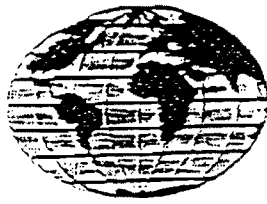


Université Pierre et Marie Curie
O.R.S.T.O.M.
Laboratoire d'Océanographie Dynamique et de Climatologie



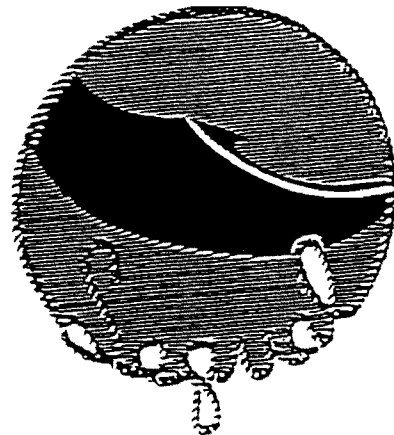
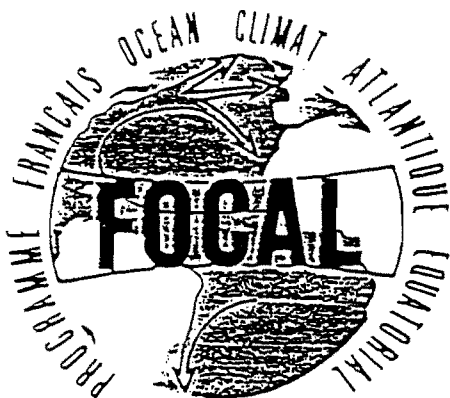
L O D Y C

CLIMATOLOGIE DE
L'OCEAN ATLANTIQUE TROPICAL
AVEC LE MODELE DU G.F.D.L.

CLIMATOLOGY OF THE TROPICAL ATLANTIC OCEAN
WITH THE G.F.D.L. MODEL

Bernard BOURLES

MAI 1987



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REMERCIEMENTS:

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Je tiens également à remercier J. MERLE et l' O.R.S.T.O.M. pour leurs soutiens logistique et matériel, C. PROVOST qui a participé à la réalisation de ce travail ainsi que toute l'équipe du C.C.R. (Centre de Recherche Calcul) de l'Université PARIS VI.

ACKNOWLEDGEMENTS:

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I would also like to thank J. MERLE and the O.R.S.T.O.M. for their logistic and material support, C. PROVOST for her help and interest in the realization of this work, and the entire team of C.C.R. (Centre de Calcul Recherche) of the University PARIS VI.

INTRODUCTION:

Jusqu'à présent, tous les atlas concernant l'océan Atlantique tropical ont été réalisés à partir de données observées. Nous présentons ici l'évolution des couches supérieures de cet océan au cours d'une année climatologique simulée; les "observations" utilisées sont les résultats du modèle tridimensionnel du G.F.D.L. (Geophysical Fluid Dynamics Laboratory). Cette simulation, qui reste une référence, n'a été présentée que partiellement dans des études antérieures (PHILANDER & PACANOWSKI, 1984; 1986a; 1986b; PHILANDER & al, 1986; RICHARDSON & PHILANDER, 1987).

Nous souhaitons que la présente compilation des résultats de cette simulation, par son caractère global, soit un outil utile aussi bien pour les expérimentalistes que pour les modélisateurs.

Cet atlas concerne l'Océan Atlantique Tropical limité par les latitudes 20°S - 20°N, zone d'intérêt des programmes FOCAL et SEQUAL. Il ne porte que sur les 300 premiers mètres de l'océan, afin de visualiser au mieux les évolutions de la couche homogène et de la thermocline.

Les cinq paramètres du modèle décrits ici sont la température, la salinité et les trois composantes de la vitesse.

Les figures ont été réalisées en utilisant une interpolation quadratique des résultats obtenus aux points de grille du modèle, sans procédure de lissage. Le matériel informatique et graphique utilisé est celui du C.C.R. (Centre de Calcul Recherche) de l'Université PARIS VI (Jussieu).

INTRODUCTION:

Up to now, all the atlases concerning the Tropical Atlantic Ocean have been produced using observed data. We present here the evolution of the upper layers of the ocean during a simulated climatic year. The "observations" used are the product of the G.F.D.L. (Geophysical Fluid Dynamics Laboratory) three-dimensional model. This simulation, which remains a reference, has been partly presented in previous studies (PHILANDER & PACANOWSKI, 1984; 1986a; 1986b; PHILANDER & al, 1986; RICHARDSON & PHILANDER, 1987).

We hope this compilation of the results of this simulation, by its global nature, will be of use to the observationalists as well as modelers.

This atlas concerns the Tropical Atlantic Ocean limited by the latitudes 20°S - 20°N, the zone of interest of the FOCAL and SEQUAL programs. Its extension with depth is restricted to the upper 300 meters, in order to examine the evolution of the mixed layer and the thermocline. The five parameters of the model described here are temperature, salinity and the three components of the velocity.

The figures have been produced using a quadratic interpolation of the results obtained from the grid-points of the model, without any smoothing. The computer and graphic devices used in this study are part of C.C.R. (Centre de Calcul Recherche) of the University of PARIS VI (Jussieu).

DESCRIPTION DU MODELE:

Ce modèle concerne l'Océan Atlantique limité par les parallèles 28°S et 50°N. La topographie des fonds océaniques est prise en compte, les îles et la plate-forme continentale étant considérés respectivement comme des fonds à 150m et 50m.

Il y a 27 niveaux sur la verticale, la résolution étant de 10m dans les 100 premiers mètres. Les points de grille sont distants de 1° selon la longitude et de 1/3° selon la latitude entre 10°S et 10°N. Au-delà de ces latitudes cet écart augmente graduellement et atteint 1.5° à 20°N.

Le modèle est forcé en surface par les vents mensuels moyens décrits par HELLERMAN et ROSENSTEIN ¹. Afin de calculer le flux de chaleur à la surface de l'océan, la température de l'air, variant saisonnièrement, est spécifiée à la surface de la mer. La radiation et l'humidité relative sont considérées, leurs valeurs étant prises constantes, afin de pouvoir calculer l'évaporation à la surface de l'océan. Les seuls termes importants intervenant dans le budget de chaleur sont la radiation incidente et l'évaporation.

Les équations primitives du modèle sont celles décrites par BRYAN ². Les coefficients de mélange dépendent du nombre de Richardson et leur application dans le modèle est détaillée par PACANOWSKI et PHILANDER ³. Le mélange dû aux fluctuations de haute fréquence du vent est pris en compte en assignant au coefficient de viscosité turbulente une valeur de 10cm²/s dans les 10 premiers mètres de l'océan. Dans l'expression concernant l'évaporation, les fluctuations du vent exercent une tension minimale imposée à 0.25dyne/cm². En l'absence de cette tension minimale, les températures de surface croissent vers des valeurs inacceptables dans des régions où la tension du vent mensuel moyen est faible.

Le modèle a été forcé par les vents climatologiques d'HELLERMAN - ROSENSTEIN pendant deux ans au bout desquels un cycle saisonnier équilibré est atteint. Les résultats présentés ici sont ceux de la troisième année de simulation.

(D'après PHILANDER and PACANOWSKI: Pictures from a simulation of the seasonal cycle of the tropical Atlantic Ocean, 1984)

¹ S. HELLERMAN and M. ROSENSTEIN:

"Normal monthly windstress over the world ocean with error estimate"
(J. Phys. Ocean. 13, 1093-1104, 1983)

² K. BRYAN:

"A numerical method for the study of the world ocean"
(J. Comput. Phys. 4, 347-376, 1969)

³ R.C. PACANOWSKI and S.G.H. PHILANDER:

"Parameterization of vertical mixing in numerical models
of tropical oceans"
(J. Phys. Ocean. 11, 1443-1451, 1981)

DESCRIPTION OF THE MODEL:

The model extends from 28°S to 50°N in the Atlantic Ocean and takes the topography of the seafloor into account, except that islands do not rise above 150m nor the coastal shelf above 50m. There are 27 layers in the vertical with a resolution of 10m in the upper 100m. The longitudinal grid-spacing is 1° and the latitudinal grid-spacing is 1/3° between 10°S and 10°N. Poleward of these latitudes it increases gradually and is 1.5° at 20°N.

The forcing function is the monthly mean surface winds as described by HELLEMAN and ROSENSTEIN ¹. To calculate the heat flux at the ocean surface the seasonally varying air temperature at sea level is specified. The radiation and relative humidity are assigned constant values so that the evaporation from the ocean surface can be calculated. The only important terms in the heat budget are the incoming radiation and the evaporation.

The primitive equation model is that described by BRYAN ². The Richardson number-dependent mixing coefficients have been discussed by PACANOWSKI and PHILANDER ³. Mixing caused by high frequency wind fluctuations is taken into account by assigning the eddy viscosity a value of 10cm²/sec in the upper 10m of the ocean. In the expression for evaporation it is assumed that wind fluctuations exert a minimum stress of 0.25dyne/cm². In the absence of this minimum, sea surface temperatures increase to unacceptably high values in regions where the monthly mean windstress is weak.

Monthly averaged climatologic winds (HELLERMAN and ROSENSTEIN) force the model for two years, by which time an equilibrium seasonal cycle is established.

The results we present here are from the third year of the simulation.

(From PHILANDER and PACANOWSKI: Pictures from a simulation of the seasonal cycle of the tropical Atlantic Ocean, 1984)

¹ S. HELLERMAN and M. ROSENSTEIN:

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(J. Phys. Ocean. 13, 1093-1104, 1983)

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of tropical oceans"
(J. Phys. Ocean. 11, 1443-1451, 1981)

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"A model of the seasonal cycle in the Tropical Atlantic Ocean"
(J. Geophys. Res., 91, No 12, 14,192-14,206, 1986a)

S.G.H. PHILANDER, R. PACANOWSKI:

"The mass and heat budget in a model of the Tropical Atlantic Ocean"
(J. Geophys. Res.: 91, C12, 14,212-14,220, 1986b)

S.G.H. PHILANDER, W.J. HURLIN, R. PACANOWSKI:

"Properties of long equatorial waves in models of the seasonal
cycle in the Tropical Atlantic and Pacific Oceans"
(J. Geophys. Res.: 91, C12, 14,207-14,211, 1986)

P.L. RICHARDSON, S.G.H. PHILANDER:

"The seasonal variation of surface currents in the Tropical
Atlantic Ocean: a comparison of shift drift data with results
from a general circulation model"
(J. Geophys. Res.: 92, C1, 715-724, 1987)

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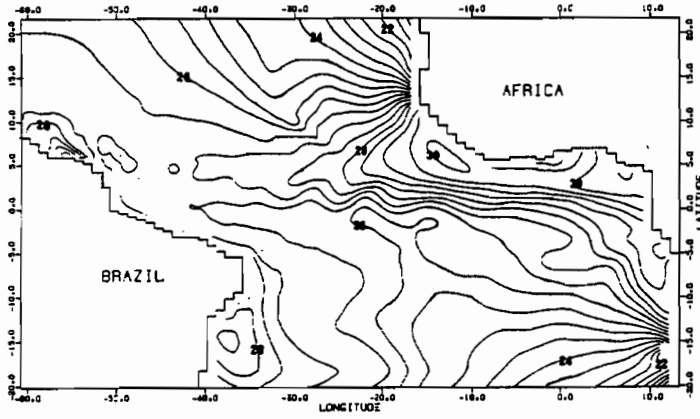
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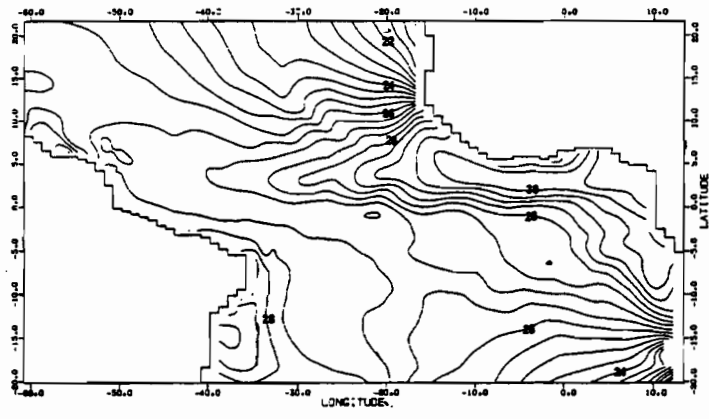
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TEMPERATURE AT 5m

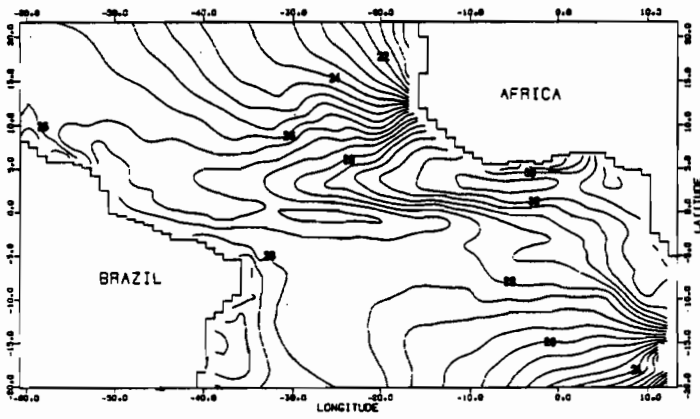
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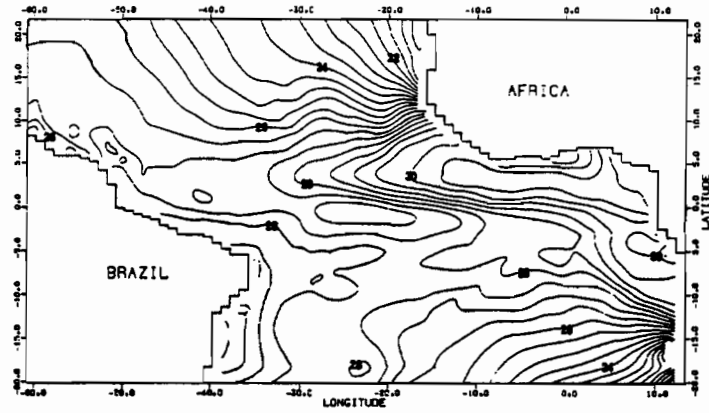
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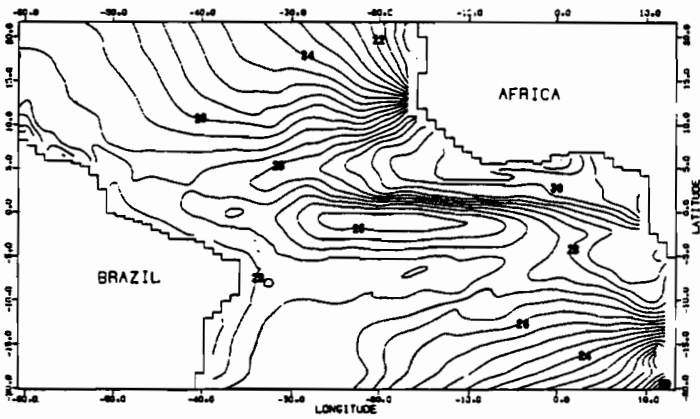
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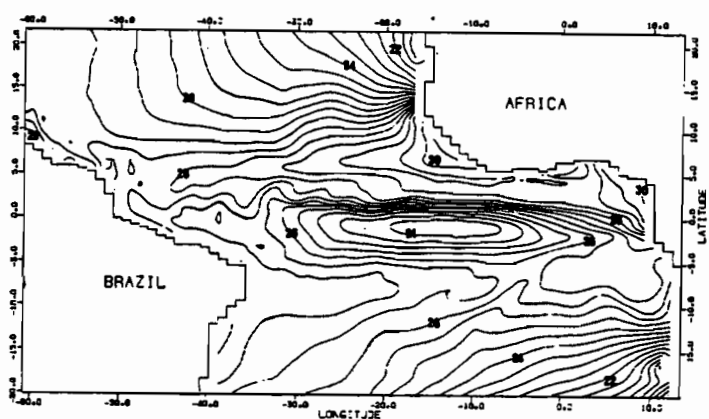
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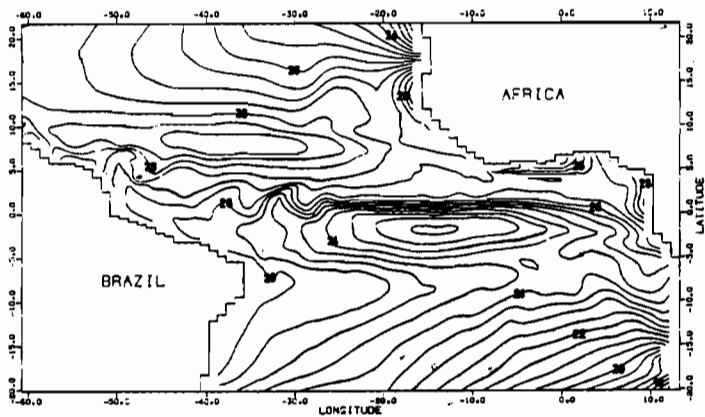


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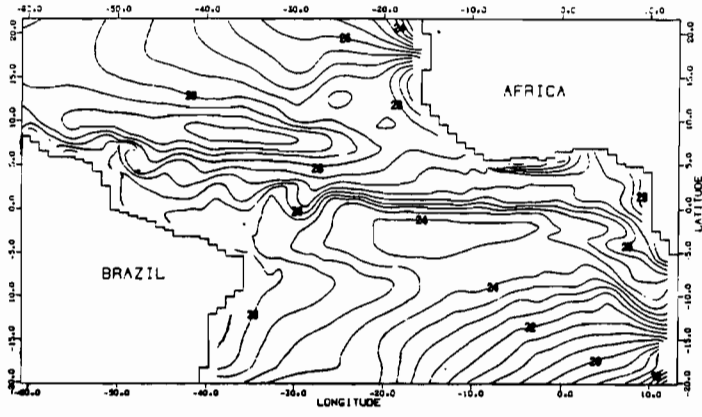


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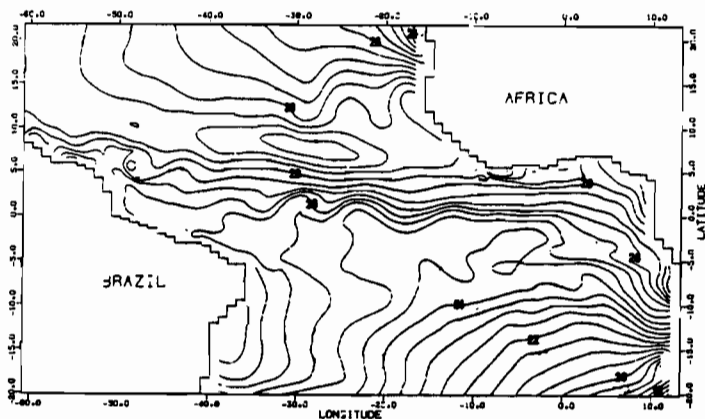
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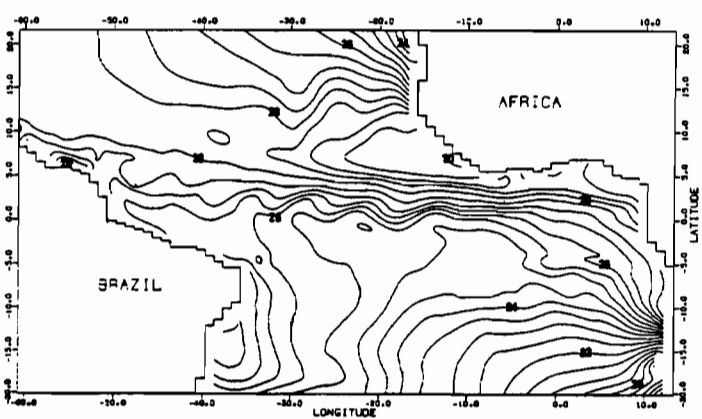
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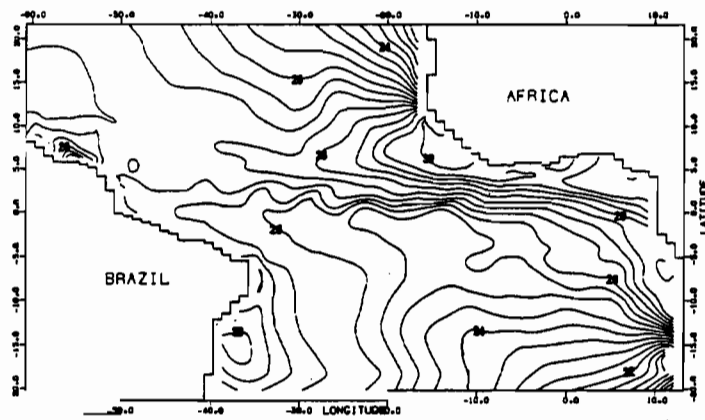
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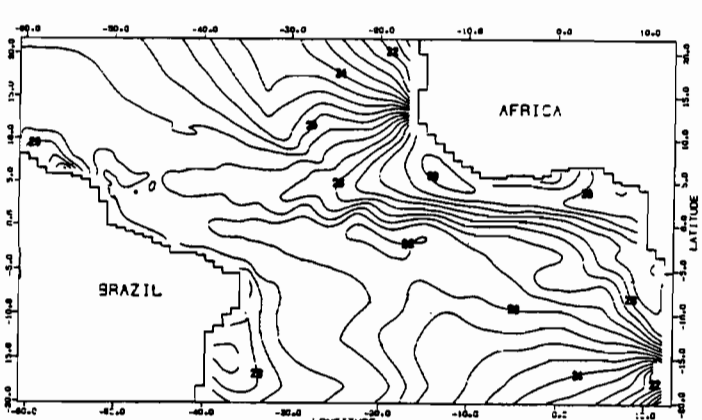
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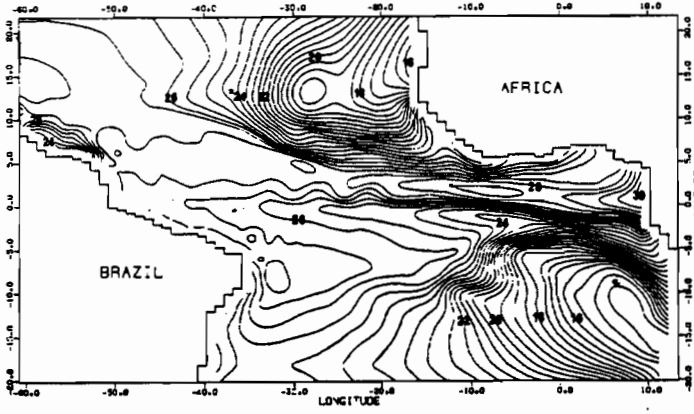


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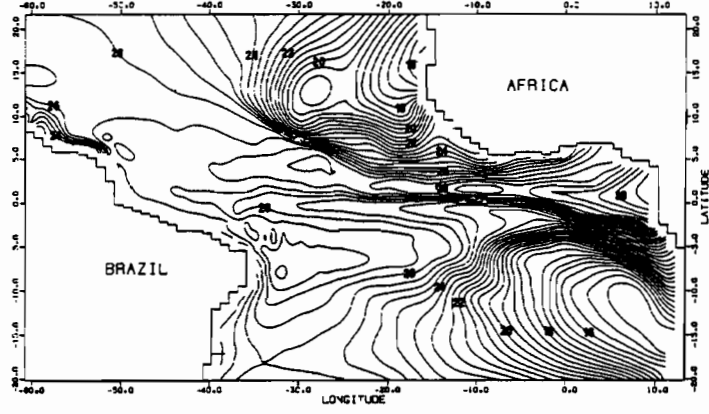


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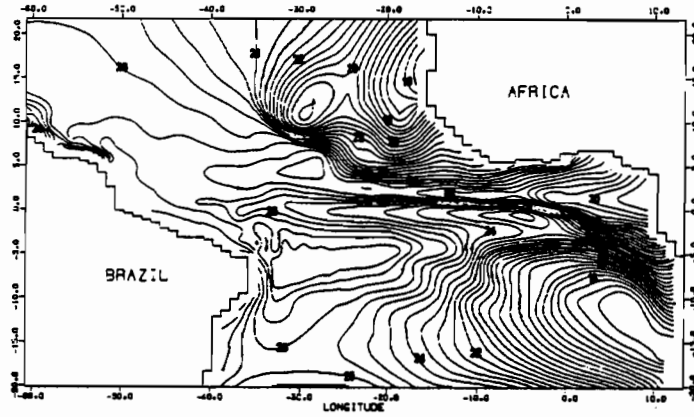
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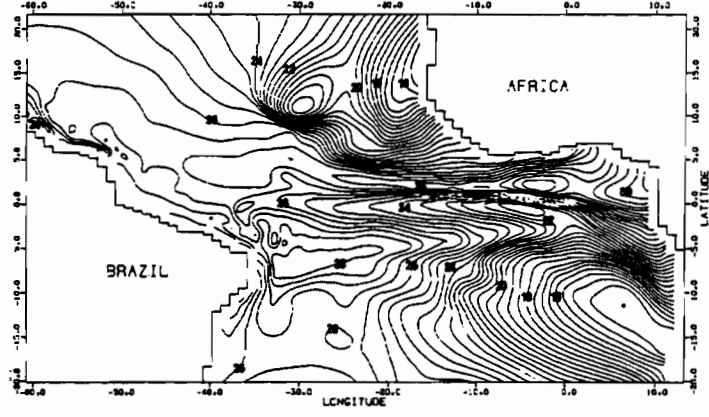
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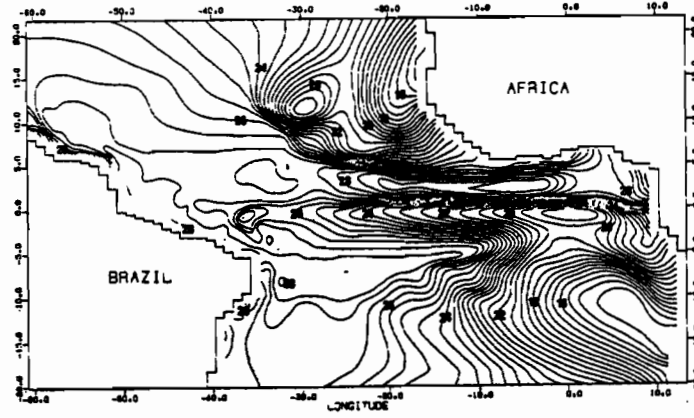
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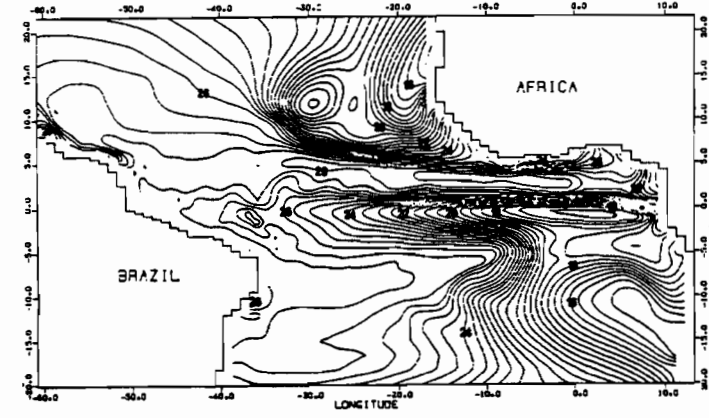
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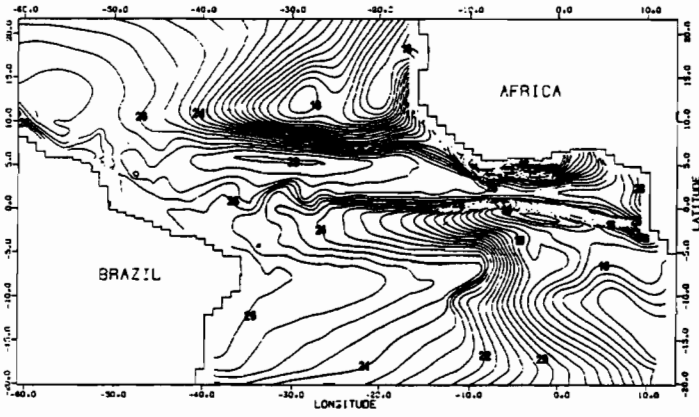


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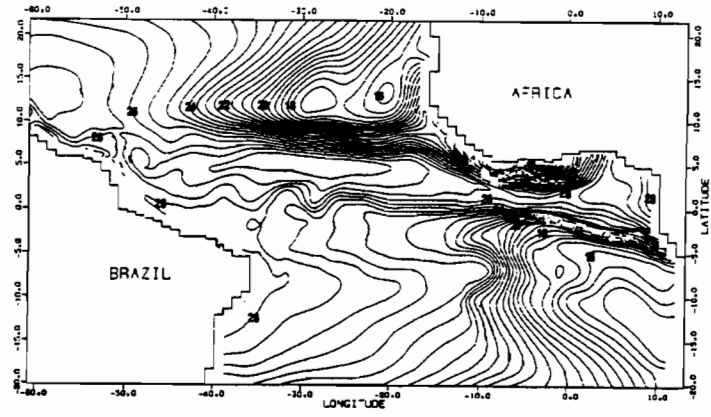


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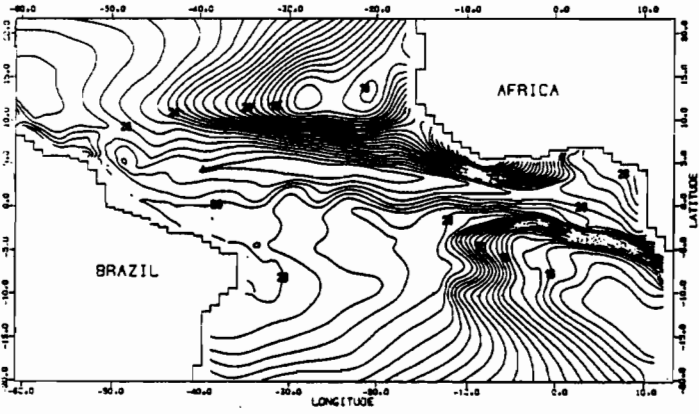
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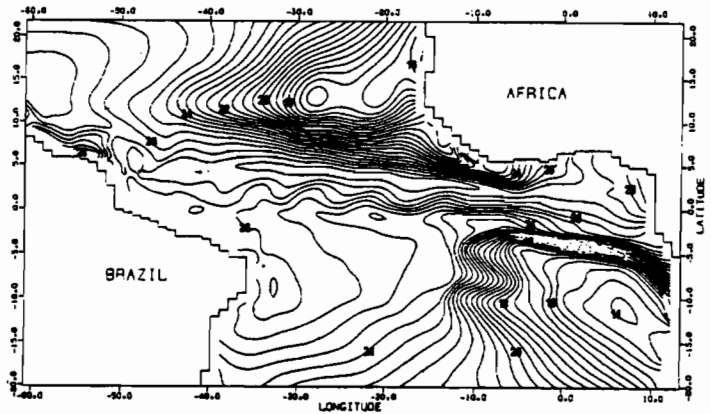
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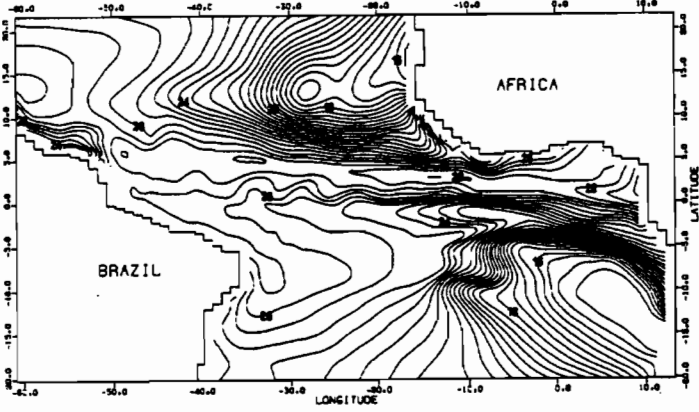
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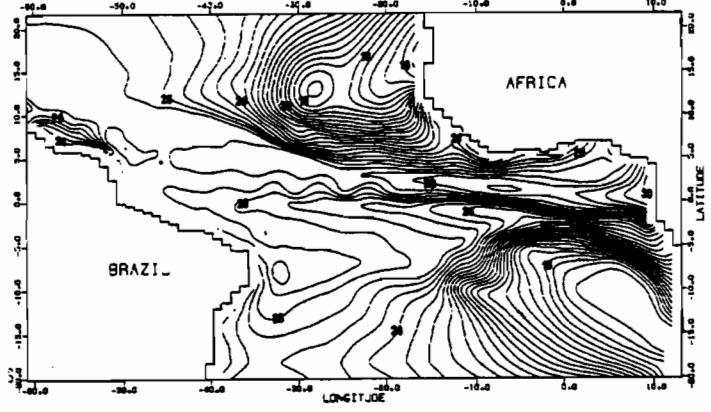
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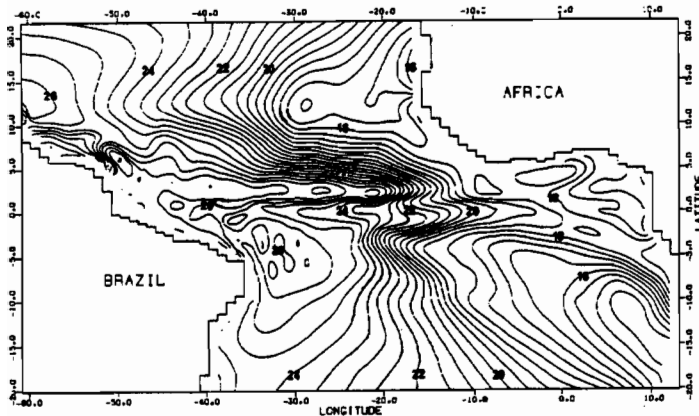


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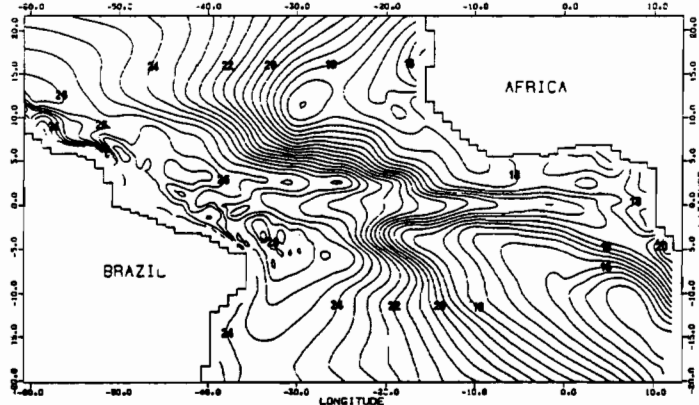


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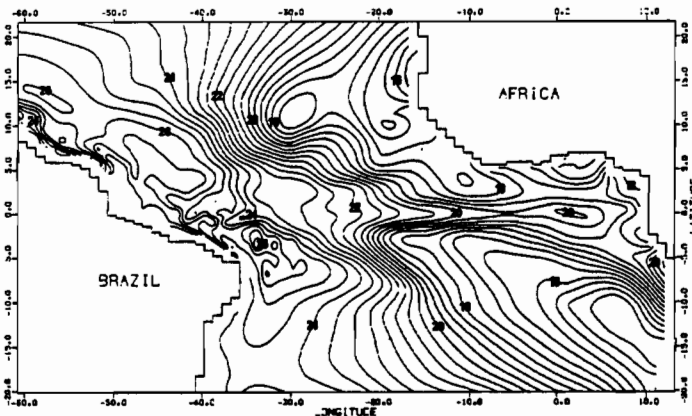
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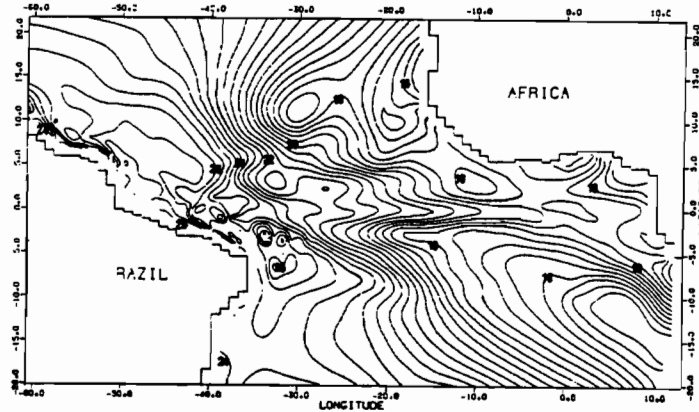
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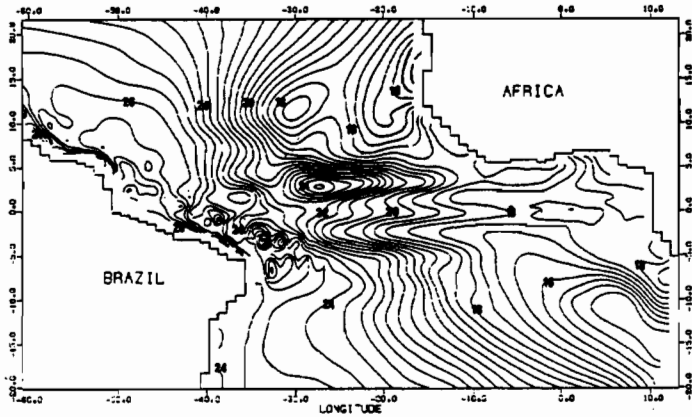
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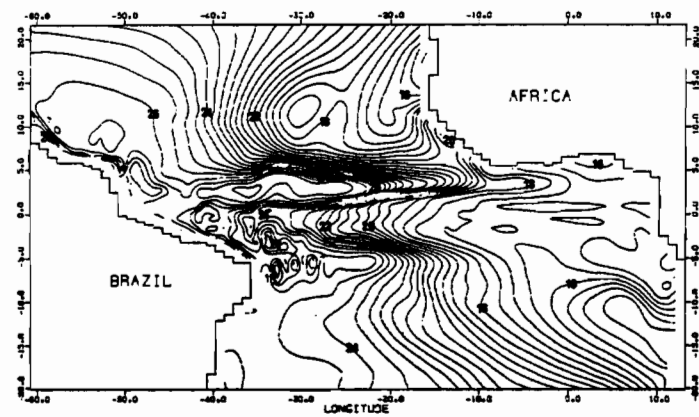
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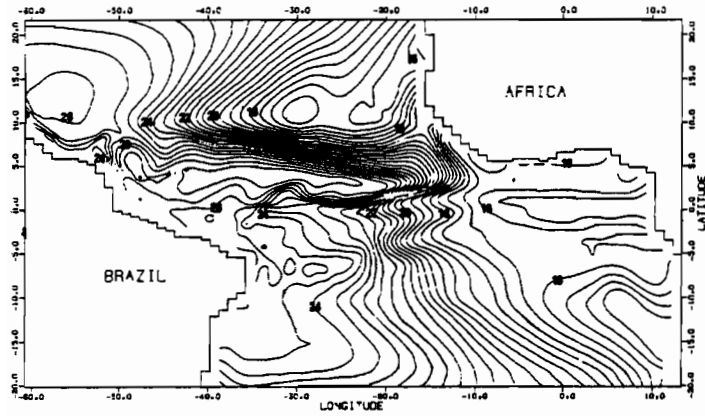


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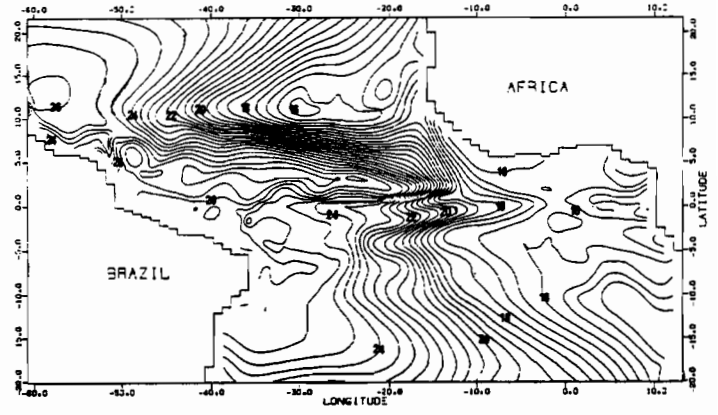


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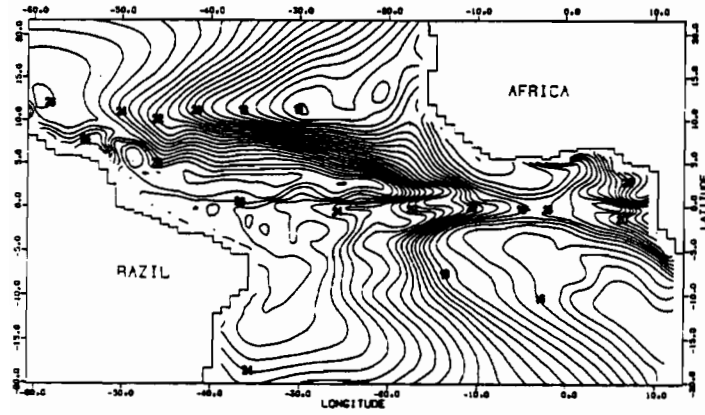
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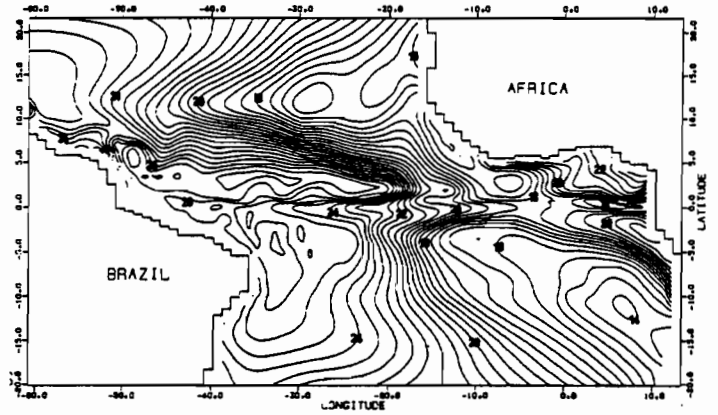
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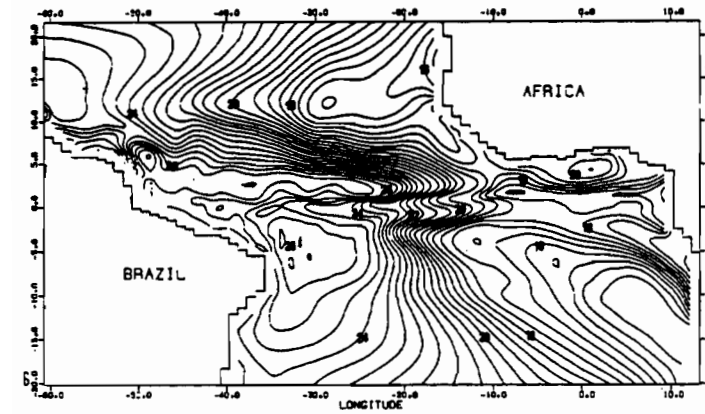
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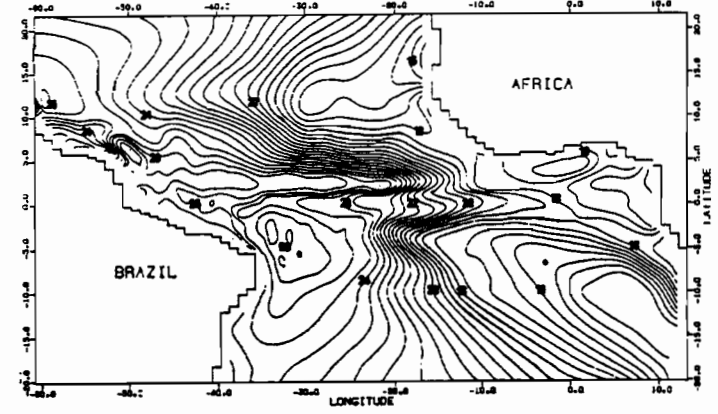
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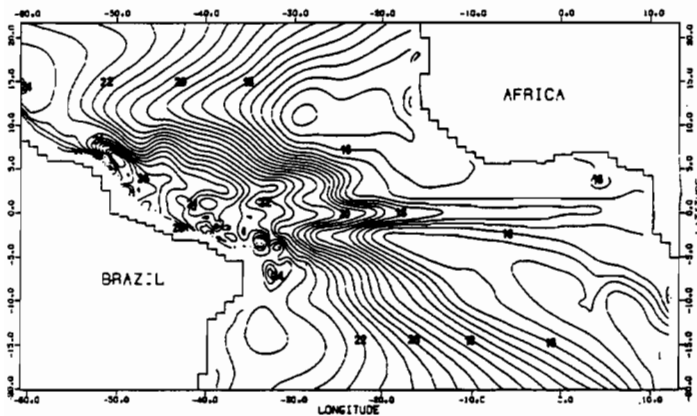


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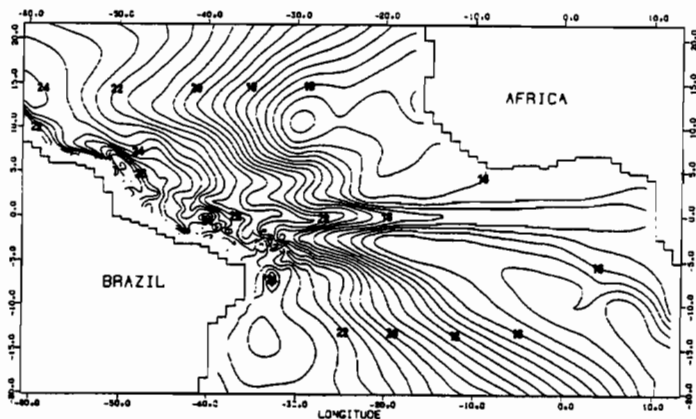


TEMPERATURE AT 95m

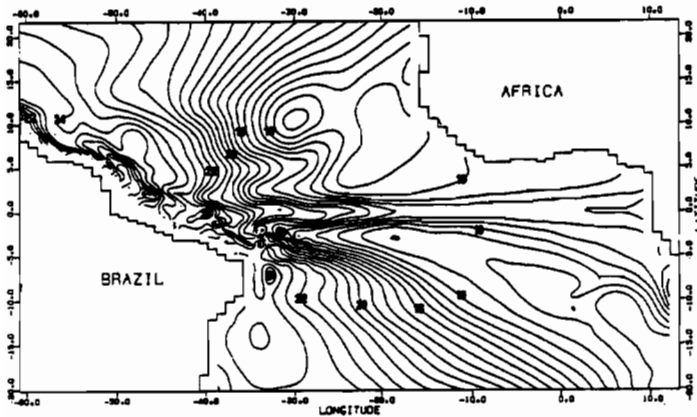
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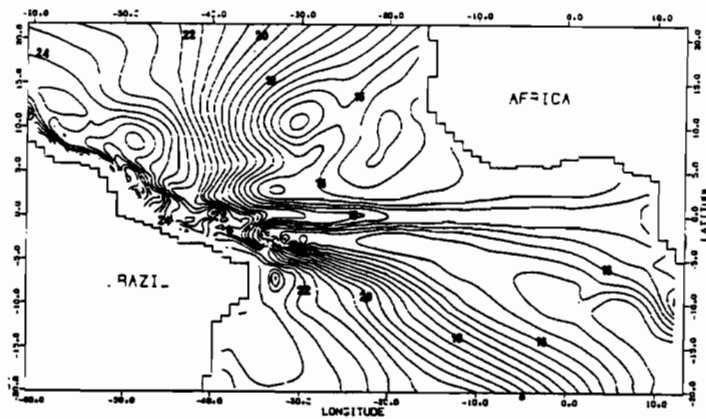
MONTH: FEBRUARY



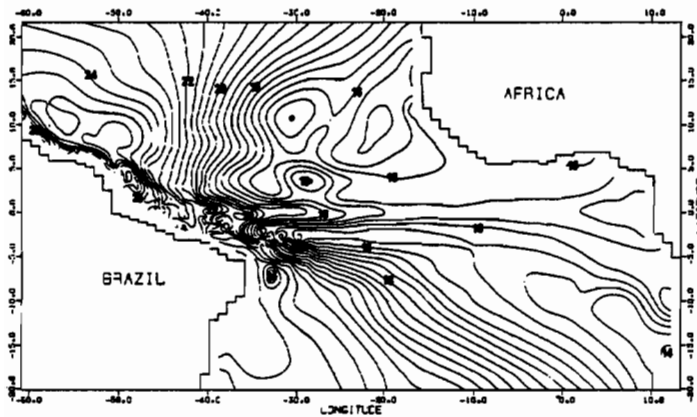
MONTH: MARCH



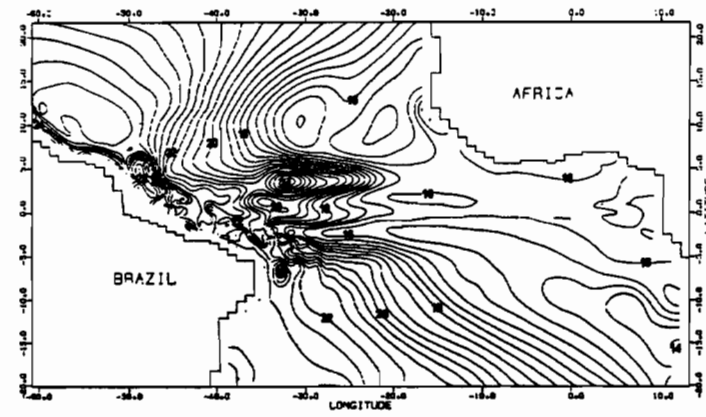
MONTH: APRIL



MONTH: MAY

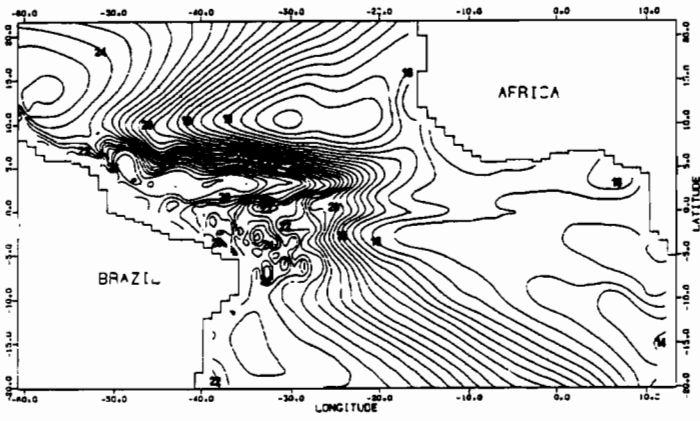


MONTH: JUNE

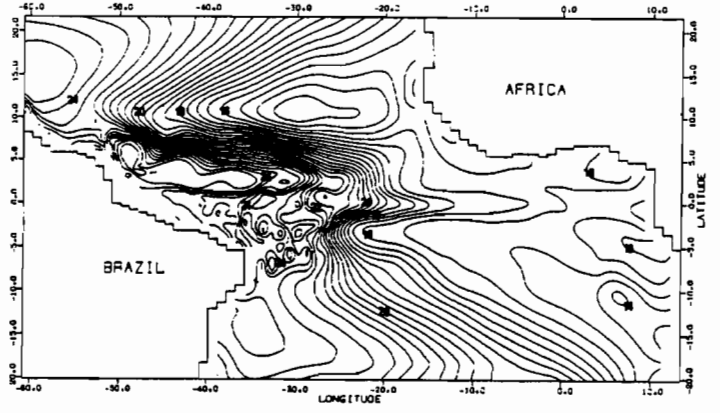


TEMPERATURE AT 95m

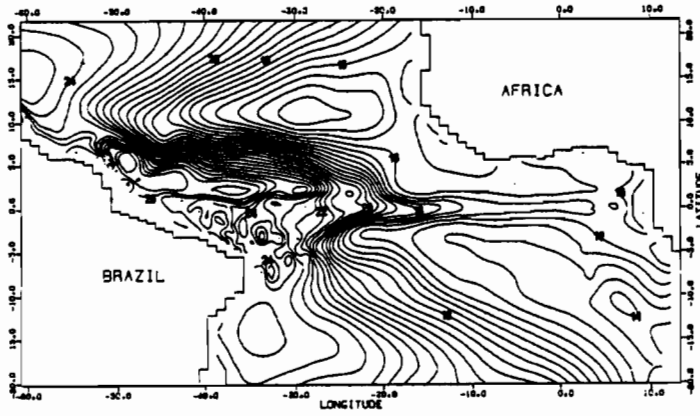
MONTH: JULY



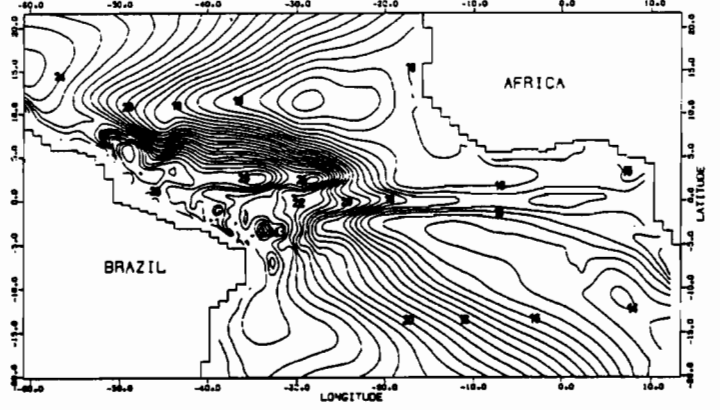
MONTH: AUGUST



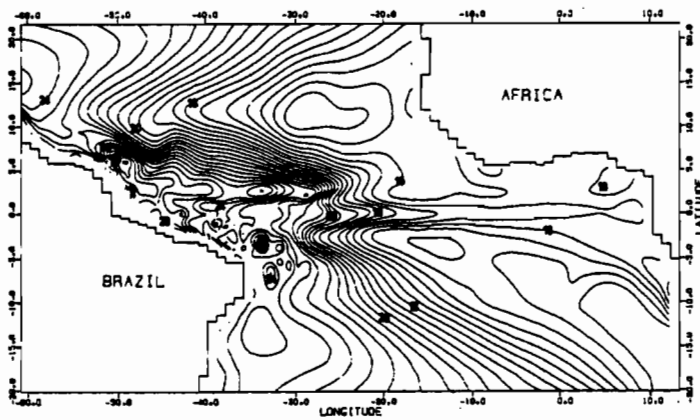
MONTH: SEPTEMB.



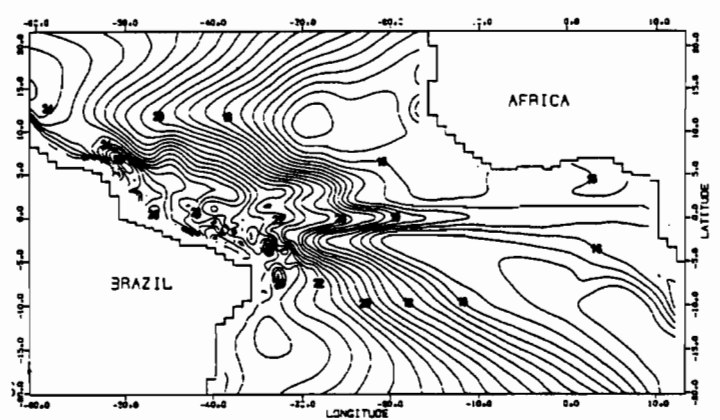
MONTH: OCTOBER



MONTH: NOVEMBER

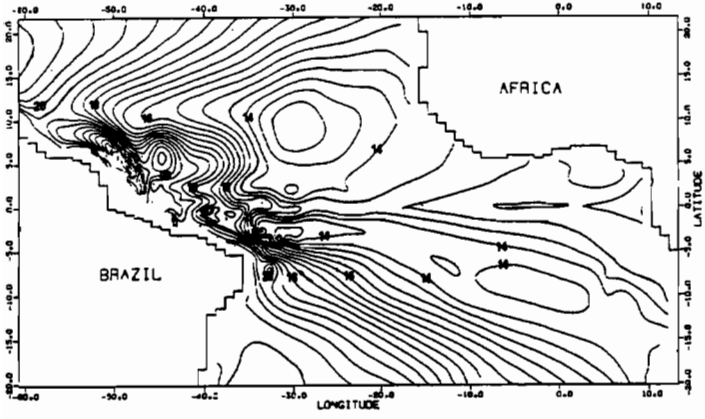


MONTH: DECEMBER

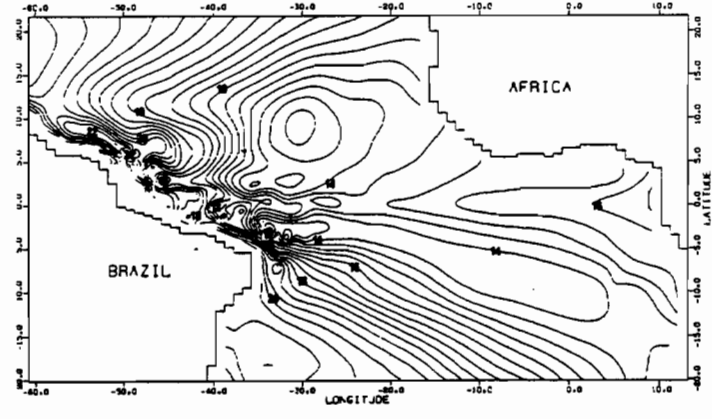


TEMPERATURE AT 136.25m

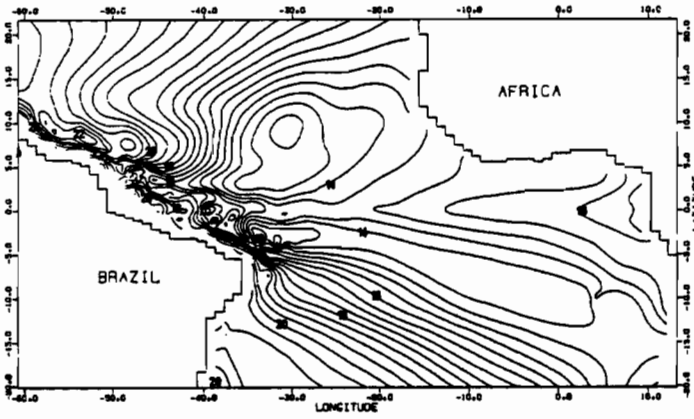
MONTH: JANUARY



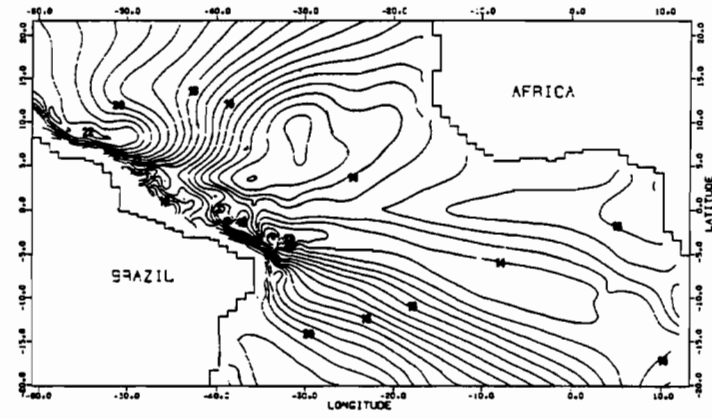
MONTH: FEBRUARY



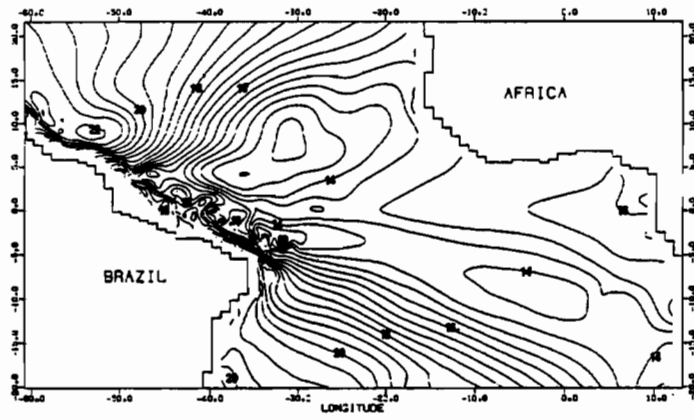
MONTH: MARCH



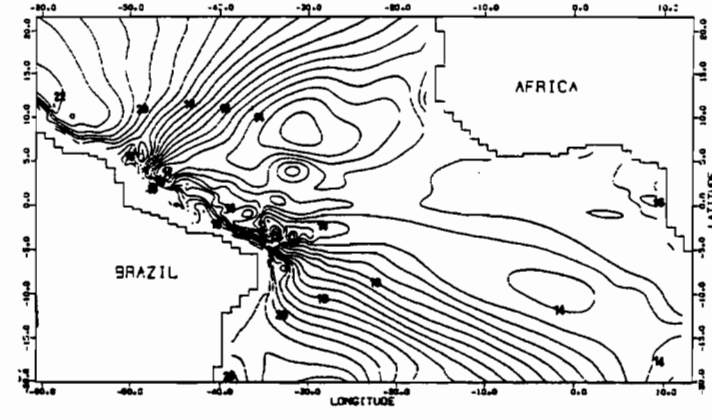
MONTH: APRIL



MONTH: MAY

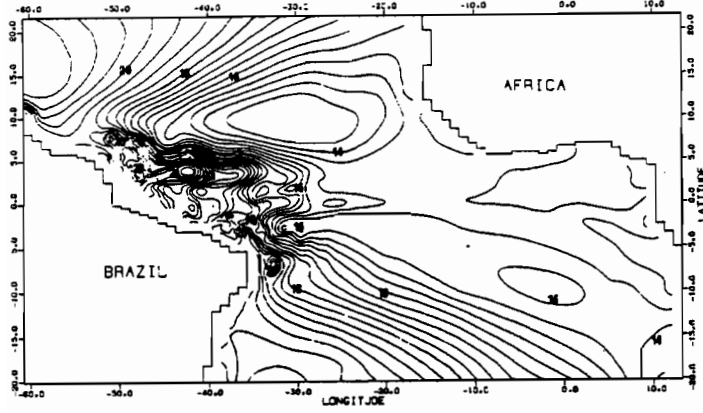


MONTH: JUNE

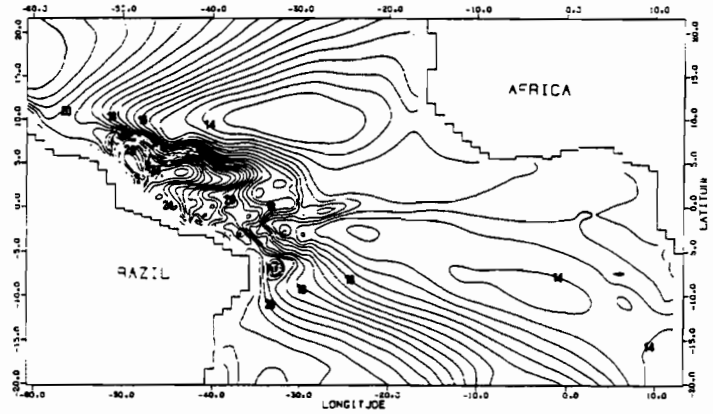


TEMPERATURE AT 136.25m

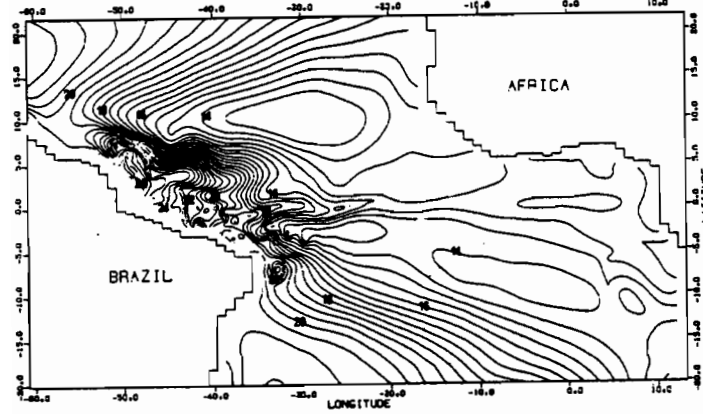
MONTH: JULY



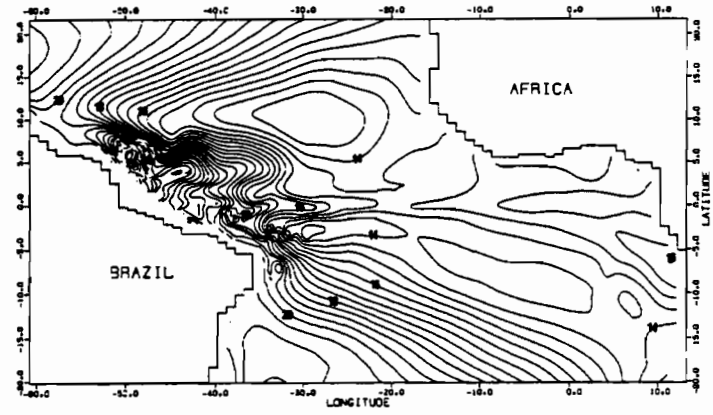
MONTH: AUGUST



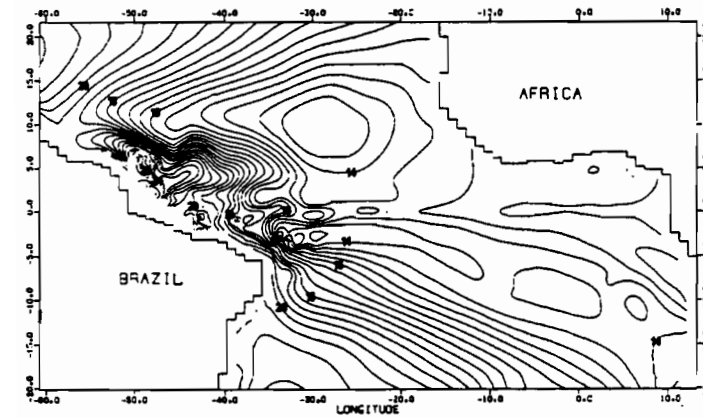
MONTH: SEPTEMBER



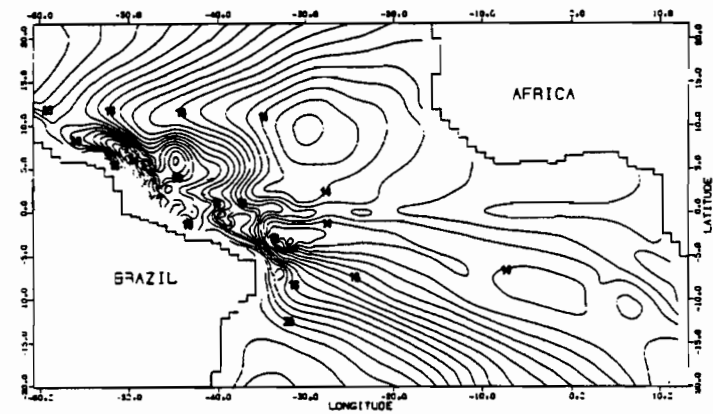
MONTH: OCTOBER



MONTH: NOVEMBER

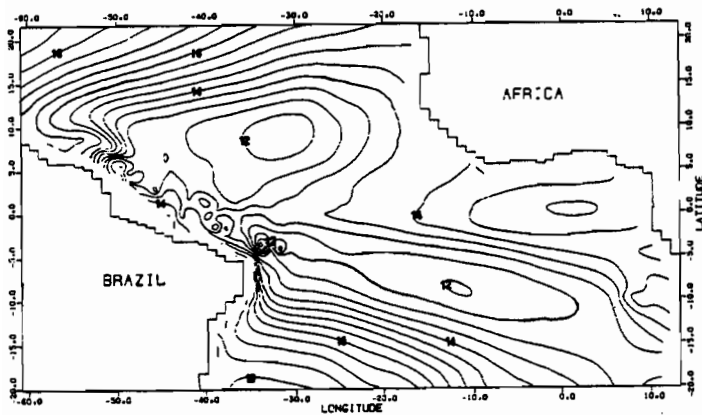


MONTH: DECEMBER

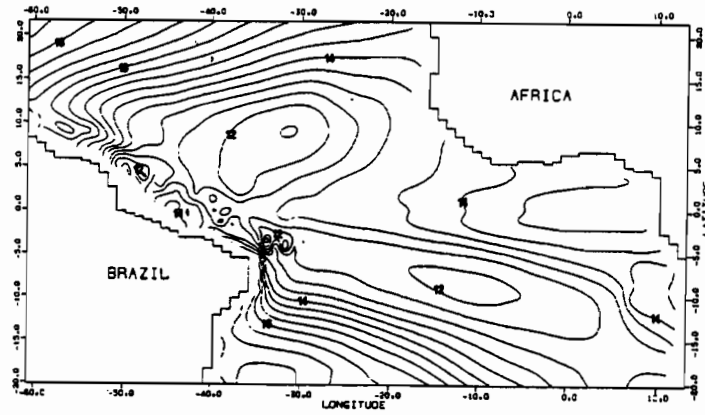


TEMPERATURE AT 205m

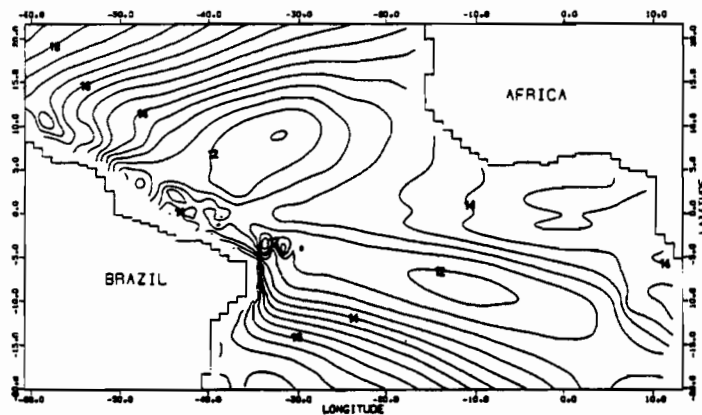
MONTH: JANUARY



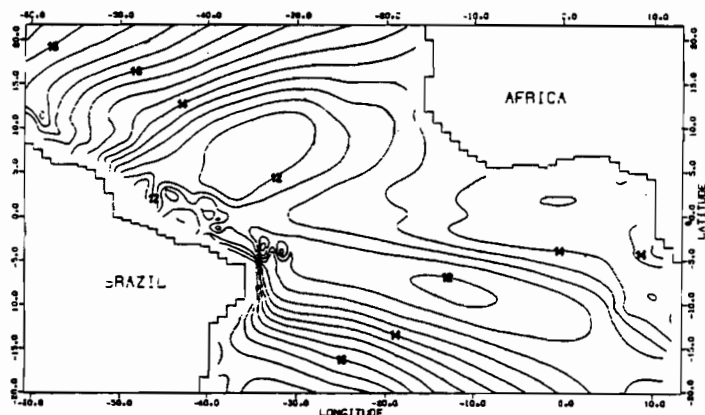
MONTH: FEBRUARY



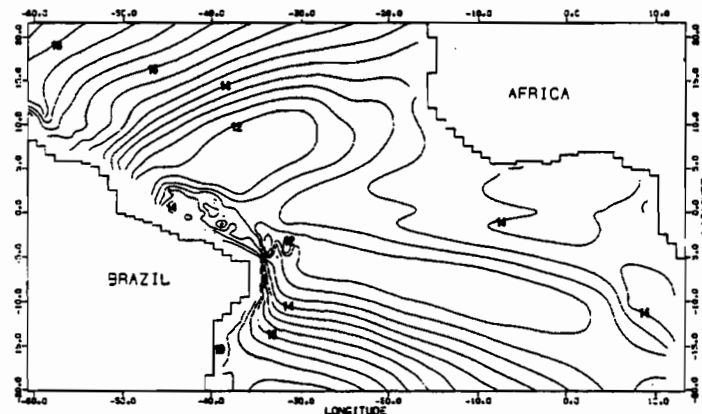
MONTH: MARCH



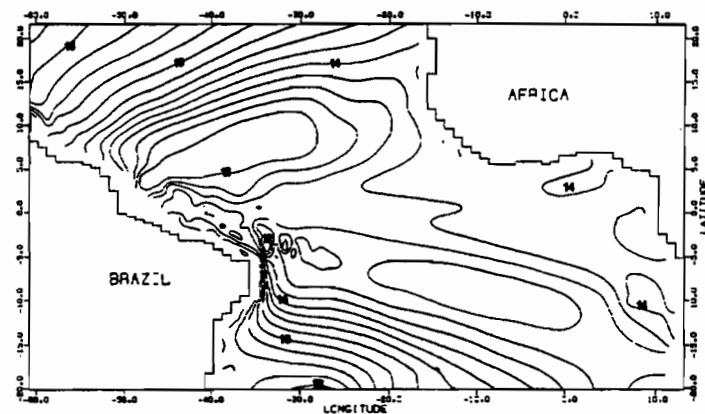
MONTH: APRIL



MONTH: MAY

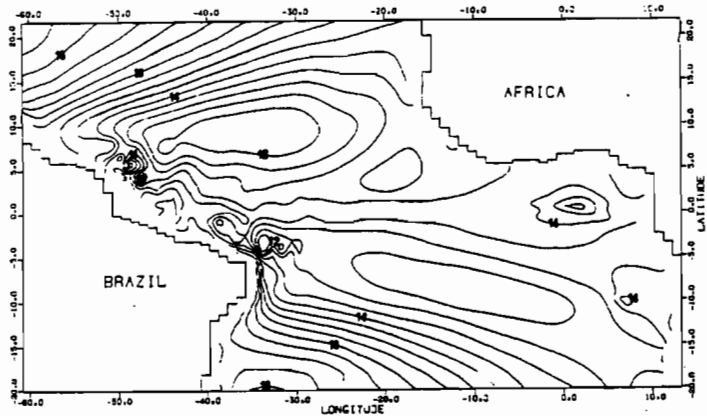


MONTH: JUNE

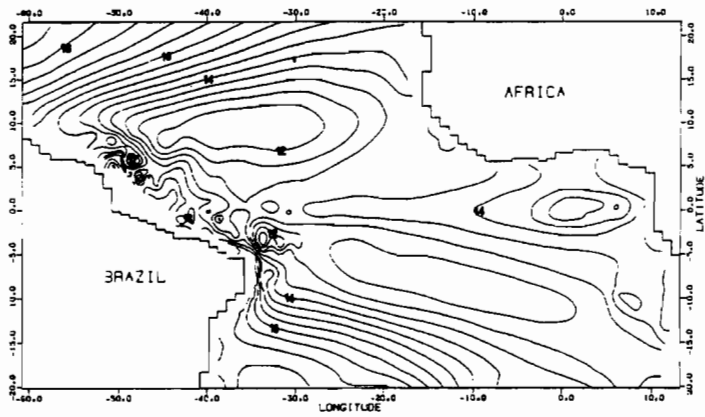


TEMPERATURE AT 205m

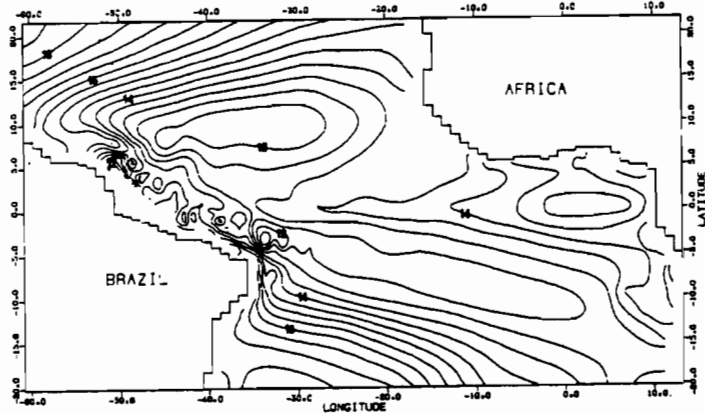
MONTH: JULY



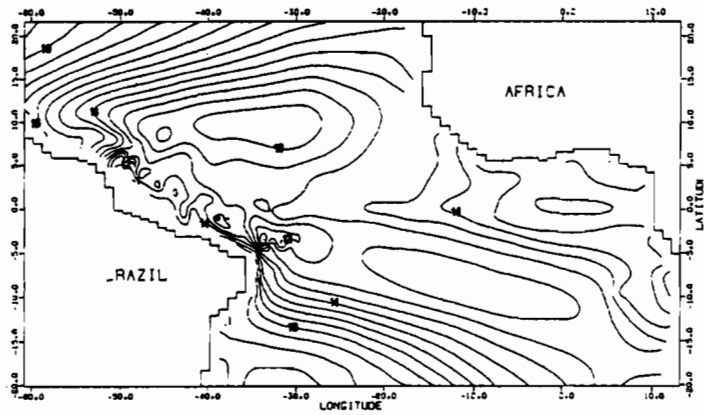
MONTH: AUGUST



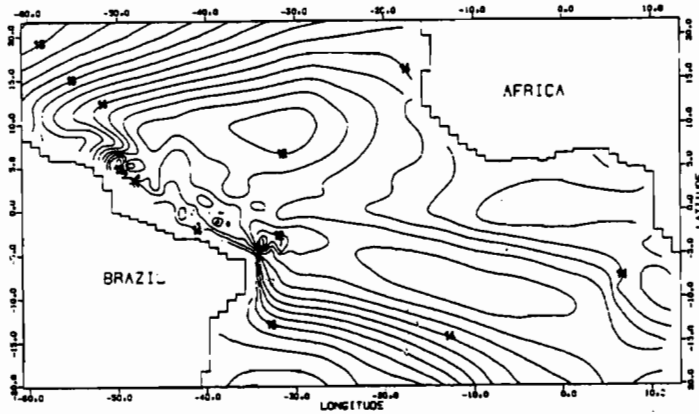
MONTH: SEPTEMB.



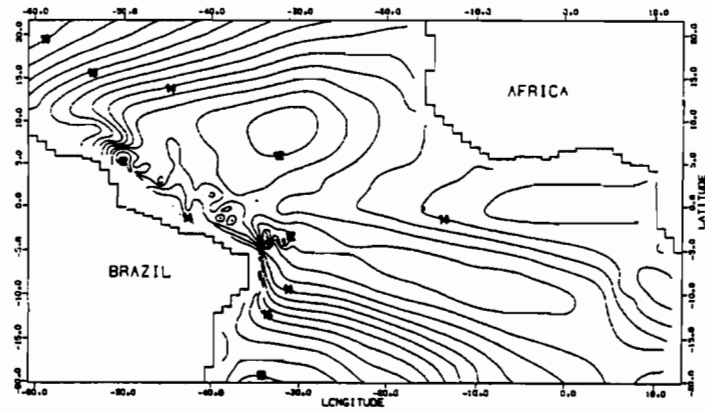
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER



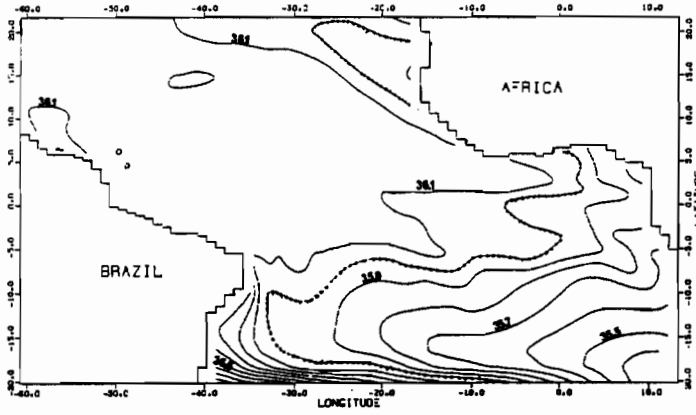
MAPS OF SALINITY AT:

* 5 m:			
	months:	- january to june.	p. 16
		- july to december.	p. 17
* 35 m:			
	months:	- january to june.	p. 18
		- july to december.	p. 19
* 65 m:			
	months:	- january to june.	p. 20
		- july to december.	p. 21
* 95 m:			
	months:	- january to june.	p. 22
		- july to december.	p. 23
* 136.25 m:			
	months:	- january to june.	p. 24
		- july to december.	p. 25
* 205 m:			
	months:	- january to june.	p. 26
		- july to december.	p. 27

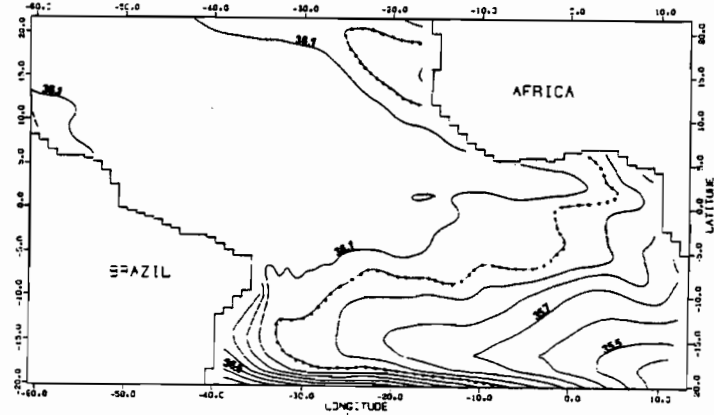
SALINITY AT 5m

(dotted line: 36‰)

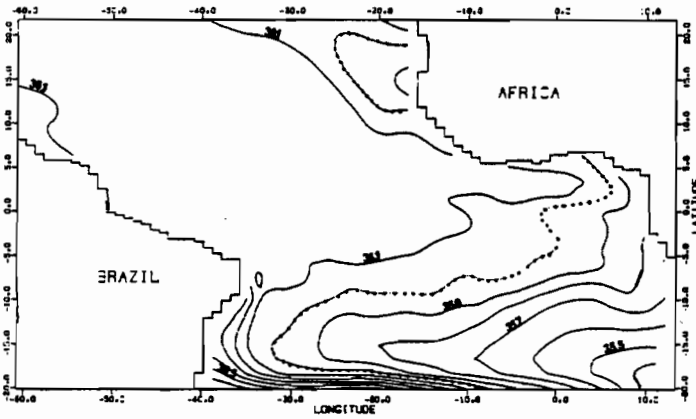
MONTH: JANUARY



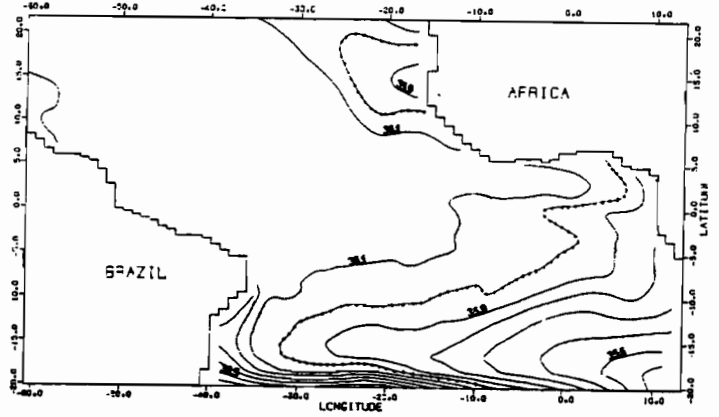
MONTH: FEBRUARY



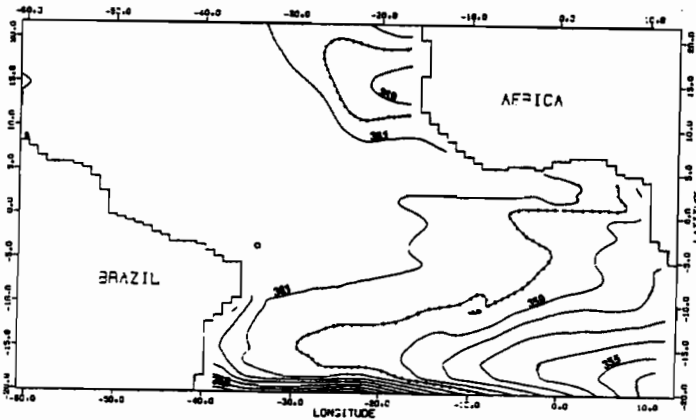
MONTH: MARCH



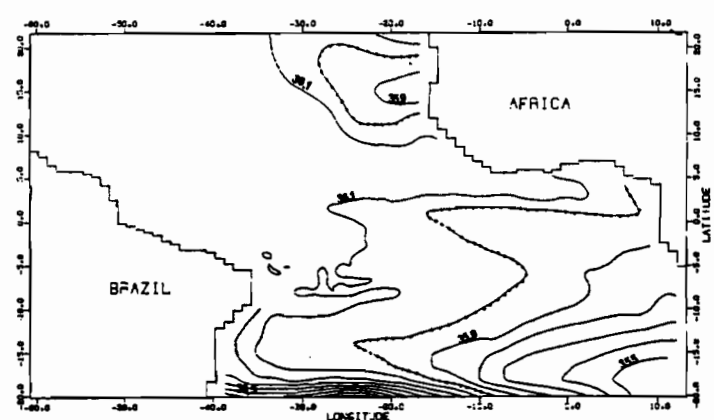
MONTH: APRIL



MONTH: MAY



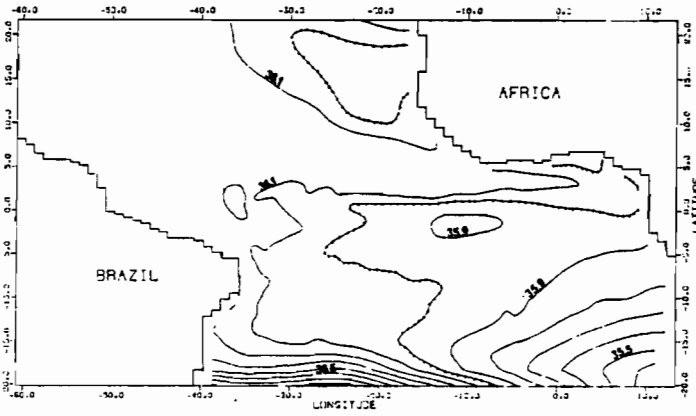
MONTH: JUNE



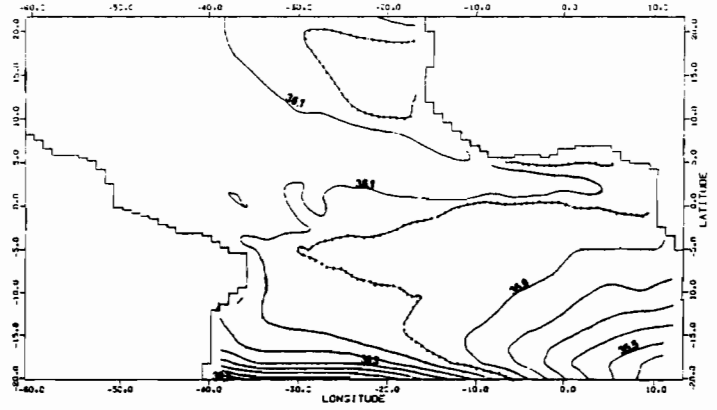
SALINITY AT 5m

(dotted line: 36‰)

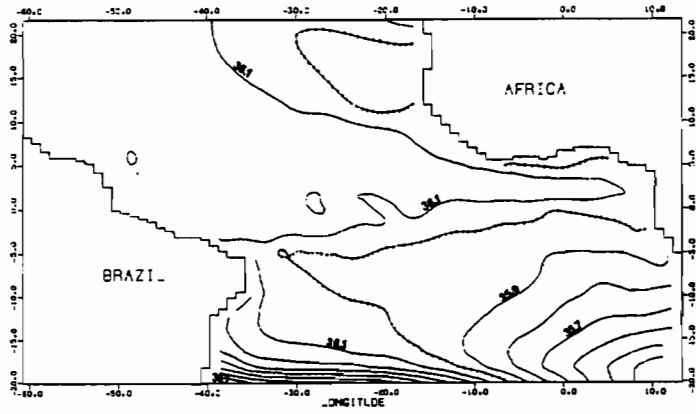
MONTH: JULY



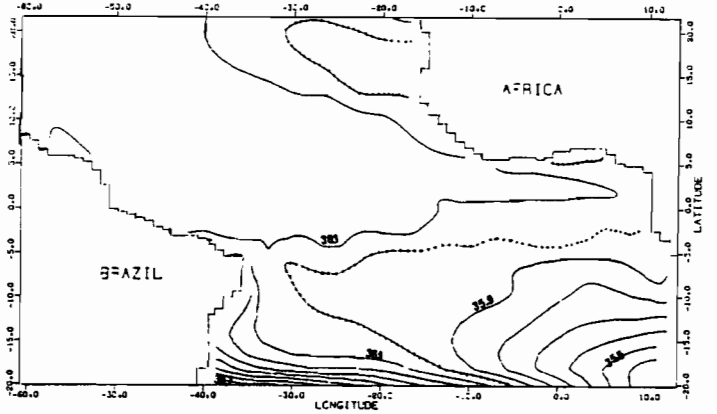
MONTH: AUGUST



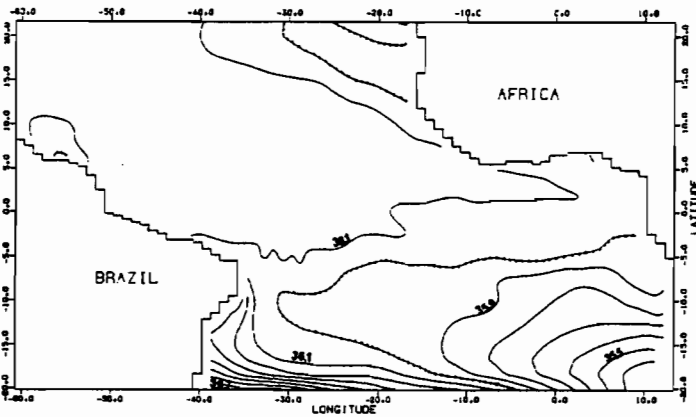
MONTH: SEPTEMB.



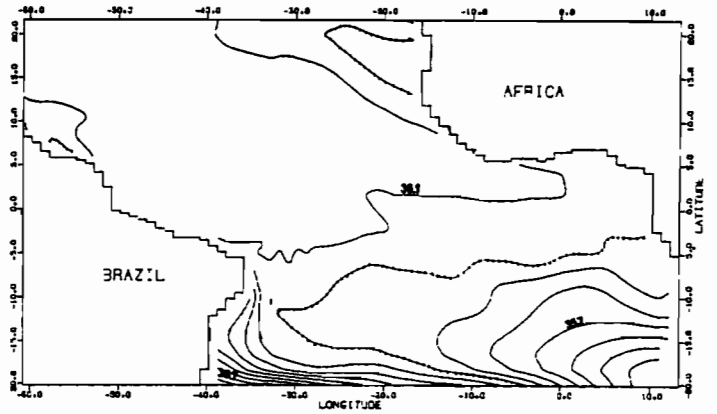
MONTH: OCTOBER



MONTH: NOVEMBER

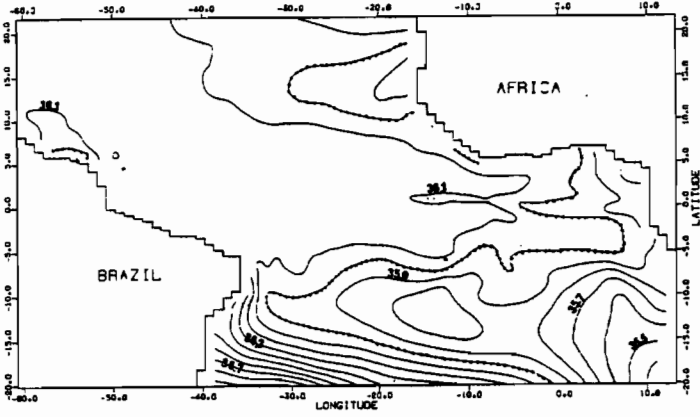


MONTH: DECEMBER

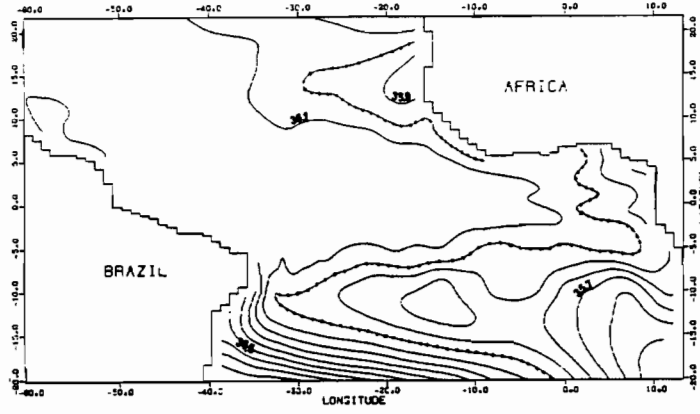


SALINITY AT 35m (dotted line: 36‰)

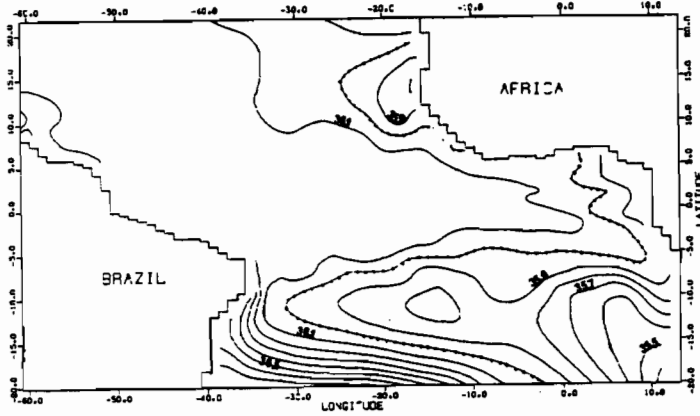
MONTH: JANUARY



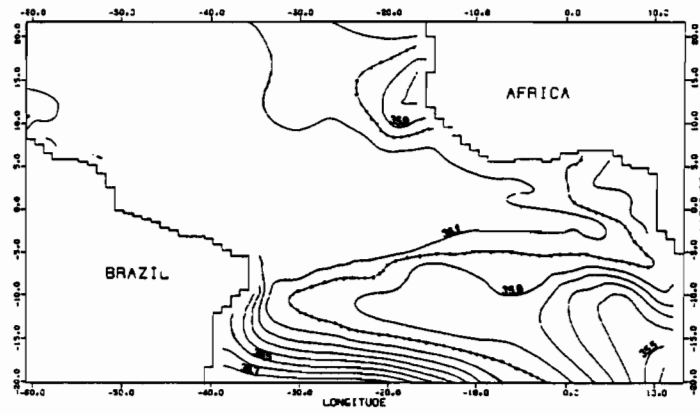
MONTH: FEBRUARY



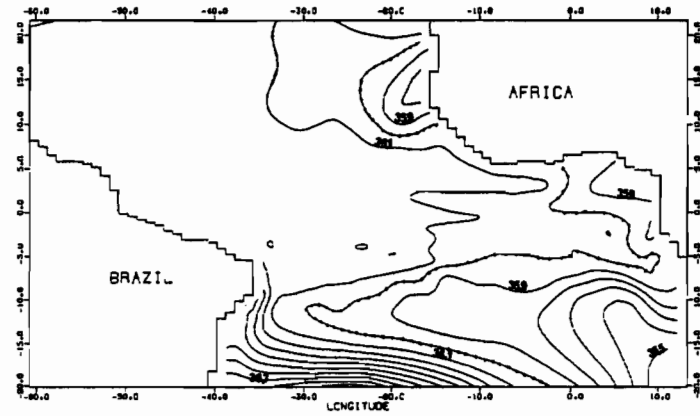
MONTH: MARCH



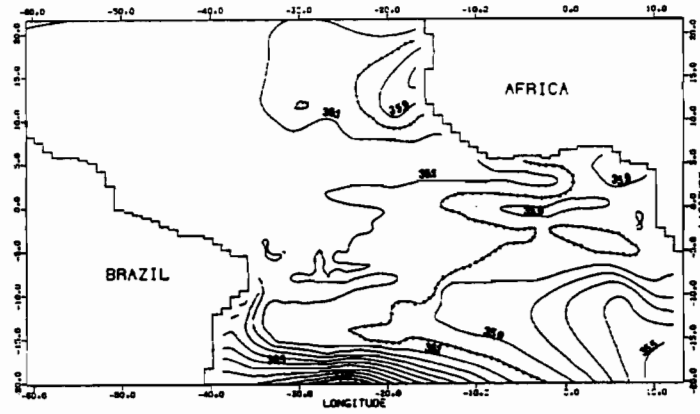
MONTH: APRIL



MONTH: MAY

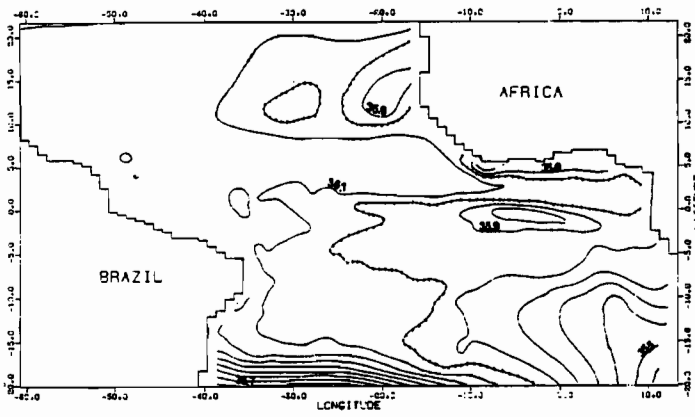


MONTH: JUNE

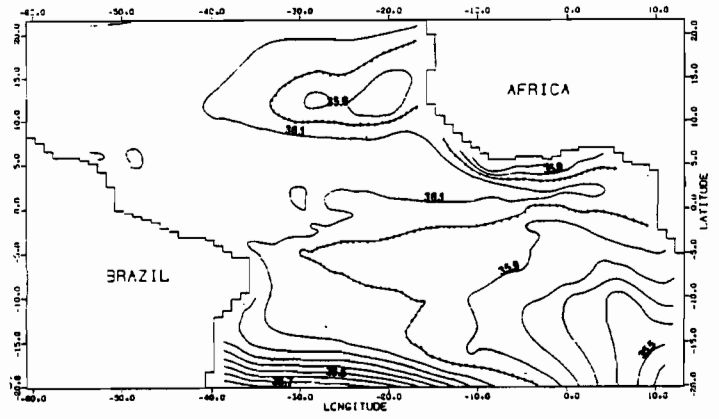


SALINITY AT 35m (dotted line: 36‰)

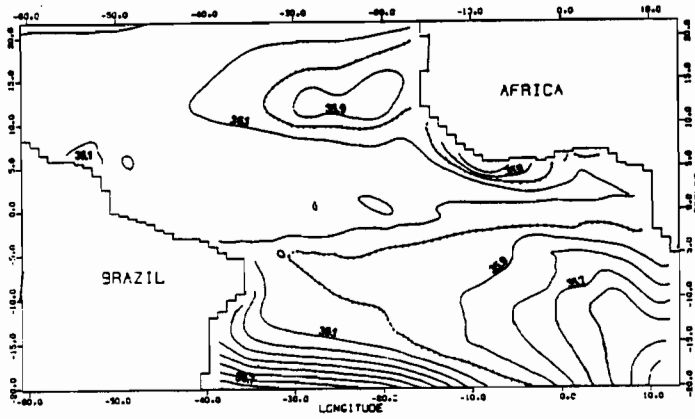
MONTH: JULY



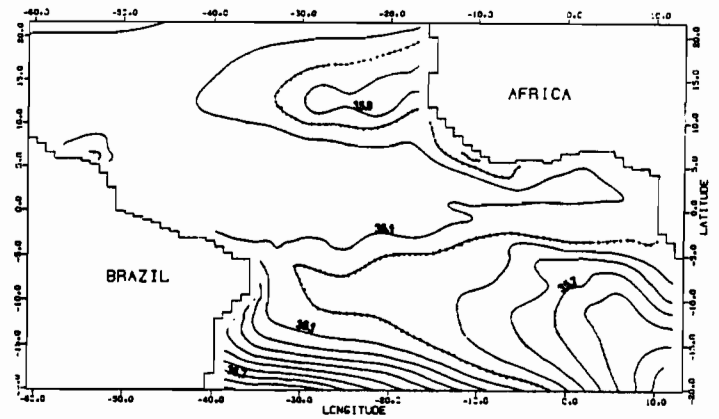
MONTH: AUGUST



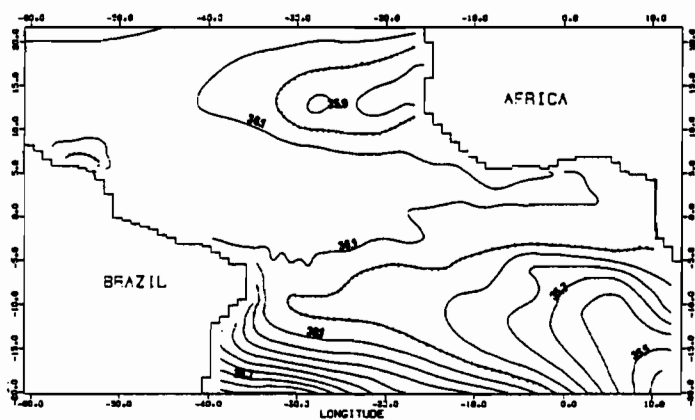
MONTH: SEPTEMB.



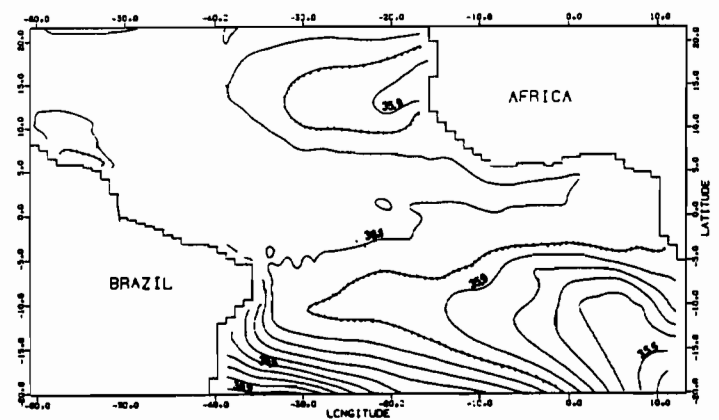
MONTH: OCTOBER



MONTH: NOVEMBER

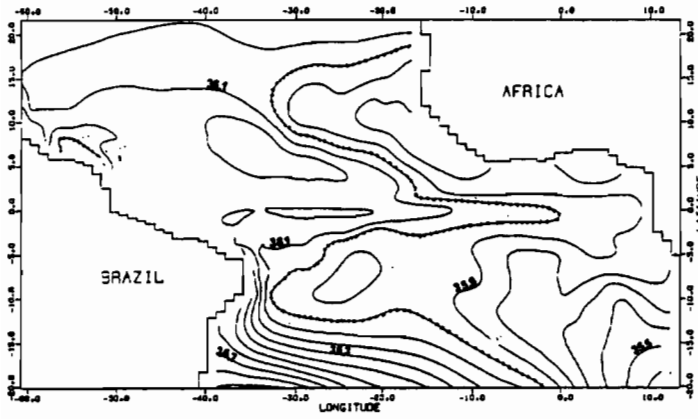


MONTH: DECEMBER

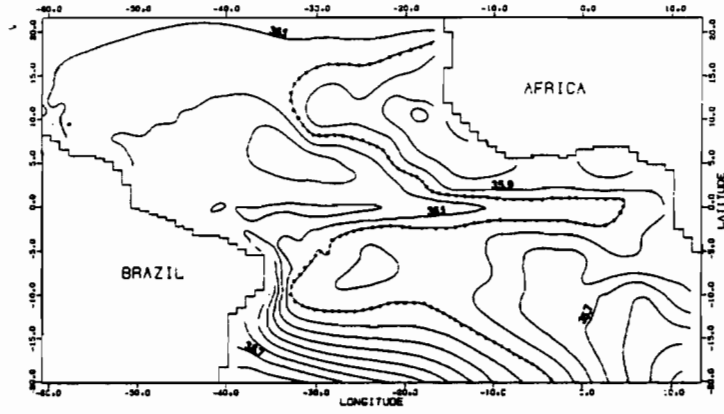


SALINITY AT 65m (dotted line: 36‰)

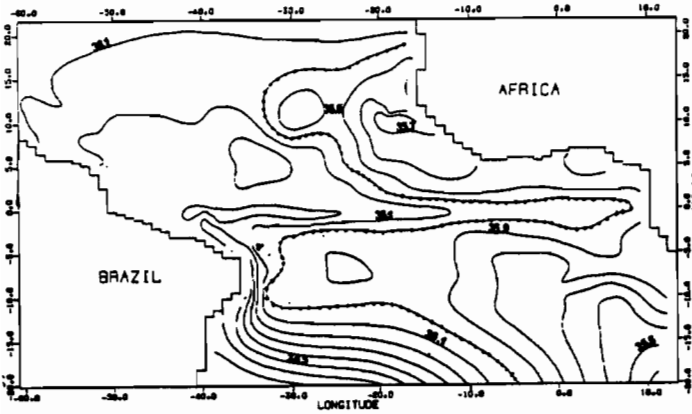
MONTH: JANUARY



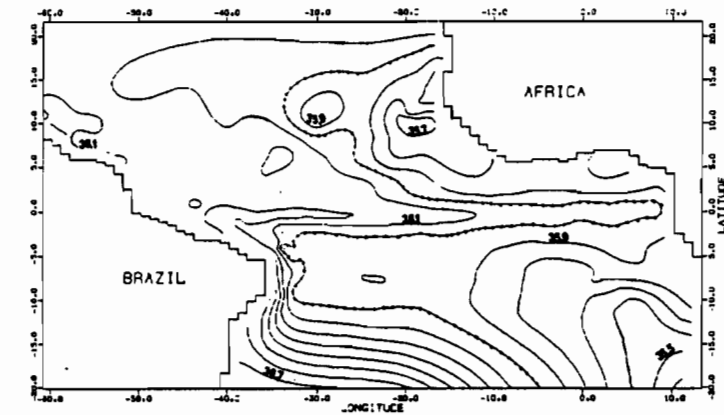
MONTH: FEBRUARY



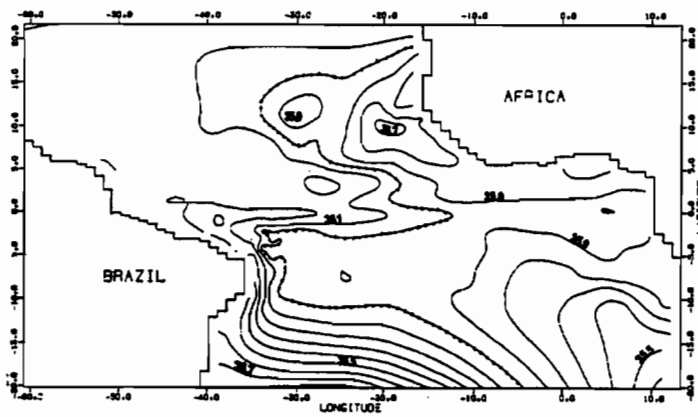
MONTH: MARCH



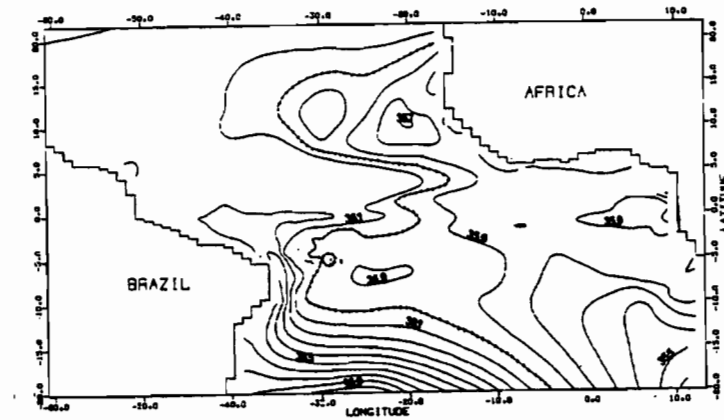
MONTH: APRIL



MONTH: MAY

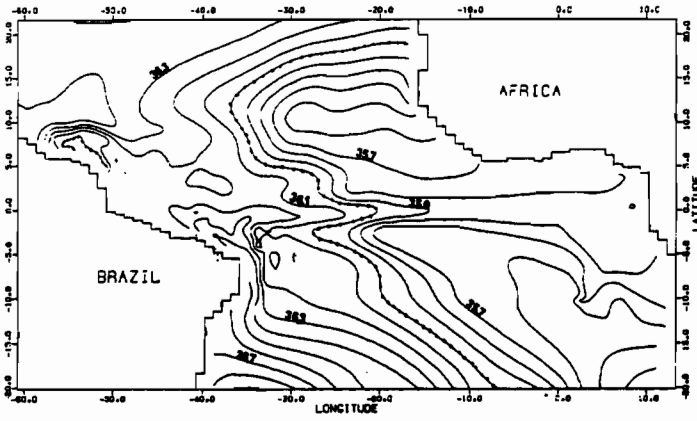


MONTH: JUNE

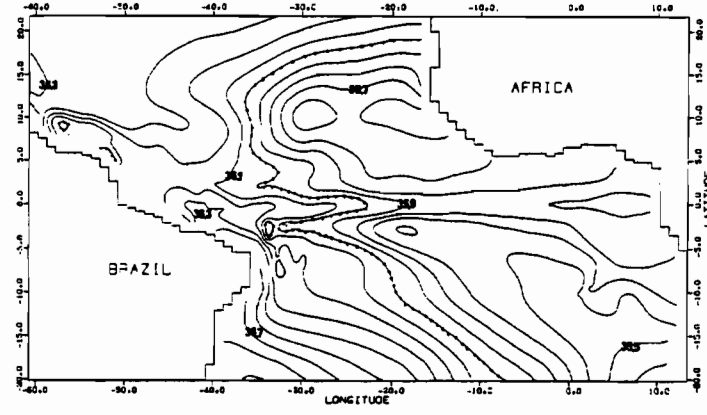


SALINITY AT 95m (dotted line: 36‰)

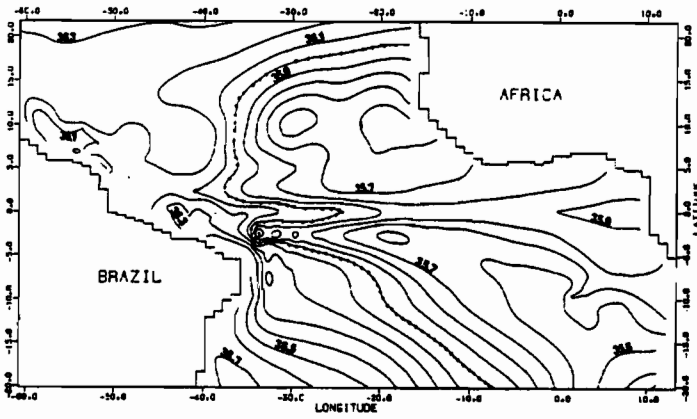
MONTH: JANUARY



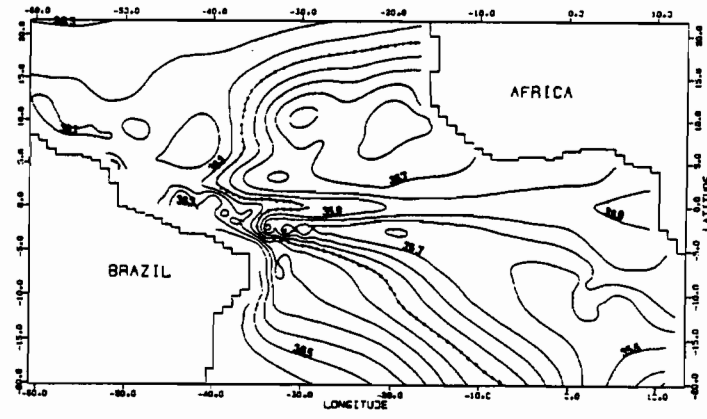
MONTH: FEBRUARY



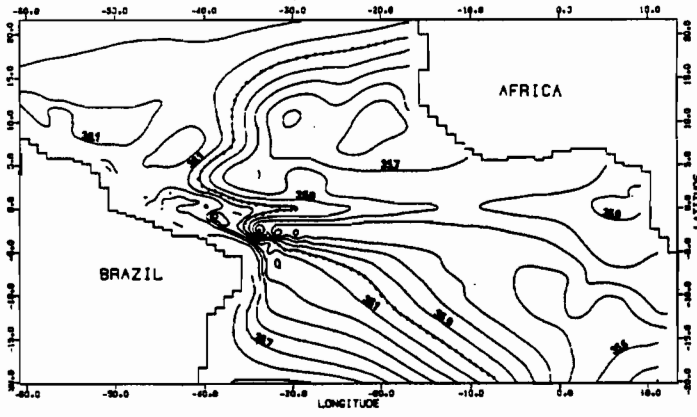
MONTH: MARCH



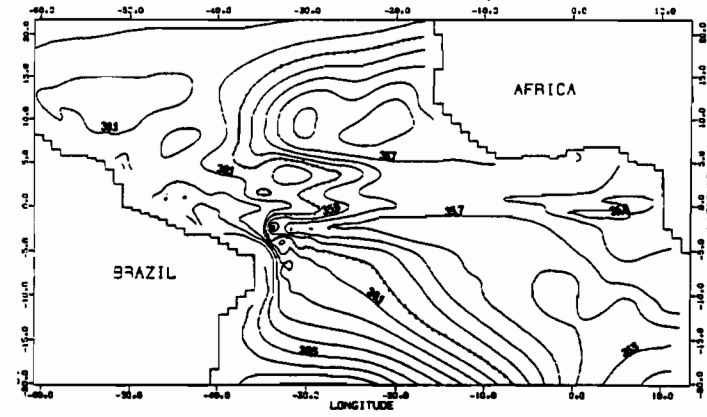
MONTH: APRIL



MONTH: MAY



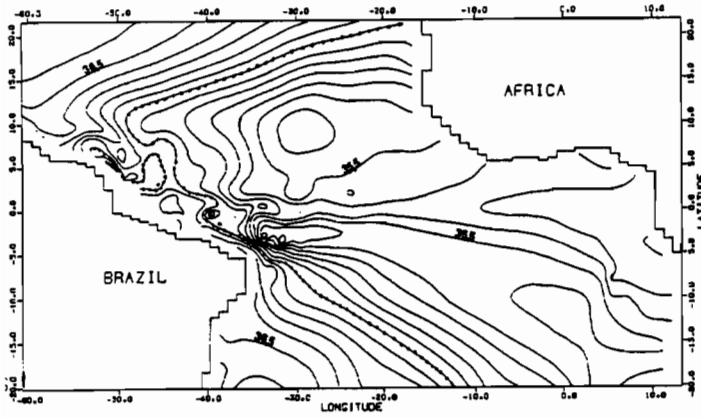
MONTH: JUNE



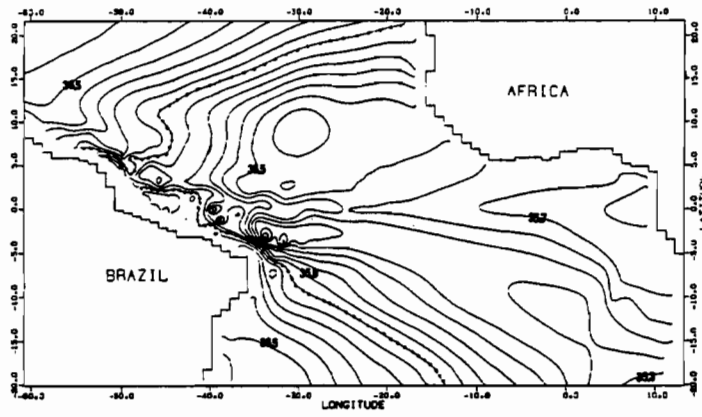
SALINITY AT 136.25m

(dotted line: 36‰)

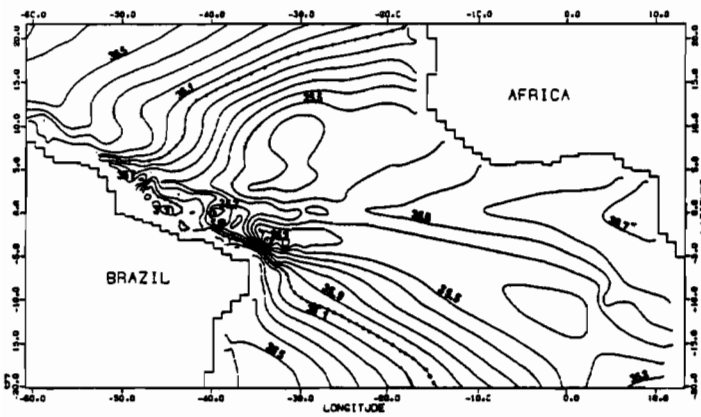
MONTH: JANUARY



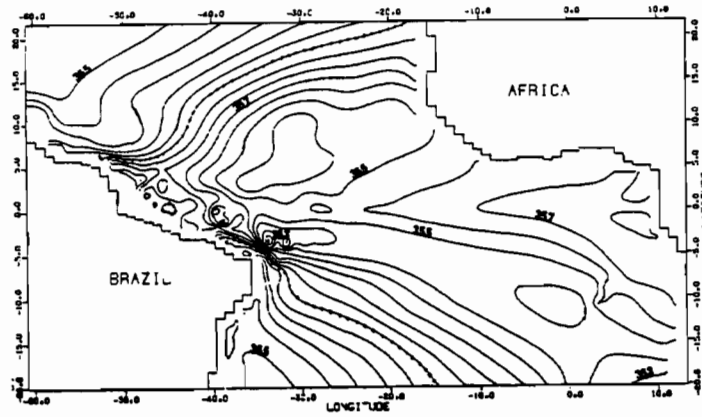
MONTH: FEBRUARY



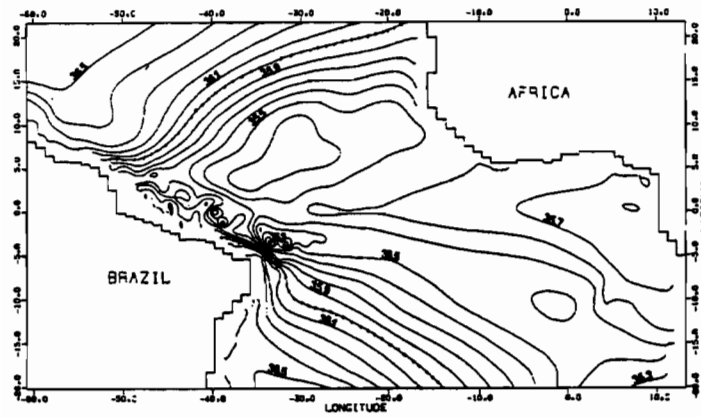
MONTH: MARCH



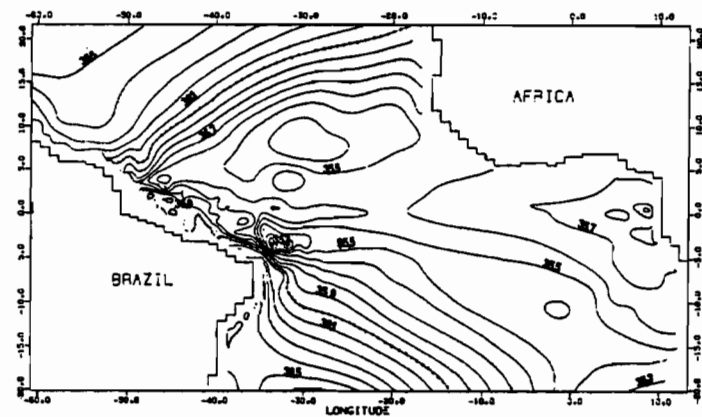
MONTH: APRIL



MONTH: MAY

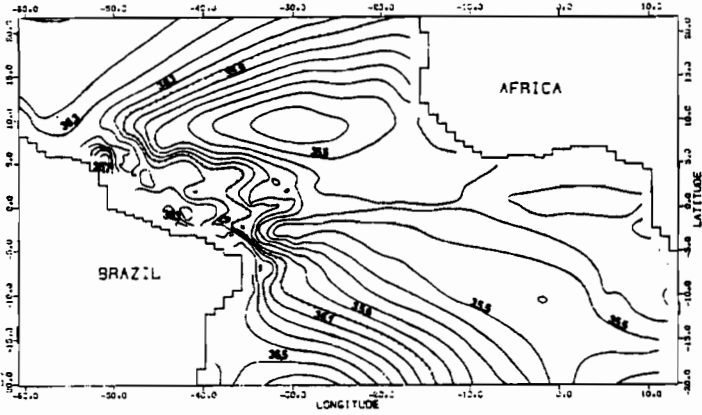


MONTH: JUNE

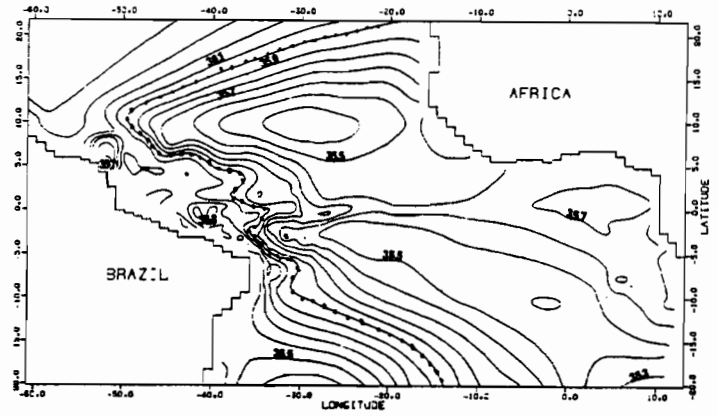


SALINITY AT 136.25m (dotted line: 36‰)

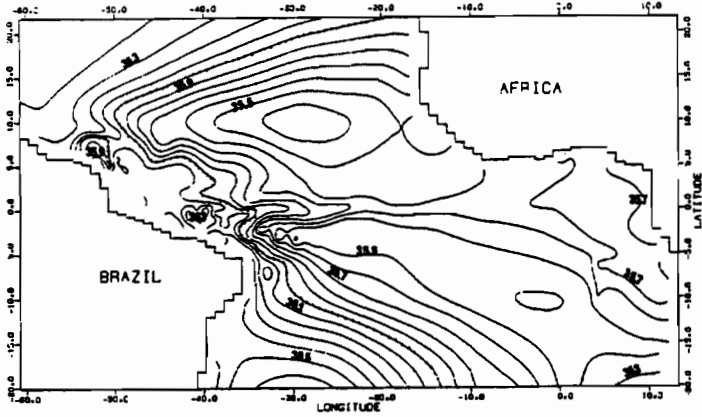
MONTH: JULY



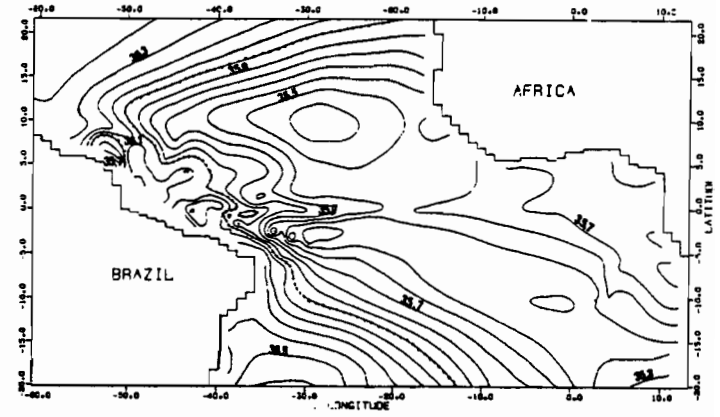
MONTH: AUGUST



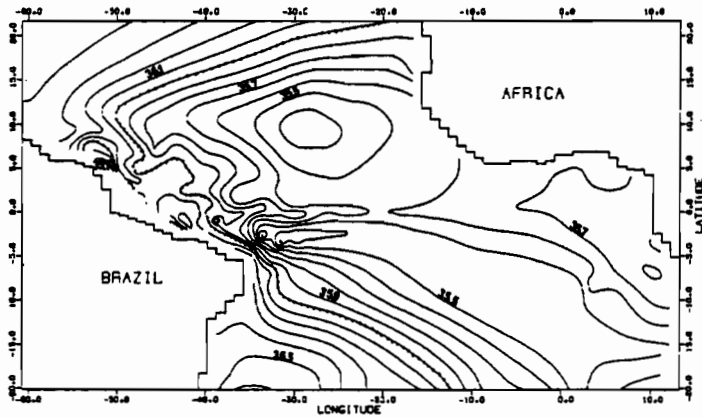
MONTH: SEPTEMBER



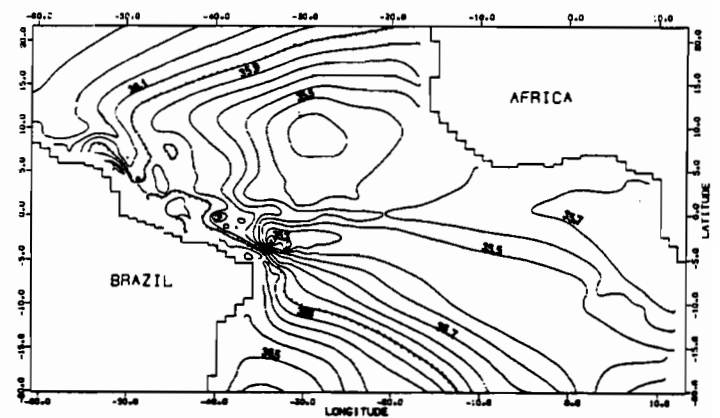
MONTH: OCTOBER



MONTH: NOVEMBER

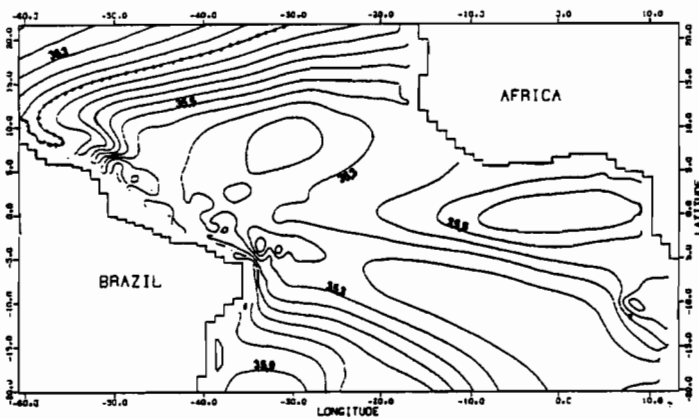


MONTH: DECEMBER

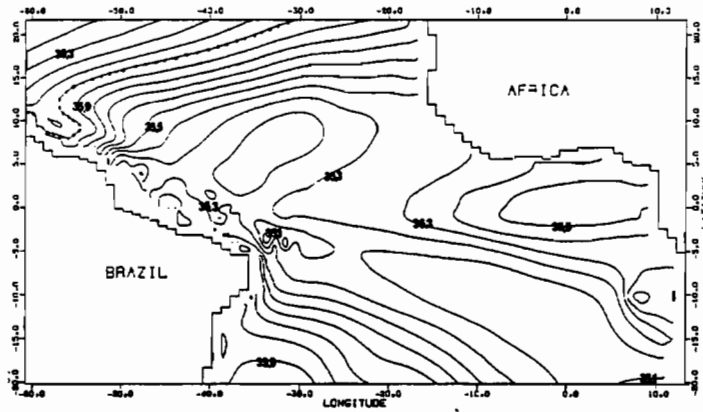


SALINITY AT 205m (dotted line: 36‰)

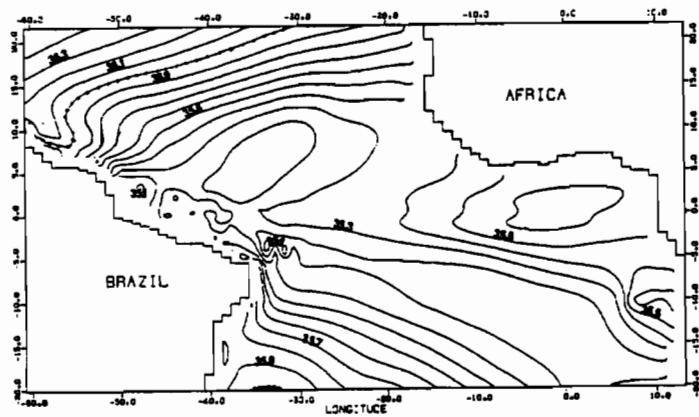
MONTH: JANUARY



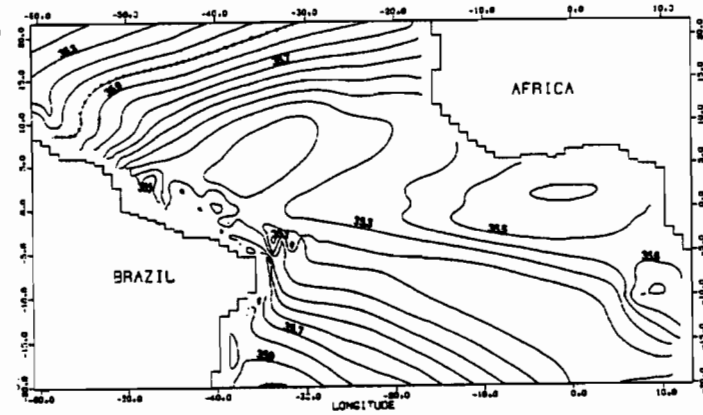
MONTH: FEBRUARY



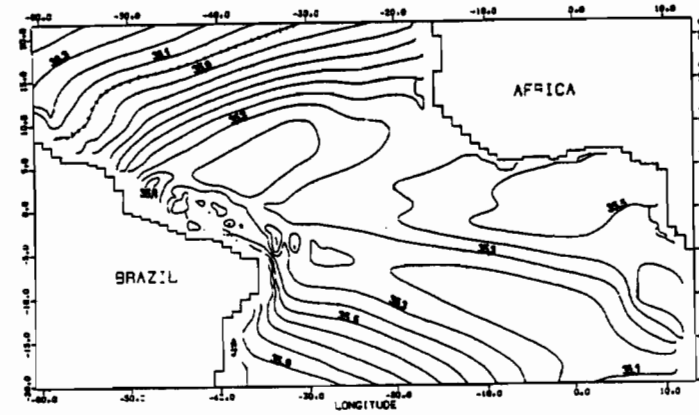
MONTH: MARCH



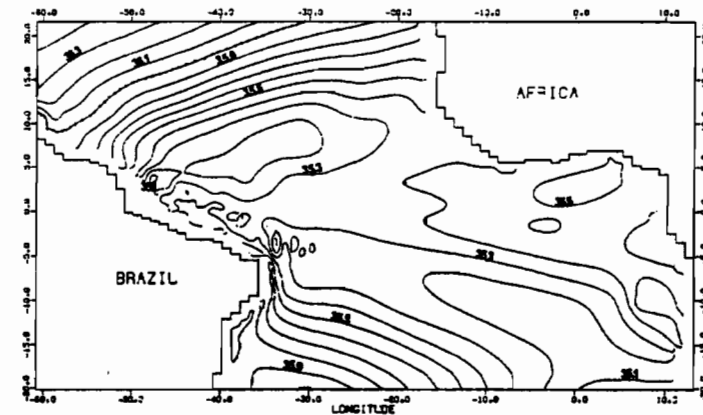
MONTH: APRIL



MONTH: MAY



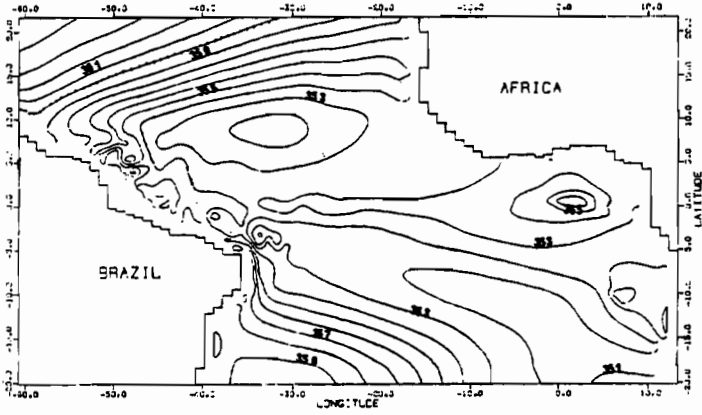
MONTH: JUNE



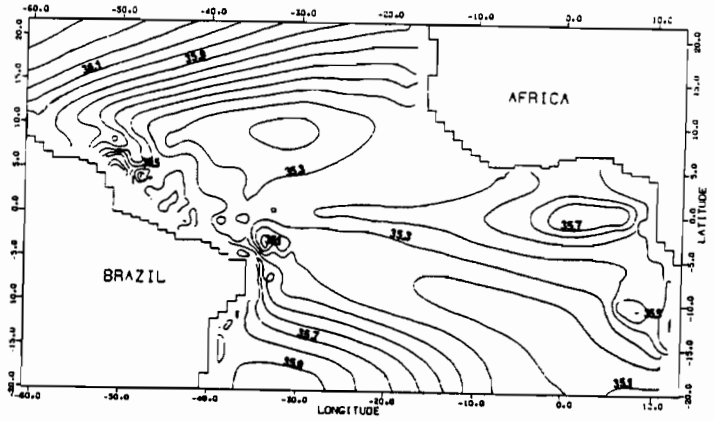
SALINITY AT 205m

(dotted line: 36‰)

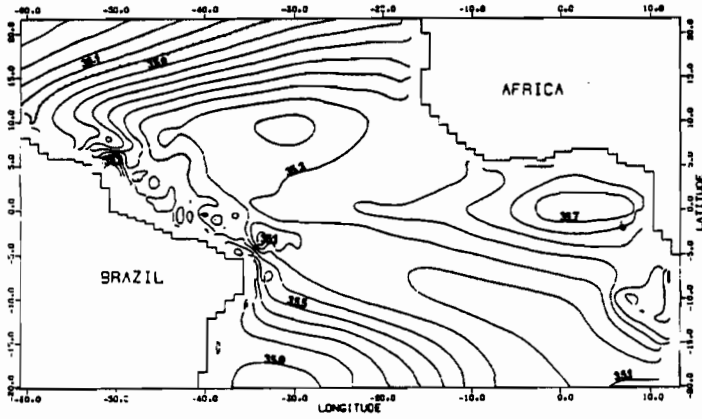
MONTH: JULY



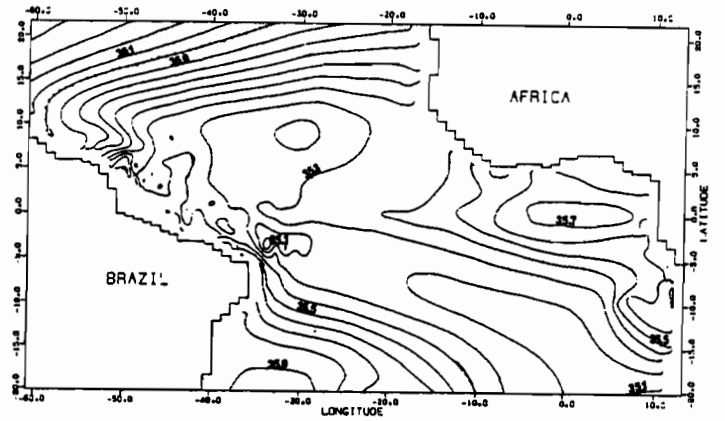
MONTH: AUGUST



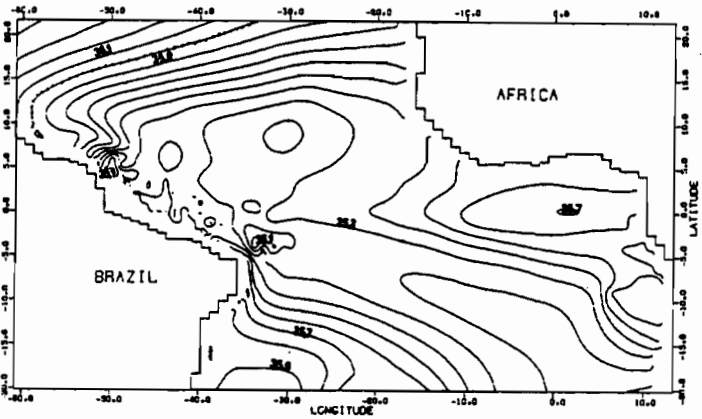
MONTH: SEPTEMBER



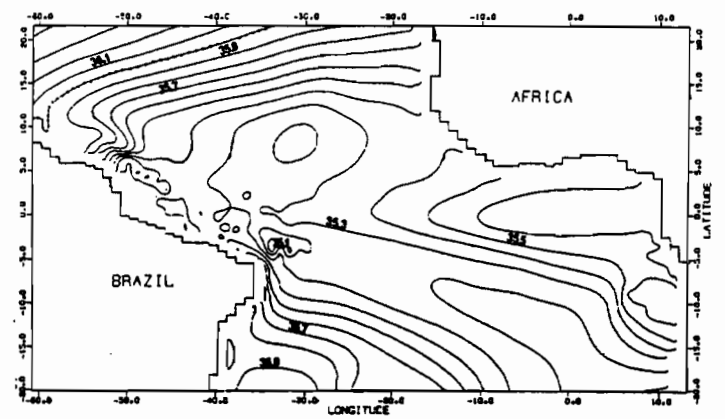
MONTH: OCTOBER



MONTH: NOVEMBER
DEPTH: 20500 cm



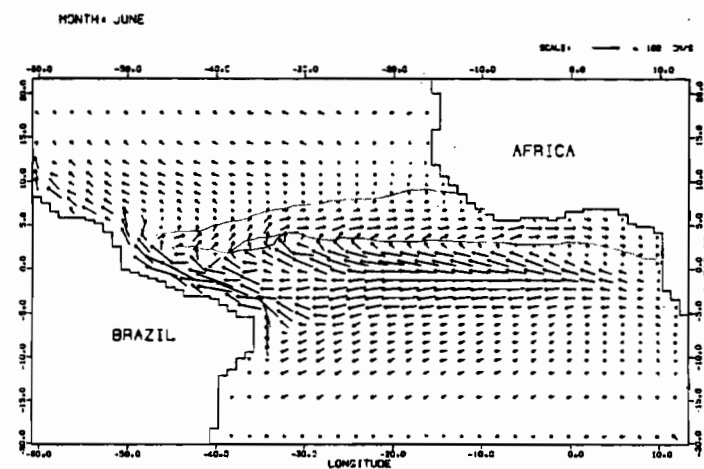
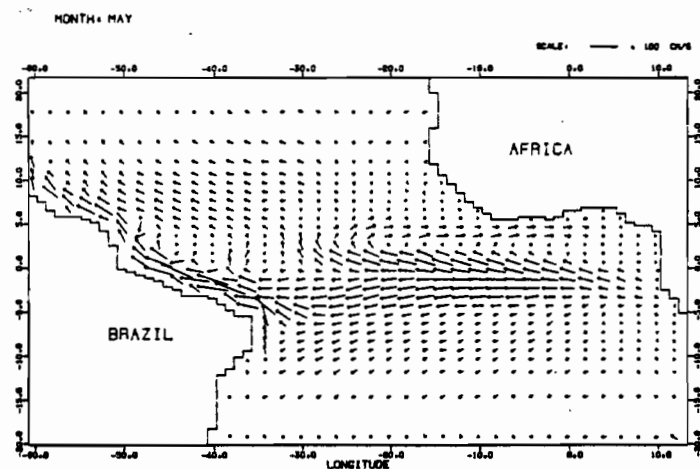
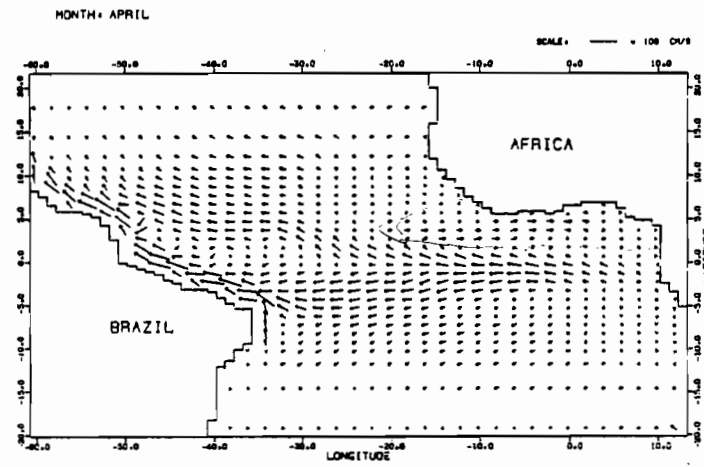
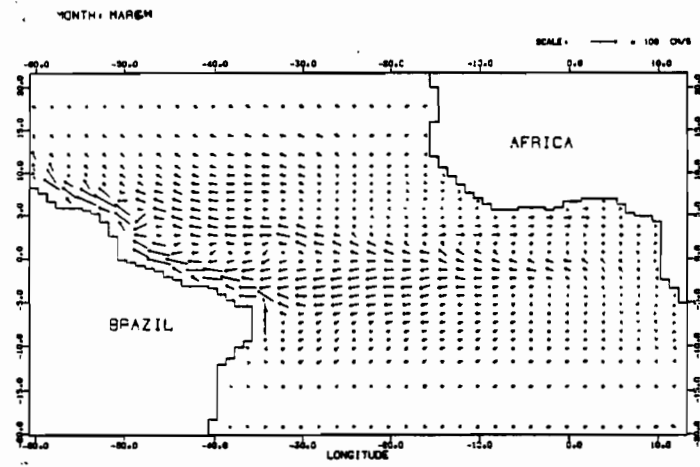
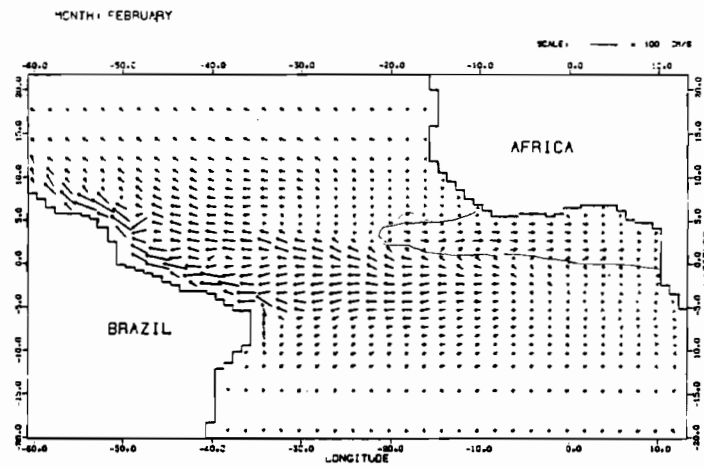
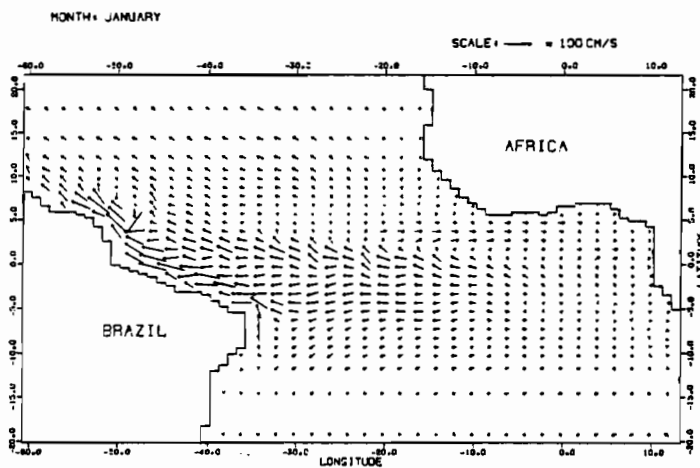
MONTH: DECEMBER



MAPS OF HORIZONTAL VELOCITY AT:

* 5 m:			
	months:	- january to june.	p. 30
		- july to december.	p. 31
* 35 m:			
	months:	- january to june.	p. 32
		- july to december.	p. 33
* 65 m:			
	months:	- january to june.	p. 34
		- july to december.	p. 35
* 95 m:			
	months:	- january to june.	p. 36
		- july to december.	p. 37
* 136.25 m:			
	months:	- january to june.	p. 38
		- july to december.	p. 39
* 205 m:			
	months:	- january to june.	p. 40
		- july to december.	p. 41

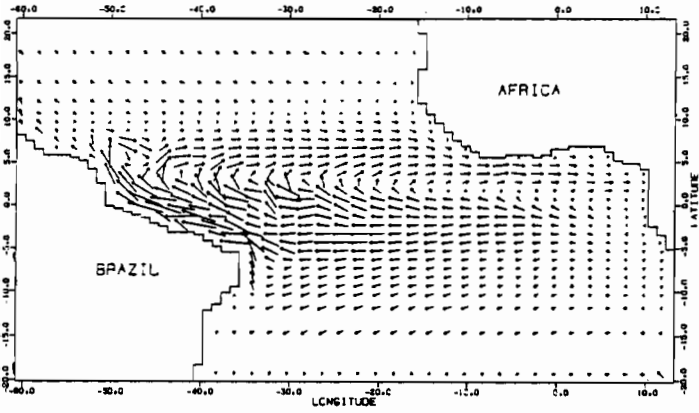
HORIZONTAL VELOCITY AT 5m



HORIZONTAL VELOCITY AT 5m

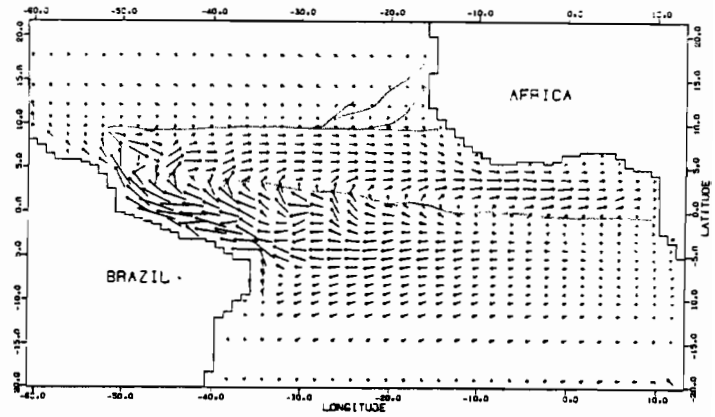
MONTH: JULY

SCALE: — = 100 CM/S



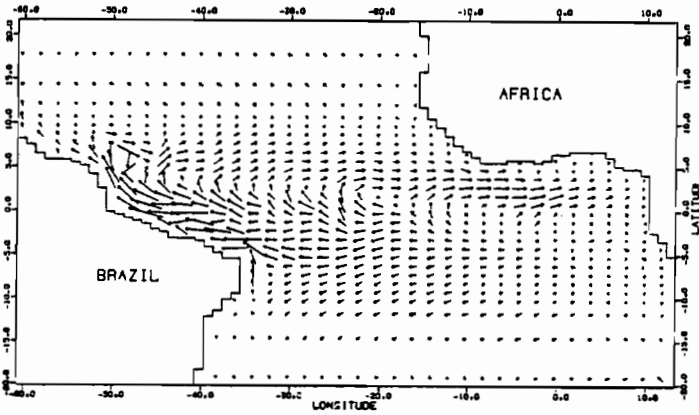
MONTH: AUGUST

SCALE: — = 100 CM/S



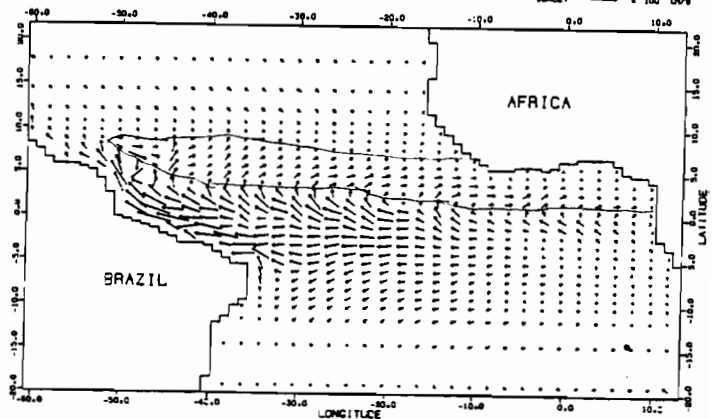
MONTH: SEPTEMBER

SCALE: — = 100 CM/S



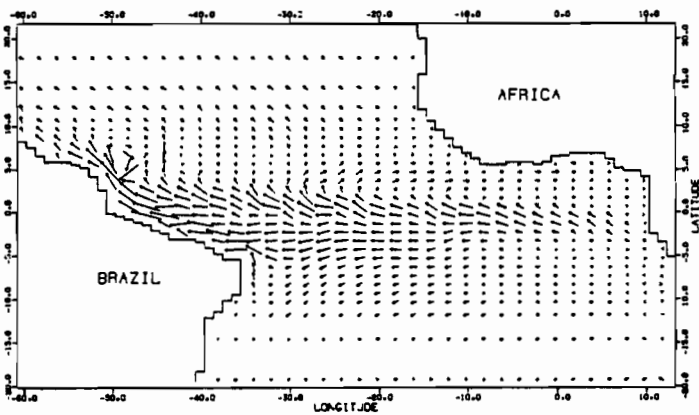
MONTH: OCTOBER

SCALE: — = 100 CM/S



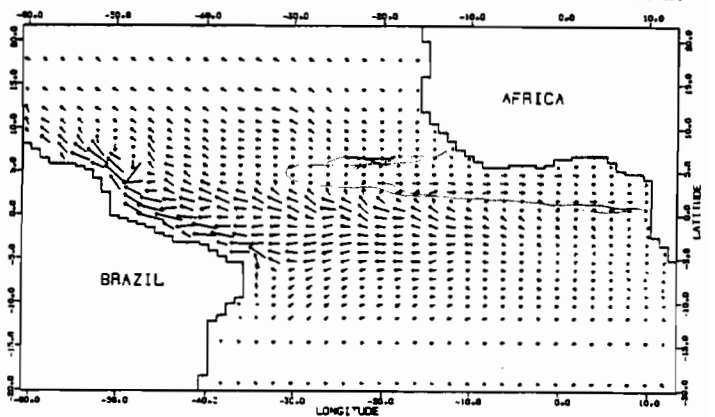
MONTH: NOVEMBER

SCALE: — = 100 CM/S

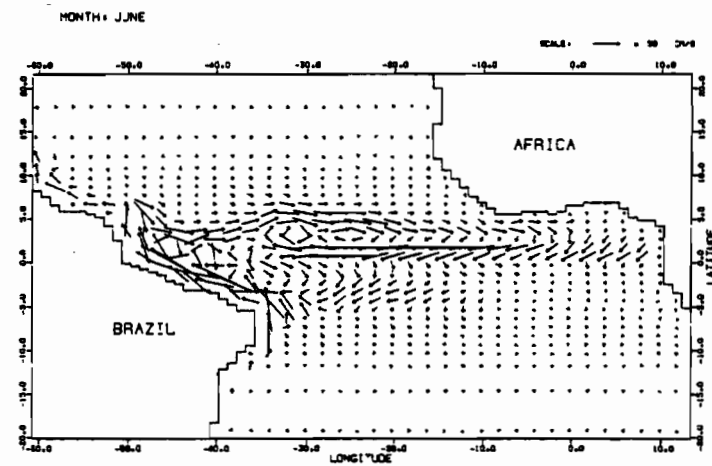
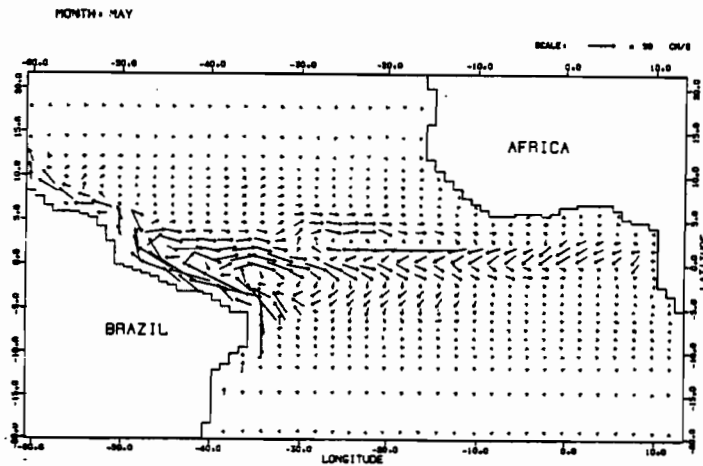
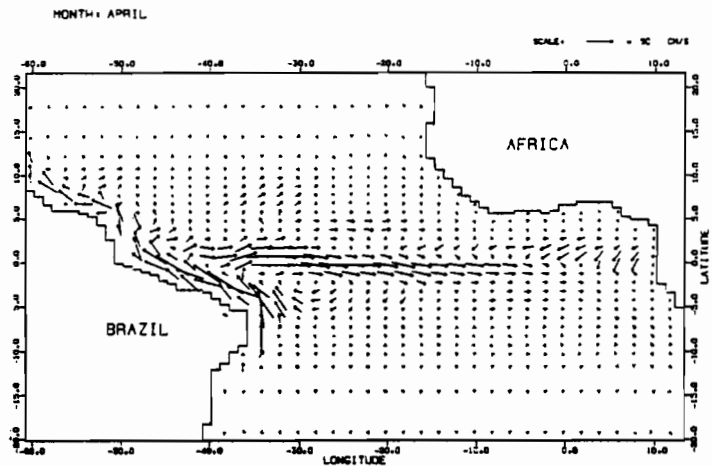
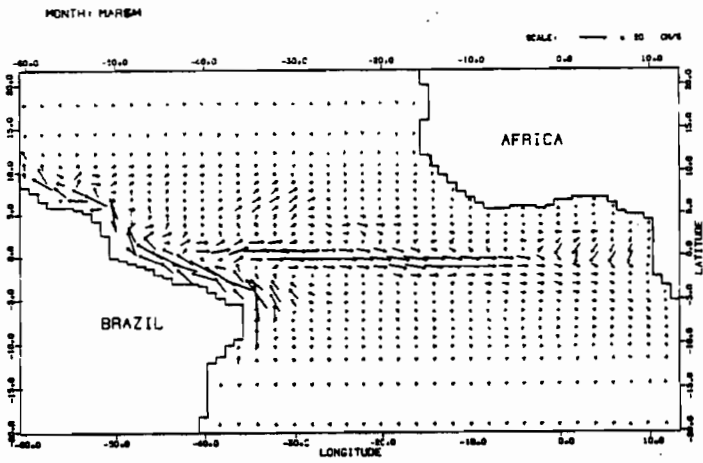
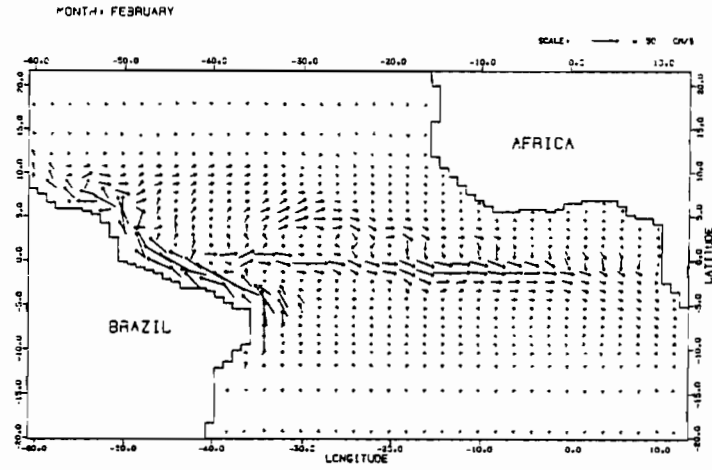
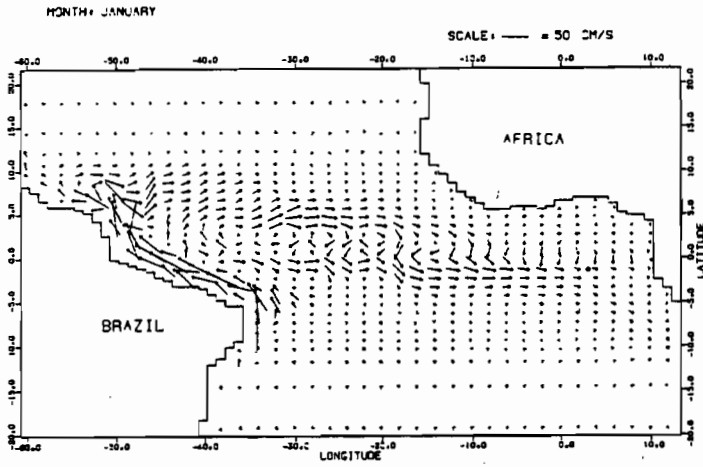


MONTH: DECEMBER

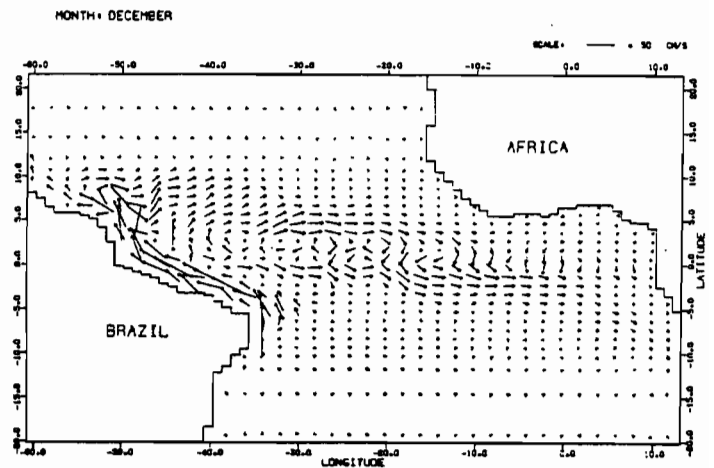
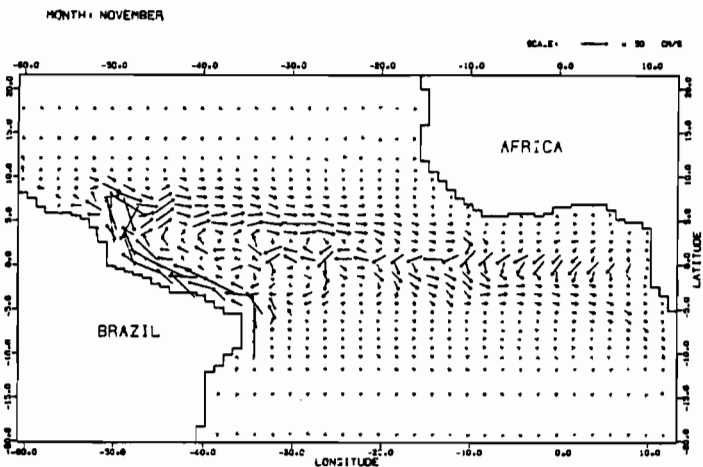
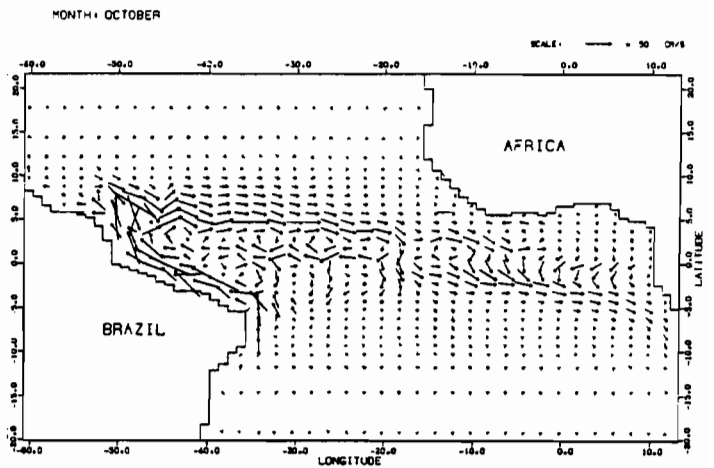
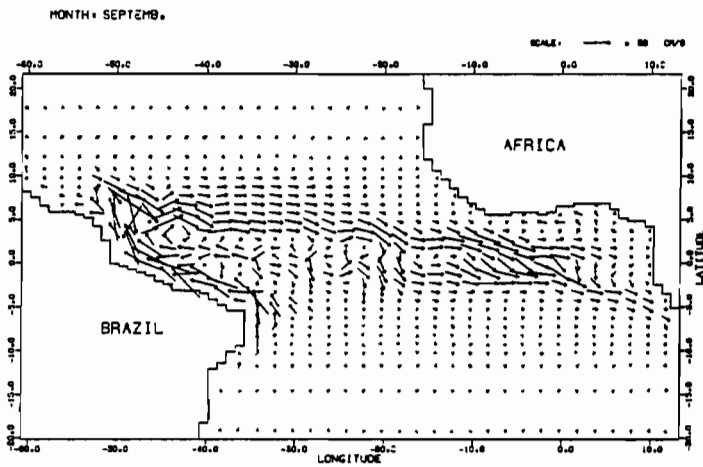
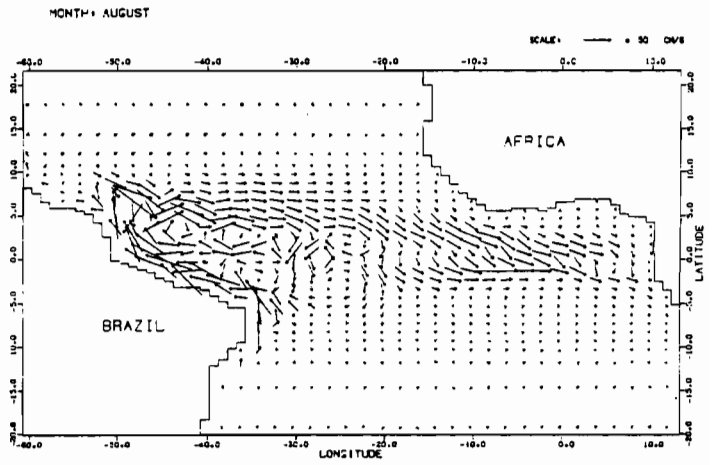
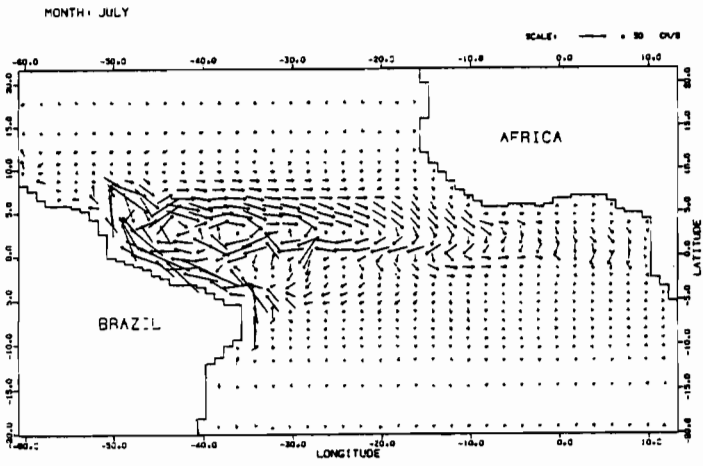
SCALE: — = 100 CM/S



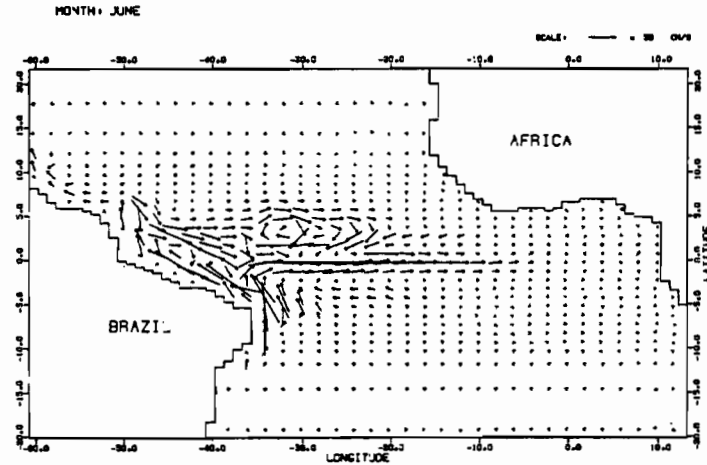
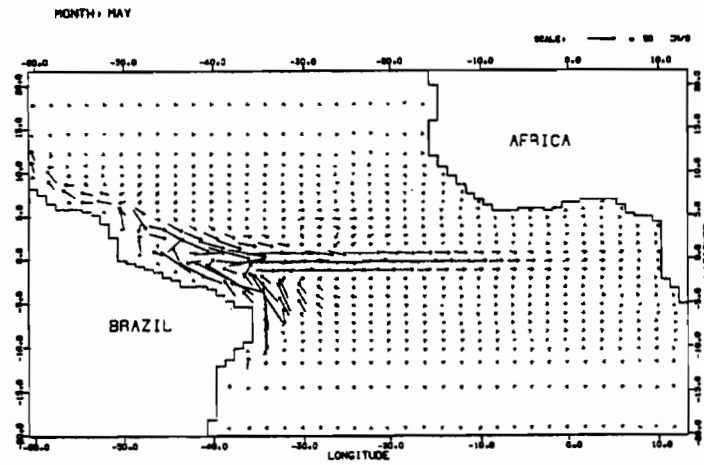
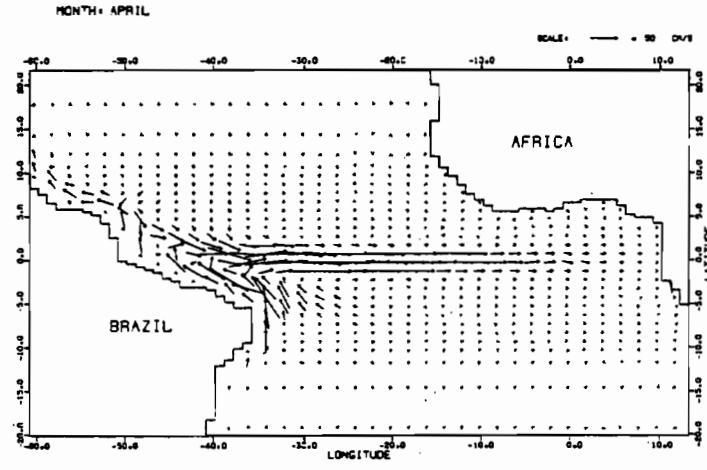
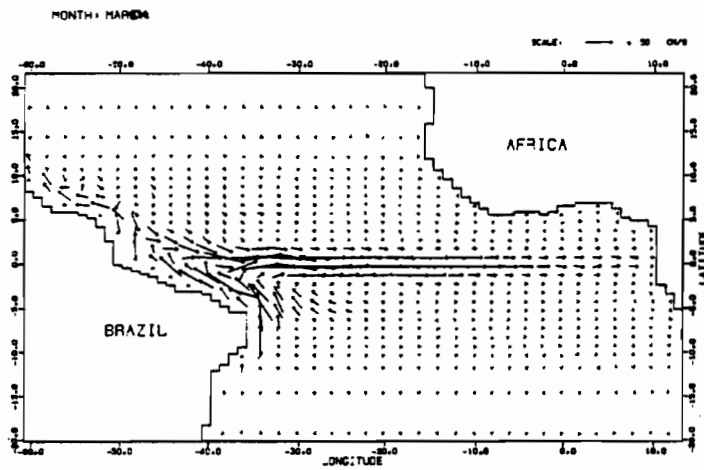
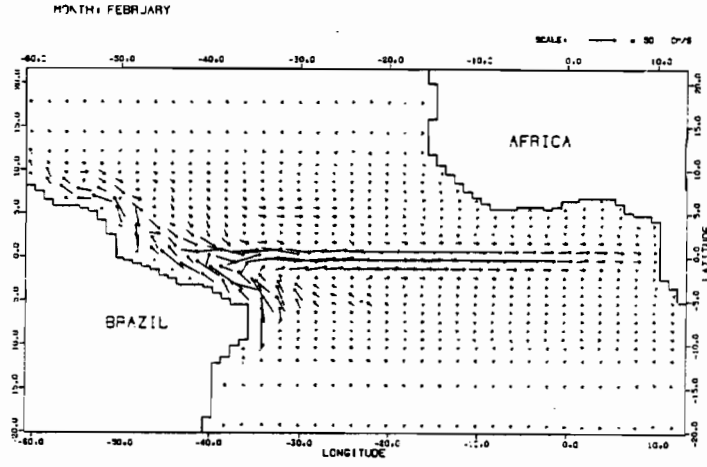
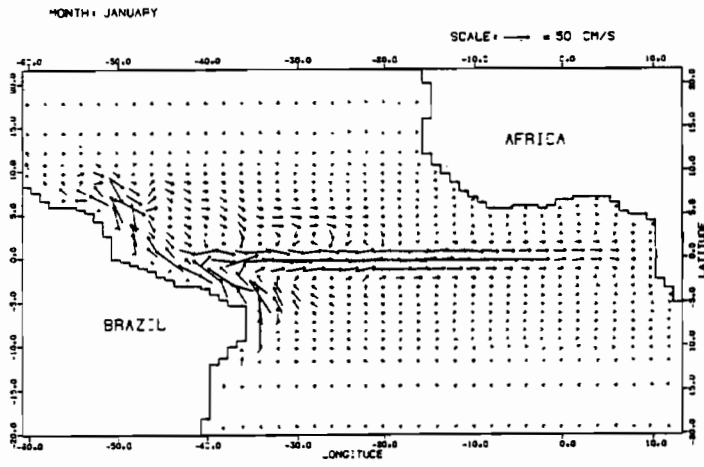
HORIZONTAL VELOCITY AT 35m



HORIZONTAL VELOCITY AT 35m



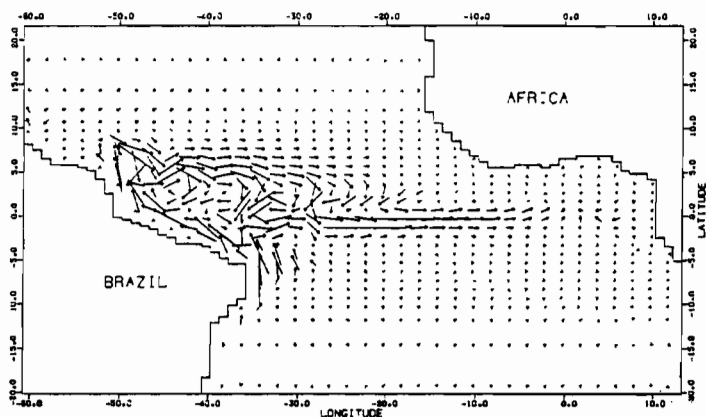
HORIZONTAL VELOCITY AT 65m



HORIZONTAL VELOCITY AT 65m

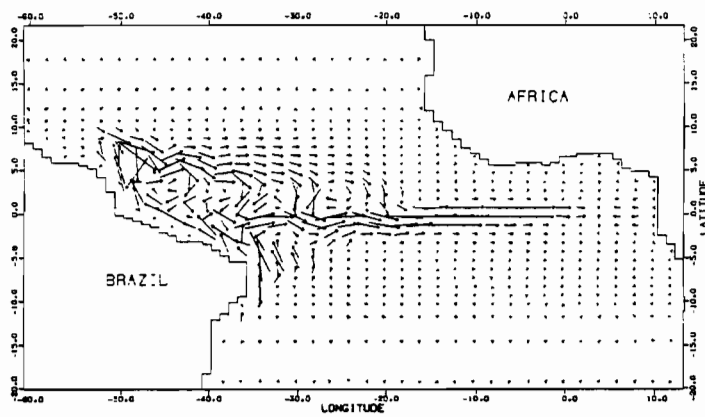
MONTH: JULY

SCALE: — = 50 CM/S



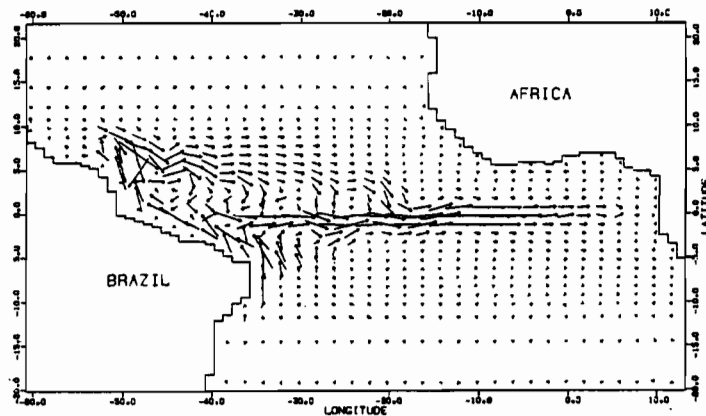
MONTH: AUGUST

SCALE: — = 50 CM/S



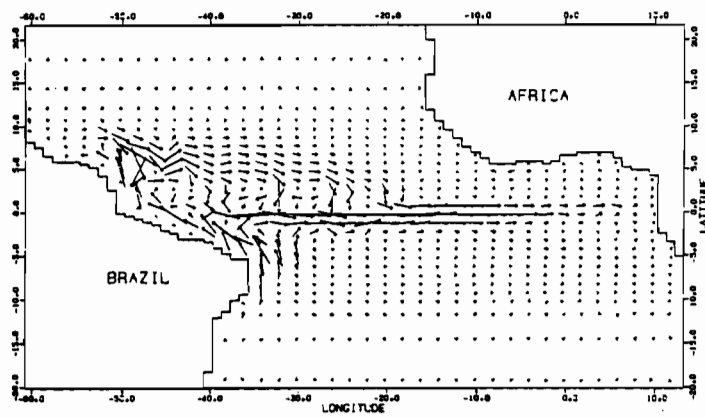
MONTH: SEPTEMBER

SCALE: — = 50 CM/S



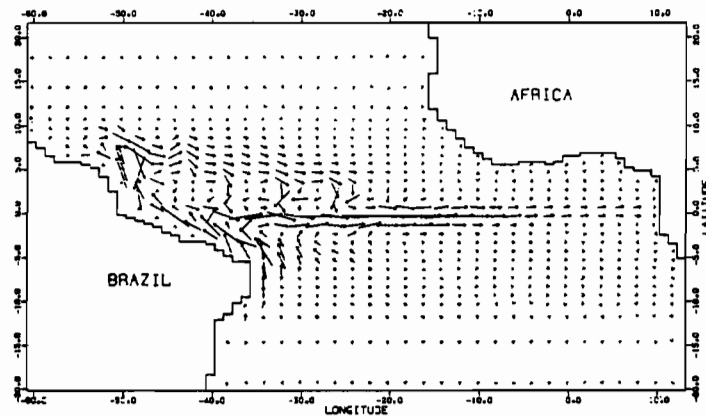
MONTH: OCTOBER

SCALE: — = 50 CM/S



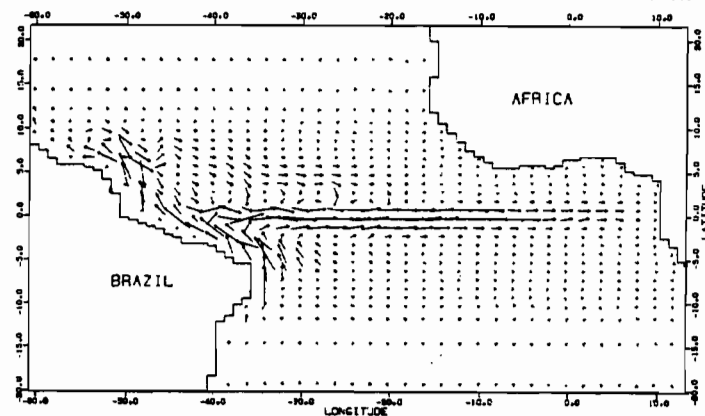
MONTH: NOVEMBER

SCALE: — = 50 CM/S

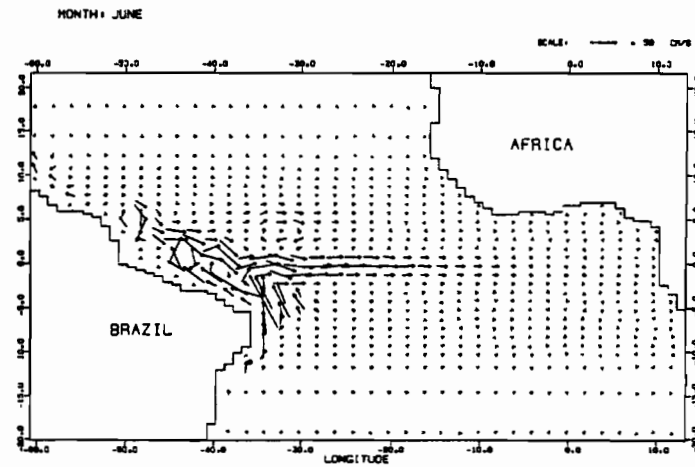
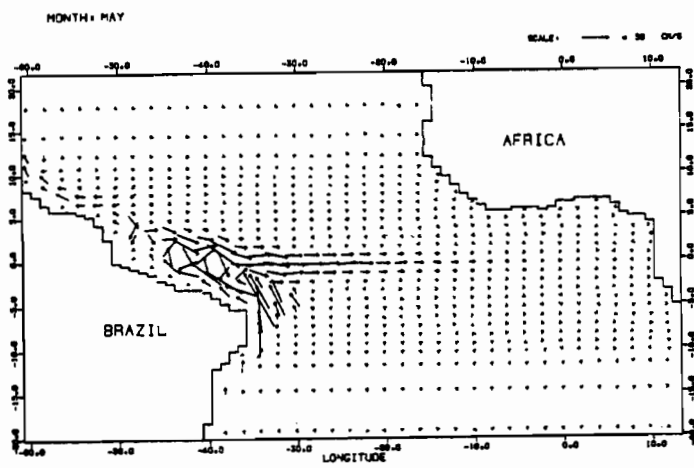
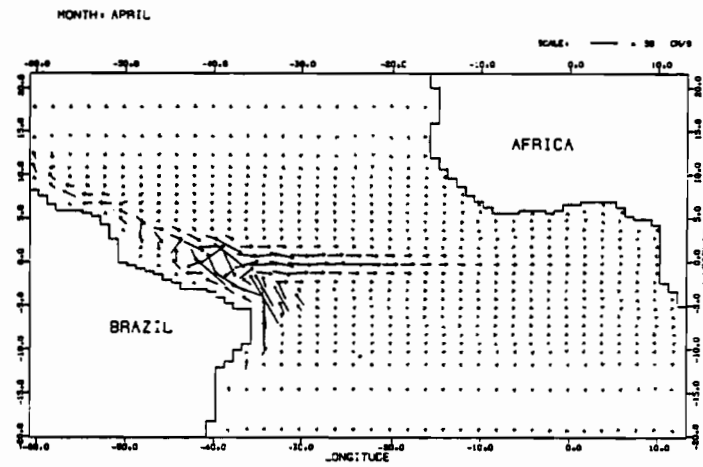
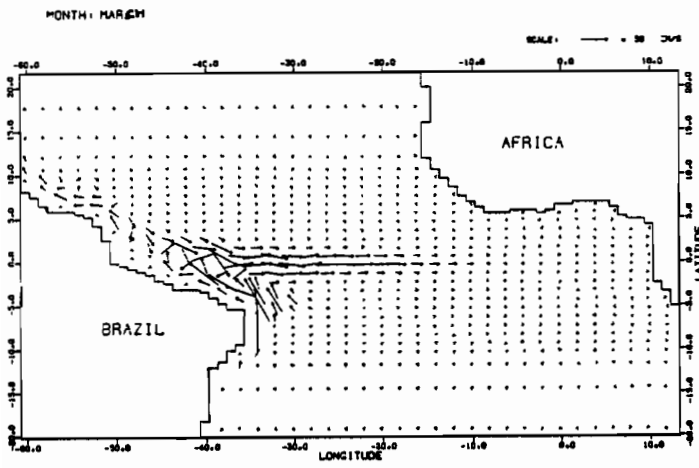
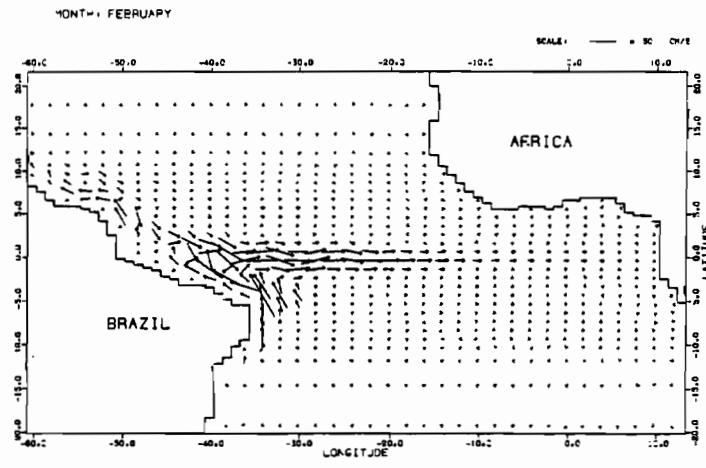
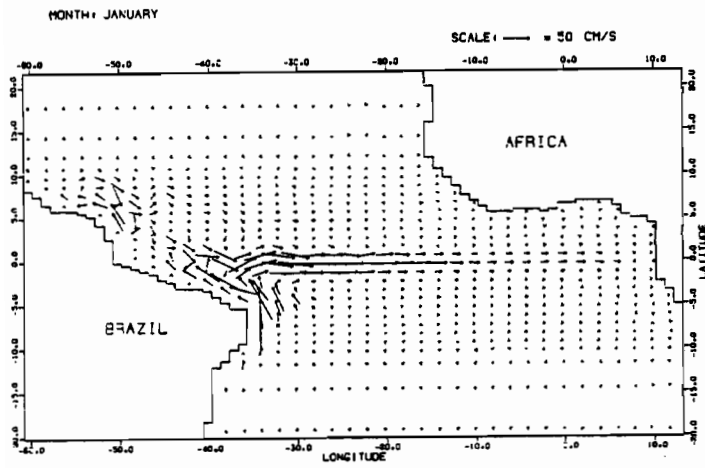


MONTH: DECEMBER

SCALE: — = 50 CM/S



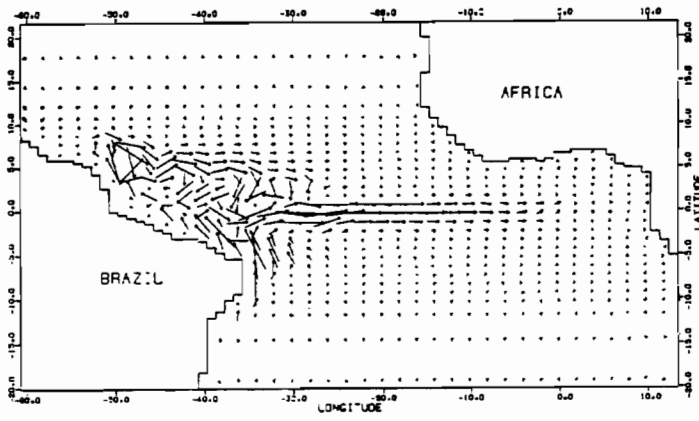
HORIZONTAL VELOCITY AT 95m



HORIZONTAL VELOCITY AT 95m

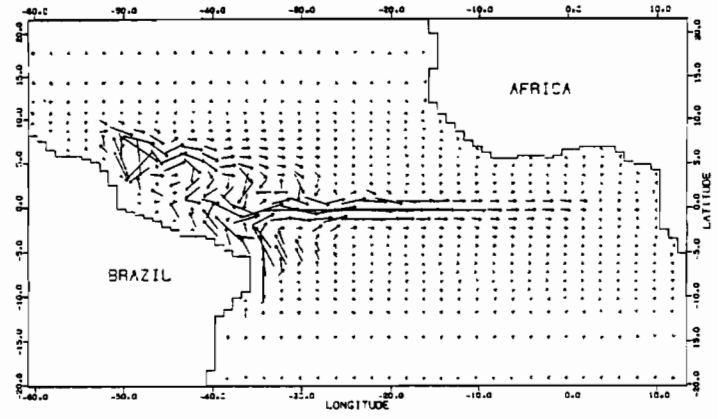
MONTH: JULY

SCALE: — = 30 CM/S



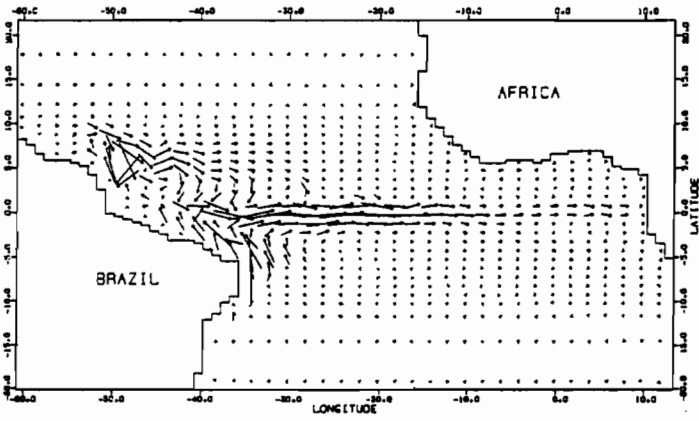
MONTH: AUGUST

SCALE: — = 30 CM/S



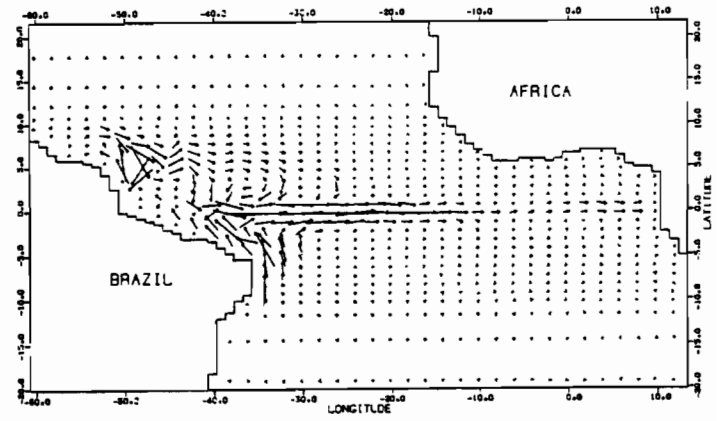
MONTH: SEPTEMB.

SCALE: — = 30 CM/S



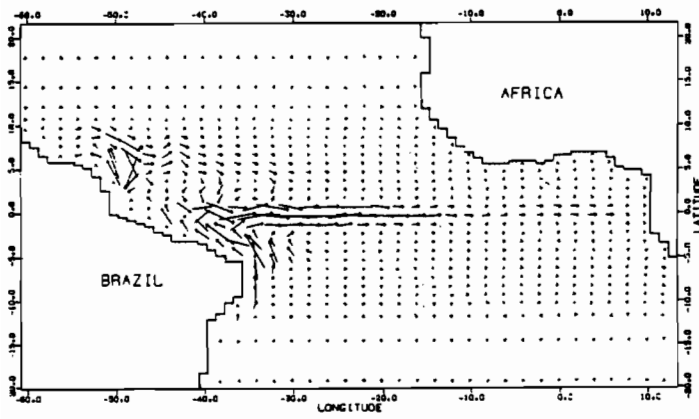
MONTH: OCTOBER

SCALE: — = 30 CM/S



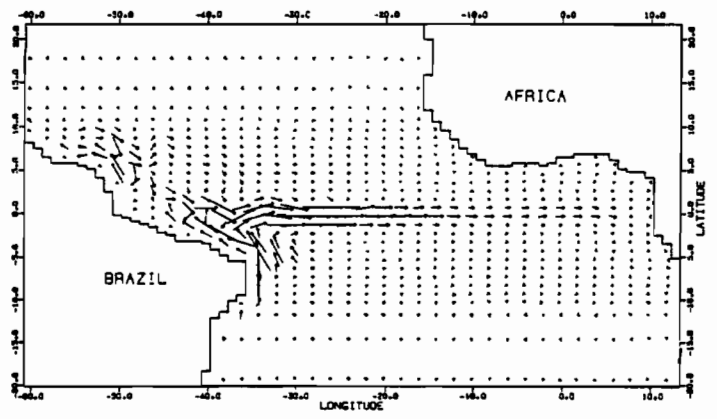
MONTH: NOVEMBER

SCALE: — = 30 CM/S

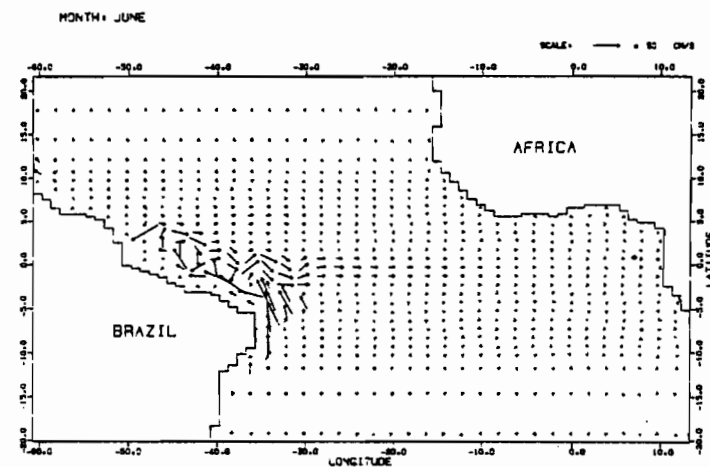
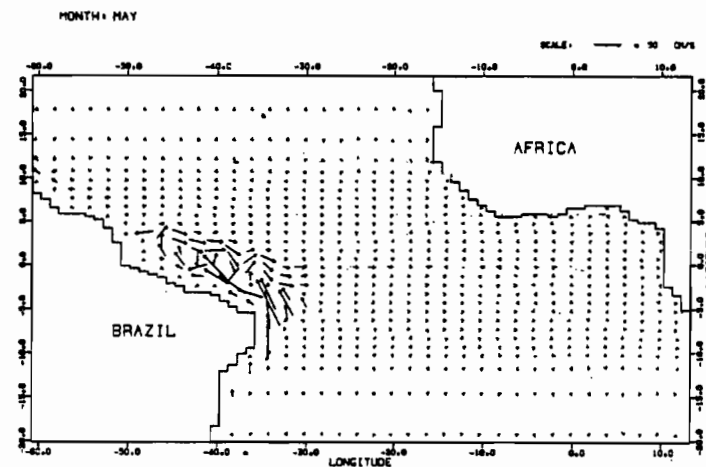
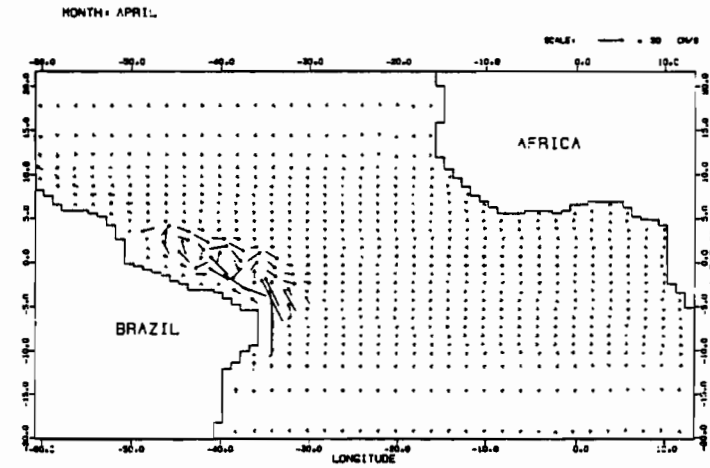
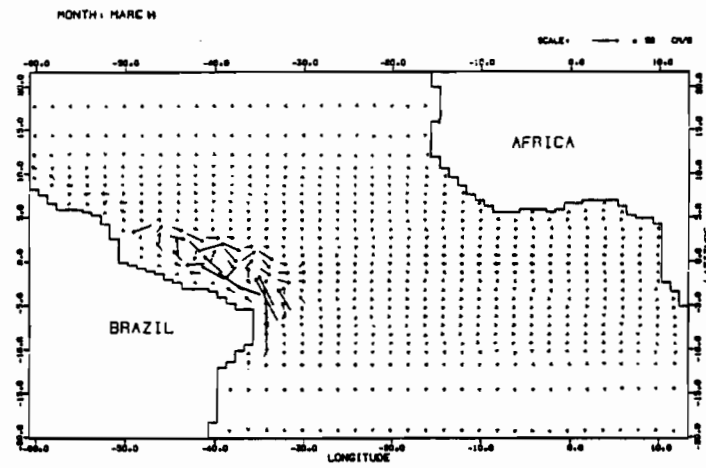
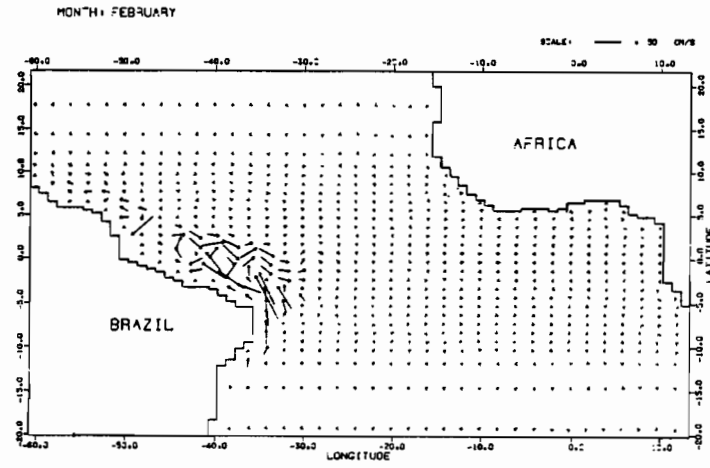
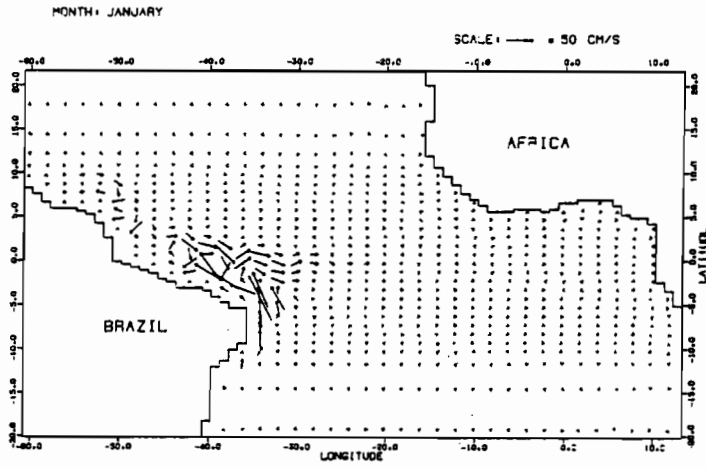


MONTH: DECEMBER

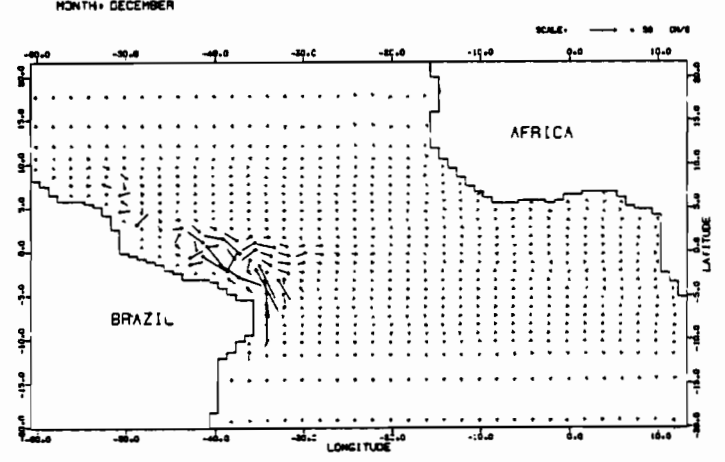
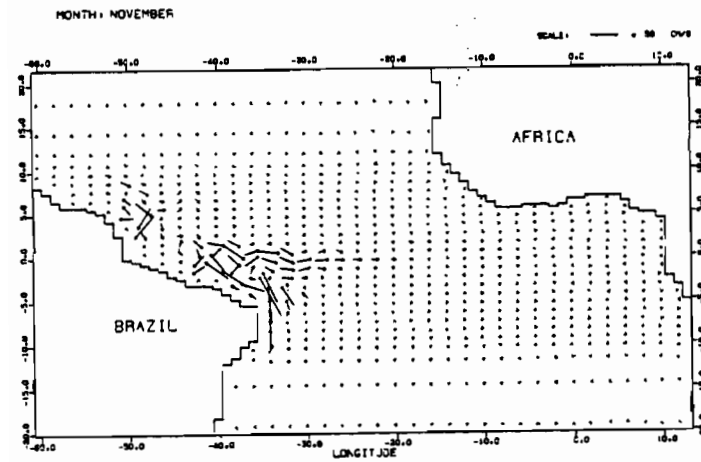
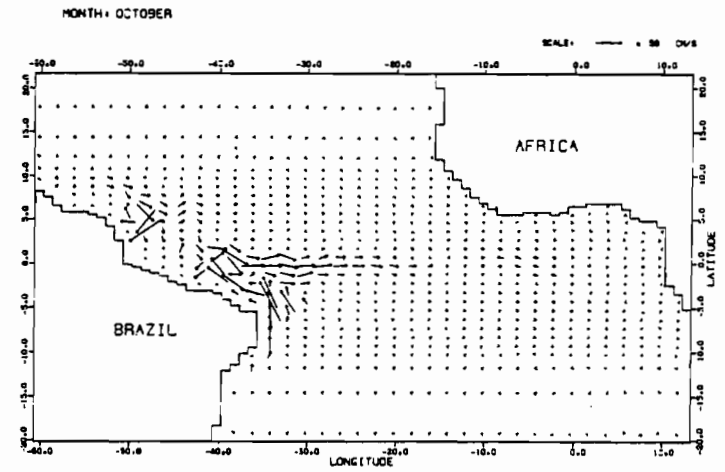
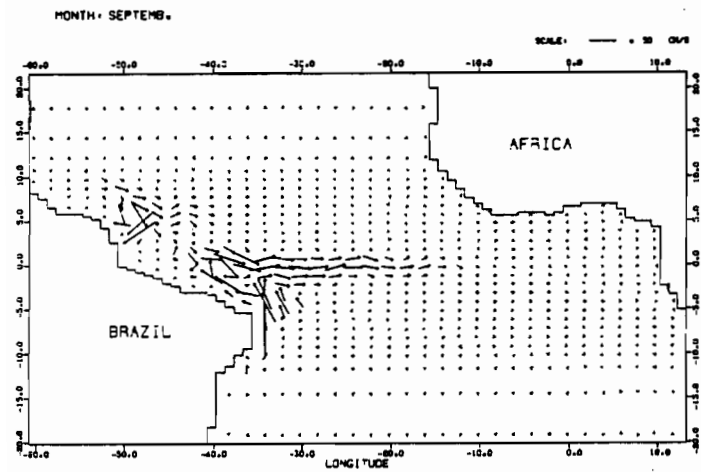
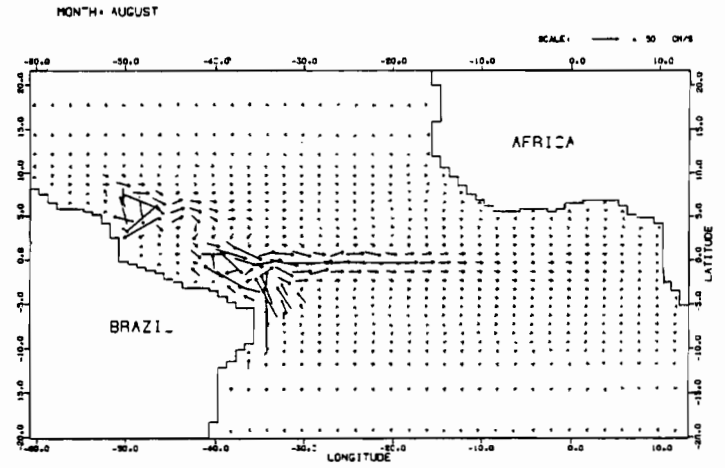
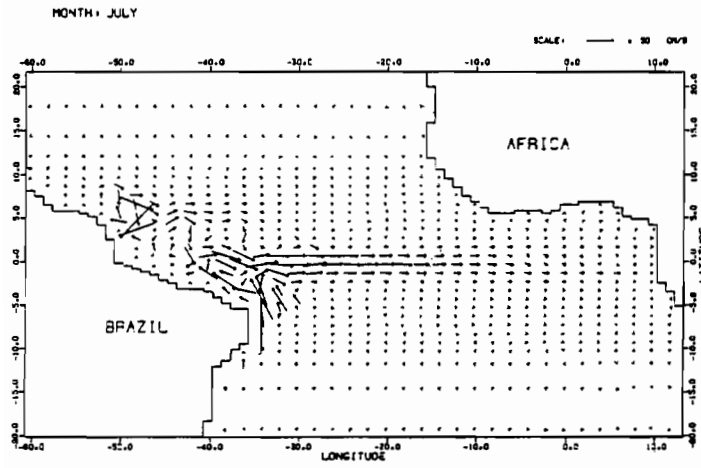
SCALE: — = 30 CM/S



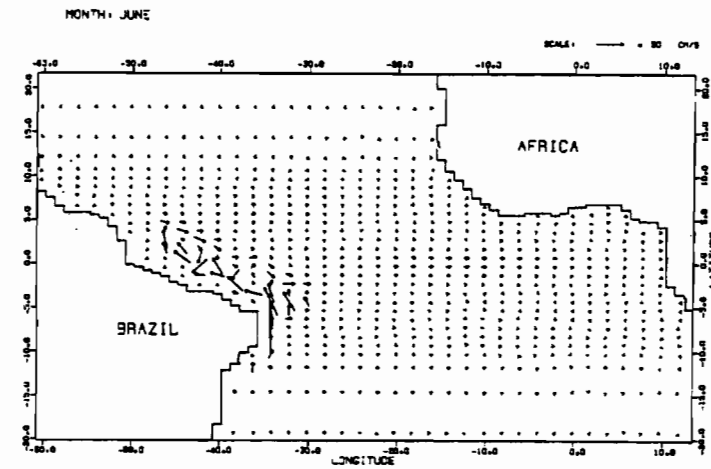
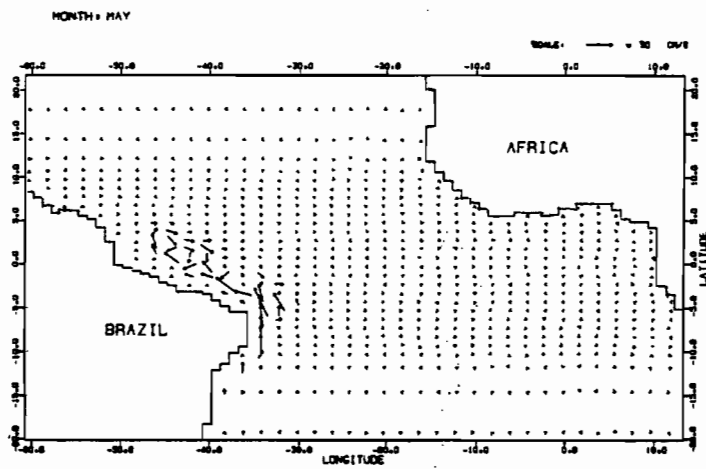
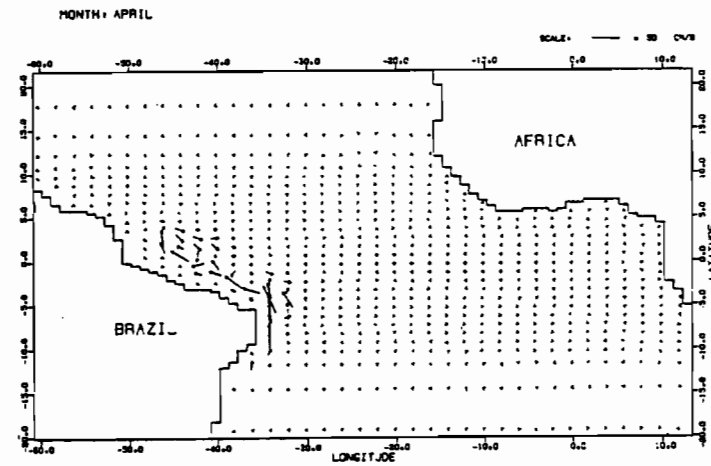
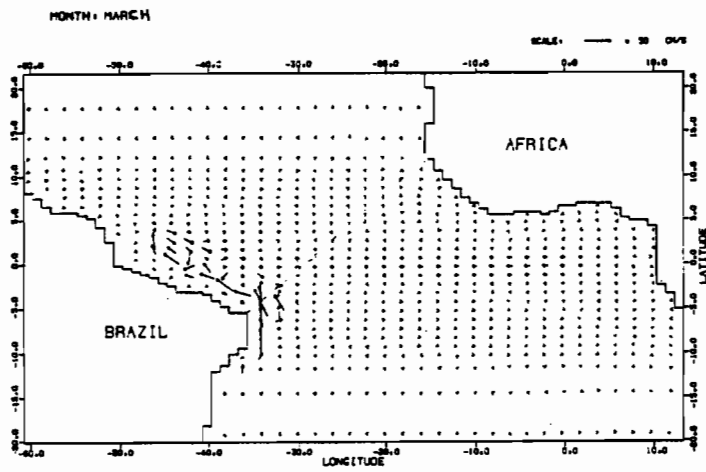
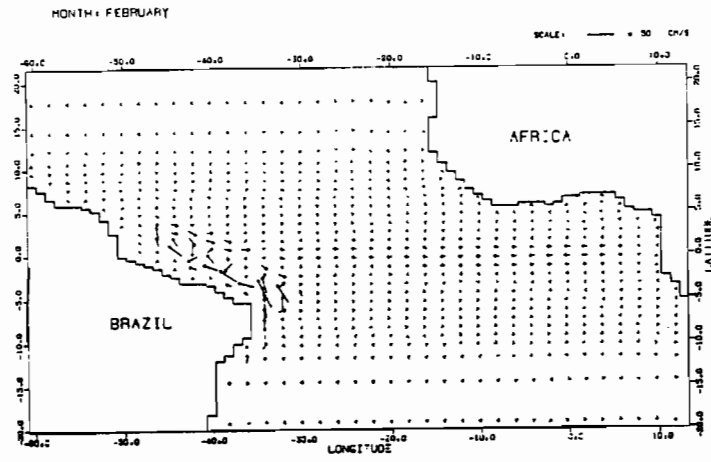
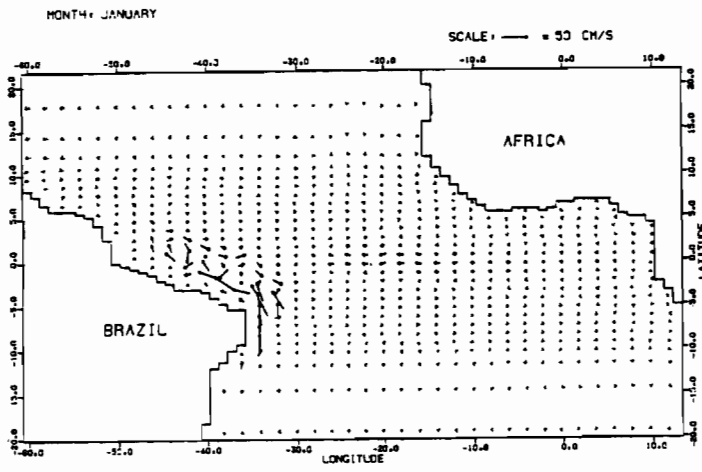
HORIZONTAL VELOCITY AT 136.25m



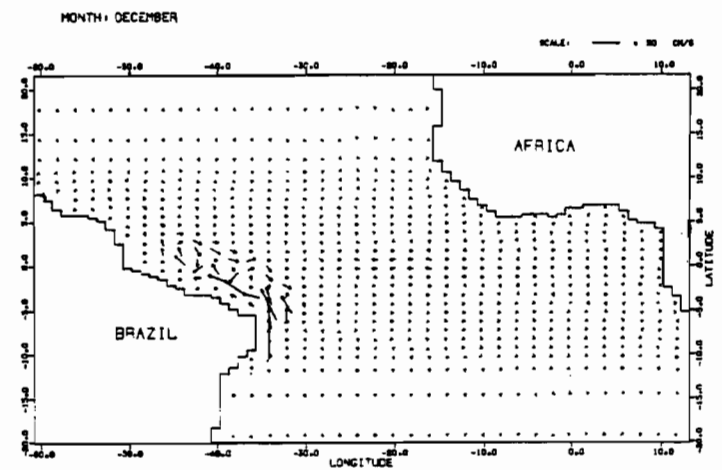
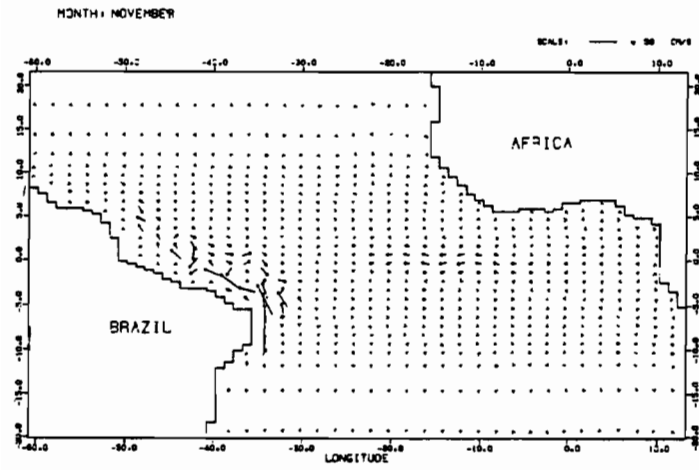
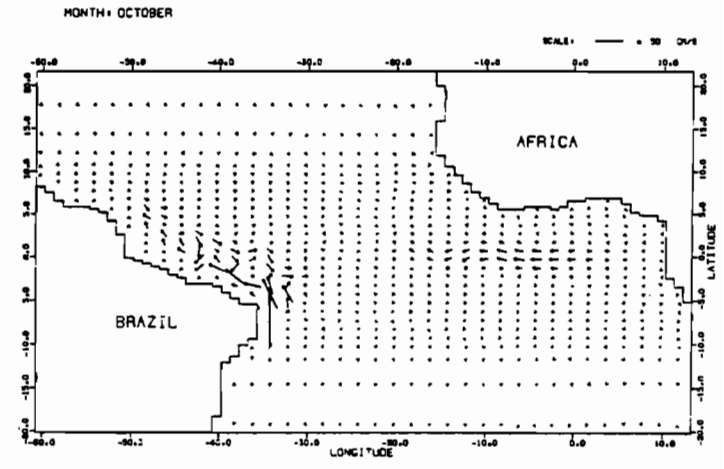
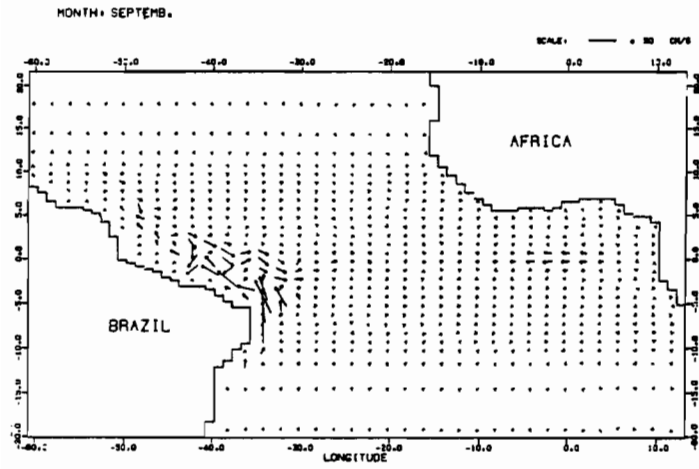
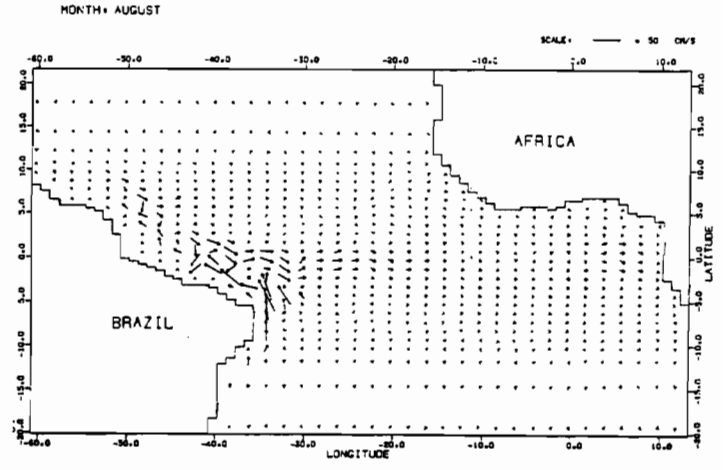
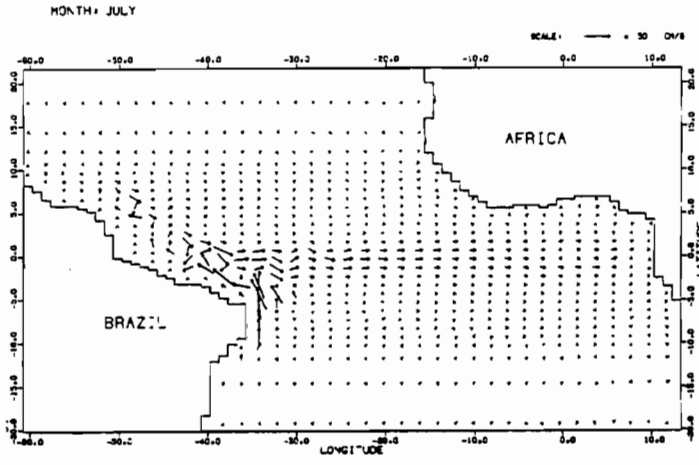
HORIZONTAL VELOCITY AT 136.25m



HORIZONTAL VELOCITY AT 205m



HORIZONTAL VELOCITY AT 205m



MAPS OF VERTICAL VELOCITY AT:

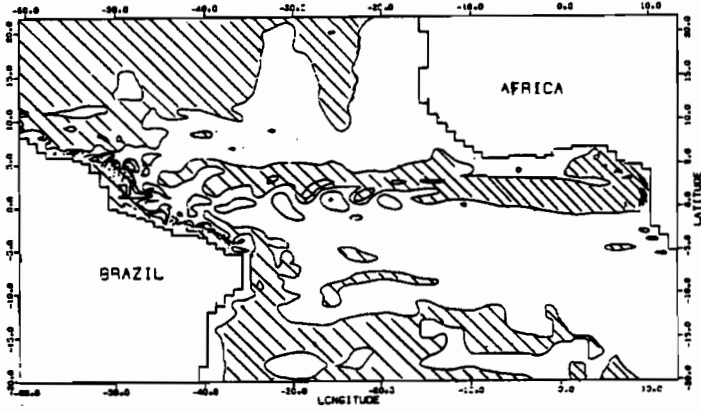
* 5 m:			
	months:	- january to june.	p. 44
		- july to december.	p. 45
* 35 m:			
	months:	- january to june.	p. 46
		- july to december.	p. 47
* 95 m:			
	months:	- january to june.	p. 48
		- july to december.	p. 49
* 136.25 m:			
	months:	- january to june.	p. 50
		- july to december.	p. 51

VERTICAL VELOCITY AT 5m

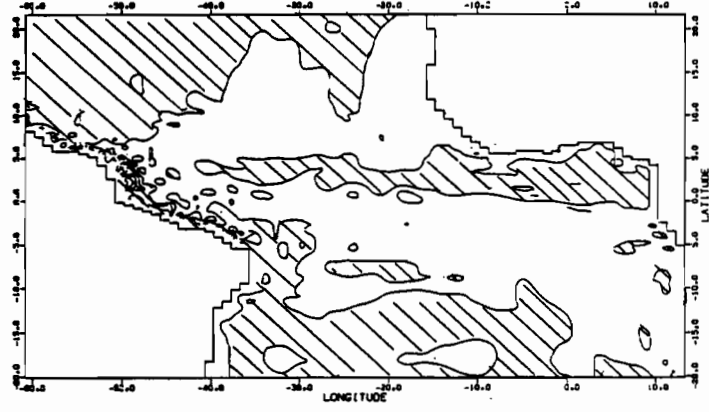
(Motion is downward in hatched areas)

(contour interval 10^{-5} m/s)

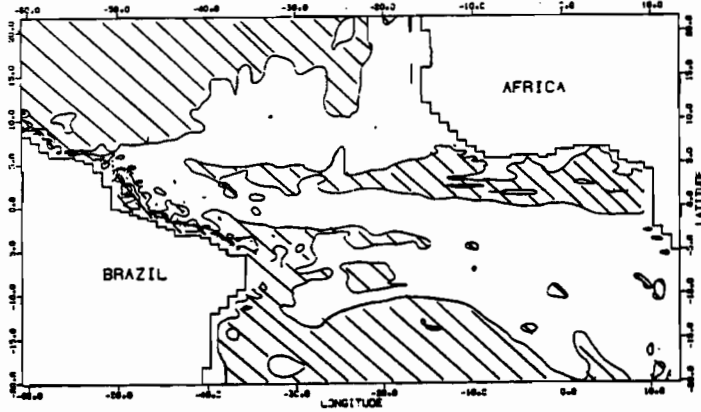
MONTH: JANUARY



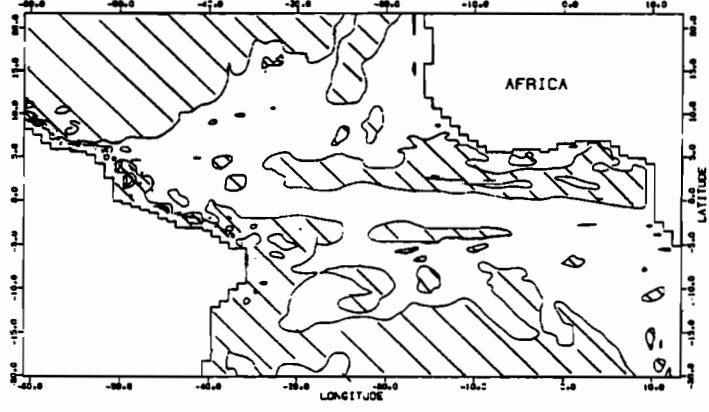
MONTH: FEBRUARY



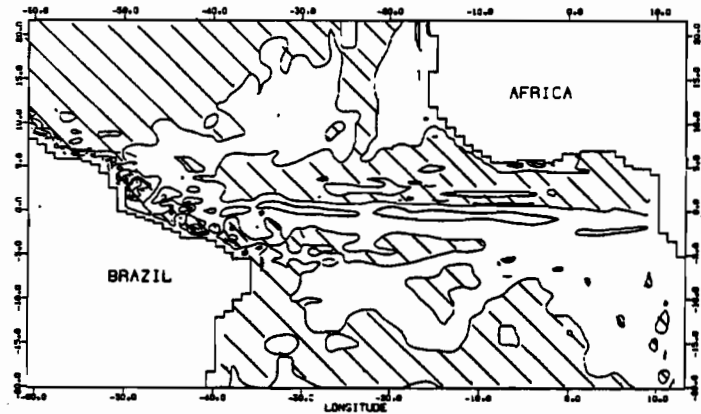
MONTH: MARCH



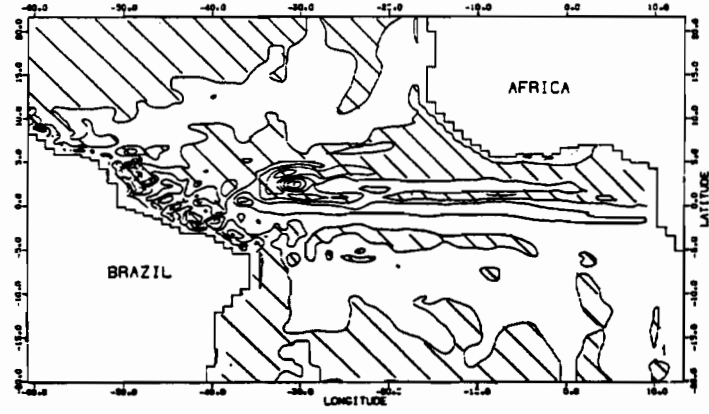
MONTH: APRIL



MONTH: MAY



MONTH: JUNE

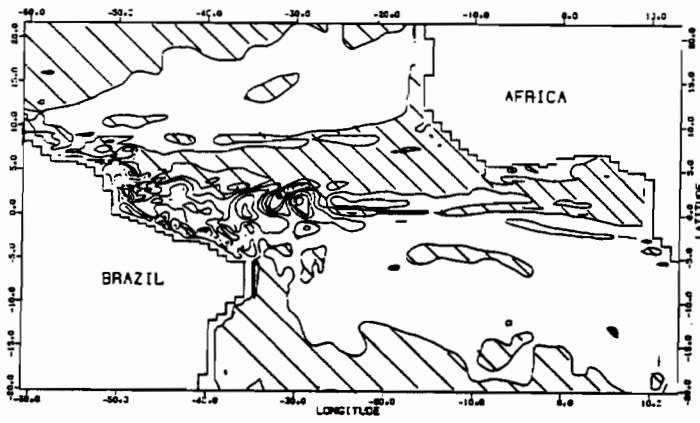


VERTICAL VELOCITY AT 5m

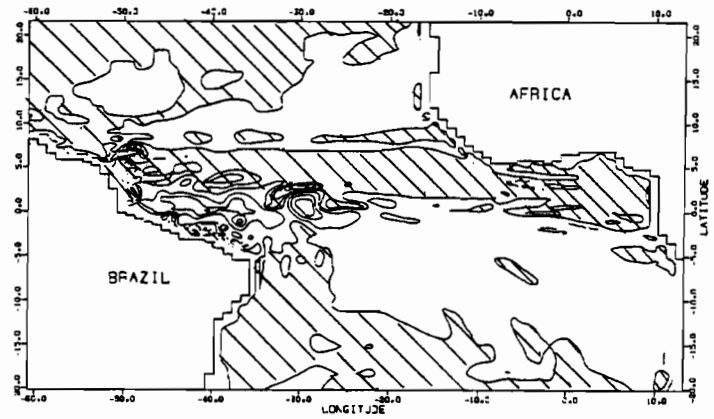
(Motion is downward in hatched areas)

(contour interval 10^{-5} m/s)

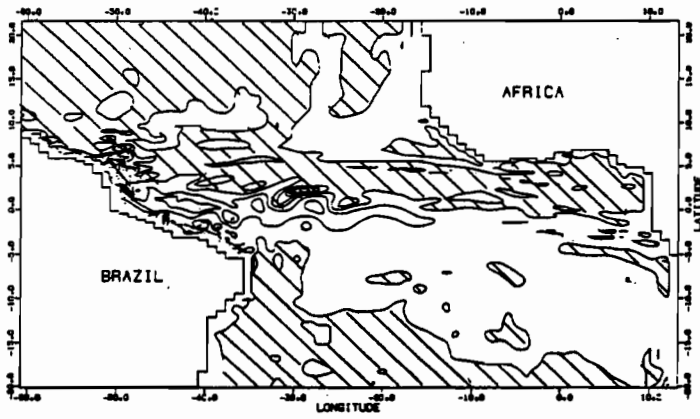
MONTH: JULY



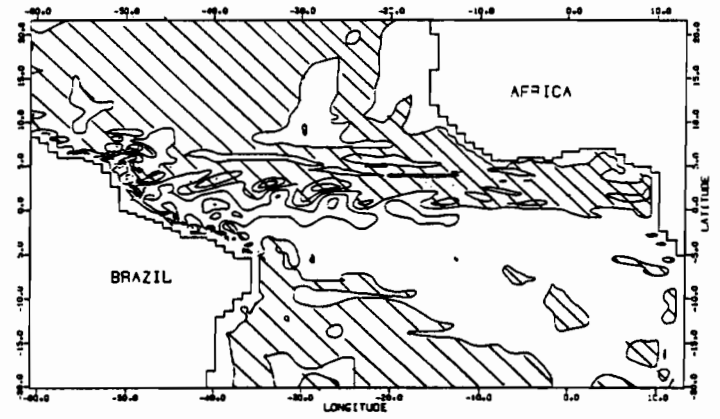
MONTH: AUGUST



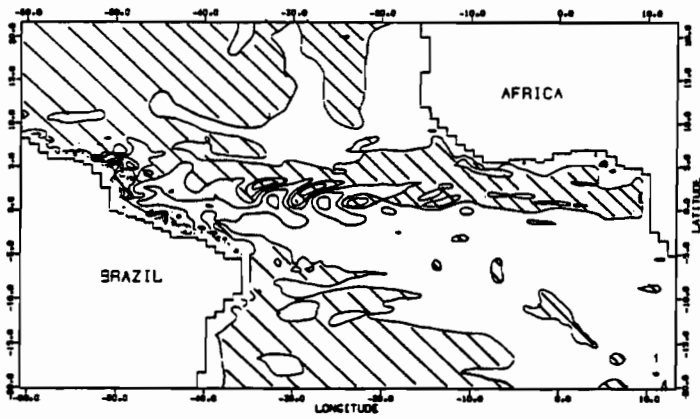
MONTH: SEPTEMB.



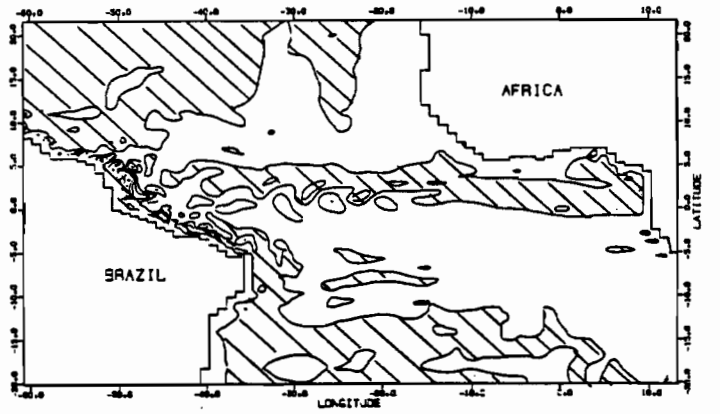
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER

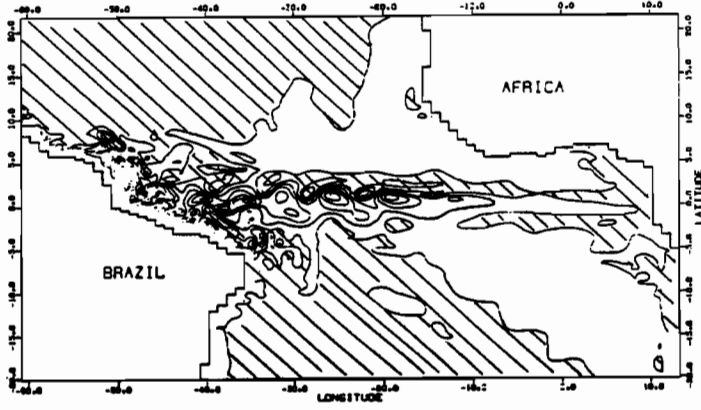


VERTICAL VELOCITY AT 35m

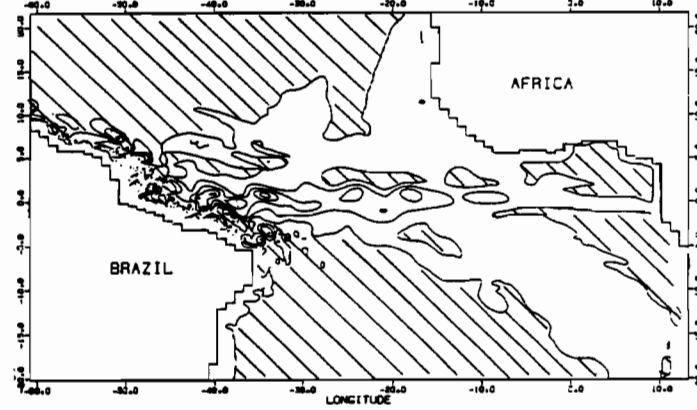
(Motion is downward in hatched areas)

(contour interval 10^{-5} m/s)

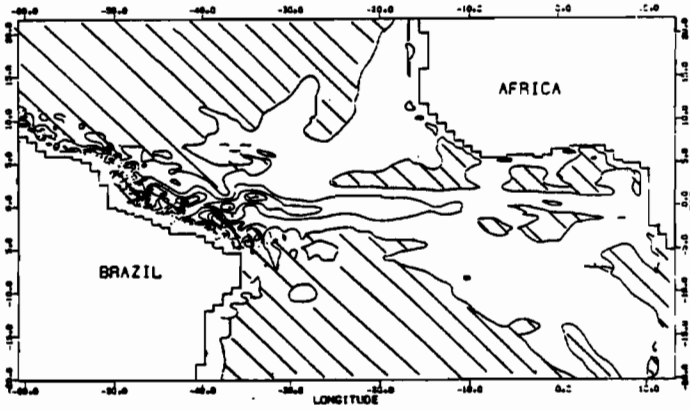
MONTH: JANUARY



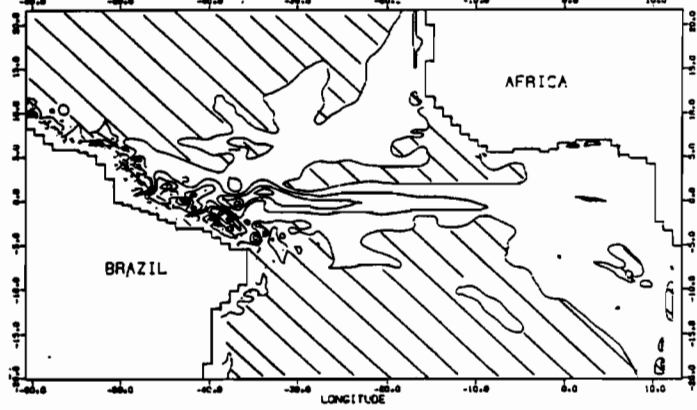
MONTH: FEBRUARY



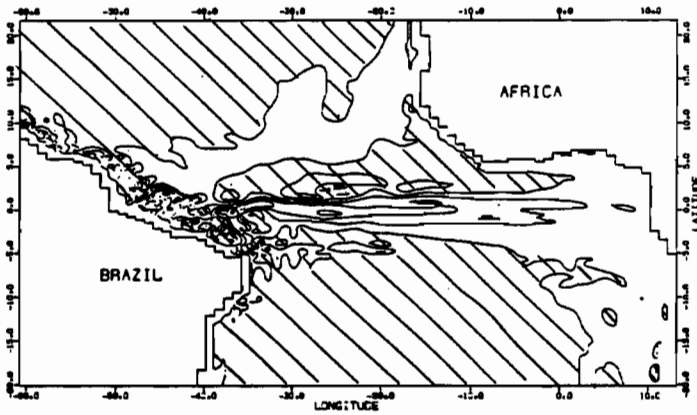
MONTH: MARCH



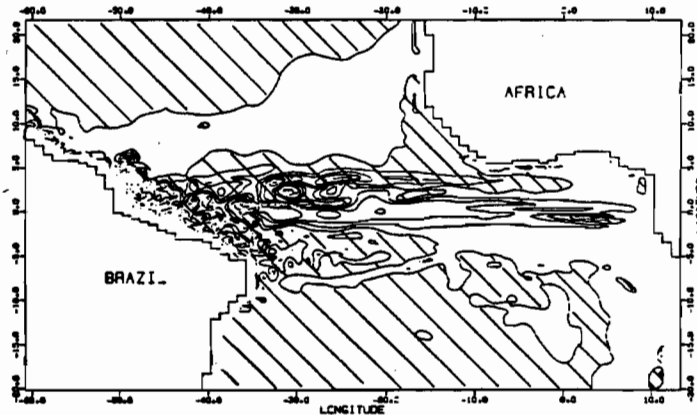
MONTH: APRIL



MONTH: MAY



MONTH: JUNE

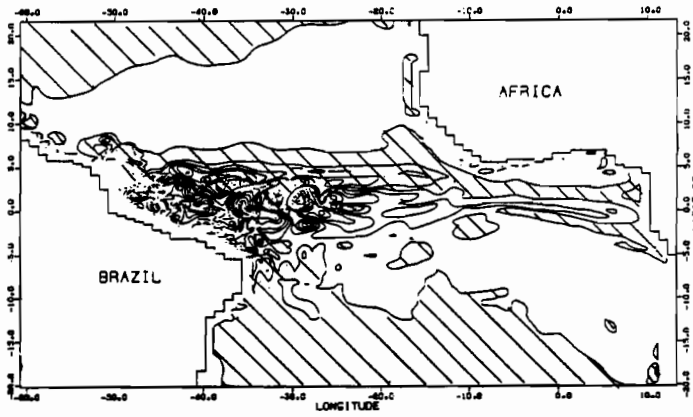


VERTICAL VELOCITY AT 35m

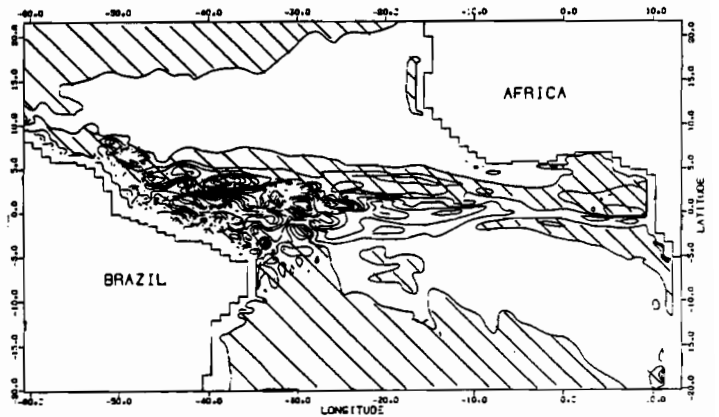
(Motion is downward in hatched areas)

(contour interval 10^{-5} m/s)

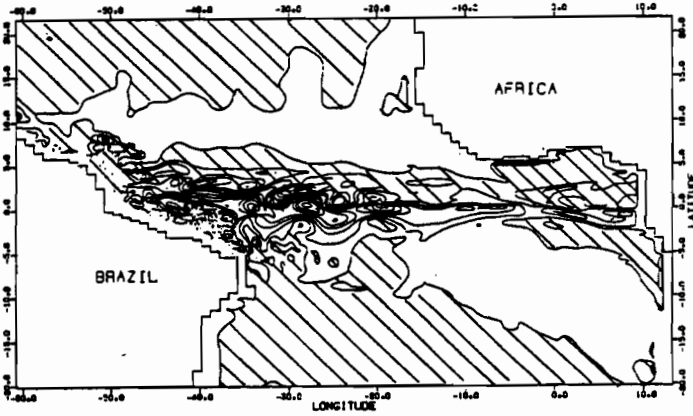
MONTH: JULY



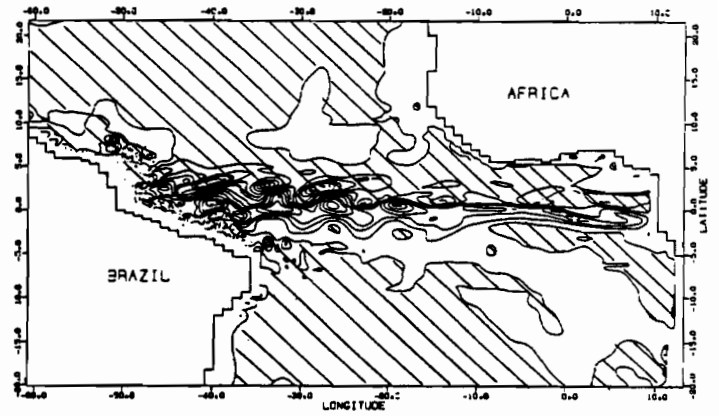
MONTH: AUGUST



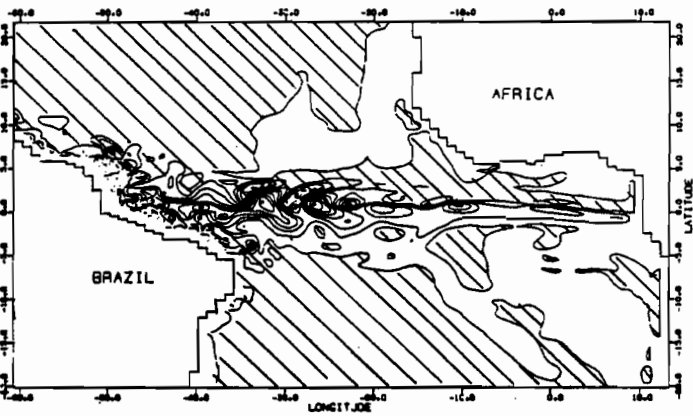
MONTH: SEPTEMB.



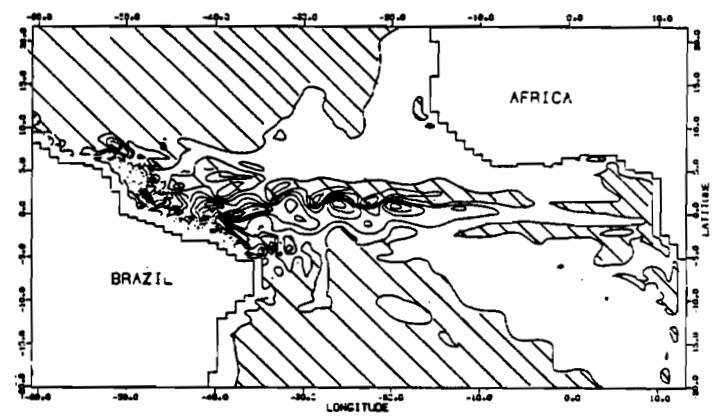
MONTH: OCTOBER



MONTH: NOVEMBER



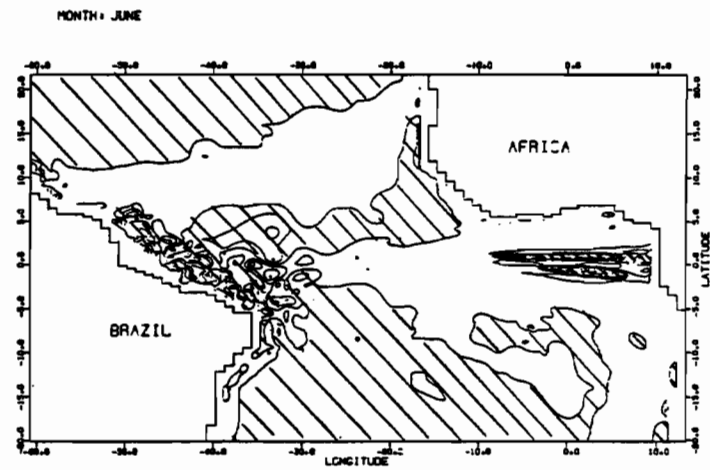
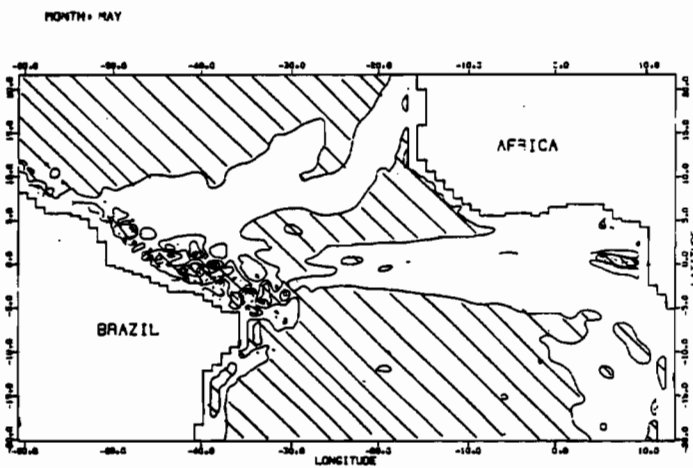
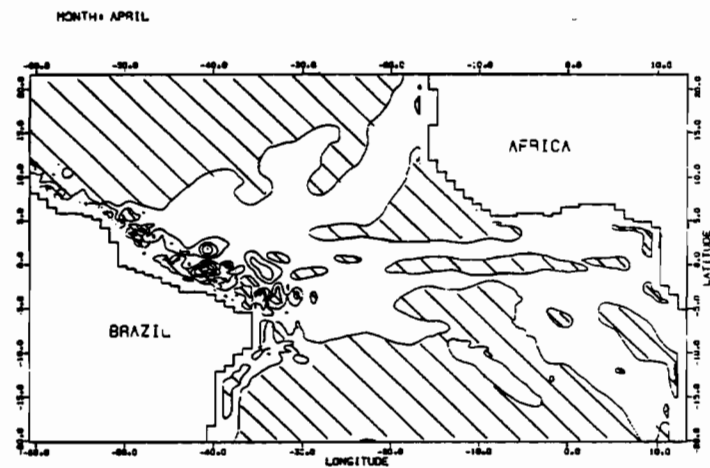
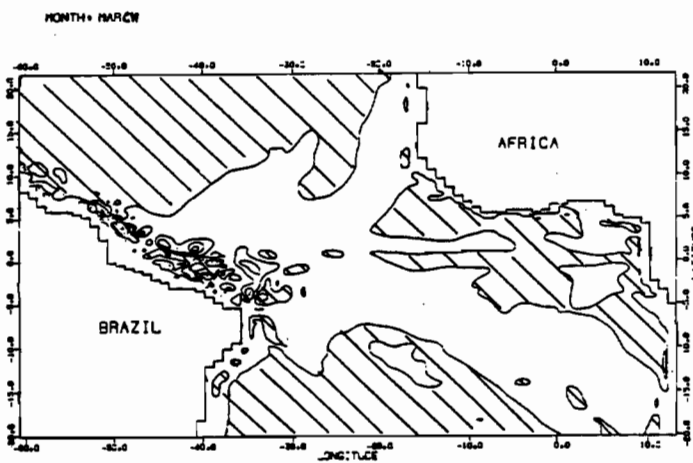
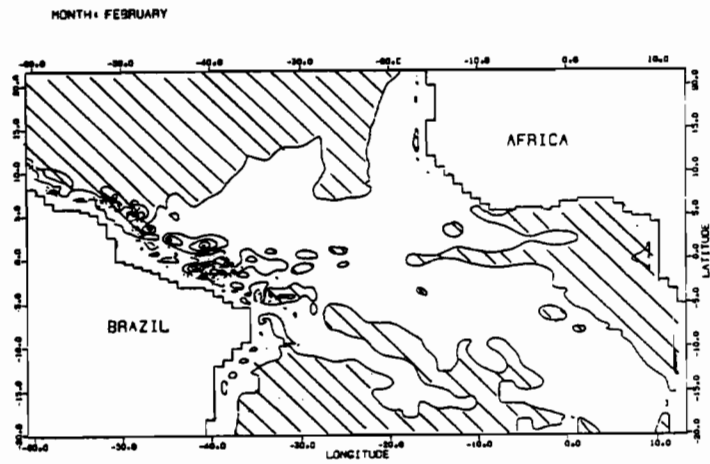
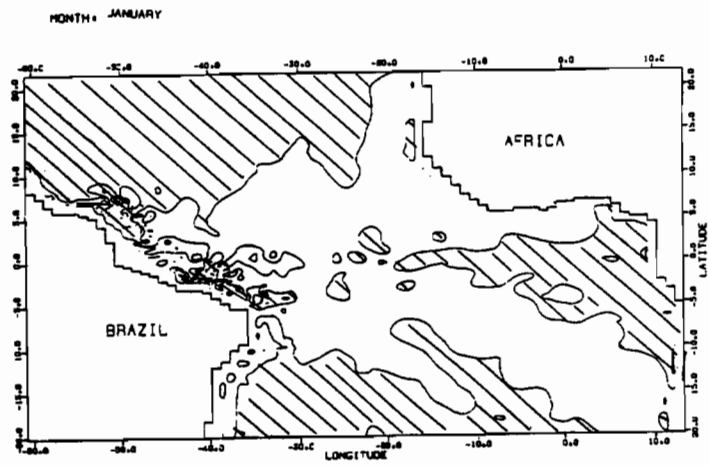
MONTH: DECEMBER



VERTICAL VELOCITY AT 95m

(Motion is downward in hatched areas)

(contour interval 10^{-5} m/s)

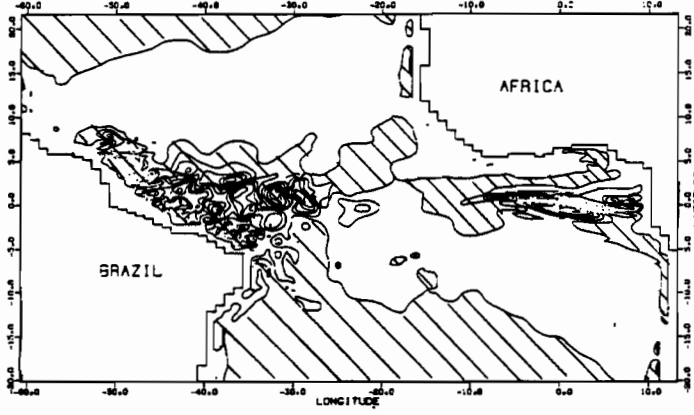


VERTICAL VELOCITY AT 95m

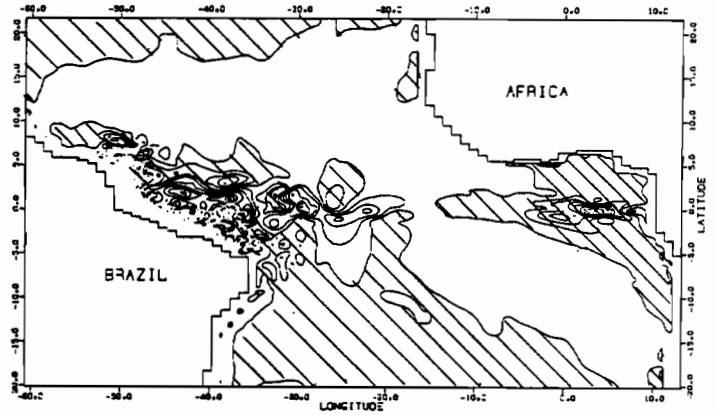
(Motion is downward in hatched areas)

(contour interval 10^{-5} m/s)

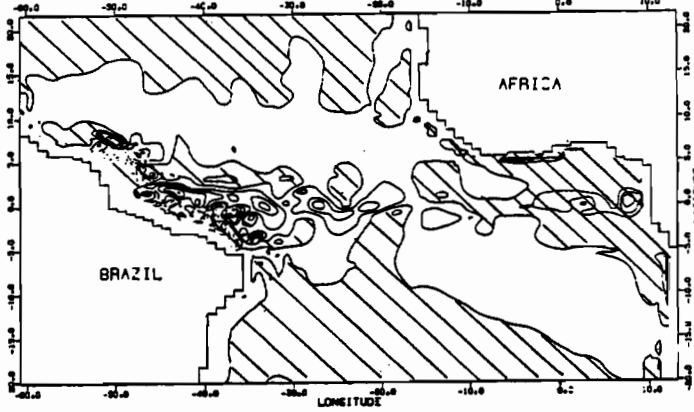
MONTH: JULY



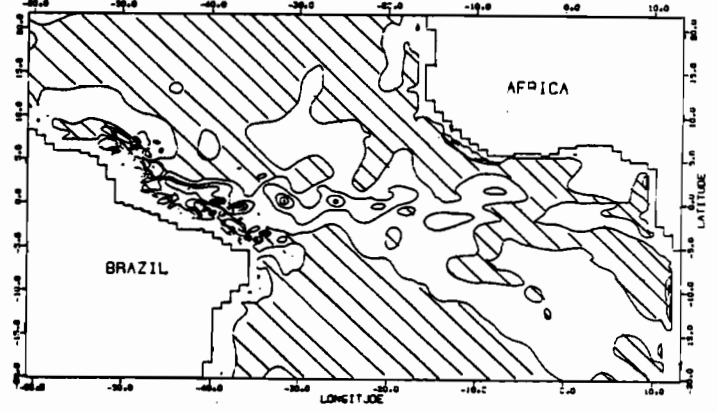
MONTH: AUGUST



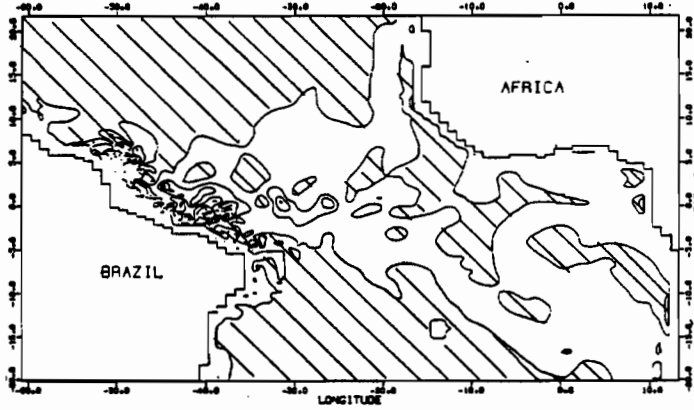
MONTH: SEPTEMBER



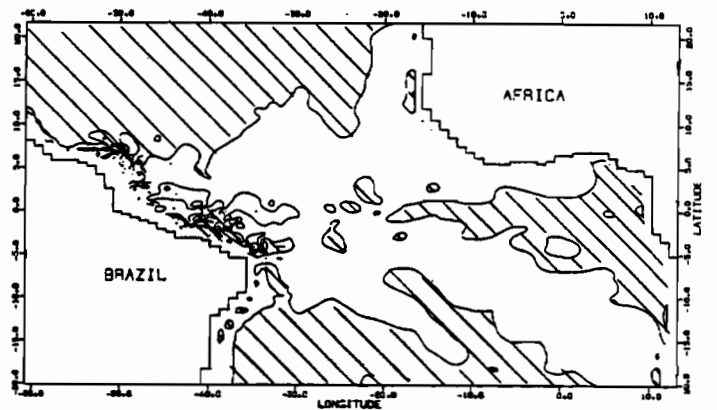
MONTH: OCTOBER



MONTH: NOVEMBER



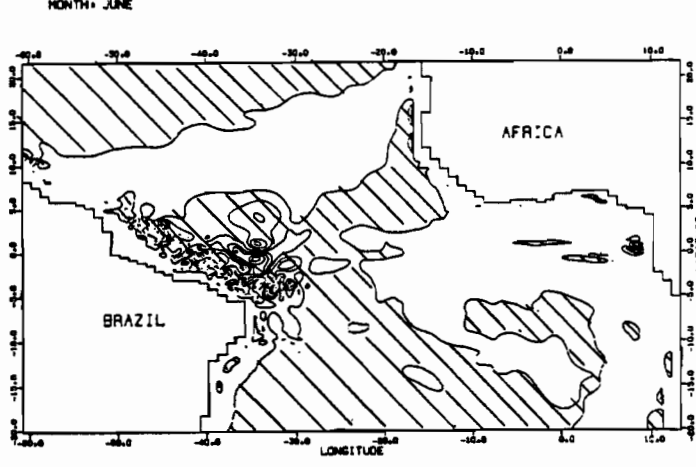
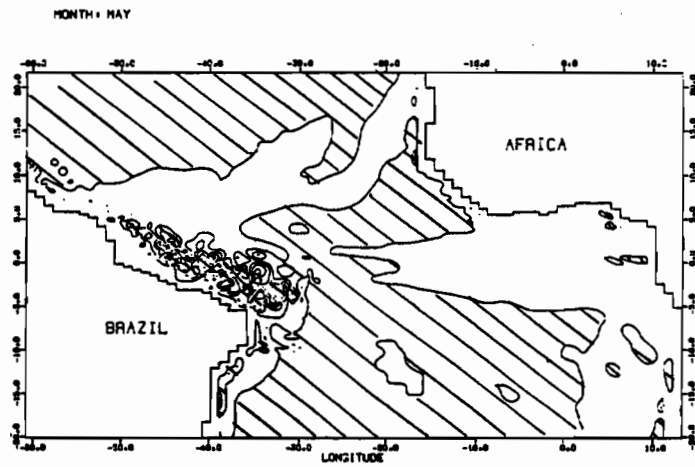
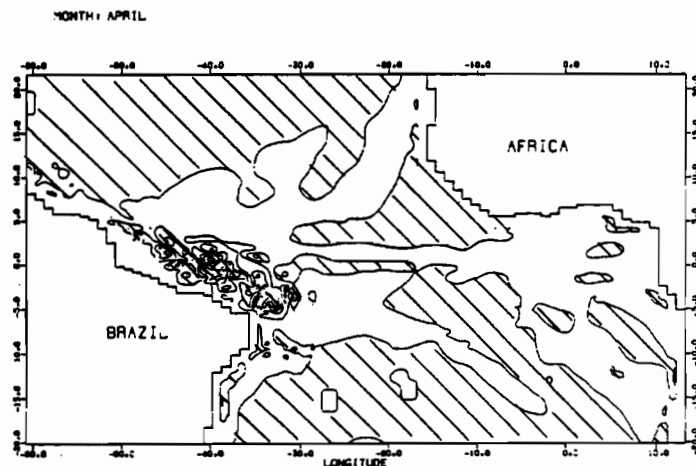
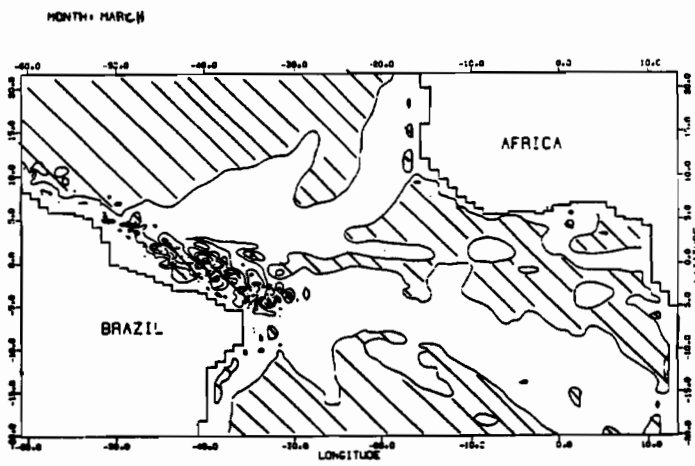
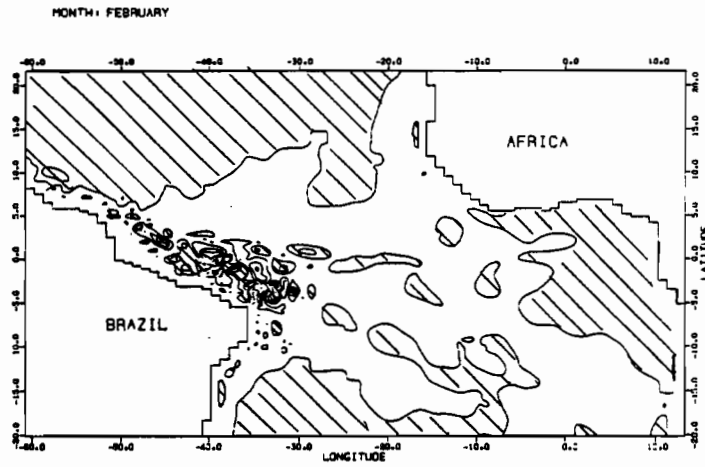
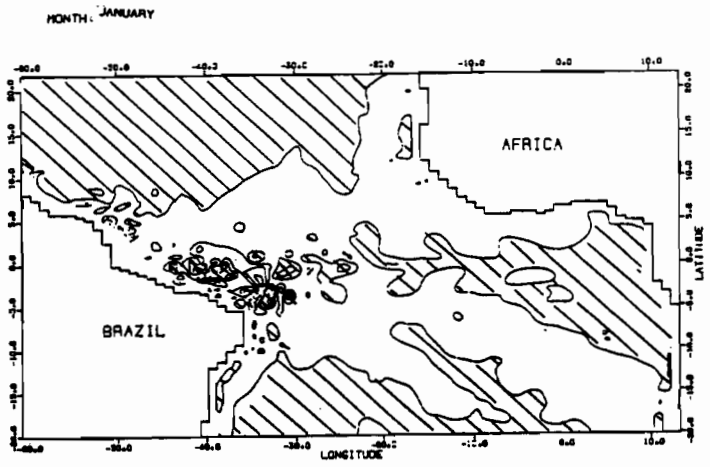
MONTH: DECEMBER



VERTICAL VELOCITY AT 136.25m

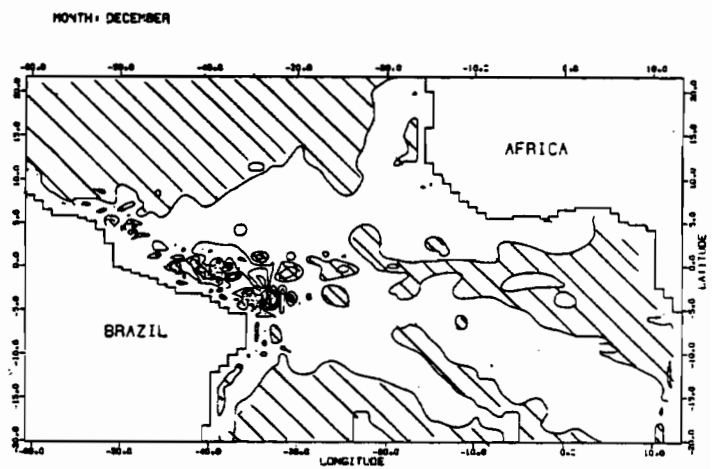
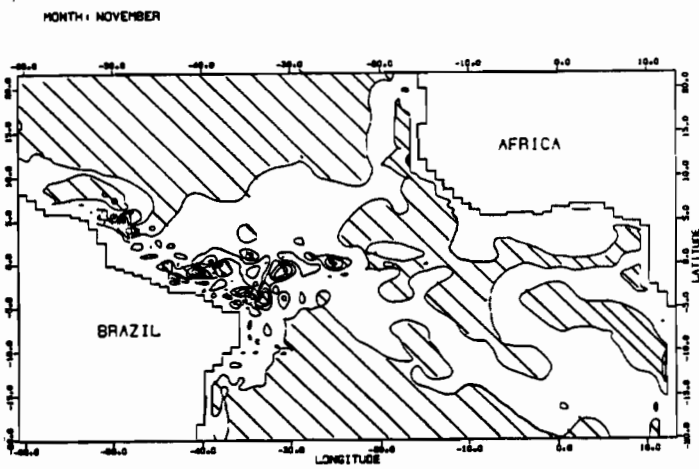
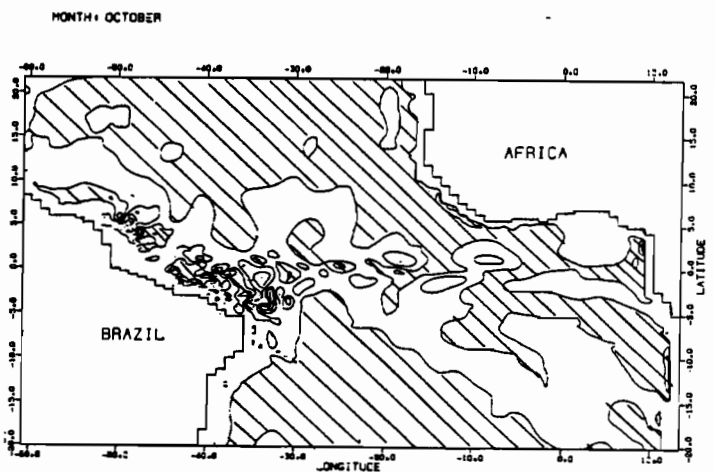
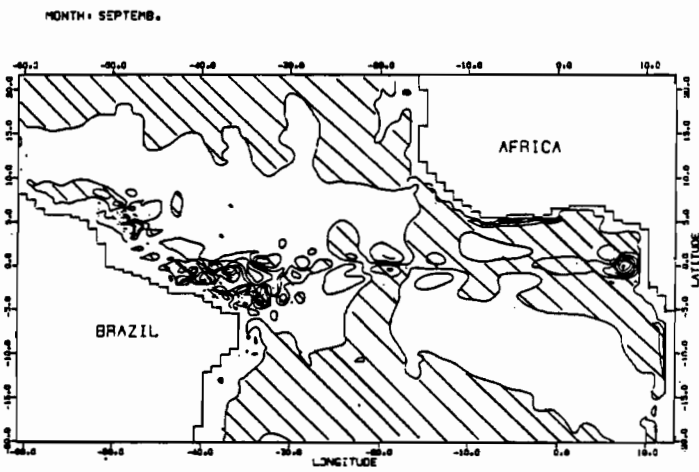
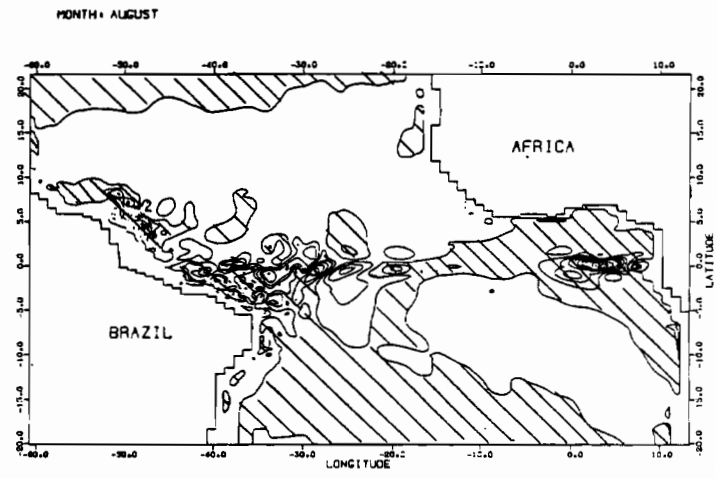
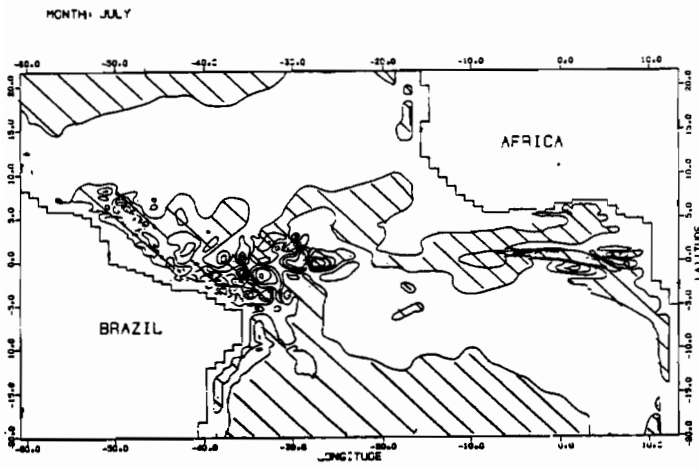
(Motion is downward in hatched areas)

(contour interval 10^{-5} m/s)



VERTICAL VELOCITY AT 136.25m

(Motion is downward in hatched areas)
(contour interval 10^{-5} m/s)

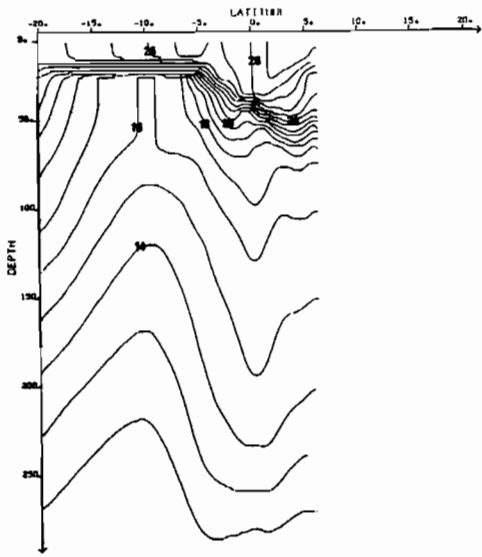


MERIDIONAL SECTIONS OF TEMPERATURE AT:

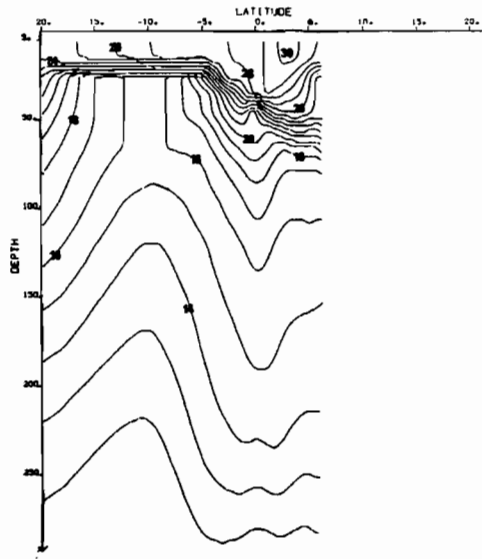
* 0.25E:			
	months:	- january to june.	p. 54
		- july to december.	p. 55
* 9.75W:			
	months:	- january to june.	p. 56
		- july to december.	p. 57
* 19.75W:			
	months:	- january to june.	p. 58
		- july to december.	p. 59
* 29.75W:			
	months:	- january to june.	p. 60
		- july to december.	p. 61
* 39.75W:			
	months:	- january to june.	p. 62
		- july to december.	p. 63
* 49.75W:			
	months:	- january to june.	p. 64
		- july to december.	p. 65

VERTICAL SECTION OF TEMPERATURE AT 0.25 E

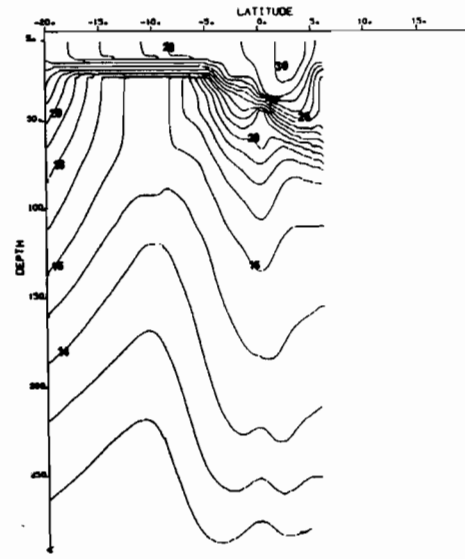
MONTH: JANUARY



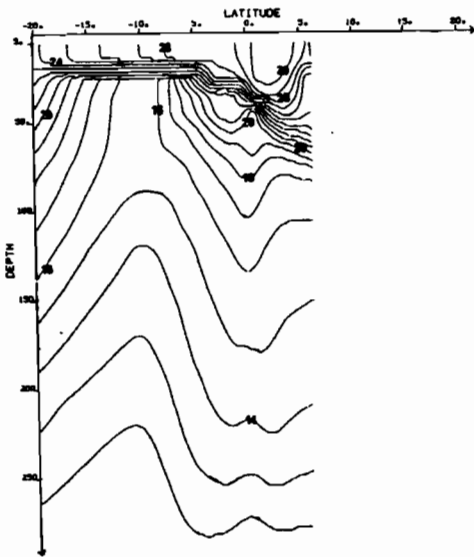
MONTH: FEBRUARY



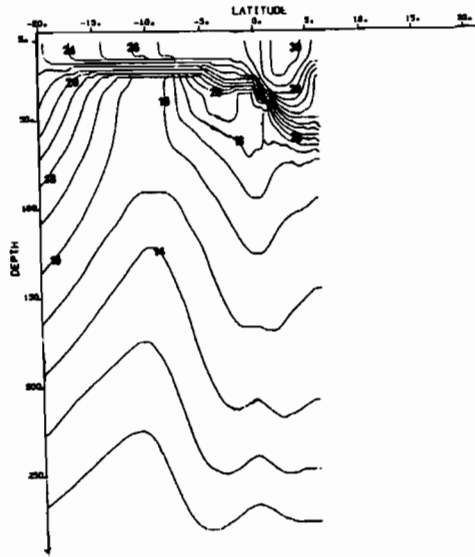
MONTH: MARCH



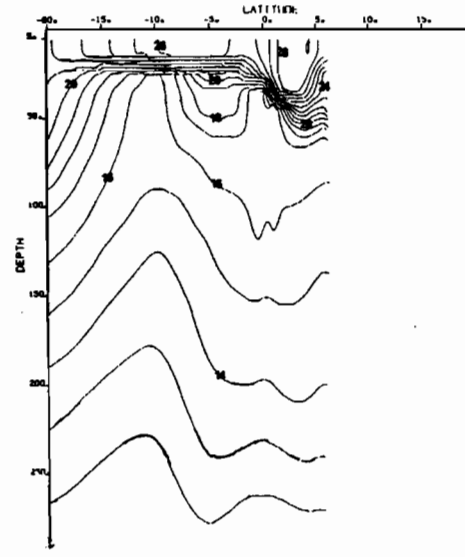
MONTH: APRIL



MONTH: MAY

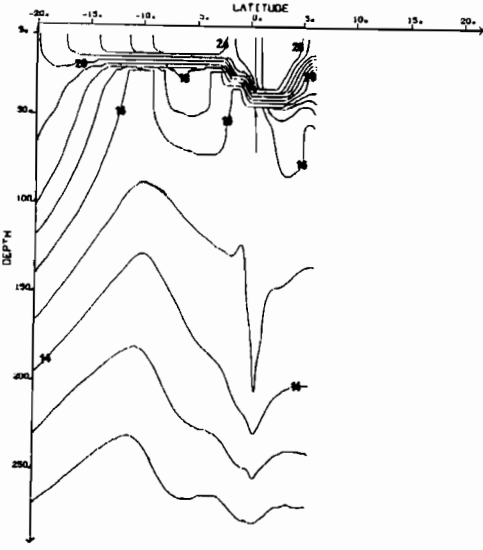


MONTH: JUNE

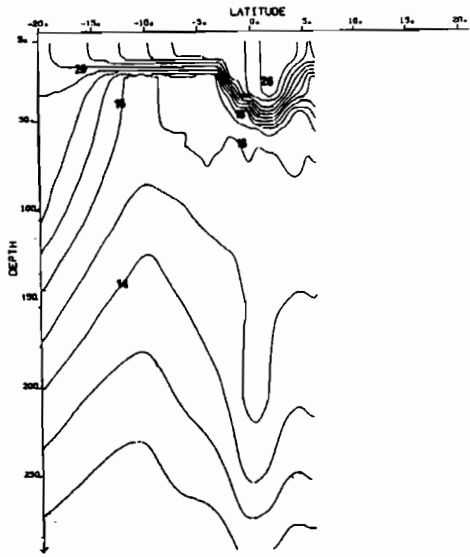


VERTICAL SECTION OF TEMPERATURE AT 0.25 E

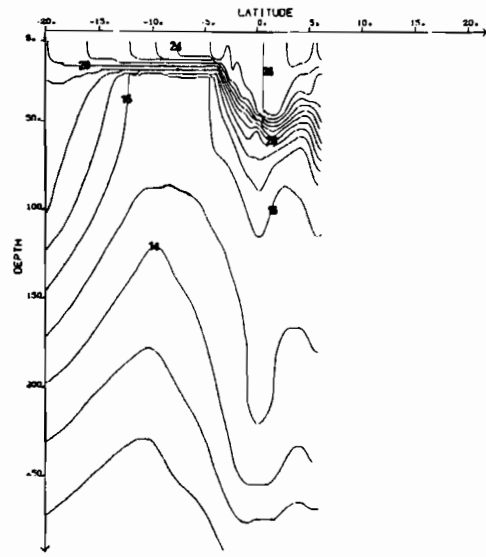
MONTH: JULY



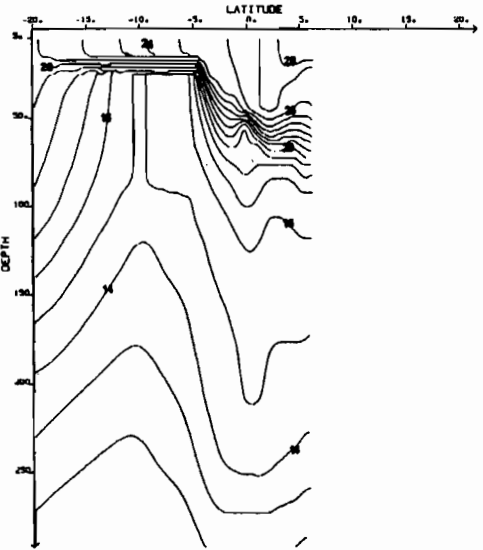
MONTH: AUGUST



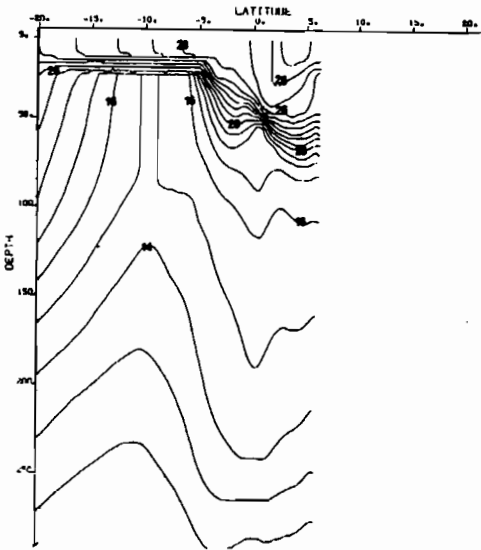
MONTH: SEPTEMBER



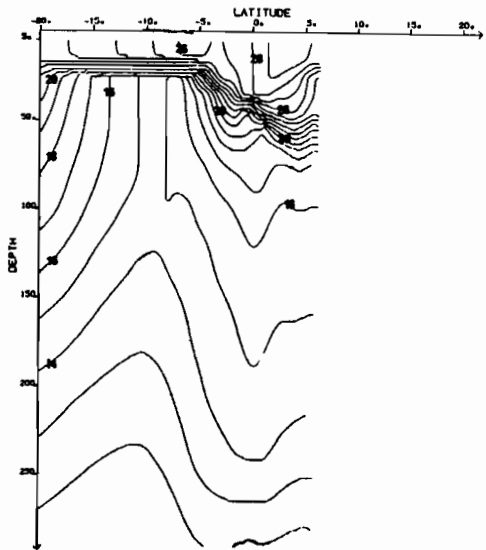
MONTH: OCTOBER



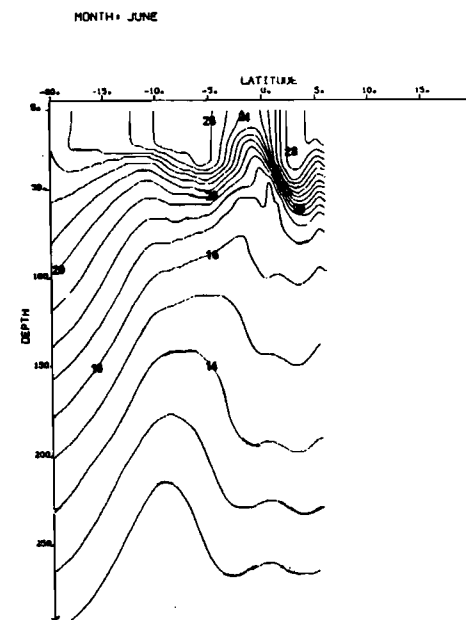
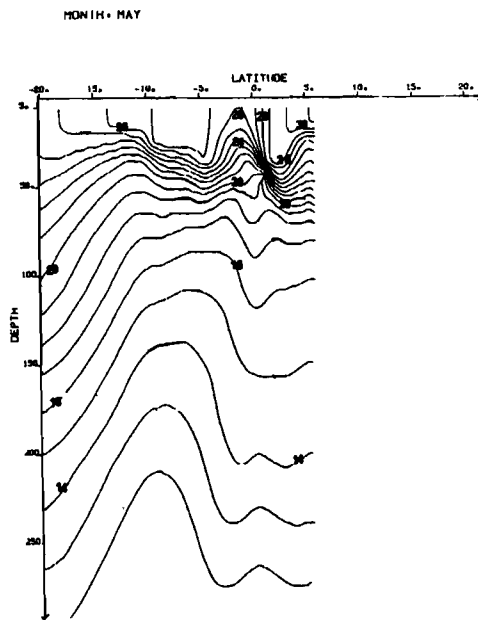
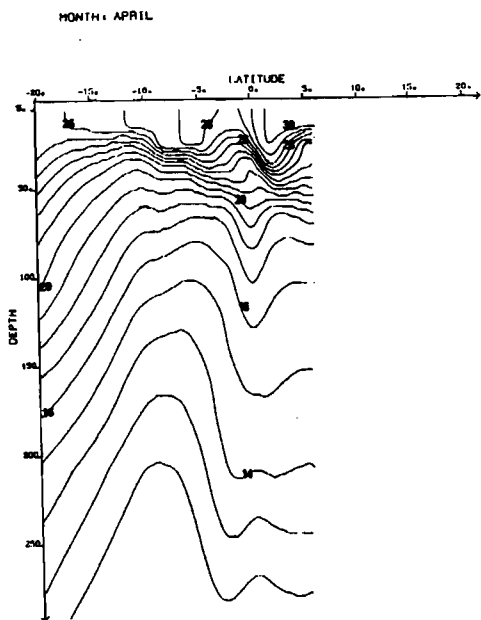
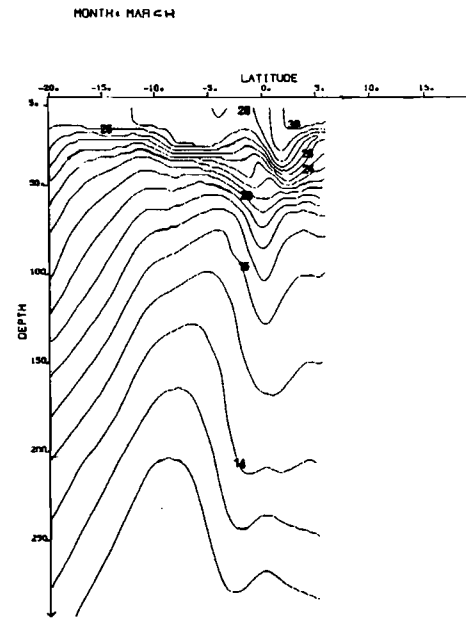
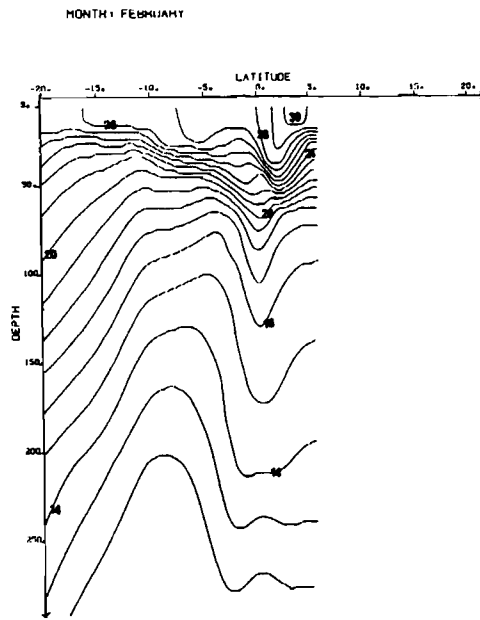
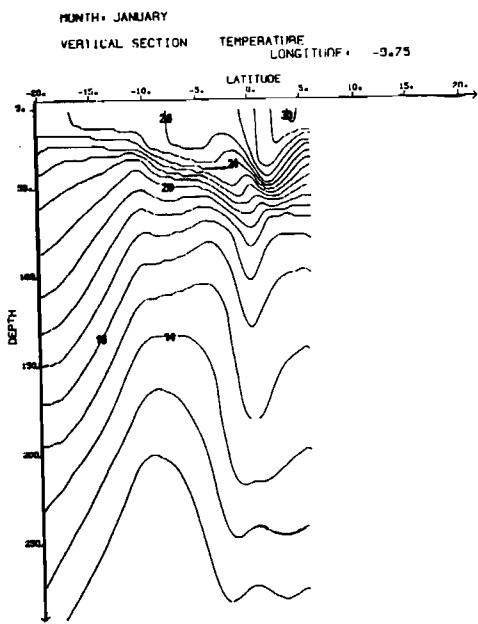
MONTH: NOVEMBER



MONTH: DECEMBER

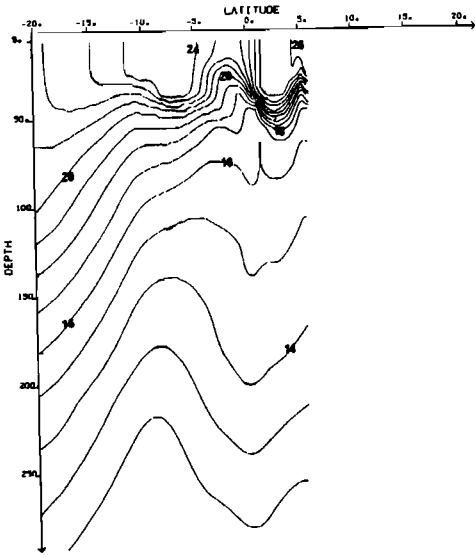


VERTICAL SECTION OF TEMPERATURE AT 9.75 W

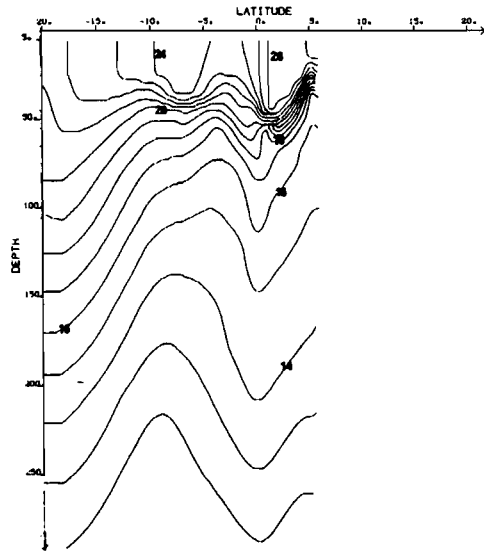


VERTICAL SECTION OF TEMPERATURE AT 9.75 W

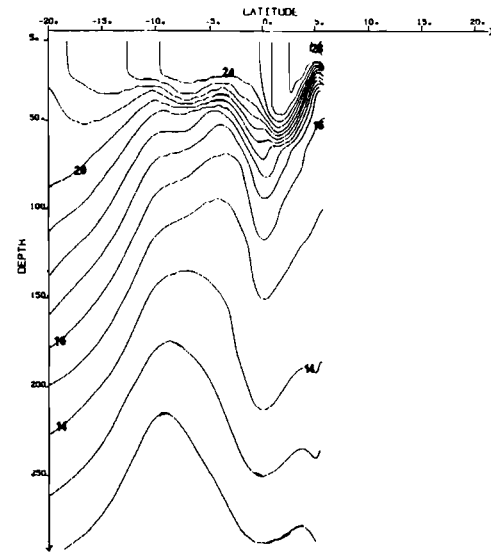
MONTH: JULY



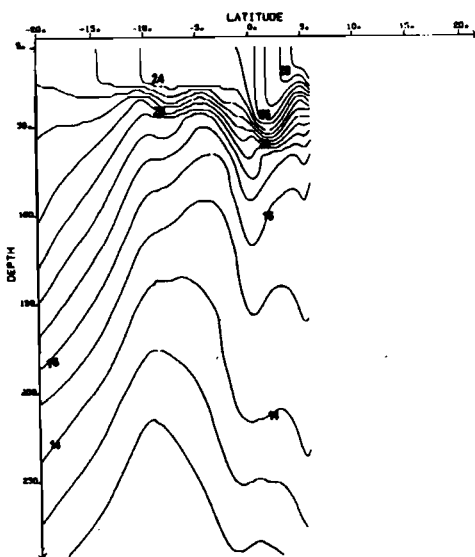
MONTH: AUGUST



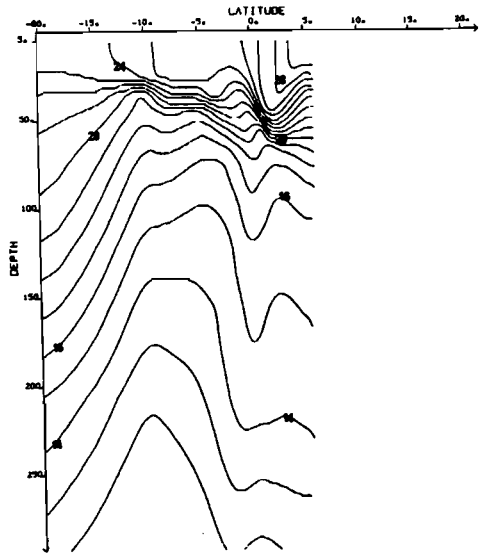
MONTH: SEPTEMB.



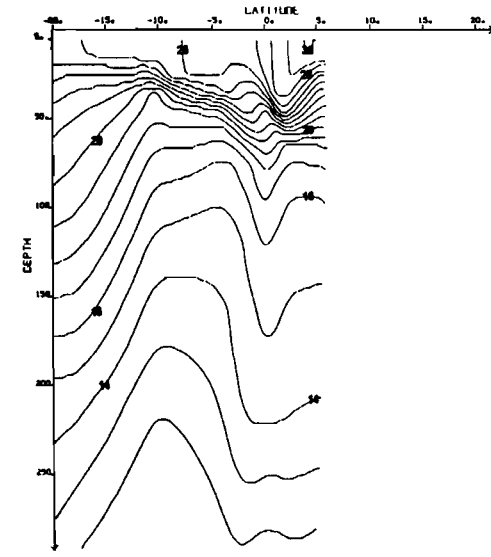
MONTH: OCTOBER



MONTH: NOVEMBER

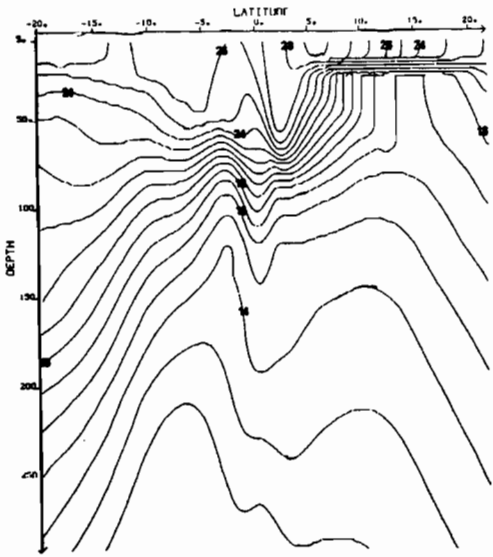


MONTH: DECEMBER

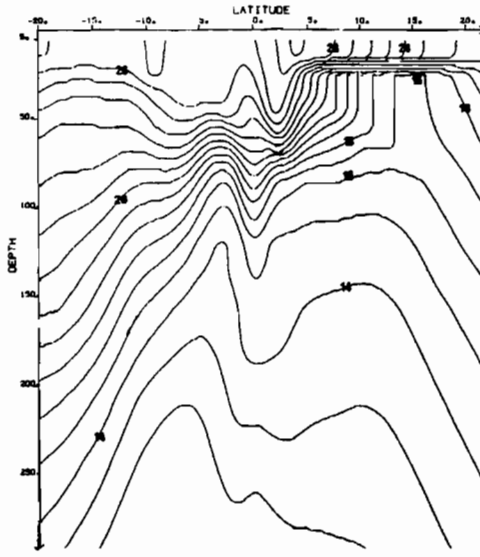


VERTICAL SECTION OF TEMPERATURE AT 19.75 W

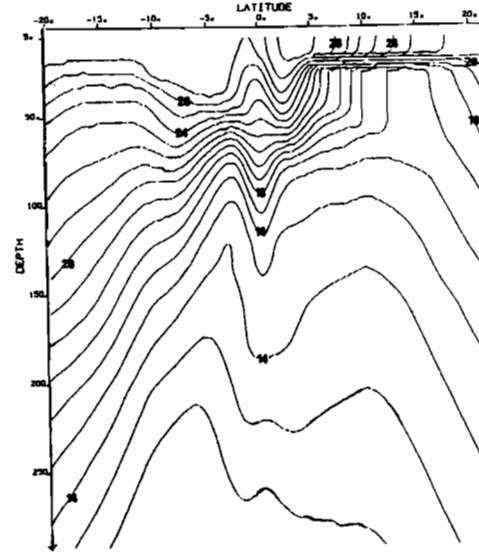
MONTH: JANUARY



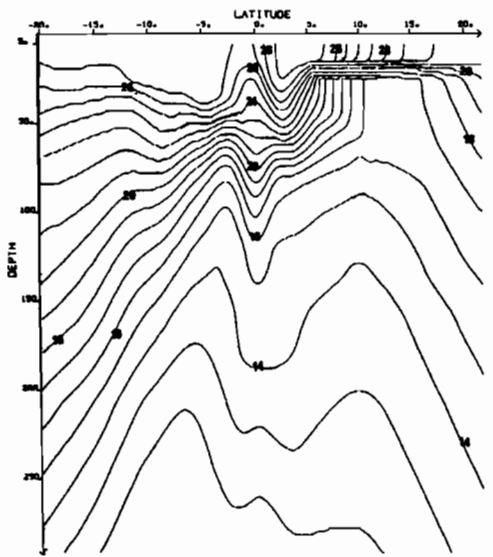
MONTH: FEBRUARY



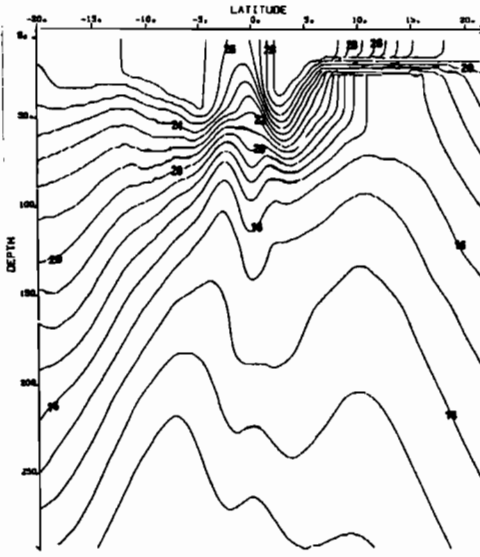
MONTH: MARCH



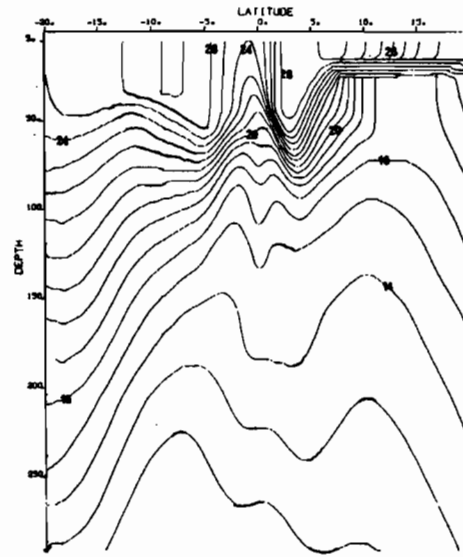
MONTH: APRIL



MONTH: MAY

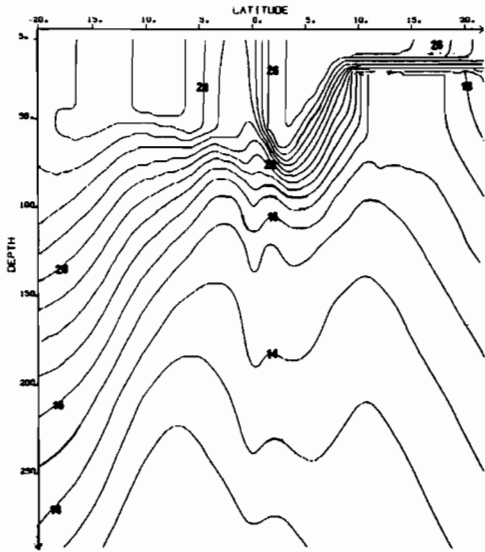


MONTH: JUNE

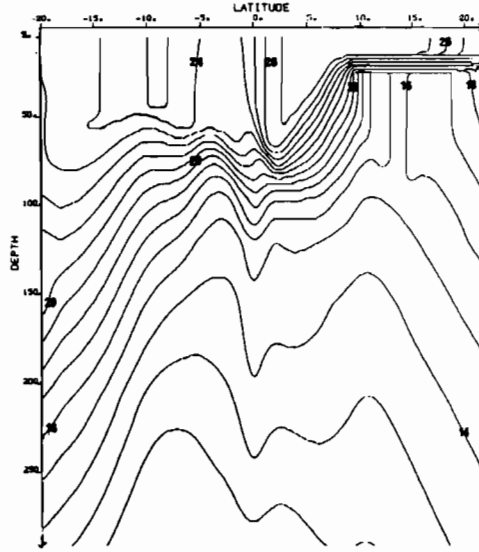


VERTICAL SECTION OF TEMPERATURE AT 19.75 W

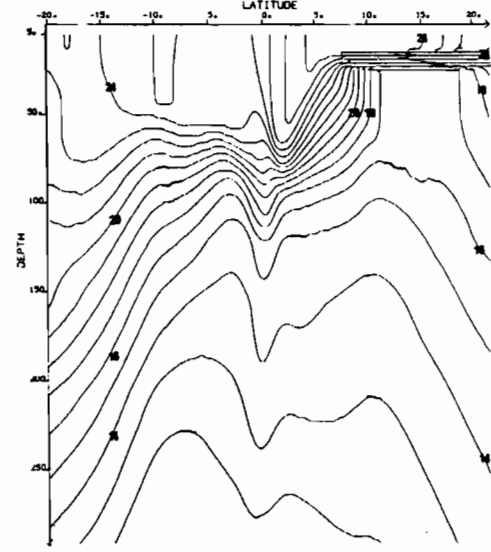
MONTH: JULY



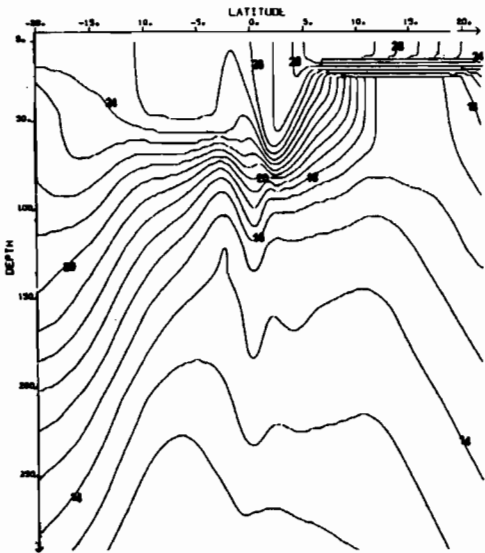
MONTH: AUGUST



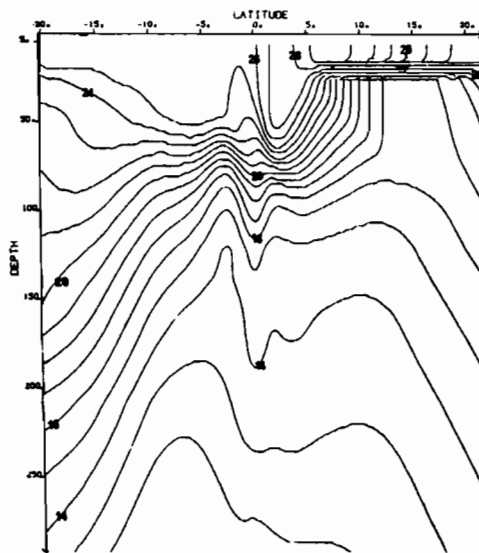
MONTH: SEPTEMB.



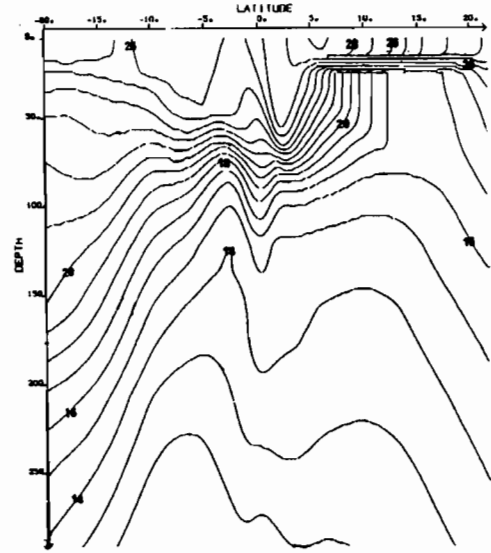
MONTH: OCTOBER



MONTH: NOVEMBER

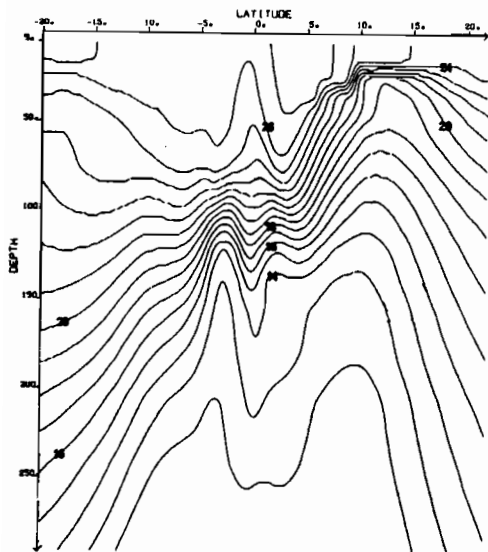


MONTH: DECEMBER

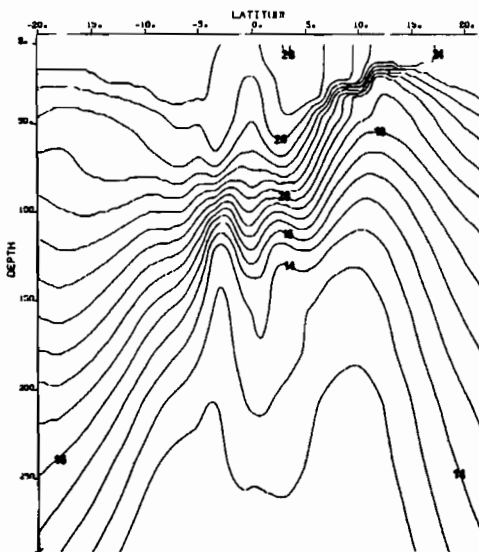


VERTICAL SECTION OF TEMPERATURE AT 29.75 W

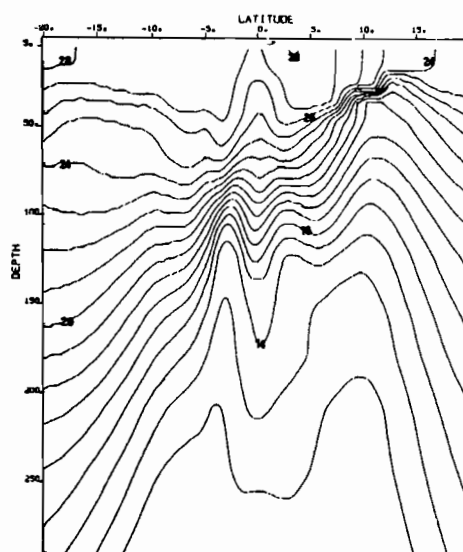
MONTH: JANUARY



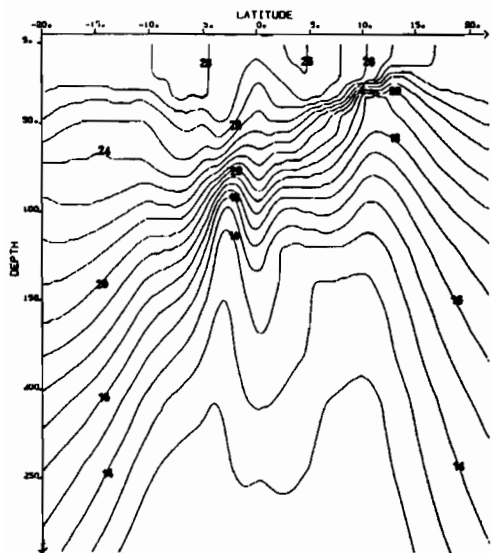
MONTH: FEBRUARY



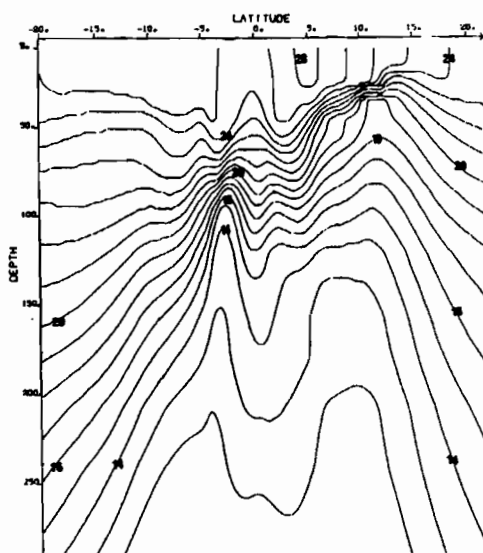
MONTH: MARCH



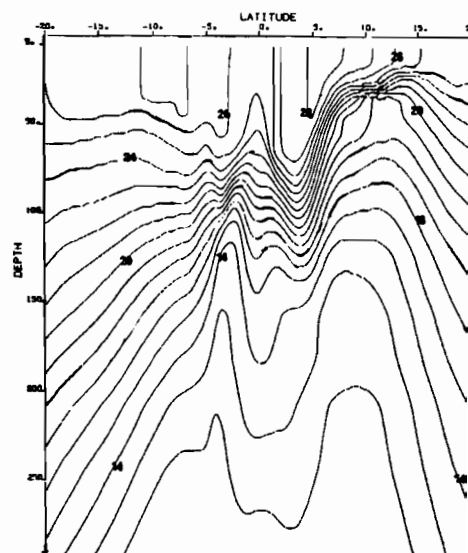
MONTH: APRIL



MONTH: MAY

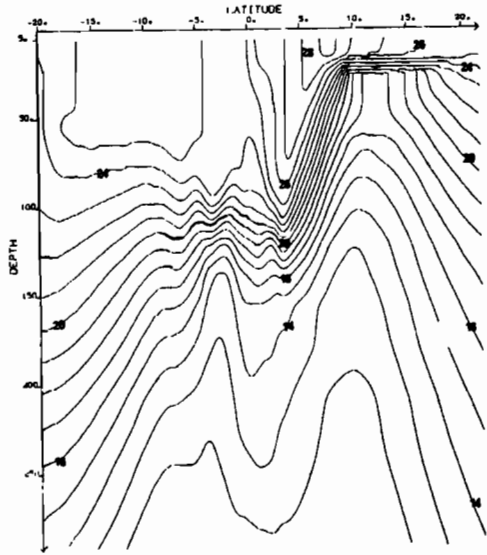


MONTH: JUNE

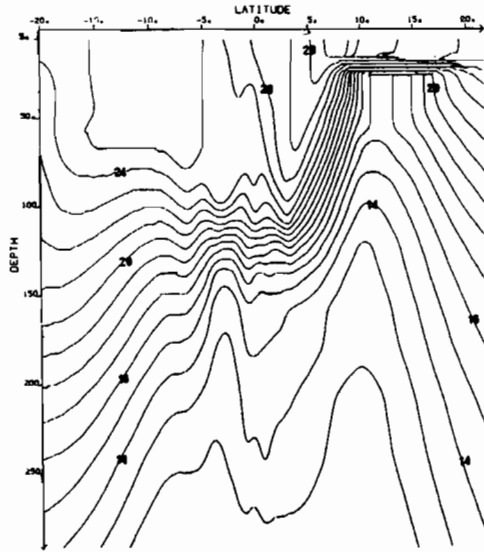


VERTICAL SECTION OF TEMPERATURE AT 29.75 W

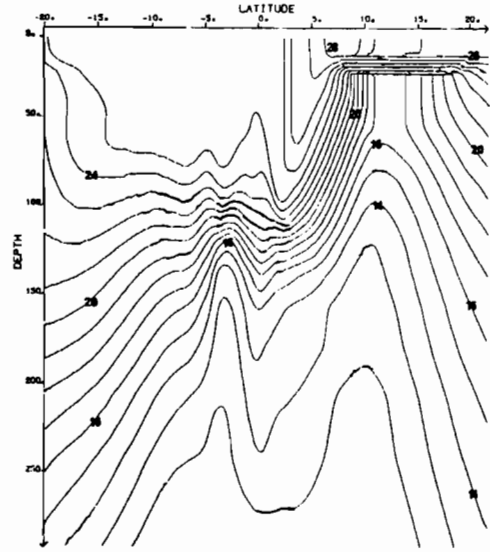
MONTH: JULY



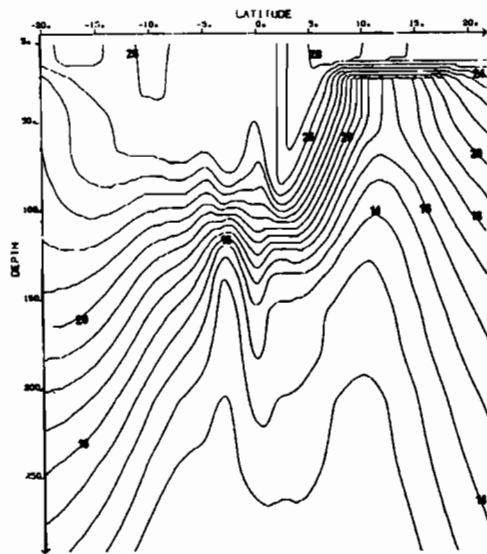
MONTH: AUGUST



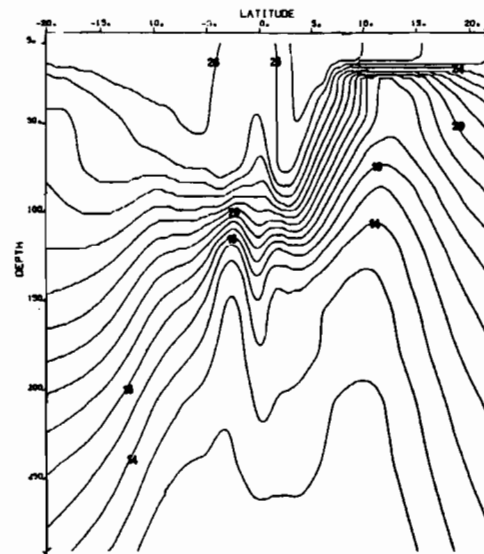
MONTH: SEPTEMBER



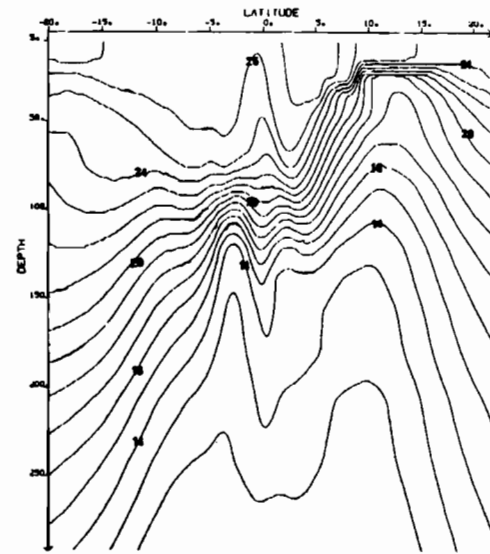
MONTH: OCTOBER



MONTH: NOVEMBER

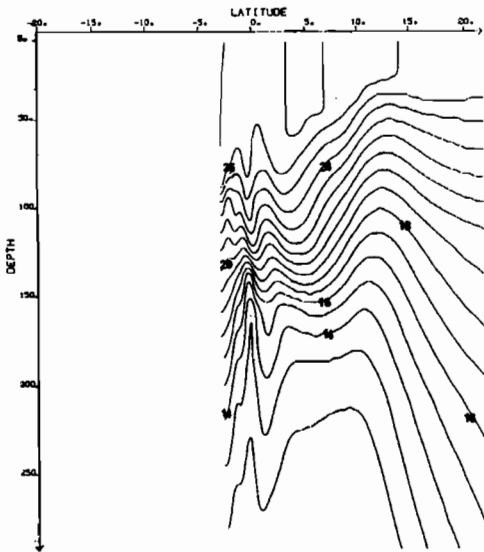


MONTH: DECEMBER

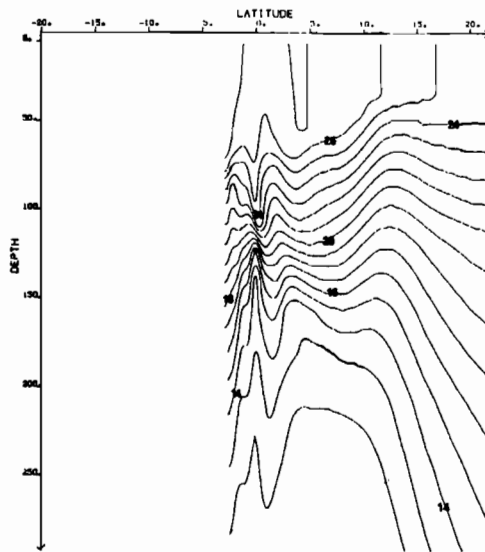


VERTICAL SECTION OF TEMPERATURE AT 39.75 W

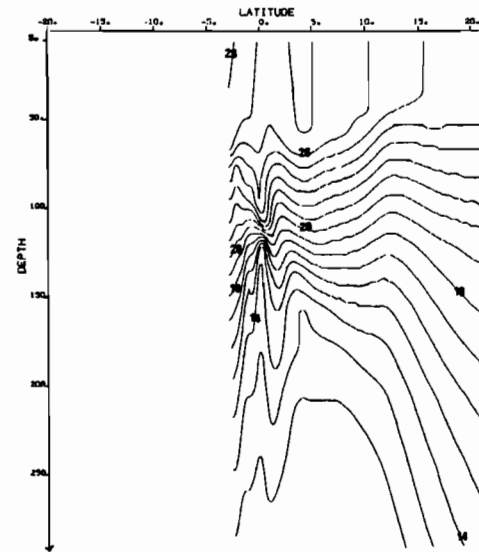
MONTH: JANUARY



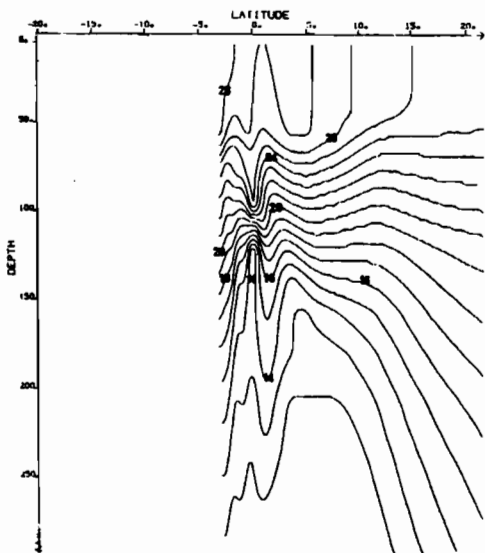
MONTH: FEBRUARY



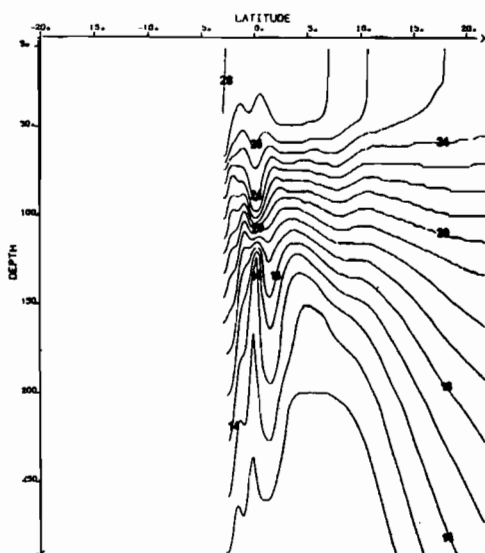
MONTH: MARCH



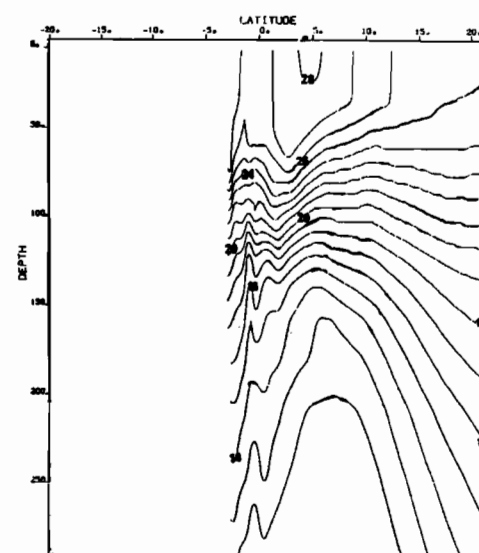
MONTH: APRIL



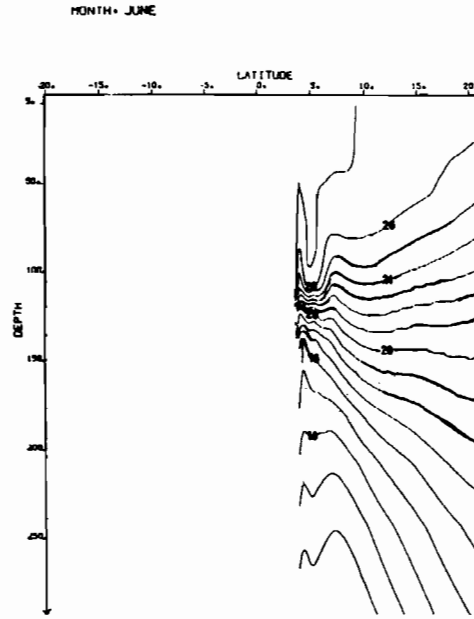
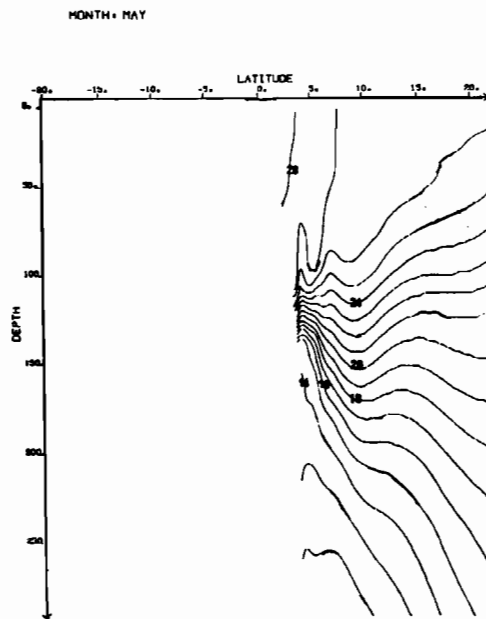
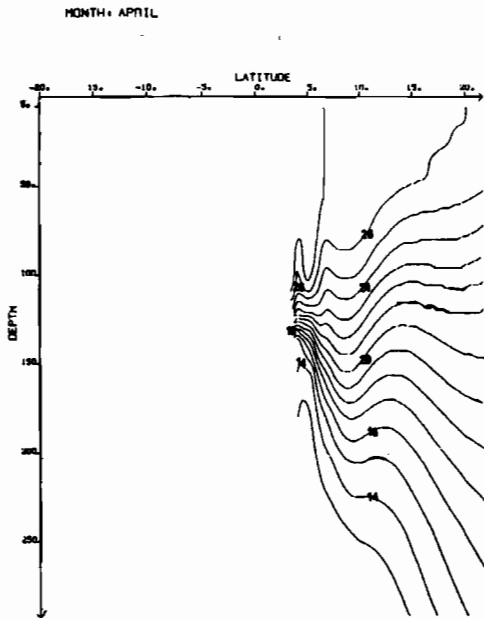
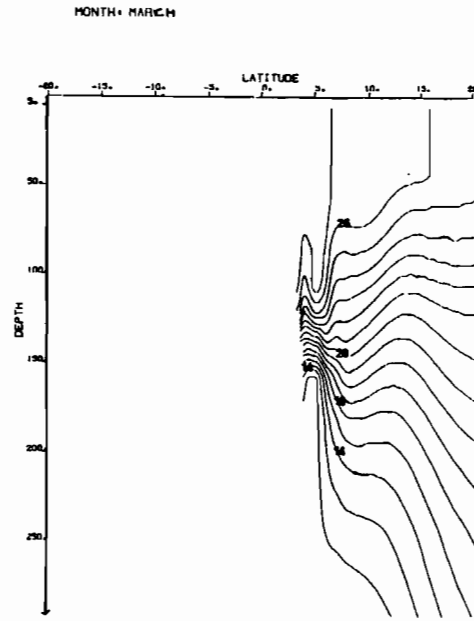
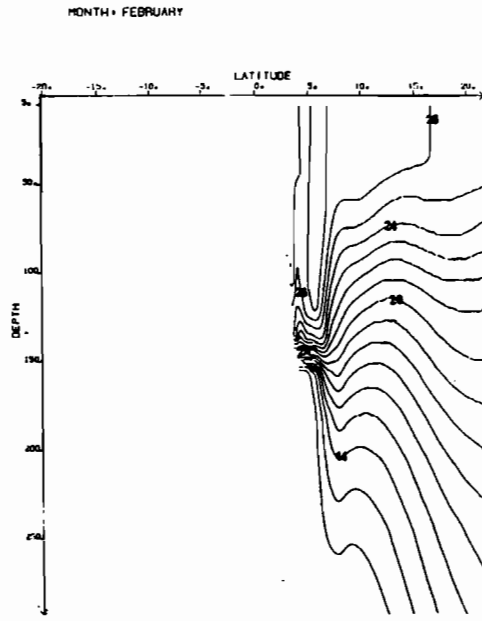
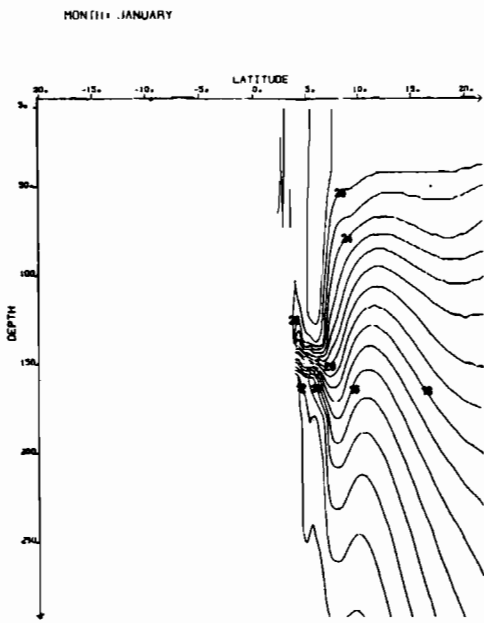
MONTH: MAY



MONTH: JUNE

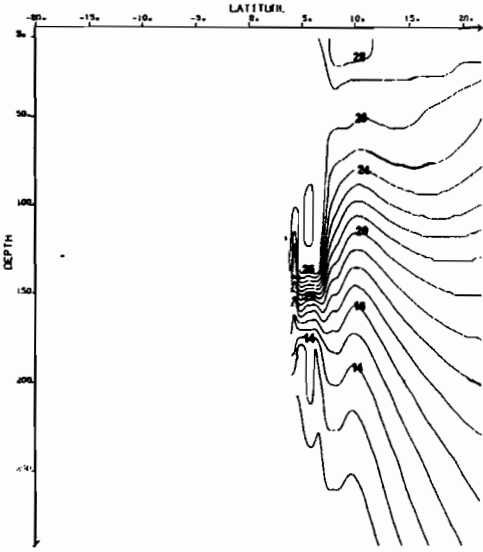


VERTICAL SECTION OF TEMPERATURE AT 49.75 W

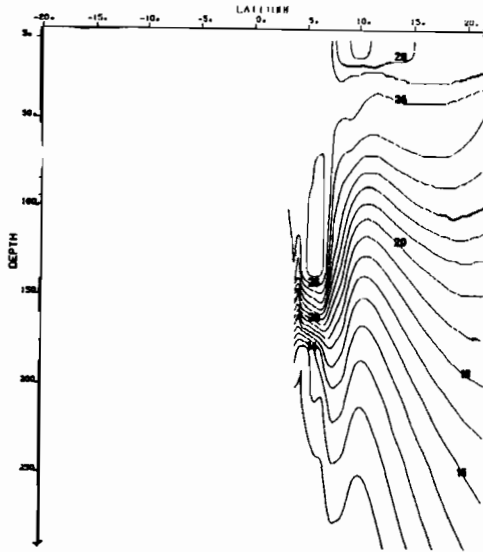


VERTICAL SECTION OF TEMPERATURE AT 49.75 W

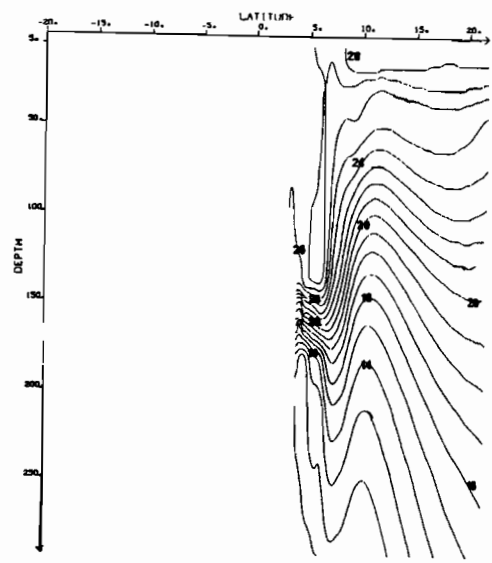
MONTH: JULY



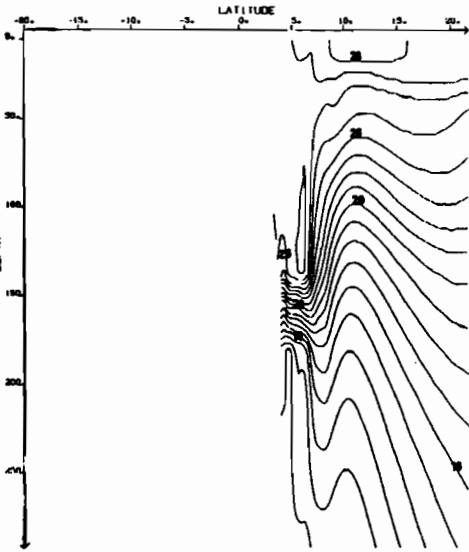
MONTH: AUGUST



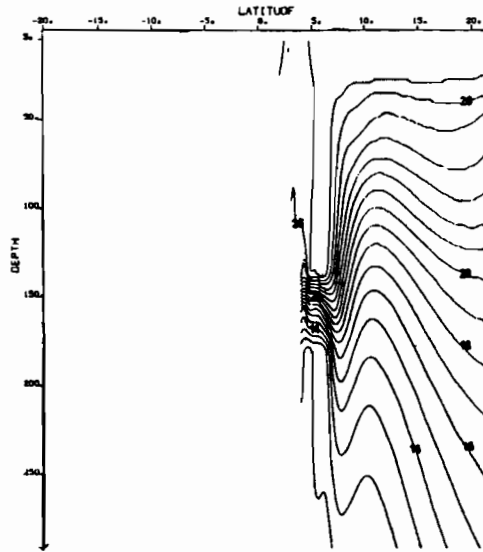
MONTH: SEPTEMB.



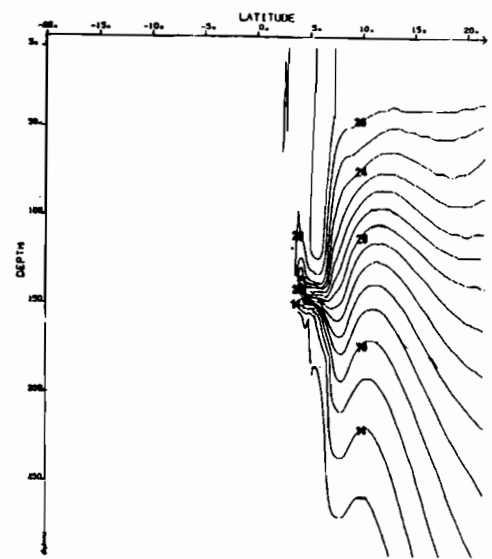
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER

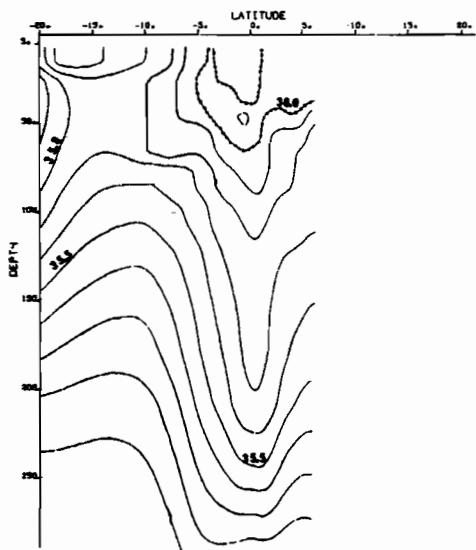


MERIDIONAL SECTIONS OF SALINITY AT:

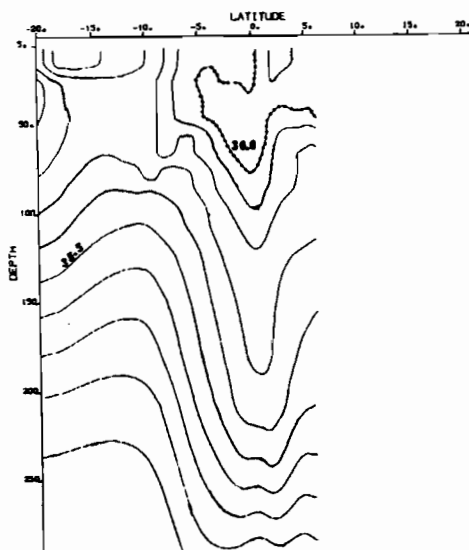
* 0.25E:			
	months:	- january to june.	p. 68
		- july to december.	p. 69
* 9.75W:			
	months:	- january to june.	p. 70
		- july to december.	p. 71
* 19.75W:			
	months:	- january to june.	p. 72
		- july to december.	p. 73
* 29.75W:			
	months:	- january to june.	p. 74
		- july to december.	p. 75
* 39.75W:			
	months:	- january to june.	p. 76
		- july to december.	p. 77
* 49.75W:			
	months:	- january to june.	p. 78
		- july to december.	p. 79

VERTICAL SECTION OF SALINITY AT 0.25 E

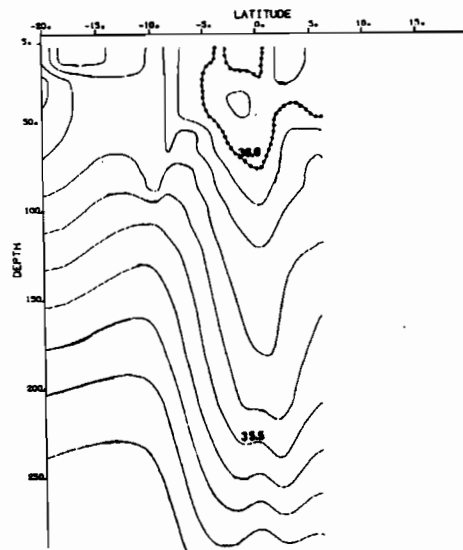
MONTH: JANUARY



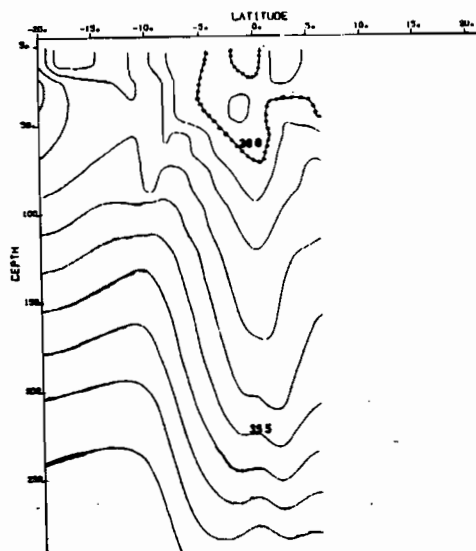
MONTH: FEBRUARY



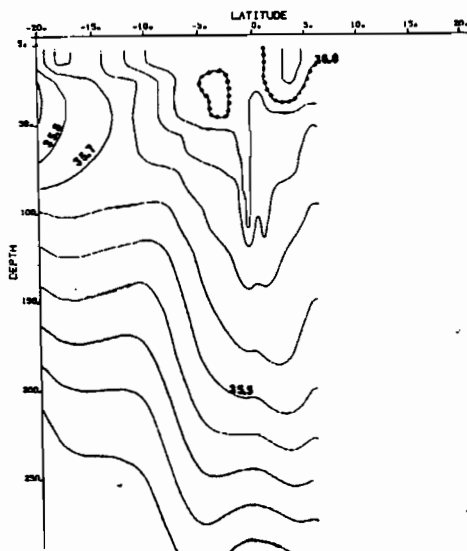
MONTH: MARCH



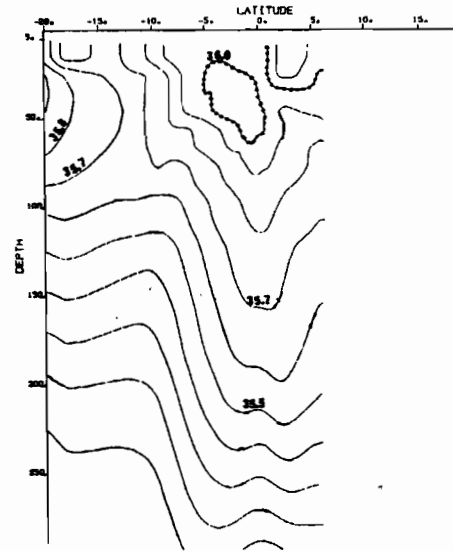
MONTH: APRIL



MONTH: JUNE

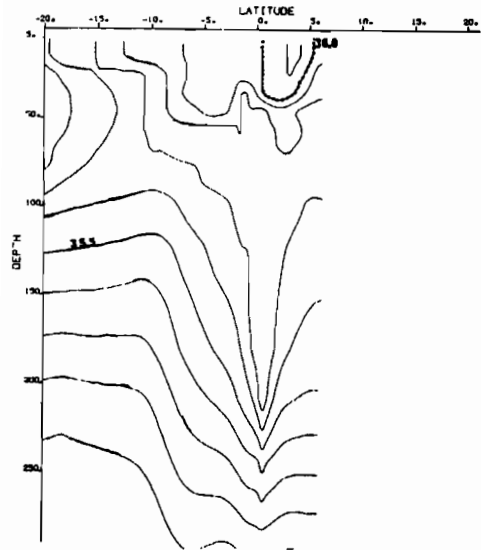


MONTH: MAY

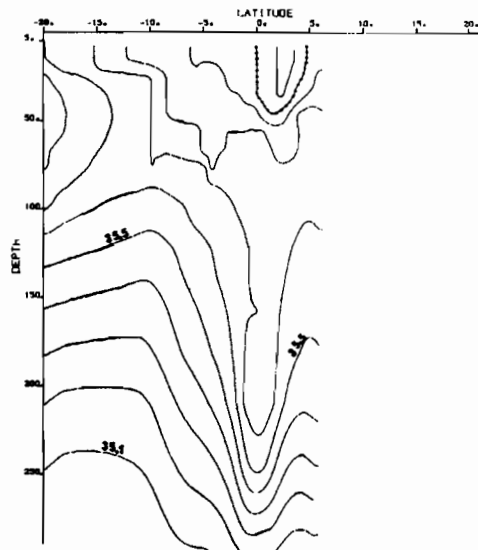


VERTICAL SECTION OF SALINITY AT 0.25 E

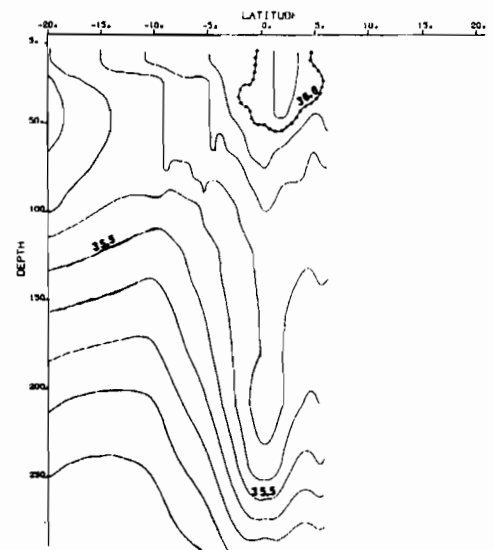
MONTH: JULY



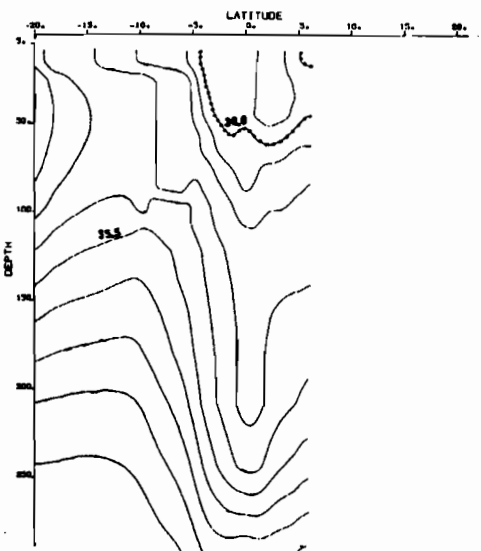
MONTH: AUGUST



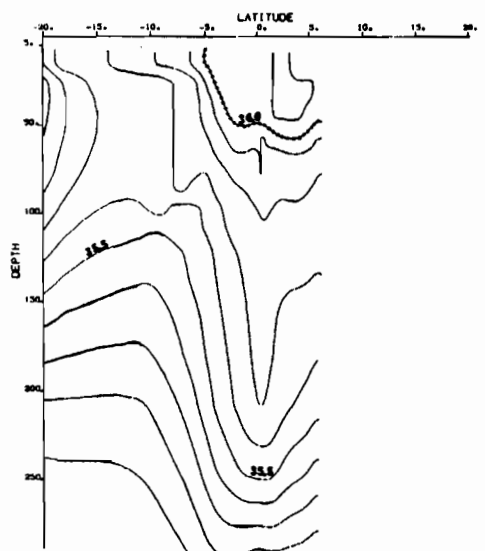
MONTH: SEPTEMB.



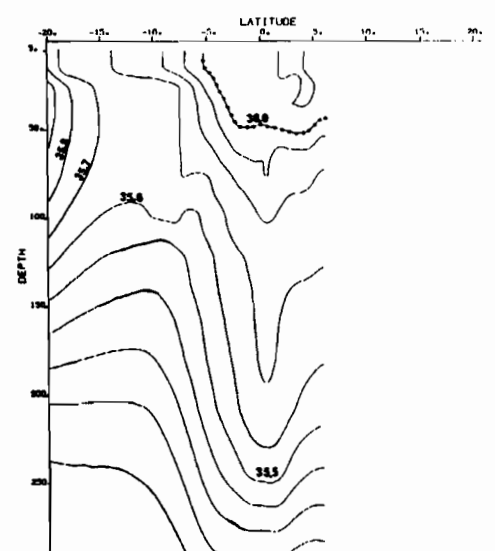
MONTH: OCTOBER



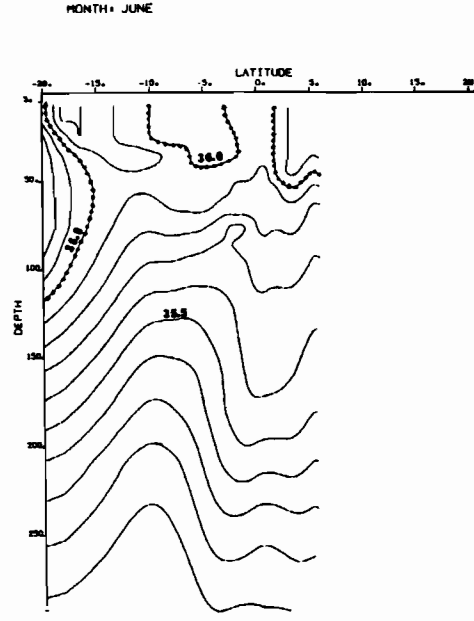
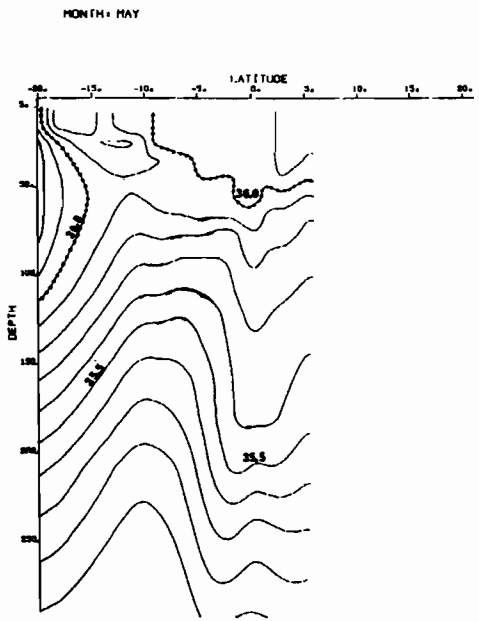
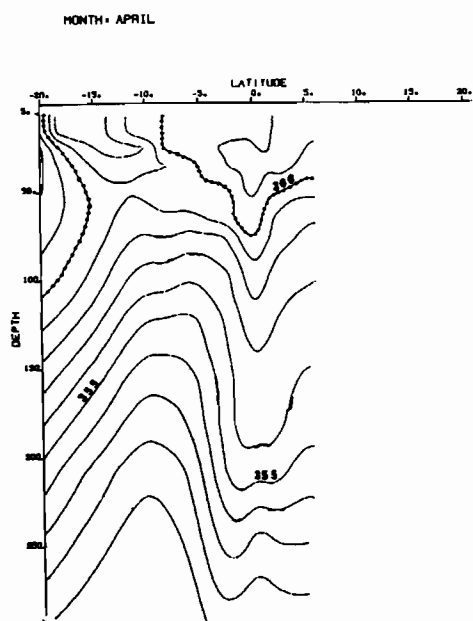
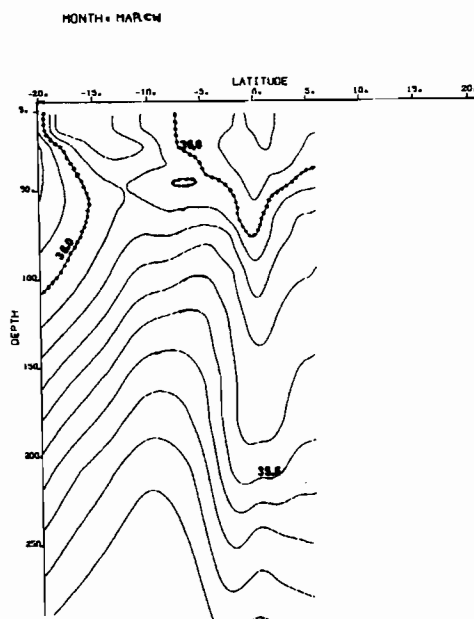
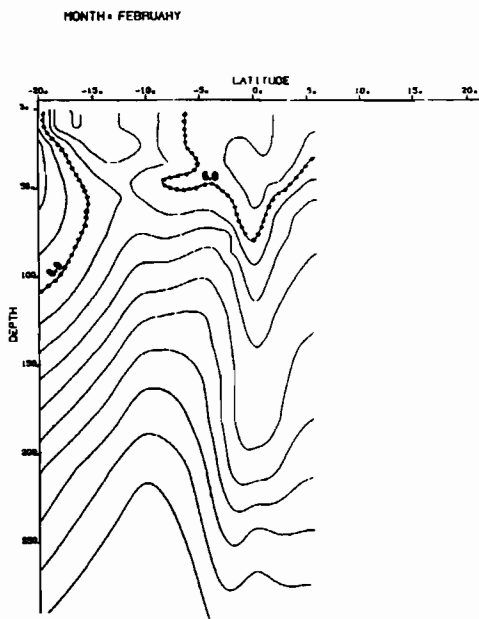
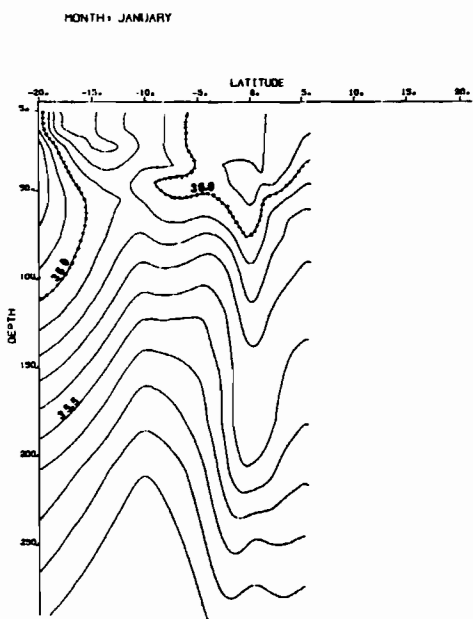
MONTH: NOVEMBER



MONTH: DECEMBER

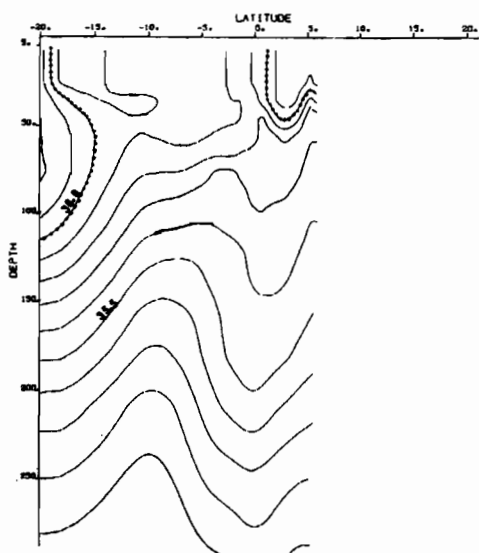


VERTICAL SECTION OF SALINITY AT 9.75 W

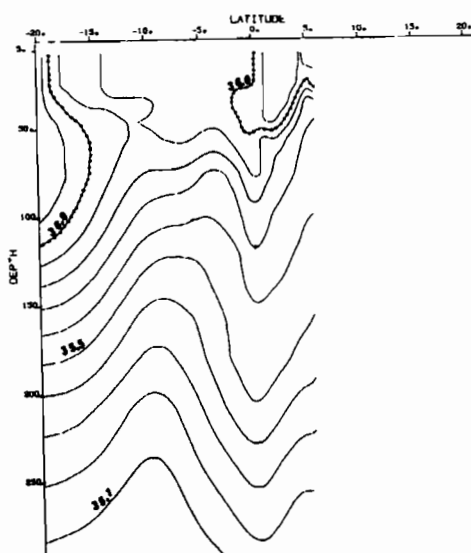


VERTICAL SECTION OF SALINITY AT 9.75 W

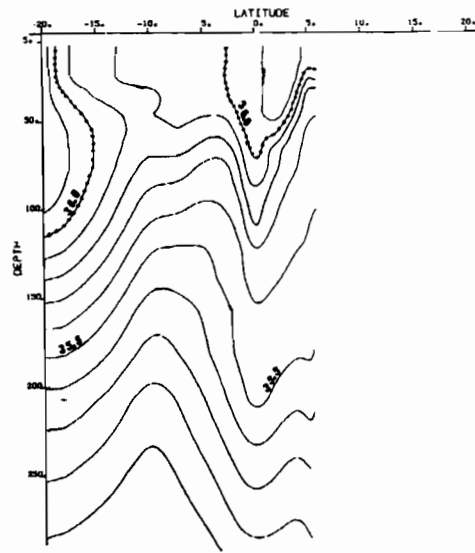
MONTH: JULY



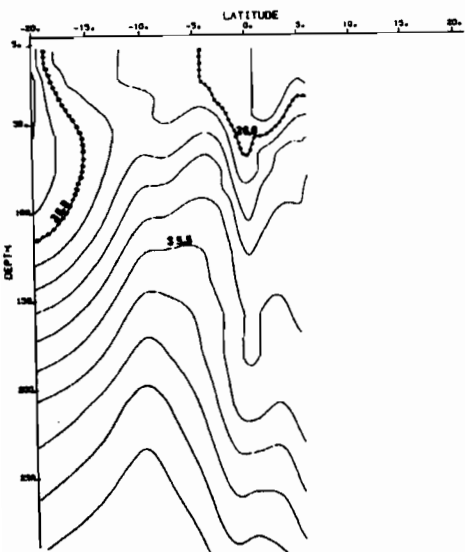
MONTH: AUGUST



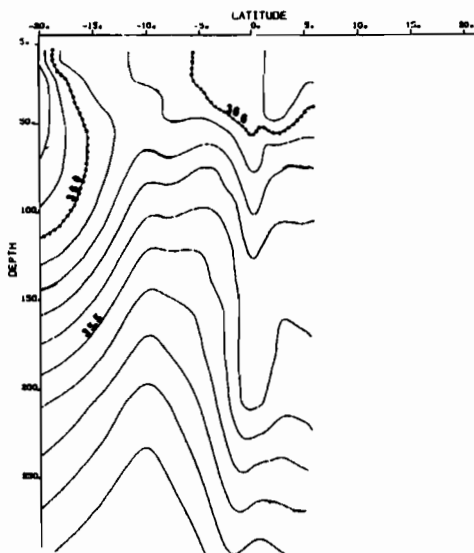
MONTH: SEPTEMBER



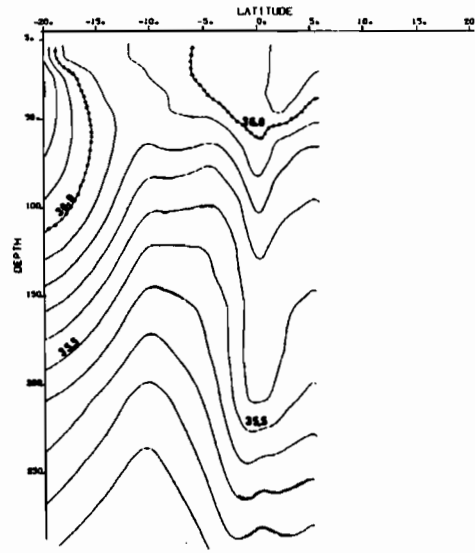
MONTH: OCTOBER



MONTH: NOVEMBER

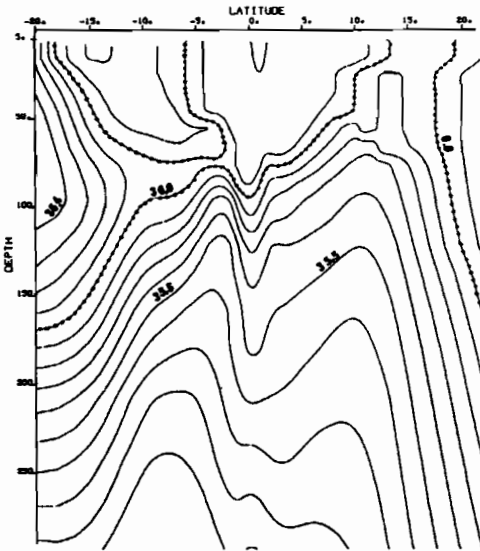


MONTH: DECEMBER

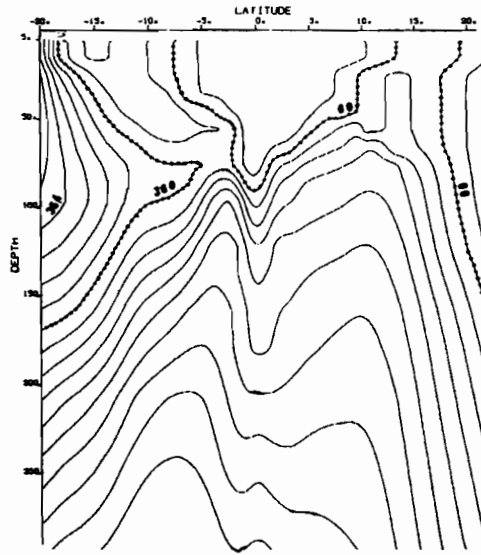


VERTICAL SECTION OF SALINITY AT 19.75 W

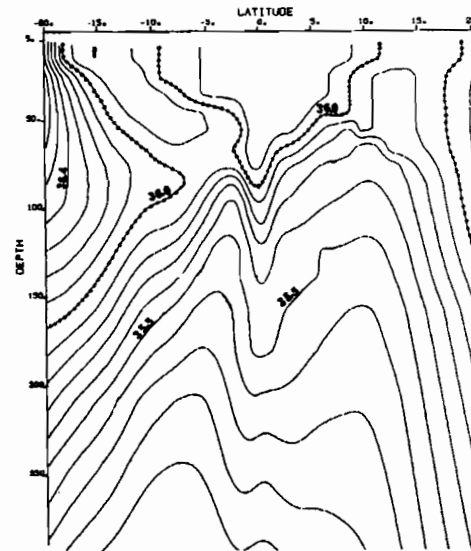
MONTH: JANUARY



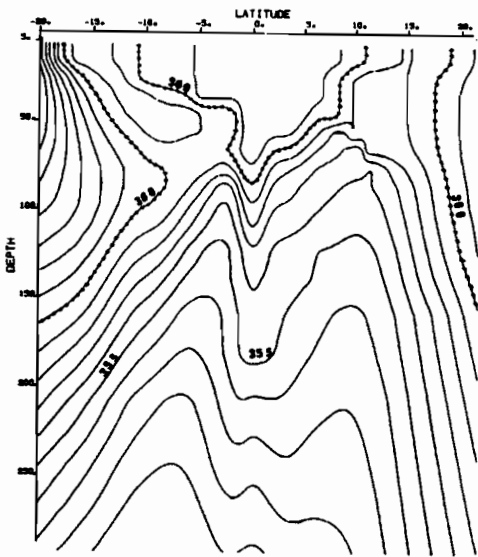
MONTH: FEBRUARY



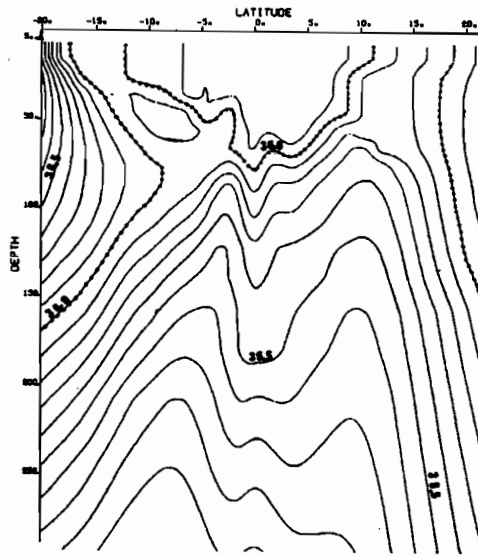
MONTH: MARCH



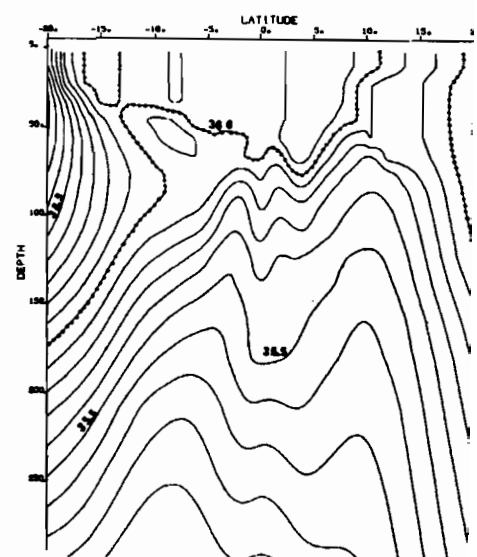
MONTH: APRIL



MONTH: MAY

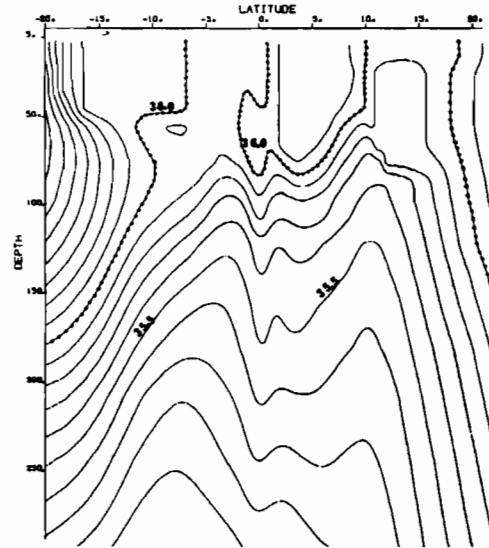


MONTH: JUNE

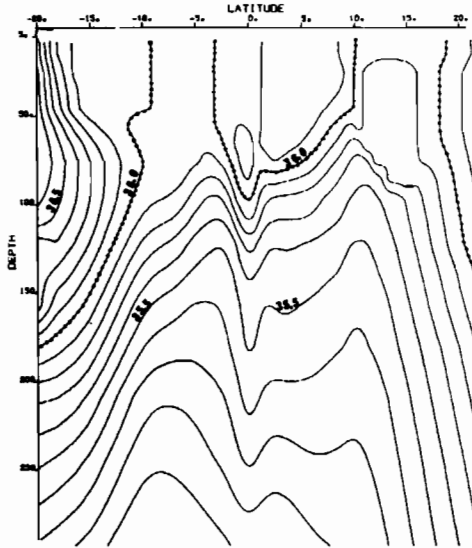


VERTICAL SECTION OF SALINITY AT 19.75 W

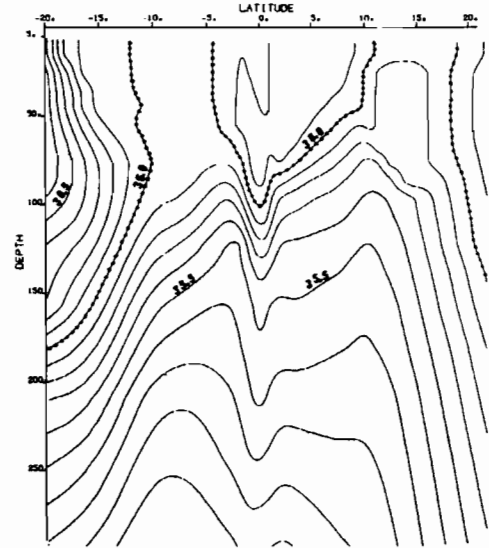
MONTH: JULY



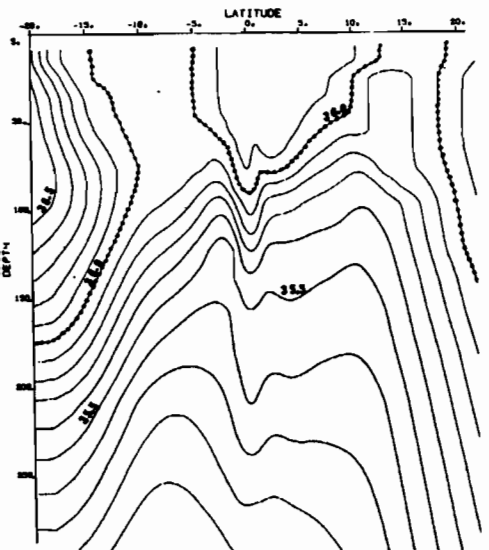
MONTH: AUGUST



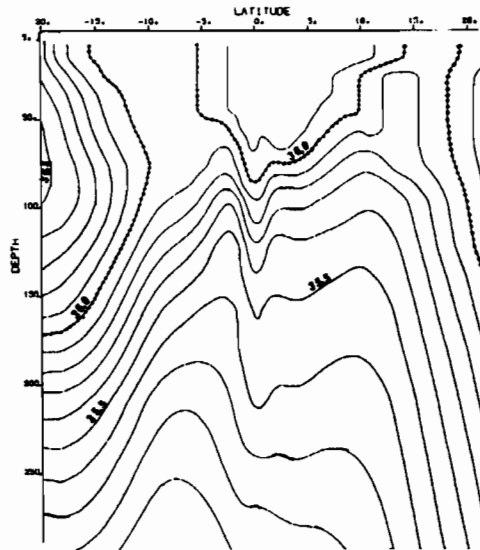
MONTH: SEPTEMBER



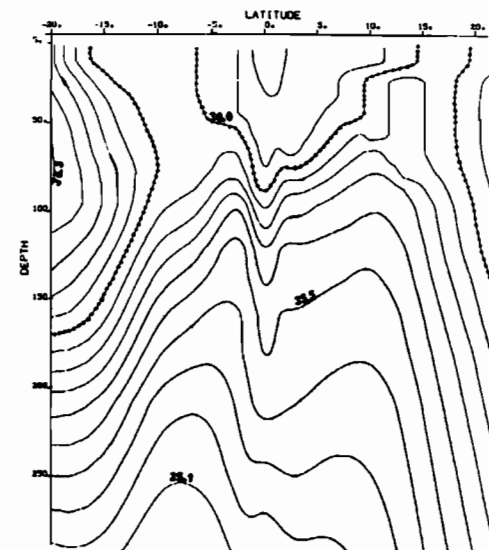
MONTH: OCTOBER



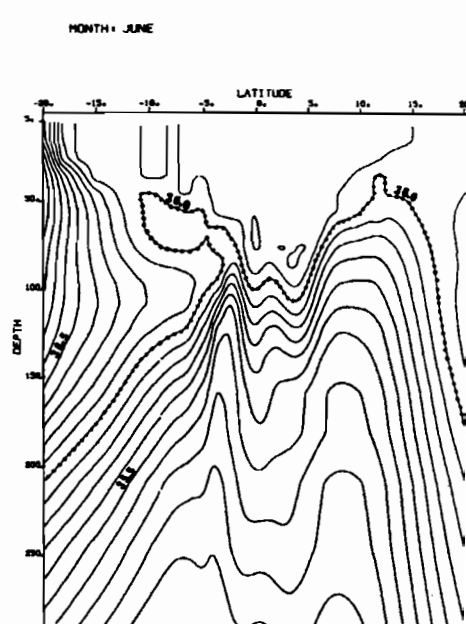
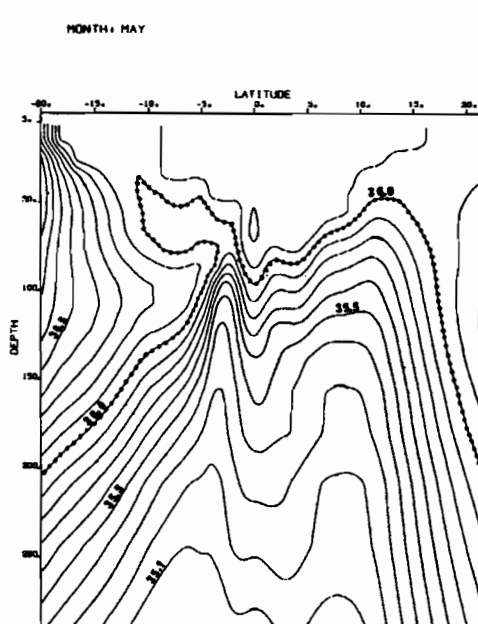
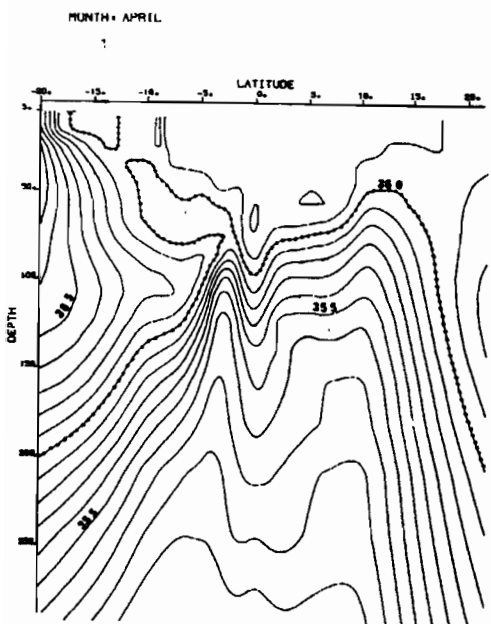
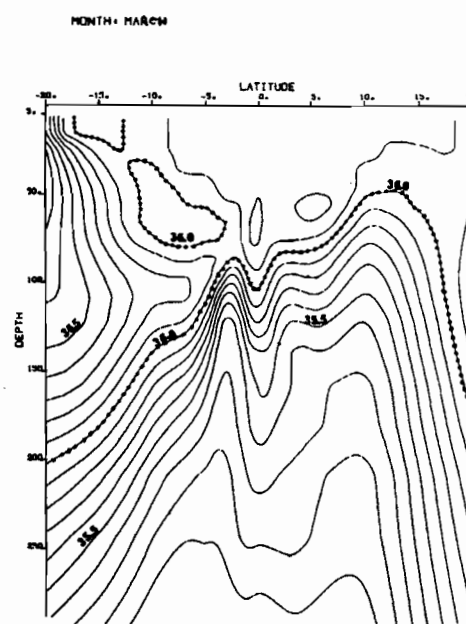
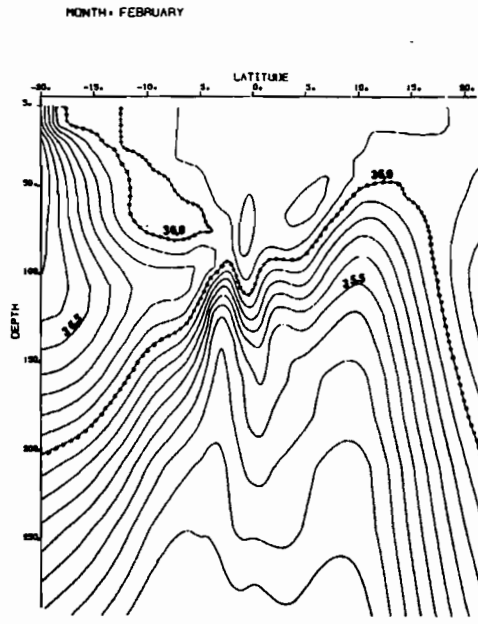
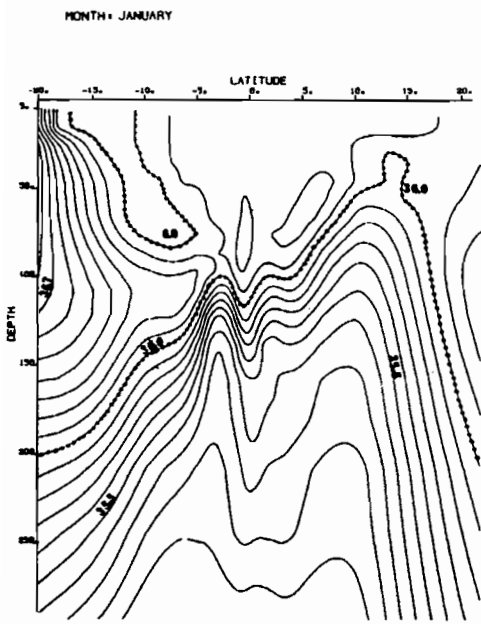
MONTH: NOVEMBER



MONTH: DECEMBER

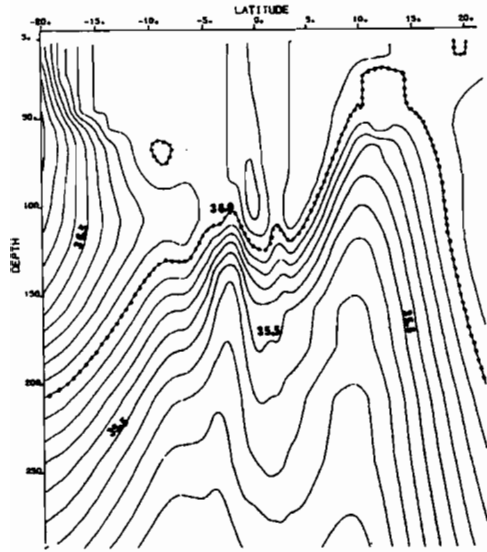


VERTICAL SECTION OF SALINITY AT 29.75 W

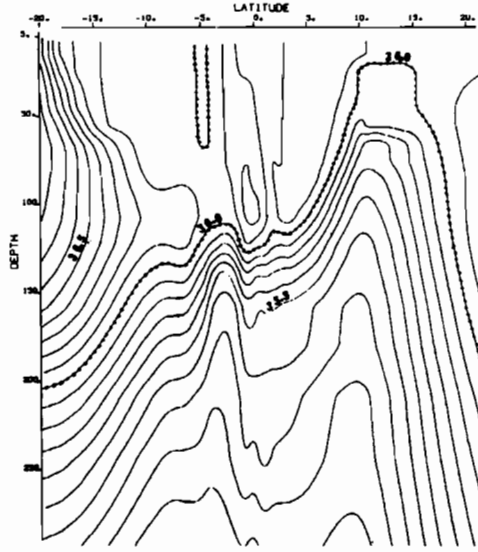


VERTICAL SECTION OF SALINITY AT 29.75 W

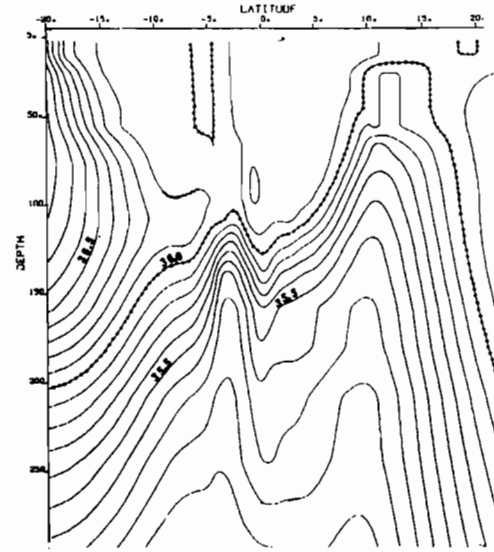
MONTH: JULY



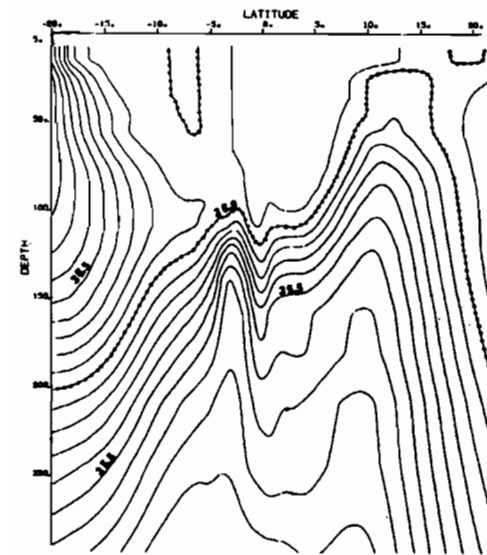
MONTH: AUGUST



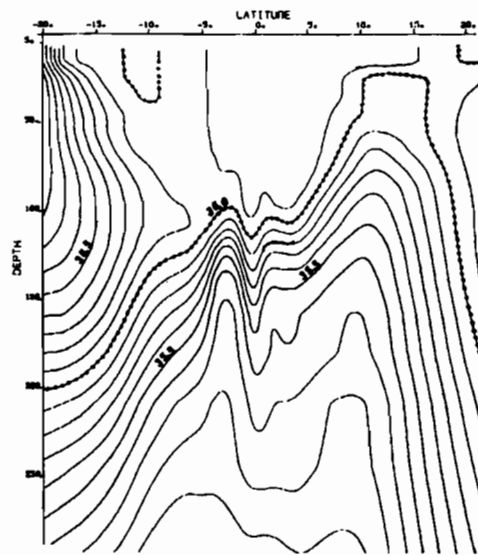
MONTH: SEPTEMBER



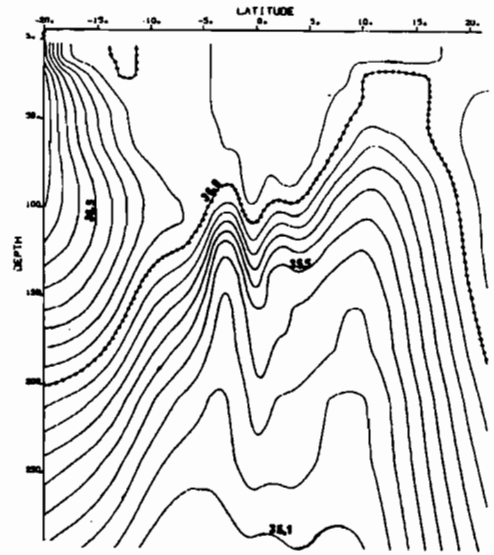
MONTH: OCTOBER



MONTH: NOVEMBER

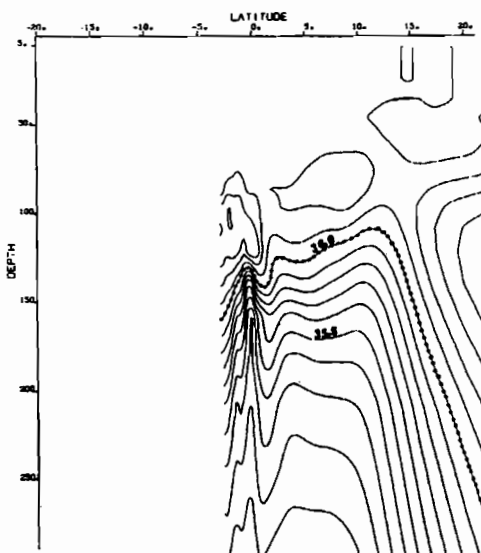


MONTH: DECEMBER

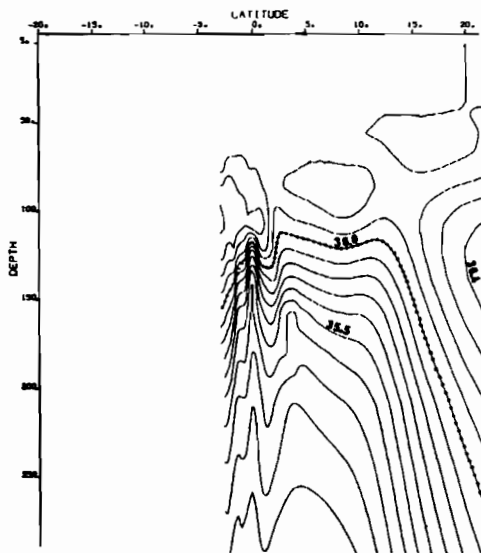


VERTICAL SECTION OF SALINITY AT 39.75 W

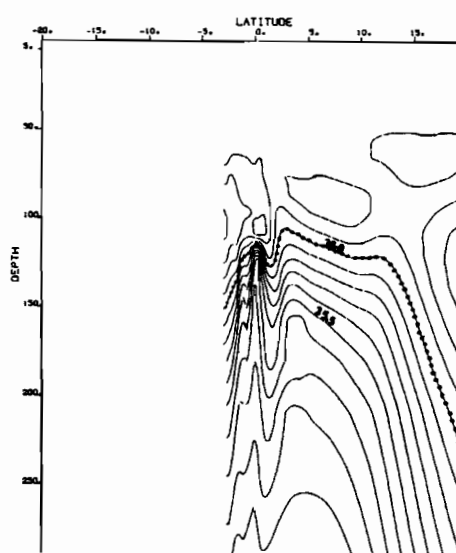
MONTH: JANUARY



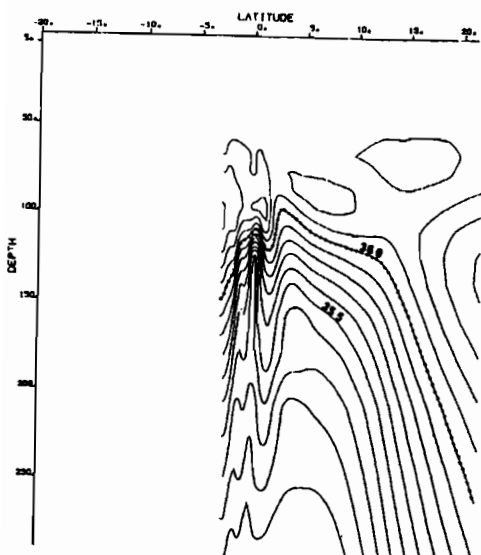
MONTH: FEBRUARY



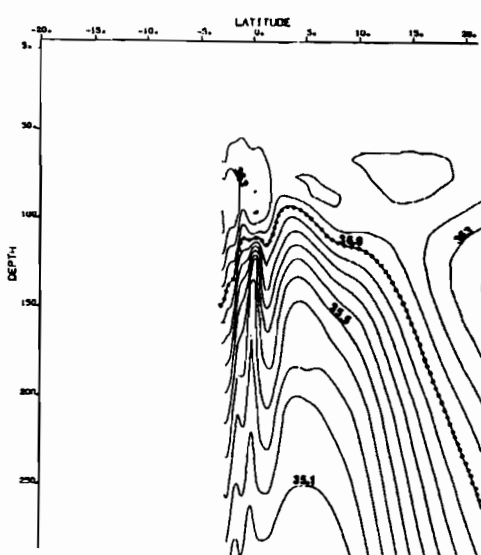
MONTH: MARCH



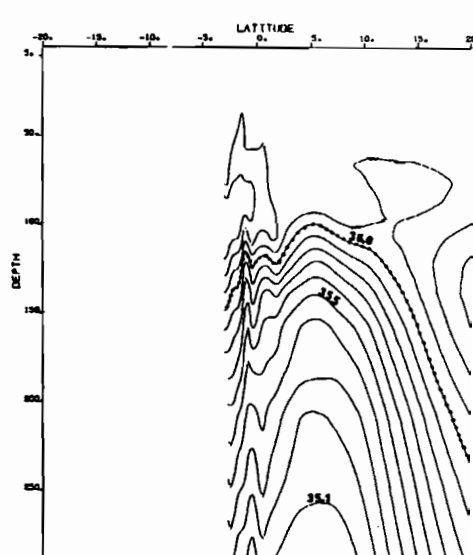
MONTH: APRIL



MONTH: MAY

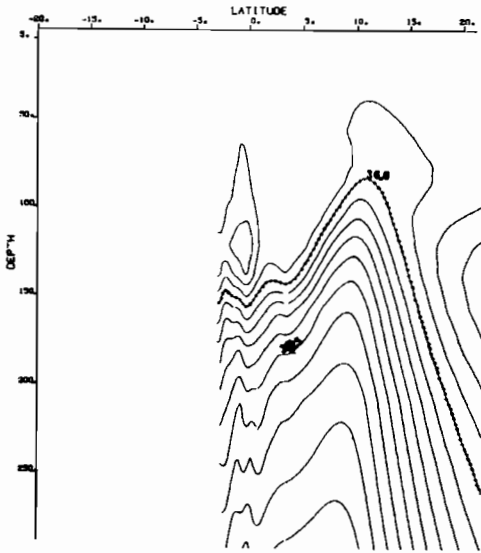


MONTH: JUNE

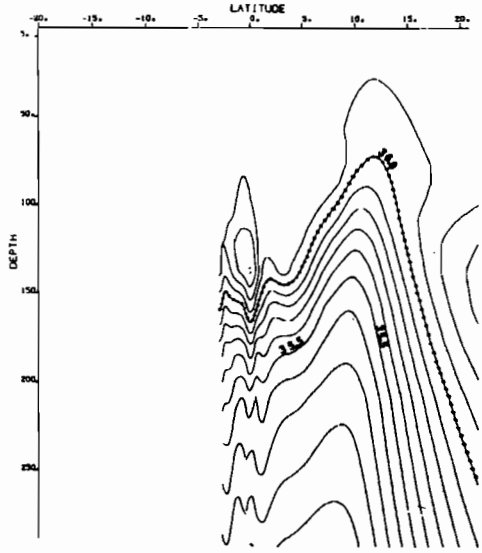


VERTICAL SECTION OF SALINITY AT 39.75 W

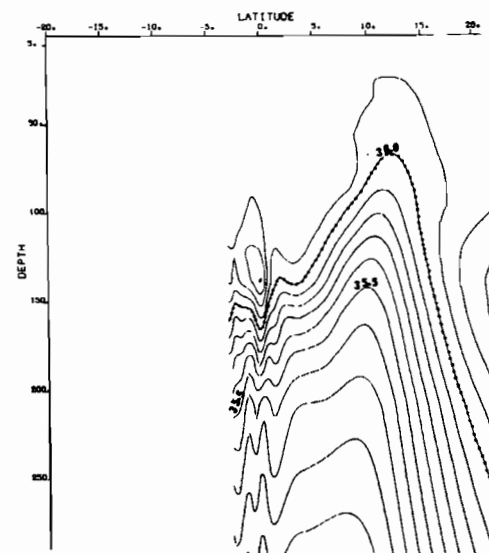
MONTH: JULY



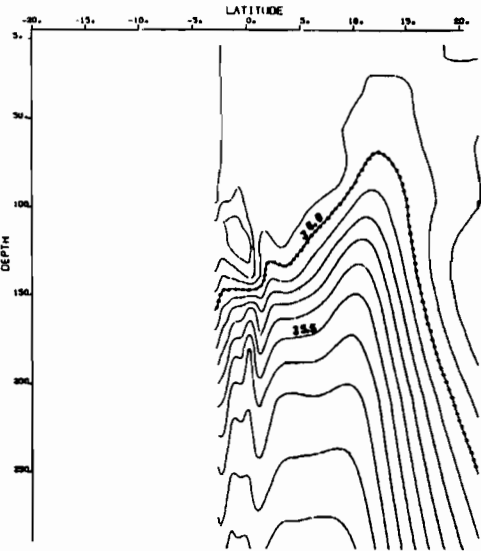
MONTH: AUGUST



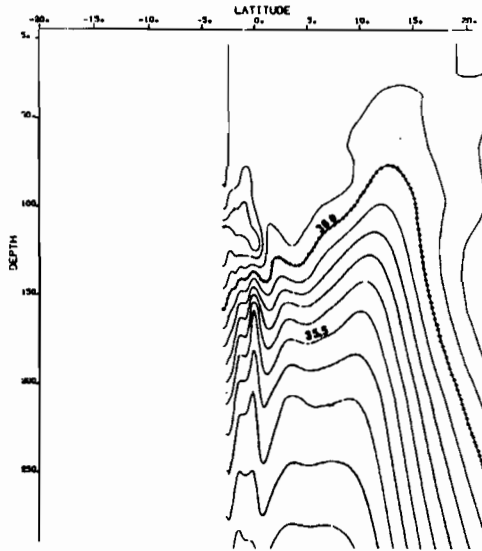
MONTH: SEPTEMB.



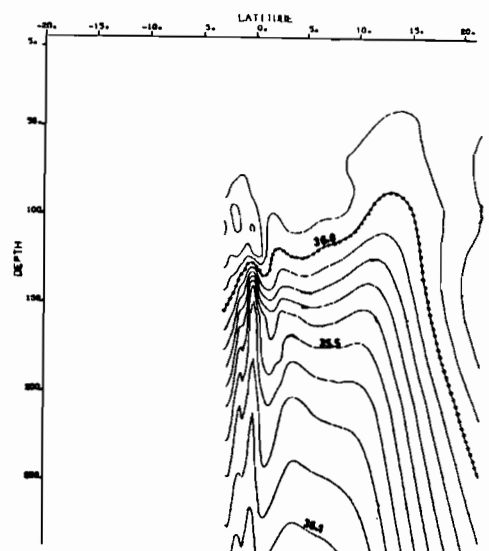
MONTH: OCTOBER



MONTH: NOVEMBER

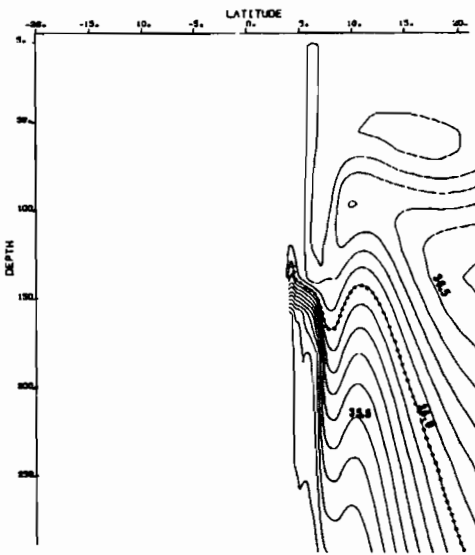


MONTH: DECEMBER

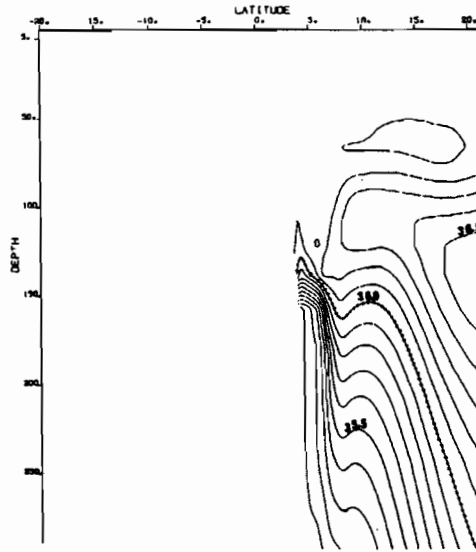


VERTICAL SECTION OF SALINITY AT 49.75 W

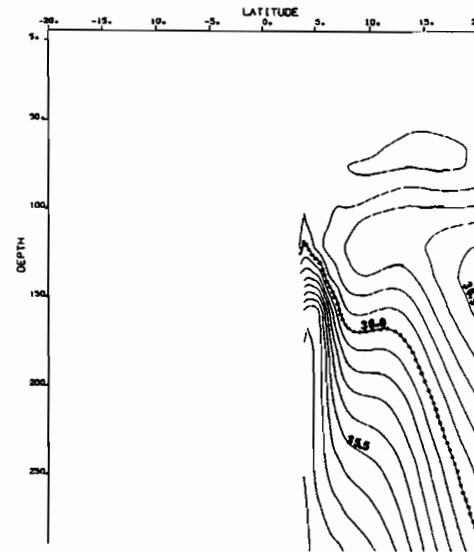
MONTH: JANUARY



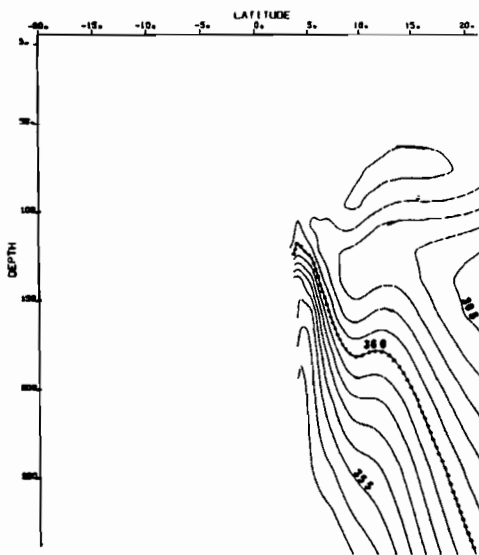
MONTH: FEBRUARY



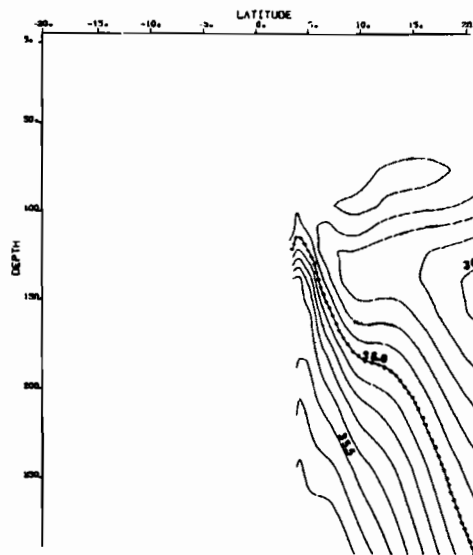
MONTH: MARCH



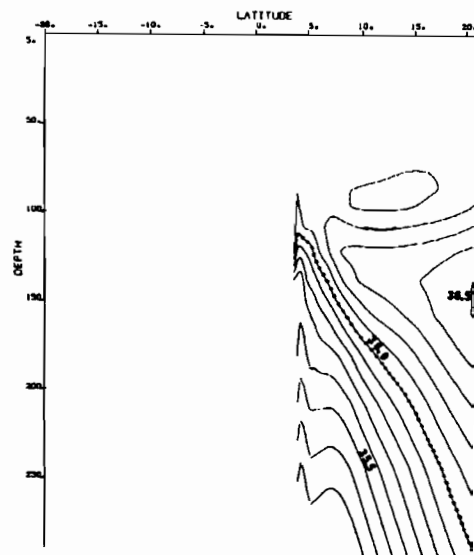
MONTH: APRIL



MONTH: MAY

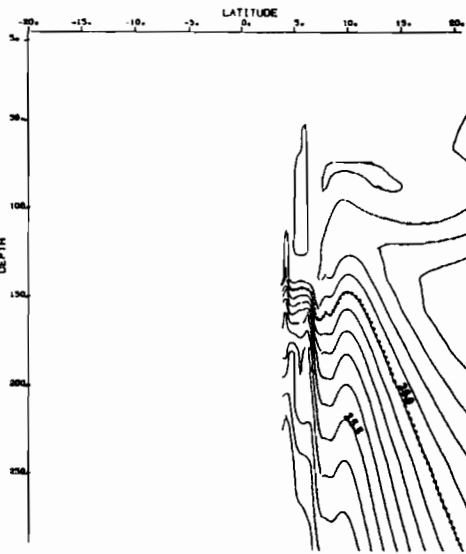


MONTH: JUNE

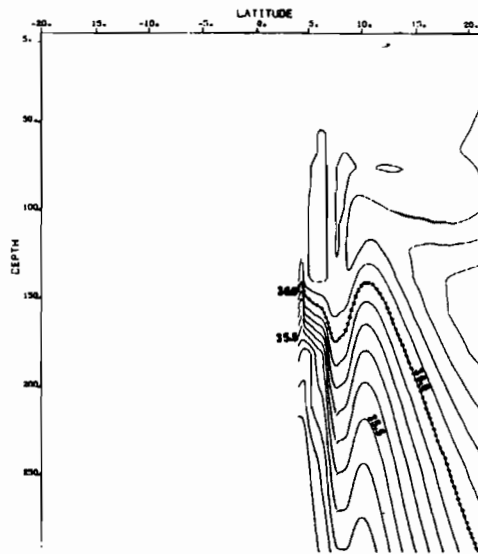


VERTICAL SECTION OF SALINITY AT 49.75 W

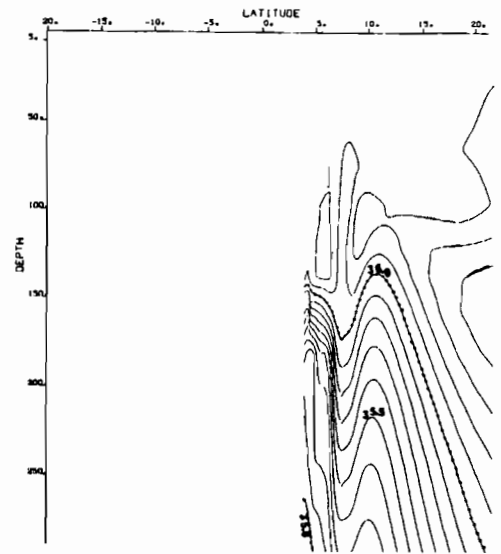
MONTH: JULY



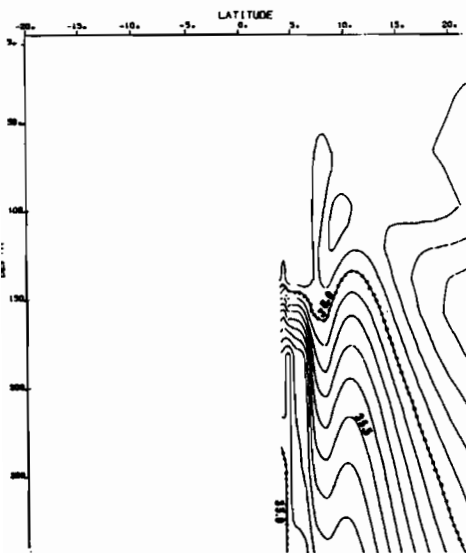
MONTH: AUGUST



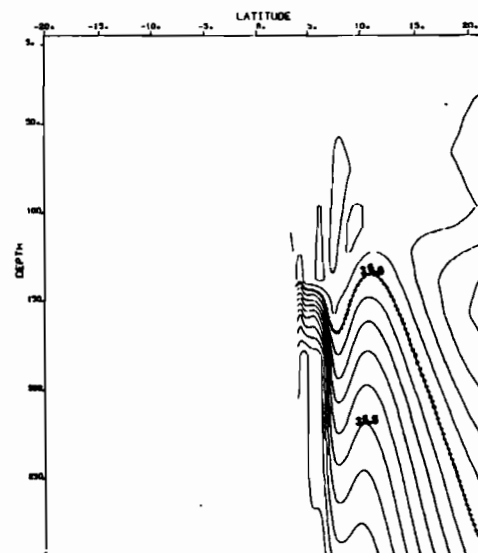
MONTH: SEPTEMBER



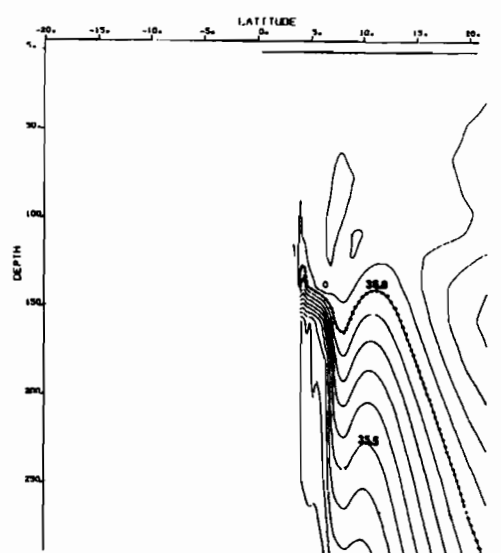
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER



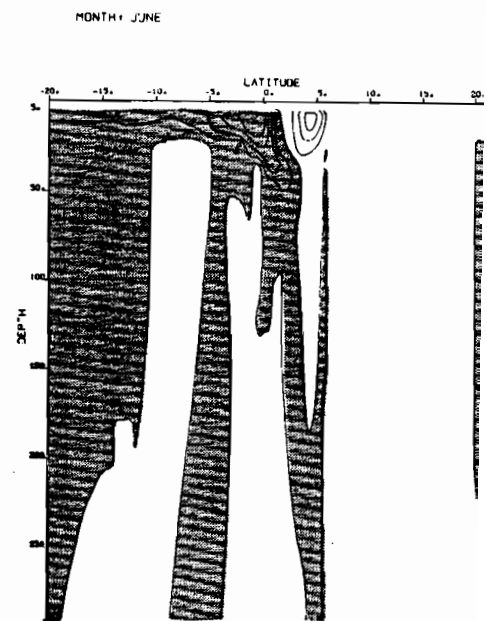
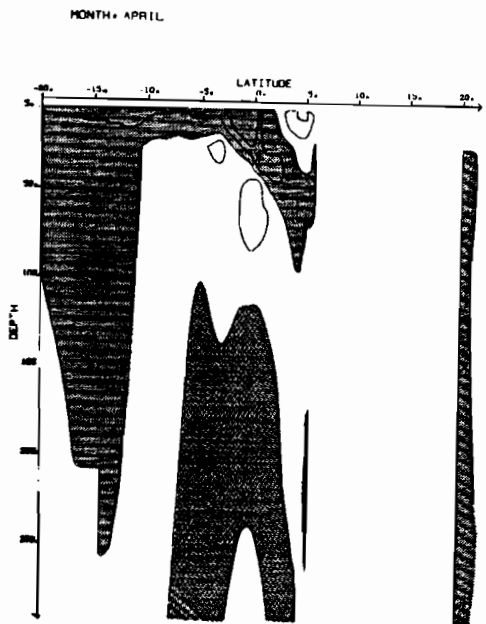
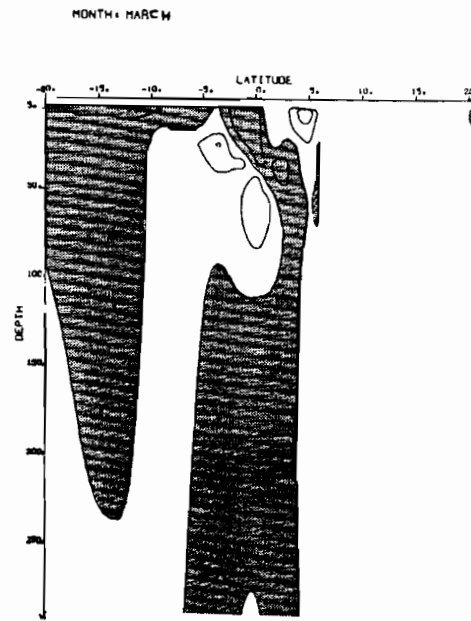
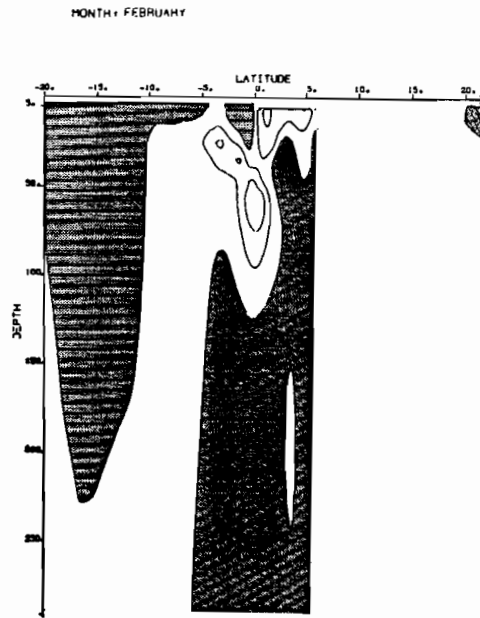
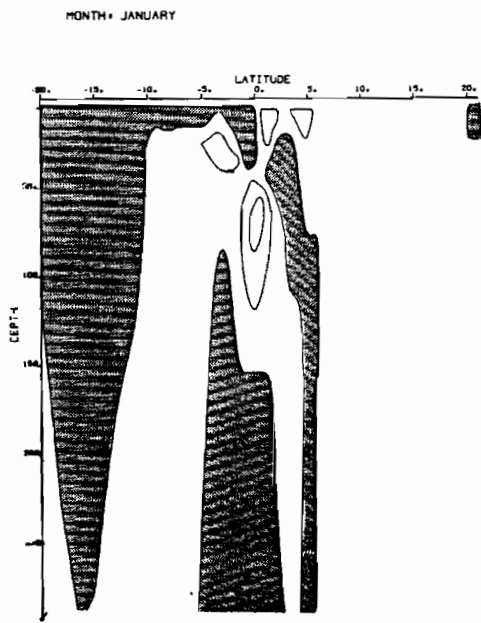
MERIDIONAL SECTIONS OF ZONAL VELOCITY AT:

* 0.25E:			
	months:	- january to june.	p. 82
		- july to december.	p. 83
* 9.75W:			
	months:	- january to june.	p. 84
		- july to december.	p. 85
* 19.75W:			
	months:	- january to june.	p. 86
		- july to december.	p. 87
* 29.75W:			
	months:	- january to june.	p. 88
		- july to december.	p. 89
* 39.75W:			
	months:	- january to june.	p. 90
		- july to december.	p. 91
* 49.75W:			
	months:	- january to june.	p. 92
		- july to december.	p. 93

VERTICAL SECTION OF ZONAL VELOCITY AT 0.25 E

(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

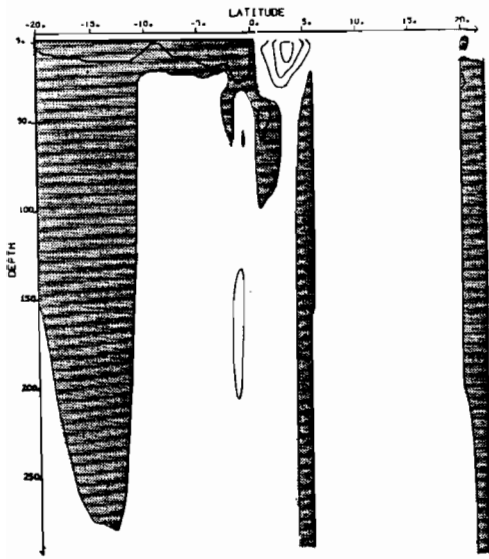


VERTICAL SECTION OF ZONAL VELOCITY AT 0.25 E

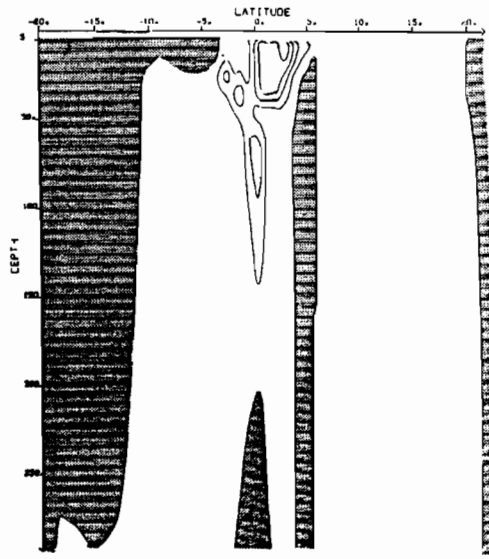
(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

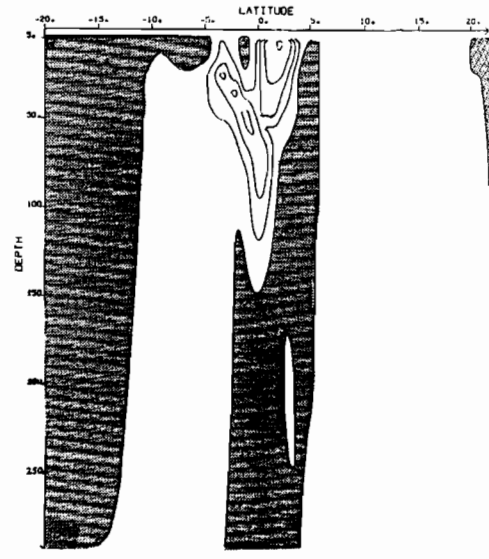
MONTH: JULY



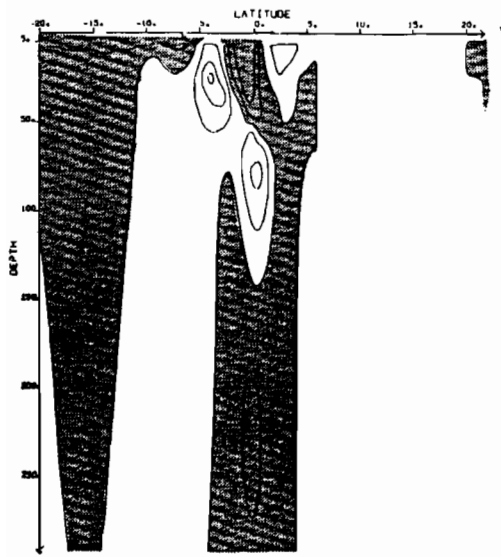
MONTH: AUGUST



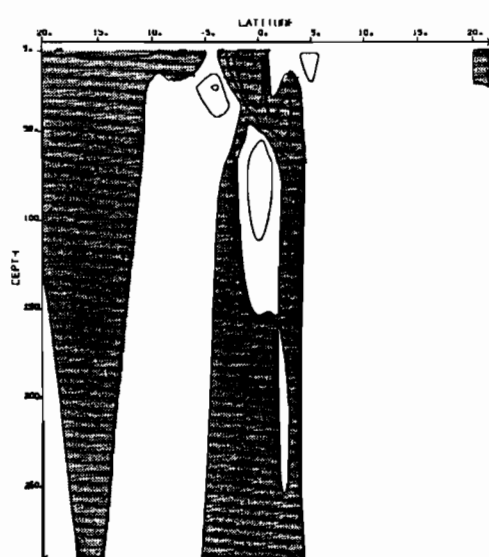
MONTH: SEPTEMBER



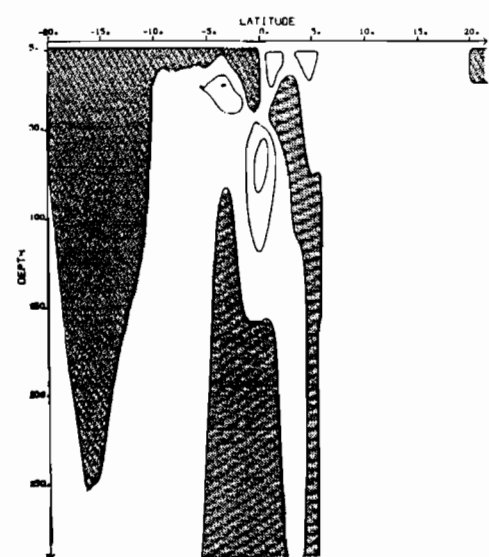
MONTH: OCTOBER



MONTH: NOVEMBER



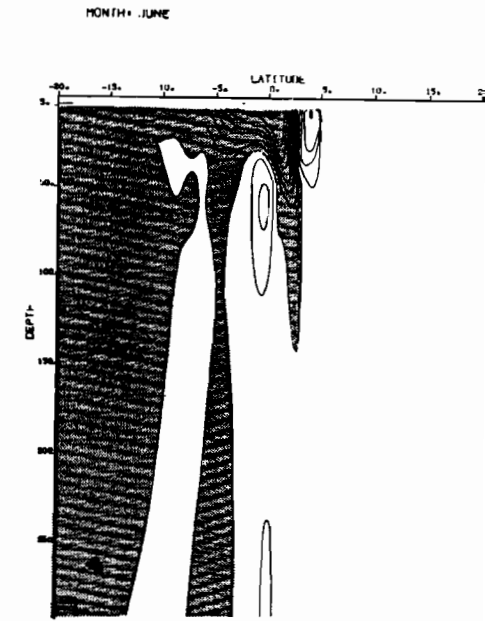
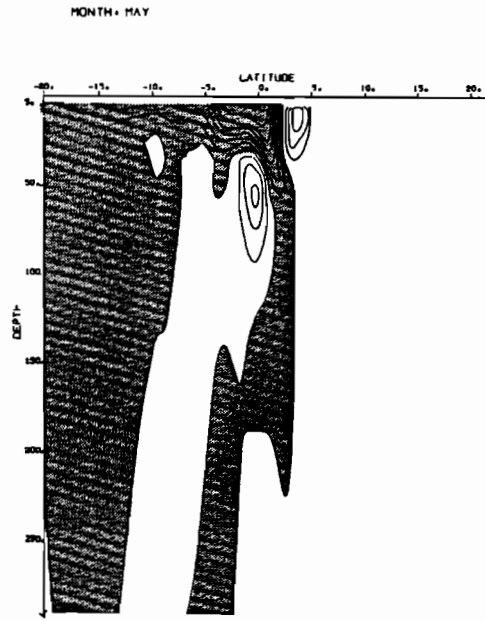
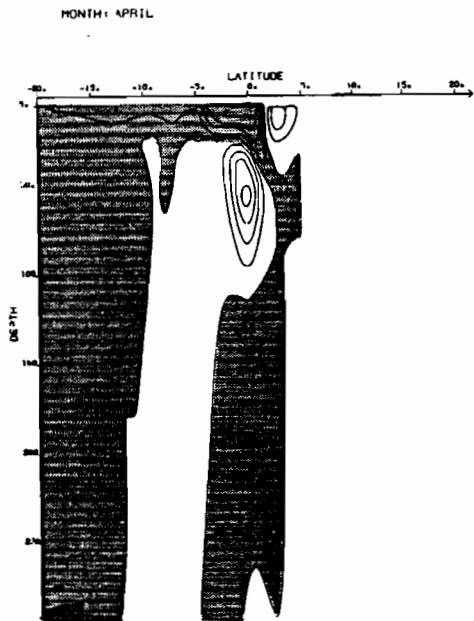
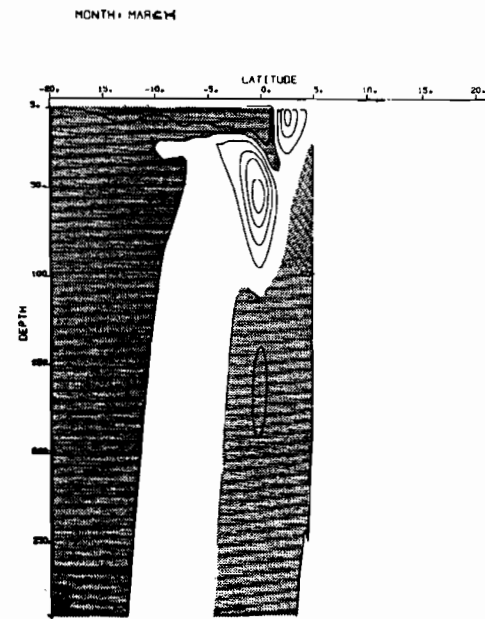
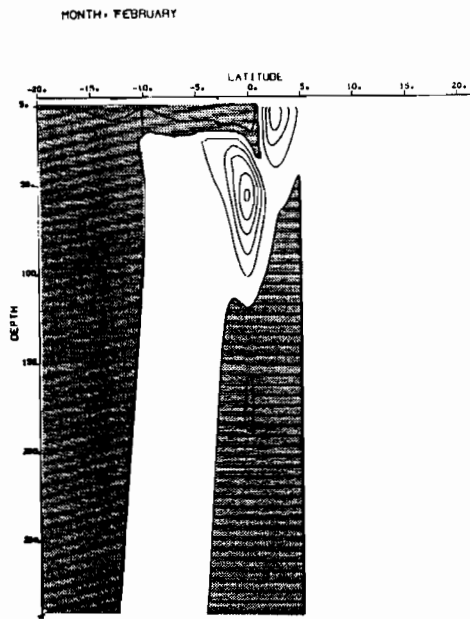
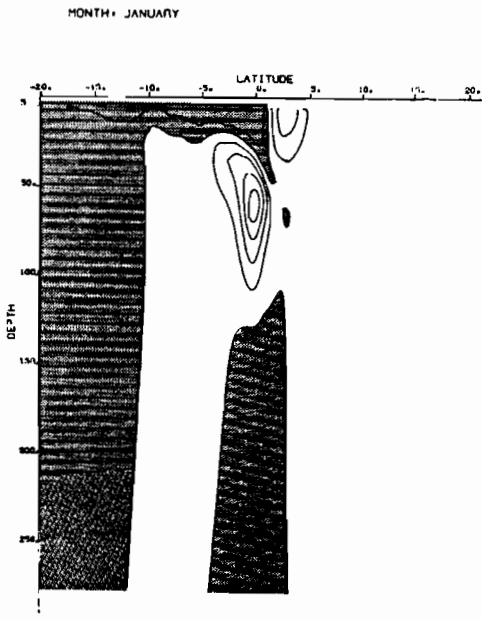
MONTH: DECEMBER



VERTICAL SECTION OF ZONAL VELOCITY AT 9.75 W

(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

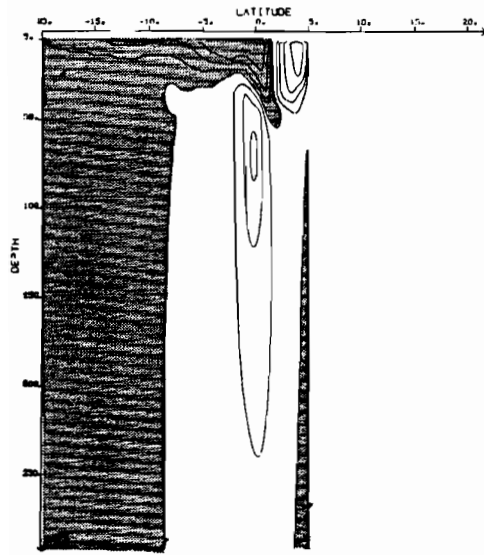


VERTICAL SECTION OF ZONAL VELOCITY AT 9.75 W.

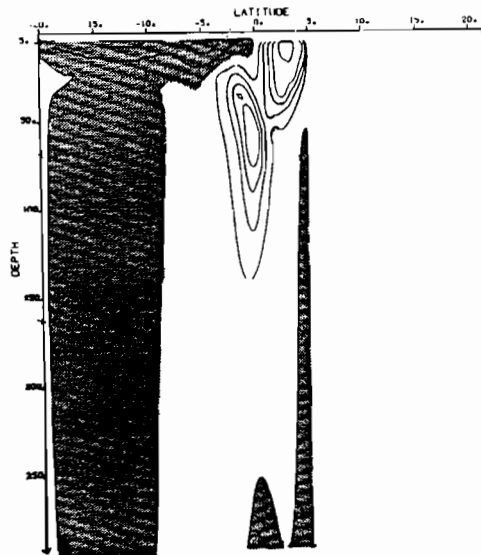
(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

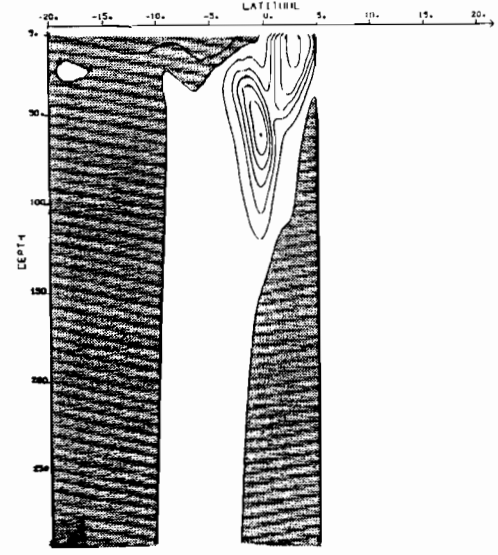
MONTH: JULY



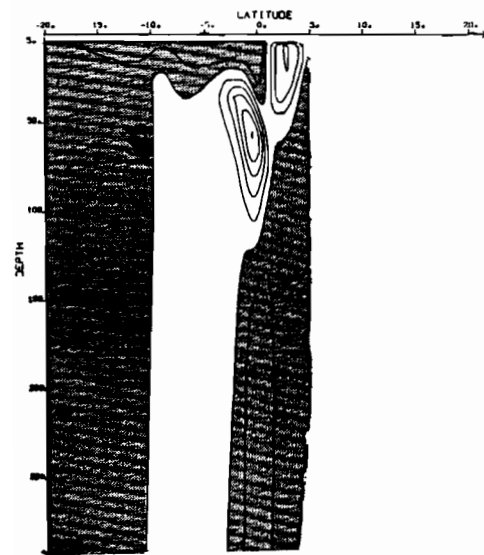
MONTH: AUGUST



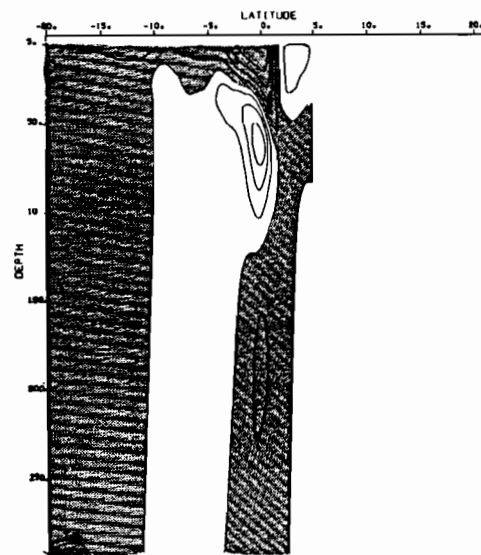
MONTH: SEPTEMB.



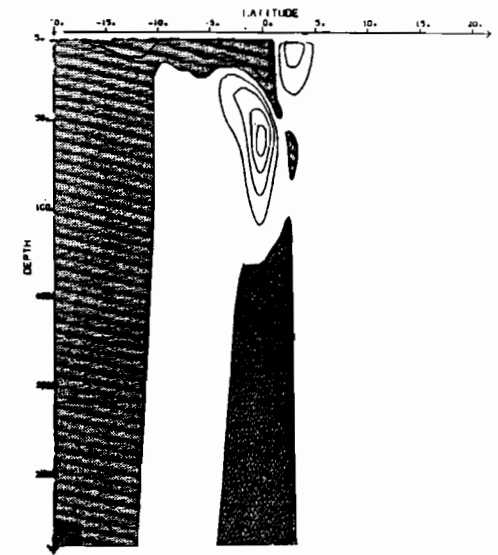
MONTH: OCTOBER



MONTH: NOVEMBER



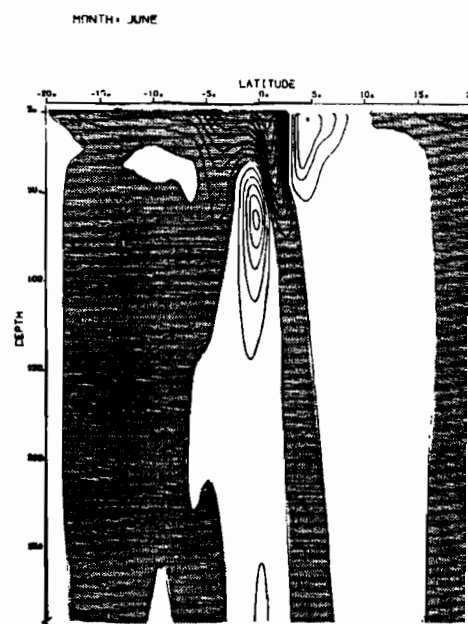
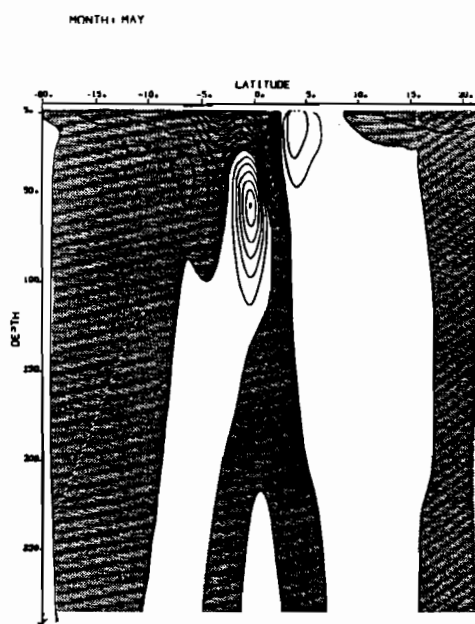
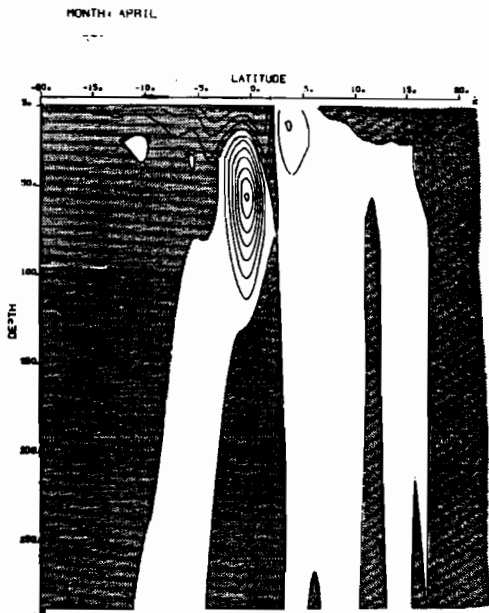
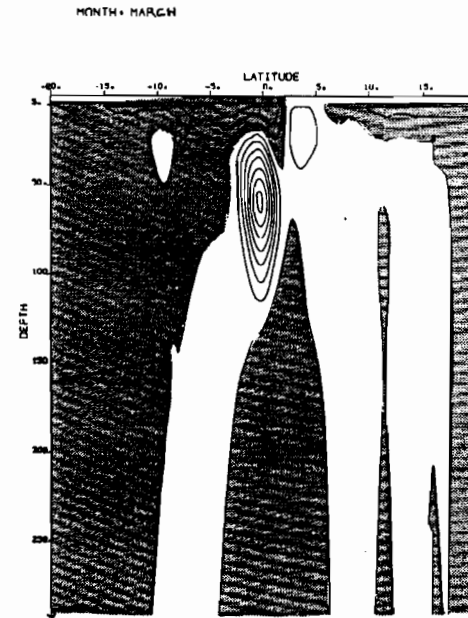
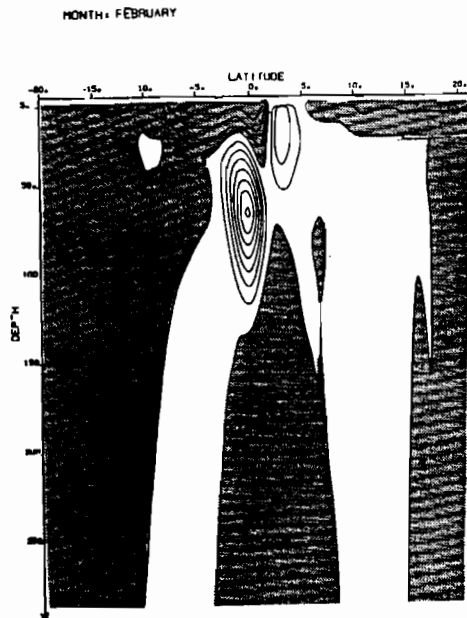
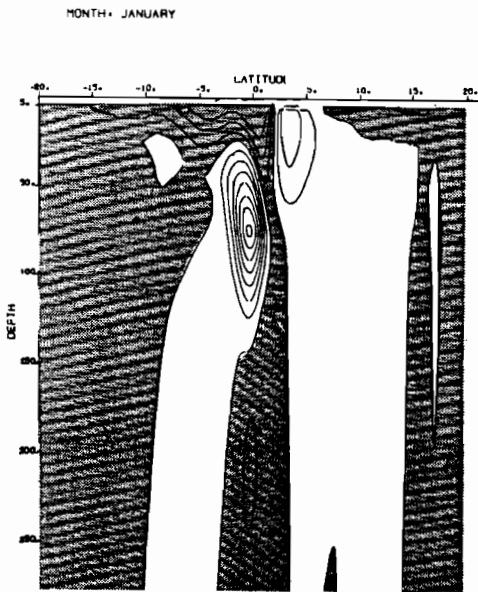
MONTH: DECEMBER



VERTICAL SECTION OF ZONAL VELOCITY AT 19.75 W

(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)



VERTICAL SECTION OF ZONAL VELOCITY AT 19.75 W

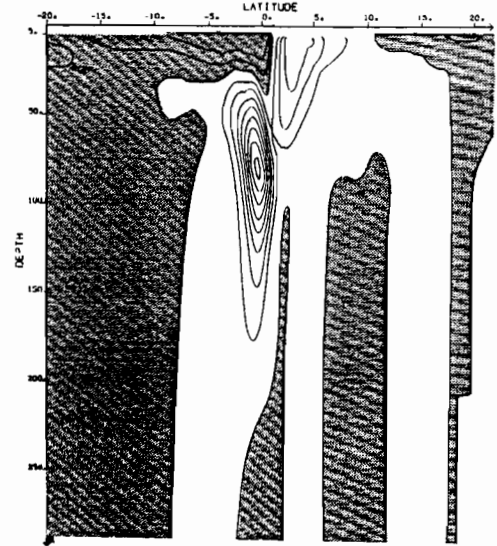
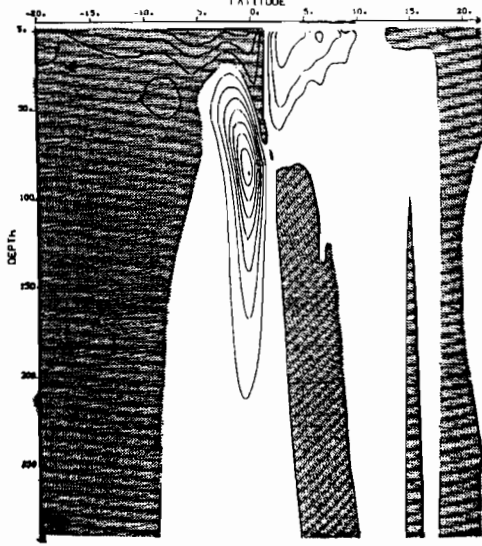
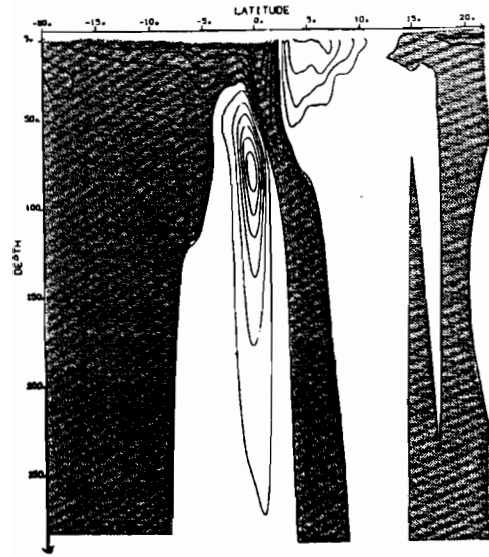
(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

MONTH: JULY

MONTH: AUGUST

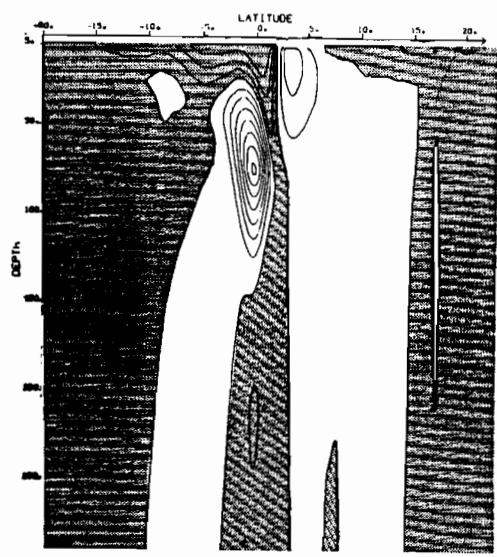
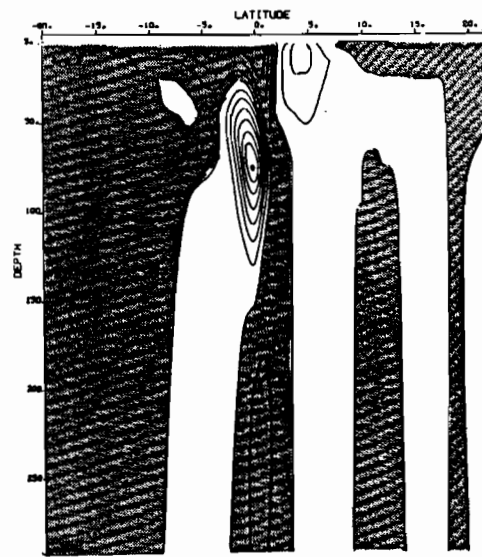
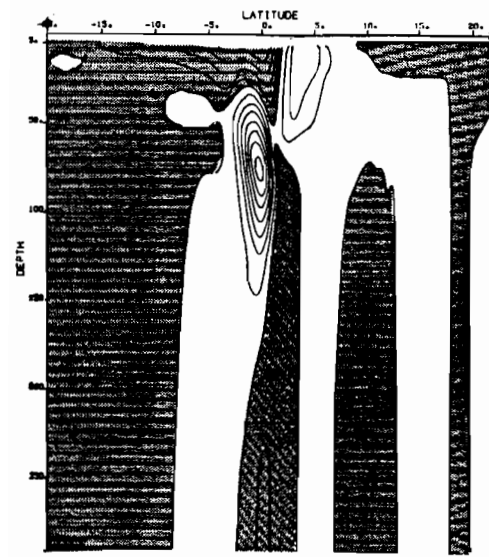
MONTH: SEPTEMB.



MONTH: OCTOBER

MONTH: NOVEMBER

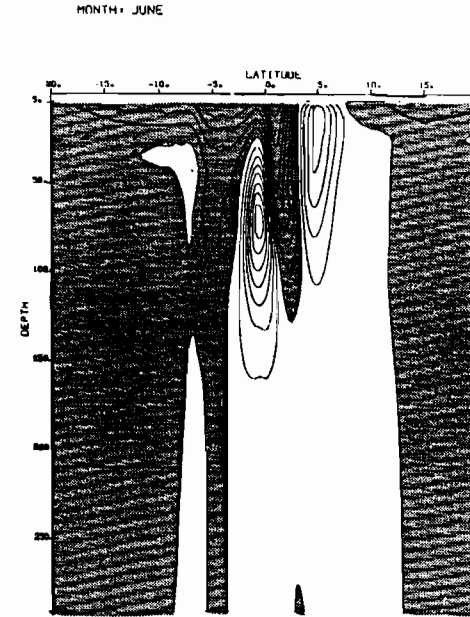
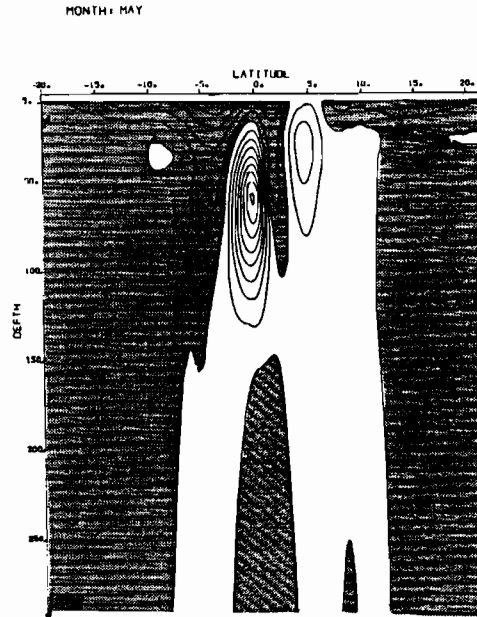
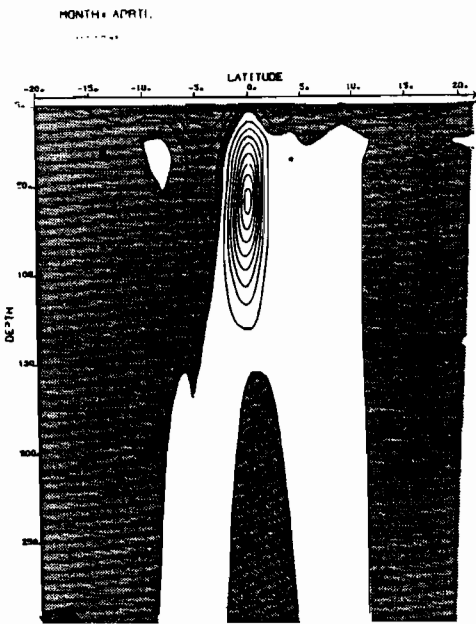
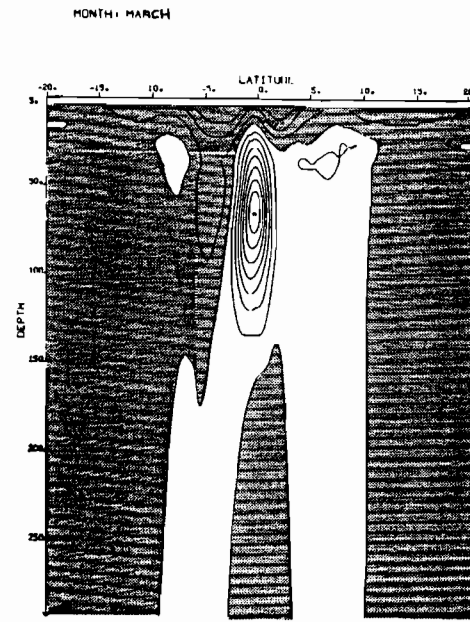
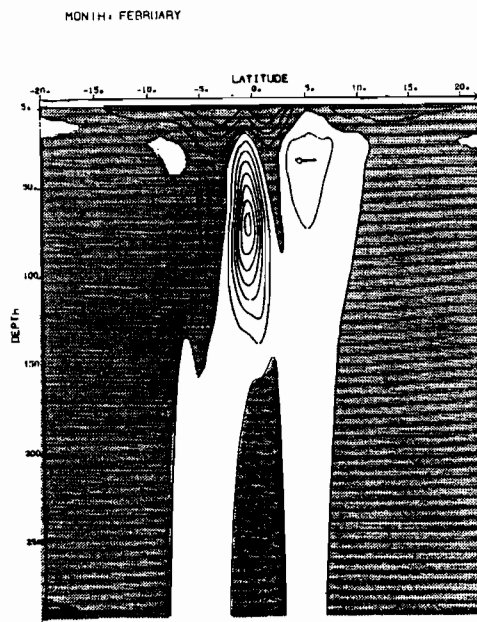
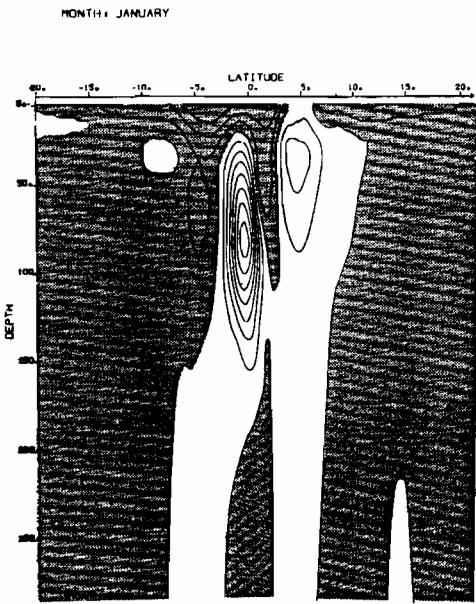
MONTH: DECEMBER



VERTICAL SECTION OF ZONAL VELOCITY AT 29.75 W

(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

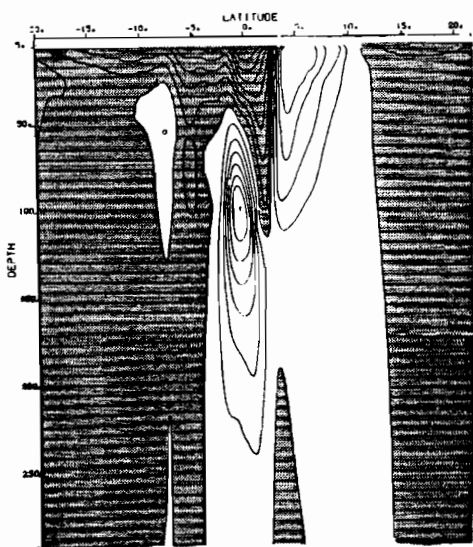


VERTICAL SECTION OF ZONAL VELOCITY AT 29.75 W

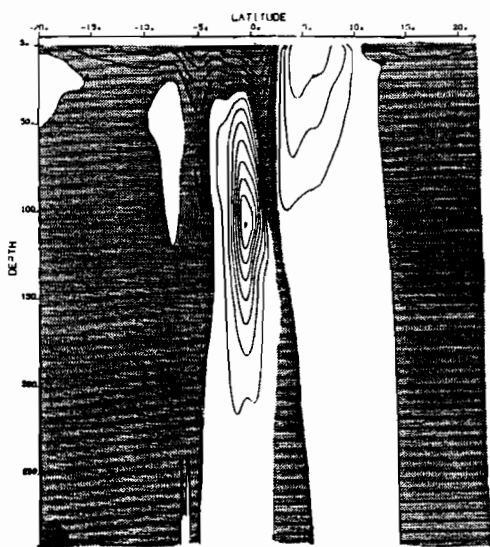
(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

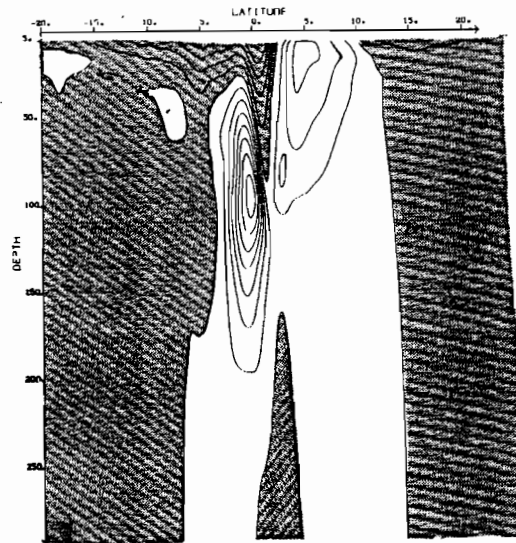
MONTH: JULY



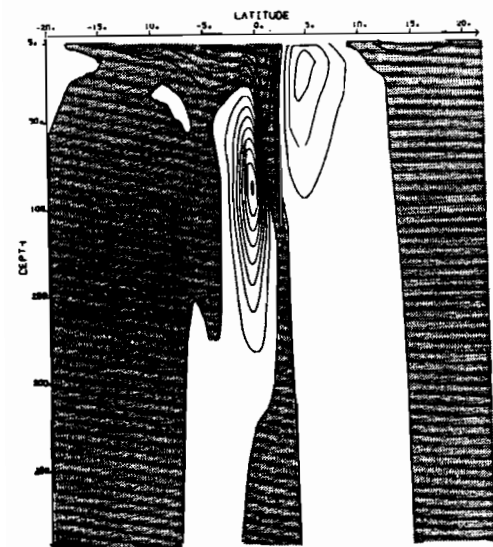
MONTH: AUGUST



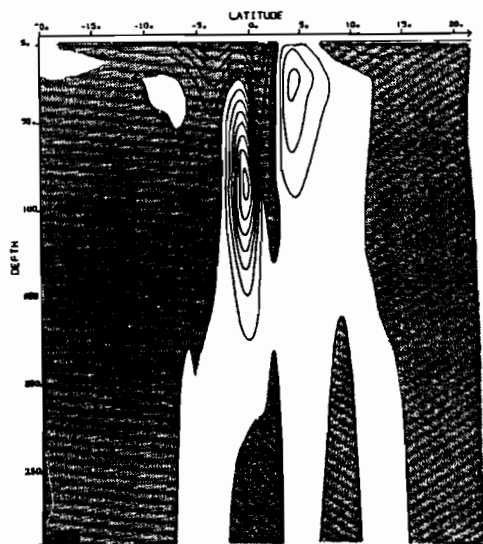
MONTH: SEPTEMB.



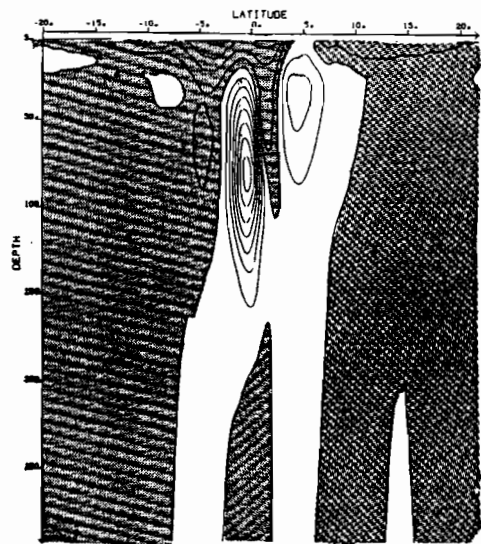
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER

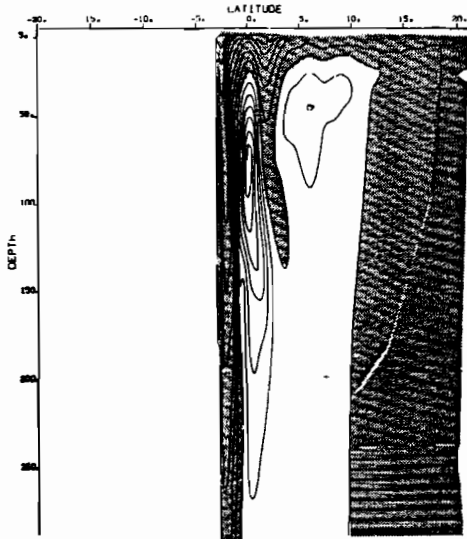


VERTICAL SECTION OF ZONAL VELOCITY AT 39.75 W

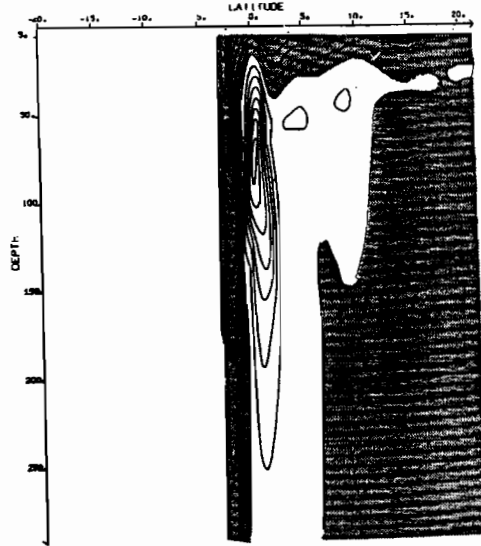
(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

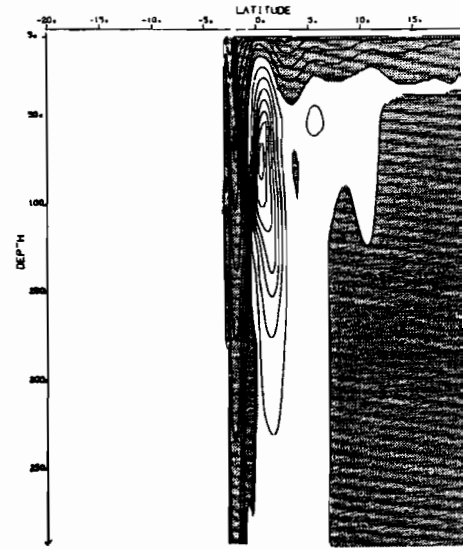
MONTH: JANUARY



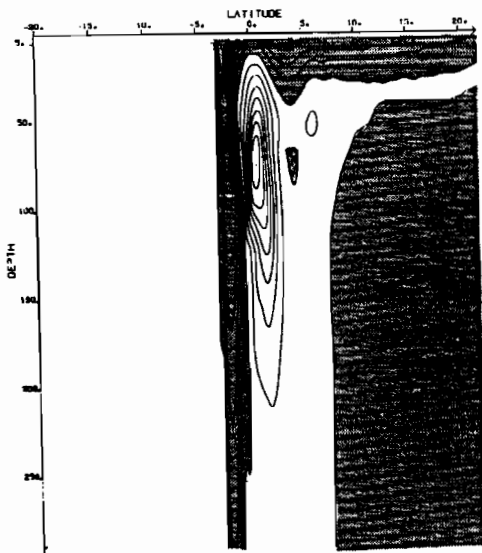
MONTH: FEBRUARY



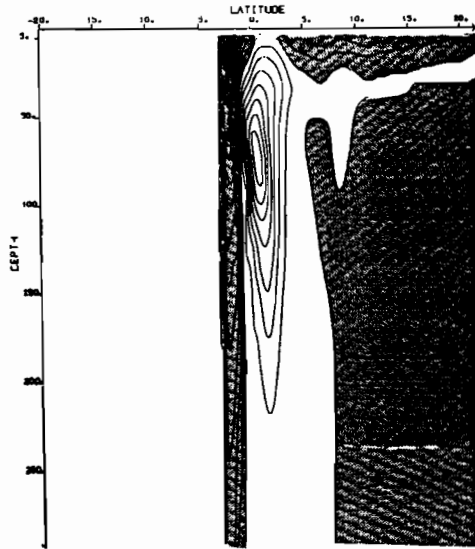
MONTH: MARCH



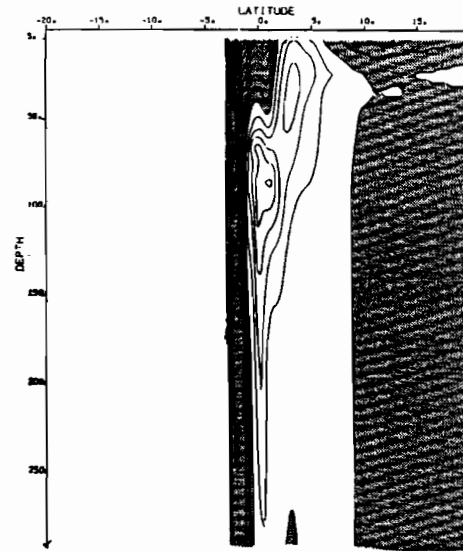
MONTH: APRIL



MONTH: MAY



MONTH: JUNE

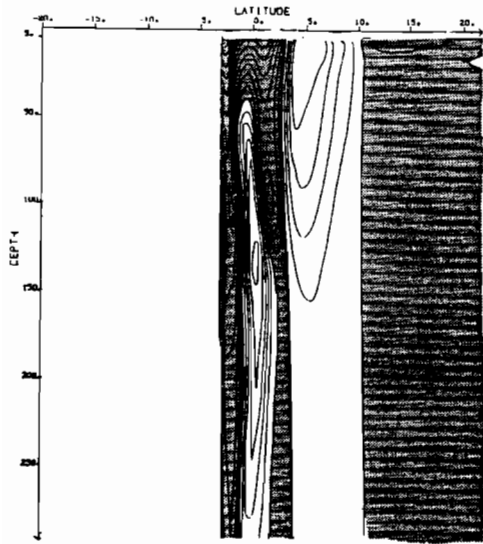


VERTICAL SECTION OF ZONAL VELOCITY AT 39.75 W

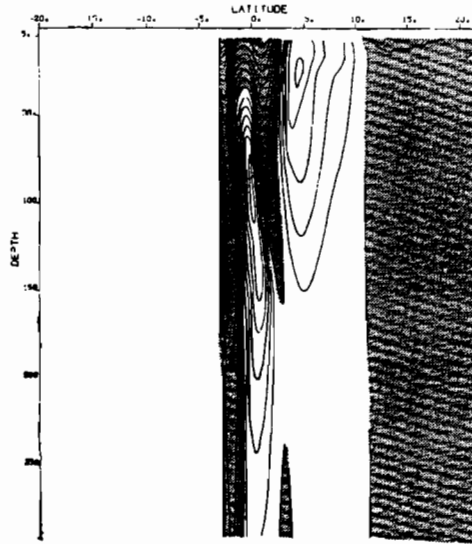
(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

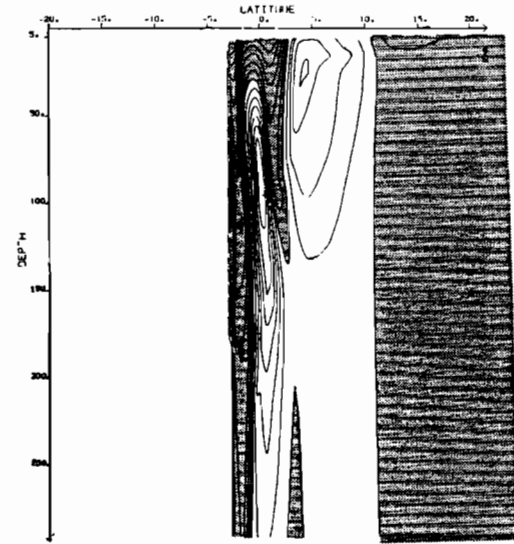
MONTH: JULY



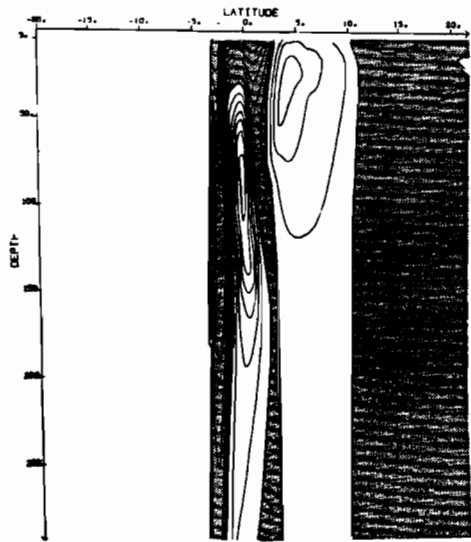
MONTH: AUGUST



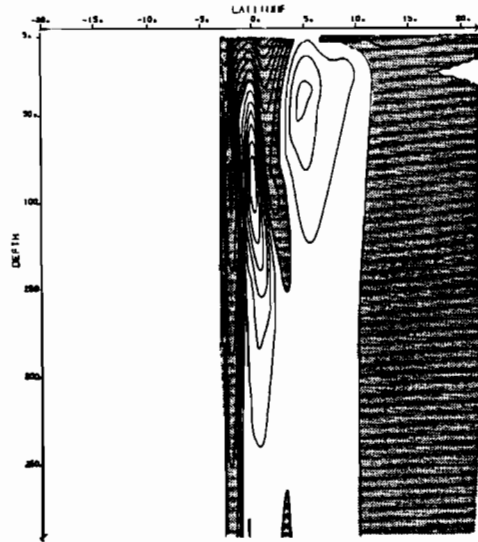
MONTH: SEPTEMBER



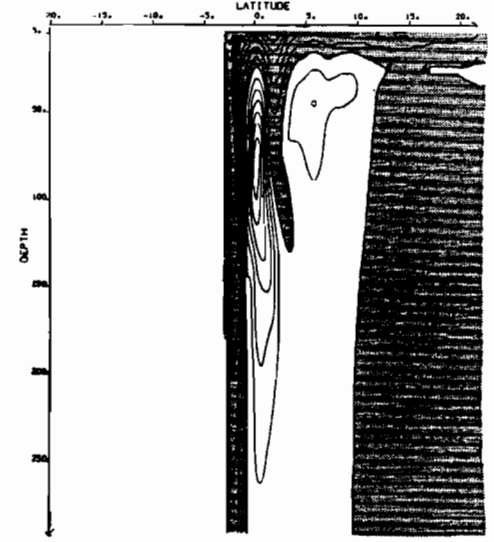
MONTH: OCTOBER



MONTH: NOVEMBER



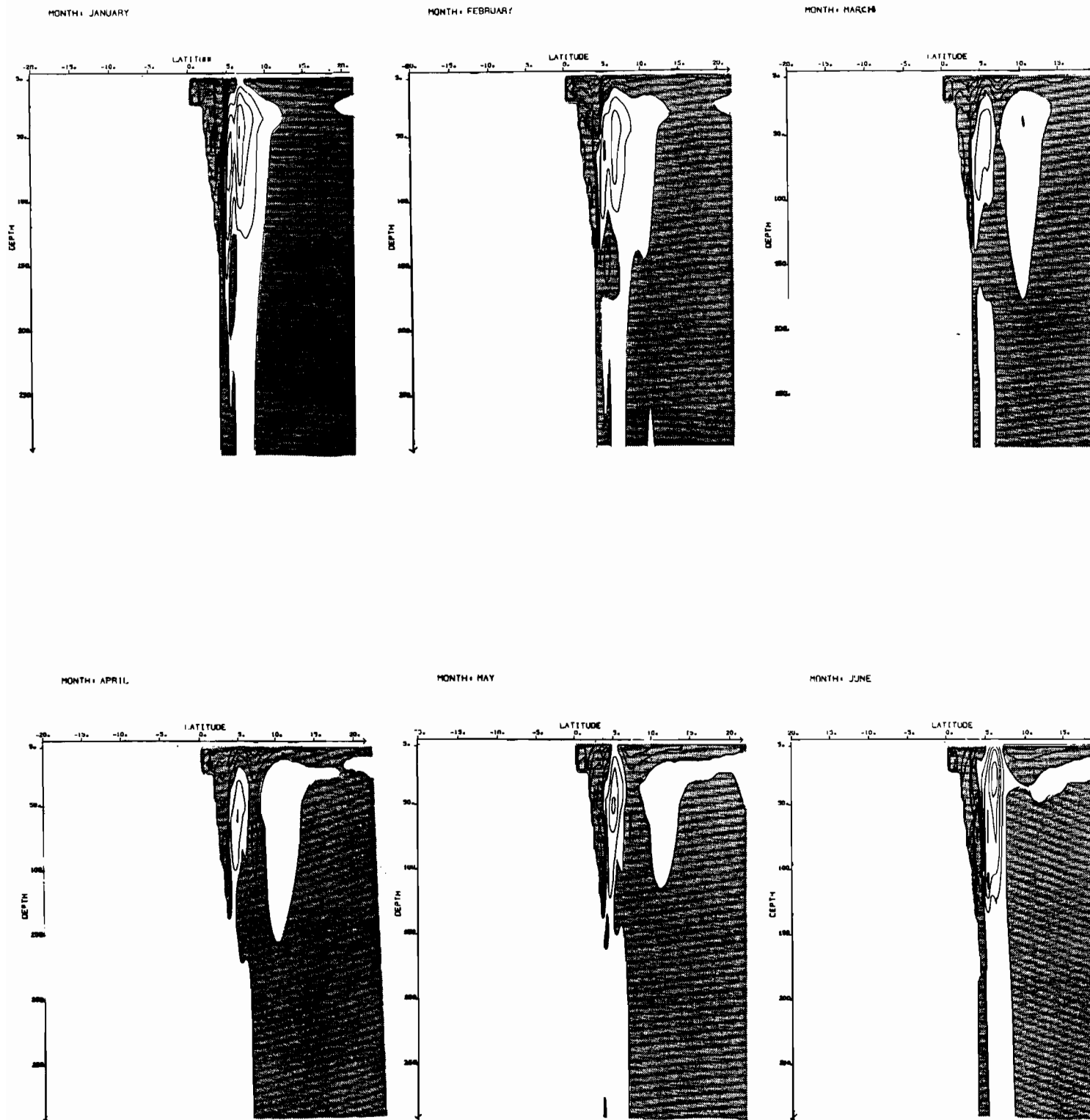
MONTH: DECEMBER



VERTICAL SECTION OF ZONAL VELOCITY AT 49.75 W

(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

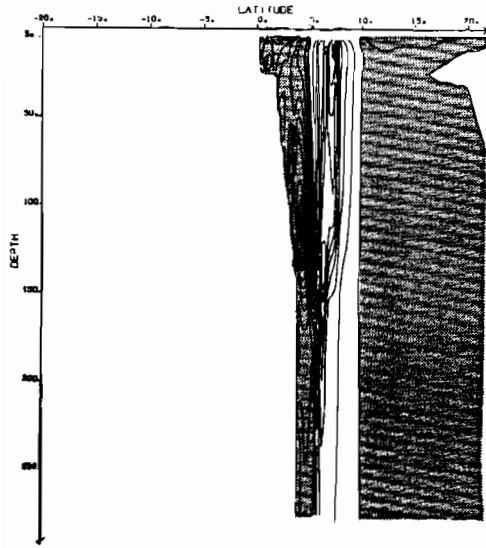


VERTICAL SECTION OF ZONAL VELOCITY AT 49.75 W

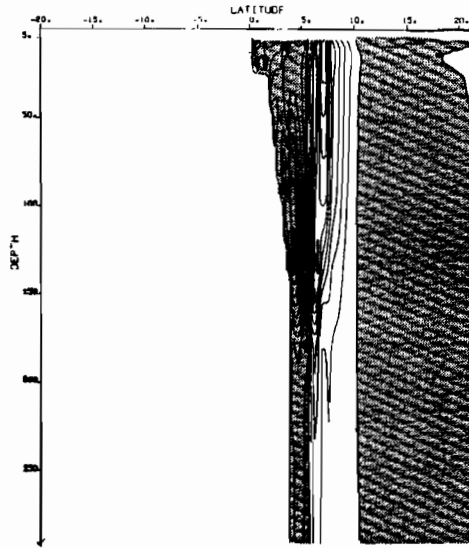
(Motion is westward in shaded areas)

(Contour interval: 10 cm/s)

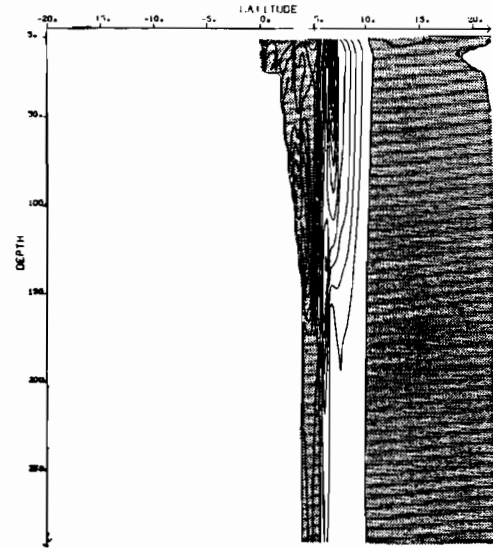
MONTH: JULY



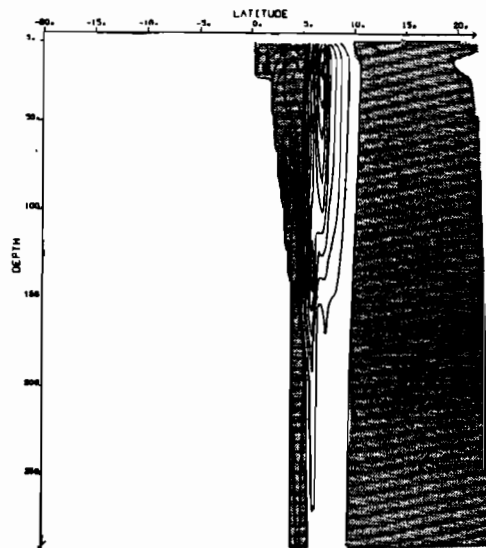
MONTH: AUGUST



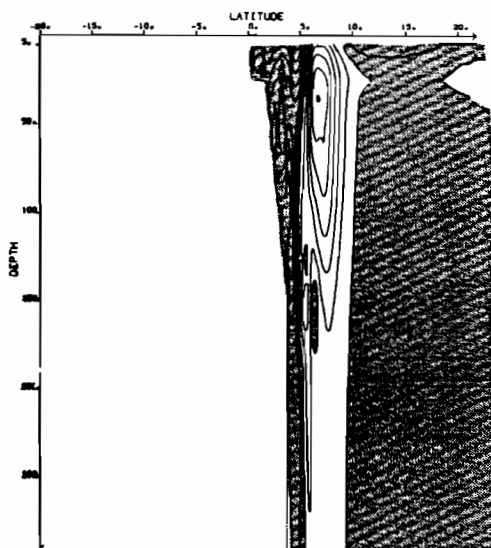
MONTH: SEPTEMB.



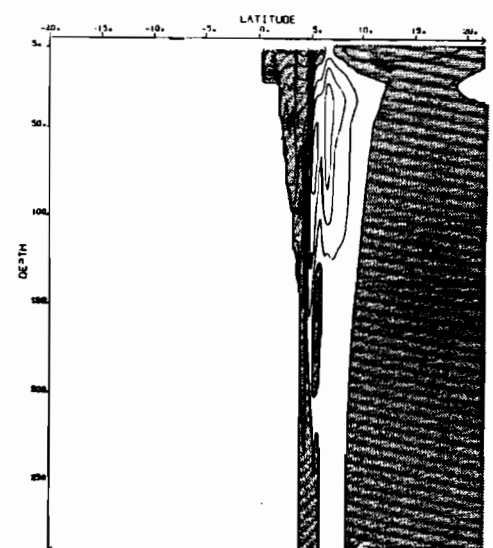
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER

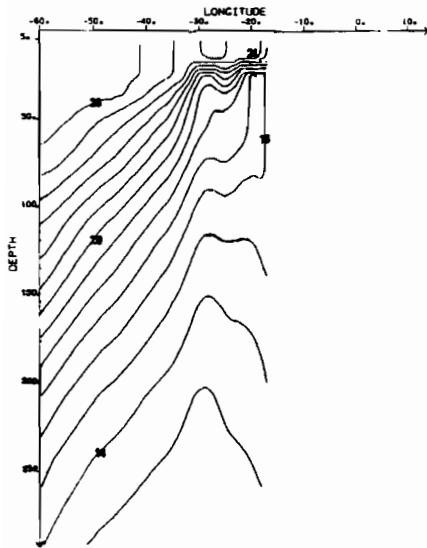


ZONAL SECTIONS OF TEMPERATURE AT:

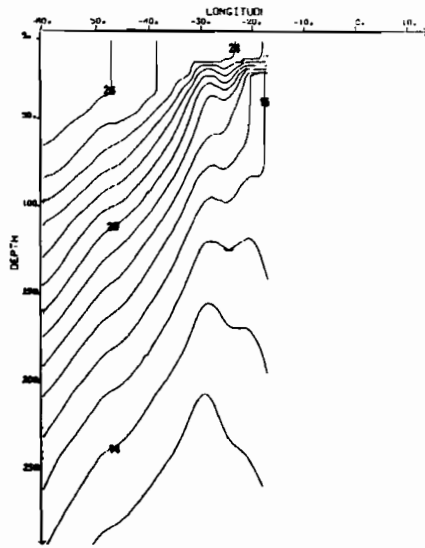
* 14.78N:		
months:	- january to june.	p. 96
	- july to december.	p. 97
* 5.17N:		
months:	- january to june.	p. 98
	- july to december.	p. 99
* 0.17N:		
months:	- january to june.	p. 100
	- july to december.	p. 101
* 5.17S:		
months:	- january to june.	p. 102
	- july to december.	p. 103
* 15.24S:		
months:	- january to june.	p. 104
	- july to december.	p. 105

VERTICAL SECTION OF TEMPERATURE AT 14.78 N

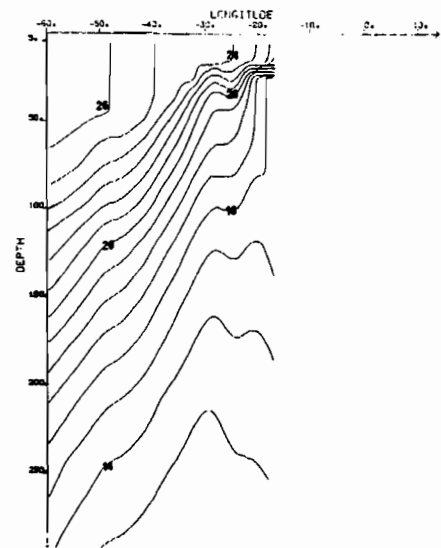
MONTH: JANUARY



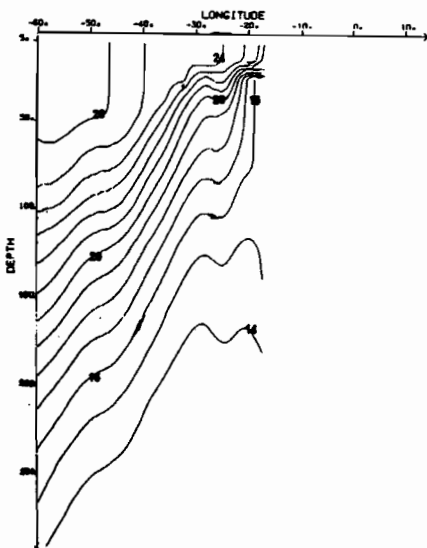
MONTH: FEBRUARY



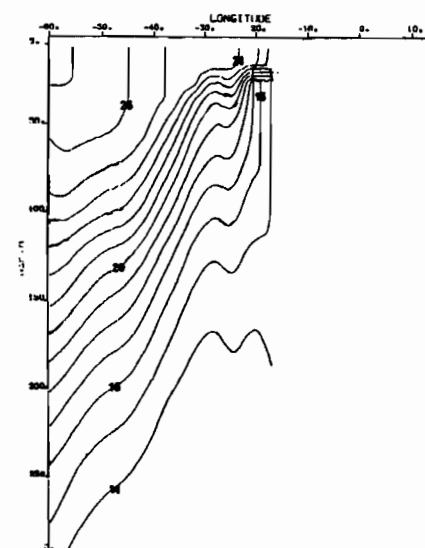
MONTH: MARCH



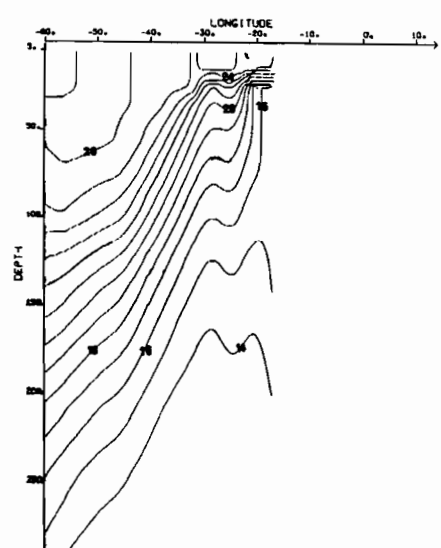
MONTH: APRIL



MONTH: MAY

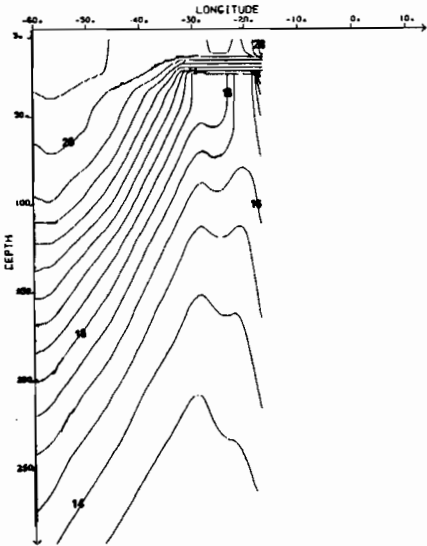


MONTH: JUNE

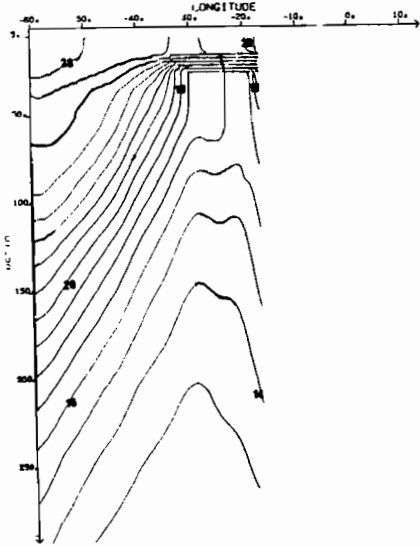


VERTICAL SECTION OF TEMPERATURE AT 14.78 N

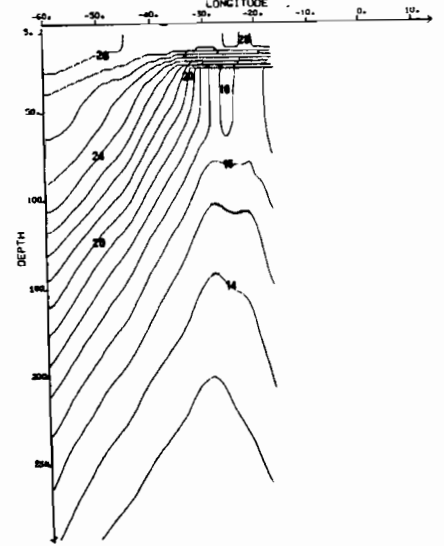
MONTH: JULY



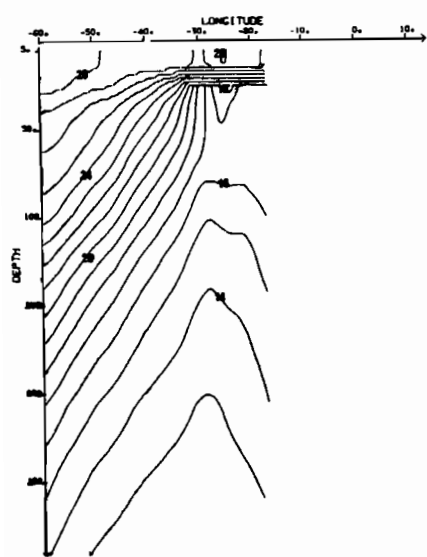
MONTH: AUGUST



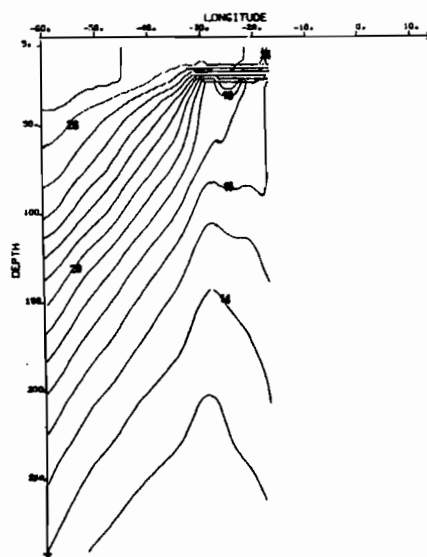
MONTH: SEPTEMB.



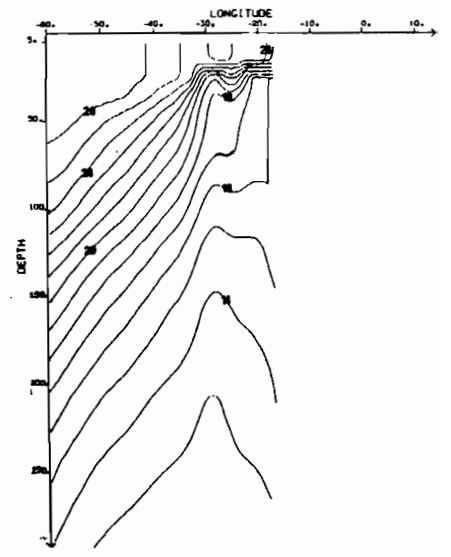
MONTH: OCTOBER



MONTH: NOVEMBER

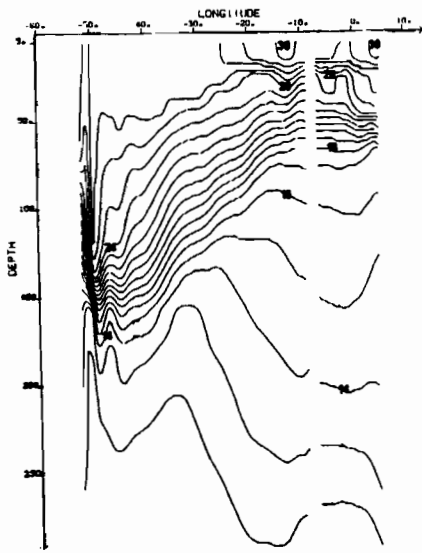


MONTH: DECEMBER

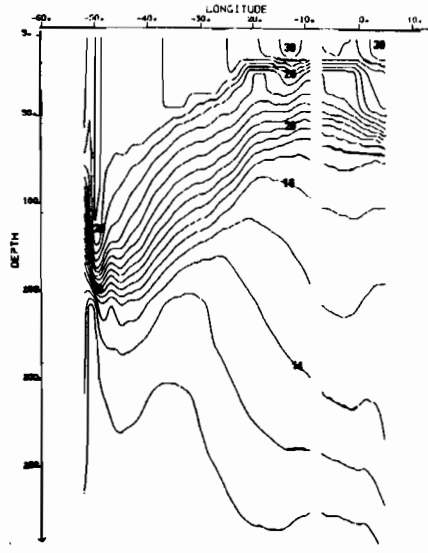


VERTICAL SECTION OF TEMPERATURE AT 5.17 N

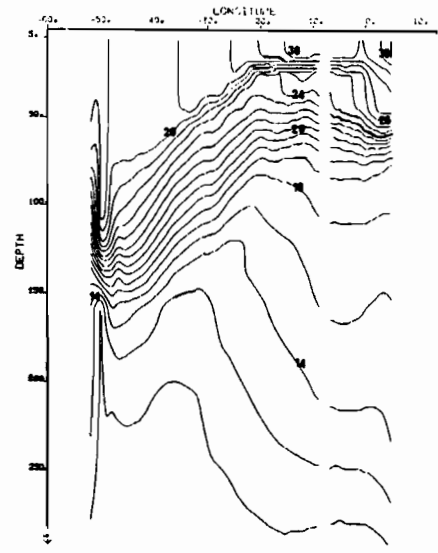
MONTH: JANUARY



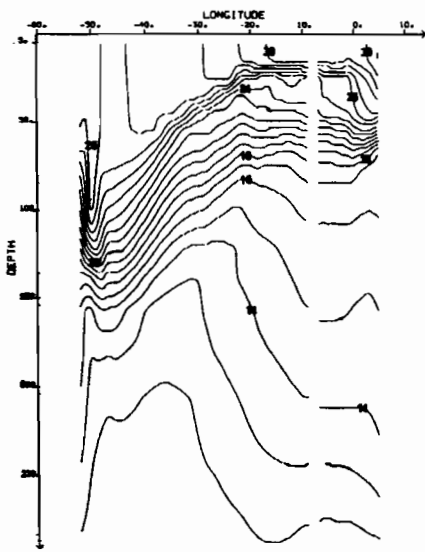
MONTH: FEBRUARY



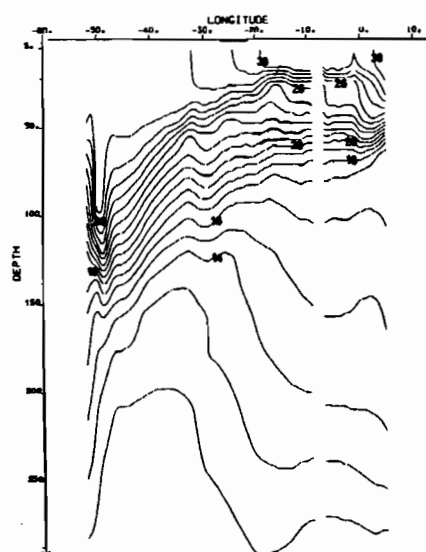
MONTH: MARCH



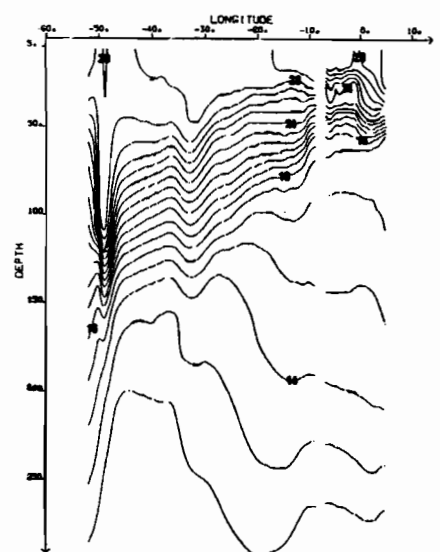
MONTH: APRIL



MONTH: MAY

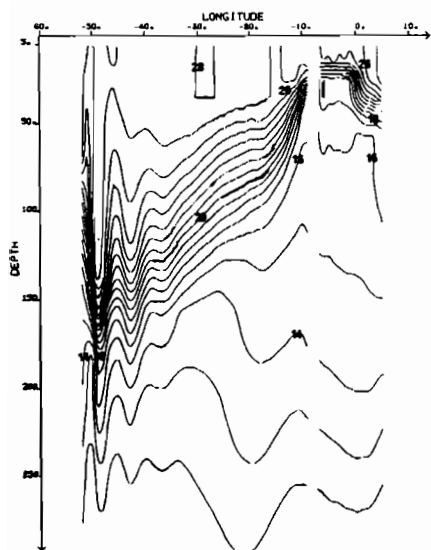


MONTH: JUNE

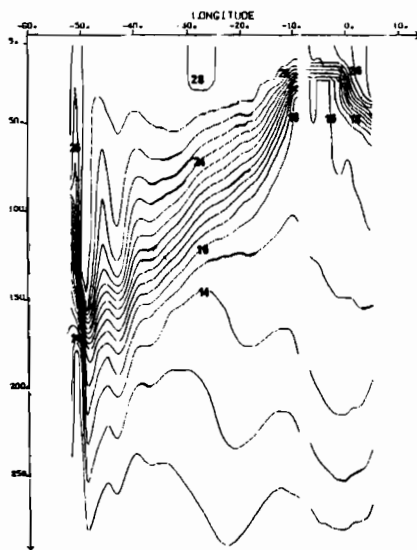


VERTICAL SECTION OF TEMPERATURE AT 5.17 N

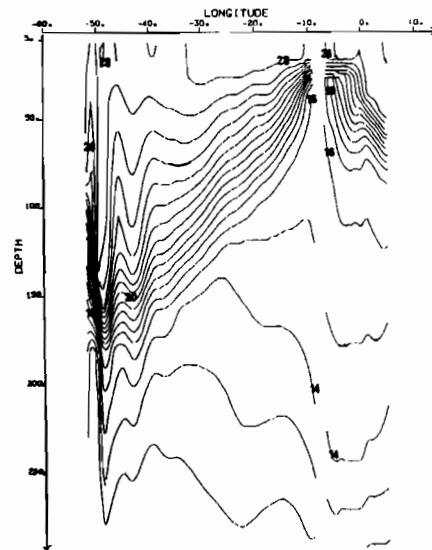
MONTH: JULY



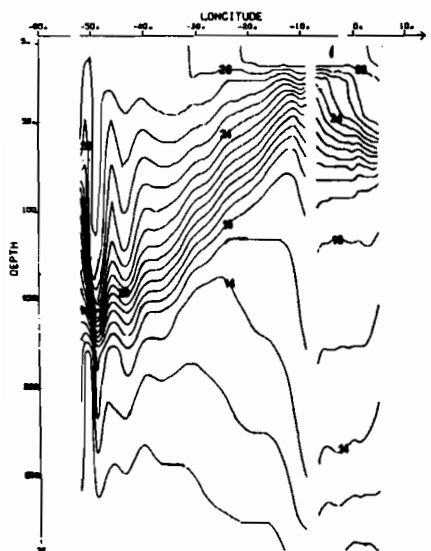
MONTH: AUGUST



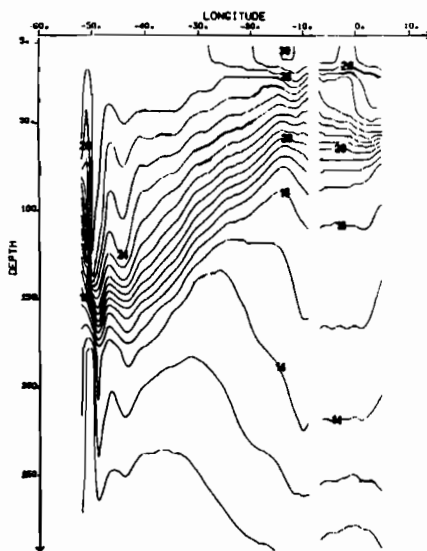
MONTH: SEPTEMB.



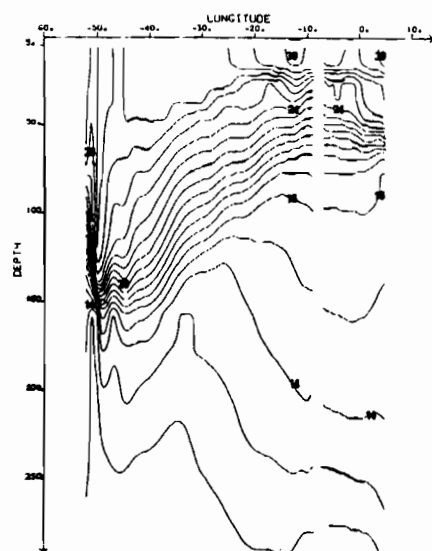
MONTH: OCTOBER



MONTH: NOVEMBER

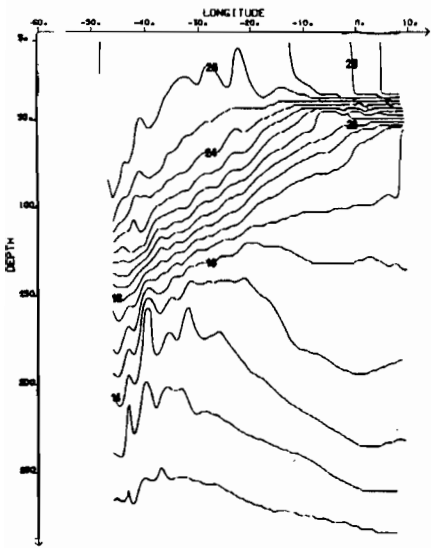


MONTH: DECEMBER

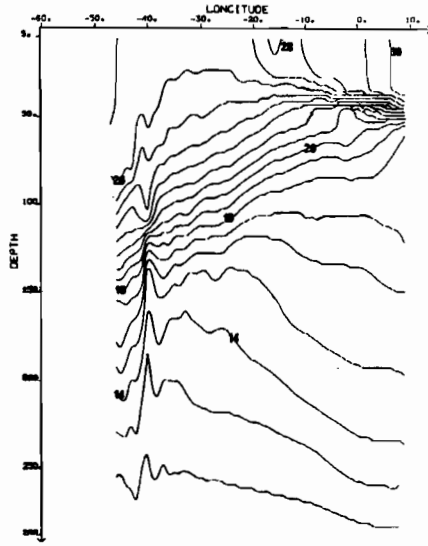


VERTICAL SECTION OF TEMPERATURE AT 0.17 N

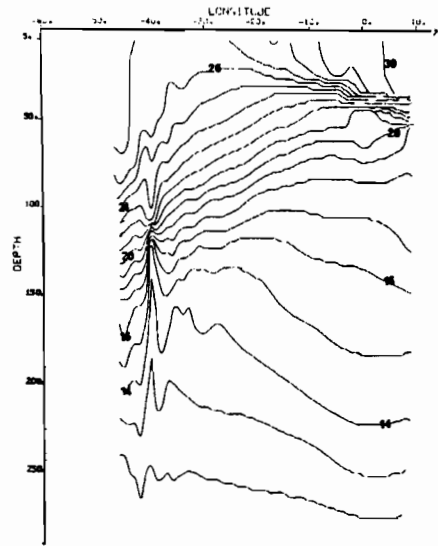
MONTH: JANUARY



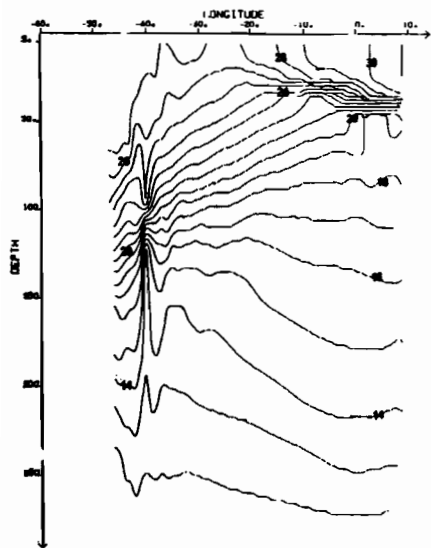
MONTH: FEBRUARY



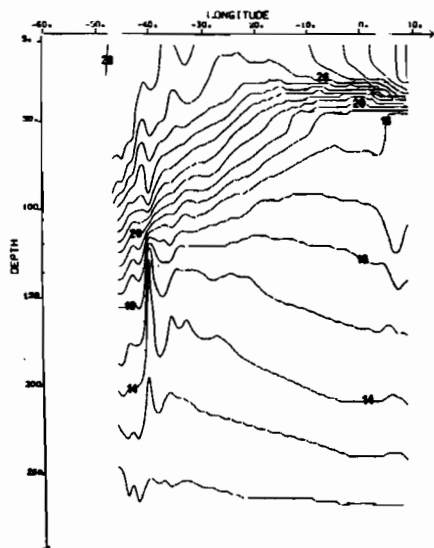
MONTH: MARCH



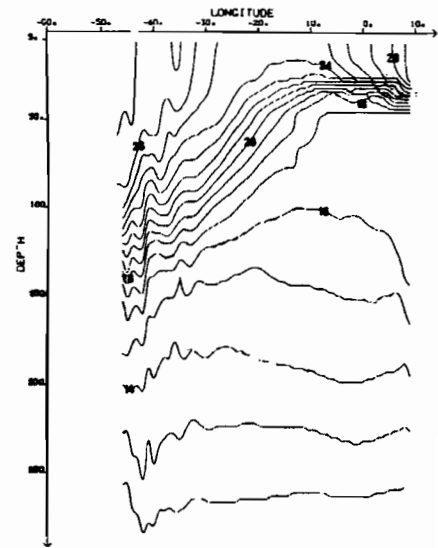
MONTH: APRIL



MONTH: MAY

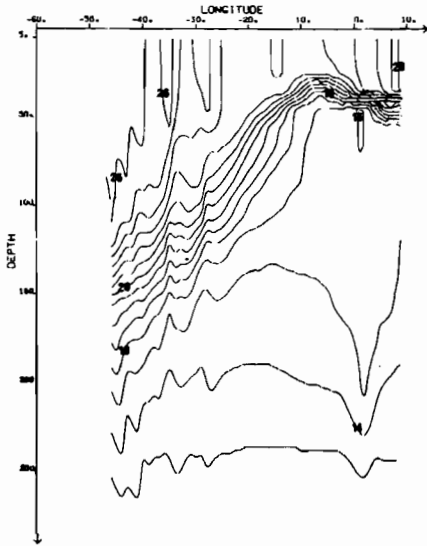


MONTH: JUNE

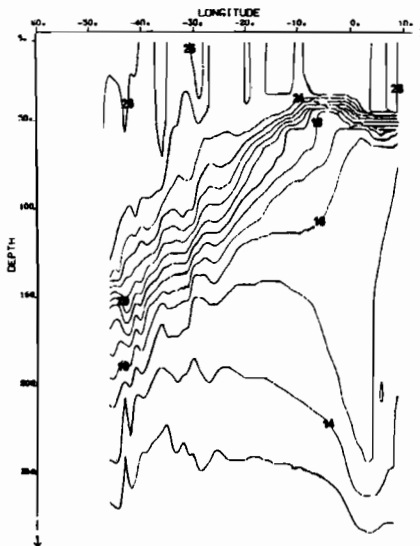


VERTICAL SECTION OF TEMPERATURE AT 0.17 N

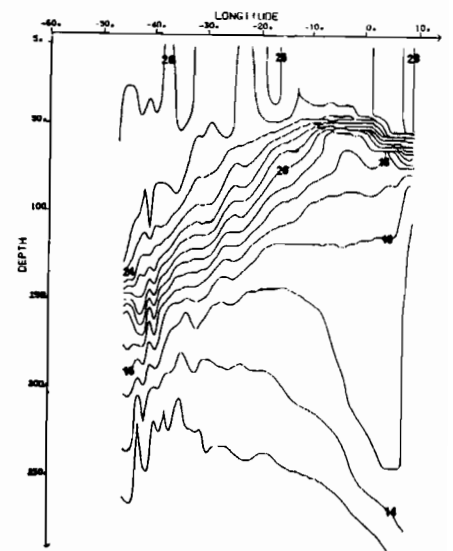
MONTH: JULY



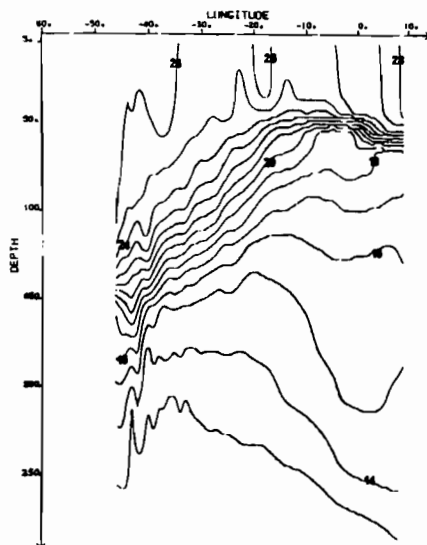
MONTH: AUGUST



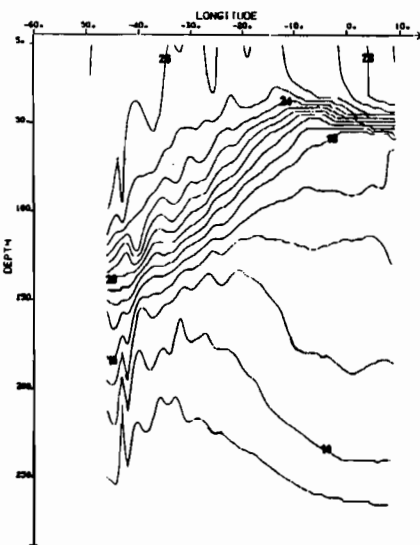
MONTH: SEPTEMB.



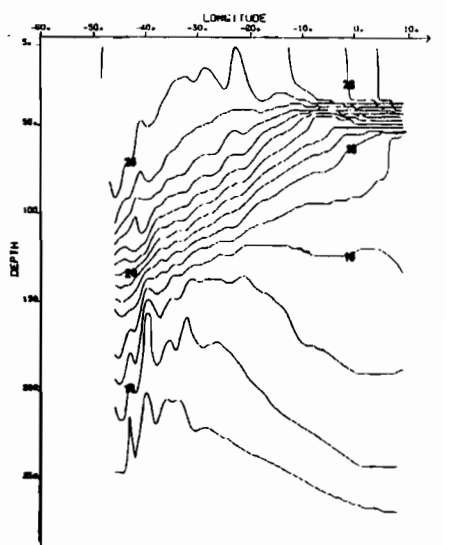
MONTH: OCTOBER



MONTH: NOVEMBER

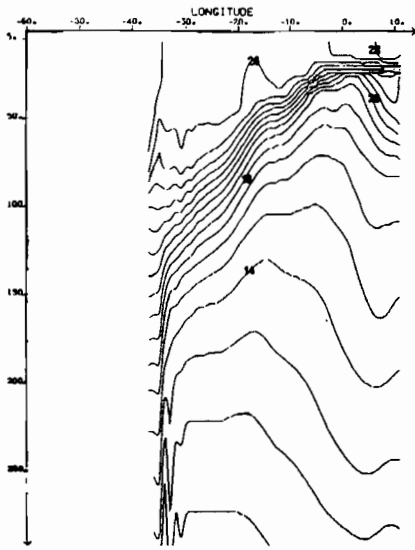


MONTH: DECEMBER

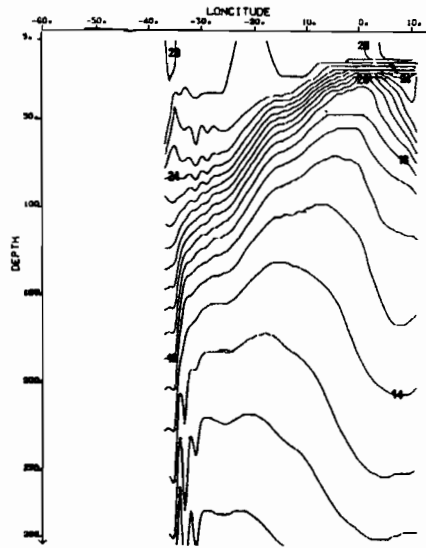


VERTICAL SECTION OF TEMPERATURE AT 5.17 S

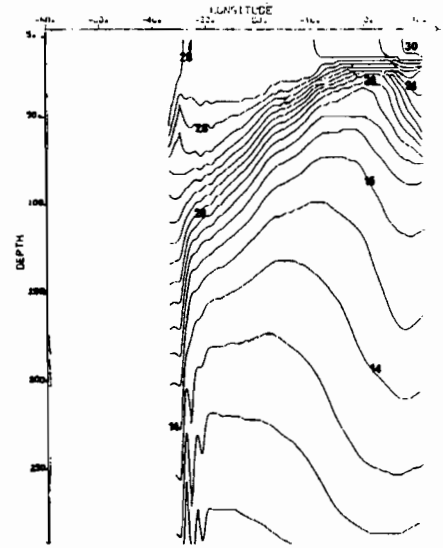
MONTH: JANUARY



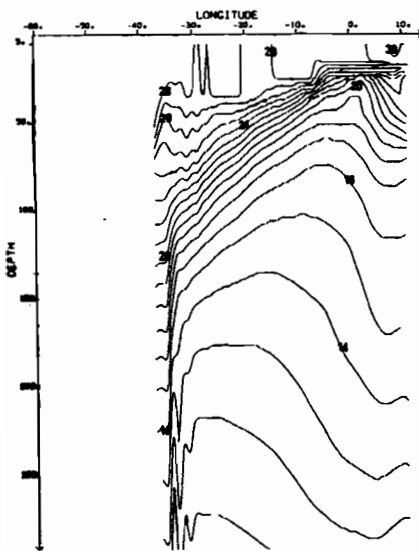
MONTH: FEBRUARY



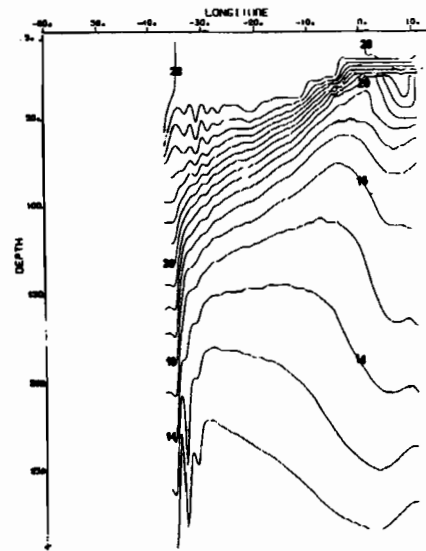
MONTH: MARCH



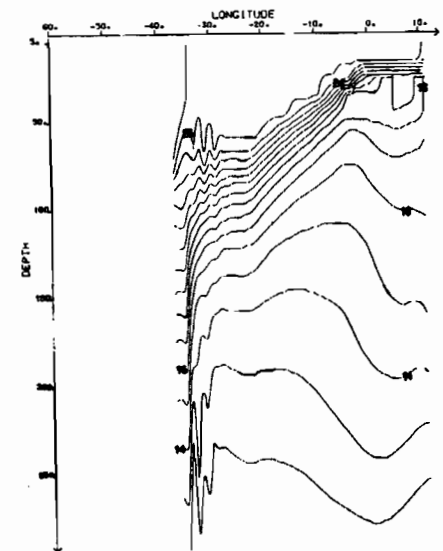
MONTH: APRIL



MONTH: MAY

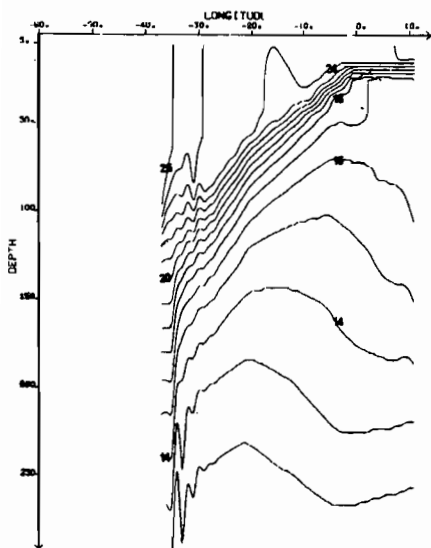


MONTH: JUNE

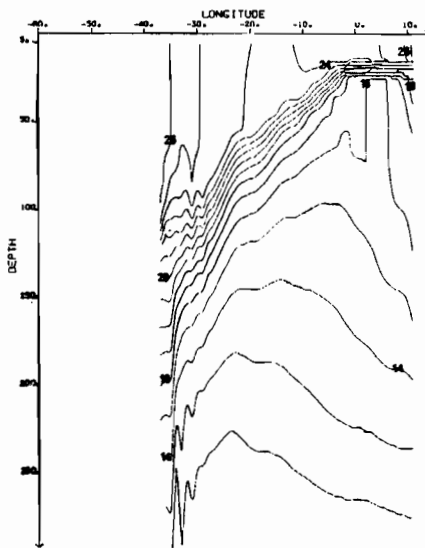


VERTICAL SECTION OF TEMPERATURE AT 5.17 S

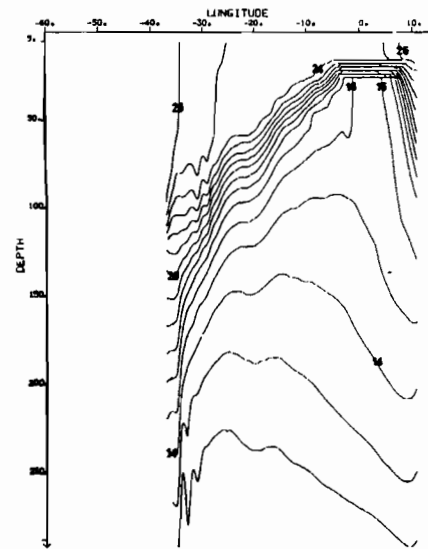
MONTH: JULY



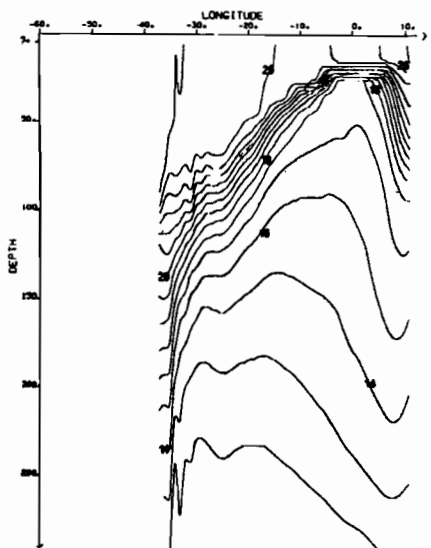
MONTH: AUGUST



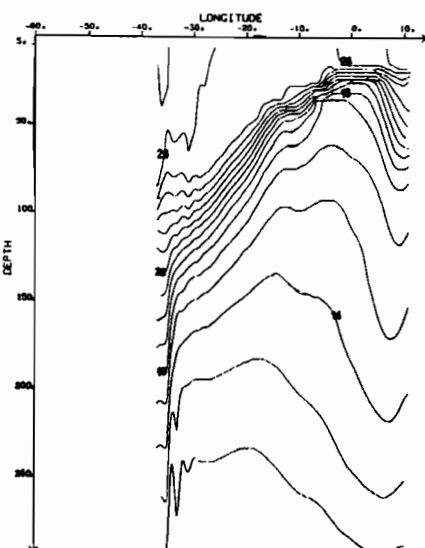
MONTH: SEPTEMBER



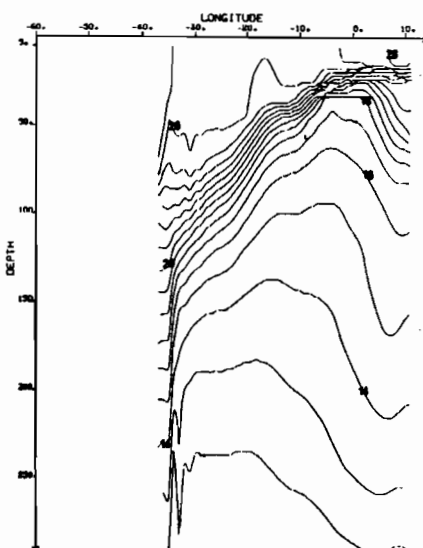
MONTH: OCTOBER



MONTH: NOVEMBER

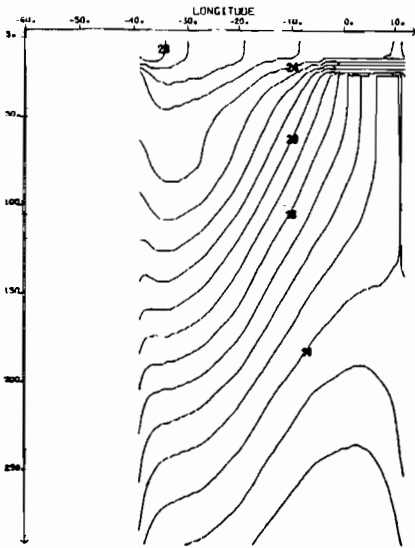


MONTH: DECEMBER

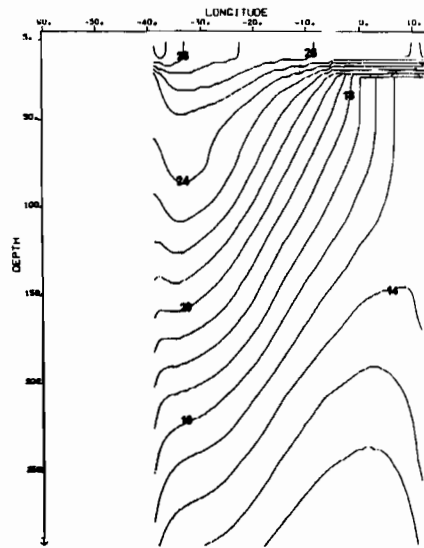


VERTICAL SECTION OF TEMPERATURE AT 15.24 S

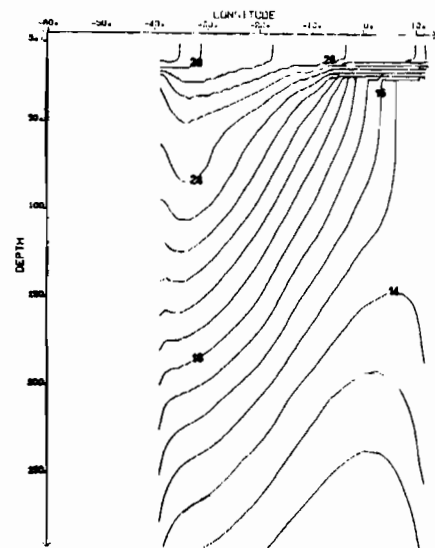
MONTH: JANUARY



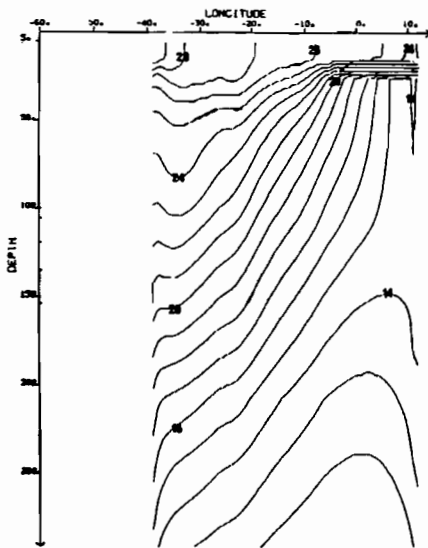
MONTH: FEBRUARY



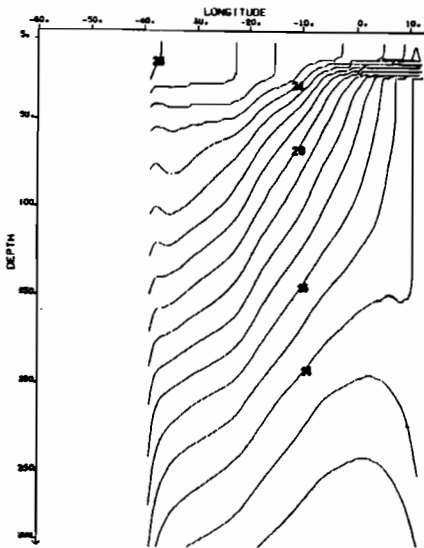
MONTH: MARCH



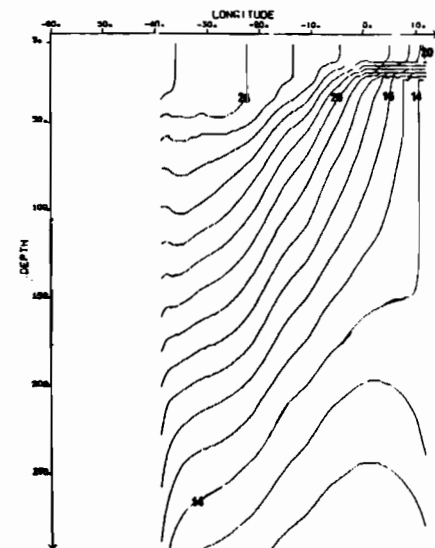
MONTH: APRIL



MONTH: MAY

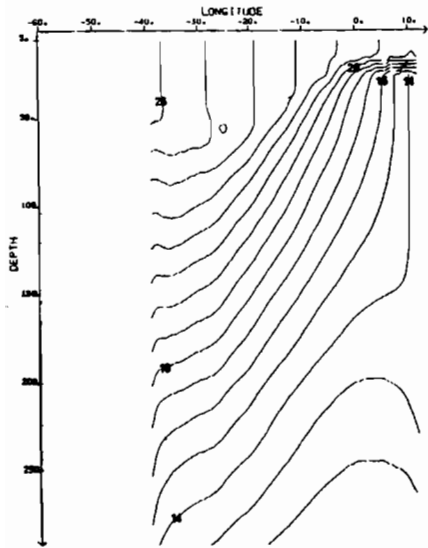


MONTH: JUNE

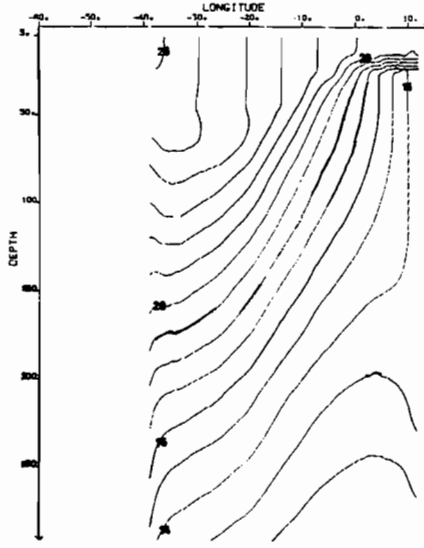


VERTICAL SECTION OF TEMPERATURE AT 15.24 S

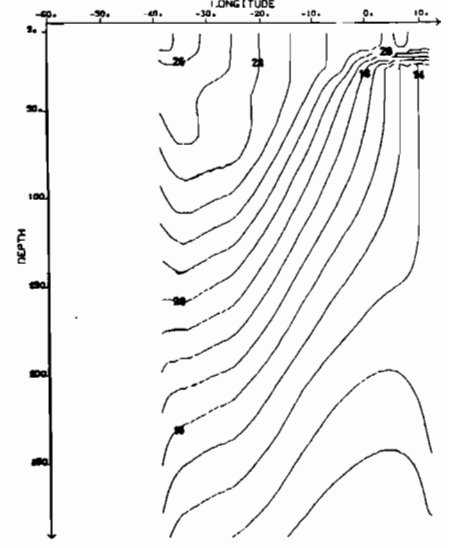
MONTH: JULY



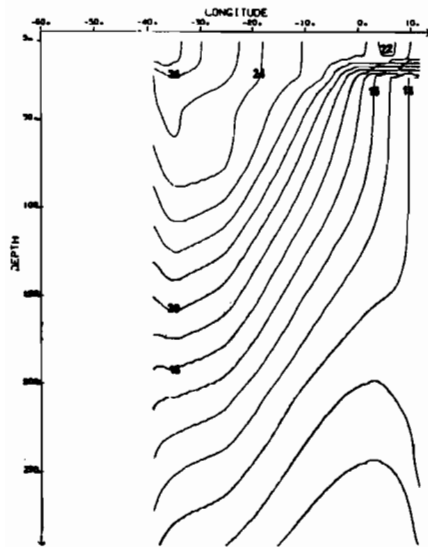
MONTH: AUGUST



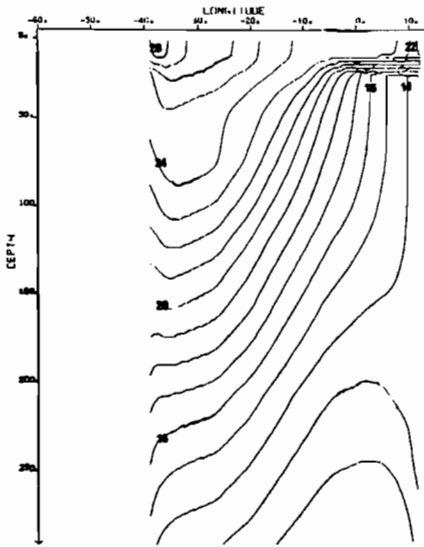
MONTH: SEPTEMBER



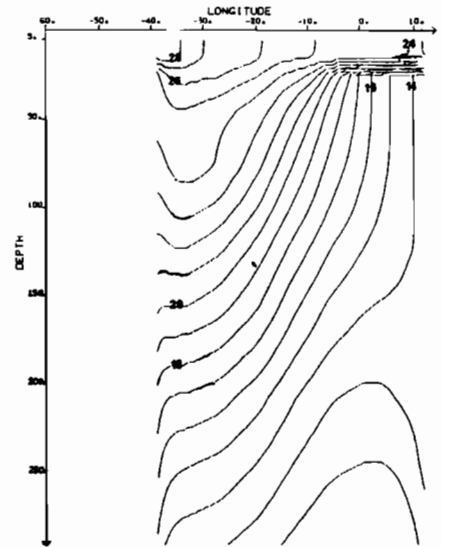
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER

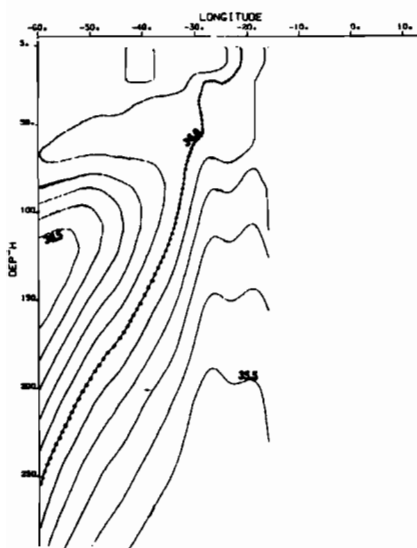


ZONAL SECTIONS OF SALINITY AT:

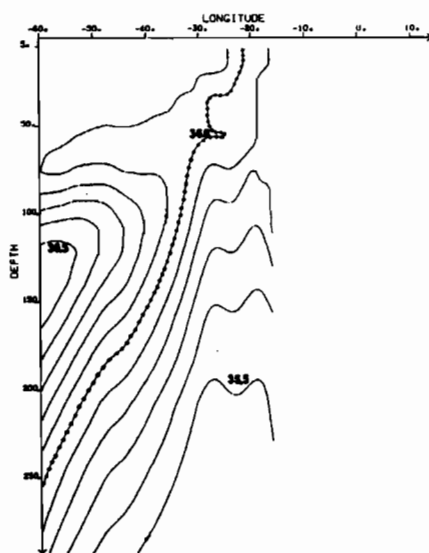
* 14.78N:			
	months:	- january to june.	p. 108
		- july to december.	p. 109
* 5.17N:			
	months:	- january to june.	p. 110
		- july to december.	p. 111
* 0.17N:			
	months:	- january to june.	p. 112
		- july to december.	p. 113
* 5.17S:			
	months:	- january to june.	p. 114
		- july to december.	p. 115
* 15.24S:			
	months:	- january to june.	p. 116
		- july to december.	p. 117

VERTICAL SECTION OF SALINITY AT 14.78 N

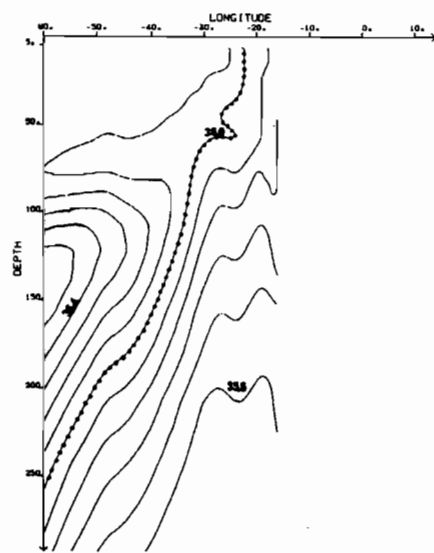
MONTH: JANUARY



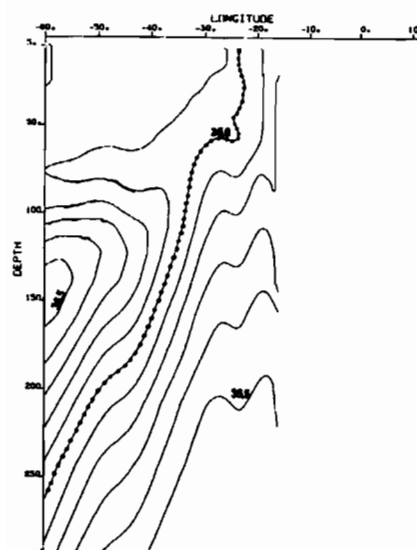
MONTH: FEBRUARY



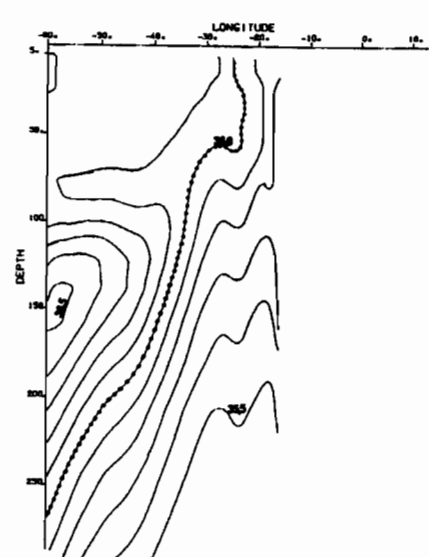
MONTH: MARCH



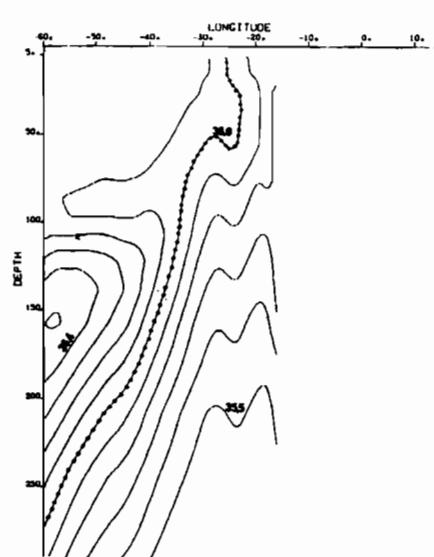
MONTH: APRIL



MONTH: MAY

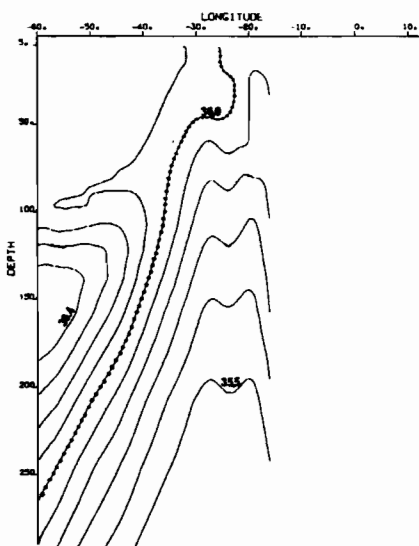


MONTH: JUNE

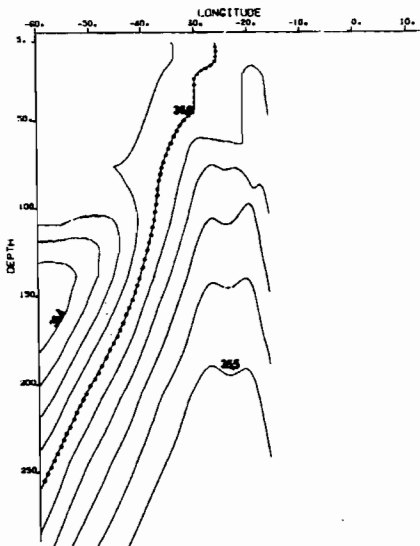


VERTICAL SECTION OF SALINITY AT 14.78 N

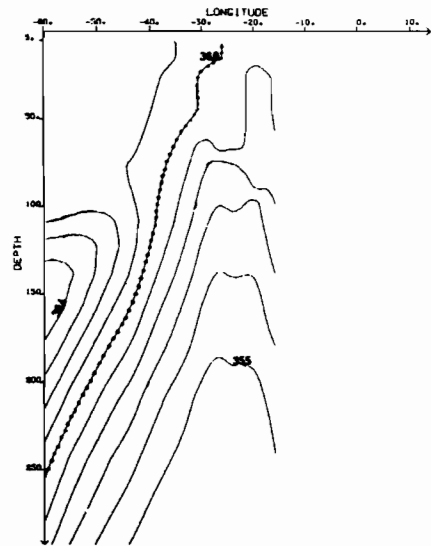
MONTH: JULY



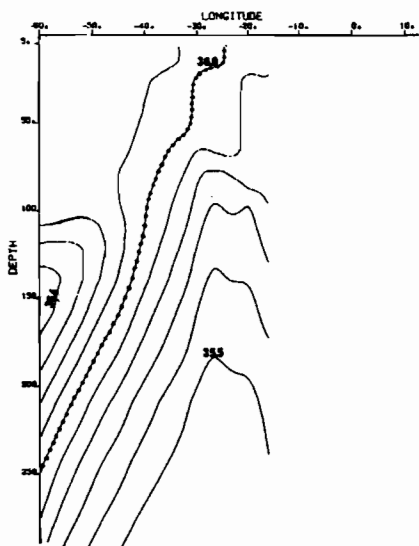
MONTH: AUGUST



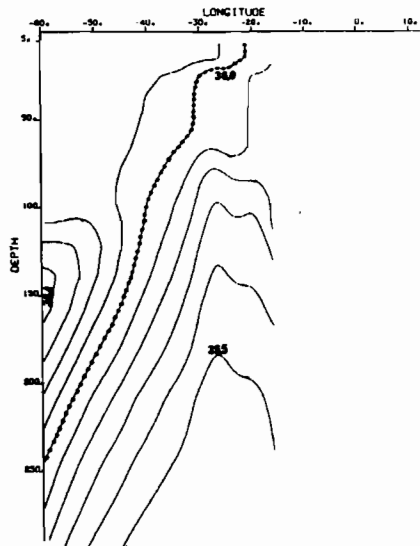
MONTH: SEPTEMBER



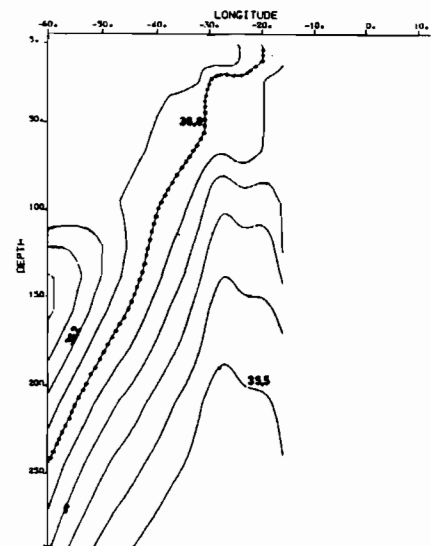
MONTH: OCTOBER



MONTH: NOVEMBER

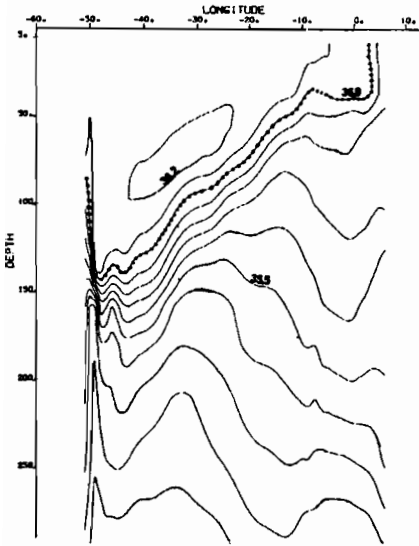


MONTH: DECEMBER

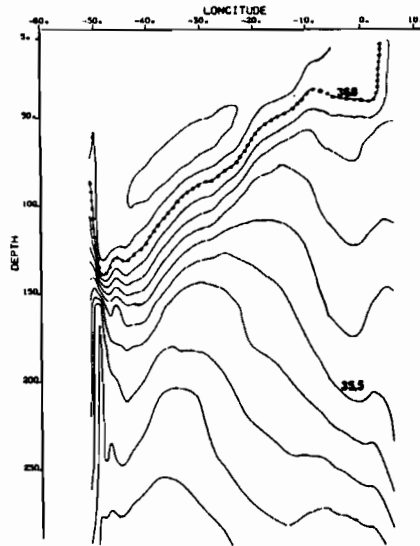


VERTICAL SECTION OF SALINITY AT 5.17 N

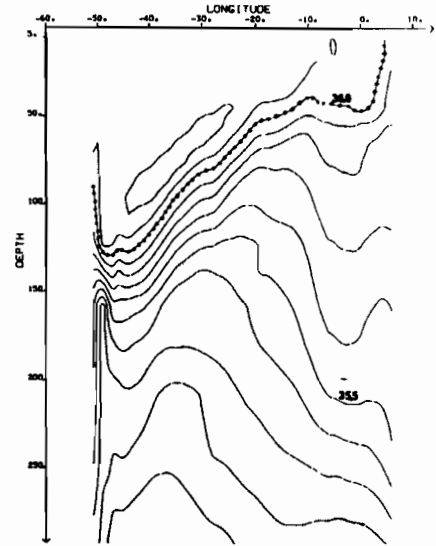
MONTH: JANUARY



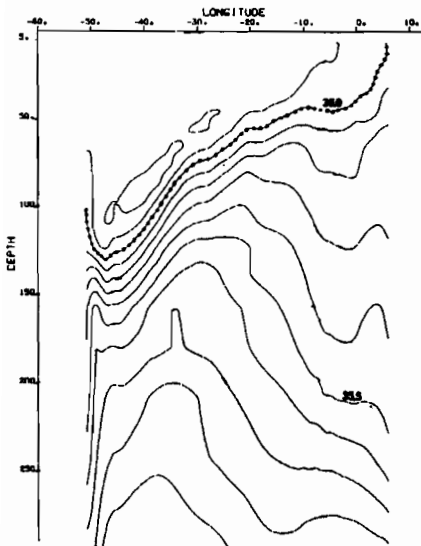
MONTH: FEBRUARY



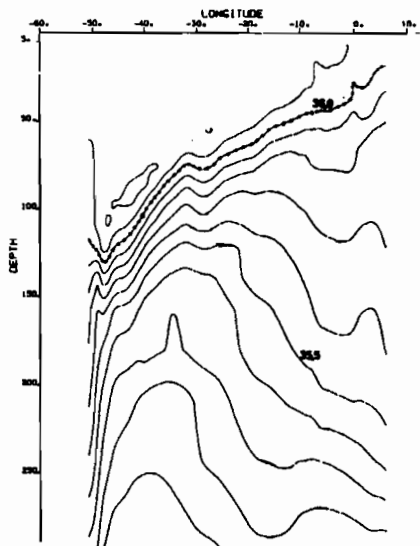
MONTH: MARCH



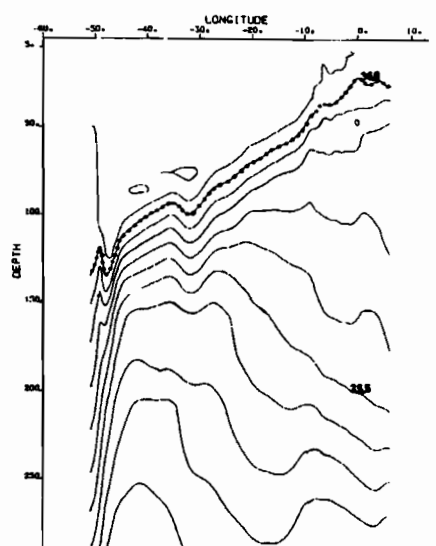
MONTH: APRIL



MONTH: MAY

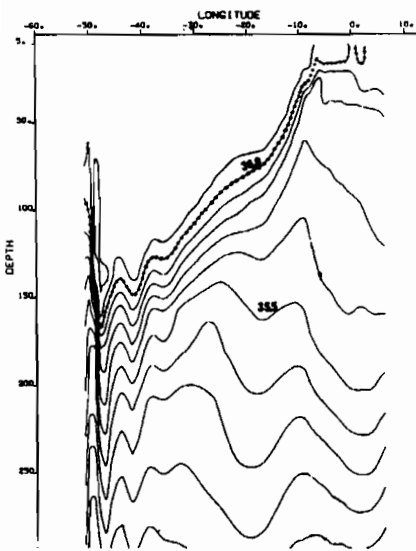


MONTH: JUNE

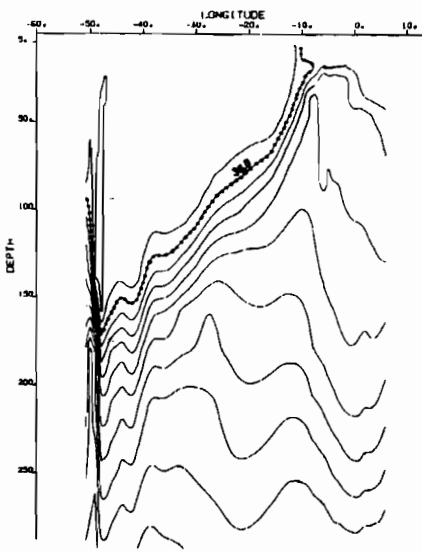


VERTICAL SECTION OF SALINITY AT 5.17 N

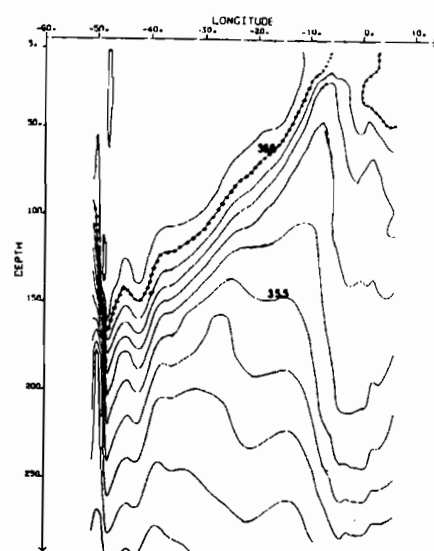
MONTH: JULY



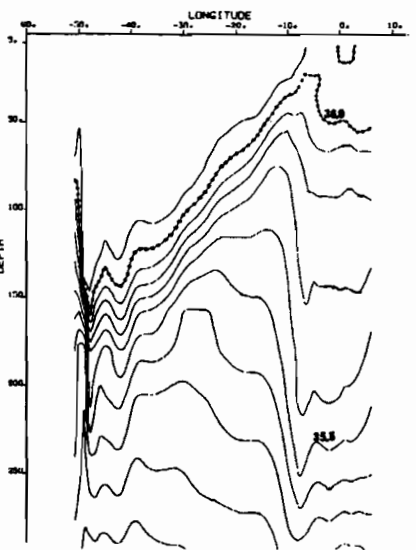
MONTH: AUGUST



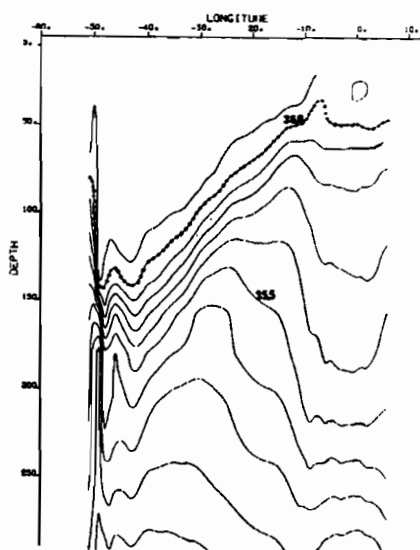
MONTH: SEPTEMB.



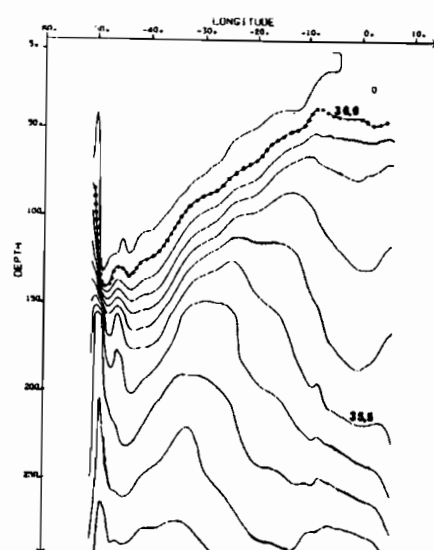
MONTH: OCTOBER



MONTH: NOVEMBER

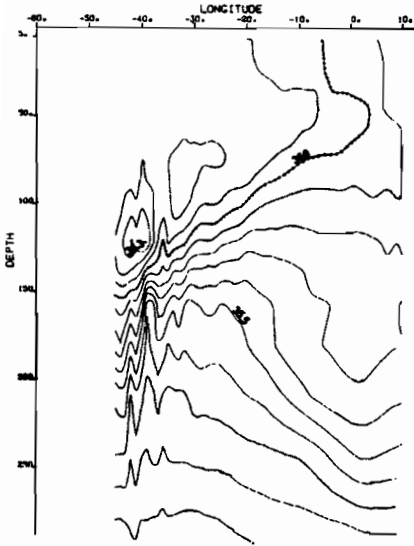


MONTH: DECEMBER

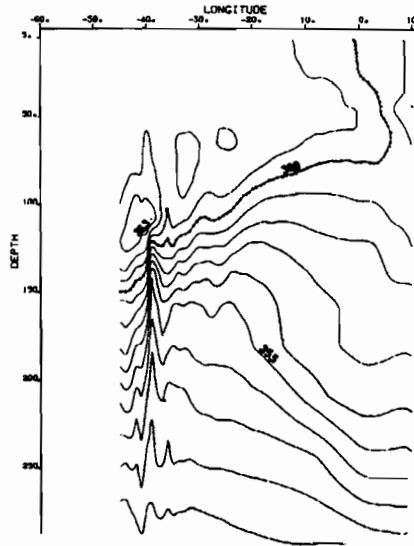


VERTICAL SECTION OF SALINITY AT 0.17 N

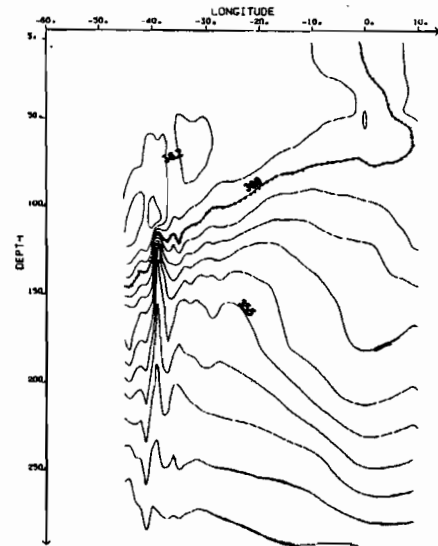
MONTH: JANUARY



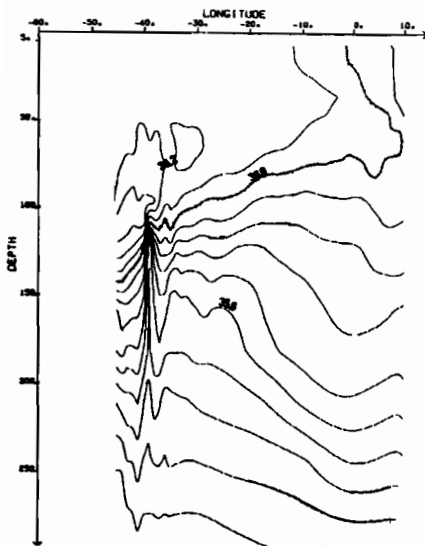
MONTH: FEBRUARY



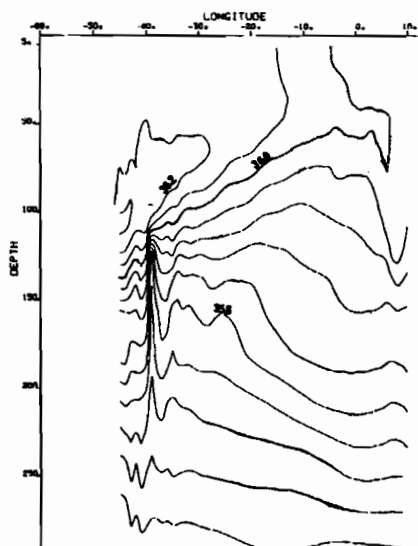
MONTH: MARCH



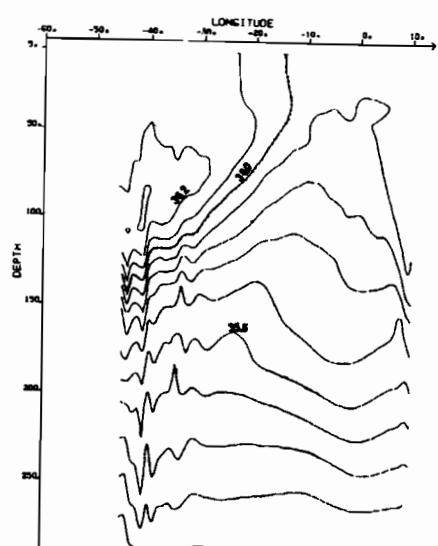
MONTH: APRIL



MONTH: MAY

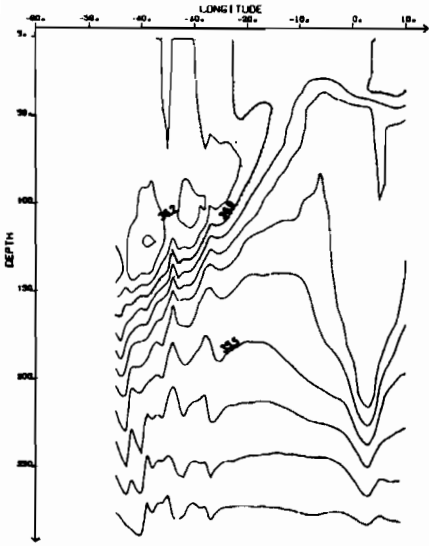


MONTH: JUNE

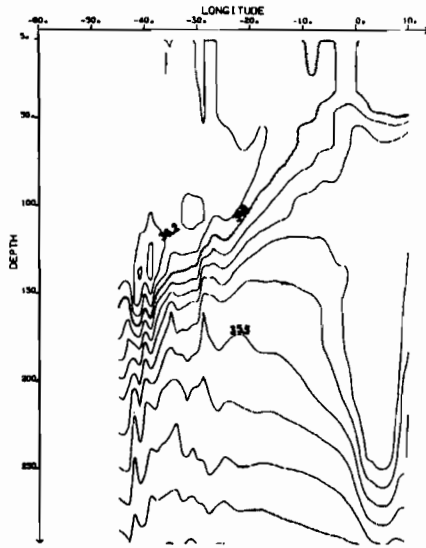


VERTICAL SECTION OF SALINITY AT 0.17 N

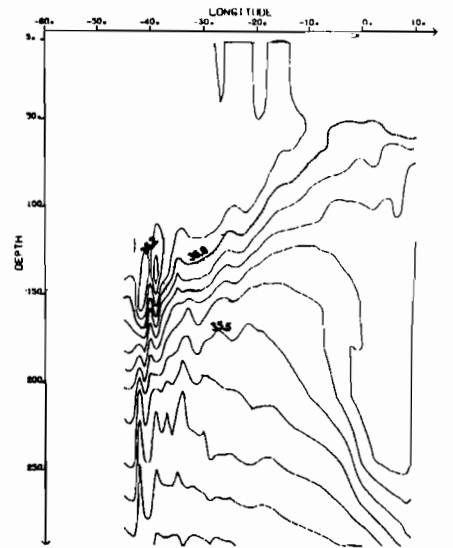
MONTH: JULY



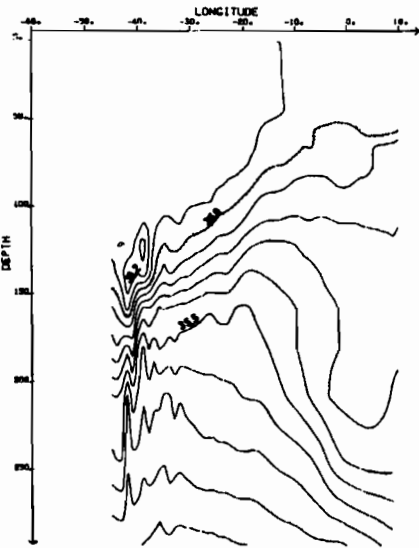
MONTH: AUGUST



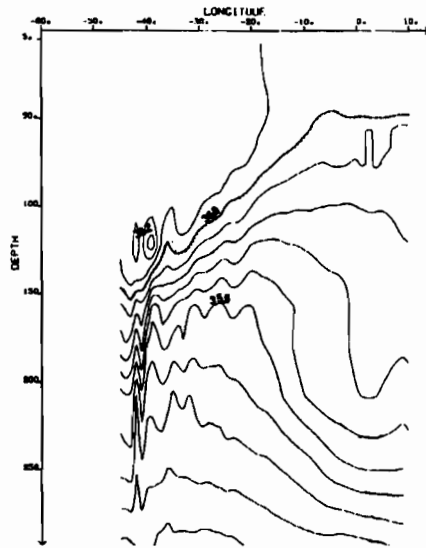
MONTH: SEPTEMBER



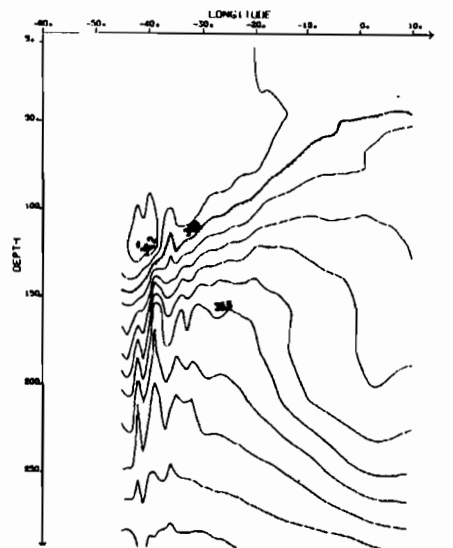
MONTH: OCTOBER



MONTH: NOVEMBER

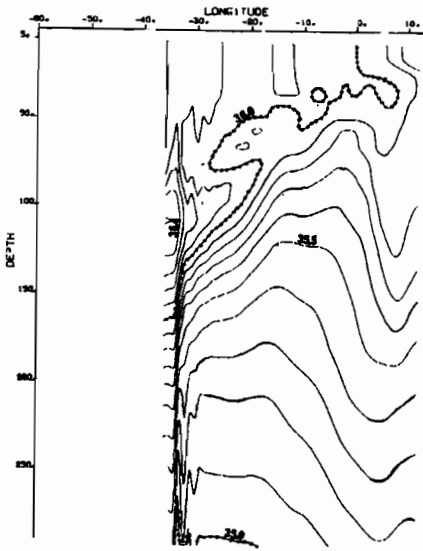


MONTH: DECEMBER

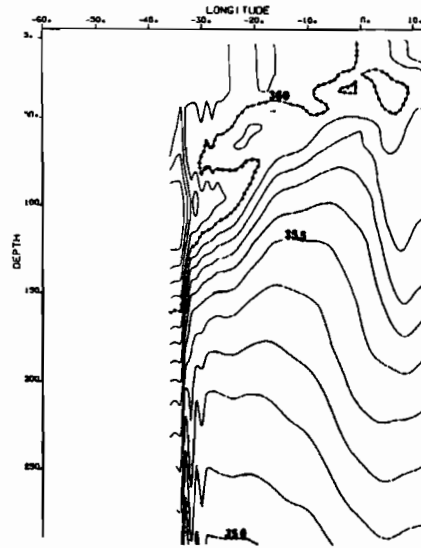


VERTICAL SECTION OF SALINITY AT 5.17 S

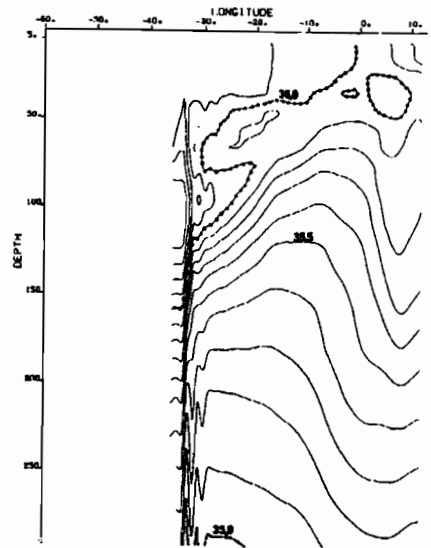
MONTH: JANUARY



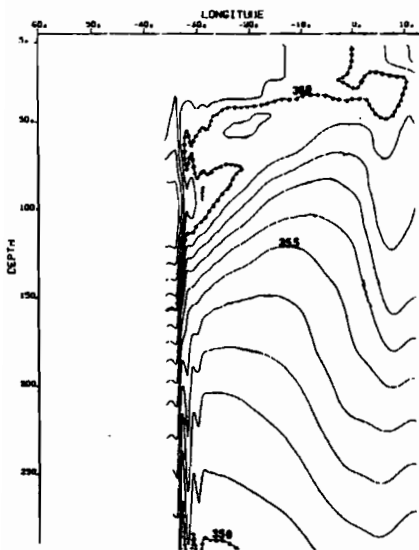
MONTH: FEBRUARY



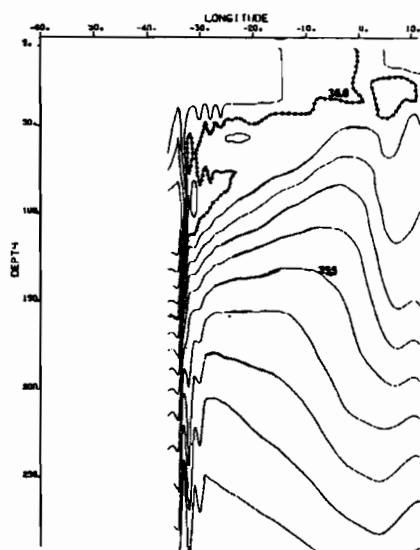
MONTH: MARCH



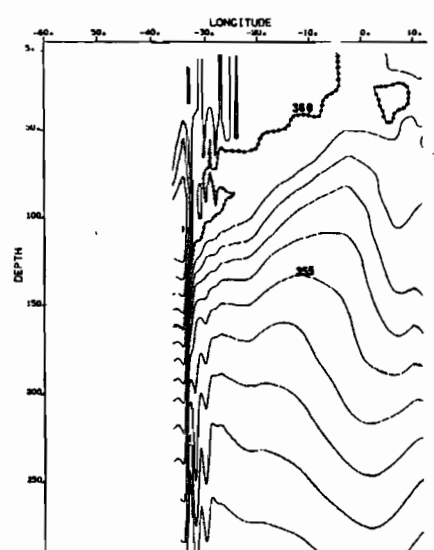
MONTH: APRIL



MONTH: MAY

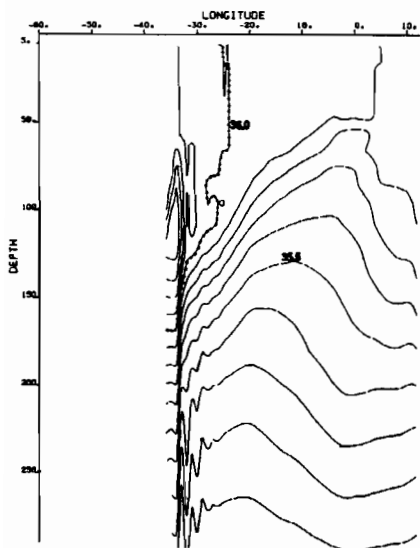


MONTH: JUNE

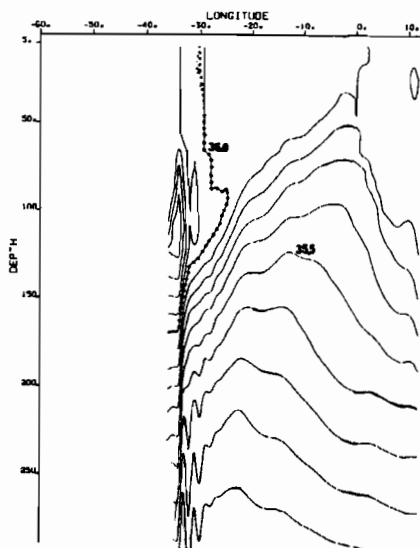


VERTICAL SECTION OF SALINITY AT 5.17 S

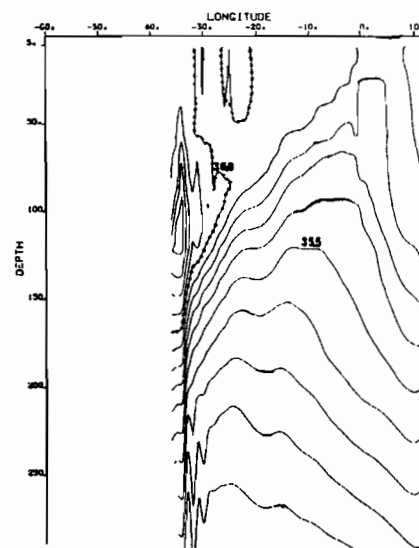
MONTH: JULY



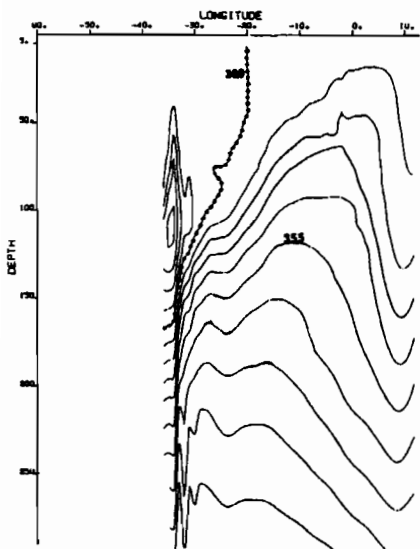
MONTH: AUGUST



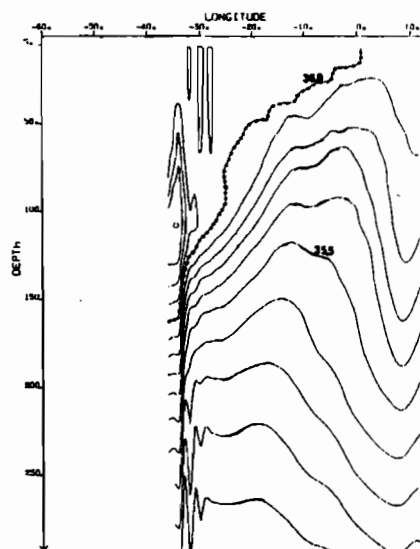
MONTH: SEPTEMBER



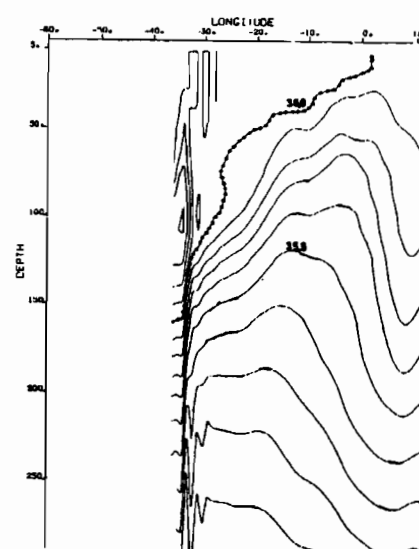
MONTH: OCTOBER



MONTH: NOVEMBER

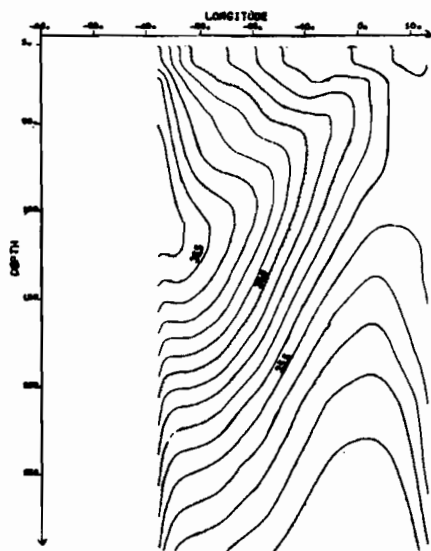


MONTH: DECEMBER

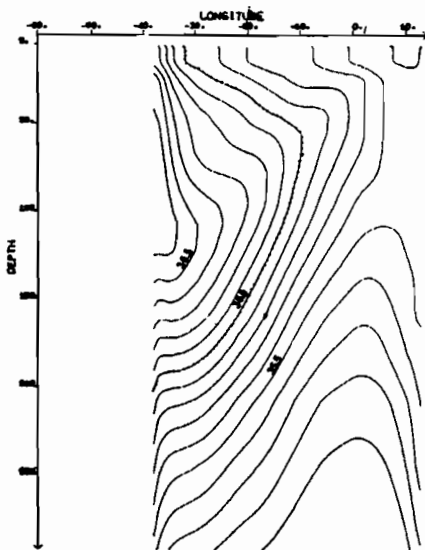


VERTICAL SECTION OF SALINITY AT 15.24 S

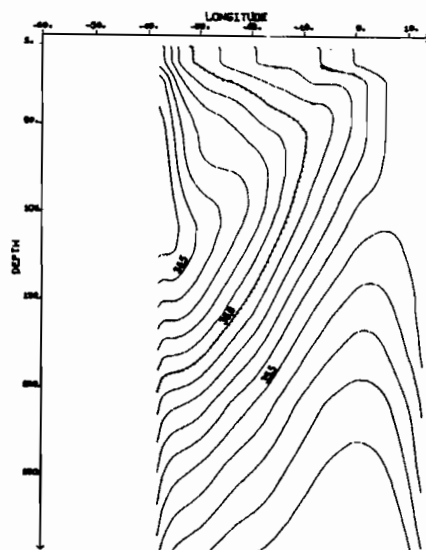
MONTH: JANUARY



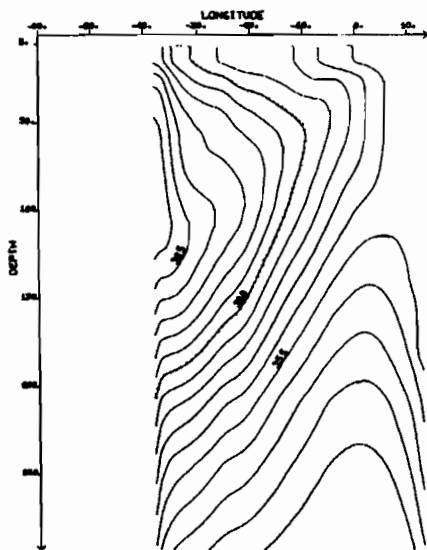
MONTH: FEBRUARY



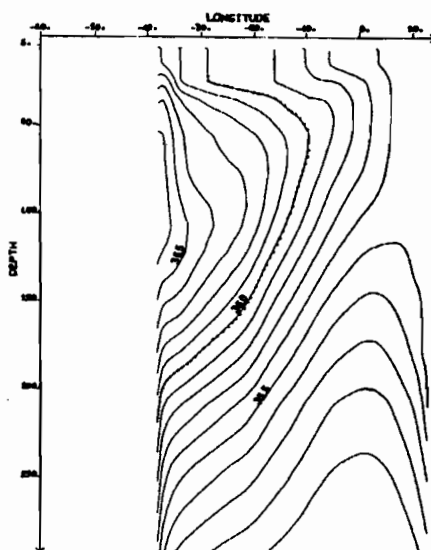
MONTH: MARCH



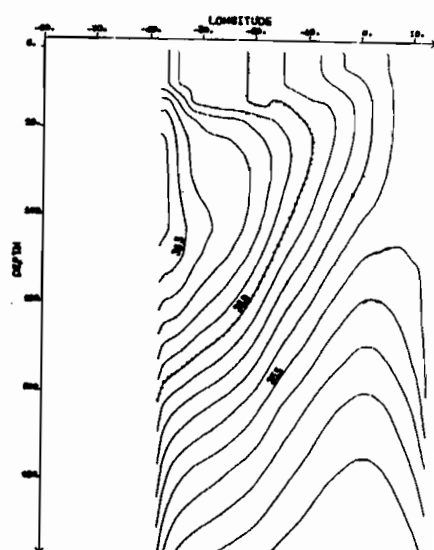
MONTH: APRIL



MONTH: MAY

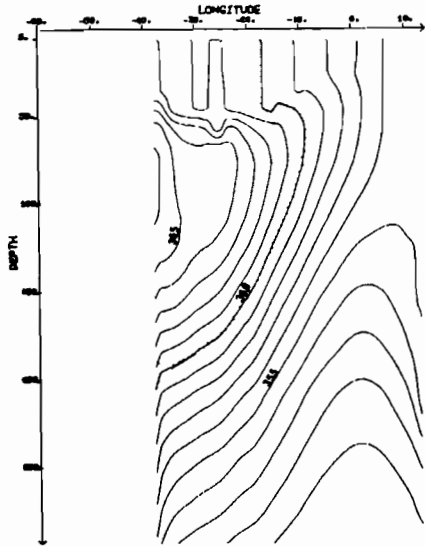


MONTH: JUNE

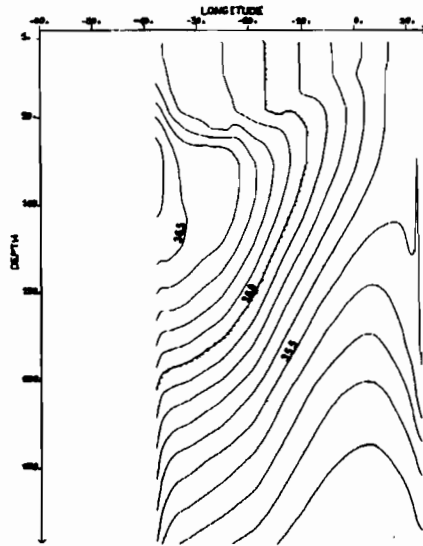


VERTICAL SECTION OF SALINITY AT 15.24 S

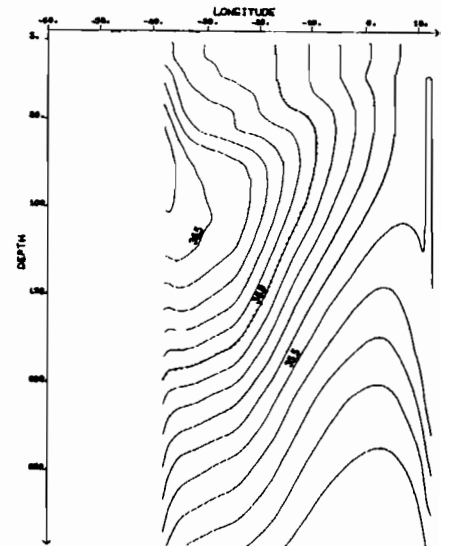
MONTH: JULY



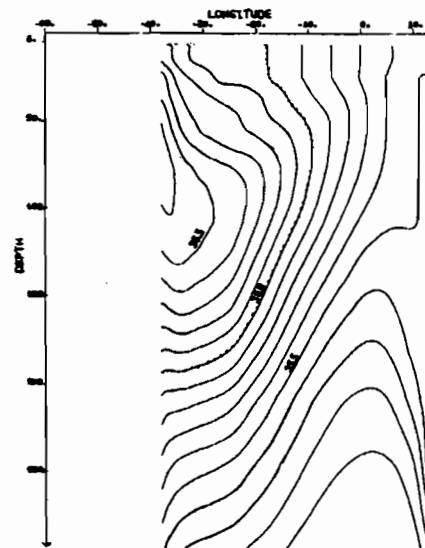
MONTH: AUGUST



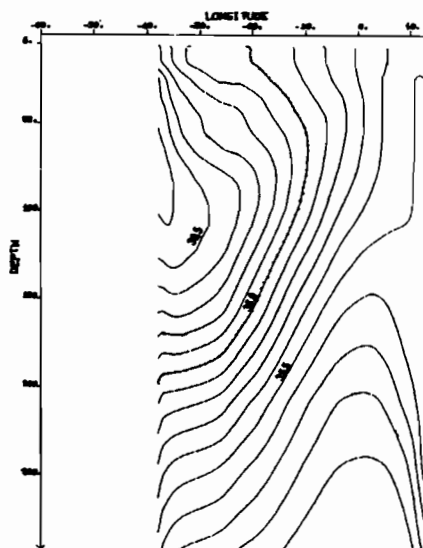
MONTH: SEPTEMBER



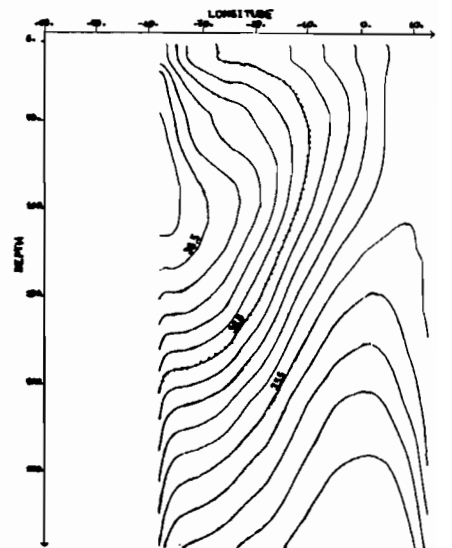
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER



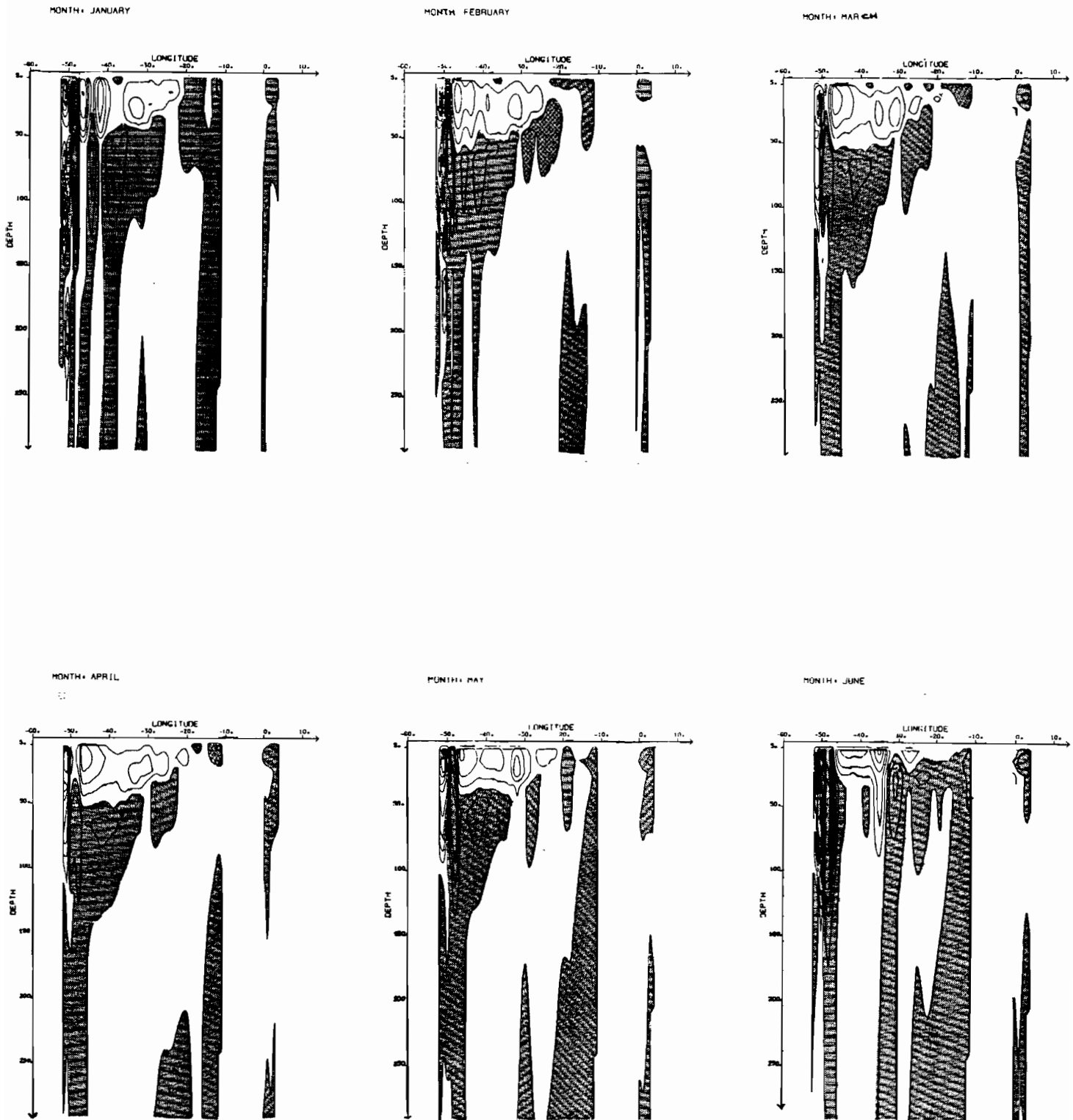
ZONAL SECTIONS OF MERIDIONAL VELOCITY AT:

* 5.17N:		
months:	- january to june.	p. 120
	- july to december.	p. 121
* 0.17N:		
months:	- january to june.	p. 122
	- july to december.	p. 123
* 5.17S:		
months:	- january to june.	p. 124
	- july to december.	p. 125

VERTICAL SECTION OF MERIDIONAL VELOCITY AT 5.17 N

(Motion is southward in shaded areas)

(Contour interval: 5 cm/s)

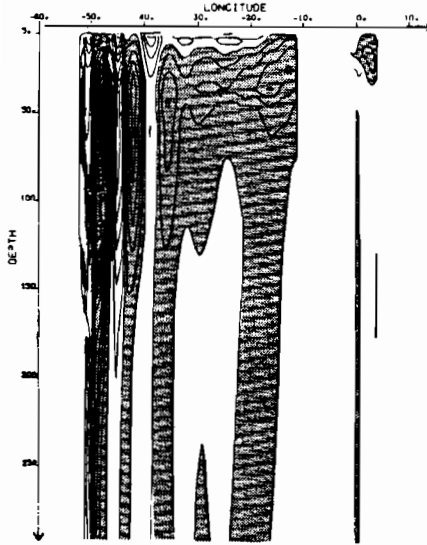


VERTICAL SECTION OF MERIDIONAL VELOCITY AT 5.17 N

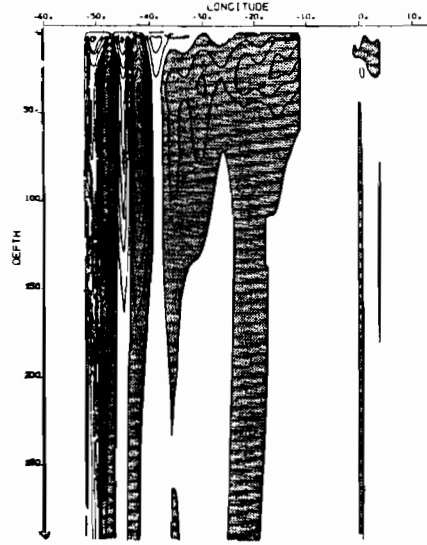
(Motion is southward in shaded areas)

(Contour interval: 5 cm/s)

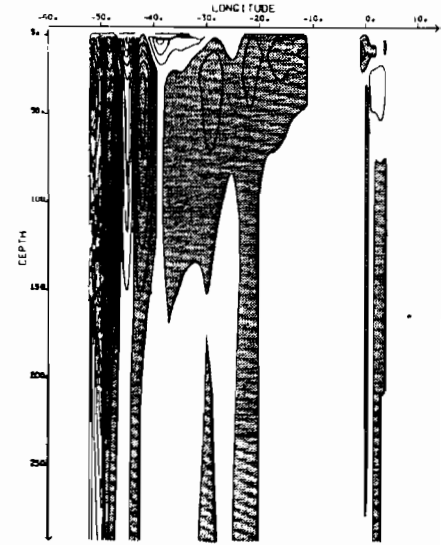
MONTH: JULY



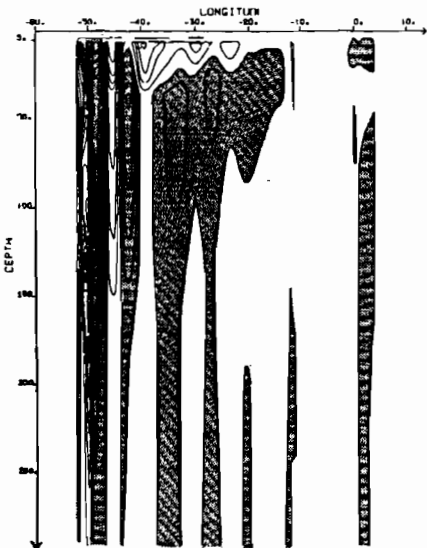
MONTH: AUGUST



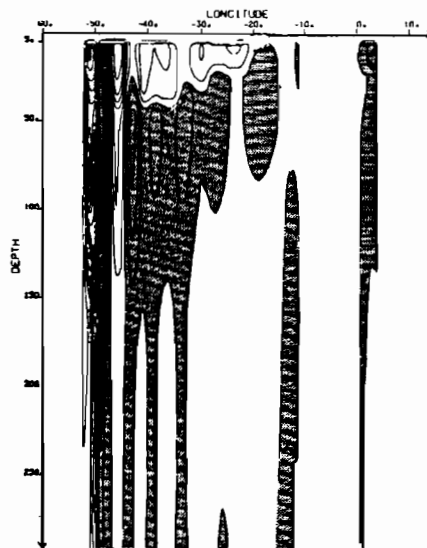
MONTH: SEPTEMB.



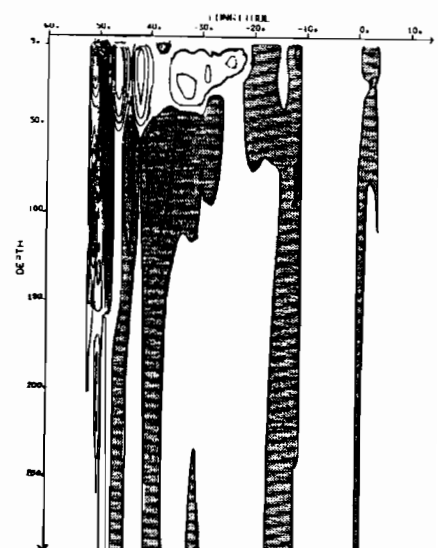
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER



VERTICAL SECTION OF MERIDIONAL VELOCITY AT 0.17 N

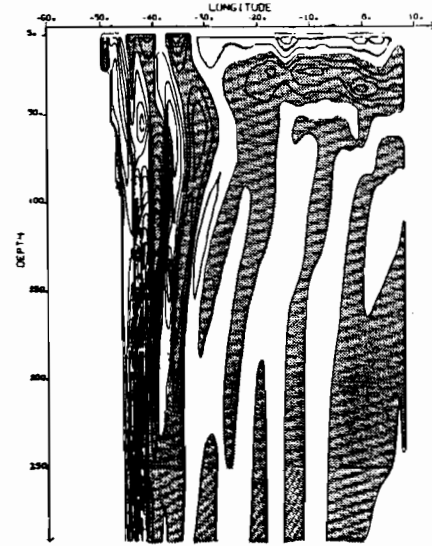
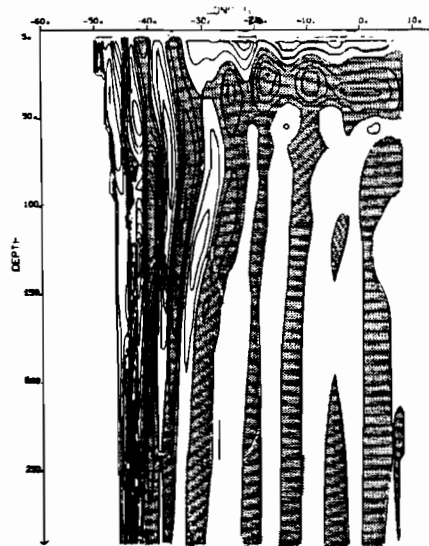
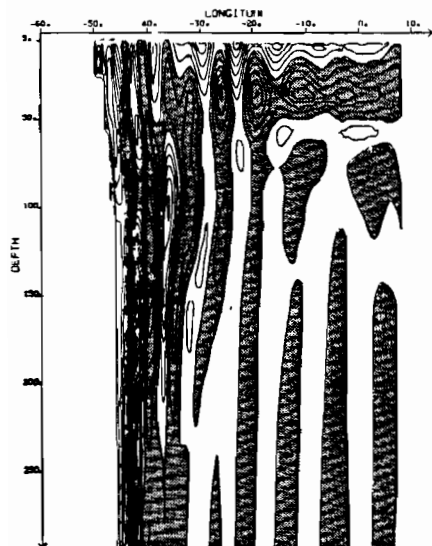
(Motion is southward in shaded areas)

(Contour interval: 5 cm/s)

MONTH: JANUARY

MONTH: FEBRUARY

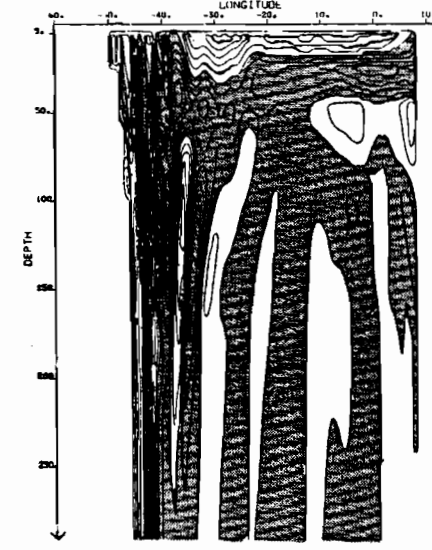
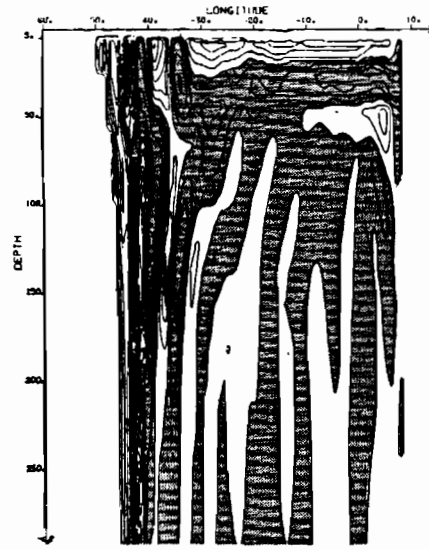
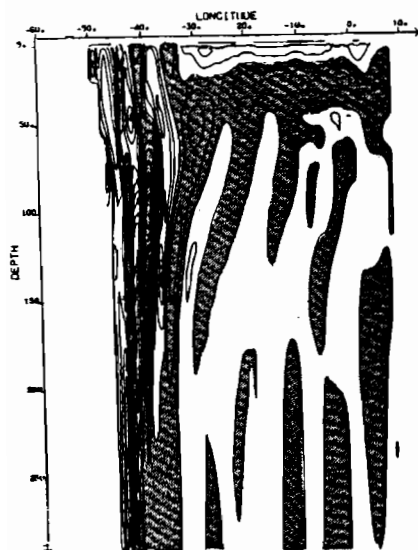
MONTH: MARCH



MONTH: APRIL

MONTH: MAY

MONTH: JUNE

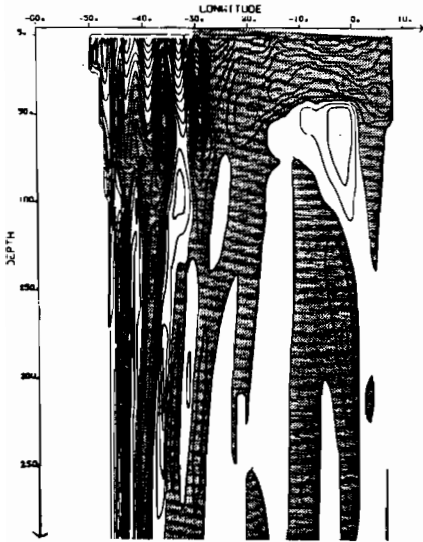


VERTICAL SECTION OF MERIDIONAL VELOCITY AT 0.17 N

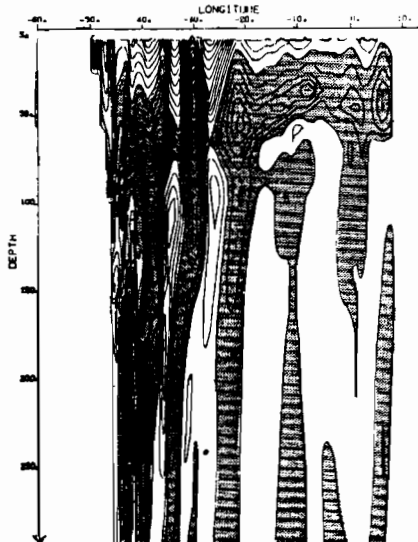
(Motion is southward in shaded areas)

(Contour interval: 5 cm/s)

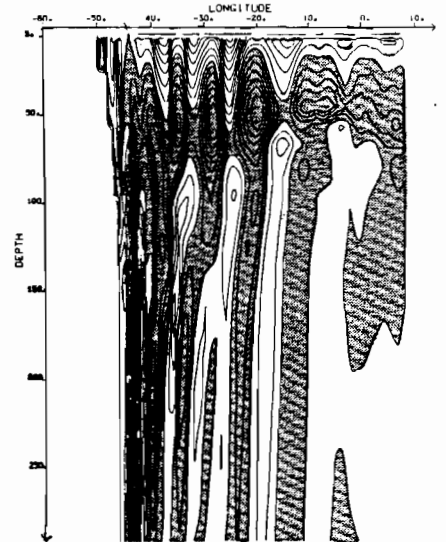
MONTH: JULY



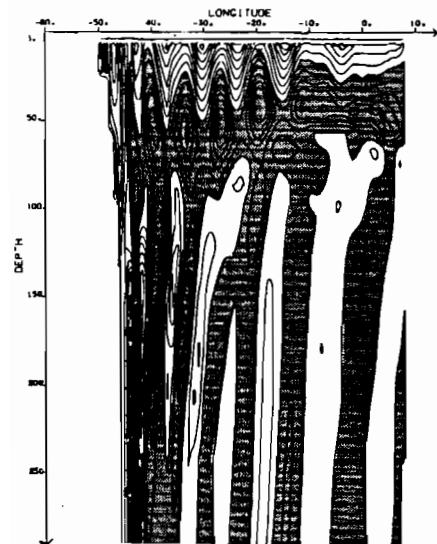
MONTH: AUGUST



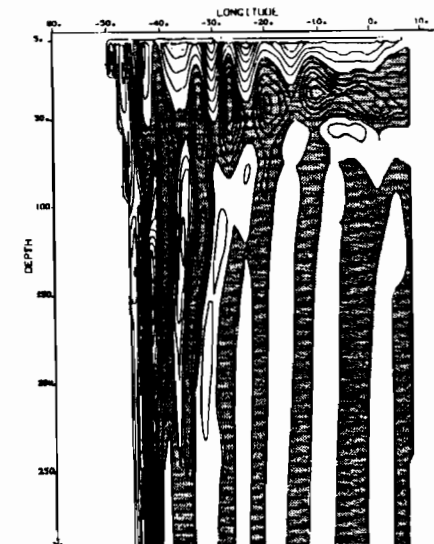
MONTH: SEPTEMBER



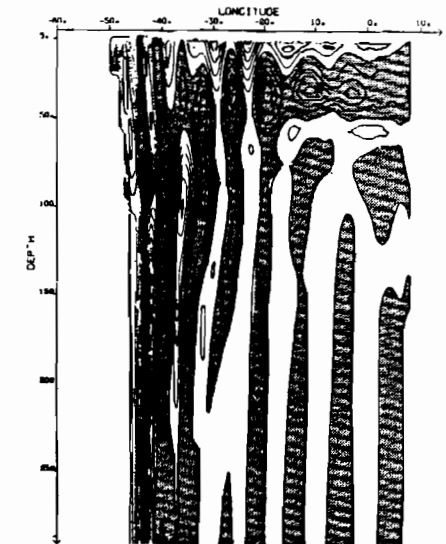
MONTH: OCTOBER



MONTH: NOVEMBER



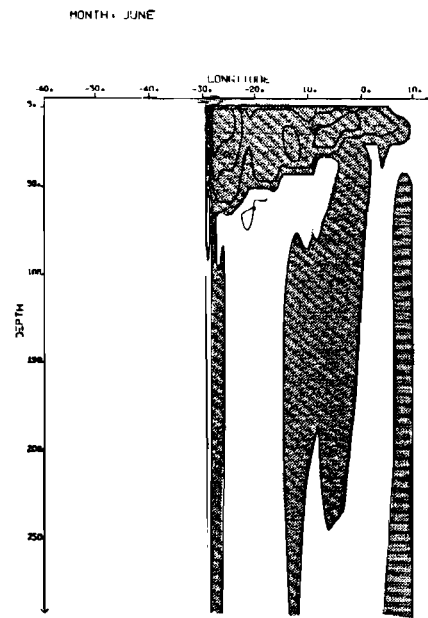
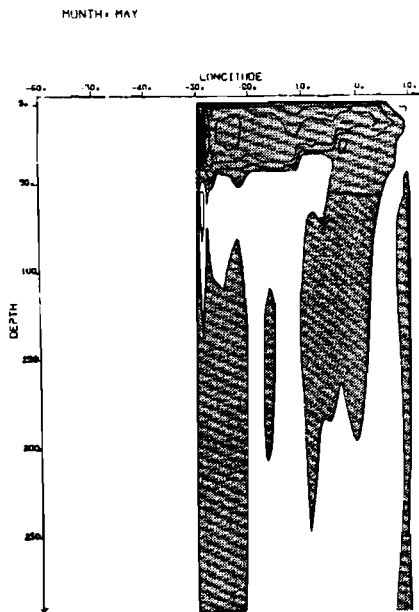
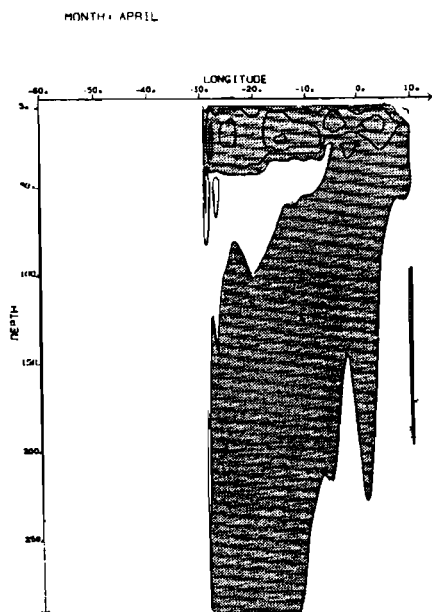
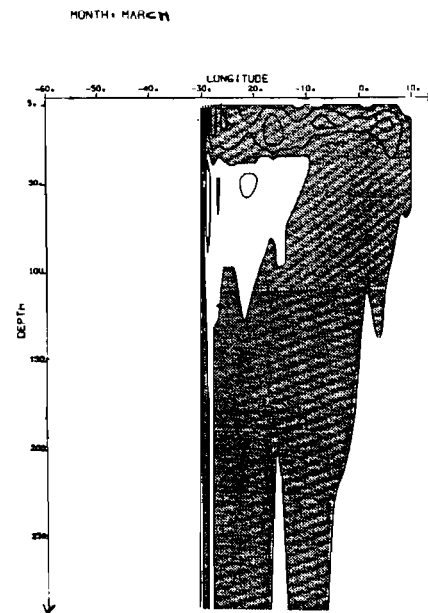
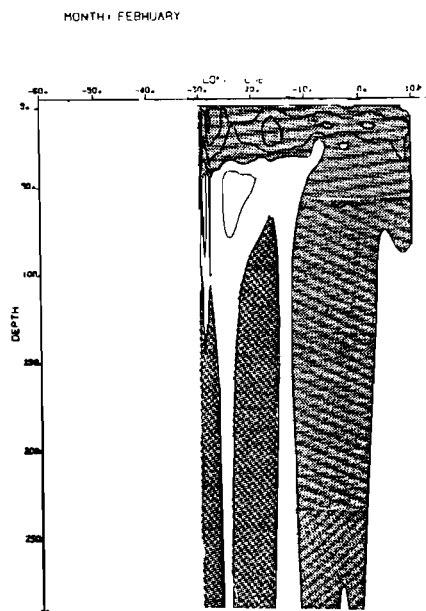
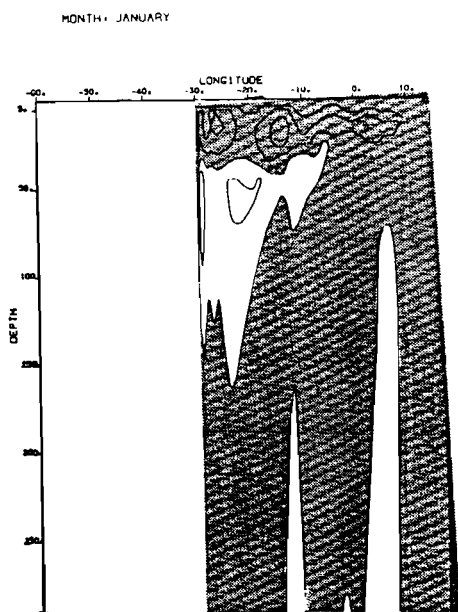
MONTH: DECEMBER



VERTICAL SECTION OF MERIDIONAL VELOCITY AT 5.17 S

(Motion is southward in shaded areas)

(Contour interval: 5 cm/s)

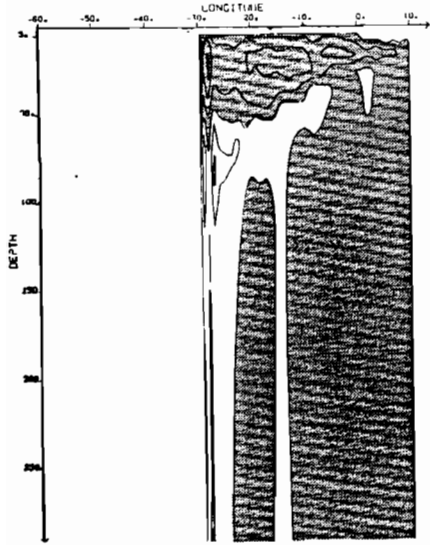


VERTICAL SECTION OF MERIDIONAL VELOCITY AT 5.17 S

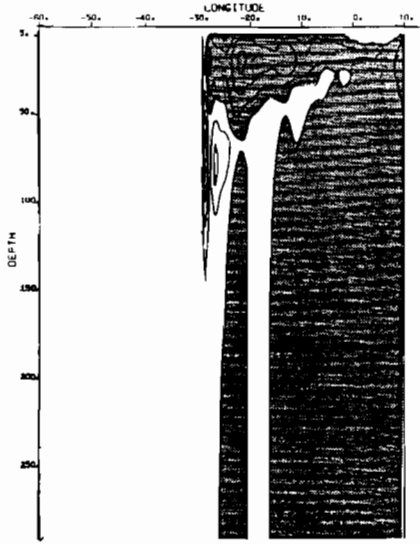
(Motion is southward in shaded areas)

(Contour interval: 5 cm/s)

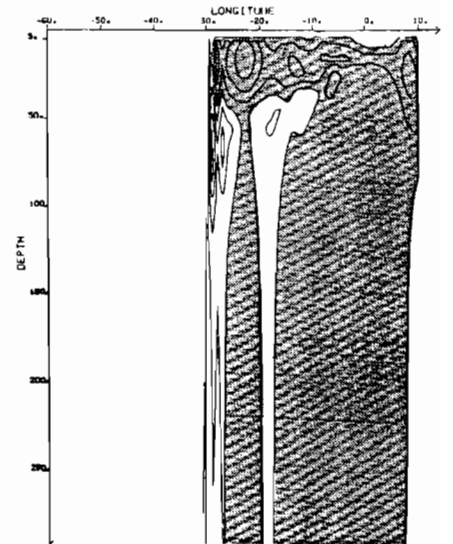
MONTH: JULY



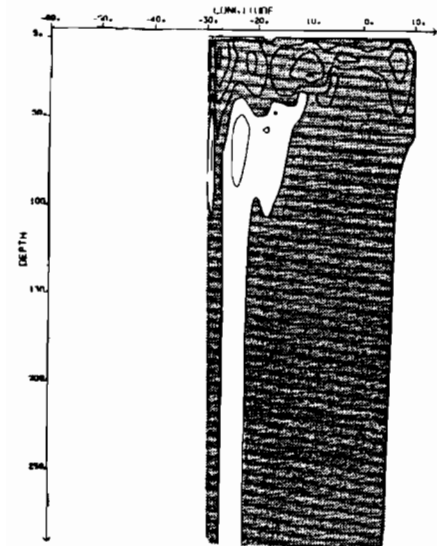
MONTH: AUGUST



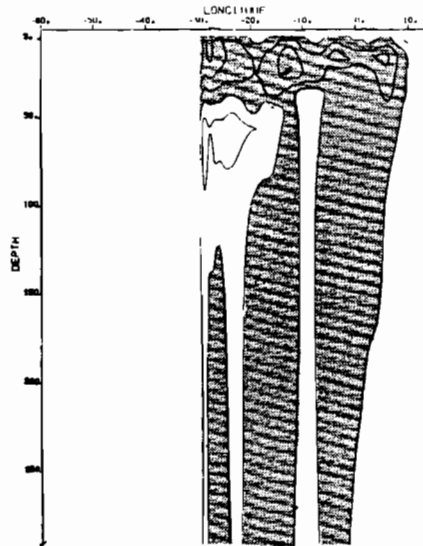
MONTH: SEPTEMBER



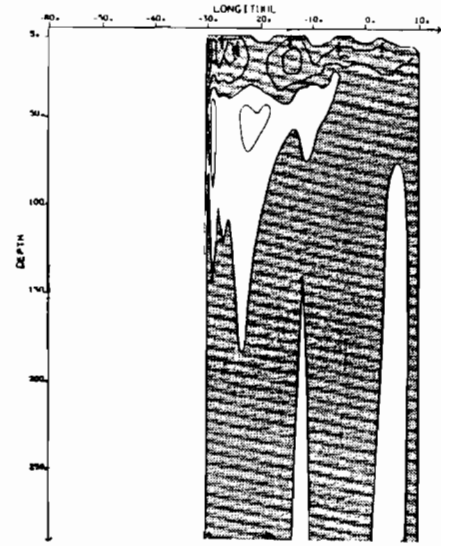
MONTH: OCTOBER



MONTH: NOVEMBER



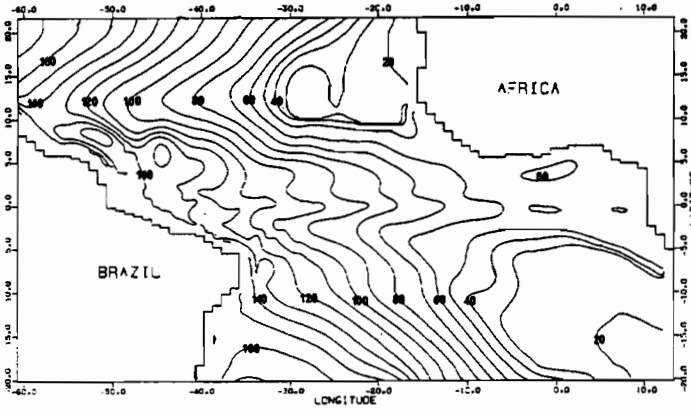
MONTH: DECEMBER



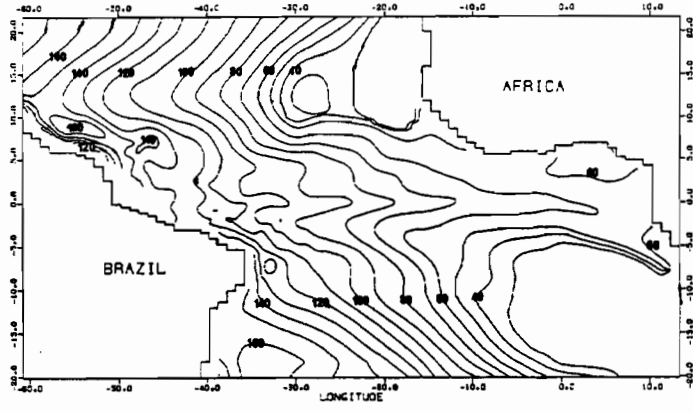
MAPS OF DEPTH OF THE ISOTHERM T=20°Celsius:

DEPTH OF THE ISOTHERM T=20°C (in meters)

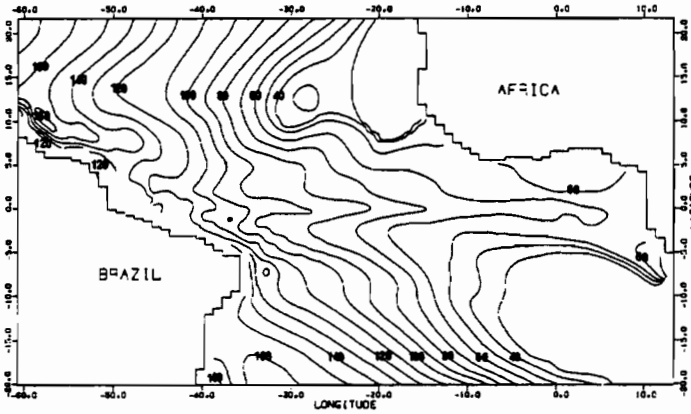
MONTH: JANUARY



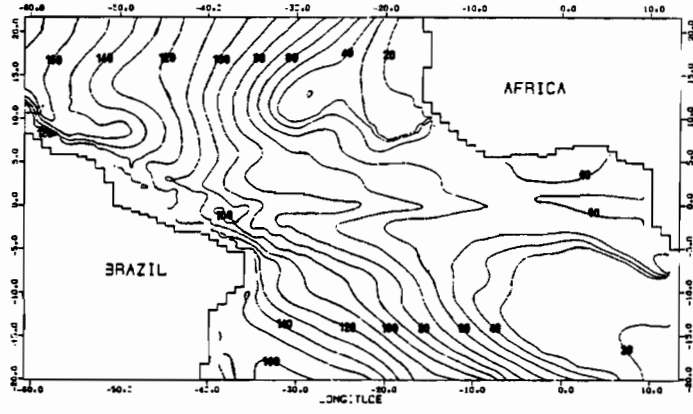
MONTH: FEBRUARY



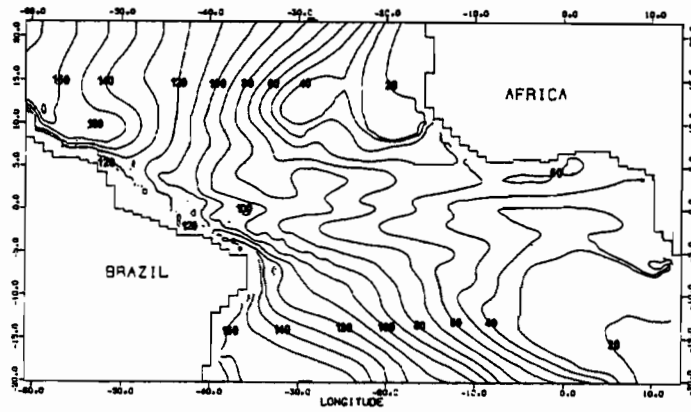
MONTH: MARCH



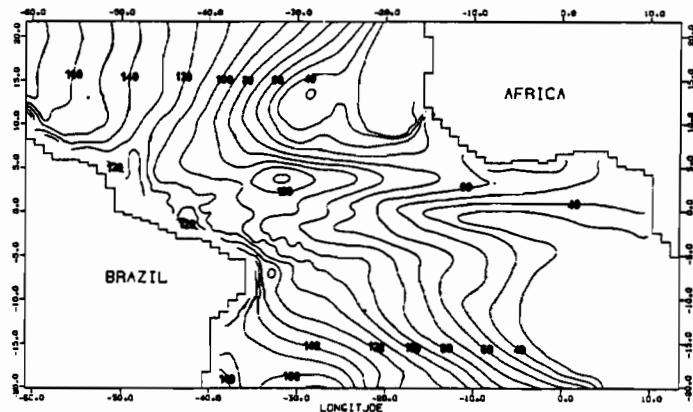
MONTH: APRIL



MONTH: MAY

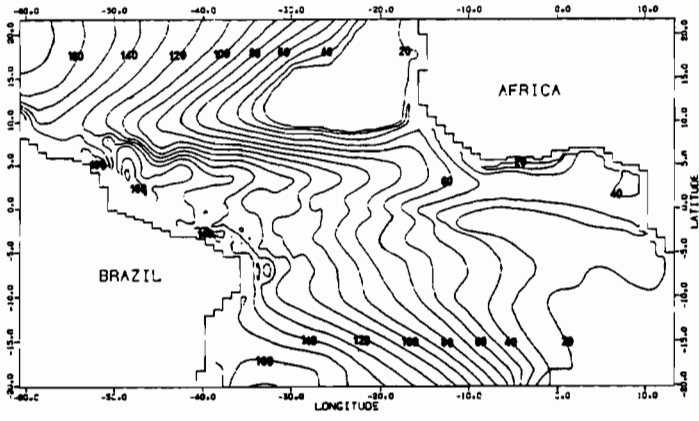


MONTH: JUNE

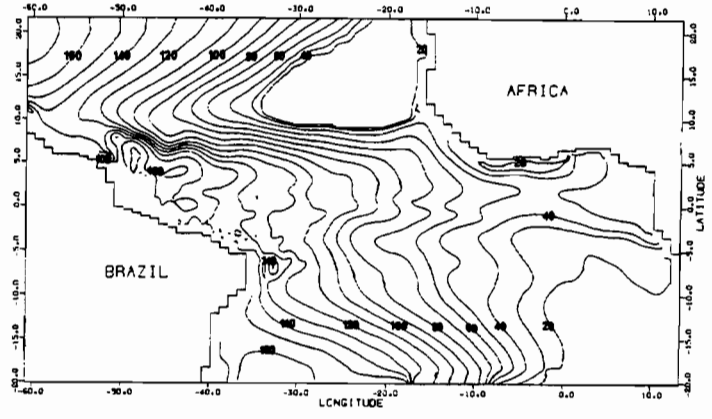


DEPTH OF THE ISOTHERM T=20°C (in meters)

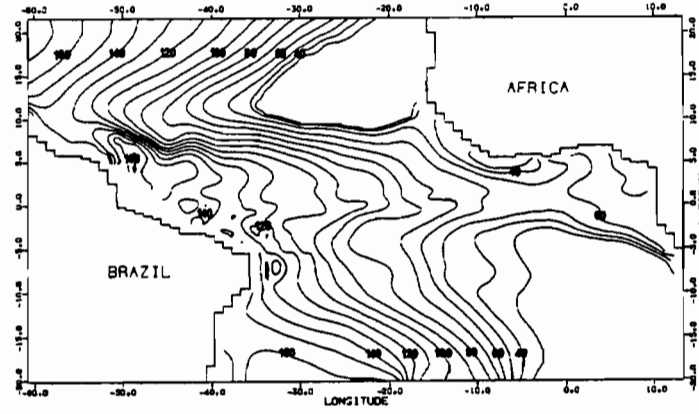
MONTH: JULY



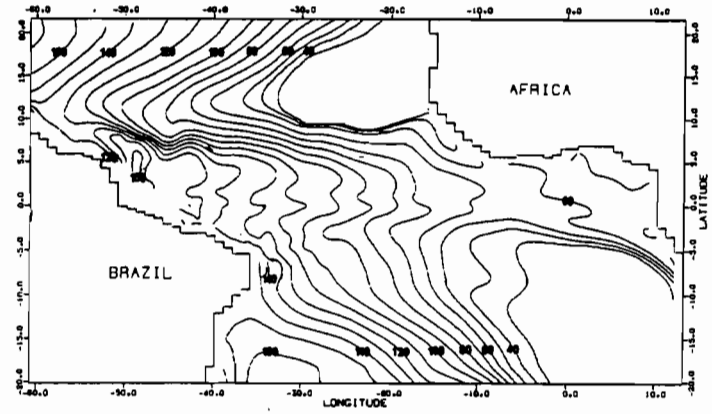
MONTH: AUGUST



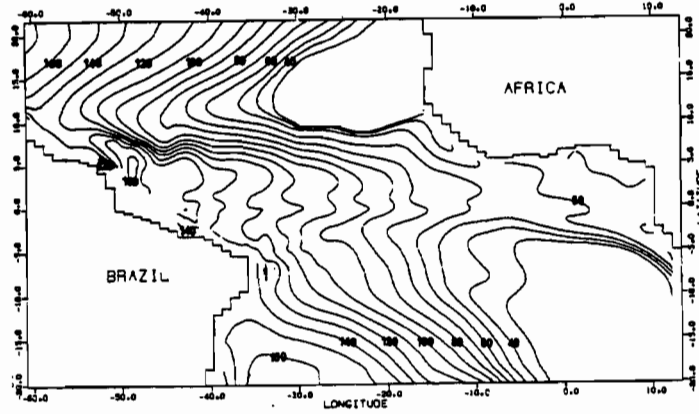
MONTH: SEPTEMBER



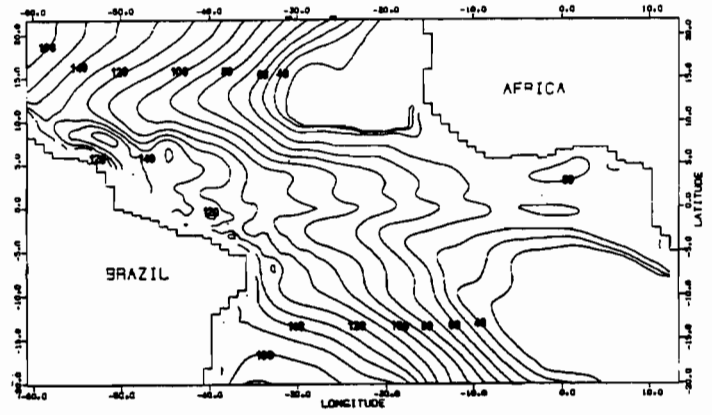
MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER



TEMPERATURE AND SALINITY VERSUS DEPTH

AT THREE LOCATIONS ALONG THE EQUATOR:

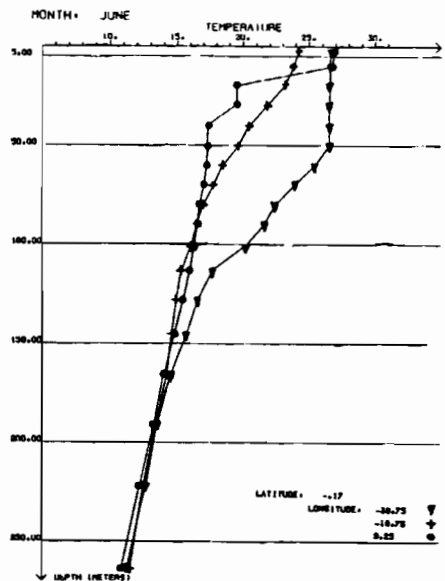
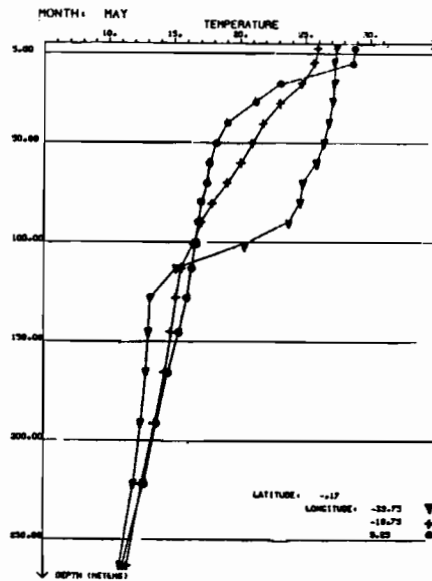
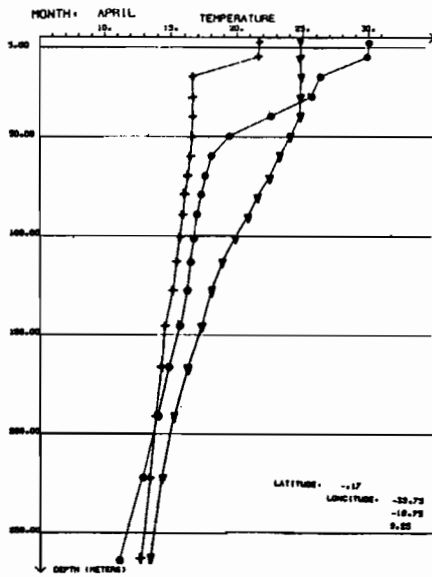
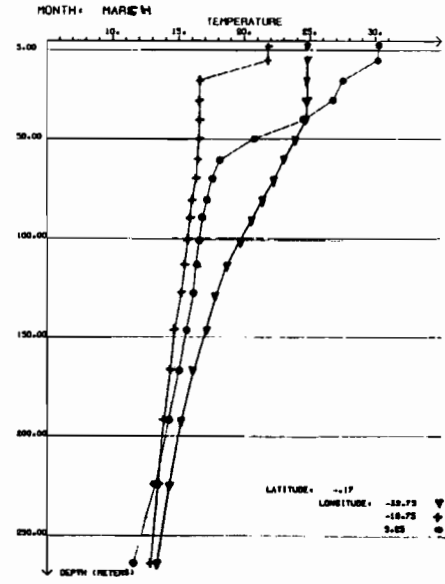
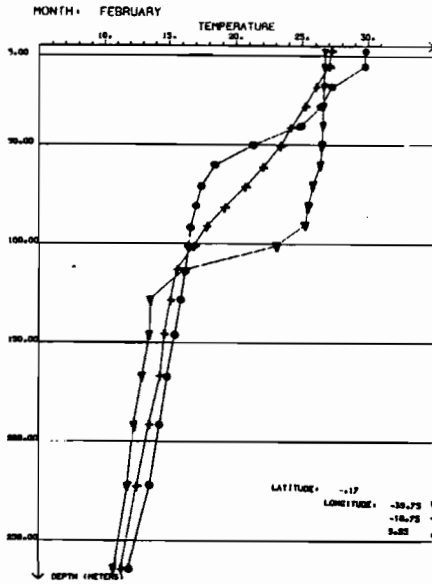
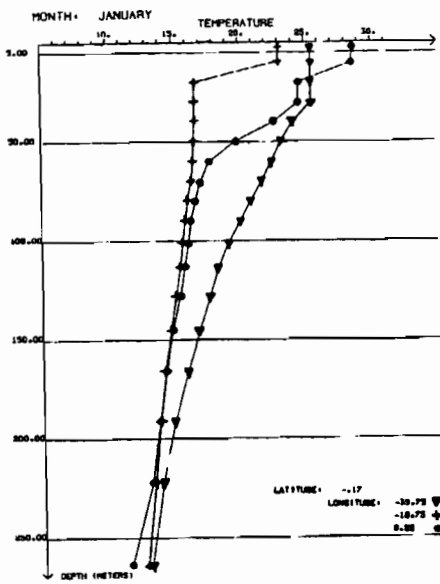
TEMPERATURE VERSUS DEPTH AT 3 LOCATIONS ALONG THE EQUATOR

(in fact along 0.17 S)

longitude: 39.75W ▼

18.75W +

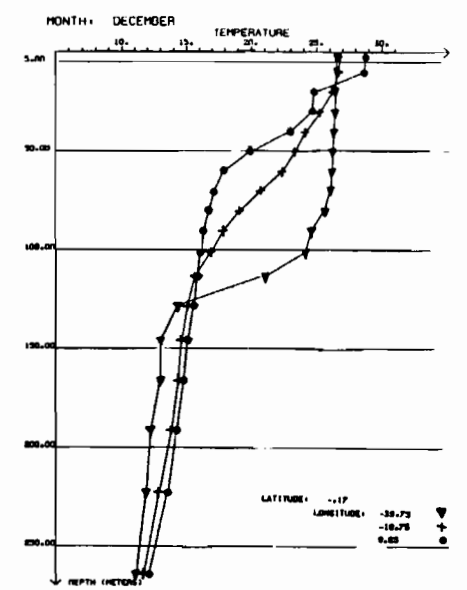
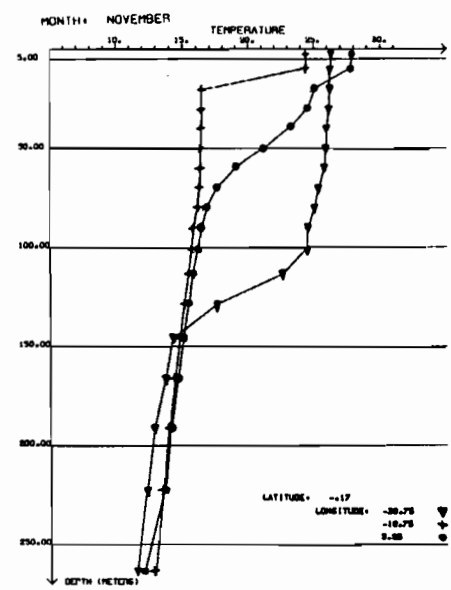
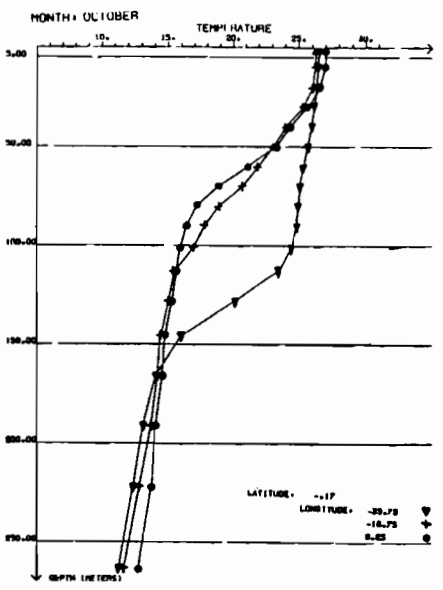
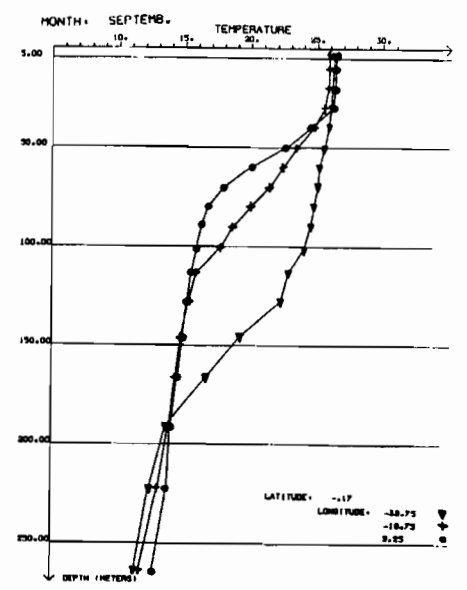
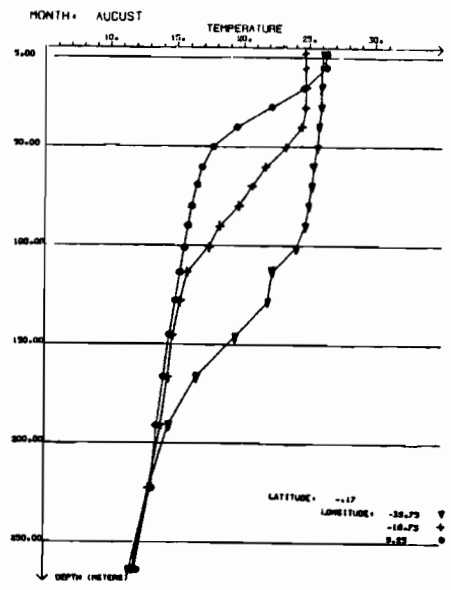
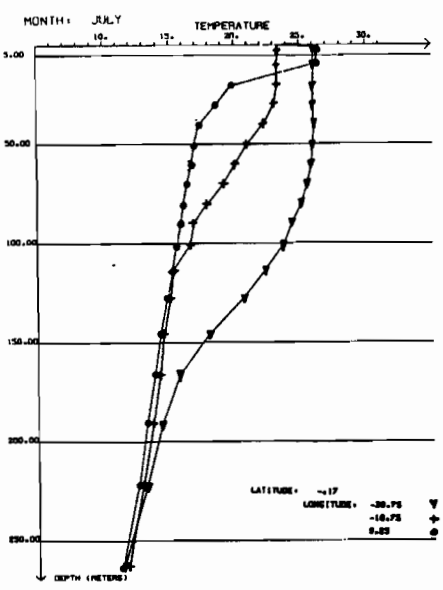
9.25E ●



TEMPERATURE VERSUS DEPTH AT 3 LOCATIONS ALONG THE EQUATOR

(in fact along 0.17 S)

longitude: 39.75W ▼
 18.75W +
 9.25E ●



SALINITY VERSUS DEPTH AT 3 LOCATIONS ALONG THE EQUATOR

(in fact along 0.17 S)

longitude: 39.75W ▼

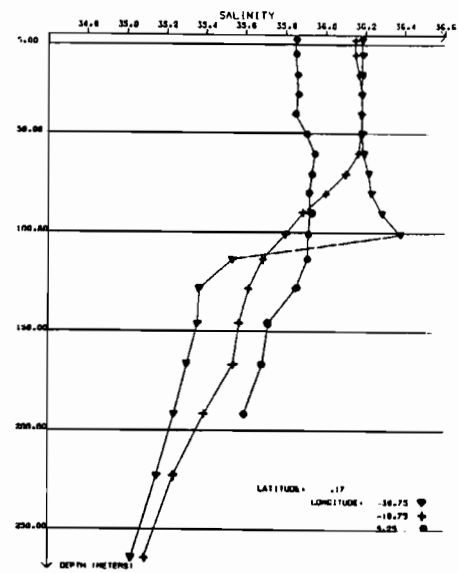
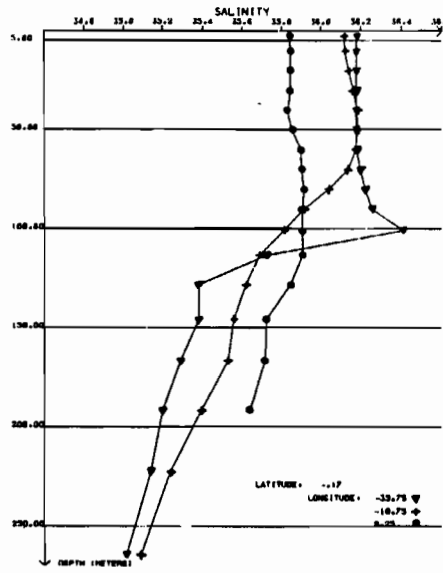
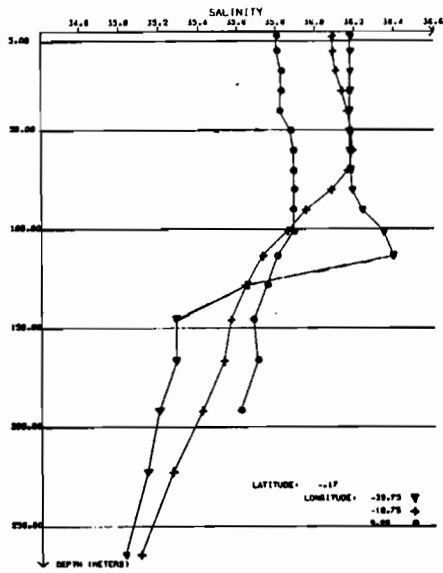
18.75W +

9.25E ●

MONTH: JANUARY

MONTH: FEBRUARY

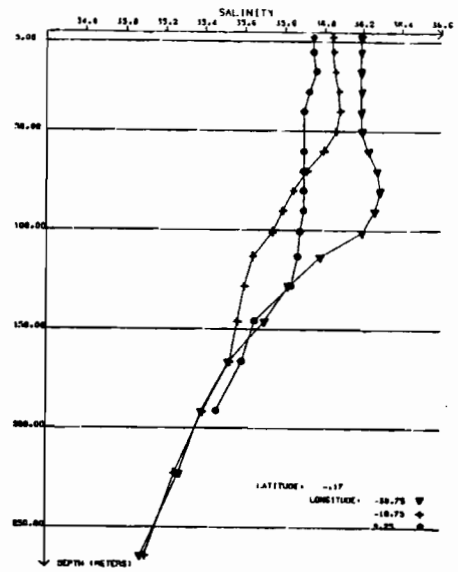
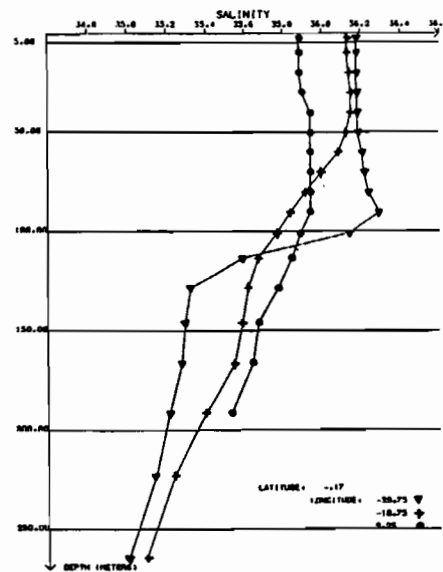
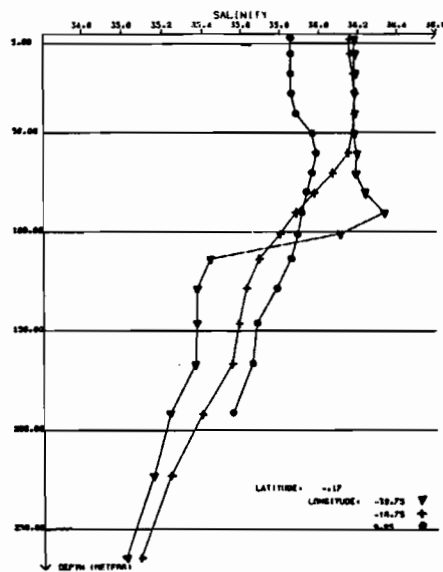
MONTH: MARCH



MONTH: APRIL

MONTH: MAY

MONTH: JUNE

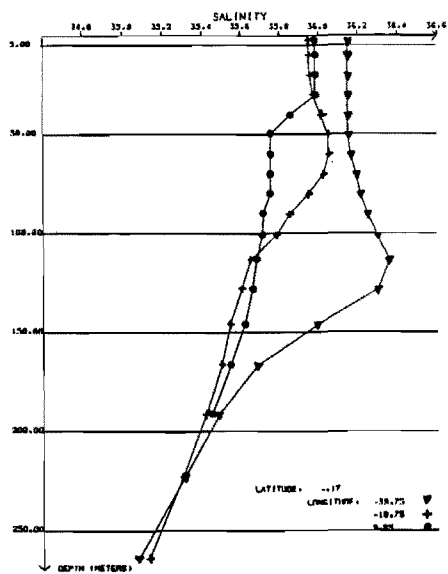


SALINITY VERSUS DEPTH AT 3 LOCATIONS ALONG THE EQUATOR

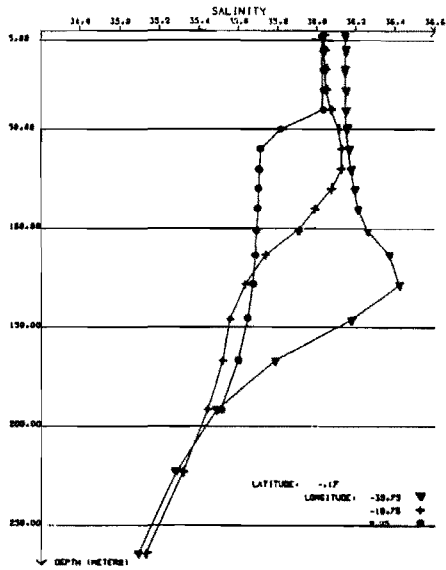
(in fact along 0.17 S)

longitude: 39.75W ▼
 18.75W +
 9.25E ●

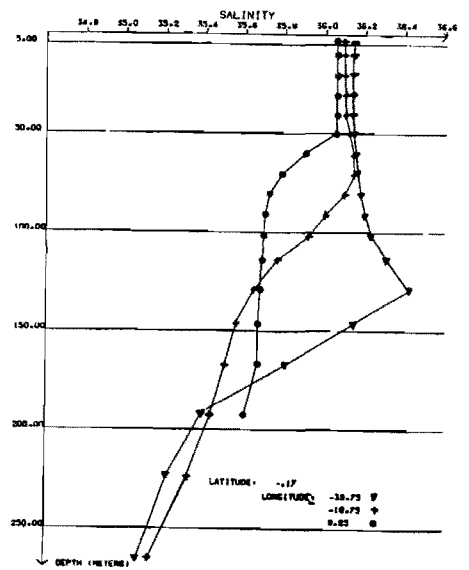
MONTH: JULY



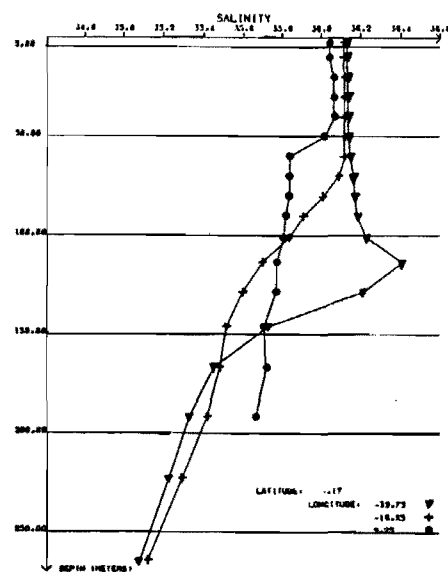
MONTH: AUGUST



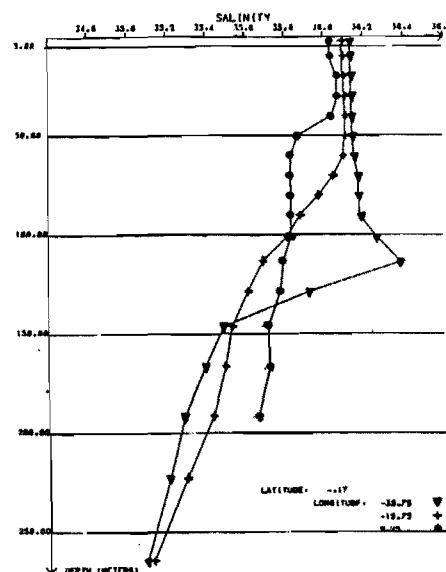
MONTH: SEPTEMB.



MONTH: OCTOBER



MONTH: NOVEMBER



MONTH: DECEMBER

