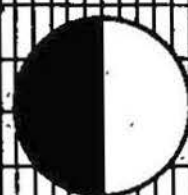


# INSTITUTO DE GEOFISICA



# Calendario Gráfico de Mareas 1993



## GOLFO DE MÉXICO Y MAR CARIBE



SECRETARIA DE MARINA



PUERTOS MEXICANOS



LAGUNA VERDE



FONATUR



CONACYT

Campeche, Camp.

Progreso, Yuc.

I. Cozumel, Q. Roo

**CALENDARIO GRAFICO DE MAREAS 1993  
GOLFO DE MEXICO Y MAR CARIBE**

**DIFERENCIAS:**

El pronóstico de mareas de Veracruz, puede ser utilizado en casi todo el Golfo de México aplicando correcciones al tiempo y a la altura de las pleamares y bajamares (puntos máximos y mínimos de la gráfica de mareas). Estas correcciones se aplicarán según su signo a las pleamares y bajamares de Veracruz, para obtener las del lugar deseado.

ESTACIONES	DIFERENCIAS DE TIEMPO				DIFERENCIAS DE ALTURA			
	Pleamar		Bajamar		Pleamar		Bajamar	
	Hora	Min.	Hora	Min.	Pies	m	Pies	m
Matamoros, Tamps.	+ 01	24	+ 01	00	- 0.5	- 0.15	- 0.3	- 0.18
Tampico, Tamps.	+ 00	15	+ 00	15	- 0.4	- 0.12	- 0.1	- 0.03
Tuxpan, Ver.	+ 00	15	+ 00	15	- 0.1	- 0.03	- 0.1	- 0.03
Alvarado, Ver.	+ 01	30	+ 00	45	- 0.4	- 0.12	- 0.1	- 0.03
Coatzacoalcos, Ver.	+ 00	25	+ 00	10	- 0.5	- 0.15	- 0.2	- 0.06
Frontera, Tab.	+ 00	00	- 00	15	- 0.2	- 0.06	- 0.1	- 0.03

Cozumel, Q. Roo. Este pronóstico de mareas puede ser utilizado para Isla Mujeres, Cancún y toda la Costa Mexicana del Mar Caribe.

**INSTITUTO DE GEOFÍSICA**

*Dr. Gerardo Suárez Reynoso*  
Director

*Ing. Francisco Grivel Piña*  
Jefe del Servicio Mareográfico

*Ing. Francisco Grivel Villegas*  
*Francisco Graffé Schmit*  
Editor Técnico

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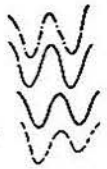
*Colaboraron en la elaboración de originales:*  
David Vázquez  
J. Alberto Quintana  
Lorenzo Pérez

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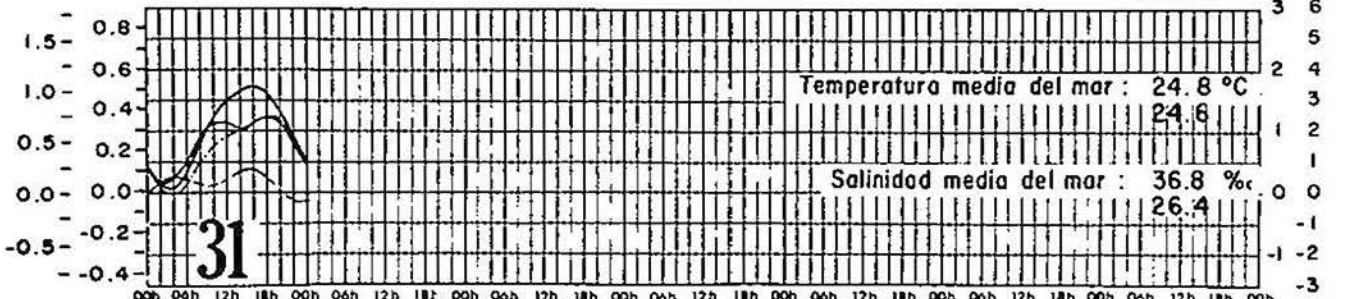
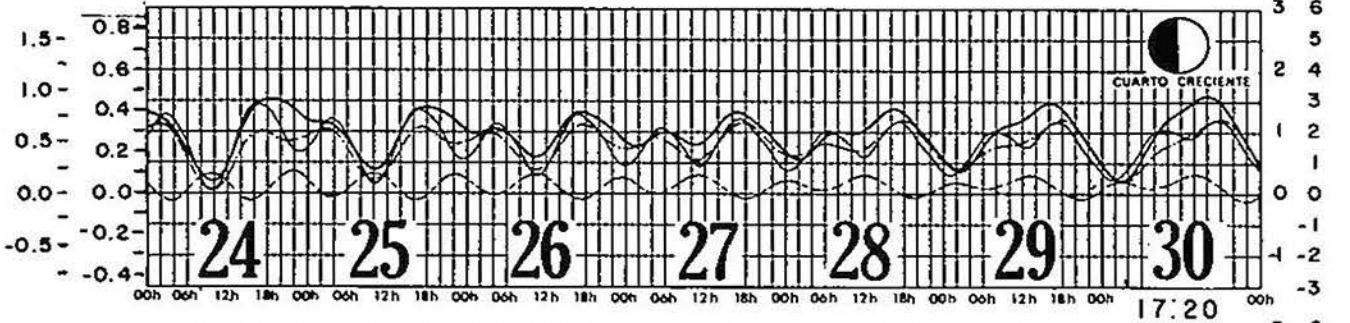
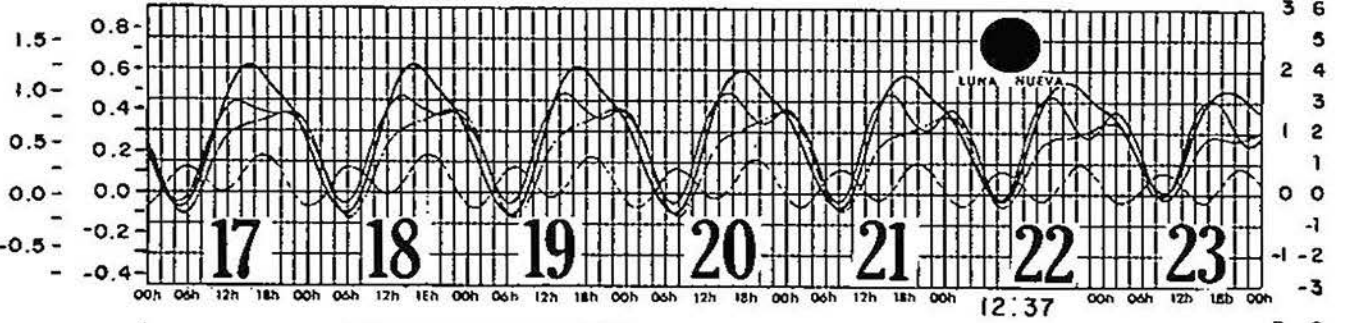
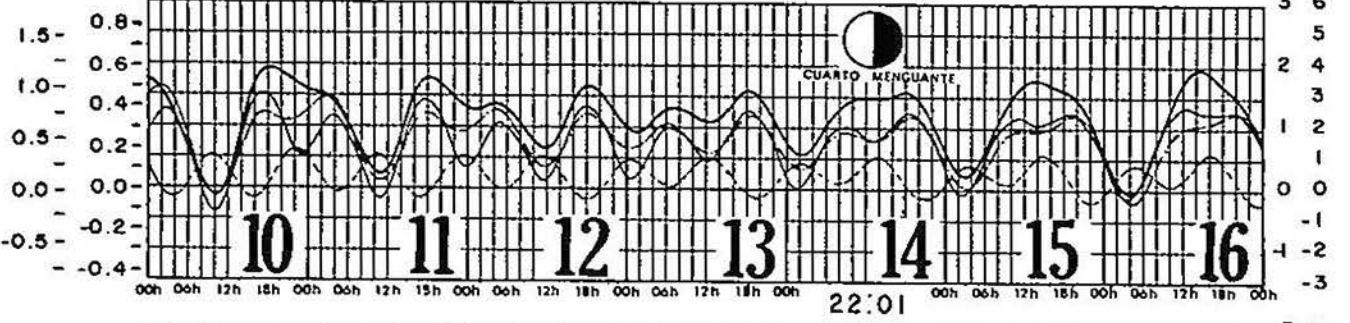
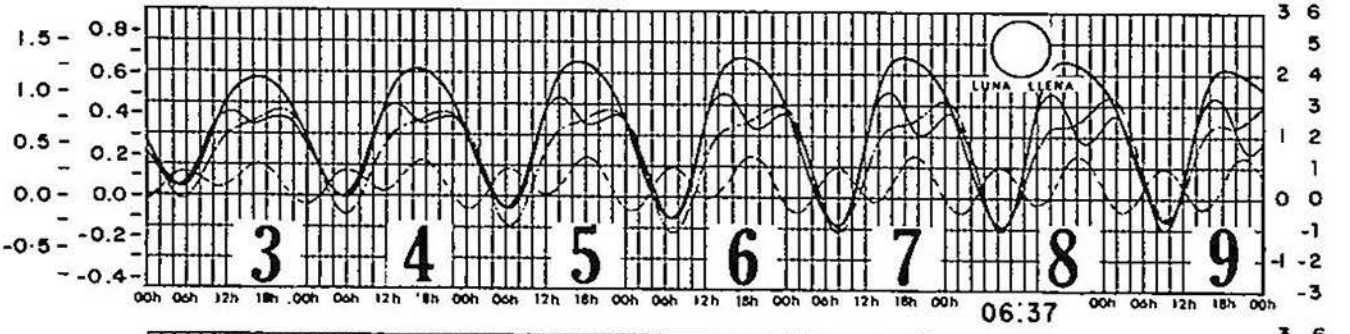
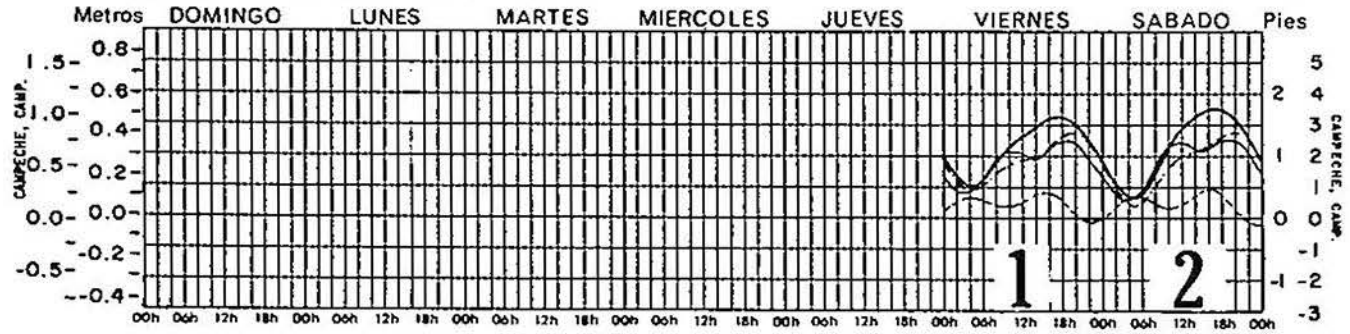


# ENERO 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



Temperatura media del mar : 24.8 °C  
24.6

Salinidad media del mar : 36.8 ‰  
26.4

HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.

22-27

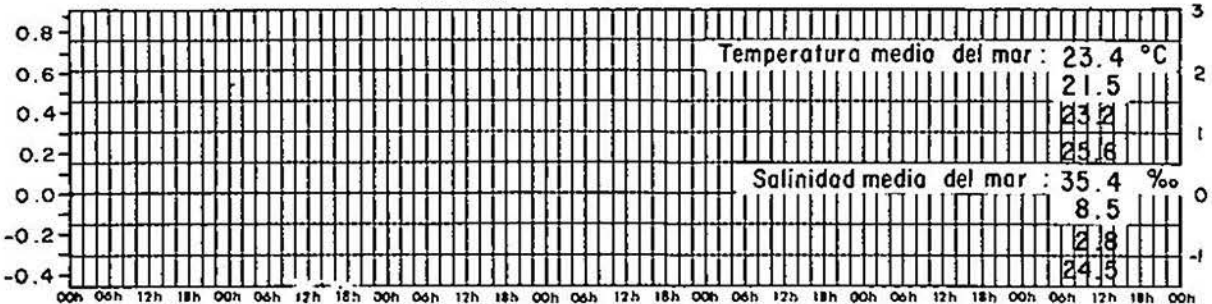
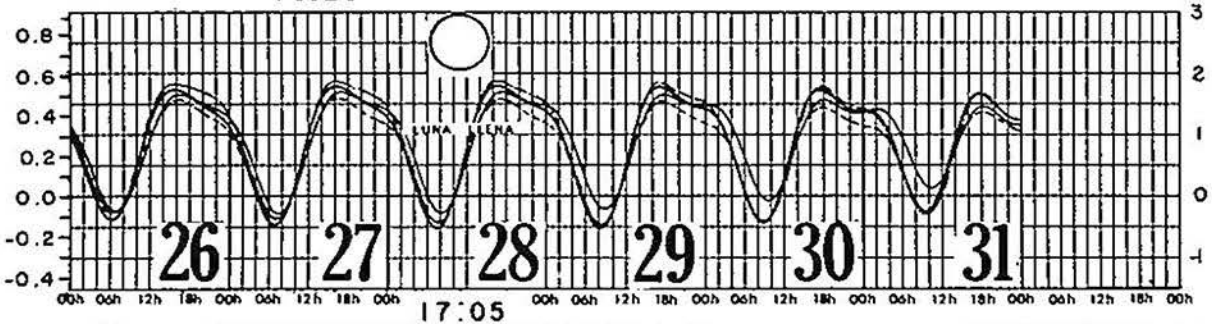
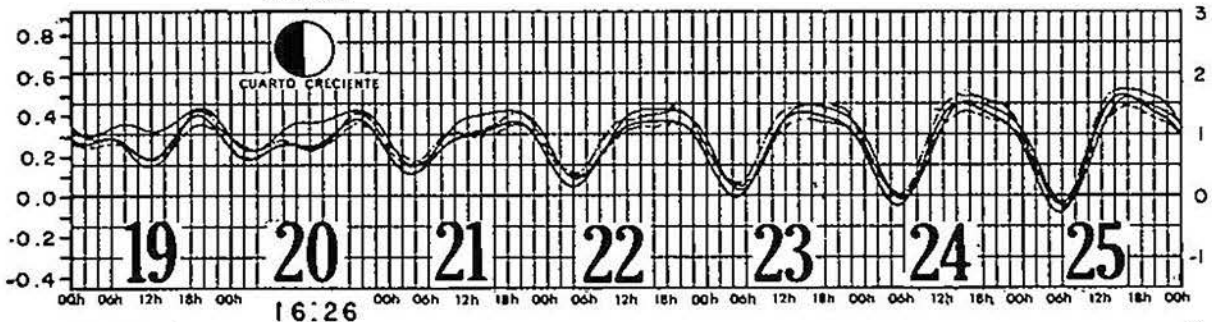
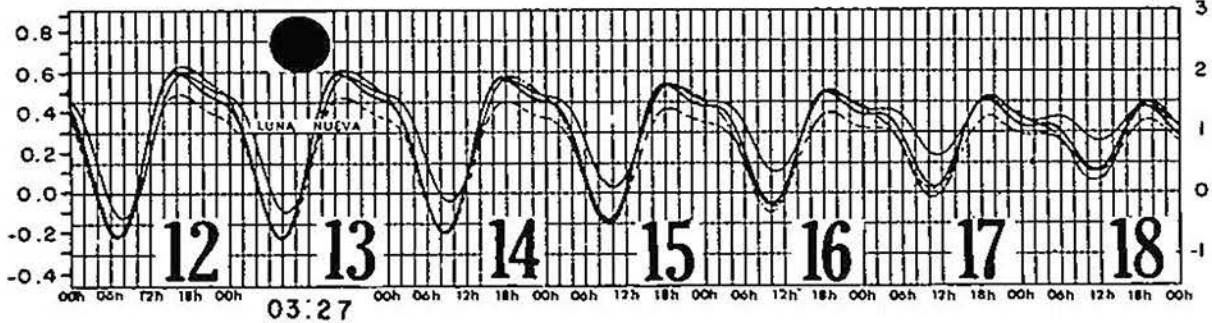
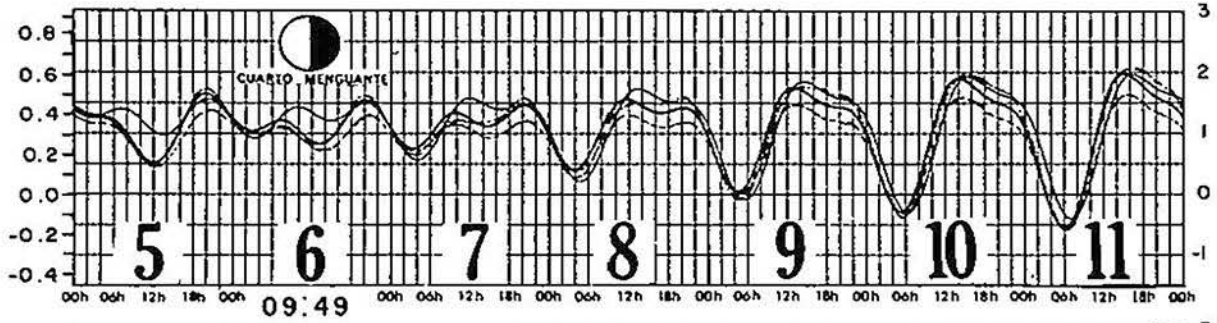
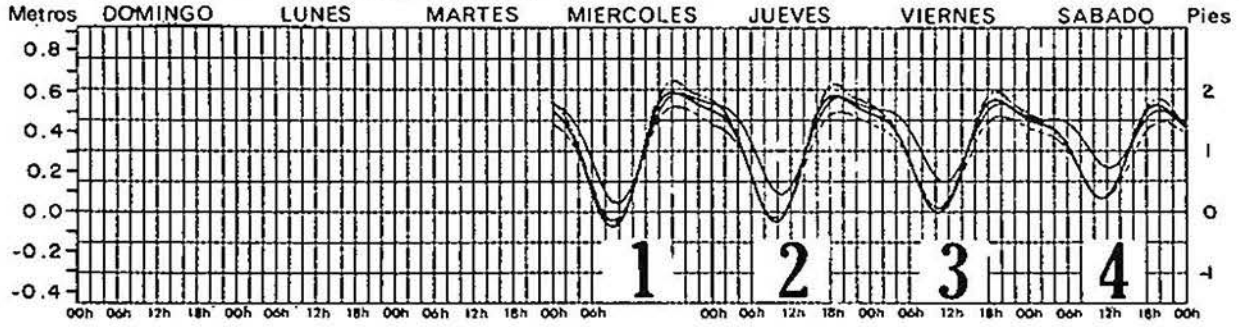


# DICIEMBRE 1993

Altamira, Tamps.  
Tampico, Tamps.  
Veracruz, Ver.  
Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.



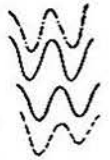
HORA DEL MERIDIANO 90° W

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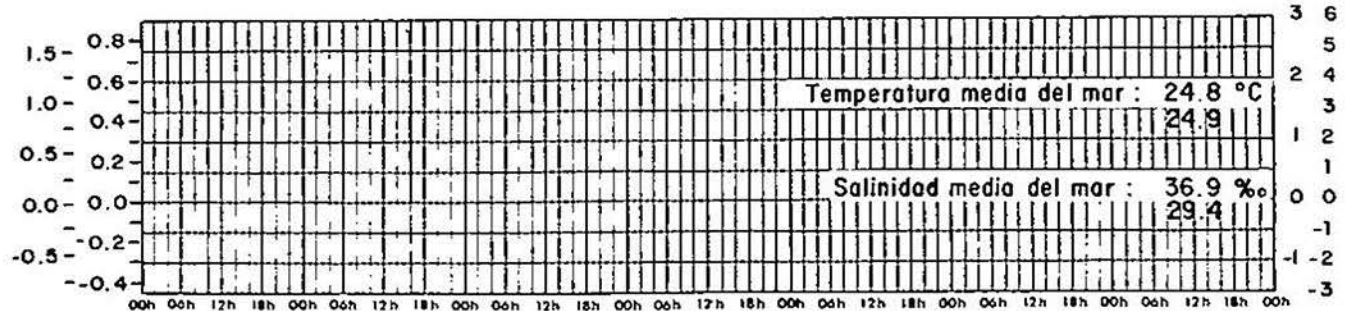
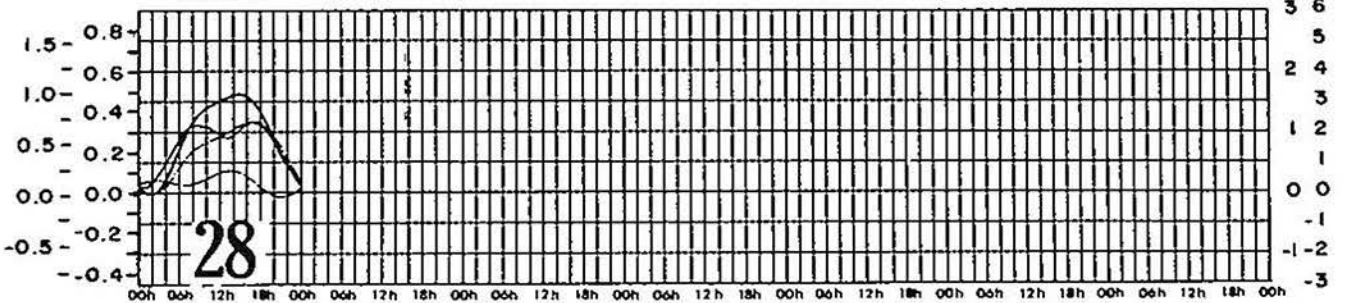
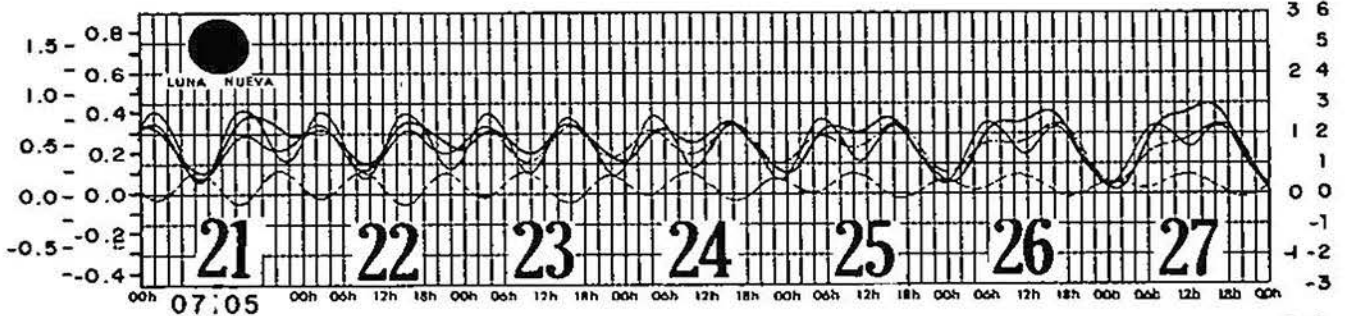
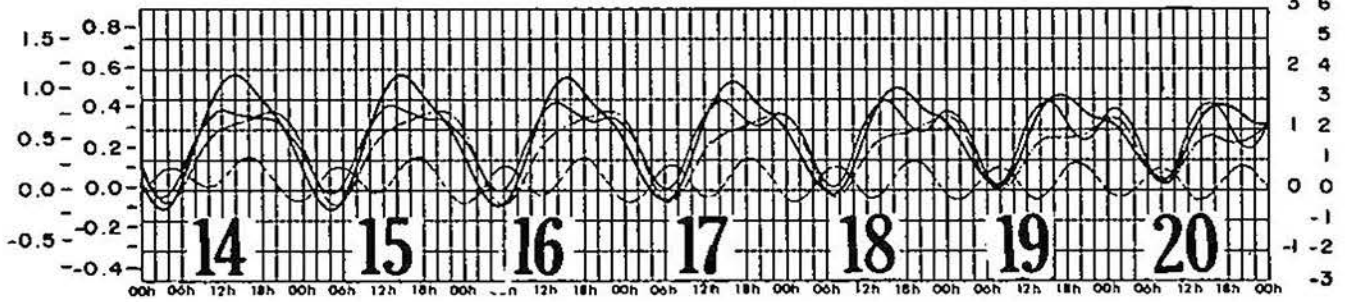
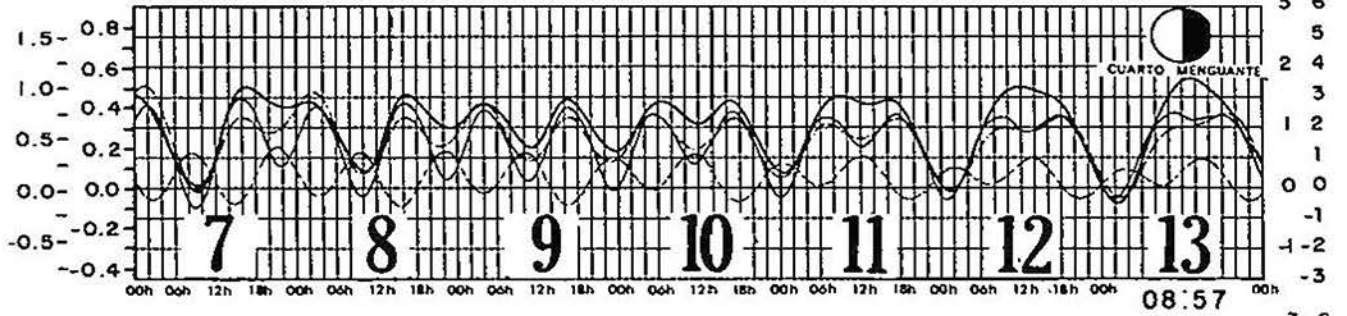
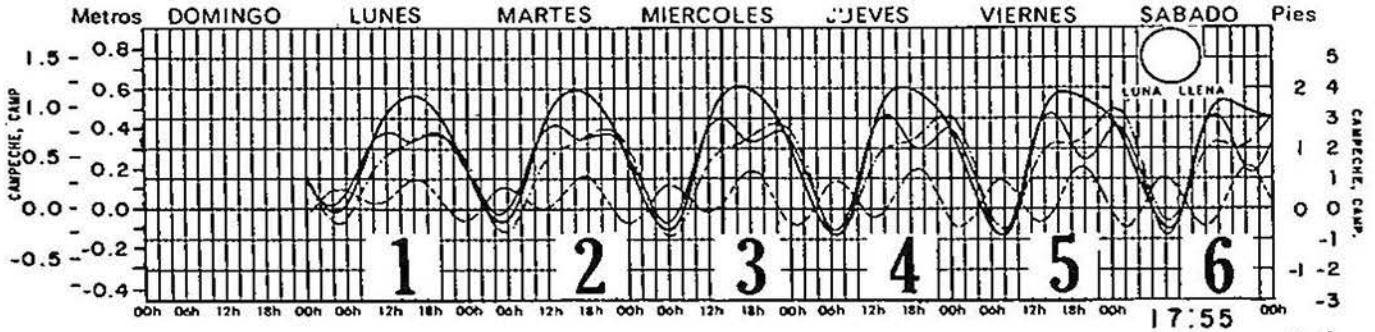


# FEBRERO 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

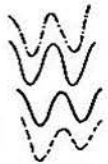
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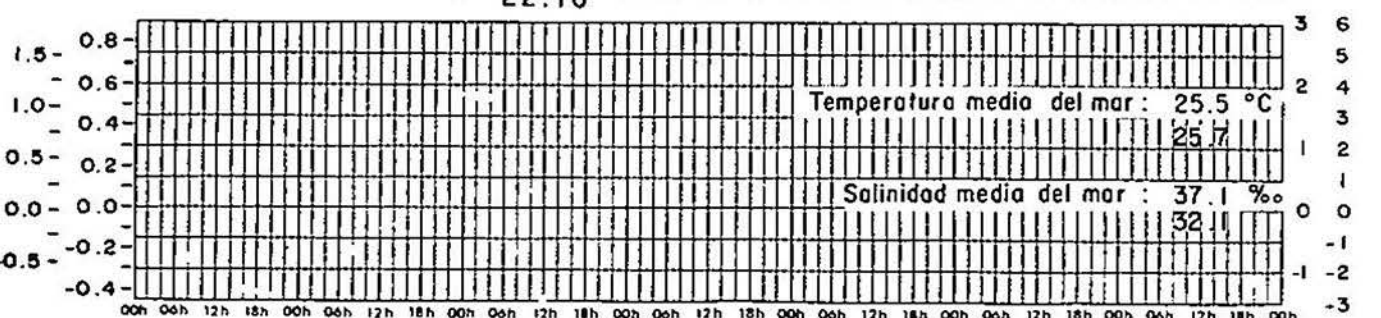
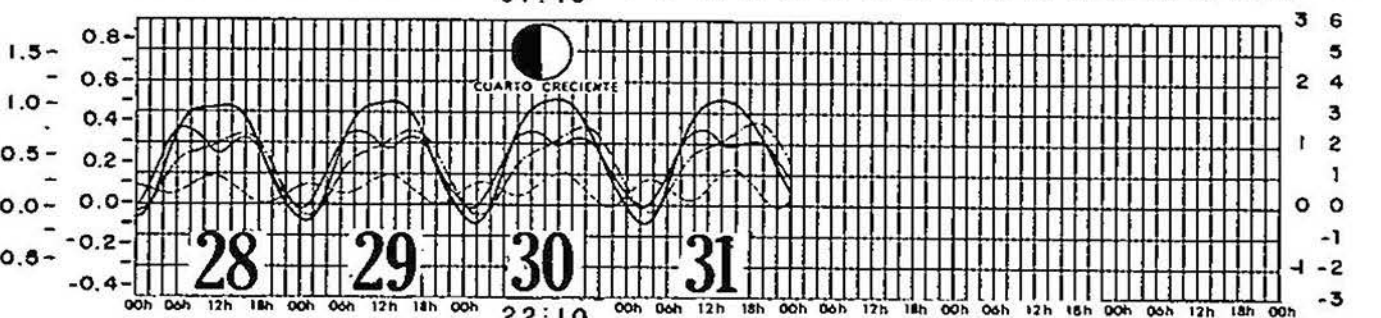
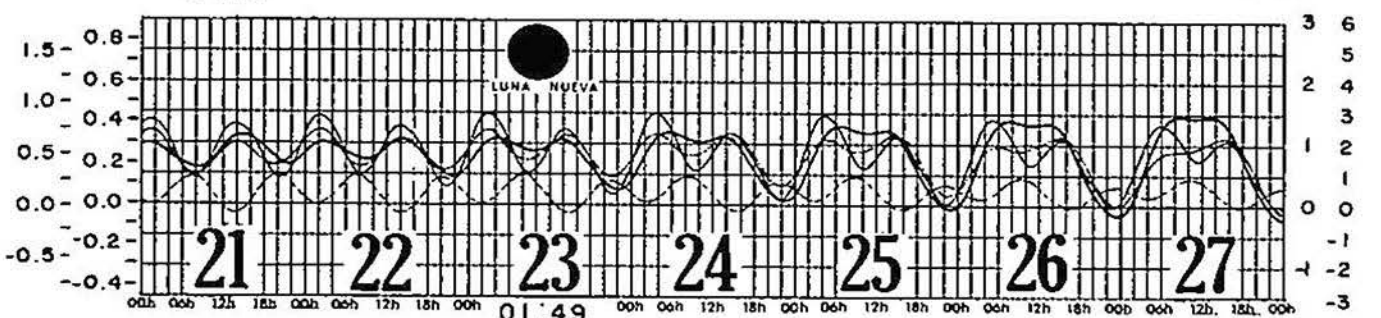
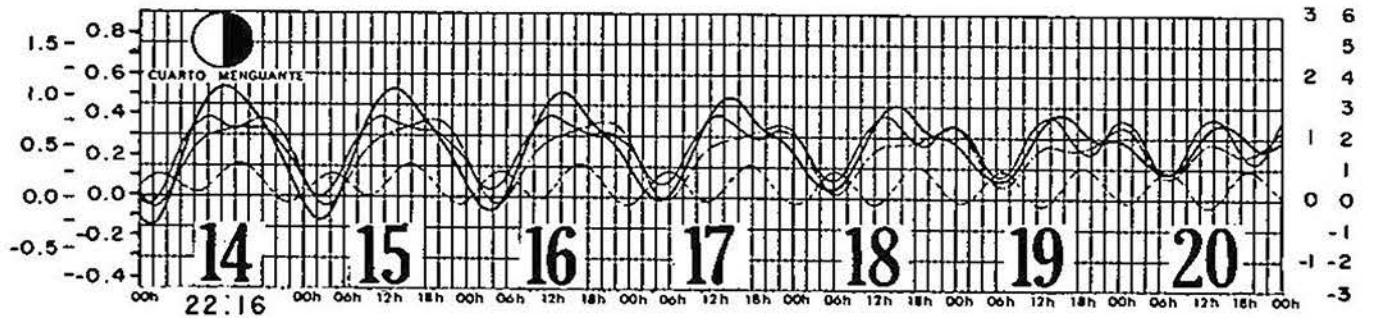
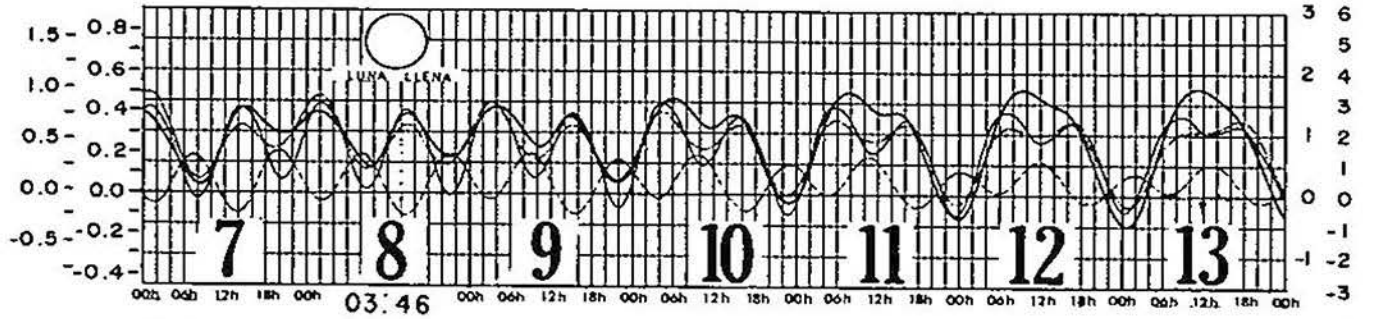
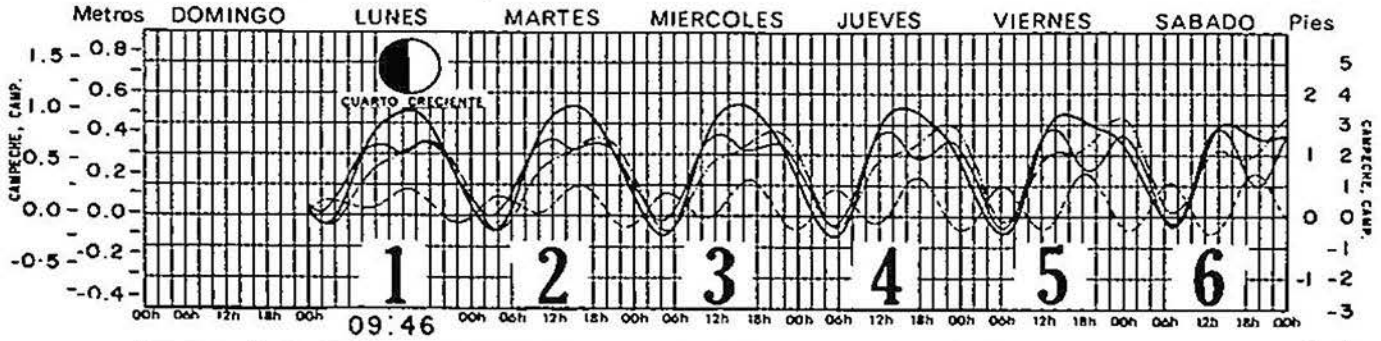


# MARZO 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



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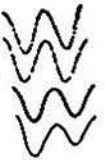
HORA DEL MERIDIANO 90° W

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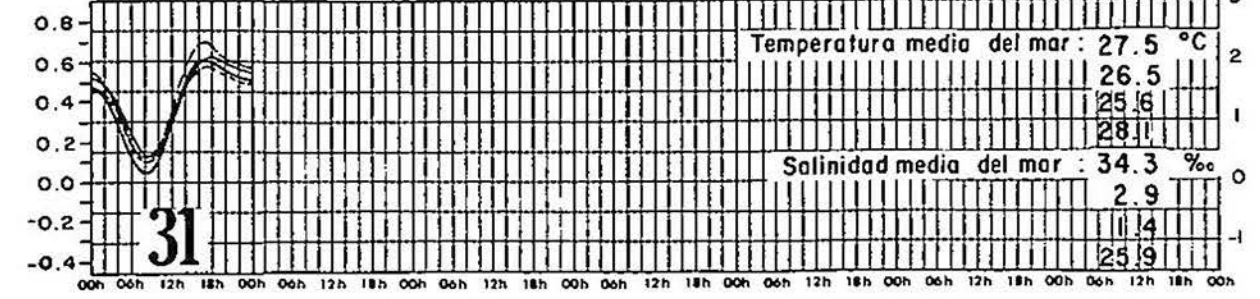
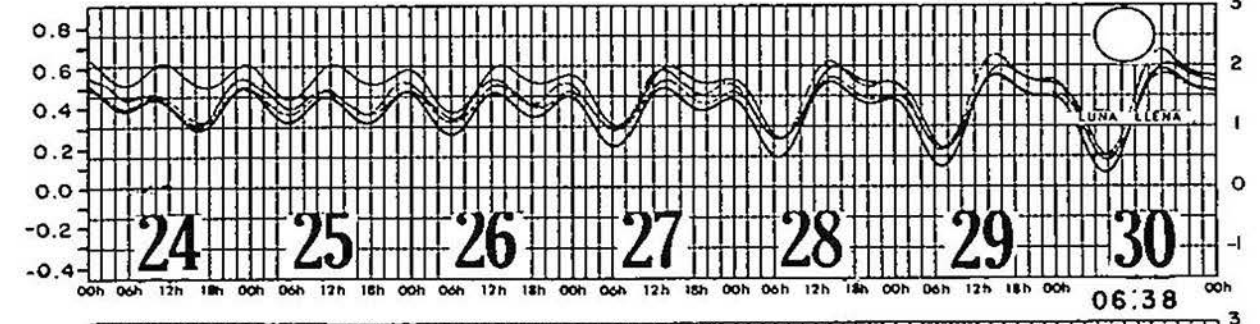
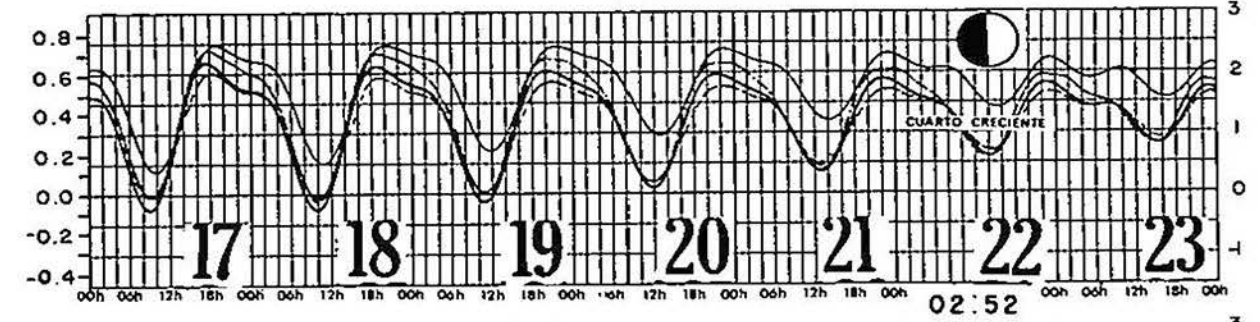
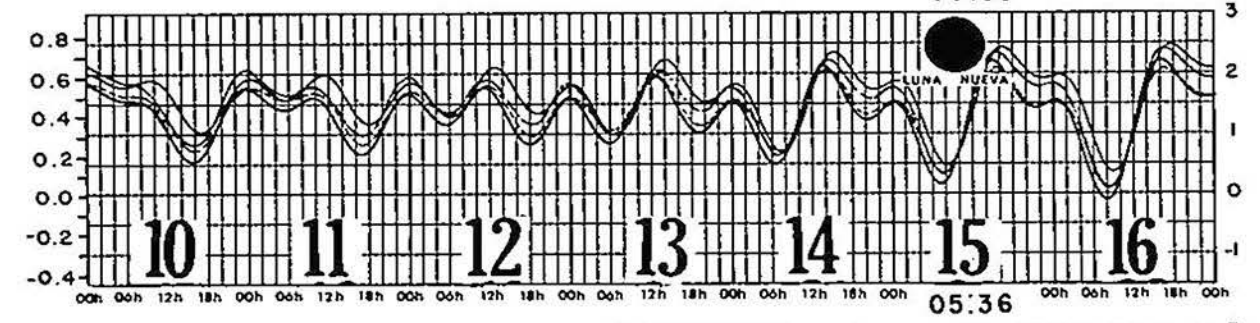
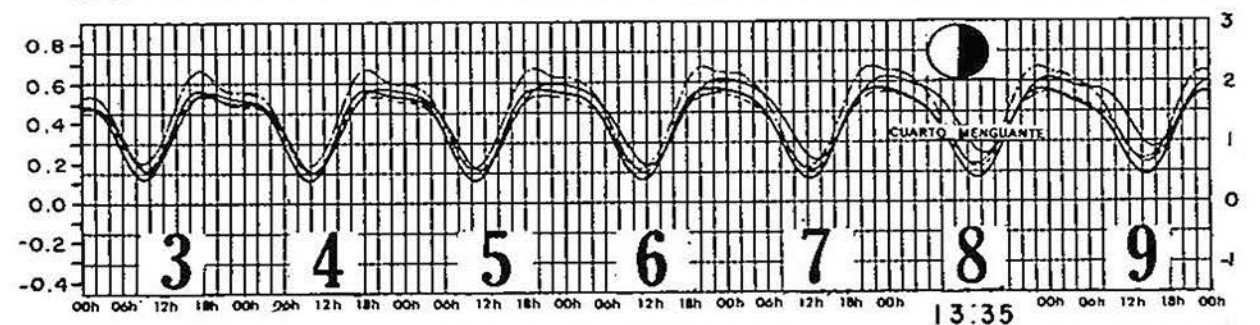
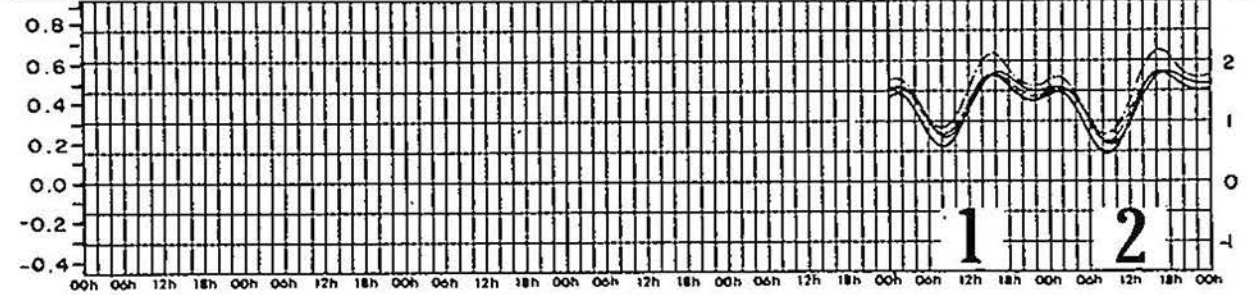
# OCTUBRE 1993

Altamira, Tamps.  
 Tampico, Tamps.  
 Veracruz, Ver.  
 Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.

Metros DOMINGO LUNES MARTES MIERCOLES JUEVES VIERNES SABADO Pies



Temperatura media del mar : 27.5 °C
26.5
25.6
28.1
Salinidad media del mar : 34.3 ‰
2.9
11.4
25.9

HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA: N.B.M.



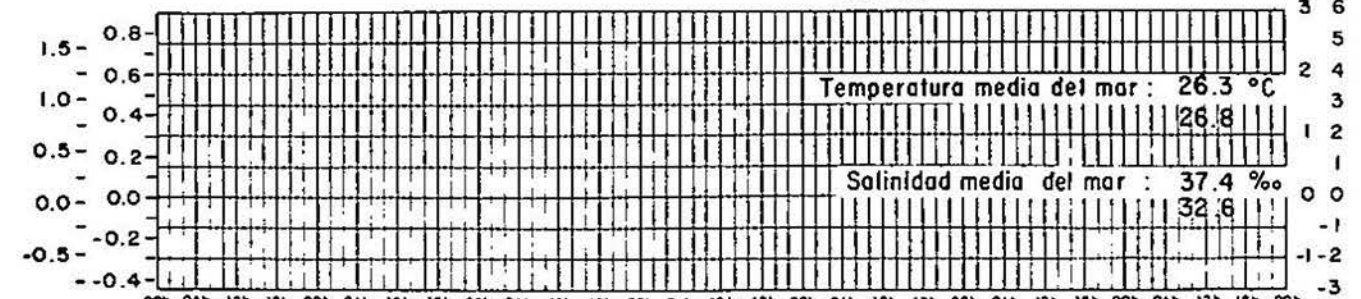
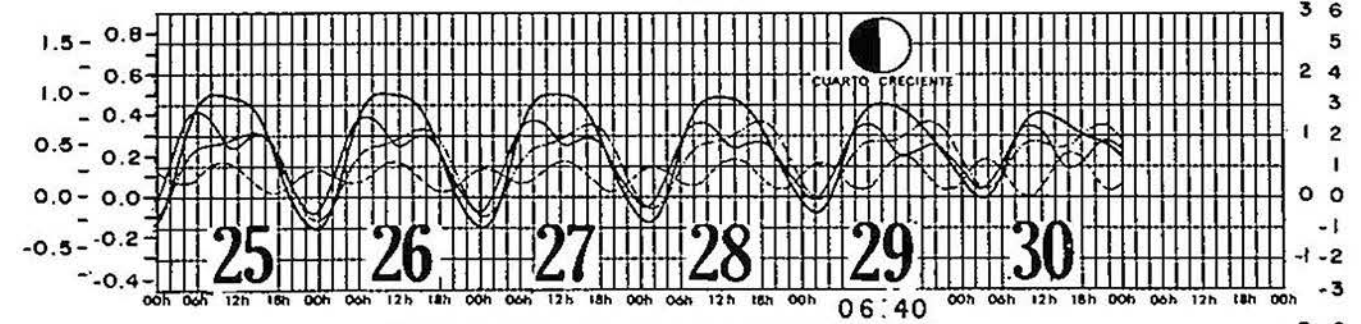
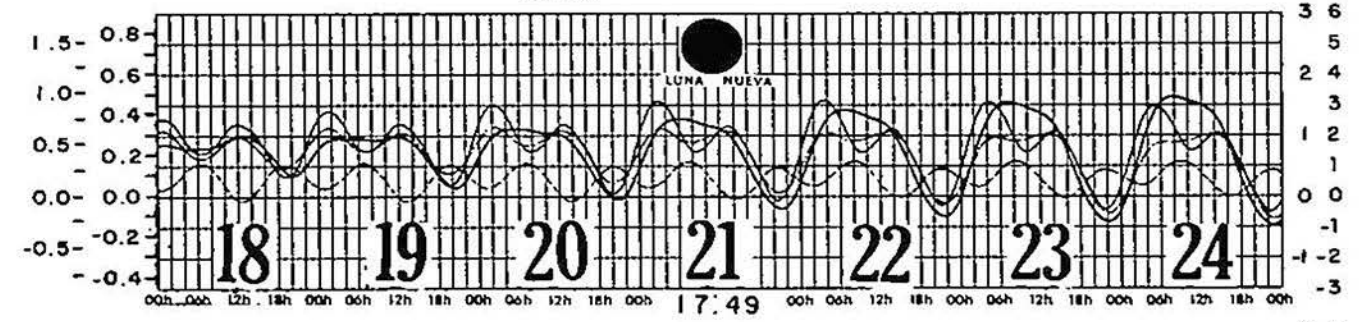
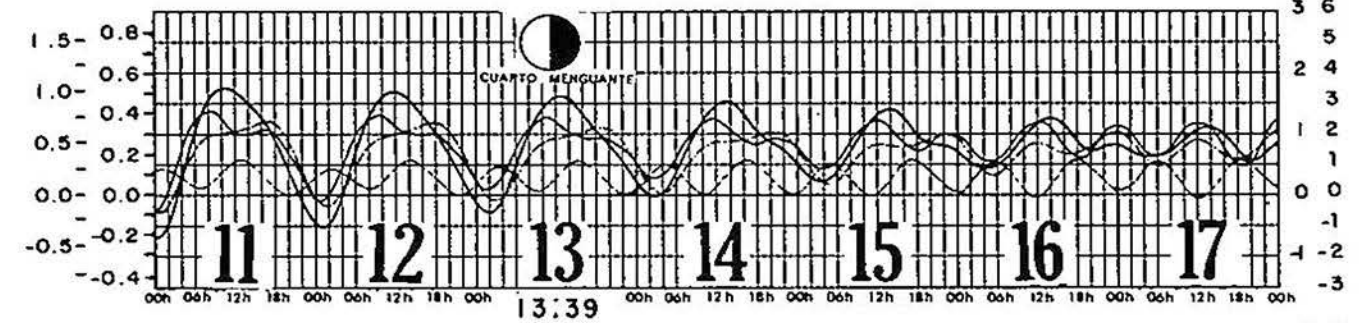
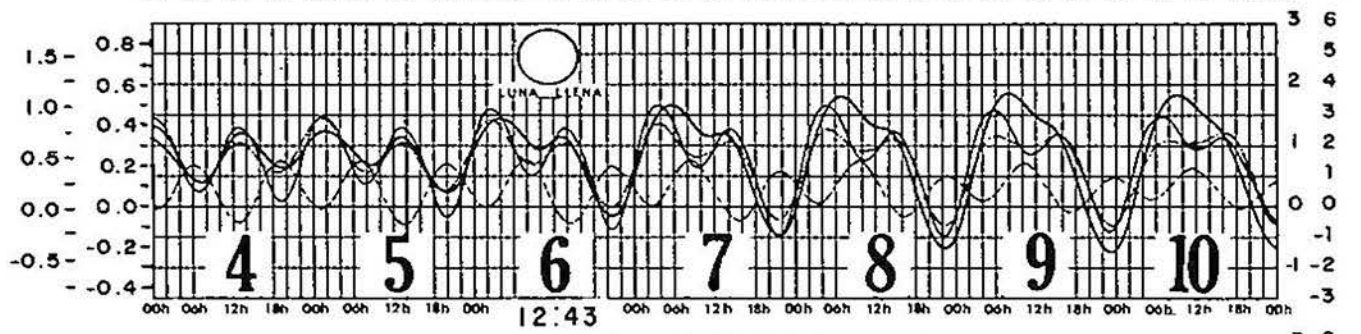
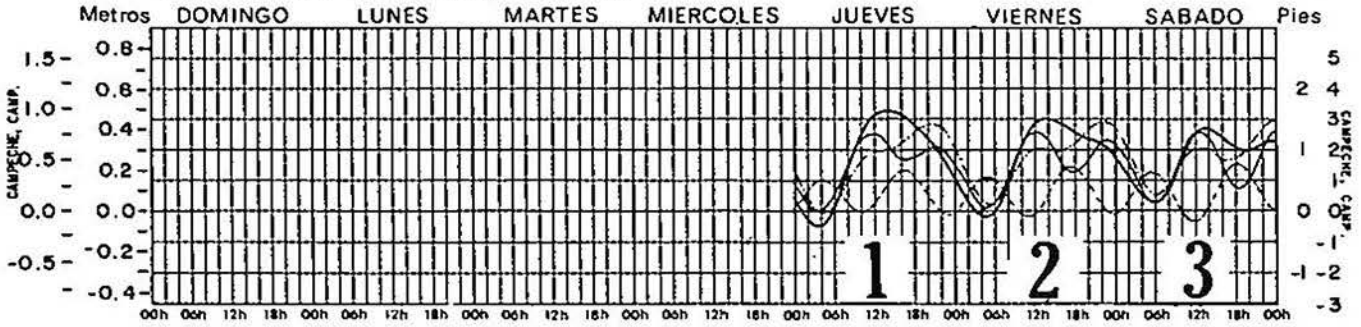


# ABRIL 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



Temperatura media del mar : 26.3 °C  
26.8  
Salinidad media del mar : 37.4 ‰  
32.6

HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.

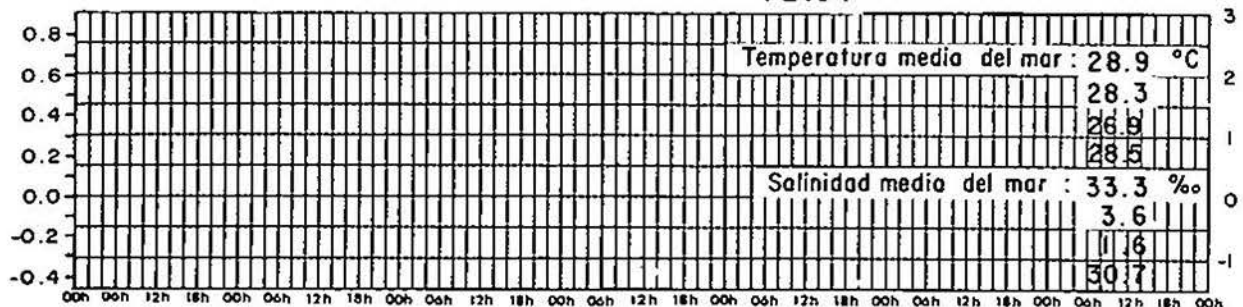
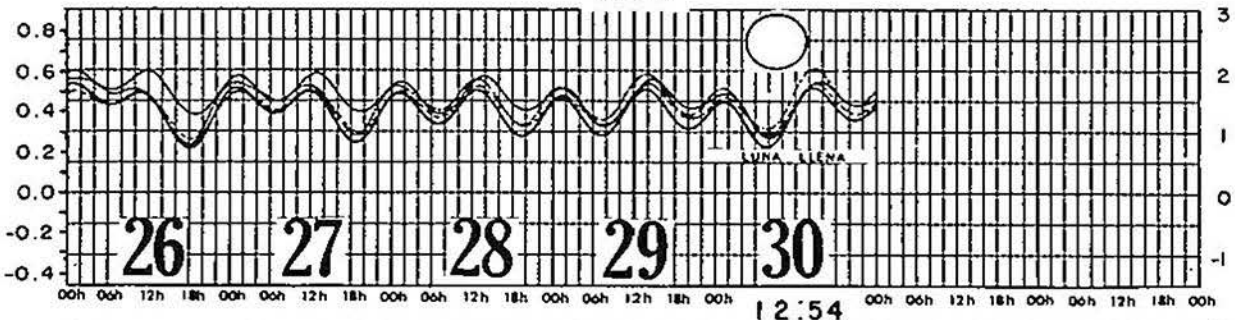
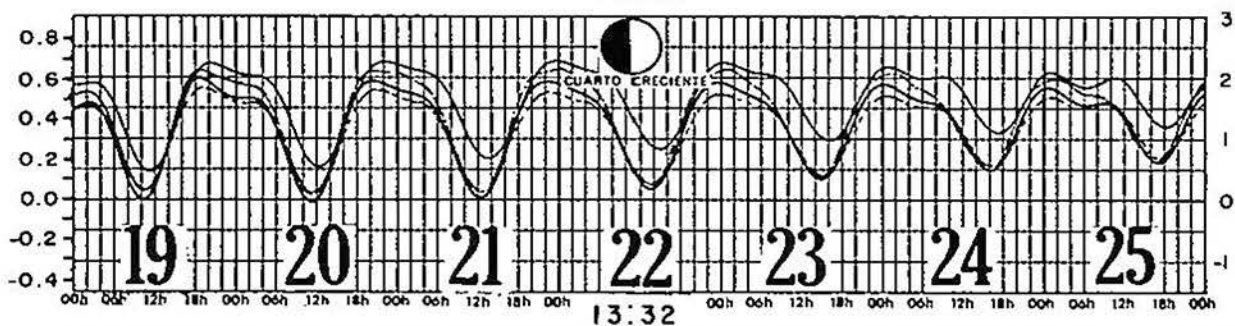
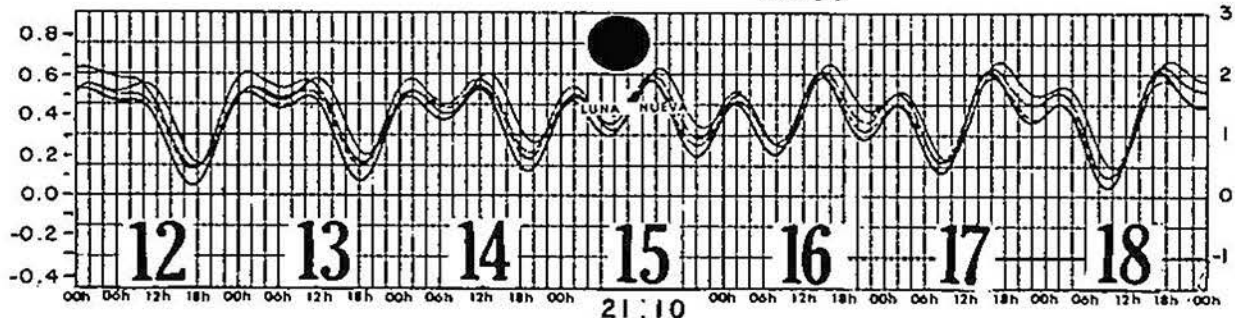
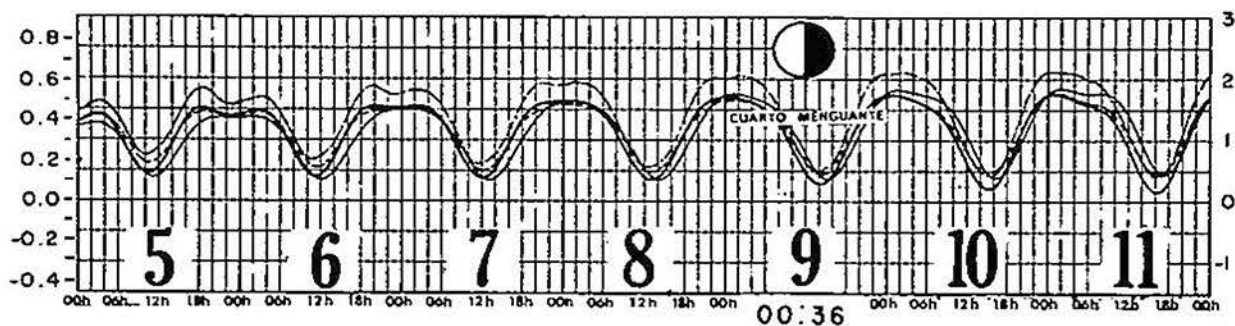
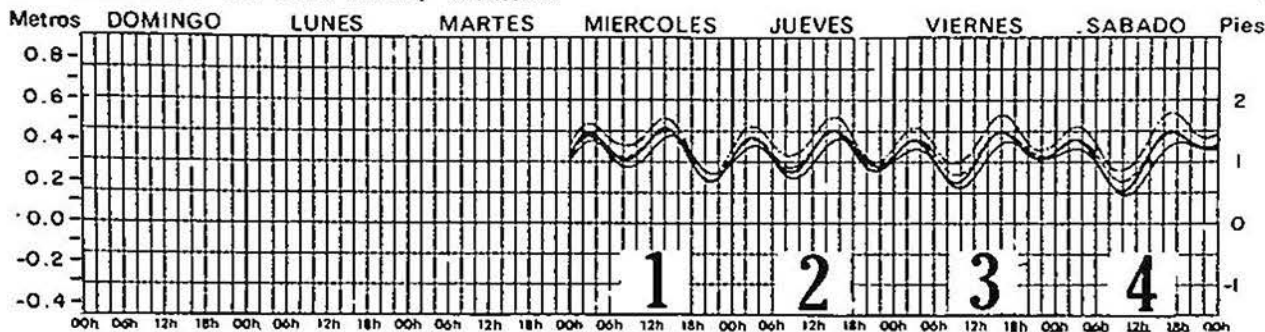


# SEPTIEMBRE 1993

Altamira, Tamps.  
 Tampico, Tamps.  
 Veracruz, Ver.  
 Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA: N.B.M.

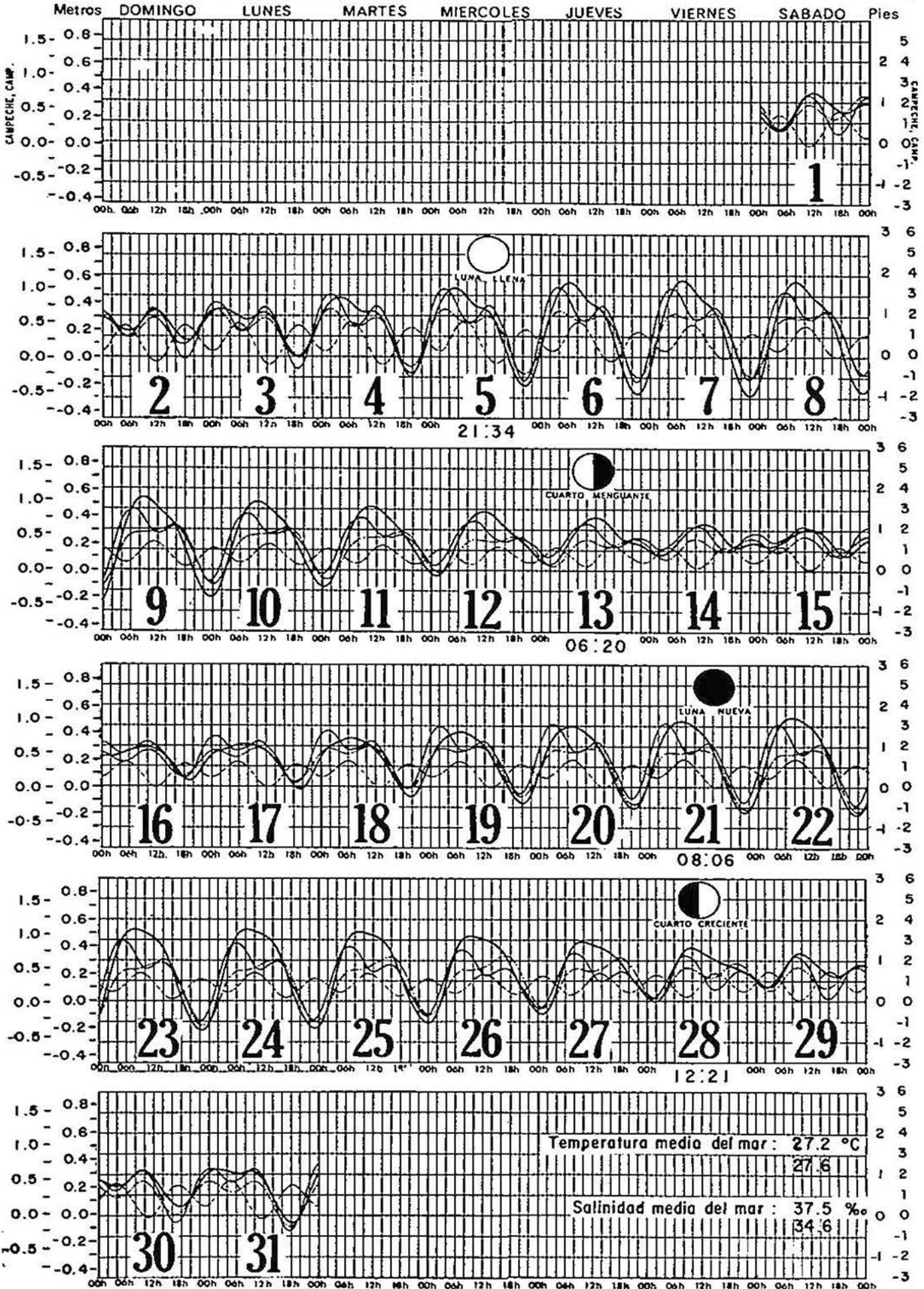


# MAYO 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



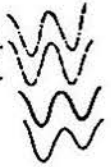
HORA DEL MERIDIANO 90° W

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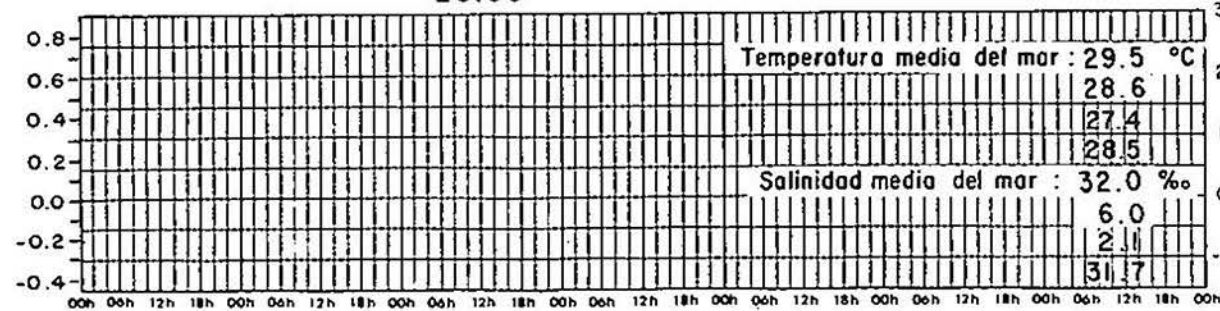
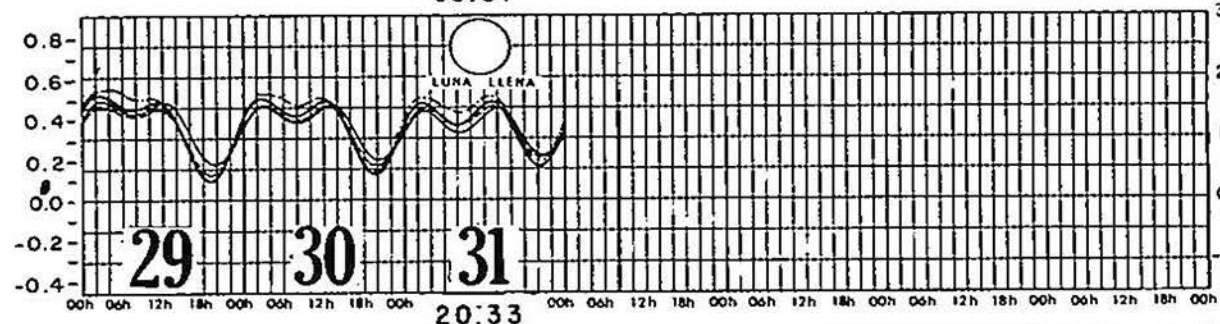
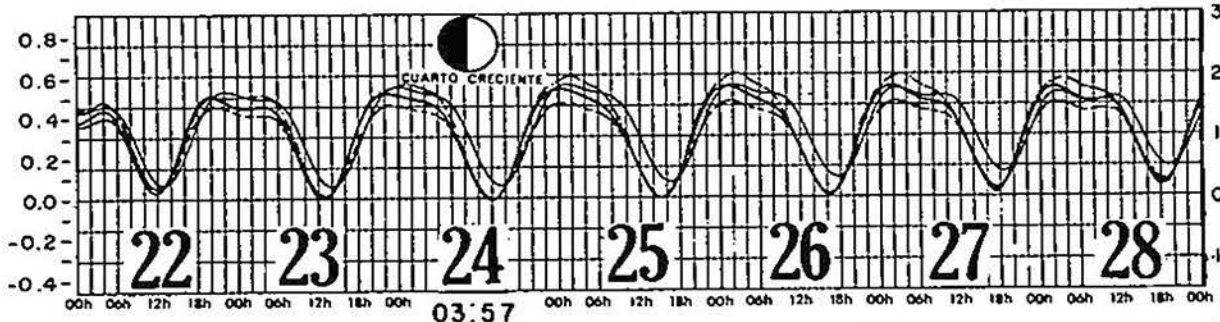
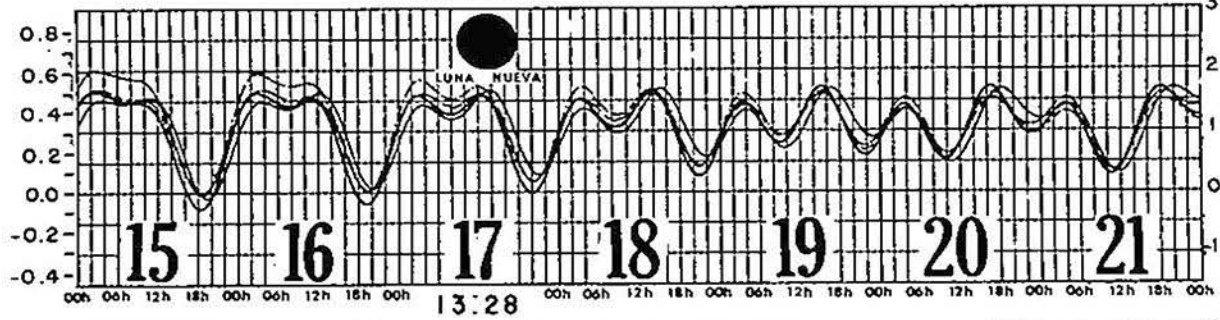
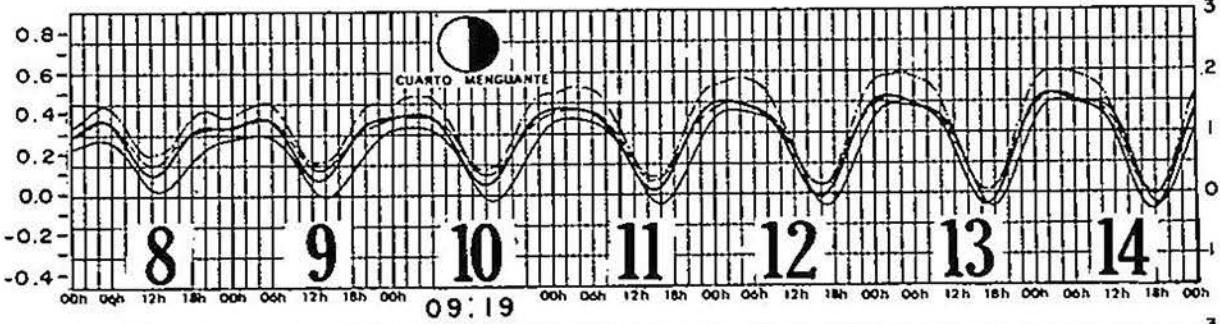
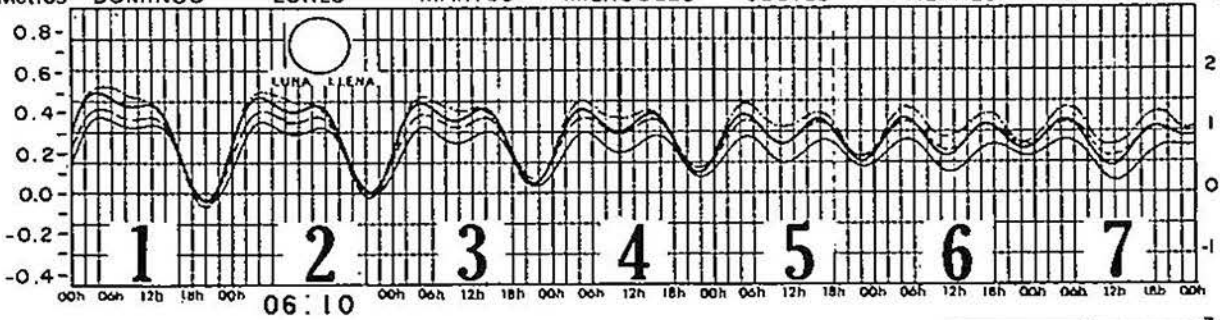
# AGOSTO 1993

Altamira, Tamps.  
 Tampico, Tamps.  
 Veracruz, Ver.  
 Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.

Metros DOMINGO LUNES MARTES MIERCOLES JUEVES VIERNES SABADO Pies



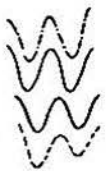
HORA DEL MERIDIANO 90° W

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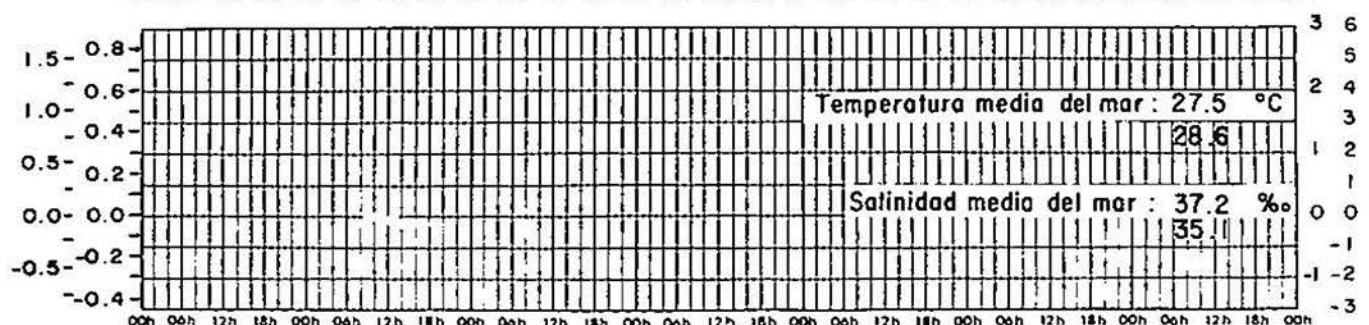
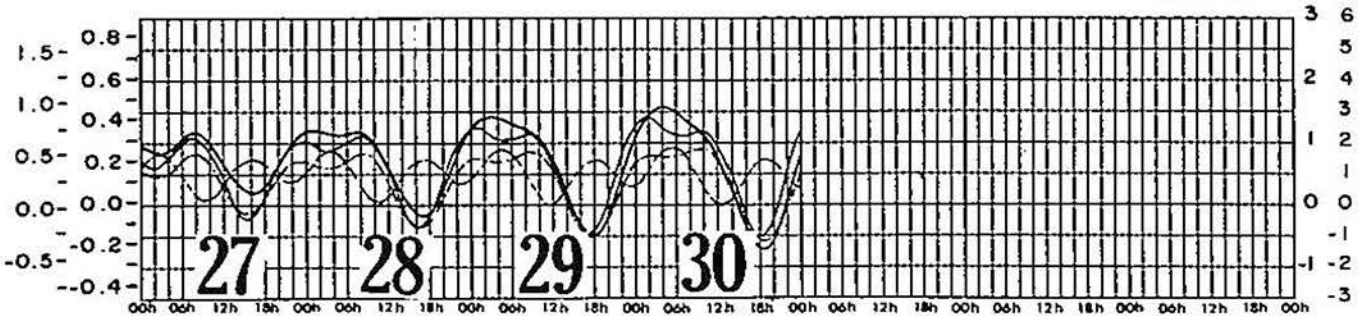
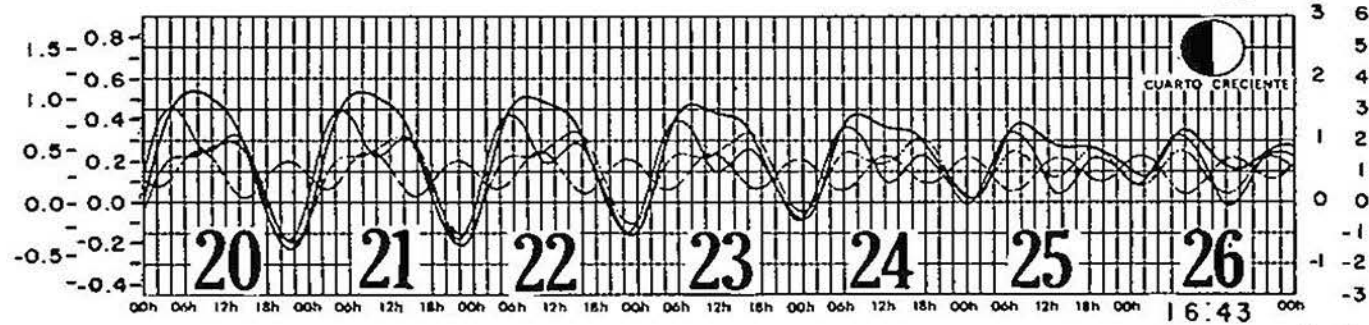
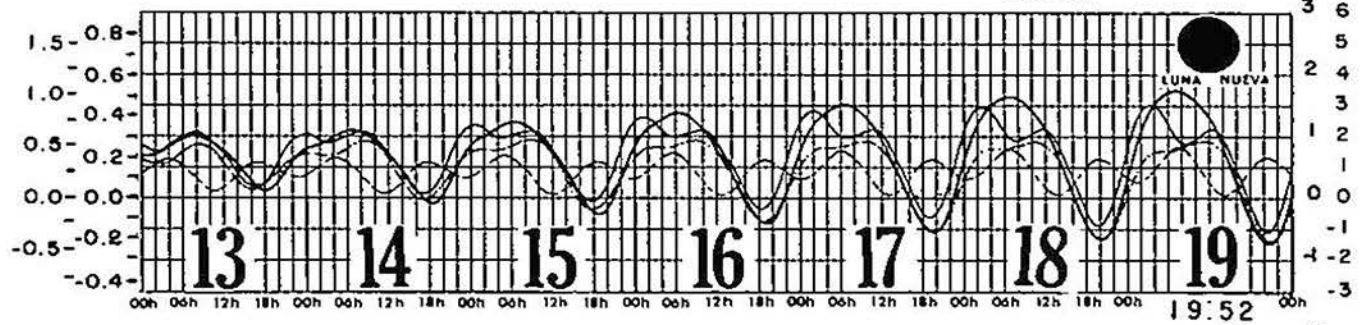
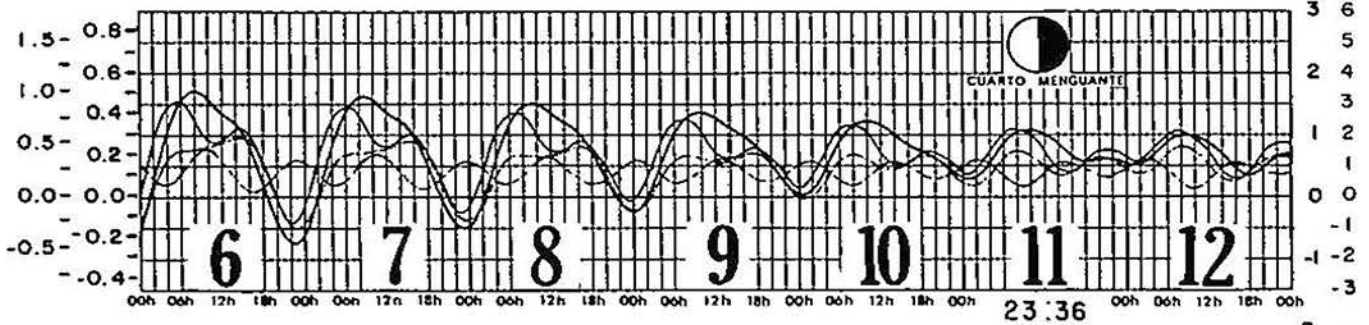
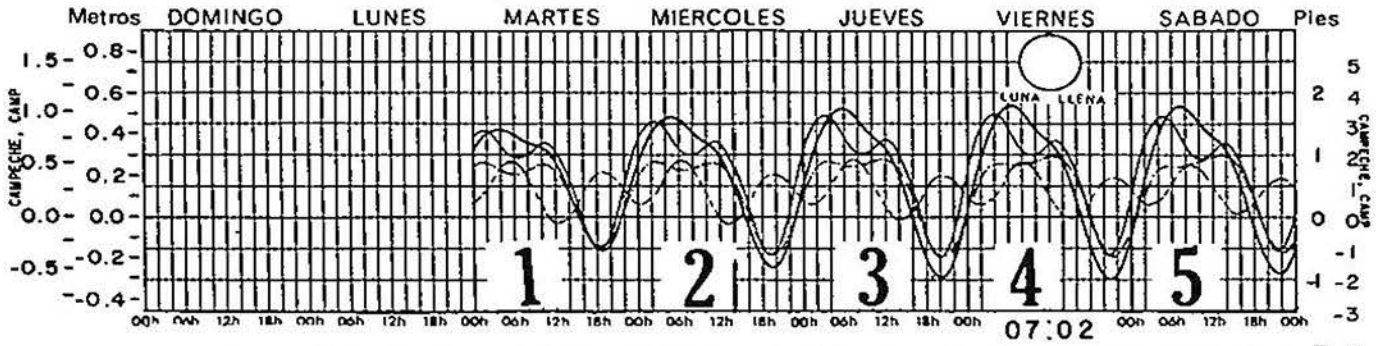


# JUNIO 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

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PLANO DE REFERENCIA: N.B.M.I.



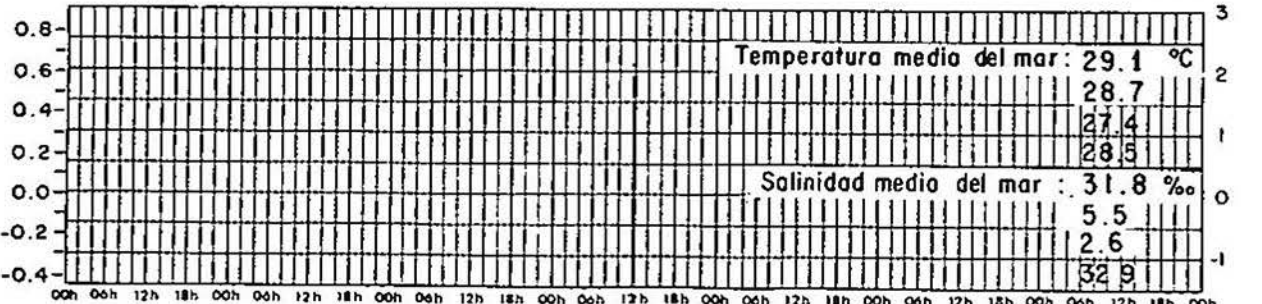
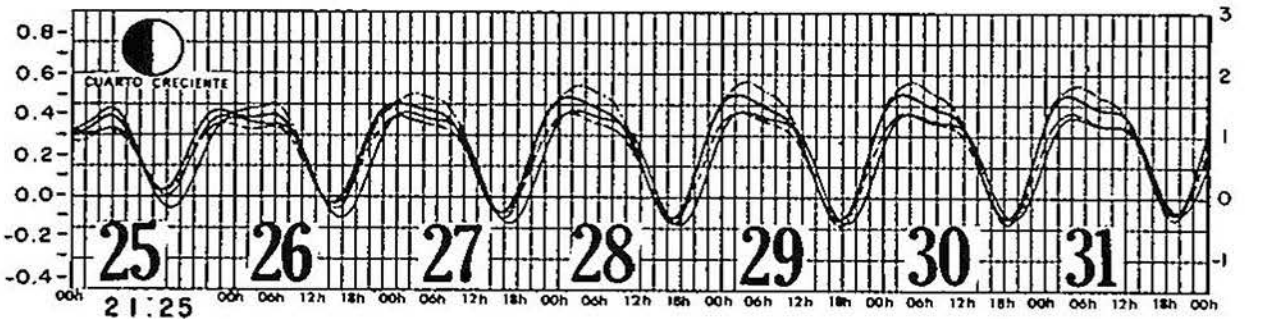
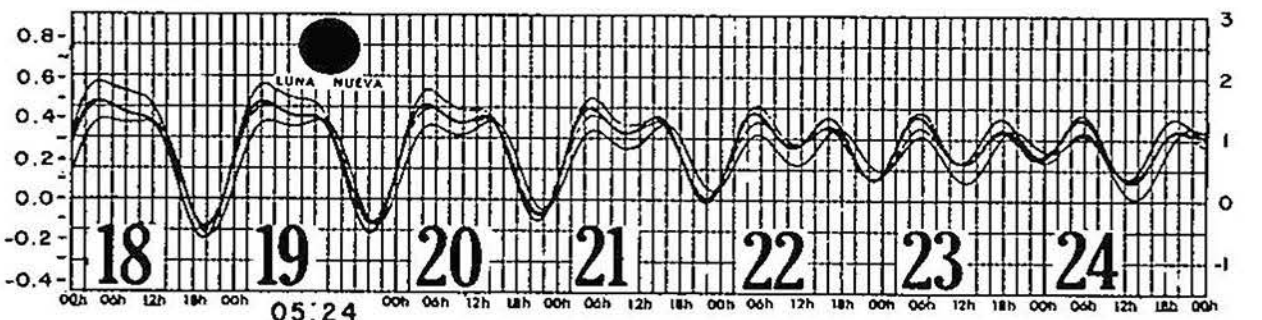
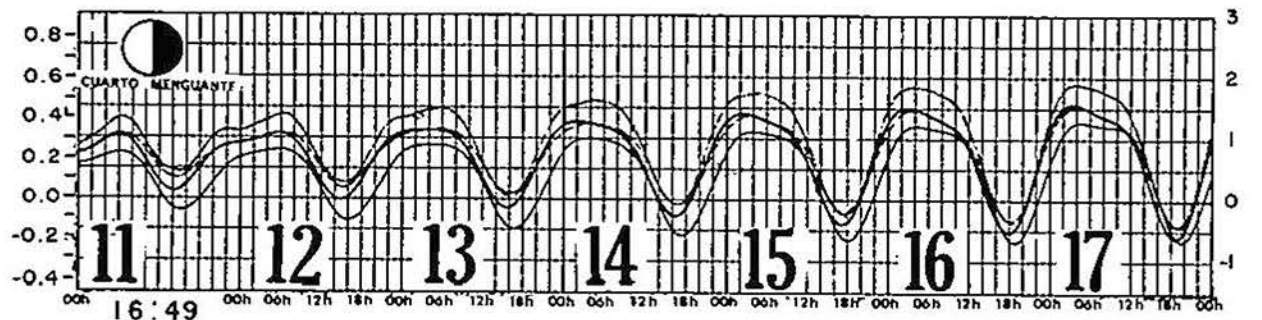
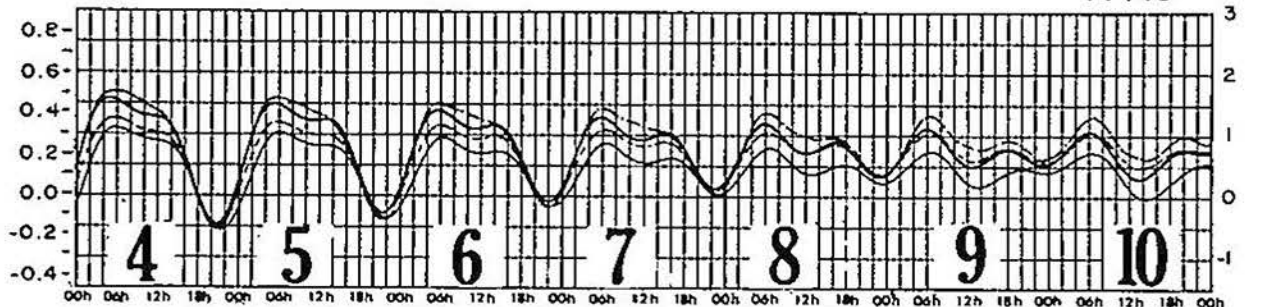
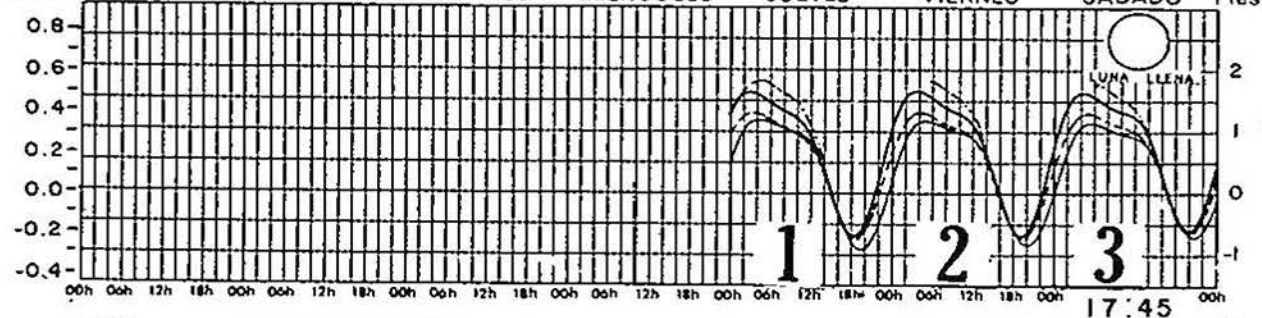
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Altamira, Tamps.  
Tampico, Tamps.  
Veracruz, Ver.  
Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.

Metros DOMINGO LUNES MARTES MIERCOLES JUEVES VIERNES SABADO Pies



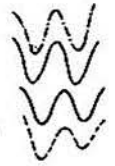
HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA: N.B.M.

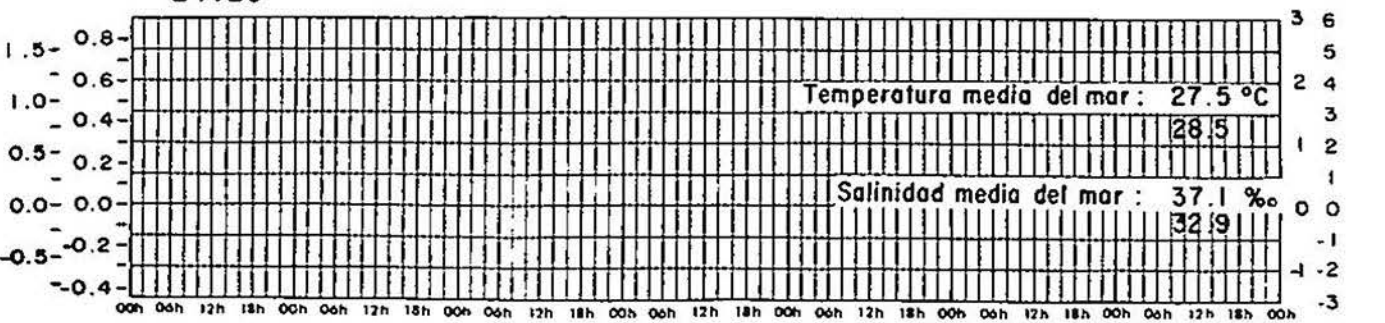
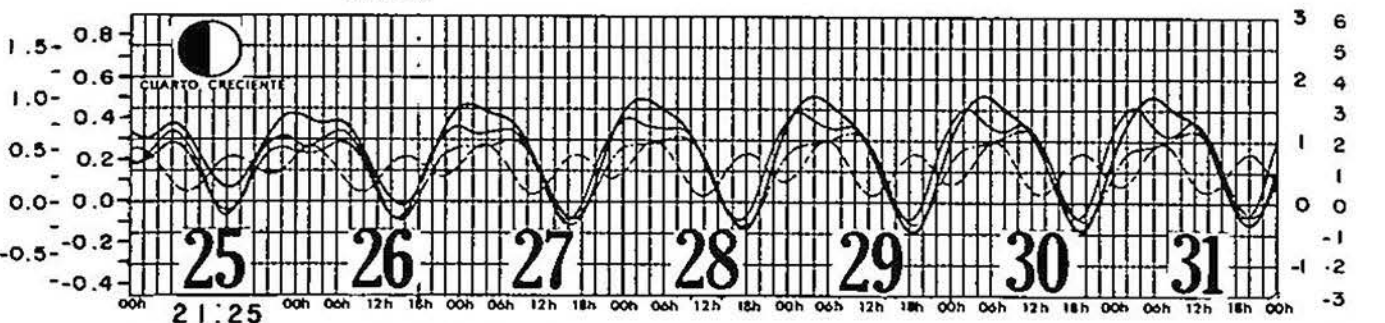
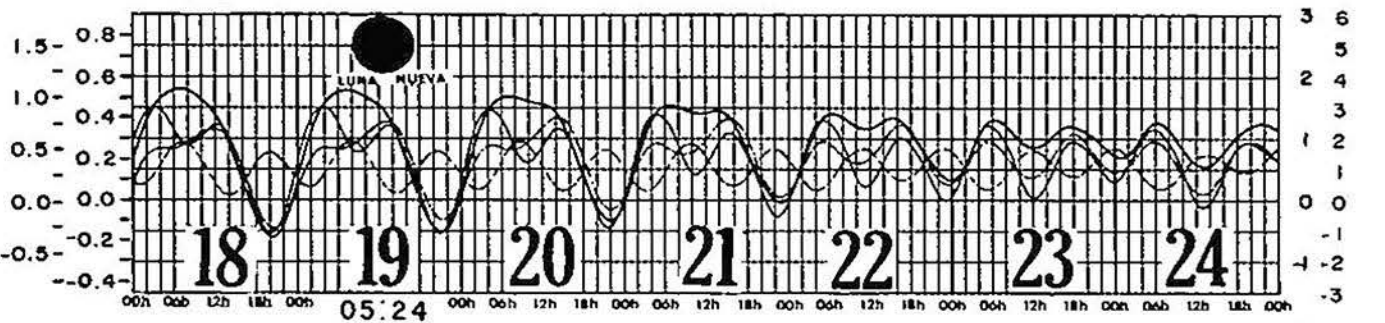
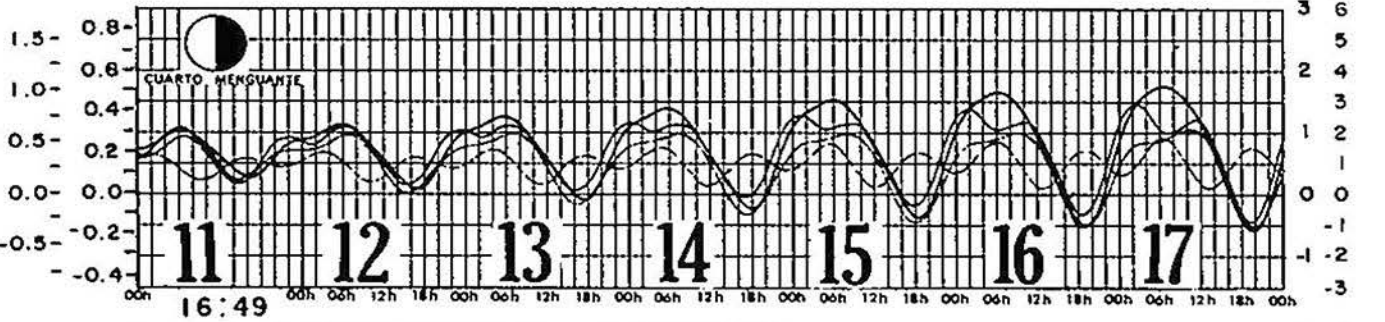
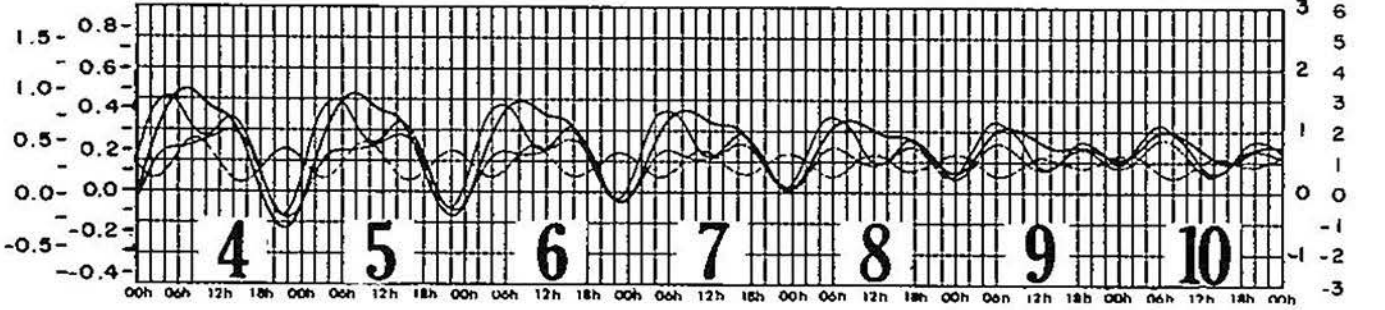
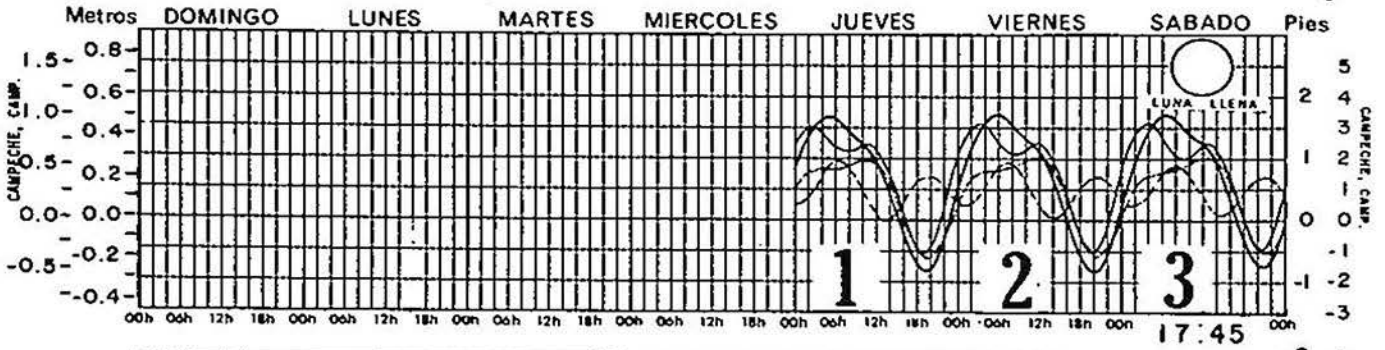


# JULIO 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.

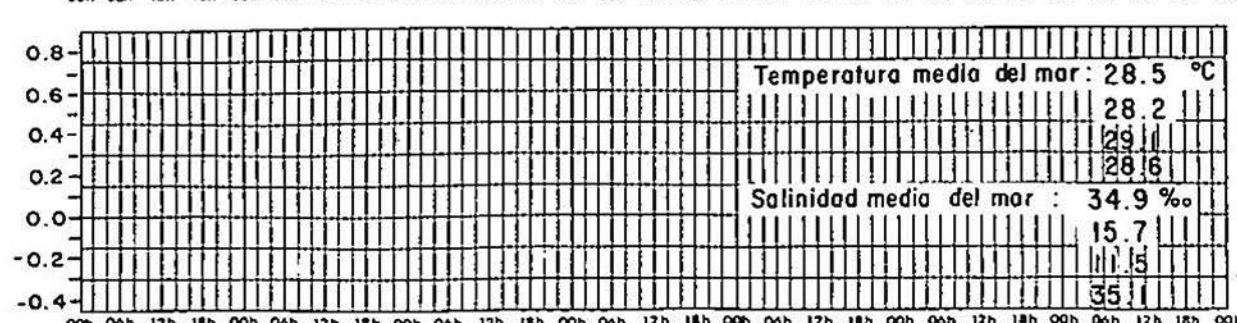
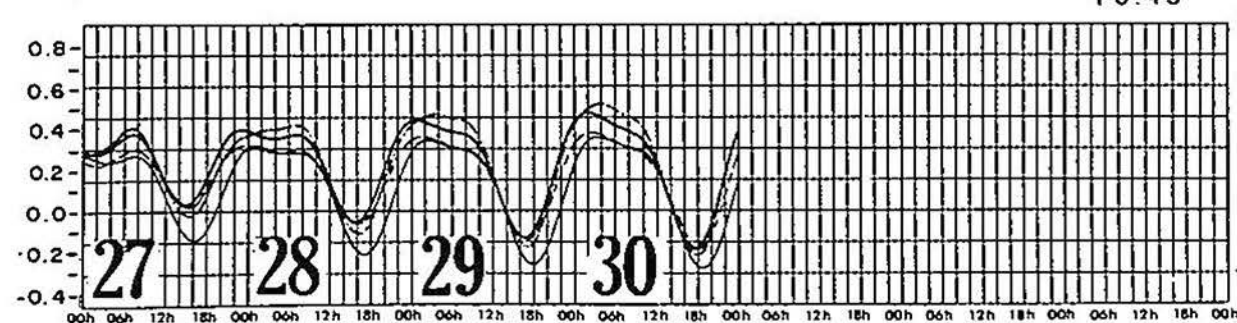
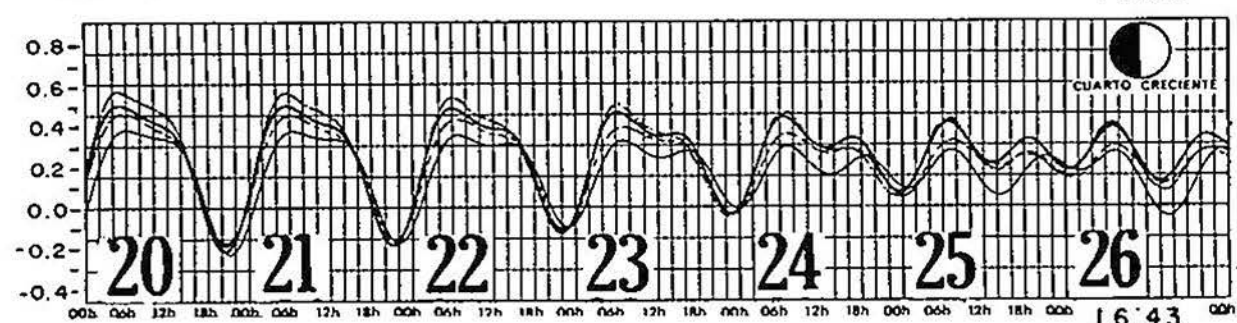
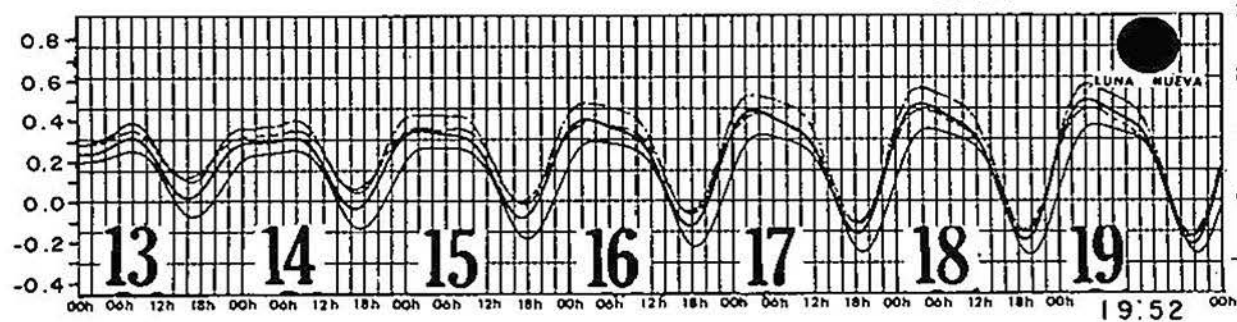
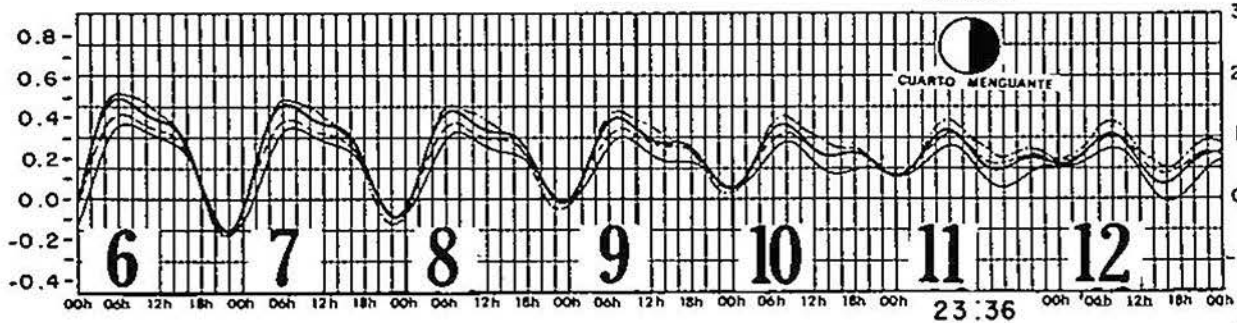
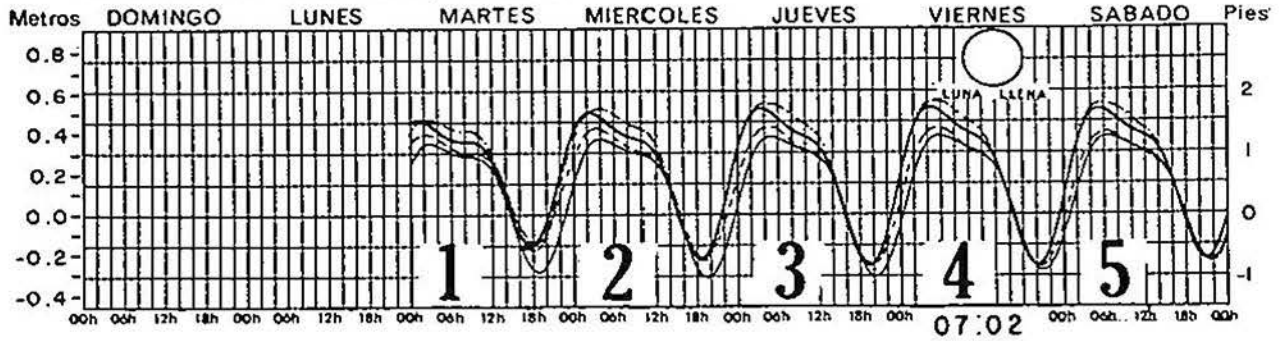


# JUNIO 1993

Altamira, Tamps.  
 Tampico, Tamps.  
 Veracruz, Ver.  
 Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

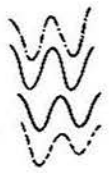
PLANO DE REFERENCIA N.B.M.



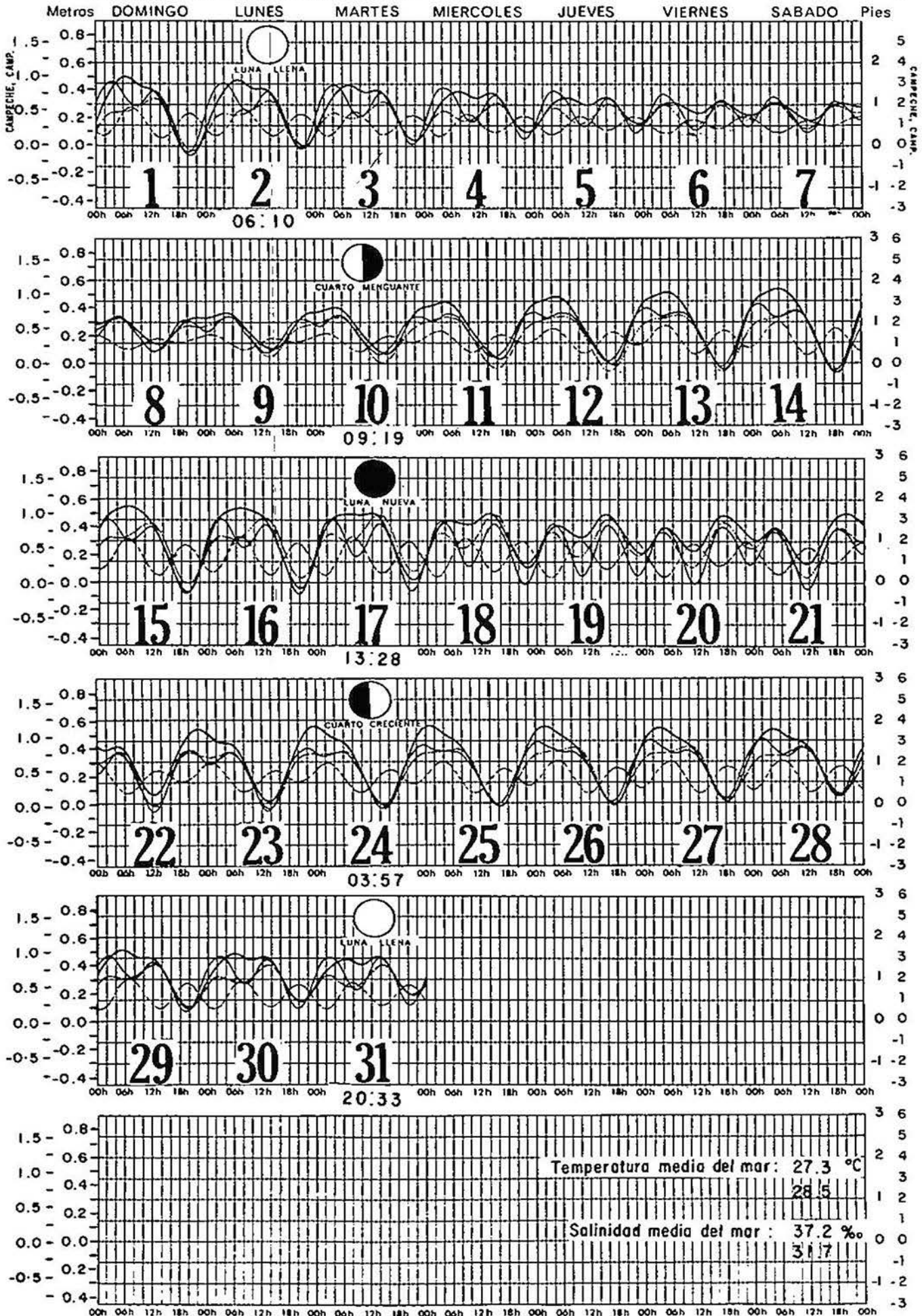


# AGOSTO 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



Temperatura media del mar: 27.3 °C

28.5

Salinidad media del mar: 37.2 ‰

31.7

HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.



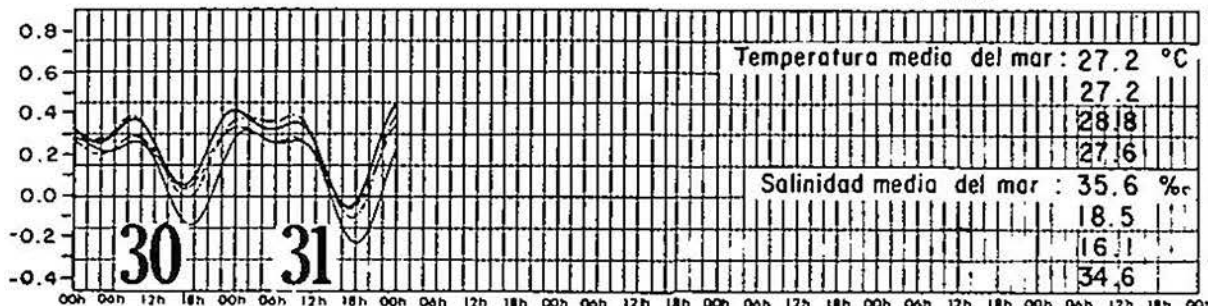
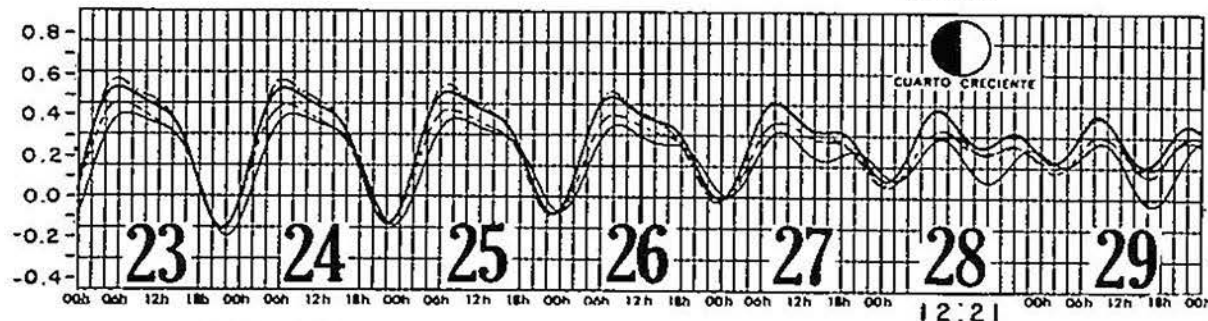
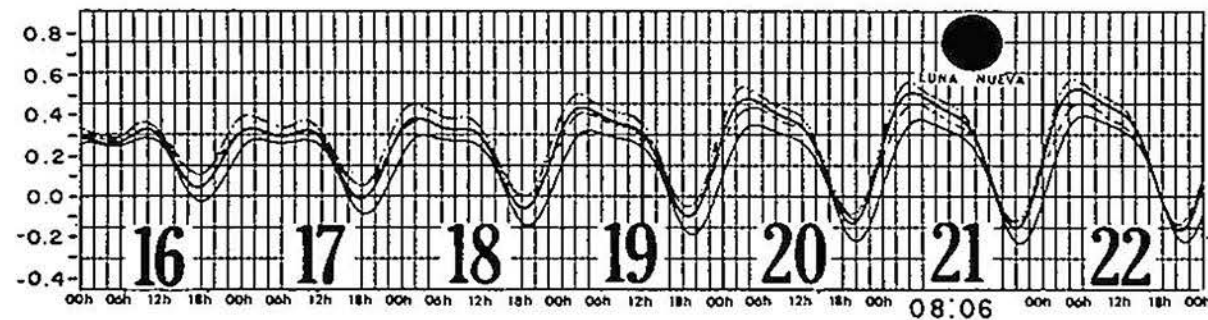
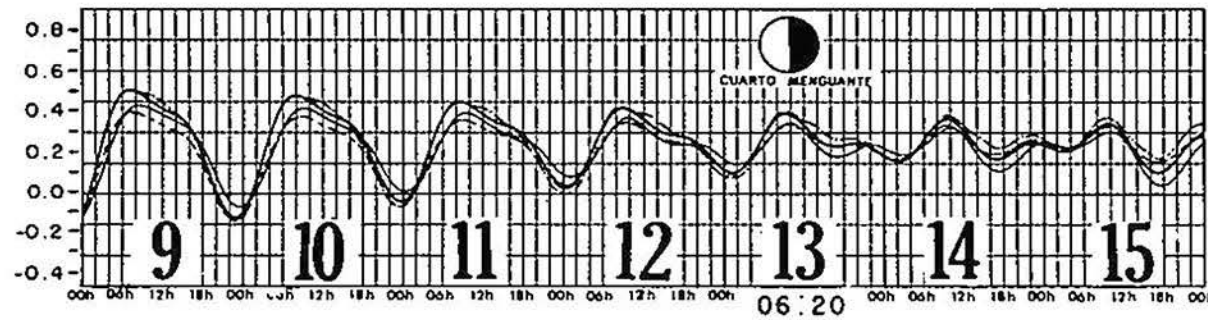
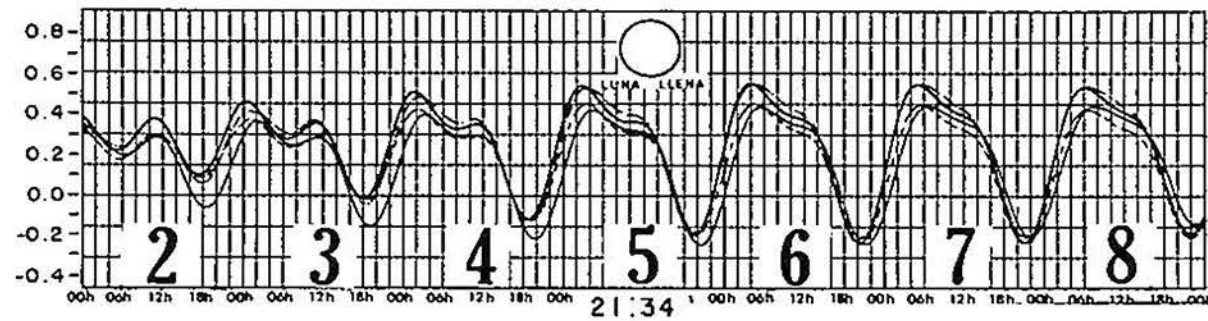
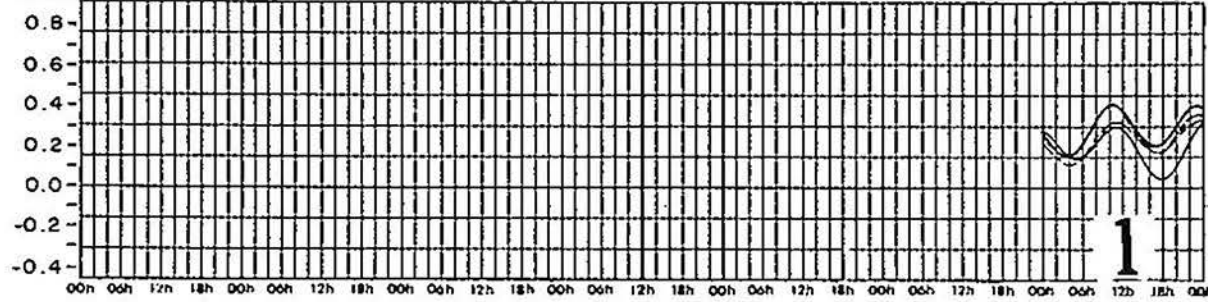
# MAYO 1993

Altamira, Tamps.  
Tampico, Tamps.  
Veracruz, Ver.  
Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.

Metros DOMINGO LUNES MARTES MIERCOLES JUEVES VIERNES SABADO. Pies



HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.

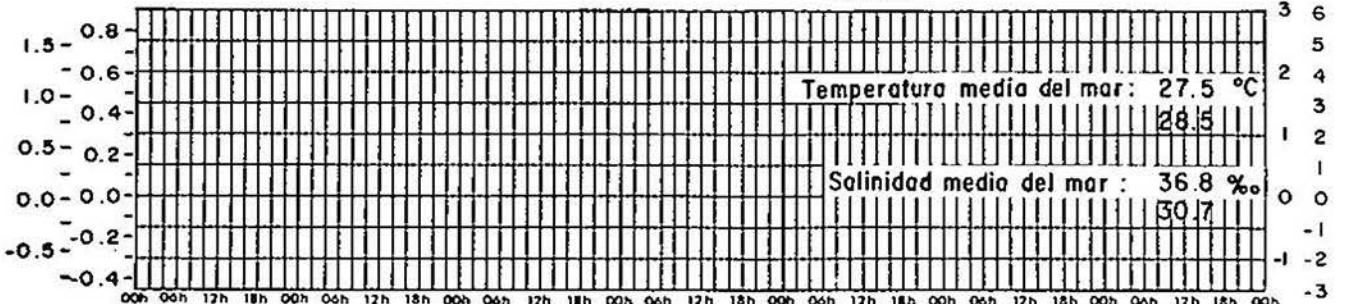
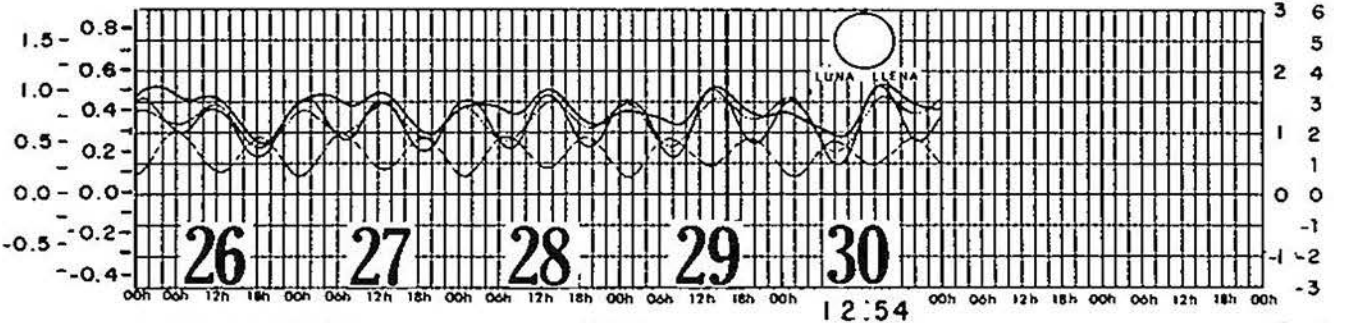
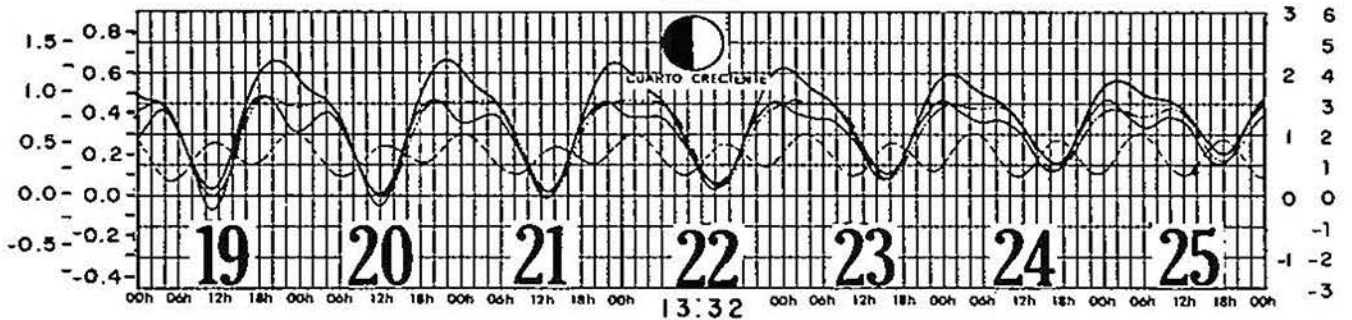
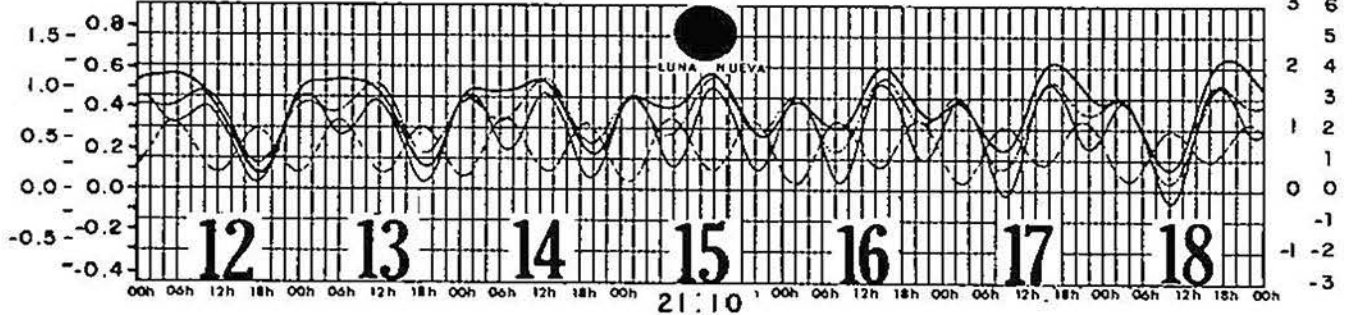
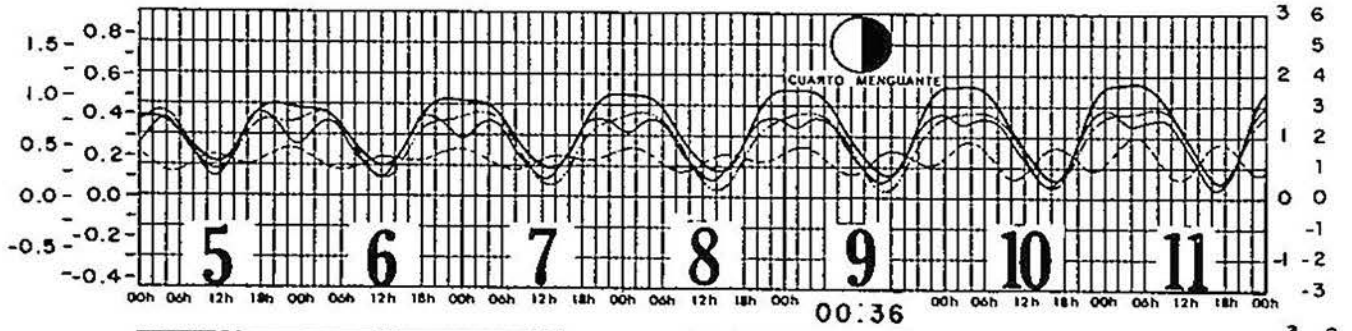
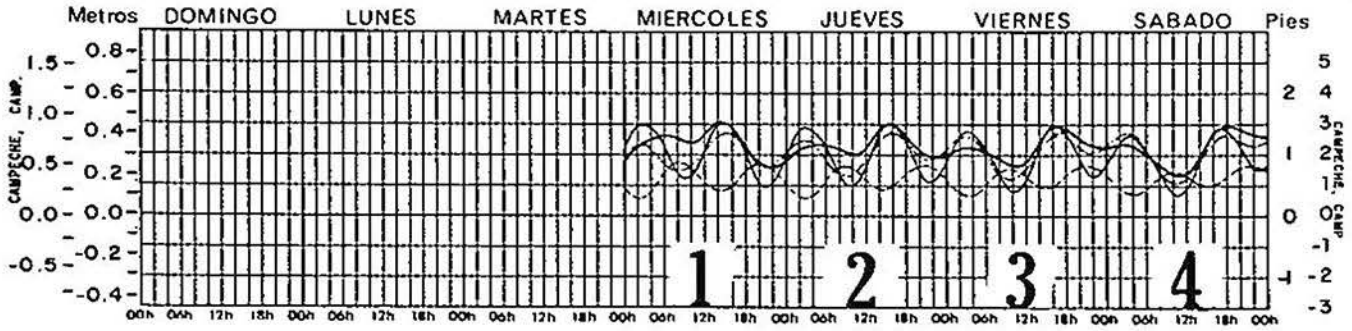


# SEPTIEMBRE 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.



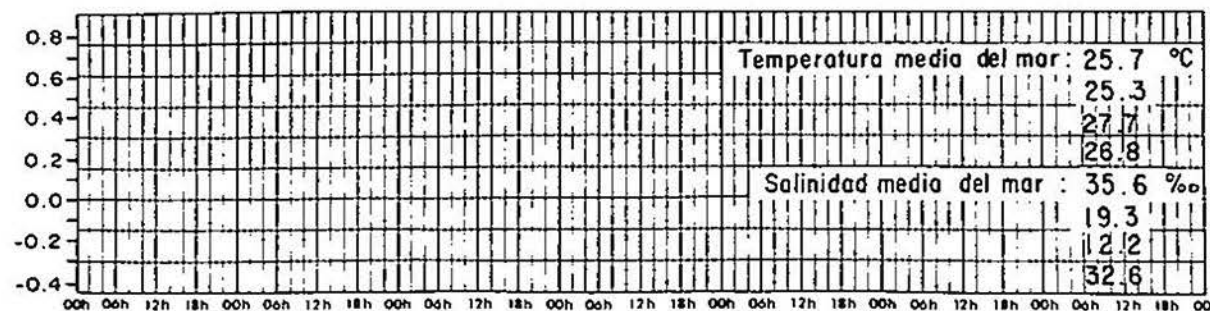
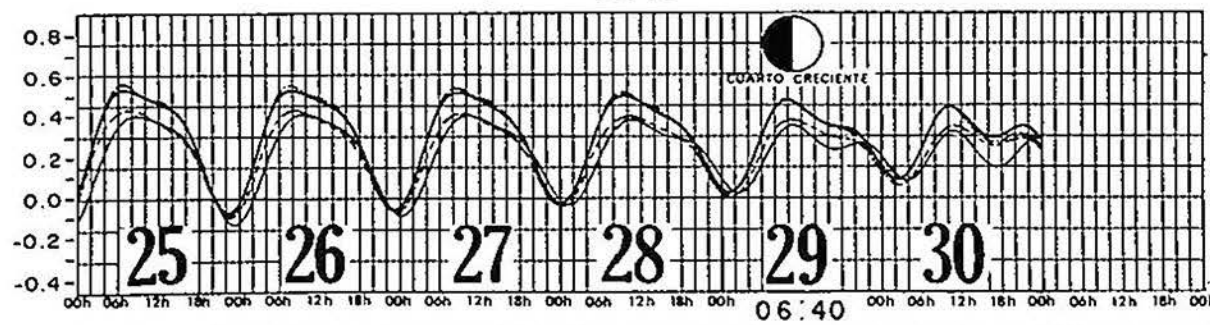
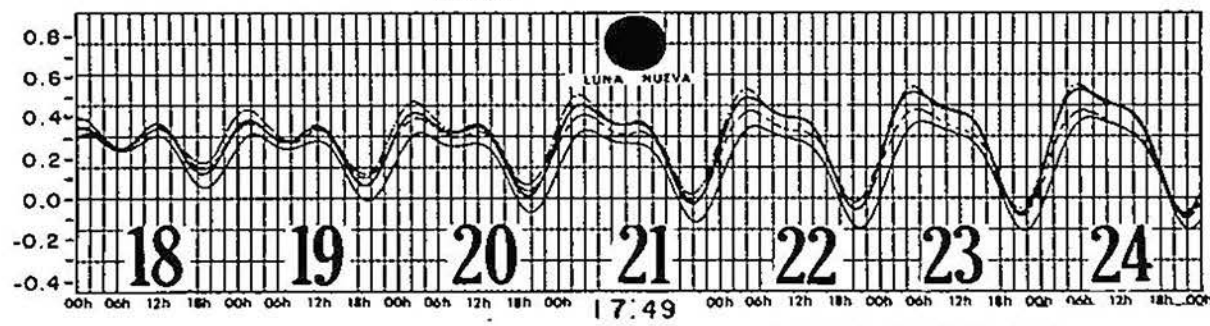
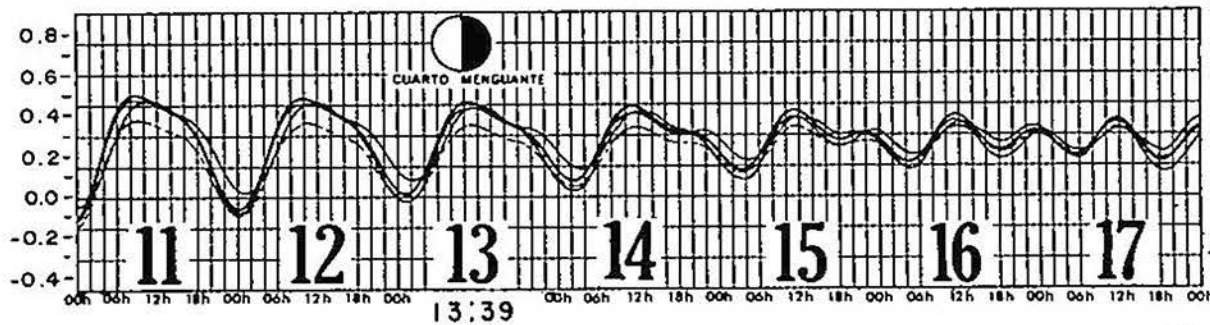
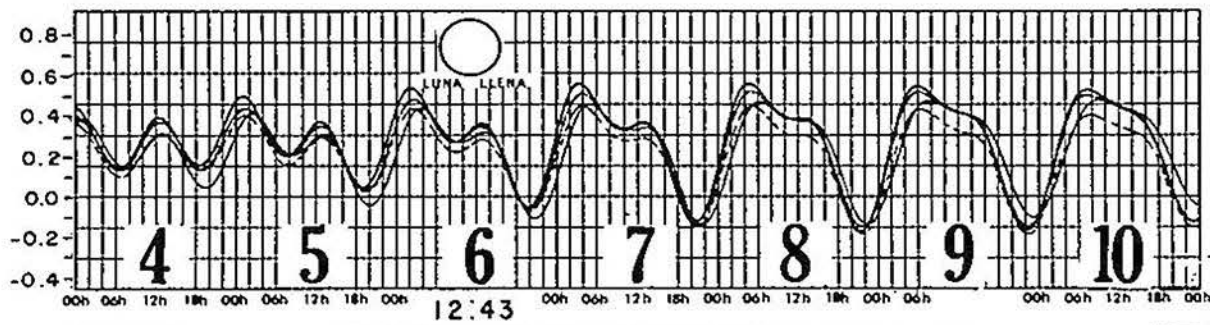
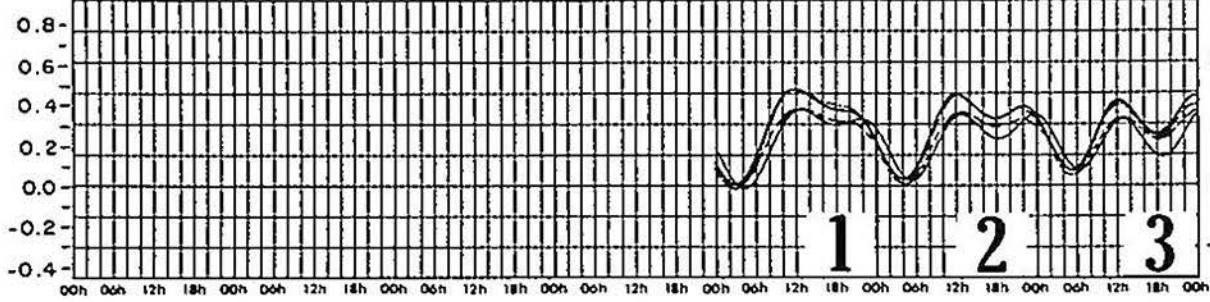
# ABRIL 1993

Altamira, Tamps.  
 Tampico, Tamps.  
 Veracruz, Ver.  
 Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.

Metros DOMINGO LUNES MARTES MIERCOLES JUEVES VIERNES SABADO Pies



Temperatura media del mar: 25.7 °C

25.3

27.7

26.8

Salinidad media del mar: 35.6 ‰

19.3

12.2

32.6

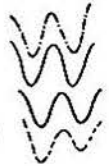
HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.

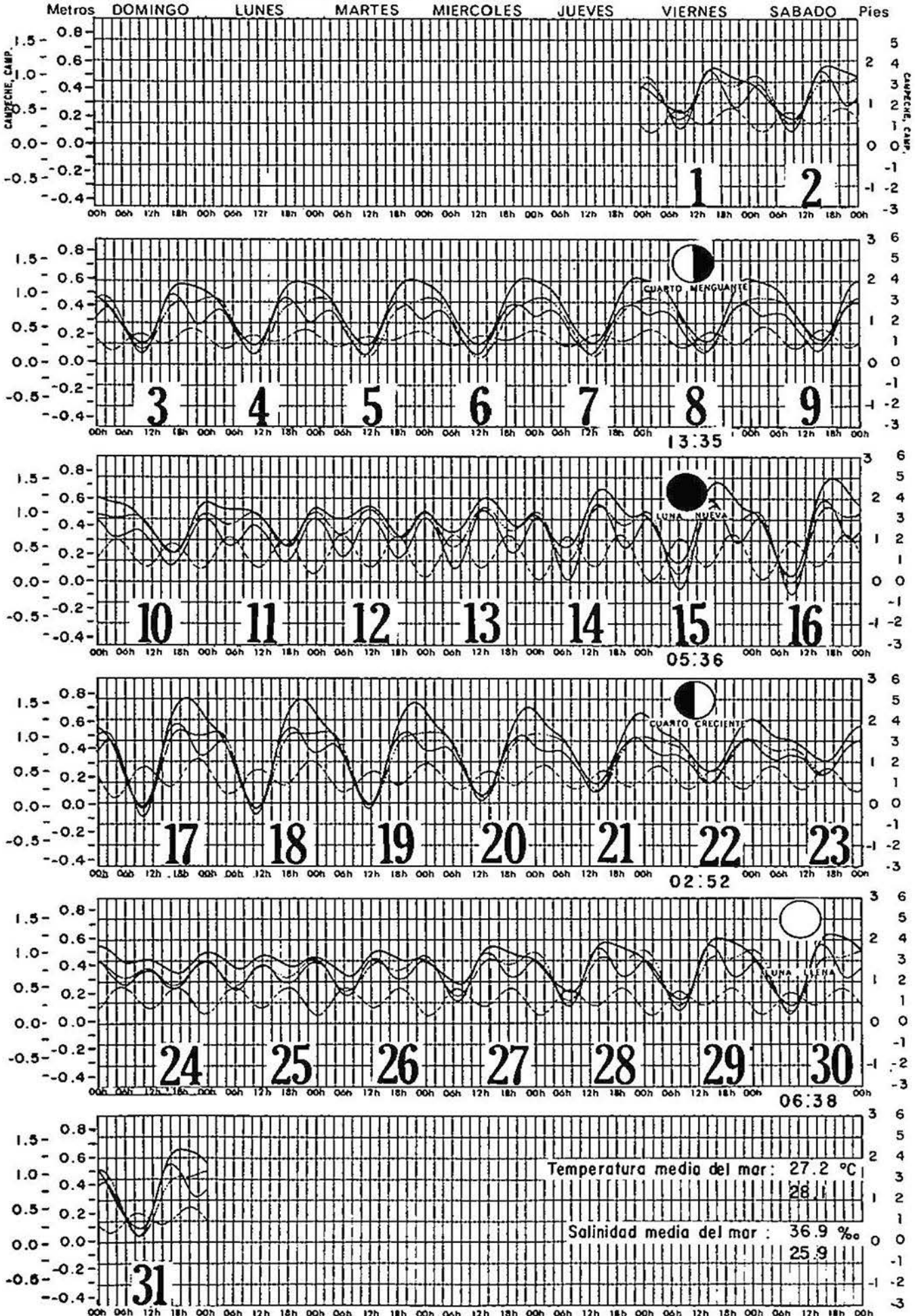


# OCTUBRE 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.

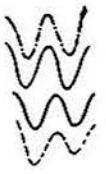
Temperatura media del mar : 27.2 °C  
 28.1  
 Salinidad media del mar : 36.9 ‰  
 25.9



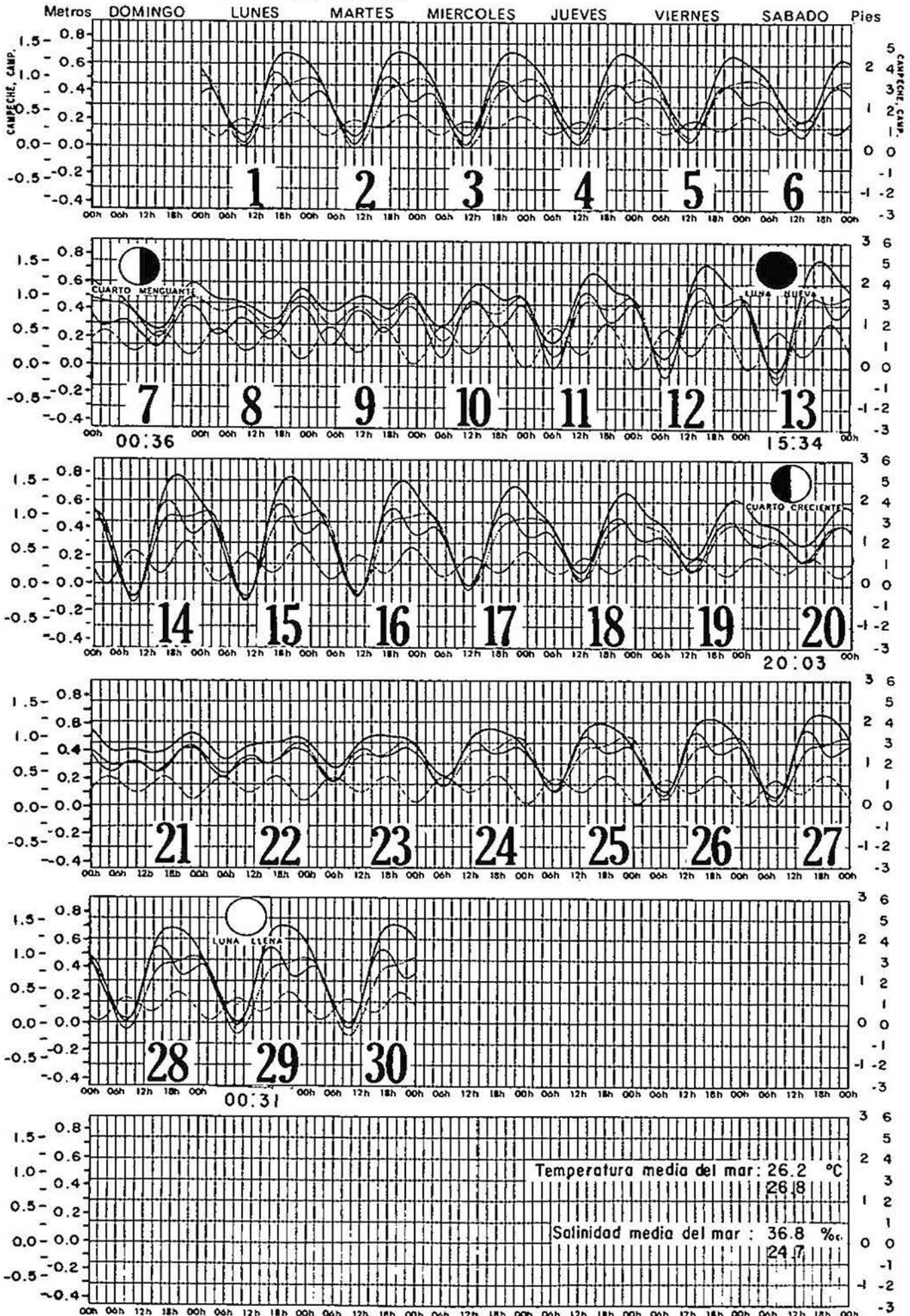


# NOVIEMBRE 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.





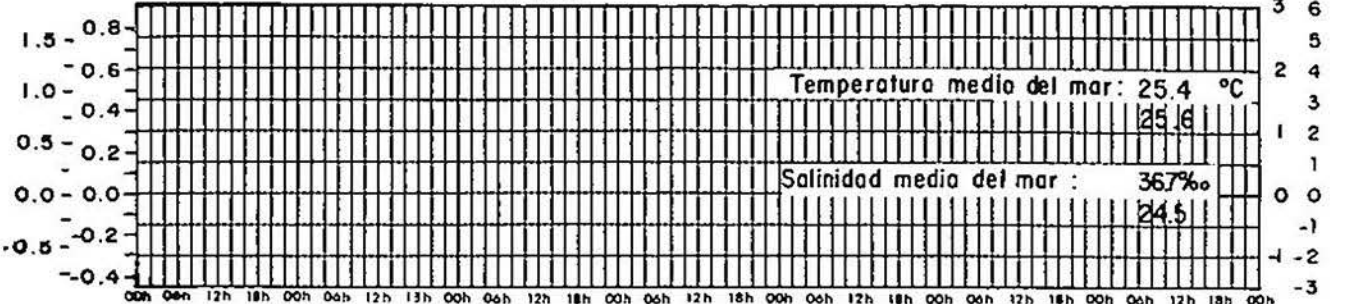
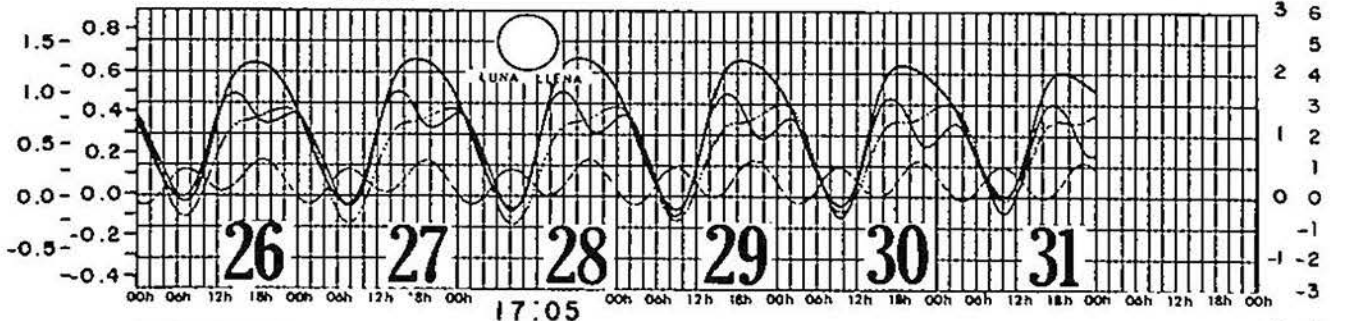
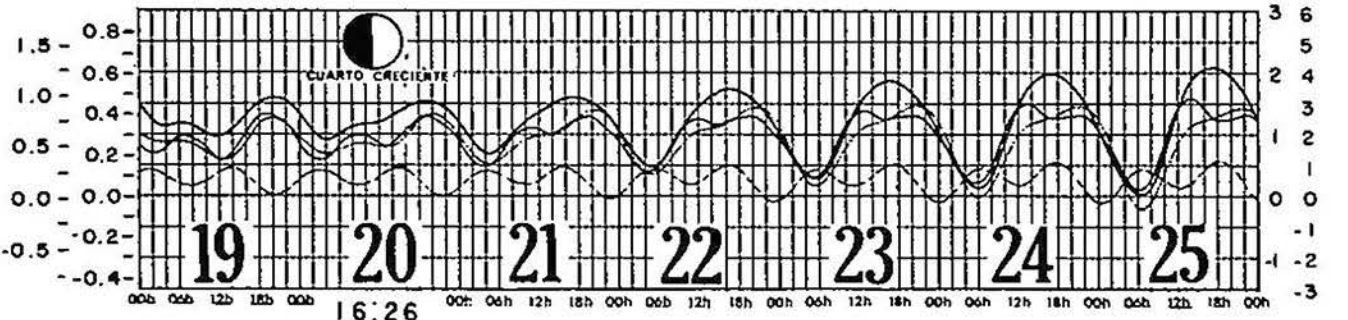
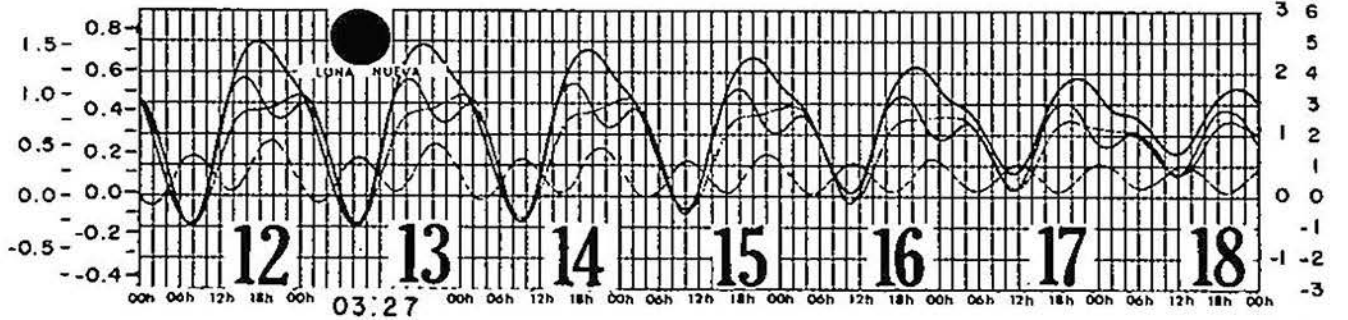
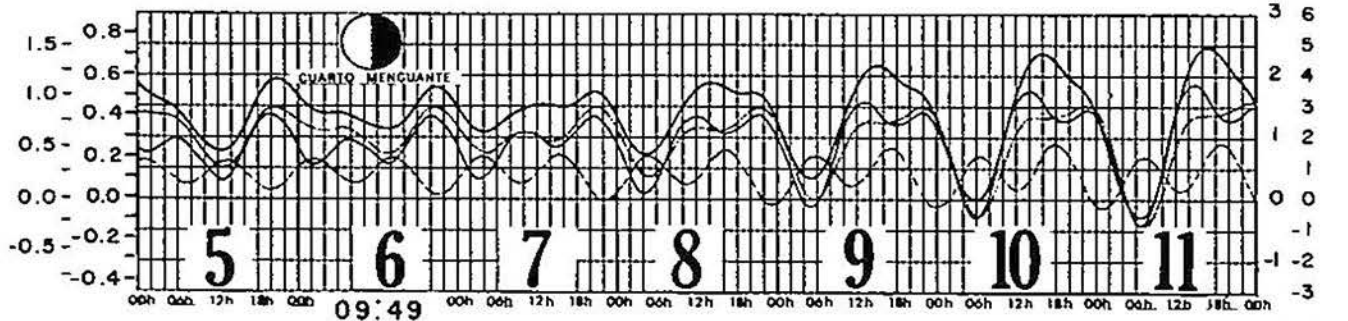
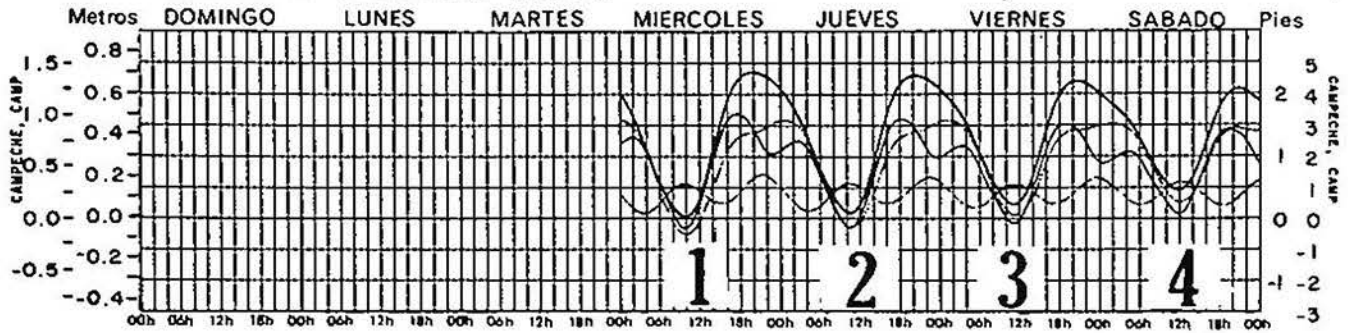


# DICIEMBRE 1993

Cd. del Carmen, Camp.  
Campeche, Camp.  
Progreso, Yuc.  
I. Cozumel Q. Roo



INSTITUTO DE GEOFISICA, U.N.A.M.



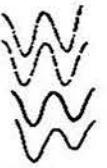
HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.  
PLANO DE REFERENCIA: N.B.M.I.



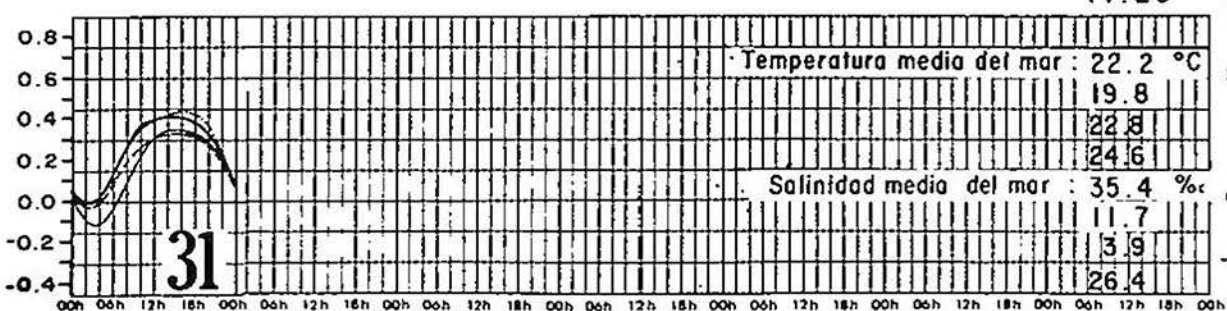
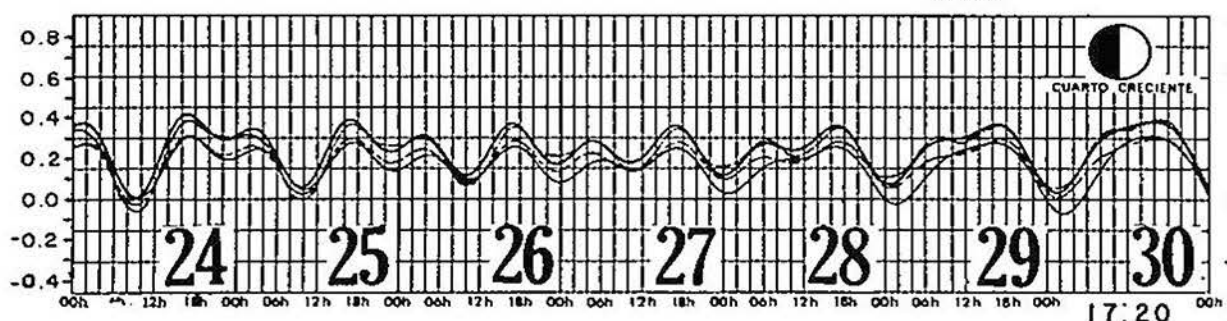
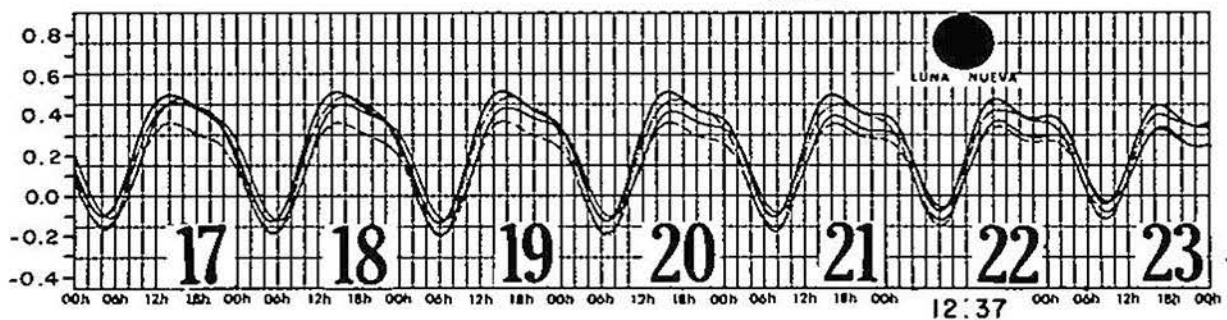
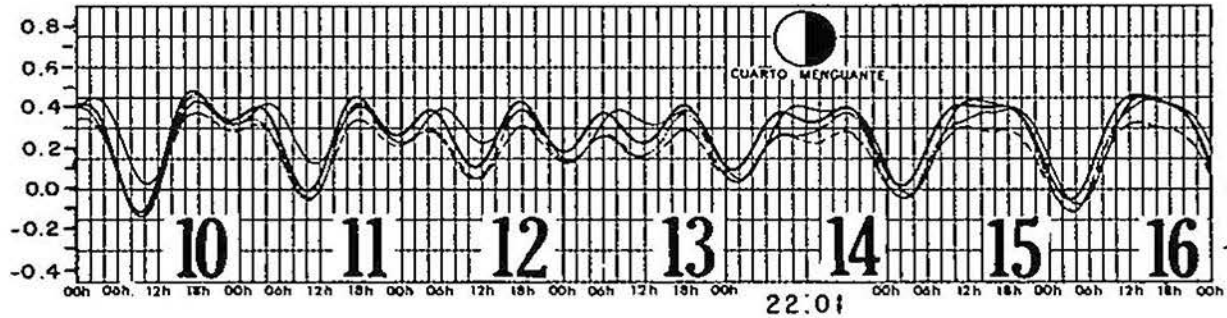
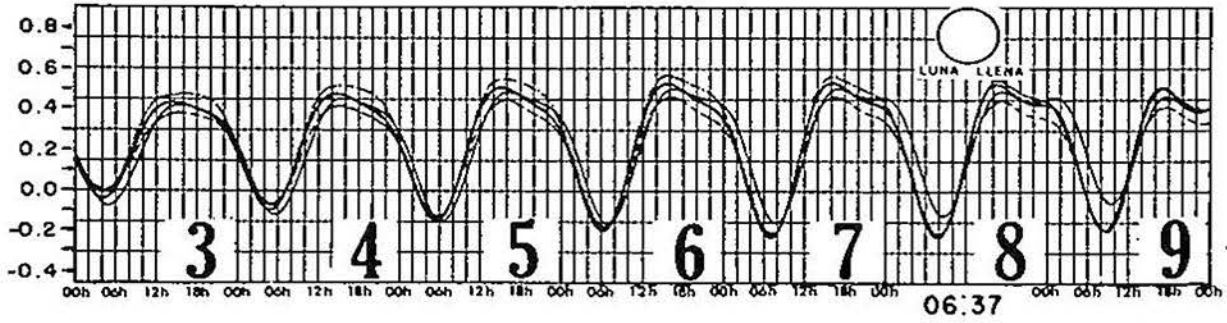
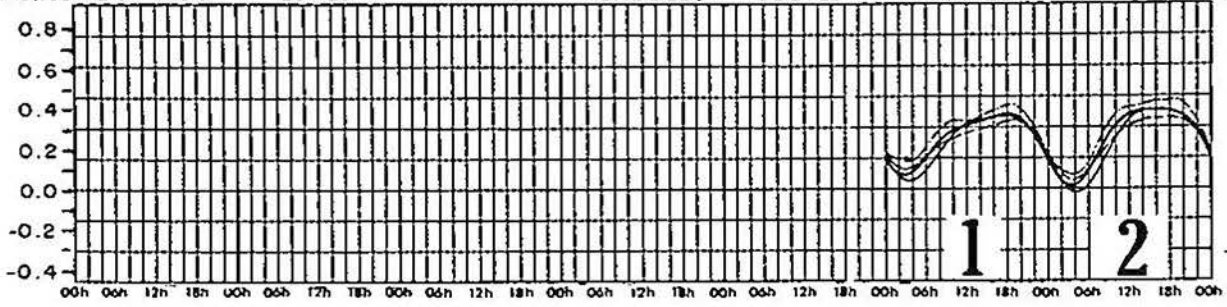
# ENERO 1993

Altamira, Tamps.  
Tampico, Tamps.  
Veracruz, Ver.  
Coatzacoalcos, Ver.



INSTITUTO DE GEOFISICA, U.N.A.M.

Metros DOMINGO LUNES MARTES MIERCOLES JUEVES VIERNES SABADO Pies



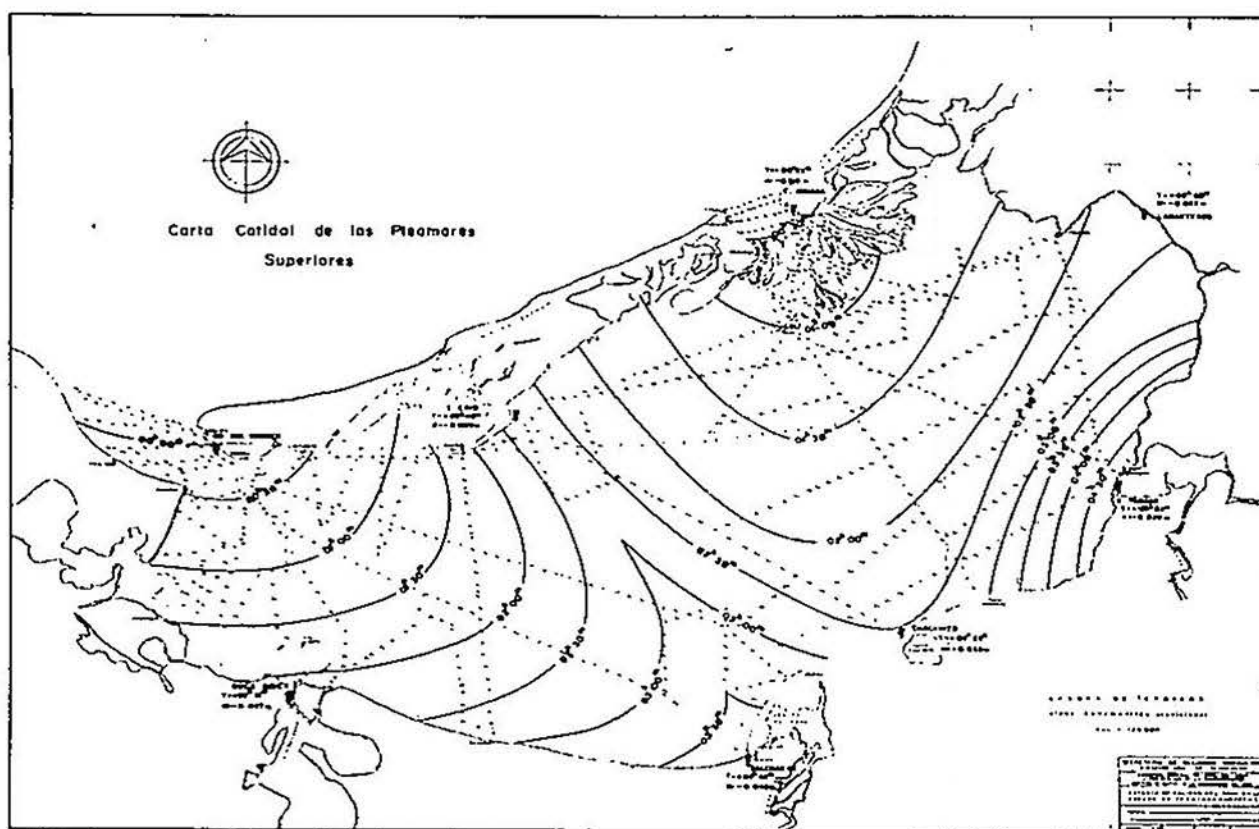
HORA DEL MERIDIANO 90° W

PLANO DE REFERENCIA N.B.M.

## CALENDARIO GRAFICO DE MAREAS 1993 GOLFO DE MEXICO Y MAR CARIBE

ESTACIONES	PLANO DE REFERENCIA BAJO EL NIVEL MEDIO DEL MAR		TIEMPO
Veracruz, Ver.	1.0 pies	0.30 m	90°W
Ciudad del Carmen, Camp.	0.8 pies	0.24 m	90°W
Campeche, Camp.	1.7 pies	0.52 m	90°W
Progreso, Yuc.	1.0 pies	0.30 m	90°W
Cozumel-Cancún, Q. Roo.	0.4 pies	0.12 m	90°W

El pronóstico de mareas de Ciudad del Carmen, Camp., puede ser utilizado en la Laguna de Términos, aplicando las correcciones que indican las curvas cotidales en el sitio deseado.



### INSTITUTO DE GEOFISICA

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J. Alberto Quintana

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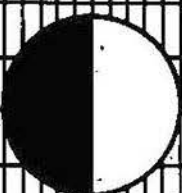
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04510, México D.F.

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Telex 1760197IGSSME

# INSTITUTO DE GEOFISICA



# Calendario Gráfico de Mareas 1991



## GOLFO DE MÉXICO Y MAR CARIBE



SECRETARIA DE MARINA



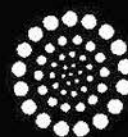
PUERTOS MEXICANOS



LAGUNA VERDE



FONATUR



CONACYT

Veracruz, Ver.

Tampico, Tamps.

Coatzacoalcos, Ver.

Cd. Del Carmen, Camp.