



Monitoreo y pronóstico de El Niño Febrero 2017

Comité Técnico ENFEN

02 de marzo de 2017



INDECI
INSTITUTO NACIONAL DE DEFENSA CIVIL

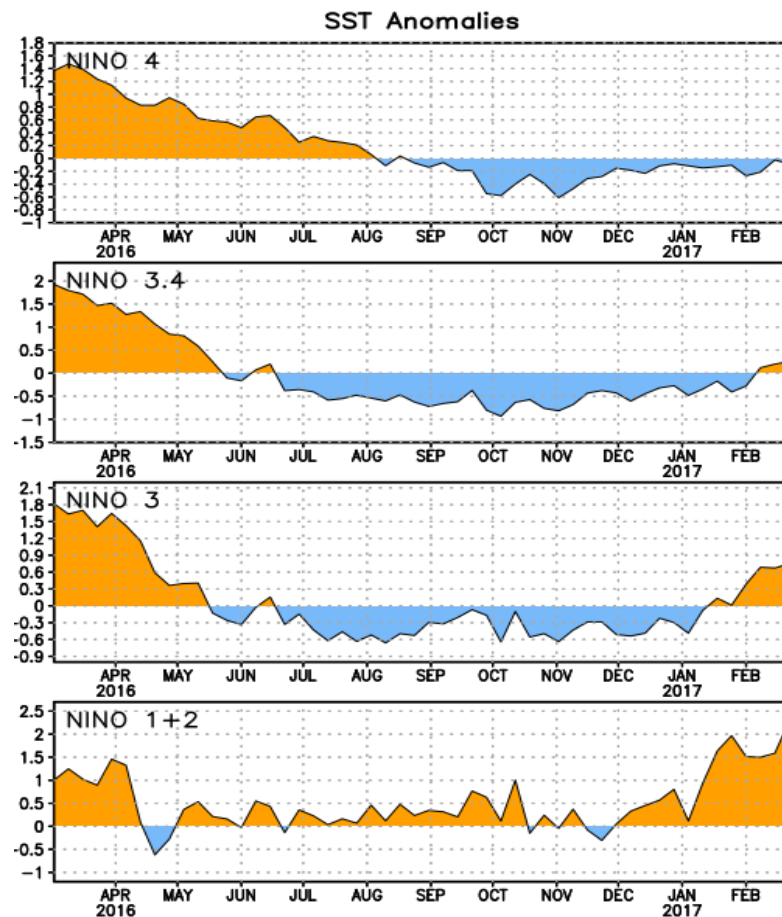
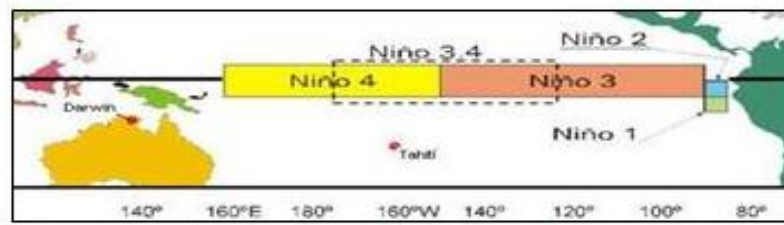




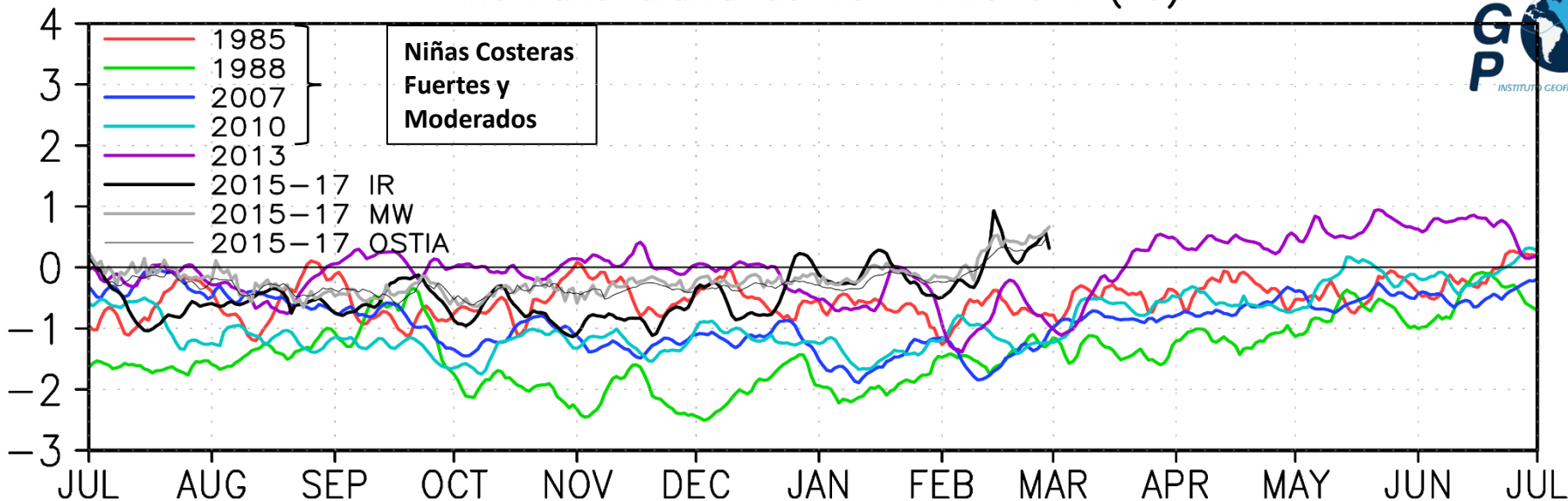
ANOMALÍAS DE LA TEMPERATURA SUPERFICIAL DEL MAR POR REGIONES NIÑO EN EL PACÍFICO ECUATORIAL

Regiones Niño	ATSM (Semanales)			
	Niño 1+2	Niño 3	Niño 3.4	Niño 4
01FEB2017	26.8 1.5	26.4 0.4	26.4 -0.3	27.9 -0.3
08FEB2017	27.2 1.5	26.9 0.7	26.8 0.1	27.9 -0.2
15FEB2017	27.7 1.6	27.1 0.7	26.9 0.2	28.1 0.0
22FEB2017	28.5 2.3	27.3 0.7	27.1 0.3	28.0 -0.1
P.T.	1.73			

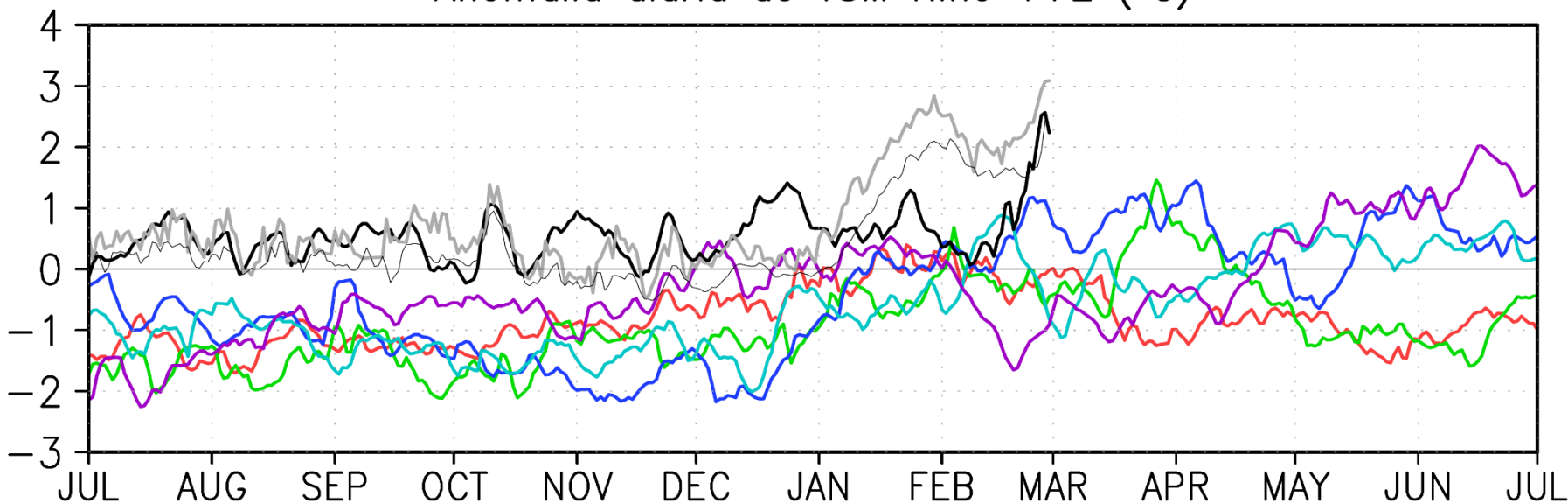
Promedios mensuales 2015					
Regiones Niño	ATSM				
	Niño 1+2	Niño 3	Niño 3.4	Niño 4	
Ene.2017	1.23 25.75	0.0 25.6	-0.3 26.3	-0.1 28.2	
Dic.2016	0.43 23.3	-0.4 24.8	-0.4 26.2	-0.1 28.4	
Nov.2016	0.09 21.7	-0.4 24.5	-0.6 26.1	-0.4 28.3	
Oct.2016	0.36 21.2	-0.4 24.5	-0.7 26.0	-0.4 28.3	
Set.2016	0.53 20.9	-0.2 24.7	-0.6 26.1	-0.2 28.5	
Ago.2016	0.4 21.0	-0.5 24.5	-0.5 26.3	0.0 28.7	
Jul.2016	0.2 21.8	-0.5 25.1	-0.5 26.7	0.3 29.1	
Jun.2016	0.3 23.2	-0.1 26.3	-0.1 27.5	0.5 29.4	
May.2016	0.3 24.6	0.0 27.1	0.3 28.2	0.6 29.4	
Abr.2016	0.2 25.8	0.8 28.3	1.1 28.8	0.9 29.4	
Mar.2016	0.9 27.6	1.6 28.7	1.7 28.9	1.3 29.5	
Feb.2016	0.7 26.8	1.9 28.4	2.4 29.1	1.5 29.6	
Ene.2016	1.4 25.9	2.6 28.2	2.6 29.2	1.4 29.7	



Anomalia diaria de TSM Nino 3.4 (°C)

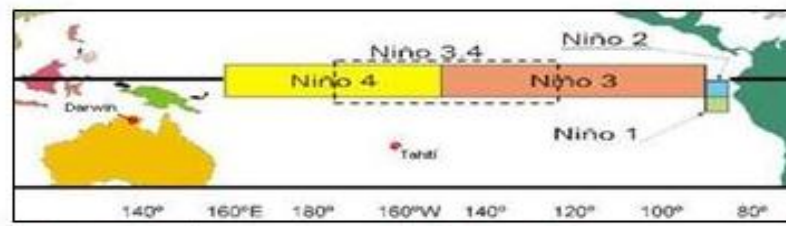
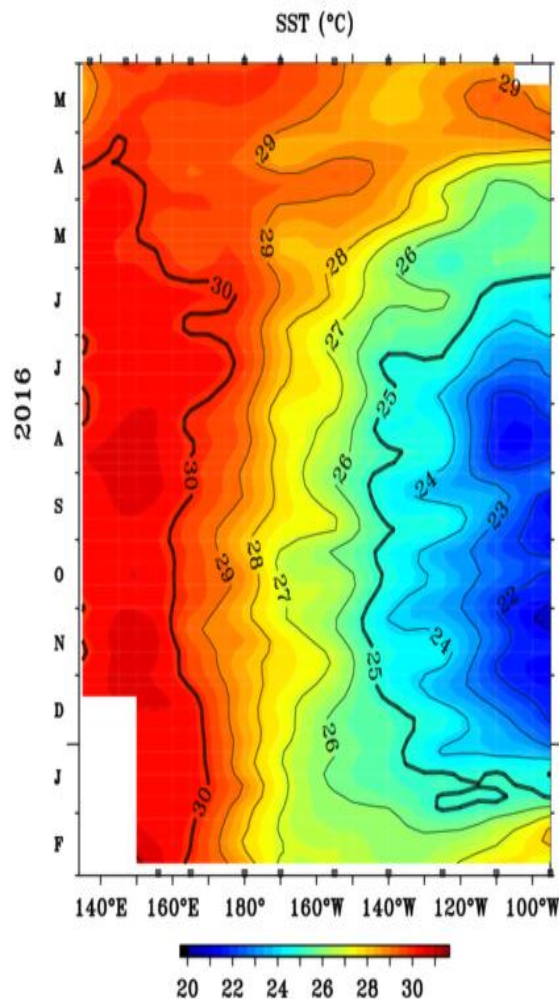
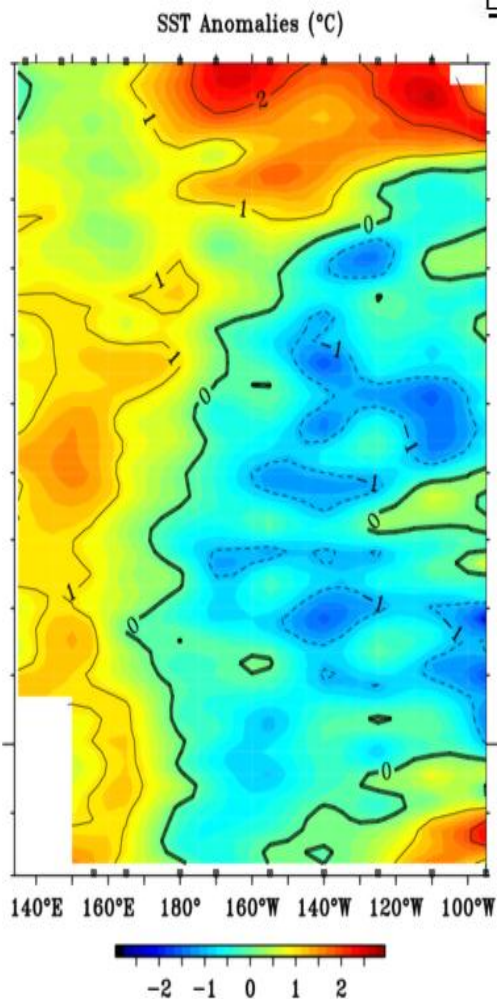
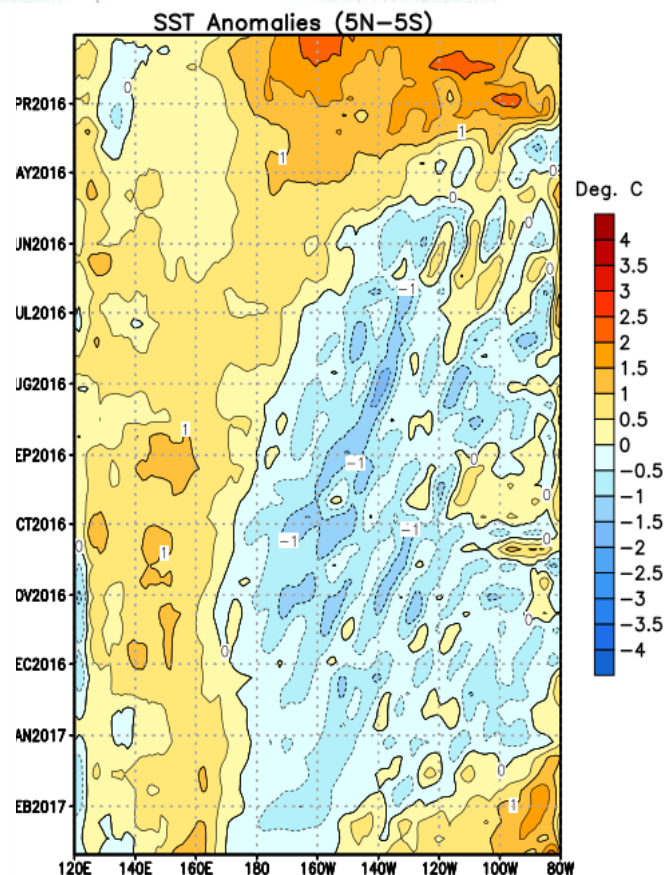


Anomalia diaria de TSM Nino 1+2 (°C)





ANOMALÍAS DE LA TEMPERATURA SUPERFICIAL EN EL PACÍFICO ECUATORIAL

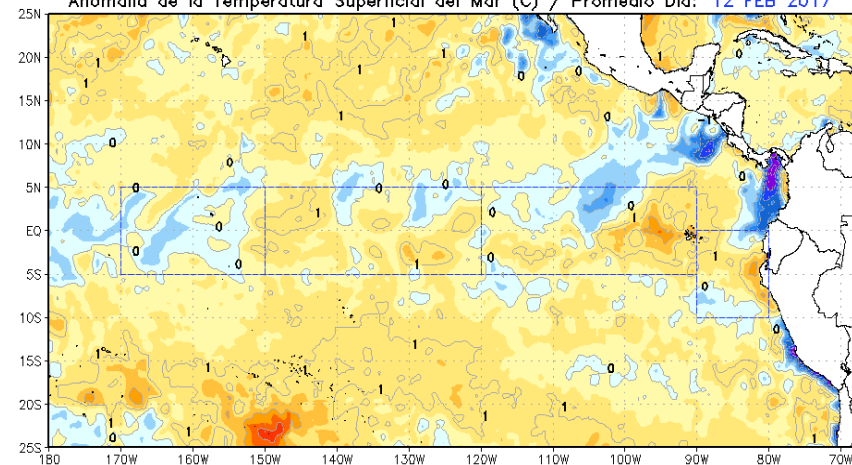




ANOMALÍAS DE LA TEMPERATURA SUPERFICIAL DEL MAR EN EL PACÍFICO ECUATORIAL

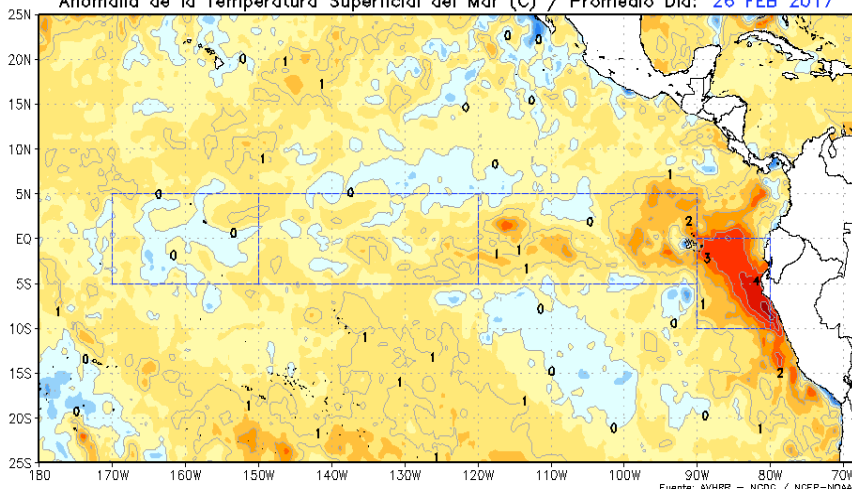
DIRECCION DE HIDROGRAFIA Y NAVEGACION
DPTO OCEANOGRAFIA – DIV METEOROLOGIA

Anomalia de la Temperatura Superficial del Mar (C) / Promedio Dia: 12 FEB 2017



DIRECCION DE HIDROGRAFIA Y NAVEGACION
DPTO OCEANOGRAFIA – DIV METEOROLOGIA

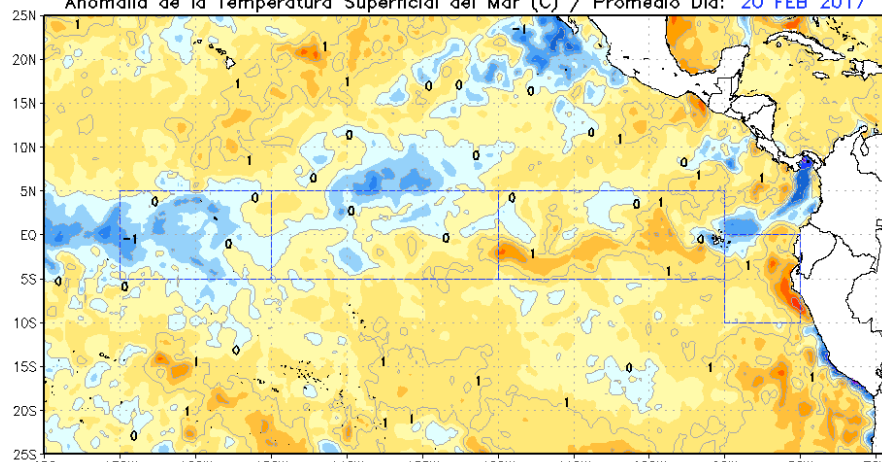
Anomalia de la Temperatura Superficial del Mar (C) / Promedio Dia: 26 FEB 2017



Fuente: AVHRR – NDQC / NCEP-NOAA

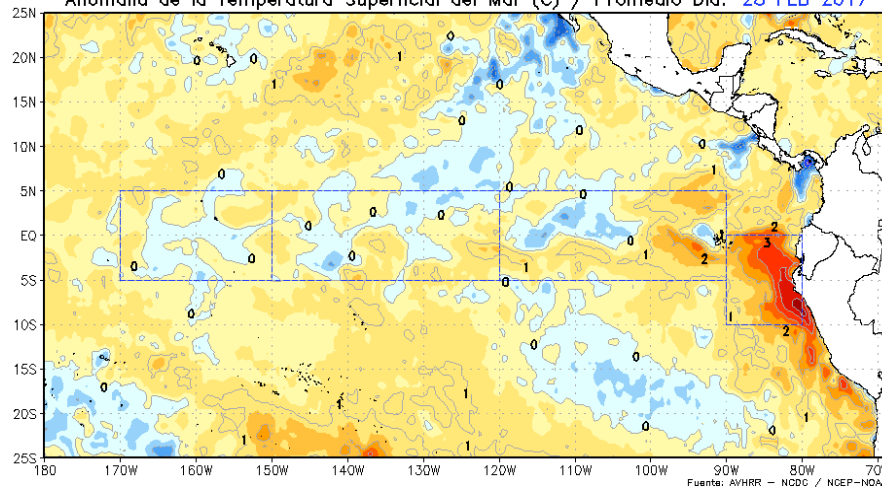
DIRECCION DE HIDROGRAFIA Y NAVEGACION
DPTO OCEANOGRAFIA – DIV METEOROLOGIA

Anomalia de la Temperatura Superficial del Mar (C) / Promedio Dia: 20 FEB 2017

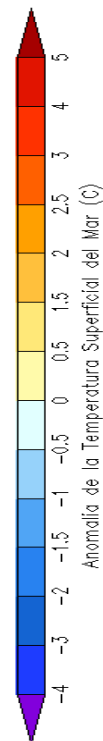


DIRECCION DE HIDROGRAFIA Y NAVEGACION
DPTO OCEANOGRAFIA – DIV METEOROLOGIA

Anomalia de la Temperatura Superficial del Mar (C) / Promedio Dia: 28 FEB 2017



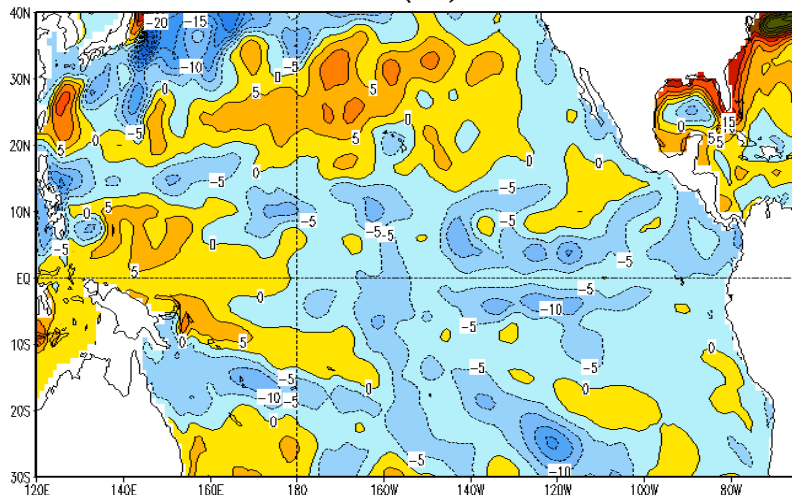
Fuente: AVHRR – NDQC / NCEP-NOAA



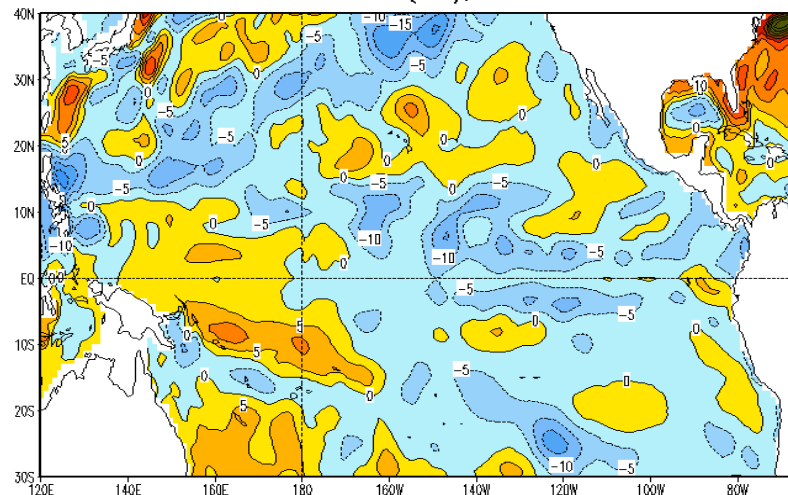


ANOMALÍAS DEL NIVEL DEL MAR EN EL PACÍFICO TROPICAL

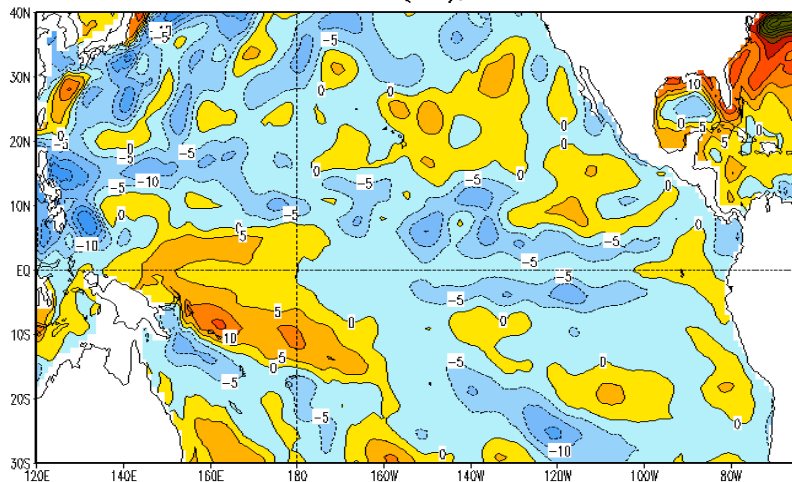
Sea Level Anom (cm), Jan 23 2017



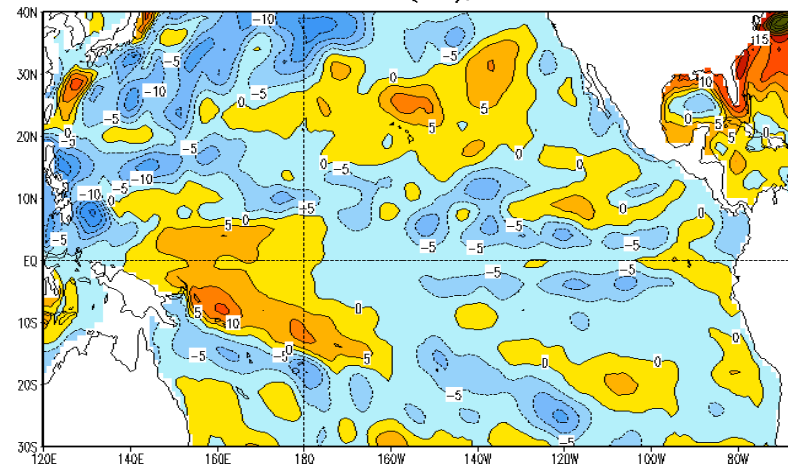
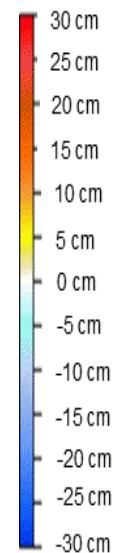
Sea Level Anom (cm), Feb 07 2017



Sea Level Anom (cm), Feb 17 2017

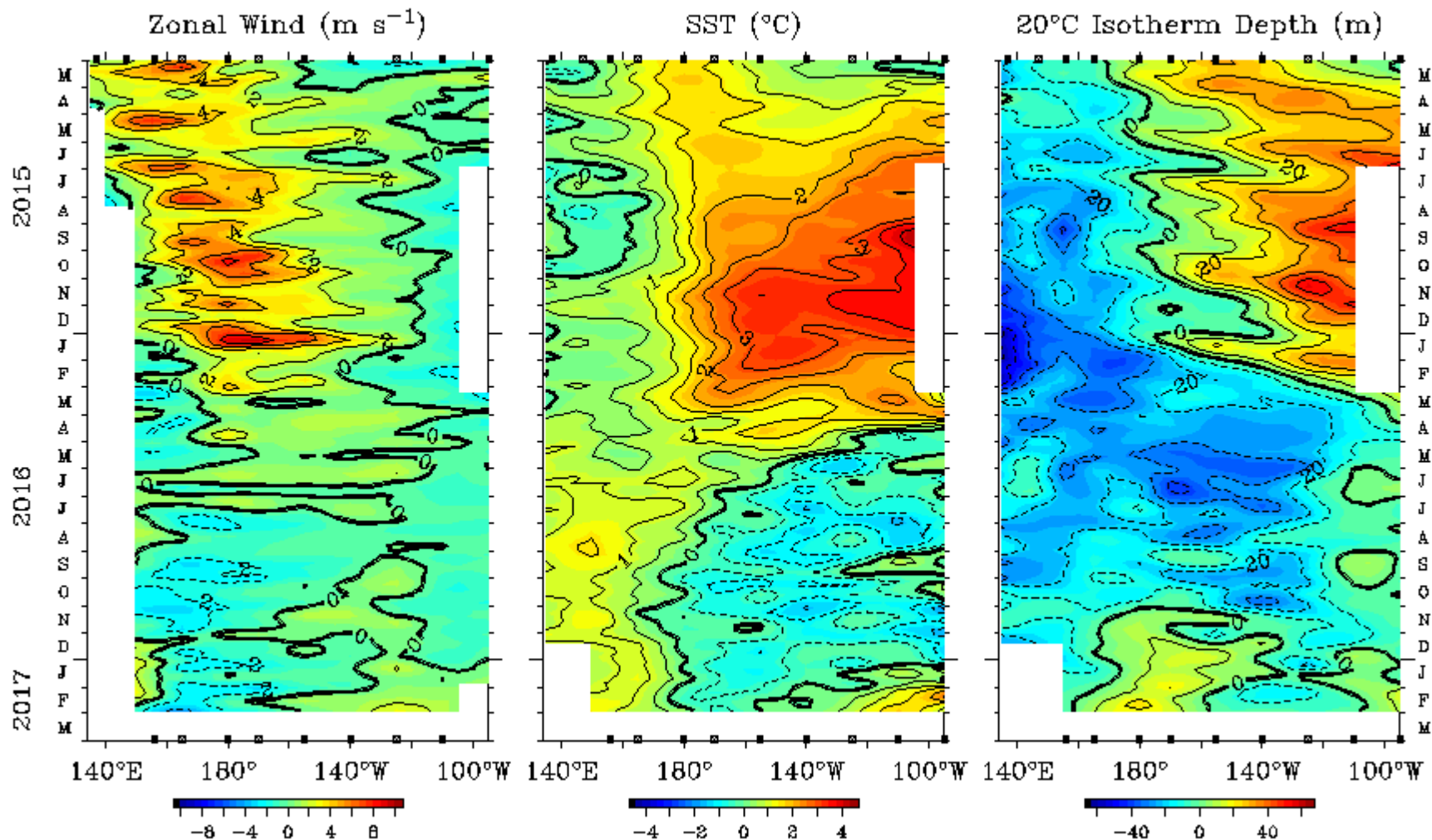


Sea Level Anom (cm), Feb 22 2017



TAO a lo largo de la línea ecuatorial

Five Day Zonal Wind, SST, and 20°C Isotherm Depth Anomalies 2°S to 2°N Average

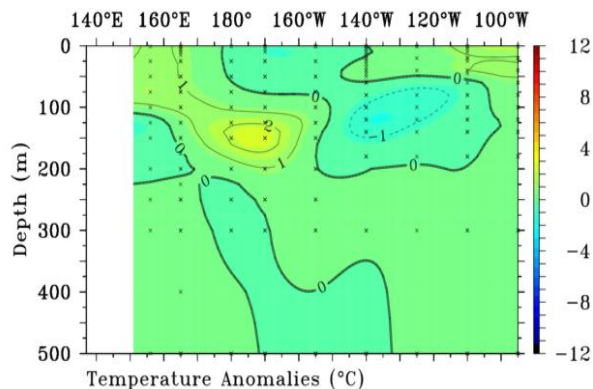




ANOMALÍAS DE LA TEMPERATURA SUBSUPERFICIAL EN EL PACÍFICO ECUATORIAL

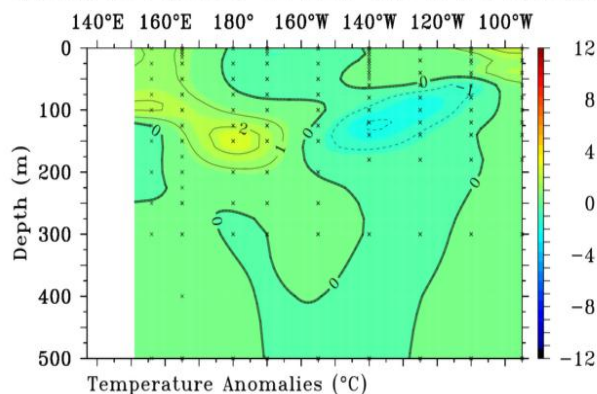
Five-Day Data

Ending On February 6 2017 2°S to 2°N Average



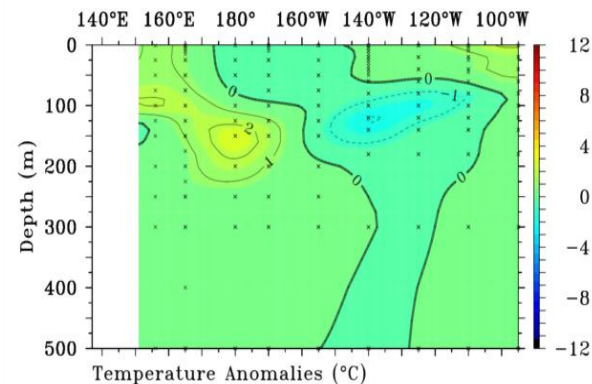
Five-Day Data

Ending On February 11 2017 2°S to 2°N Average

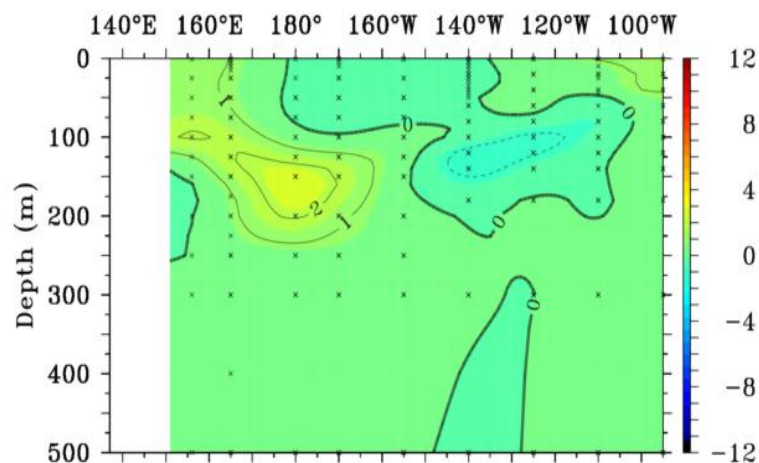


Five-Day Data

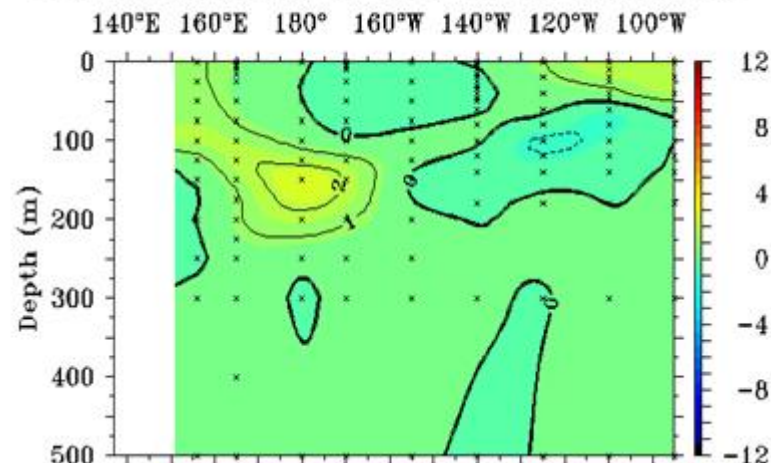
Ending On February 16 2017 2°S to 2°N Average



Ending On February 21 2017 2°S to 2°N Average

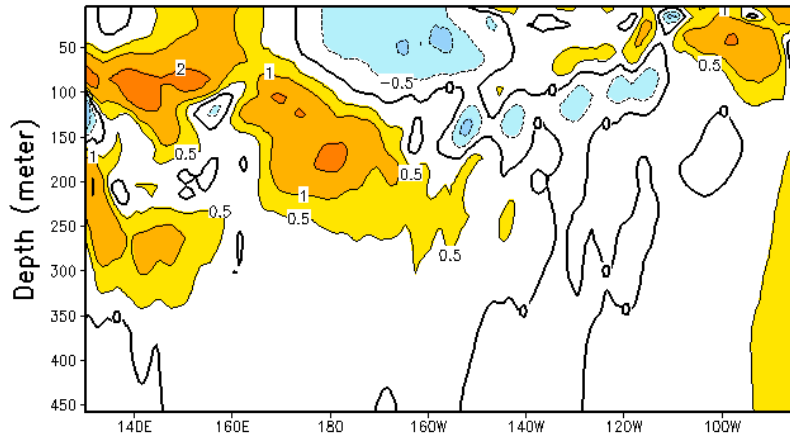


End Date: February 28 2017 2°S to 2°N Average

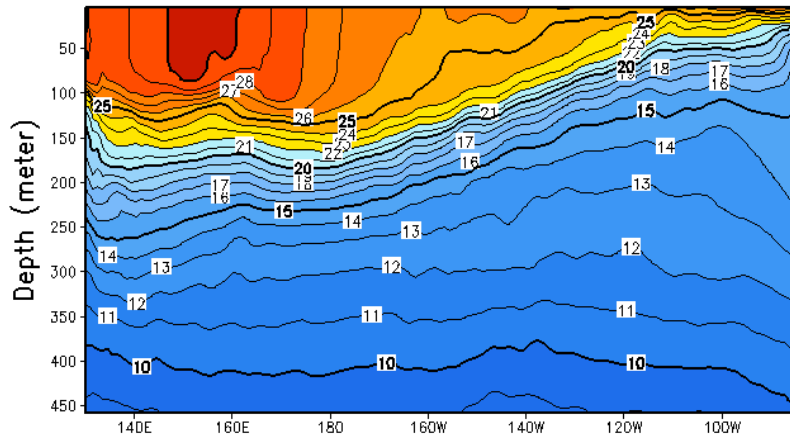


ANOMALÍAS DE LA TEMPERATURA SUBSUPERFICIAL EN EL PACÍFICO ECUATORIAL (NCEP-GODAS)

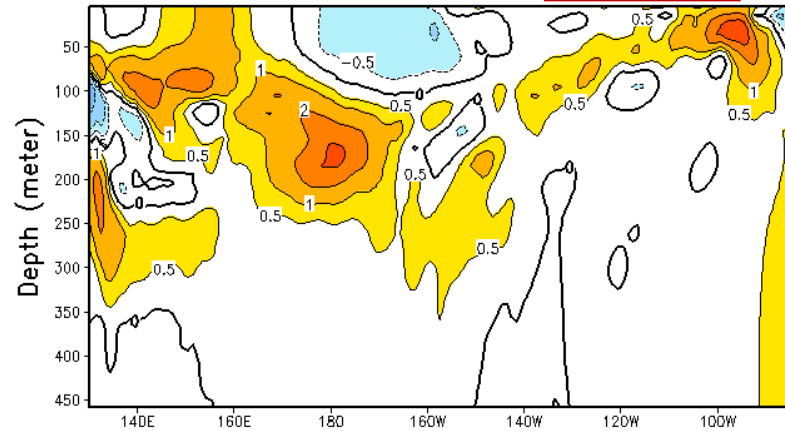
Equatorial Temperature Anom ($^{\circ}\text{C}$), Feb 17 2017



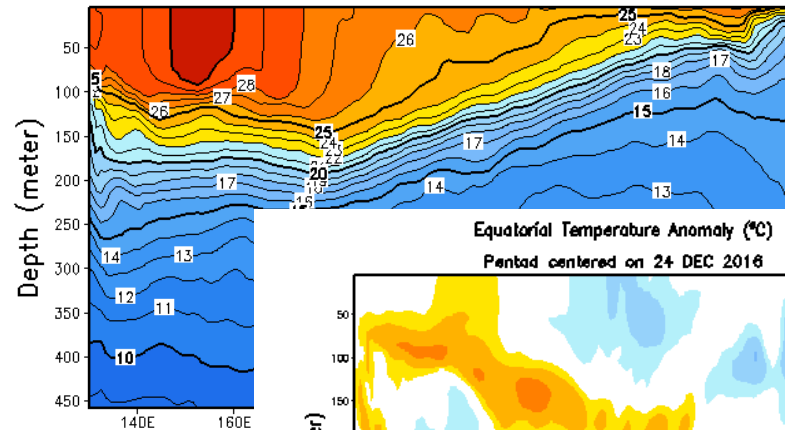
Equatorial Temperature ($^{\circ}\text{C}$), Feb 17 2017



Equatorial Temperature Anom ($^{\circ}\text{C}$), Feb 22 2017

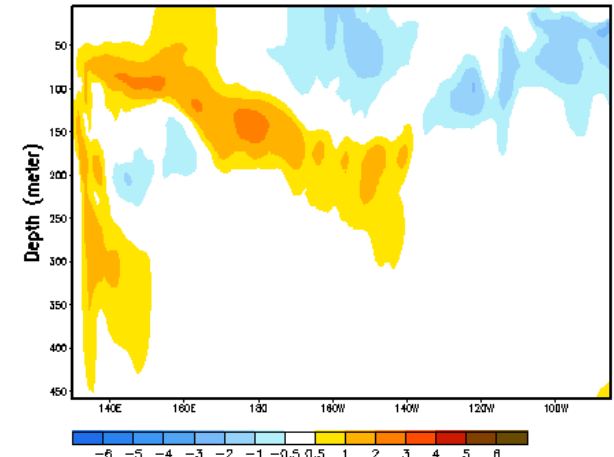


Equatorial Temperature ($^{\circ}\text{C}$), Feb 22 2017

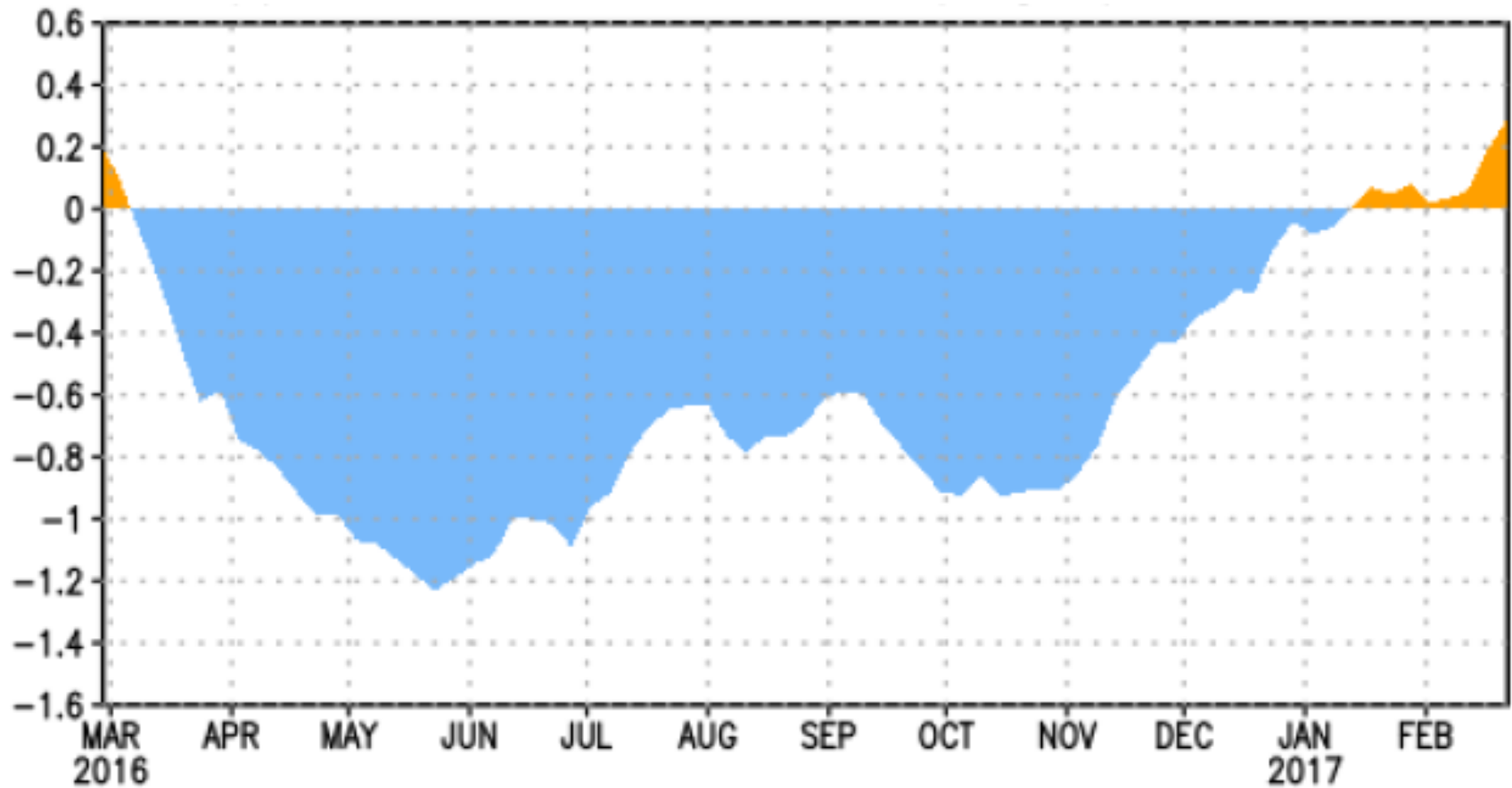


Equatorial Temperature Anomaly ($^{\circ}\text{C}$)

Pentad centered on 24 DEC 2016



Contenido de calor en el Pacífico Ecuatorial (0 – 300m, 180-100W, °C)



Fuente: NOAA

Valores del Índice Costero El Niño

Mes	ICEN	Categoría
04/2016	0.77	Cálida Débil
05/2016	0.54	Cálida Débil
06/2016	0.43	Cálida Débil
07/2016	0.29	Neutra
08/2016	0.17	Neutra
09/2016	0.14	Neutra
10/2016	0.22	Neutra
11/2016	0.37	Neutra
12/2016	0.43	Cálida Débil

Bajo porque el ERSST de enero fue dudosamente bajo (0.38)

Mes	ICENtmp	Categoría
01/2017	0.97*	Cálida Débil
02/2017	1.00**	Cálida Débil

* Se usaron los datos de (Dic. 2016 y Ene. 2017) ERSST3v, (Feb 2017) OI-WKSST

** Se usaron los datos de (Ene. 2017) ERSST3v, (Feb. 2017) OI-WKSST Y (Mar 2017)NMME
NMME CI 2017 02

Valores del Oceanic Niño Index (ONI)

El Niño en
el Pacífico
Central →
duró hasta
mayo

Mes	ONI	Categoría
04/2016	1.09	Cálida Moderada
05/2016	0.60	Cálida Débil
06/2016	0.10	Neutra
07/2016	-0.32	Neutra
08/2016	-0.58	Fría Débil
09/2016	-0.75	Fría Débil
10/2016	-0.84	Fría Débil
11/2016	-0.84	Fría Débil
12/2016	-0.73	Fría Débil

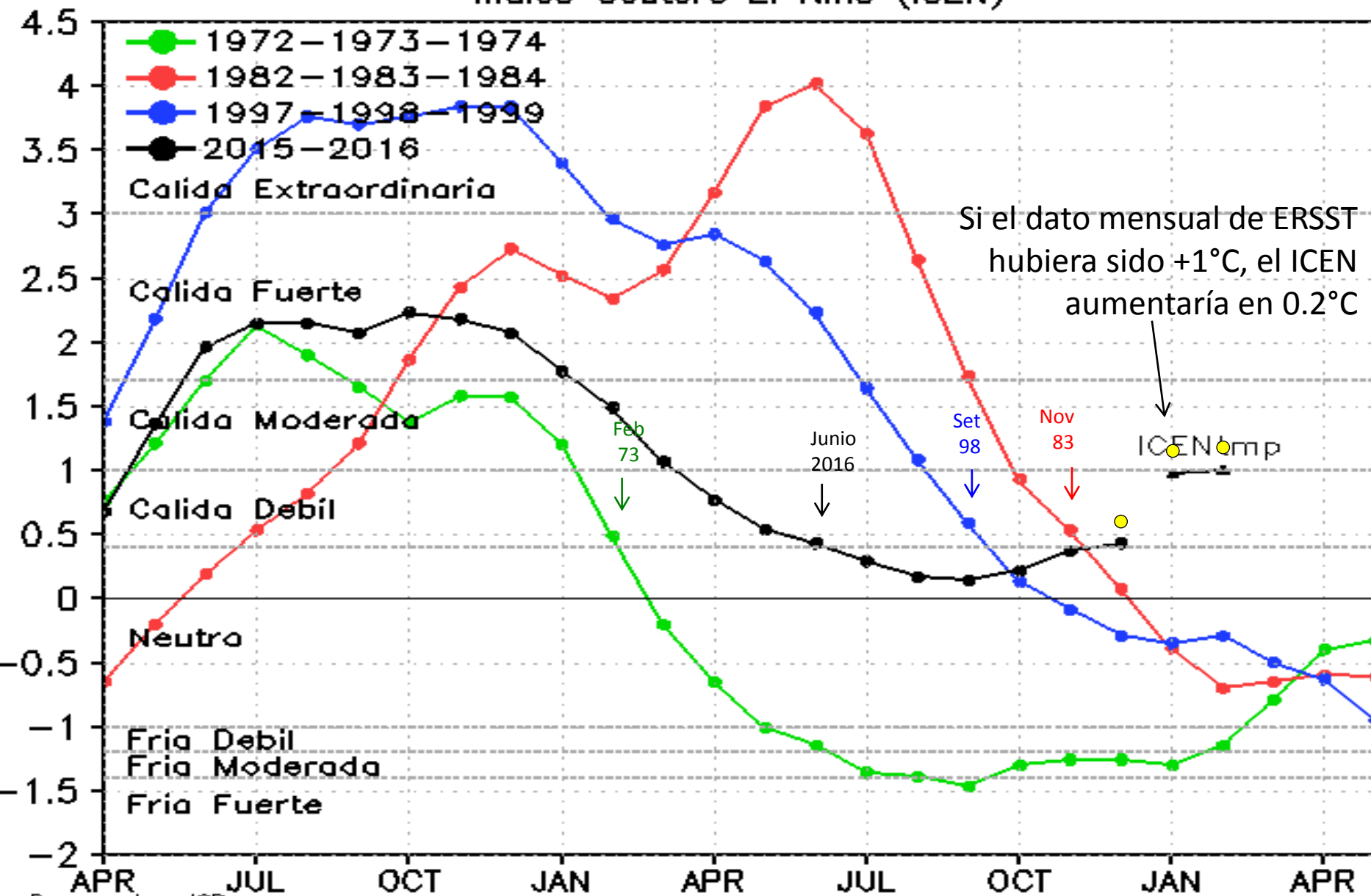
<http://www.cpc.ncep.noaa.gov/data/indices/oni.ascii.txt>

Mes	ONItmp	Categoría
01/2016	-0.40*	Neutra
02/2017	-0.13**	Neutra

* Se usaron los datos de (Dic 2016 y Ene 2017) ERSST4, (Feb. 2017) OI-WkSST .

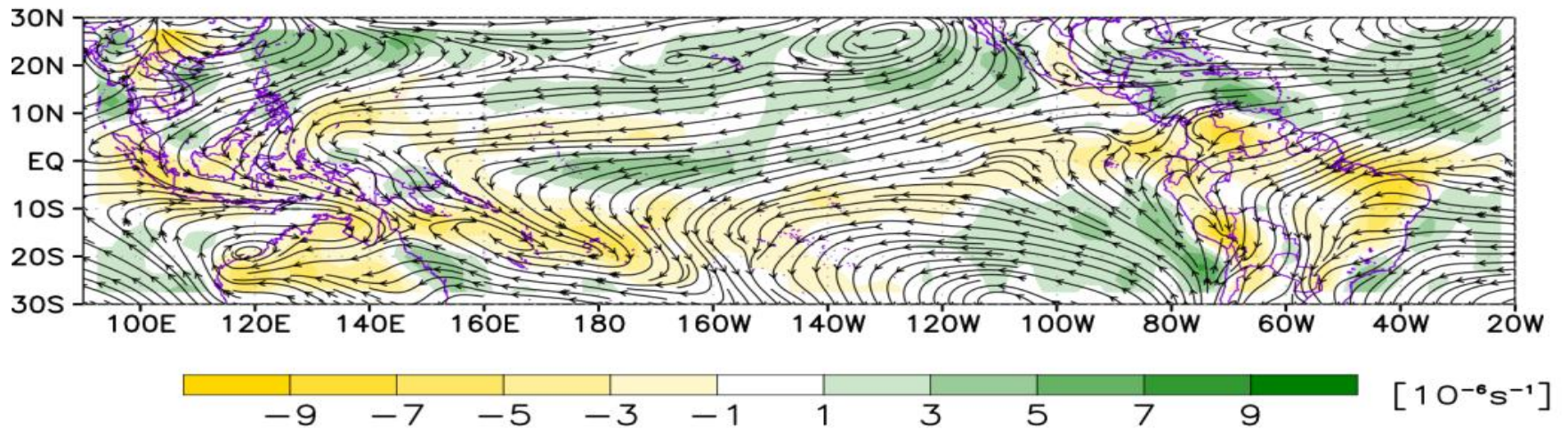
** Se usaron los datos de (Ene. 2017) ERSST4, (Feb. 2017) OI-WkSST y(Mar. 2017) NMME

Indice Costero El Niño (ICEN)

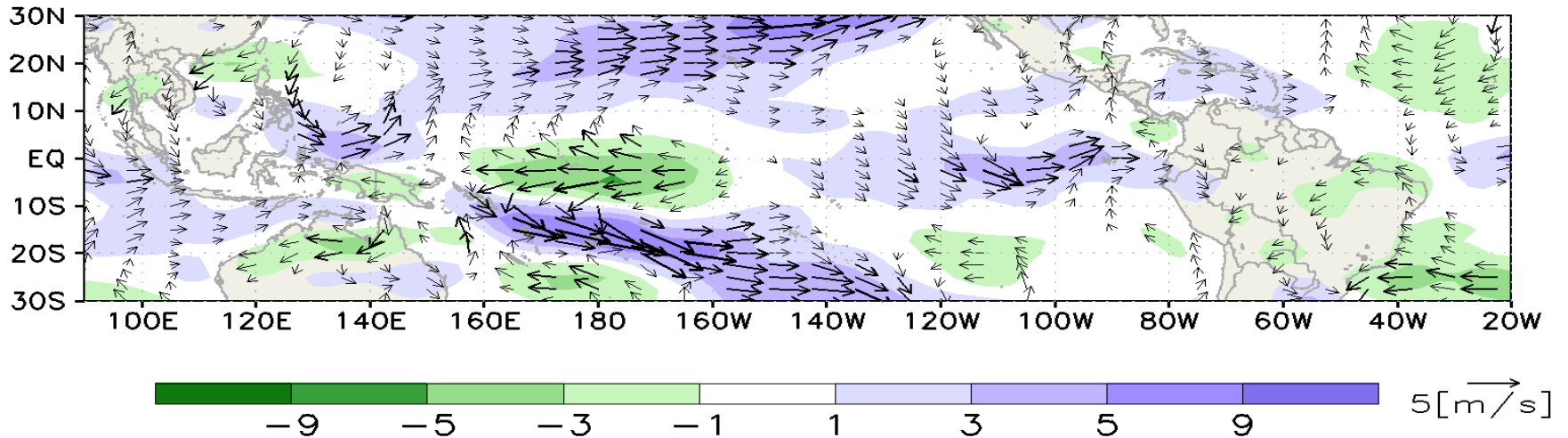


VIENTOS A 925hPa

VIENTO PROMEDIO a 925hPa FEBRERO 2017
NCEP-NOAA / SENAMHI -DCL

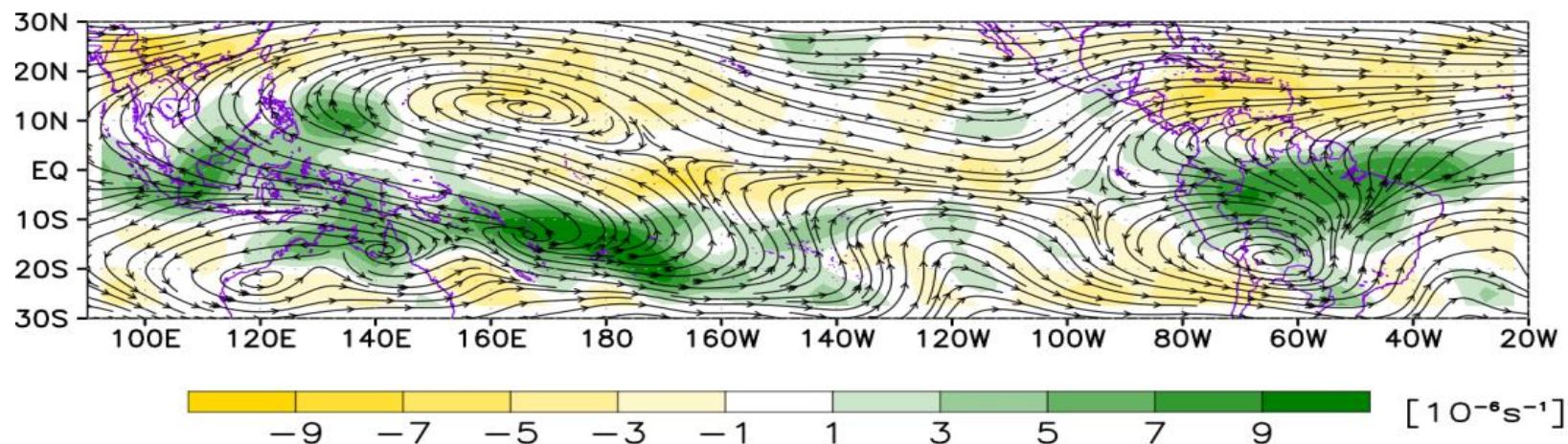


ANOMALIA DE VIENTO a 925hPa FEBRERO 2017
NCEP-NOAA / SENAMHI -DCL

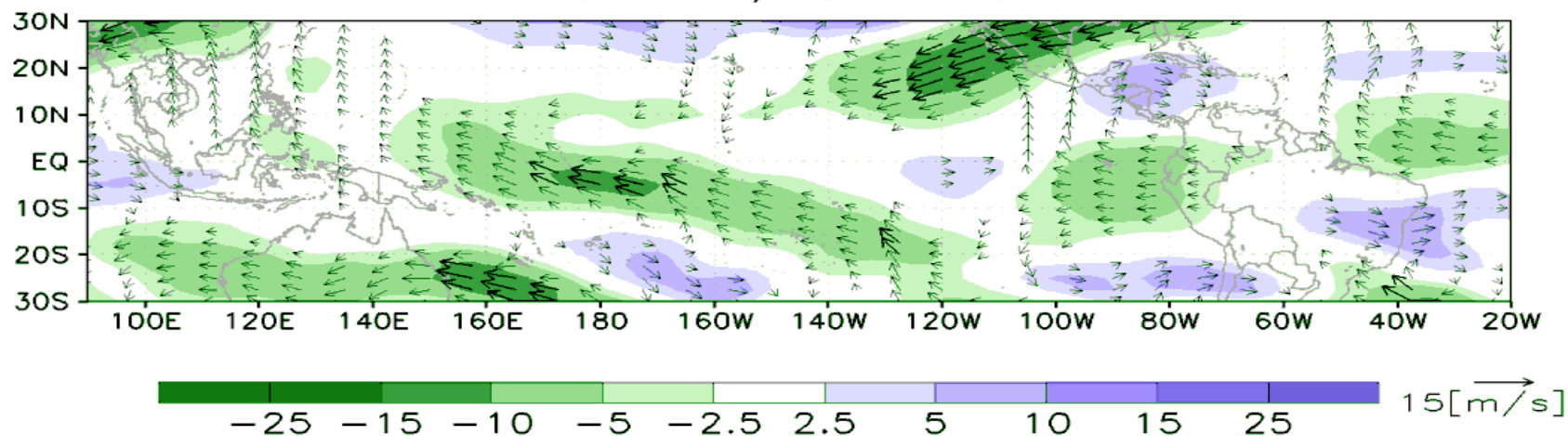


VIENTO A 200 hPa

VIENTO PROMEDIO a 200hPa FEBRERO 2017
NCEP-NOAA / SENAMHI -DCL

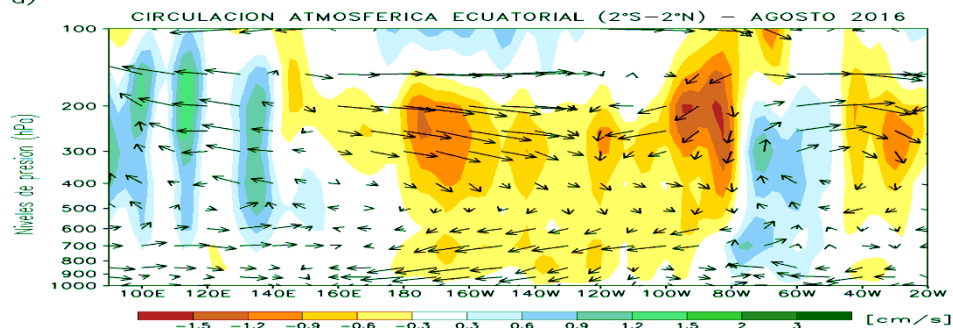
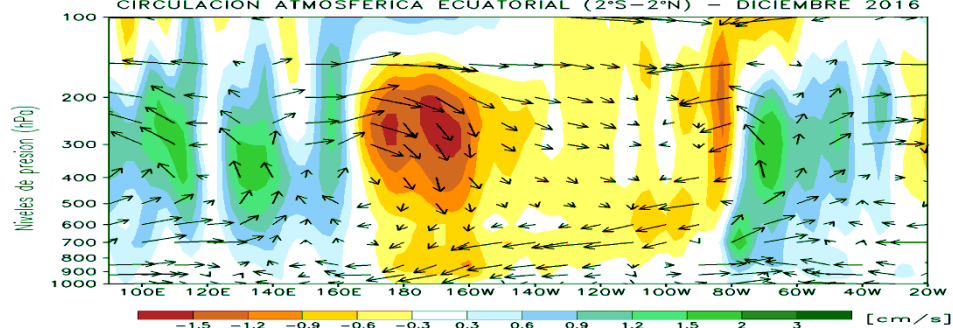
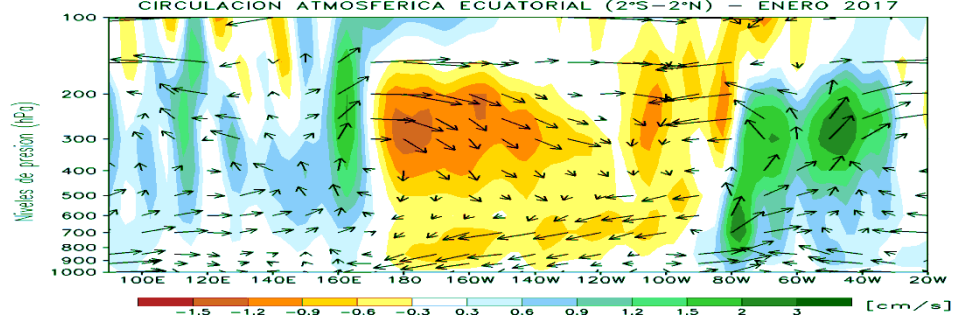
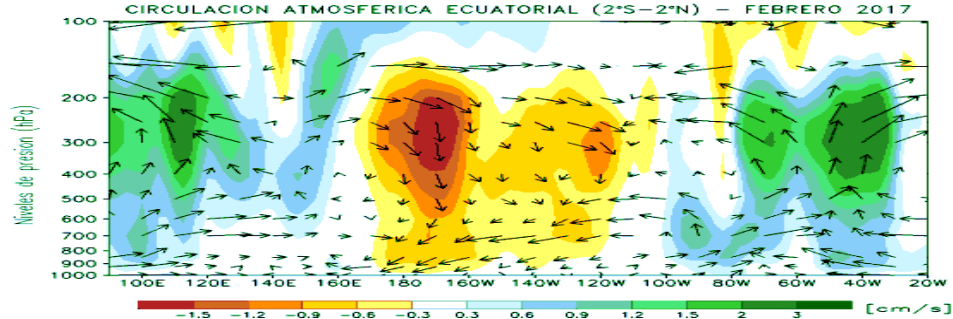


ANOMALIA DE VIENTO a 200hPa FEBRERO 2017
NCEP-NOAA / SENAMHI -DCL

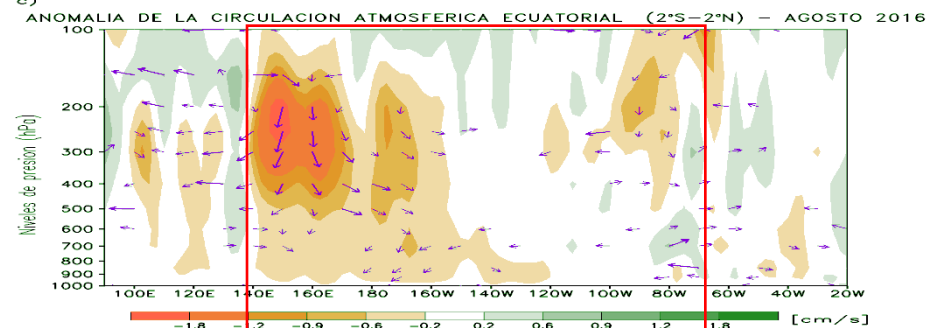
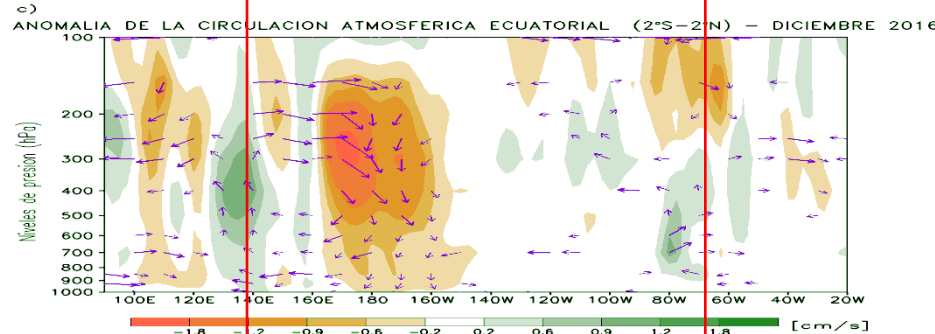
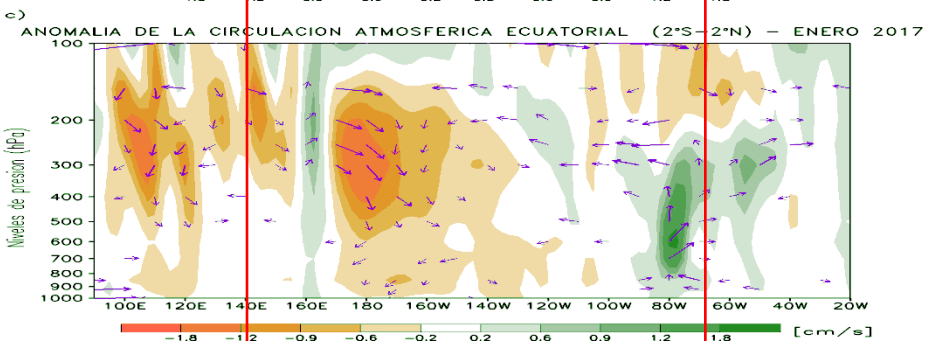
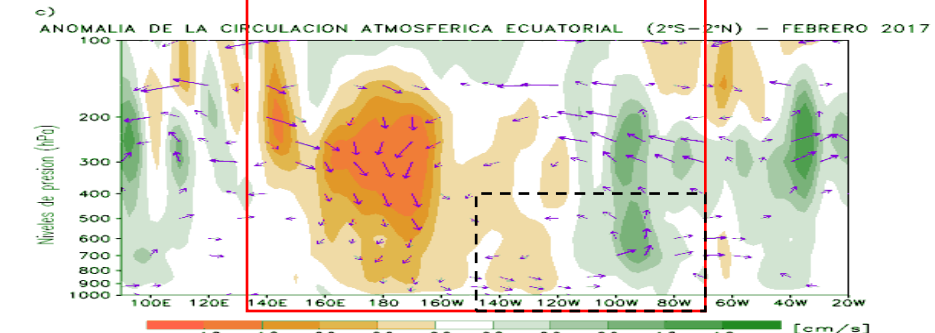


MONITOREO DE LA CIRCULACION ATMOSF. EC. 5°N-5°S

a)

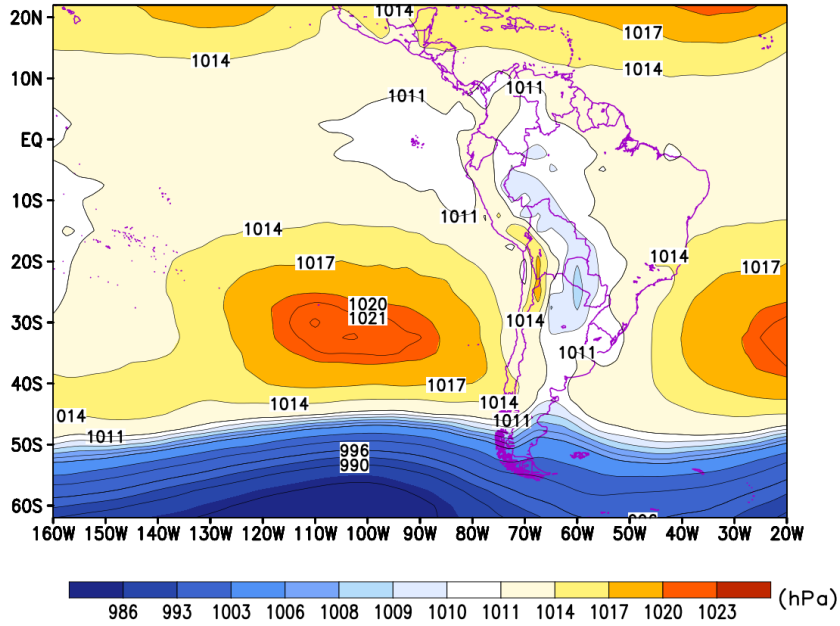


c)

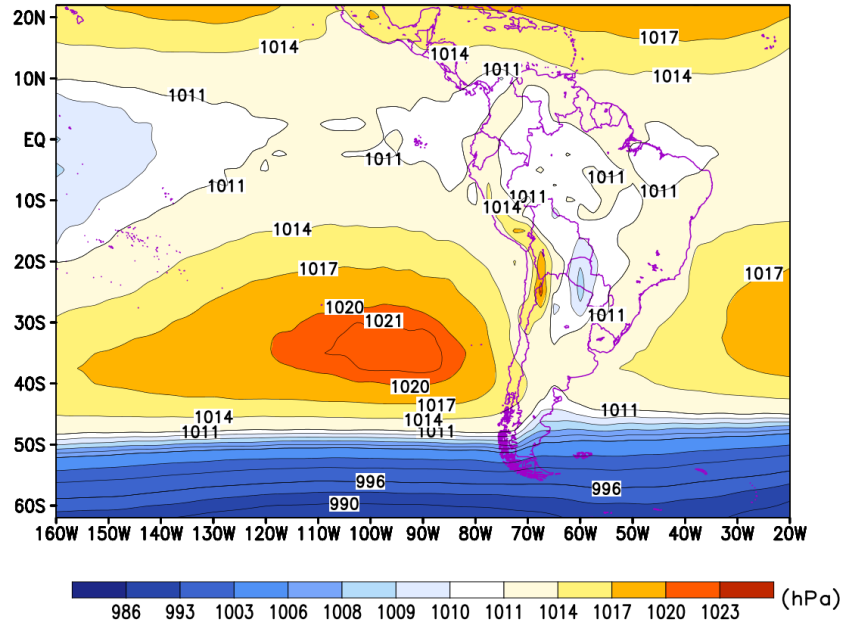


CAMPOS DE PRESIONES

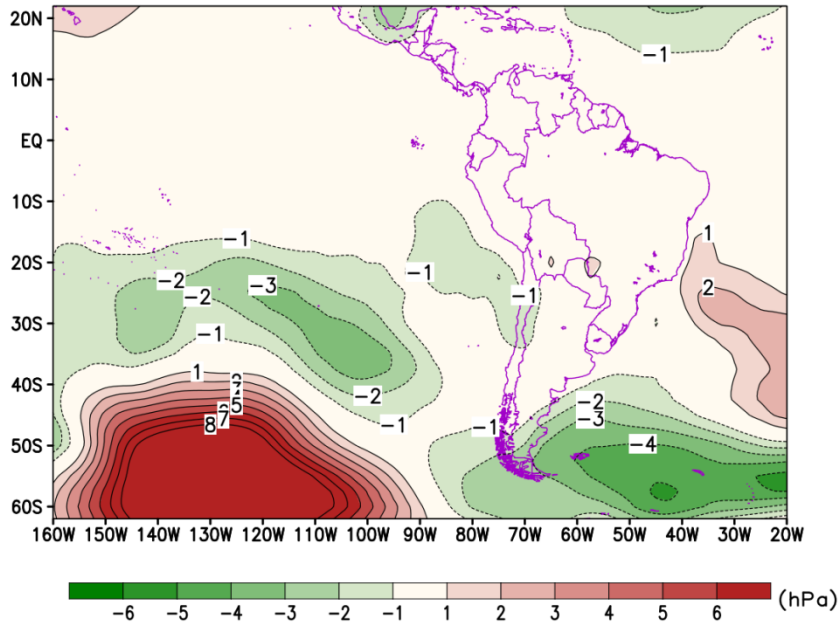
PRESION A NIVEL DEL MAR – 2017 FEBRERO



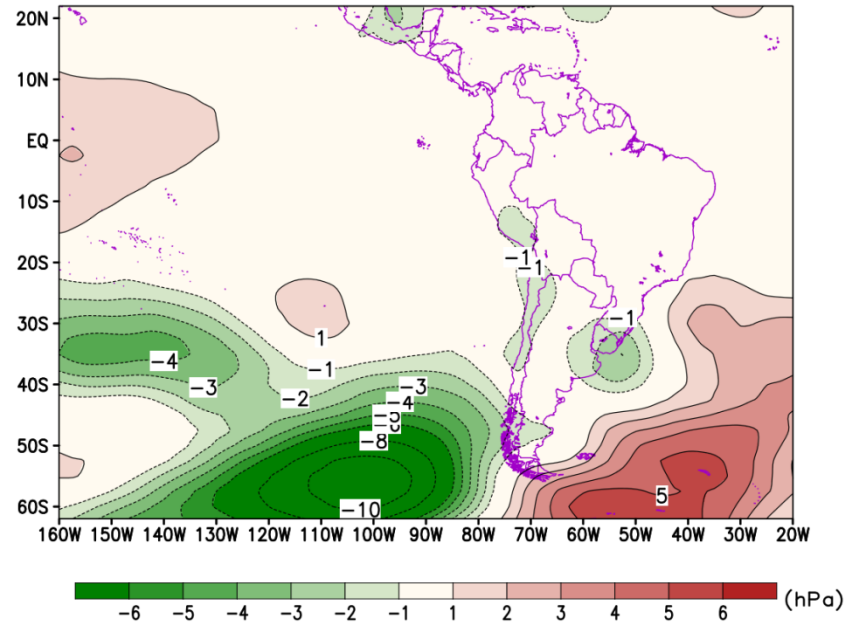
CLIMATOLOGIA DE LA PRESION A NIVEL DEL MAR - FEBRERO



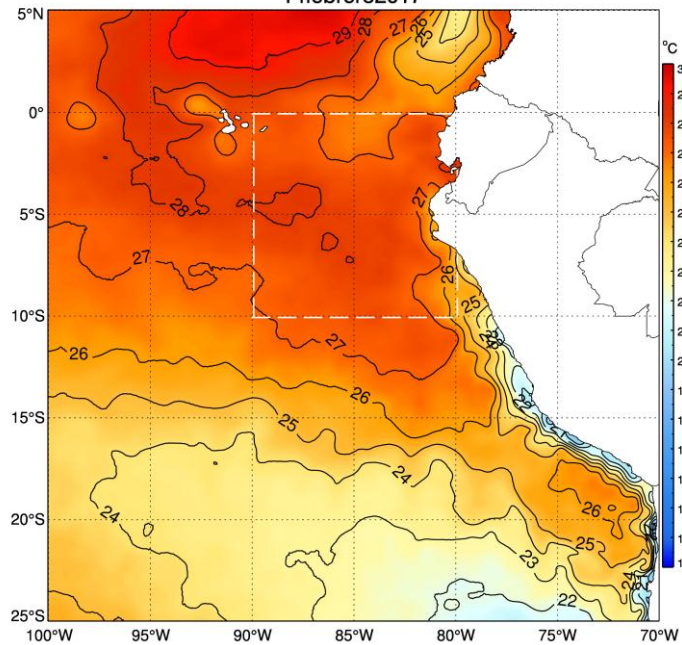
ANOMALIA DE LA PRESION A NIVEL DEL MAR - 2017 ENERO



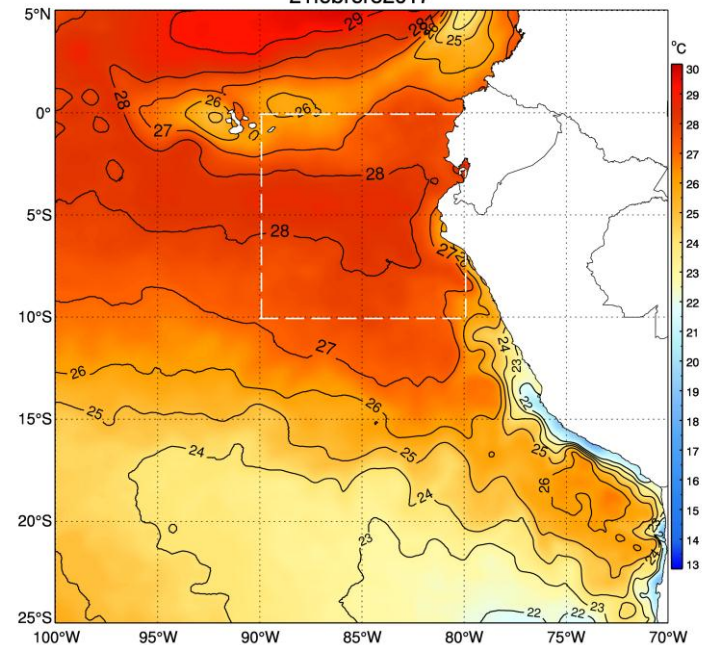
ANOMALIA DE LA PRESION A NIVEL DEL MAR - 2017 FEBRERO



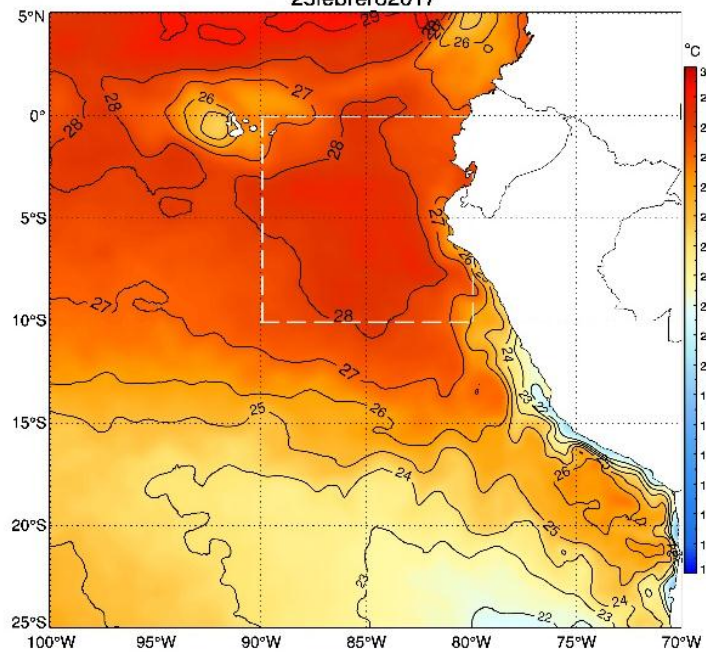
Temperatura Superficial del Mar
14febrero2017



Temperatura Superficial del Mar
21febrero2017

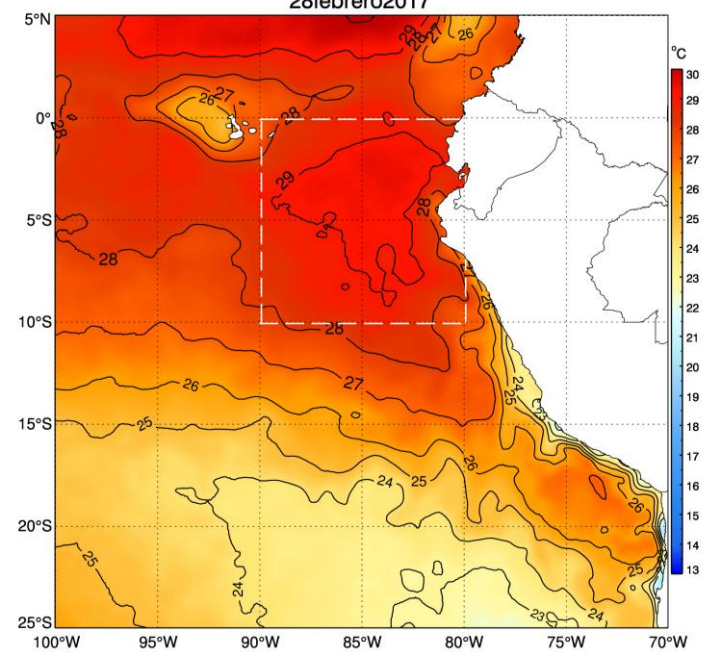


25febrero2017



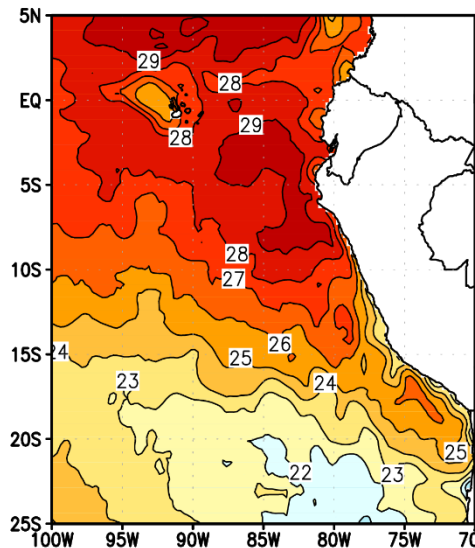
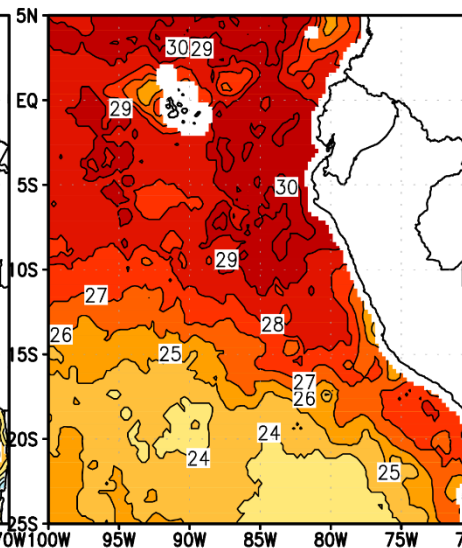
Fuente: OSTIA

28febrero2017

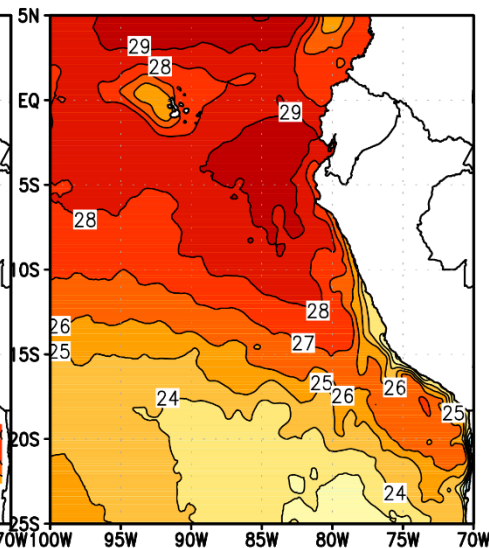
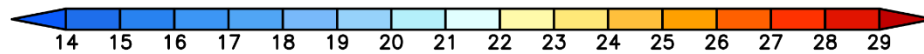


Fuente: OSTIA

NOAA Hires OISST

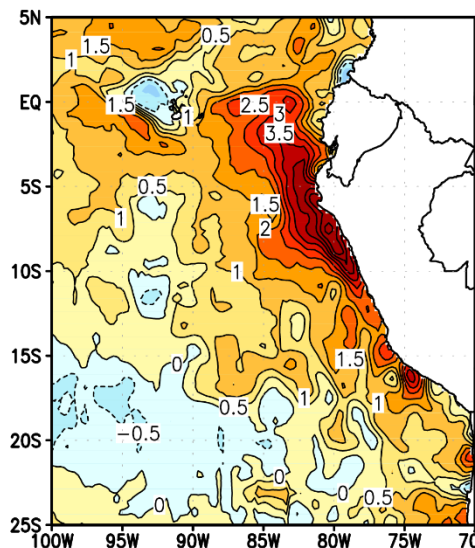
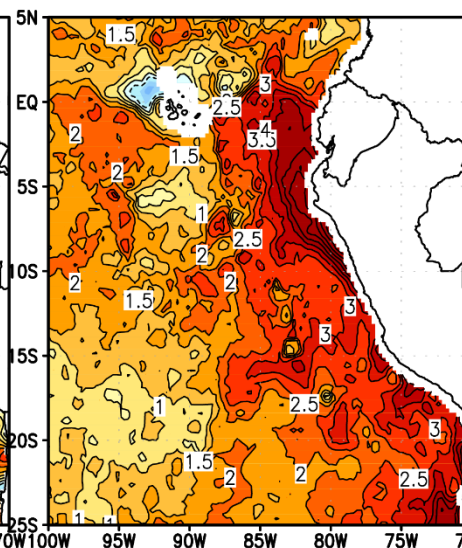
Temperatura superficial del Mar
RSS Microonda(MW)

OSTIA

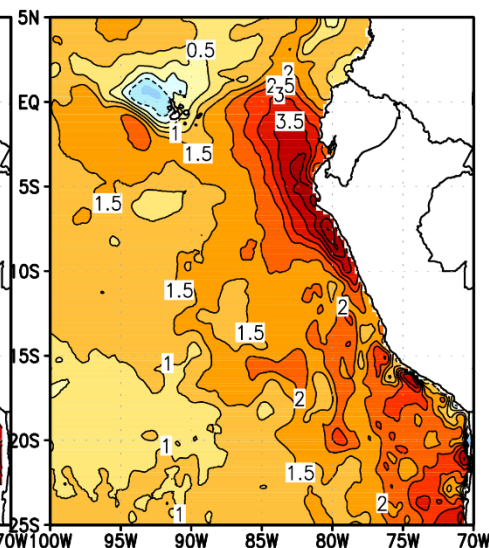
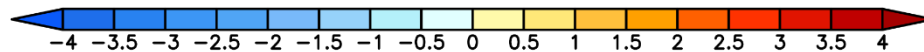


28FEB2017

NOAA Hires OISST

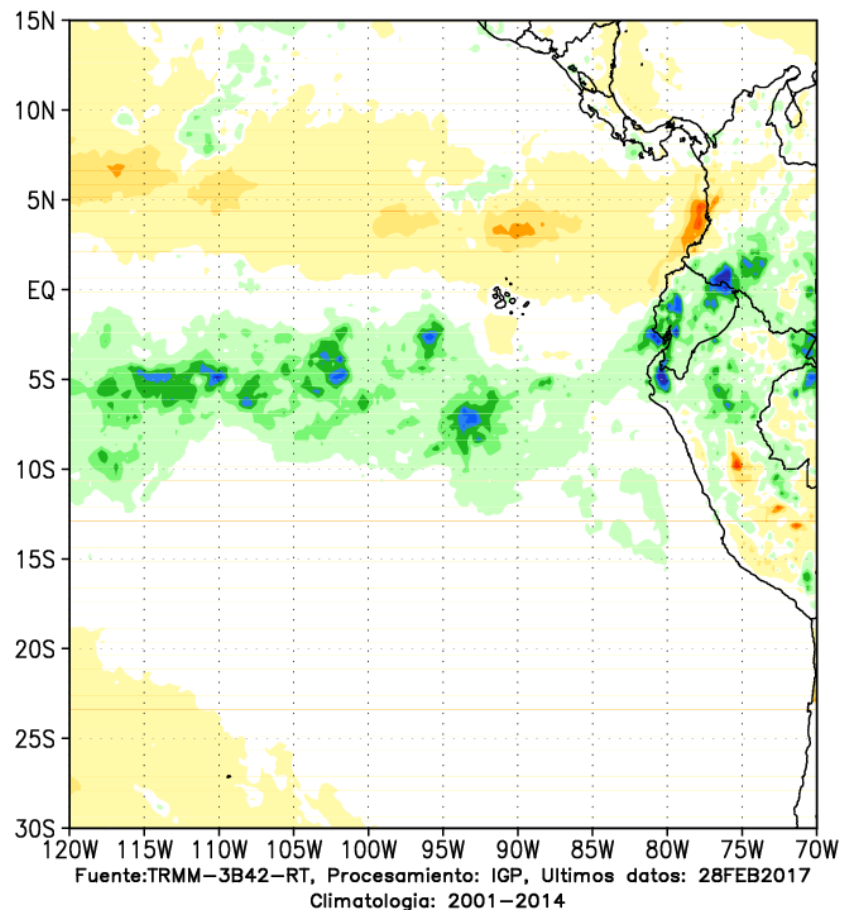
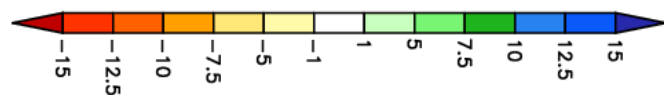
Anomalia de TSM
RSS Microonda(MW)

OSTIA

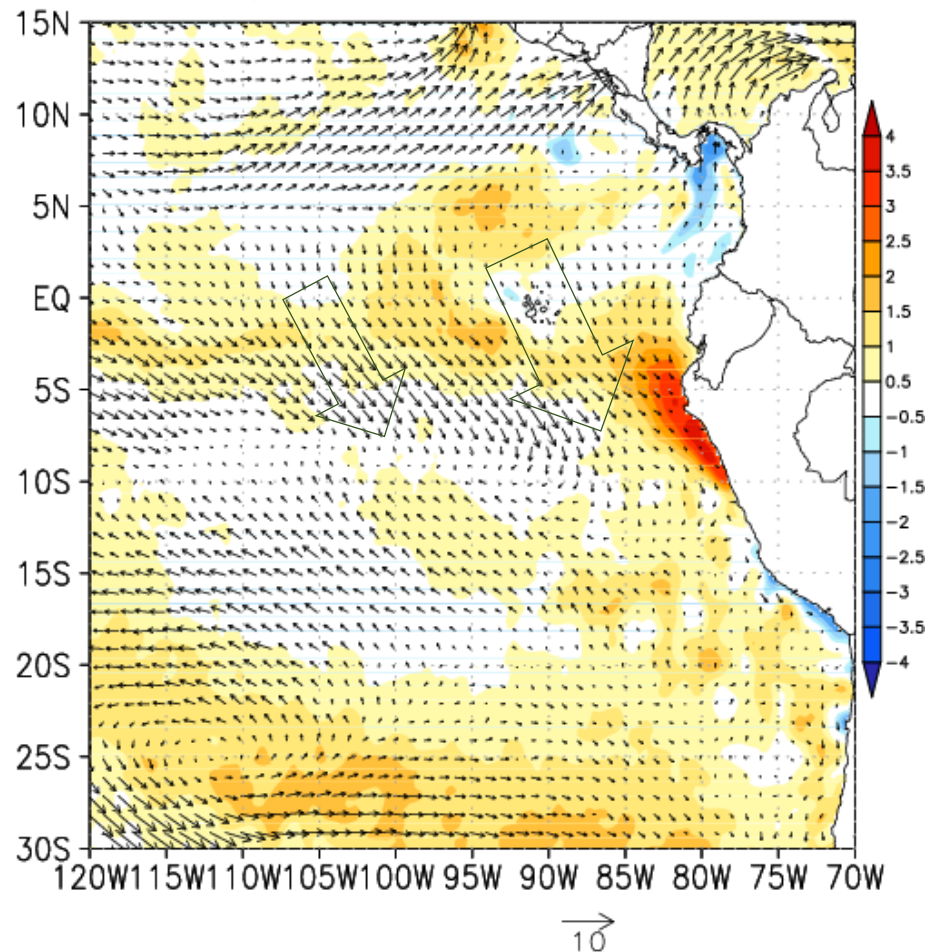


28FEB2017

Anomalia de precipitación (mm/día)
últimos 15 días



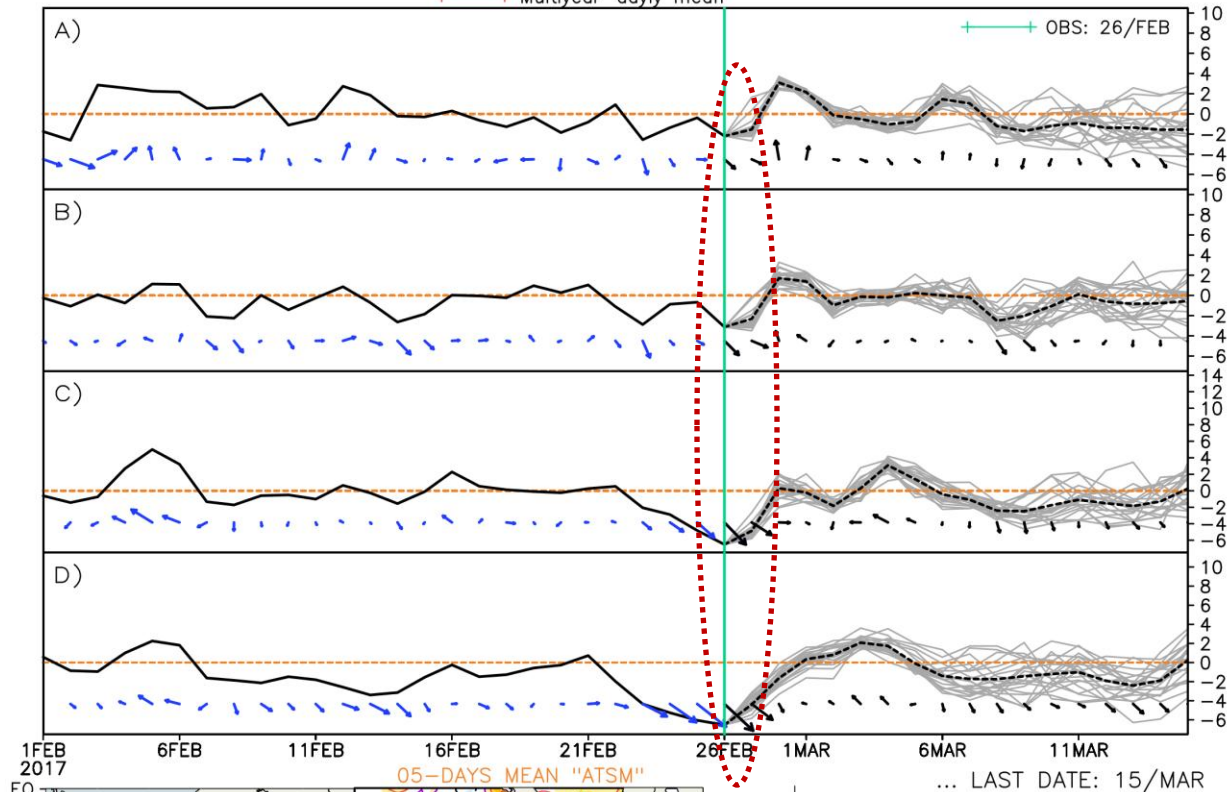
Anomalia de temperatura superficial del mar (C)
Anomalia del esfuerzo de viento ($N \cdot m^{-2} \cdot 10^{-2}$)
promedio de los últimos 15 días



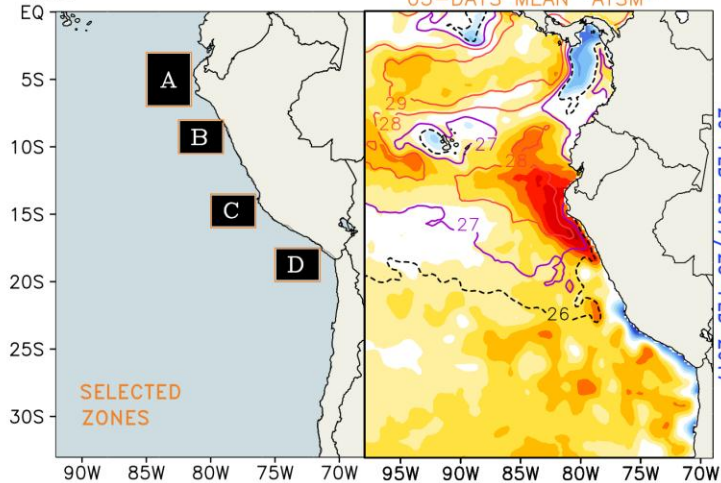
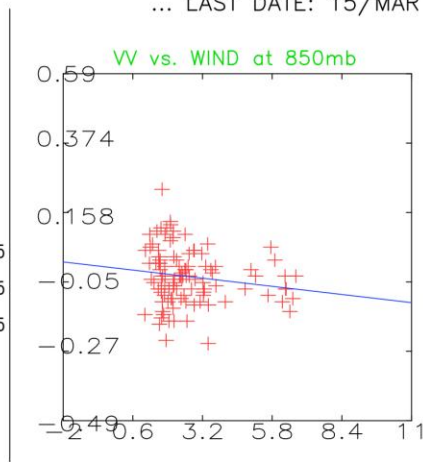
14 ene-12 feb 2017

VELOCIDAD DEL VIENTO (m/s) EN EL NIVEL: 850(mb)

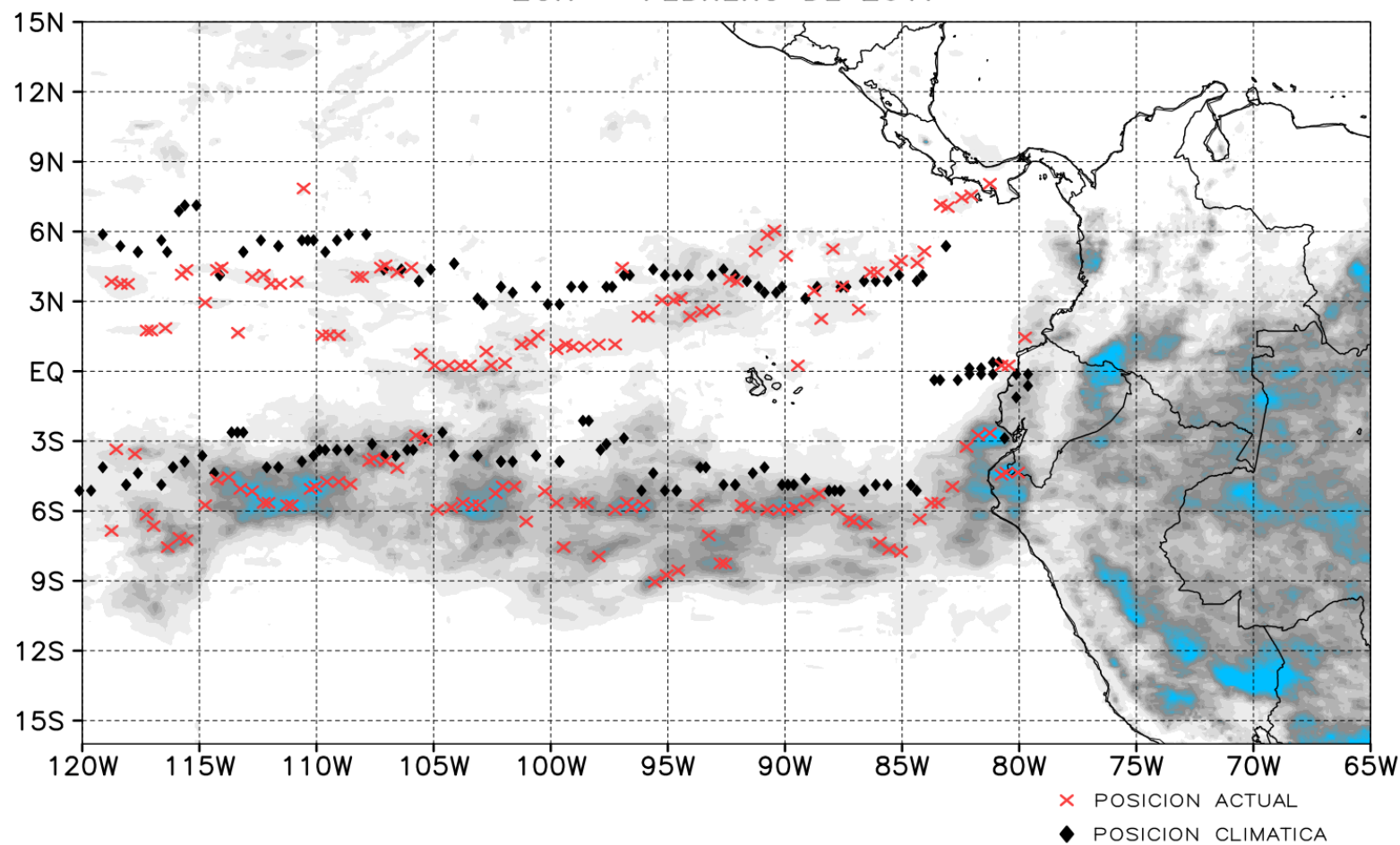
- SENAMHI DMA/SPC —
- GFS daily analysis
- Forecast ensemble mean
- Individual ensemble members
- Multiyear—daily mean



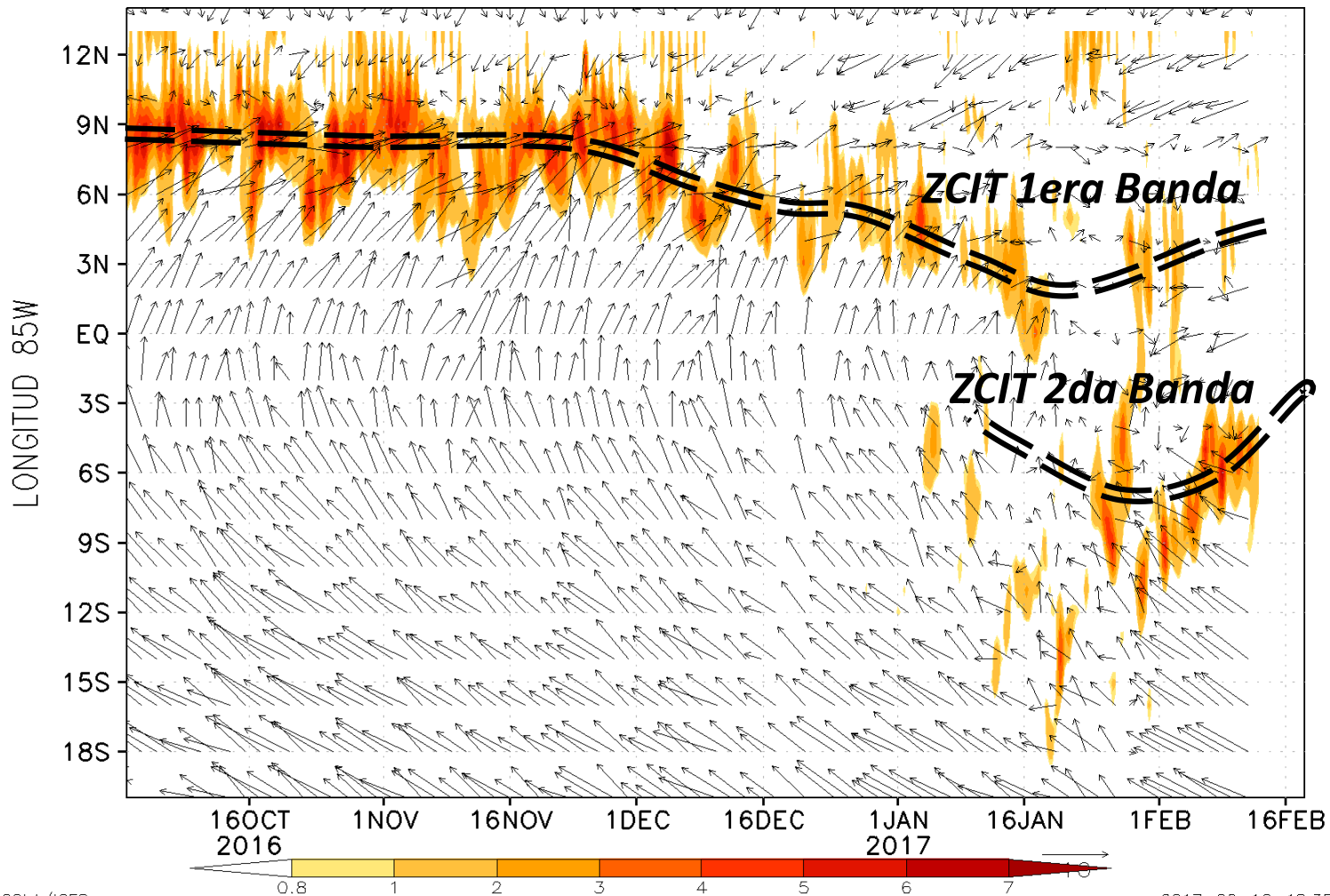
Flujos de vientos del norte a 850HPa hacia fines del mes.



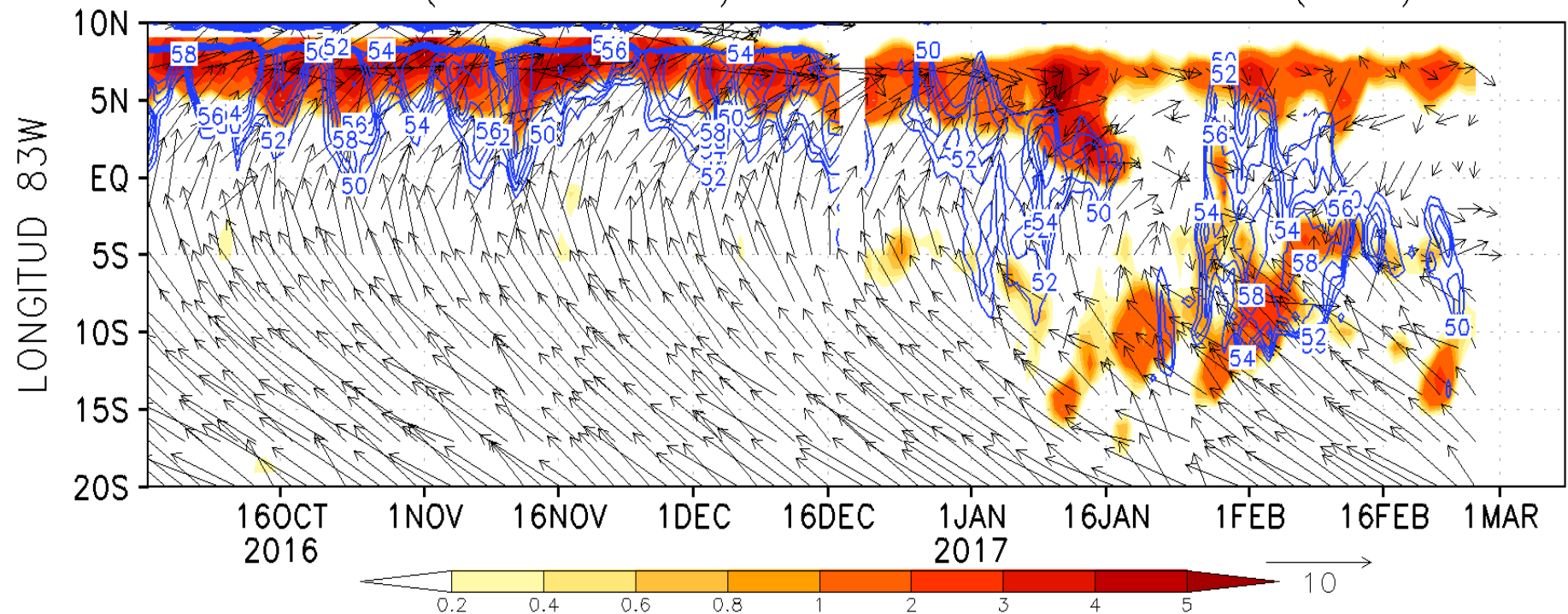
ZCIT – FEBRERO DE 2017



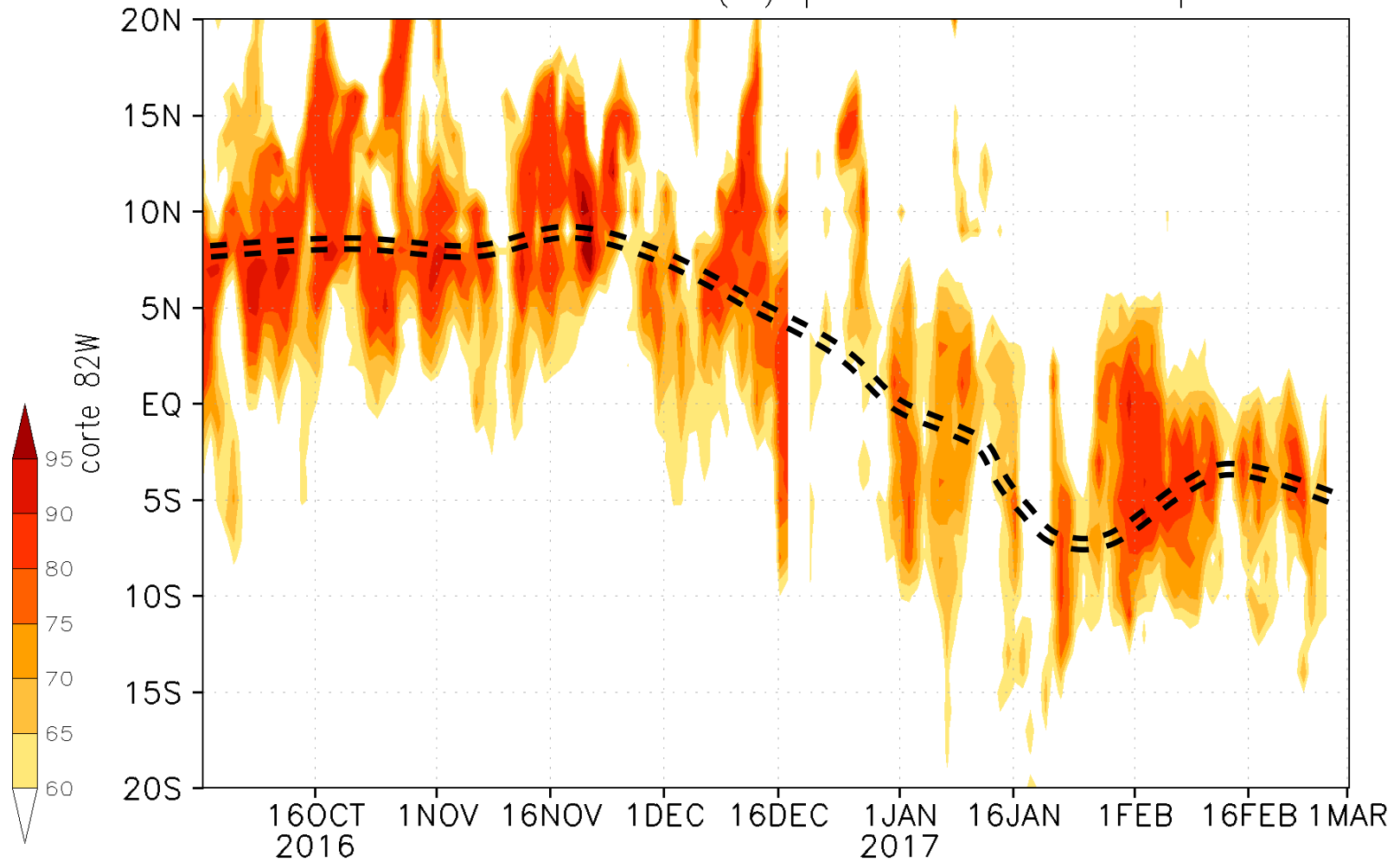
ZONA DE CONVERGENCIA INTERTROPICAL



ZCIT (2da. BANDA) – AGUA PRECIPITABLE (mm)

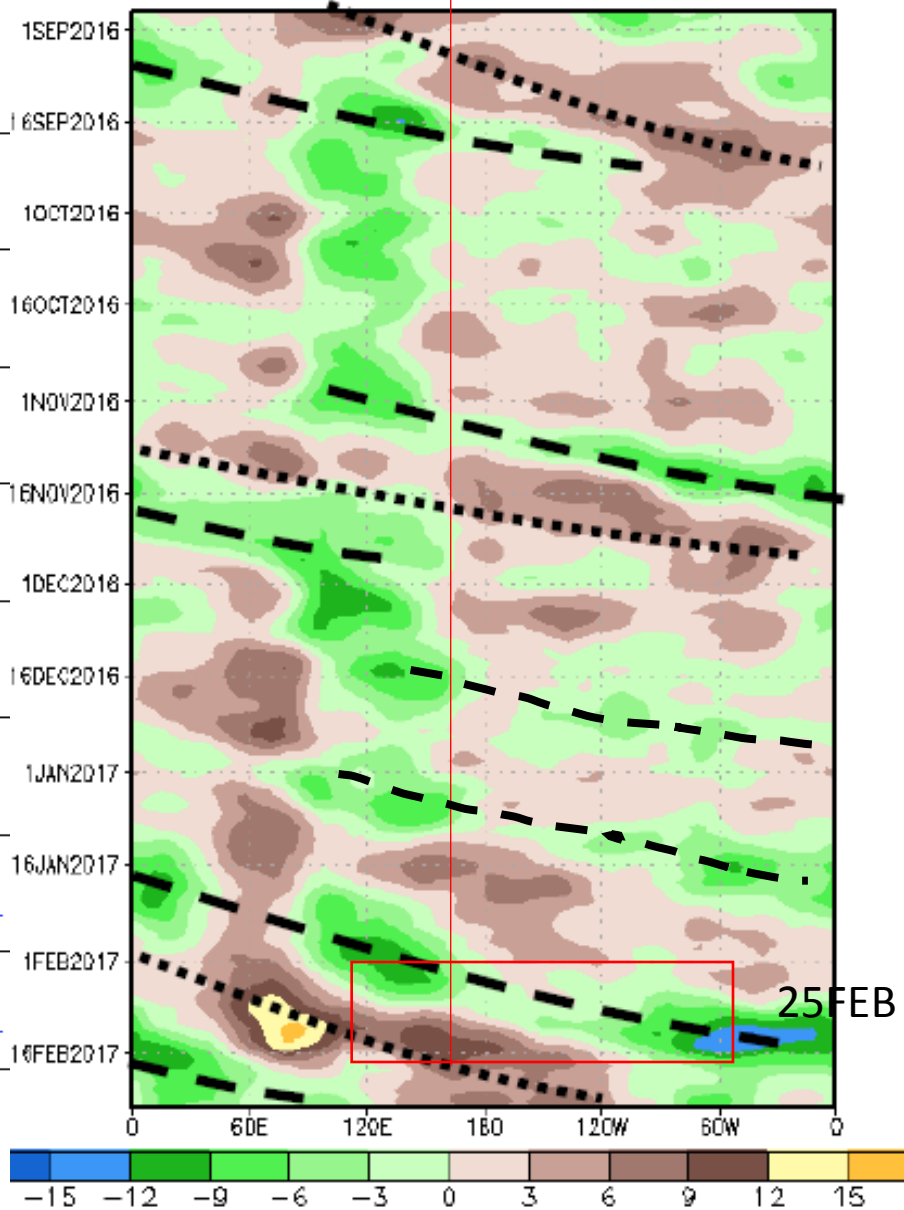


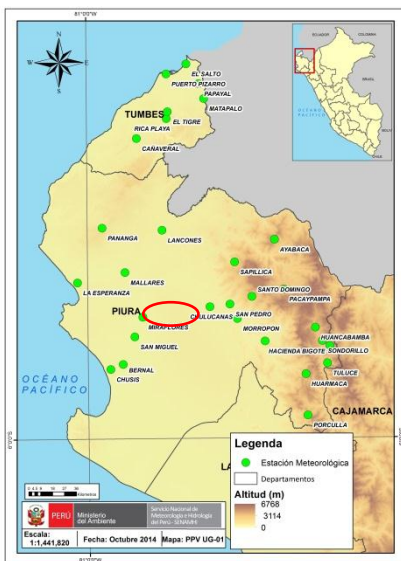
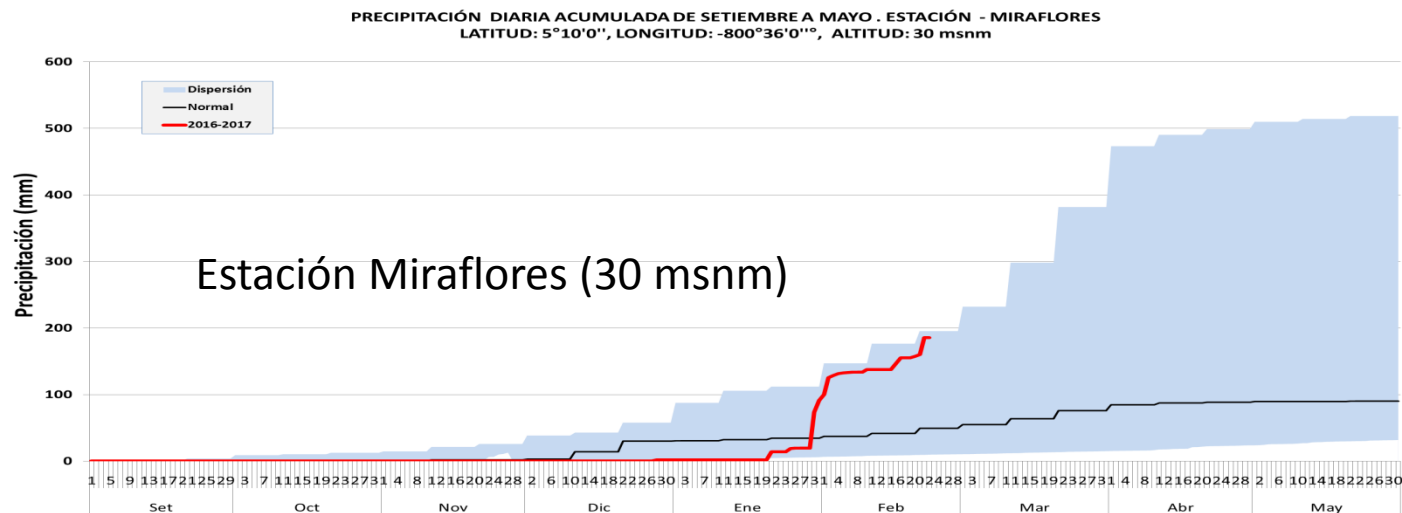
Humedad Relativa (%) prom. 1000–300hpa



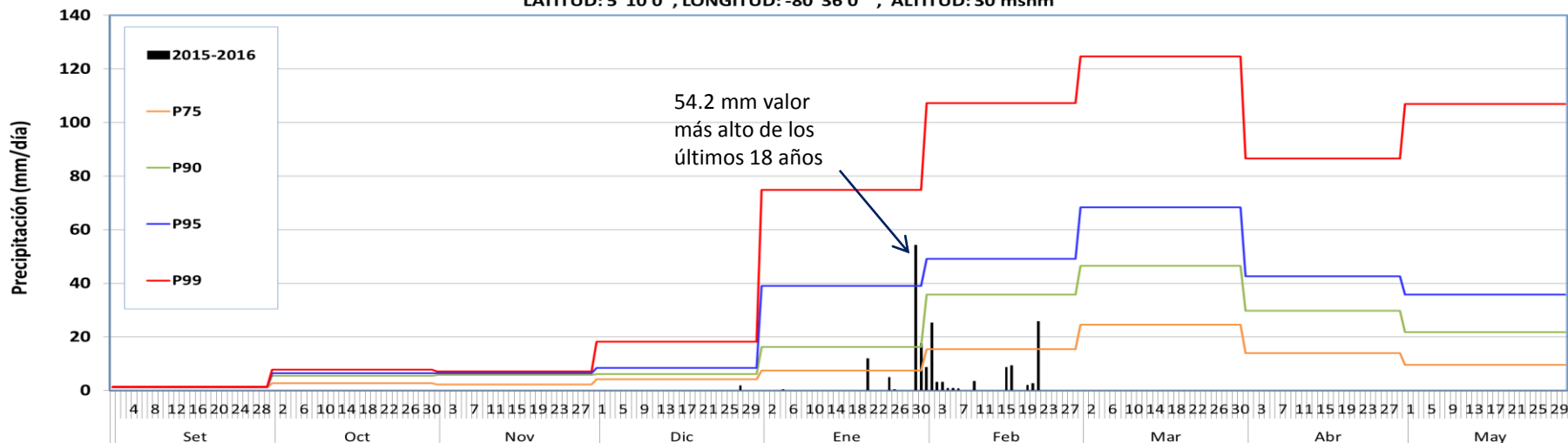
200-hPa Velocity Potential Anomaly: 5N-5S

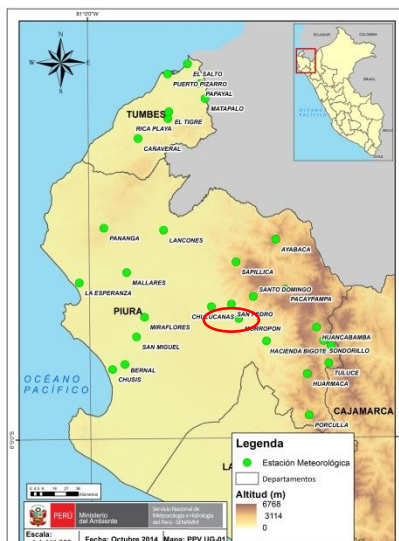
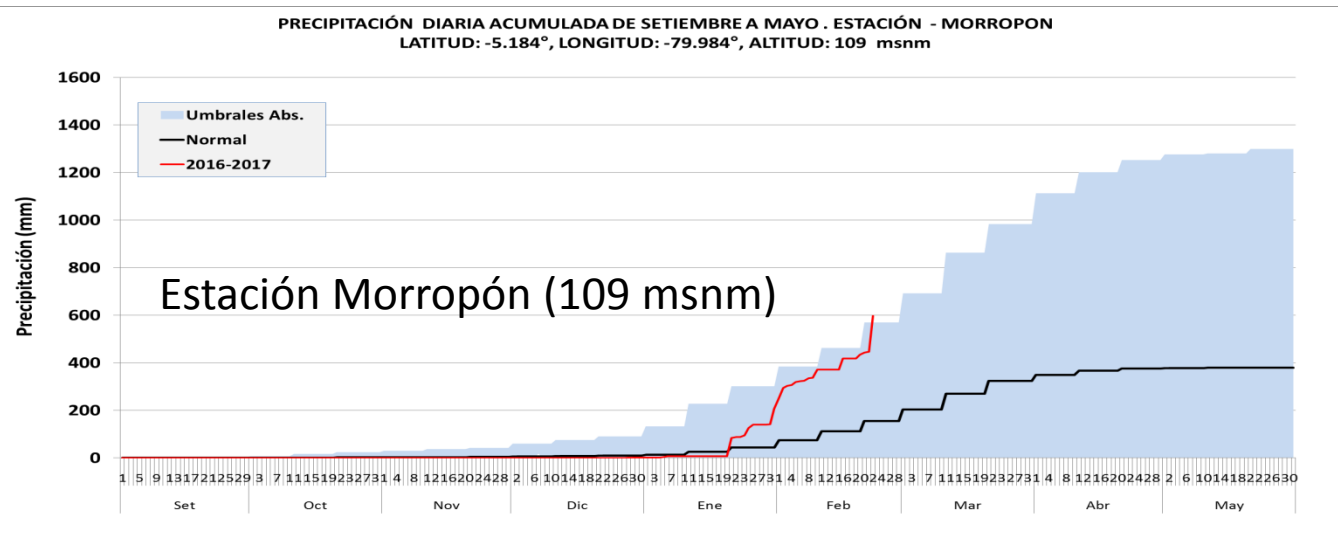
5-day Running Mean



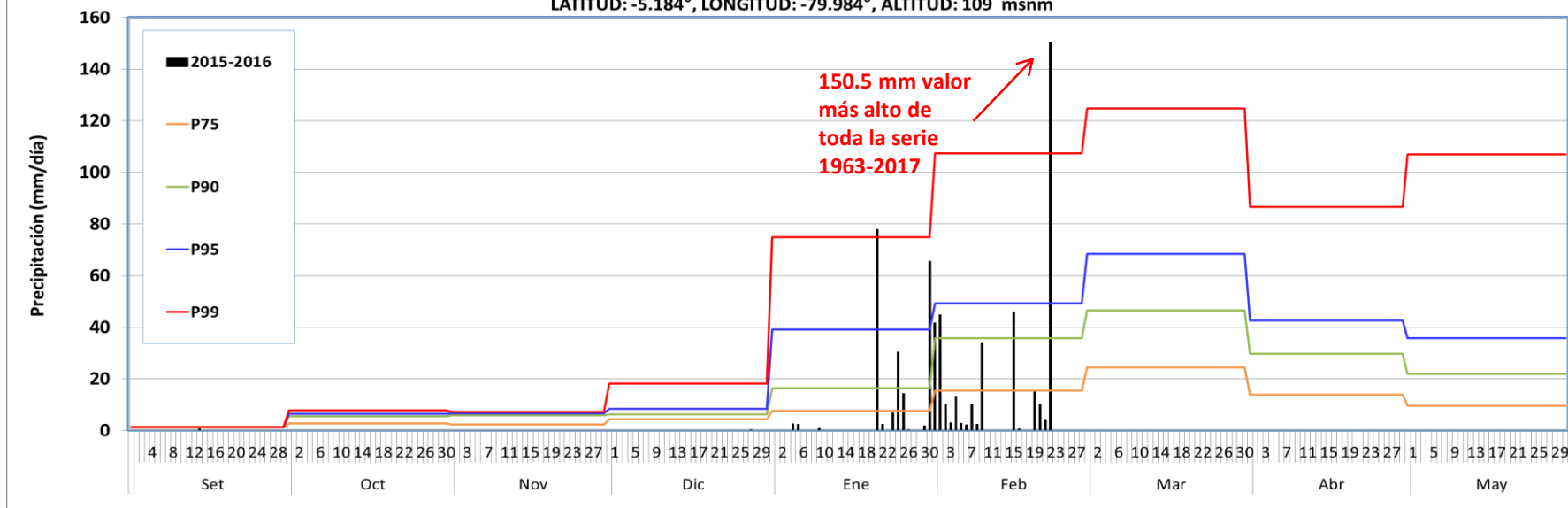


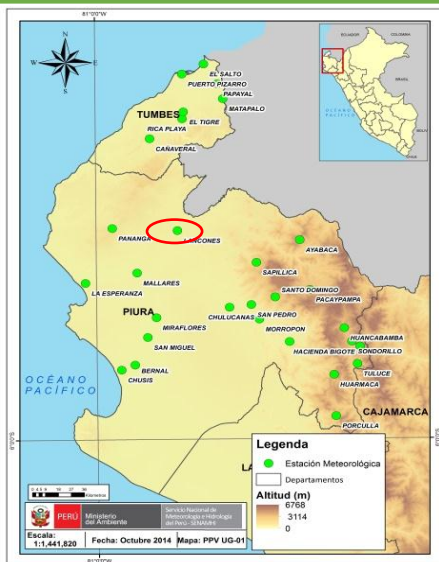
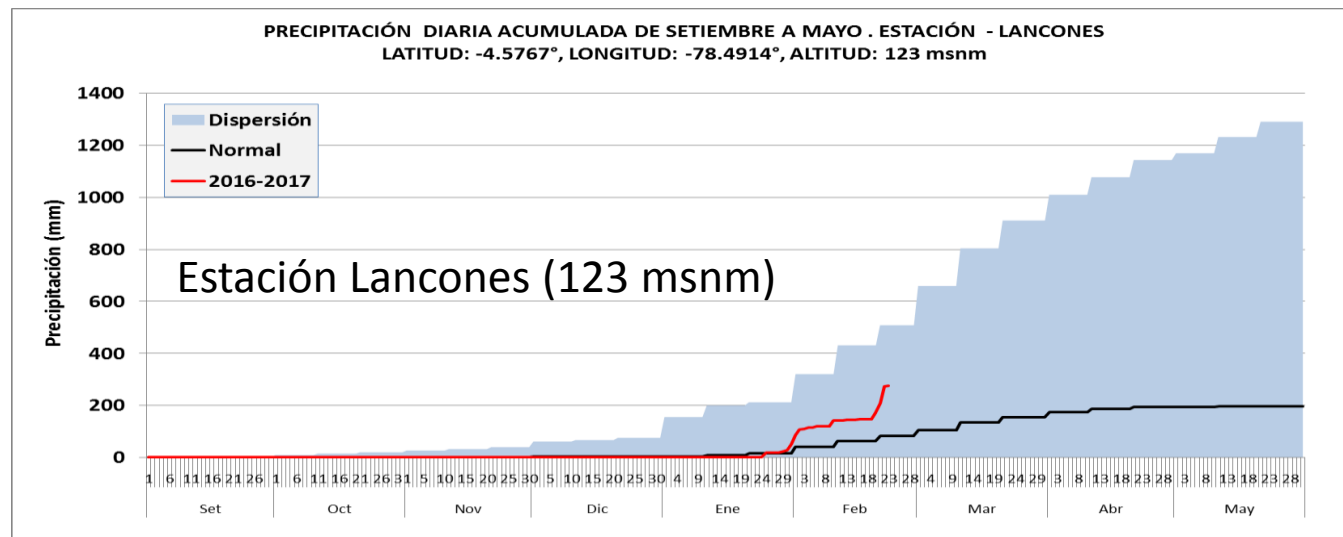
PRECIPITACIÓN DIARIA ACUMULADA DE SETIEMBRE A MAYO . ESTACIÓN - MIRAFLORES
LATITUD: 5°10'0", LONGITUD: -80°36'0", ALTITUD: 30 msnm



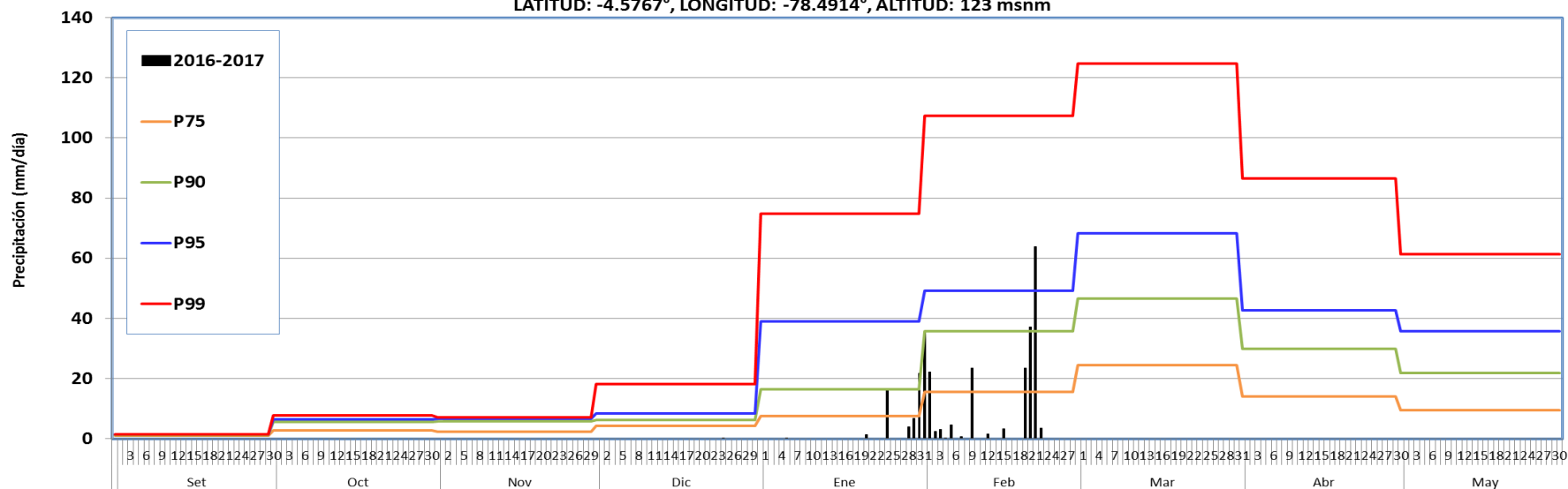


PRECIPITACIÓN DIARIA ACUMULADA DE SETIEMBRE A MAYO . ESTACIÓN - MORROPON
LATITUD: -5.184°, LONGITUD: -79.984°, ALTITUD: 109 msnm





PRECIPITACIÓN DIARIA ACUMULADA DE SETIEMBRE A MAYO . ESTACIÓN - LANCONES
LATITUD: -4.5767°, LONGITUD: -78.4914°, ALTITUD: 123 msnm



Lluvia(costa hasta 1000m)–Temperatura Superficial del mar hasta 330Km de la costa

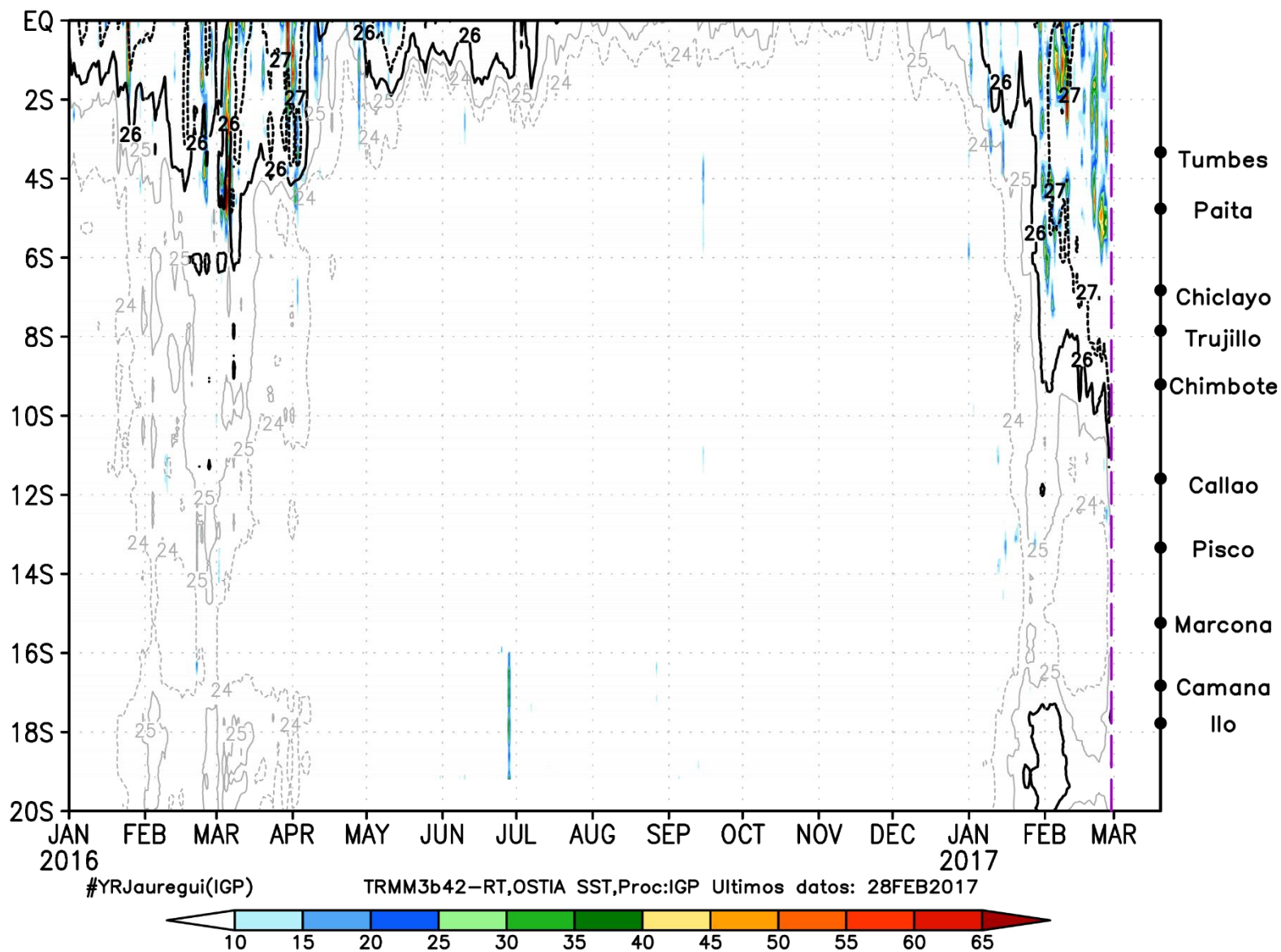
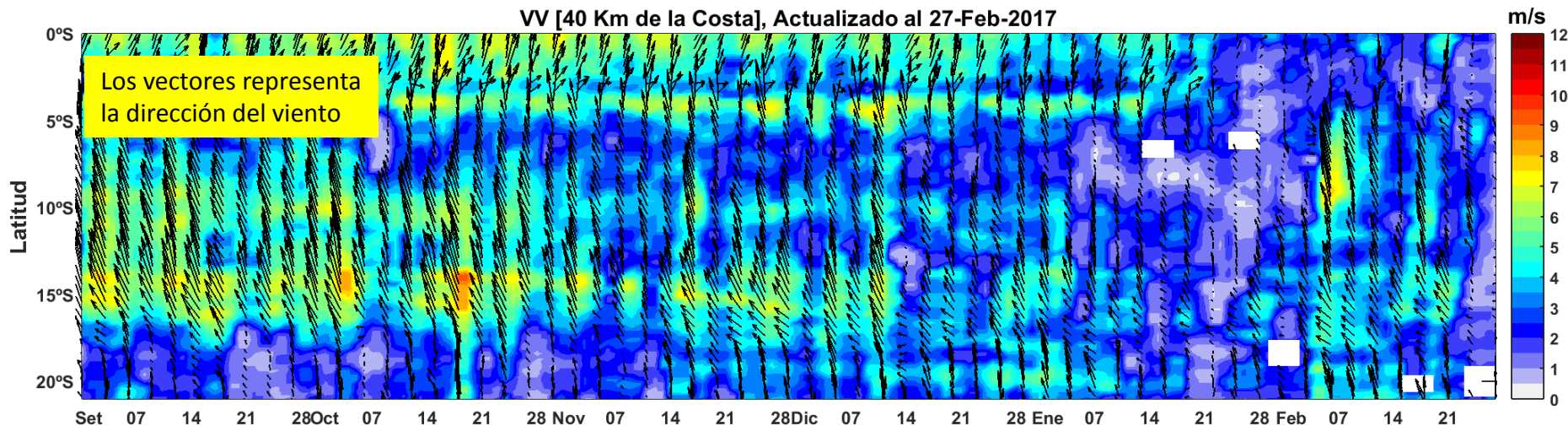


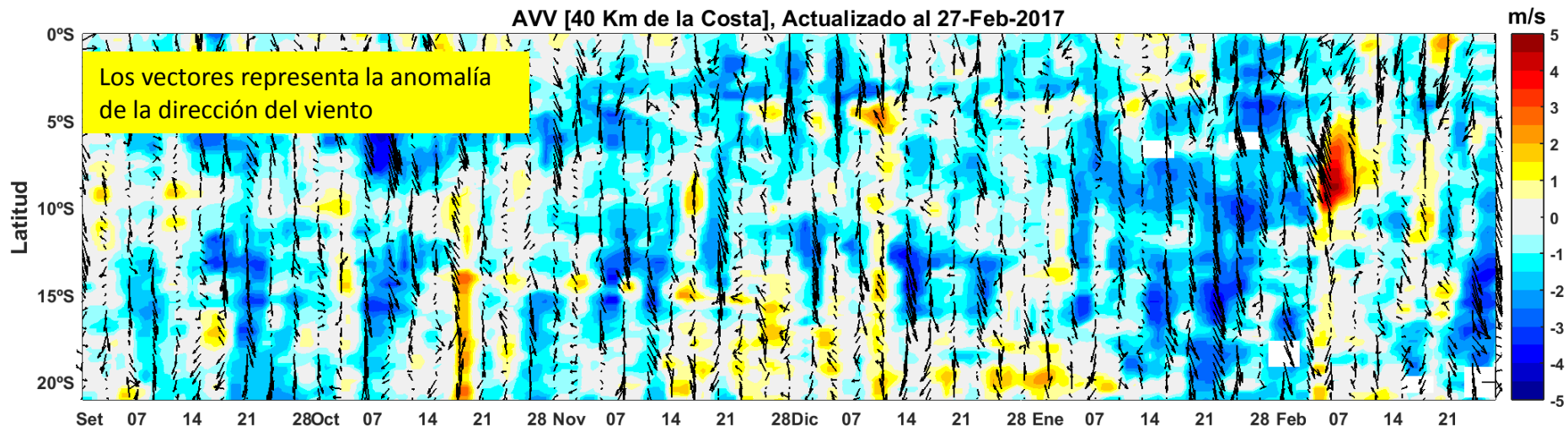
Diagrama Hovmöller de la Velocidad y Anomalías del Viento Satelital a 40 km de la costa (últimos 180 días)



VV [40 Km de la Costa], Actualizado al 27-Feb-2017

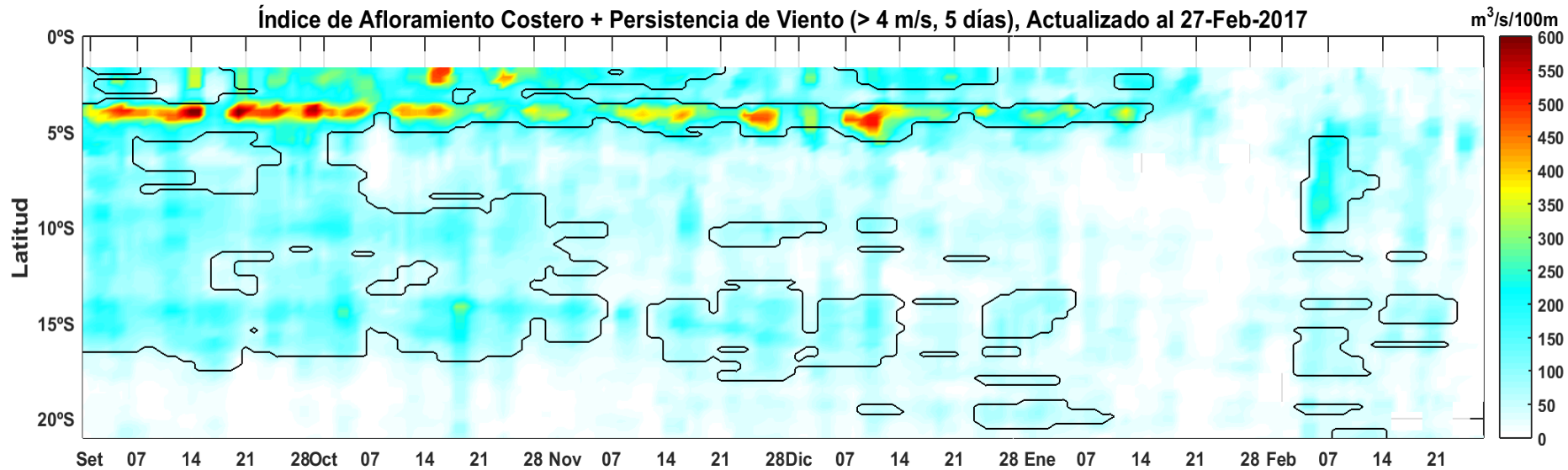


AVV [40 Km de la Costa], Actualizado al 27-Feb-2017



Viento Satelital (40 Km frente a la costa del Perú): a) Velocidad del viento (m/s), b) Anomalía de la velocidad del viento (m/s). Fuente: Satélite ASCAT, Procesamiento: Laboratorio de Hidro-Física Marina, IMARPE

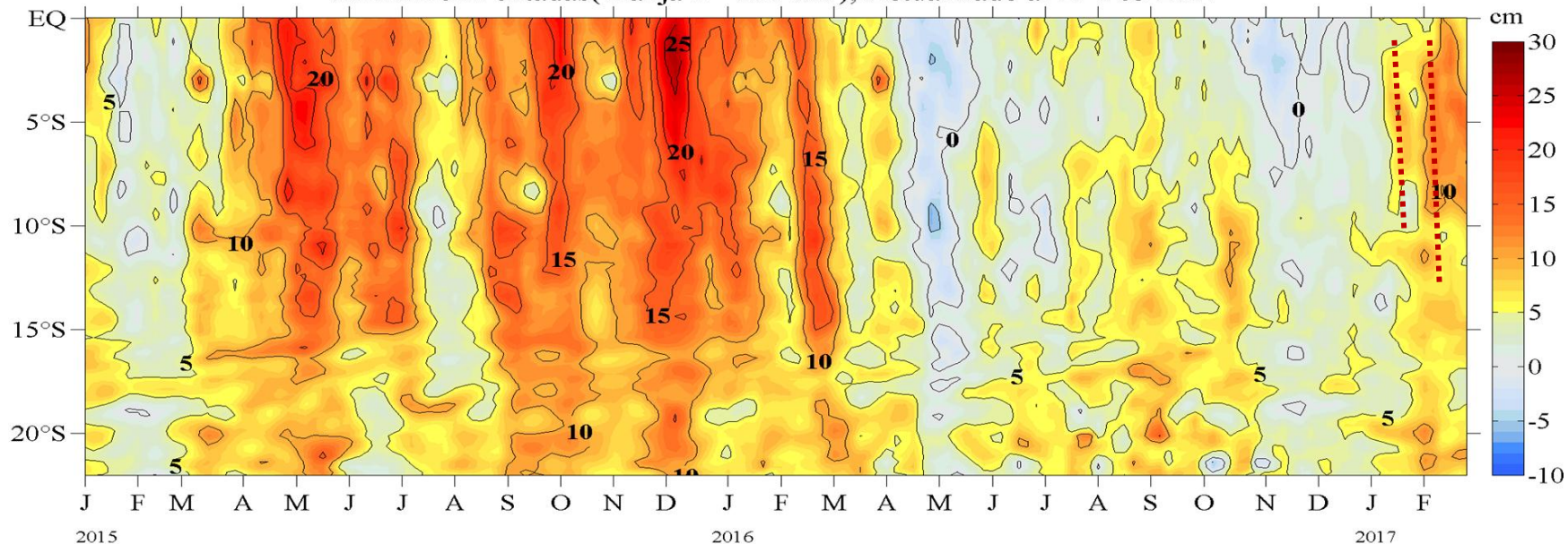
Diagrama de Hovmöller del índice de Afloramiento Costero (últimos 180 días)



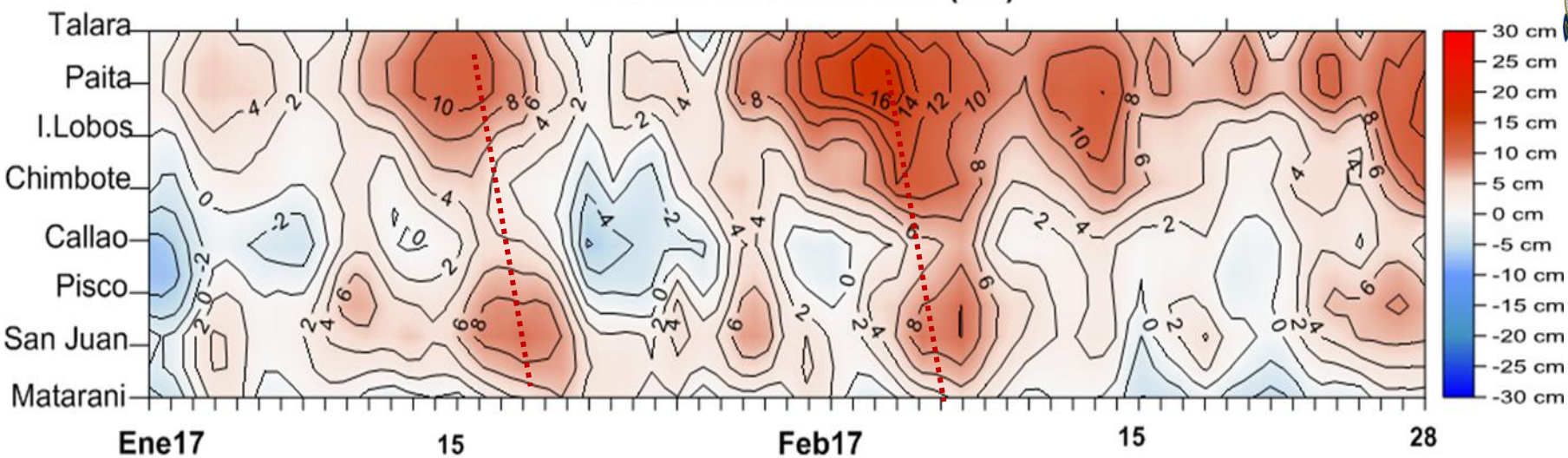
Fuente: Satélite ASCAT, Procesamiento: Laboratorio de Hidro-Física Marina, IMARPE

Anomalía del nivel medio del mar (datos satelitales)

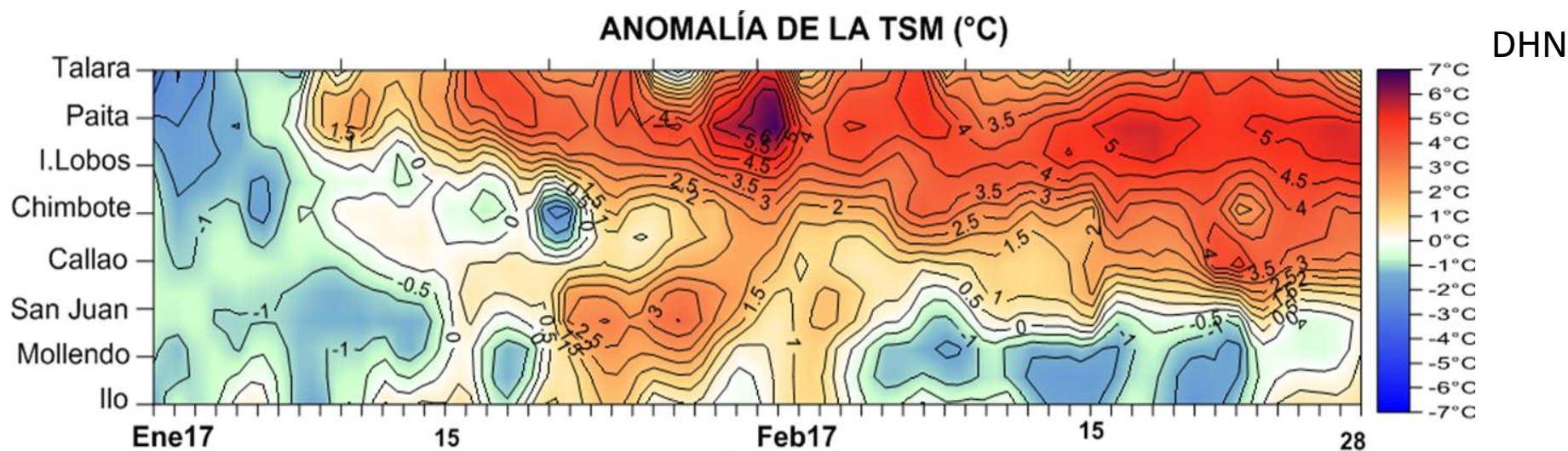
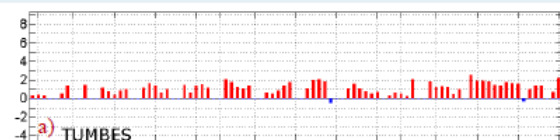
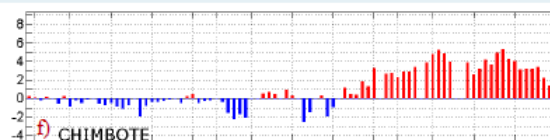
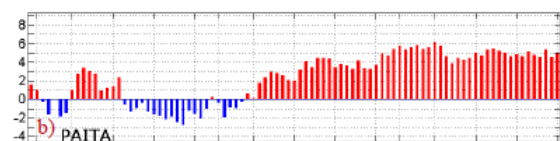
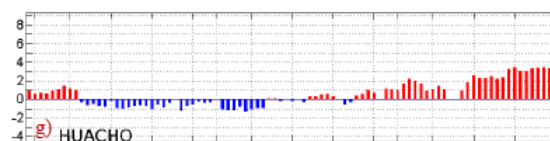
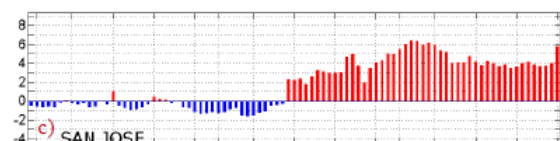
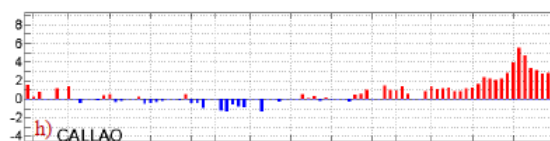
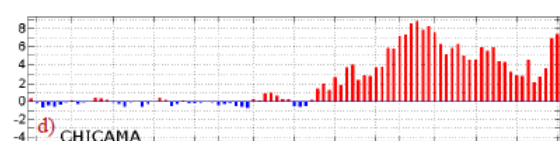
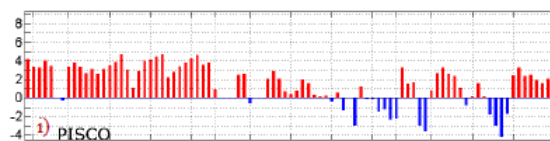
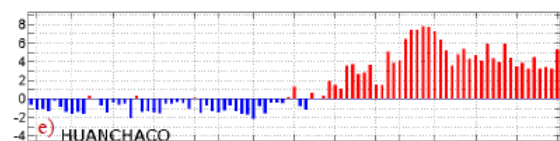
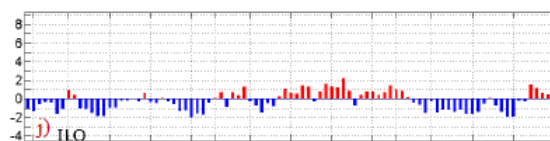
ANMM en Pentadas(franja 0 - 100 km), Actualizado al 27-Feb-2017



ANOMALÍA DEL NMM (cm)



Anomalías de la temperatura superficial del mar en el litoral



28.02.2017

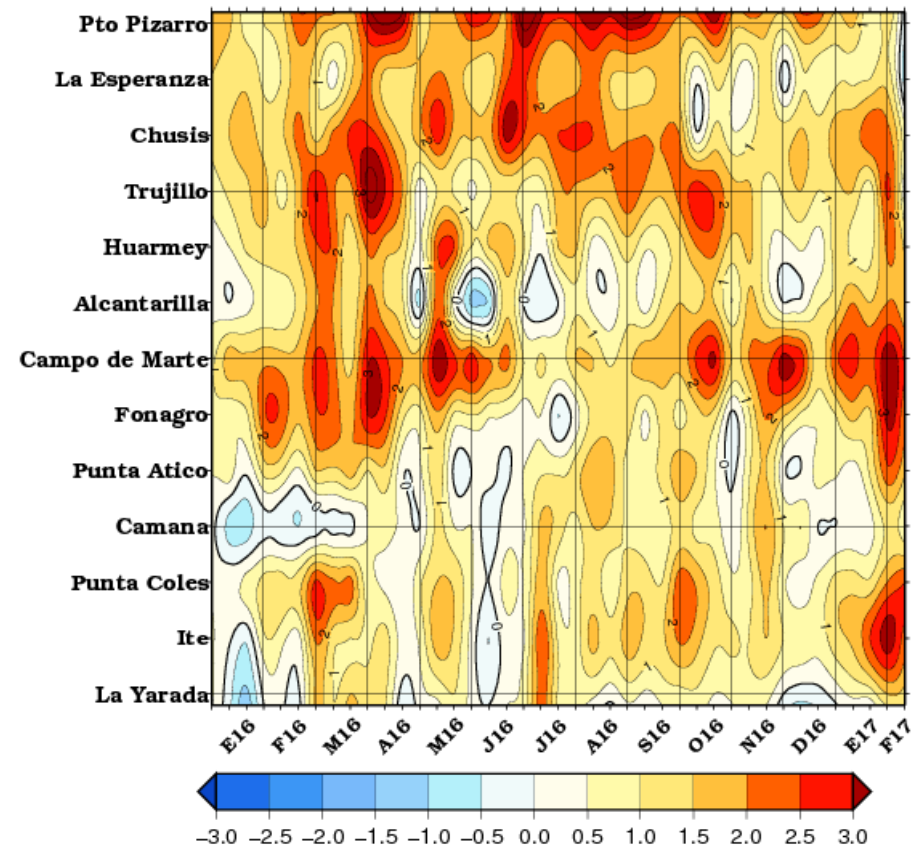
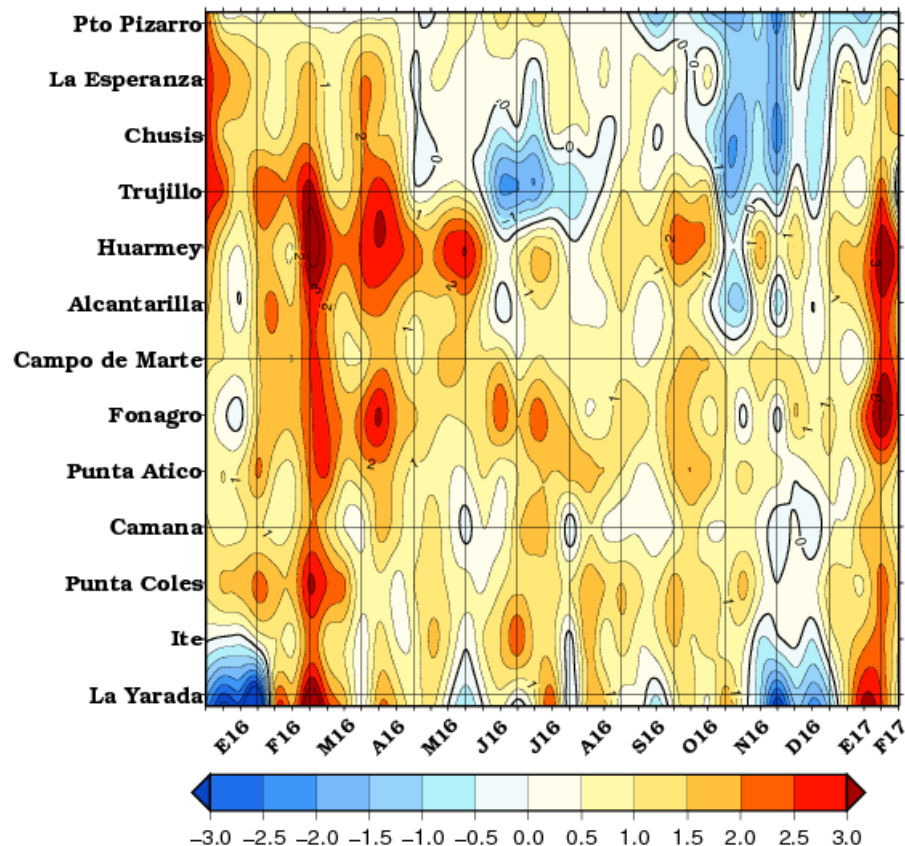
Estación	Climatología	T, °C	ΔT, °C
Tumbes	1985-2010	30,20	2,19
Paíta	1981-2010	28,10	4,89
San José	1991-2010	28,60	5,73
Chicama	1981-2010	26,47	7,38
Huanchaco	2008-2016	24,35	5,32
Chimbote	1981-2010	25,43	3,07
Huacho	1989-2010	21,17	3,17
Callao	1981-2010	19,93	2,59
Pisco	1982-2010	26,07	3,01
Atico	2015-2016	17,00	-
Matarani	2013-2016	17,47	-
Ilo	1981-2010	18,43	1,30

Imarpe

TEMPERATURAS EXTREMAS DEL AIRE

Anomalías de la
Temperatura Máxima

Anomalía de la
Temperatura Mínima



TEMPERATURAS EXTREMAS DEL AIRE

Figura 1

Distribución de las estaciones meteorológicas en el litoral peruano

ANOMALIAS PROMEDIO TEMPERATURA MÁXIMA

Estación	DICIEMBRE 2016	ENE	*FEB
Costa Norte	1.4	1.5	-0.1
Costa Centro	1.2	1.9	1.8
Costa Sur	0.5	1.5	1.7

ANOMALIAS PROMEDIO TEMPERATURA MÍNIMA

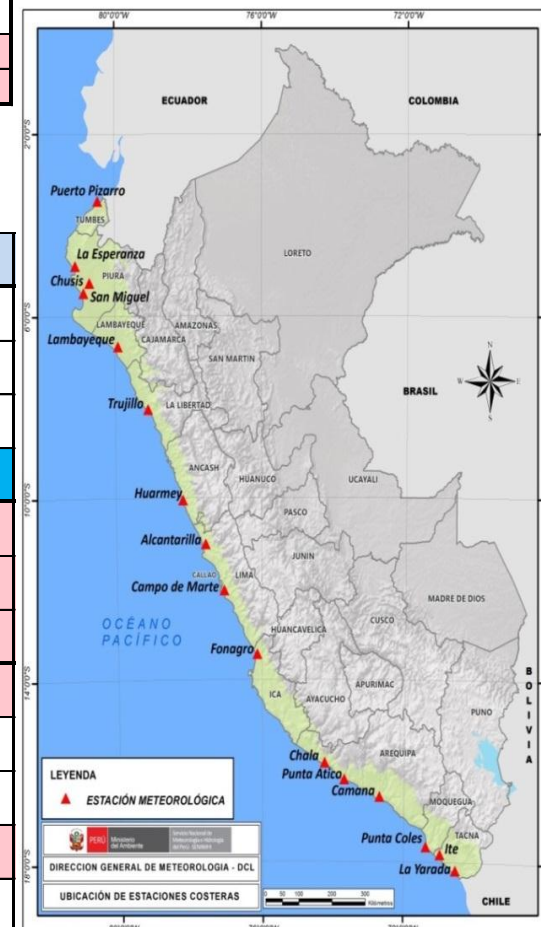
Estación	DICIEMBRE 2016	ENE	*FEB
Costa Norte	-0.2	0.8	0.3
Costa Centro	0.7	1.8	2.1
Costa Sur	0.2	1.7	1.1

DATA EXTENDIDA

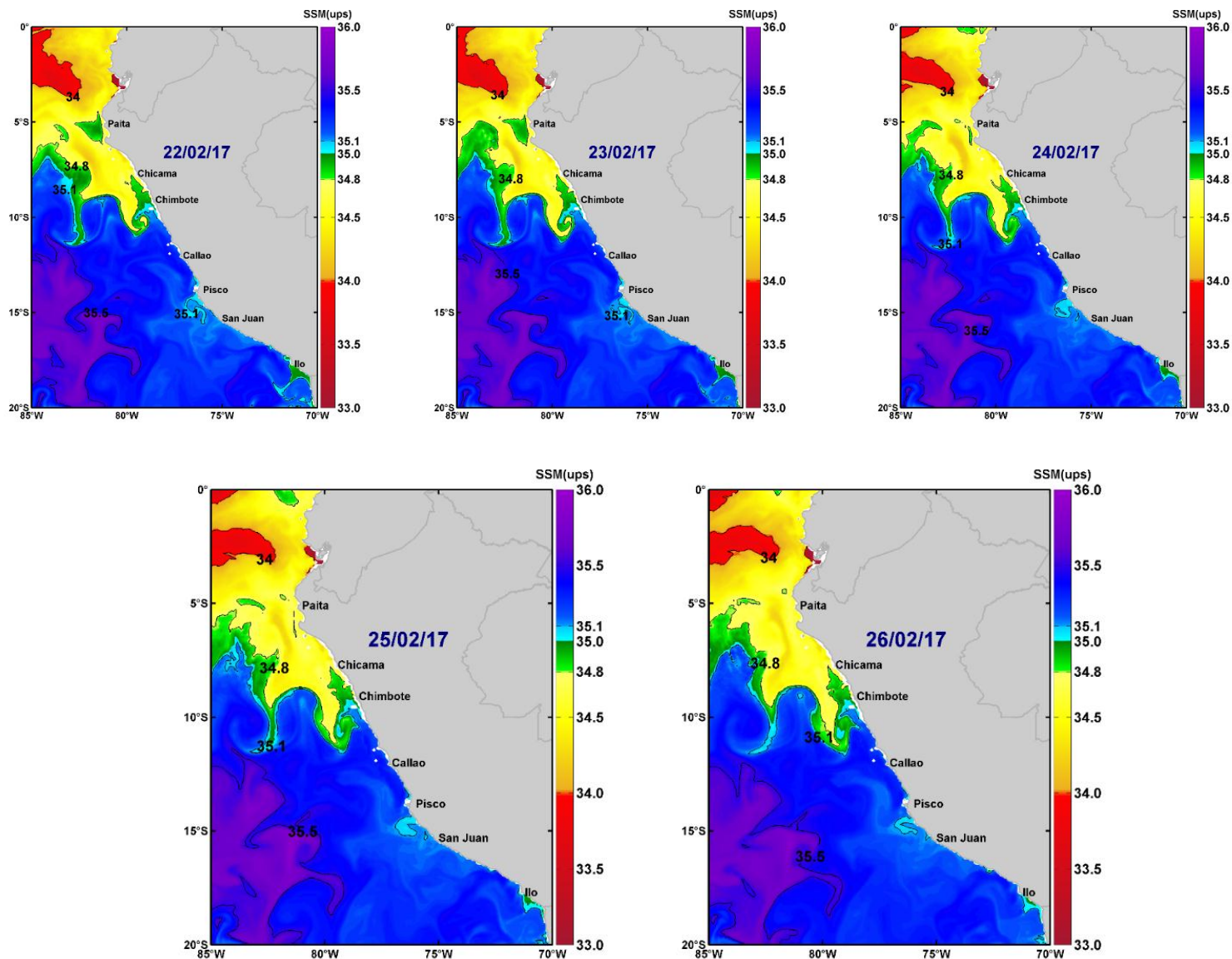
N ord	Departamento	zona	Estación	Dic_2016	ENE	*FEB
1	Tumbes	Costa Norte	Puerto Pizarro	1.8	1.1	-0.4
2	Piura		La Esperanza	0.8	1.1	-0.8
3	Piura		Chusis	1.5	2.2	0.7
6	La Libertad		Trujillo	1.3	1.6	0.1
7	Ancash	Costa Centro	Huarmey	0.7	1.2	1.4
8	Lima		Alcantarilla	0.7	1.8	1.5
9	Lima		Campo de Marte	2.1	2.8	2.4
10	Ica	Costa Sur	Fonagro	0.8	2.1	2.0
11	Arequipa		Punta Atico	0.4	1.3	1.6
12	Arequipa		Camana	0.5	0.5	0.6
13	Moquegua		Punta Coles	0.7	1.4	2.5
14	Tacna		Ite	0.9	2.5	2.2
15	Tacna		La Yarada	-0.1	1.0	1.3

DATA EXTENDIDA

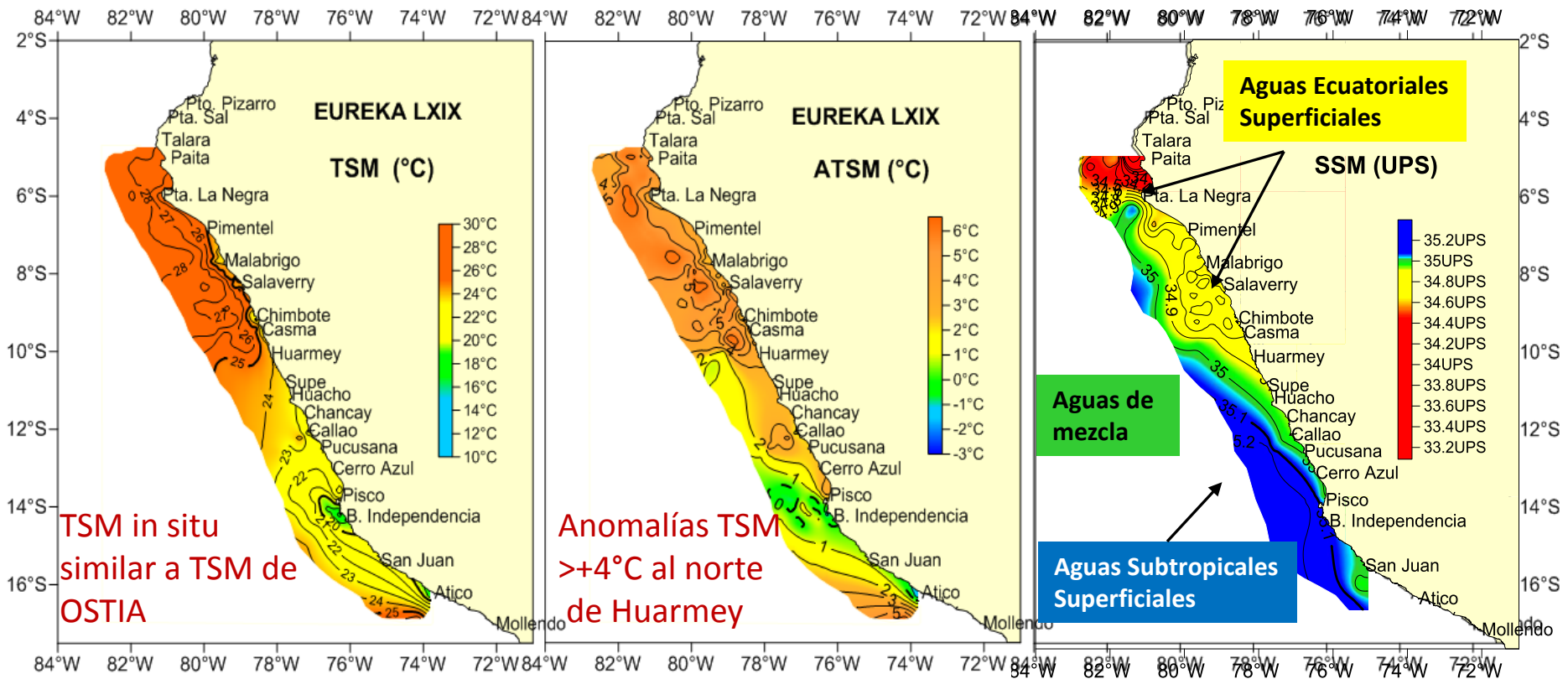
zona	Estación	Dic_2016	ENE	*FEB
Costa Norte	Puerto Pizarro	-0.2	0.5	0.5
	La Esperanza	-0.4	0.9	0.9
	Chusis	-0.4	0.8	0.8
	Trujillo	0.2	1.0	-1.0
Costa Centro	Huarmey	1.0	2.3	2.6
	Alcantarilla	0.5	1.9	1.6
	Campo de Marte	0.7	1.1	1.9
Costa Sur	Fonagro	1.2	2.3	2.3
	Punta Atico	0.5	1.0	0.9
	Camana	0.0	1.3	0.6
	Punta Coles	0.6	1.4	1.3
	Ite	0.1	1.7	1.0
	La Yarada	-1.4	2.3	0.6



MAPAS DE SALINIDAD SUPERFICIAL DEL MAR DEL 22 AL 26 DE FEBRERO DE 2017 (HYCOM-NCODA)

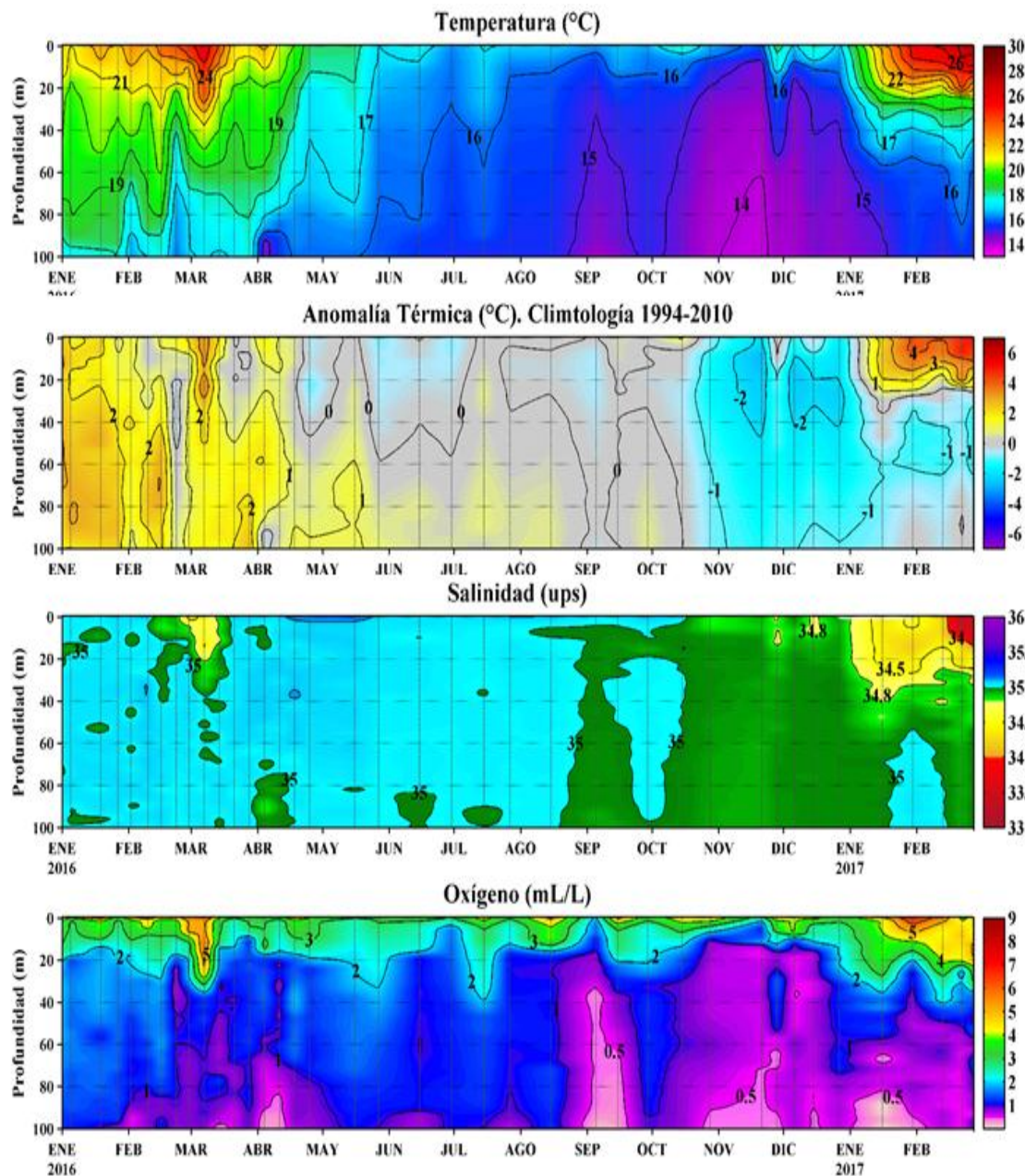
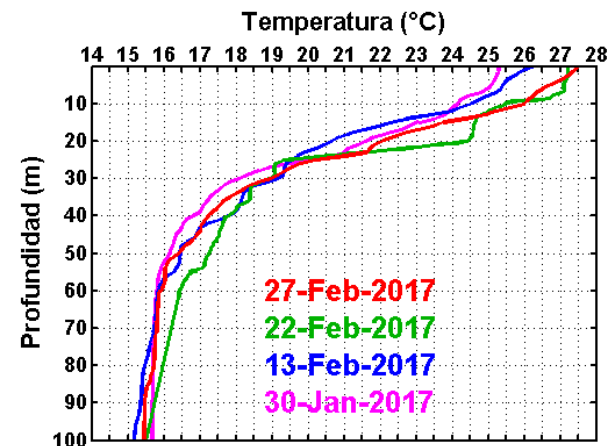
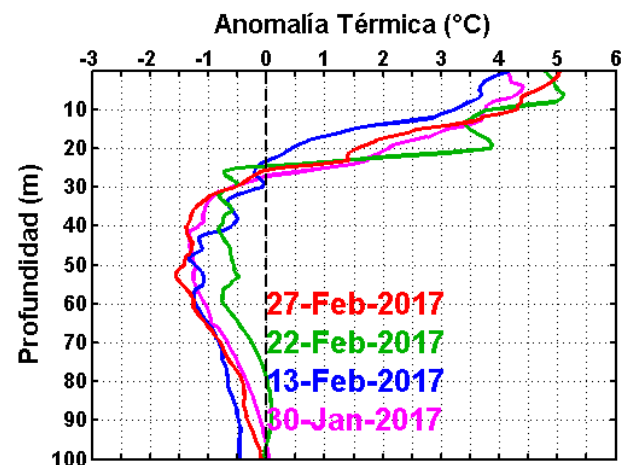


Masas de agua frente a la costa (Operación 'EUREKA LXIX', 21-23.02)

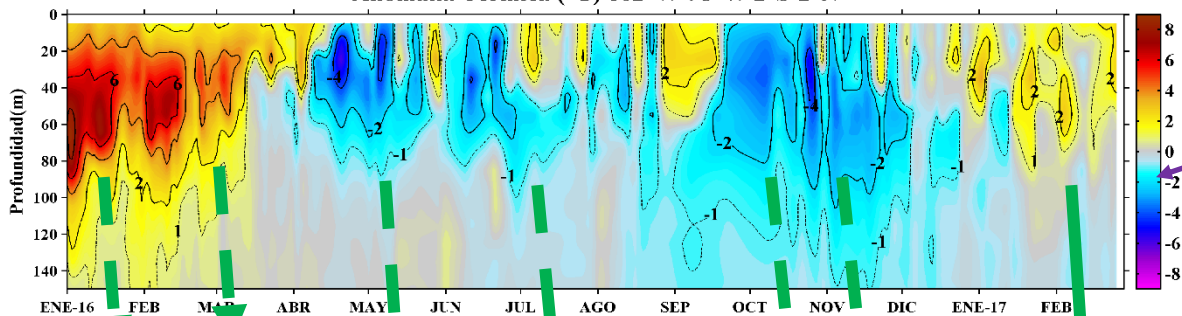


Mediciones in situ realizadas por IMARPE confirman información de producto OSTIA. Destaca la proyección hasta Chimbote de las Aguas Ecuatoriales Superficiales, cálidas y de baja salinidad. Las Aguas Subtropicales han sido desplazadas al centro-sur y las aguas costeras frías casi han desaparecido.

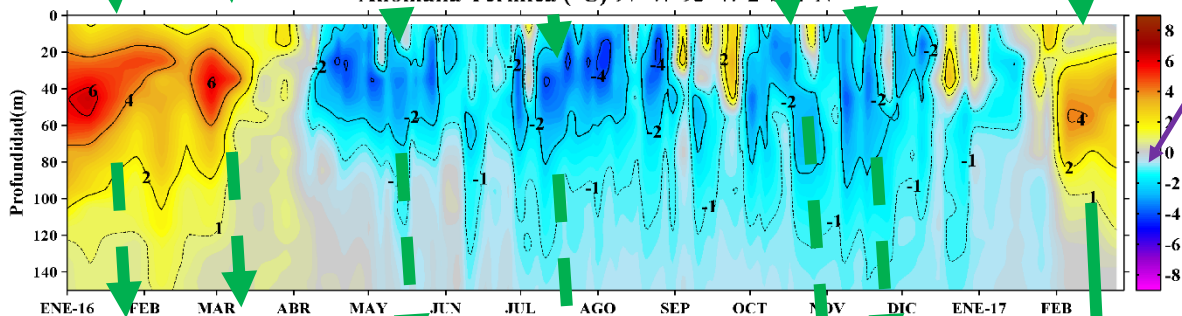
PUNTO FIJO DE PAITA (27 DE FEBRERO 2017)



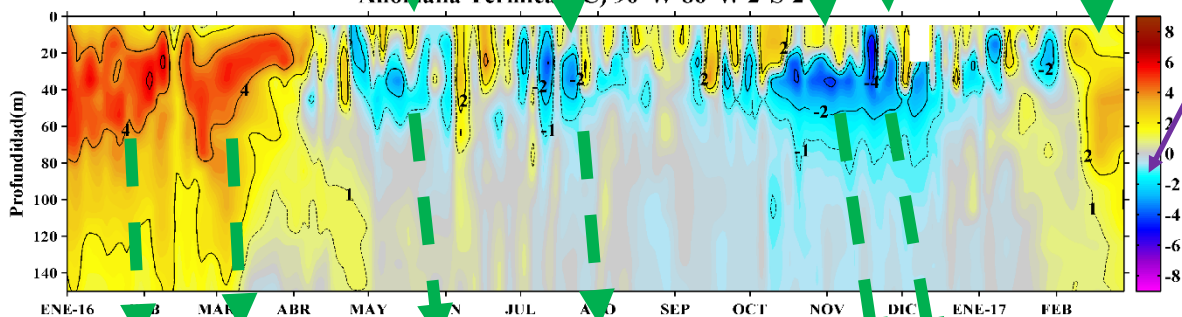
Anomalia Térmica (°C) 102°W-98°W 2°S-2°N



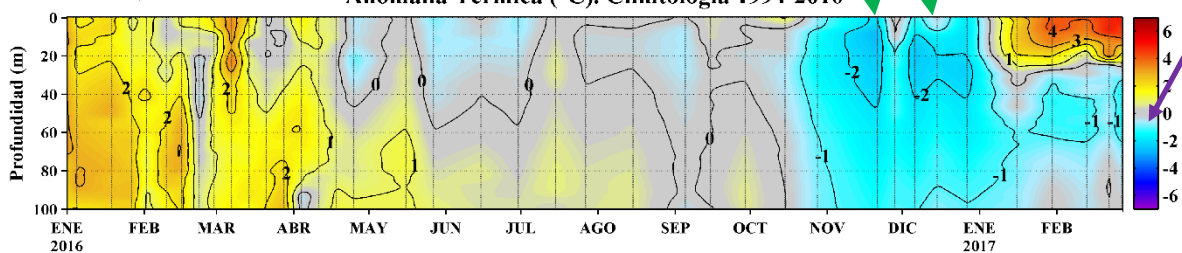
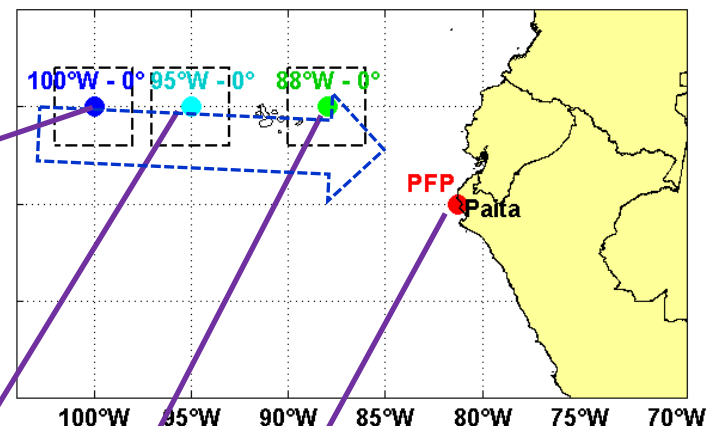
Anomalia Térmica (°C) 97°W-93°W 2°S-2°N



Anomalia Térmica (°C) 90°W-86°W 2°S-2°N



Anomalia Térmica (°C). Climatología 1994-2010

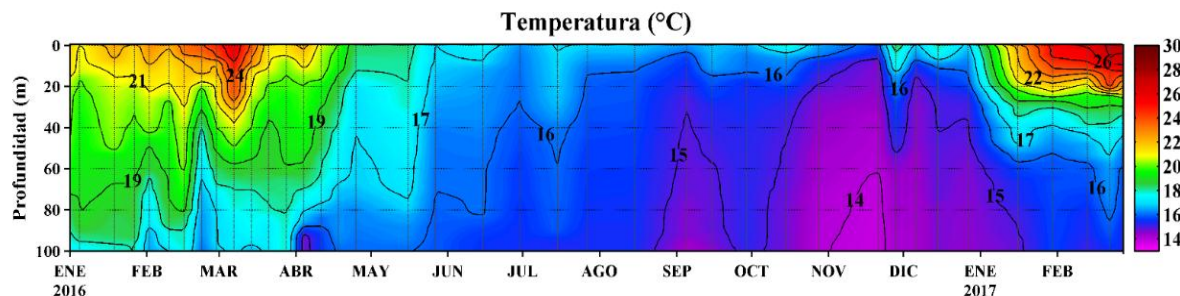


SERIE DE TIEMPO DE ANOMALÍA
TÉRMICA USANDO DATOS ARGOS
(ENERO 2015 - 13 DE FEBRERO 2017),
CLIMATOLOGÍA GODAS (1993-2015) Y
ANOMALÍA TÉRMICA DEL PUNTO FIJO
DE PAITA (ENERO 2015 - 28 DE
FEBRERO DE 2017)

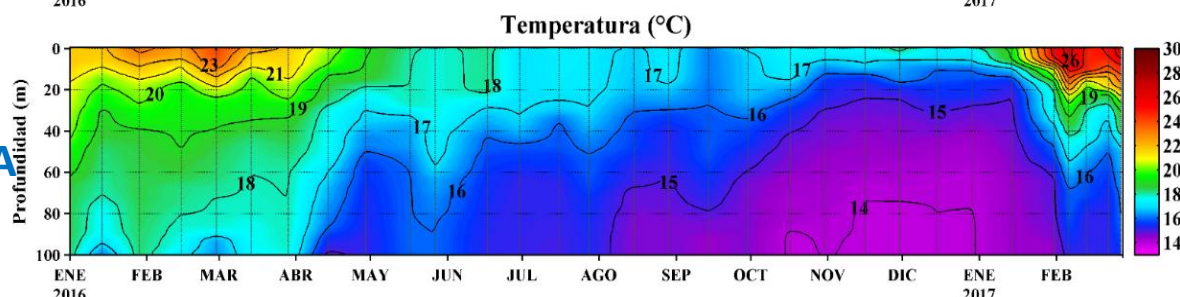
TEMPERATURA PUNTOS FIJOS (27 DE FEBRERO DE 2017)



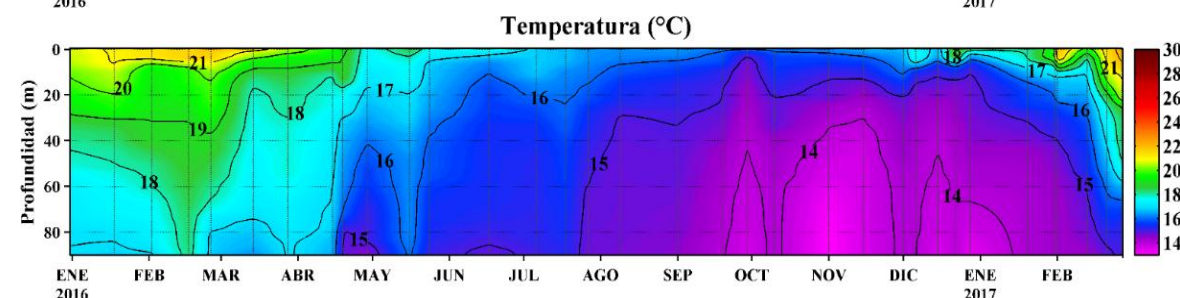
PAITA



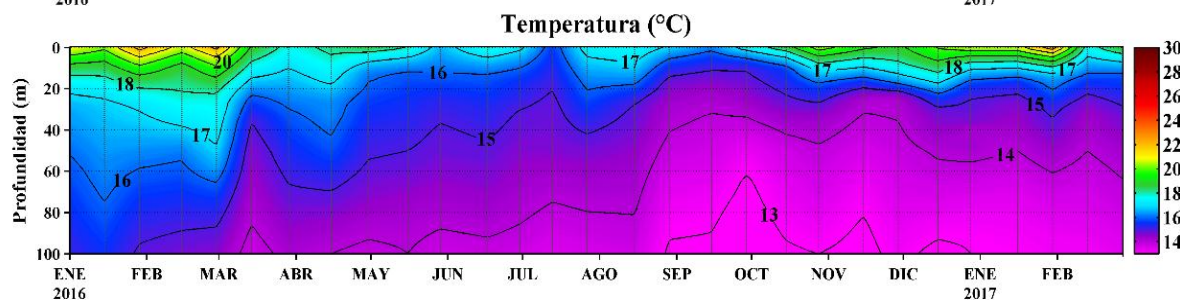
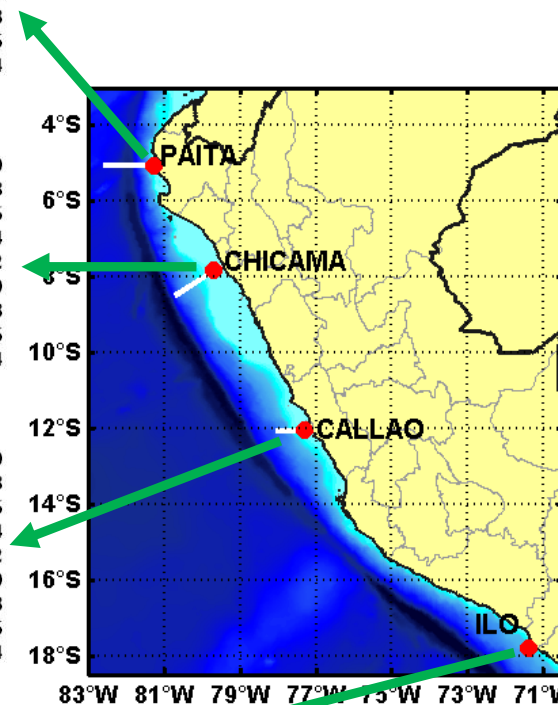
CHICAMA



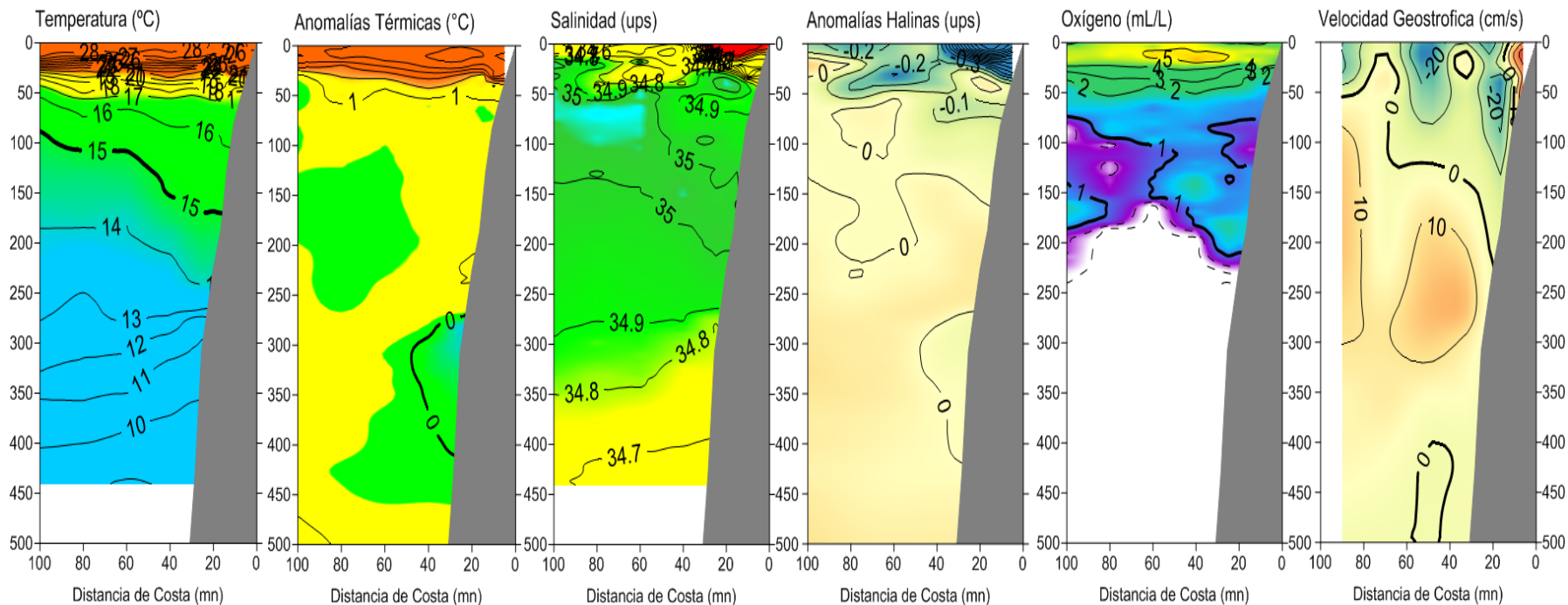
CALLAO



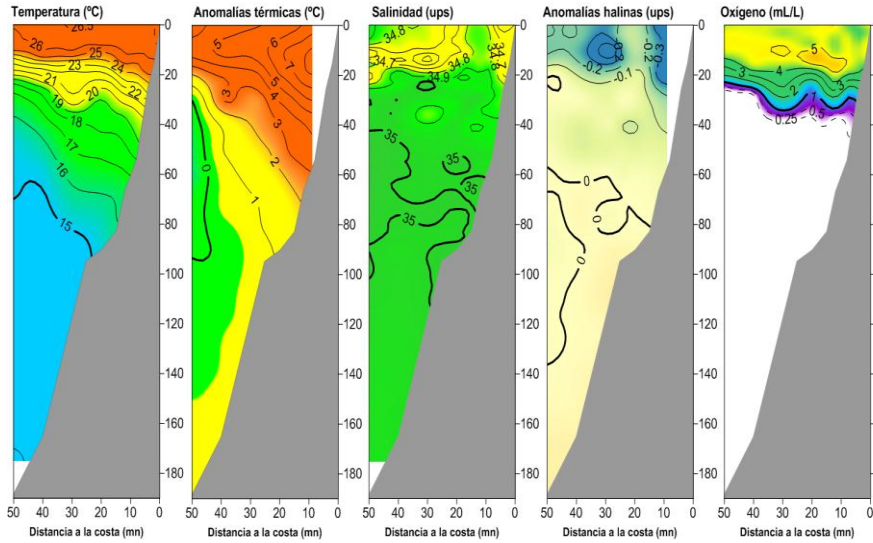
ILO



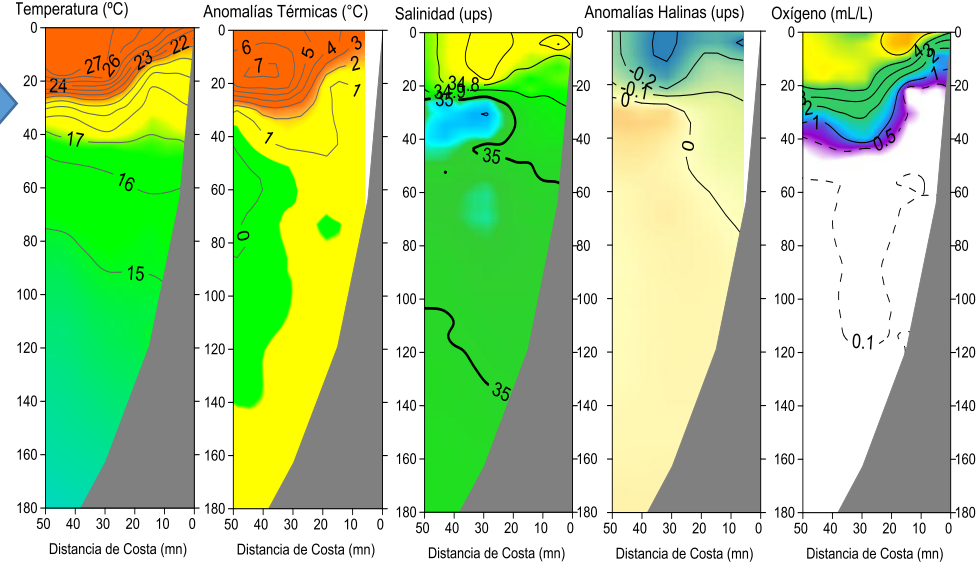
SECCION PAITA (21-22 Febrero del 2017)



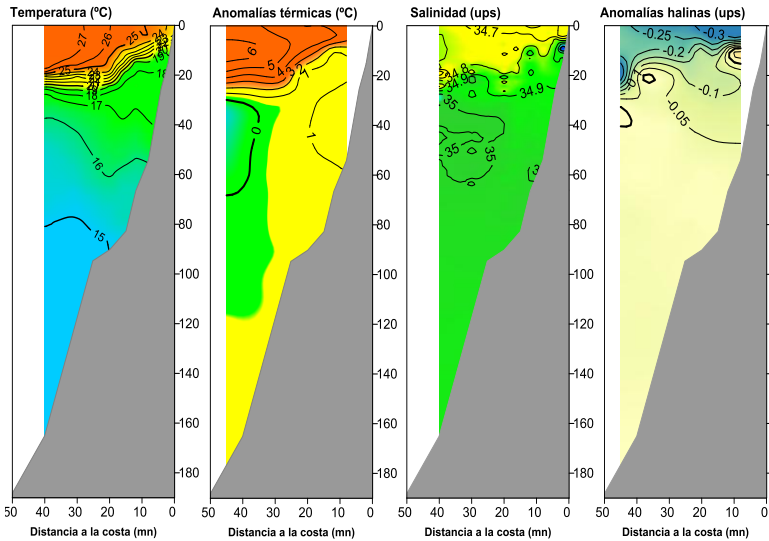
SEGUIMIENTO LARVAL 1702
Sección Chicama (06 febrero 2017)
BIC Luis Flores P.



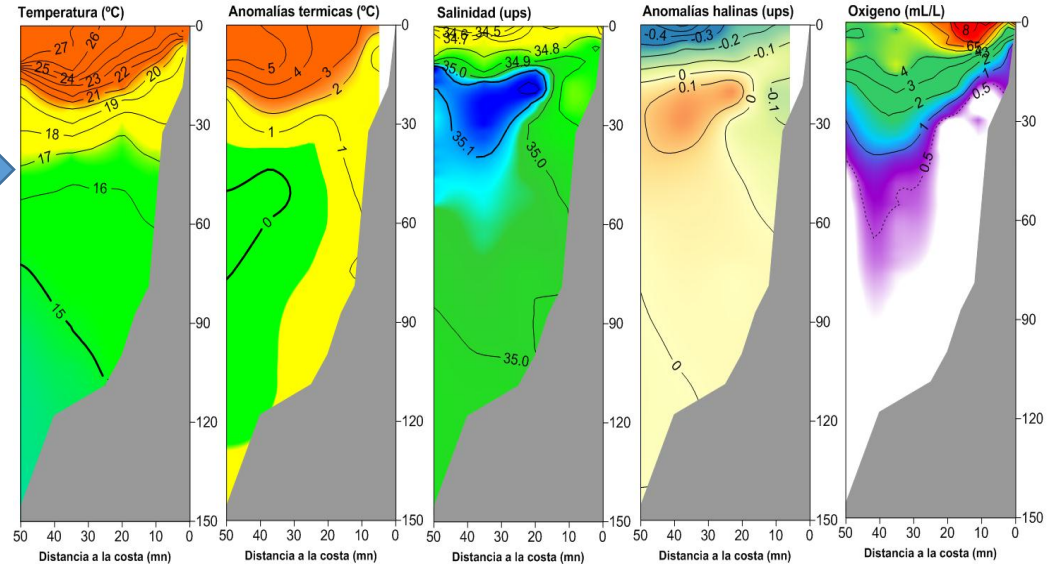
SECCION CHICAMA (18-19 de Febrero del 2017)



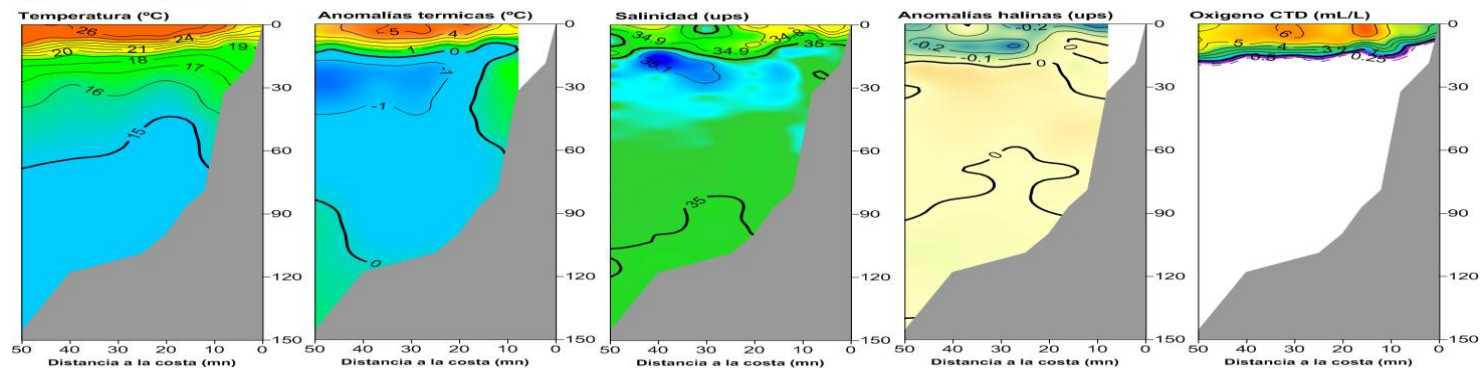
SEGUIMIENTO LARVAL 1702
Sección Chicama (20-21 febrero 2017)
BIC Luis Flores P.



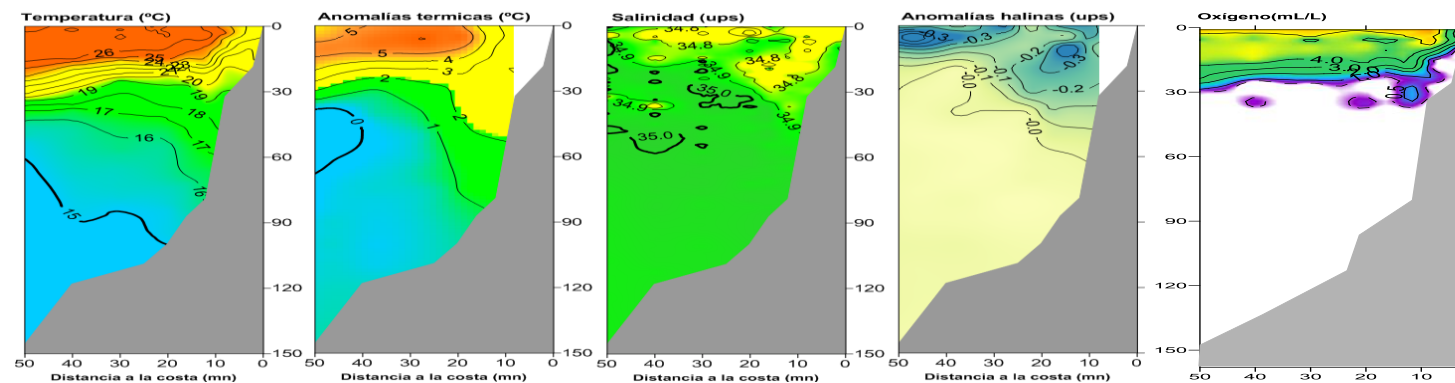
EUREKA LXIX
Sección Chicama (22 febrero 2017)
Ribar VI



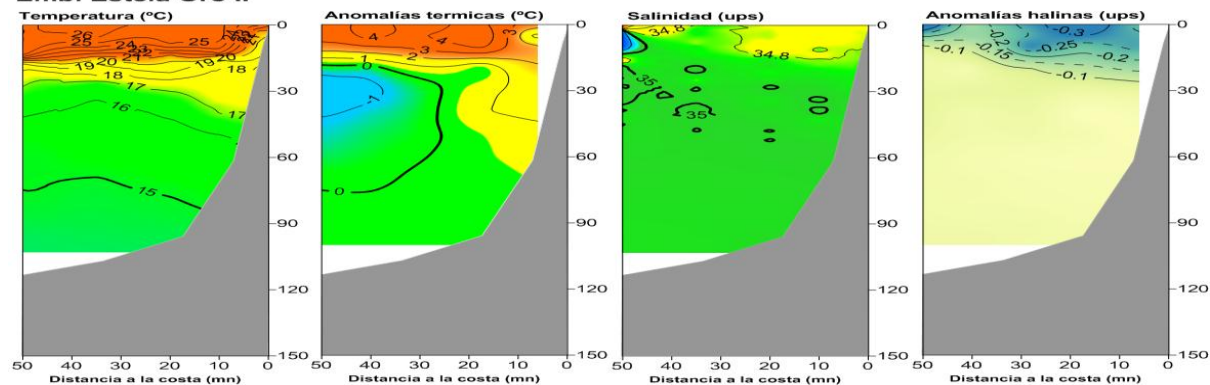
SEGUIMIENTO LARVAL 1702
Sección Chimbote (02-03 febrero 2017)
BIC Luis Flores P.



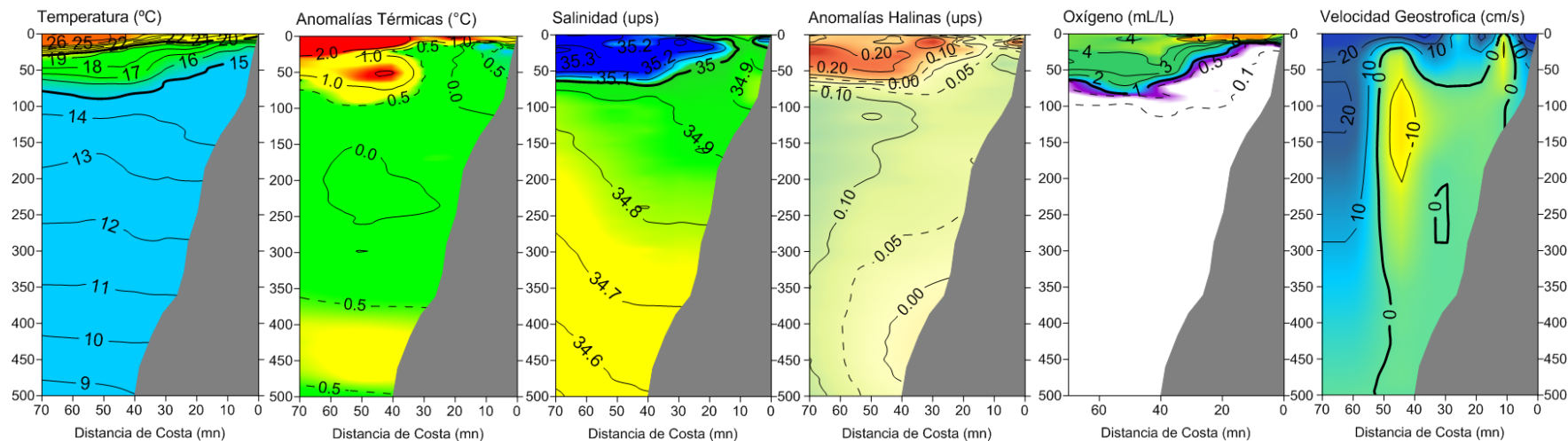
SEGUIMIENTO LARVAL 1702
Sección Chimbote (17 febrero 2017)
BIC Luis Flores P.



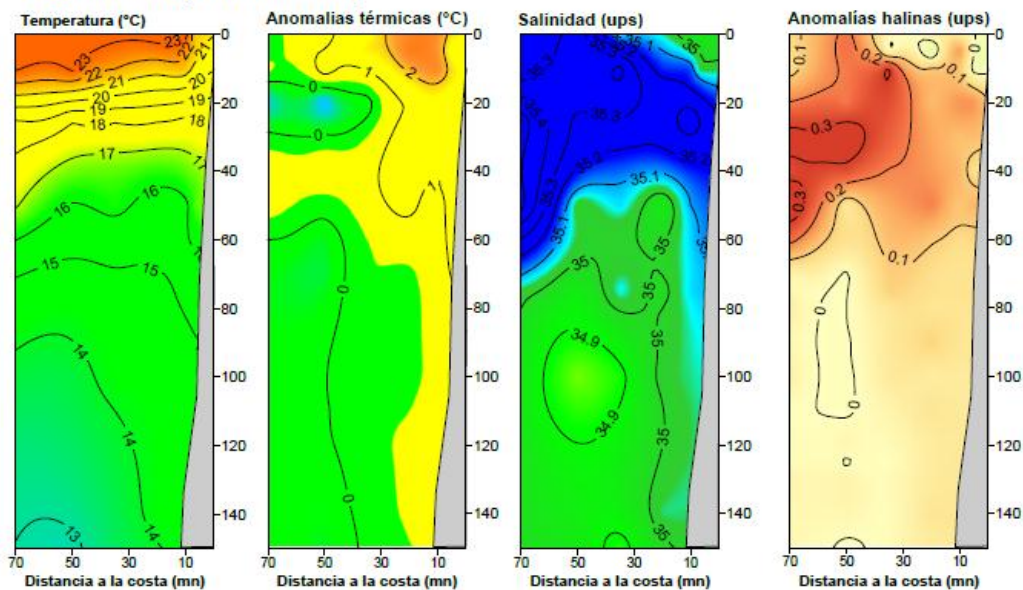
EUREKA LXIX
Sección Chimbote (21-22 febrero 2017)
Emb. Estela Oro II



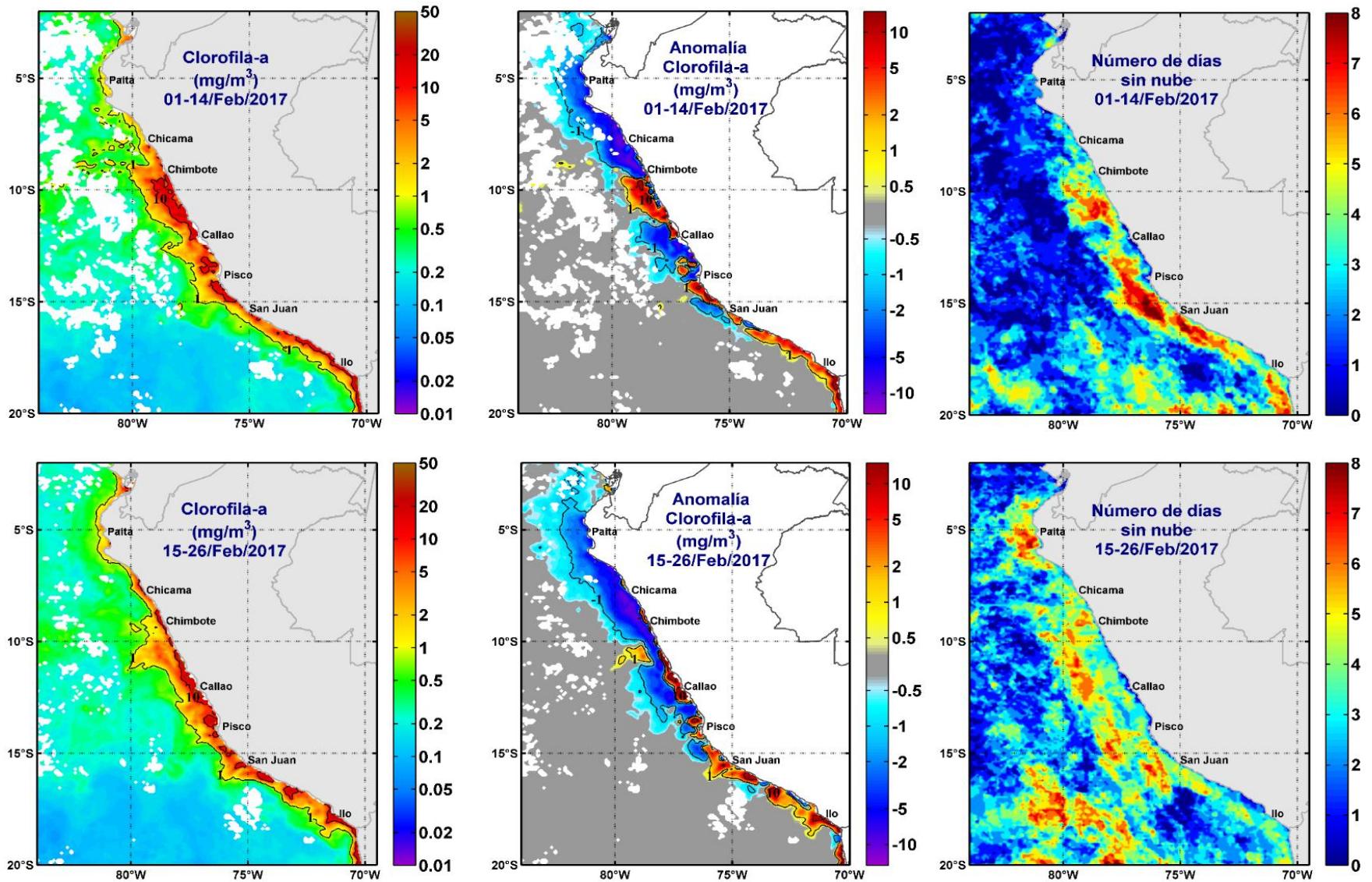
SECCION CALLAO (01-02 de Febrero del 2017)



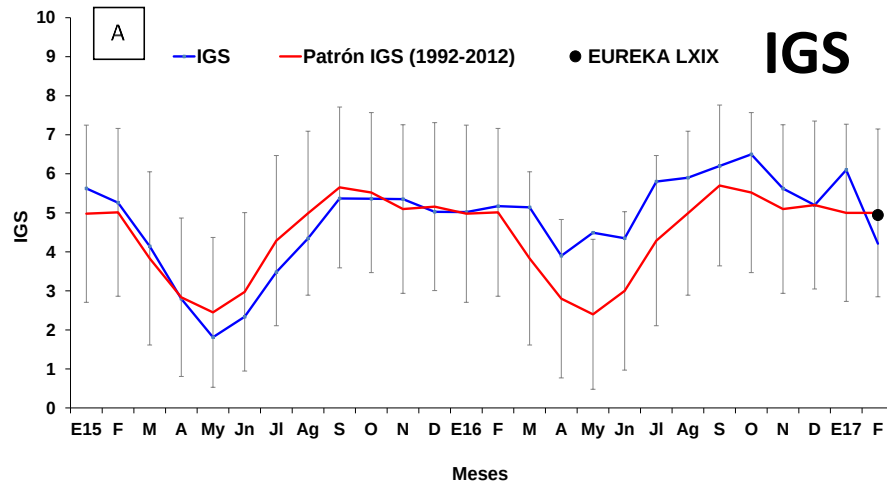
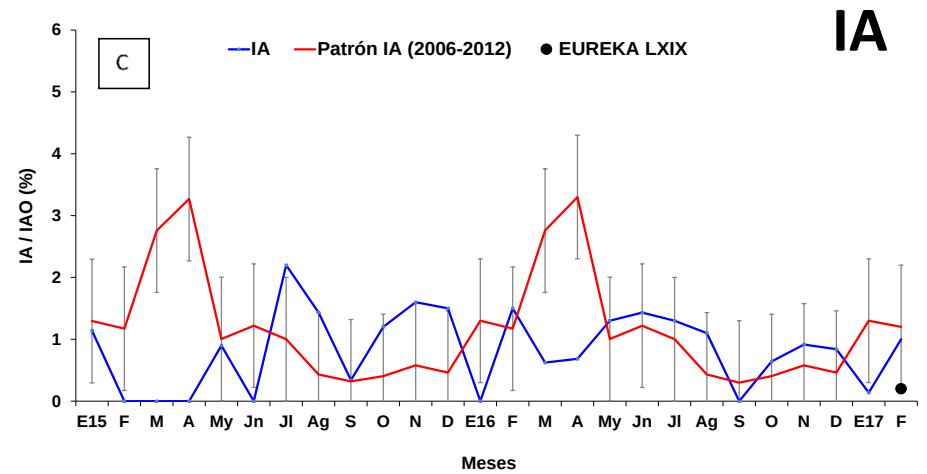
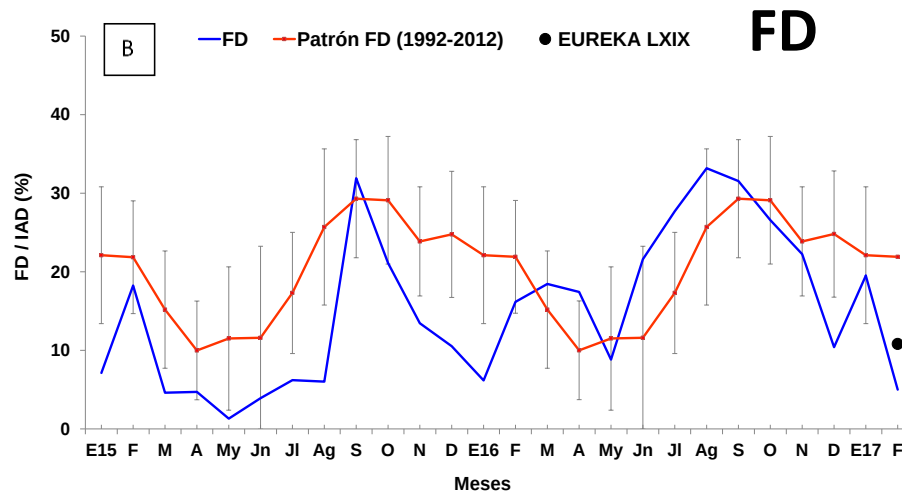
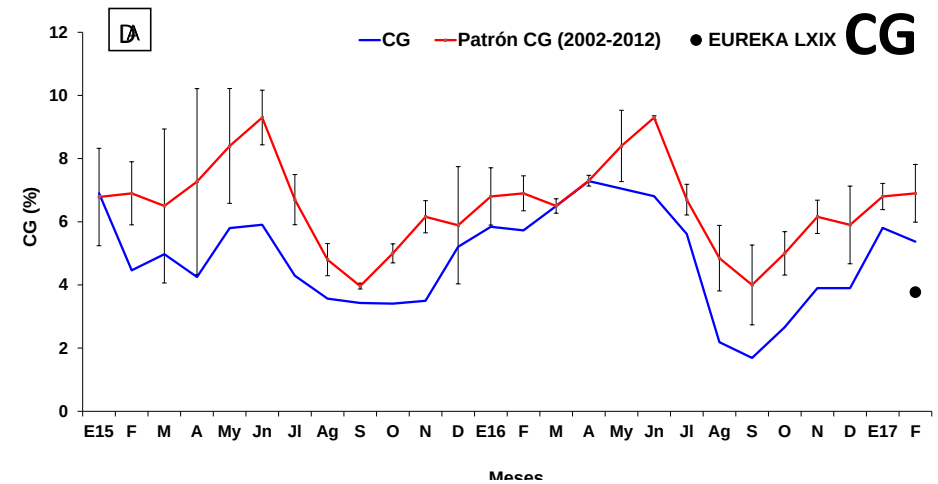
EUREKA LXIX 1702 Sección Callao (21 febrero 2017)



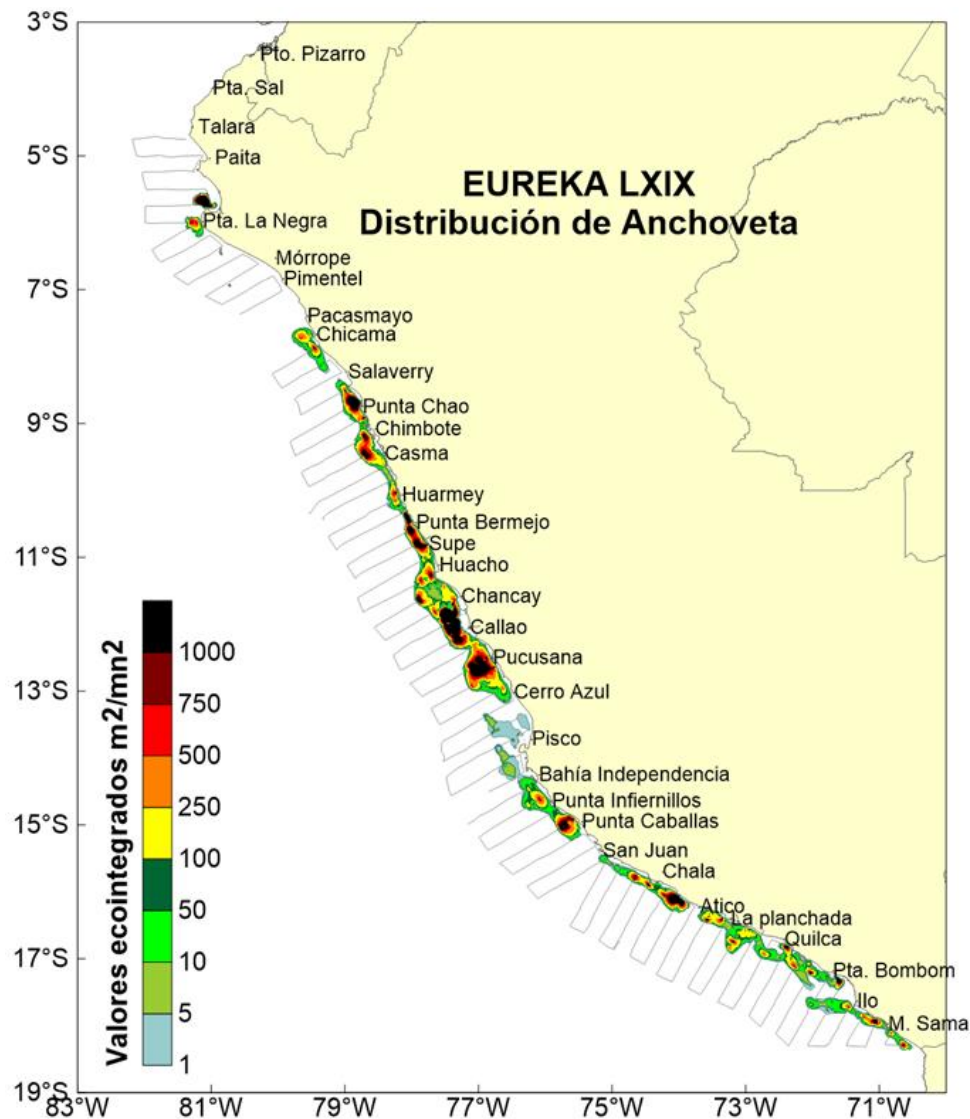
Clorofila-a MODIS-AQUA Febrero 2017. climatología 2002-2015



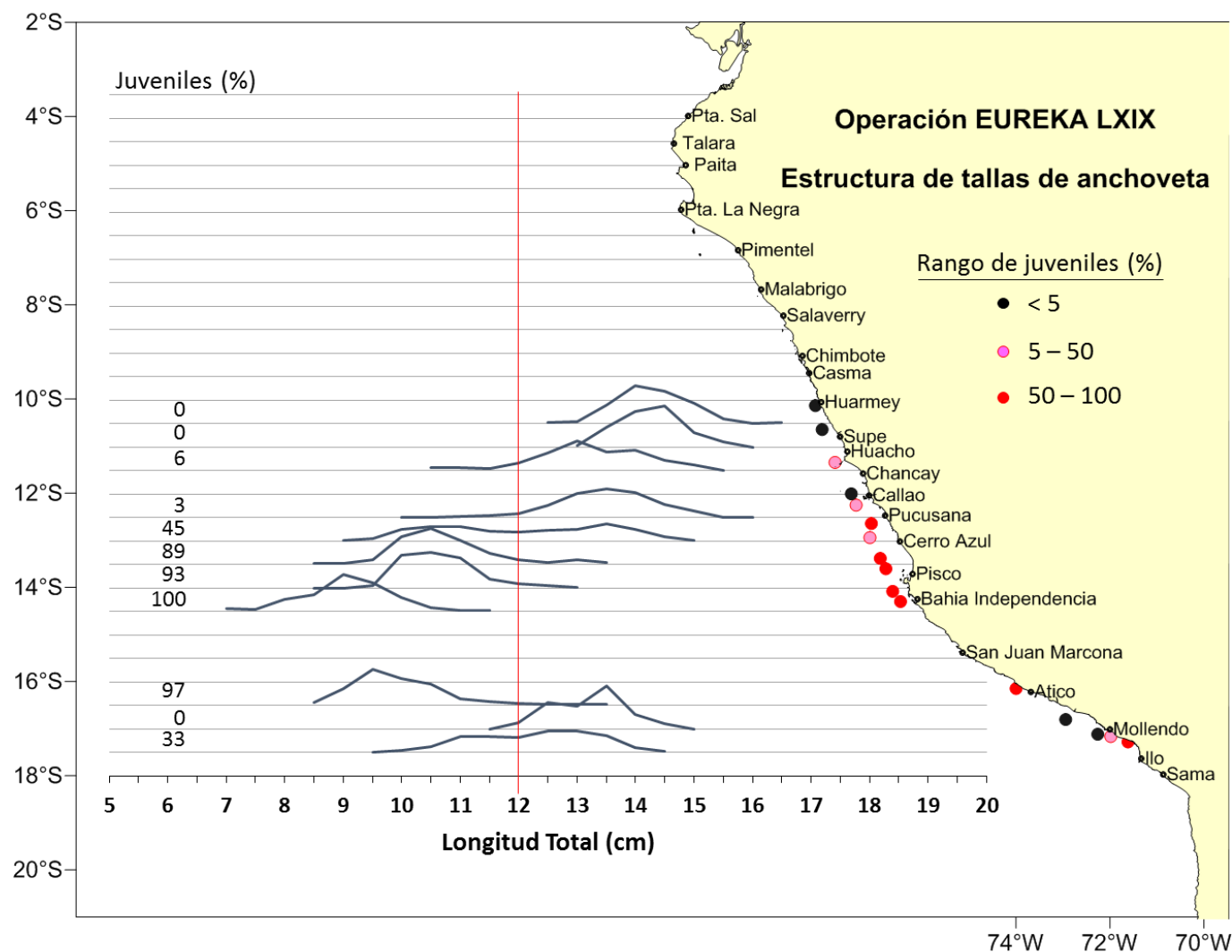
INDICADORES REPRODUCTIVOS DE LA ANCHOVETA



Distribución de anchoveta - EUREKA LXIX

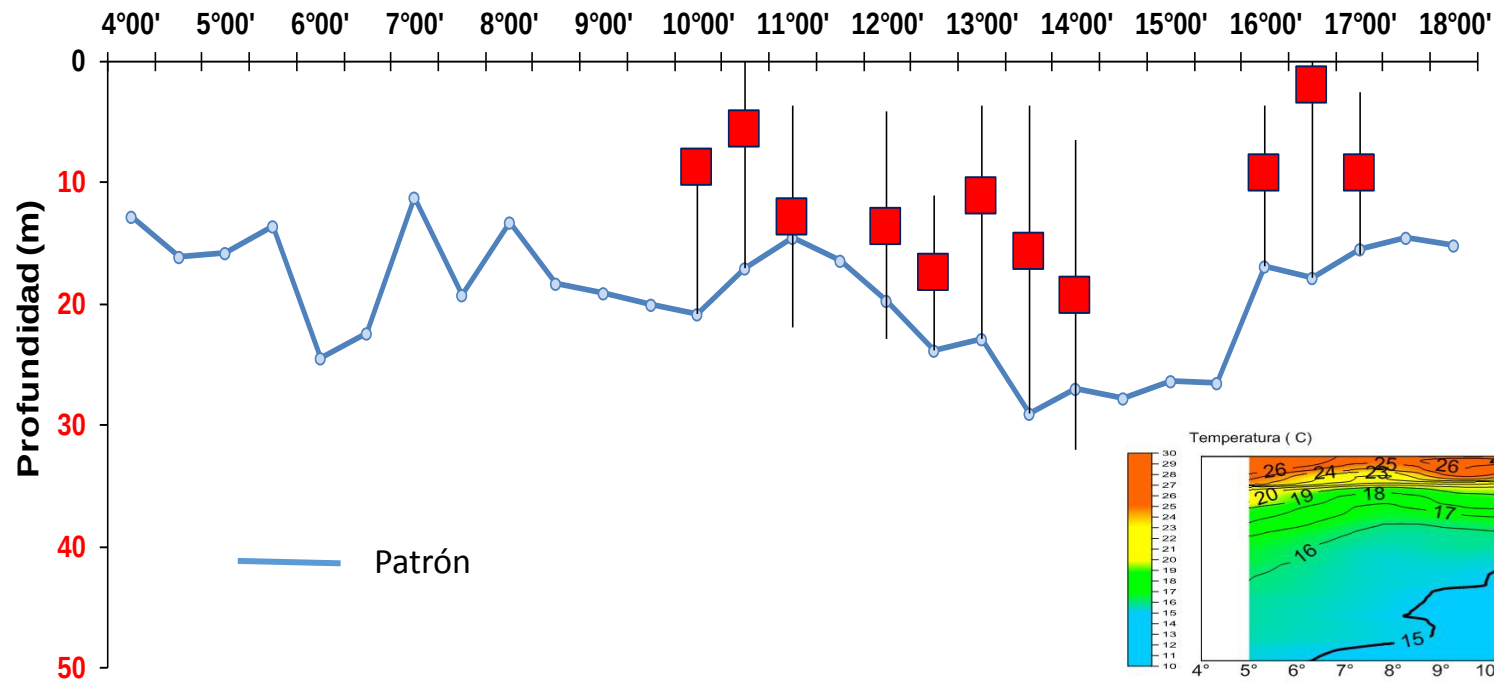
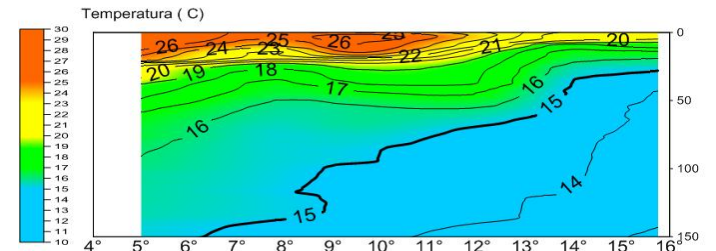
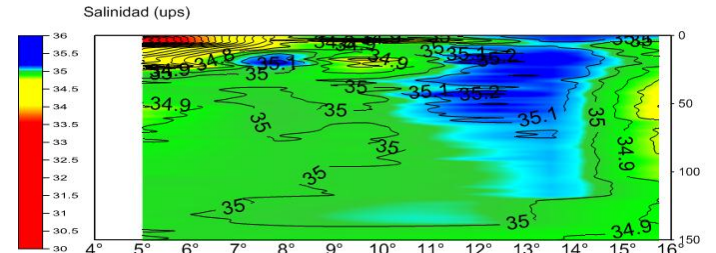
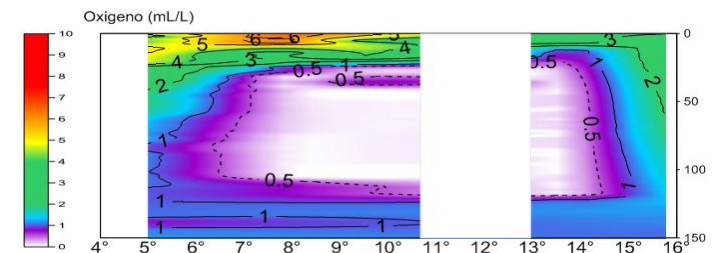


Estructura de tallas anchoveta EUREKA LXIX

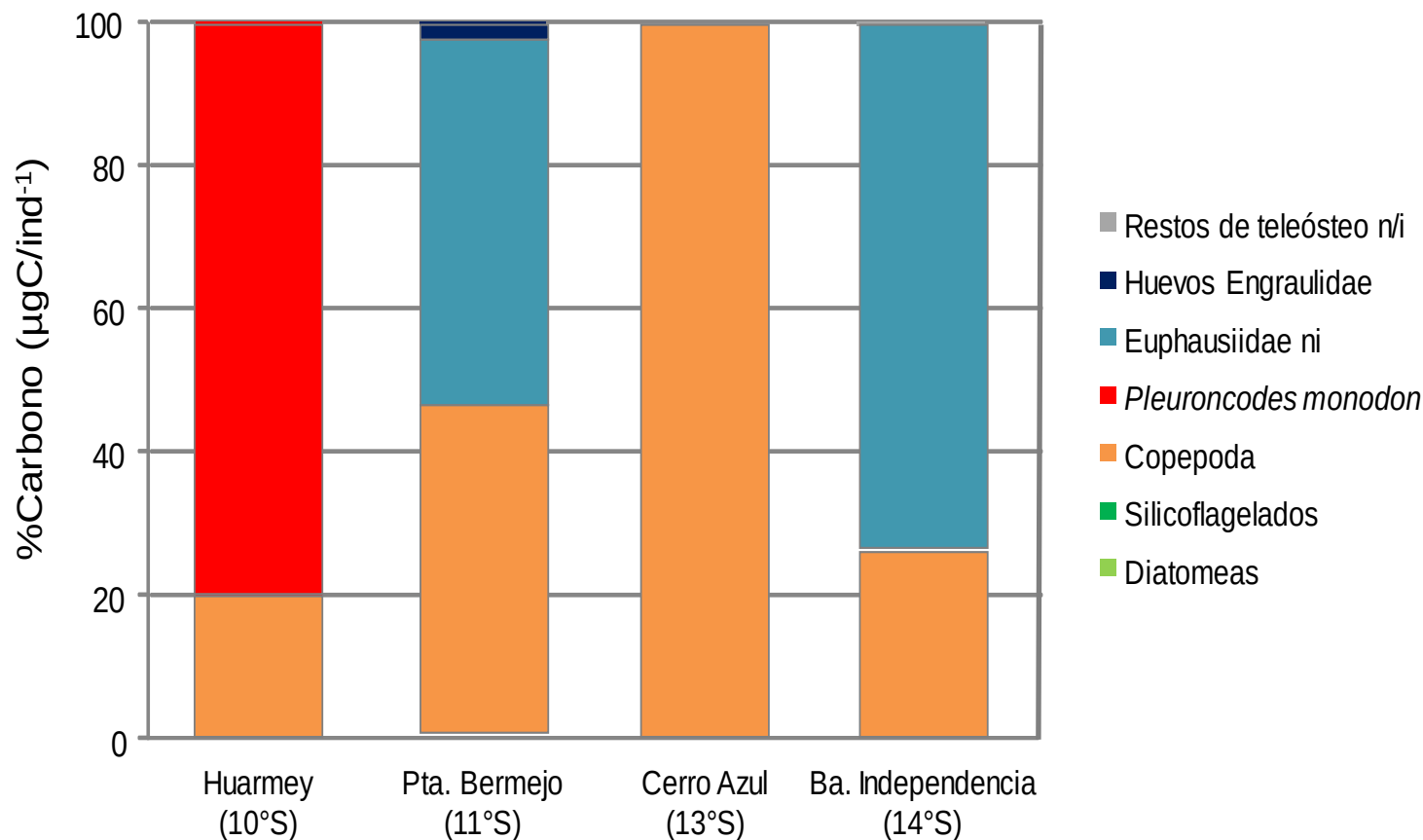


Distribución vertical de la anchoveta

Operación 'EUREKA LXIX' (01 – 09 febrero)

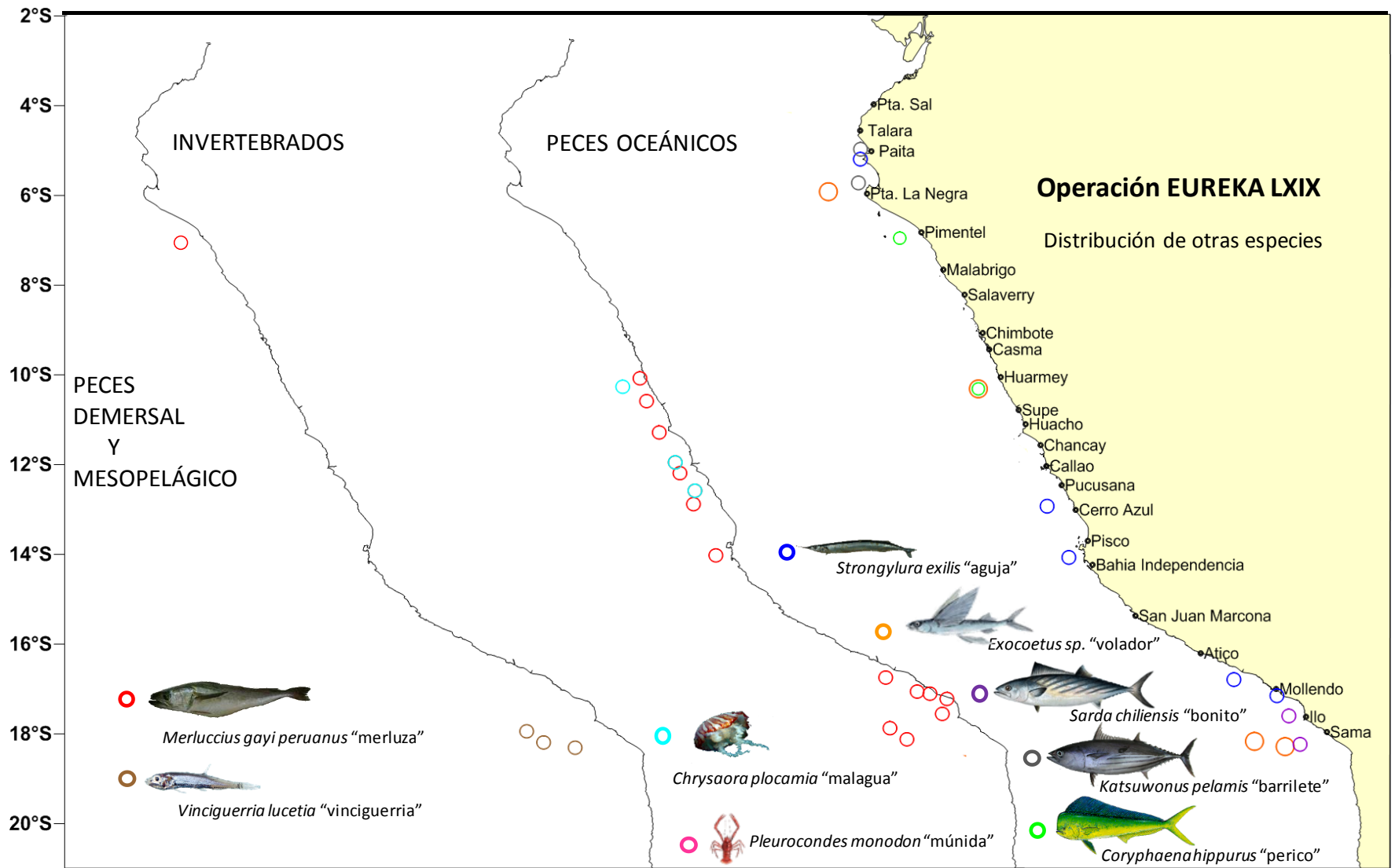


Composición de la dieta de la anchoveta

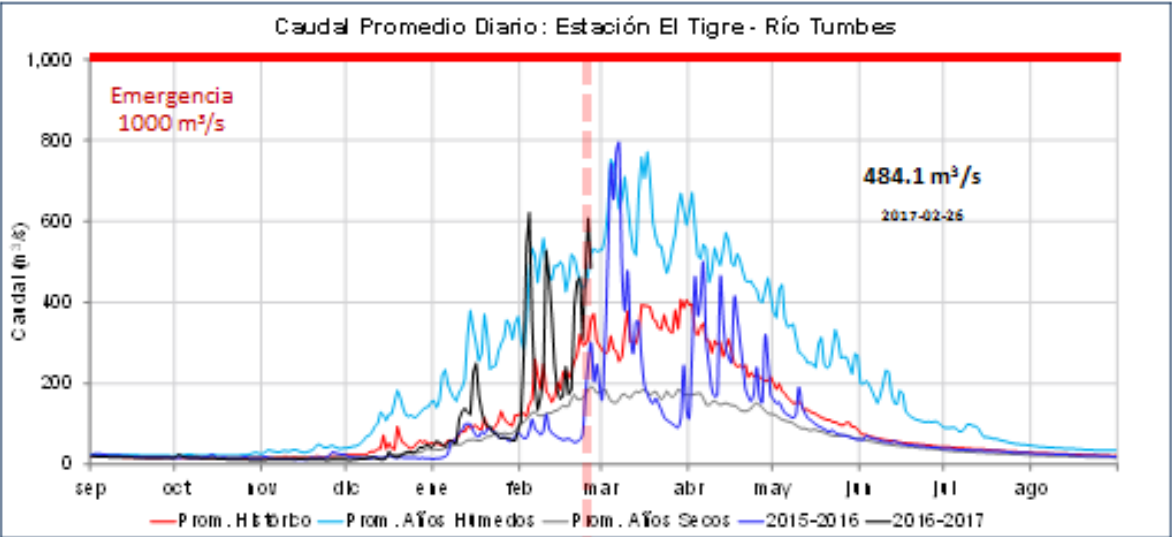
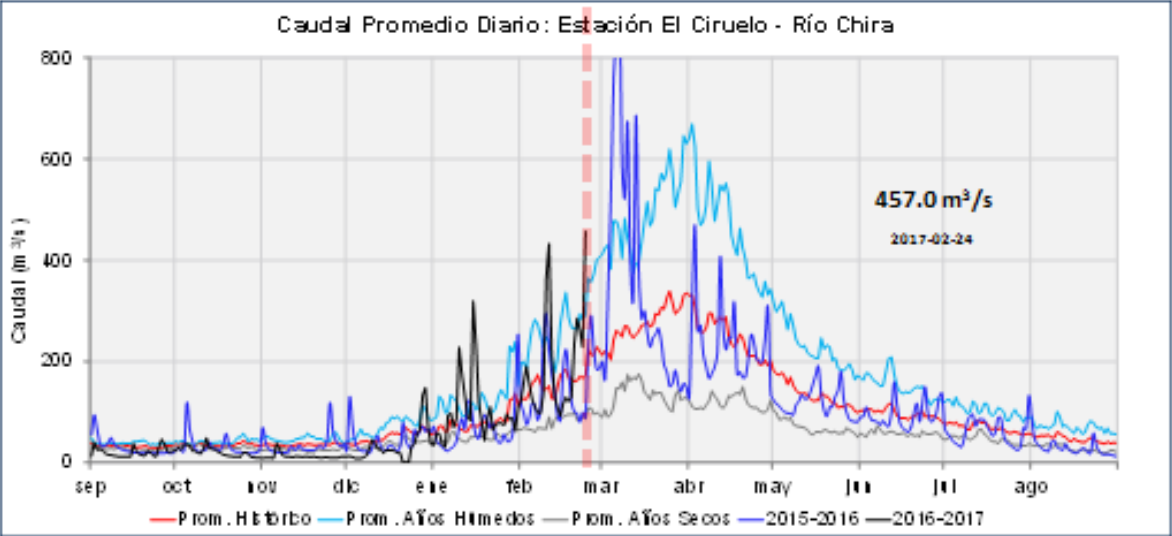


Se observó el principal ítem alimenticio de la anchoveta, en la zona norte (Huarmey), fue la munida (*Pleuroncodes monodon*), mientras que al sur de Bahía Independencia (16°S), estuvo constituido por eupausidos y copedos. La capacidad de ingesta fue mínima, al presentar un bajo peso de contenido estomacal.

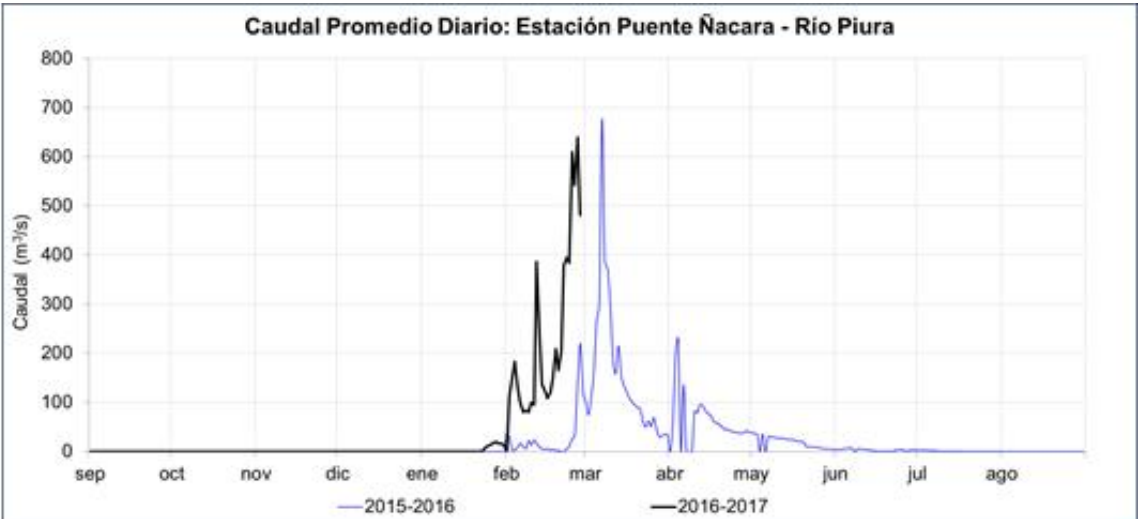
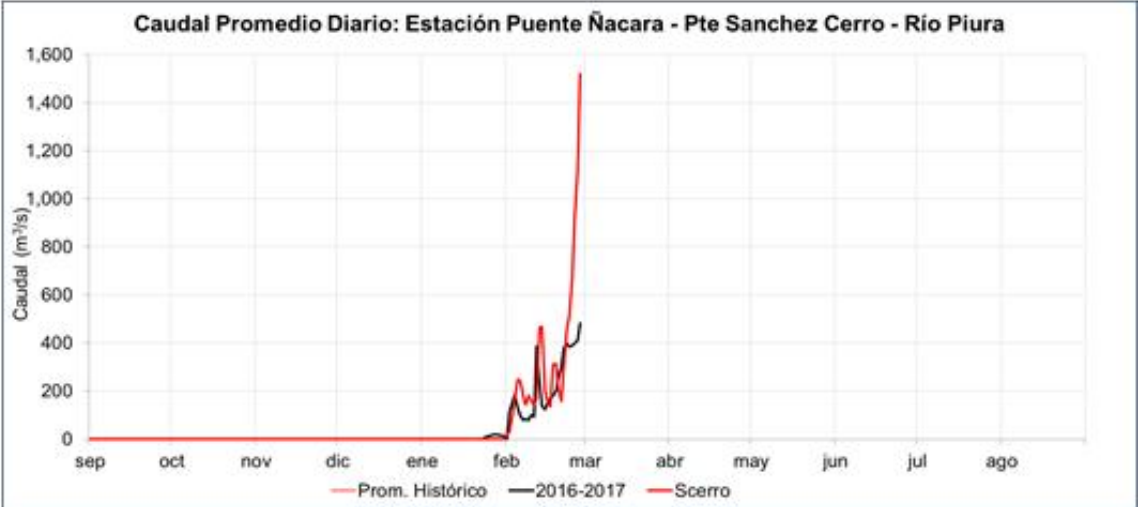
Distribución de otras especies



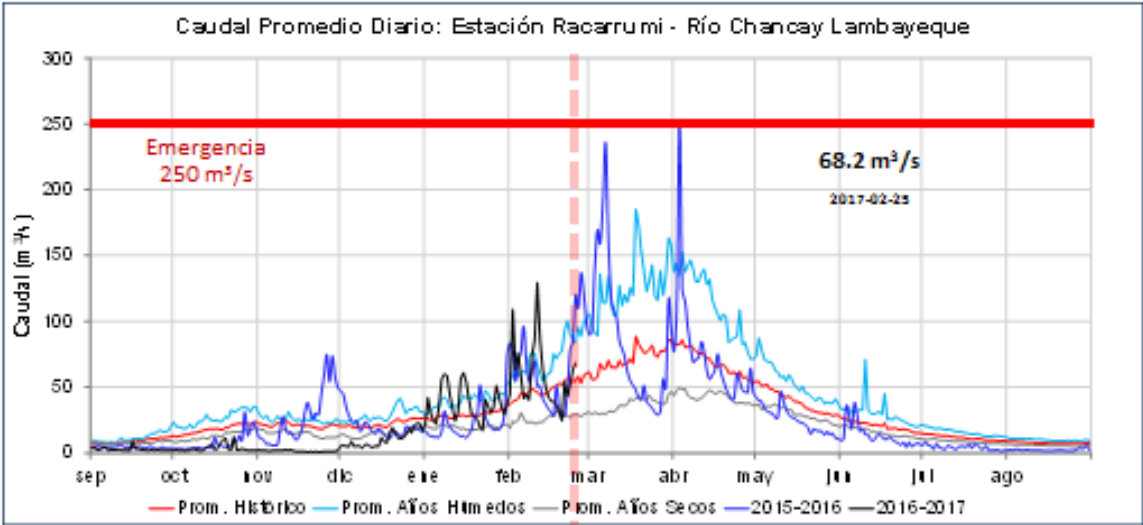
Región hidrográfica Pacífico – Ríos Costa Norte



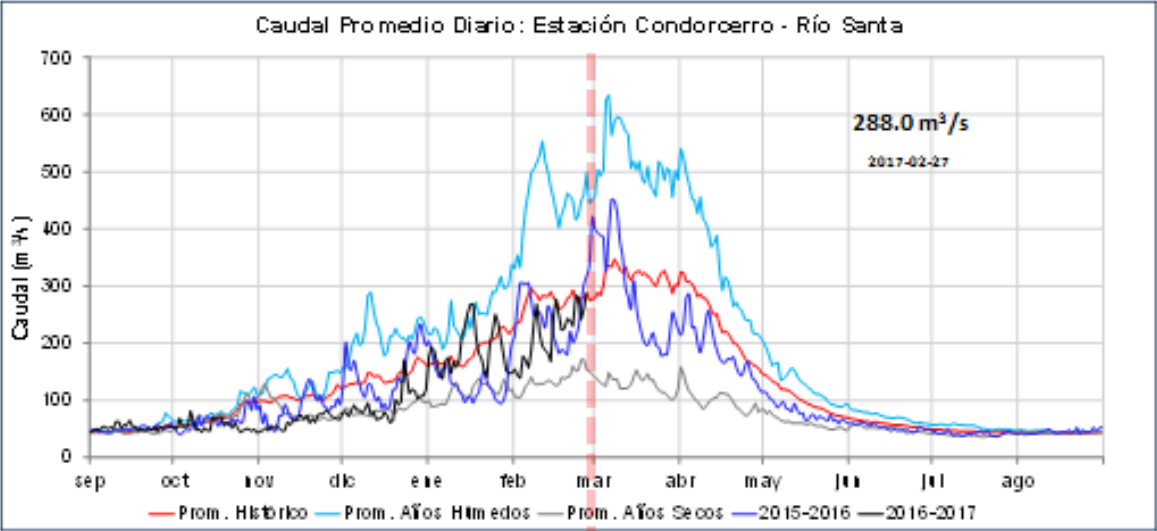
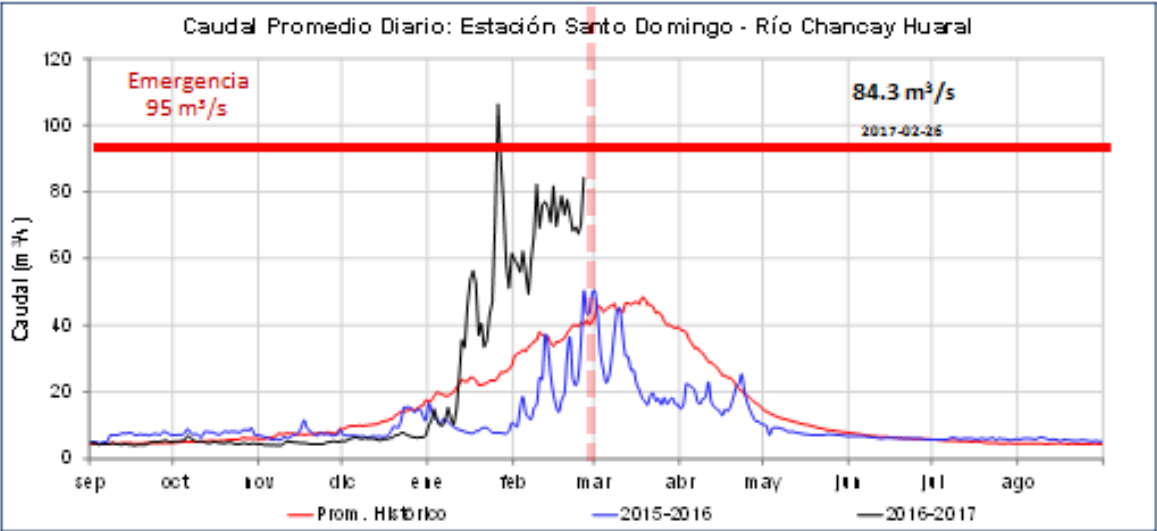
Región hidrográfica Pacífico – Ríos Costa Norte



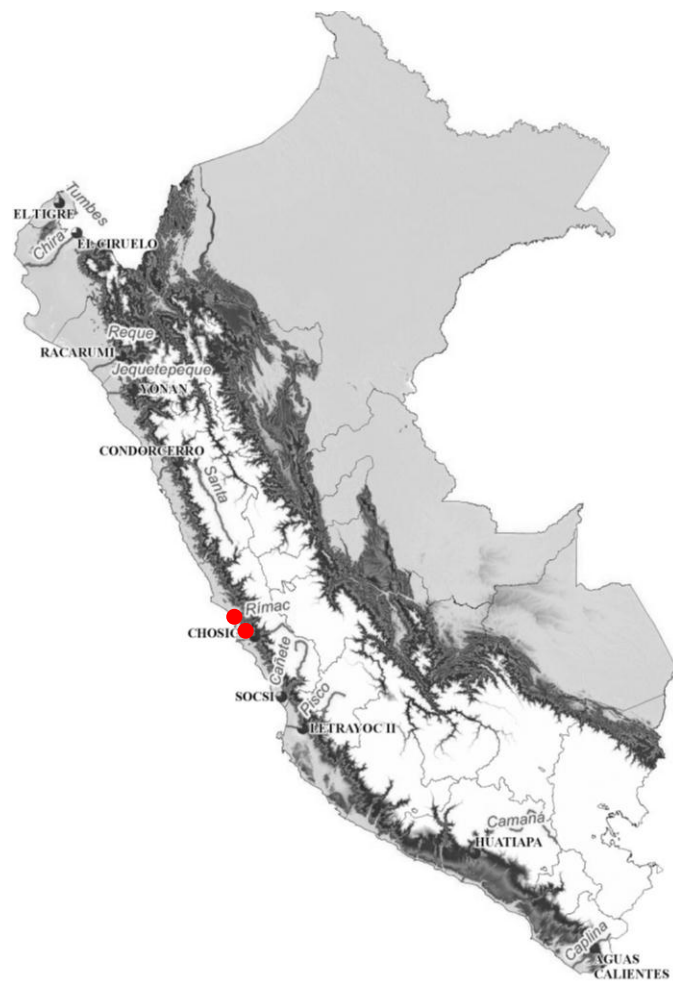
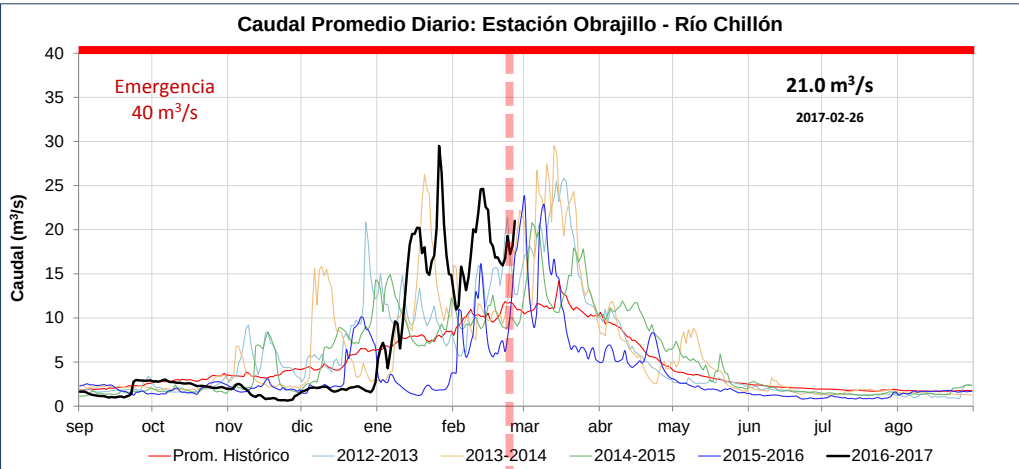
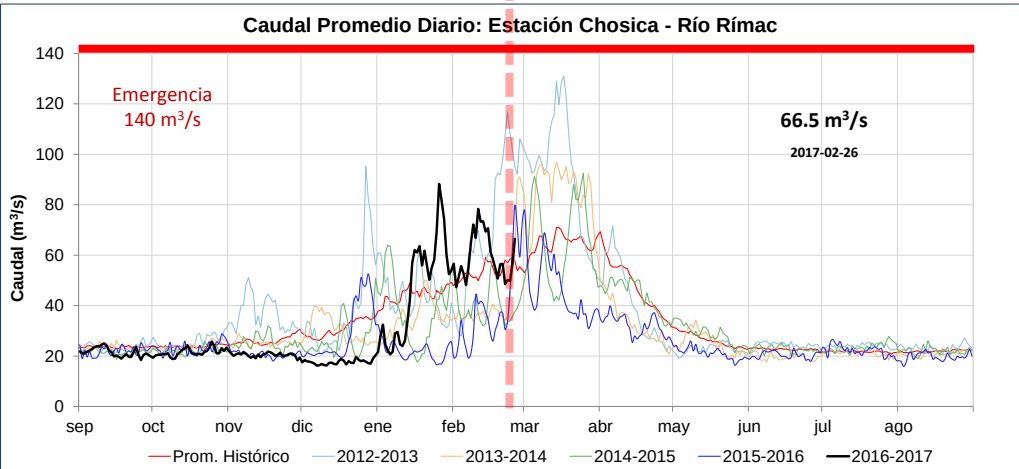
Región hidrográfica Pacífico – Ríos Costa Norte



Región hidrográfica Pacífico – Ríos Costa Centro

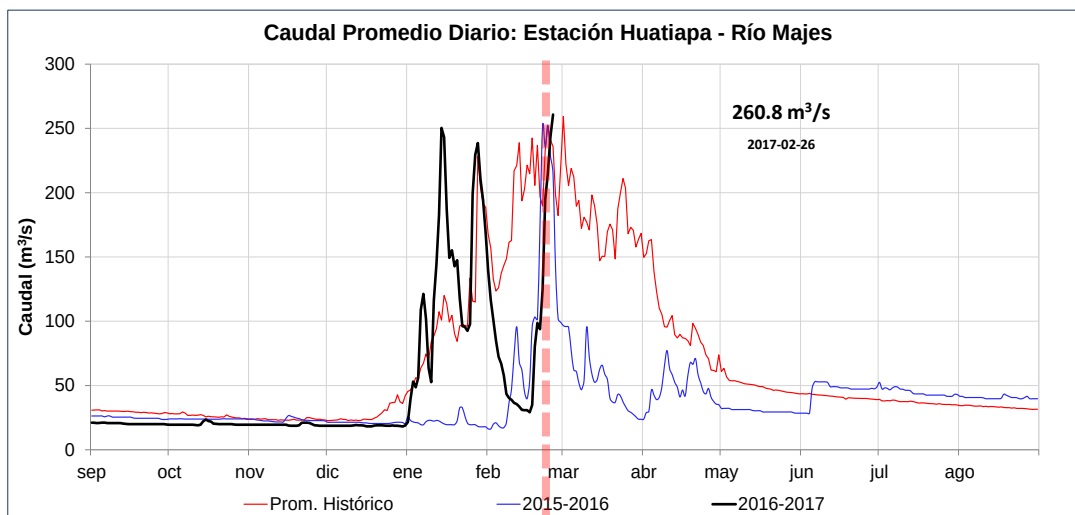
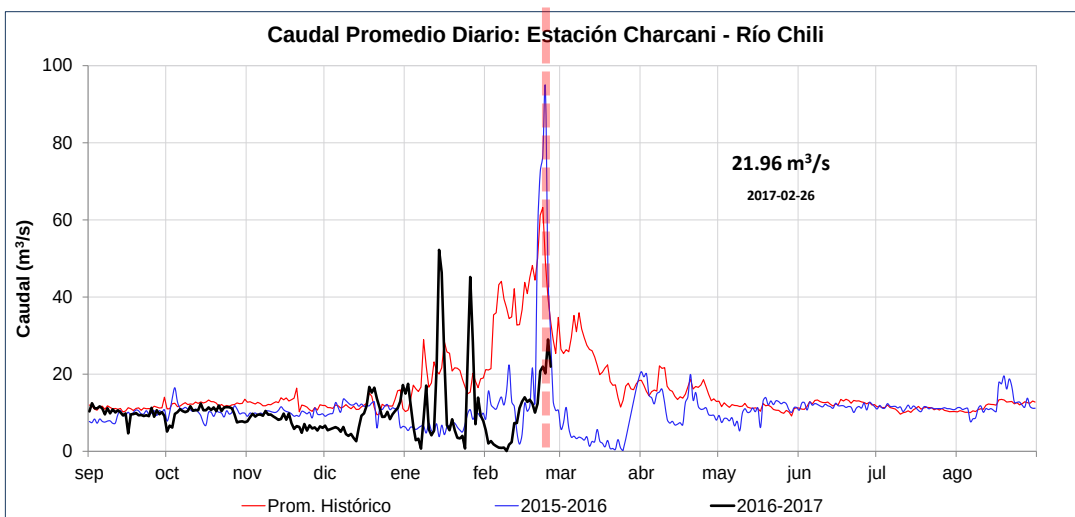
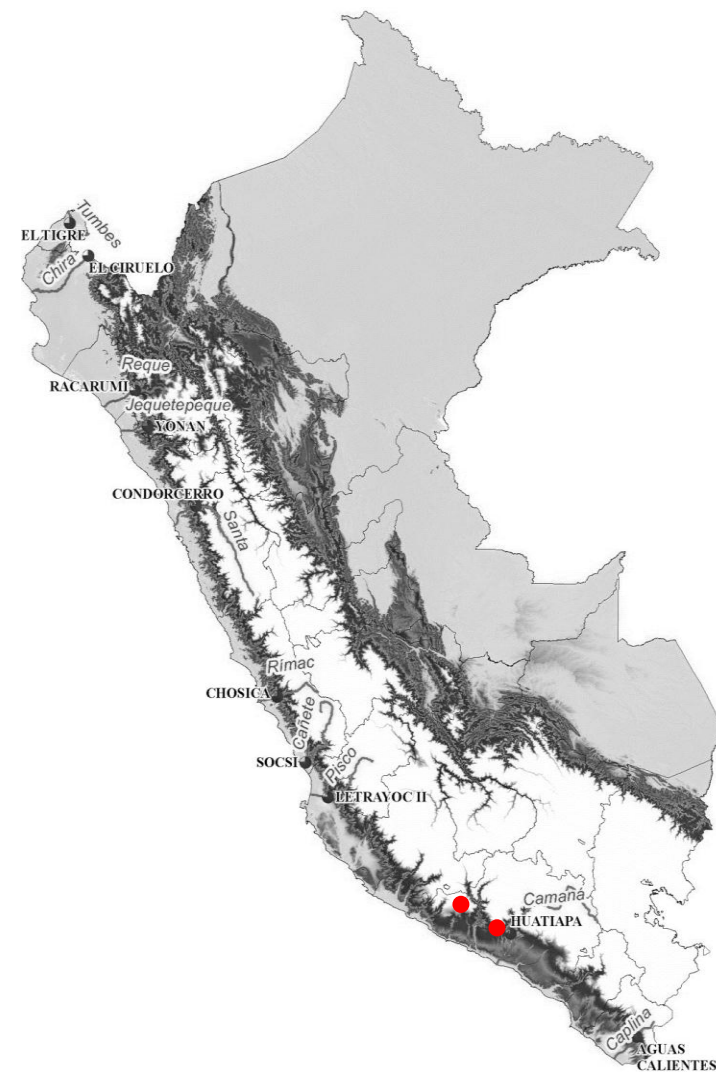


Región hidrográfica Pacífico – Ríos Costa Centro

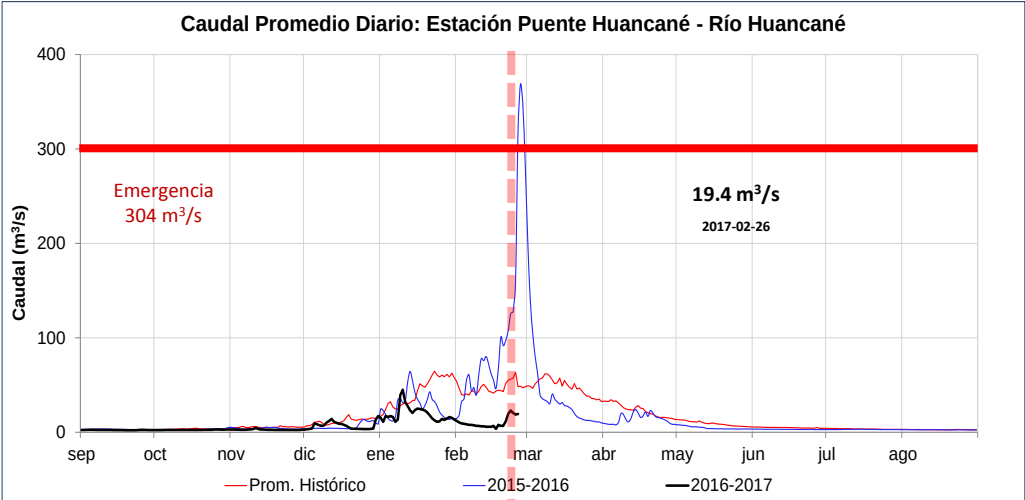
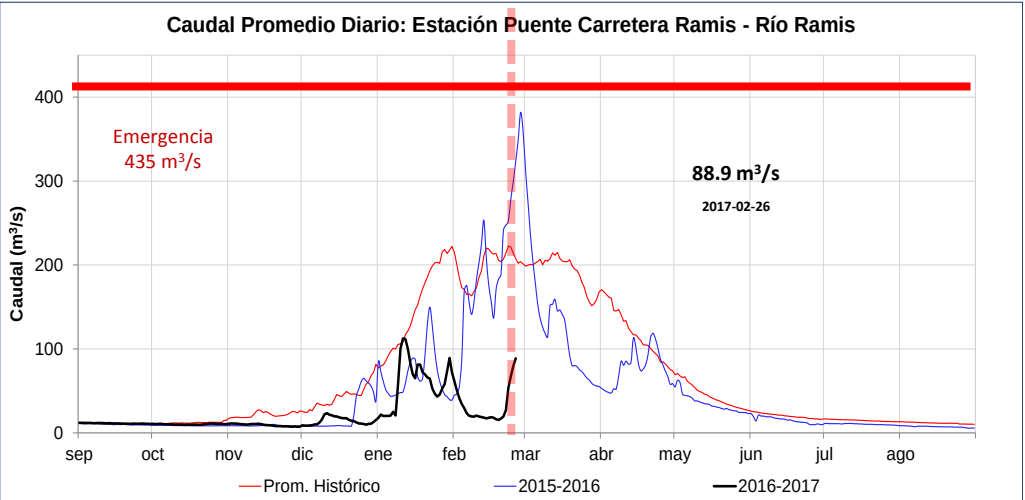


Región hidrográfica Pacífico – Ríos Costa Sur

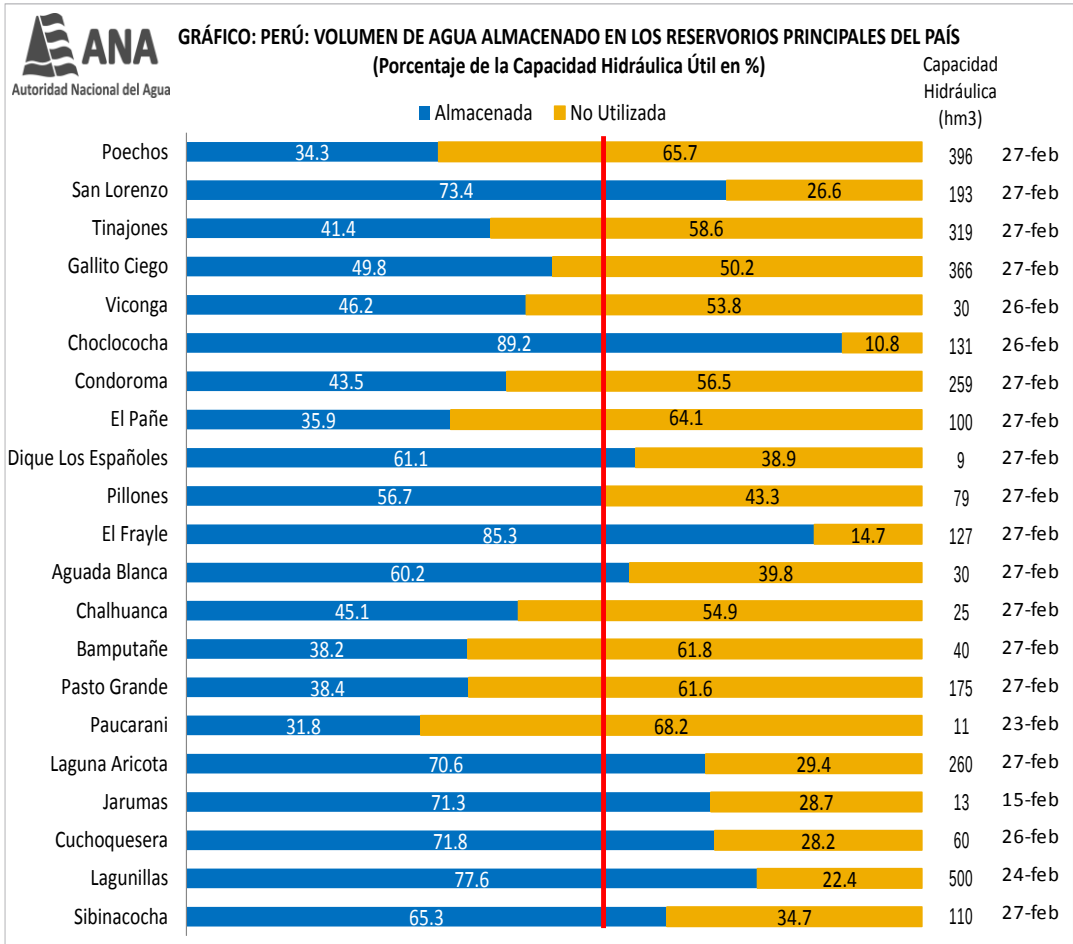
Ríos de vertiente Pacífico – Sur



Región hidrográfica Titicaca



Resumen del estado de los principales embalses, enero-febrero 2017.



Caudales

Para la segunda quincena de febrero, los ríos del Perú, en su mayoría con hidrogramas de tipo ascendentes y en su mayoría con caudales promedios diarios por encima de sus promedios y algunos alcanzando valores encima de sus máximos (Costa Norte). El río Piura superó su nivel de emergencia (1,000 m3/s). **La activación de quebradas incrementa el caudal con sedimentos.**

Reservorios

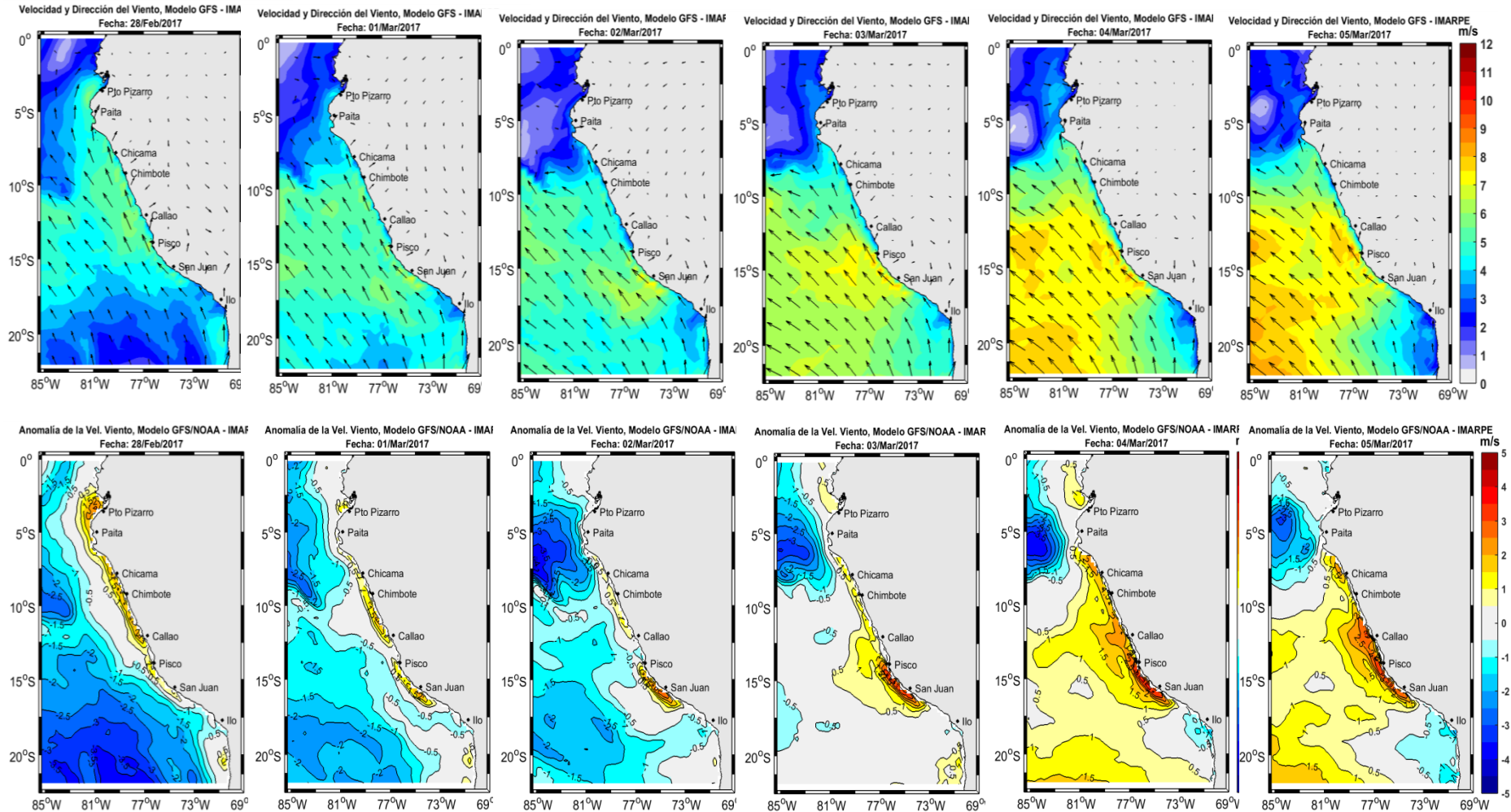
Las reservas hídricas en la costa norte promedian en 46% respecto a la capacidad hidráulica de los principales embalses.

En el sur, el sistema hidráulico Colca – Chili (Arequipa) operan en promedio al 62%, mostrando en su mayoría hidrogramas ascendentes. En Pasto Grande (Moquegua), el nivel llegó hasta el 38%. Los de Tacna (Aricota, Jarumas y Paucarani) están en promedio al 69% de su capacidad hidráulica.

En la costa sur los embalses muestran una tendencia ascendente en su mayoría, operando en promedio al 59% de su capacidad hidráulica útil.

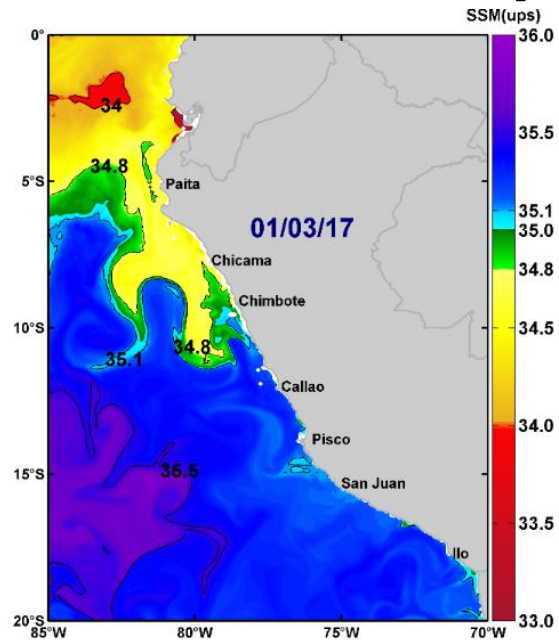
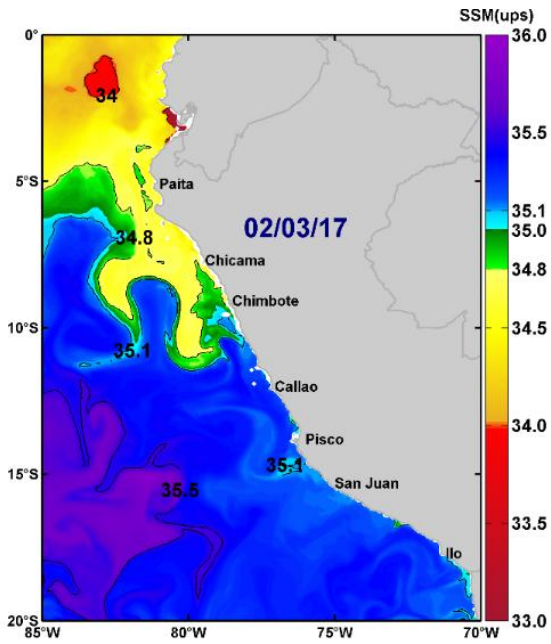
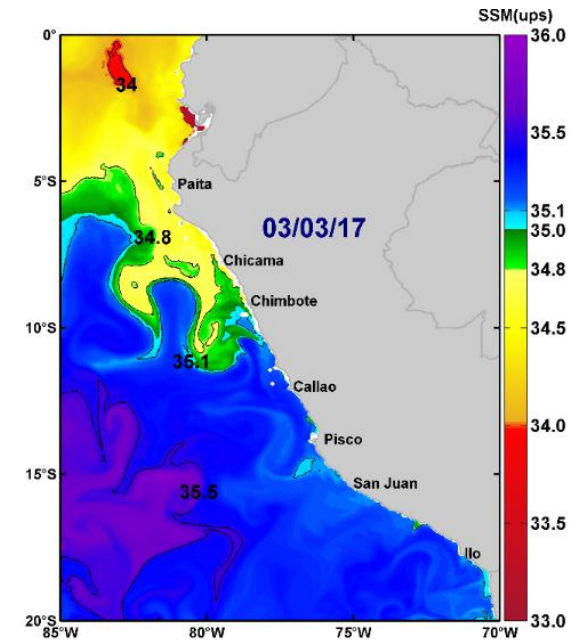
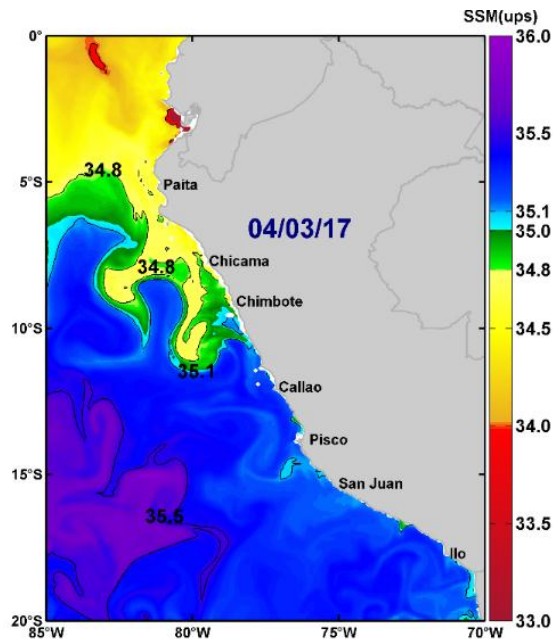
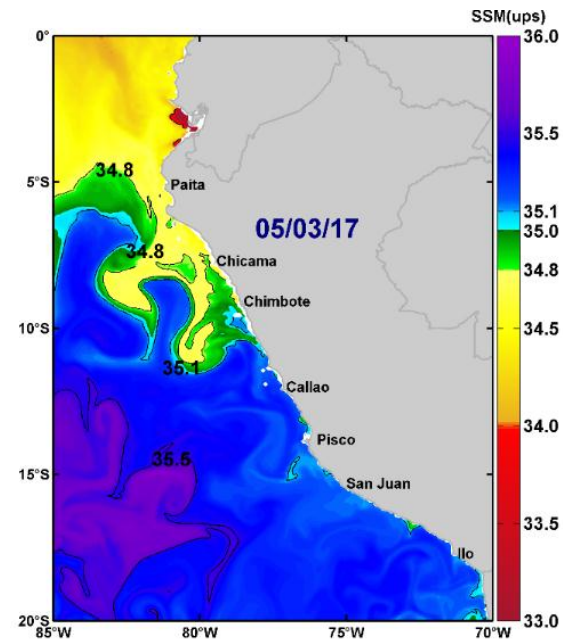
Perspectivas

Mapas del Pronóstico del Viento Costero (Modelo GFS)



Mapas de la velocidad y dirección del viento pronosticado por el modelo GFS (frente a la costa de Perú): Fuente: Modelo GFS-NOAA, Procesamiento: Laboratorio de Hidro-Física Marina, IMARPE

CONOSTICOS DE SALINIDAD SUPERFICIAL DEL MAR (HYCOM-NCODA)

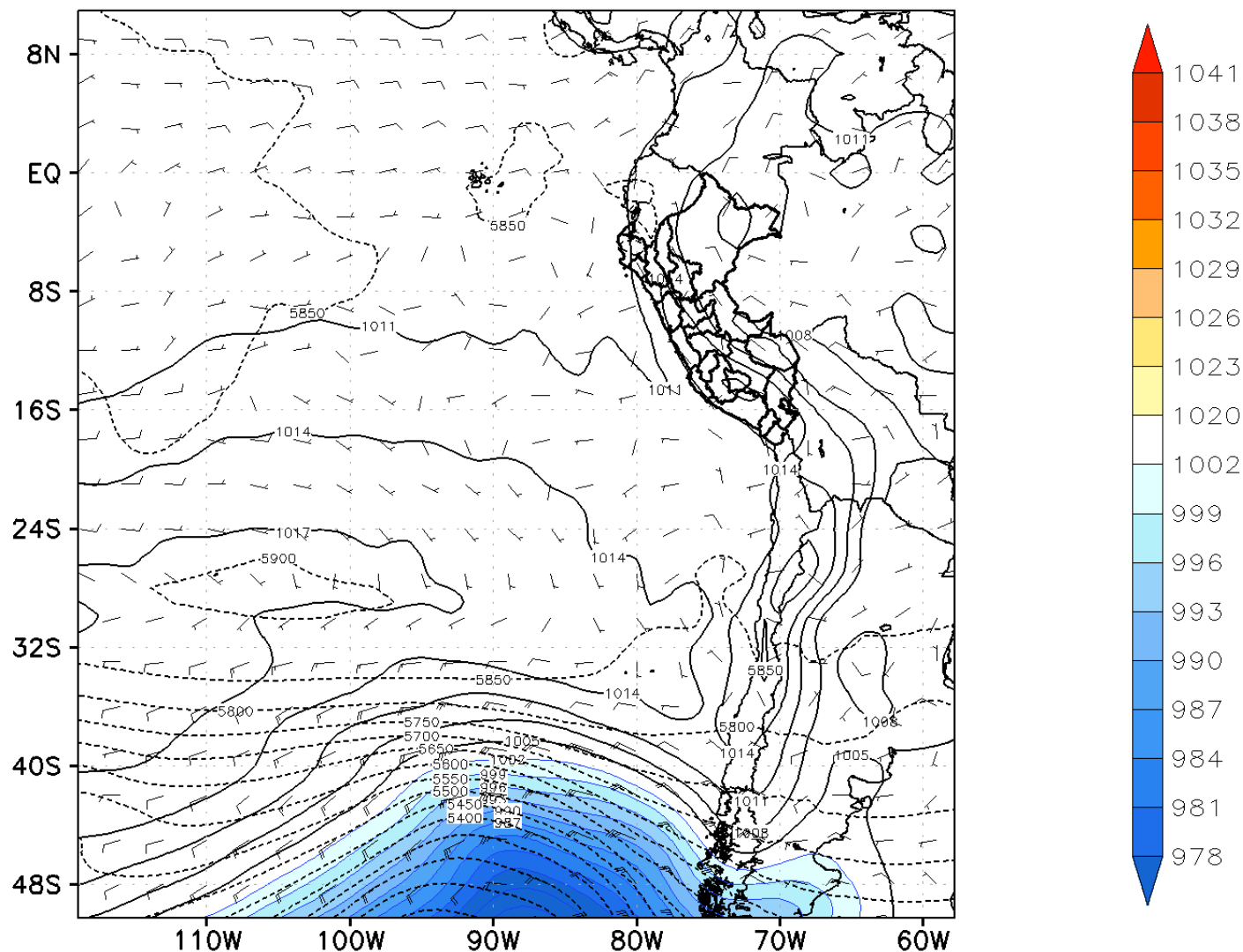


Pronósticos de presión a nivel del mar y

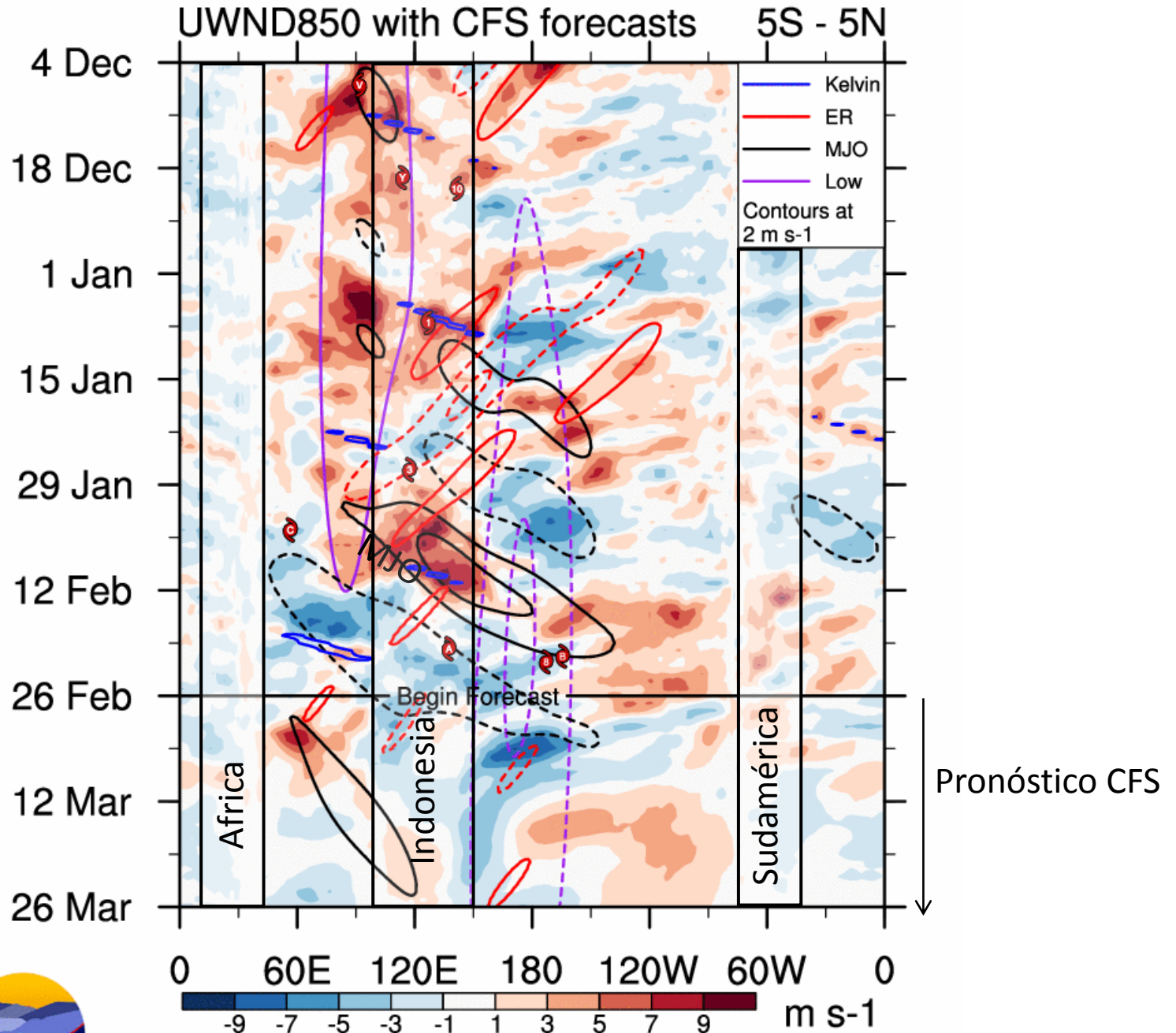
APS

www.gif-animator.com - UNREGISTERED

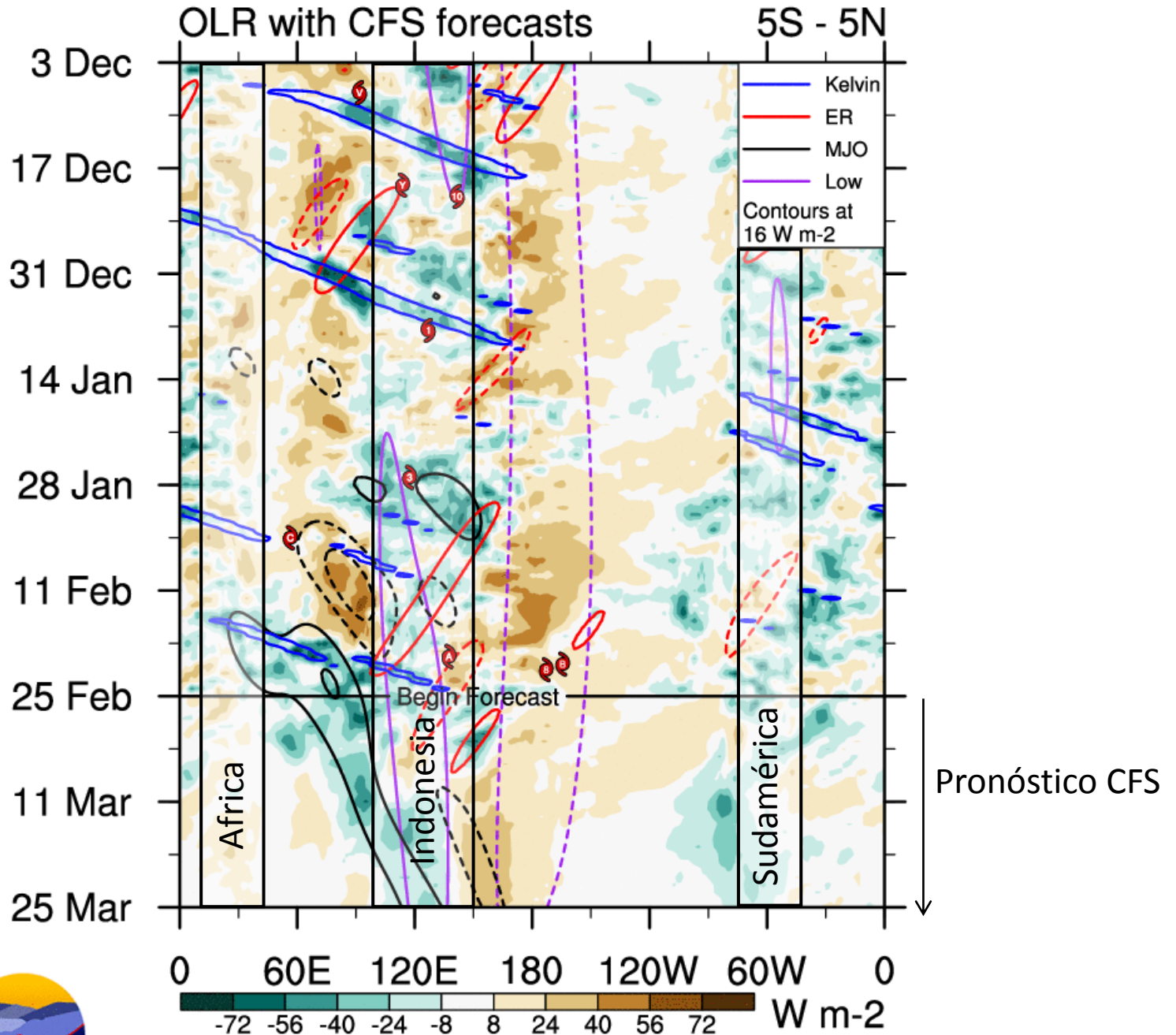
PRESION A NIVEL DEL MAR (hPa), VIENTO 850 hPa, ALT GEO 500hPa
ANALISIS: 00UTC 28FEB2017 VALIDO: 00UTC 28FEB2017



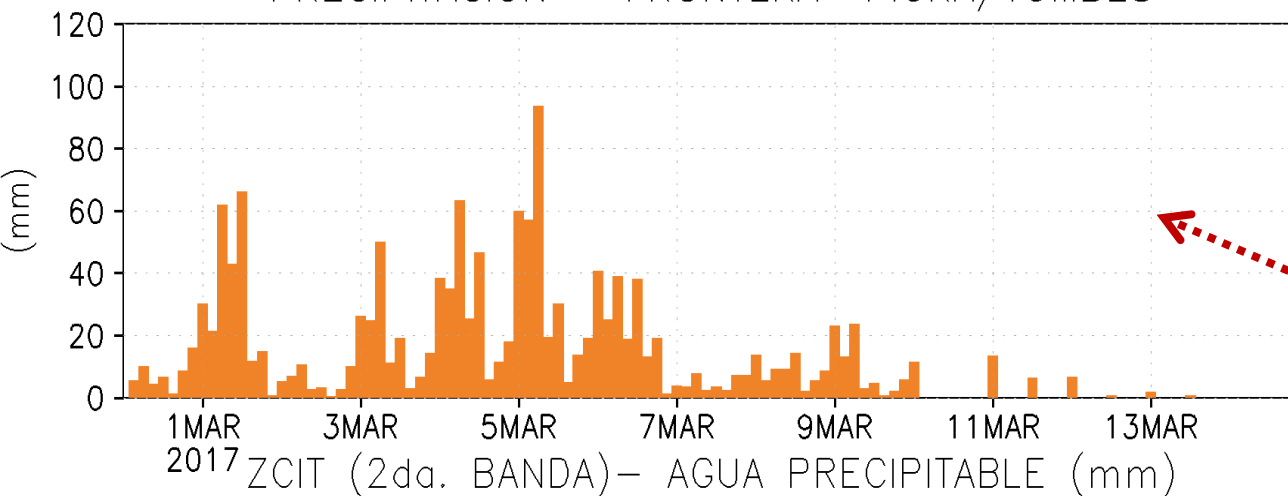
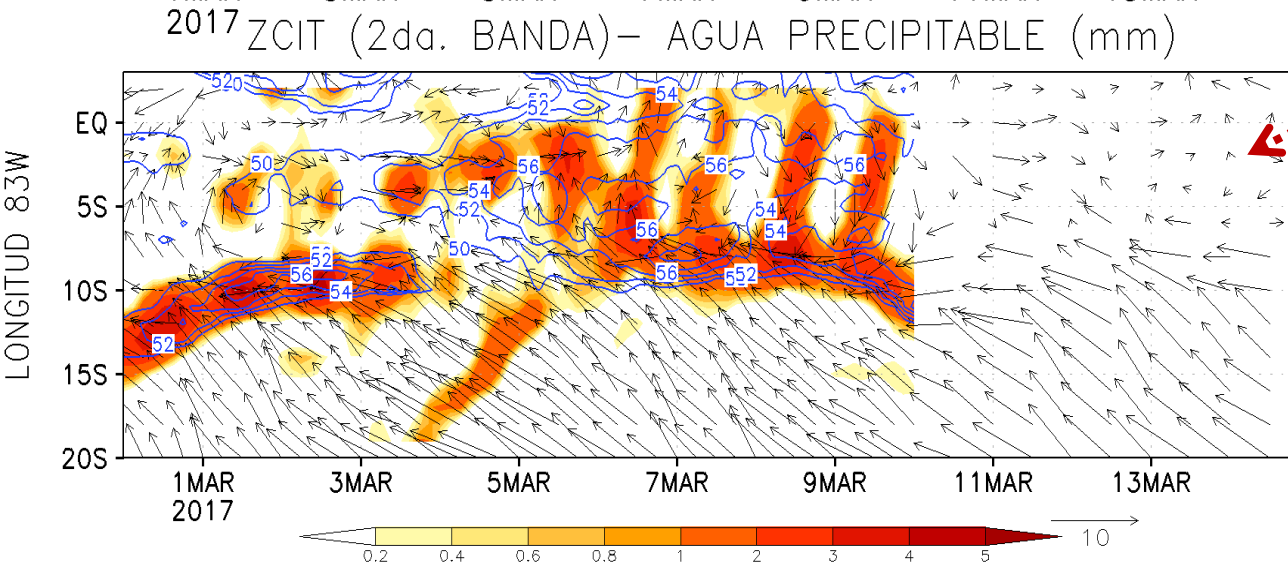
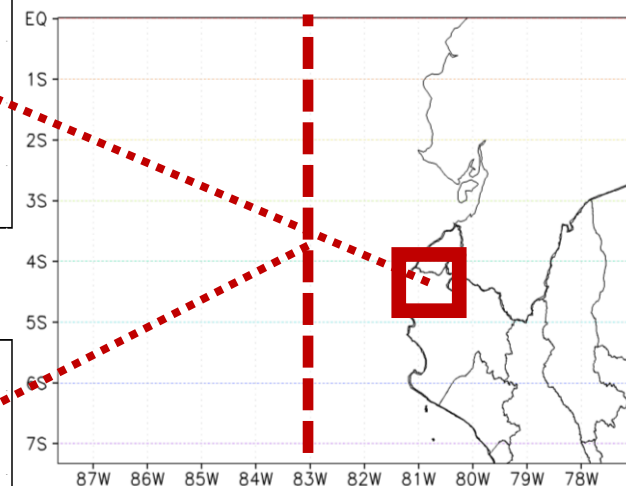
Viento zonal ecuatorial en 850 Pa



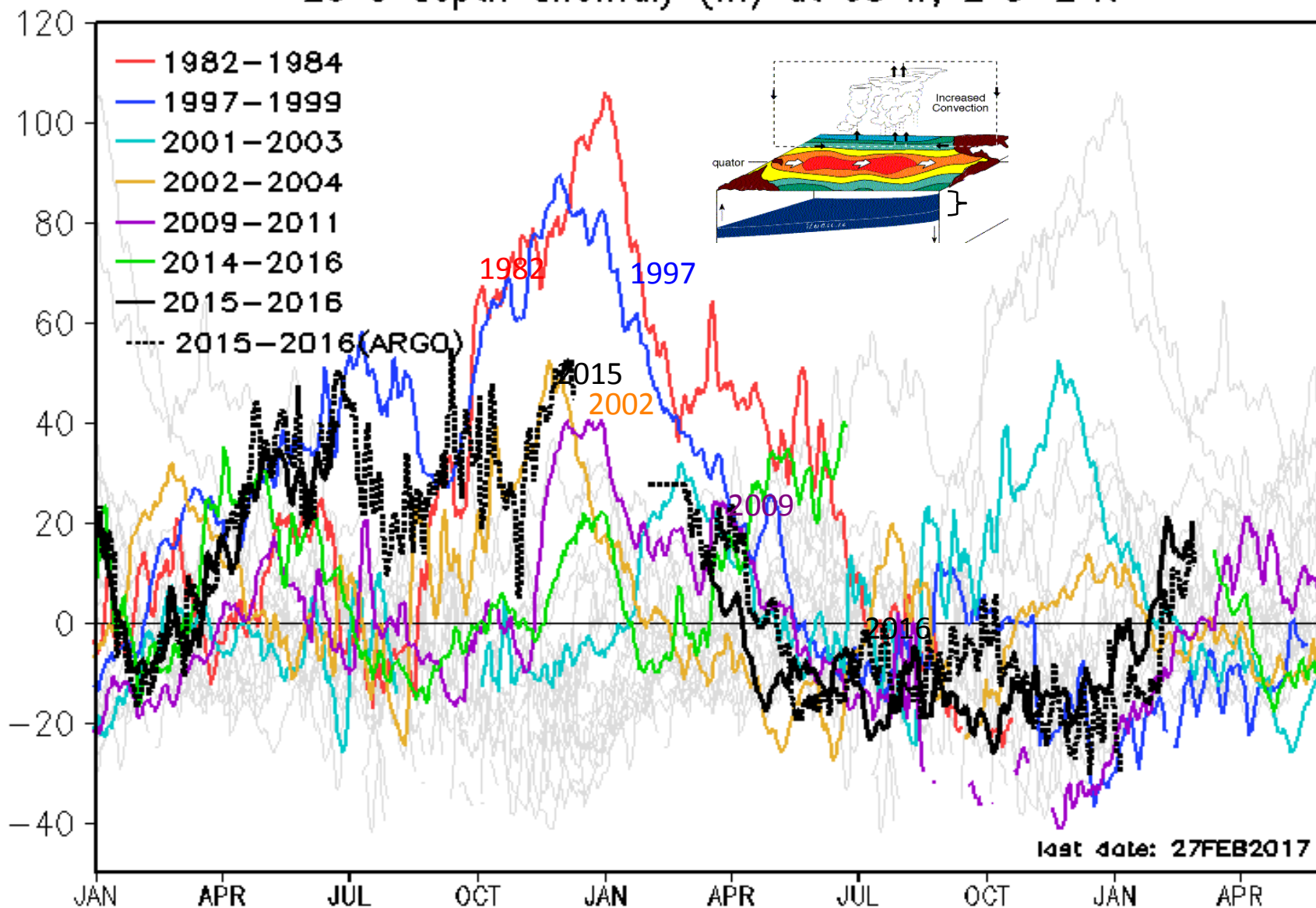
Convección (ROL) ecuatorial



PRECIPITACION – FRONTERA PIURA/TUMBES



20°C depth anomaly (m) at 95°W, 2°S–2°N



5 day running mean. Data: TAO/TRITON (PMEL) and ARGO (100°W – 90°W), Processing: IGP

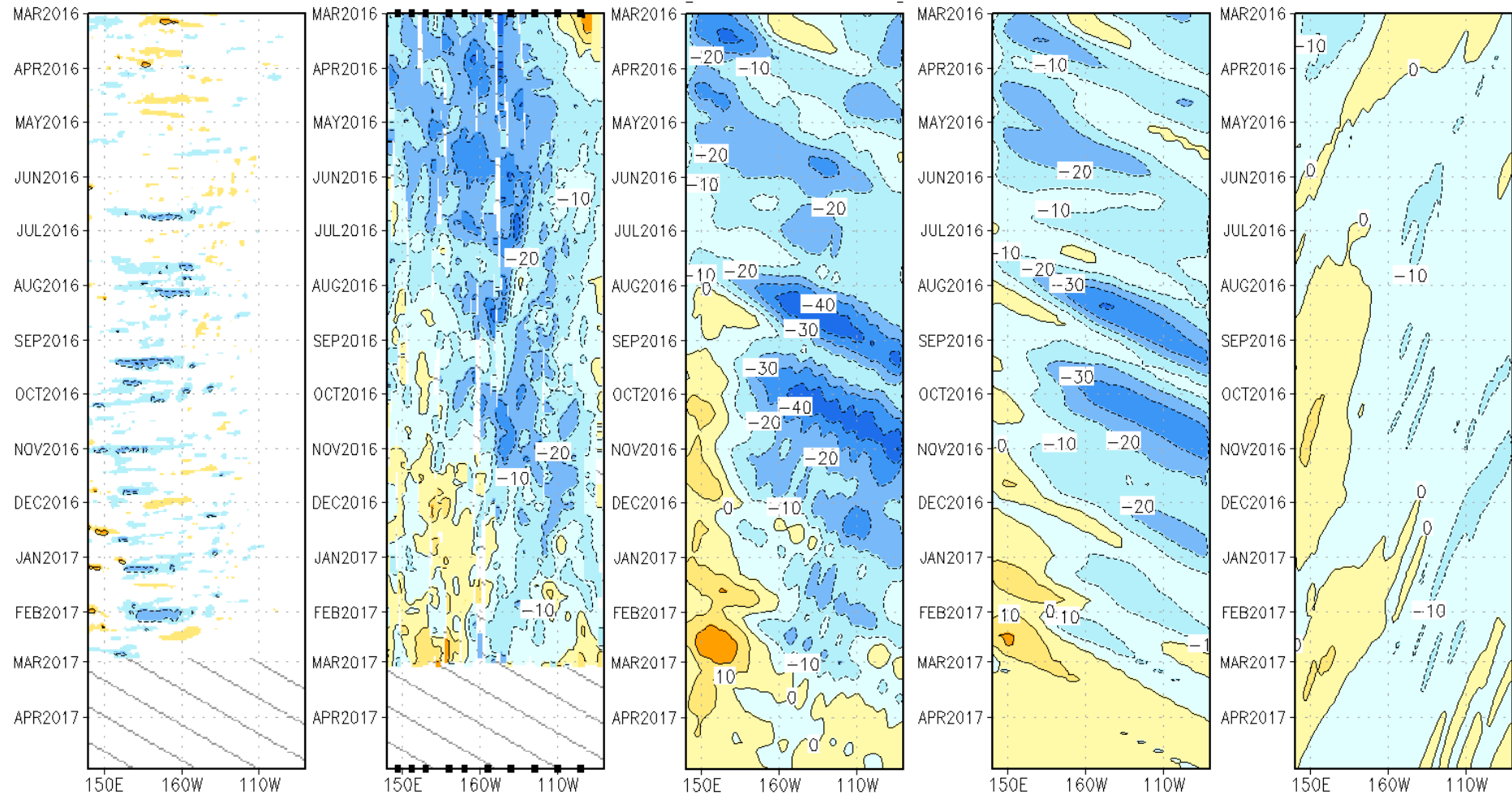
ASCAT (taux)

ARGO+TAO

Kelvin + Rossby

Kelvin

Rossby



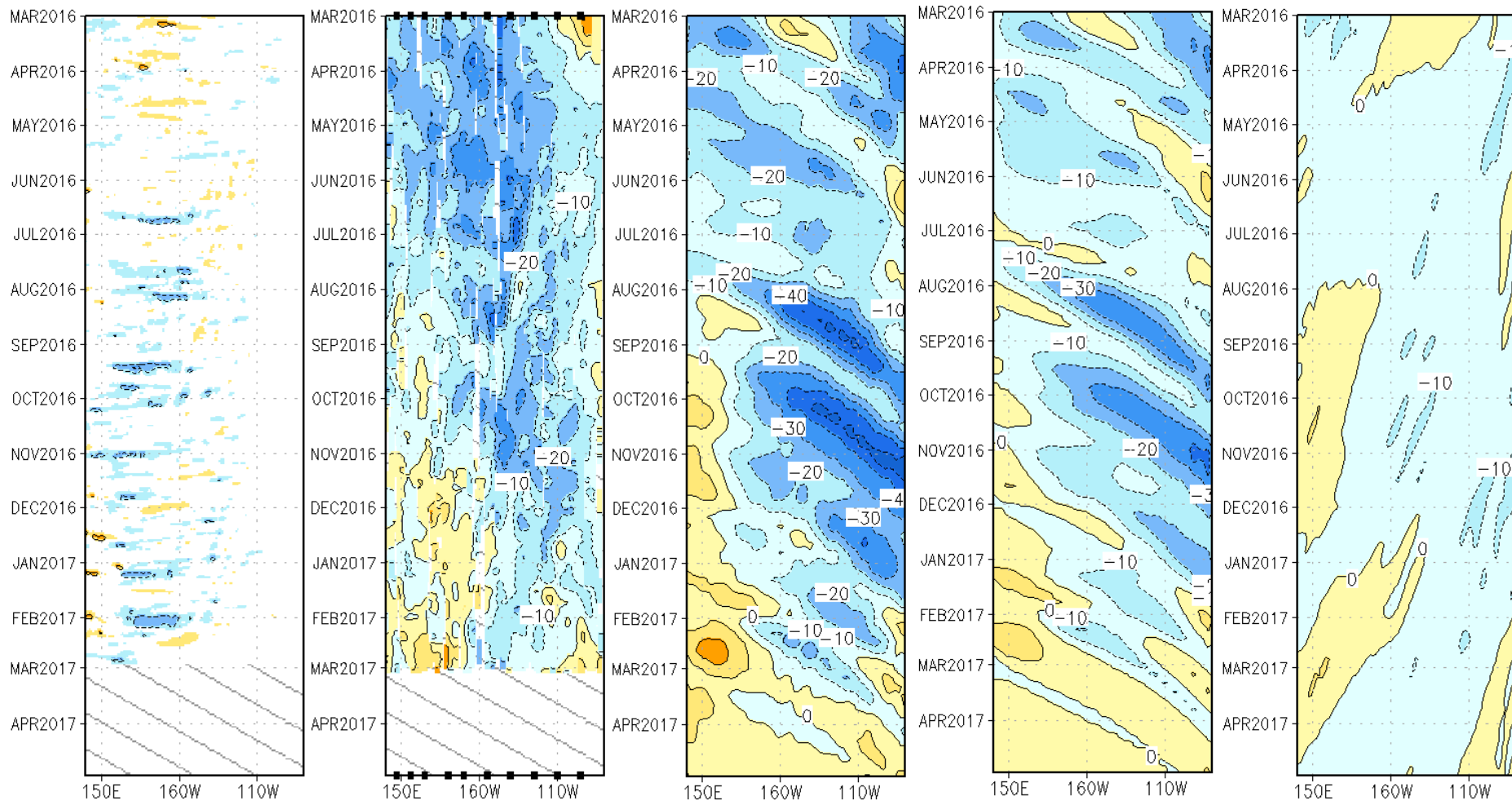
ASCAT (taux)

ARGO+TAO

Kelvin + Rossby

Kelvin

Rossby



Simulación de la propagación de las ondas Kelvin Ecuatoriales

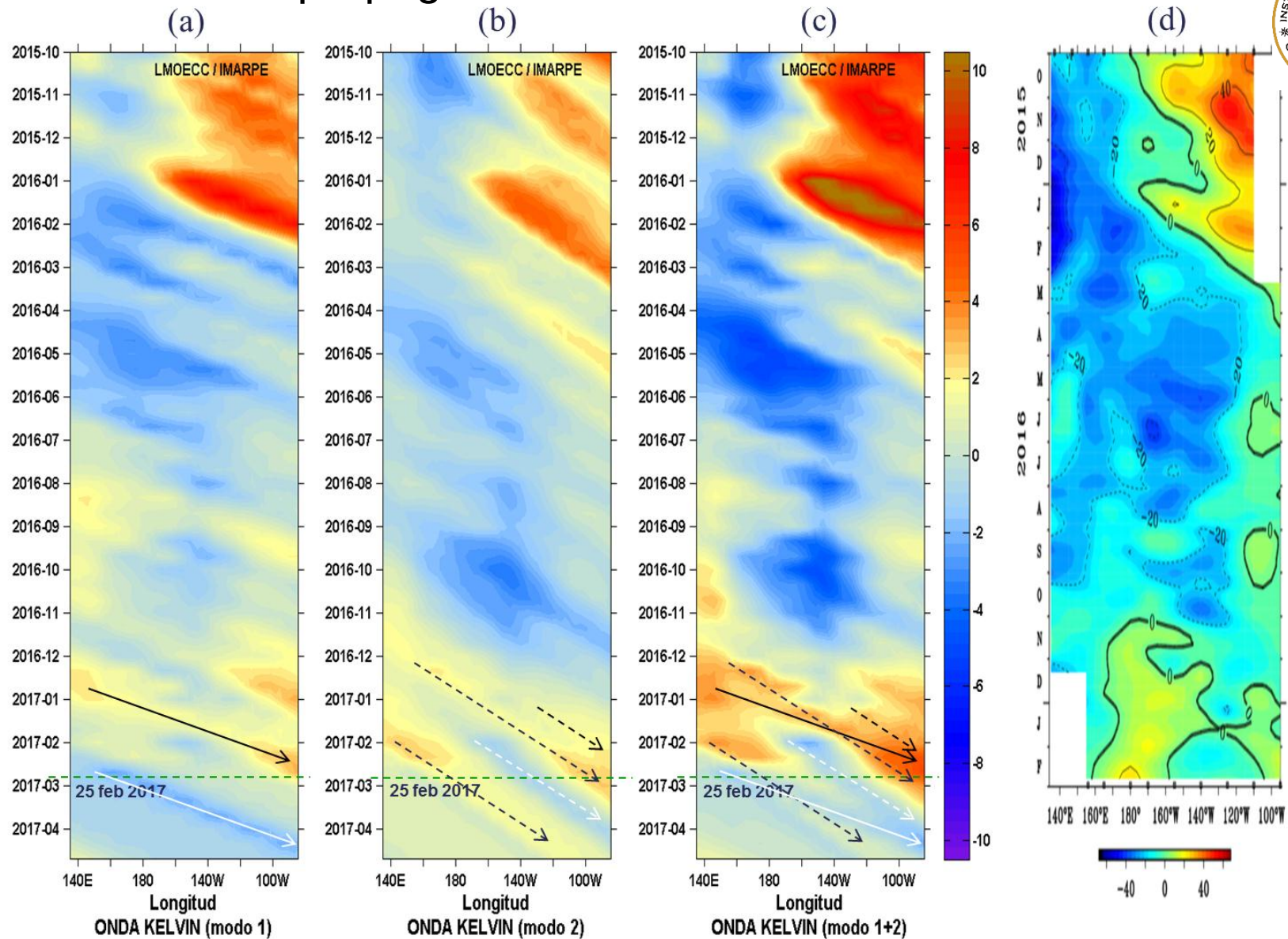
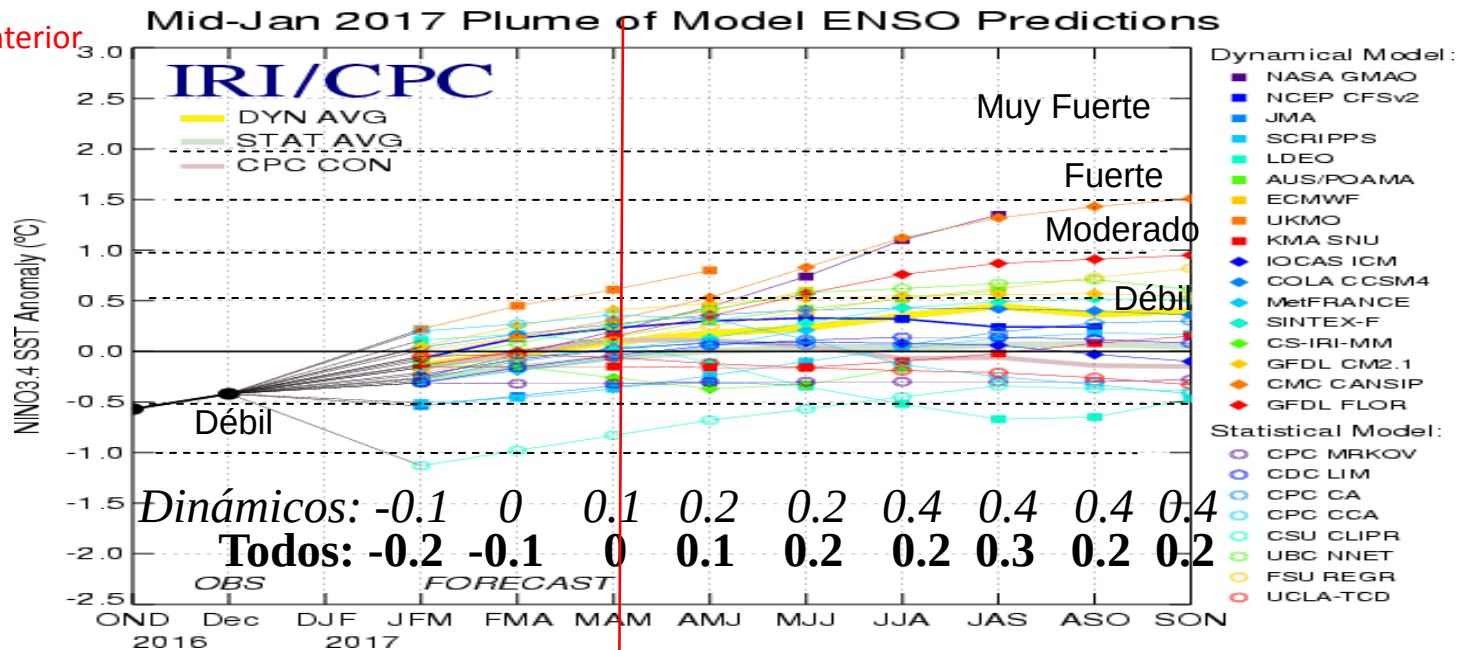
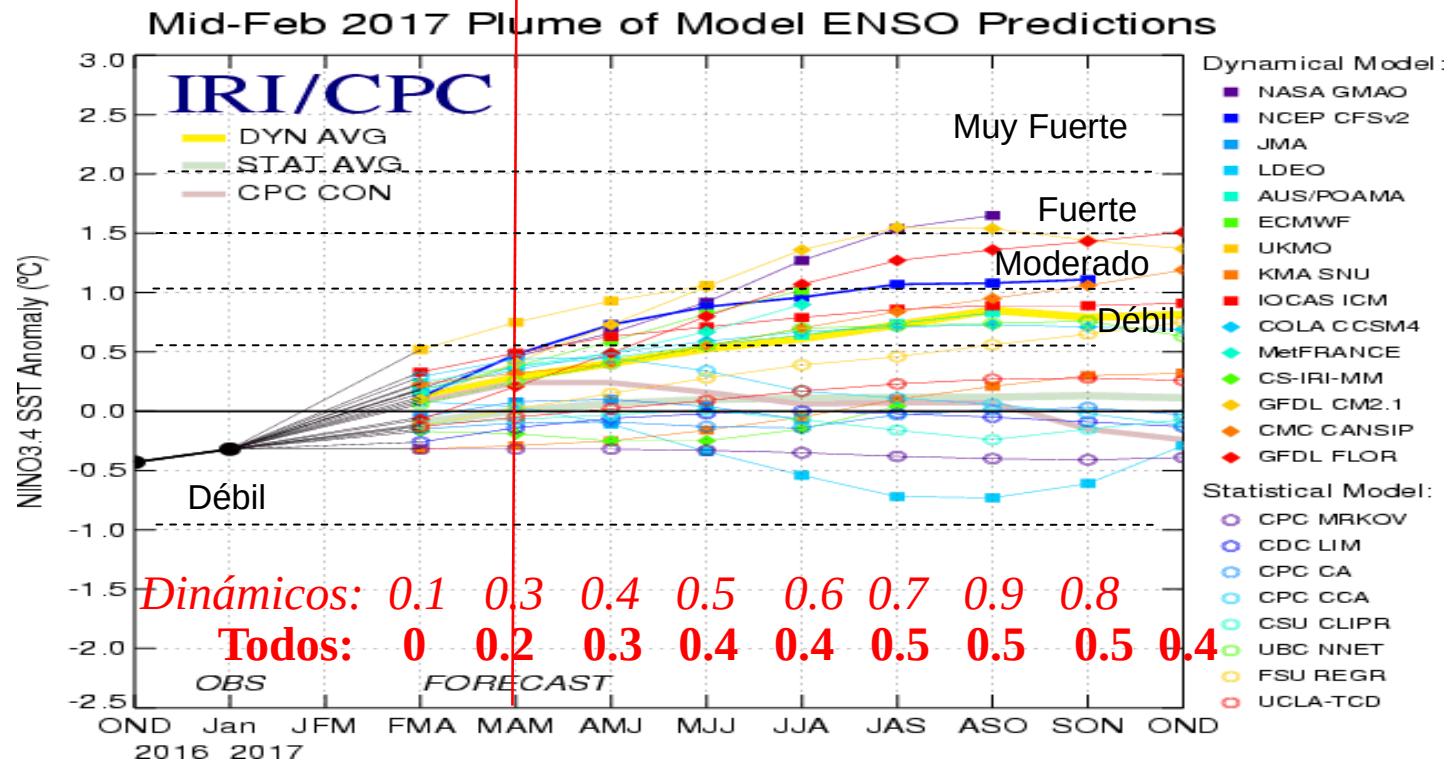


Diagrama Hovmöller longitud-tiempo de las ondas Kelvin en el océano Pacífico ecuatorial (0°N): (a) Modo 1, (b) Modo 2, (c) Modos 1+2 y (d) Anomalías de la profundización de la isoterma de 20°C (m) en la Pacífico Ecuatorial (2°S y 2°N). La línea discontinua horizontal, en verde, indica el inicio del pronóstico sin el forzante de vientos. Fuente: IMARPE, forzado con vientos de NCEP (Figuras a-c) y adaptación de TAO/PMEL/NOAA (Figuras d).

Corrida del mes anterior



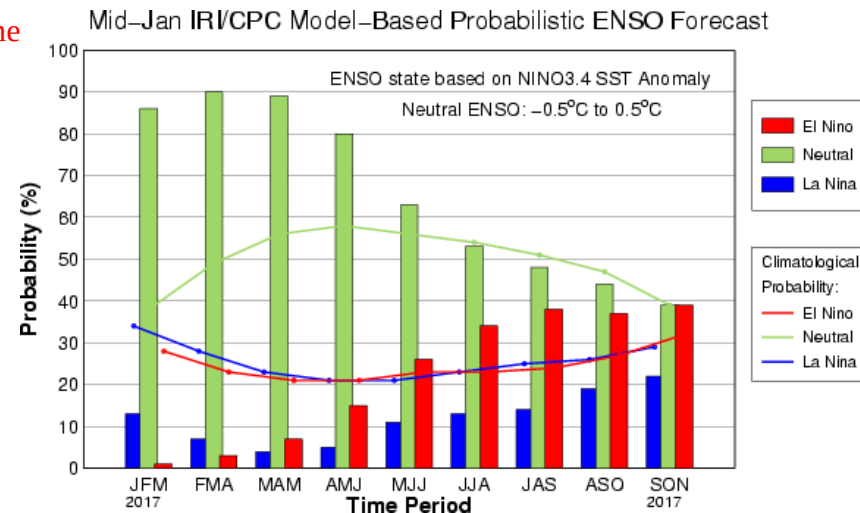
Corrida del mes reciente



Ensamblado multimodelos (IRI) para Niño 3.4

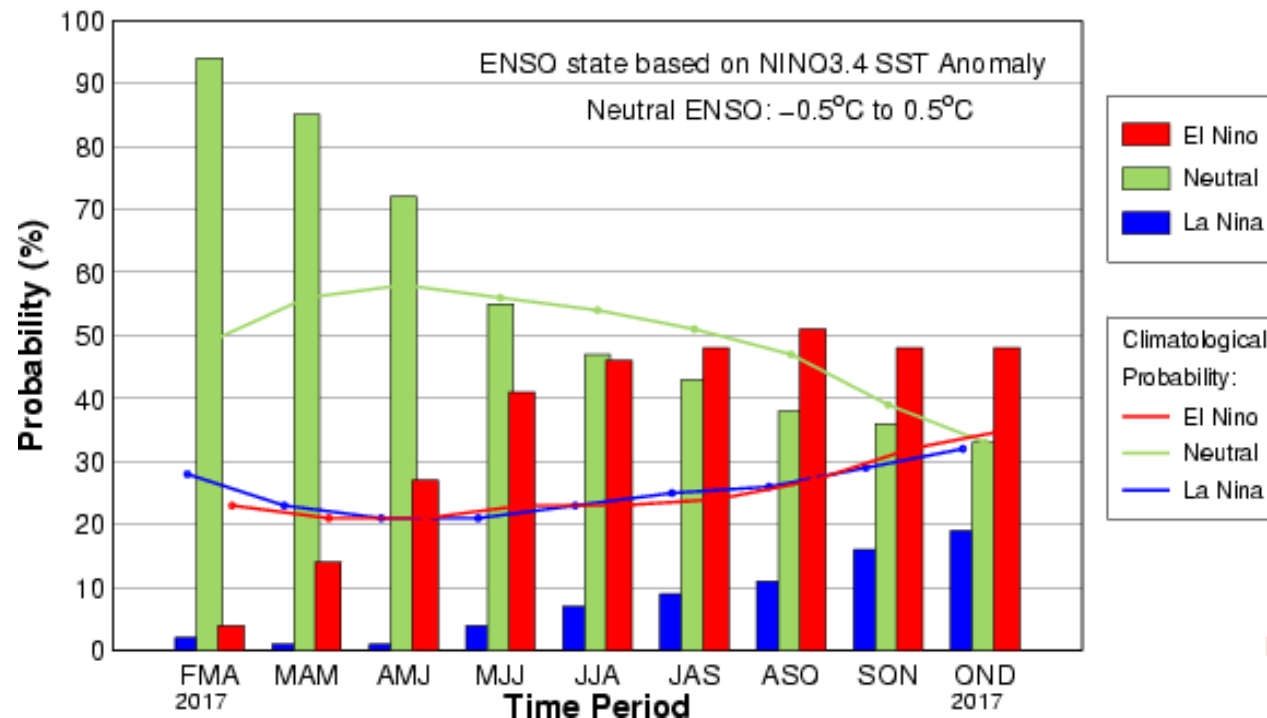
Probabilidades de El Niño según solo según porcentaje de **modelos** (IRI)

Corrida del me anterior



Corrida reciente

Mid-Feb IRI/CPC Model-Based Probabilistic ENSO Forecast

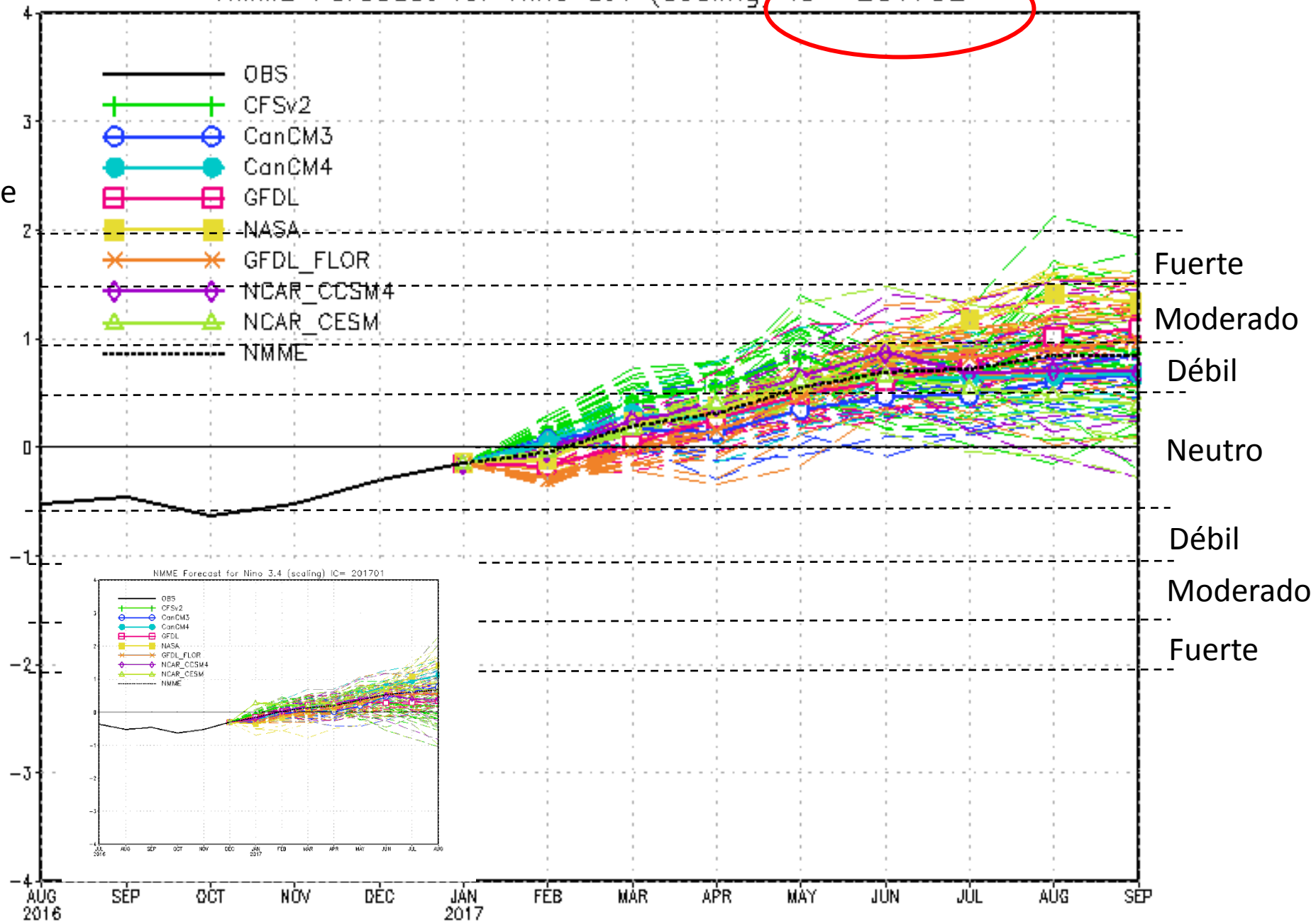


Según la evaluación NOAA/IRI, la probabilidad de Condiciones Neutras en el Pacífico central es de 72% para el mes de mayo, para abril es 55%

Publicado 16 de Febrero de 2017

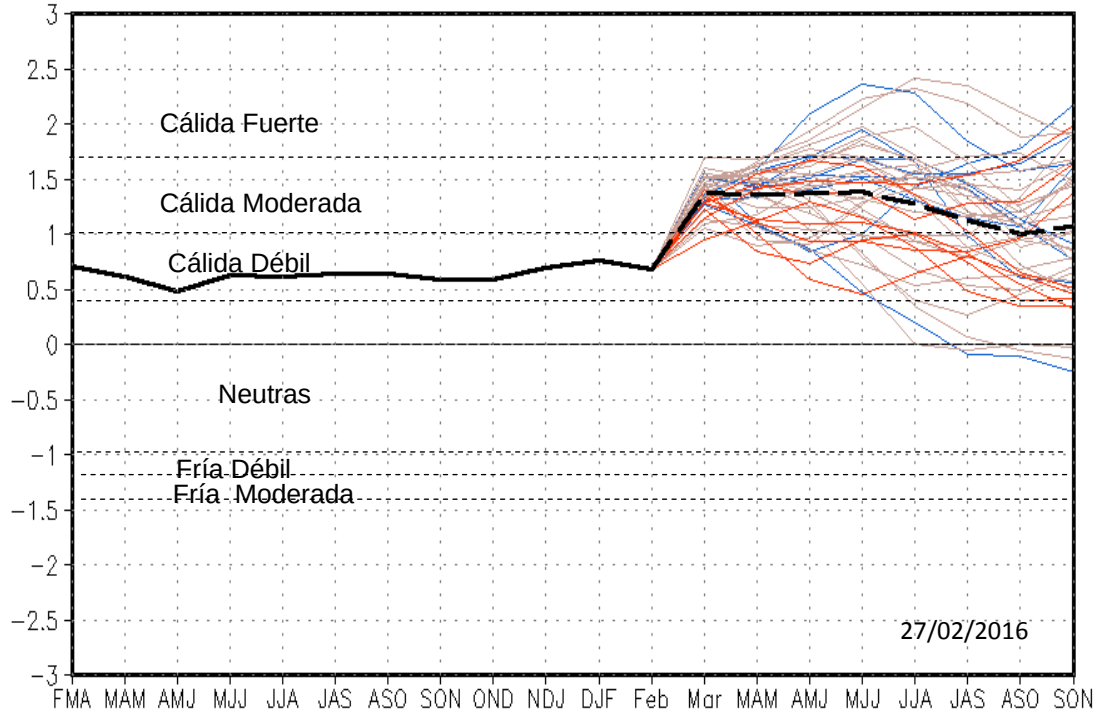
NMME Forecast for Nino 3.4 (scaling) IC= 201702

luy
erte

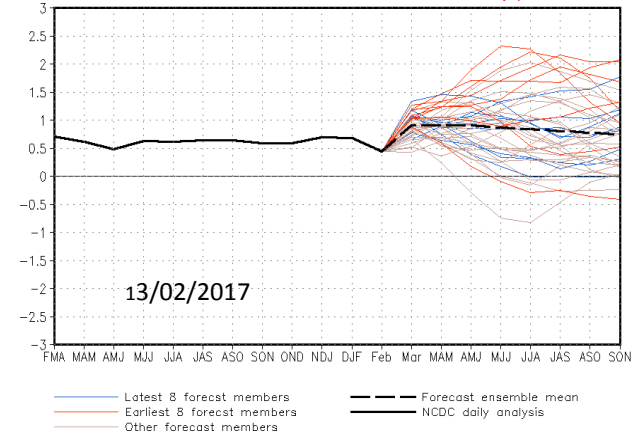


Pronóstico Niño 1+2 de CFS2

CFSv2 forecast Nino1+2 SST anomalies (K)



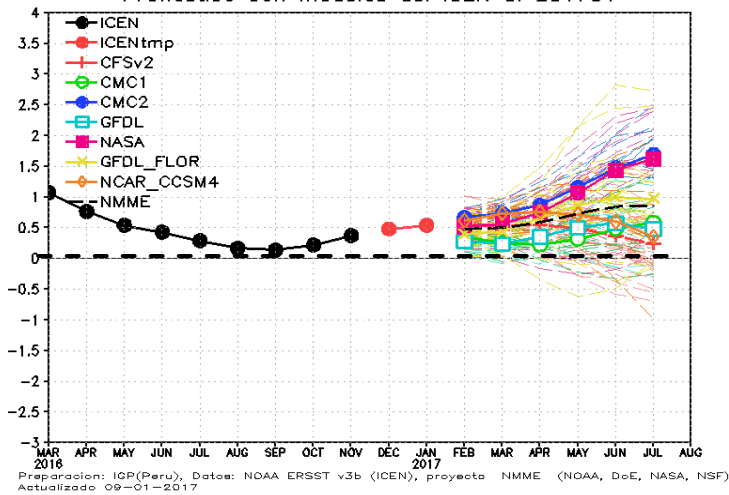
CFSv2 forecast Nino1+2 SST anomalies (K)



Corrida anterior

Corrida actual

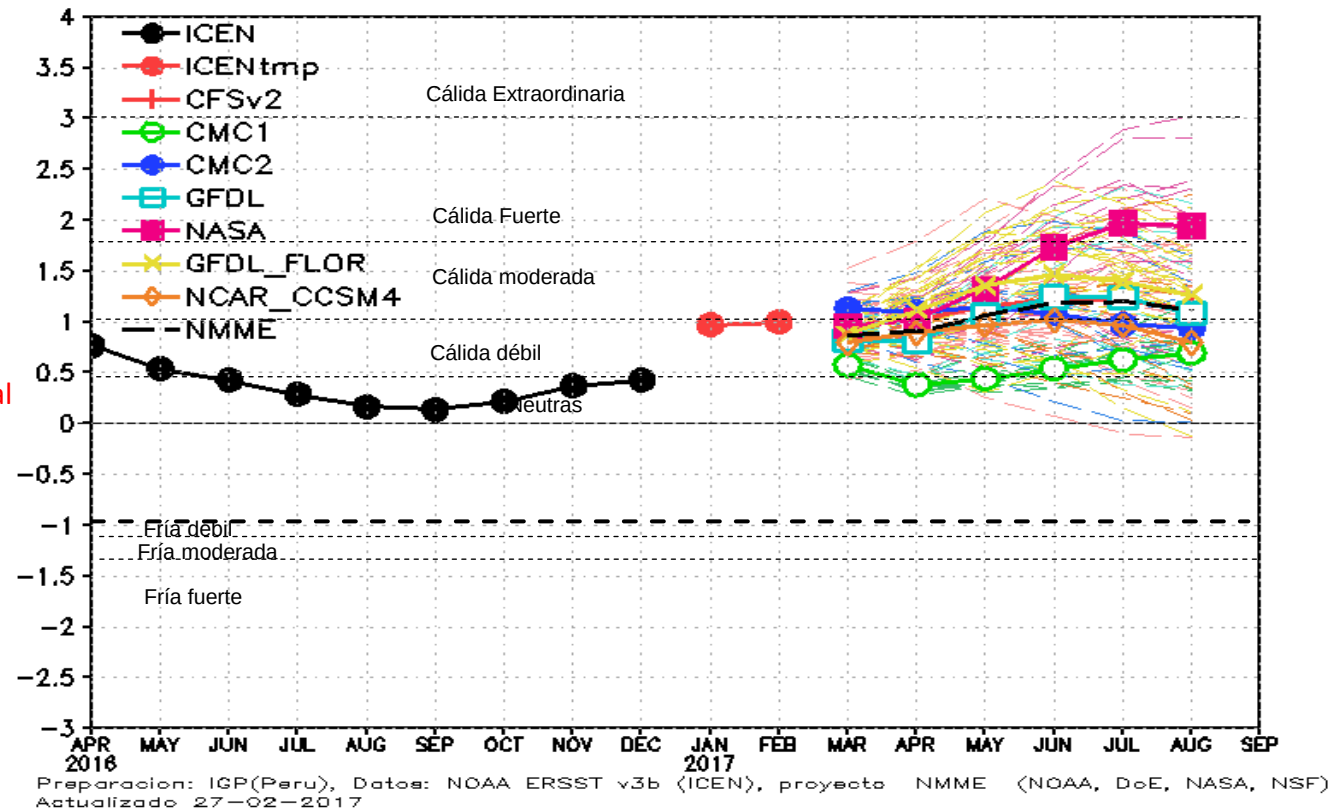
Pronostico con modelos del ICEN CI 201701



Corrida anterior

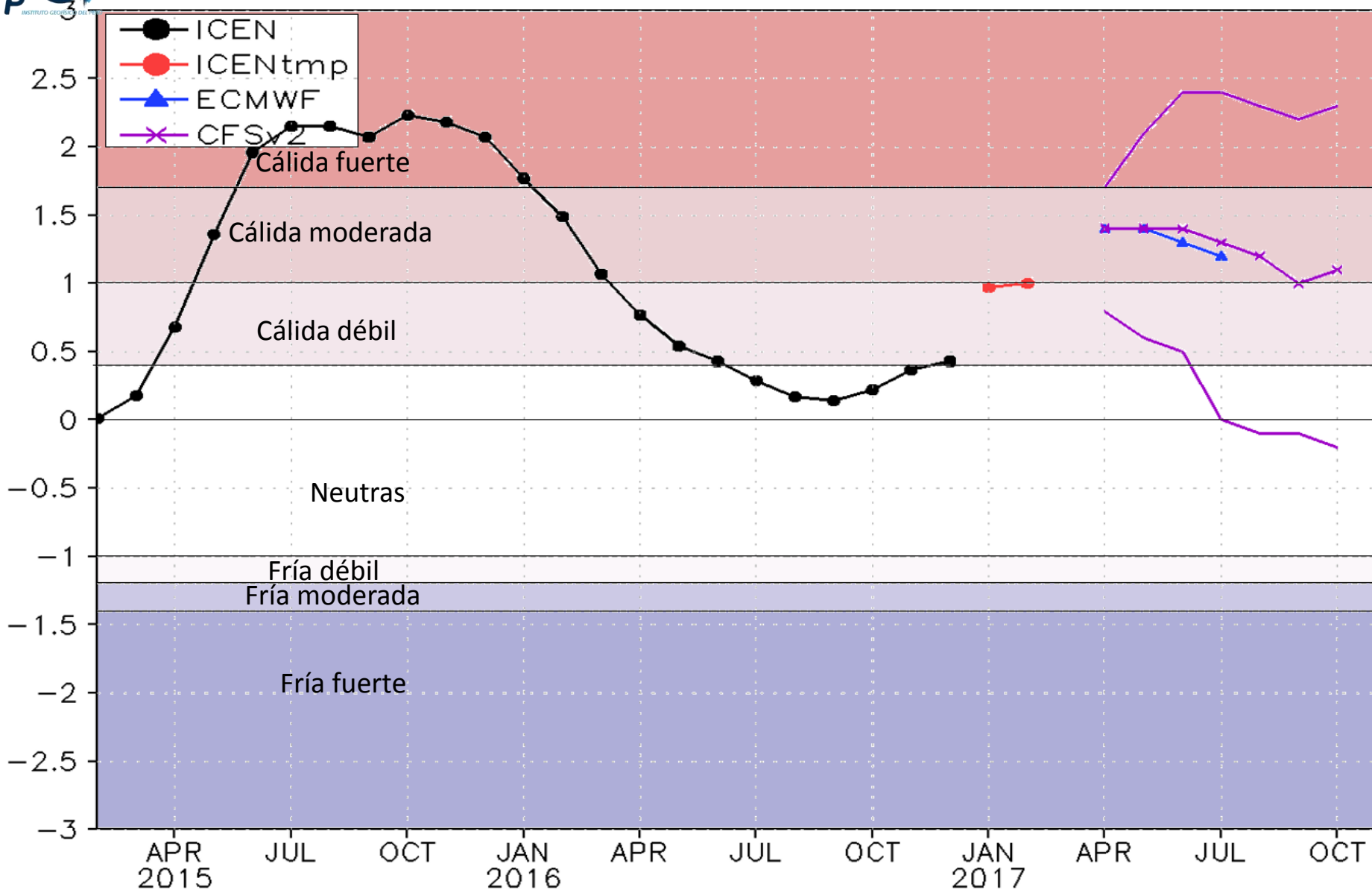
Pronostico con modelos del ICEN CI 201702

Corrida actual



Nota: Los pronósticos de los modelos CFSv2, CMC1, CMC2, GFDL, NASA, NCAR y GFDL_FLOR tienen como condiciones inicial el mes de febrero de 2017.

Pronóstico con modelos del ICEN



Nota: Las líneas delgadas en los pronósticos indican los máximos y mínimos en los "ensembles" de CFS2 con CI de Febrero.

Para ECMWF no se cuenta con datos del "ensemble", tiene condiciones iniciales el mes de Enero

Pronósticos de ICEN por modelos de NMME (promedios trimestrales de los

CI 2017 01

pronósticos de las anomalías en Niño 1+2)

Modelo	NDE	DEF	EFM	FMA	MAM	AMJ	MJJ	JJA
CFS2		0.62	0.55	0.54	0.55	0.49	0.37	0.24
CMC1		0.50	0.35	0.26	0.23	0.32	0.49	0.59
CMC2		0.65	0.67	0.73	0.87	1.16	1.47	1.69
GFDL		0.42	0.28	0.24	0.35	0.50	0.55	0.48
NASA		0.55	0.52	0.57	0.74	1.07	1.44	1.62
GFDL_FLOR		0.51	0.40	0.44	0.66	0.86	1.00	0.97
NCAR_CCSM4		0.59	0.61	0.73	0.76	0.72	0.60	0.35
NMME		0.55	0.48	0.50	0.59	0.73	0.85	0.85
ICENtmp	0.48							

CI 2017 02

Modelo	DEF	EFM	FMA	MAM	AMJ	MJJ	JJA	JAS
CFS2		0.74	0.98	1.03	1.15	1.23	1.21	1.12
CMC1		0.64	0.58	0.38	0.44	0.54	0.63	0.69
CMC2		0.95	1.13	1.09	1.14	1.08	0.98	0.94
GFDL		0.77	0.82	0.81	1.07	1.24	1.24	1.08
NASA		0.85	0.96	1.02	1.33	1.74	1.97	1.95
GFDL_FLOR		0.72	0.88	1.11	1.35	1.46	1.39	1.27
NCAR_CCSM4		0.67	0.80	0.89	0.97	1.02	0.97	0.80
NMME		0.76	0.88	0.90	1.06	1.19	1.20	1.12
ICENtmp	0.97							

Pronósticos de ONI por modelos de NMME (promedios trimestrales de los

pronósticos de las anomalías en Niño 3.4)

CI 2017 01

Modelo	NDE	DEF	EFM	FMA	MAM	AMJ	MJJ	JJA
CFS2		-0.26	0.25	0.29	0.34	0.36	0.33	0.28
CMC1		-0.37	-0.12	-0.02	0.05	0.18	0.43	0.70
CMC2		-0.34	0.00	0.28	0.57	0.87	1.22	1.53
GFDL		-0.29	0.05	0.25	0.41	0.47	0.52	0.54
NASA		-0.48	-0.23	0.01	0.25	0.50	0.82	1.20
GFDL_FLOR		-0.38	-0.14	0.00	0.15	0.35	0.57	0.76
NCAR_CCSM4		-0.30	-0.01	0.14	0.25	0.37	0.45	0.50
NMME		-0.35	-0.03	0.14	0.29	0.44	0.62	0.79
ONItmp	-0.65							

CI 2017 02

Modelo	DEF	EFM	FMA	MAM	AMJ	MJJ	JJA	JAS
CFS2		0.02	0.74	0.80	0.94	1.02	1.12	1.14
CMC1		-0.11	0.12	0.17	0.22	0.34	0.49	0.64
CMC2		-0.02	0.28	0.45	0.56	0.77	0.94	1.05
GFDL		-0.24	0.09	0.42	0.74	1.07	1.38	1.56
NASA		-0.13	0.25	0.53	0.74	1.01	1.39	1.67
GFDL_FLOR		-0.31	-0.07	0.21	0.49	0.79	1.07	1.27
NCAR_CCSM4		-0.12	0.18	0.38	0.54	0.66	0.78	0.84
NMME		-0.13	0.23	0.42	0.60	0.81	1.02	1.17
ONItmp	-0.40							

Nota: Para el modelo CFSv2 en (EFM), se realizó el promedio de los meses enero y febrero; para (FMA) se hizo el Promedio de marzo y abril.

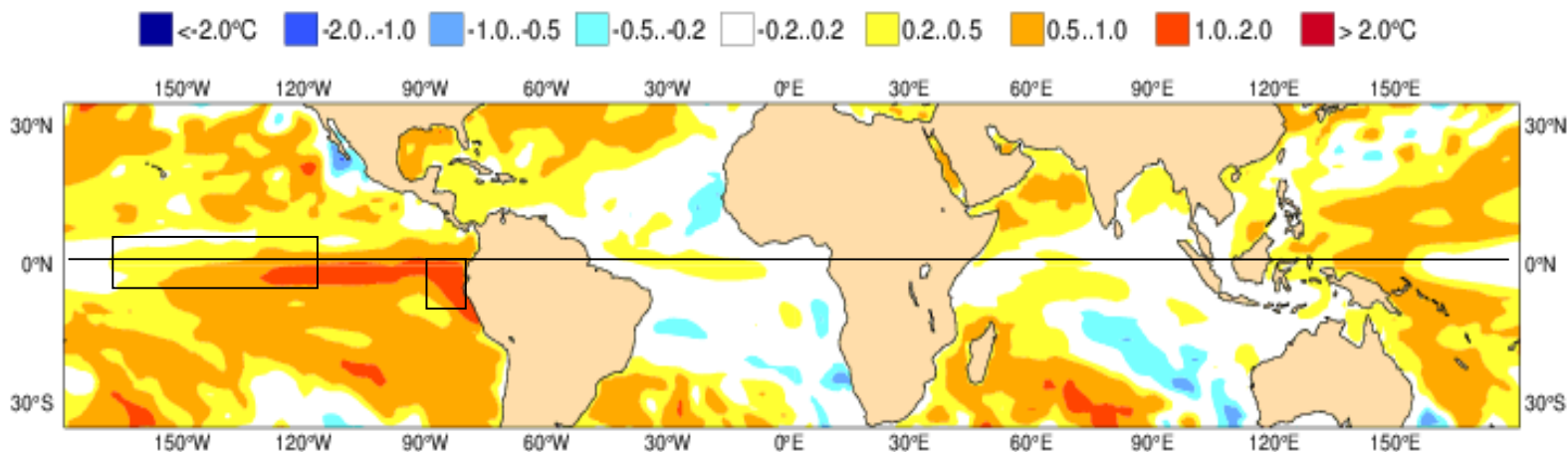
ECMWF Seasonal Forecast
Mean forecast SST anomaly
Forecast start reference is 01/02/17
Ensemble size = 51, climate size = 450

MAM 2017

System 4
MAM 2017

ECMWF

C.I. Febrero



Pac. Cen.
0.7 ° C

Pac. Or.
1.4° C

CFS2

C.I. Febrero

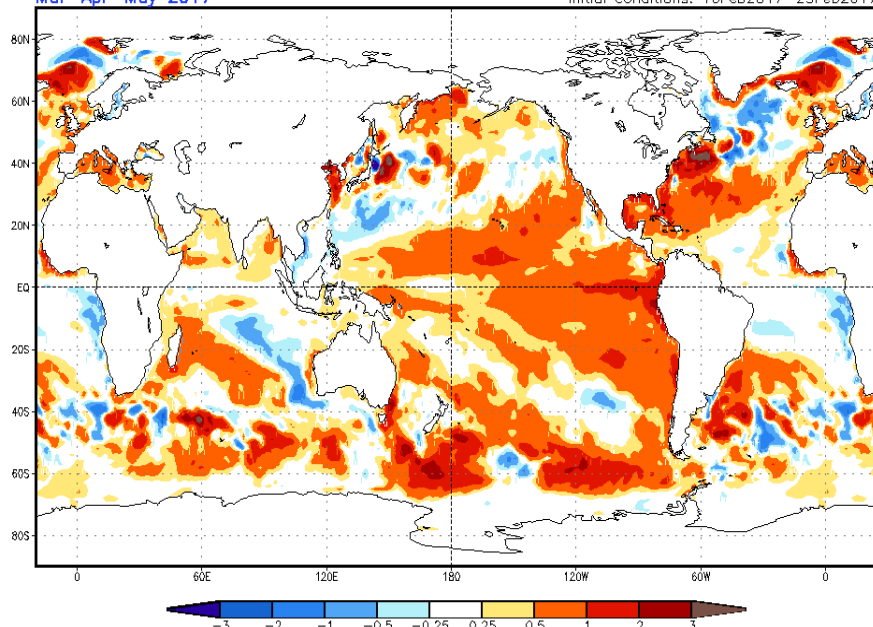
CFSv2 seasonal SST anomalies (K)



NWS/NCEP/CPC

Mar-Apr-May 2017

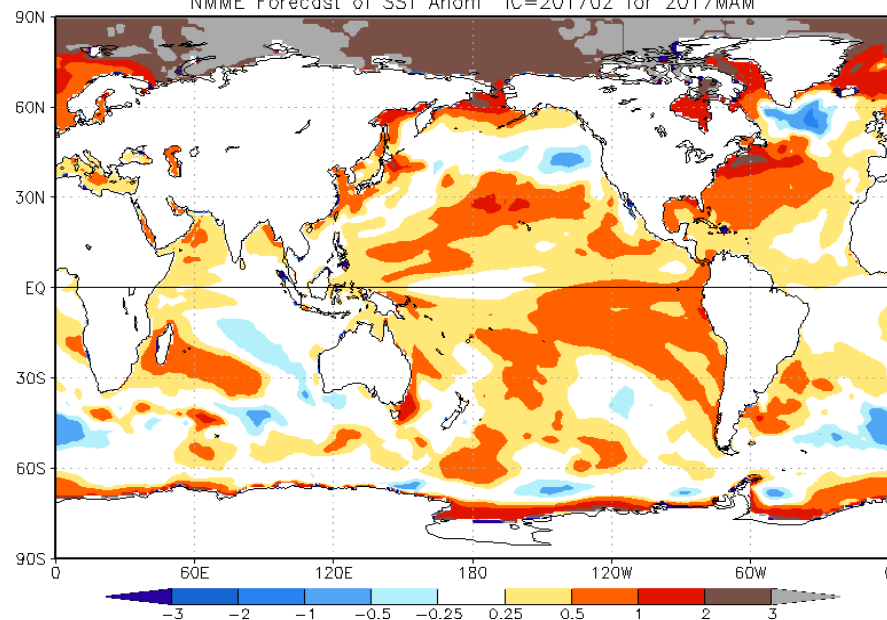
Initial conditions: 16Feb2017-25Feb2017



NMME

C.I. Febrero

NMME Forecast of SST Anom IC=201702 for 2017MAM



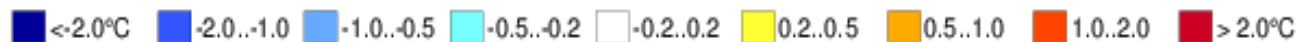
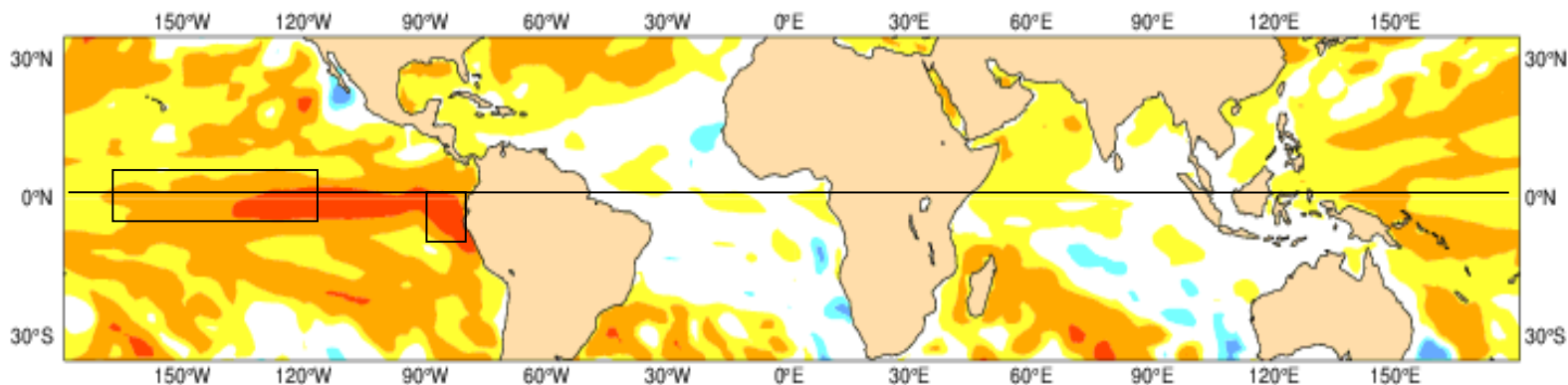
ECMWF Seasonal Forecast
 Mean forecast SST anomaly
 Forecast start reference is 01/02/17
 Ensemble size = 51, climate size = 450

AMJ 2017

System 4
 AMJ 2017

ECMWF

C.I. Febrero



Pac. Cen.
 0.8 ° C

Pac. Or.
 1.4° C

CFS2

C.I. Febrero

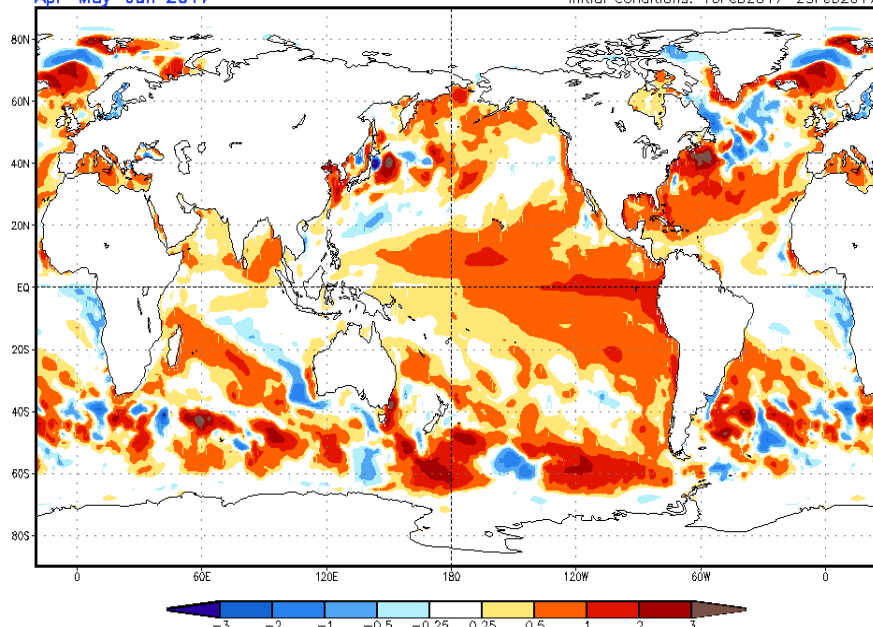
CFSv2 seasonal SST anomalies (K)



NWS/NCEP/CPC

Apr-May-Jun 2017

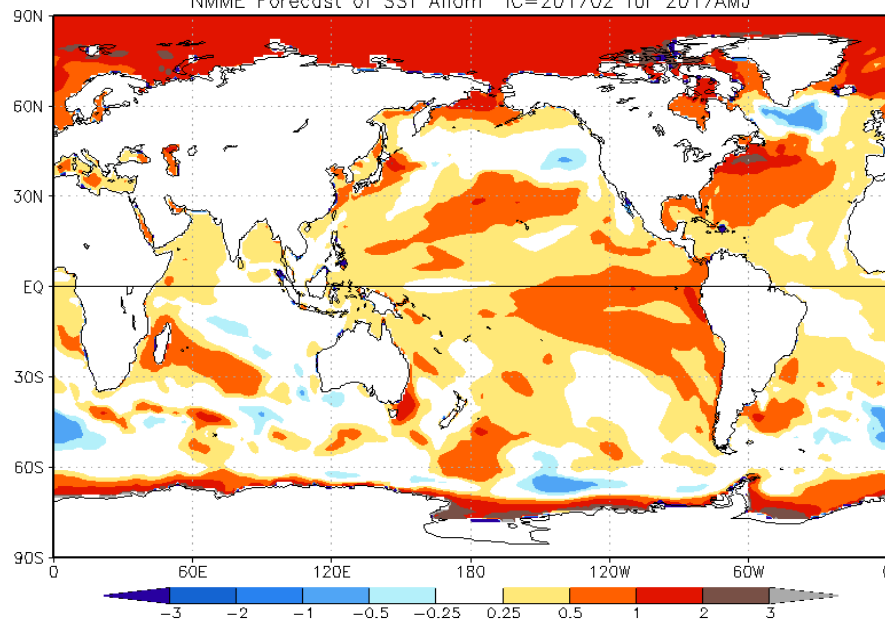
Initial conditions: 16Feb2017-25Feb2017



NMME

C.I. Febrero

NMME Forecast of SST Anom IC=201702 for 2017AMJ



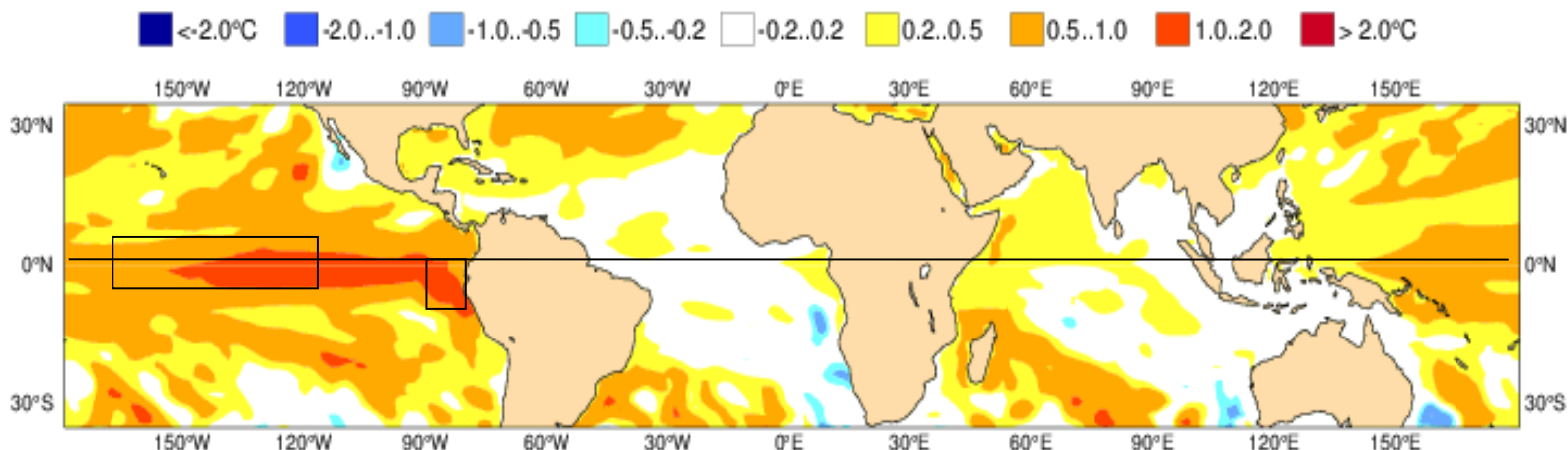
ECMWF Seasonal Forecast
Mean forecast SST anomaly
Forecast start reference is 01/02/17
Ensemble size = 51, climate size = 450

MJJ 2017

System 4
MJJ 2017

ECMWF

C.I. Febrero



Pac. Cen.
1.1 ° C

Pac. Or.
1.3 ° C

CFS2

C.I. Febrero

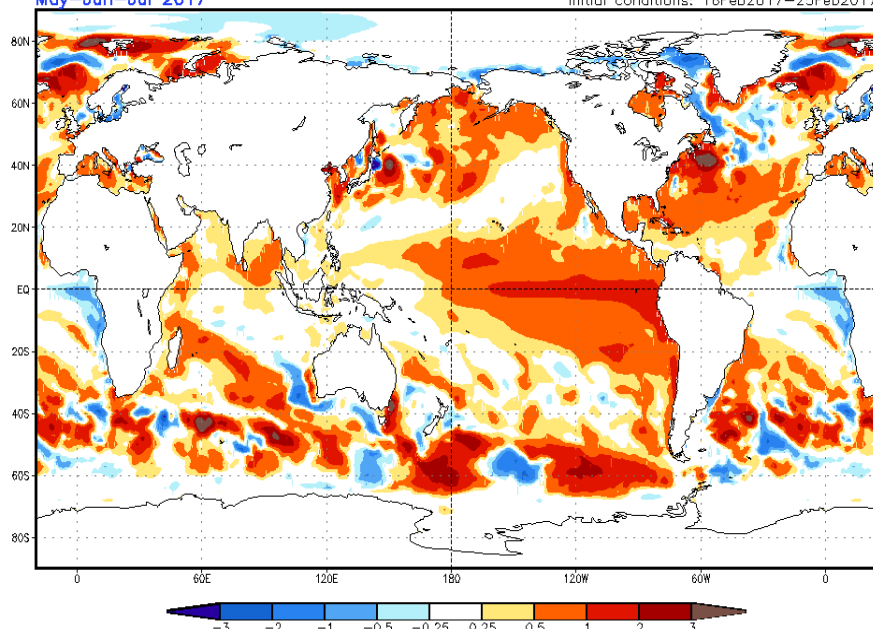
CFSv2 seasonal SST anomalies (K)



NWS/NCEP/CPC

May-Jun-Jul 2017

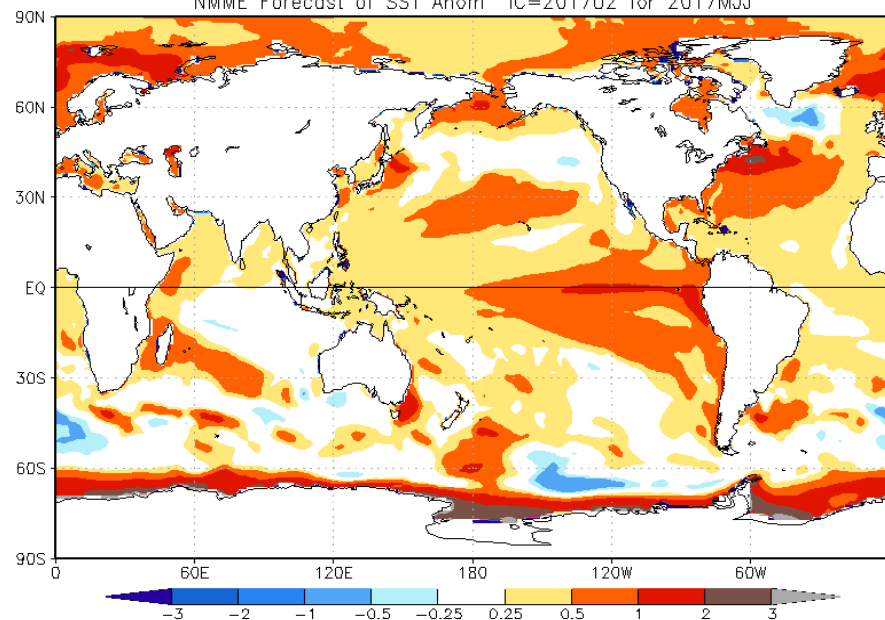
Initial conditions: 16Feb2017-25Feb2017



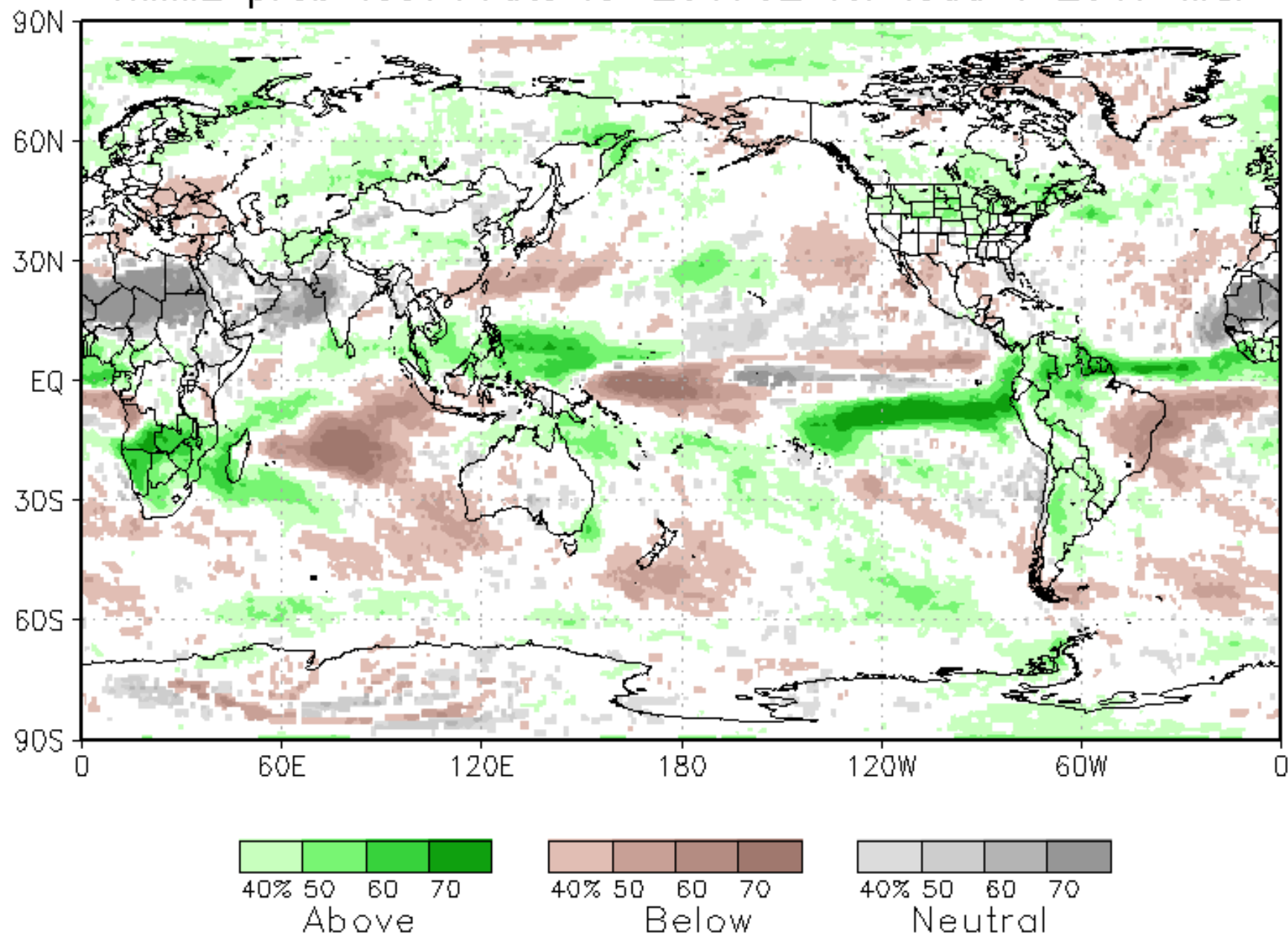
NMME

C.I. Febrero

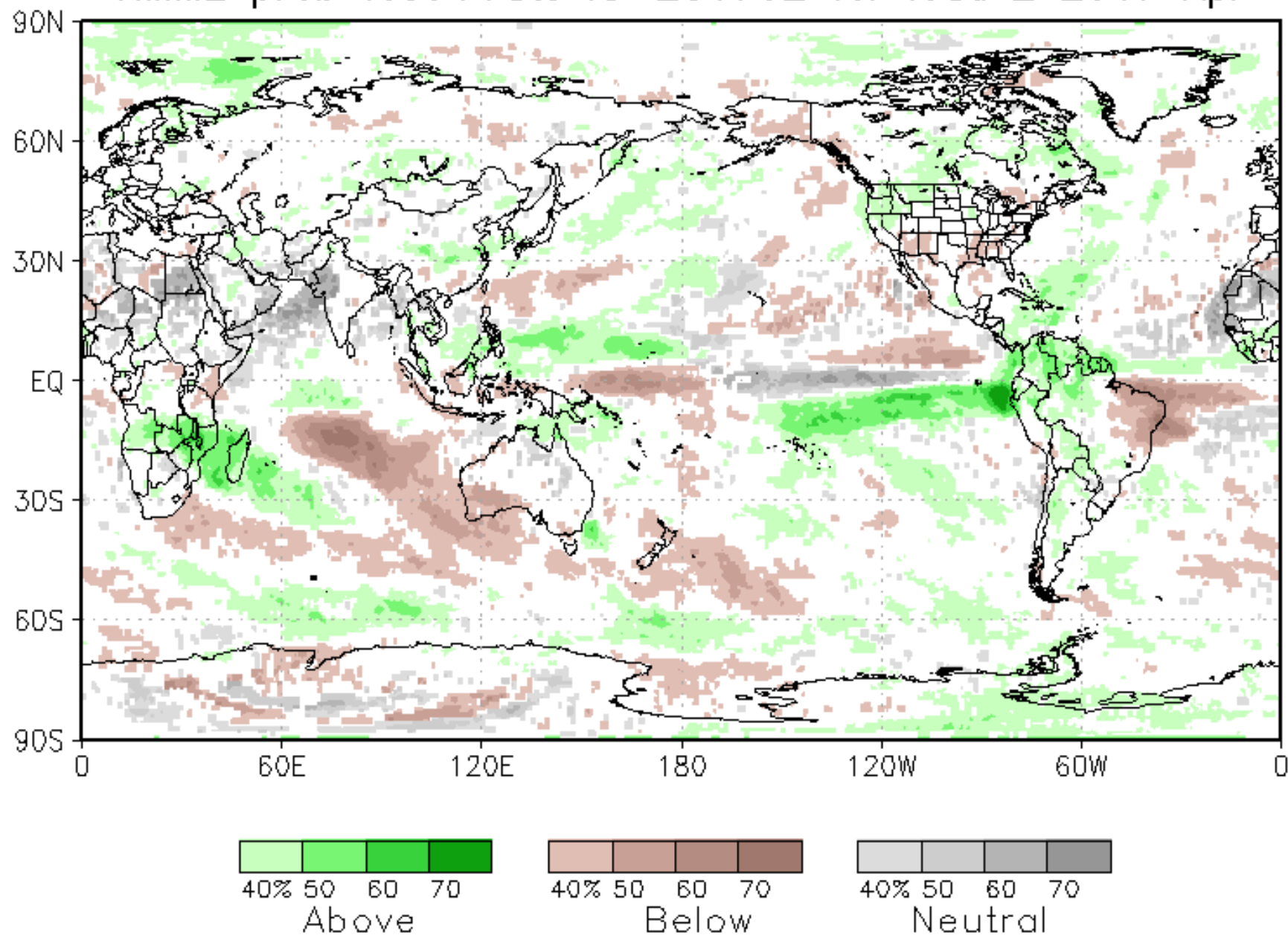
NMME Forecast of SST Anom IC=201702 for 2017MJJ



NMME prob fcst Prate IC=201702 for lead 1 2017 Mar



NMME prob fcst Prate IC=201702 for lead 2 2017 Apr



ECMWF Seasonal Forecast

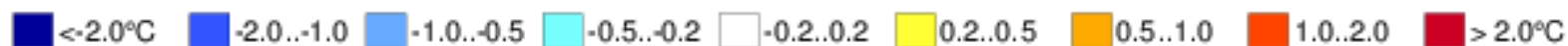
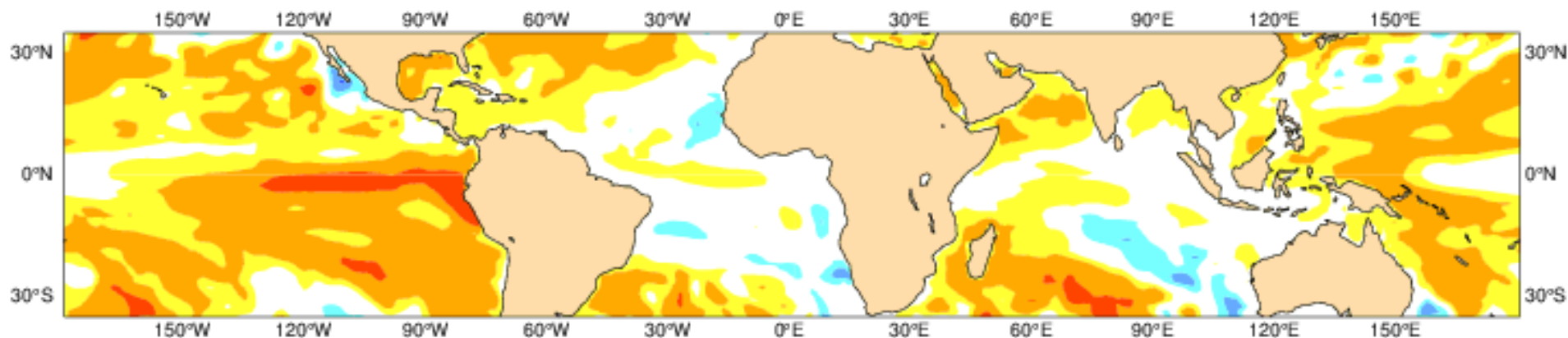
Mean forecast SST anomaly

Forecast start reference is 01/02/17

Ensemble size = 51, climate size = 450

System 4

MAM 2017



ECMWF Seasonal Forecast

Mean precipitation anomaly

Forecast start reference is 01/02/17

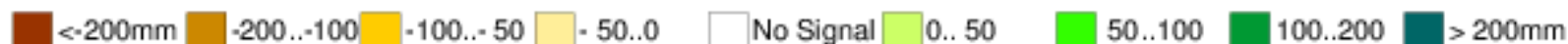
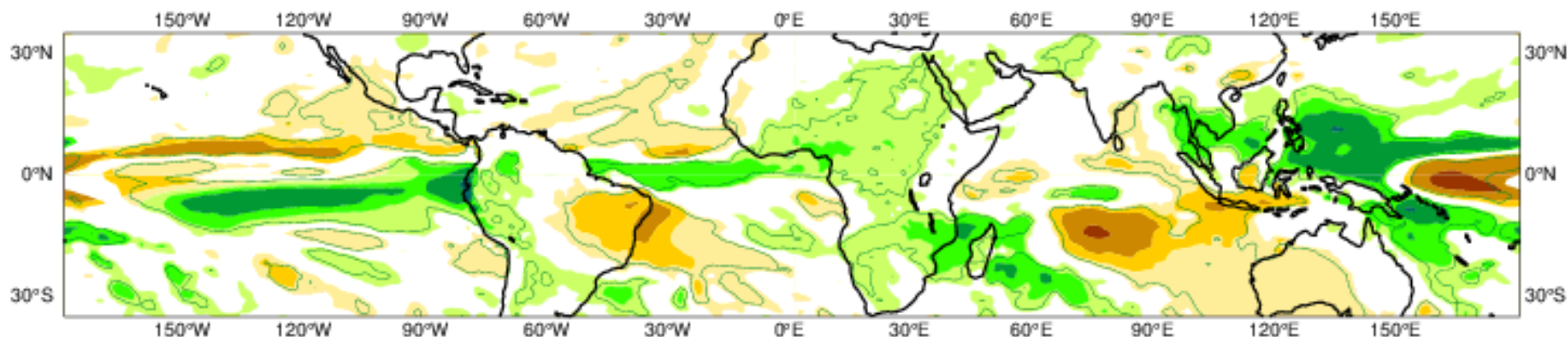
Ensemble size = 51, climate size = 450

System 4

MAM 2017

Shaded areas significant at 10% level

Solid contour at 1% level



Esquema simplificado de la actividad de las ondas largas ecuatoriales (Kelvin y Rossby)

