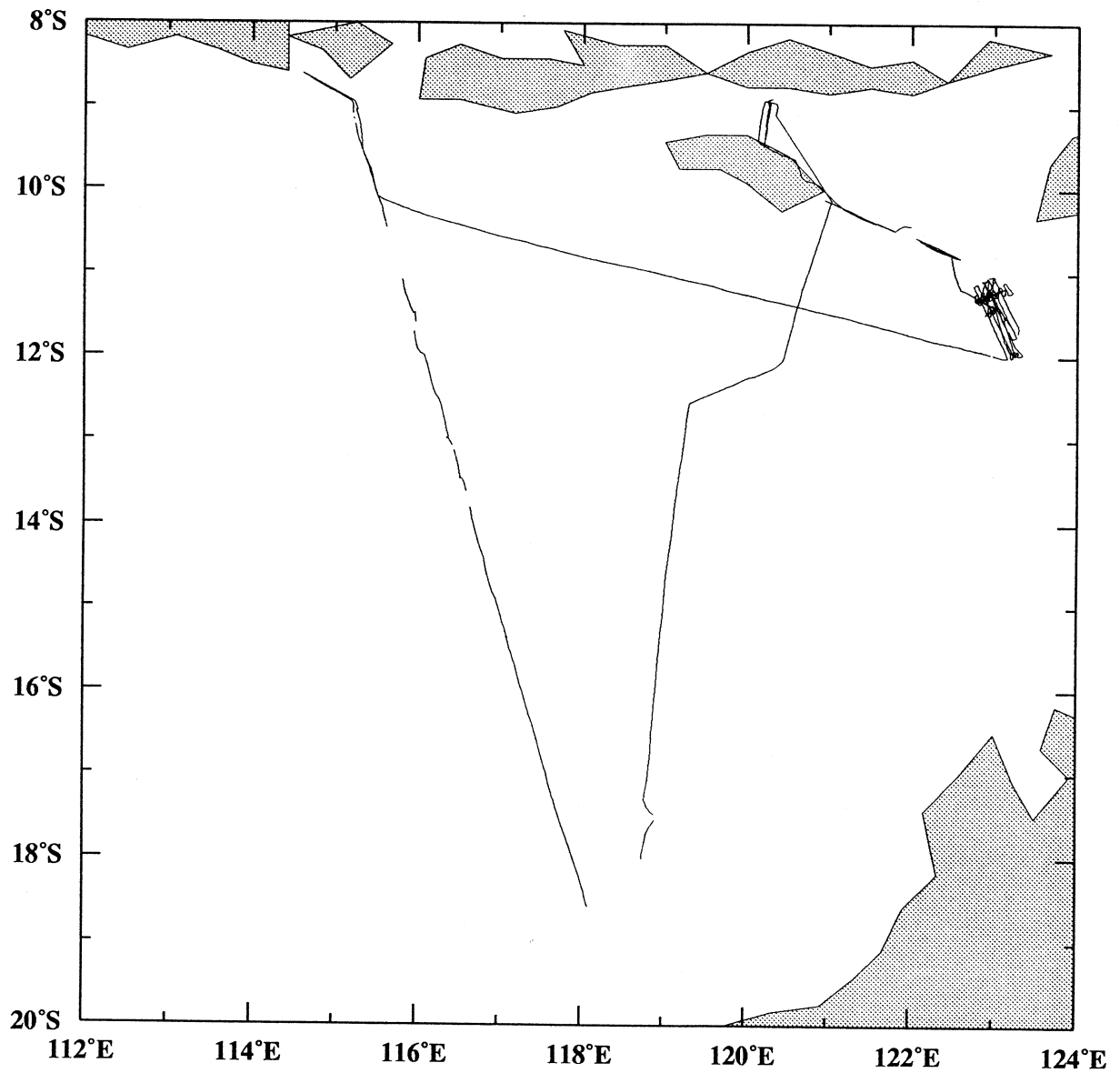


JADE2 a9208 (.gps): Cruise Track (1992/03/20 09:52:01 to 1992/03/23 0 1:10:03)



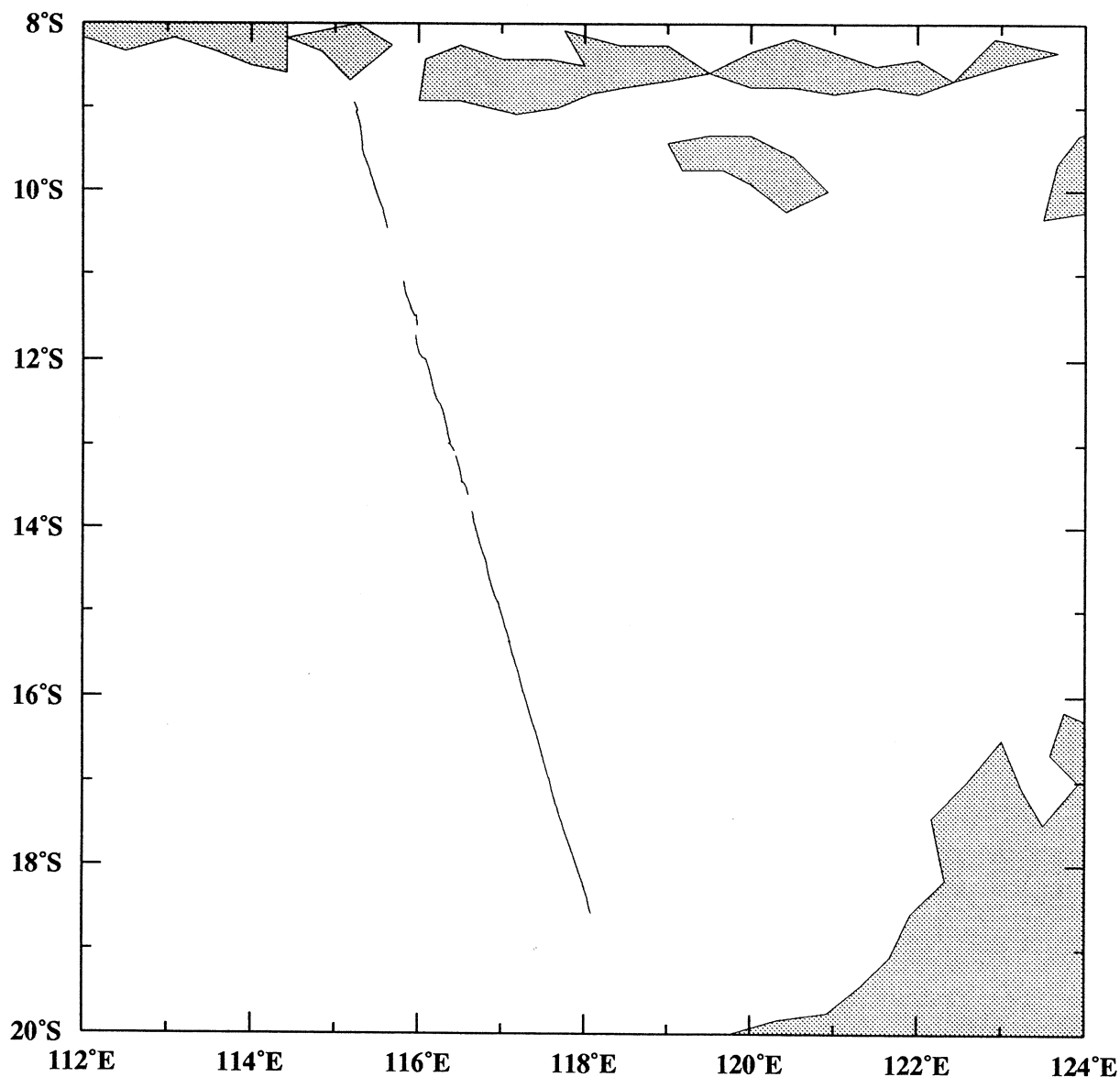
JADE

February 21 to March 22, 1992
Cruise track



MD9201

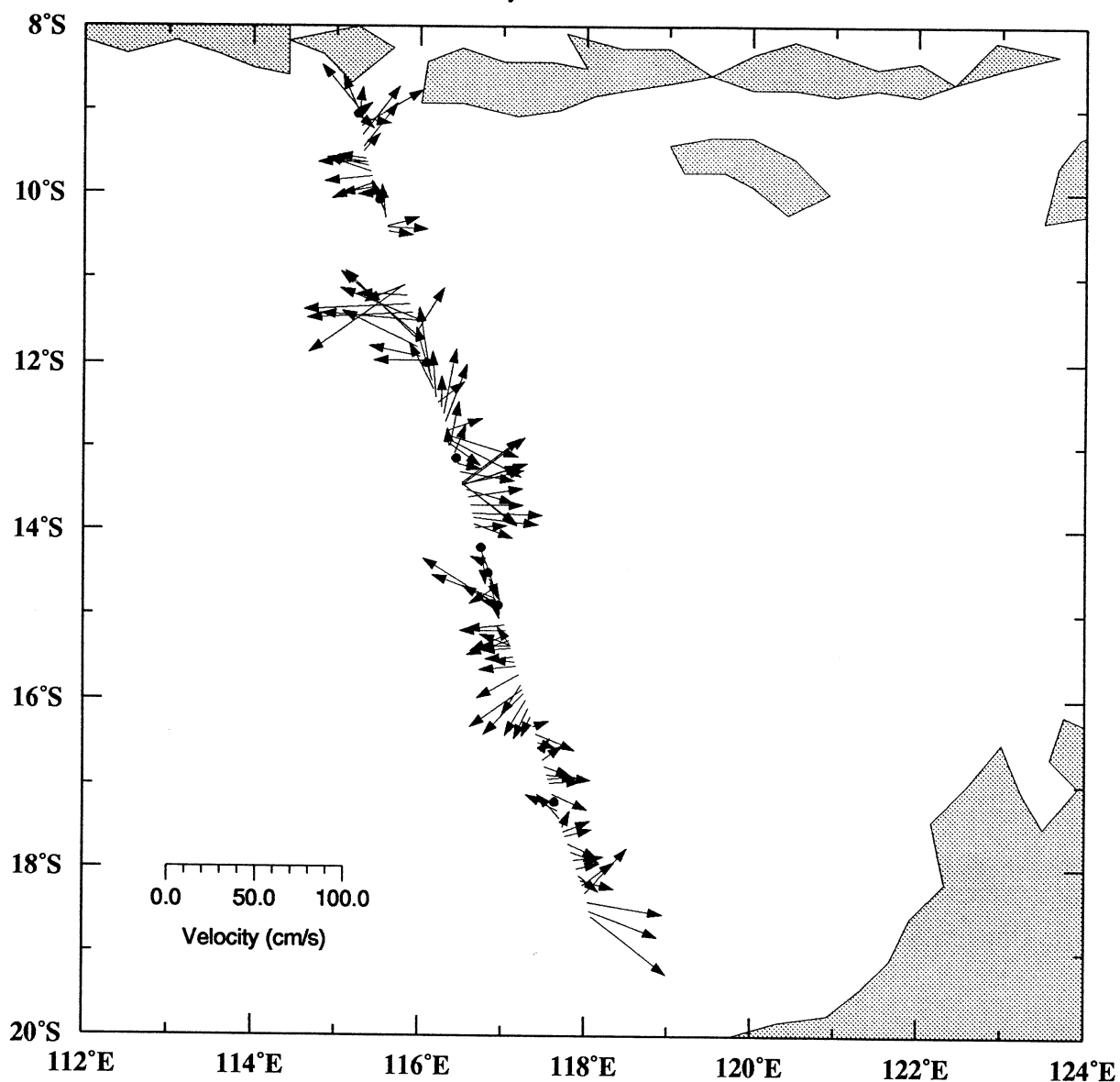
February 21 to March 2, 1992
Cruise track



MD9201

February 21 to March 2, 1992

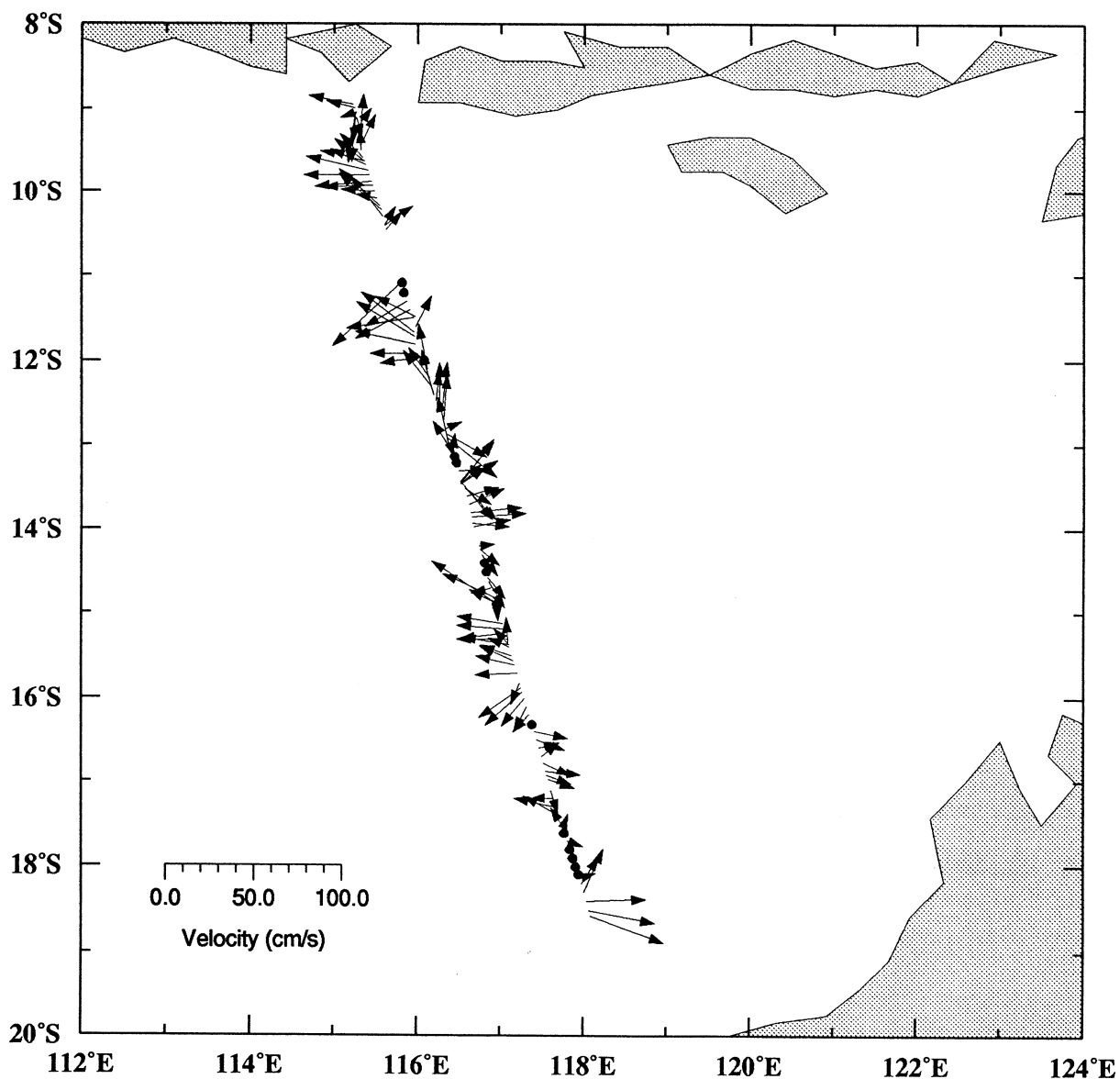
Layer: 20m to 25m



MD9201

February 21 to March 2, 1992

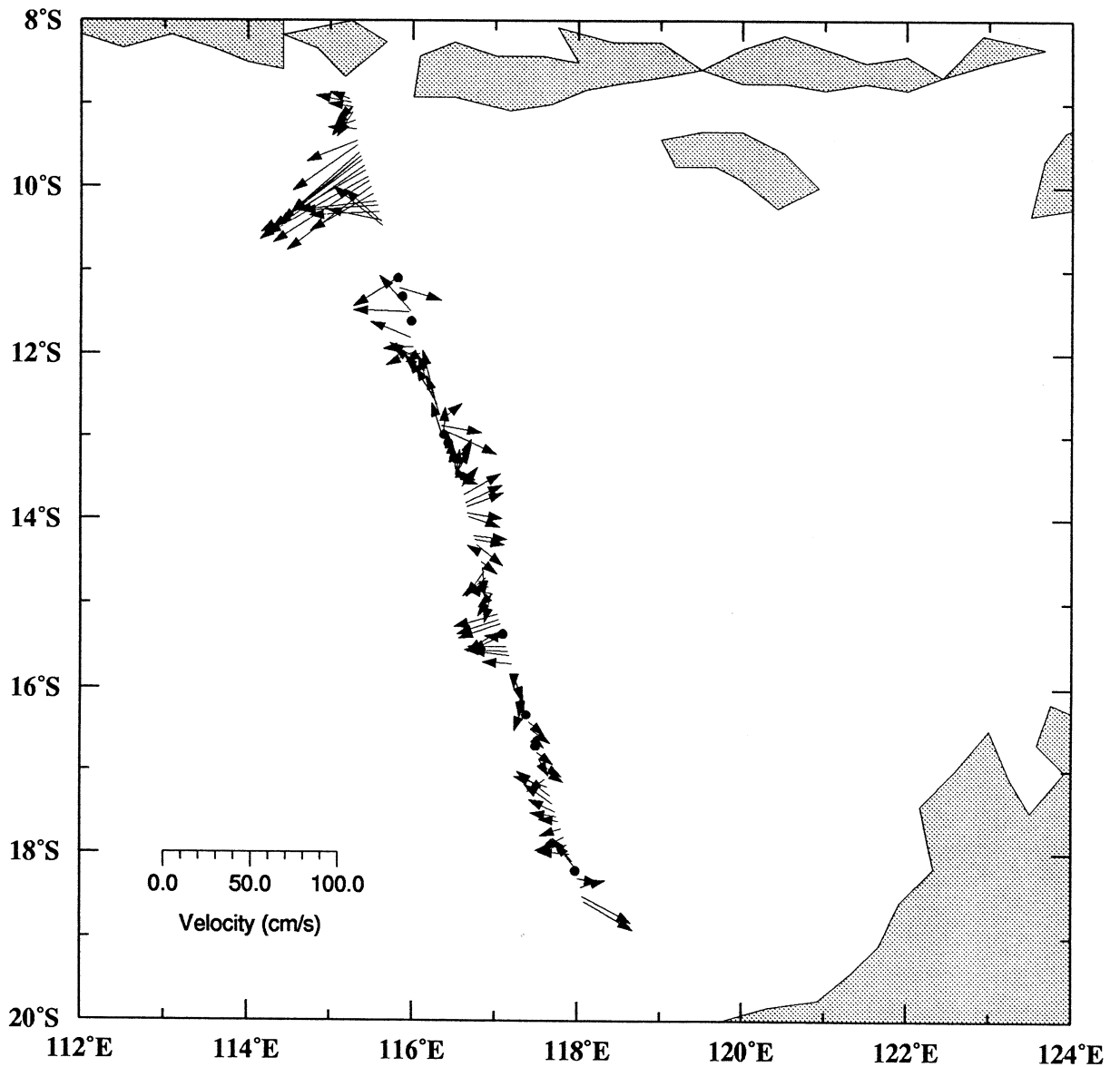
Layer: 25m to 75m



MD9201

February 21 to March 2, 1992

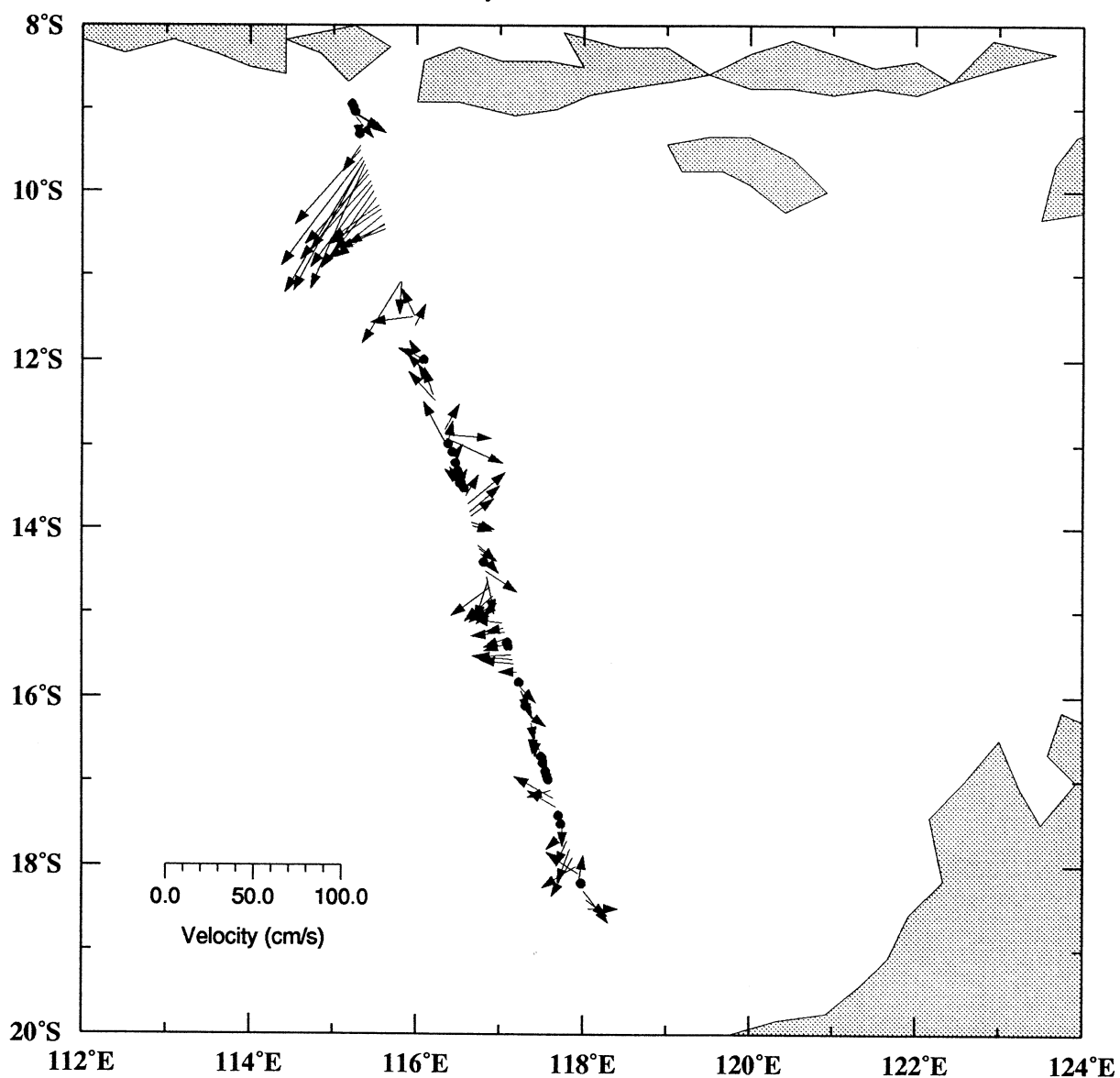
Layer: 75m to 125m



MD9201

February 21 to March 2, 1992

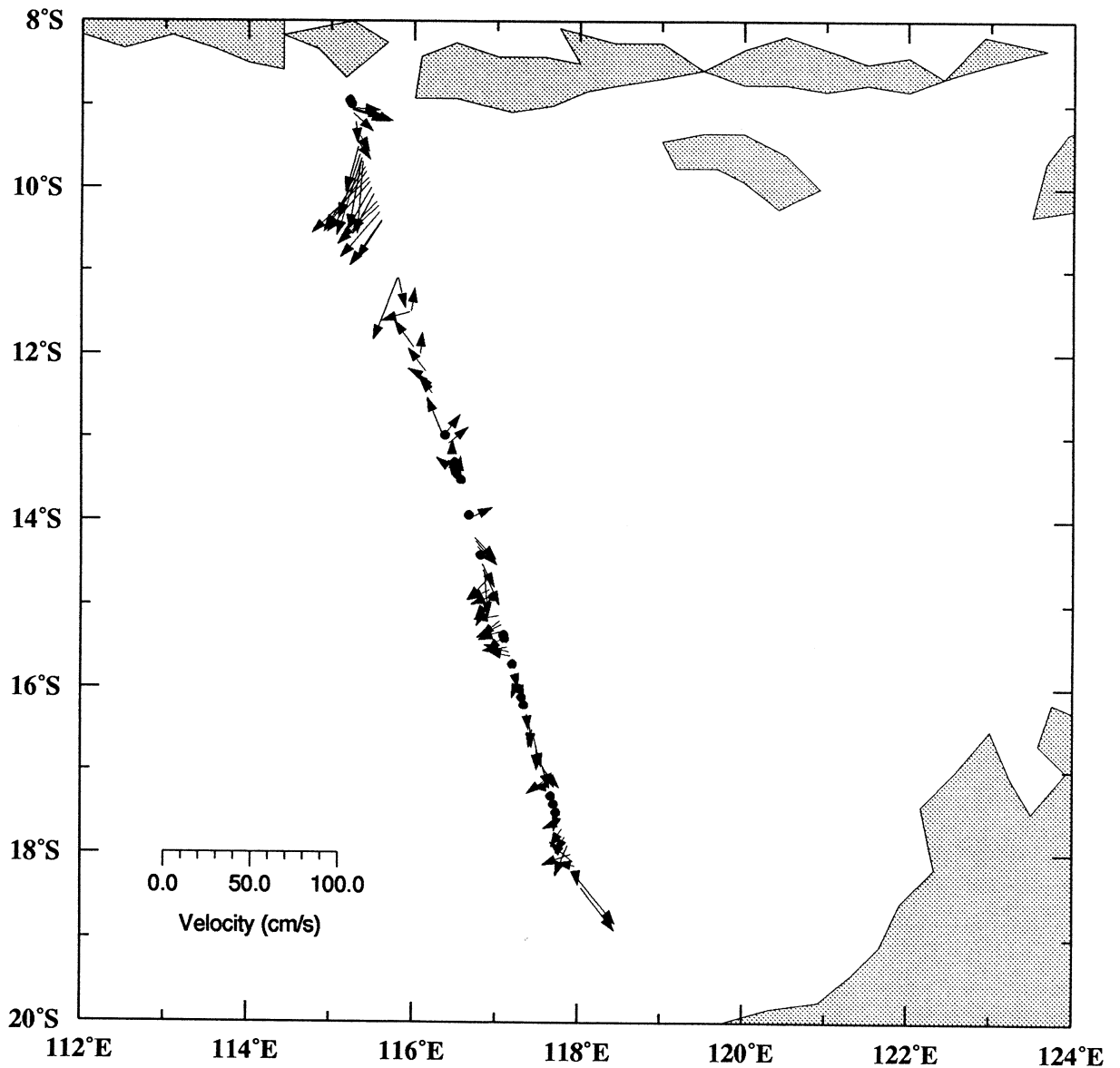
Layer: 125m to 175m



MD9201

February 21 to March 2, 1992

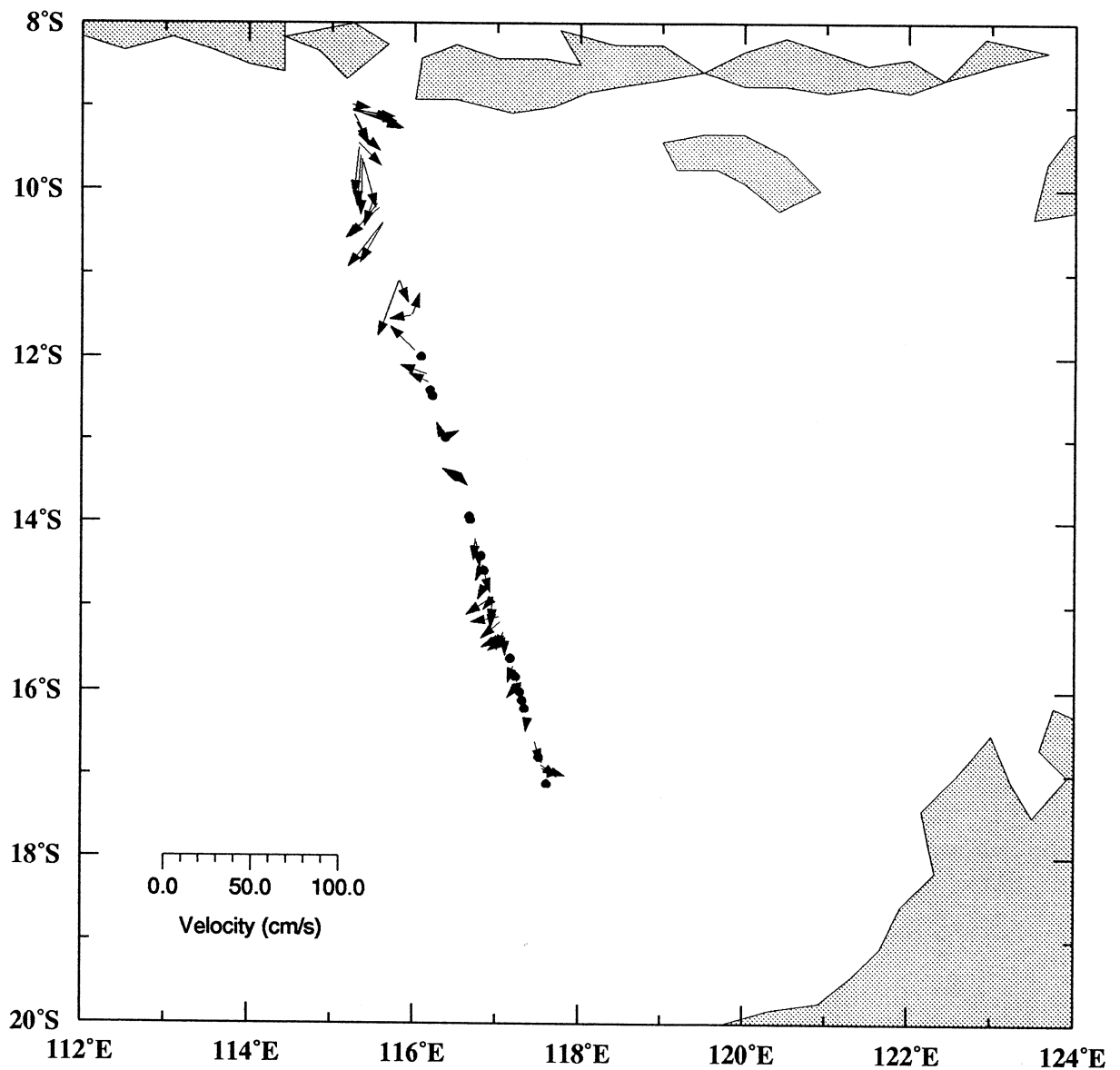
Layer: 175m to 225m



MD9201

February 21 to March 2, 1992

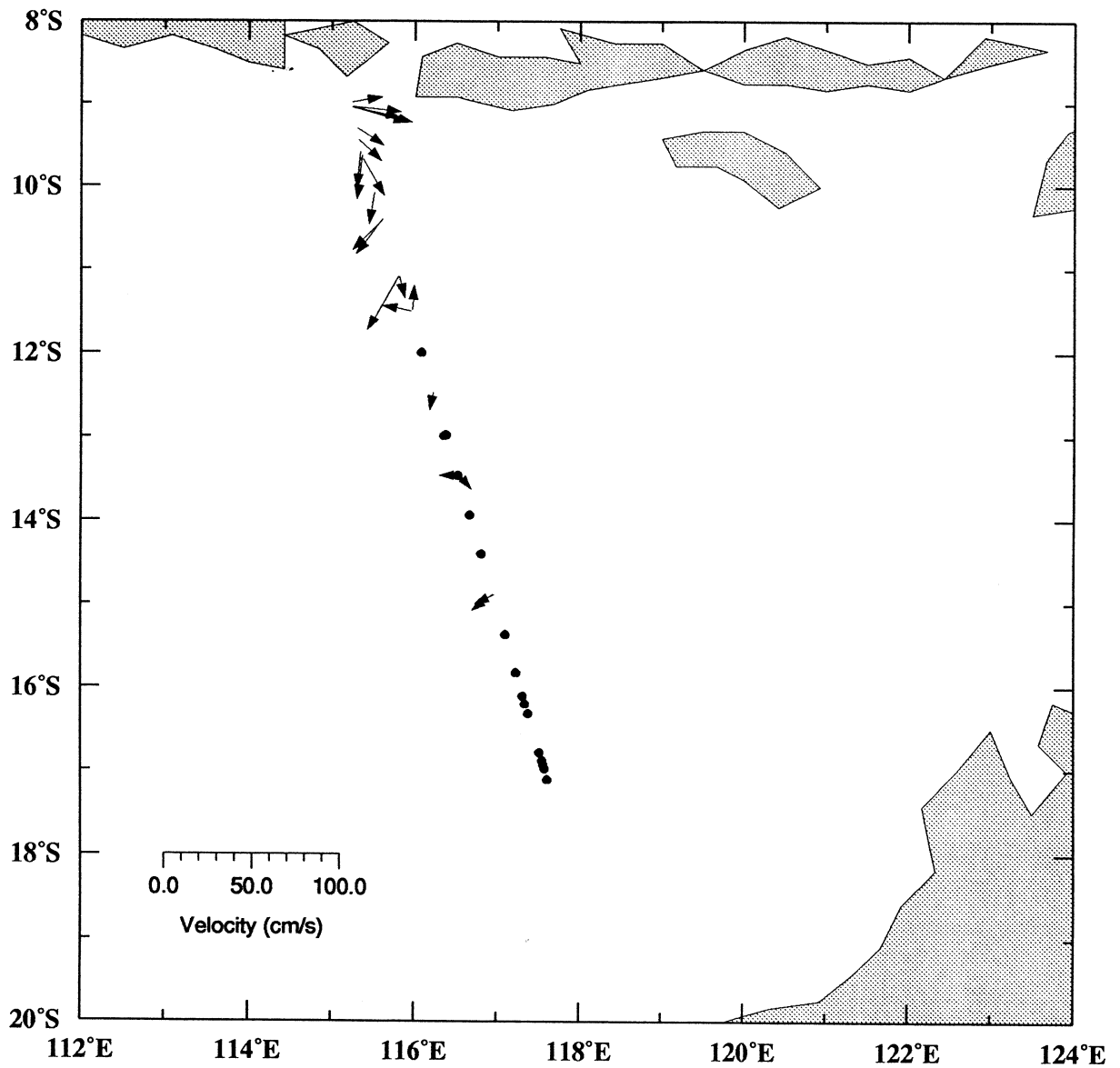
Layer: 225m to 275m



MD9201

February 21 to March 2, 1992

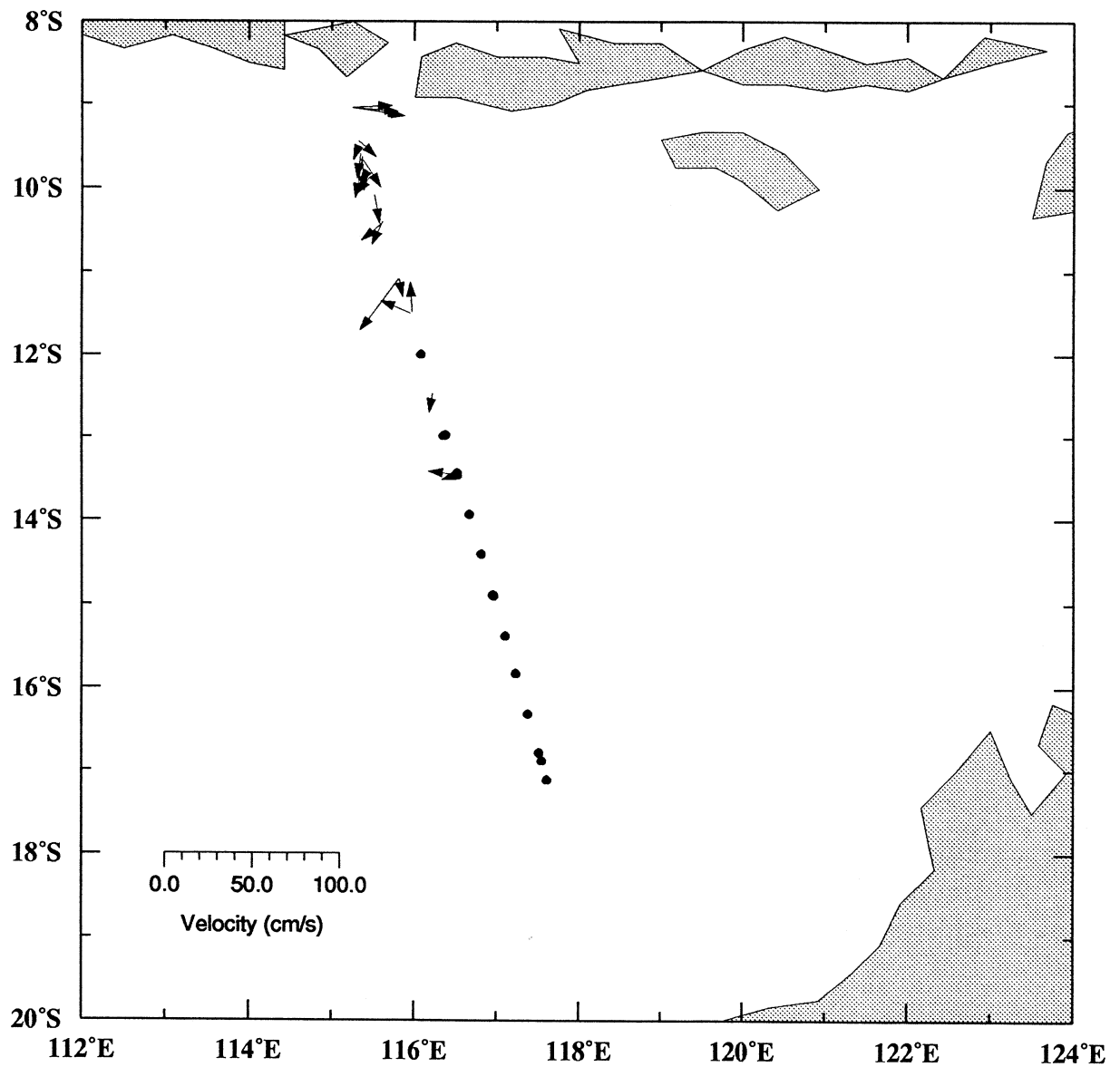
Layer: 275m to 325m



MD9201

February 21 to March 2, 1992

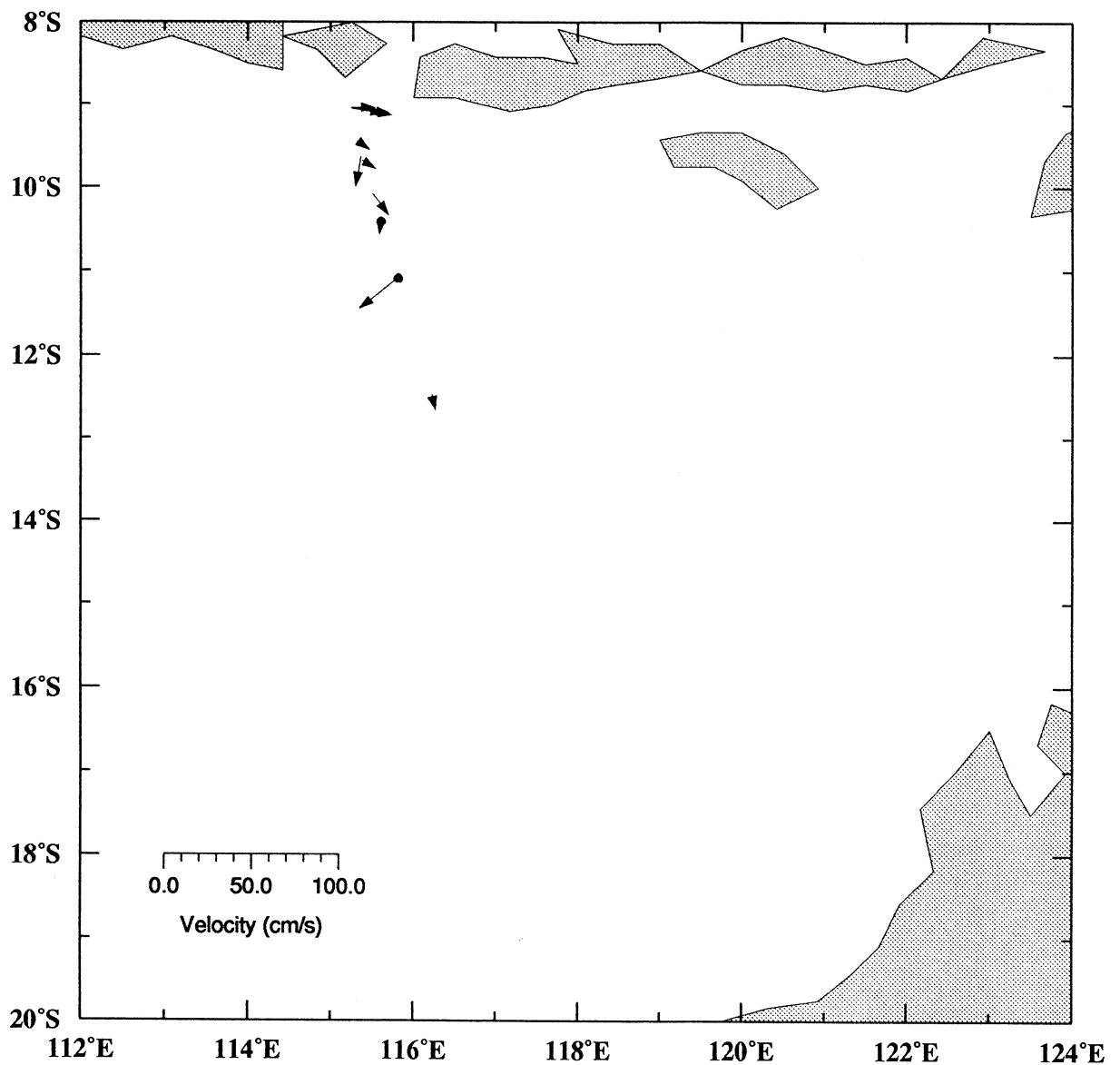
Layer: 325m to 375m



MD9201

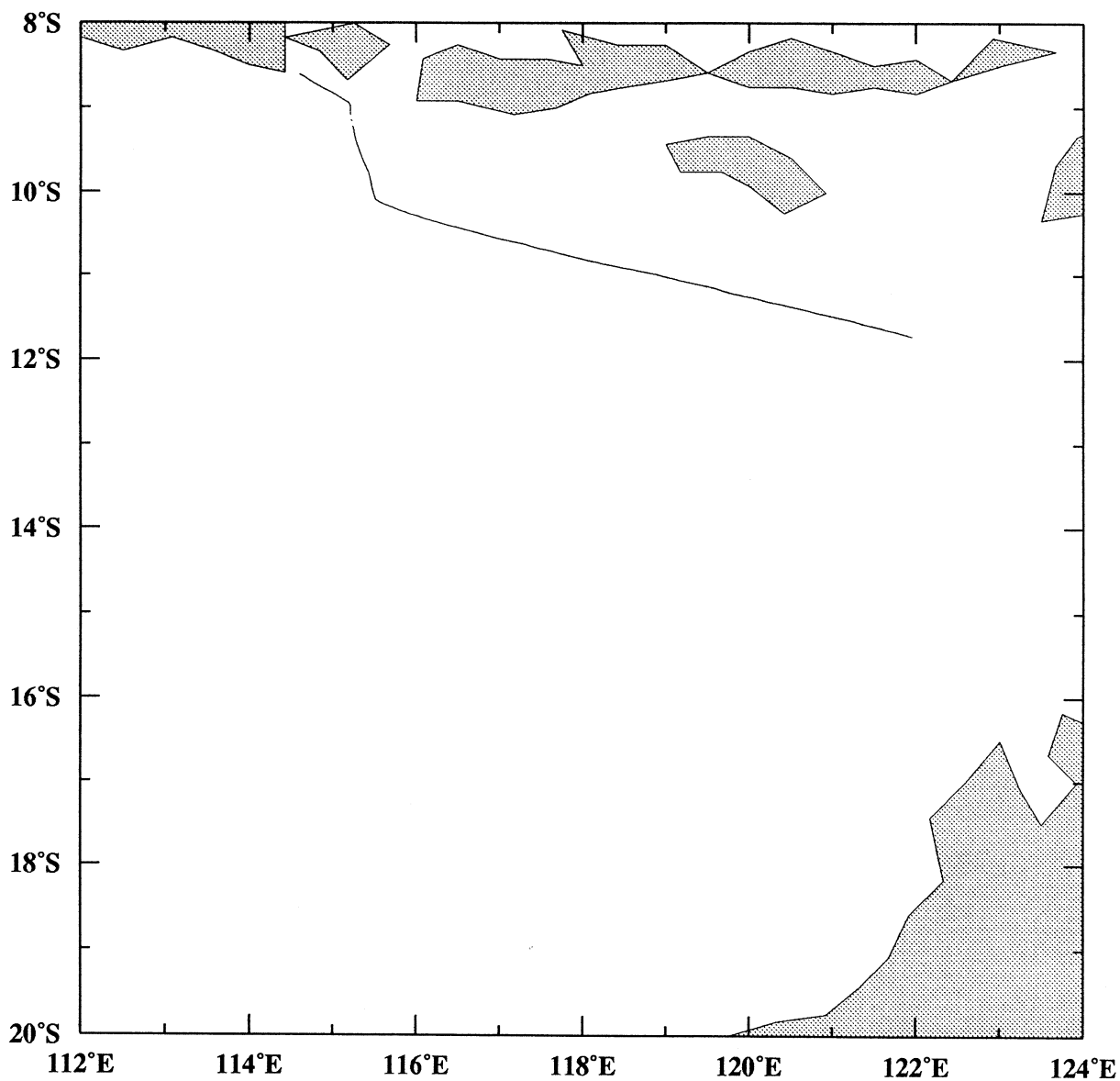
February 21 to March 2, 1992

Layer: 375m to 425m



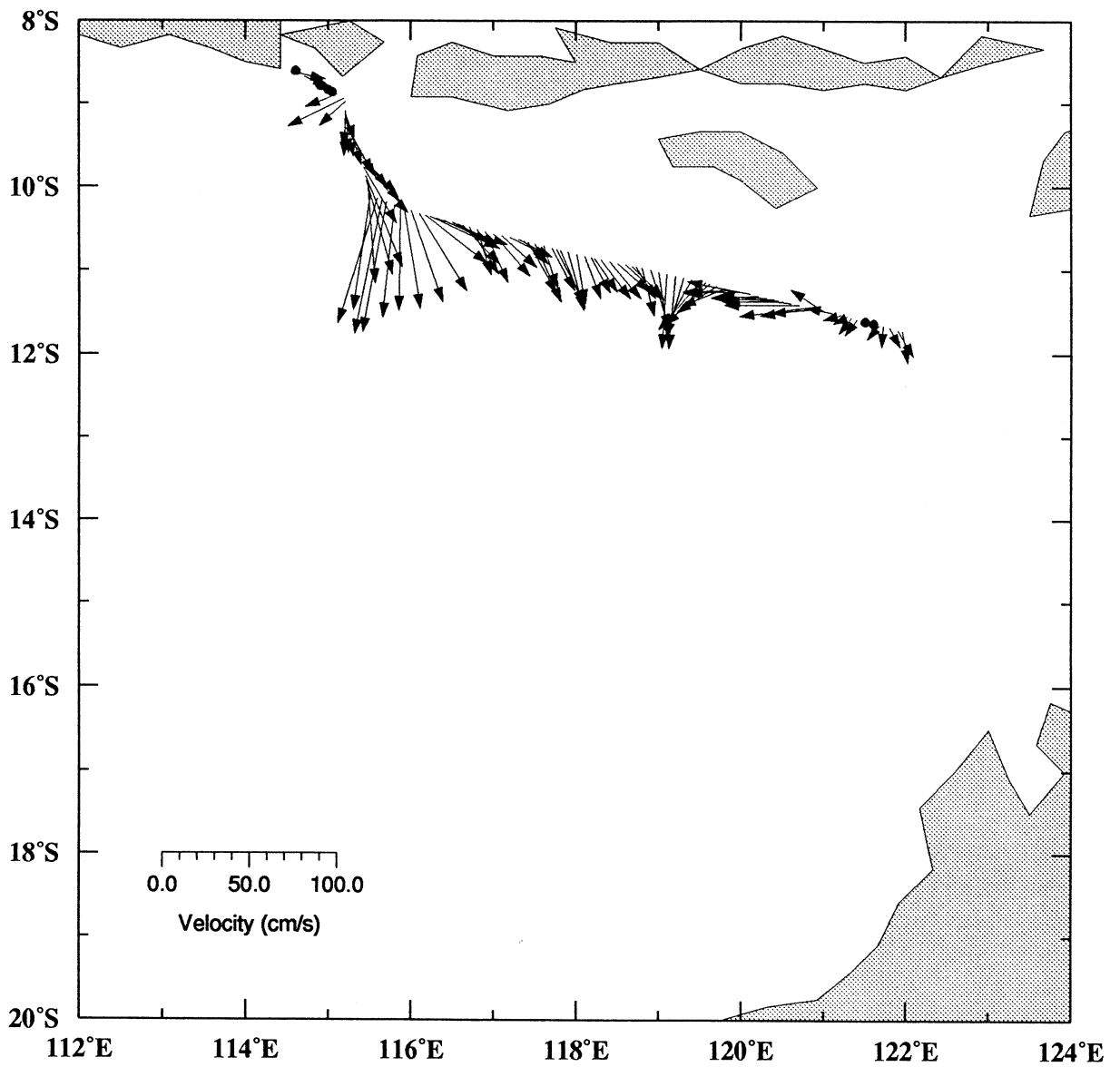
MD9202

March 5 to 7, 1992
Cruise track



MD9202

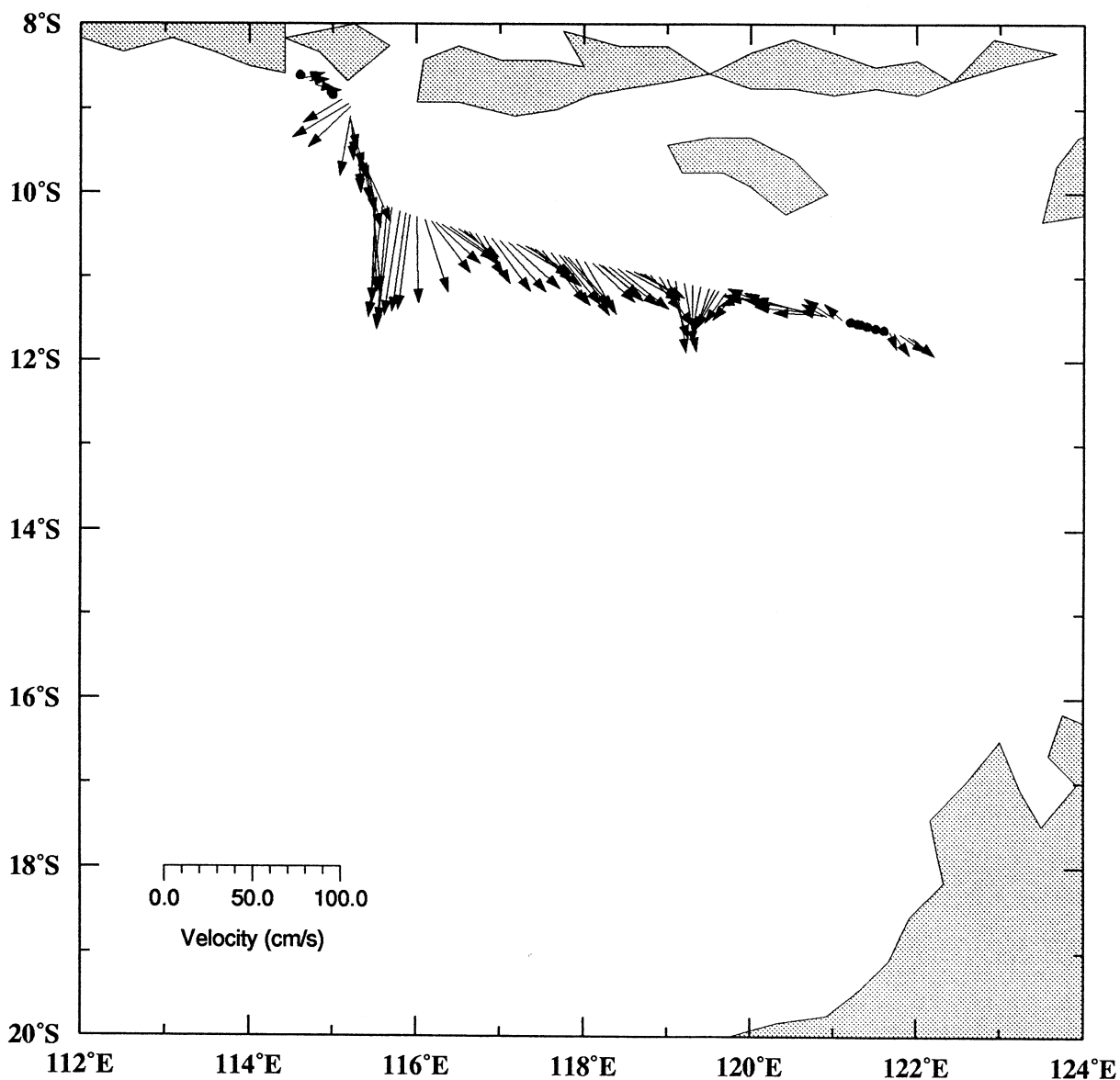
March 5 to 7, 1992
Layer: 20m to 25m



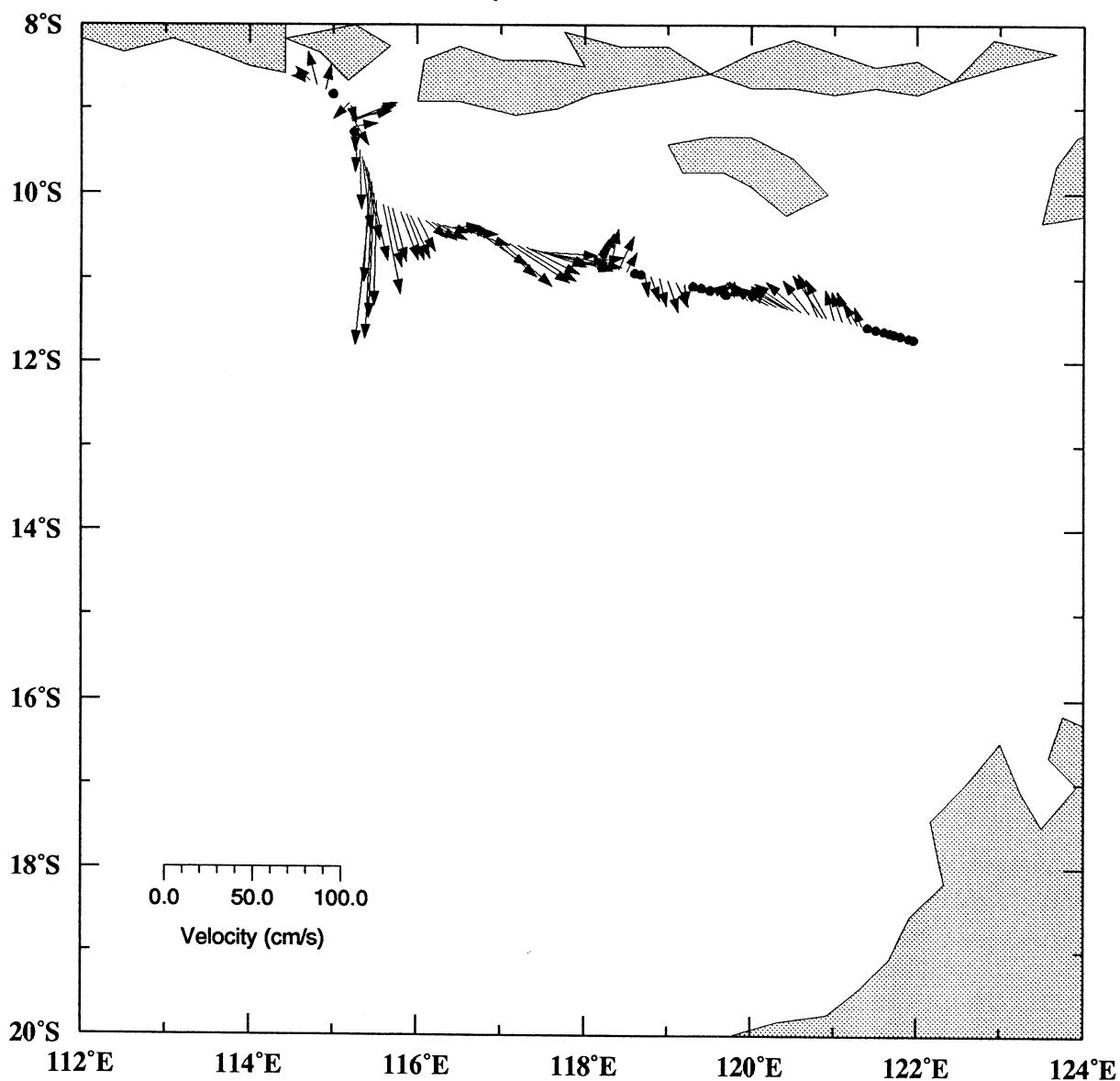
MD9202

March 5 to 7, 1992

Layer: 25m to 75m

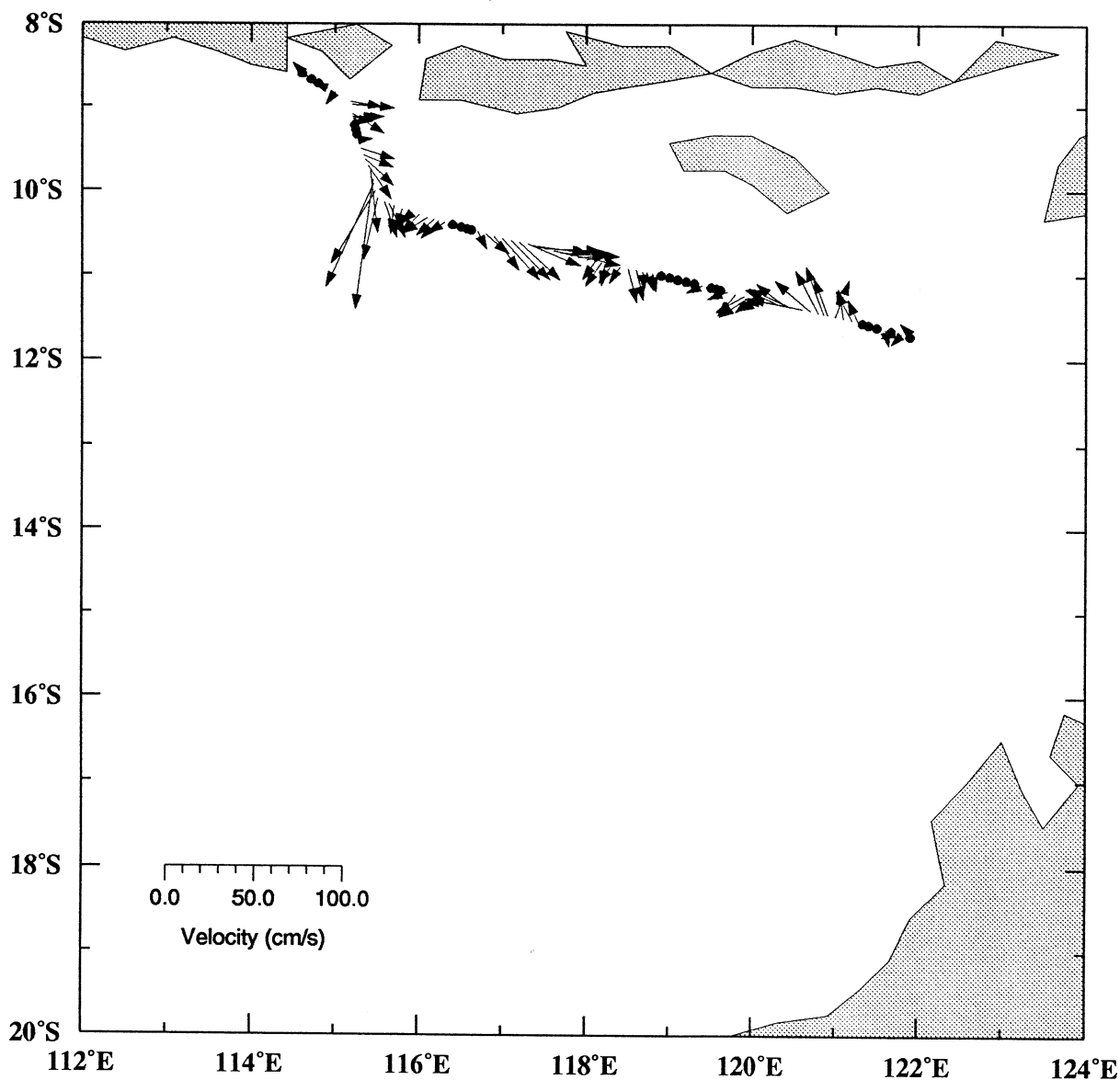


MD9202
March 5 to 7, 1992
Layer: 75m to 125m

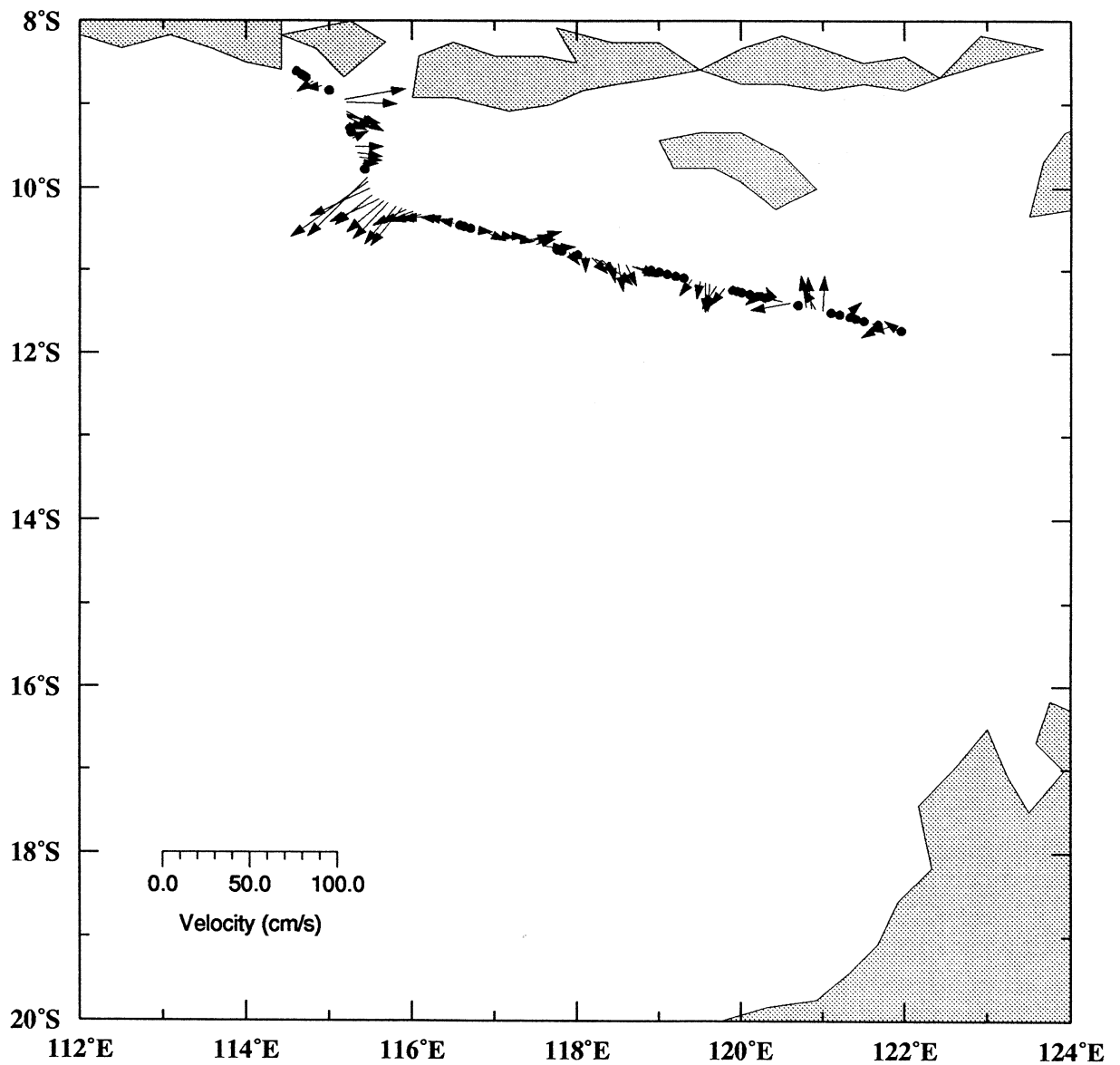


MD9202

March 5 to 7, 1992
Layer: 125m to 175m

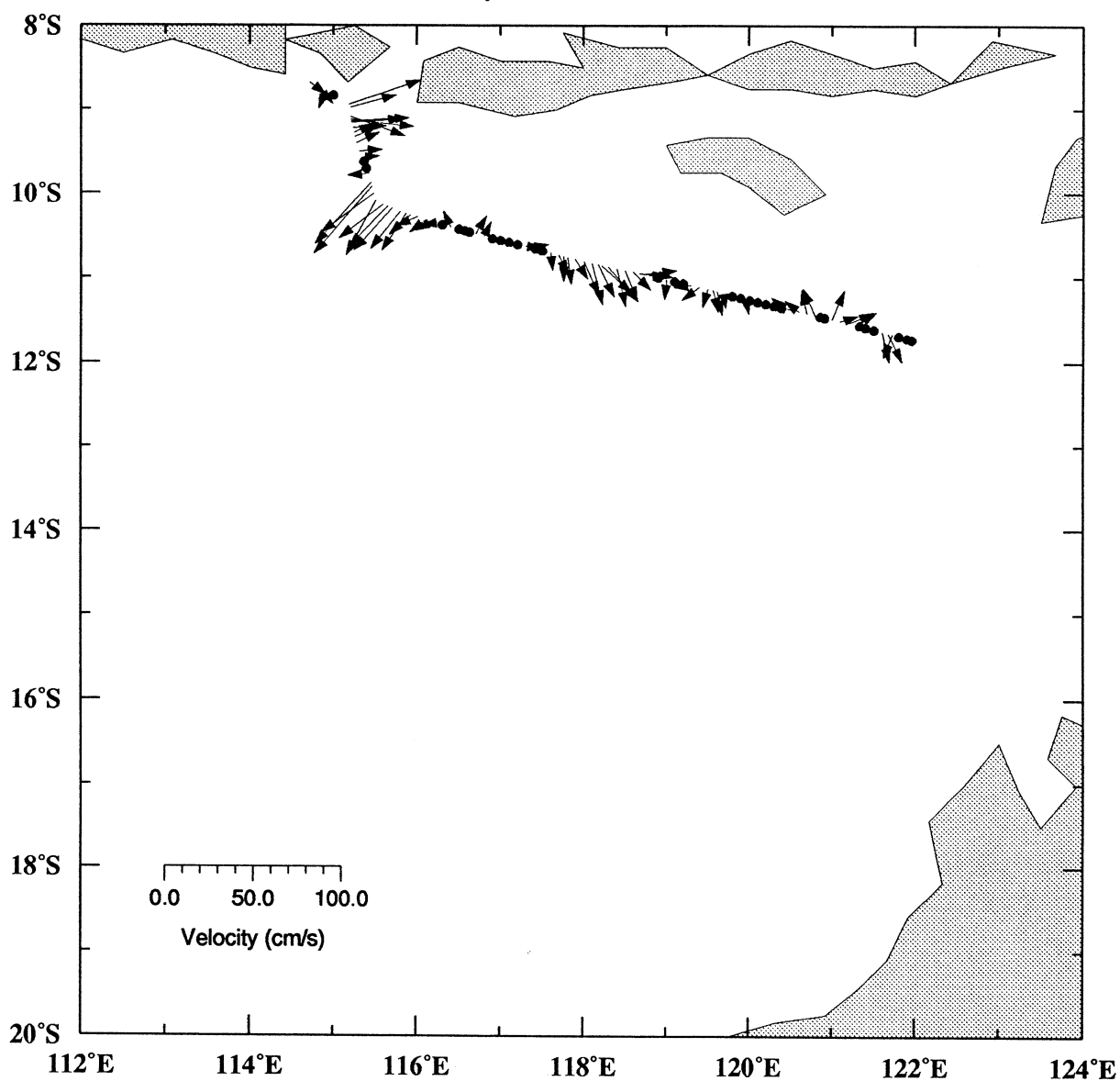


MD9202
March 5 to 7, 1992
Layer: 175m to 225m



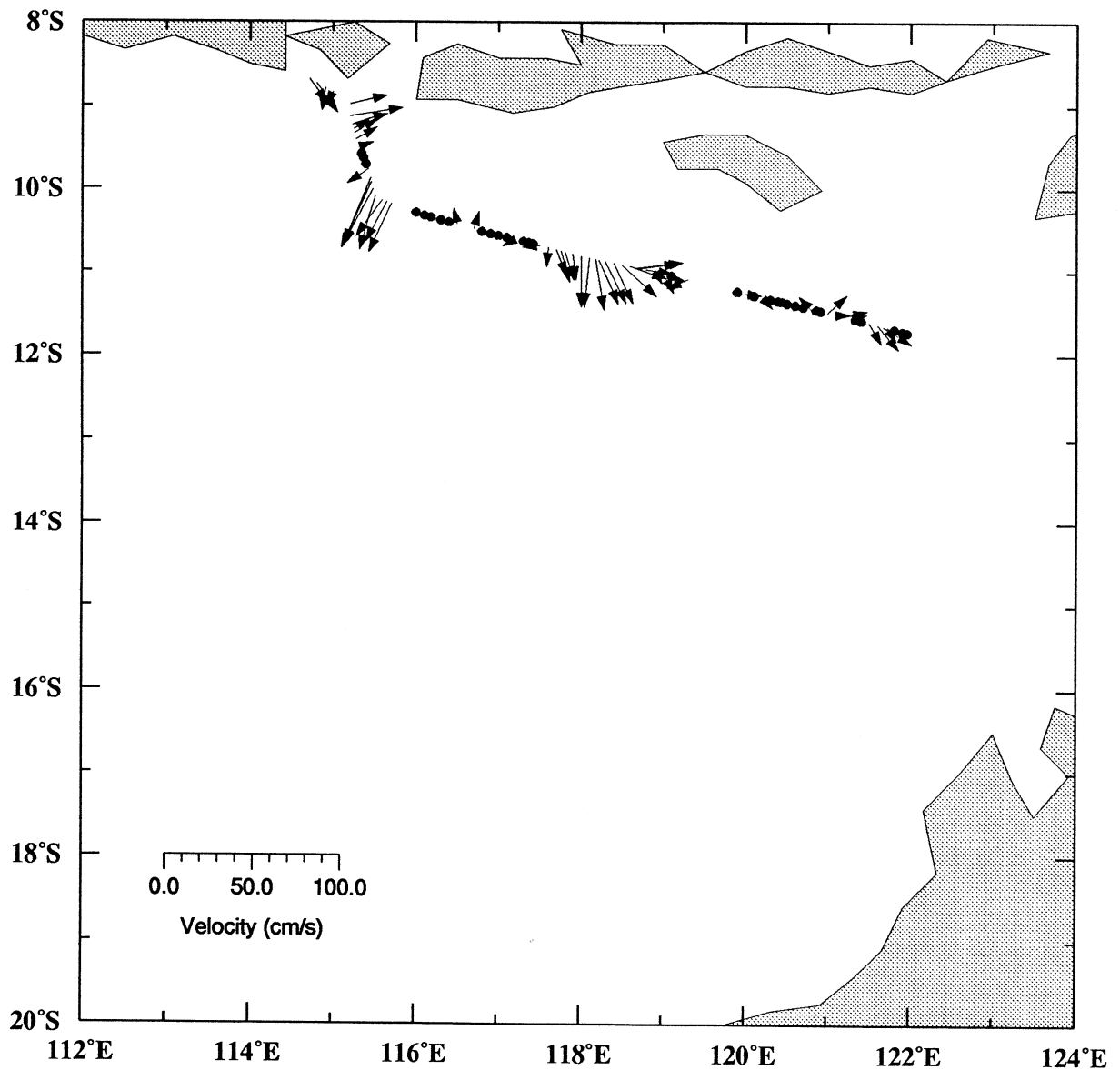
MD9202

March 5 to 7, 1992
Layer: 225m to 275m



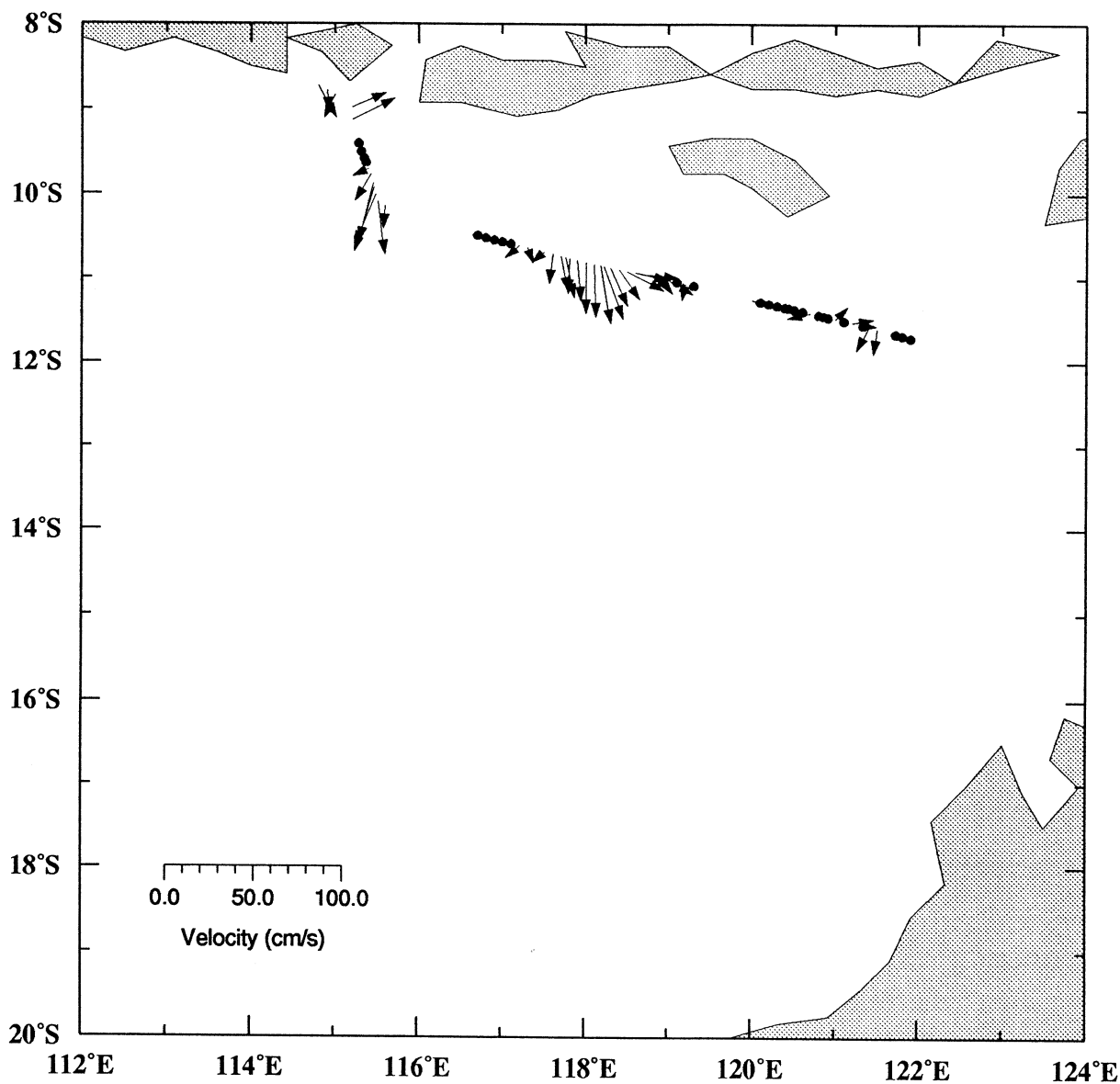
MD9202

March 5 to 7, 1992
Layer: 275m to 325m



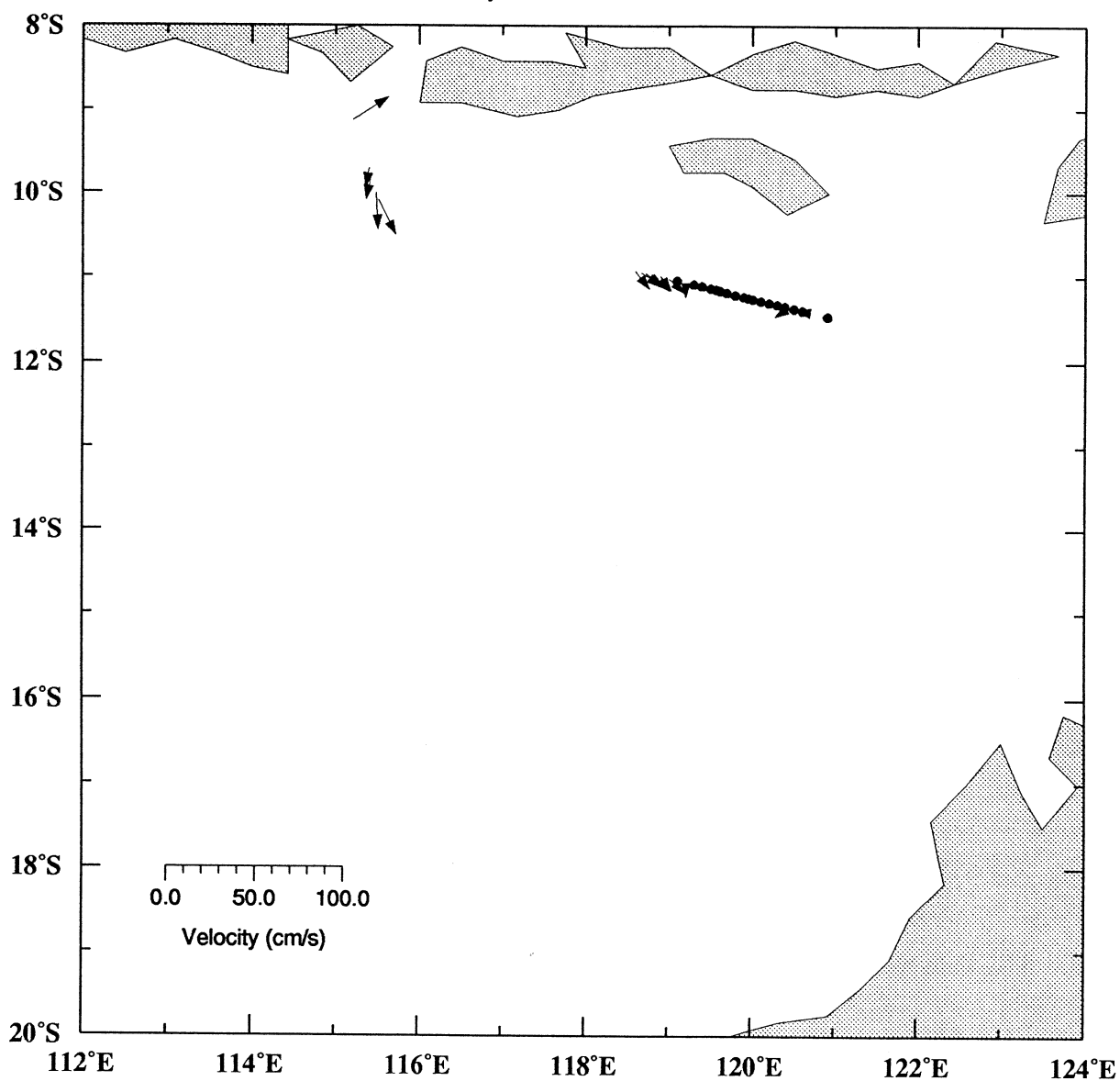
MD9202

March 5 to 7, 1992
Layer: 325m to 375m



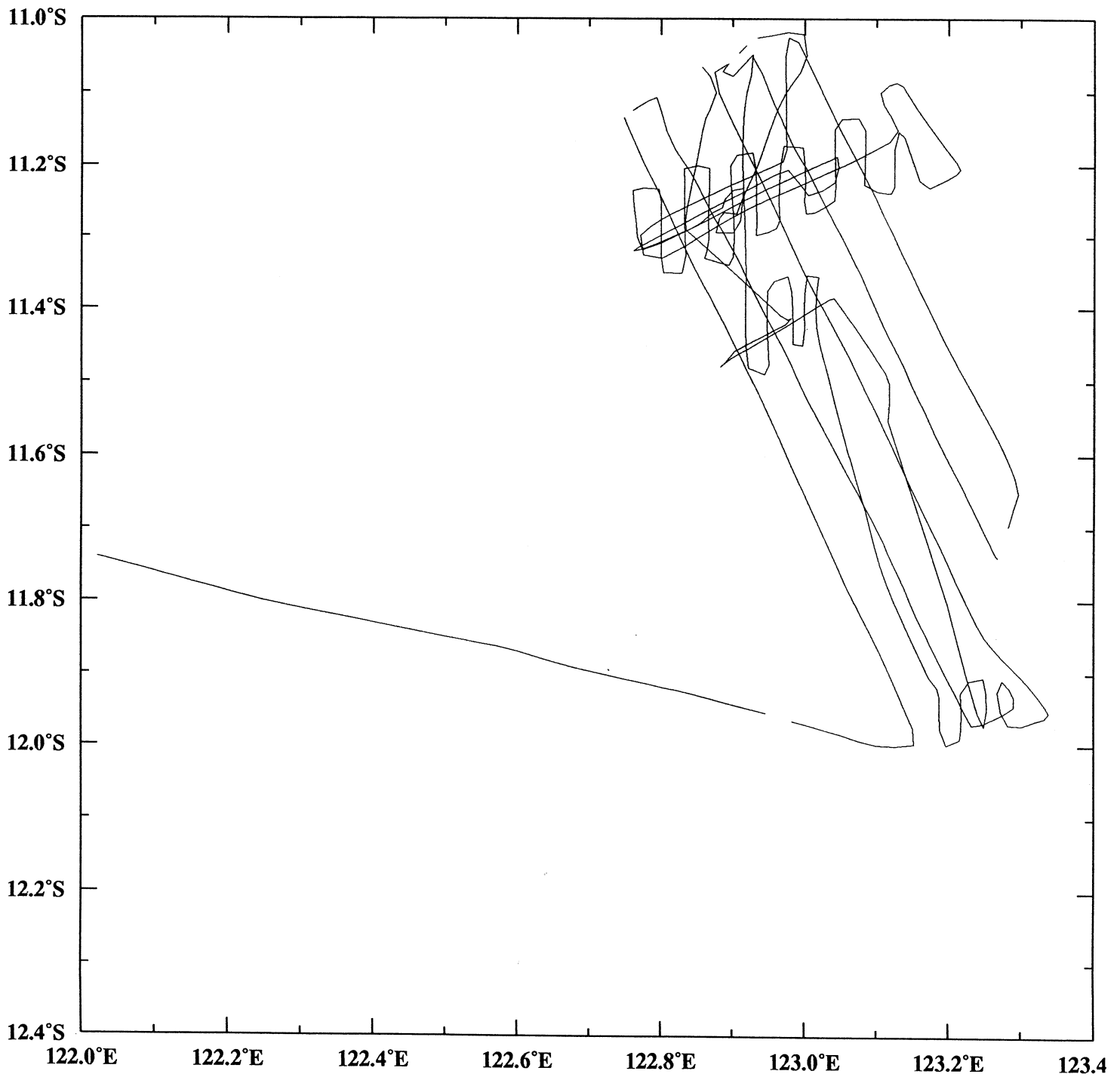
MD9202

March 5 to 7, 1992
Layer: 375m to 425m



MD9203

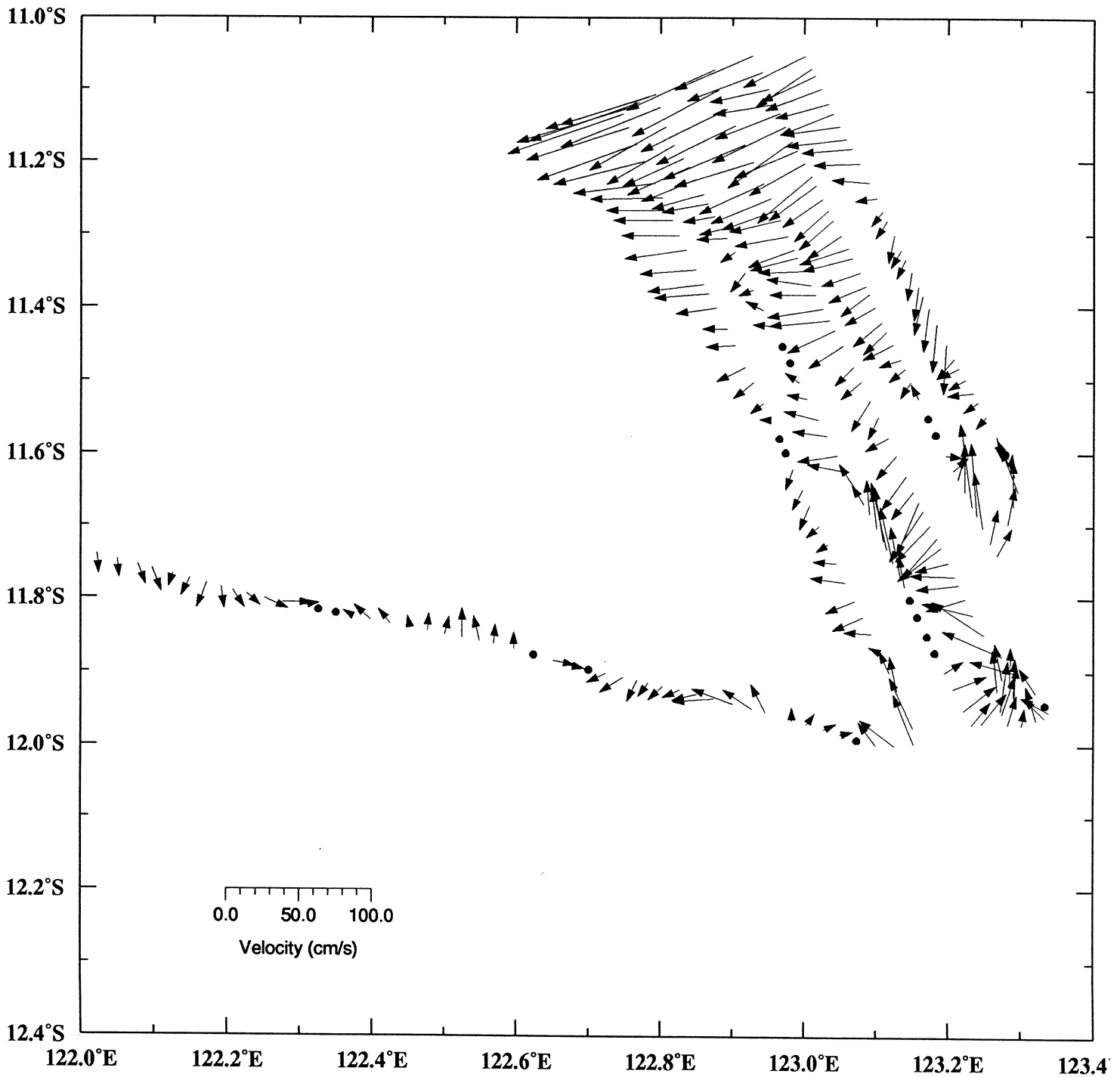
March 8 to 11, 1992
Cruise track



MD9203

March 8 to 10, 1992

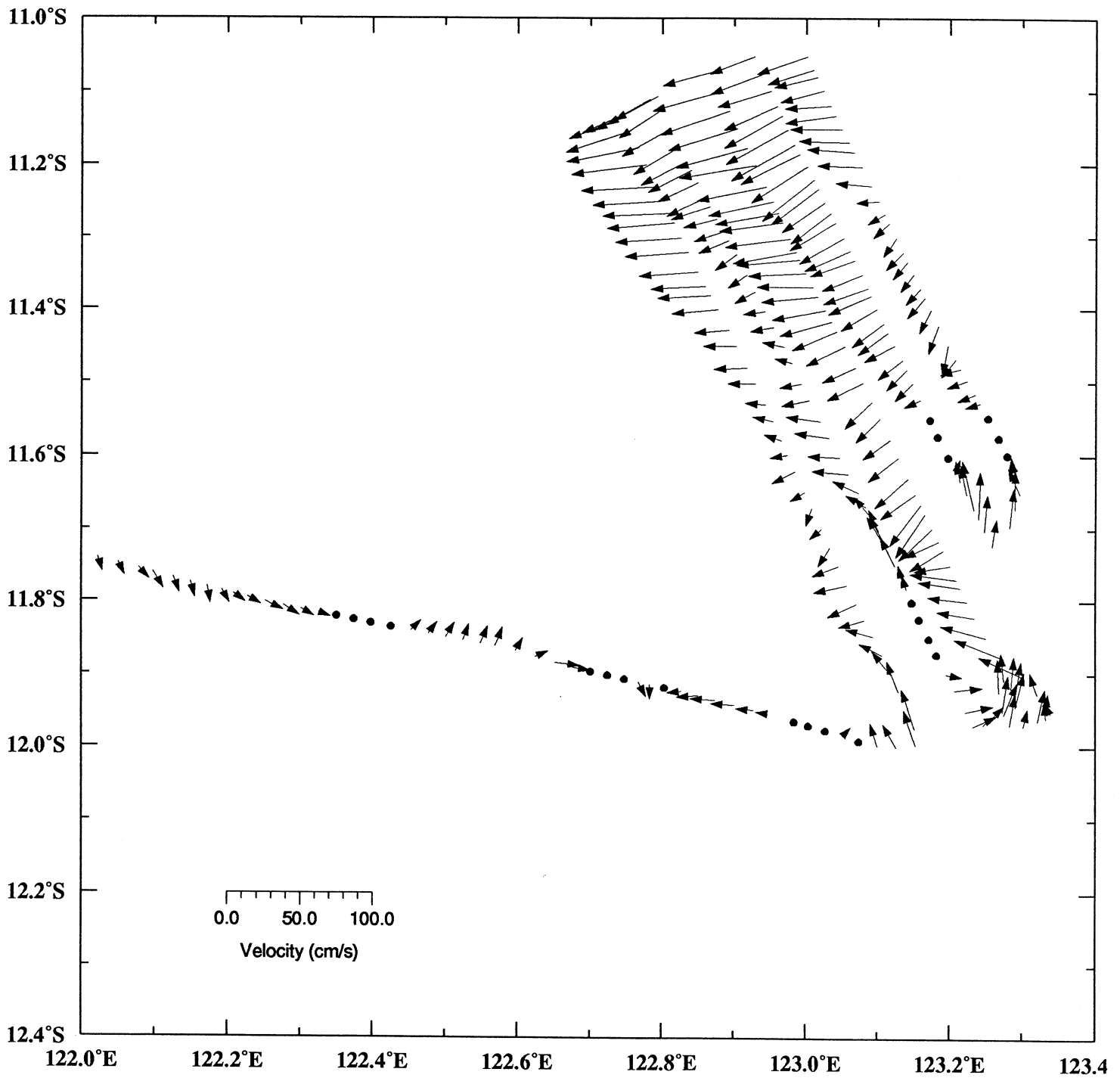
Layer: 20m to 25



MD9203

March 8 to 10, 1992

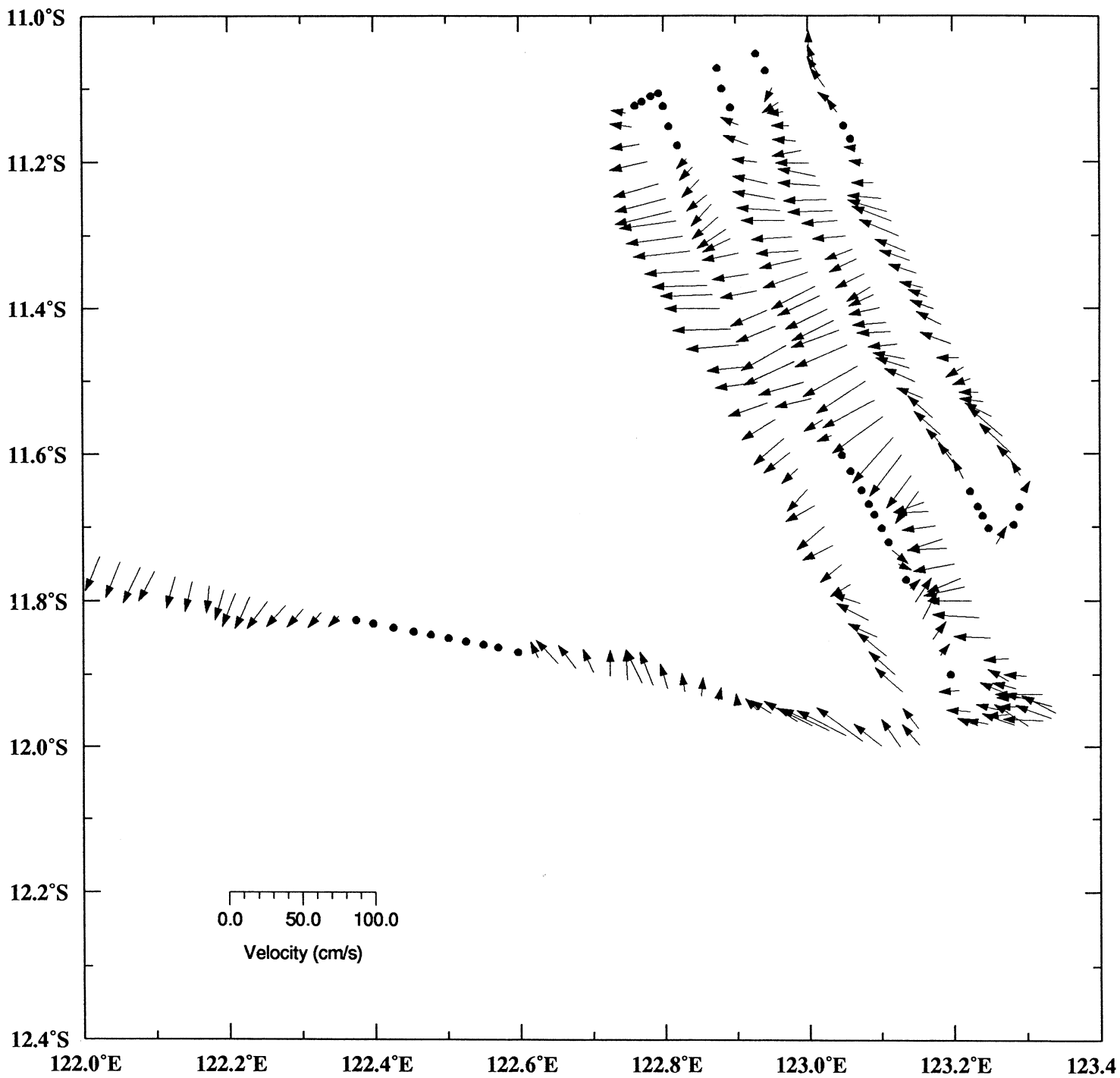
Layer: 25m to 75m



MD9203

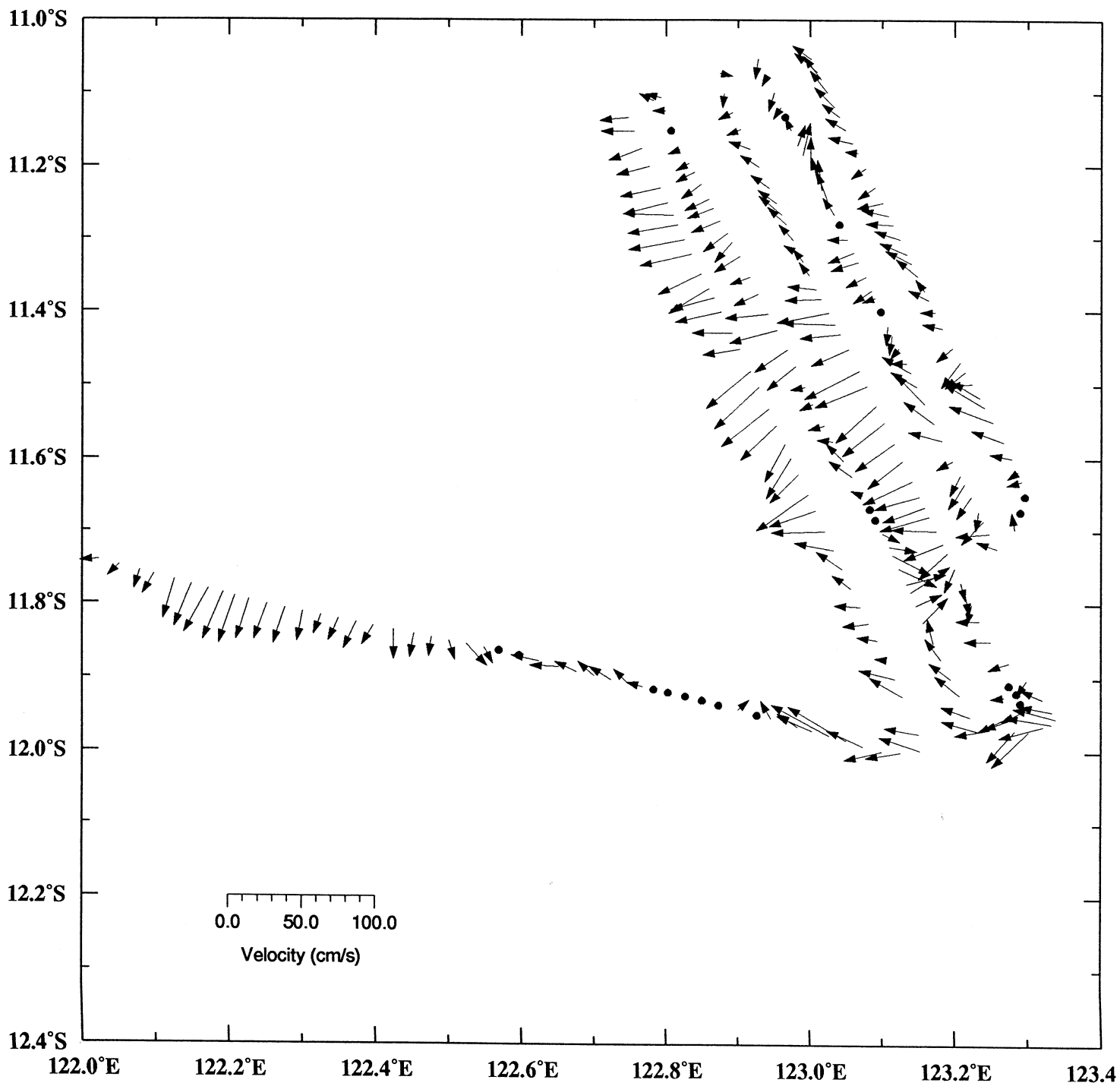
March 8 to 10, 1992

Layer: 75m to 125m



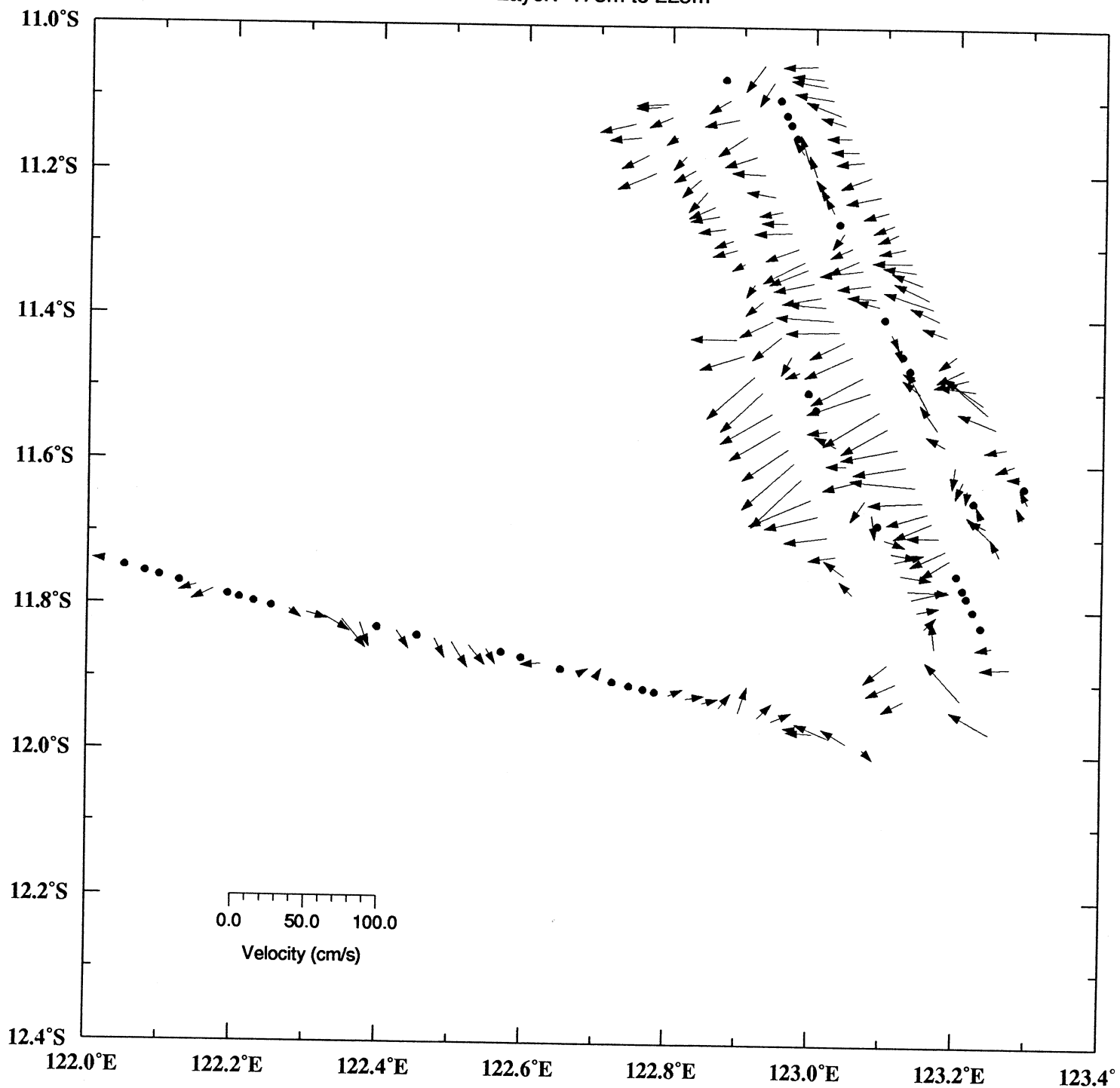
MD9203

March 8 to 10, 1992
Layer: 125m to 175m



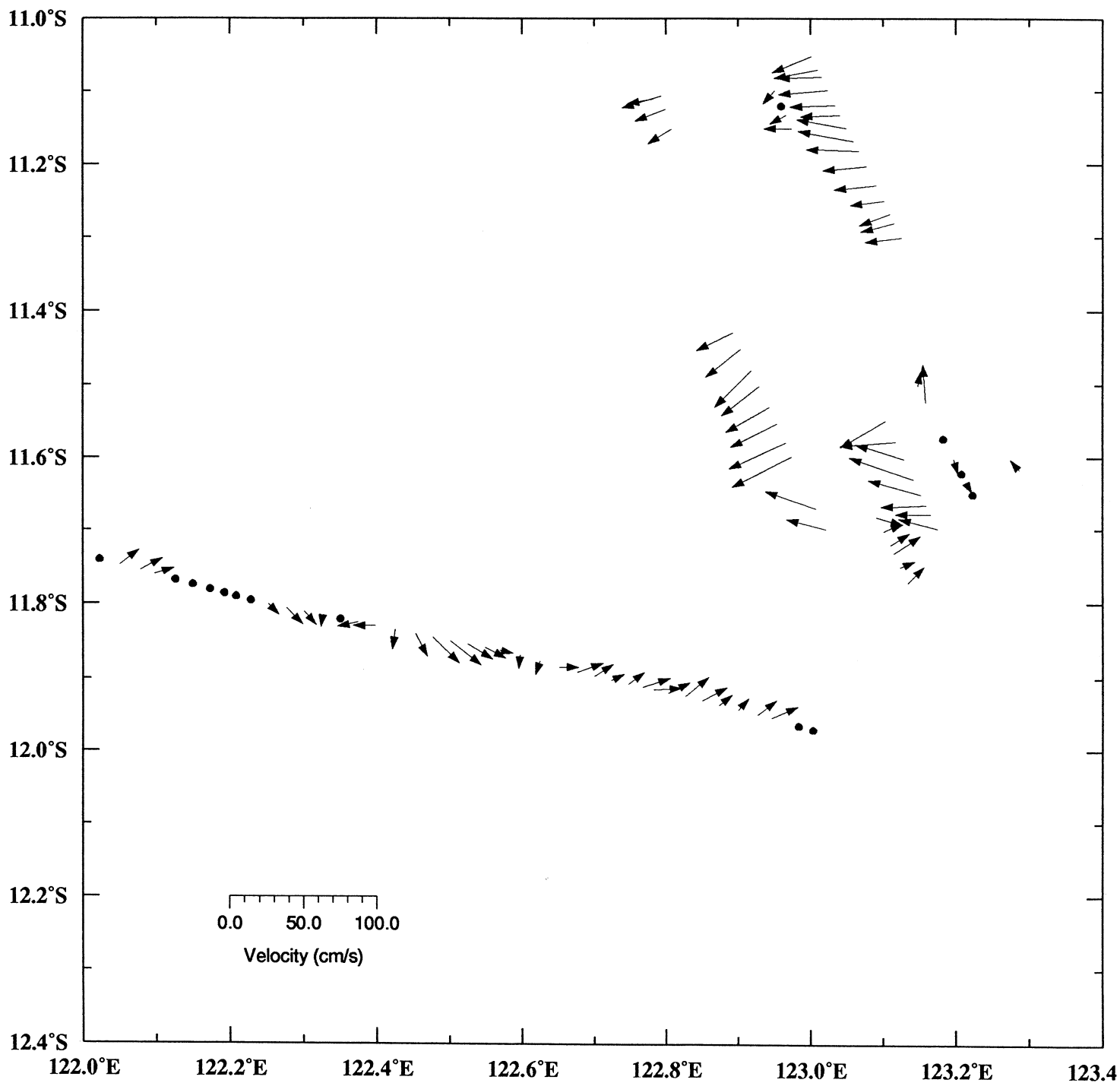
MD9203

March 8 to 10, 1992
Layer: 175m to 225m



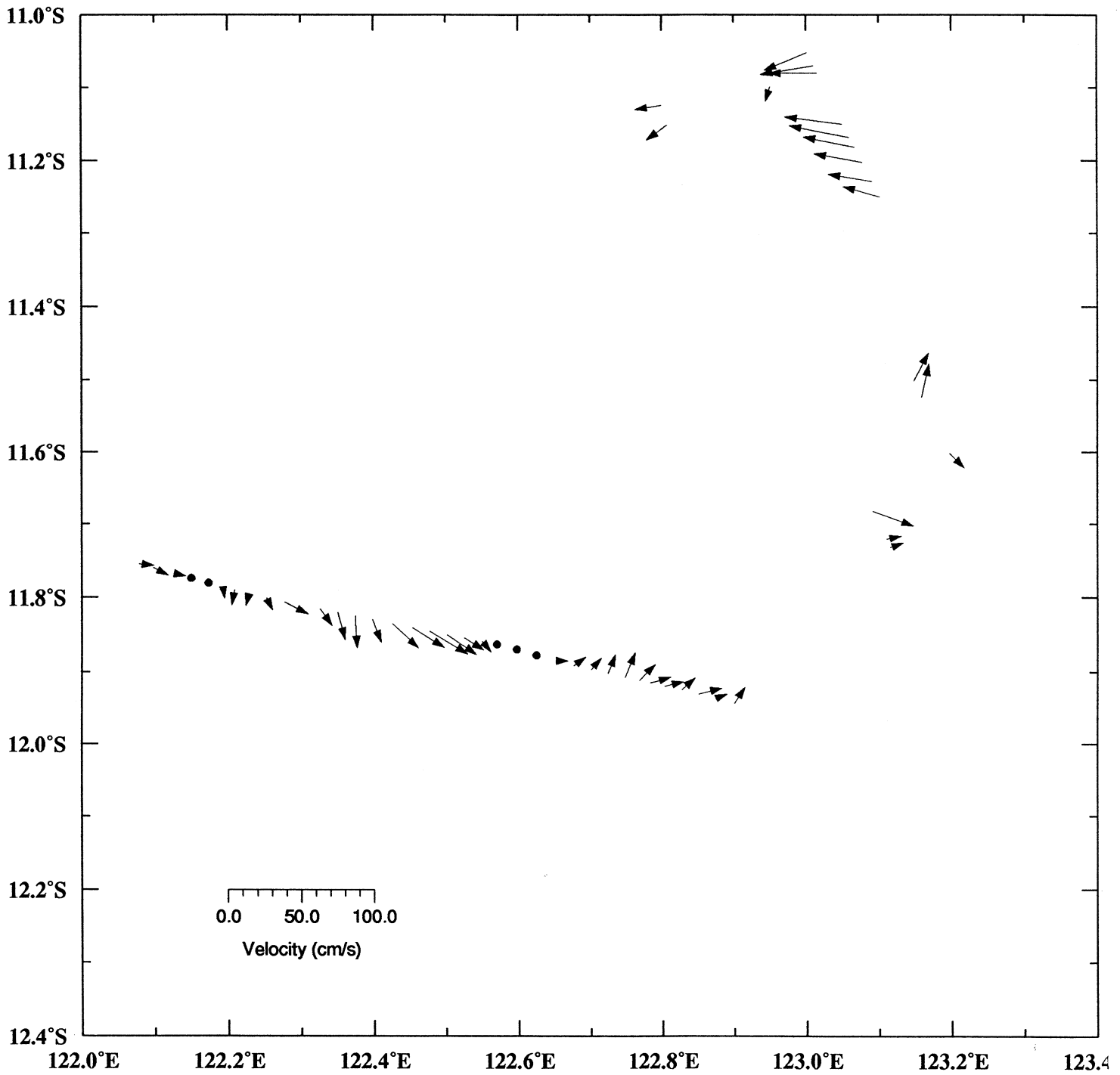
MD9203

March 8 to 10, 1992
Layer: 225m to 275m



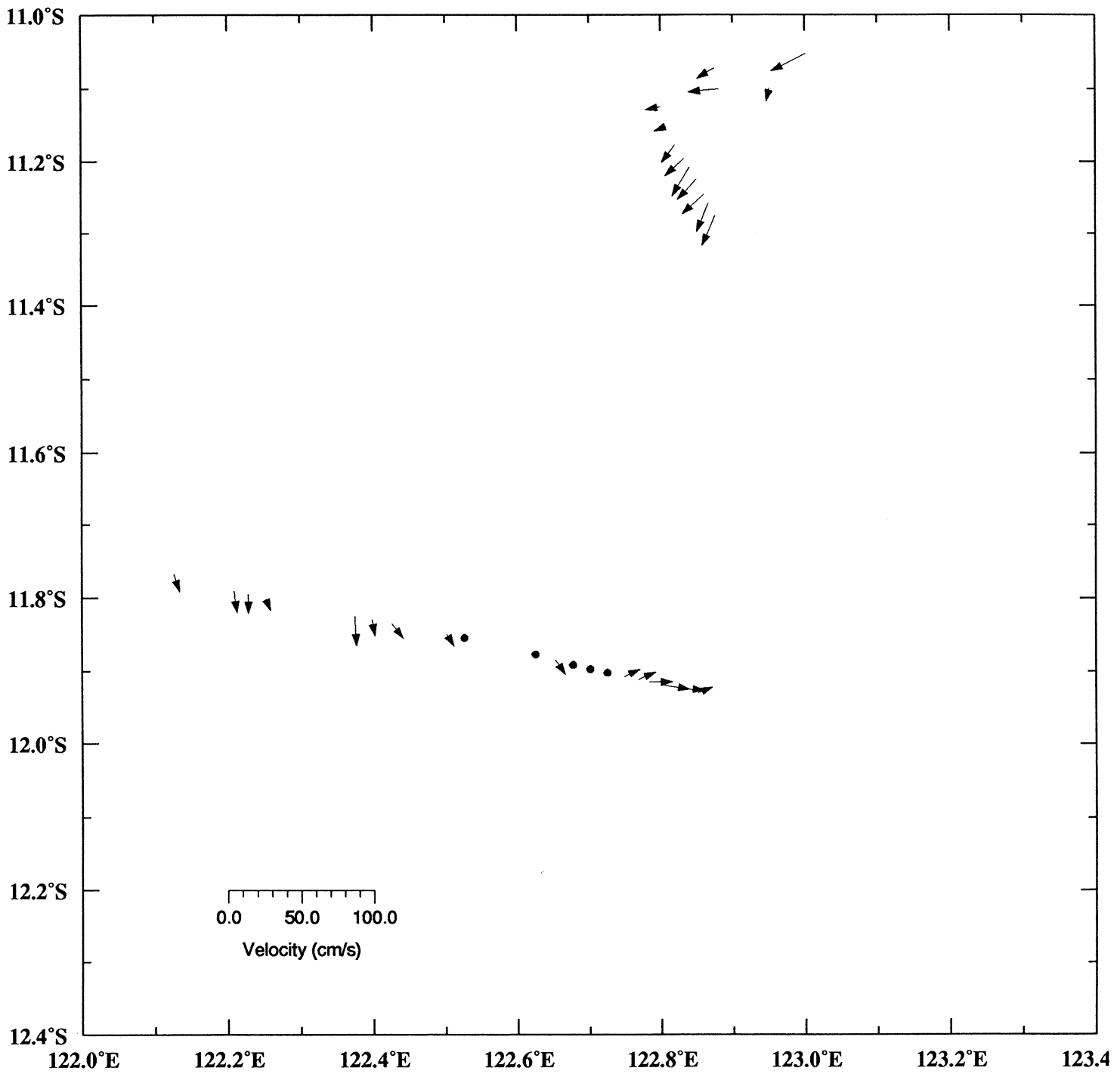
MD9203

March 8 to 10, 1992
Layer: 275m to 325m



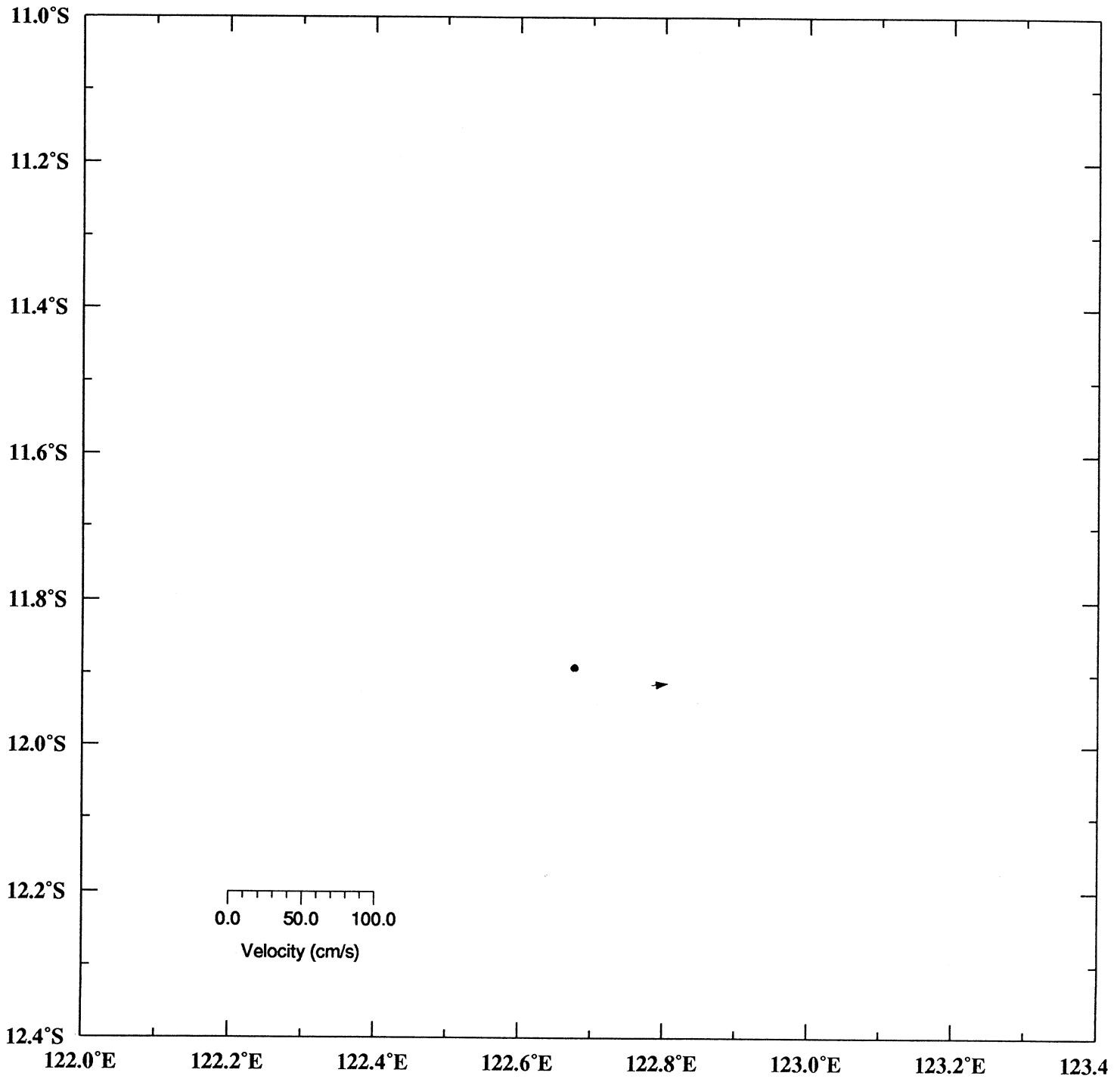
MD9203

March 8 to 10, 1992
Layer: 325m to 375m



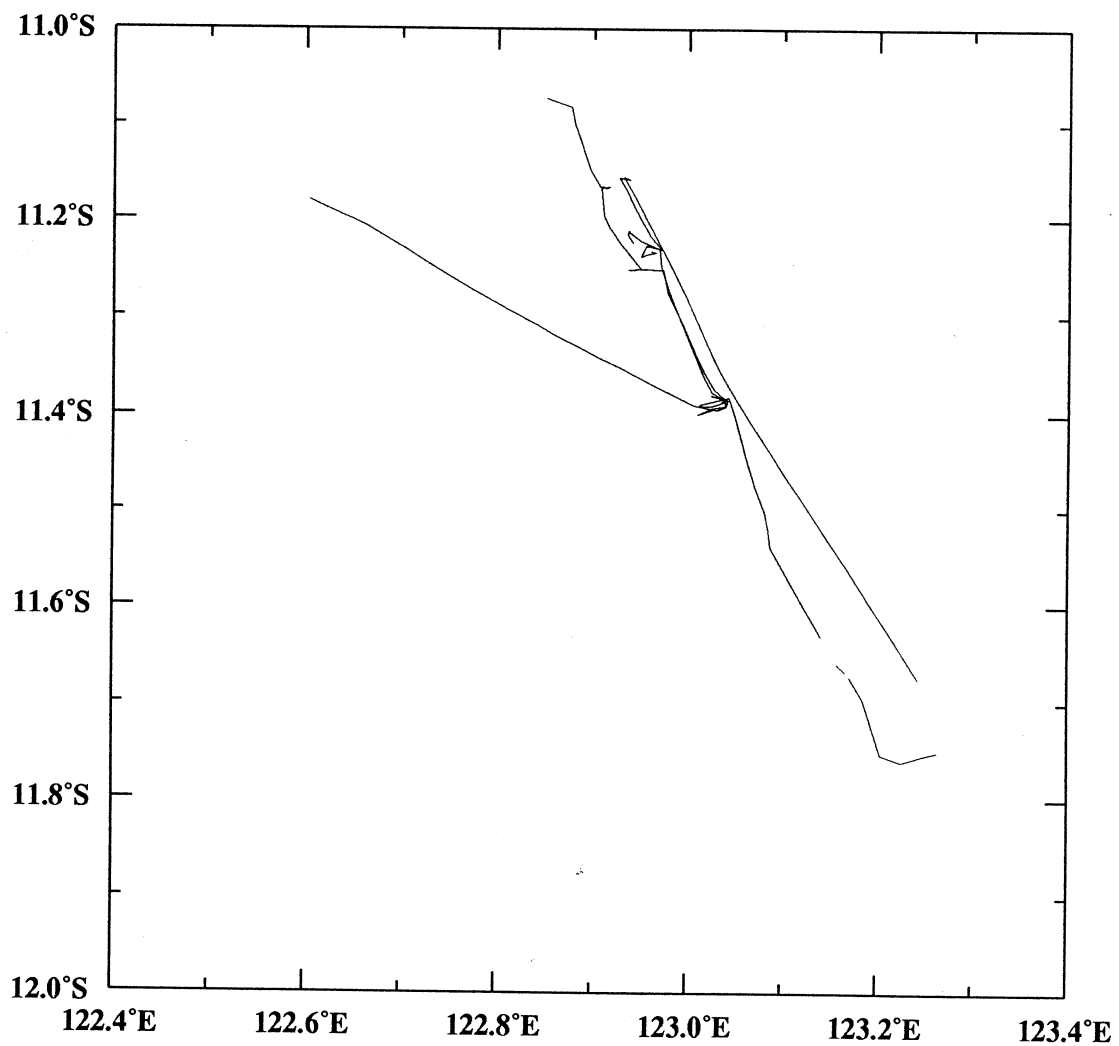
MD9203

March 8 to 10, 1992
Layer: 375m to 425m



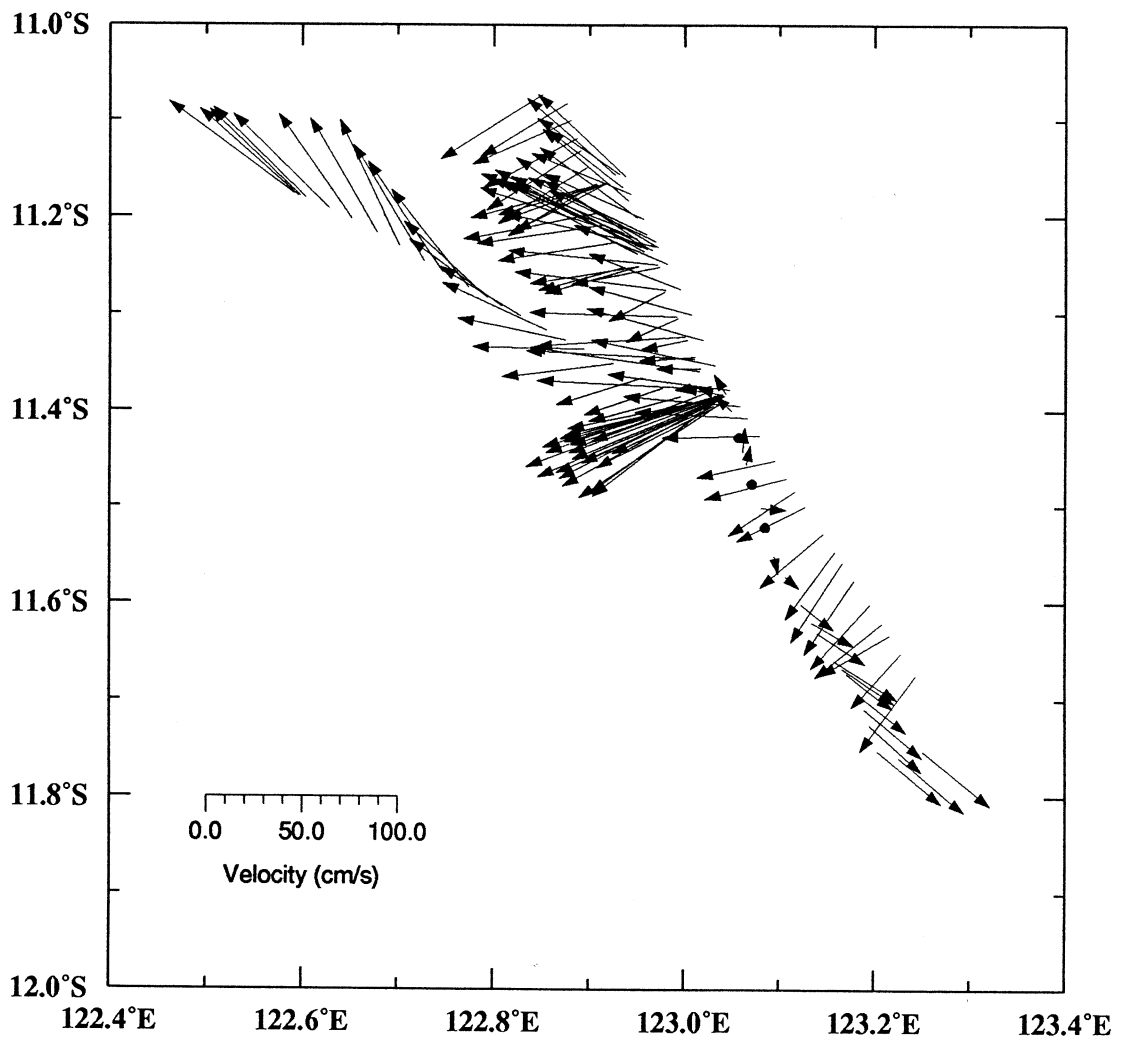
MD9204

March 11 to 14, 1992
Cruise track



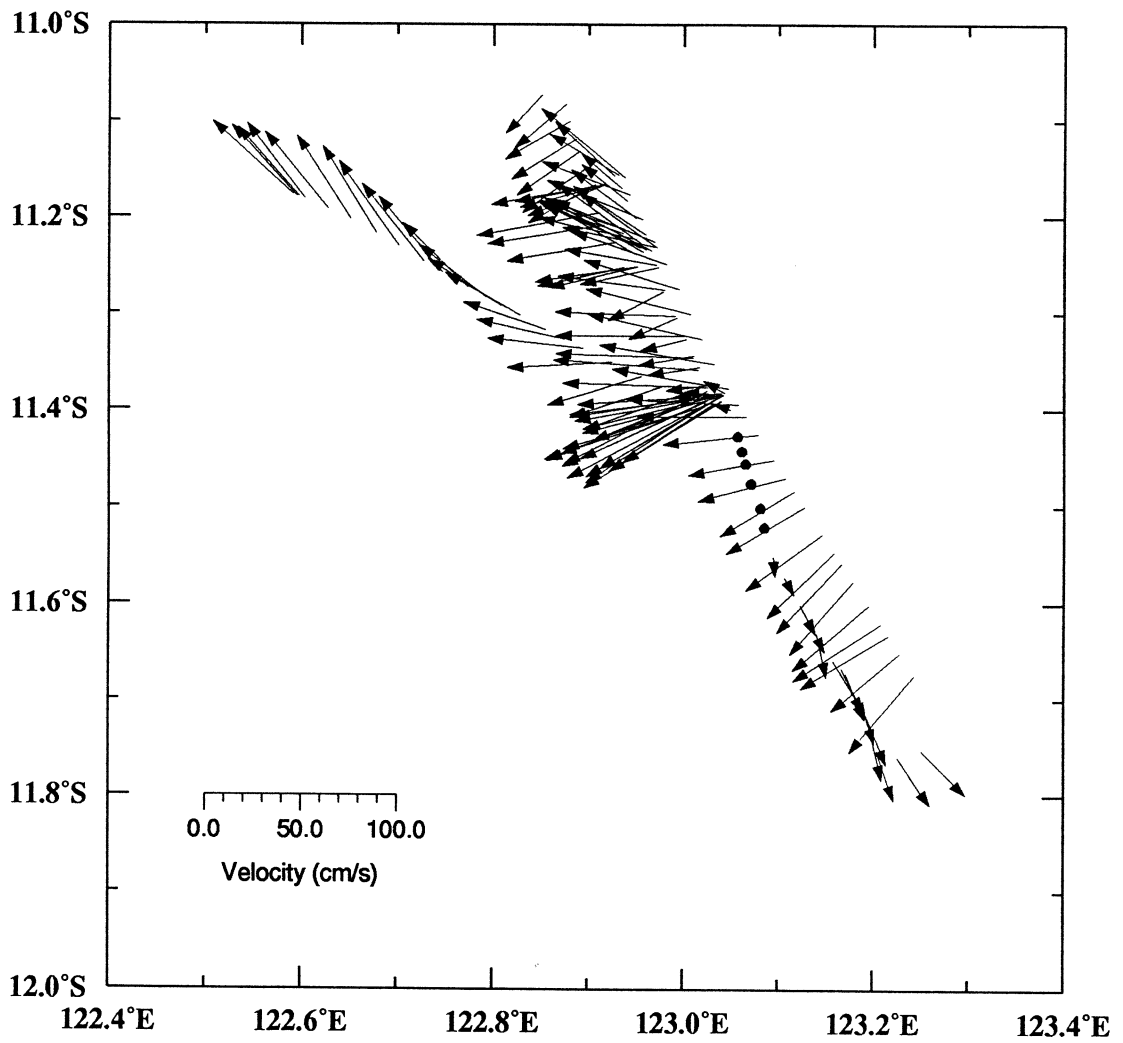
MD9204

March 11 to 14, 1992
Layer: 20m to 25m



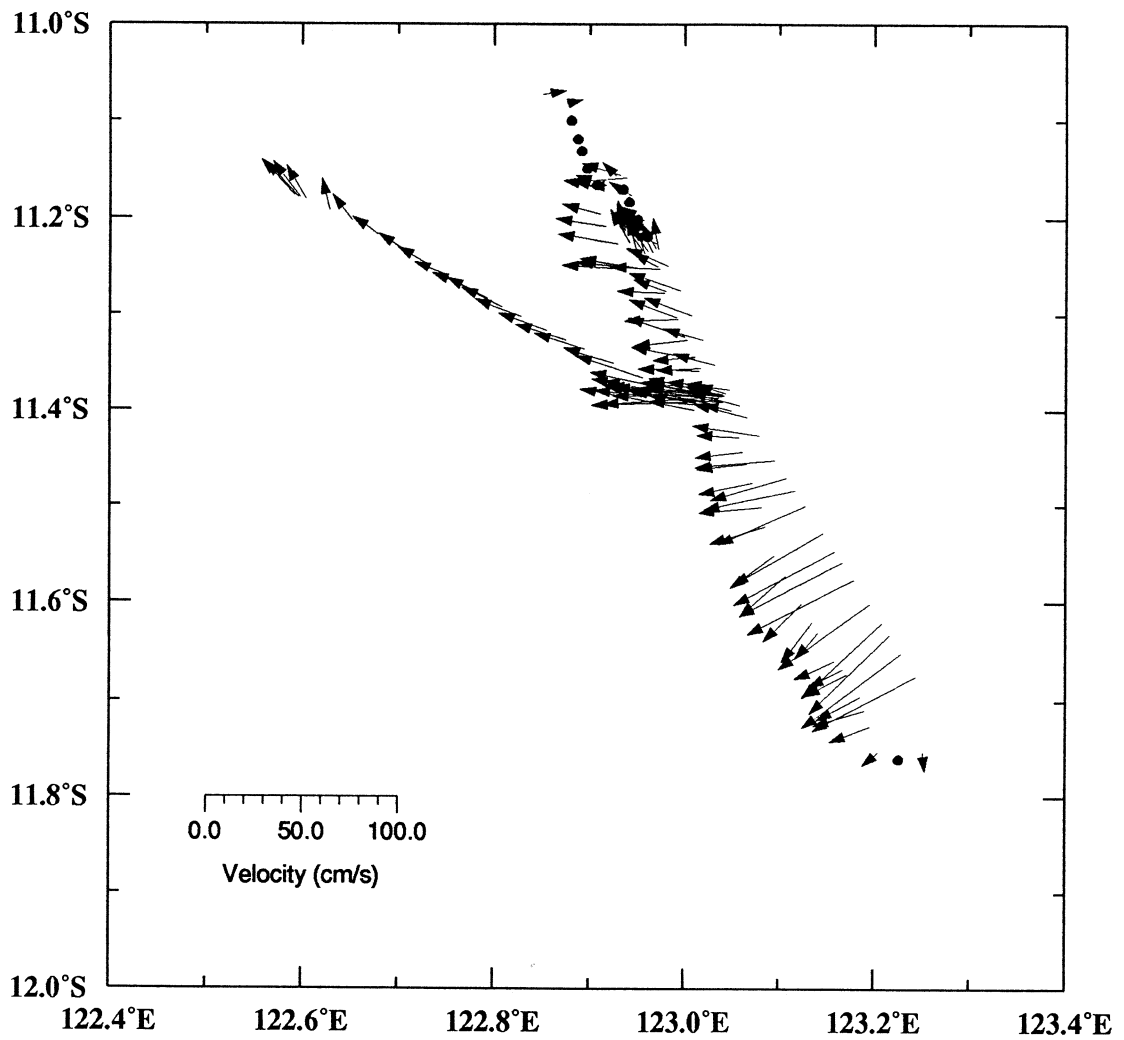
MD9204

March 11 to 14, 1992
Layer: 25m to 75m



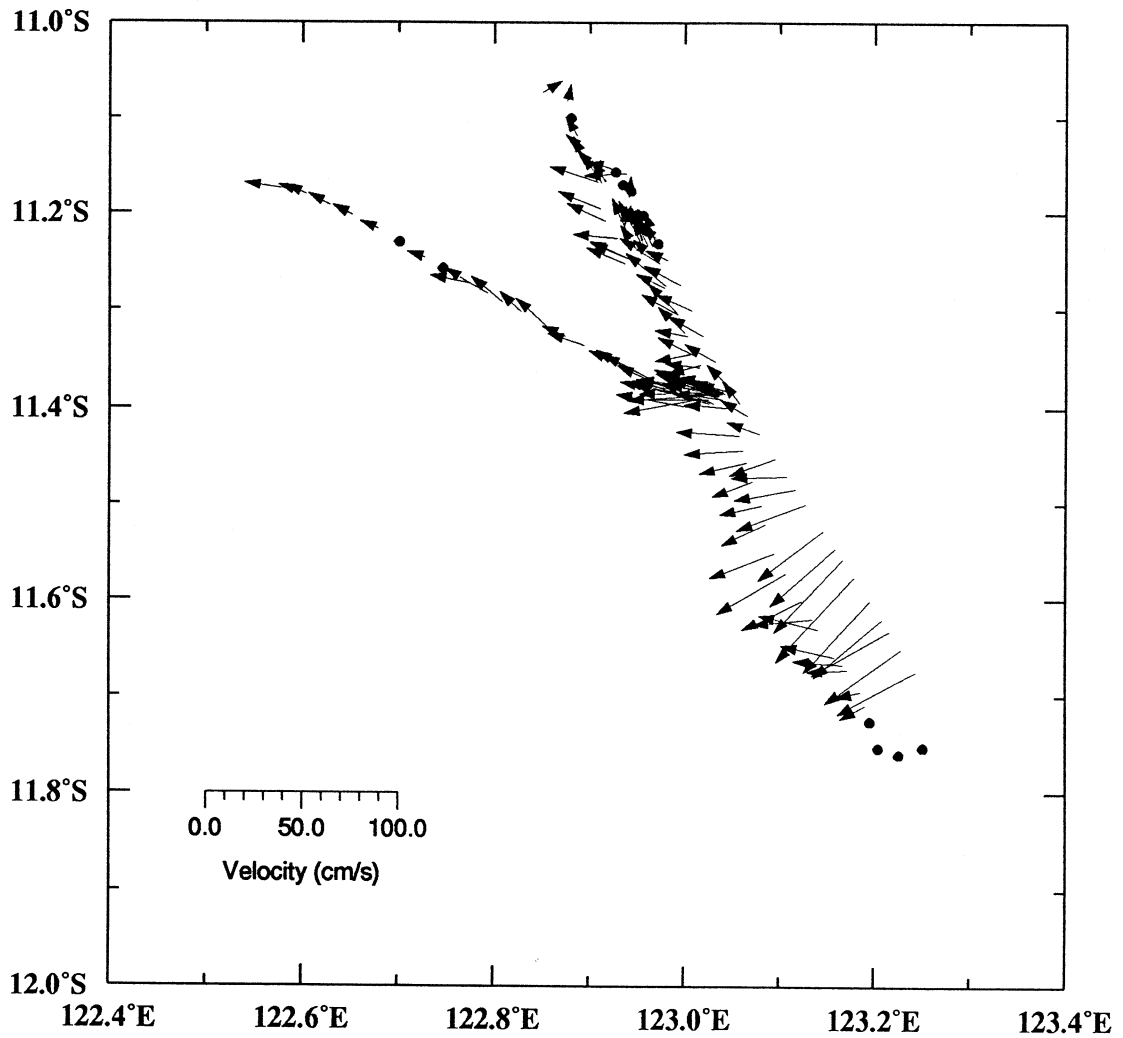
MD9204

March 11 to 14, 1992
Layer: 75m to 125m



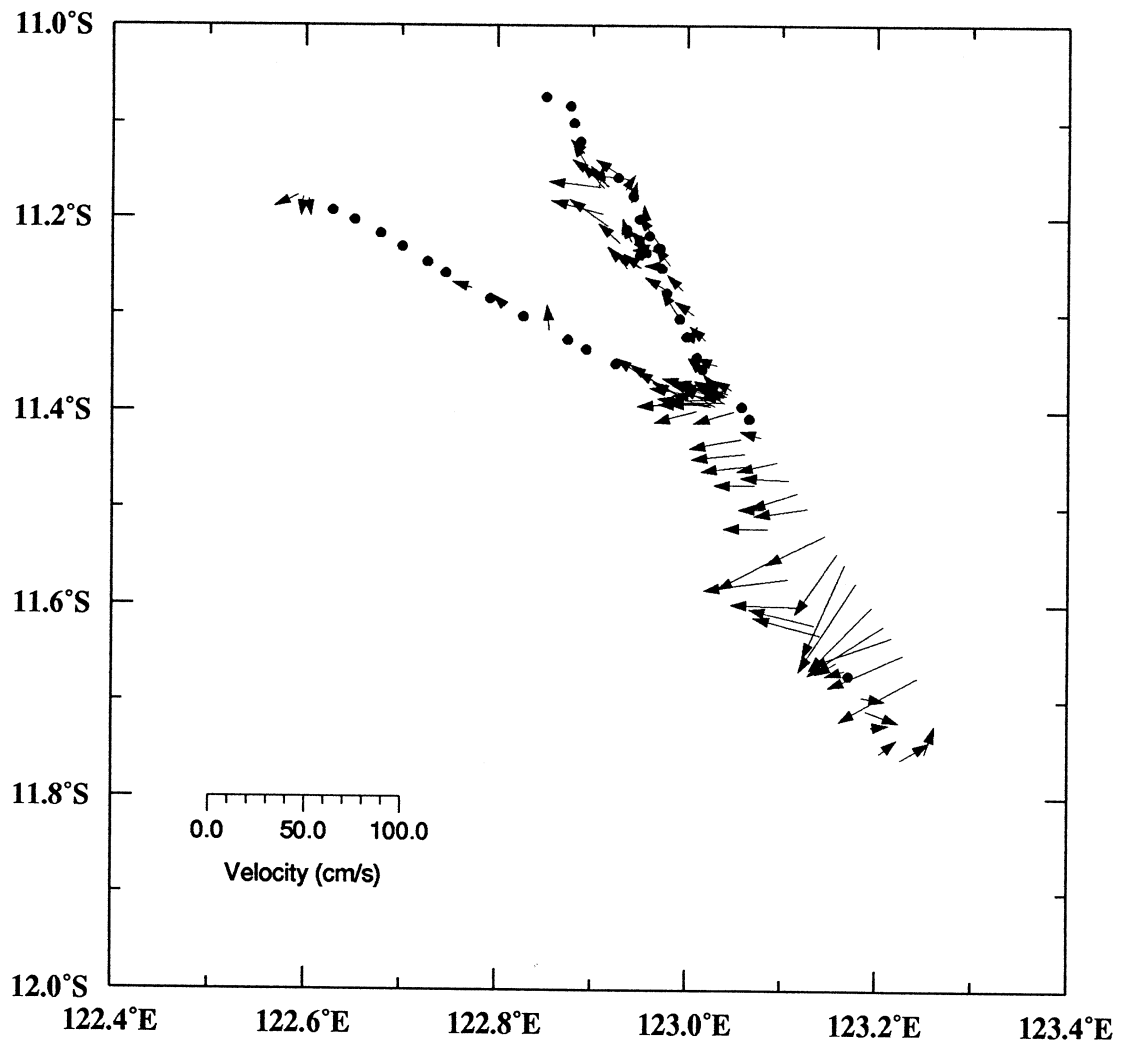
MD9204

March 11 to 14, 1992
Layer: 125m to 175m



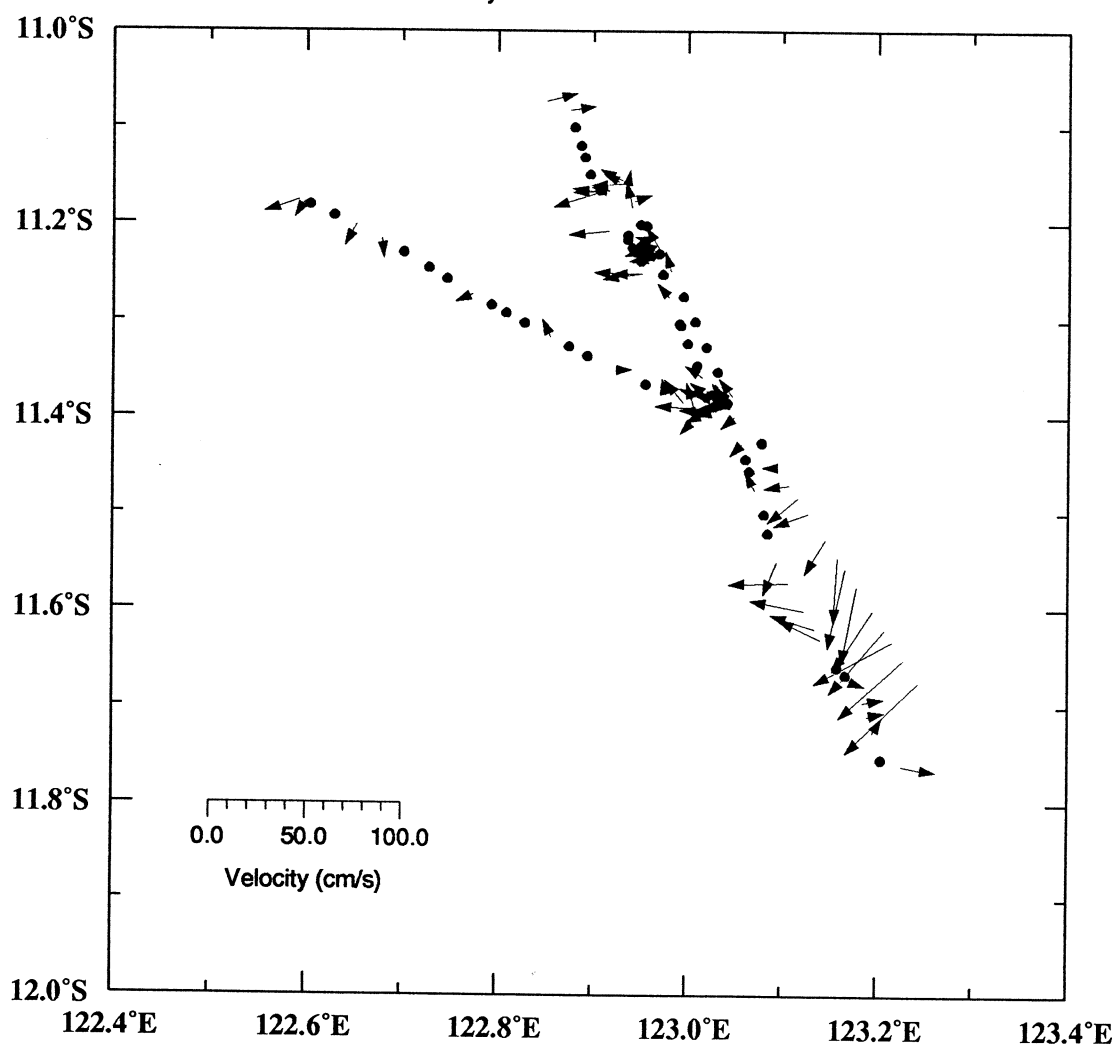
MD9204

March 11 to 14, 1992
Layer: 175m to 225m



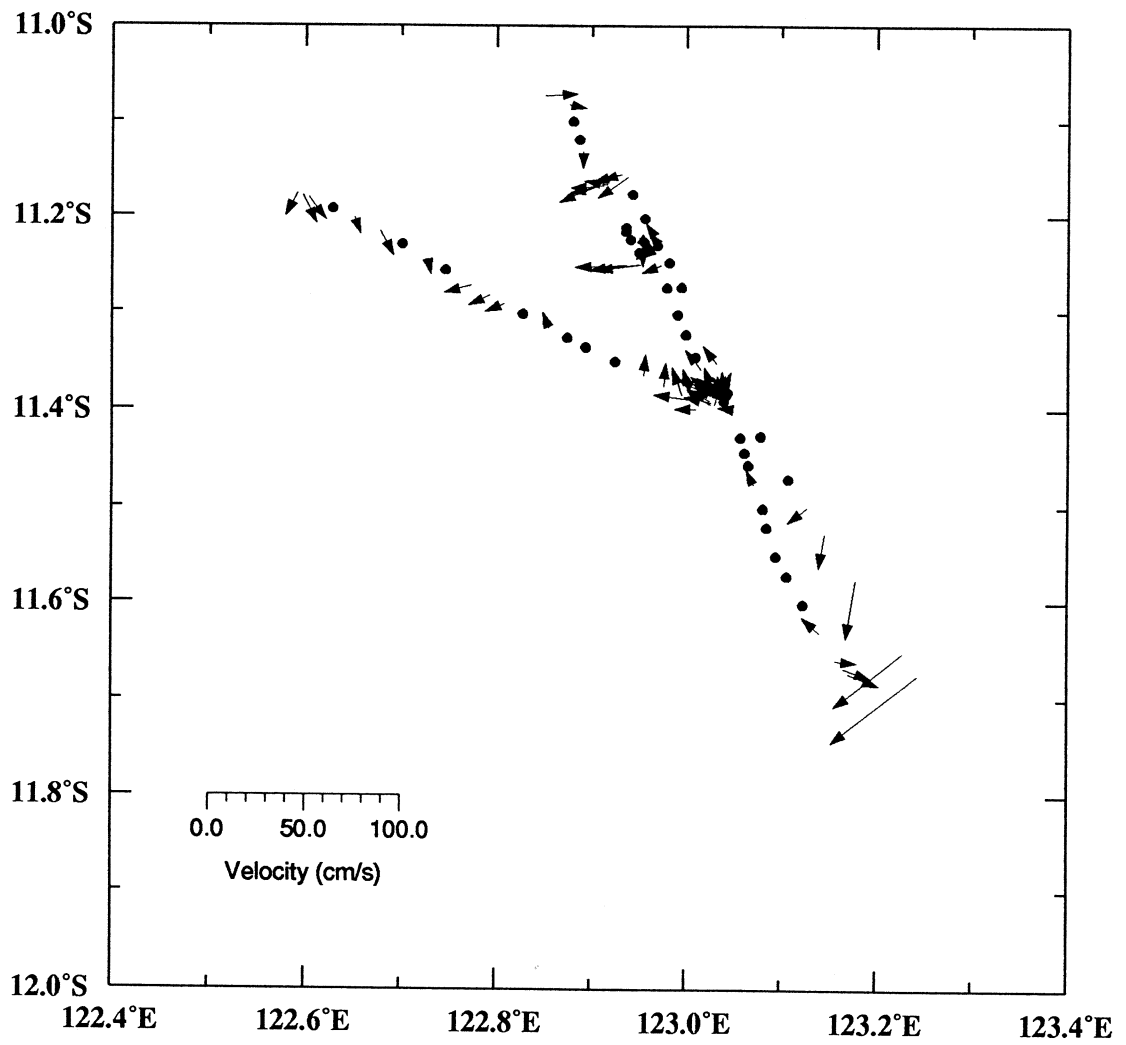
MD9204

March 11 to 14, 1992
Layer: 225m to 275m



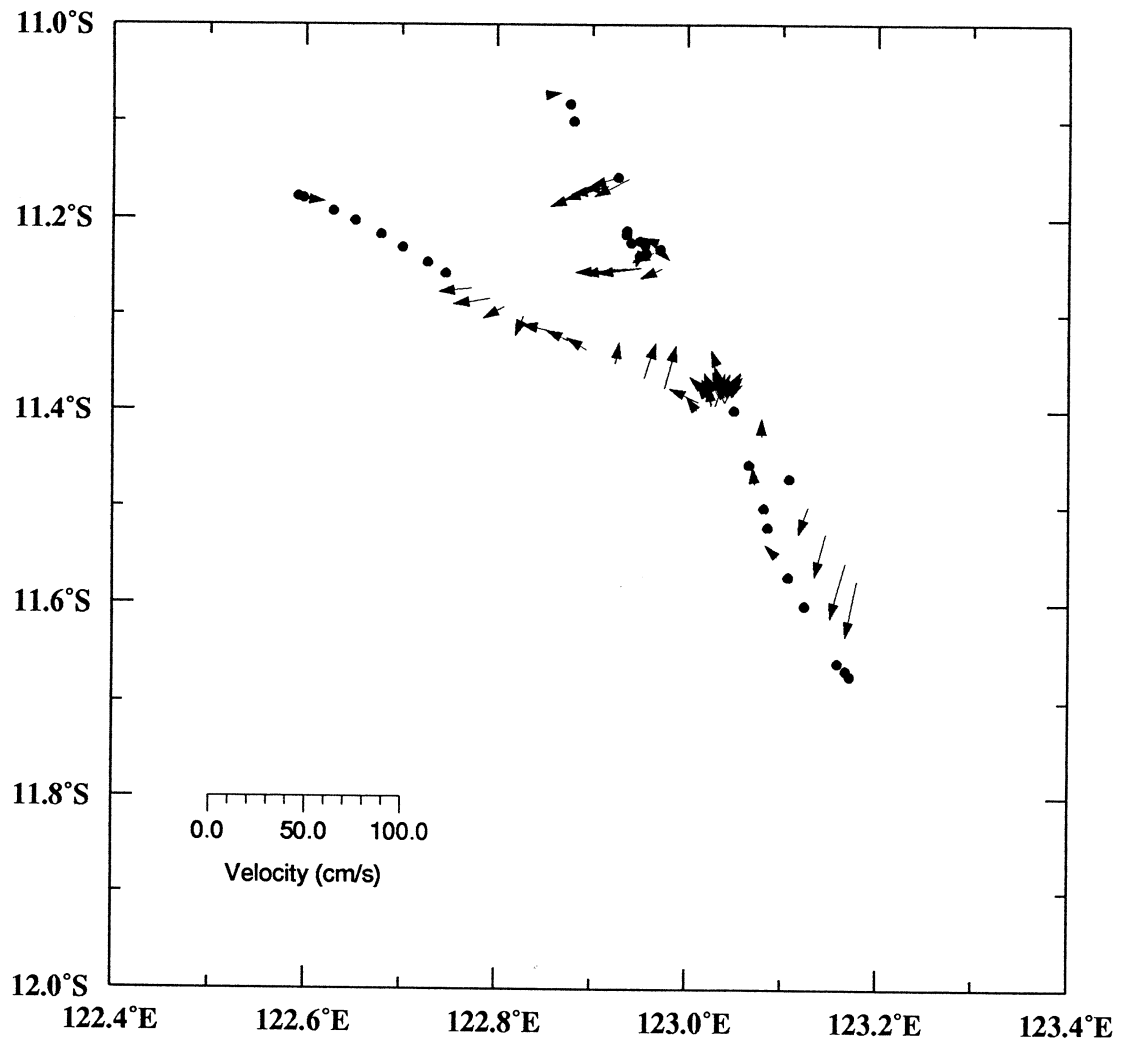
MD9204

March 11 to 14, 1992
Layer: 275m to 325m



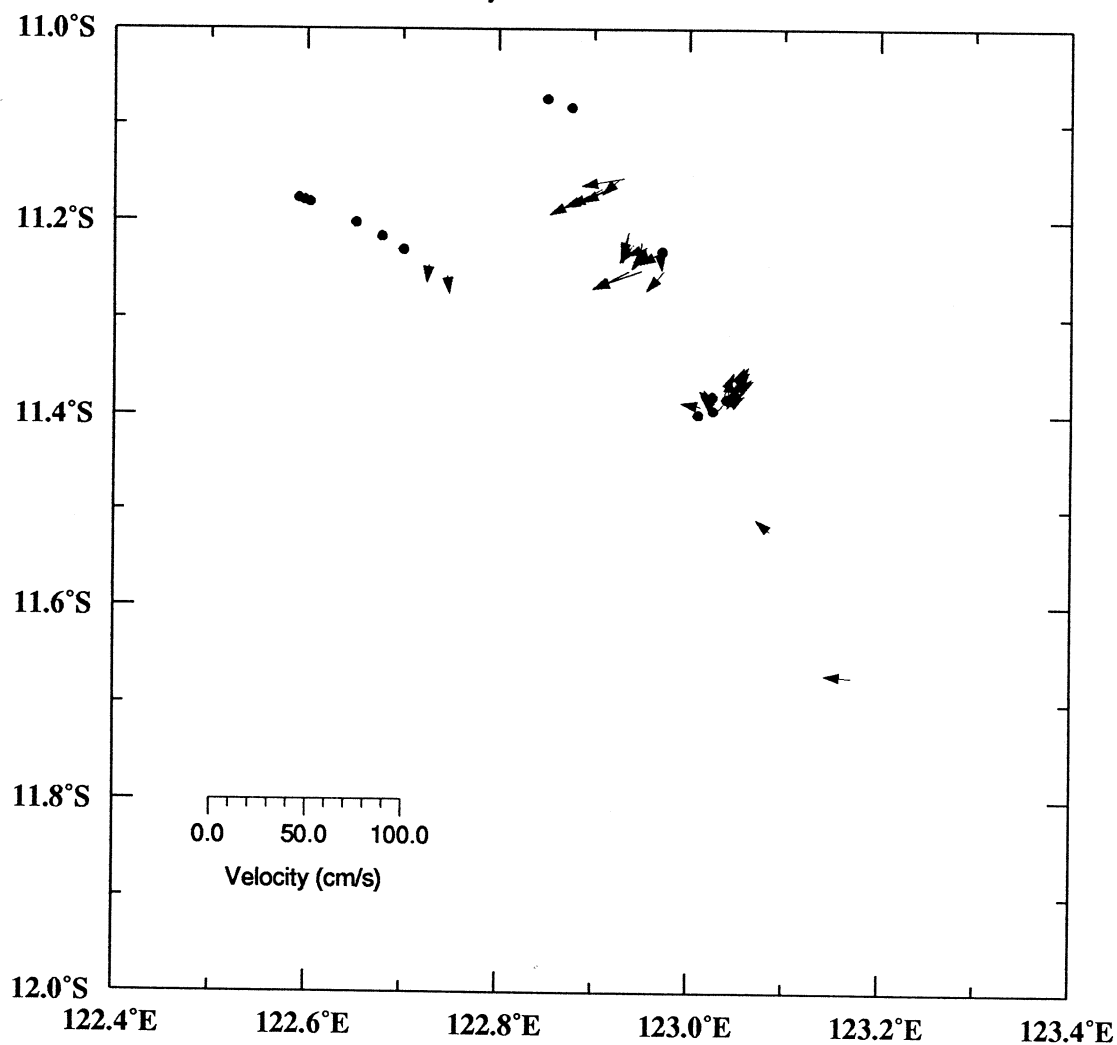
MD9204

March 11 to 14, 1992
Layer: 325m to 375m



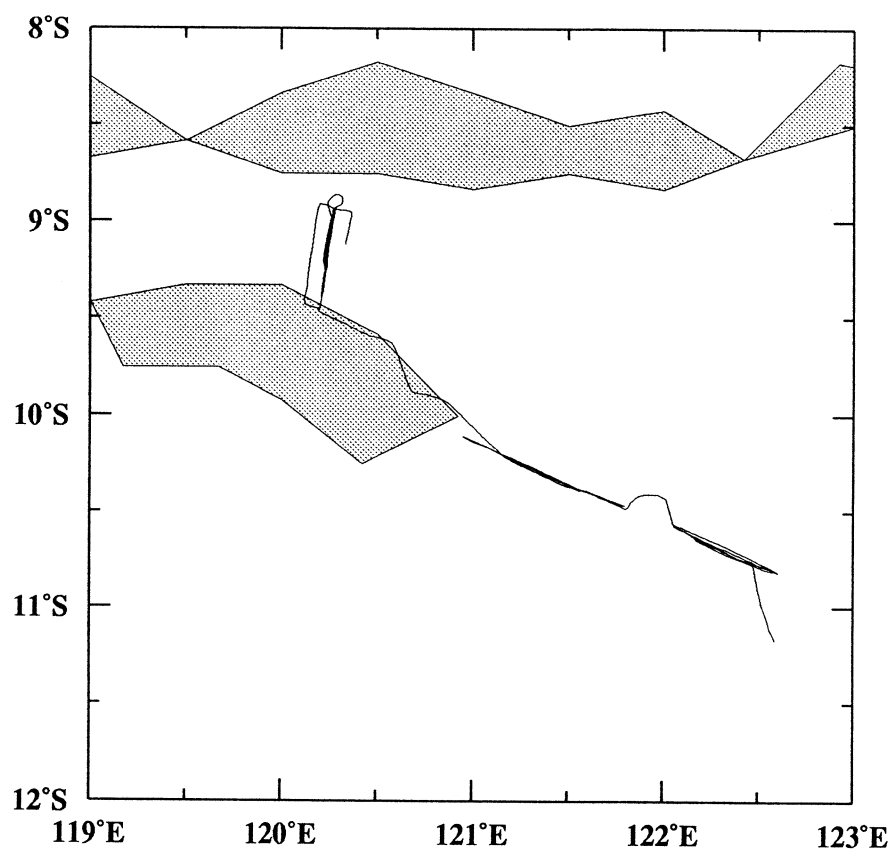
MD9204

March 11 to 14, 1992
Layer: 375m to 425m



MD9205 --> MD9207

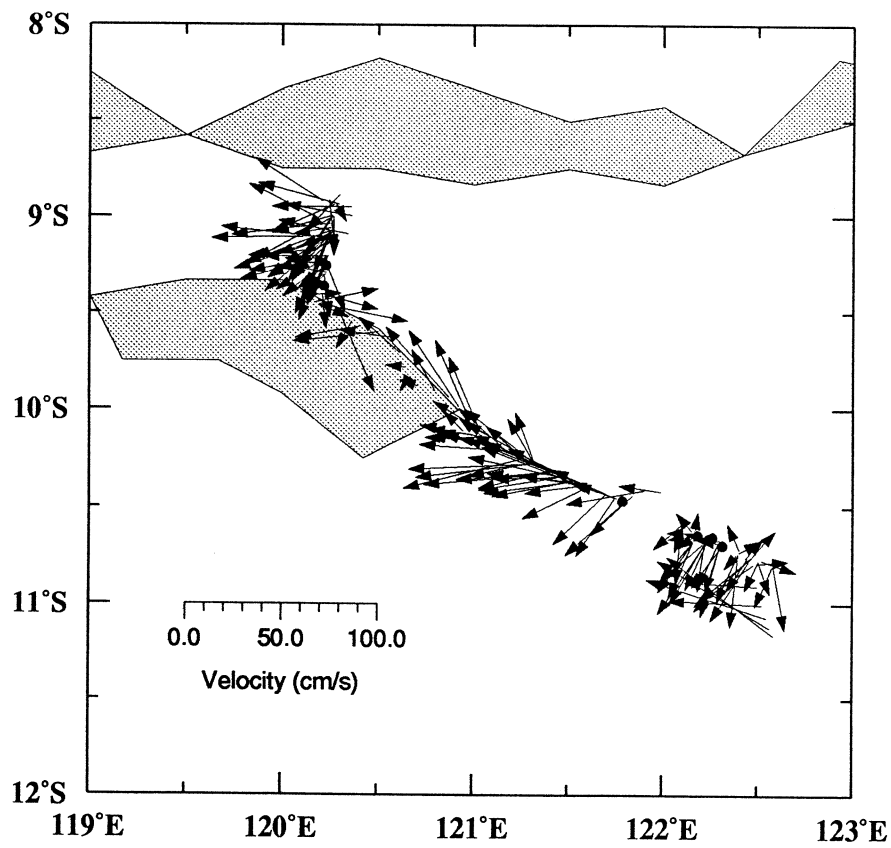
March 14 to 18, 1992
Cruise track



MD9205 --> MD9207

March 14 to 18, 1992

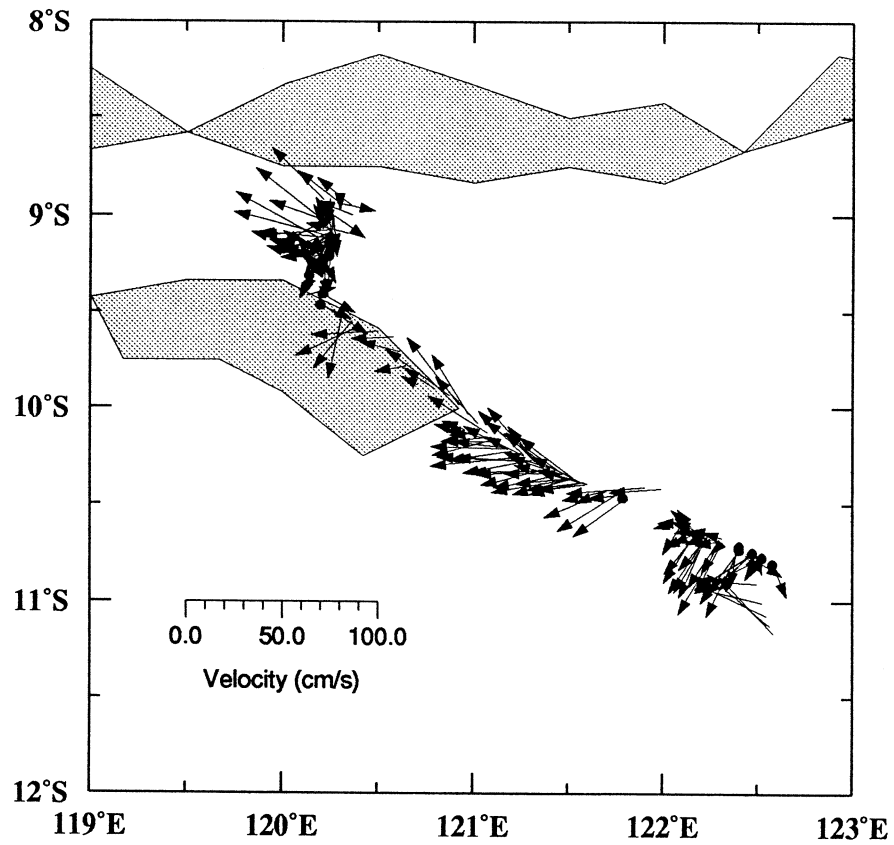
Layer: 20m to 25m



MD9205 --> MD9207

March 14 to 18, 1992

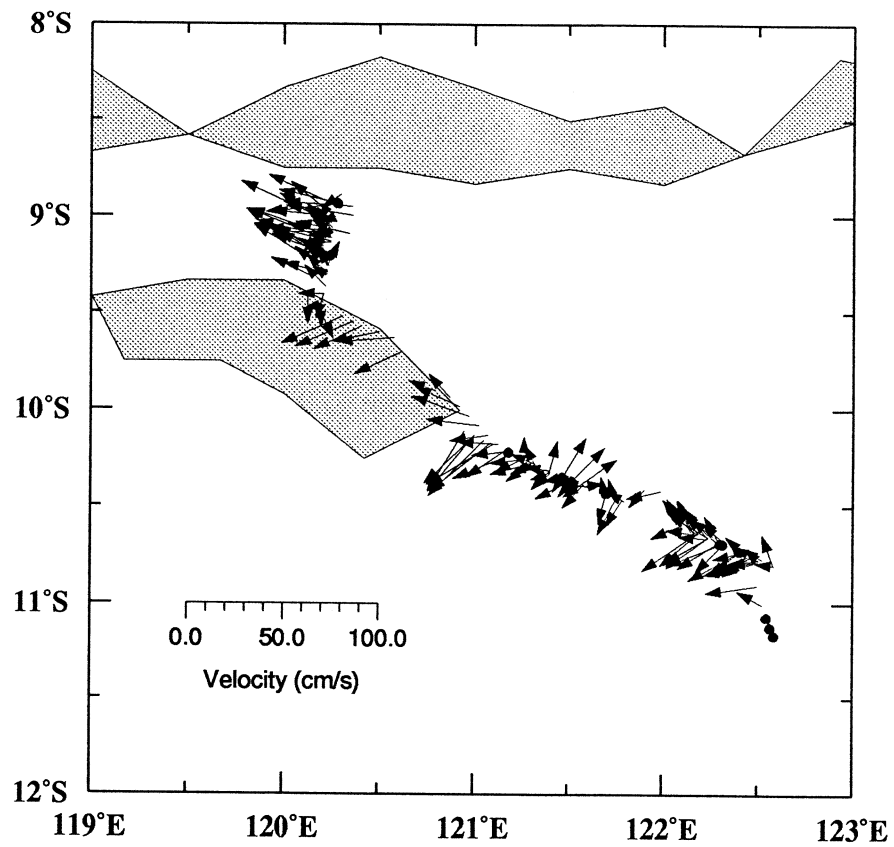
Layer: 25m to 75m



MD9205 --> MD9207

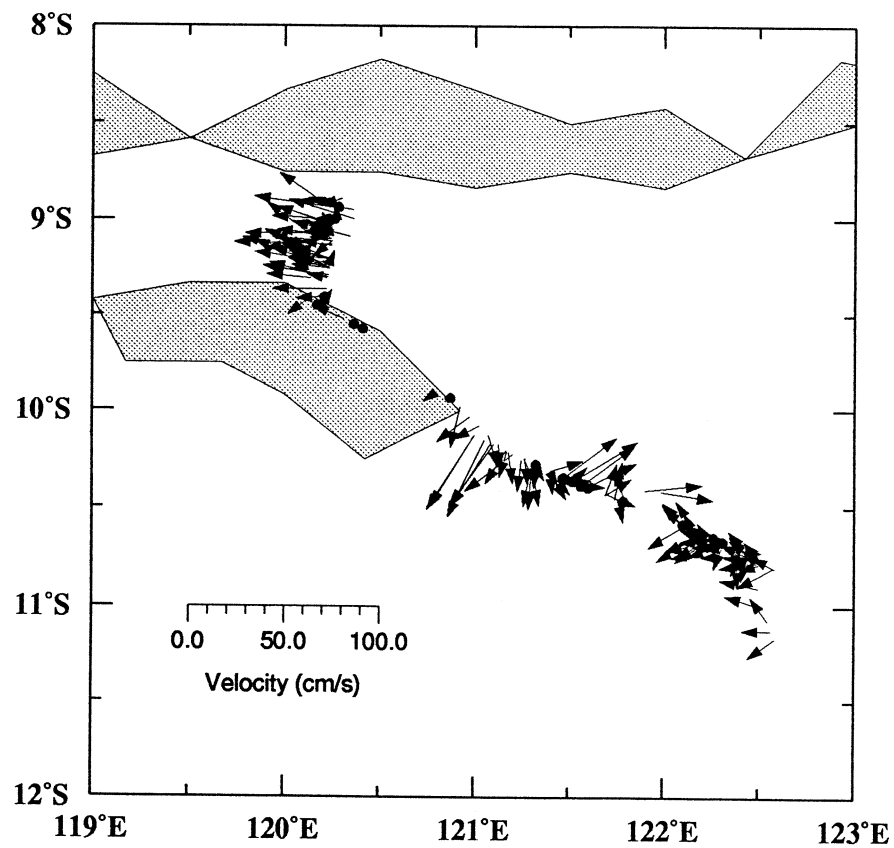
March 14 to 18, 1992

Layer: 75m to 125m



MD9205 --> MD9207

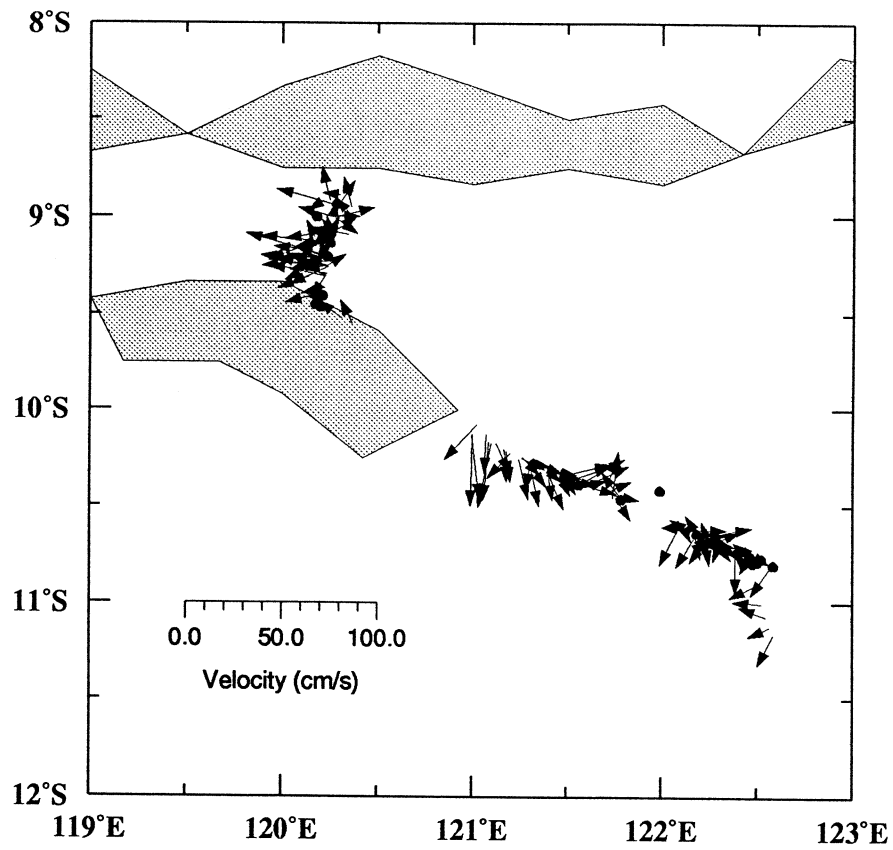
March 14 to 18, 1992
Layer: 125m to 175m



MD9205 --> MD9207

March 14 to 18, 1992

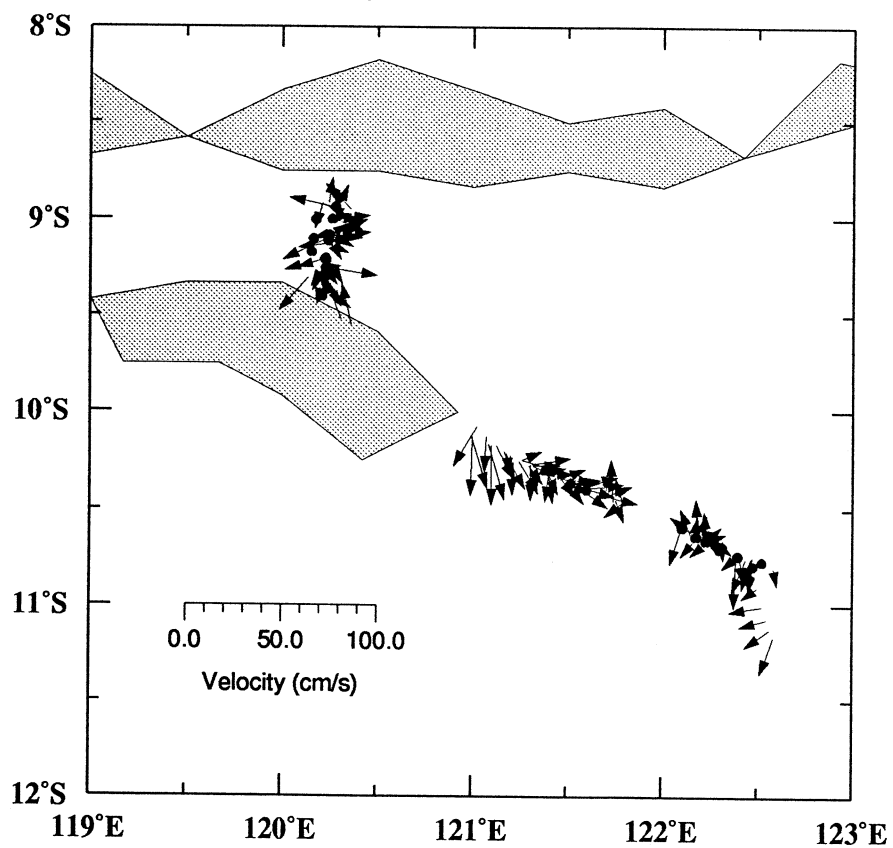
Layer: 175m to 225m



MD9205 --> MD9207

March 14 to 18, 1992

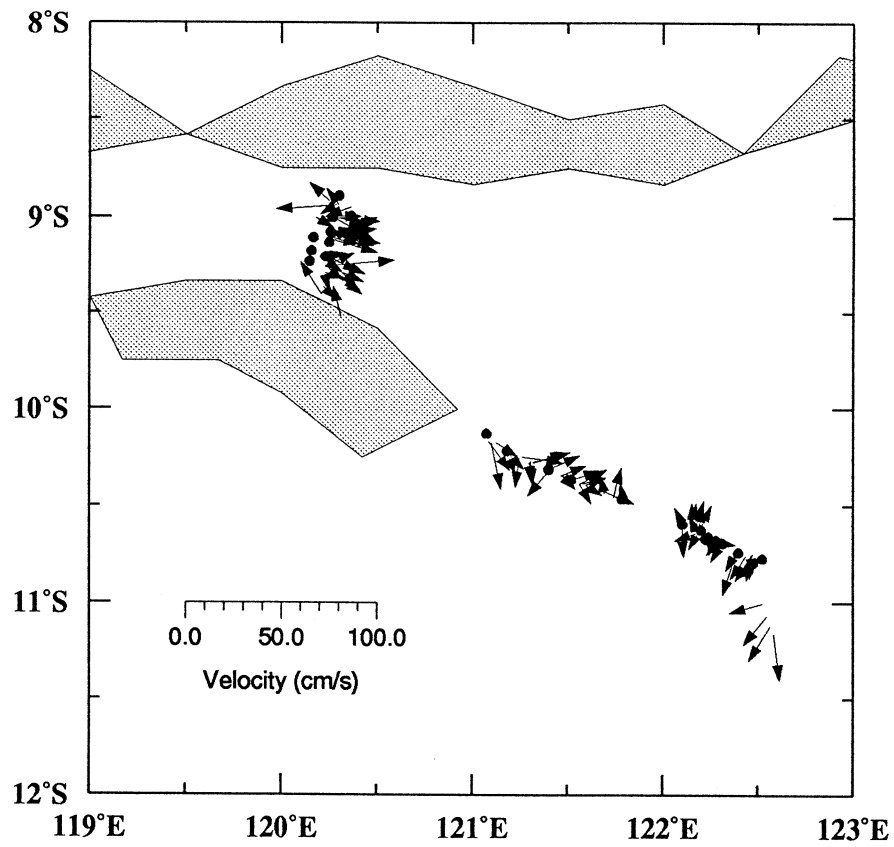
Layer: 225m to 275m



MD9205 --> MD9207

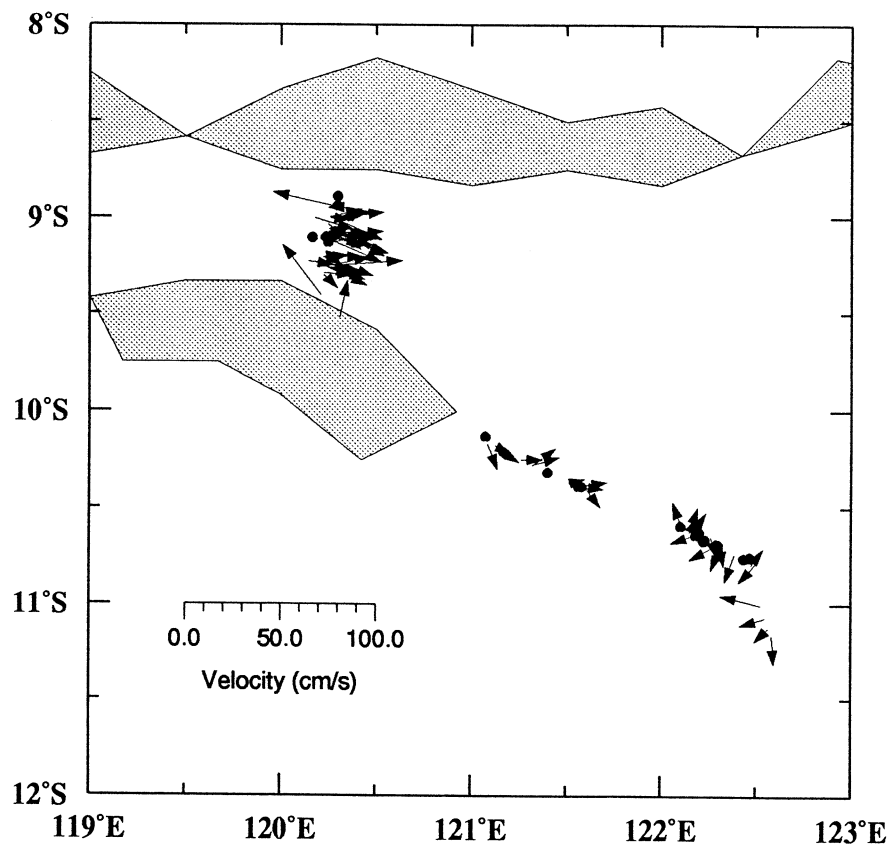
March 14 to 18, 1992

Layer: 275m to 325m



MD9205 --> MD9207

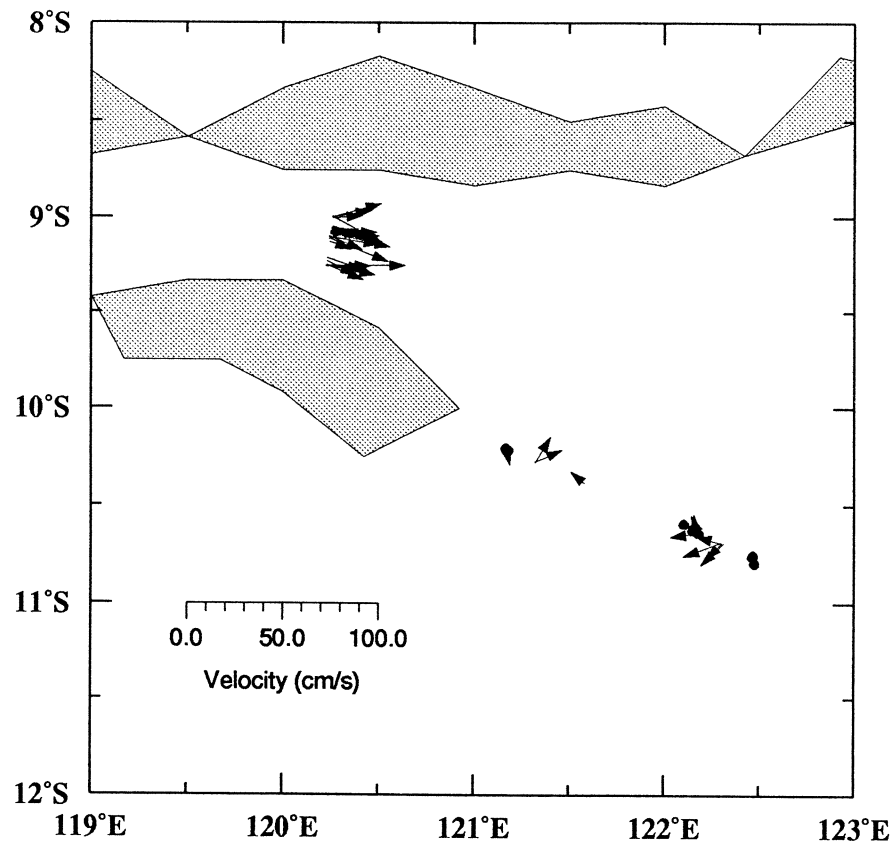
March 14 to 18, 1992
Layer: 325m to 375m



MD9205 --> MD9207

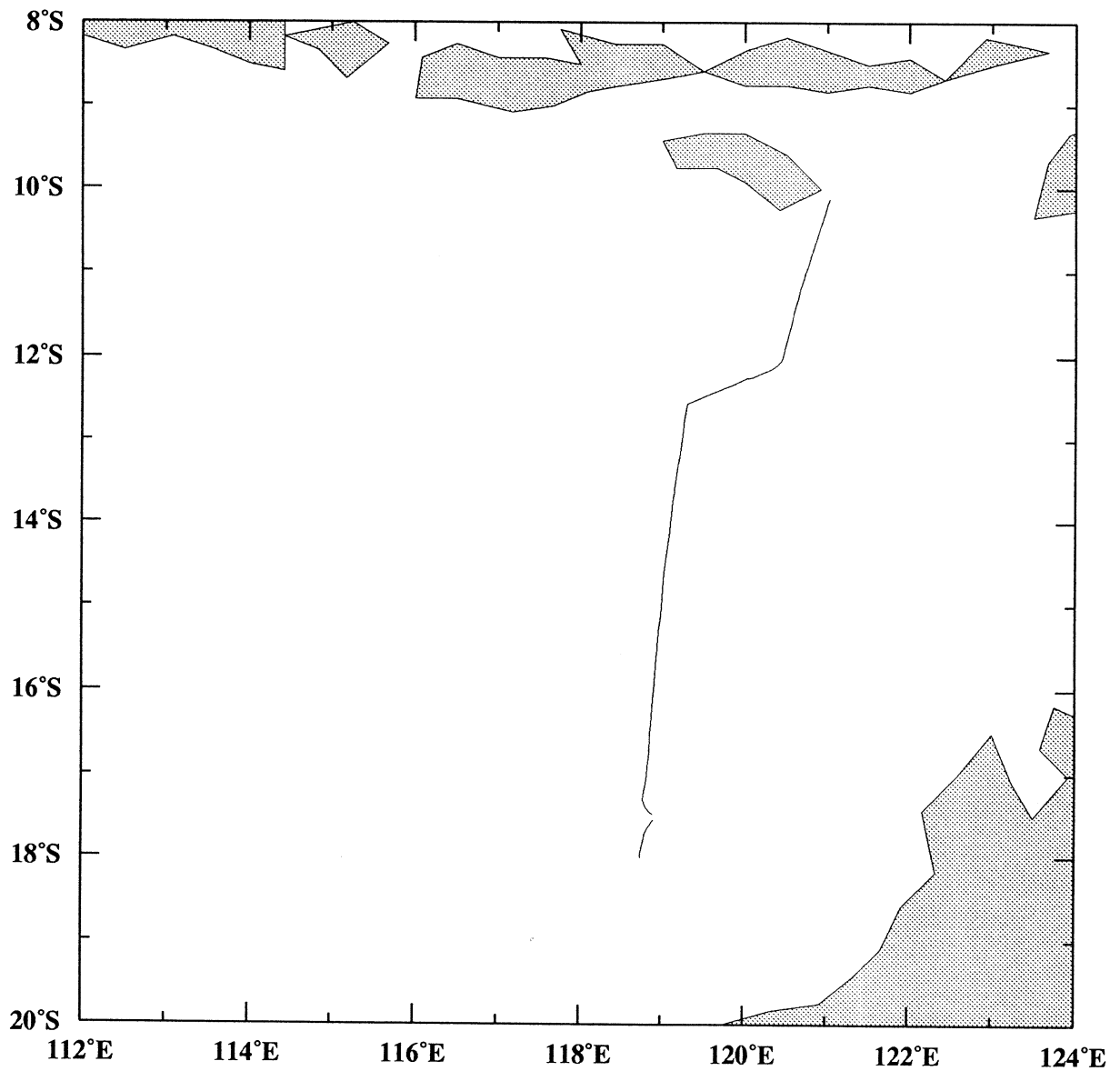
March 14 to 18, 1992

Layer: 375m to 425m



MD9208

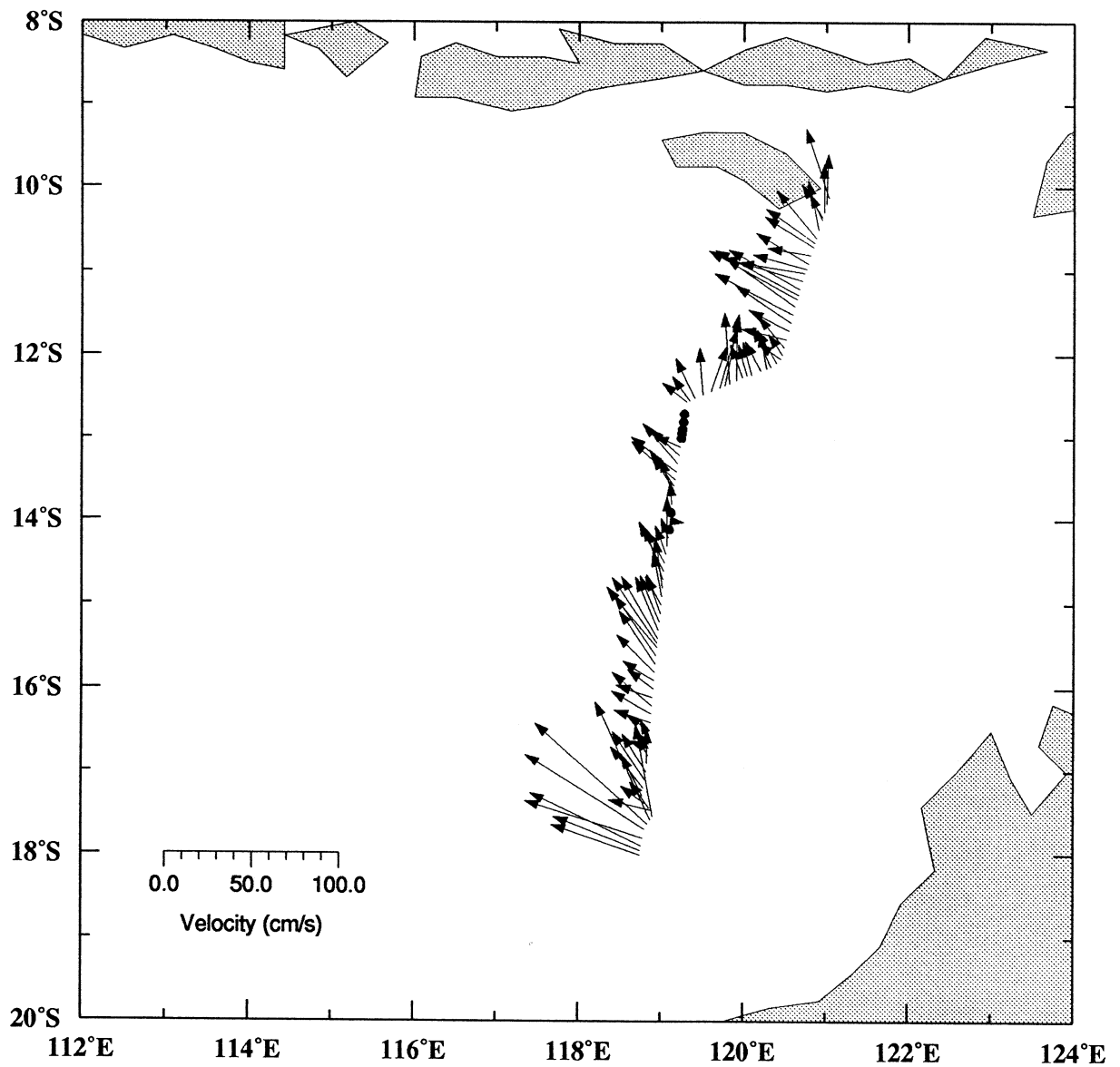
March 20 to 22, 1992
Cruise track



MD9208

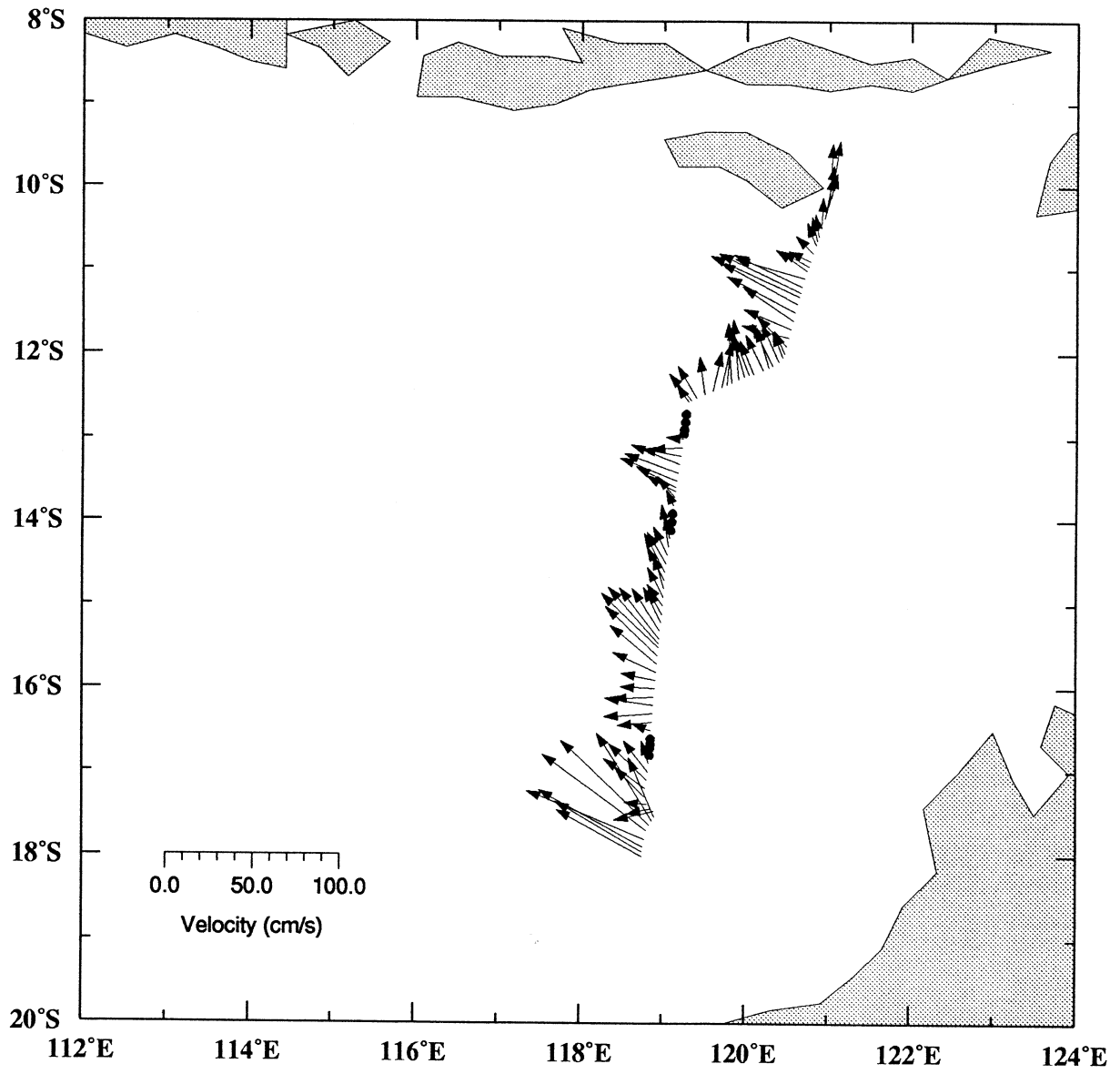
March 20 to 22, 1992

Layer: 20m to 25m



MD9208

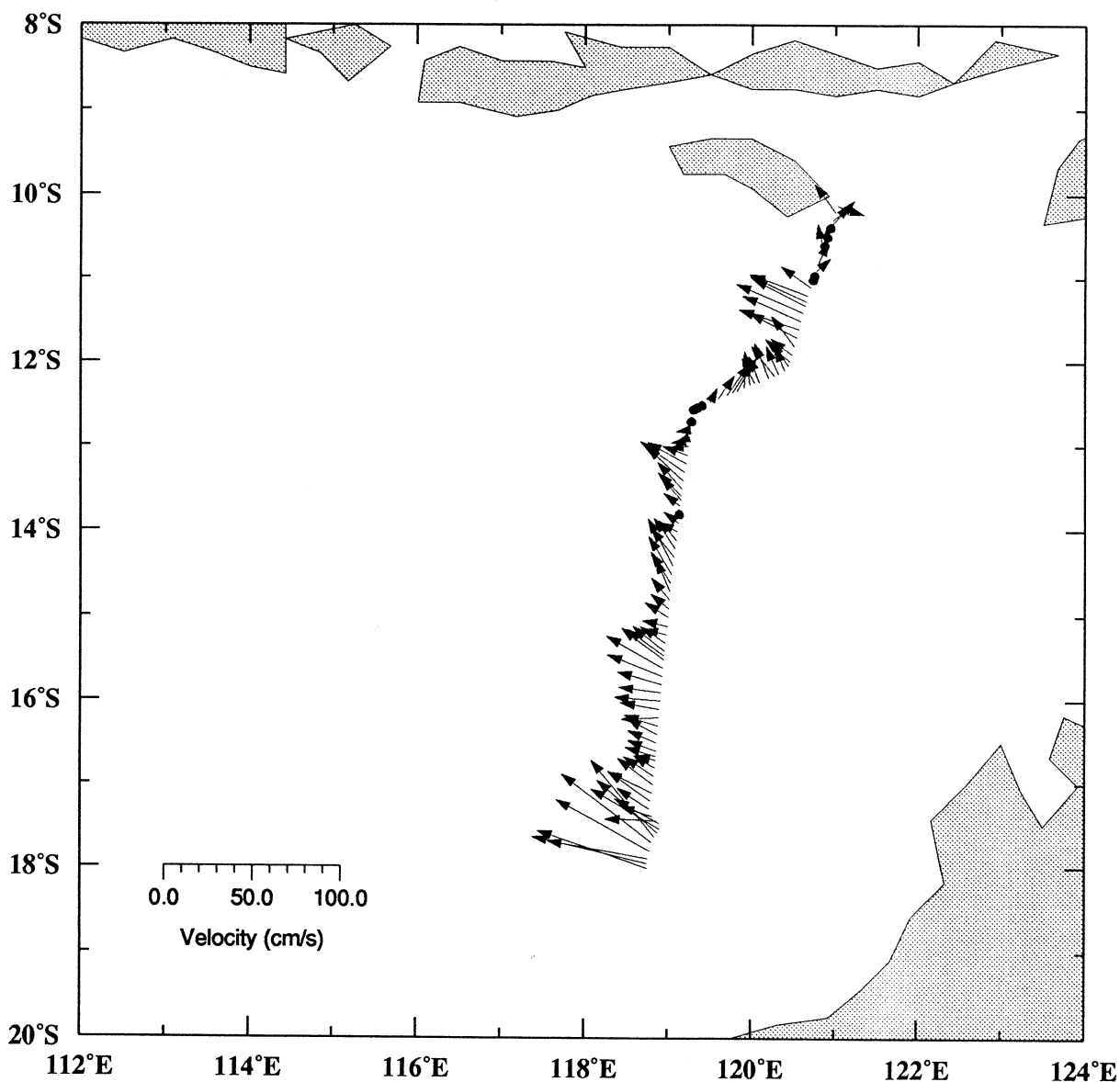
March 20 to 22, 1992
Layer: 25m to 75m



MD9208

March 20 to 22, 1992

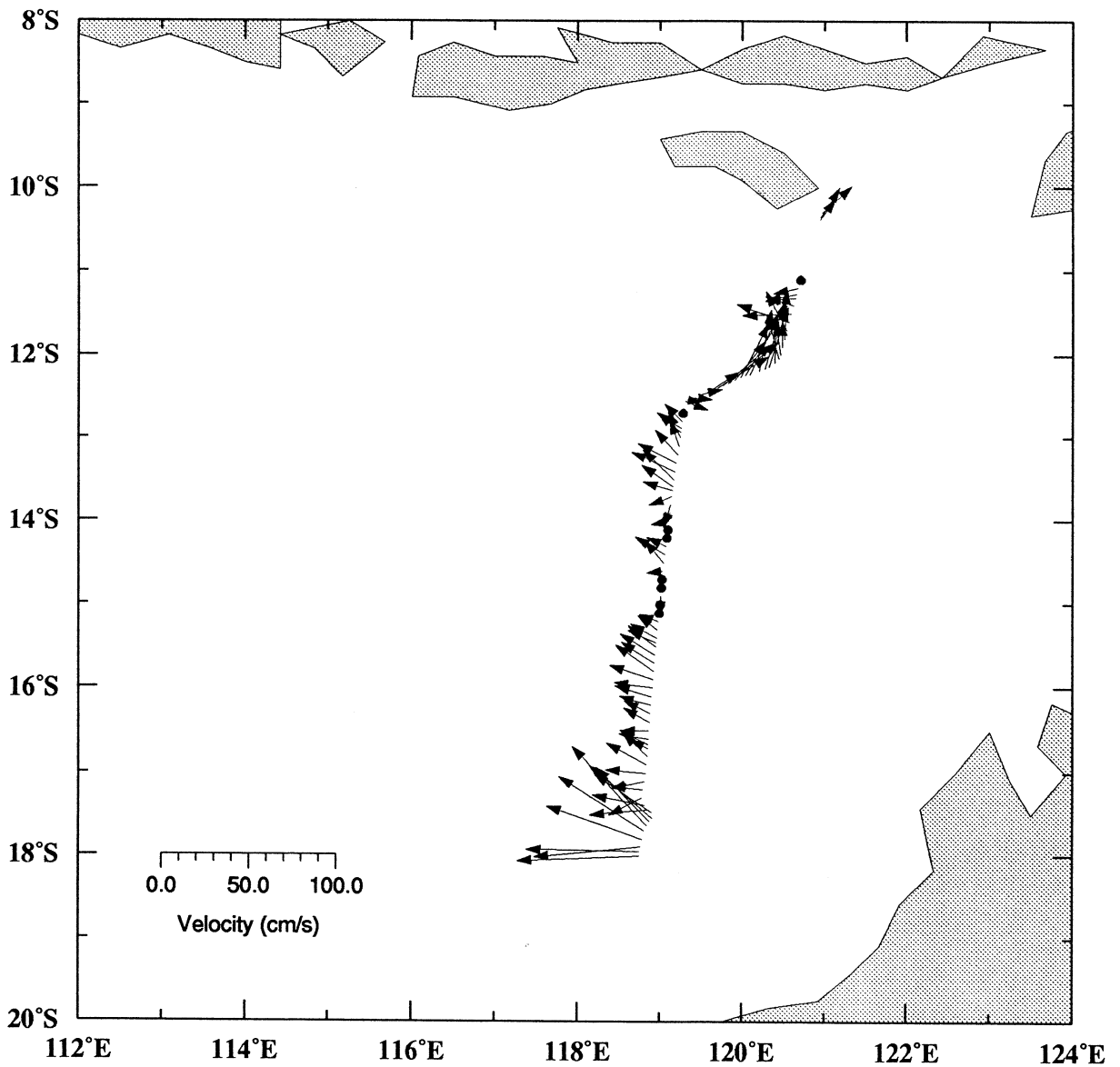
Layer: 75m to 125m



MD9208

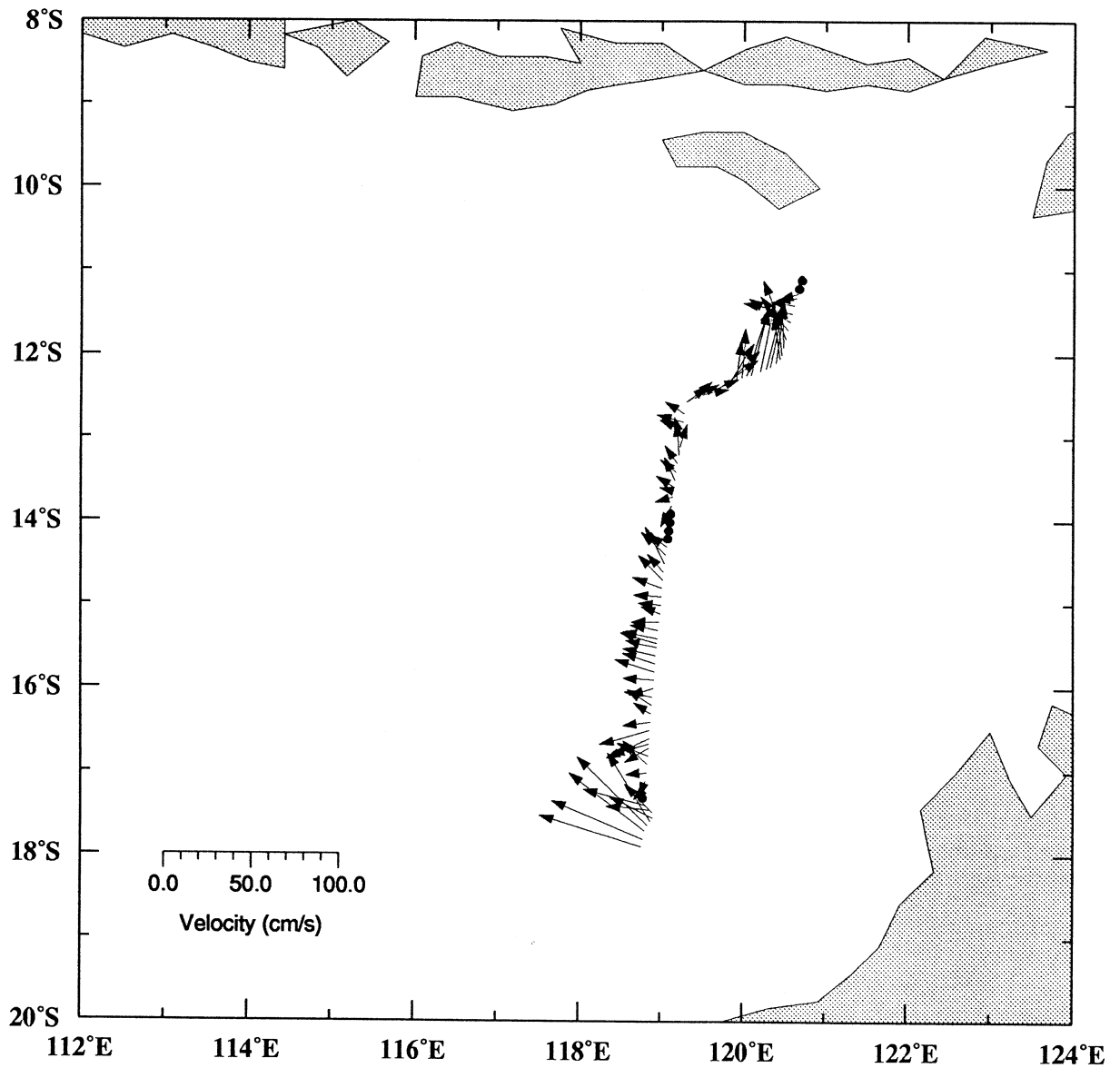
March 20 to 22, 1992

Layer: 125m to 175m



MD9208

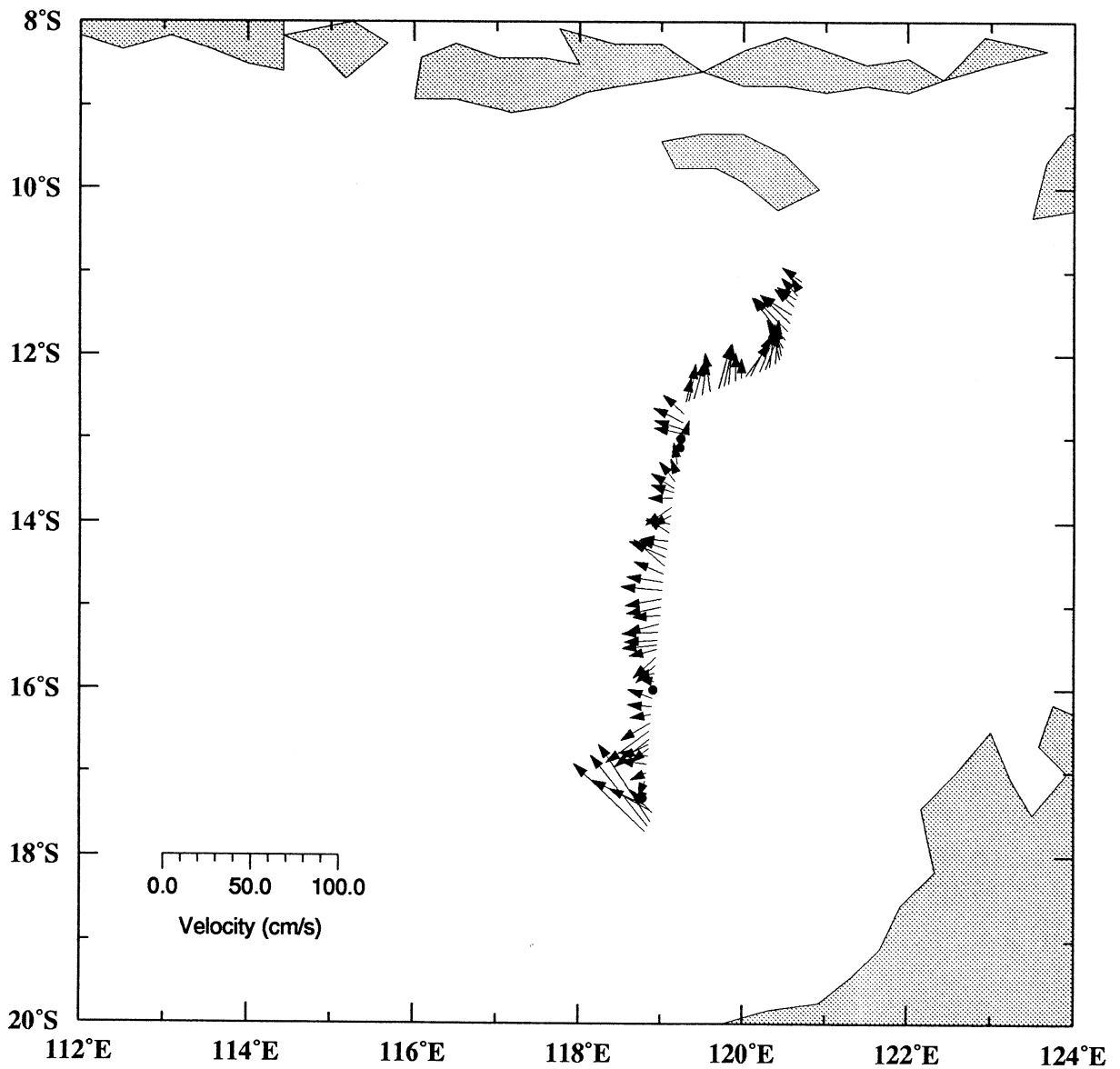
March 20 to 22, 1992
Layer: 175m to 225m



MD9208

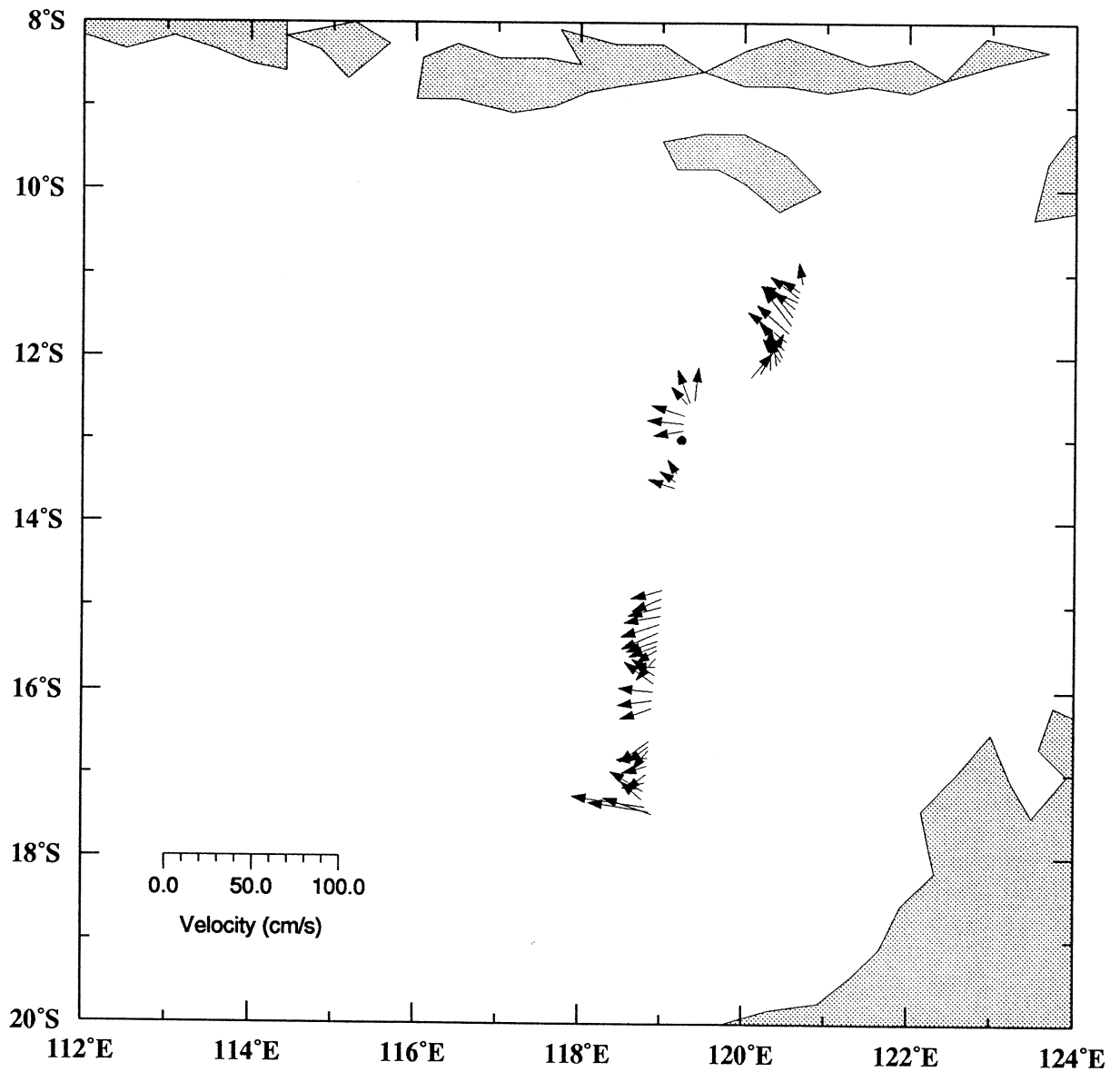
March 20 to 22, 1992

Layer: 225m to 275m



MD9208

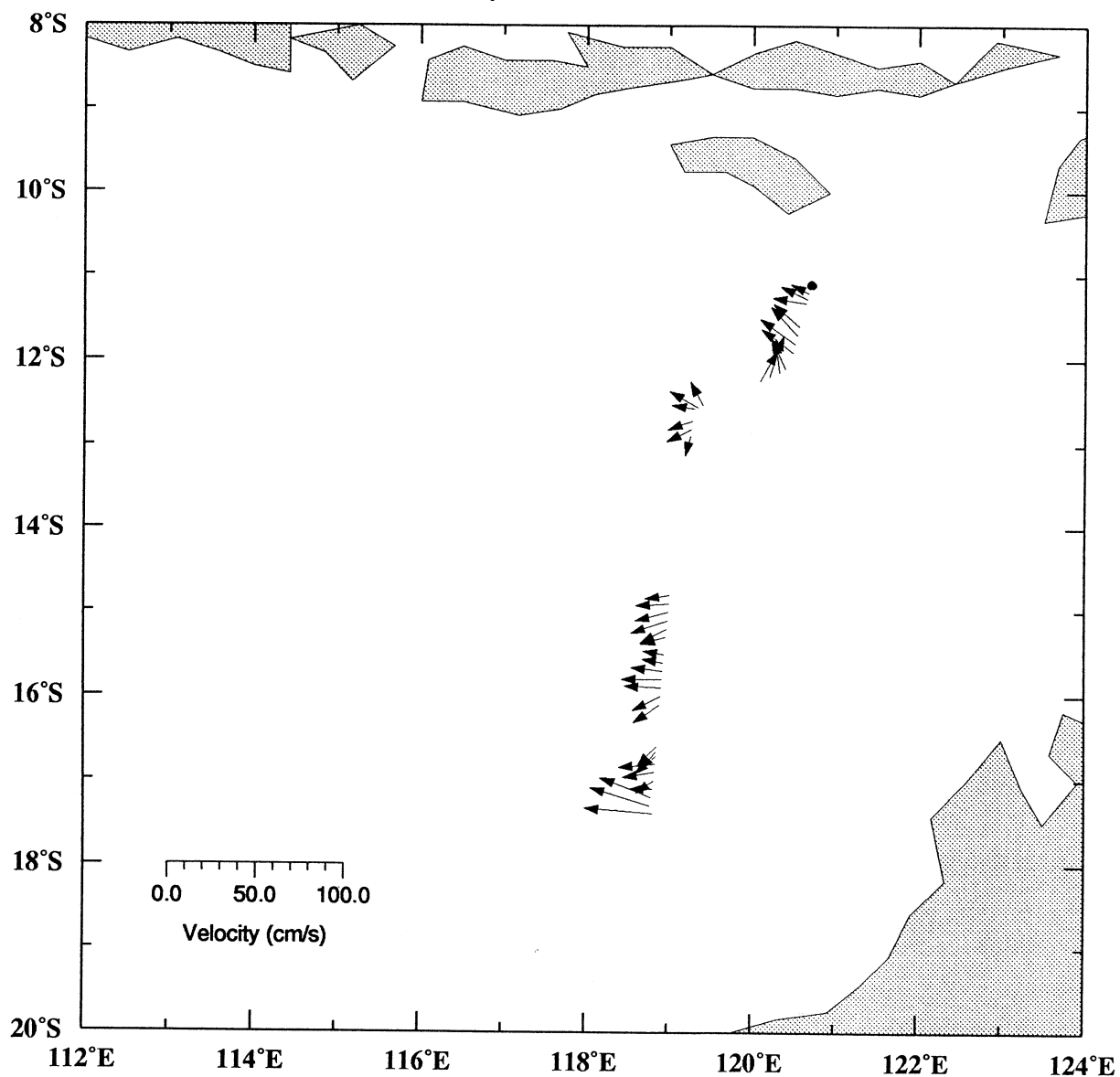
March 20 to 22, 1992
Layer: 275m to 325m



MD9208

March 20 to 22, 1992

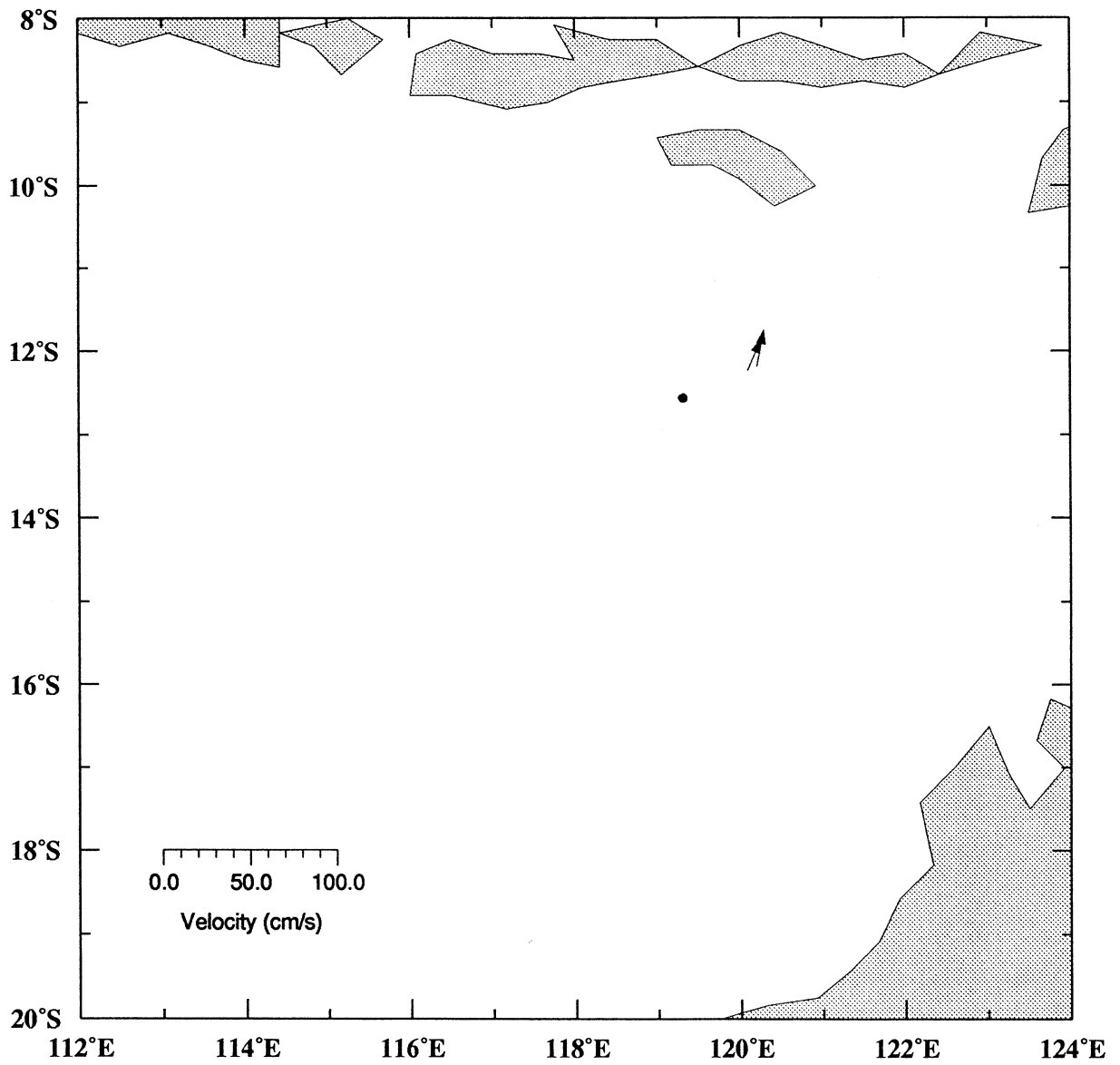
Layer: 325m to 375m



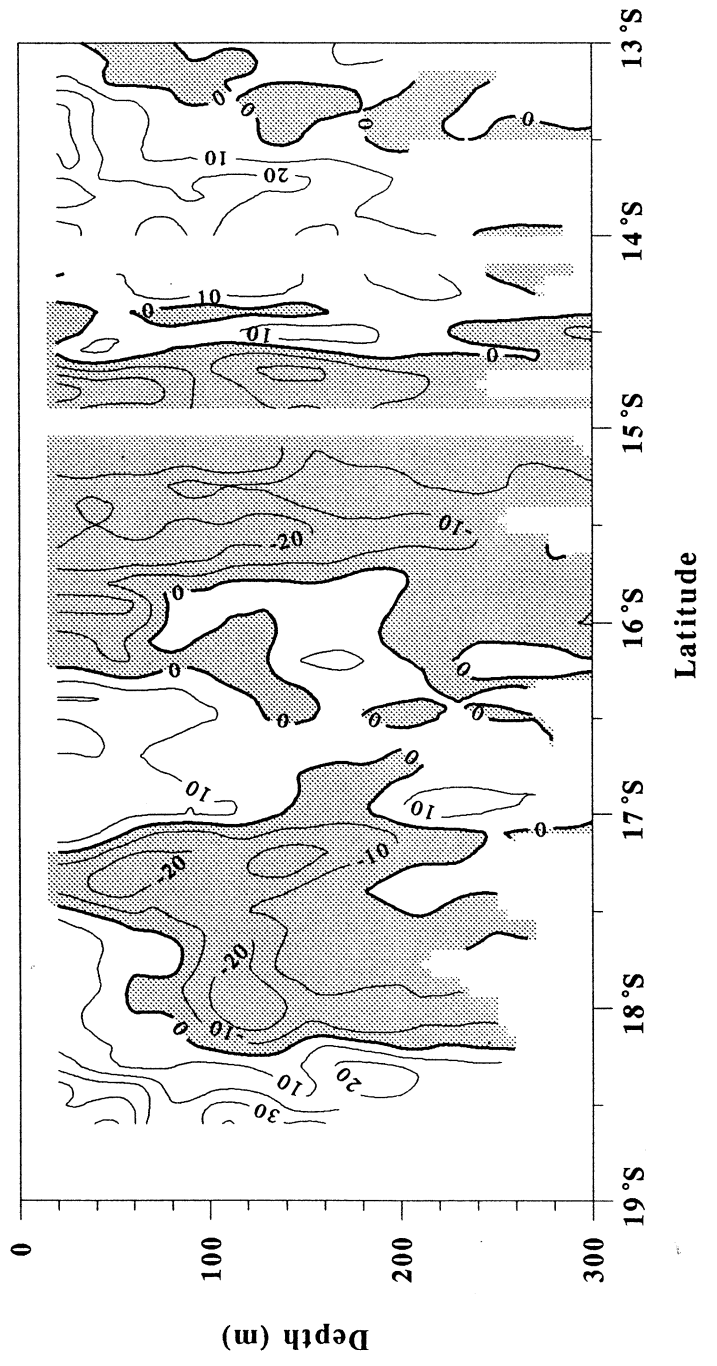
MD9208

March 20 to 22, 1992

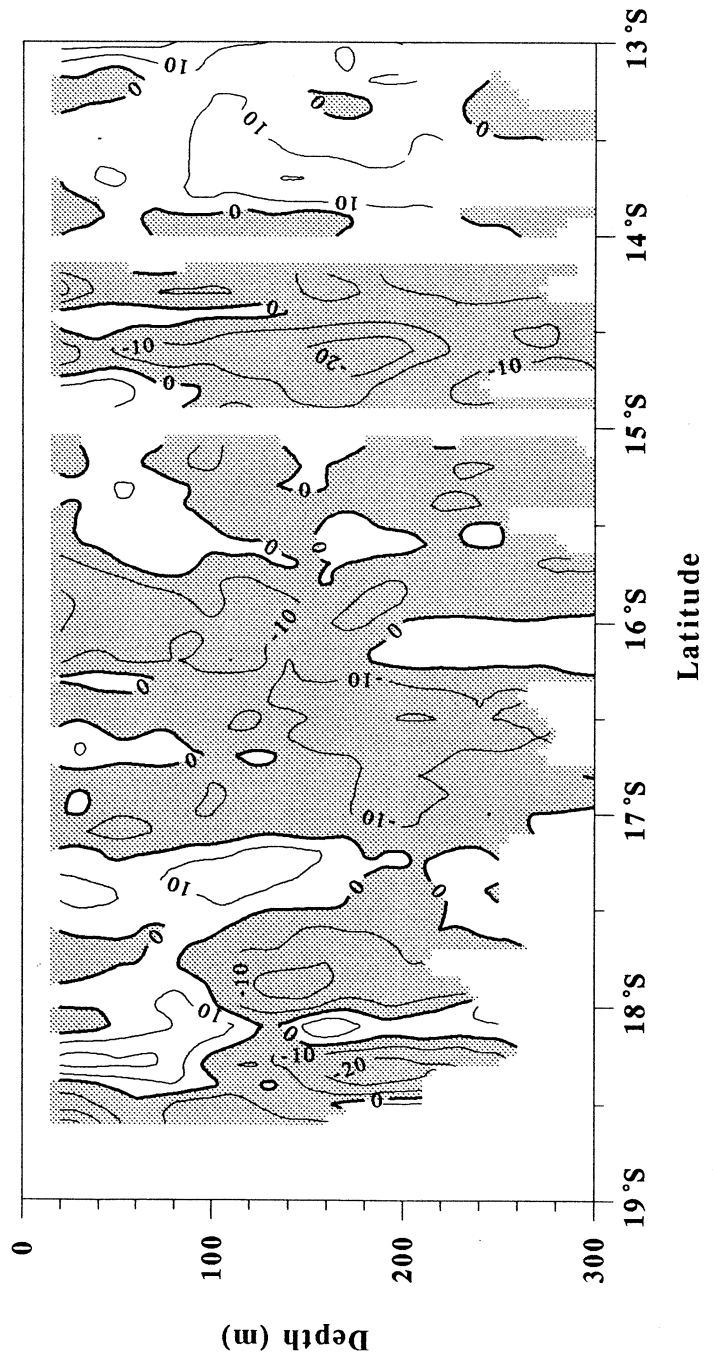
Layer: 375m to 425m



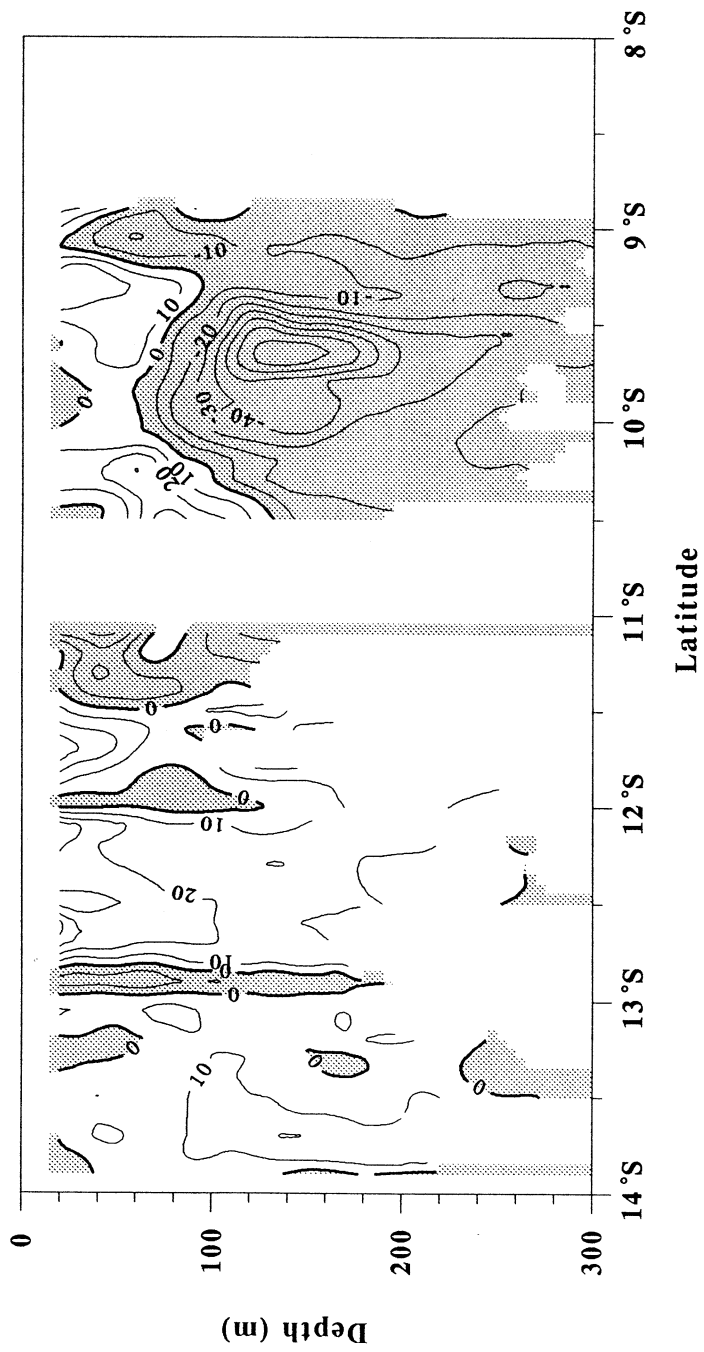
ADCP MD9201, 118E NORTHBOUND, 21 to 26 February 1992, U (cm/s)



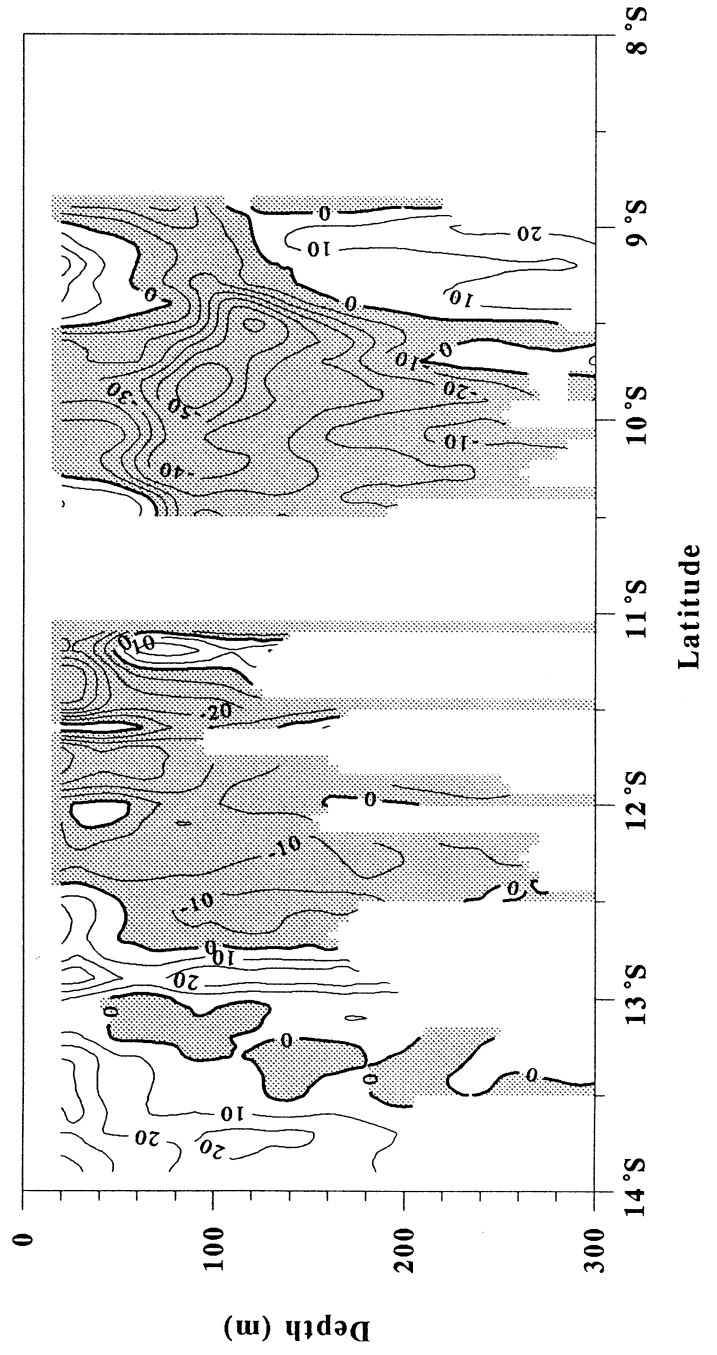
ADCP MD9201, 118E NORTHBOUND, 21 to 26 February 1992, V (cm/s)



ADCP MD9201, 118E NORTHBOUND, 25 February to 02 March 1992, V (cm/s)

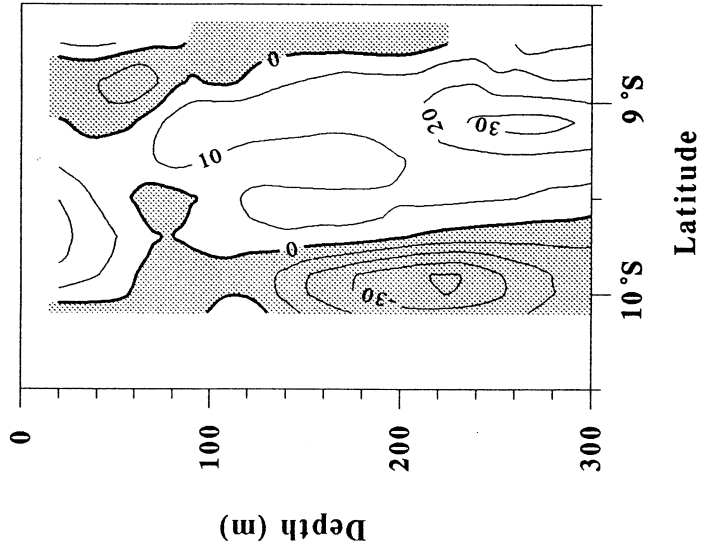


ADCP MD9201, 118E NORTHBOUND, 25 February to 02 March 1992, U (cm/s)



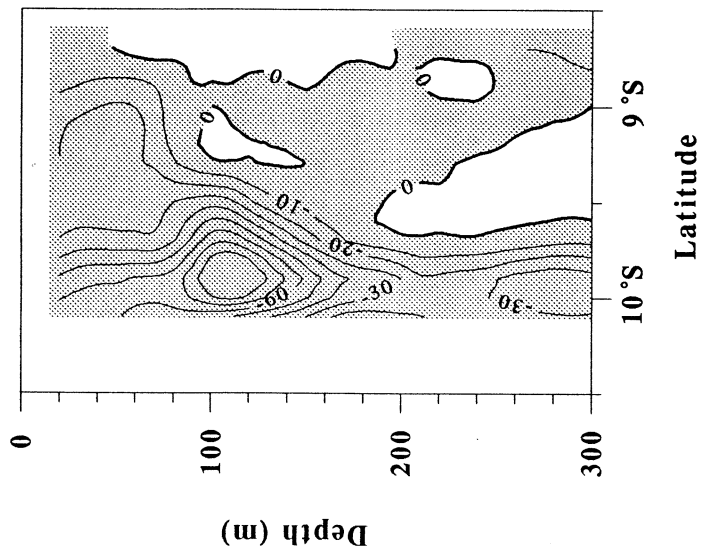
A Comparer avec MD9201, 118E NORTHBOUND, 28/02 ~ 12/03

ADCP MD9202, 115E SOUTHBOUND, 5 to 6 March 1992, U (cm/s)

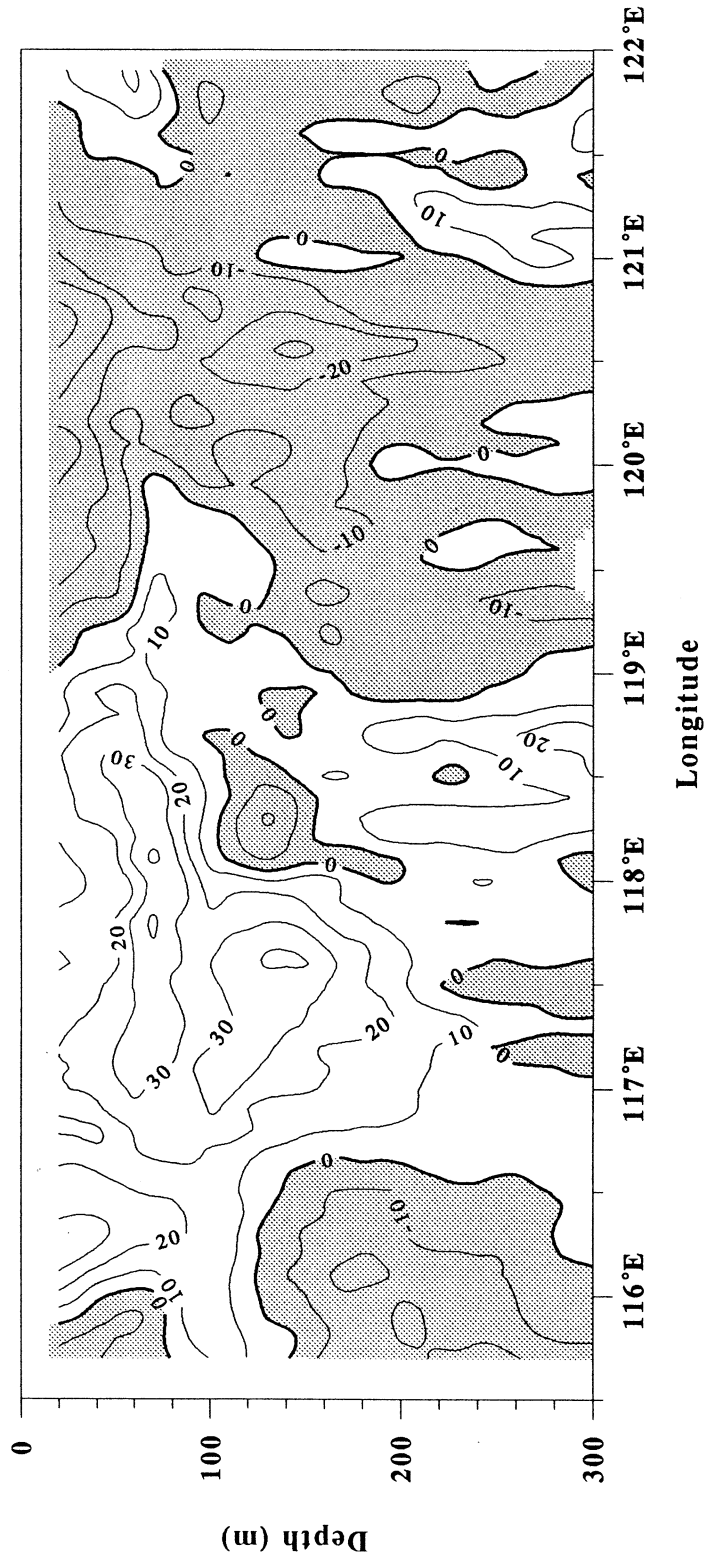


A comparison with MD9204, 118E NORTHBOUND, 25/02 to 02/03

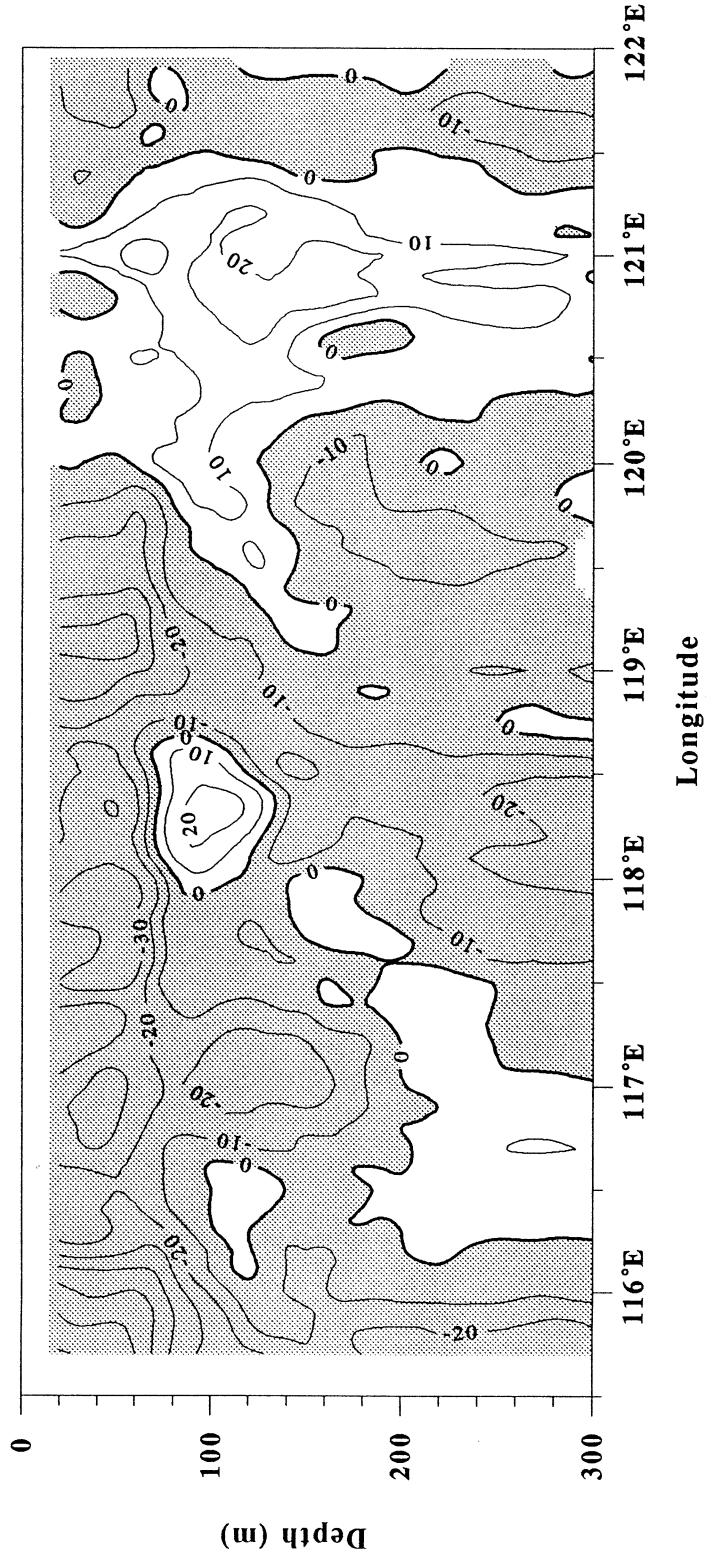
ADCP MD9202, 115E SOUTHBOUND, 5 to 6 March 1992, V (cm/s)



ADCP MD9202, 10S EASTBOUND, 6 to 7 March 1992, U (cm/s)



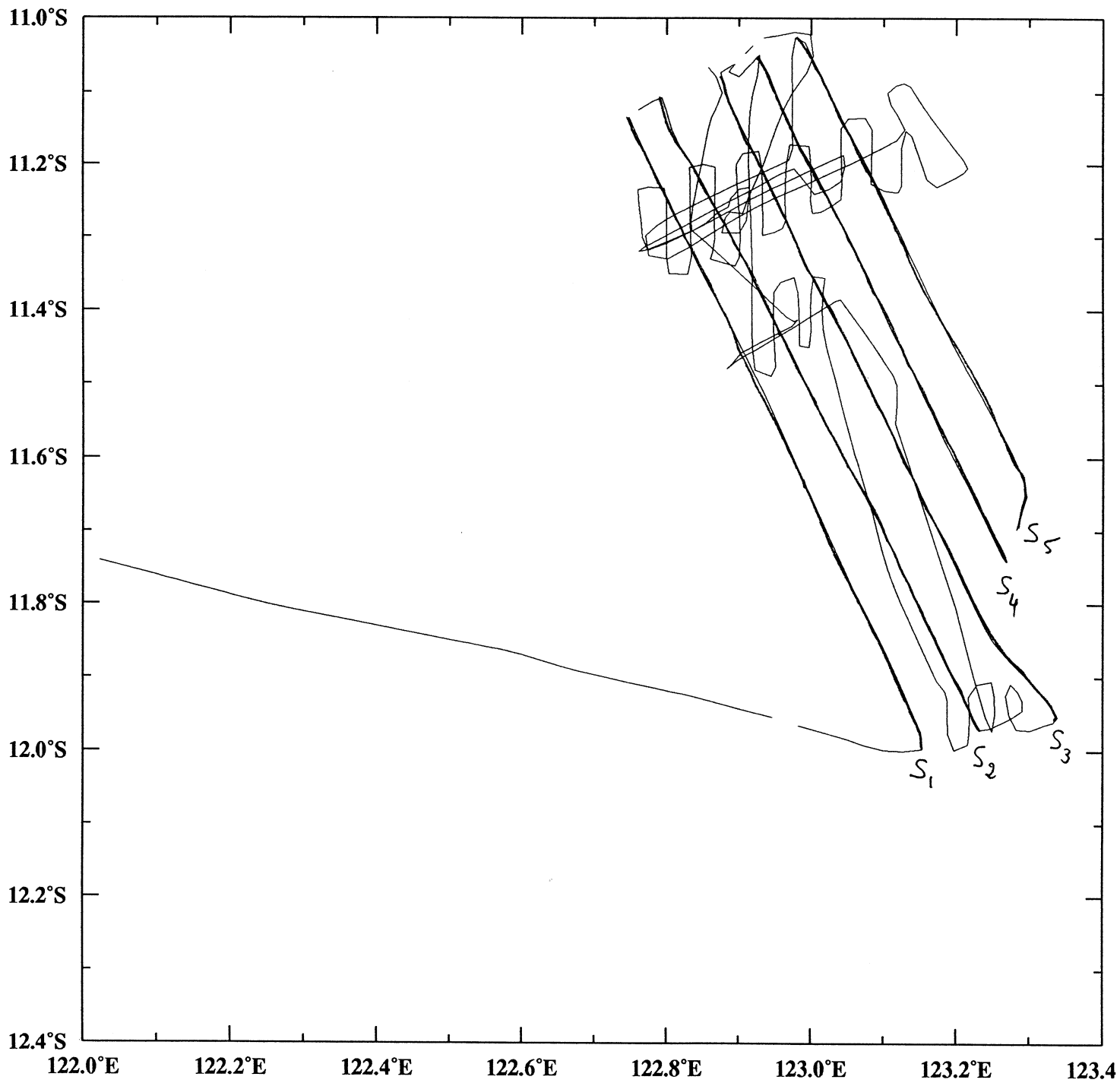
ADCP MD9202, 10S EASTBOUND, 6 to 7 March 1992, V (cm/s)



CONTOURS : Section 1 à 5

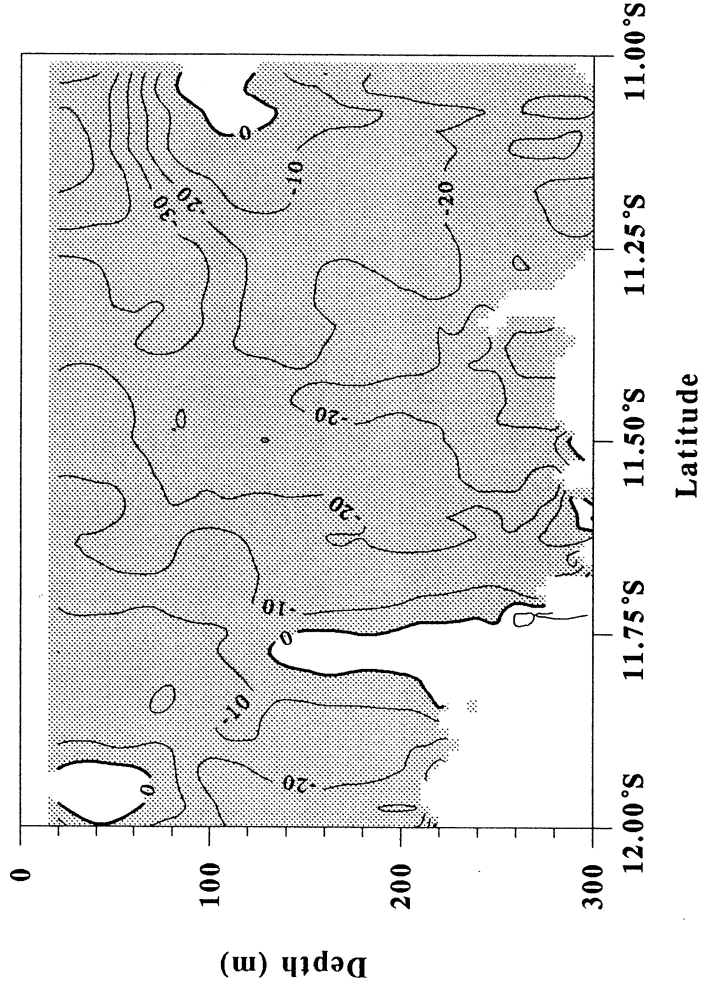
MD9203

March 8 to 11, 1992
Cruise track



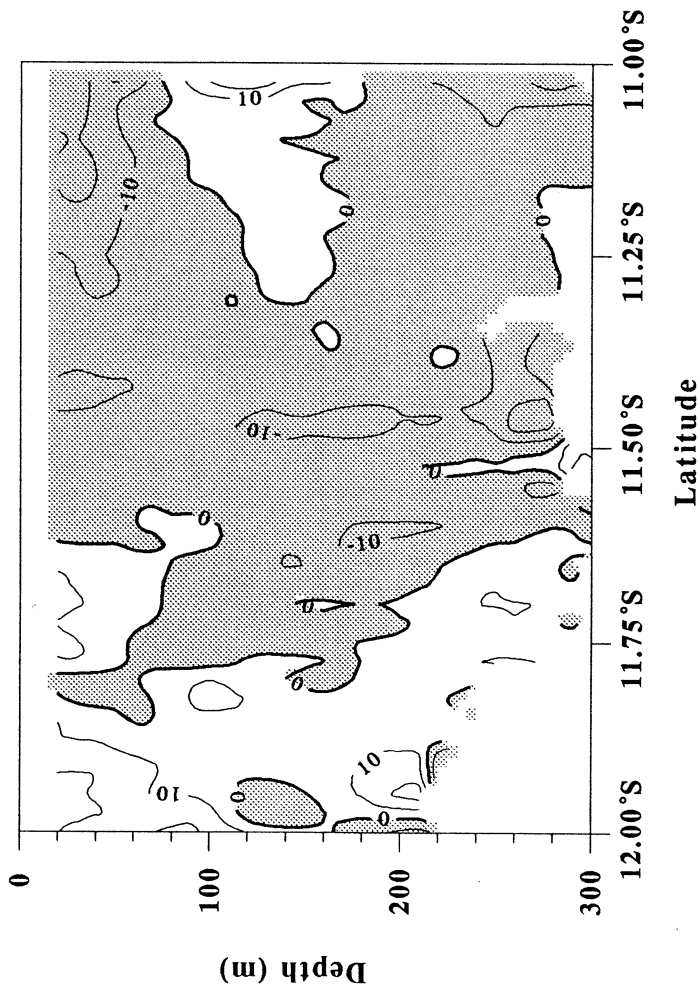
ADCP MD9203, 123E (CHENAL DE TIMOR), 7 (19:11) to 8 (23:31) March 1992, U (cm/s)

(sections 1 to 5)

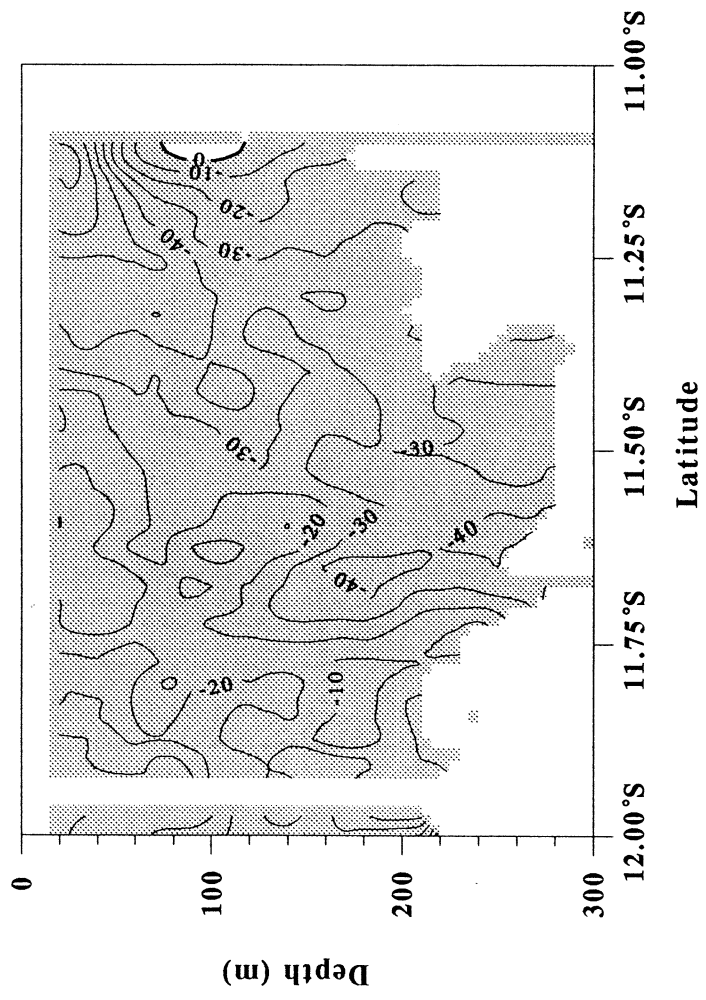


ADCP MD9203, 123E (CHENAL DE TIMOR), 7 (19:11) to 8 (23:31) March 1992, V (cm/s)

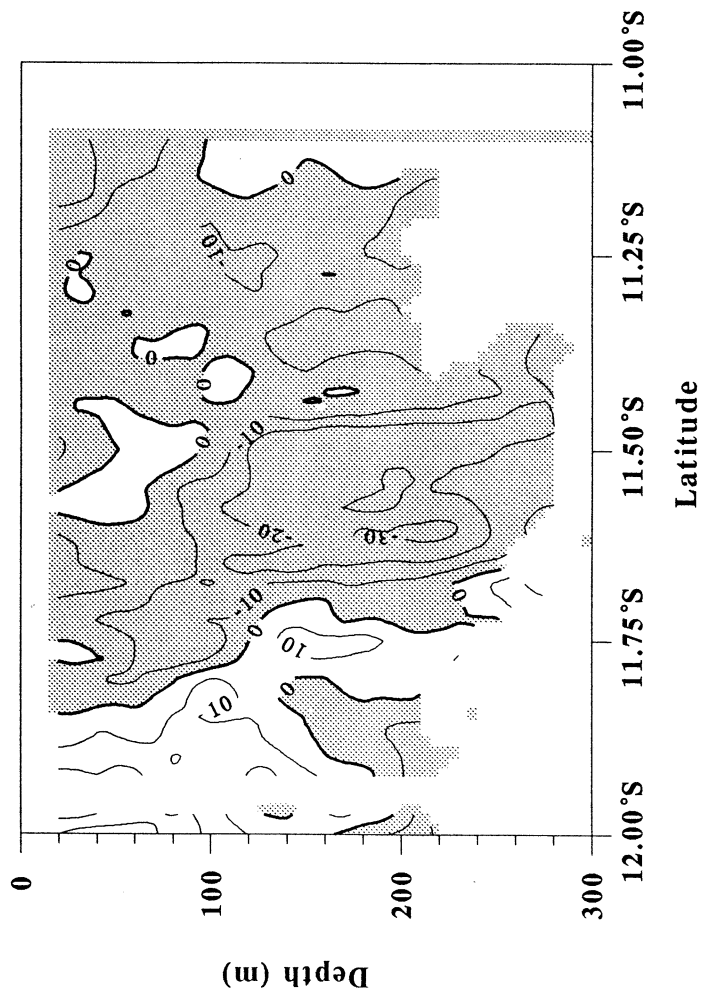
(sections A & S)



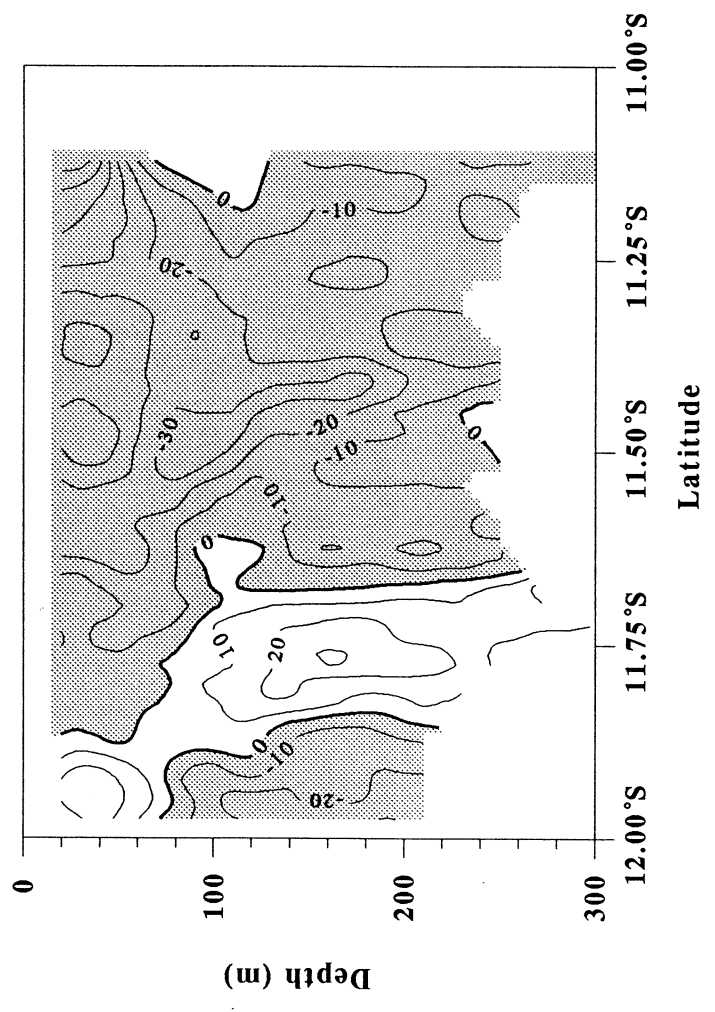
ADCP MD9203, 123E (CHENAL DE TIMOR), 7 (19:11) to 8 (00:27) March 1992, U (cm/s)



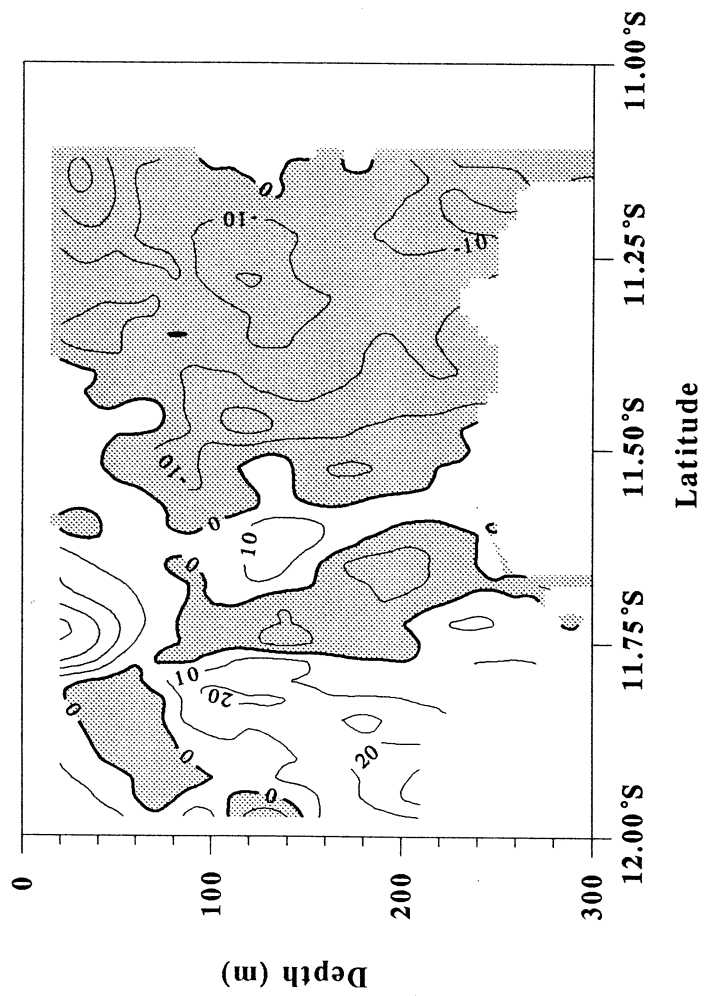
ADCP MD9203, 123E (CHENAL DE TIMOR), 7 (19:11) to 8 (00:27) March 1992, V (cm/s)



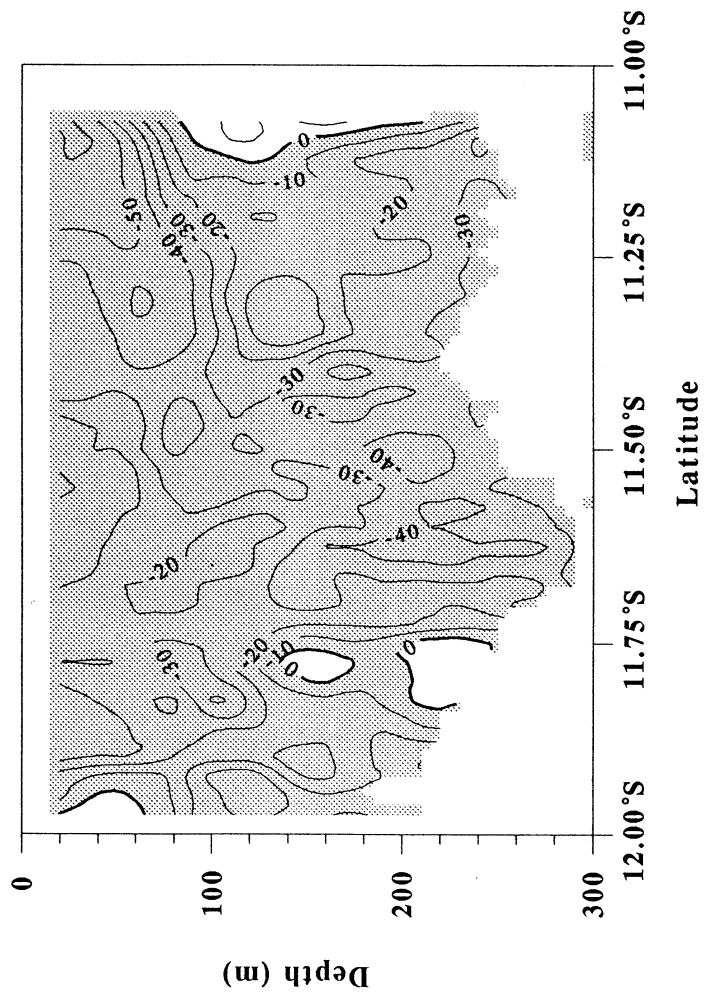
ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (00:30 to 06:30), U (cm/s)



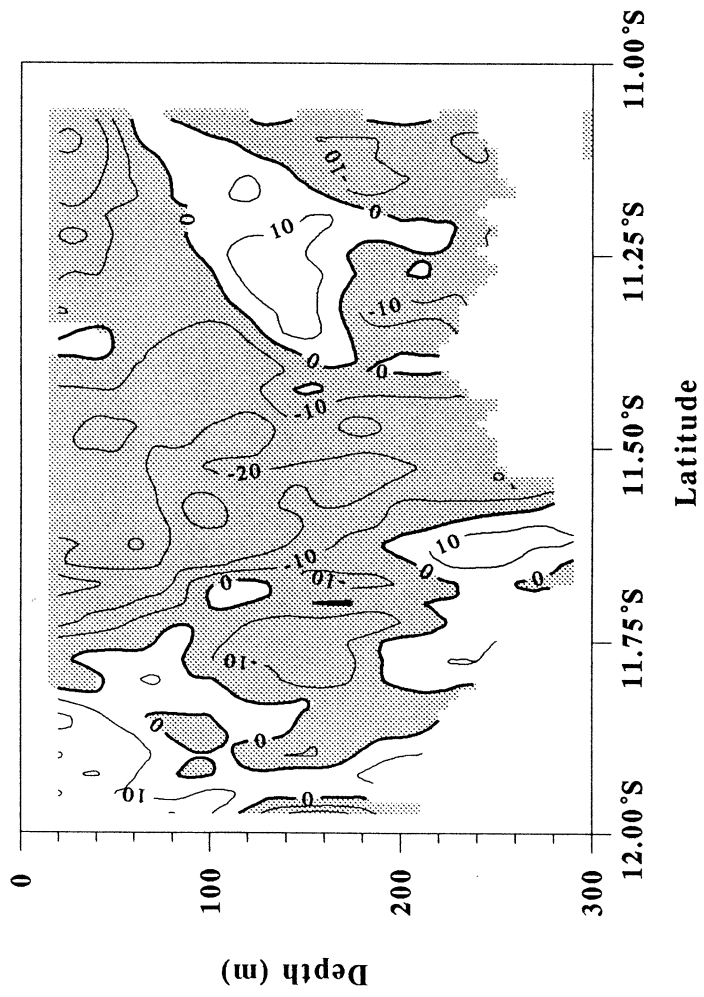
ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (00:30 to 06:30), V (cm/s)



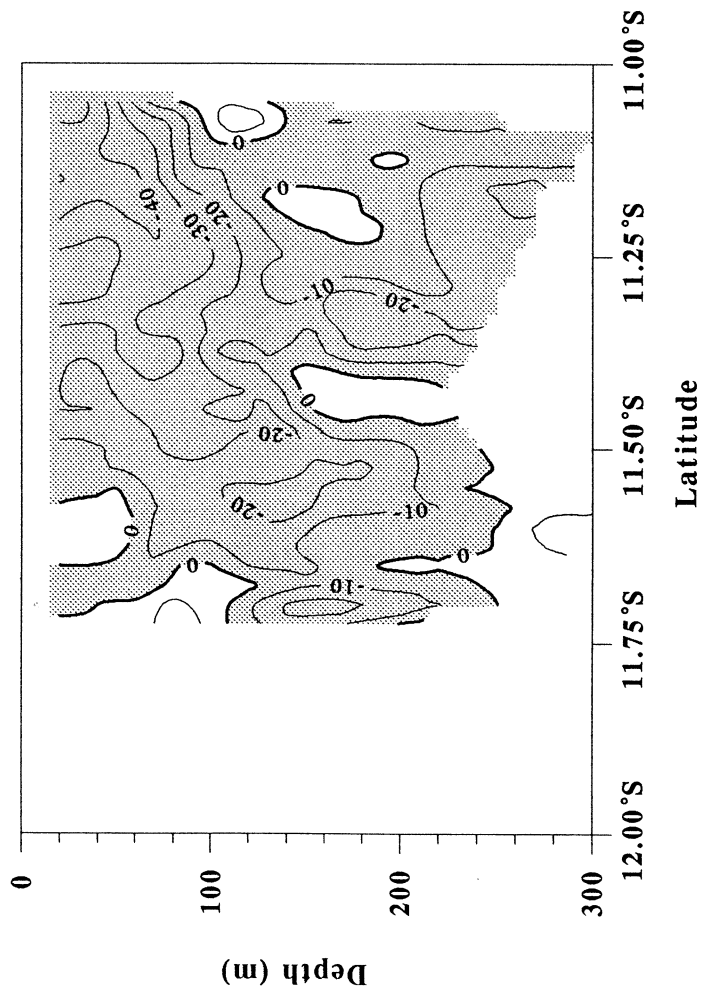
ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (07:27 to 13:43), U (cm/s)



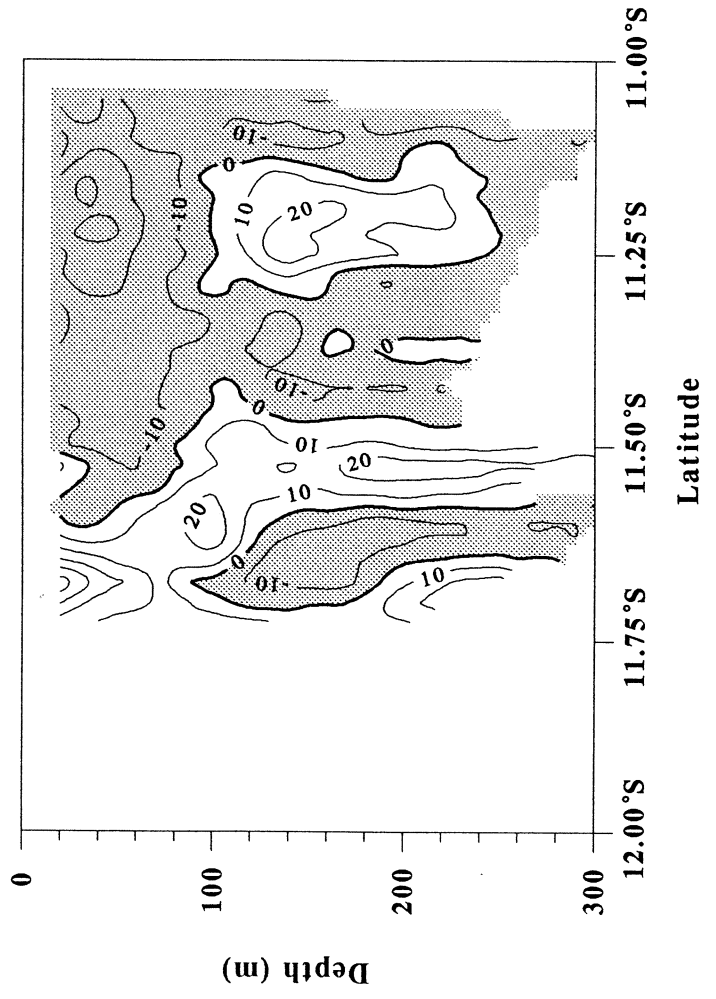
ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (07:27 to 13:43), V (cm/s)



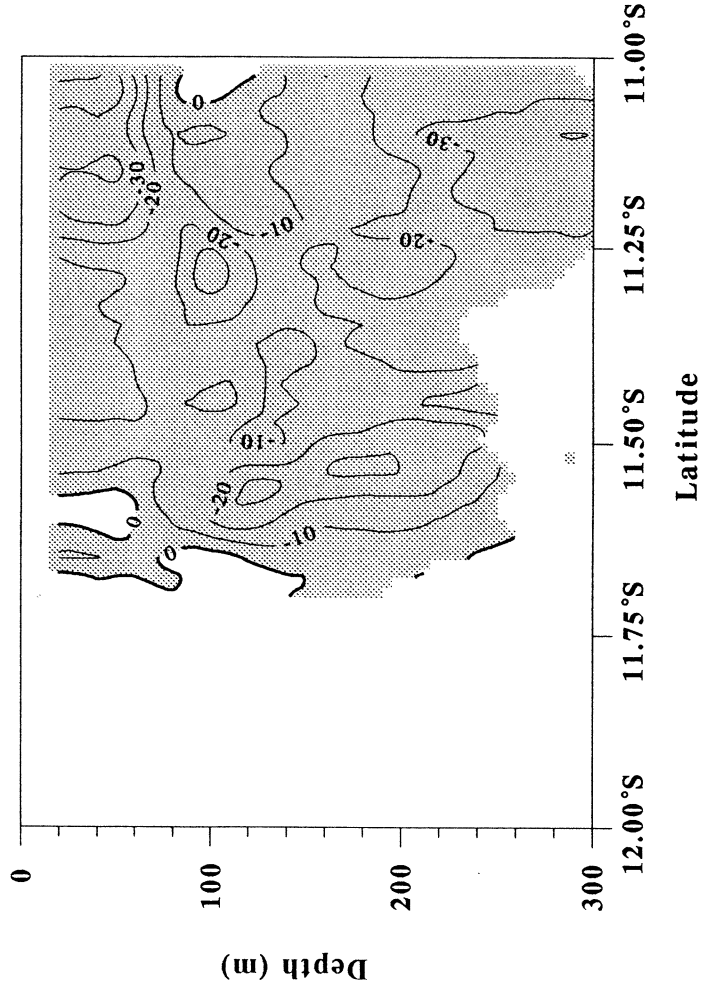
ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (13:45 to 18:39), U (cm/s)



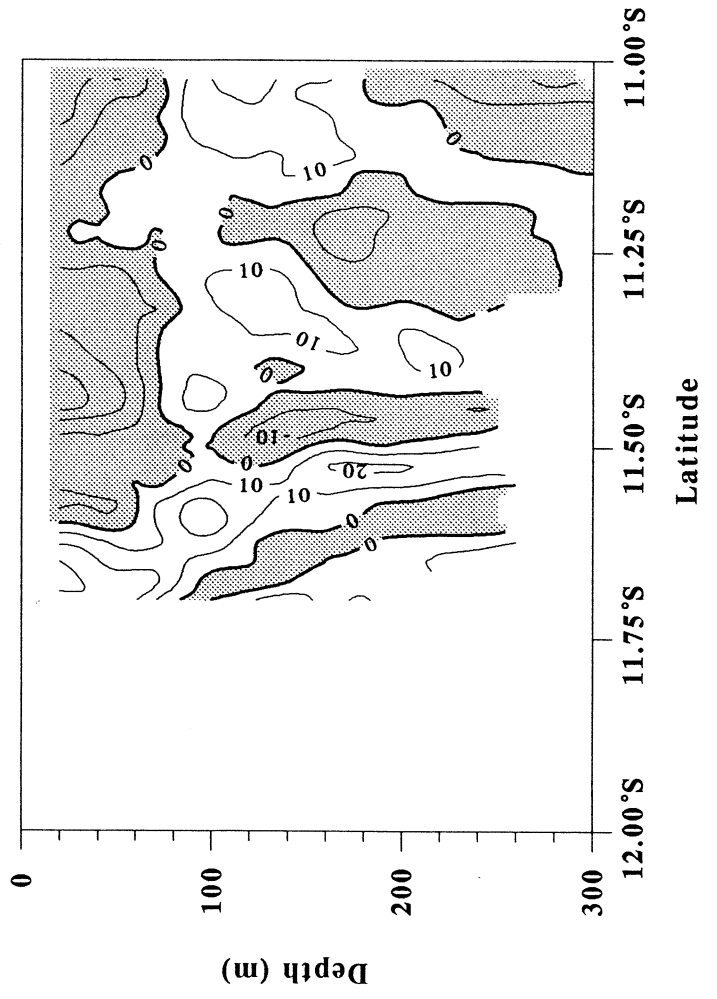
ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (13:45 to 18:39), V (cm/s)



ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (18:53 to 23:31), U (cm/s)

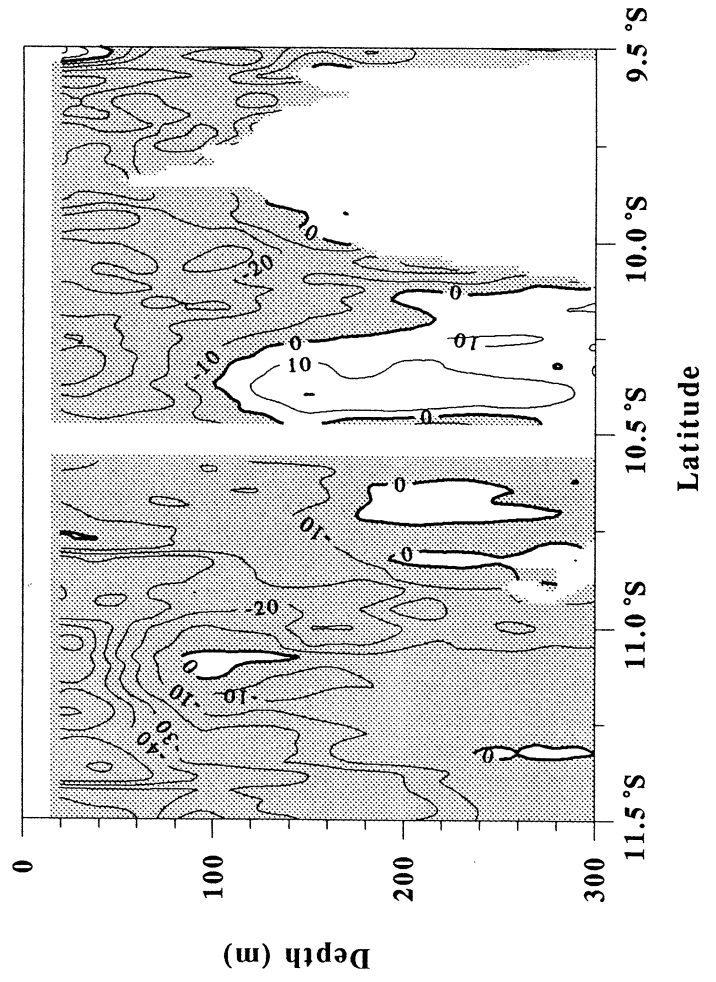


ADCP MD9203, 123E (CHENAL DE TIMOR), 8 March 1992 (18:53 to 23:31), V (cm/s)

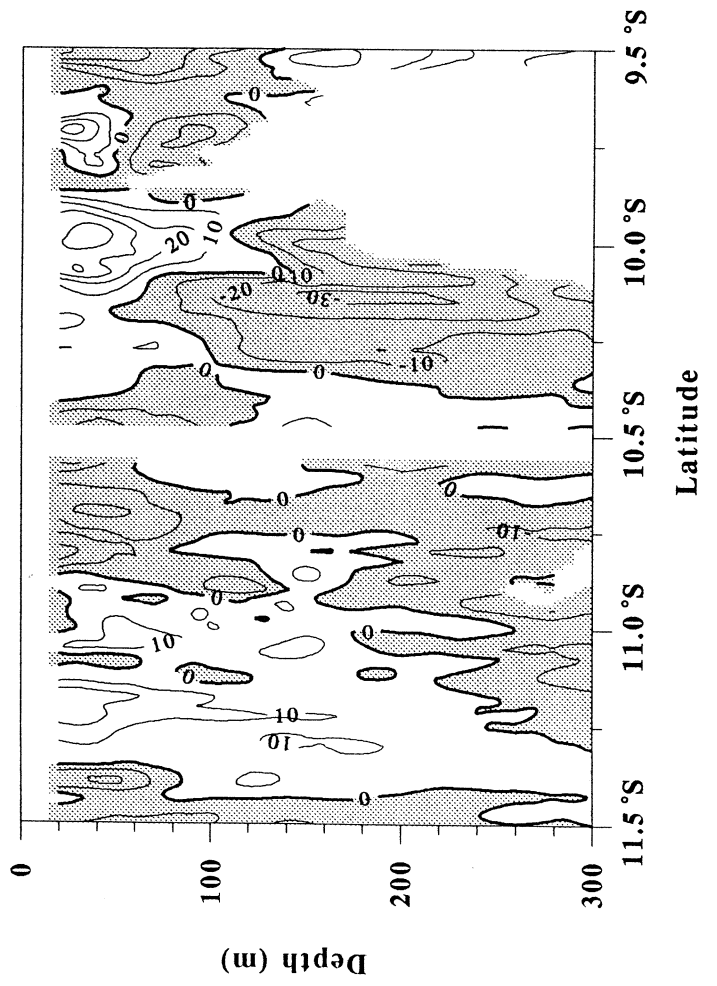


ADCP MD9204-5-6, 123-120E, 11 to 17 March 1992, U (cm/s)

MD9204 Ashmore → Rotf
MD9205 Rotf → Siva
MD9206 Sava → Numbou

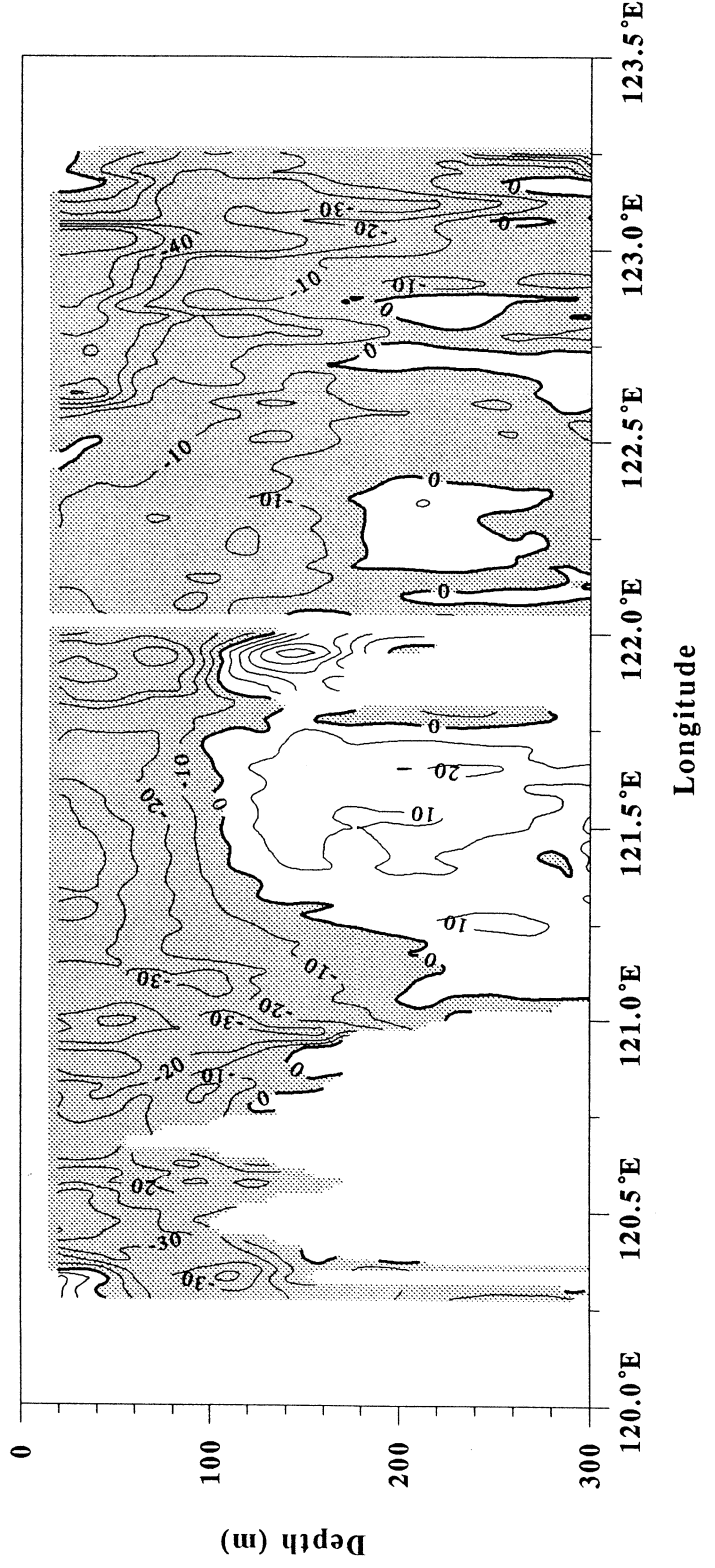


ADCP MD9204-5-6, 123-120E, 11 to 17 March 1992, V (cm/s)

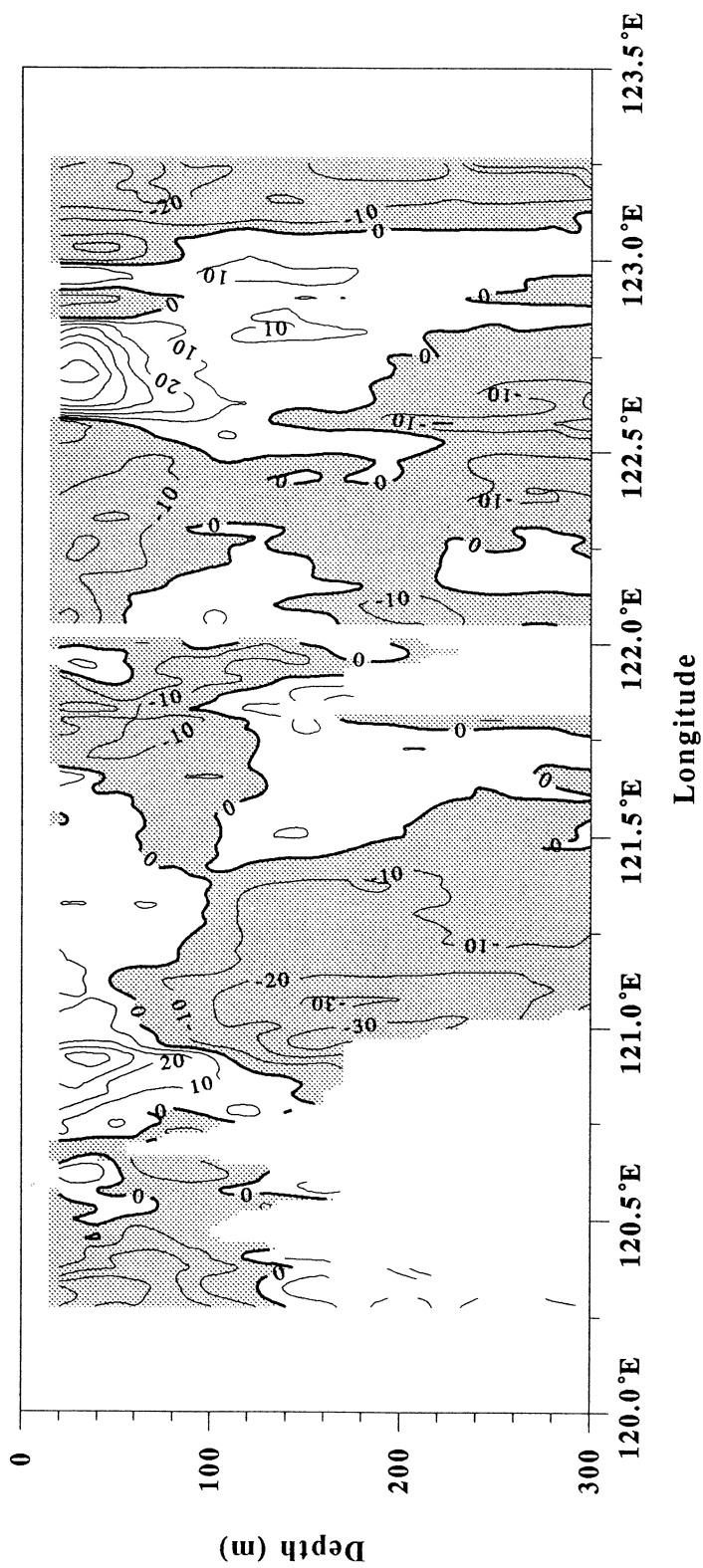


ADCP MD9204-5-6, 9.5-11.5S, 11 to 17 March 1992, U (cm/s)

md9204 : Ashimene → R/L
md9205 : Sobe → S/N
md9206 : Sava → S/N

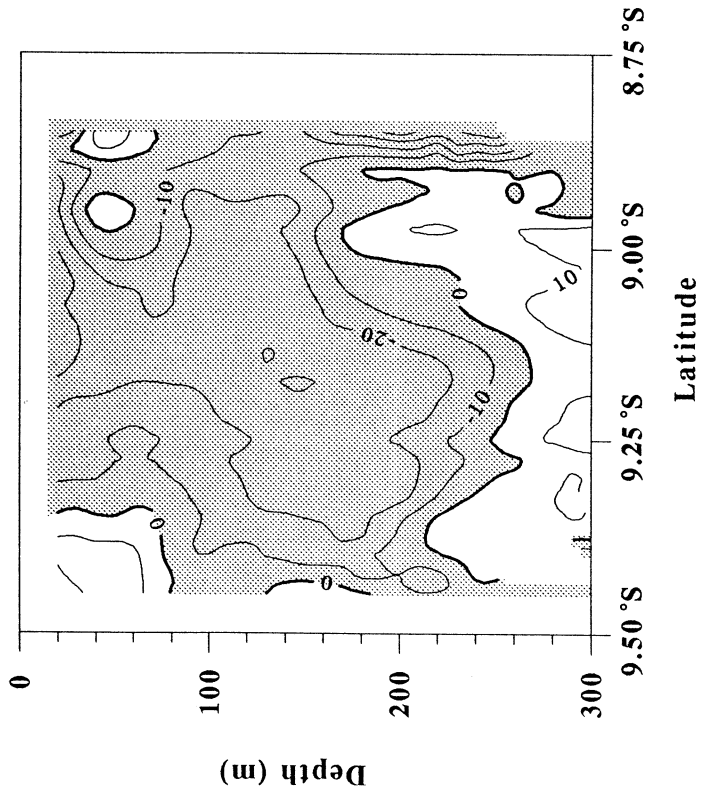


ADCP MD9204-5-6, 9.5-11.5S, 11 to 17 March 1992, V (cm/s)



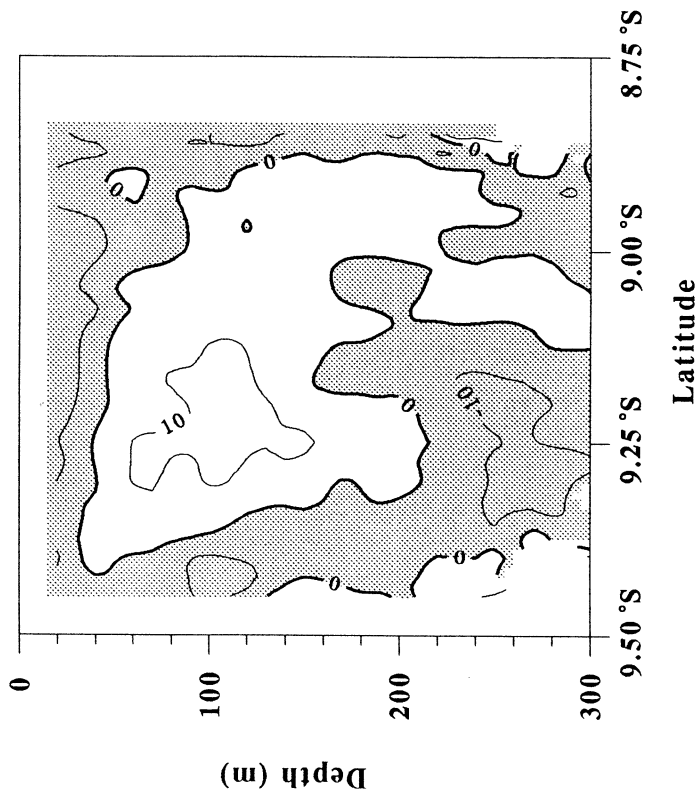
ADCP MD9207, 120E (SUMBA-FLORES), 17 (05:22) to 18 (20:10) March 1992, U (cm/s)

(Sections 4 & 6)

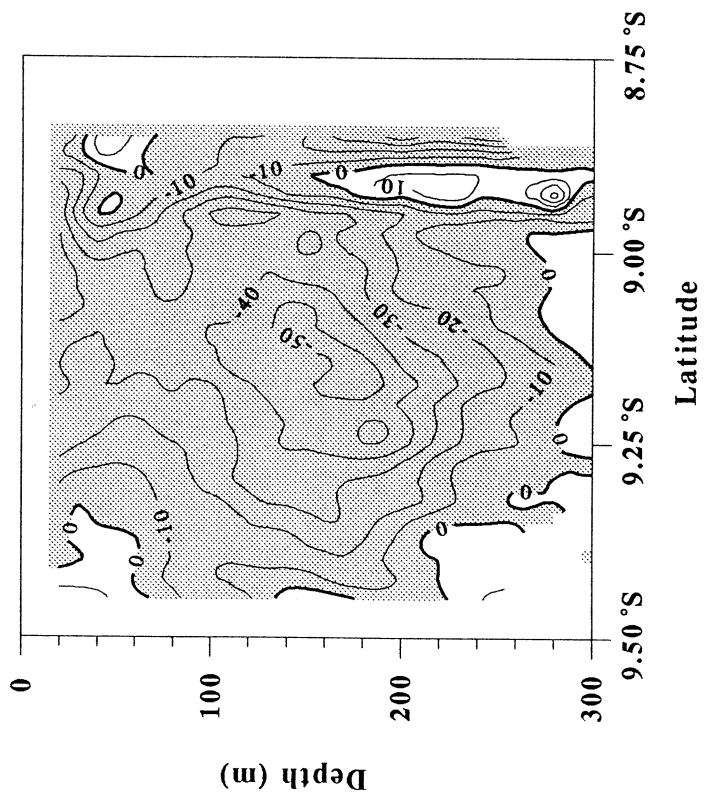


ADCP MD9207, 120E (SUMBA-FLORES), 17 (05:22) to 18 (20:10) March 1992, V (cm/s)

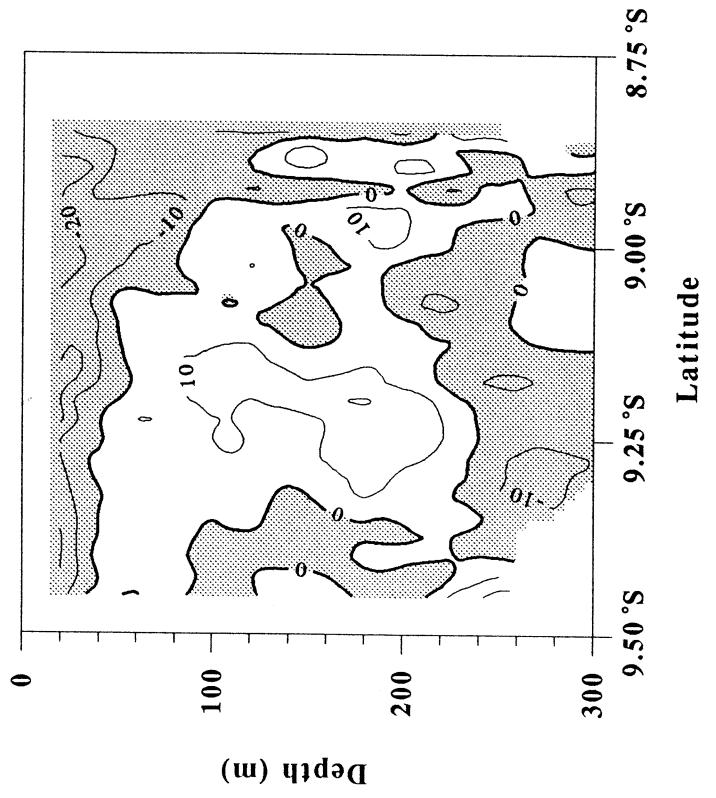
(Sections 1 & 4)



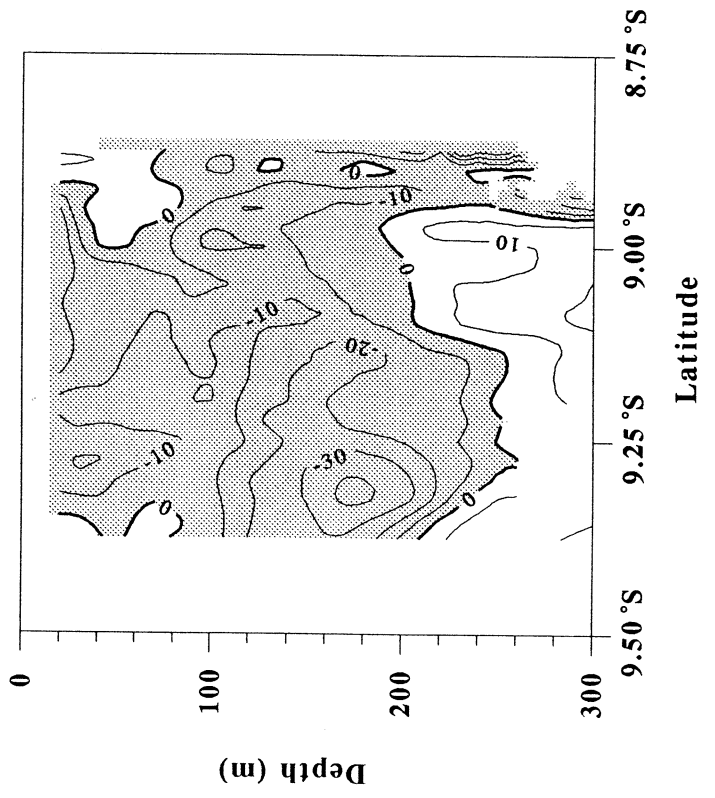
ADCP MD9207, 120E (SUMBA-FLORES), 17 March 1992 (05:22 to 08:48), U (cm/s)



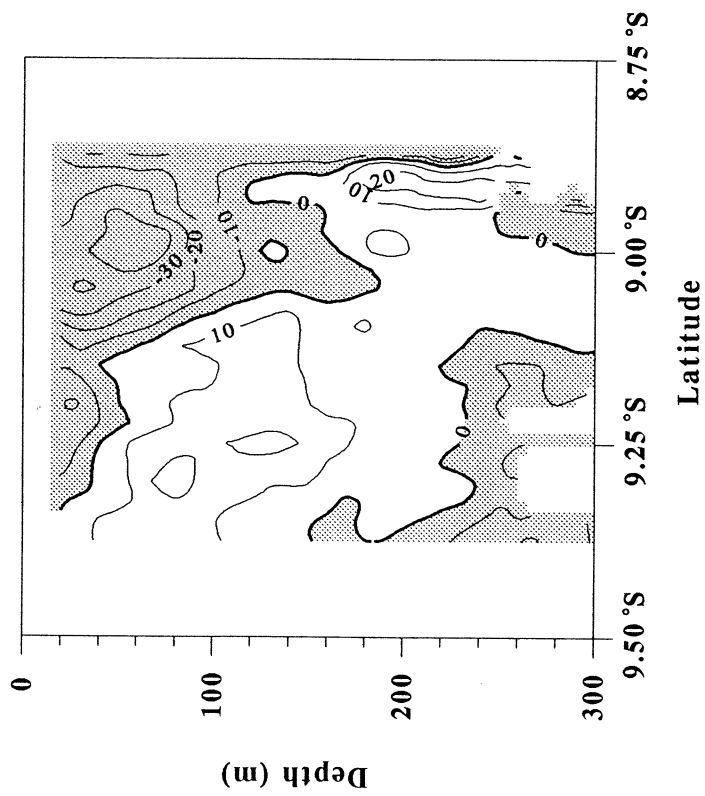
ADCP MD9207, 120E (SUMBA-FLORES), 17 March 1992 (05:22 to 08:48), V (cm/s)



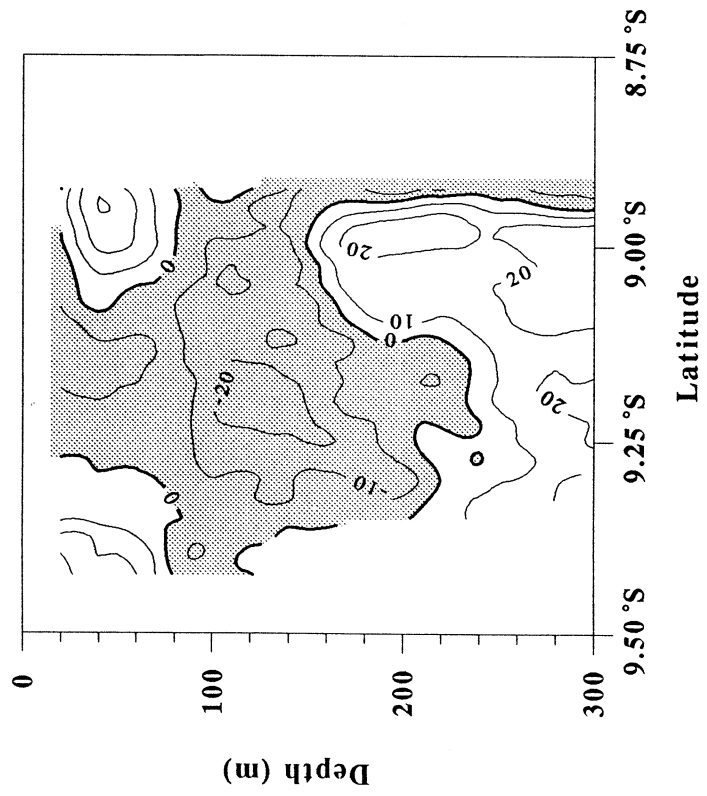
ADCP MD9207, 120E (SUMBA-FLORES), 17 March 1992 (08:50 to 18:54), U (cm/s)



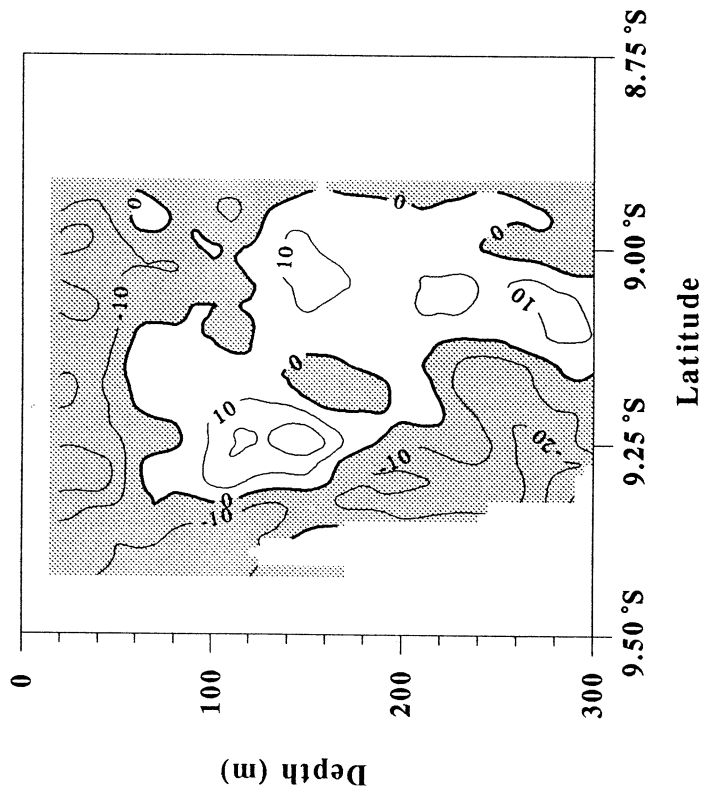
ADCP MD9207, 120E (SUMBA-FLORES), 17 March 1992 (08:50 to 18:54), V (cm/s)



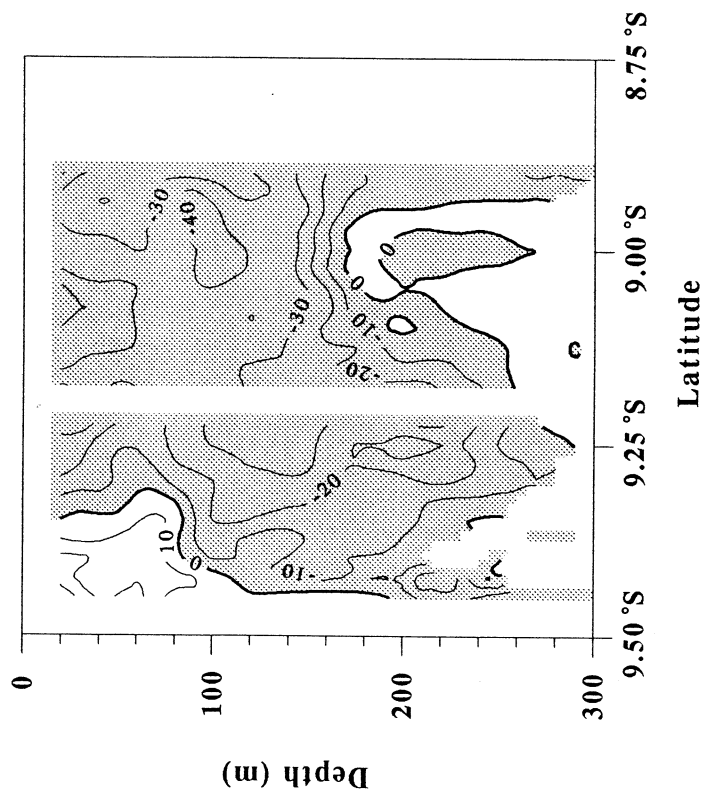
ADCP MD9207, 120E (SUMBA-FLORES), 18 March 1992 (13:00 to 15:28), U (cm/s)



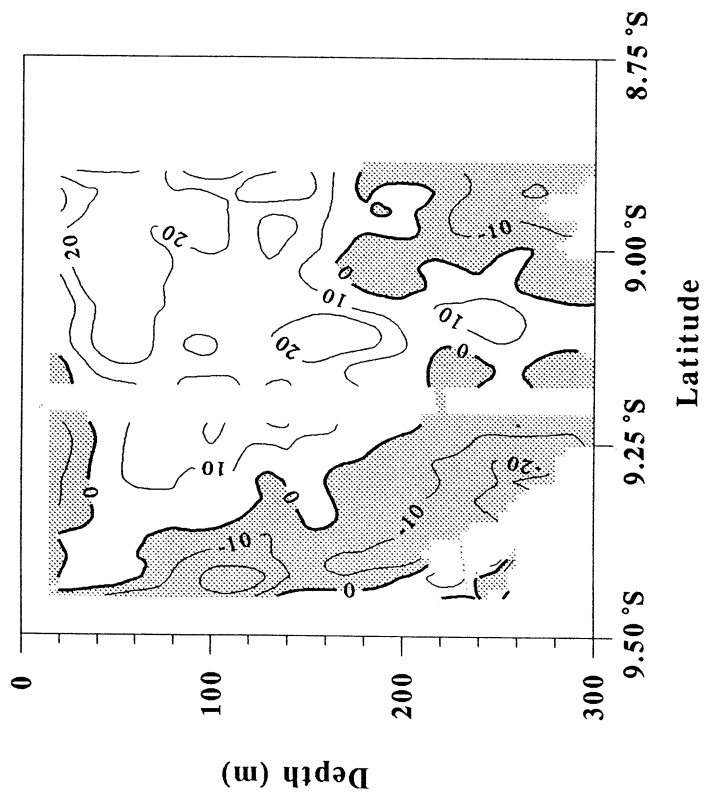
ADCP MD9207, 120E (SUMBA-FLORES), 18 March 1992 (13:00 to 15:28), V (cm/s)



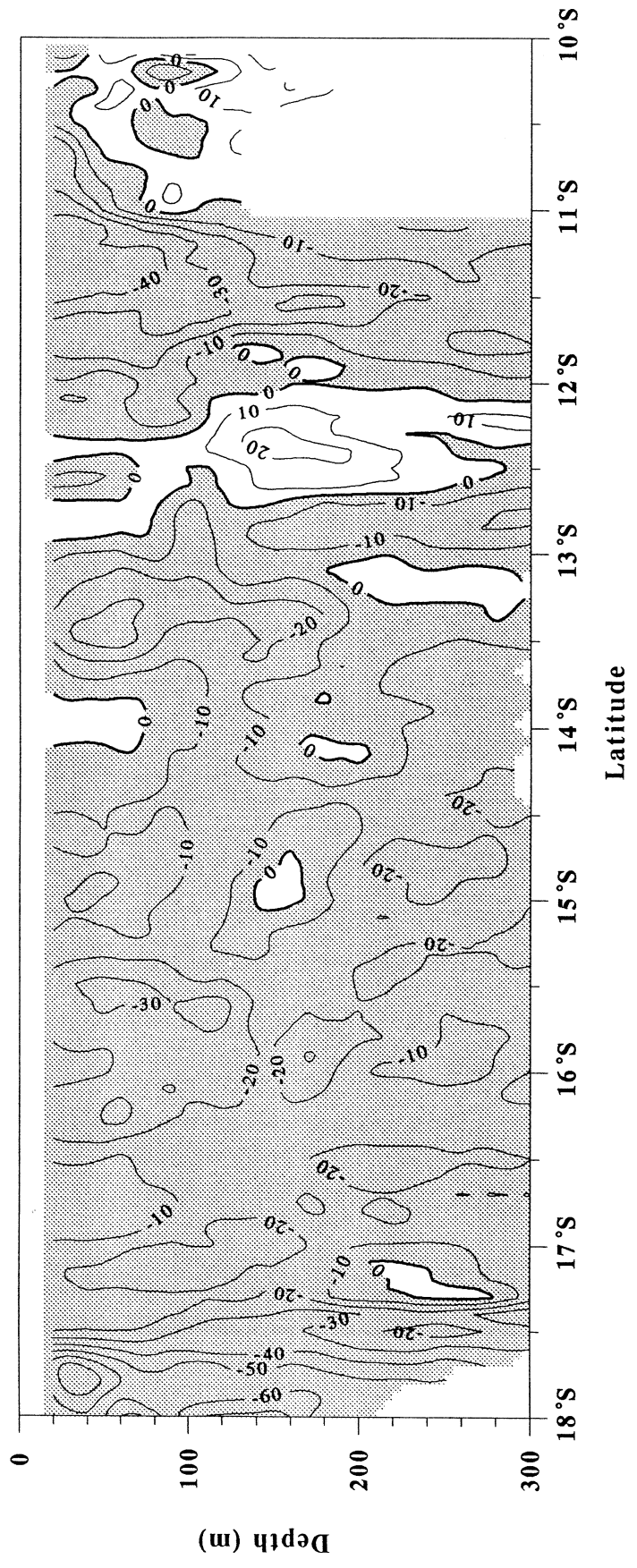
ADCP MD9207, 120E (SUMBA-FLORES), 18 March 1992 (15:30 to 18:46), U (cm/s)



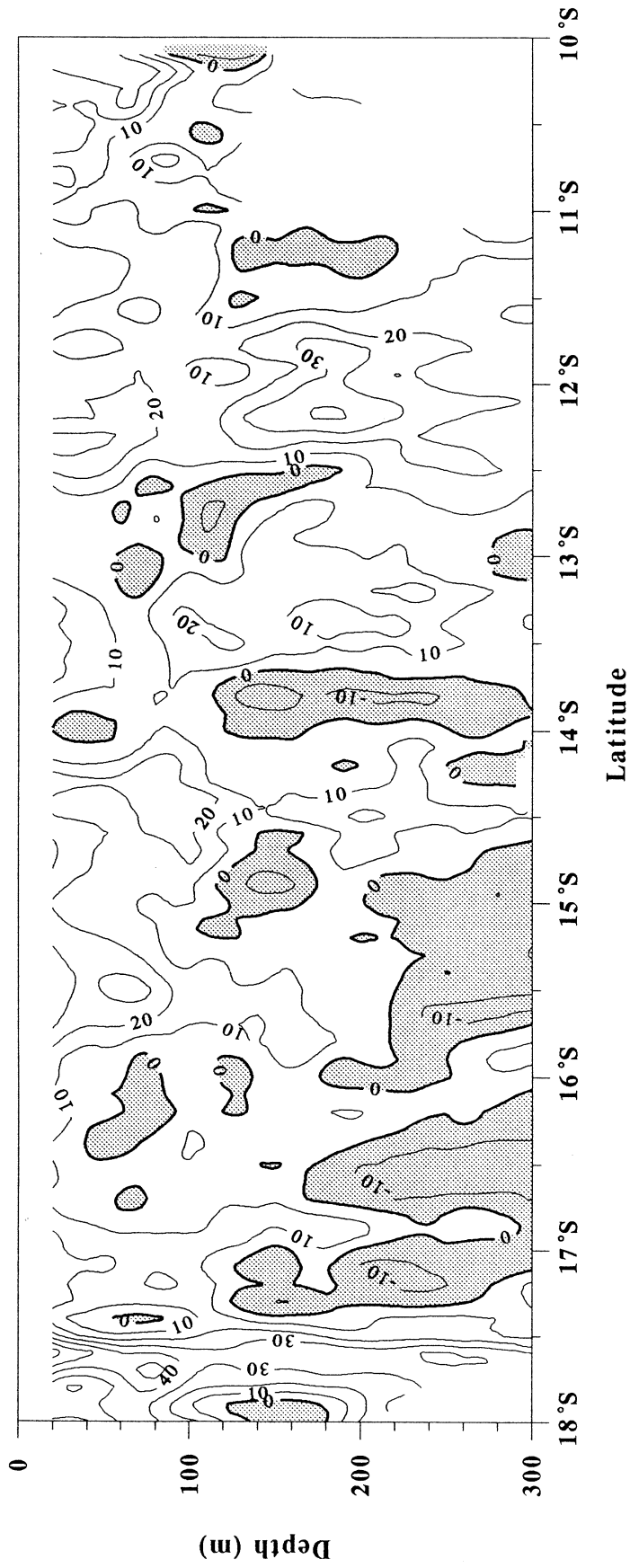
ADCP MD9207, 120E (SUMBA-FLORES), 18 March 1992 (15:30 to 18:46), V (cm/s)

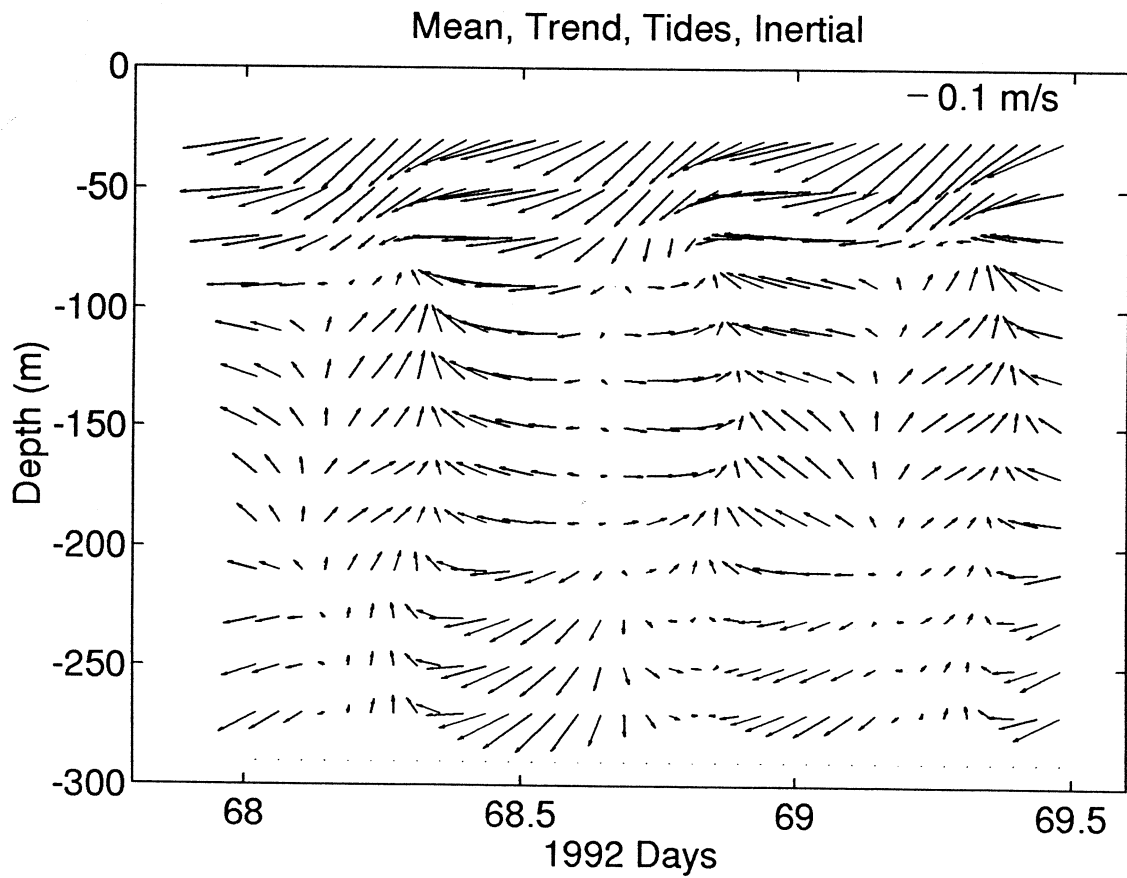
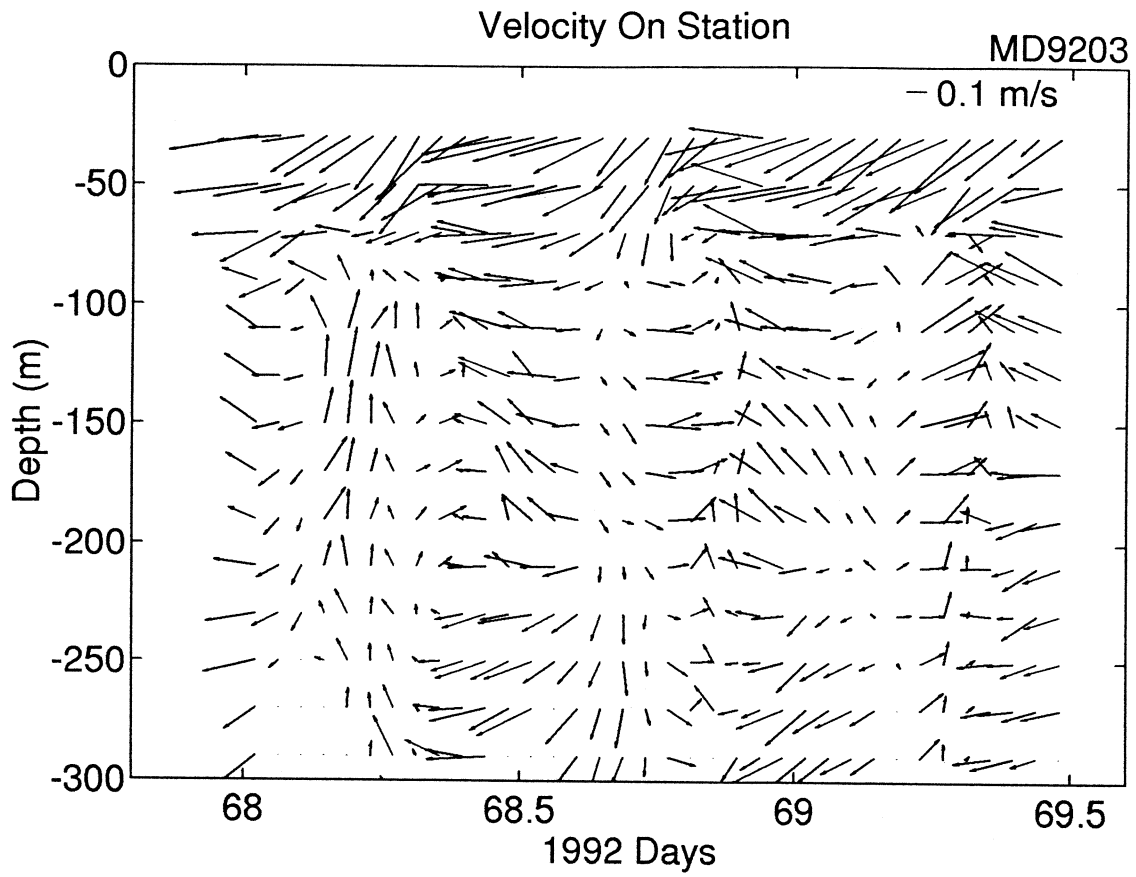


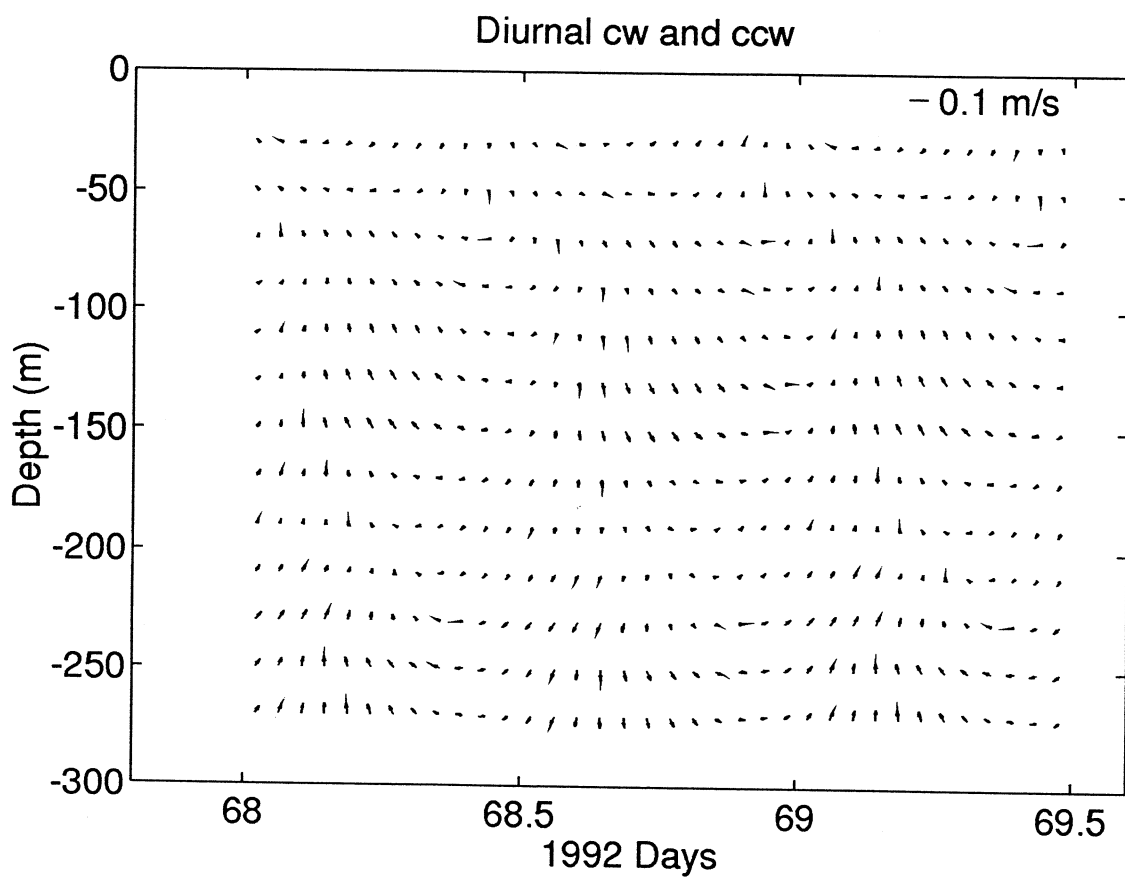
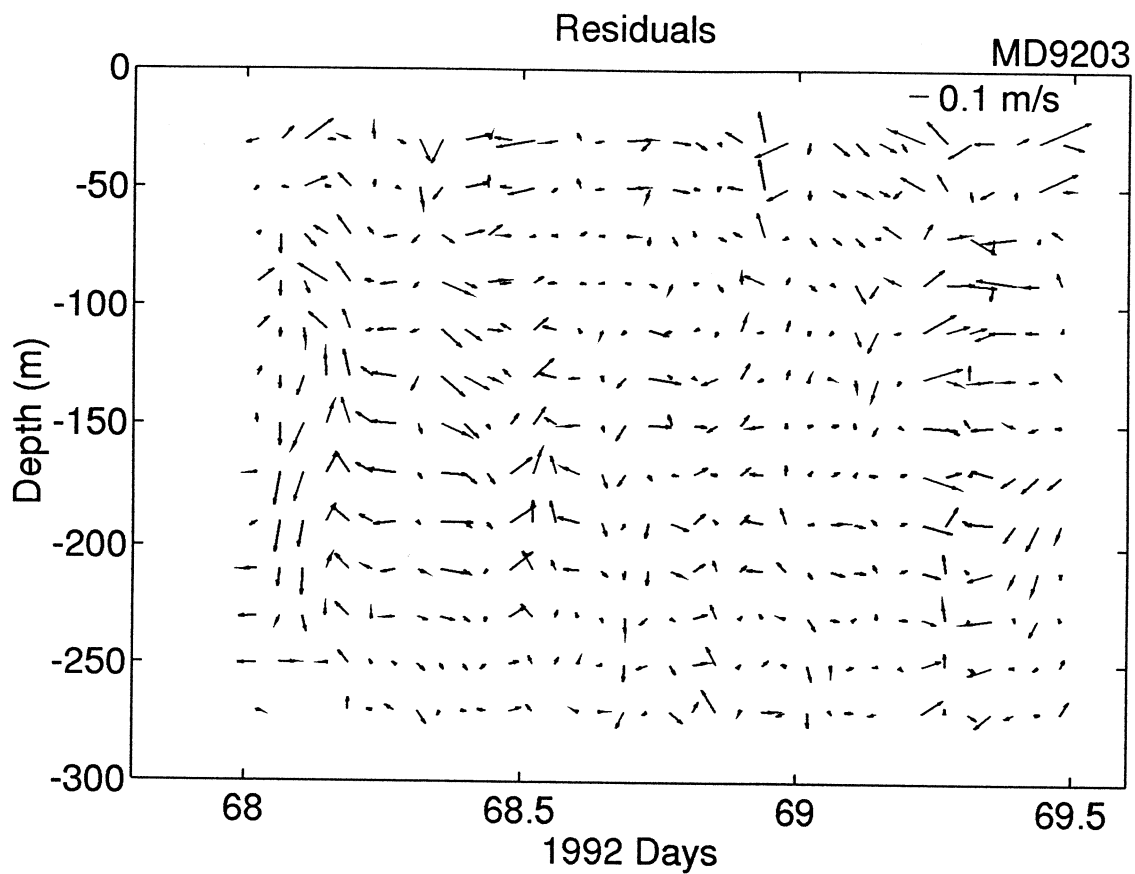
ADCP MD9208, 121E SOUTHBOUND, 20 to 22 March 1992, U (cm/s)

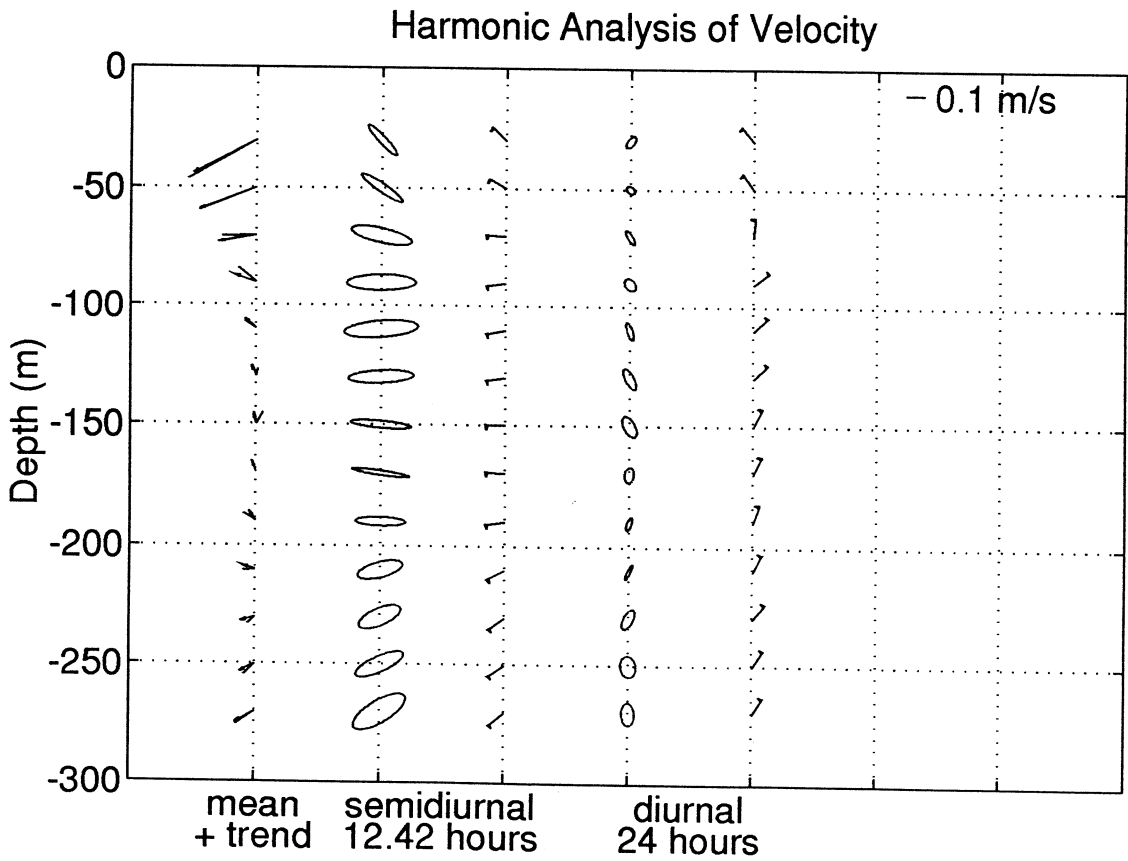
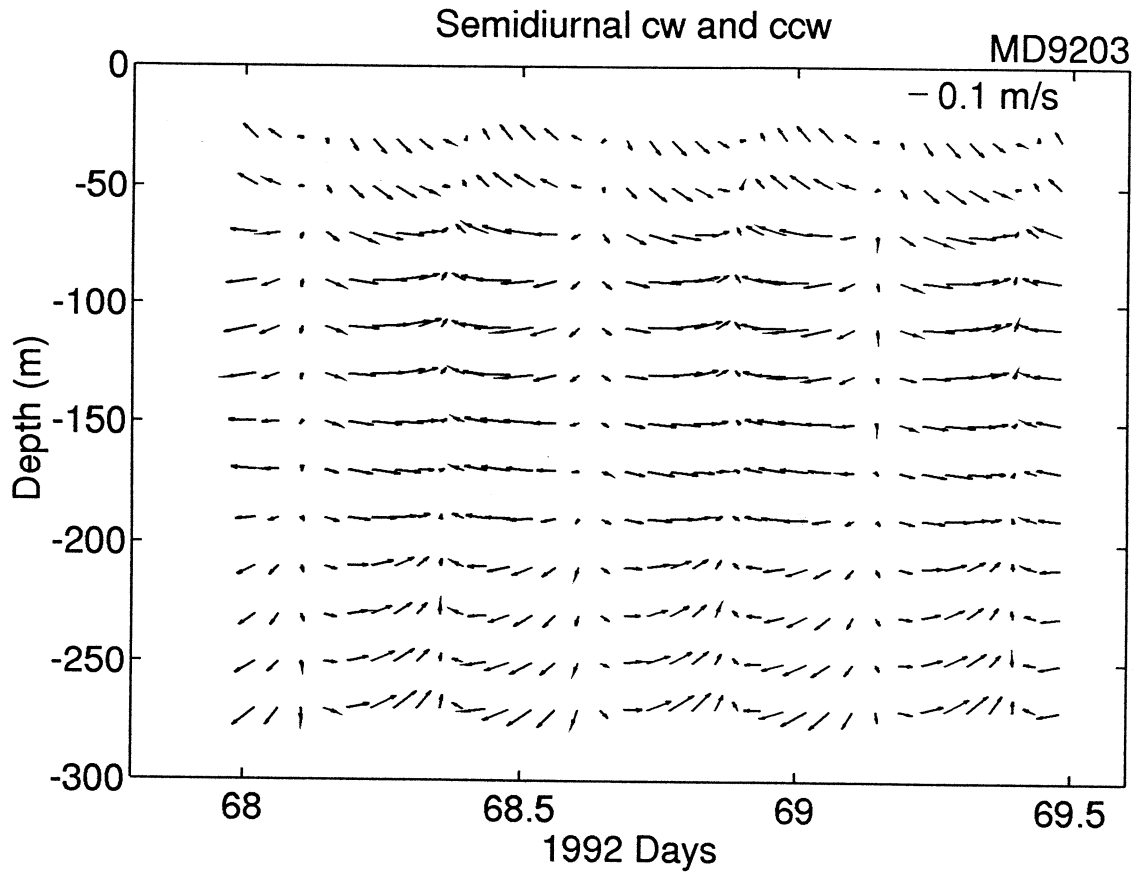


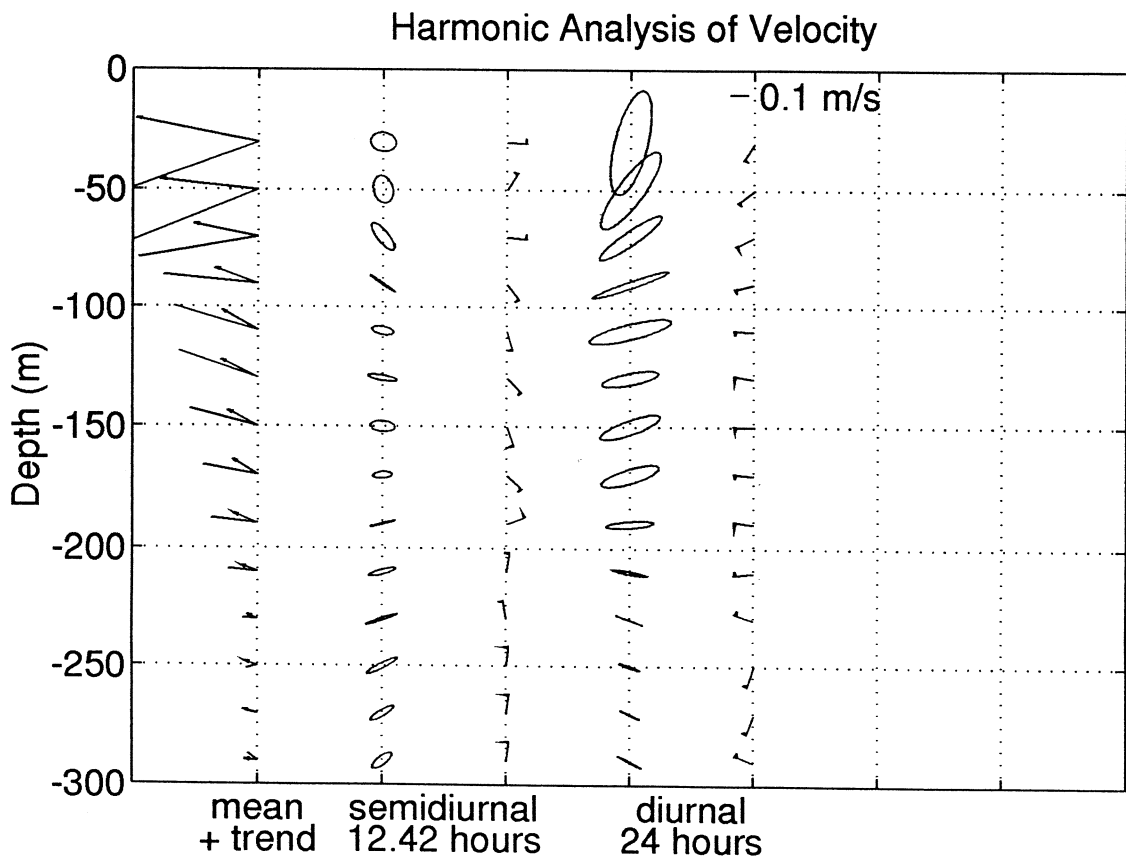
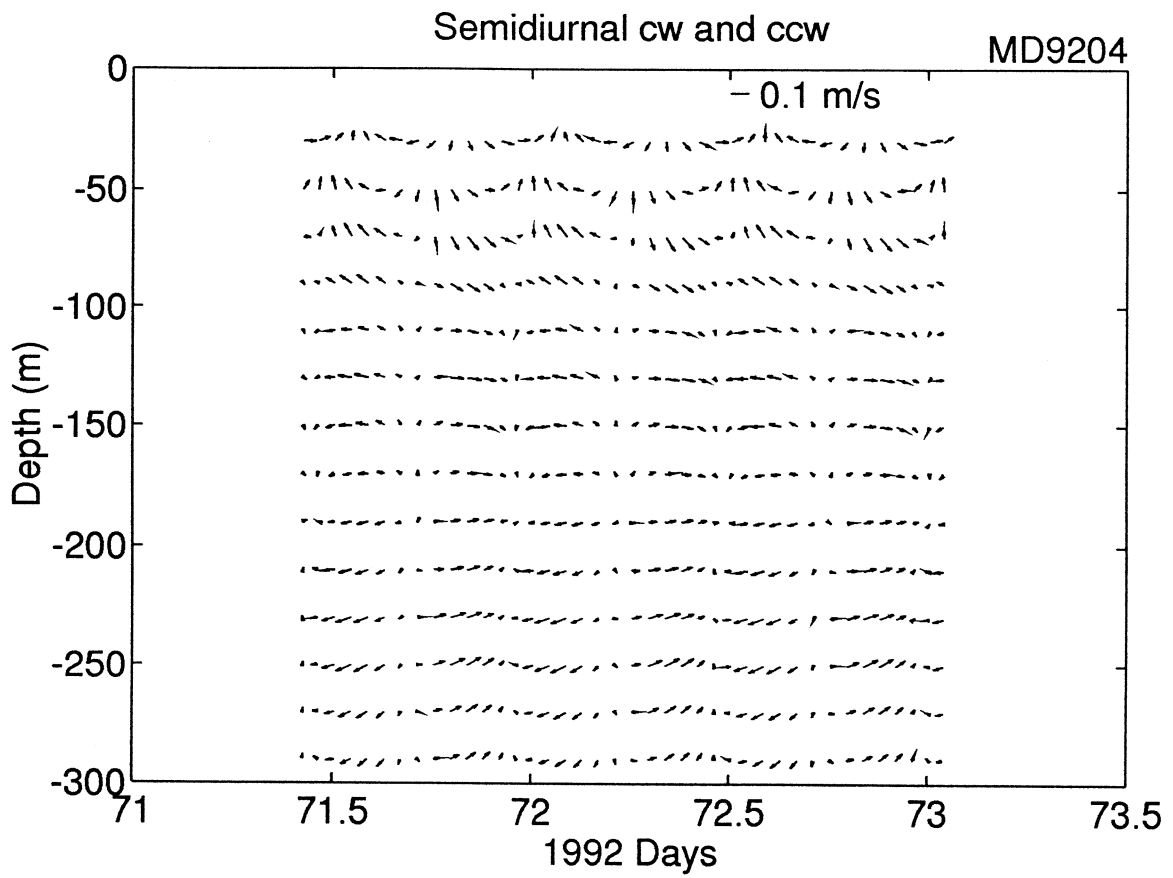
ADCP MD9208, 121E SOUTHBOUND, 20 to 22 March 1992, V (cm/s)

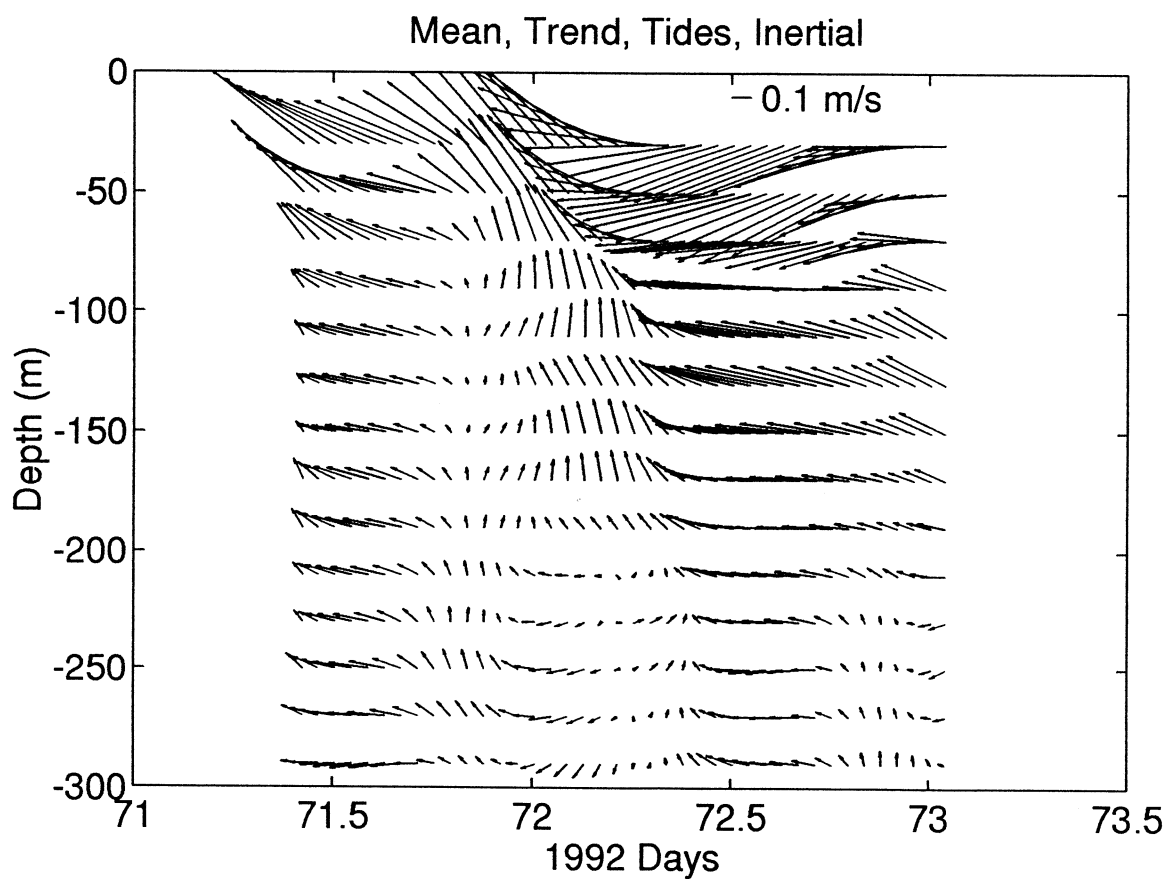
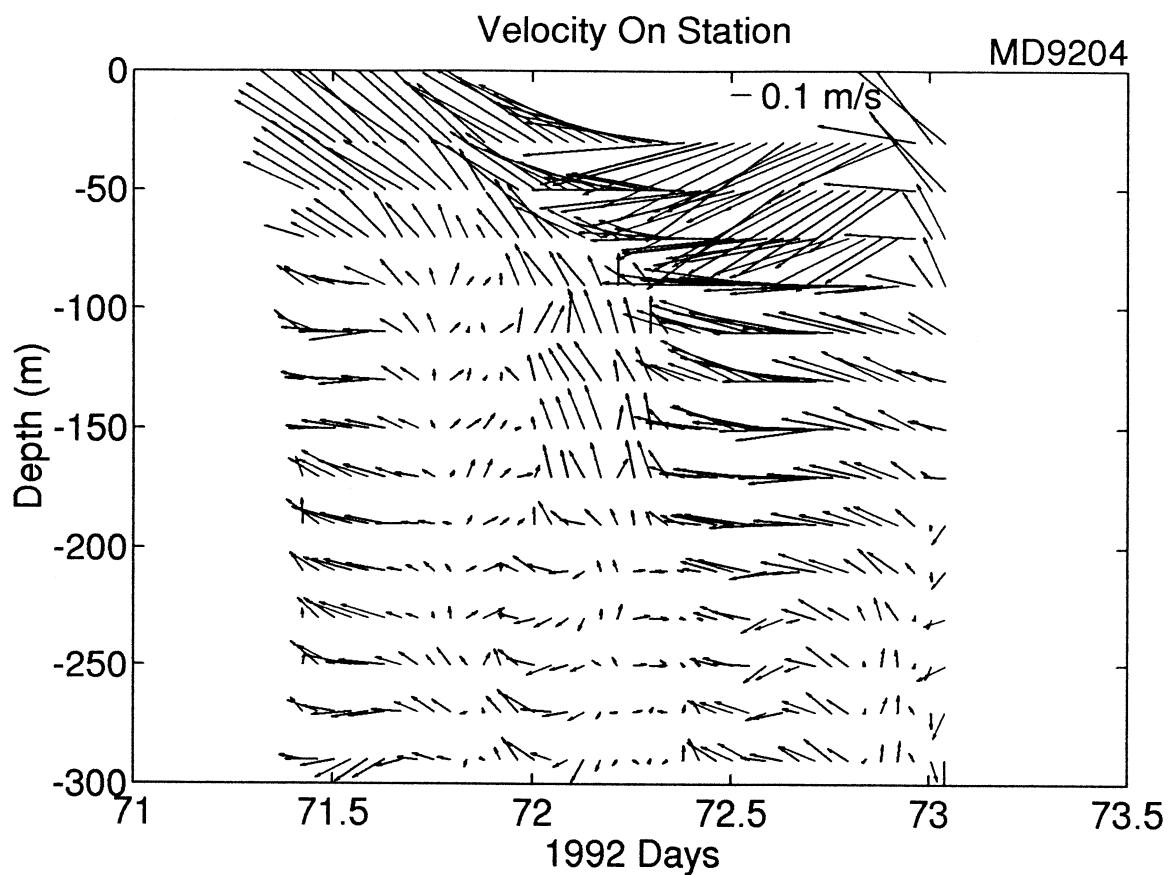


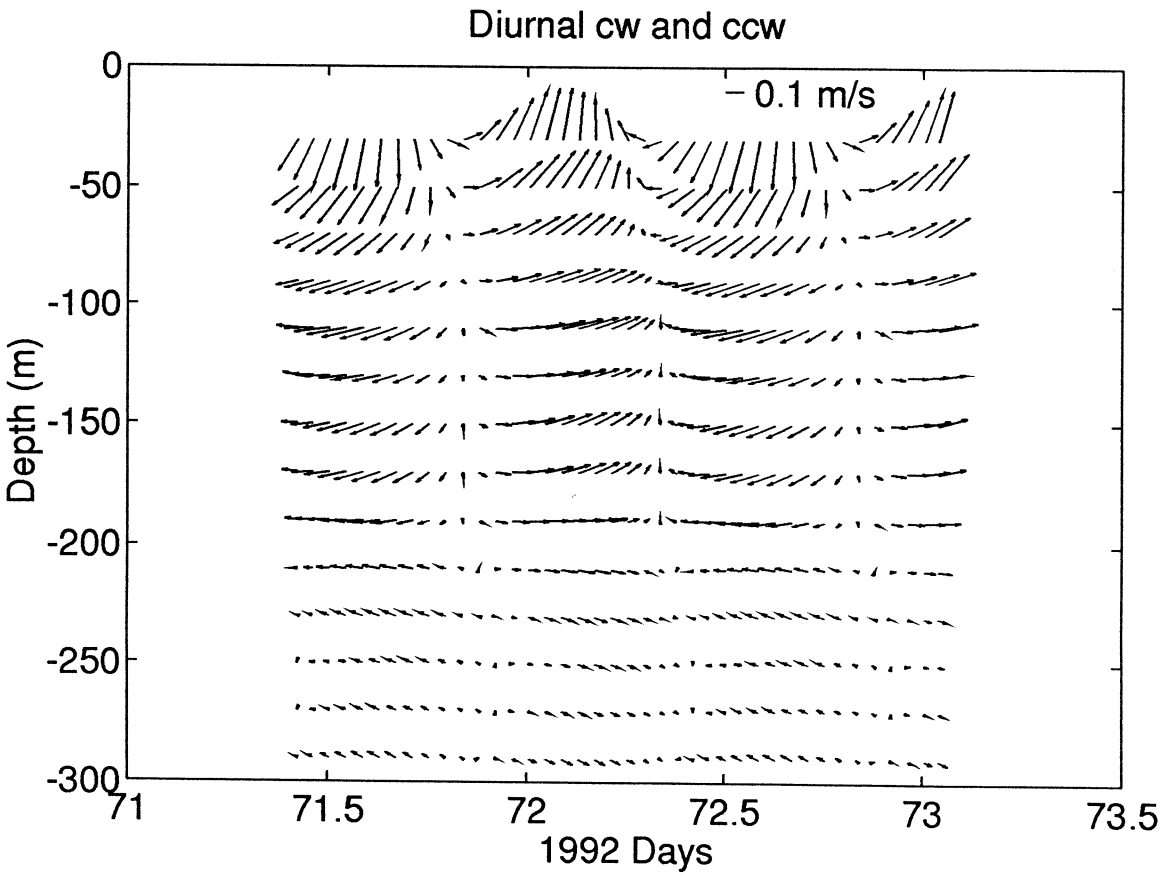
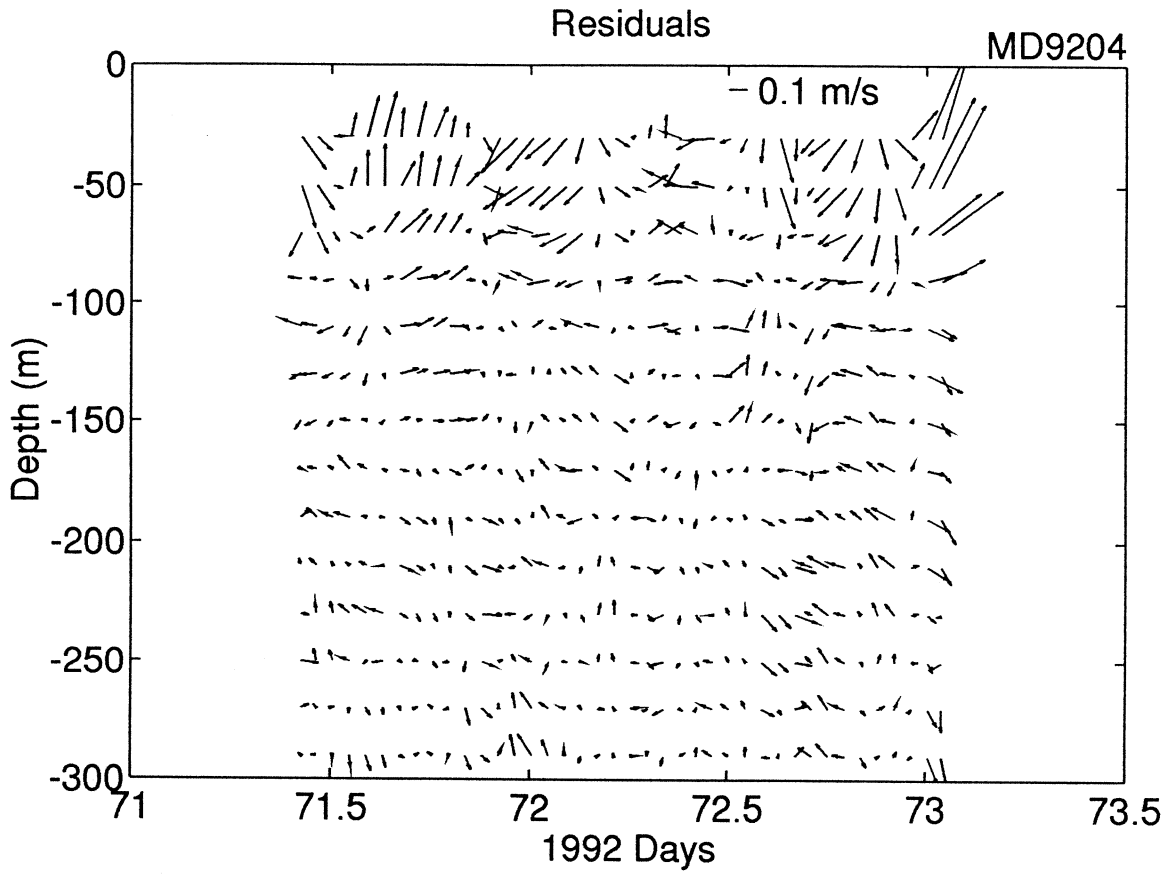


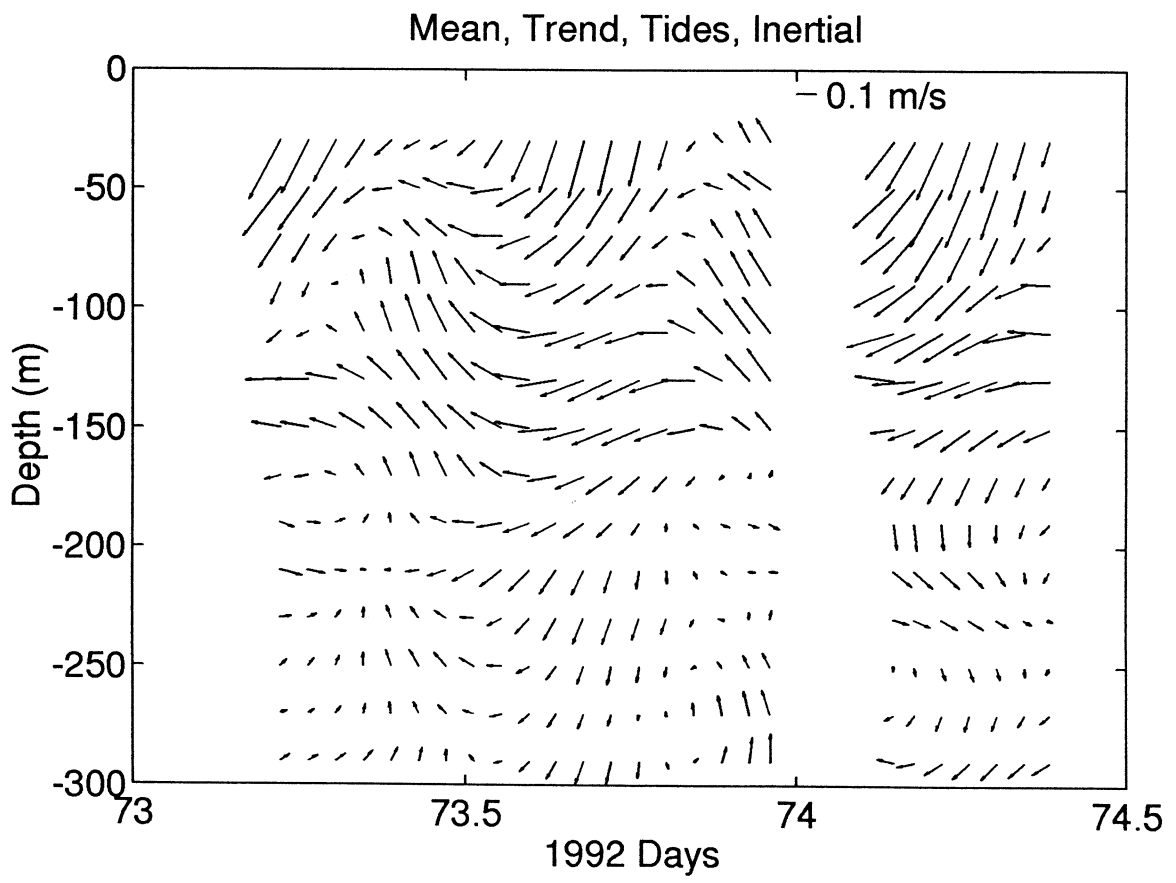
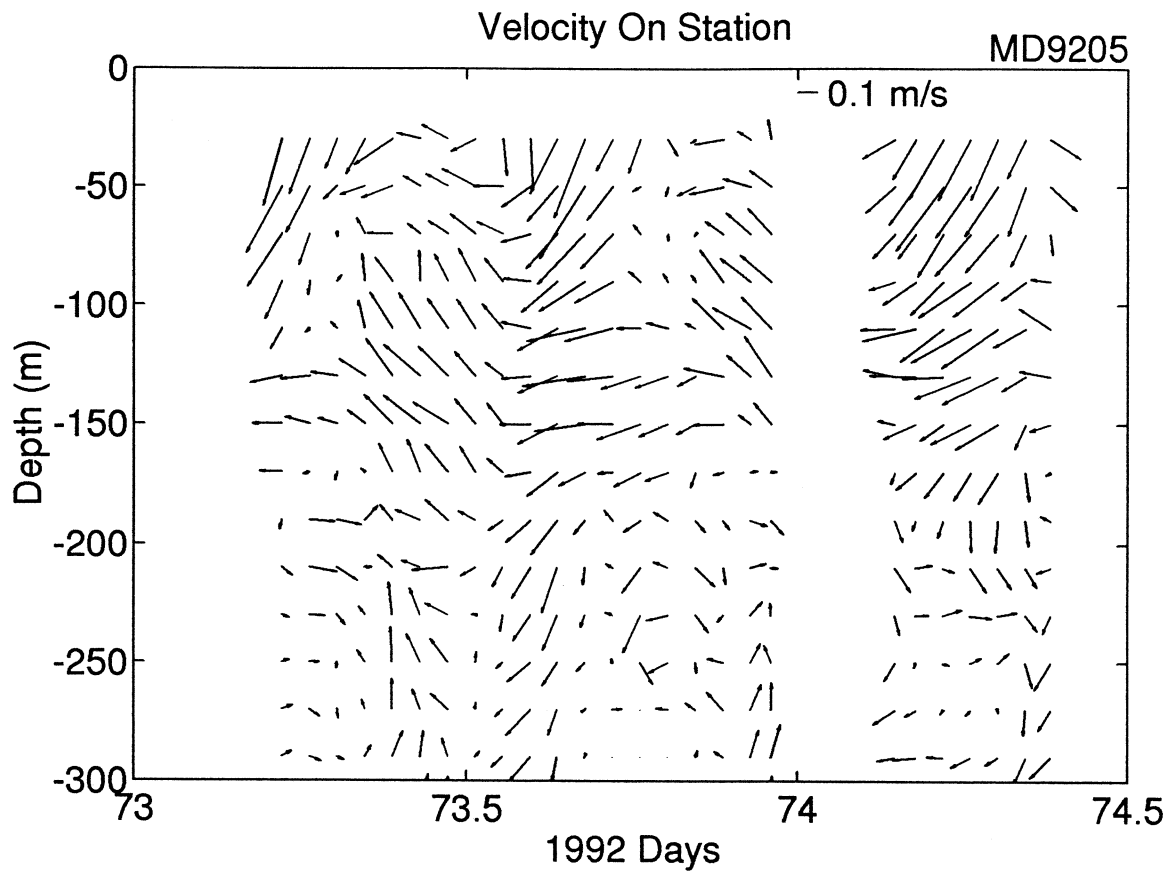


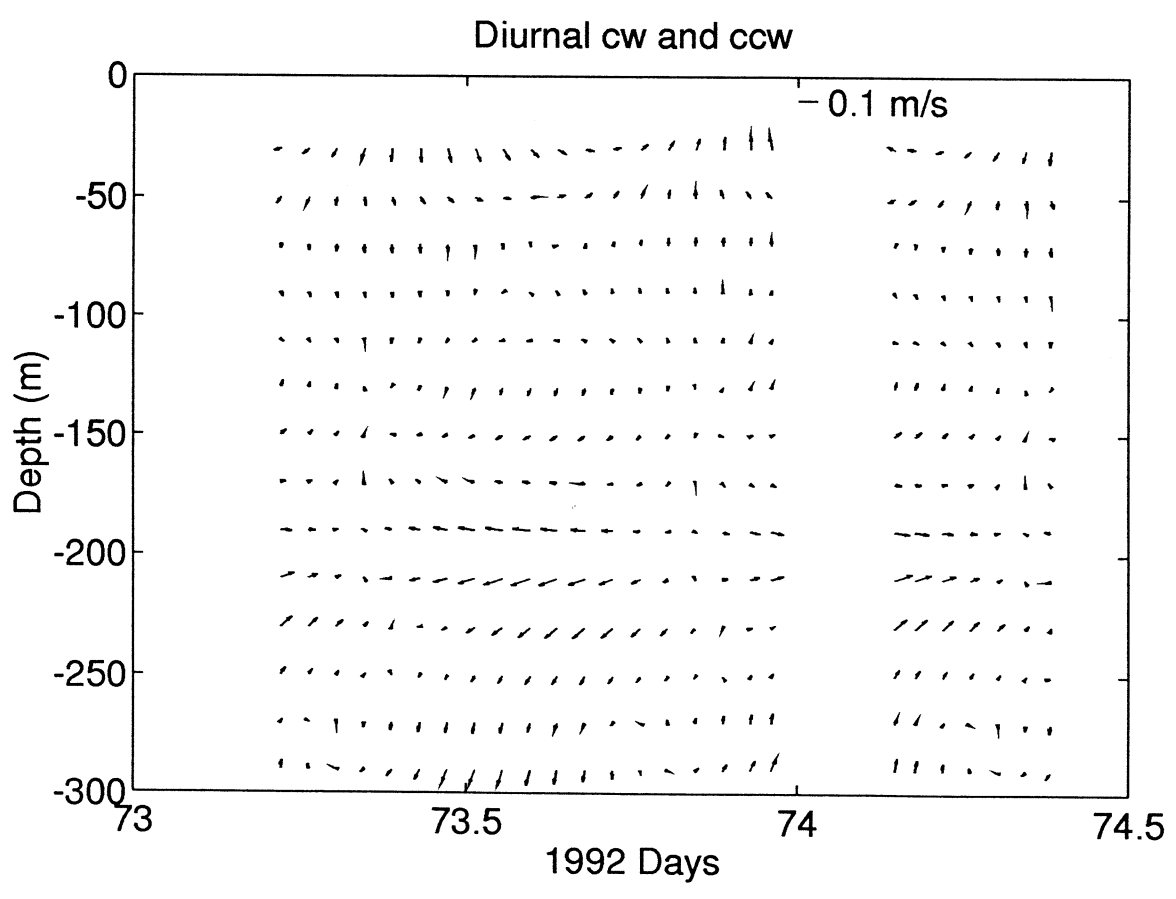
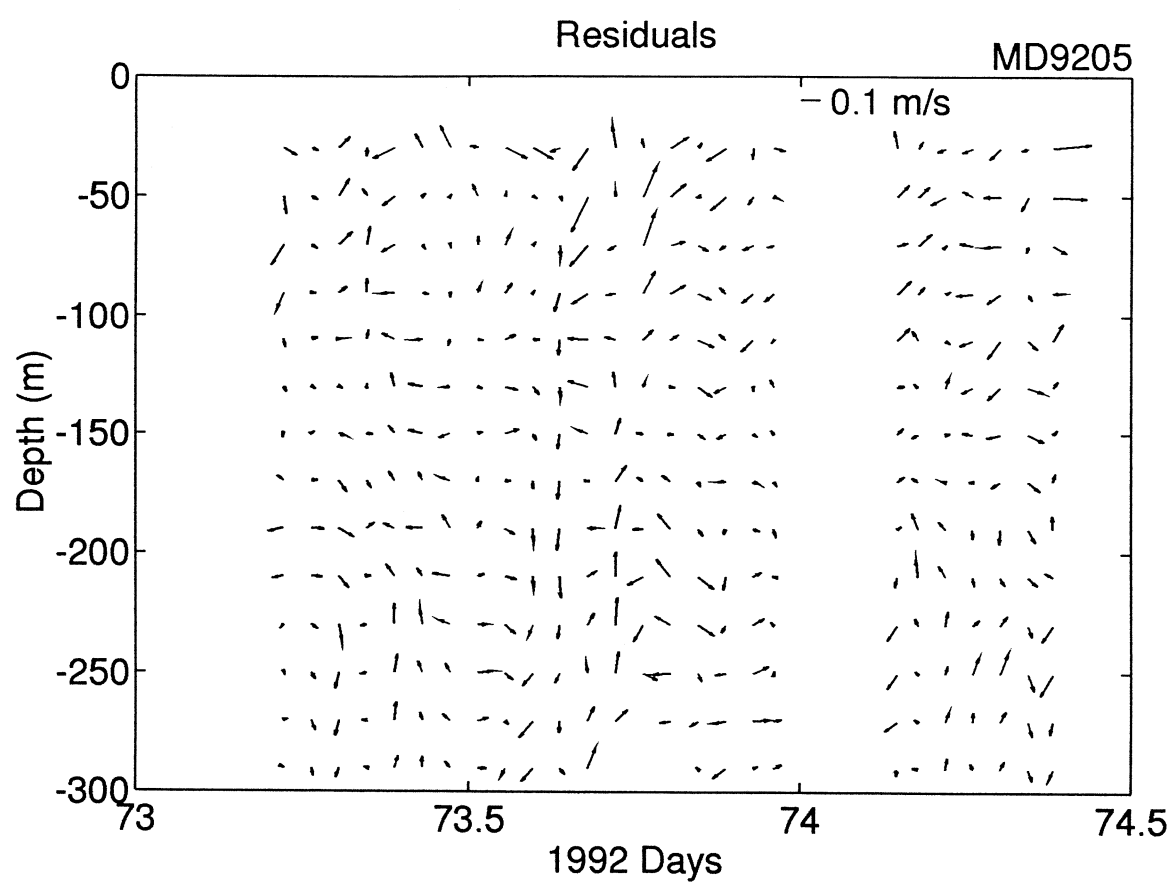


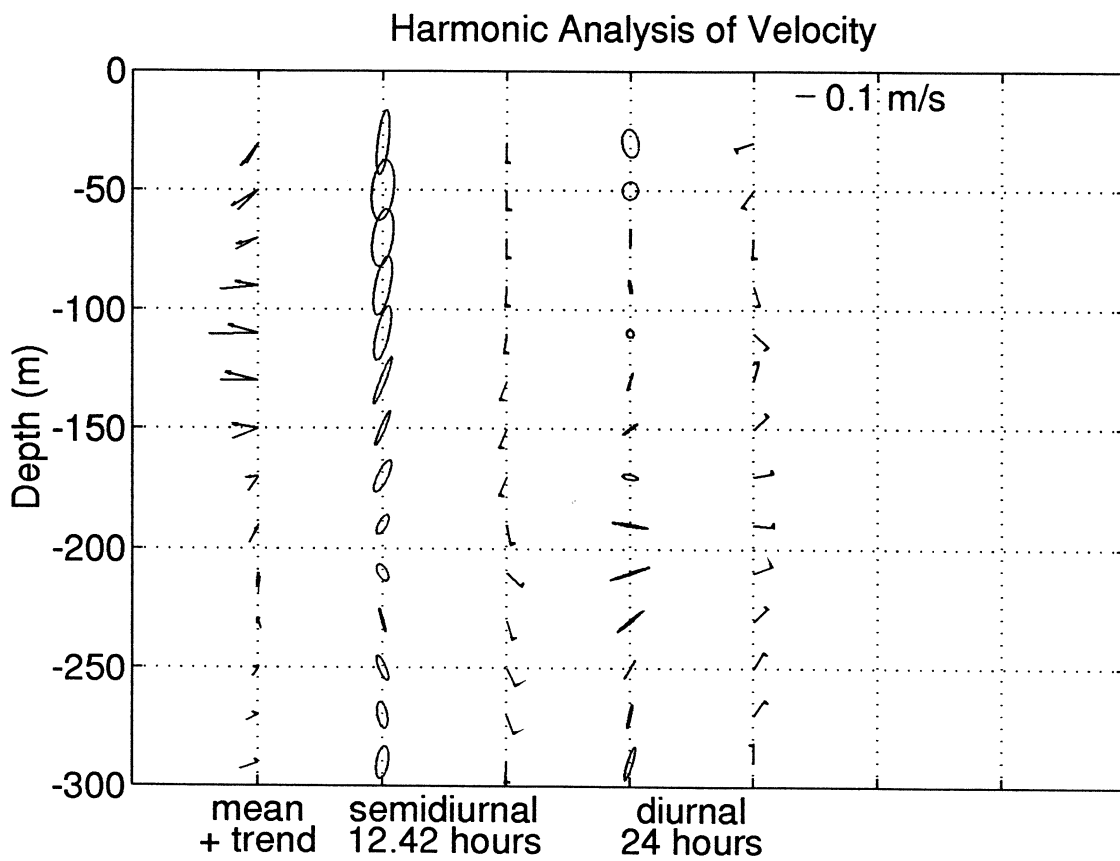
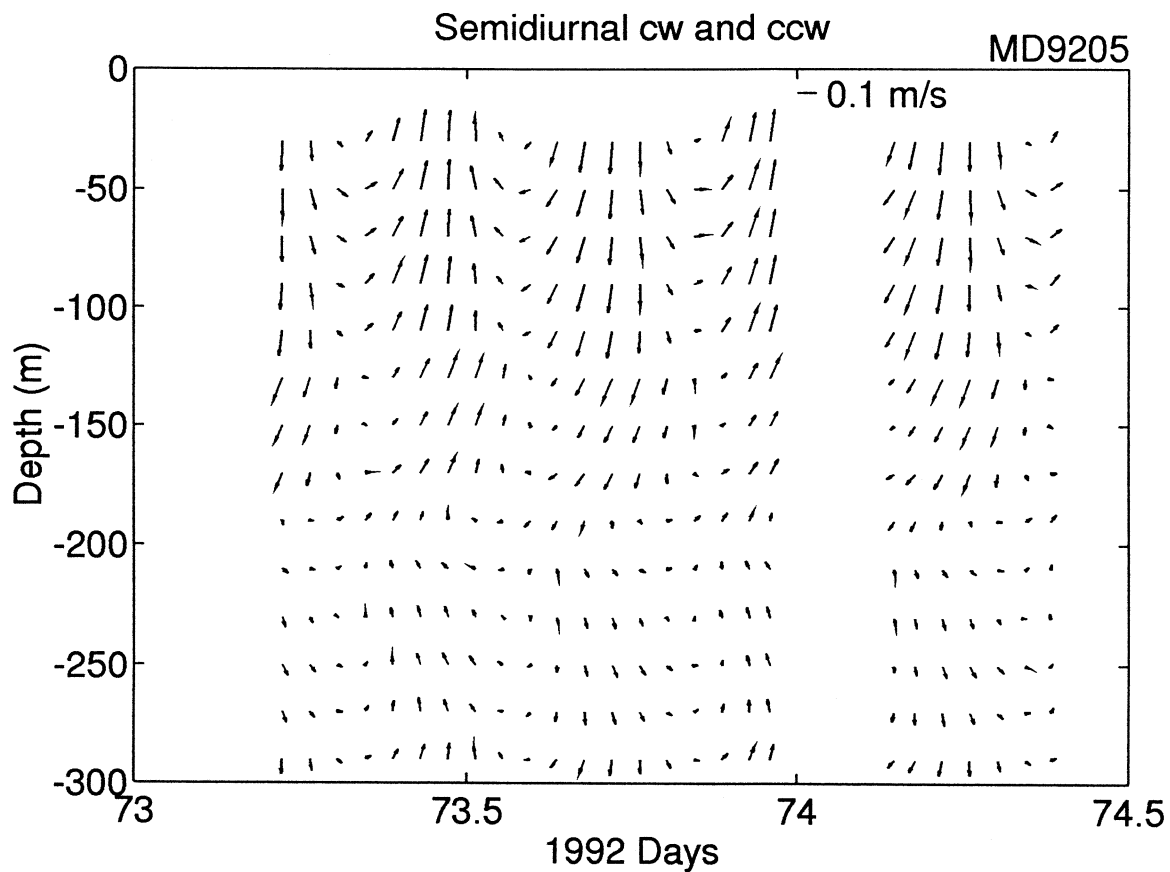


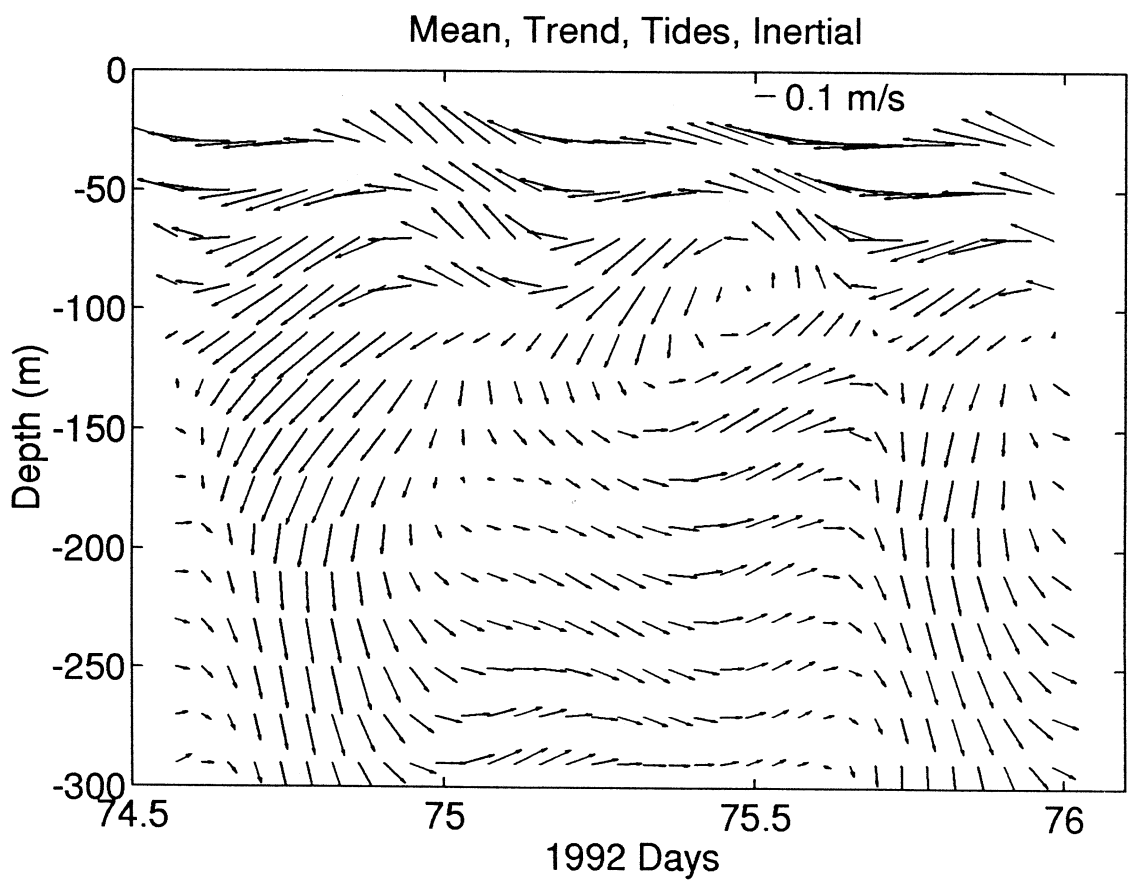
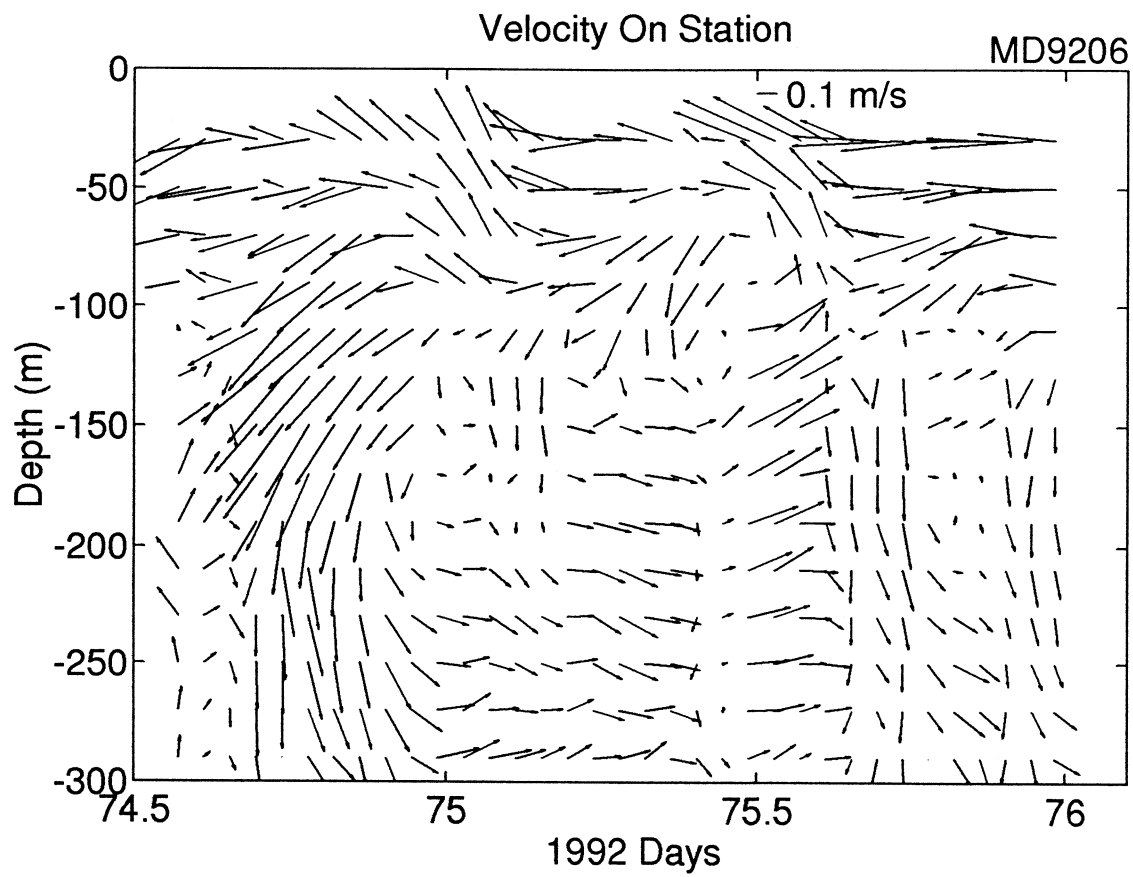




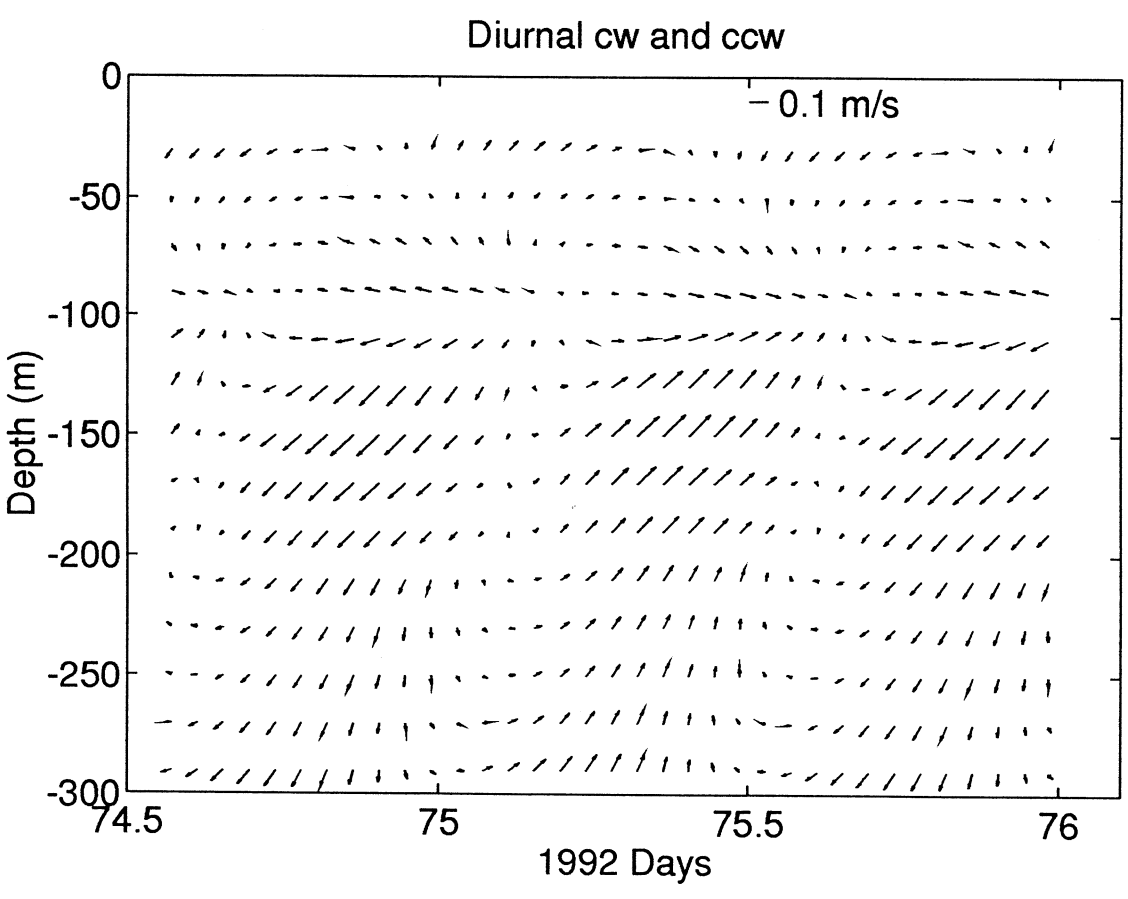
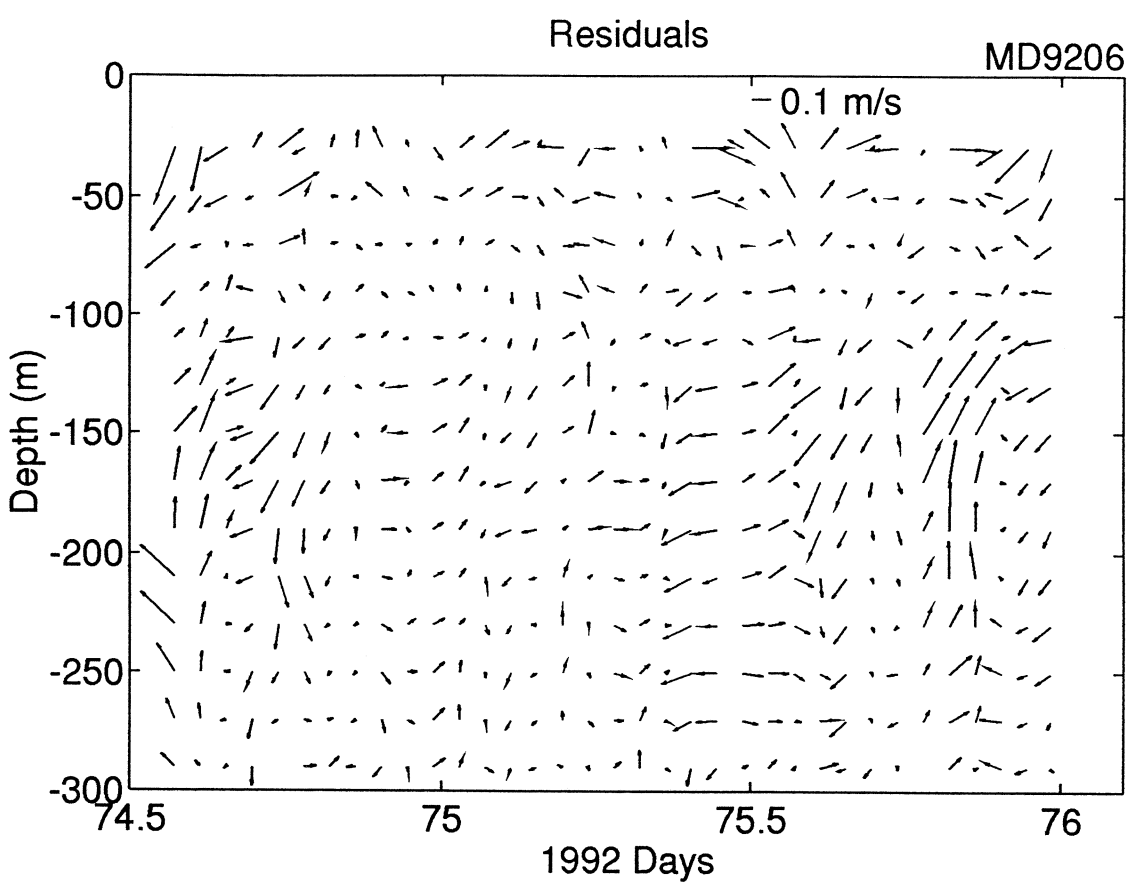








27 April 94



27 Jan 96

