

Monitoreo y pronóstico de El Niño

1ra quincena de febrero de 2016

Comité Técnico ENFEN

18 de febrero de 2016

Valores del Índice Costero El Niño

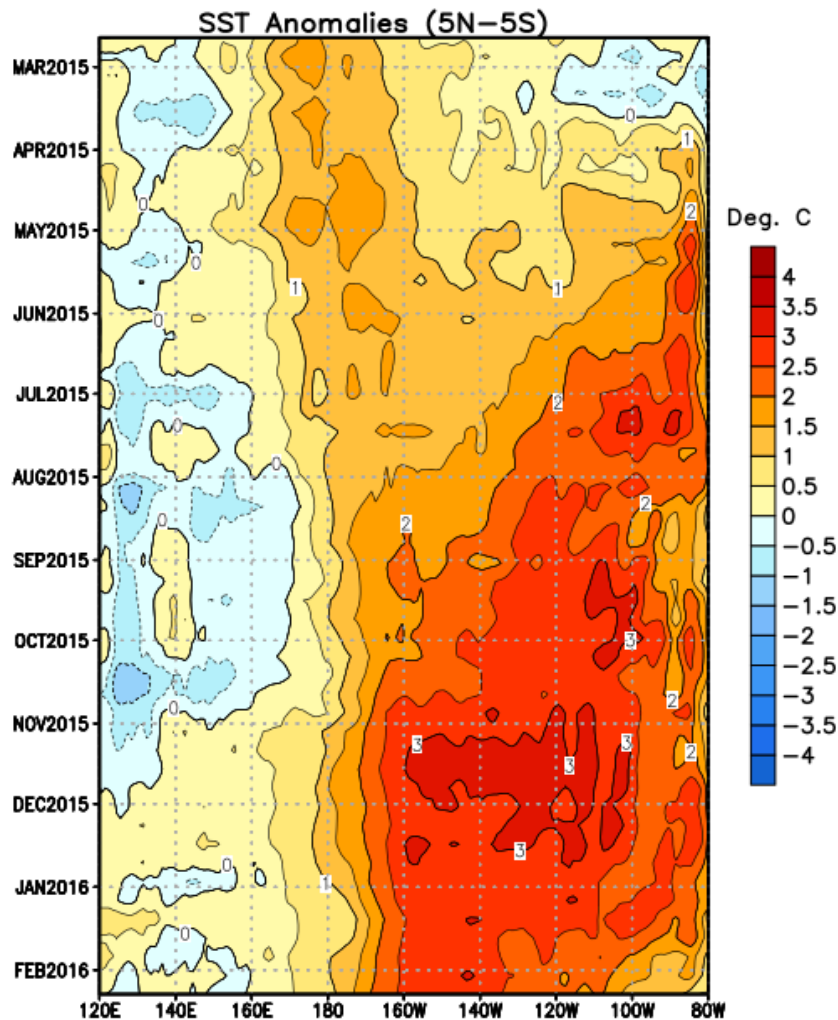
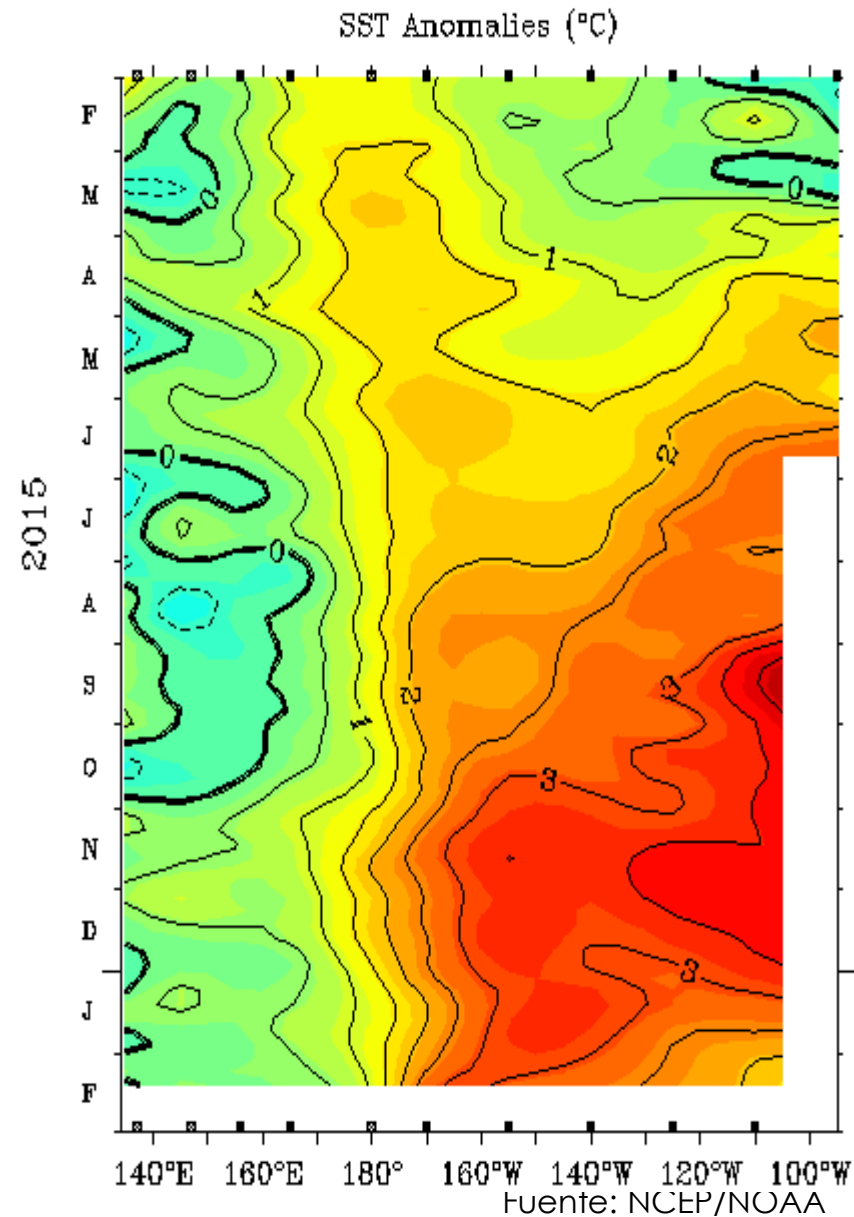
Mes	ICEN	Categoría
04/2015	0.68	Cálida Débil
05/2015	1.36	Cálida Moderada
06/2015	1.96	Cálida Fuerte
07/2015	2.15	Cálida Fuerte
08/2015	2.15	Cálida Fuerte
09/2015	2.07	Cálida Fuerte
10/2015	2.23	Cálida Fuerte
11/2015	2.18	Cálida Fuerte
12/2015	2.07	Cálida Fuerte

Mes	ICENtmp	Categoría
01/2016	1.68 *	Cálida Moderada
0122016	1.36**	Cálida Moderada

* Se usaron los datos de (Dic. 2015, Ene. 2016) ERSST3v, (Feb. 2016) NMME

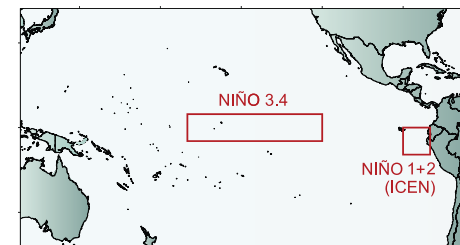
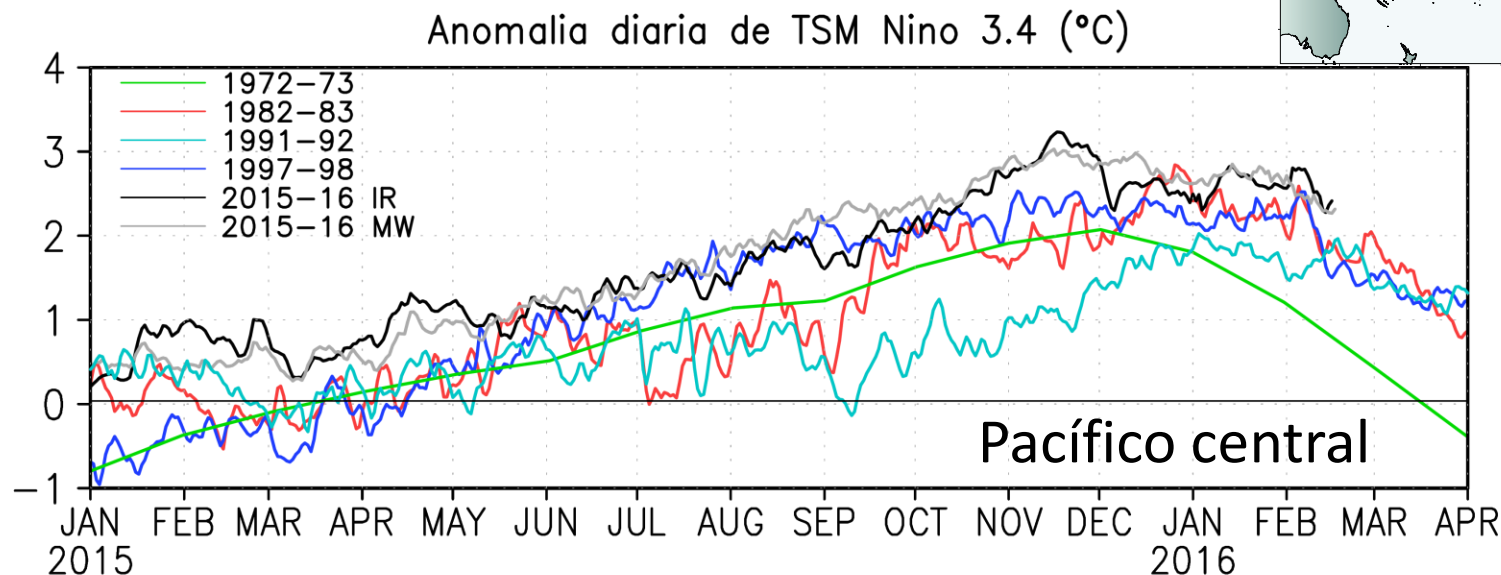
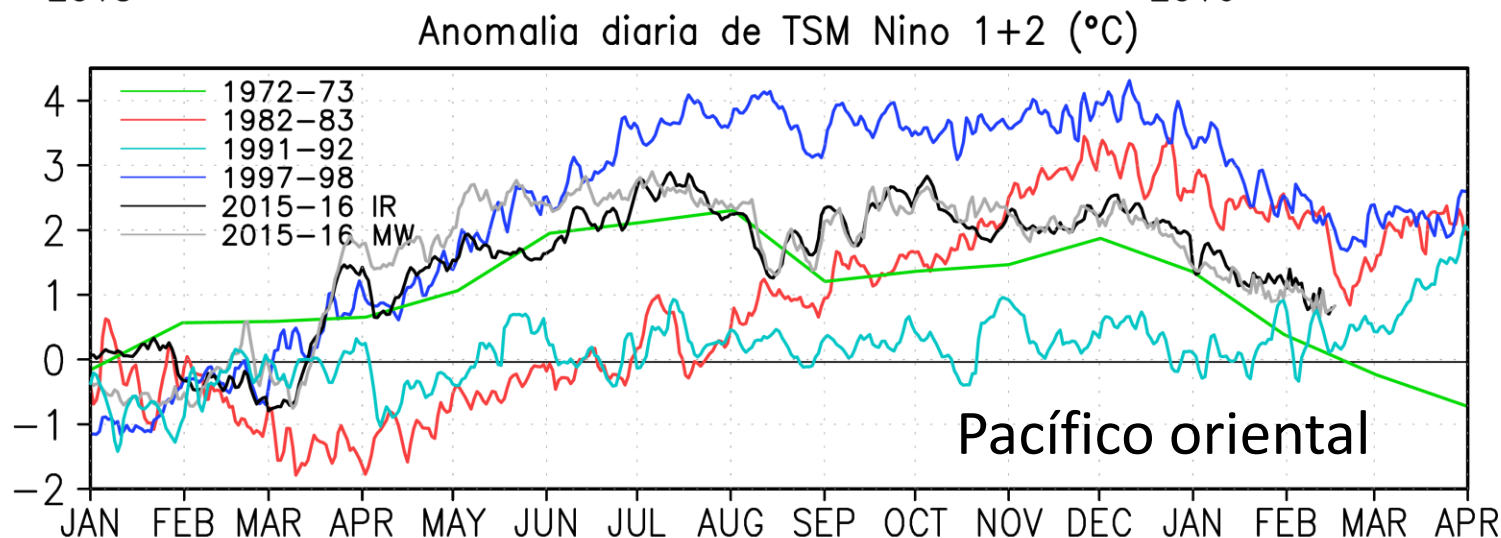
** Se usaron los datos de (Ene. 2016) ERSST3v, (Feb. y Mar. 2016) NMME

ANOMALÍAS DE LA TEMPERATURA SUPERFICIAL DEL MAR EN EL PACÍFICO ECUATORIAL



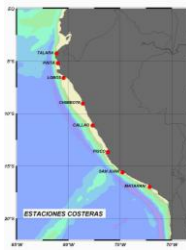
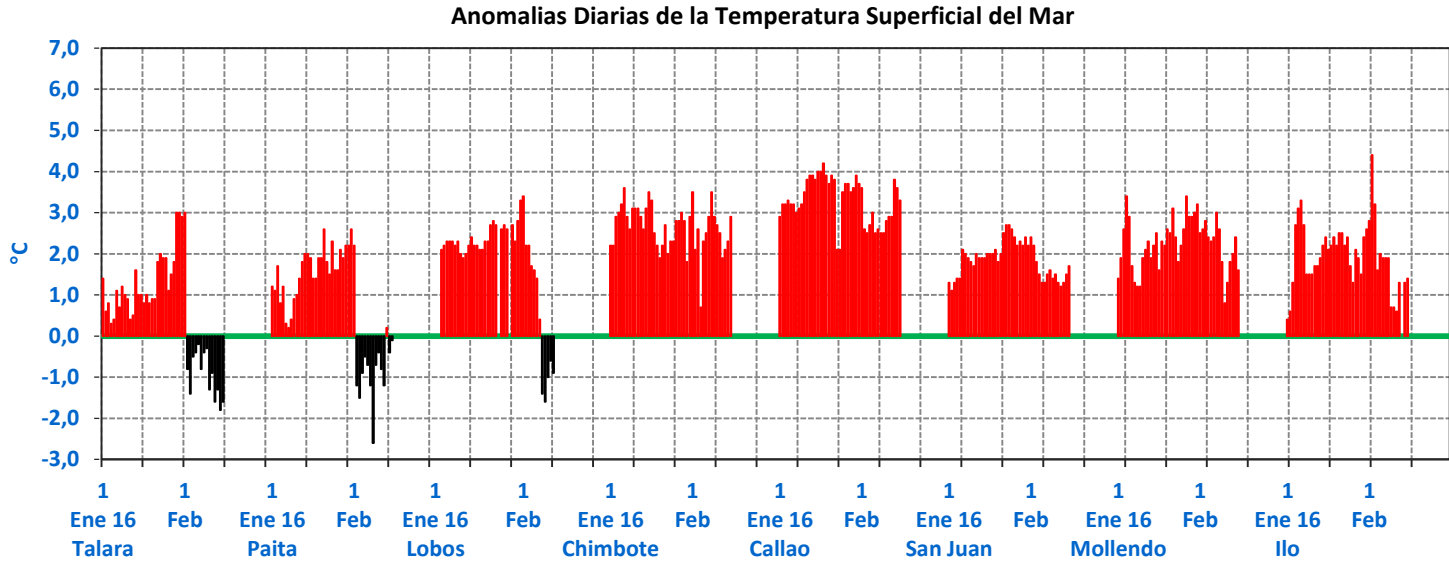
Fuente: NCEP/NOAA

Anomalia de la Temperatura Superficial de Mar



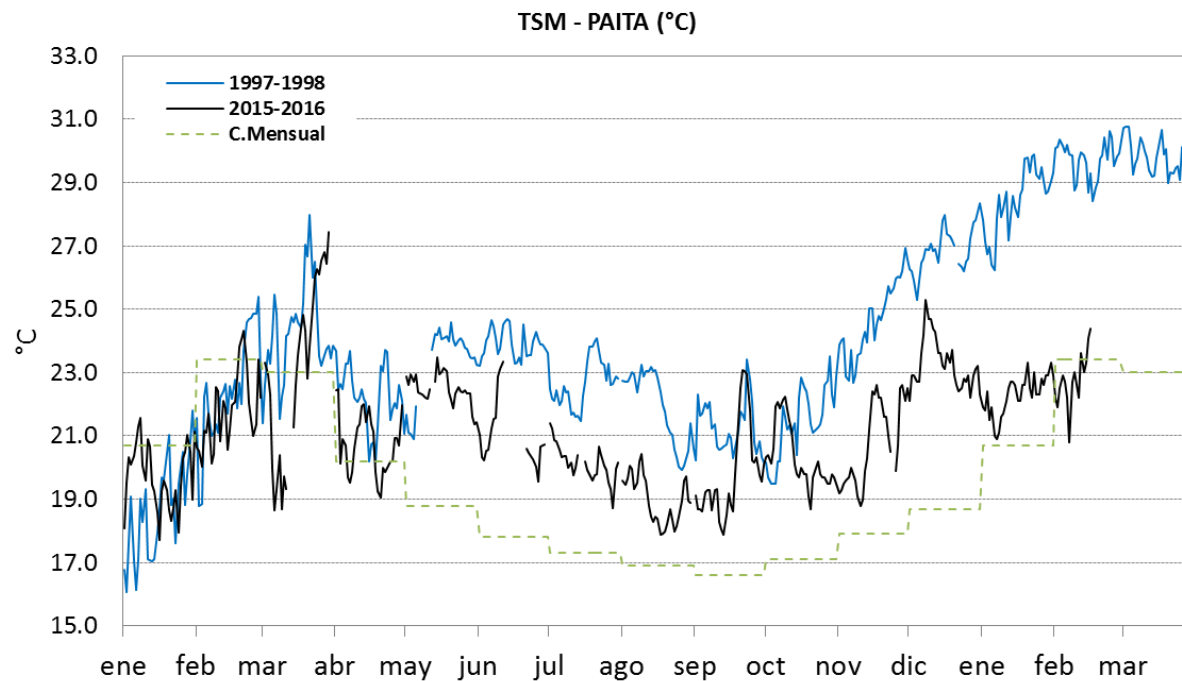
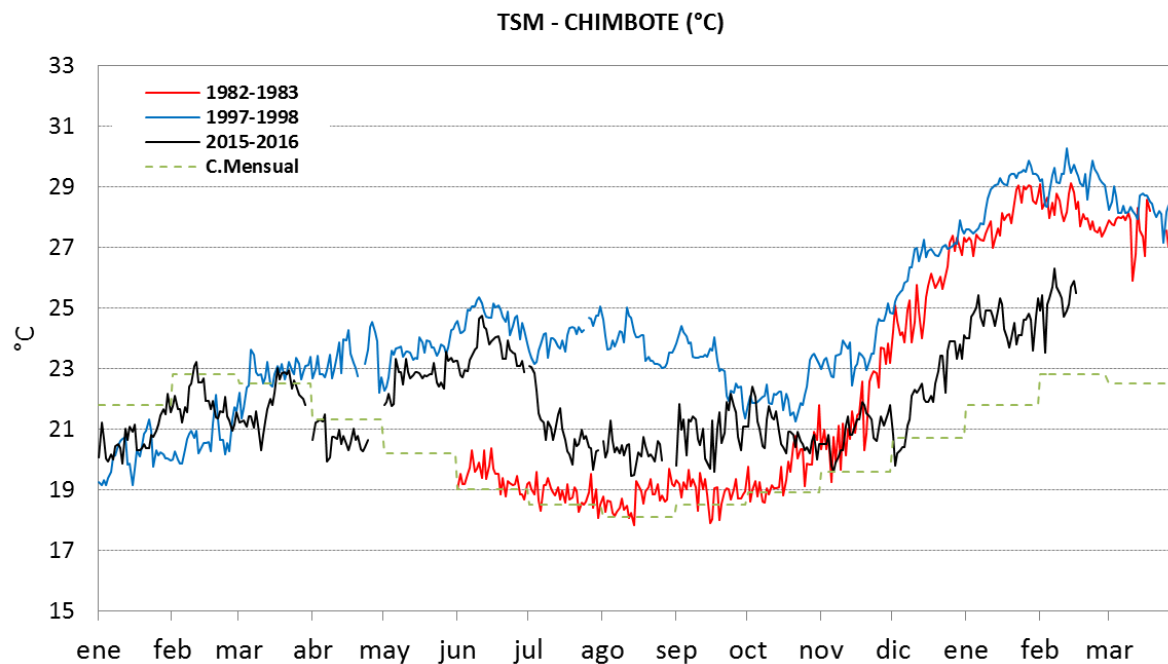


ANOMALÍAS DE LA TEMPERATURA SUPERFICIAL DEL MAR EN EL LITORAL PERUANO

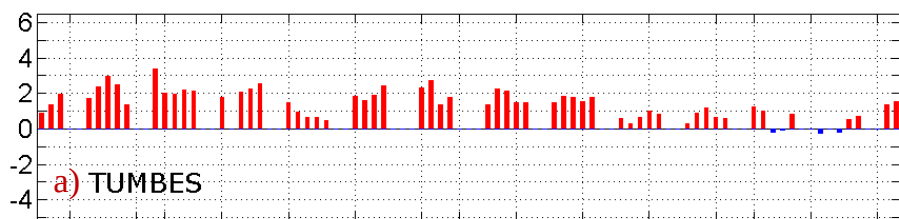
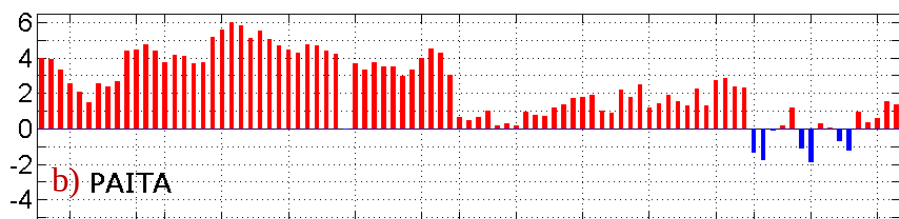
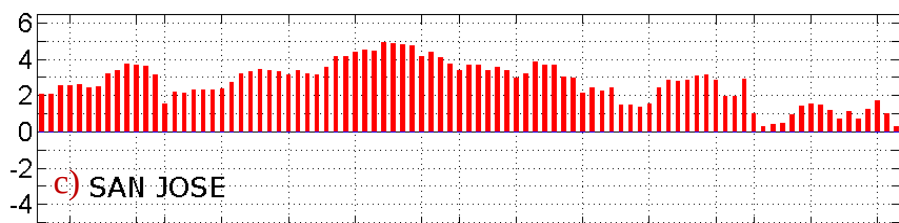
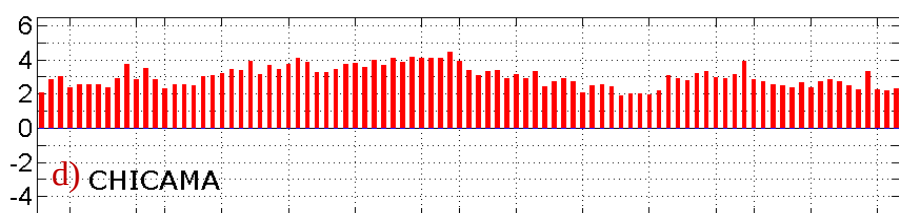
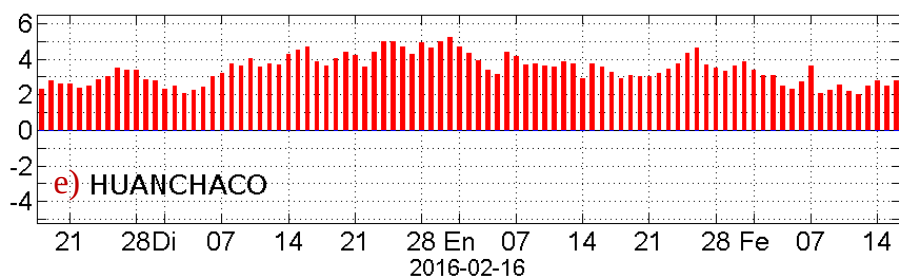
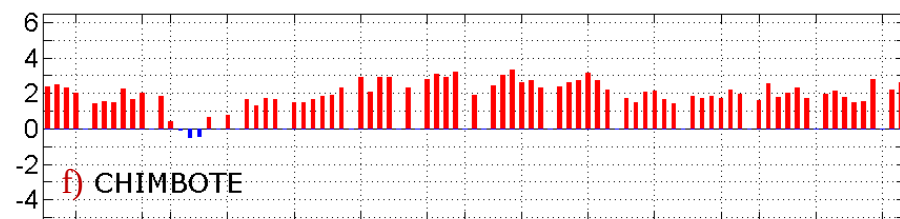
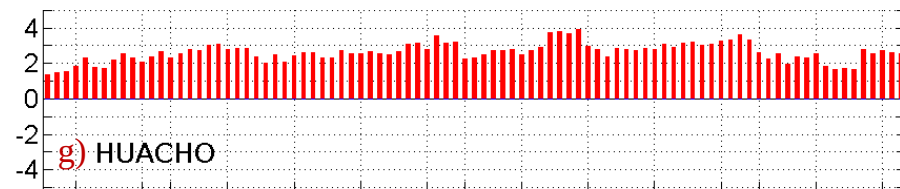
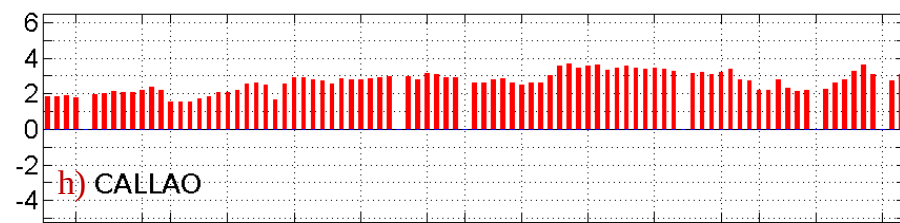
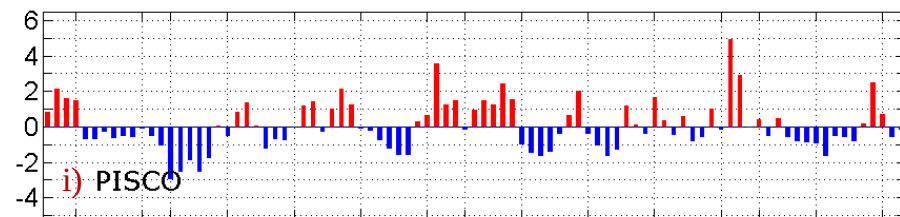
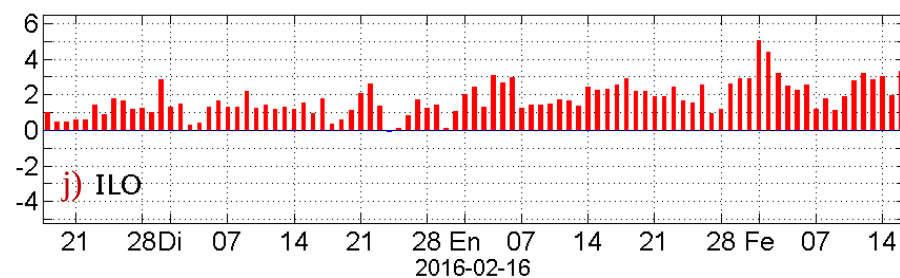


Estación	ATSM (° C)												2016	
	Ene.	Feb.	Mar.	Abr.	May.	Jun.	Jul.	Ago.	Set.	Oct.	Nov.	Dic.	Ene	15Feb
Talara	-0.2	-1.8	-0.1	1.1	3	2.6	2.5	1.2	2.5	3.2	3.0	3.1	21.9 1.3	22.0 -0.9
Paíta	-1	-1.6	0.3	0.6	3.7	3.2	2.8	2.1	3.2	3.2	2.8	4.6	22.3 1.6	22.5 -0.9
Isla Lobos de Afuera	0.3	-0.2	-0.4	0.6	2.2	3.4	2.4	1.4	2.1	2.4	1.7	2.7	22.8 2.4	22.4 0.4
Chimbote	-1.1	-0.9	-0.6	-0.6	2.5	4.6	2.5	2.2	2.4	2	1.3	1.5	24.5 2.7	25.2 2.4
Callao	-0.1	0	-0.4	0.1	2.5	3.2	2.1	1.7	1.8	2.1	2.2	3.1	19.8 3.5	20.0 2.9
San Juan	-1	-0.2	0.1	0.3	0.8	1.6	0.8	1	1.1	1	1.7	1.7	17.7 2.0	17.4 1.5
Mollendo	-0.3	0	0.5	0.7	1.2	1.7	1.5	0.8	2.3	1.5	1.0	1.2	19.5 2.3	19.2 2.1
Ilo	-0.7	-0.2	0.8	0.5	1.1	1.6	1.9	0.7	1.8	1.5	1.1	1.7	19.1 2.0	18.7 1.8

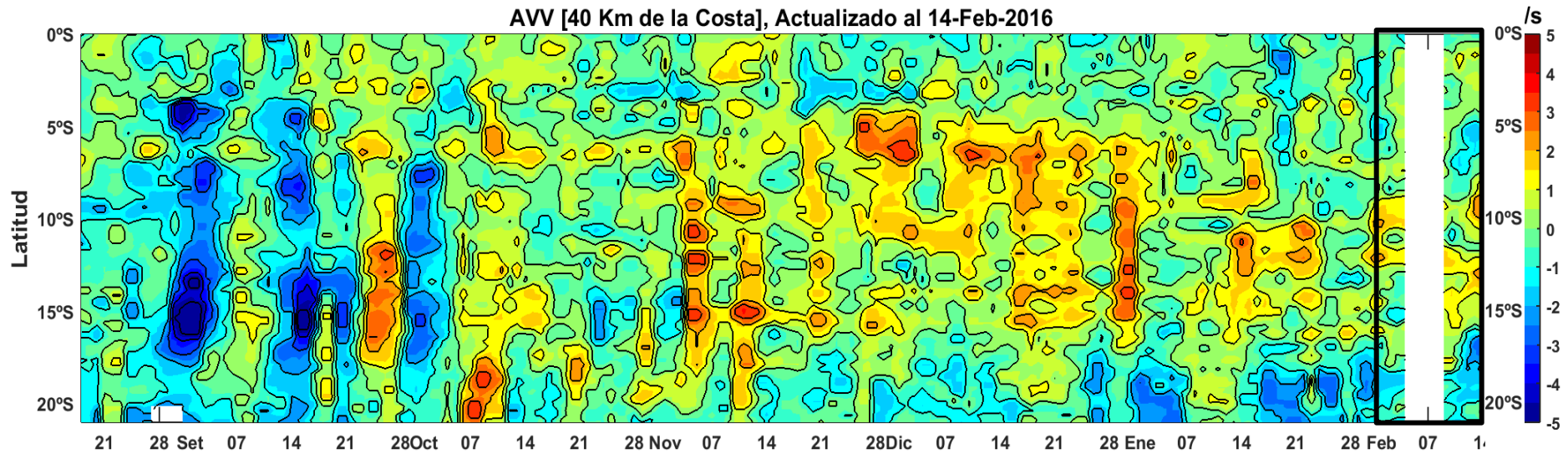
Promedios Diarios TSM		
Estación	Martes 16 Febrero 2016	
	TSM (°C)	ATSM(°C)
Talara	22.7	-0.2
Paíta	24.4	+1.0
I. Lobos de Afuera	22.1	+0.1
Chimbote	25.5	+2.7
Callao	20.2	+3.1
San Juan	17.9	+2.0
Mollendo	18.3	+1.2
Ilo	19.8	+2.9



ATSM CON REGISTROS DE LOS LABORATORIOS COSTEROS



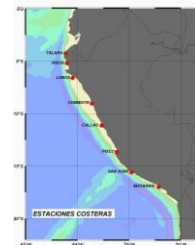
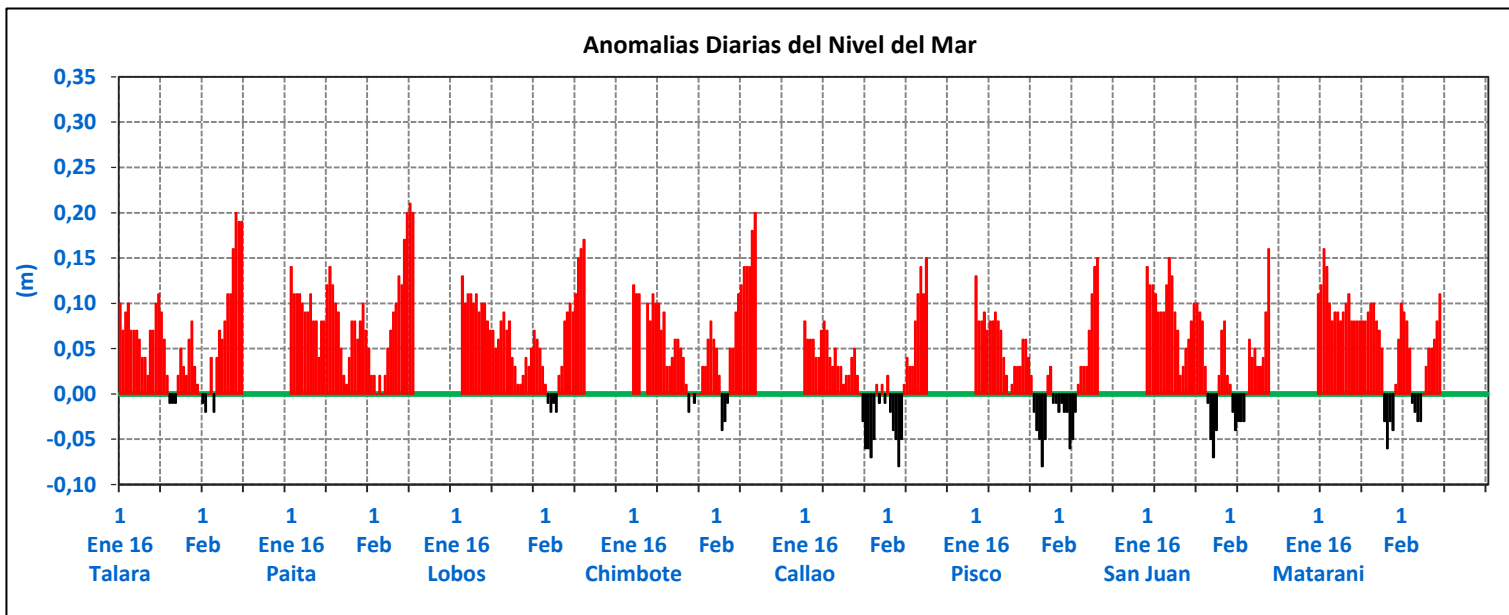
Anomalías del Viento Costero



Viento Satelital (40 Km frente a la costa del Perú): Fuente: Satélite ASCAT, Procesamiento: Laboratorio de Hidro-Física Marina, IMARPE



ANOMALÍAS DEL NIVEL MEDIO DEL MAR EN EL LITORAL PERUANO

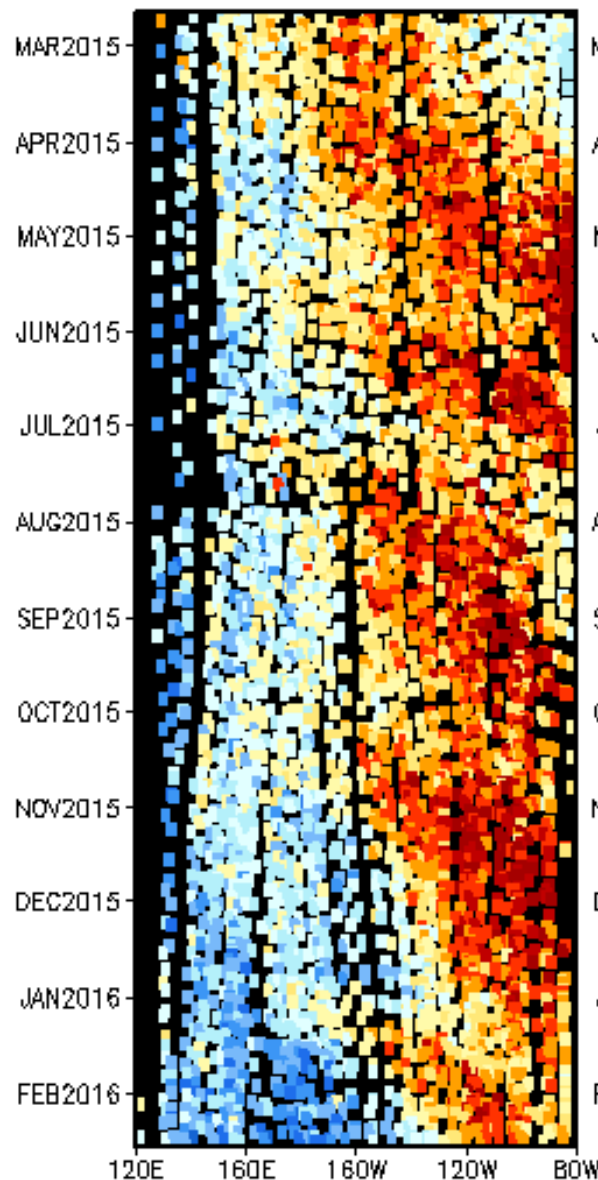


Estación	ANMM (cm) 2015												2016	
	Ene.	Feb.	Mar.	Abr.	May.	Jun.	Jul.	Ago.	Sep.	Oct.	Nov.	Dic.	Ene.	Feb.
Talara	0	-1	5	16	19	15	10	12	16	13	18	19	95 5	9
Paita	2	0	4	14	20	16	12	13	17	15	19	21	88 8	10
Isla Lobos de Afuera	1	-	-	11	15	14	7	9	11	9	13	15	79 7	7
Chimbote	0	1	4	10	15	15	7	10	12	9	13	15	66 5	8
Callao	-2	-3	0	7	10	12	3	8	9	6	9	9	58 2	3
San Juan	-1	-2	4	8	10	13	3	8	13	11	11	12	50 6	3
Matarani	-2	-3	3	4	6	9	4	8	12	9	12	12	61 7	4

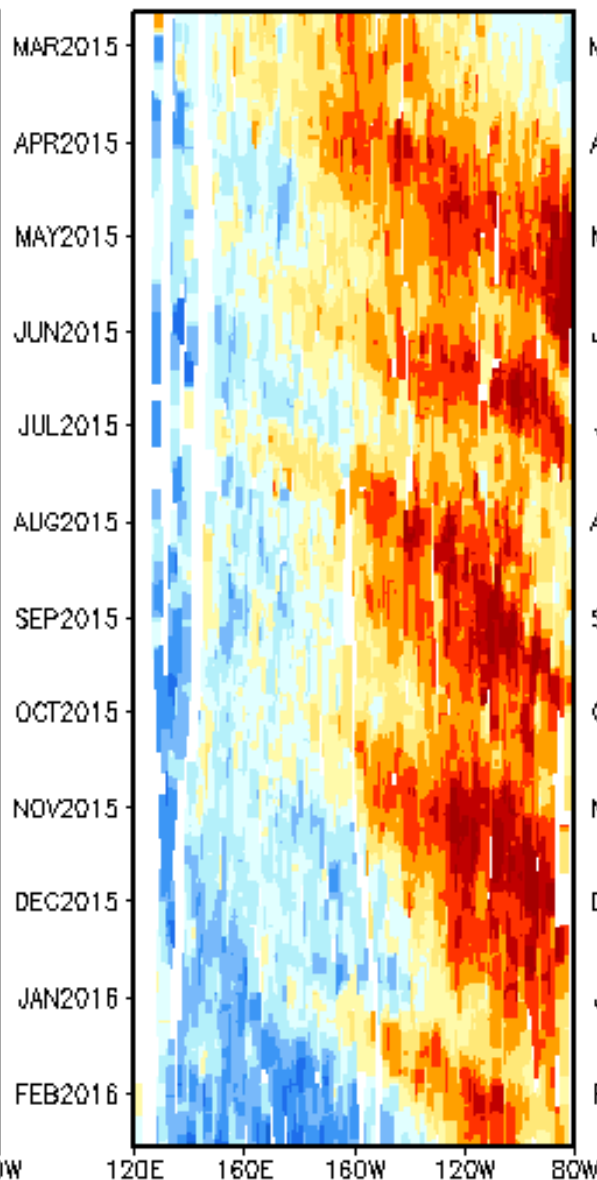
Promedios Diarios NMM		
Estación	Martes 16 Febrero 2016	
	NMM (m)	ANMM(m)
Talara	1.09	+0.17
Paita	1.04	+0.21
I. Lobos de Afuera	0.92	+0.17
Chimbote	0.84	+0.22
Callao	0.74	+0.16
Pisco	0.67	+0.18
San Juan	0.67	+0.21
Matarani	0.69	+0.13

Equatorial (2°S – 2°N) 20°C isotherm depth anomaly (m)

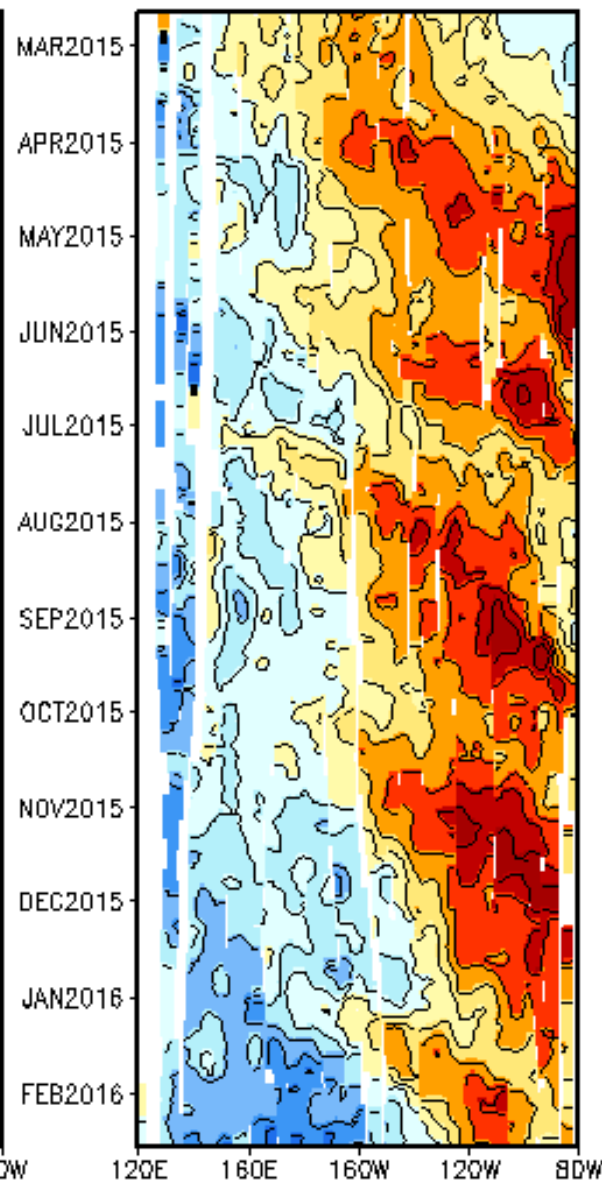
a) Gridded profiles



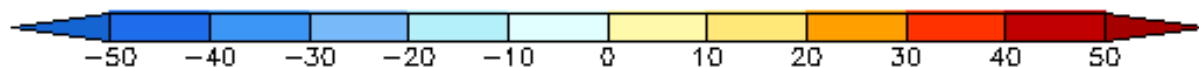
b) 11-day mean



c) Smoothed 11-day mean

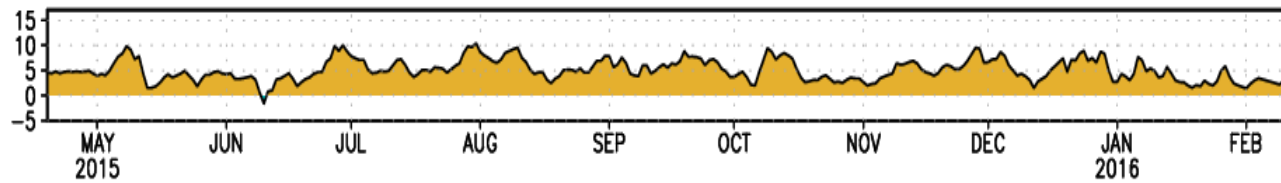


Data: Argo, Processing: IGP, Clim: 1980–2009 (GODAS), Last data: 18FEB2016

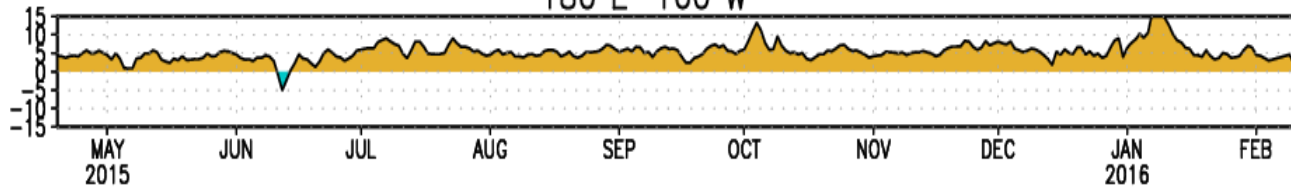


Anomalia del esfuerzo de viento zonal 5°S–5°N (10^{-2} Nm $^{-2}$)

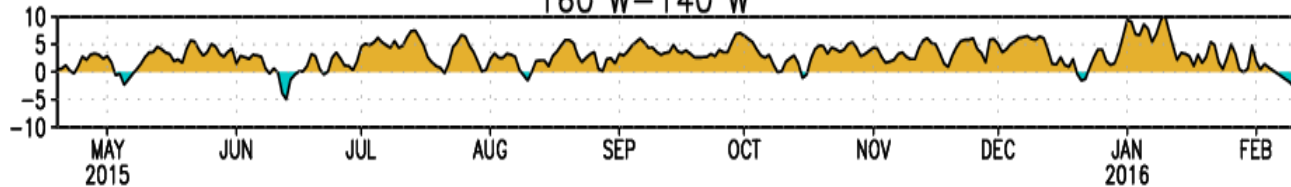
160°E–180°E



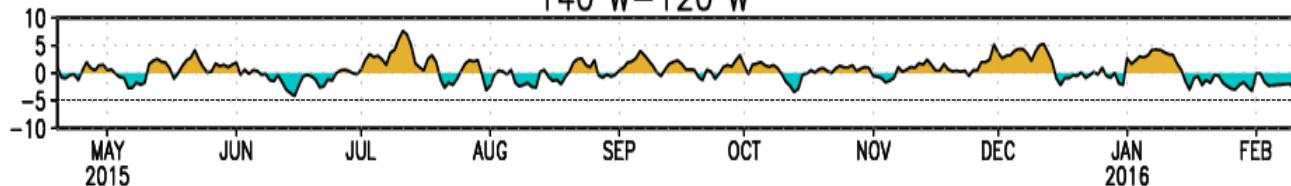
180°E–160°W



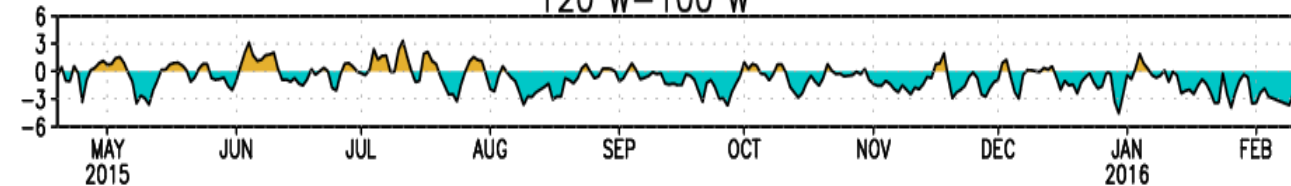
160°W–140°W



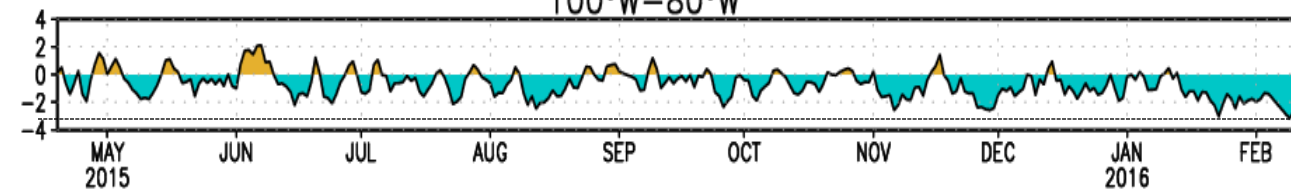
140°W–120°W



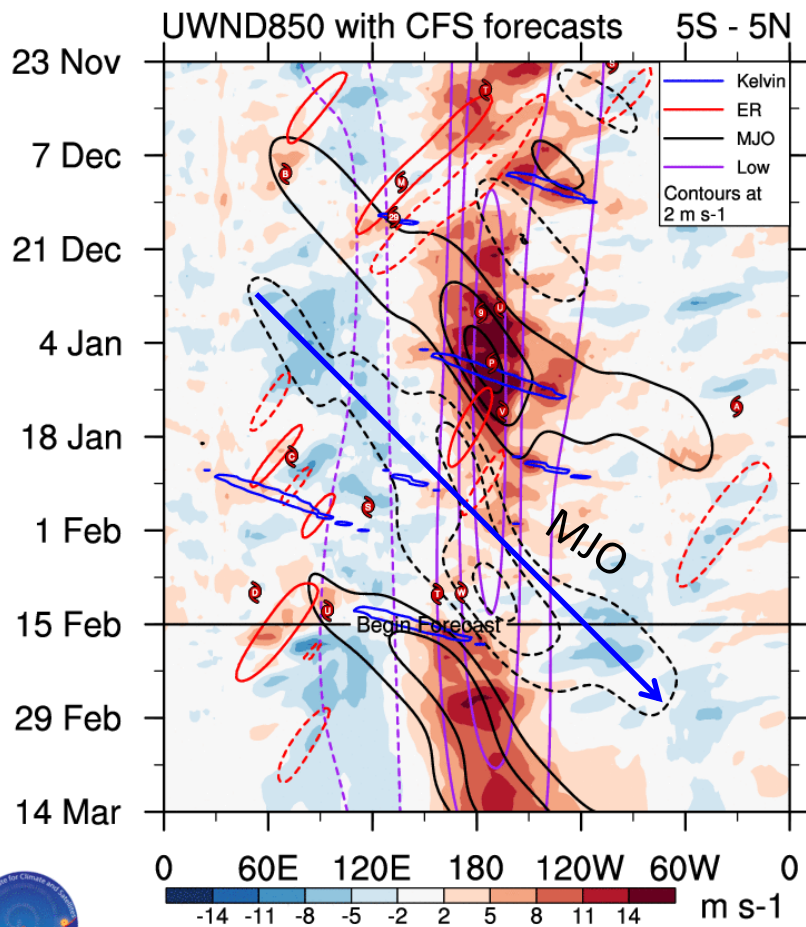
120°W–100°W



100°W–80°W



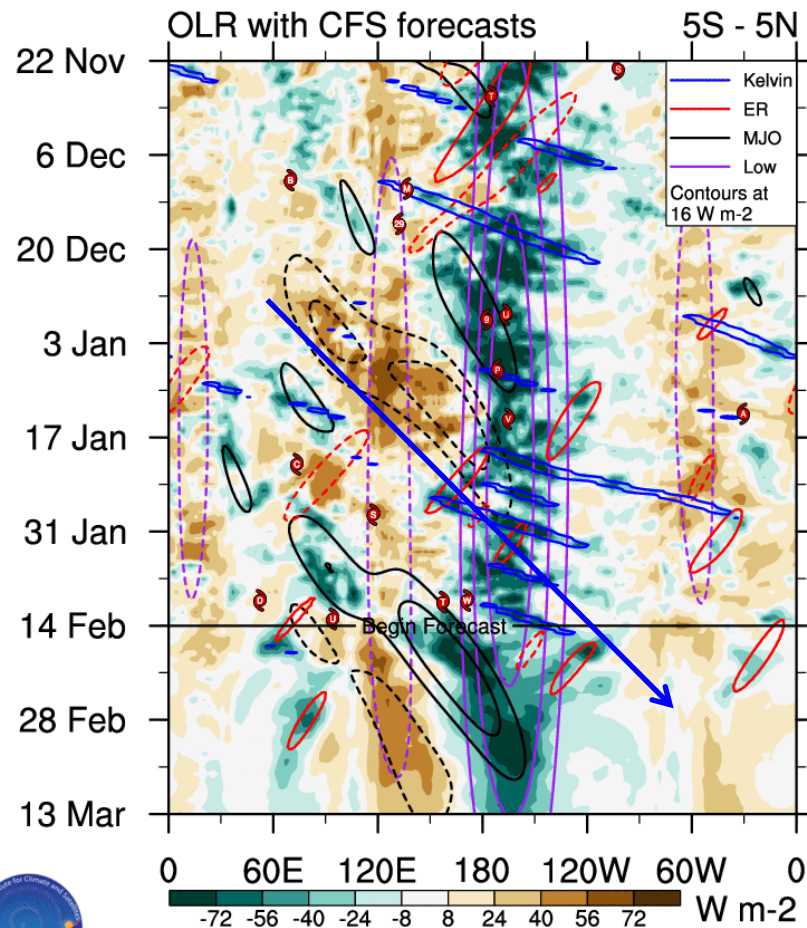
Viento zonal



monitor.cicsnc.org/mjo

Carl Schreck (cjschrec@ncsu.edu)

Actividad convectiva

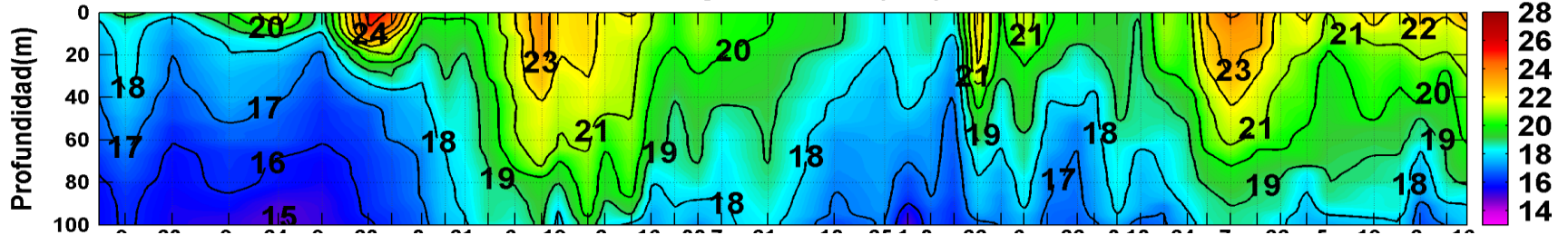


monitor.cicsnc.org/mjo

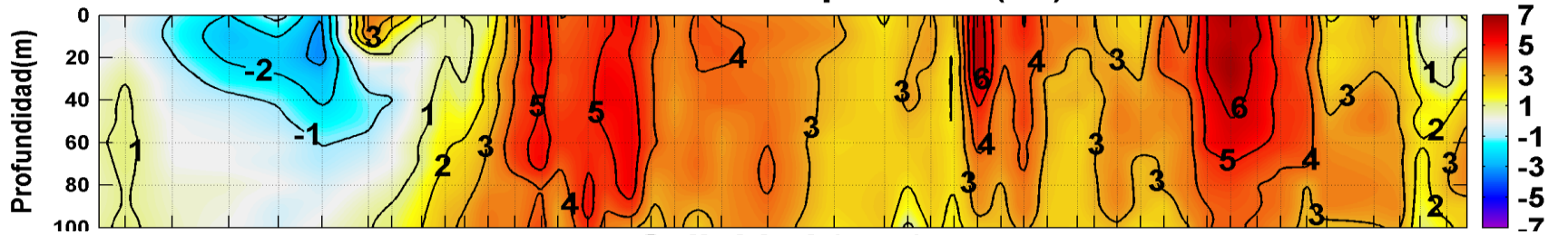
Carl Schreck (cjschrec@ncsu.edu)

PUNTO FIJO DE PAITA (16 DE FEBRERO 2016)

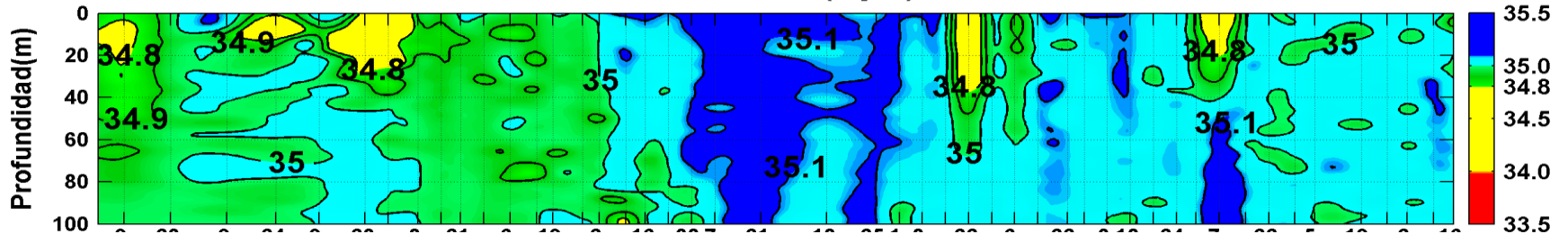
Temperatura (°C)



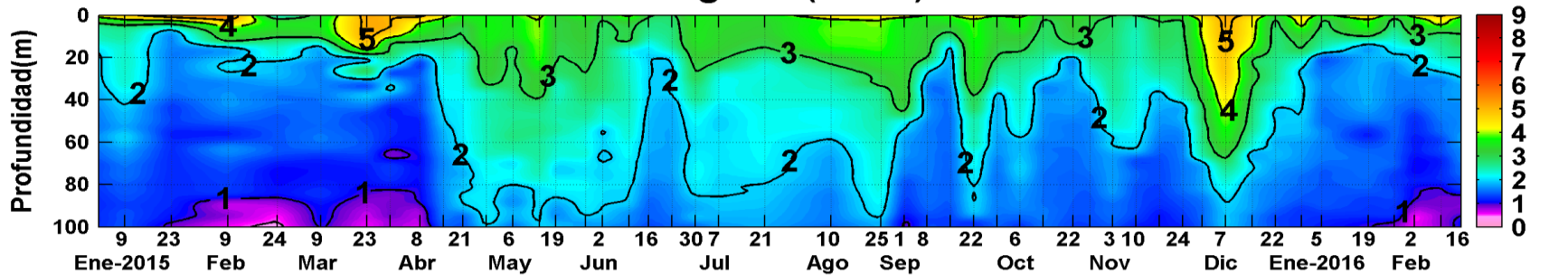
Ánomaía de temperatura (°C)

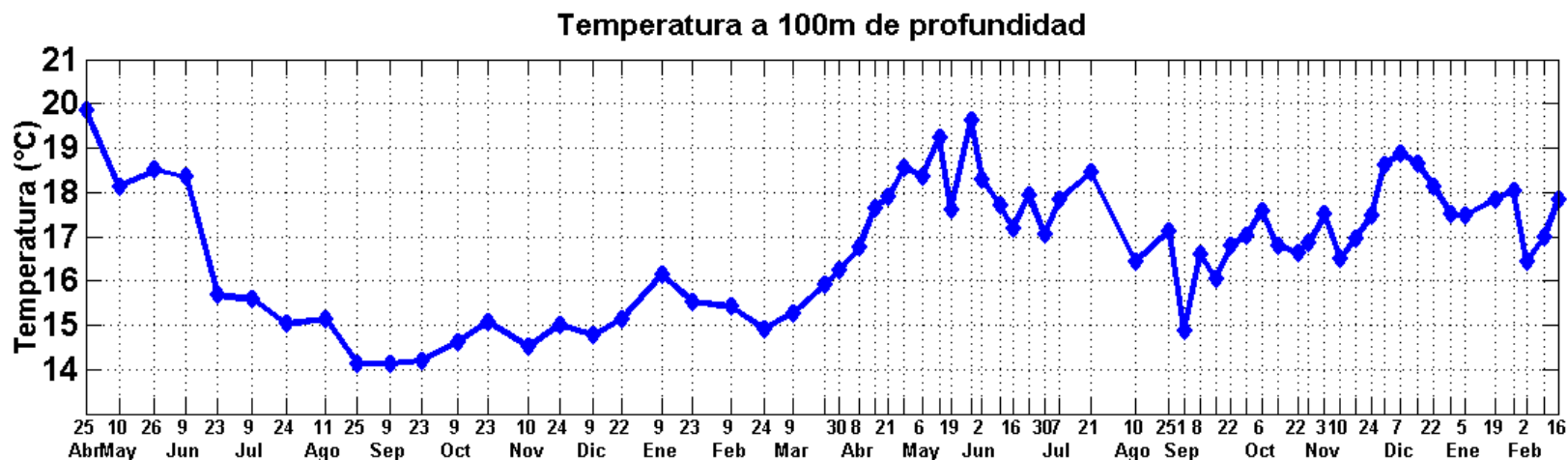
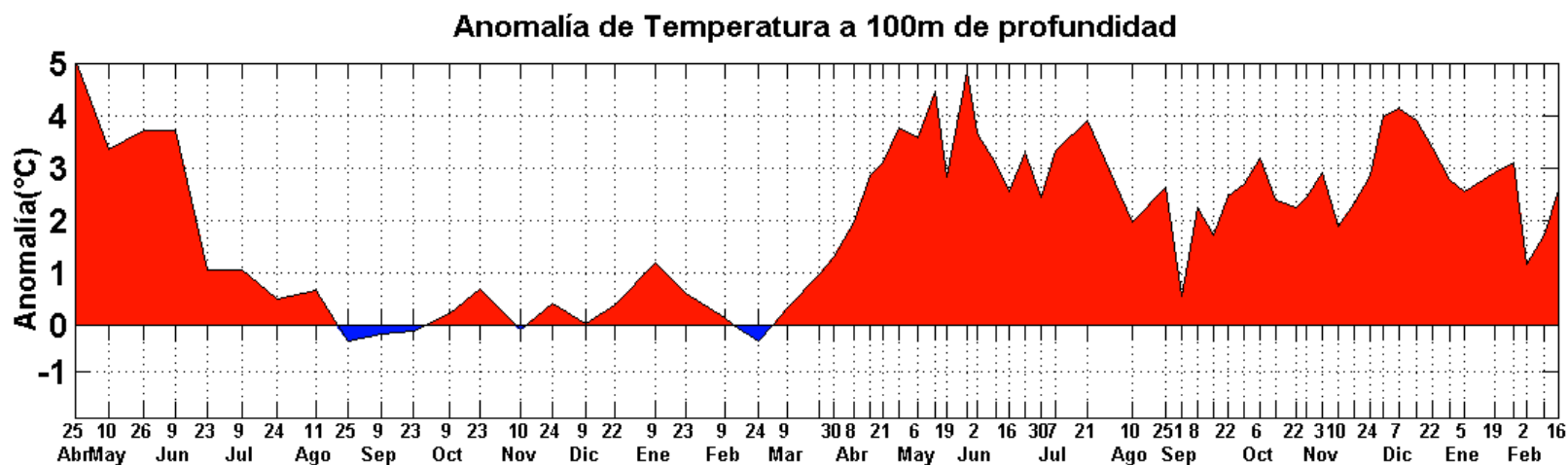


Salinidad (ups)



Oxígeno (mL/L)



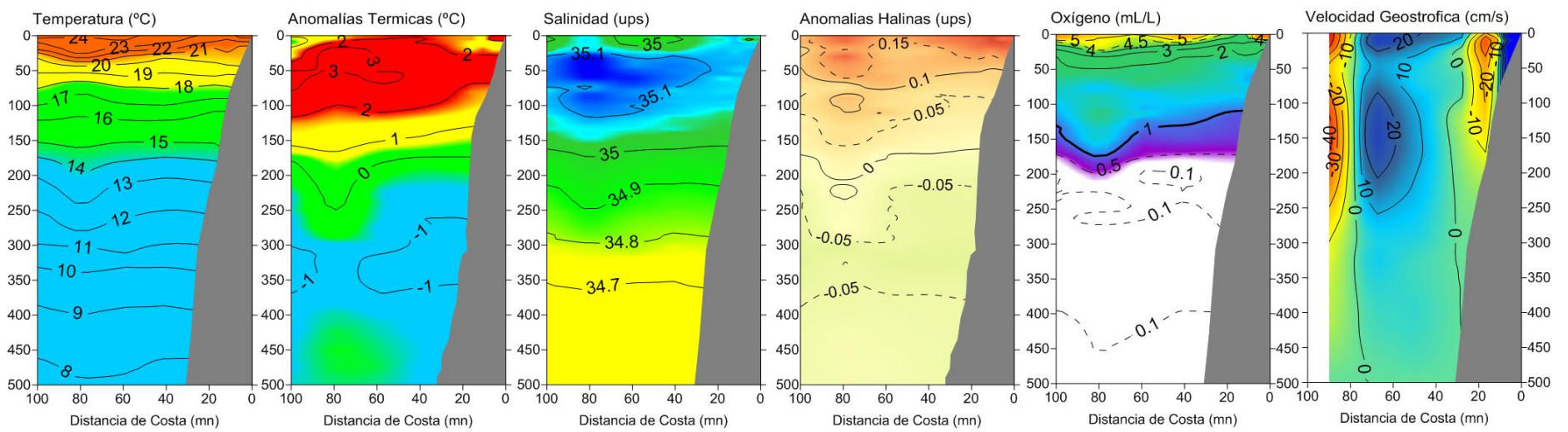


Serie de tiempo de temperatura a 100 m de profundidad y anomalía de temperatura a 100 m de abril de 2014 a febrero de 2016, calculado con la base los datos históricos de MBARI (1994-2010).

Paita

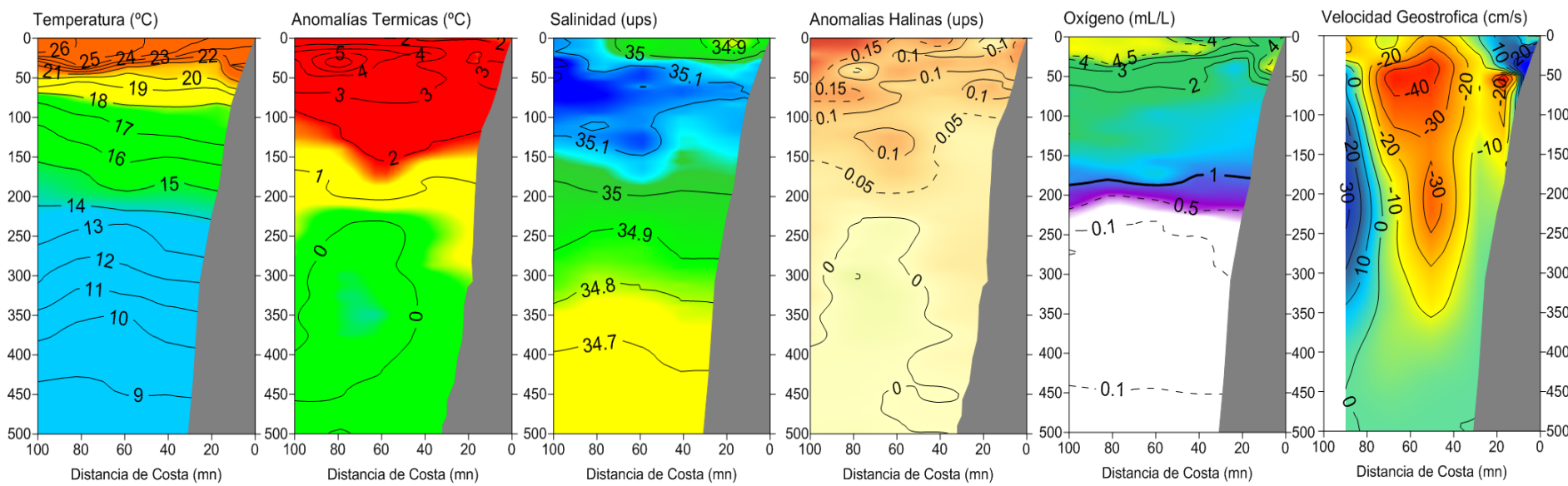
30 enero

SECCION PAITA (30/01/2016)



13-14 febrero

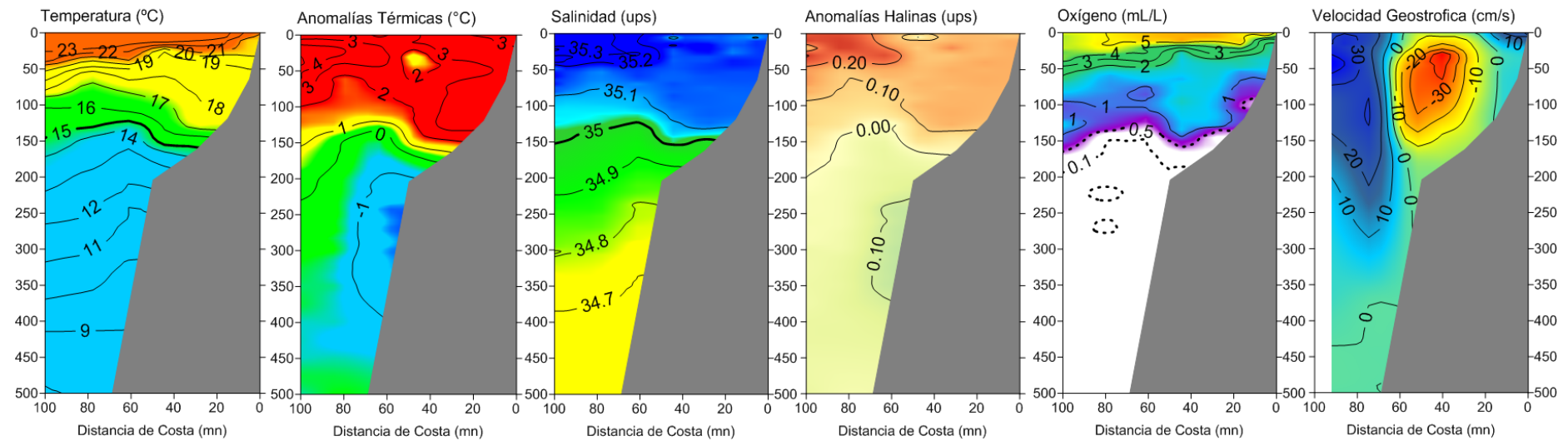
SECCION PAITA (13-14/02/2016)



Chicama

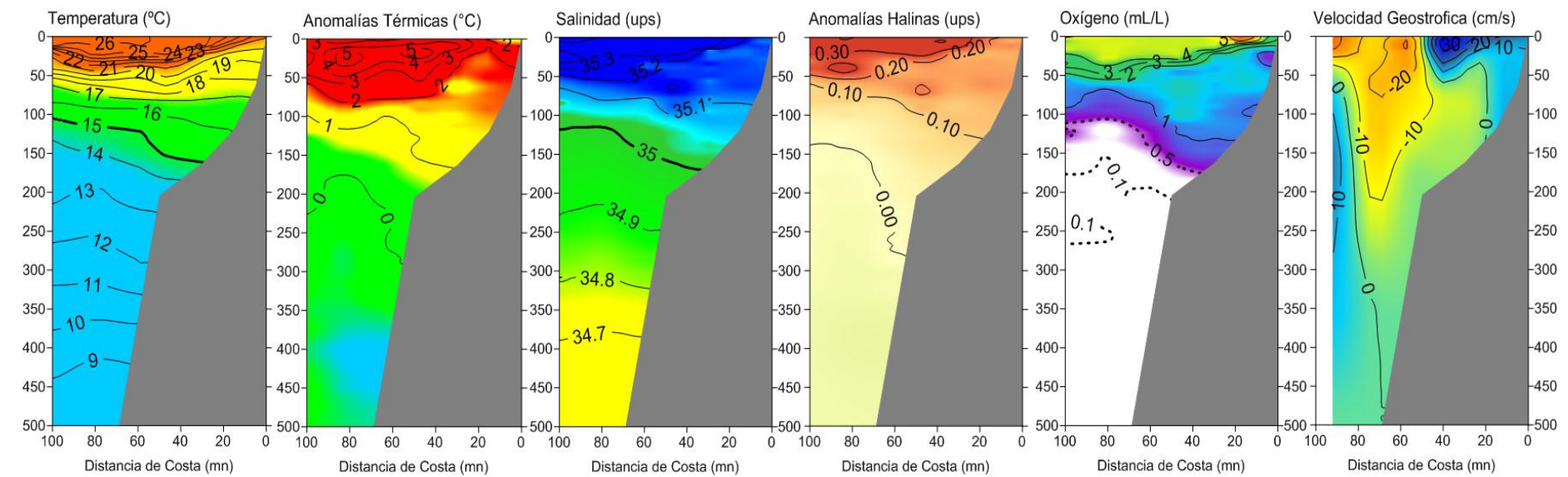
28 enero

SECCION CHICAMA (28/01/2016)



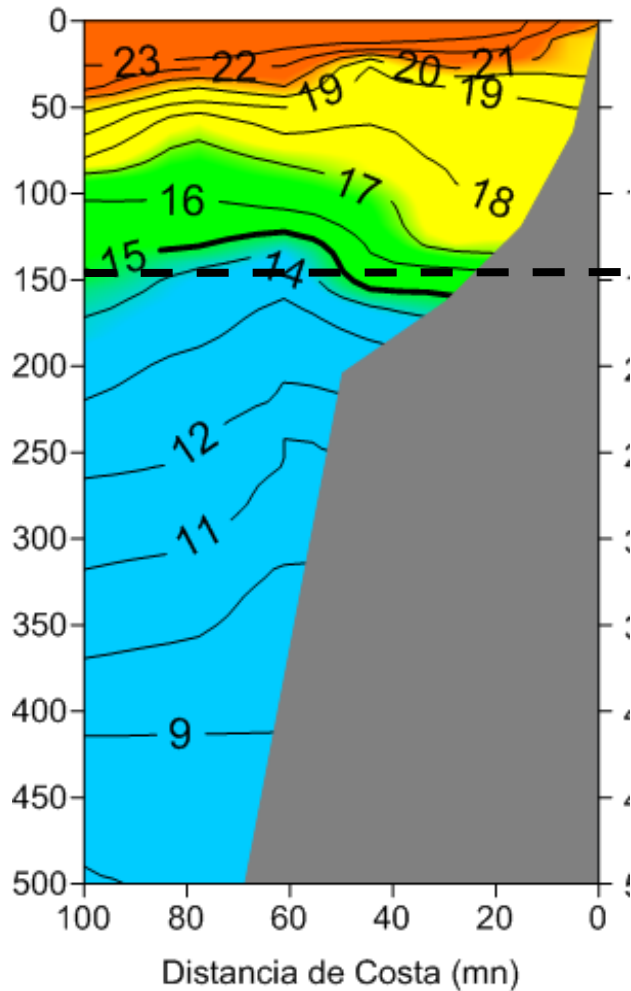
11-12 febrero

SECCION CHICAMA (11-12/02/2016)

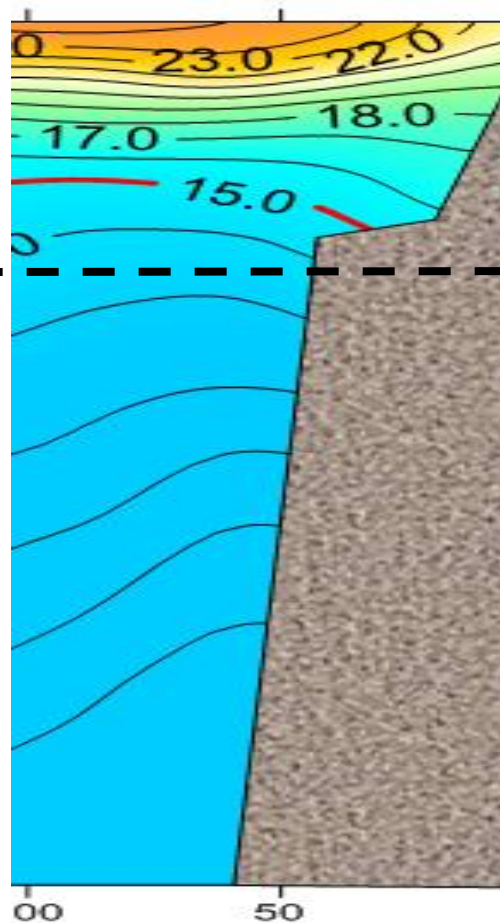


Temperatura Chicama

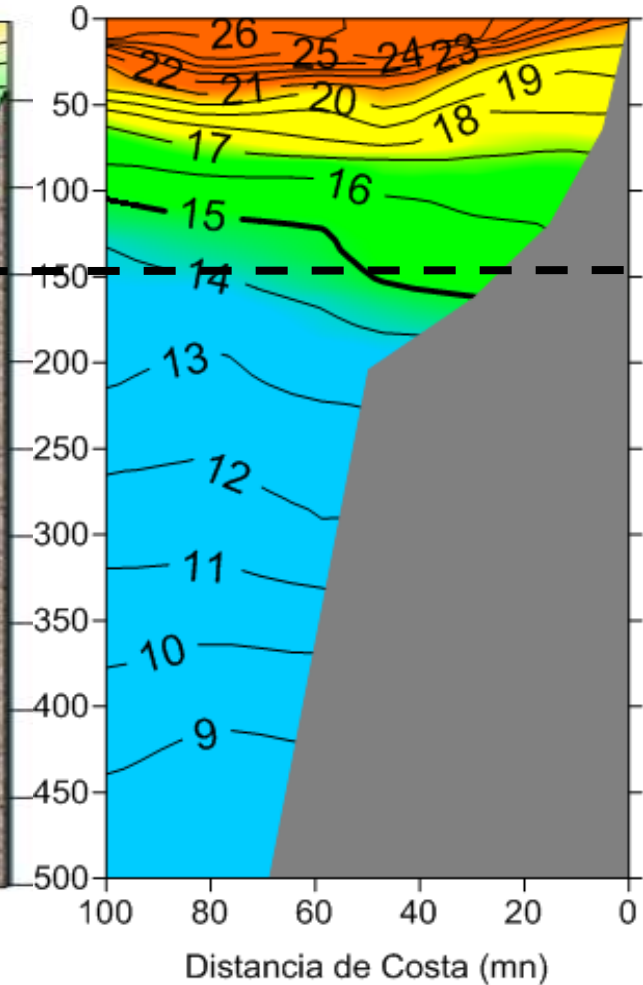
28 enero

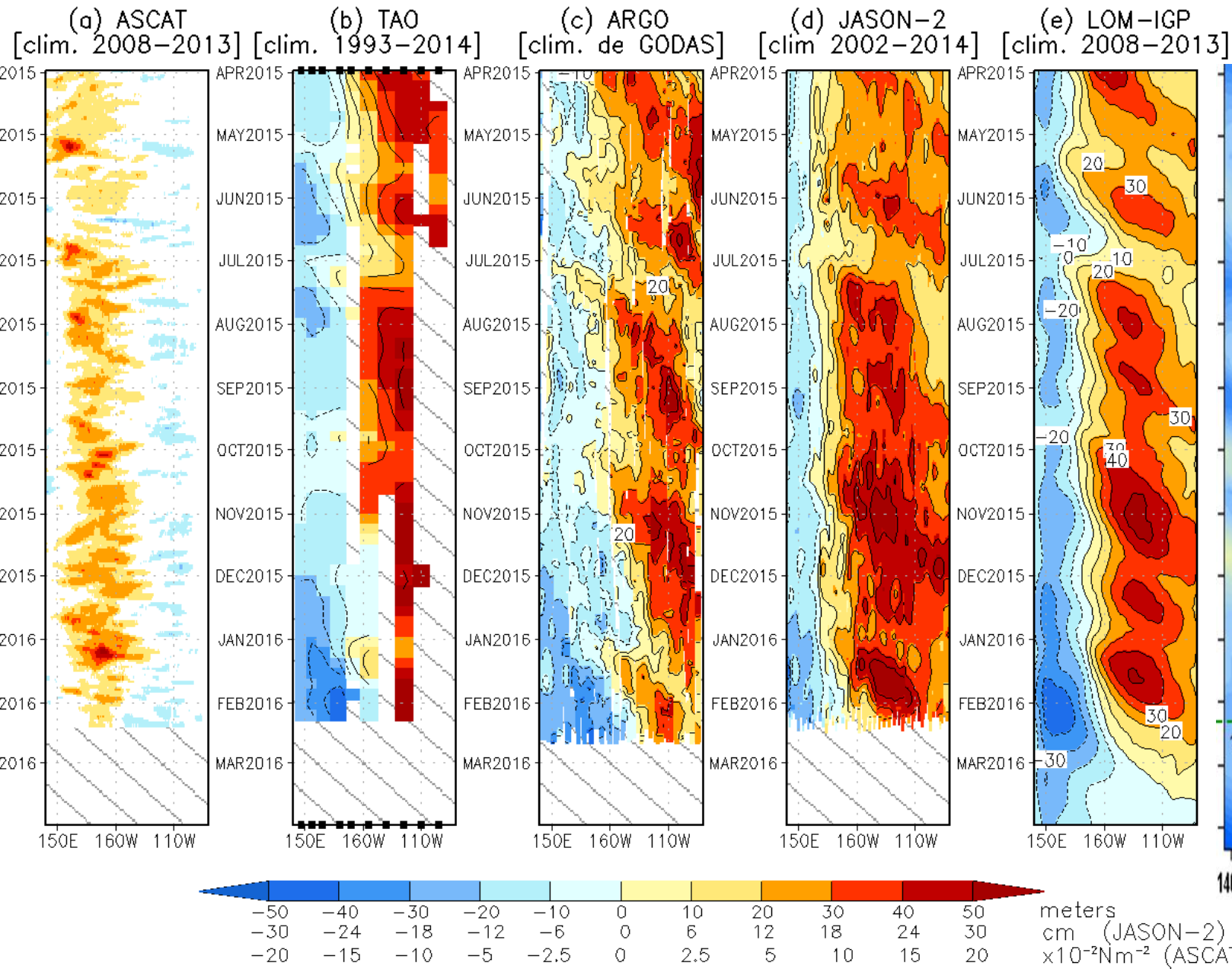


5-6 febrero

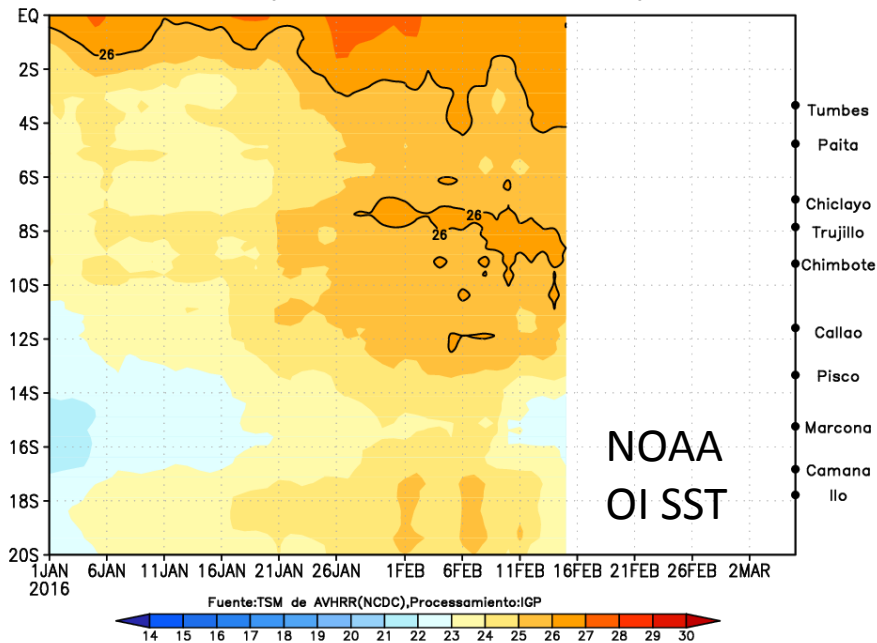


11-12 febrero

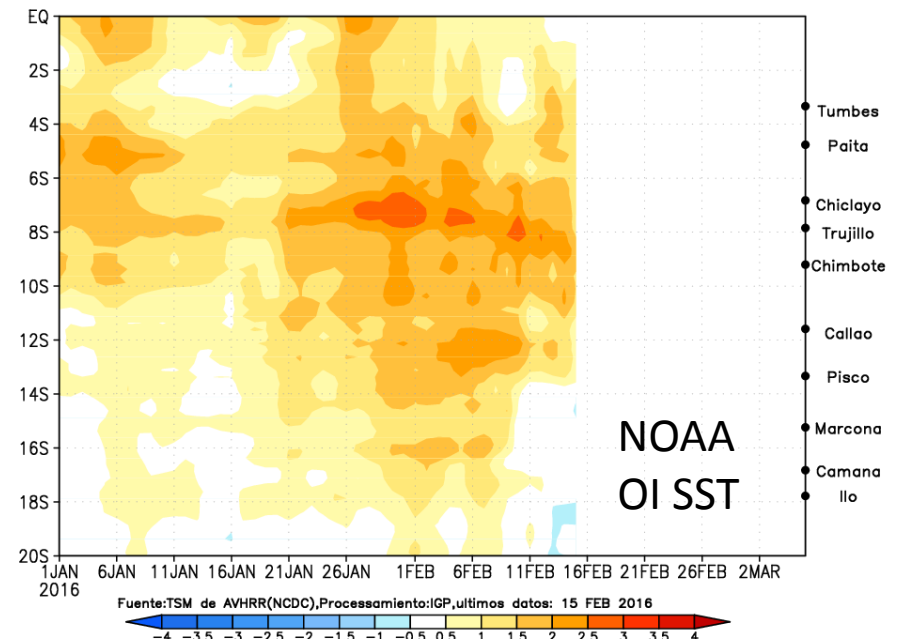




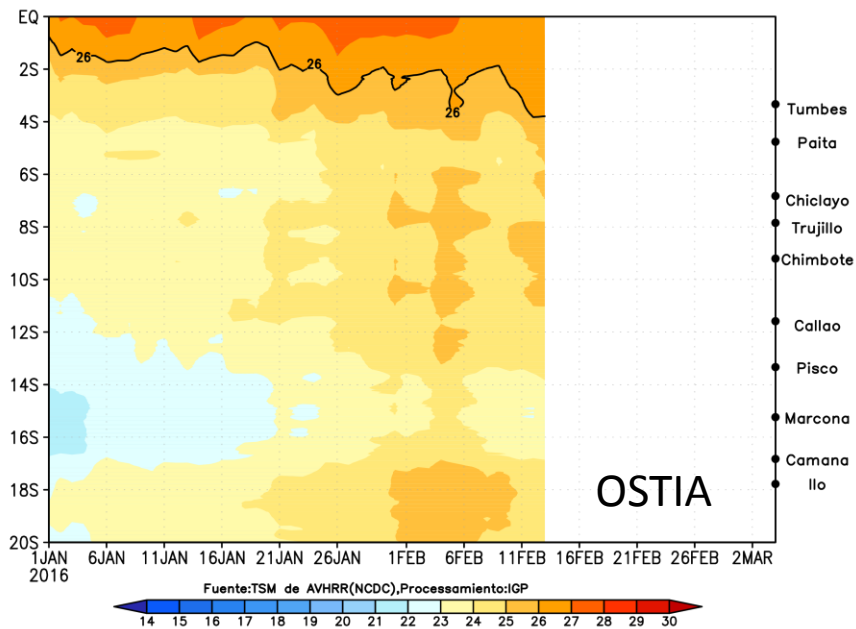
TSM (° C, hasta 330 km)



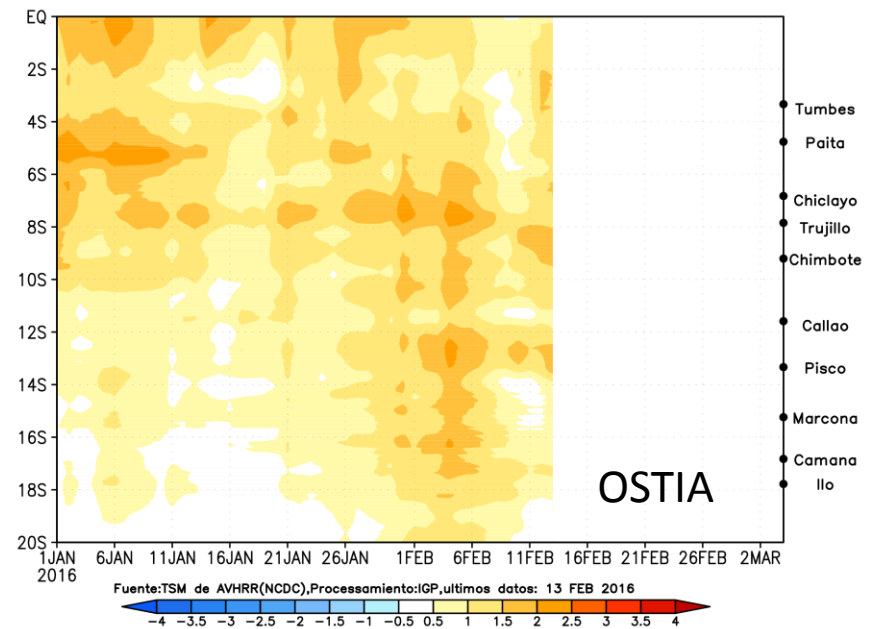
Anomalia de TSM (° C, hasta 330 km)



Temperatura superficial del mar (C) hasta 330Km

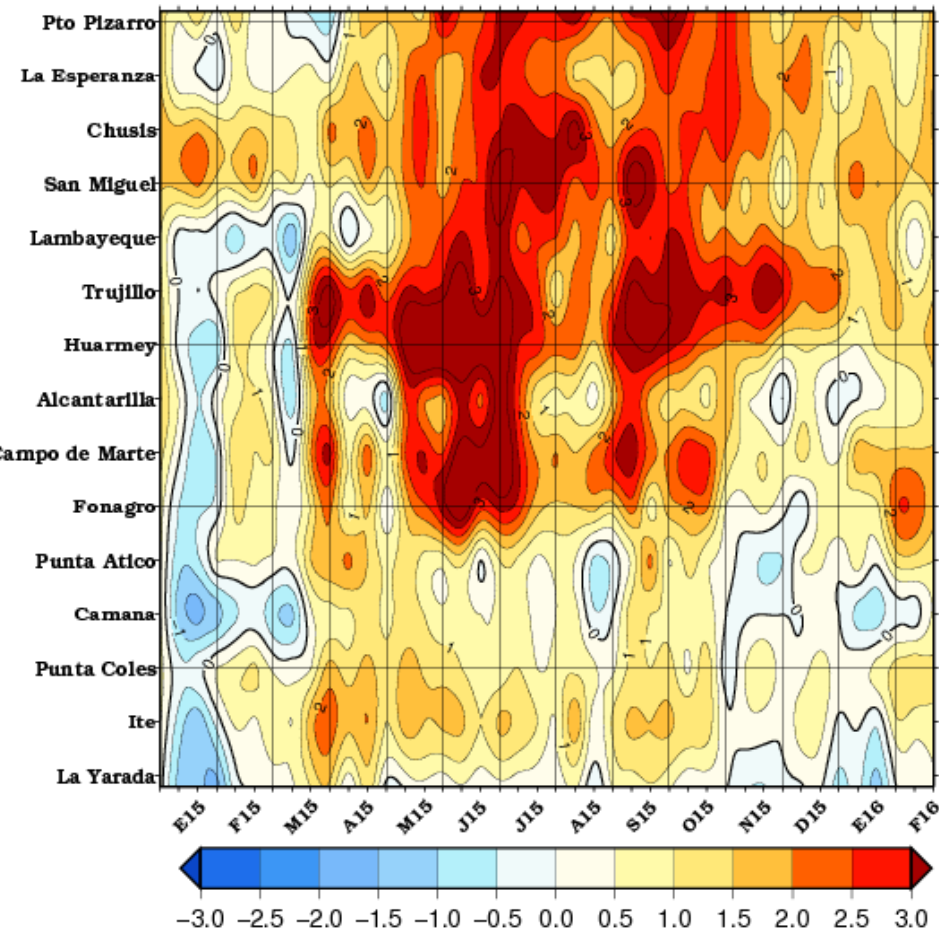


Anomalia de temperatura superficial del mar (C) hasta 330Km

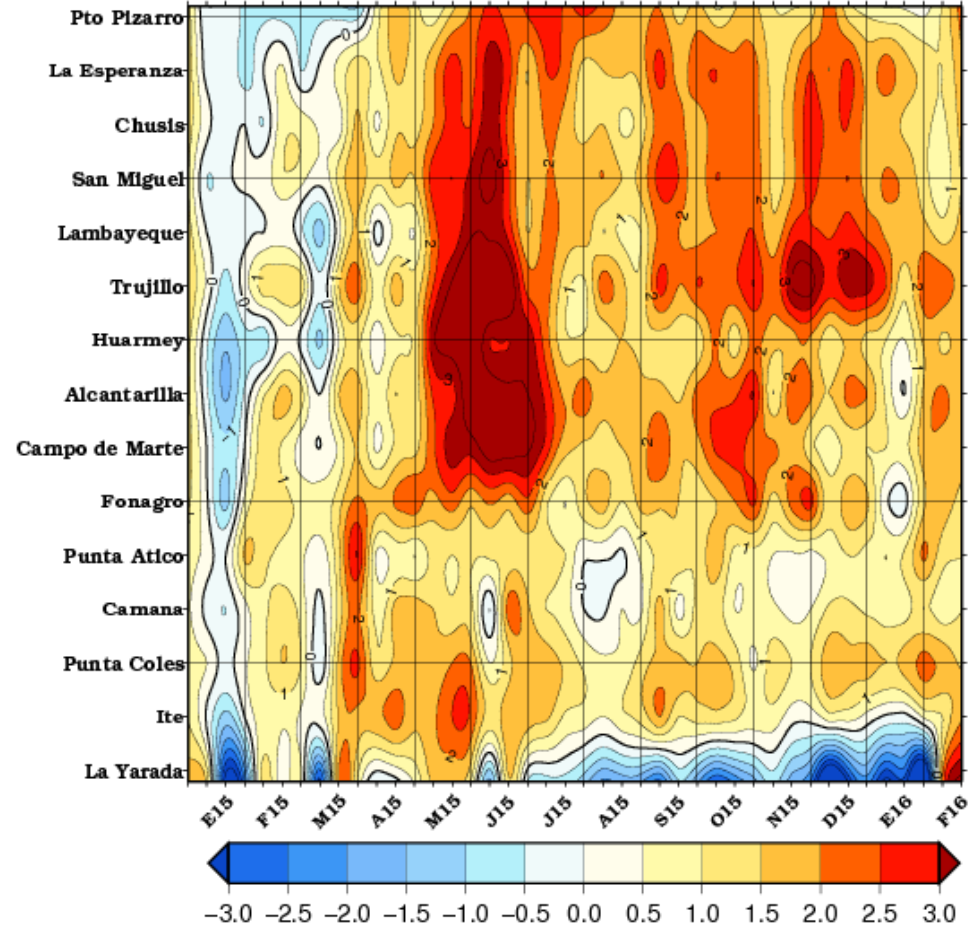


TEMPERATURAS

Anomalía de Temperatura Máxima



Anomalía de Temperatura Mínima

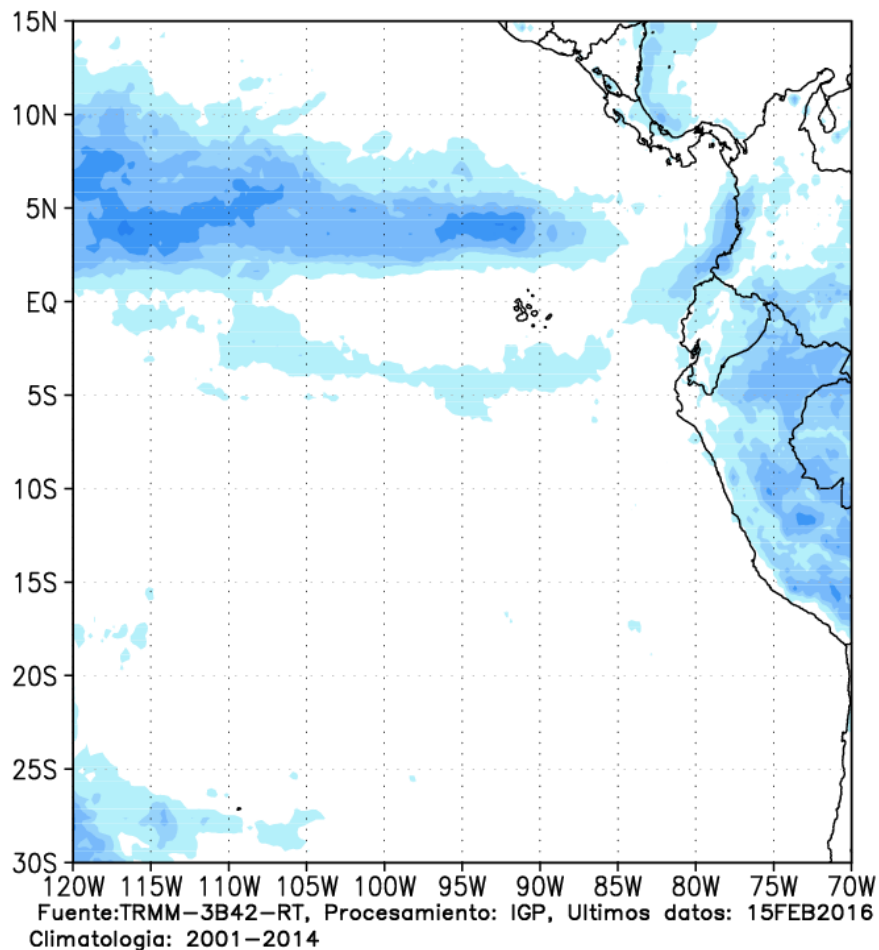


TEMPERATURAS

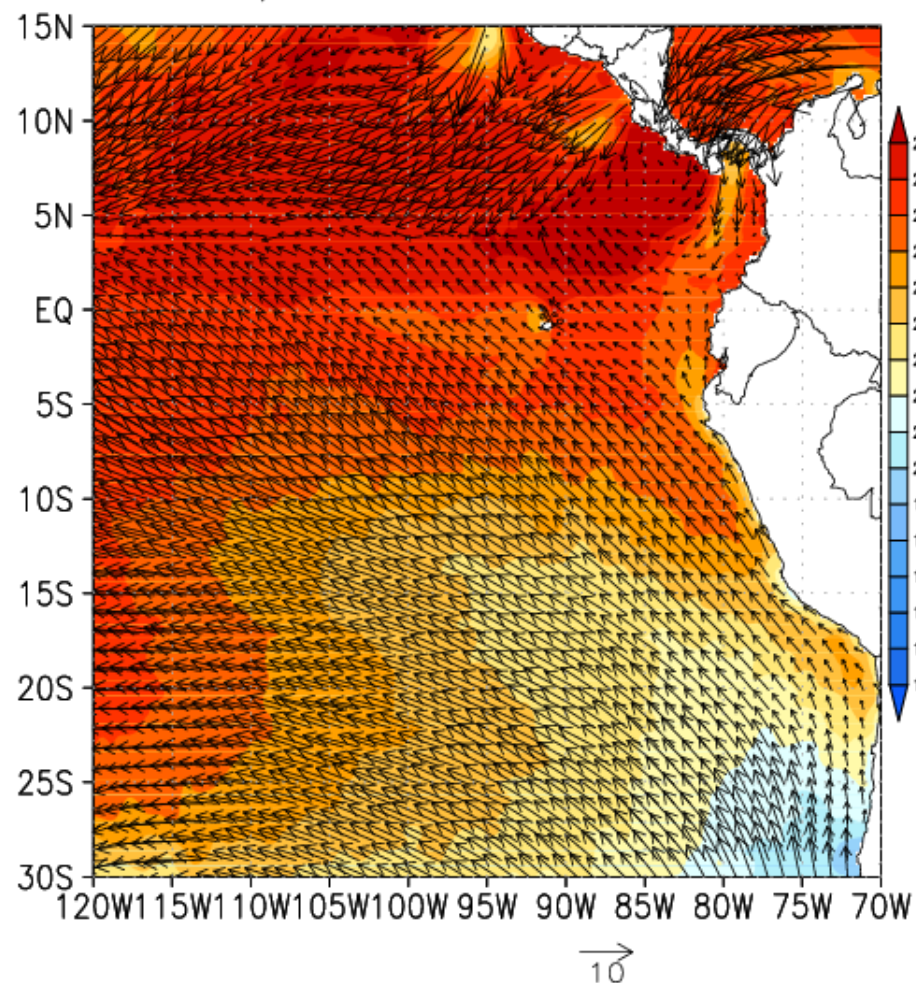


Estación	Longitud (°W)	Latitud (°S)	Altura (m)	Temperatura Máxima (°C)	Ciimatología Tmáxima (°C)	Temperatura Mínima (°C)	Ciimatología Tmínima (°C)	Anomalía TMAX (°C)	Anomalía TMIN (°C)
Puerto Pizarro	80° 27'26	03° 30'30	1	32.7	31.5	24.7	23.8	1.2	0.9
La Esperanza	81° 04'4	04° 55'55	30	31.9	30.9	24.2	23.2	1.0	1.0
Chusis	80° 50'50	05° 31'31	14	33.6	32.2	23.6	22.7	1.4	0.9
San Miguel	80° 40'55	05° 18'14	20	35.3	33.9	23.2	22.4	1.4	0.7
Lambayeque	79° 55'17	06° 42'13	18	29.5	29.5	22.7	21.5	0.0	1.2
Trujillo	78° 35	08° 03	30	28.5	27.6	22.3	20.0	0.8	2.3
Huarmey	78° 10'1	10° 05'1	20	29.7	28.3	21.2	19.8	1.4	1.4
Alcantarilla	77° 33'1	11° 03'1	120	29.6	29.0	21.8	19.7	0.6	2.1
Campo de Marte	77° 02'35.4	12° 04'13.9	159	28.0	26.3	22.8	21.0	1.6	1.8
Fonagro	76° 08'8	13° 28'28	60	30.5	28.1	22.1	20.4	2.4	1.8
Punta Atico	73° 41'40	16° 13'43	20	26.7	25.6	19.8	18.7	1.1	1.1
Camana	72° 41'49	16° 36'24	15	26.8	27.2	21.1	20.4	-0.4	0.7
Punta Coles	71° 22'24.5	17° 41'55.2	70	26.8	25.4	21.1	19.3	1.3	1.8
Ite	70° 57'57	17° 51'50	160	27.2	26.5	21.6	20.6	0.7	1.0
La Yarada	70°31'25	18°12'41	58	28.0	27.8	20.5	18.7	0.2	1.9

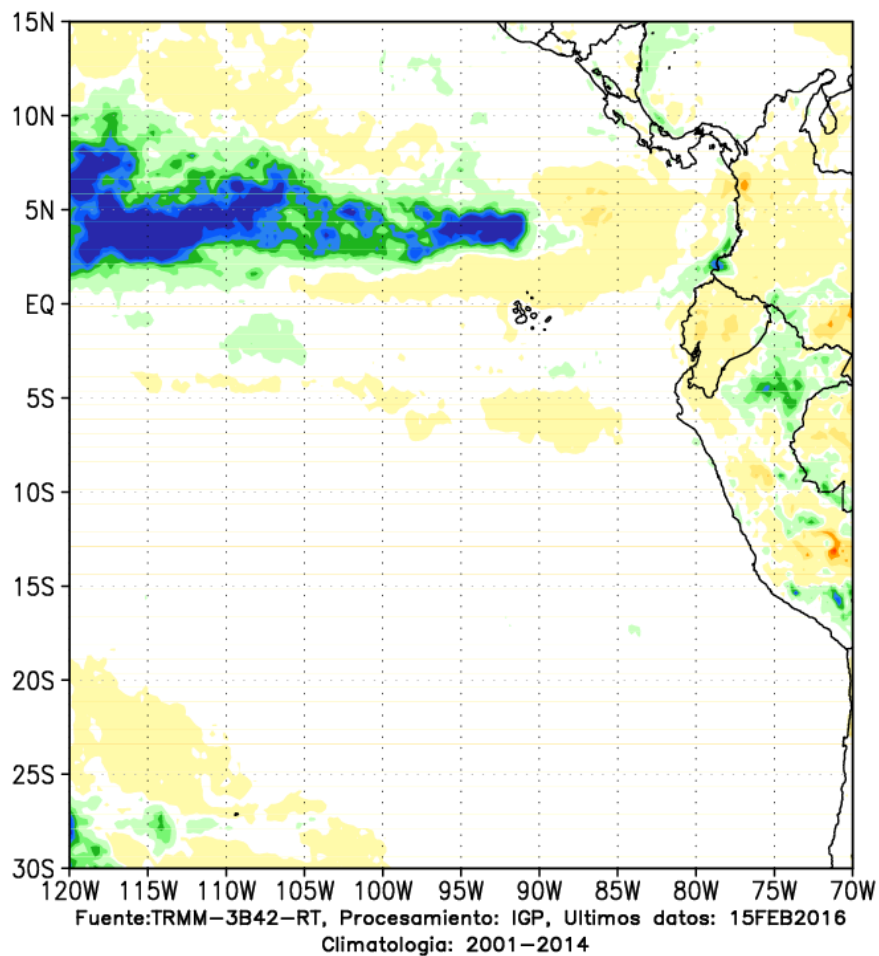
Precipitación promedio (mm/día)
últimos 15 días



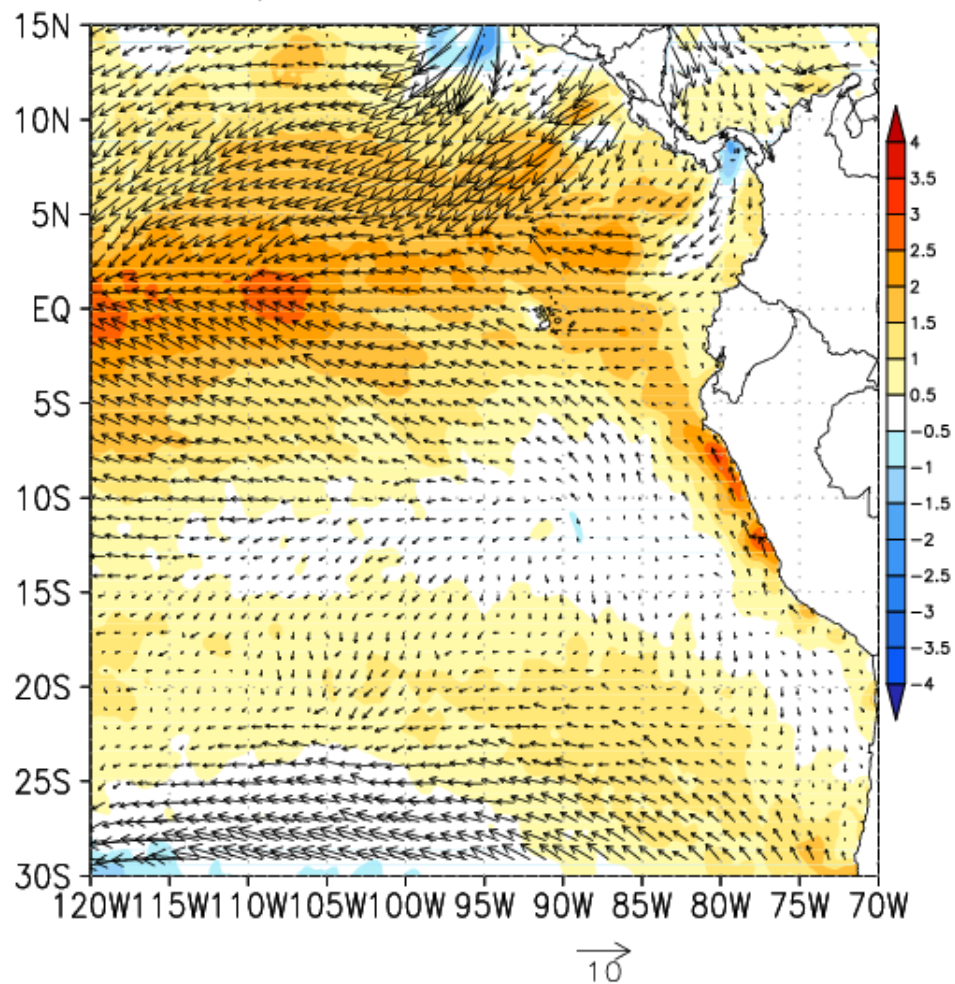
Temperatura superficial del mar (C)
Esfuerzo de viento ($\text{N} \cdot \text{m}^{-2} \cdot 10^{-2}$)
promedio de los últimos 15 días



Anomalia de precipitación (mm/día)
ultimos 15 días



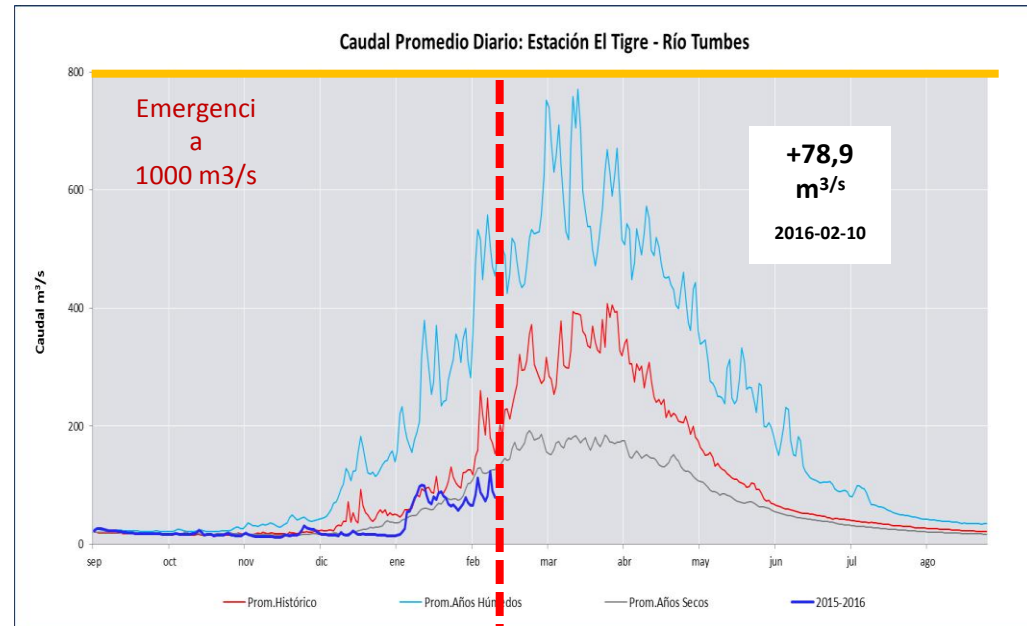
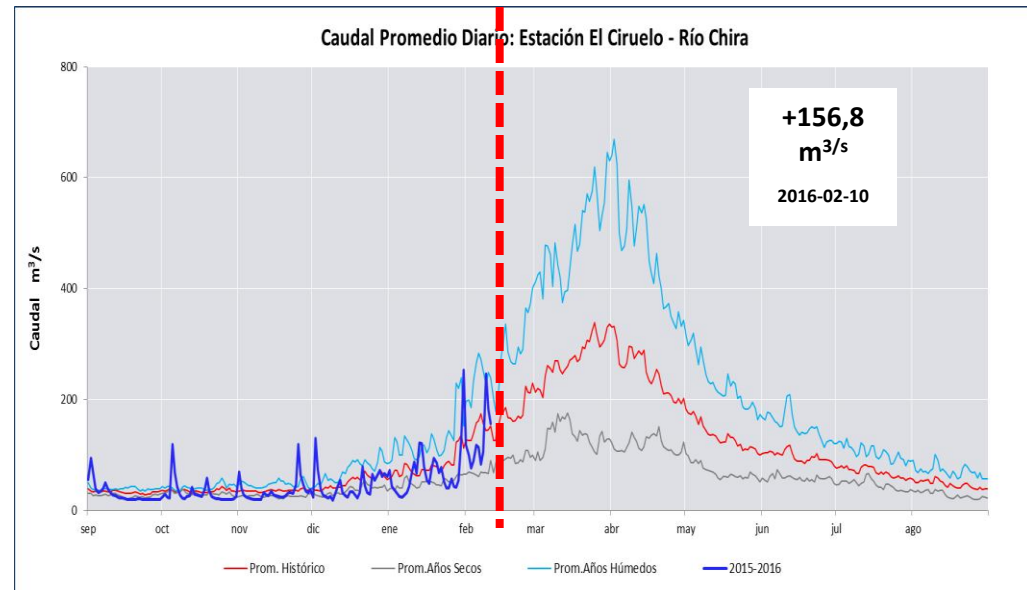
Anomalia de temperatura superficial del mar (C)
Anomalia del esfuerzo de viento ($\text{N}^{\text{m}}-2 \cdot 10^{-2}$)
promedio de los ultimos 15 días



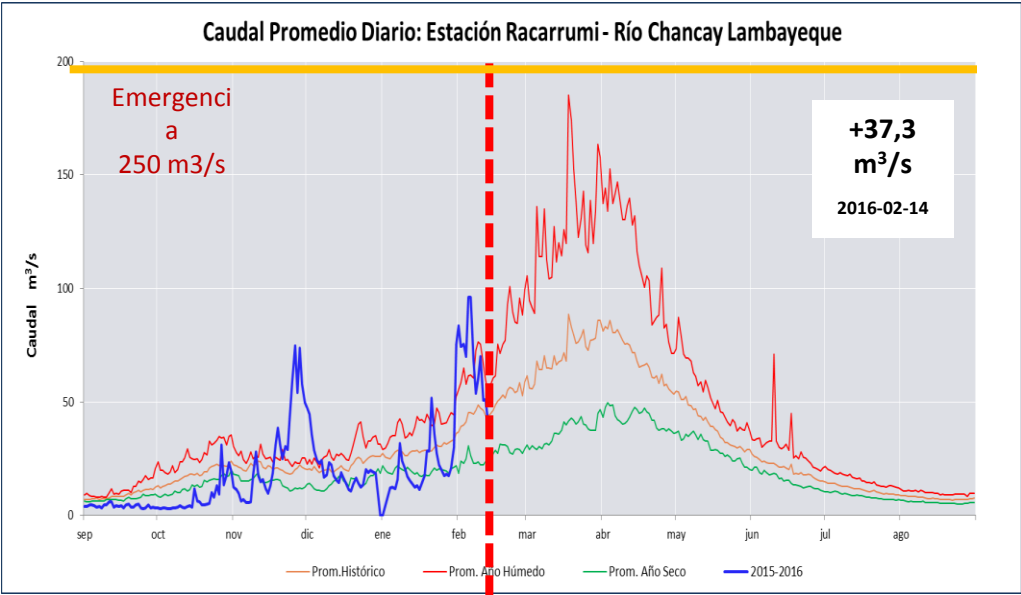
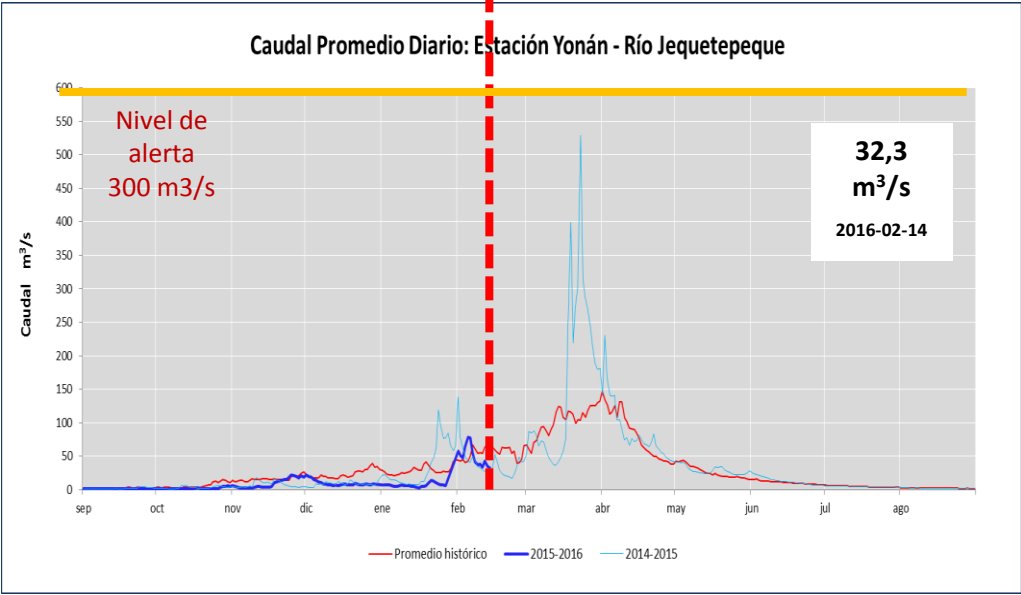
PRECIPITACIÓN – COSTA NORTE

TUMBES			LA CRUZ	MATAPALO	EL TIGRE	RICA PLAYA	Pto PIZARRO	PAPAYAL	EL SALTO	CAÑAVERAL
Año	Mes	Día	Precip	Precip	Precip	Precip	Precip	Precip	Precip	Precip
2016	2	1	0	4	0.9	1.2	0	0.8	0	0
2016	2	2	0	61.7	4.8	0	0.5	4.4	2.8	0
2016	2	3	4.6	33.7	6.6	18.2	1.8	2.9	16	0
2016	2	4	0.8	0.8	0.8	0.8	0	0.3	2.3	0
2016	2	5	0	0	1.1	2	0	0	0	9.5
2016	2	6	0	0	0	0	0	0.4	0	0
2016	2	7	0	20.2	1.4	0.8	0	4.8	1.1	0
2016	2	8	10.6	16	12	16.6	61.7	27.5	32.2	10.7
2016	2	9	2.8	33.6	27.5	30.4	0.4	9.6	0	18.6
2016	2	10	0	4.2	54.5	130.7	0	0	0	4.8
2016	2	11	0	0.2	0.9	0	0	0	0	0
2016	2	12	0	0.5	0		0	0	0	1.8
2016	2	13	0	0	0		0	0	0	0
2016	2	14	0	0.6	1.2		0	0		0

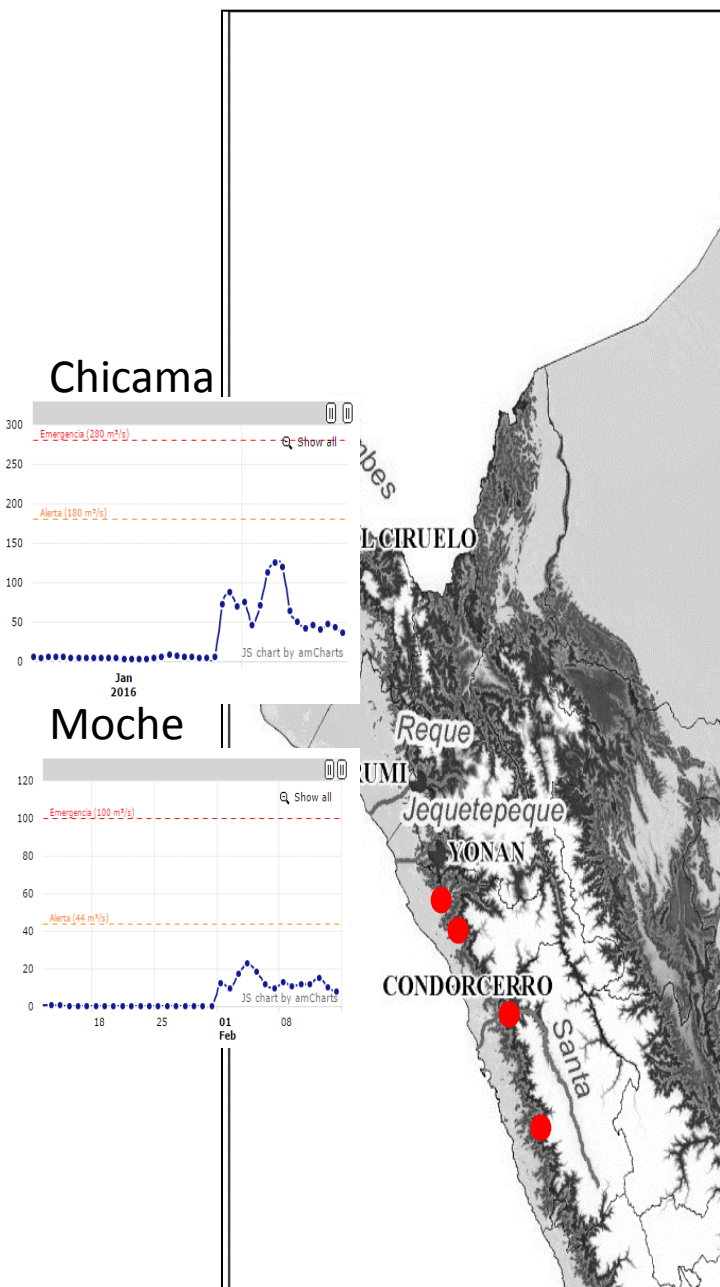
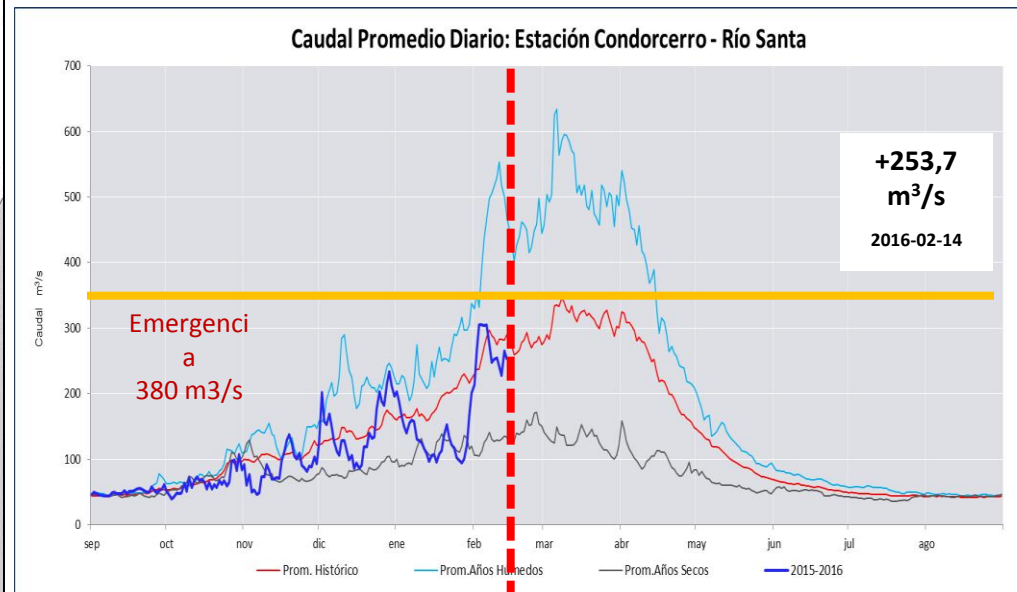
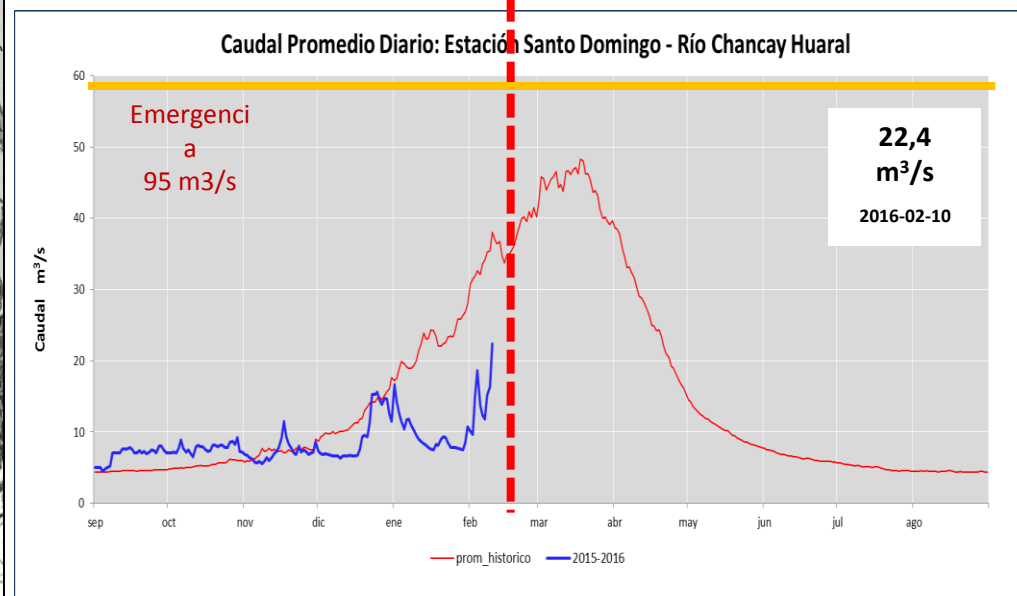
Región hidrográfica Pacífico – Ríos Costa Norte



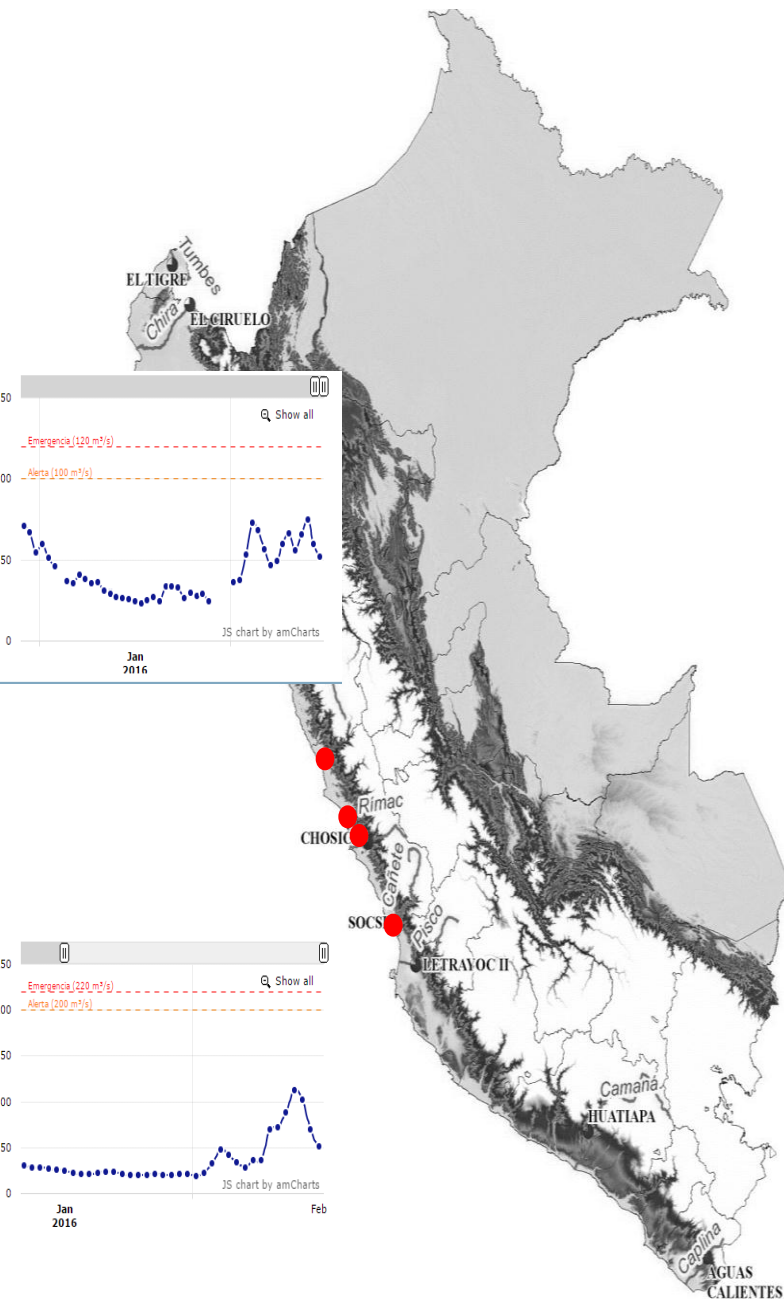
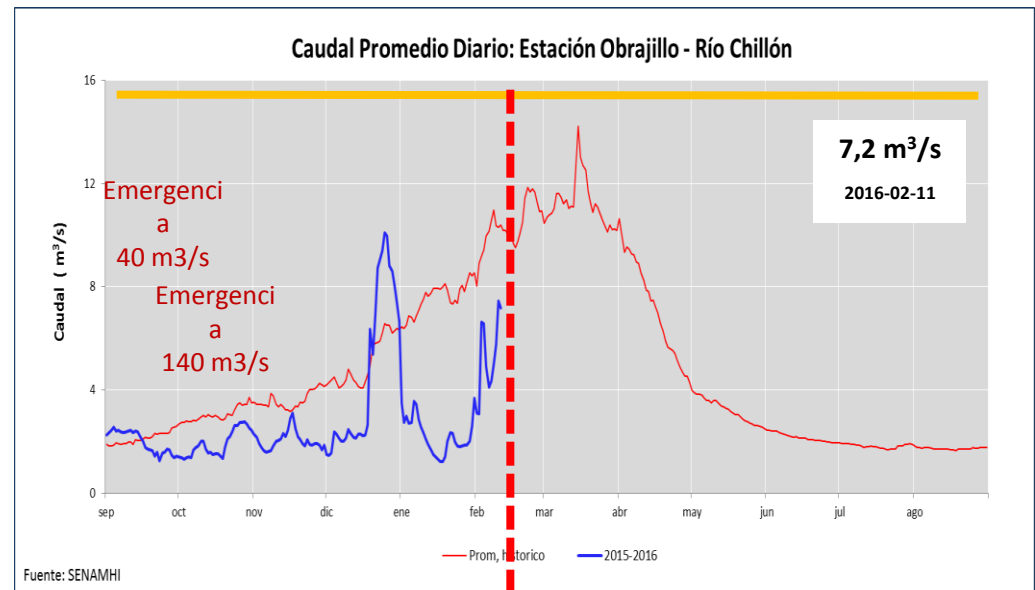
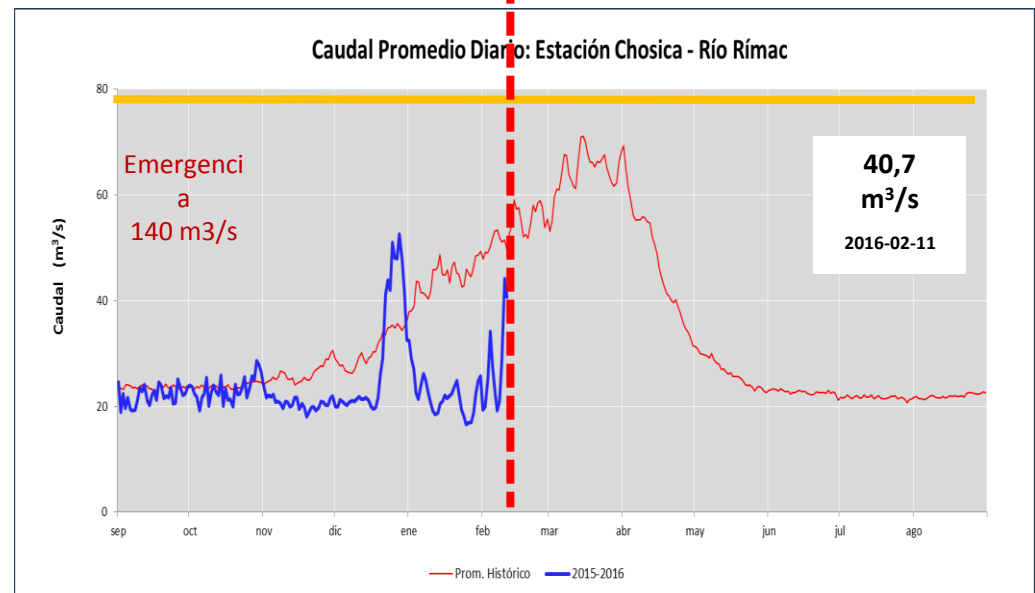
Región hidrográfica Pacífico – Ríos Costa Norte



Región hidrográfica Pacífico – Ríos Costa Centro

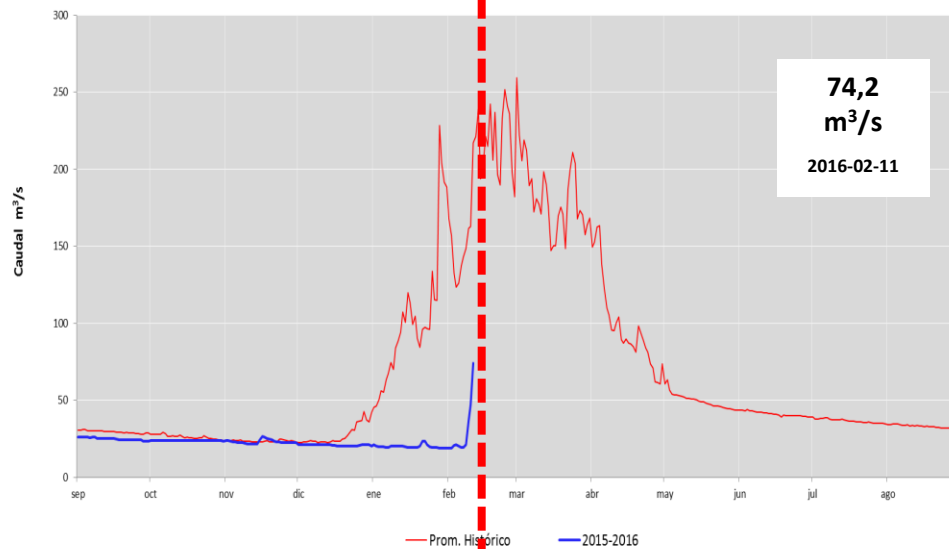


Región hidrográfica Pacífico – Ríos Costa Norte

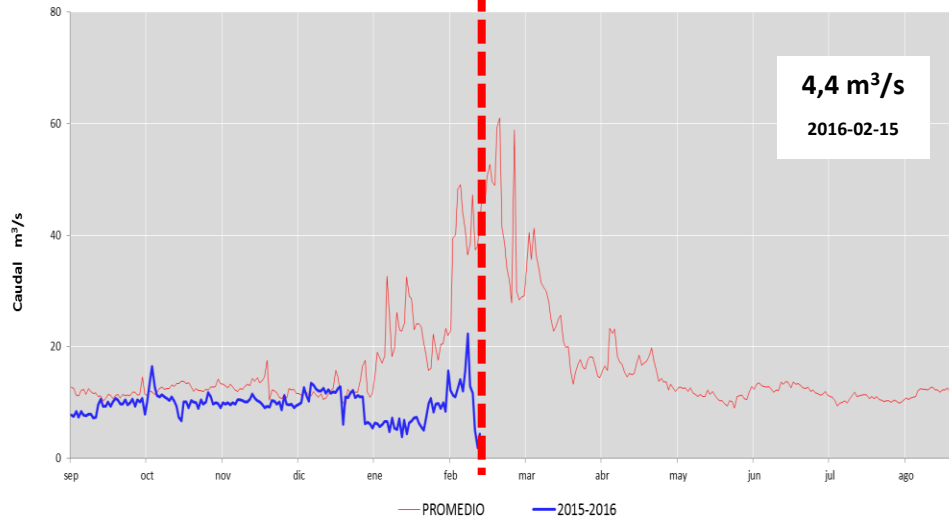
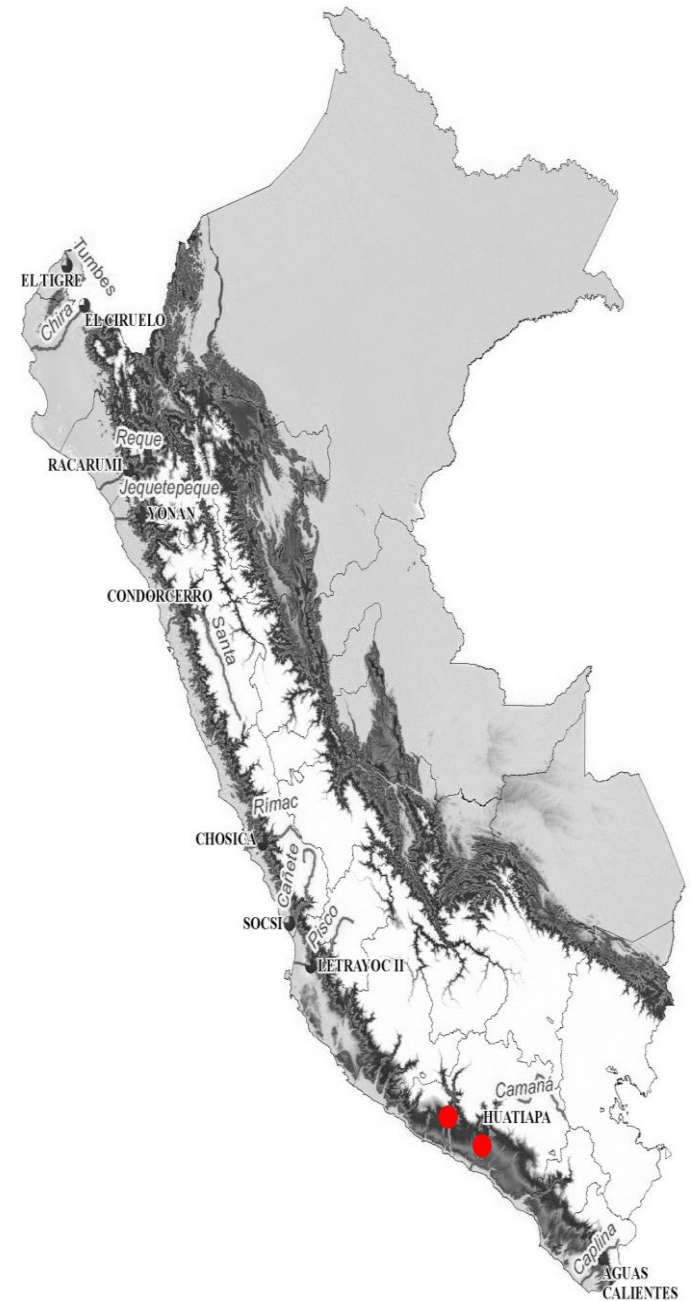


Región hidrográfica Pacífico – Ríos Costa Sur

Caudal Promedio Diario: Estación Huatiapa - Río Majes

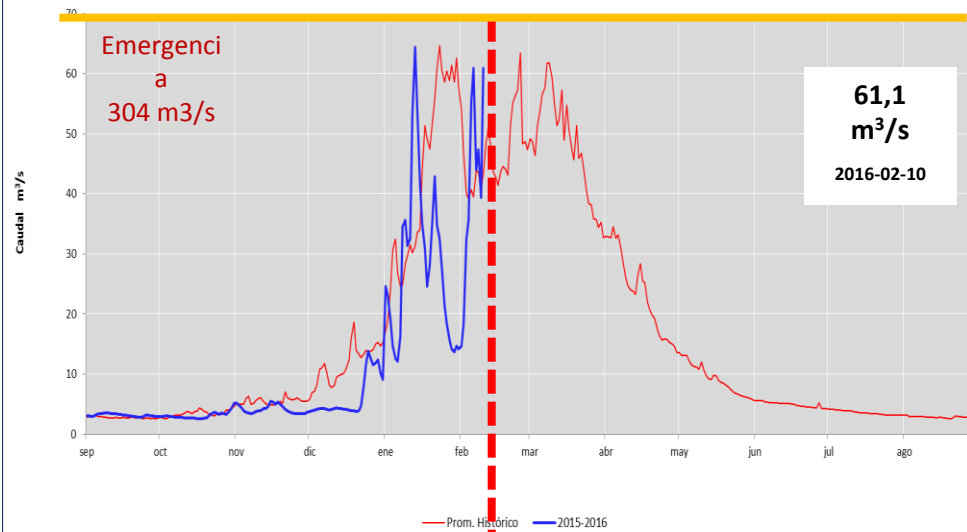


Caudal Promedio Diario: Estación Charcani - Río Chili

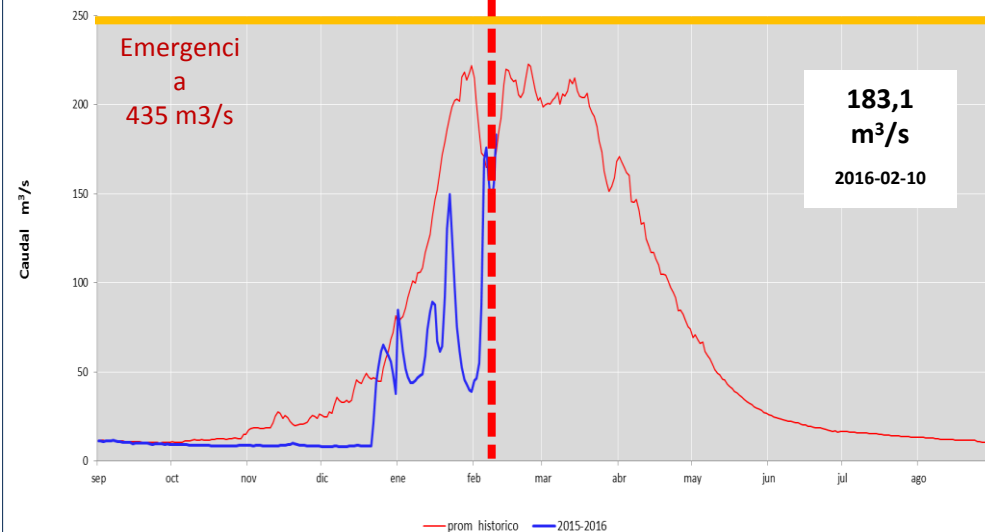
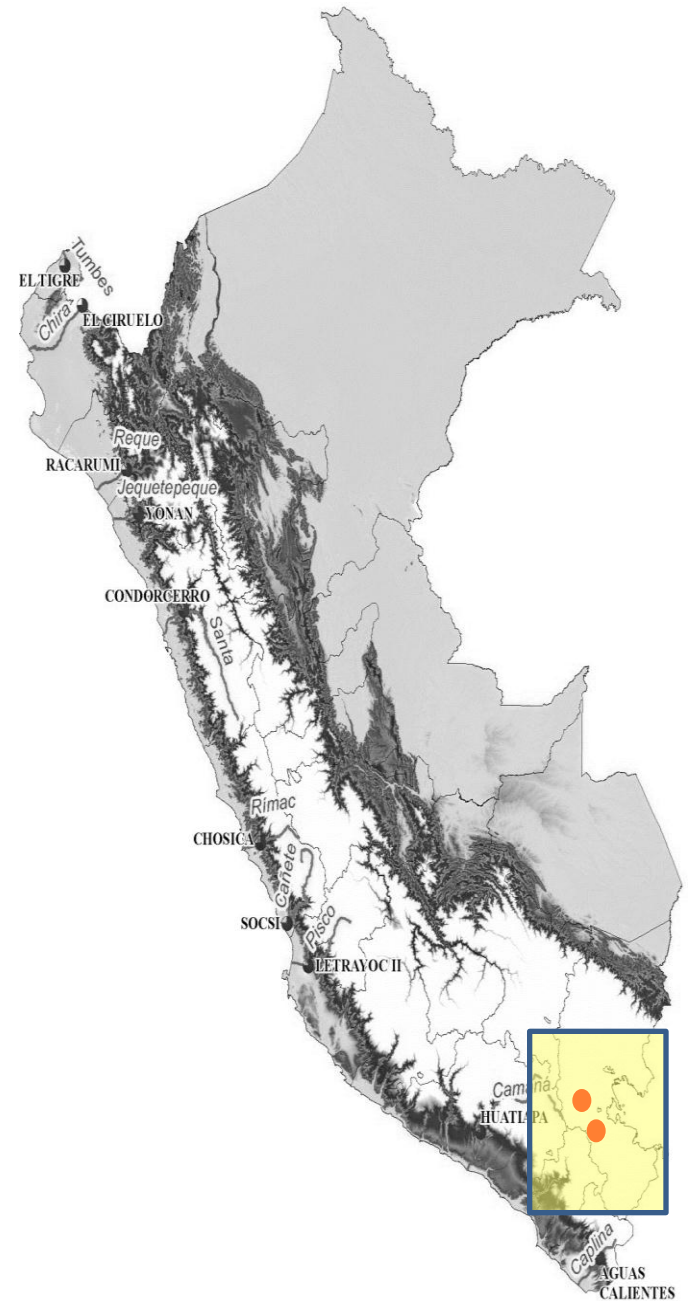


Región hidrográfica Titicaca

Caudal Promedio Diario: Estación Puente Huancané - Río Huancané

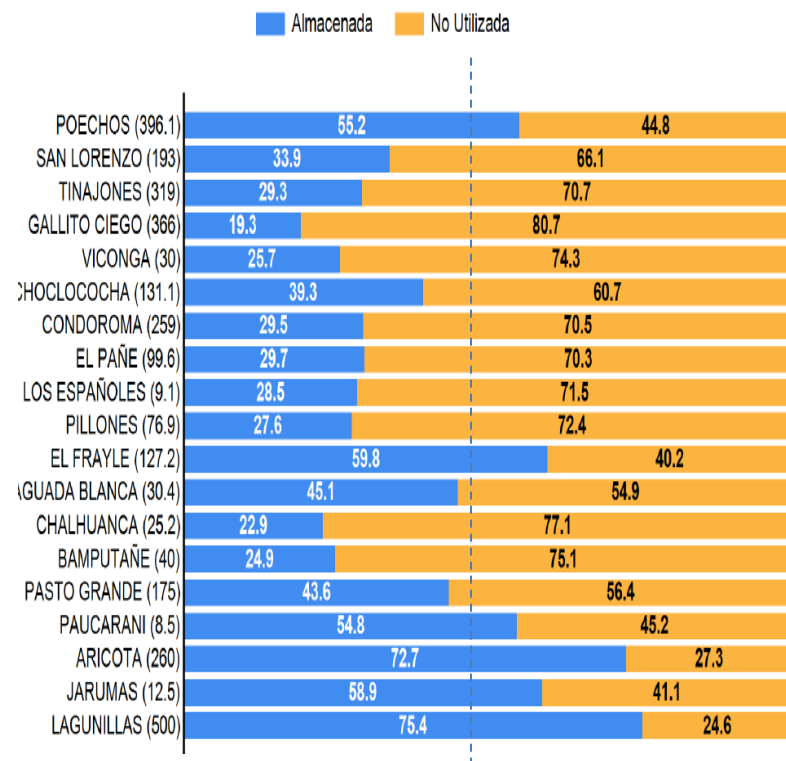


Caudal Promedio Diario: Estación Puente Carretera Ramis - Río Ramis



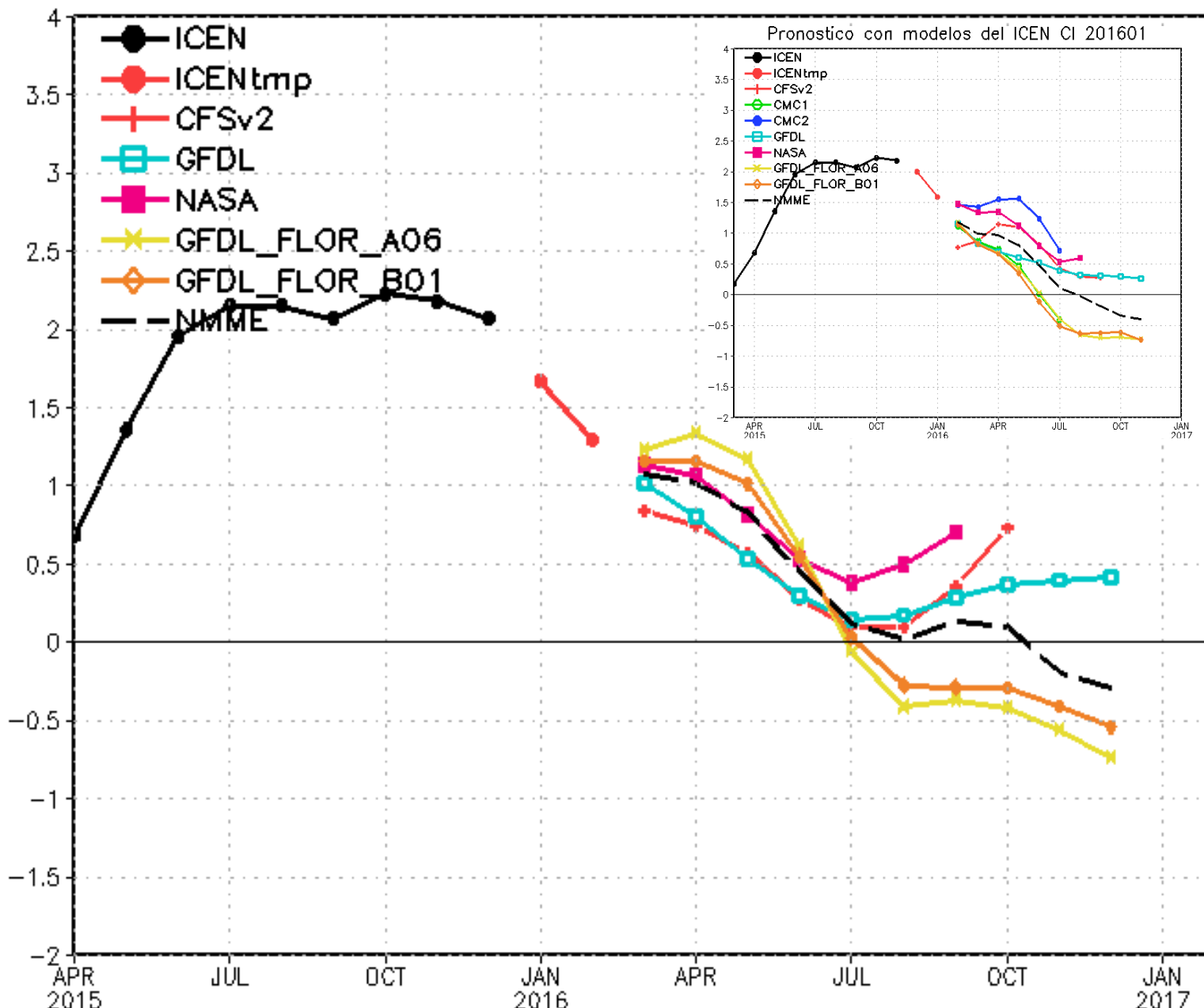
Resumen del estado de los principales embalses

Zona	Nombre del Reservoirio	Fecha del dato	Departamento de Influencia	Capacidad Hidráulica (hm3)		Capacidad Hidráulica
				Útil	Almacenada	Almacenada (%)
Costa - Norte	POECHOS	15-feb	Piura	396.1	218.7	55.2
Costa - Norte	SAN LORENZO	15-feb	Piura	193	65.4	33.9
Costa - Norte	TINAJONES	15-feb	Lambayeque	319	93.5	29.3
Costa - Norte	GALLITO CIEGO	15-feb	Cajamarca	366	70.6	19.3
Costa - Centro	VICONGA	11-feb	Lima	30	7.7	25.7
Costa - Sur	CHOCLOCOCHA	15-feb	Huancavelica	131.1	51.5	39.3
Costa - Sur	CONDOROMA	15-feb	Arequipa	259	76.3	29.5
Costa - Sur	EL PAÑE	15-feb	Cusco	99.6	29.6	29.7
Costa - Sur	LOS ESPAÑOLES	15-feb	Arequipa	9.1	2.6	28.5
Costa - Sur	PILLONES	15-feb	Arequipa	76.9	21.2	27.6
Costa - Sur	EL FRAYLE	15-feb	Arequipa	127.2	76.1	59.8
Costa - Sur	AGUADA BLANCA	15-feb	Arequipa	30.4	13.7	45.1
Costa - Sur	CHALHUANCA	15-feb	Arequipa	25.2	5.8	22.9
Costa - Sur	BAMPUTAÑE	15-feb	Puno	40	10	24.9
Costa - Sur	PASTO GRANDE	15-feb	Moquegua	175	76.3	43.6
Costa - Sur	PAUCARANI	15-feb	Tacna	8.5	4.7	54.8
Costa - Sur	ARICOTA	15-feb	Tacna	260	189.1	72.7
Costa - Sur	JARUMAS	12-feb	Tacna	12.5	7.4	58.9
Sierra - Sur	LAGUNILLAS	11-feb	Puno	500	377	75.4
Situación Nacional		-	-	3058.6	1397.2	45.7

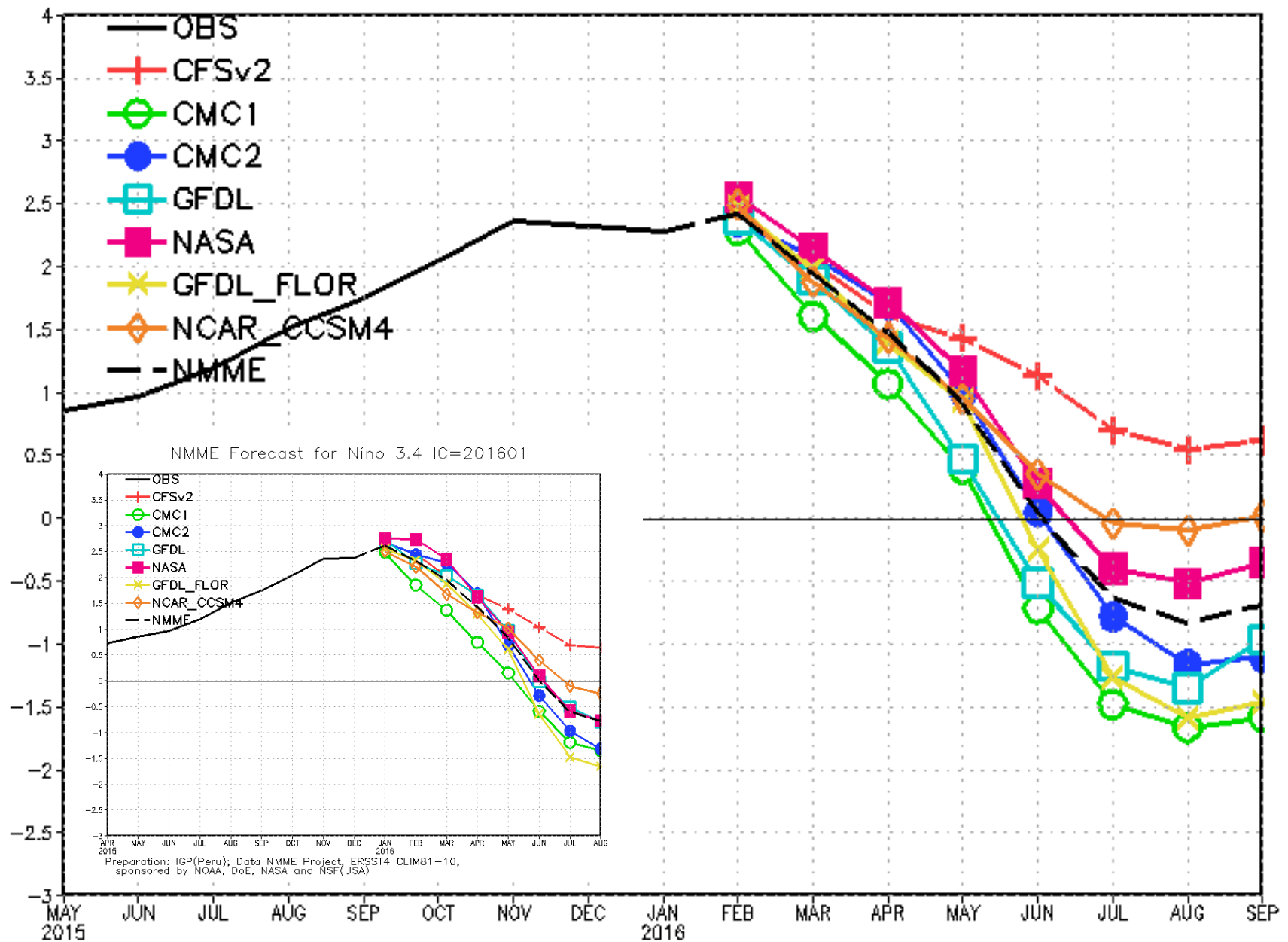


Fuente: http://snirh.ana.gob.pe/fen/EFEN_EstadoEmbalses.aspx

Pronostico con modelos del ICEN CI 201602



NMME Forecast for Nino 3.4 IC=201602



Preparation: IGP(Peru); Data NMME Project, ERSST4 CLIM81-10,
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