Item 22
Submitted by Staff

Arlene Tavani

From: Carol A. Reeb [creeb@stanford.edu]
Sent: Monday, May 17, 2010 5:04 PM
To: kmarkey65@comcast.net
Cc: Darby Fuerst; Arlene Tavani
Subject: El Nino-La Nina forecast

Attachments: ensodisc.pdf; Central Coast rainfall by wateryear.pdf


ensodisc.pdf (106 KB)


Central Coast rainfall by wate...

Dear Director Markey and General Manager Fuerst,

Attached is the most recent update (ensodisc.pdf) on the El Nino/Southern Oscilation (ENSO) from NOAA. I send this to you in light of Action Item 22 which regards the water supply and forecast for May 1, 2010 - September 30, 2010 which will be presented at tonight's (May 17) board meeting. While there may be adequate water stored to begin WY 2011 with optimism, the NOAA models suggest we currently have a "significant" chance of entering a La Nina state in which sea surface temperatures drop along with precipitation. This means the Central Coast could be in store for drier-than-normal conditions during the winter of 2011. A dry winter could significantly impact the Carmel River, its aquifers, and under 95-10, Cal Am's ability to pump enough water to meet the needs of Peninsula residents for the summer of 2011 and into WY 2012.

I write this to you now in the hopes that you and the Board might begin serious discussions on emergency conservation measures should they become necessary. Enforcing 95-10 during a La Nina event will be bad timing on the part of the State should they move forward and do so. If possible, preparing legal documents now to lessen the order's impact might be in order. Fully enforcing 95-10 this year could negatively skew public opinion for protecting a fish and a frog in the river. It could accelerate support for desalination not matter what the costs. It could lead to desperate decisions by board members to appease public outcry as water supplies dwindle. As a leader on the board, I turn to you to introduce these thoughts for the Board's consideration.

I have attached a graph of precipitation records by water year from 1895-2009. I have also indicated in red the 27" measured so far for 2010. On that graph I've added a few recent El Nino and La Nina events. While a dry La Nina does not always follow a wet El Nino, the evidence leans in that direction. I ask you to consider preparing our community now for a potentially dry year especially given the State's order that reduces our water supply.

Sincerely,

Carol Reeb

Data from:
Time Series Data:
http://www.wrcc.dri.edu/monitor/cal-mon/frames_version.html
El Nino/La Nina Historic Events:
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ensostuff/ensoyears.shtml
El Nino/La Nina Advisory
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/

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Carol A. Reeb, Ph.D.
Research Associate
Hopkins Marine Station
Stanford University
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EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

CLIMATE PREDICTION CENTER/NCEP/NWS

6 May 2010

ENSO Alert System Status: El Niño Advisory

Synopsis: A transition to ENSO-neutral conditions is expected by June 2010, which will continue into the Northern Hemisphere summer 2010.

El Niño weakened during April 2010 as positive surface temperature (SST) anomalies decreased across the equatorial Pacific Ocean. However, SST anomalies still exceeded +0.5°C across most of the Pacific at the end of the month (Figs. 1 and 2). Since the end of February, subsurface heat content anomalies (average temperatures in the upper 300m of the ocean, Fig. 3) have decreased steadily in association with the expansion and strengthening of below-average temperatures at depth (25-200m; Fig. 4). Also, enhanced convection developed over Indonesia, while suppressed convection strengthened and expanded over the tropical Pacific, south of the equator (Fig. 5). The low-level equatorial trade winds remained near-average, and anomalous upper-level westerly winds prevailed over the central Pacific during much of April. Collectively, these oceanic and atmospheric anomalies reflect a weakening El Niño.

Nearly all models predict decreasing SST anomalies in the Niño-3.4 region through the Northern Hemisphere summer 2010 (Fig. 6). Most models predict a transition to ENSO-neutral conditions during April-June 2010, followed by ENSO-neutral conditions through the end of the year. However, by July-September 2010, the envelope of model solutions includes a significant number (nearly a third) indicating the onset of La Niña conditions. Even though ENSO-neutral conditions are most likely during the second half of the year, the general tendency of the models in recent months has been toward increasingly negative SST anomalies in the Niño-3.4 region. These forecasts, in addition to various oceanic and atmospheric indicators, indicate a growing possibility of La Niña developing during the second half of 2010.

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center web site (El Niño/La Niña Current Conditions and Expert Discussions). Forecasts for the evolution of El Niño/La Niña are updated monthly in the Forecast Forum section of CPC's Climate Diagnostics Bulletin. The next ENSO Diagnostics Discussion is scheduled for **3 June 2010**. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.enso-update@noaa.gov.

Climate Prediction Center
National Centers for Environmental Prediction
NOAA/National Weather Service
Camp Springs, MD 20746-4304

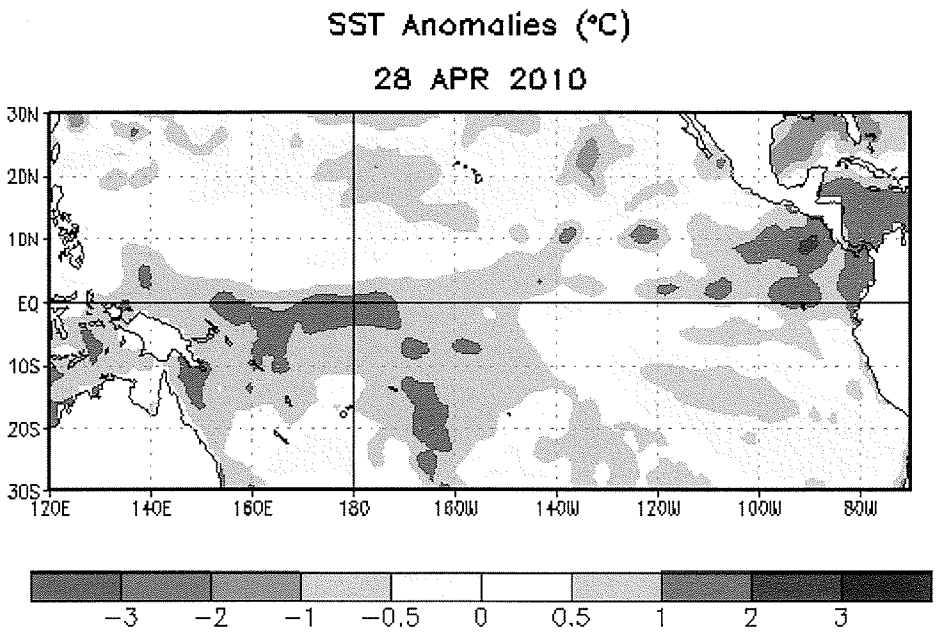


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 28 April 2010. Anomalies are computed with respect to the 1971-2000 base period weekly means (Xue et al. 2003, *J. Climate*, **16**, 1601-1612).

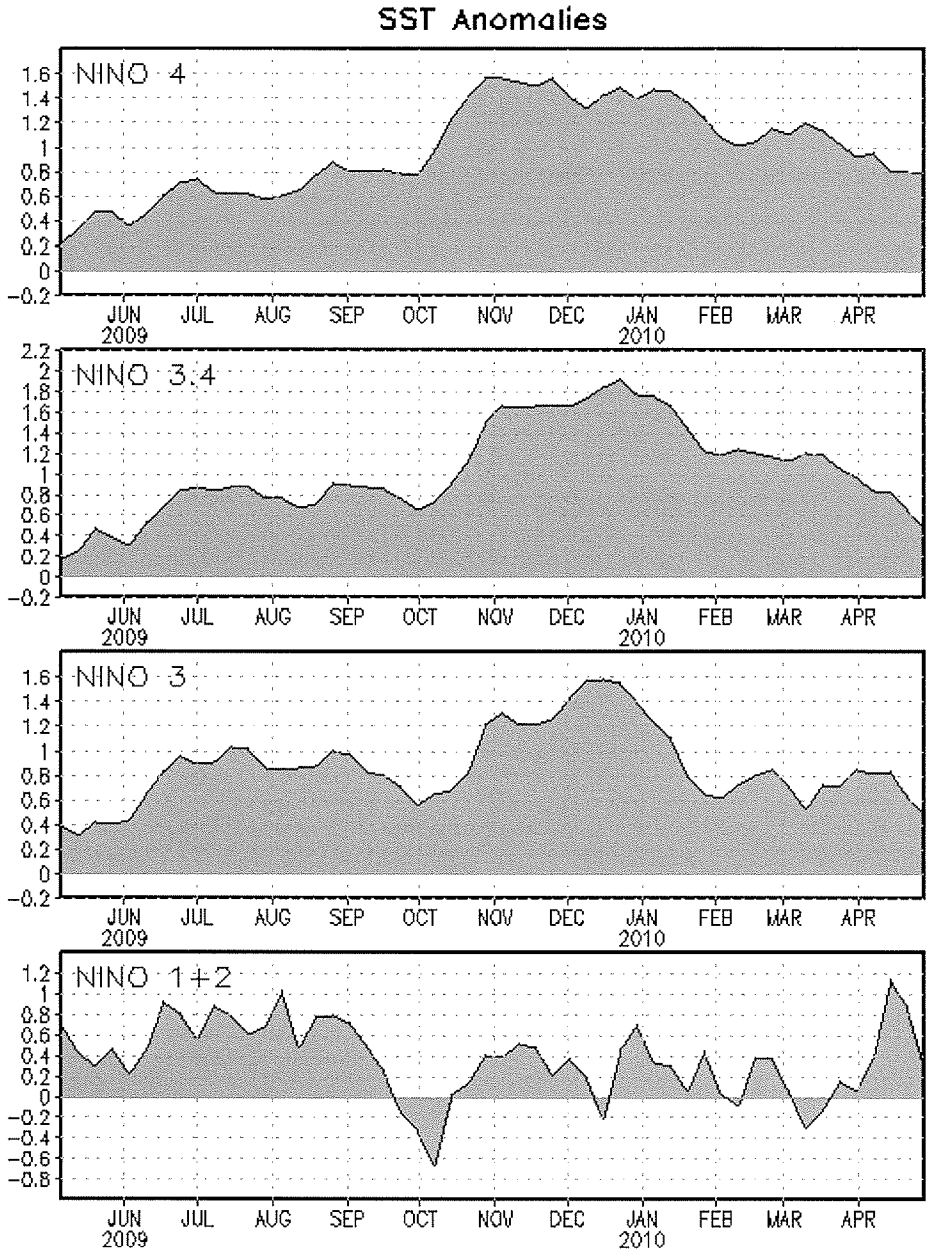


Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies (°C) in the Niño regions [Niño-1+2 (0°-10°S, 90°W-80°W), Niño 3 (5°N-5°S, 150°W-90°W), Niño-3.4 (5°N-5°S, 170°W-120°W), Niño-4 (150°W-160°E and 5°N-5°S)]. SST anomalies are departures from the 1971-2000 base period weekly means (Xue et al. 2003, *J. Climate*, **16**, 1601-1612).

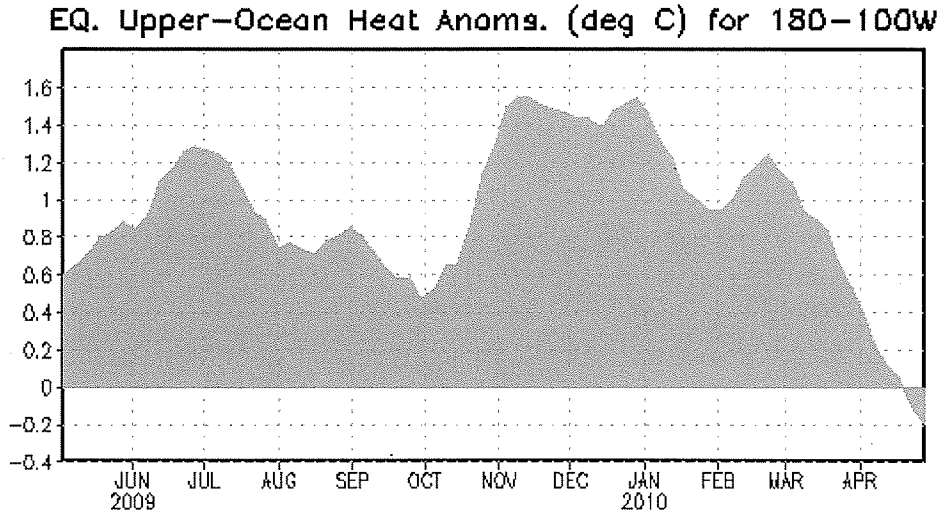


Figure 3. Area-averaged upper-ocean heat content anomalies (°C) in the equatorial Pacific (5°N-5°S, 180°-100°W). Heat content anomalies are computed as departures from the 1982-2004 base period pentad means.

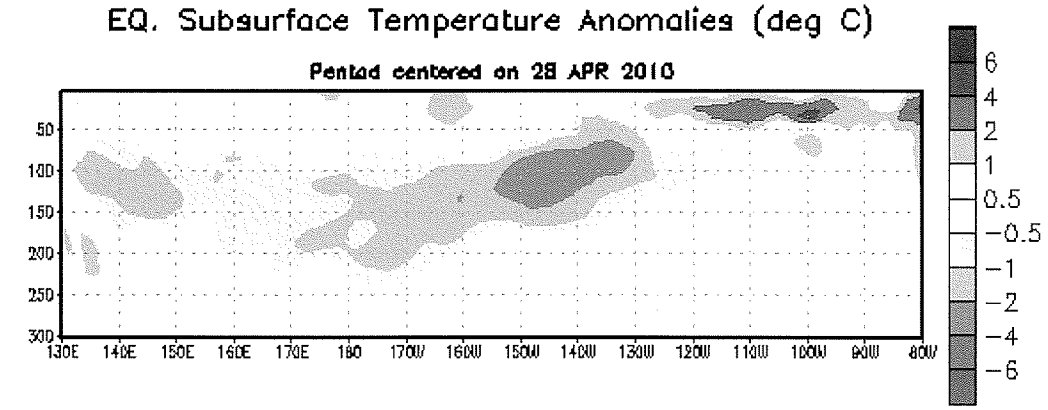


Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies (°C) centered on the week of 28 April 2010. The anomalies are averaged between 5°N-5°S. Anomalies are departures from the 1982-2004 base period pentad means.

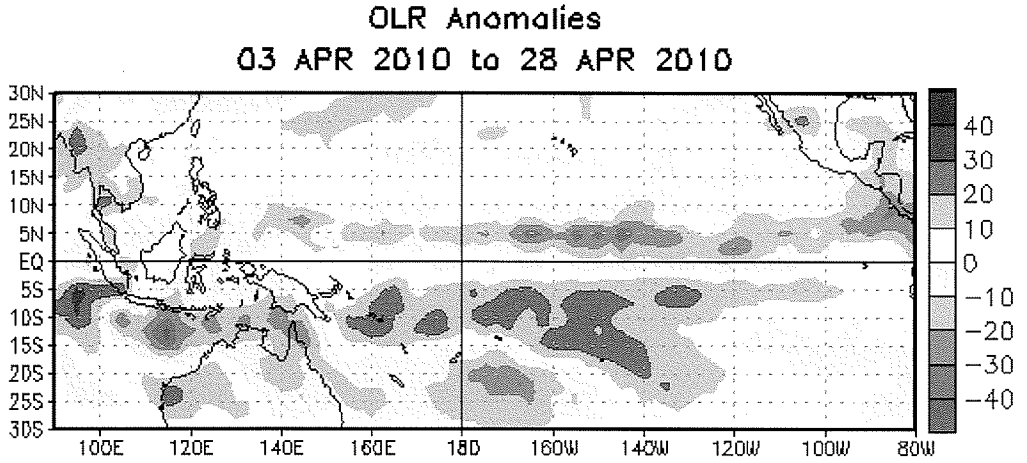


Figure 5. Average outgoing longwave radiation (OLR) anomalies (W/m^2) for the four-week period 3 April – 28 April 2010. OLR anomalies are computed as departures from the 1979-1995 base period pentad means.

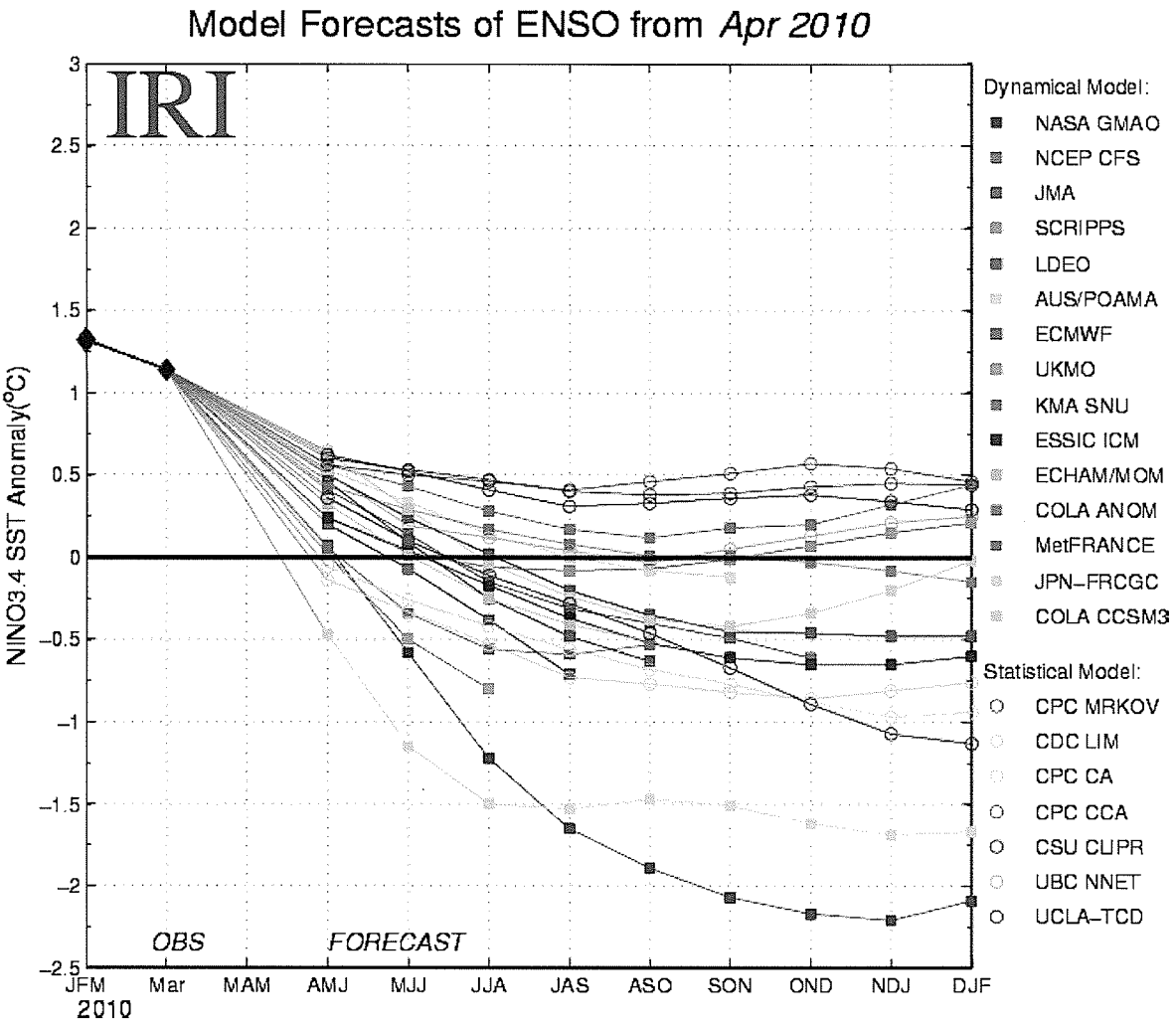
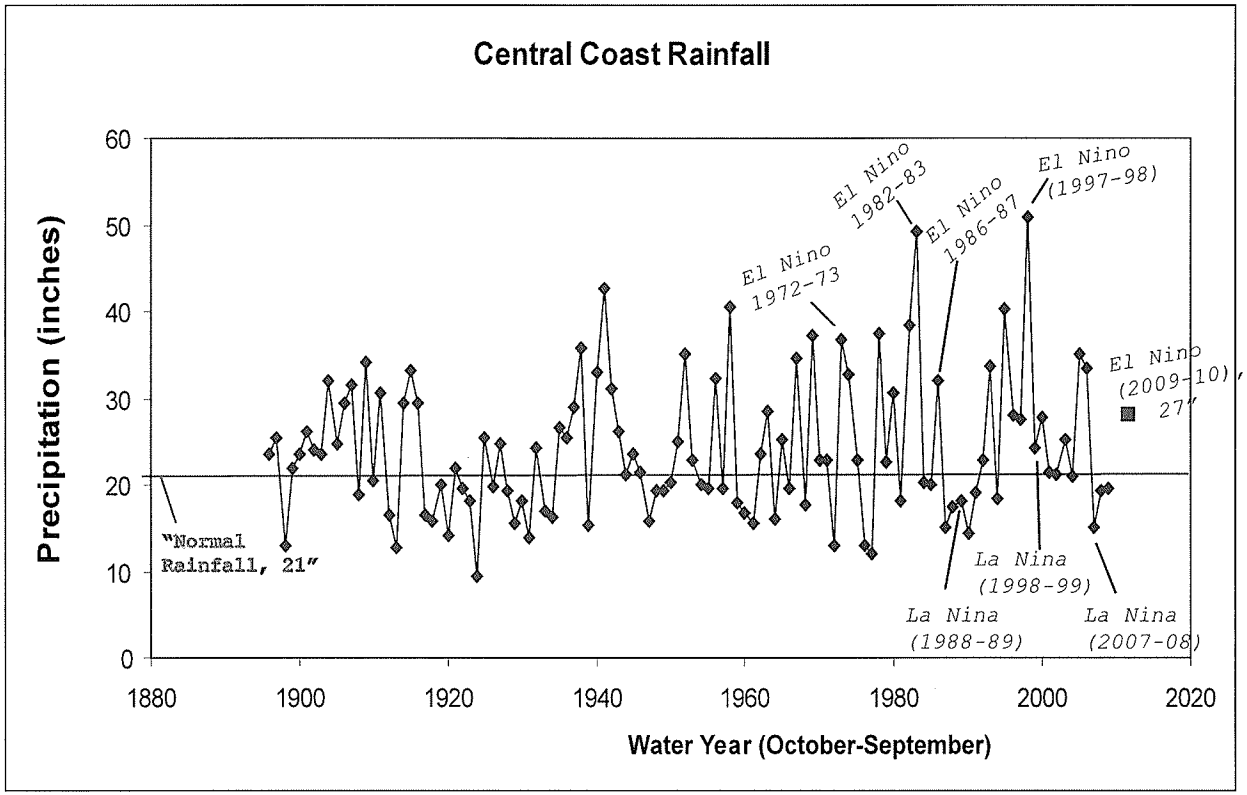


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure courtesy of the International Research Institute (IRI) for Climate and Society. Figure updated 15 April 2010.


Central Coast Rainfall
Precipitation (inches)
60
50
40
30
20
10
0
1880
1900
1920
1940
1960
1980
2000
2020
Water Year (October-September)
"Normal Rainfall, 21"
El Nino 1972-73
El Nino 1982-83
El Nino 1986-87
El Nino (1997-98)
El Nino (2009-10), 27"
La Nina (1988-89)
La Nina (1998-99)
La Nina (2007-08)