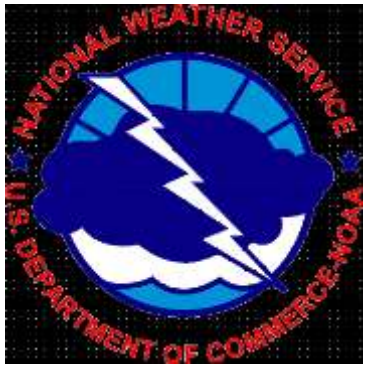




National Weather Service San Diego



NWS operational forecasting and climate applications

Alex Tardy

Warning Coordination Meteorologist



10 million people served



View of operations situational awareness



24/7 Central operations for life and property messaging and for promoting the economy

NWS field office operations

- Provide alerts (warnings, watches and advisories) to protect life threatening, property damaging and commerce impacting weather related events in support of the economy
- Real-time numerical weather prediction (locally and NCEP)
- Gridded digital (GIS, KML, etc) forecasts of weather parameters out to 7 days
- Downscale and collect climatological information to brief and present to partners
- The above includes Decision Support Services for key government partners for impacting weather that meets their needs and provides interpretation
- Conduct workshops for weather awareness and longer range outlooks for media, government and private partners
- StormReady and TsunamiReady partner collaboration for private and public agencies to improve communication and resiliency
- Outreach at public hazard events and education for all ages
- Scientific research and technology development for infusion into operational forecasting environment

Types of Services for Partners

- Legacy Text Products (ZFP, FWF) to 7 days
- Spot Weather Forecast (point locations)
- Gridded Forecasts (graphics, point and click generated tables and graphs)
- Special Weather Statements and Hazardous Weather Outlooks
- Conference Calls
- Interpretive services for partner defined thresholds and specific timing and uncertainty forecast support
- Weather Story Graphics
- Headlines on the Web Page
- Email with summary of highlights
- Email with highlights and accompanying graphics (heads-up messaging out to 10 days)
- YouTube video briefings
- GoToMeeting (webinars, virtual)
- Real-time Social Media information sharing on Twitter and Facebook
- NWSchat proactive instant messaging and interactions
- Specialized partner “heads-up” messages for impact events
(Fog for US Border Patrol, Heat for County Health Departments,
Santa Ana for fire weather)
- Storm and Post-storm information sharing of impacts
- iNWS messages and Wireless Emergency Alerts

Operational Observing Systems

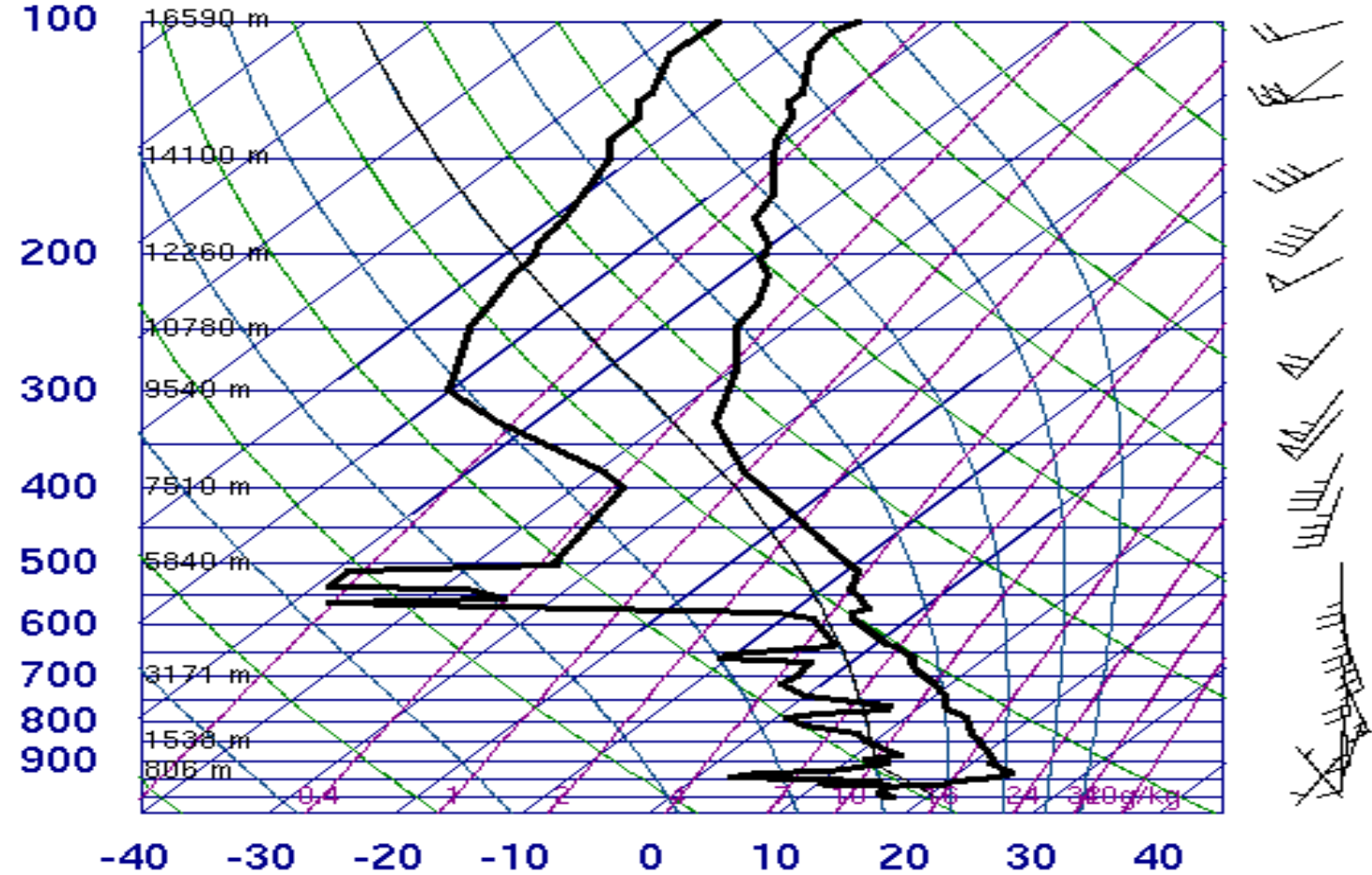
- **Radiosondes**
 - *High vertical resolution, low time and horizontal resolution*
- **Surface METAR**
 - *High horizontal and time resolution, no vertical information*
- **Wind profilers**
 - *High vertical and time resolution, moderate horizontal res.*
 - *Limited geographic coverage (primarily central U.S.)*
 - *No thermodynamic data (RASS gives virtual temperature)*
- **NEXRAD VWP winds**
 - *High time resolution, moderate horizontal resolution, variable vertical resolution*
 - *No thermodynamic data*
- **Satellite**
 - *Real-time GPS-met and GOES imagers*
 - *Microwave data*



Launch weather balloon



72293 NKX San Diego

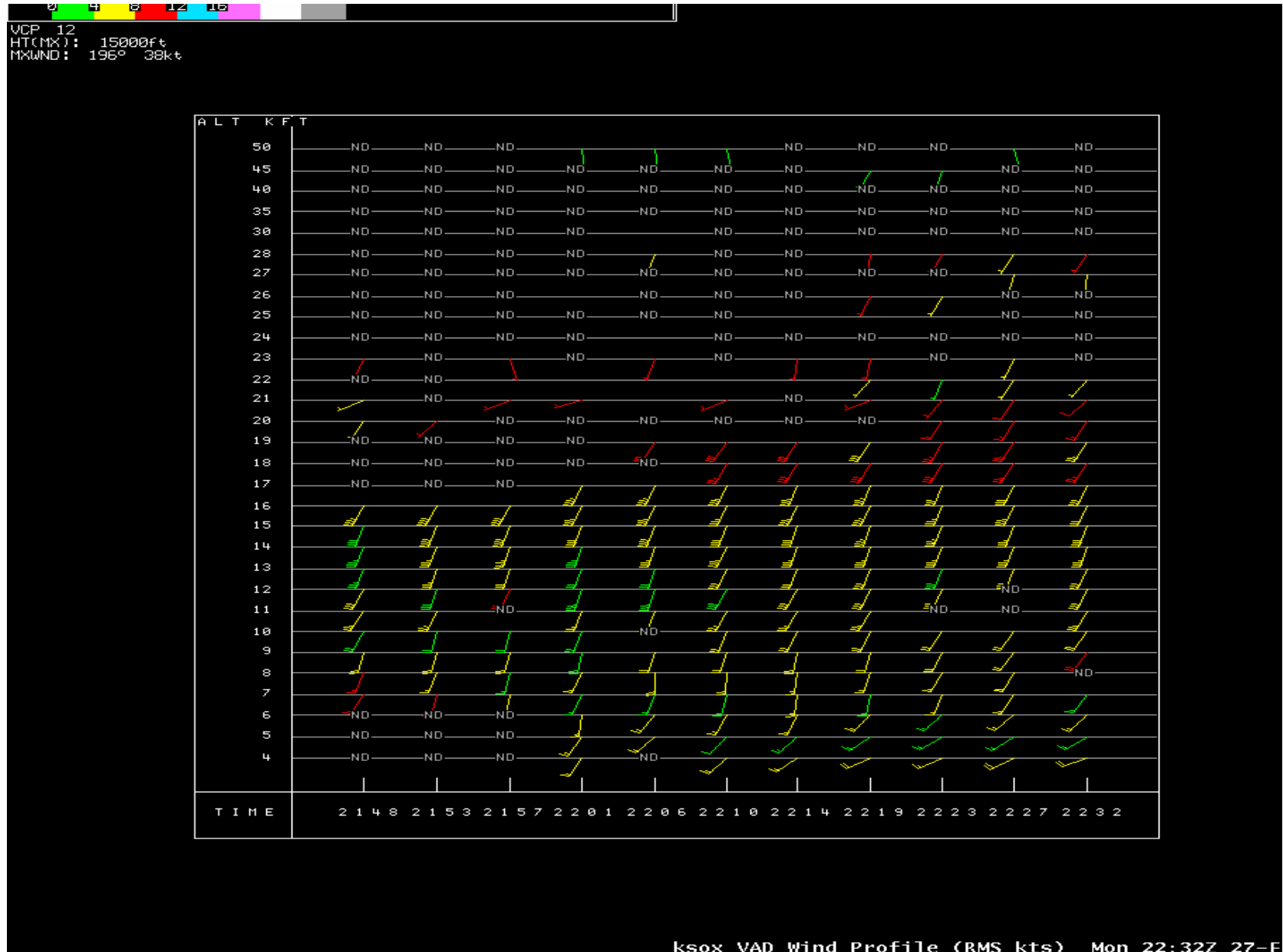


SLAT	32.85
SLON	-117.11
SELV	128.0
SHOW	-0.36
LIFT	4.08
LFTV	3.77
SWET	155.7
KINX	28.50
CTOT	20.10
VTOT	29.10
TOTL	49.20
CAPE	0.00
CAPV	0.00
CINS	0.00
CINV	0.00
EQLV	-9999
EQTV	-9999
LFCT	-9999
LFCV	-9999
BRCH	0.00
BRCV	0.00
LCLT	285.6
LCLP	906.0
MLTH	293.8
MLMR	10.42
THCK	5712.
PWAT	30.26

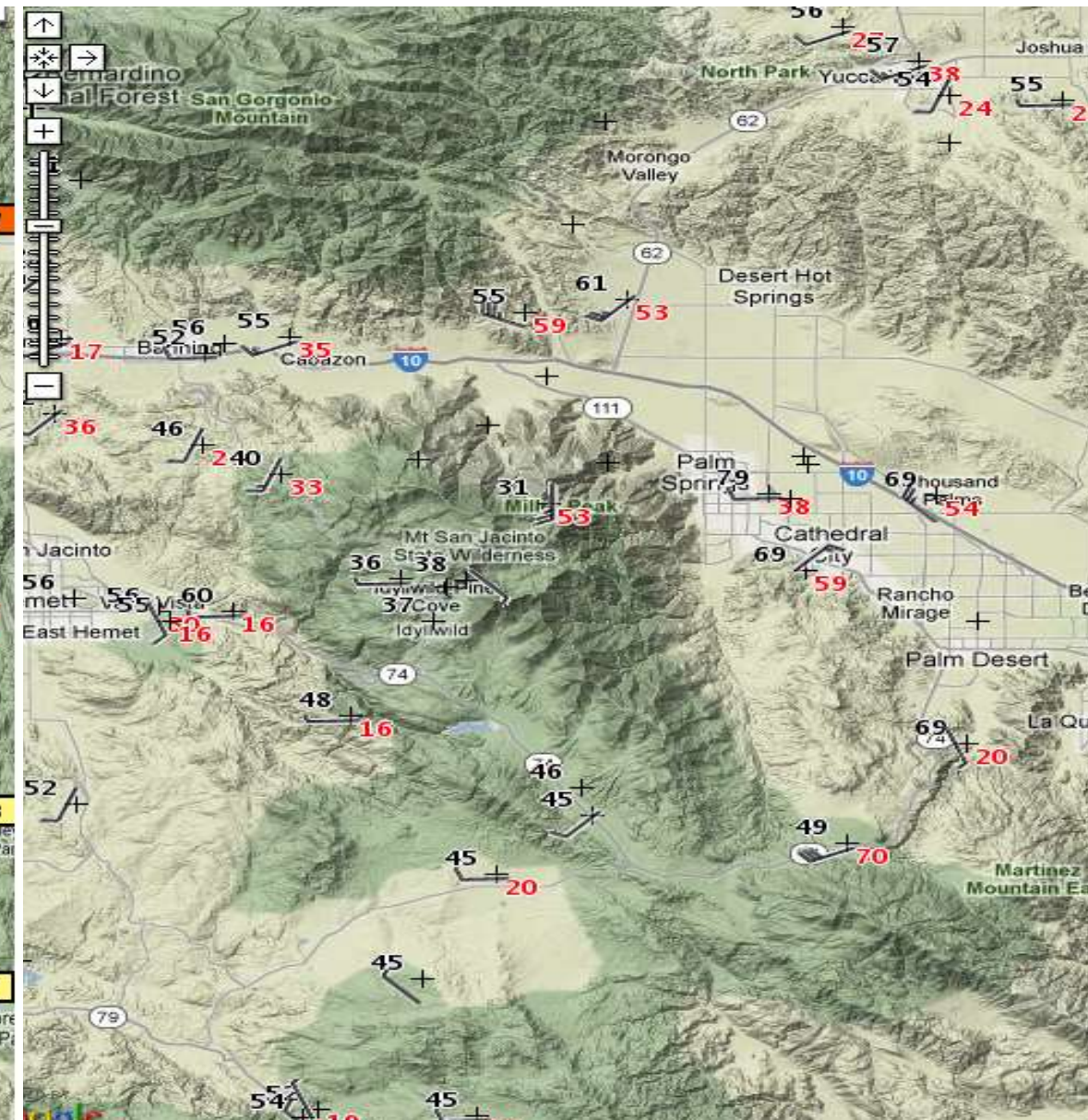
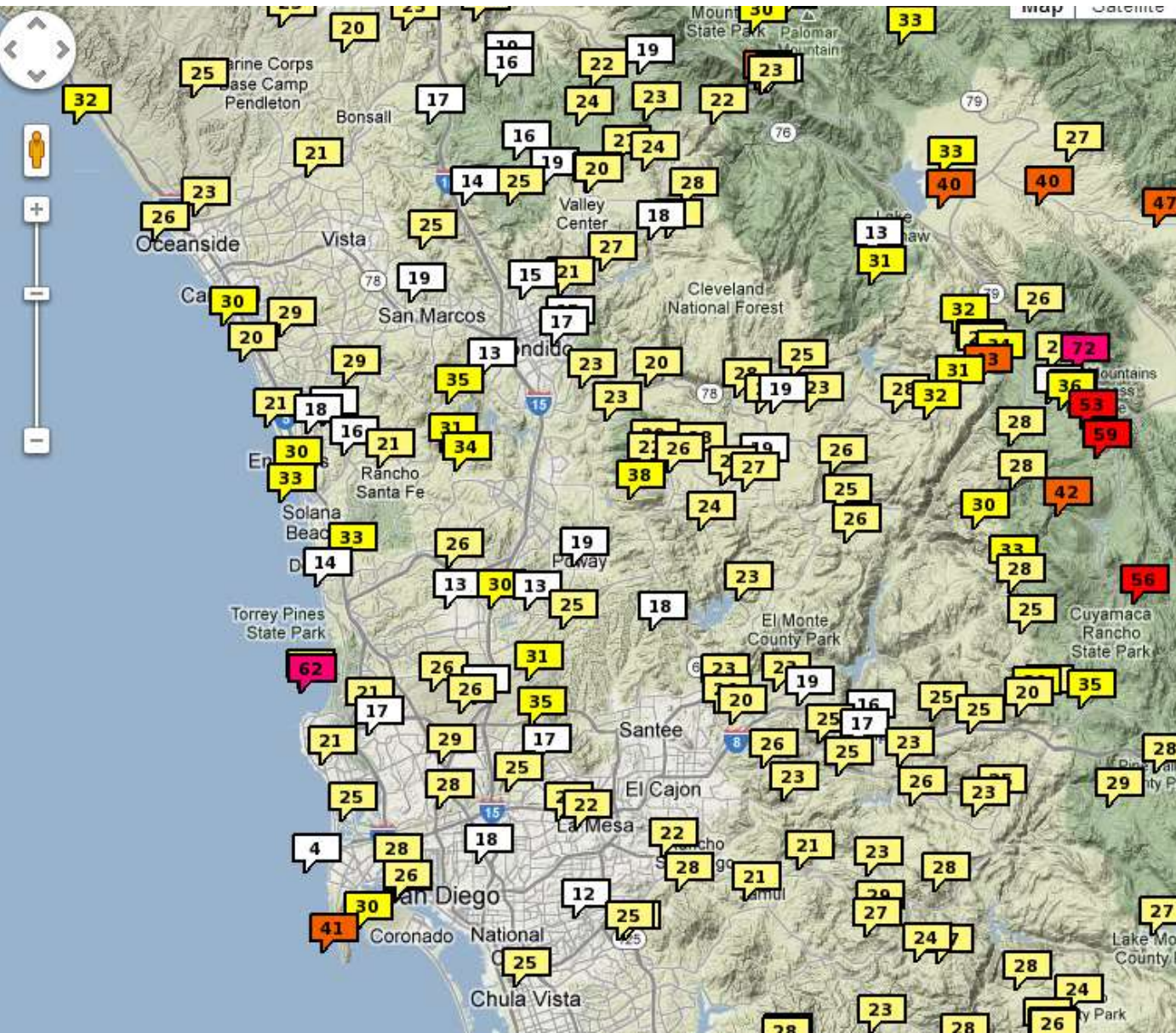
12Z 13 Sep 2011

University of Wyoming

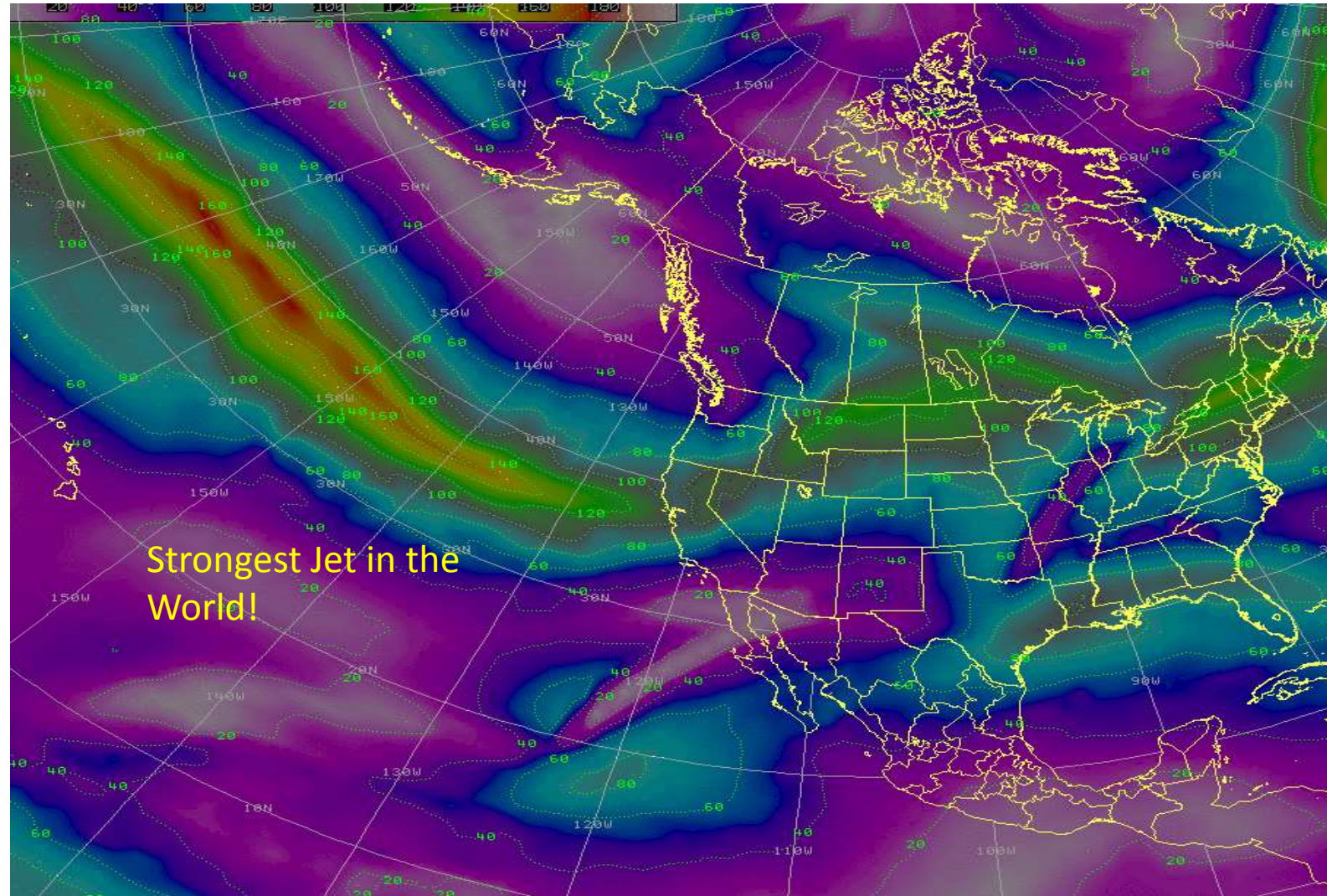
Wind Profile



View what is going on at weather stations

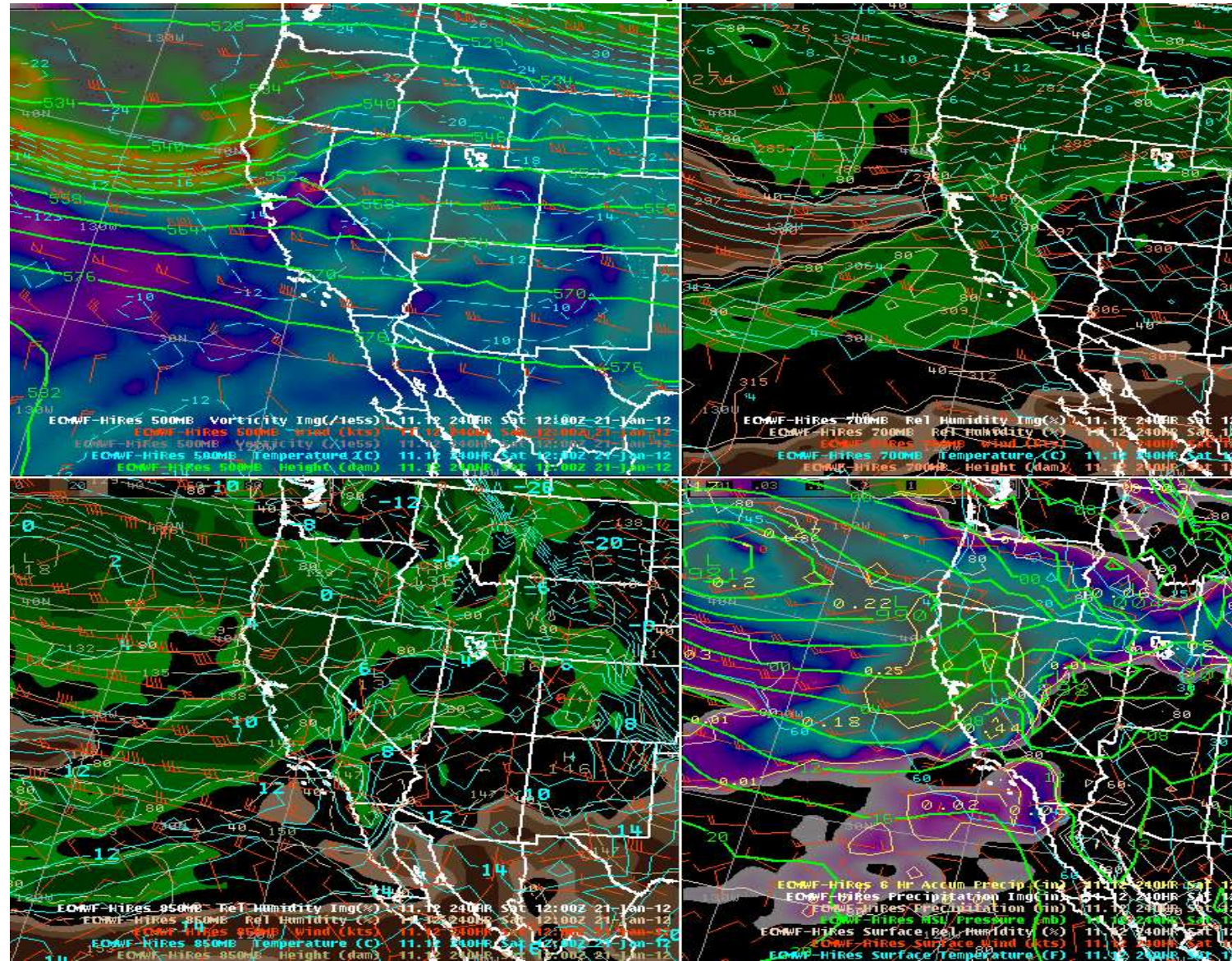


Numerical Weather Prediction (jet stream)

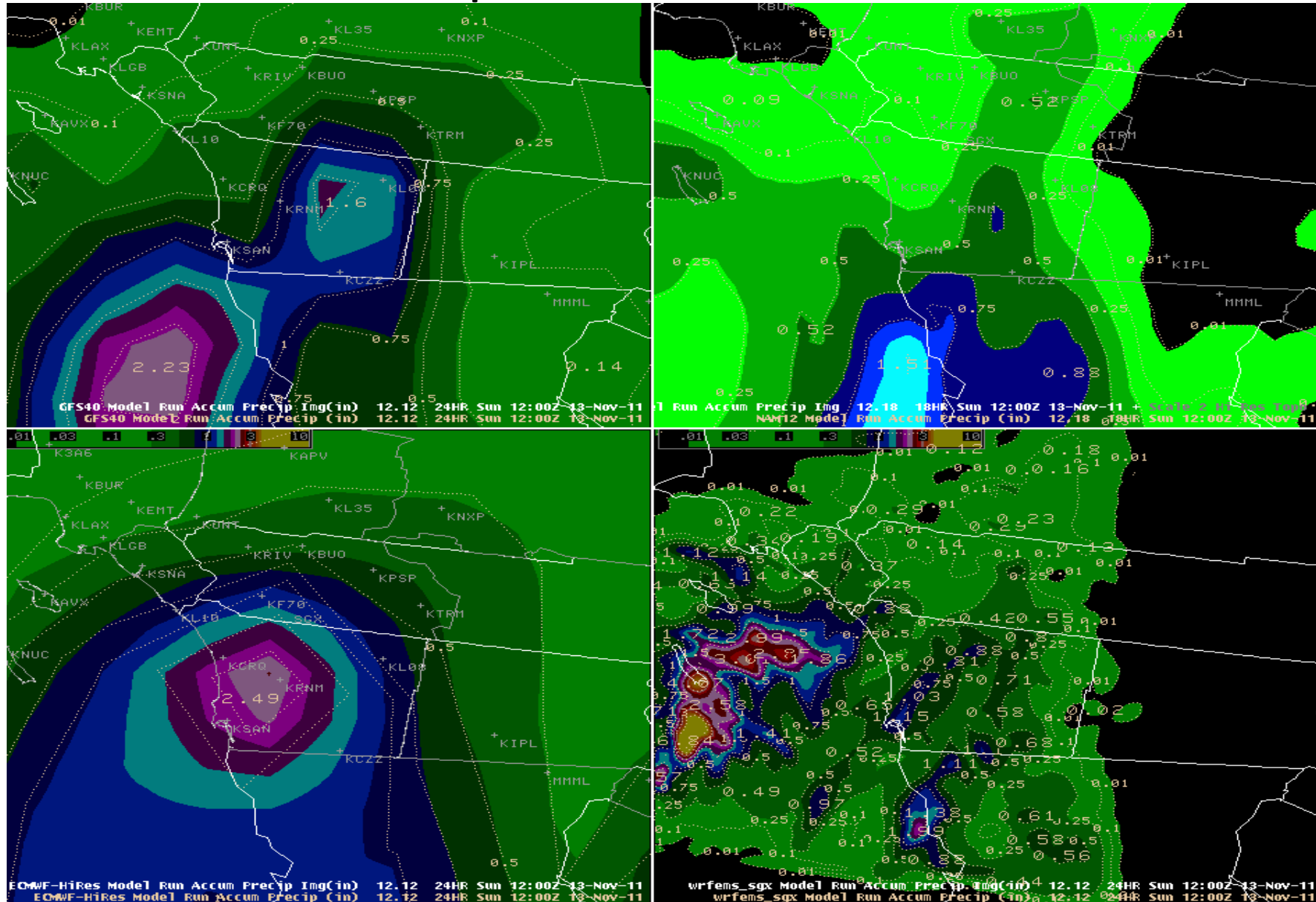


Numerical Weather Prediction – short range

Look at different Numerical Weather Prediction in panel views

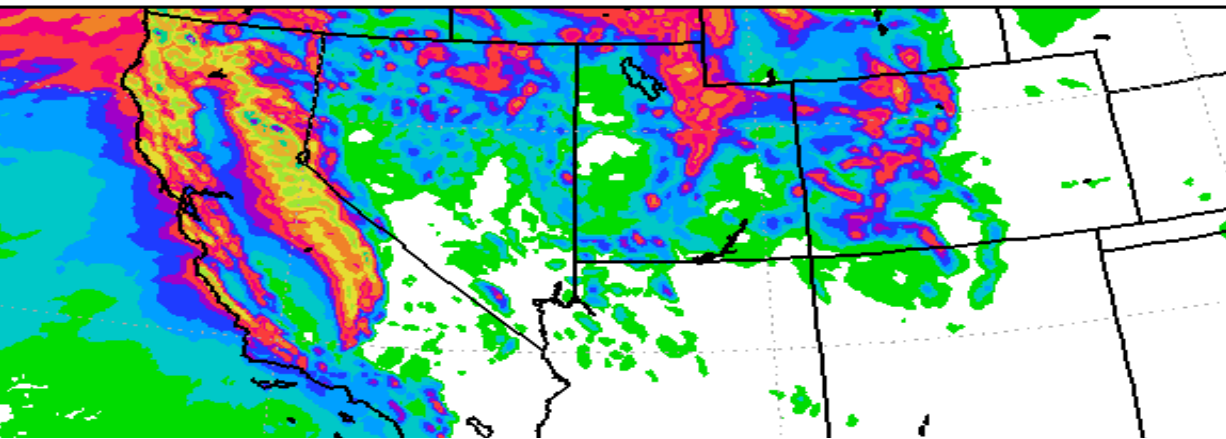


Various model output have different solutions

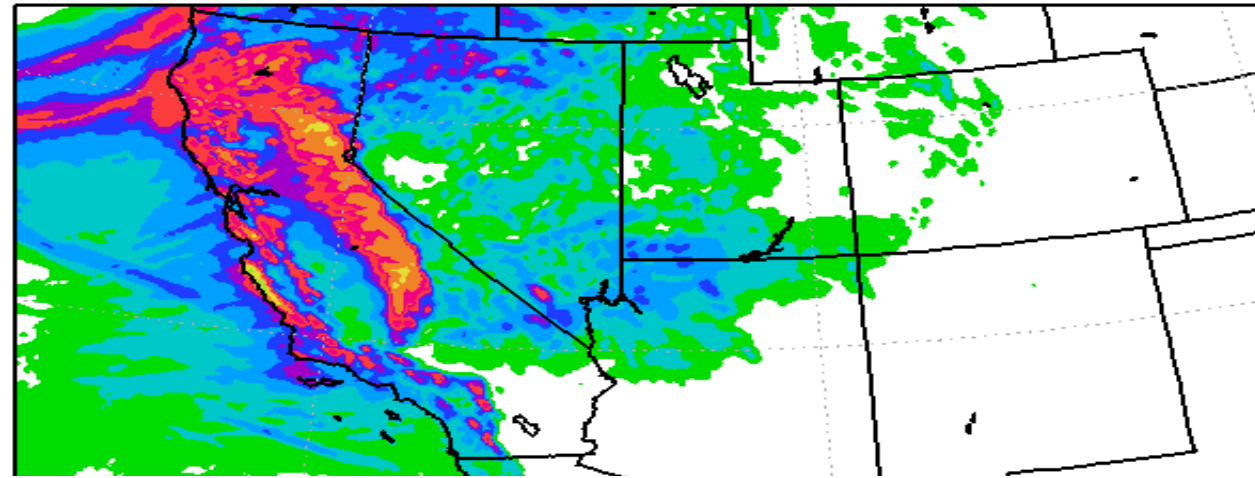


High resolution model data

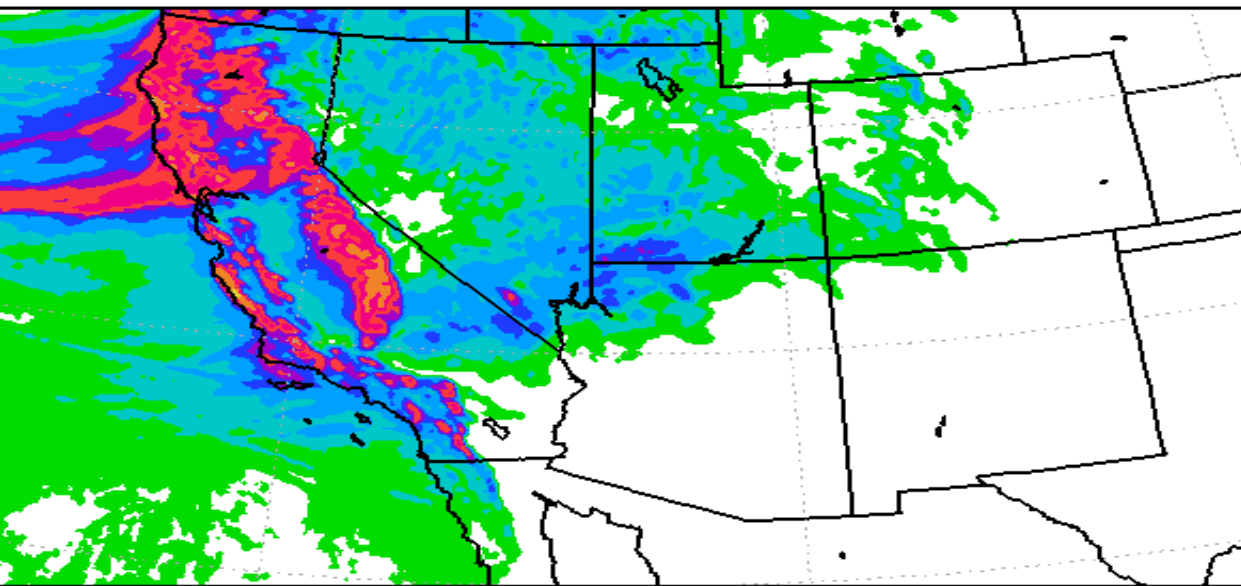
60-H APCP CONUS4KM 60H FCST VALID 00Z 23 JAN 2012



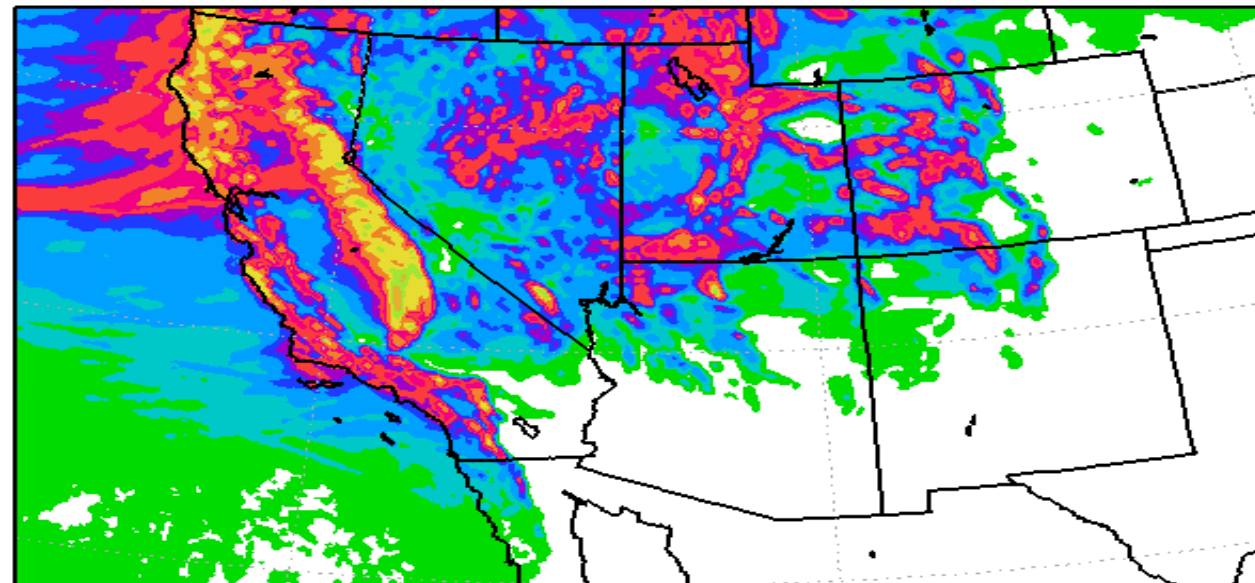
24-48 H APCP CONUS4KM 48H FCST VALID 00Z 24 JAN 2012



6-60 H APCP CONUS4KM 60H FCST VALID 00Z 24 JAN 2012

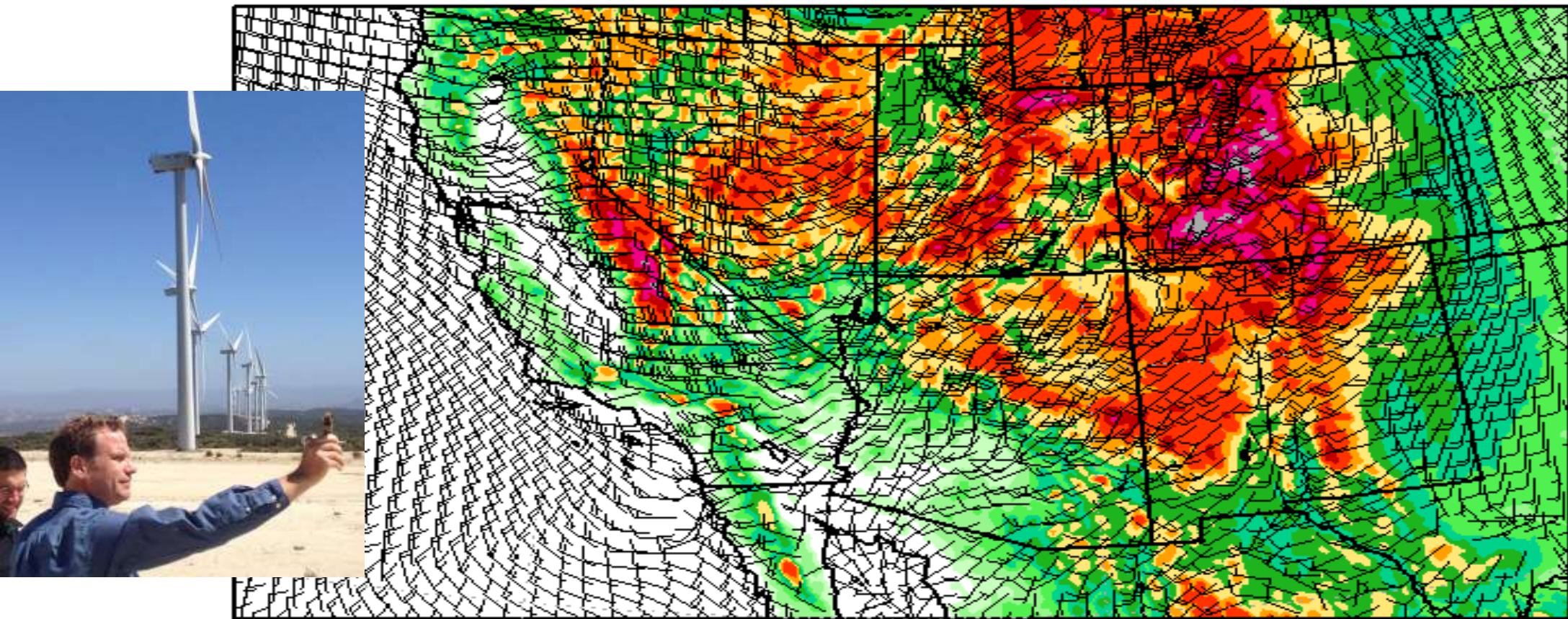


60-H APCP CONUS4KM 60H FCST VALID 00Z 24 JAN 2012



High resolution model data

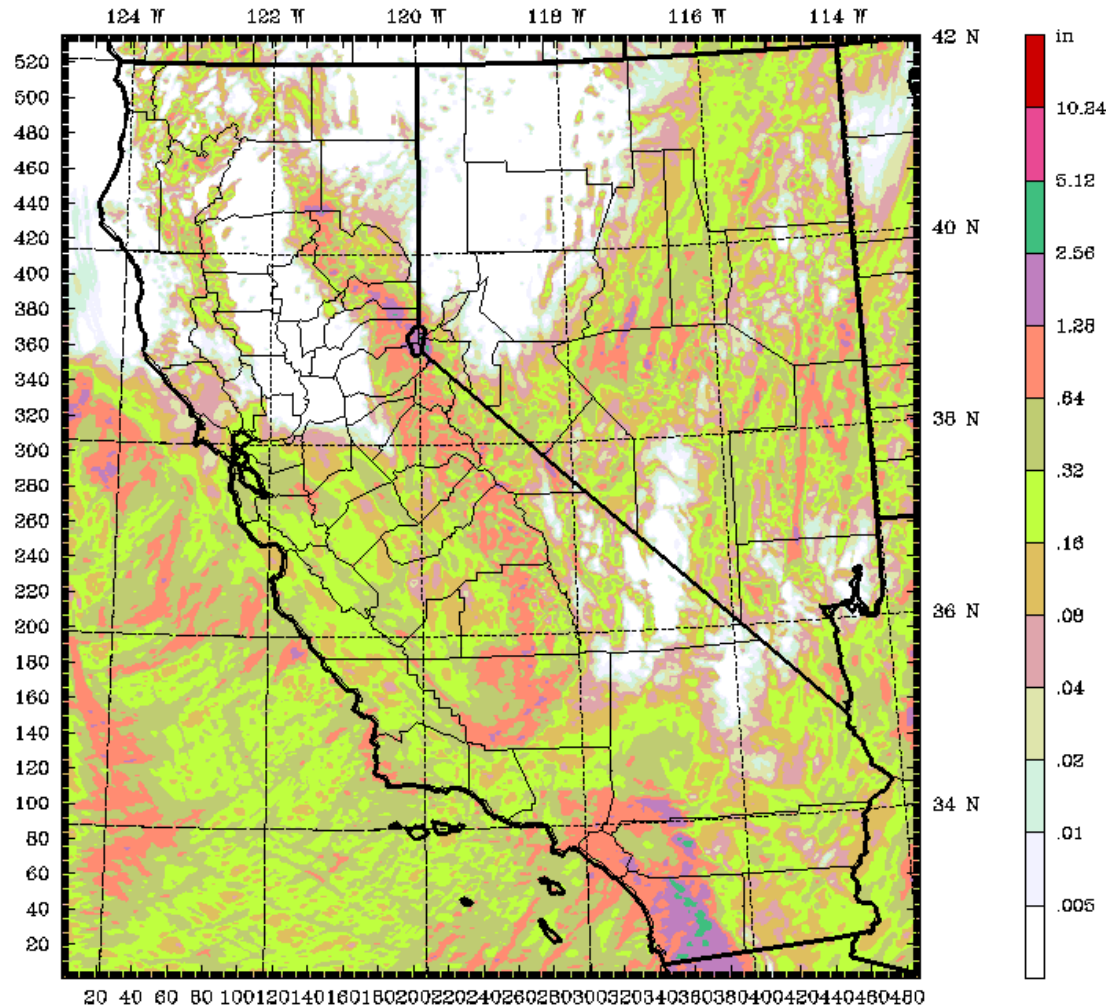
10-M WND CONUS4KM 09H FCST VALID 21Z 21 JAN 2012



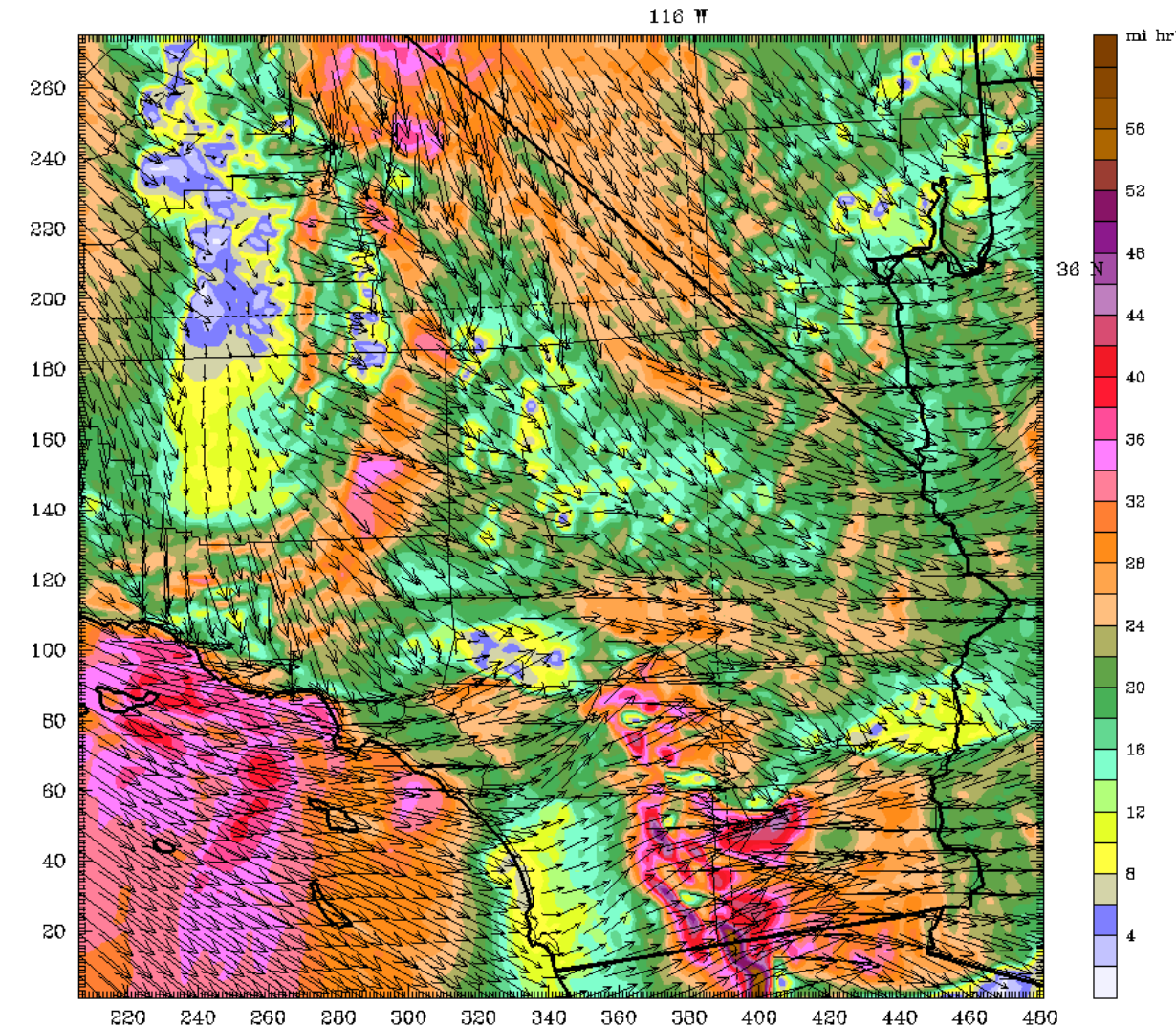
High resolution model data

CANSAC WRF Realtime: Domain 3 (2 km)
Fest: 72.00 h
Total precip. in past 72 h
Init: 1200 UTC Thu 07 Mar 13
Valid: 1200 UTC Sun 10 Mar 13 (0500 PDT Sun 10 Mar 13)

CANSAC WRF Realtime: Domain 3 (2 km)
48.00 h
ontal wind speed
ontal wind vectors
Init: 0000 UTC Mon 15 Apr 13
Valid: 0000 UTC Wed 17 Apr 13 (1700 PDT Tue 16 Apr 13)
at height = 0.01 km sm= 1
at height = 0.01 km sm= 1

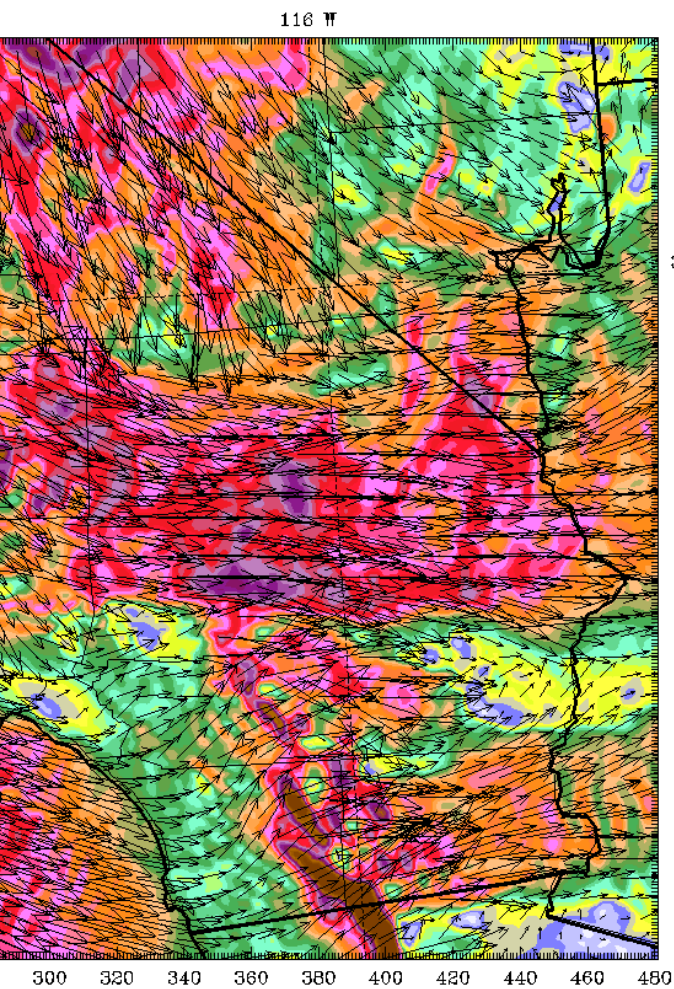


Model Info: V3.3.1 No Cu YSU PBL Lin et al Noah LSM 2.0 km, 31 levels, 12 sec

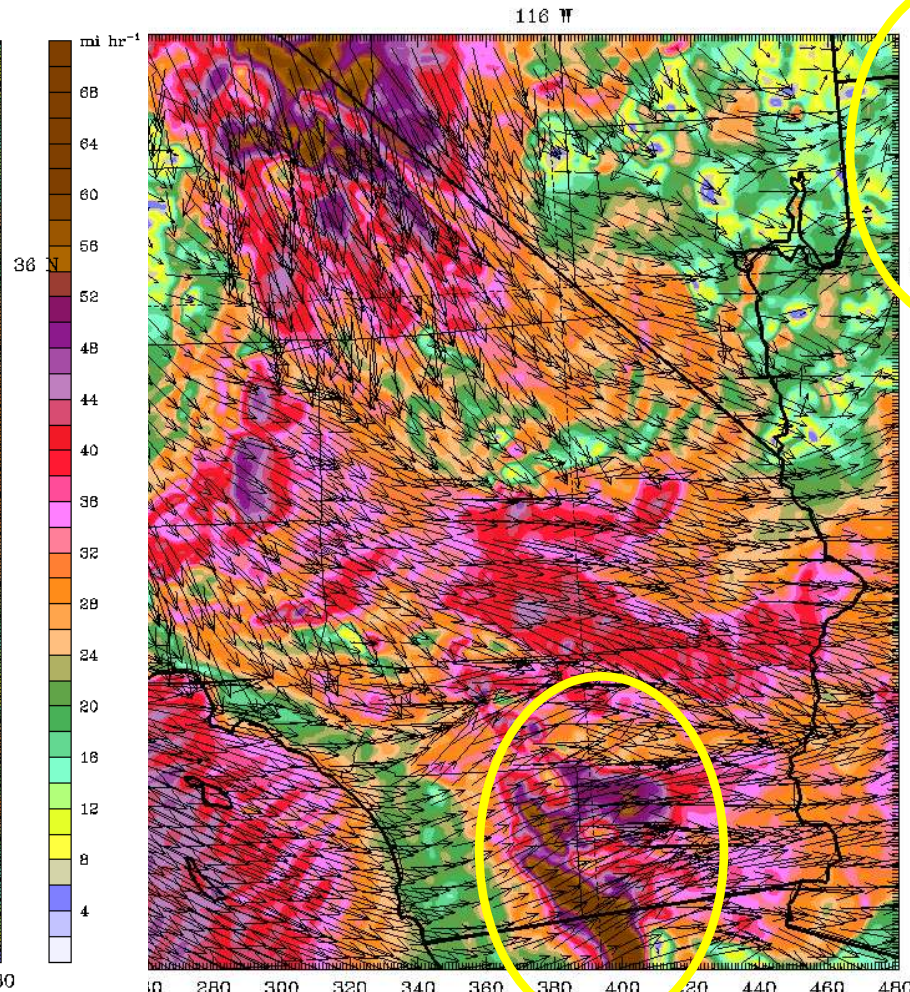


CANSAC 2-km WRF 10-m wind (0000 UTC 8 April 2013)

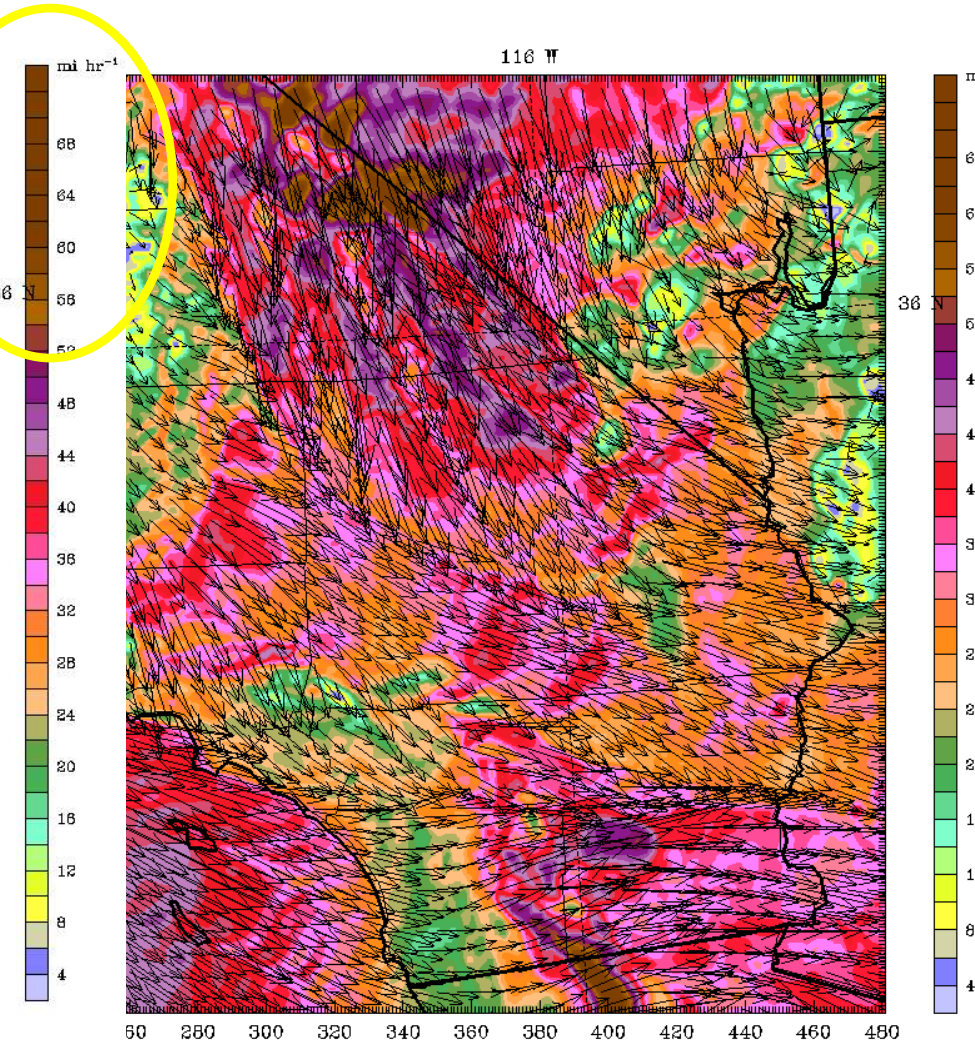
Domain 3 (2 km) Init: 0000 UTC Mon 08 Apr 13 Valid: 1800 UTC Mon 08 Apr 13 (1100 PDT Mon 08 Apr 13) at height = 0.01 km sm= 1
 Domain 3 (2 km) Init: 0000 UTC Mon 08 Apr 13 Valid: 2100 UTC Mon 08 Apr 13 (1400 PDT Mon 08 Apr 13) at height = 0.01 km sm= 1
 Domain 3 (2 km) Init: 0000 UTC Mon 08 Apr 13 Valid: 0000 UTC Tue 09 Apr 13 (1700 PDT Mon 08 Apr 13) at height = 0.01 km sm= 1



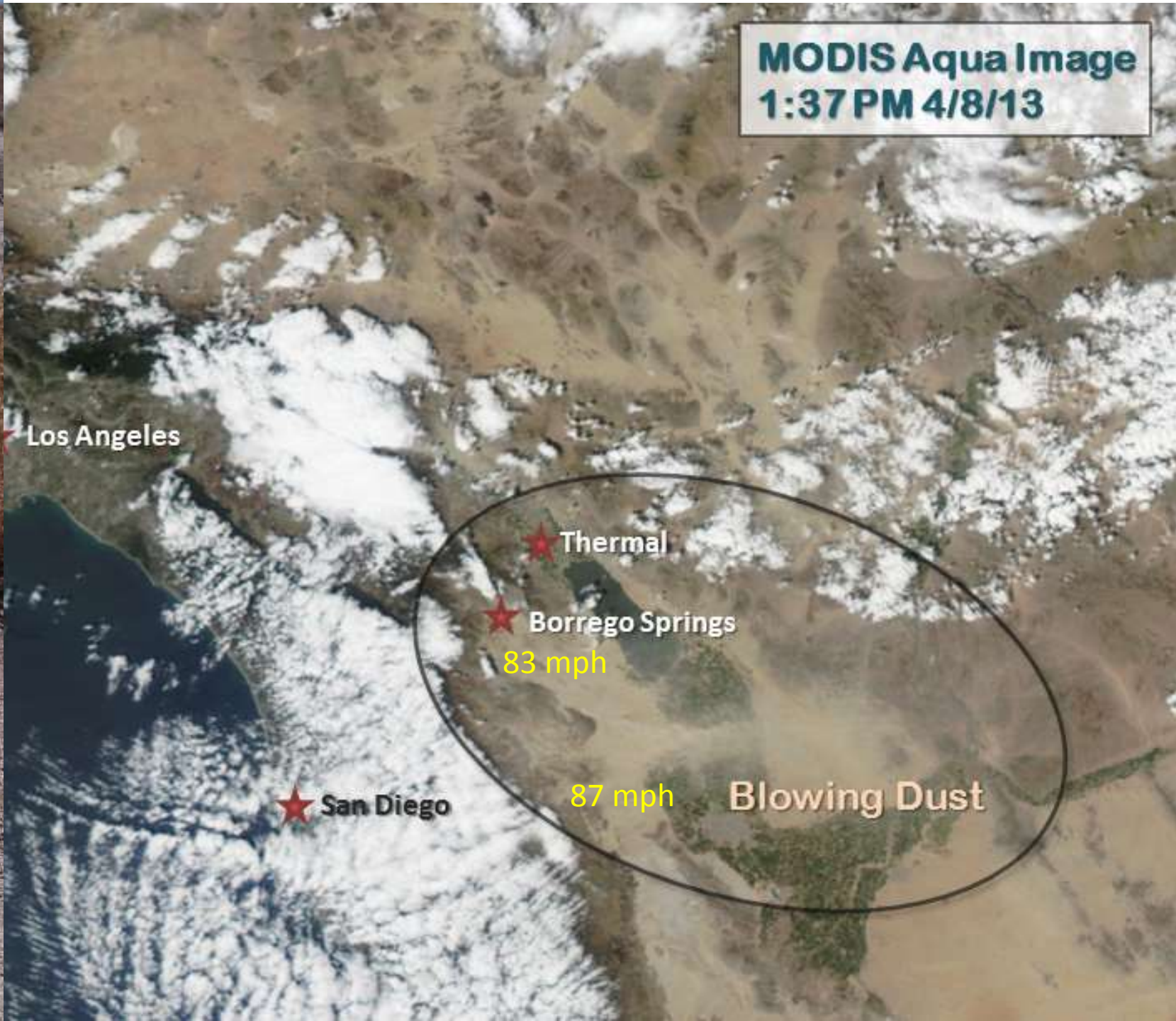
MAXIMUM VECTOR: 69.0 m s⁻¹
 YSU PBL Lin et al Noah LSM 2.0 km, 31 levels, 12 sec
 SW: Dudhia DIFF: simple KM: 2D Smagor



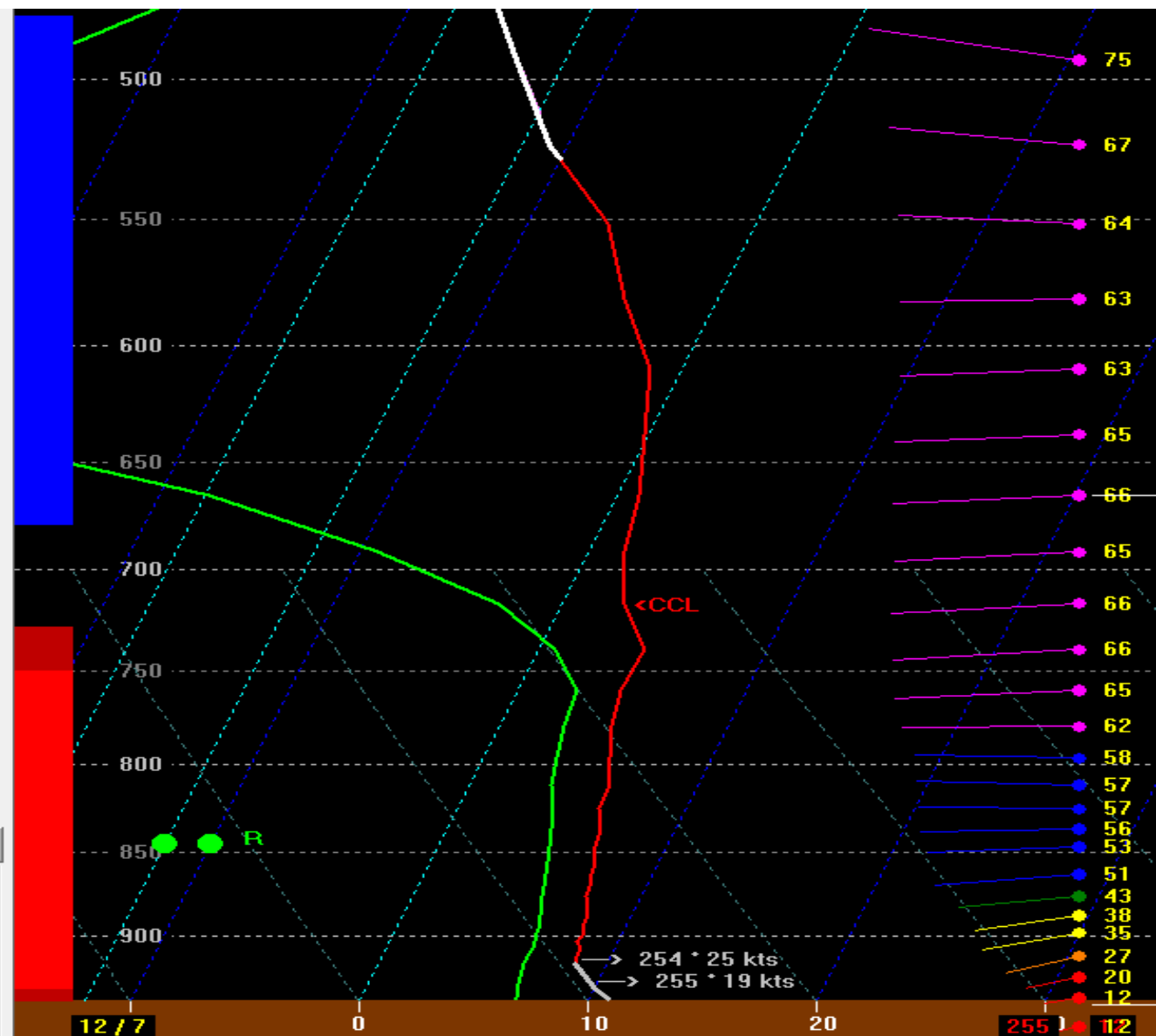
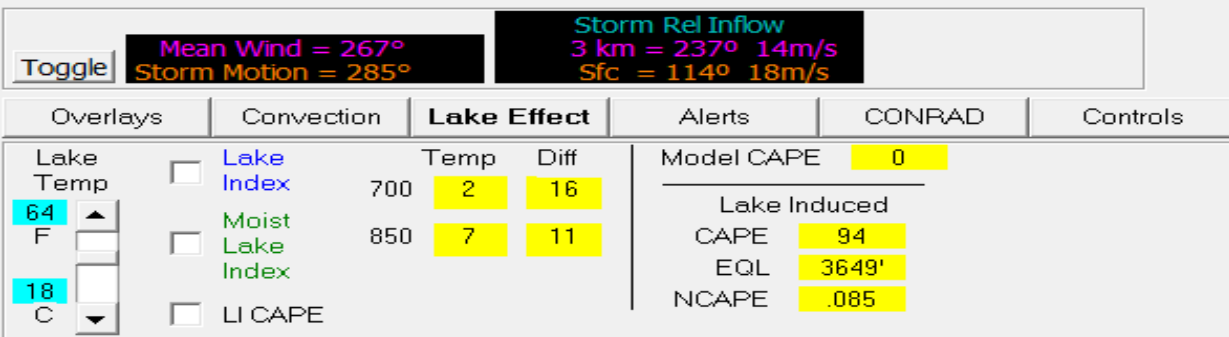
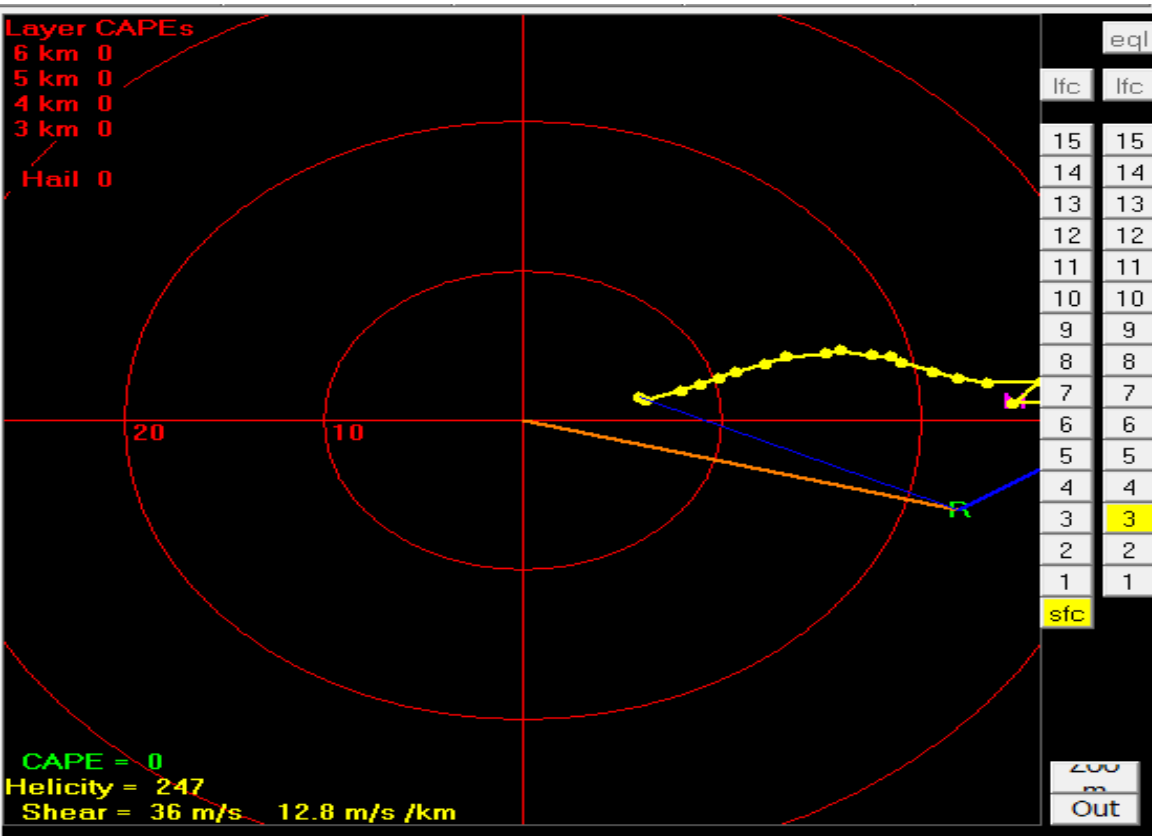
MAXIMUM VECTOR: 67.4 m s⁻¹
 No Cu YSU PBL Lin et al Noah LSM 2.0 km, 31 levels, 12 sec
 W: RRTM SW: Dudhia DIFF: simple KM: 2D Smagor



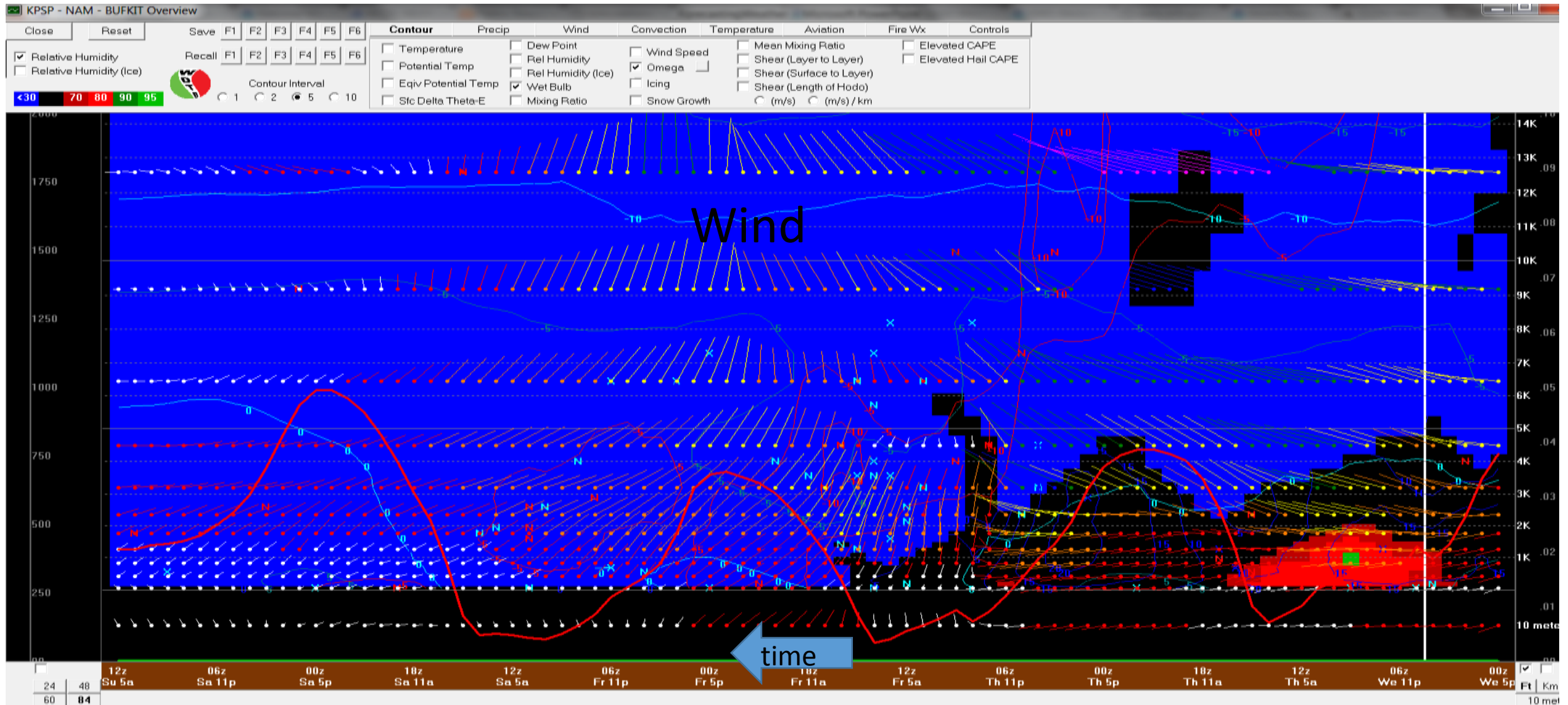
MAXIMUM VECTOR: 65.6 m s⁻¹
 No Cu YSU PBL Lin et al Noah LSM 2.0 km, 31 levels, 12 sec
 W: RRTM SW: Dudhia DIFF: simple KM: 2D Smagor



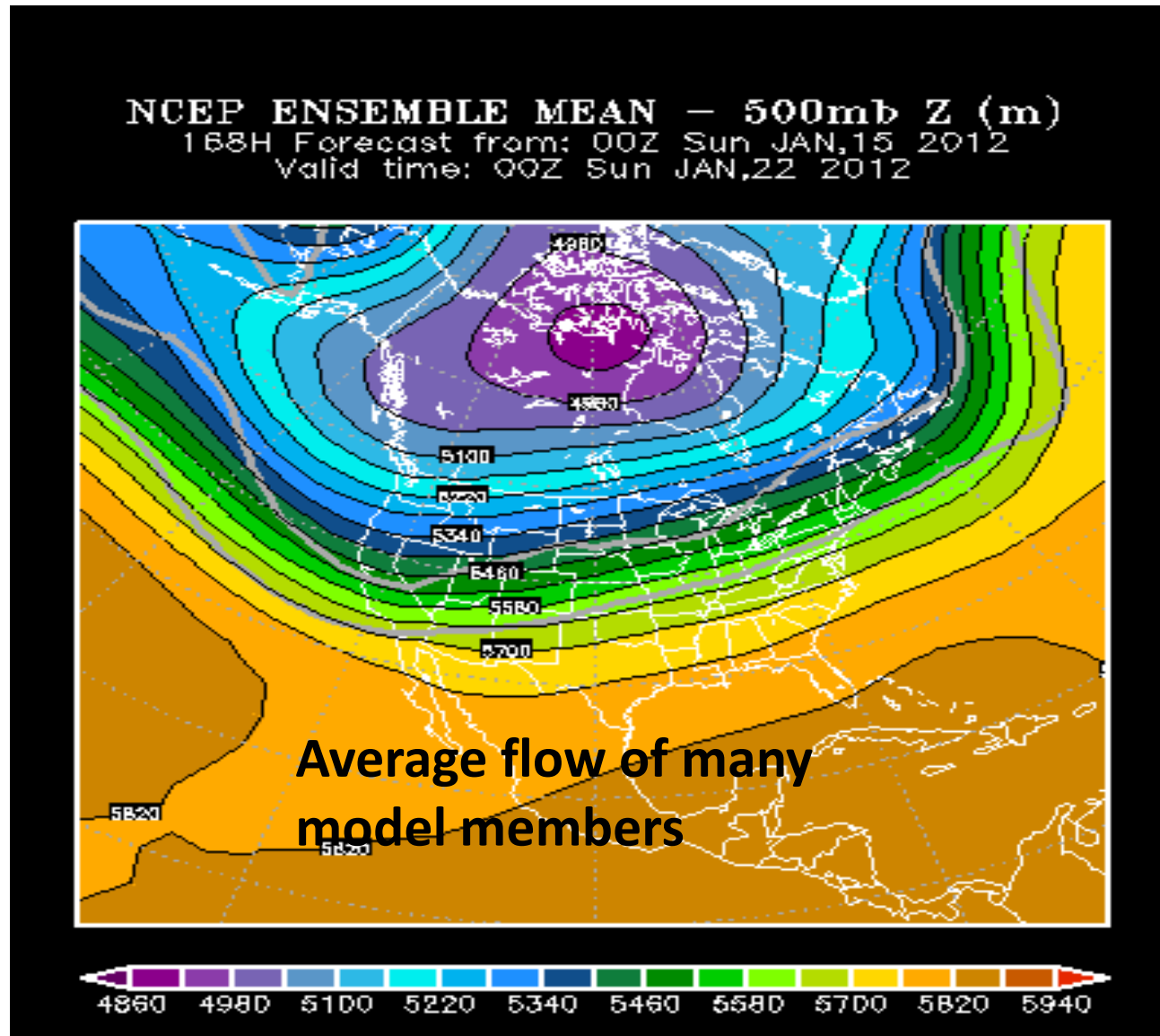
Vertically and in time



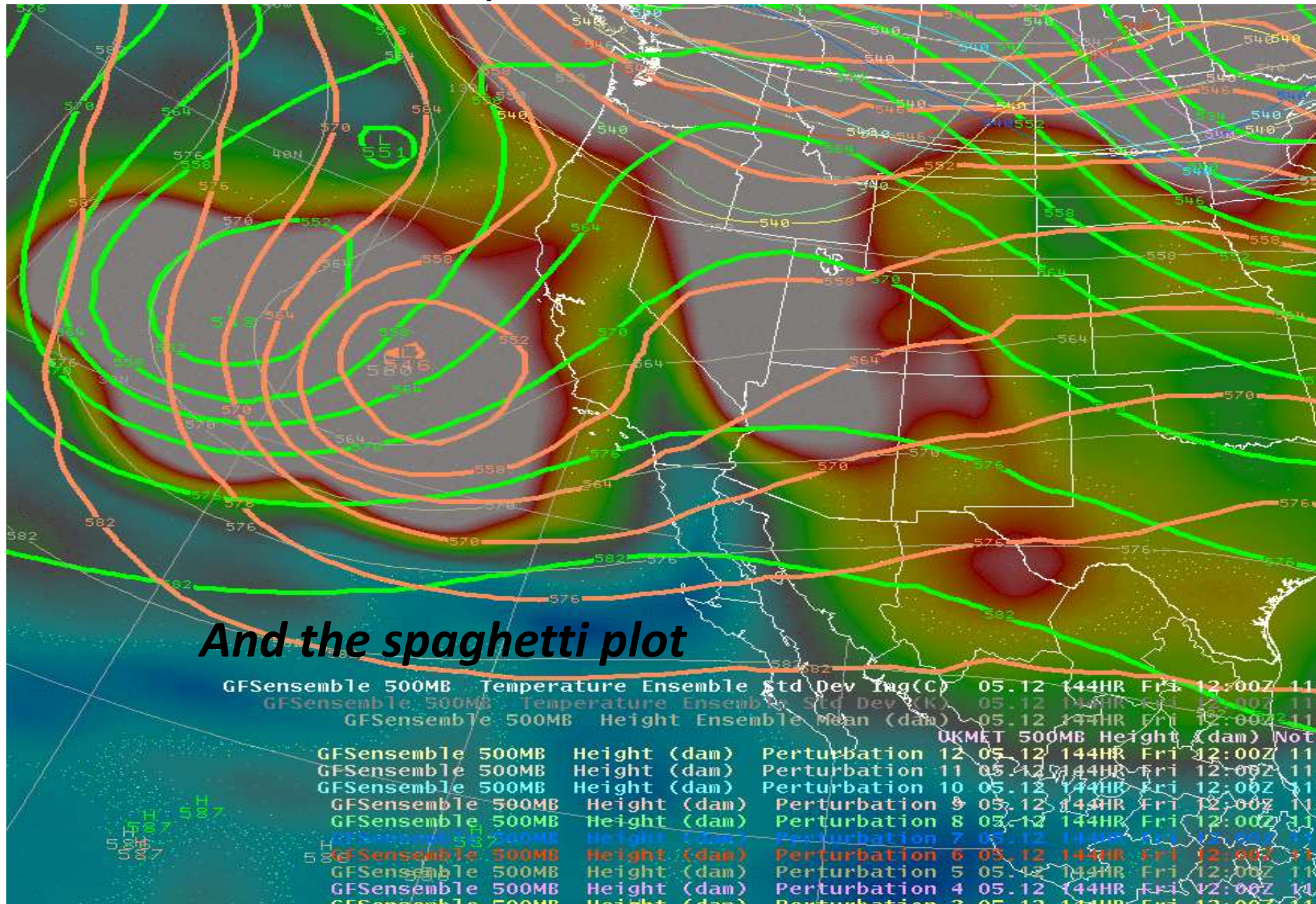
Vertically and in time



Model data Ensemble view

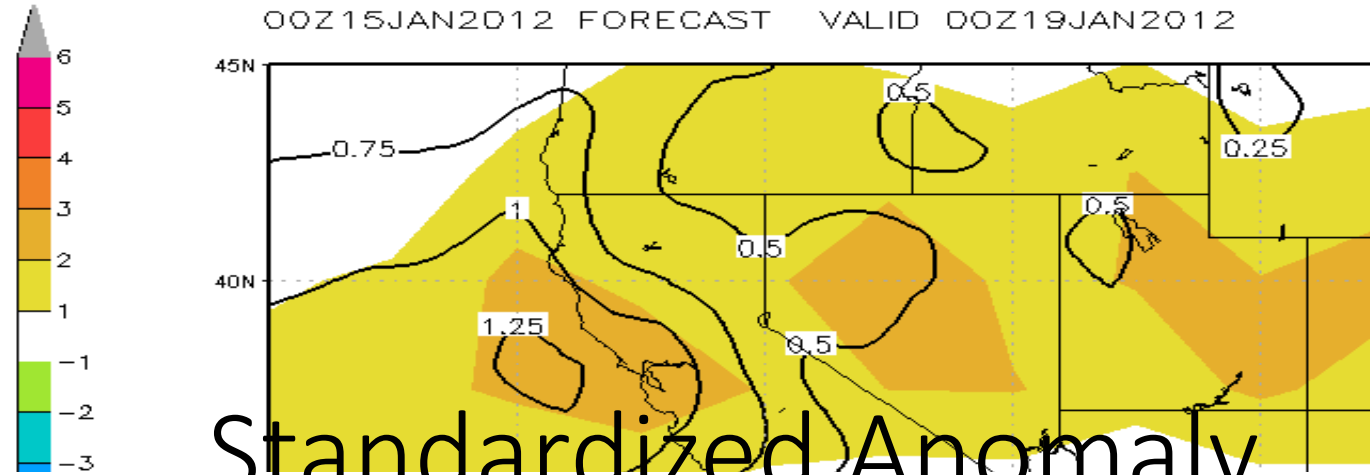


The “spread” of models



GEFS EM PWAT (IN) AND STANDARDIZED ANOMALY

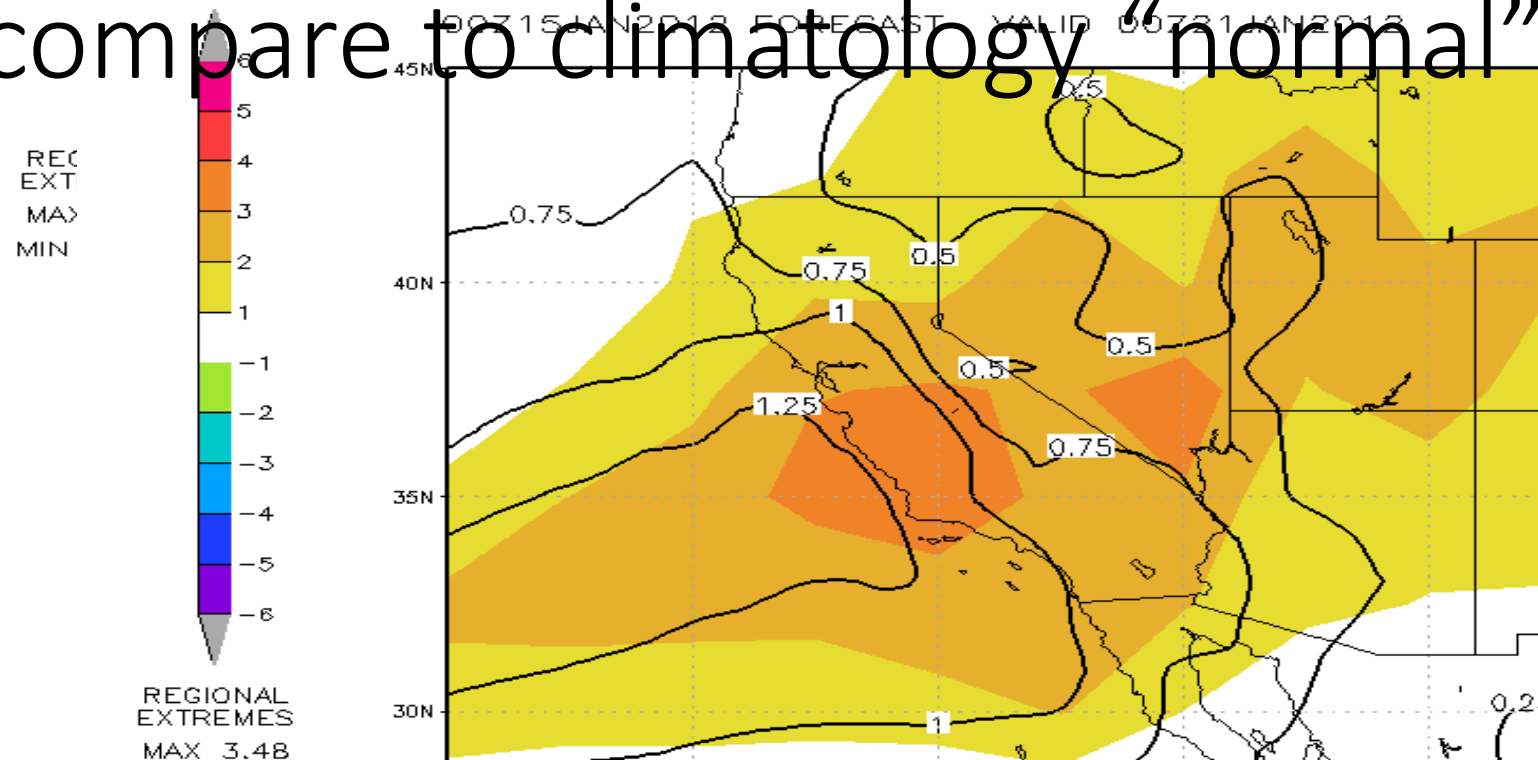
00Z15JAN2012 FORECAST VALID 00Z19JAN2012



Standardized Anomaly

GEFS EM PWAT (IN) AND STANDARDIZED ANOMALY

compare to climatology “normal”



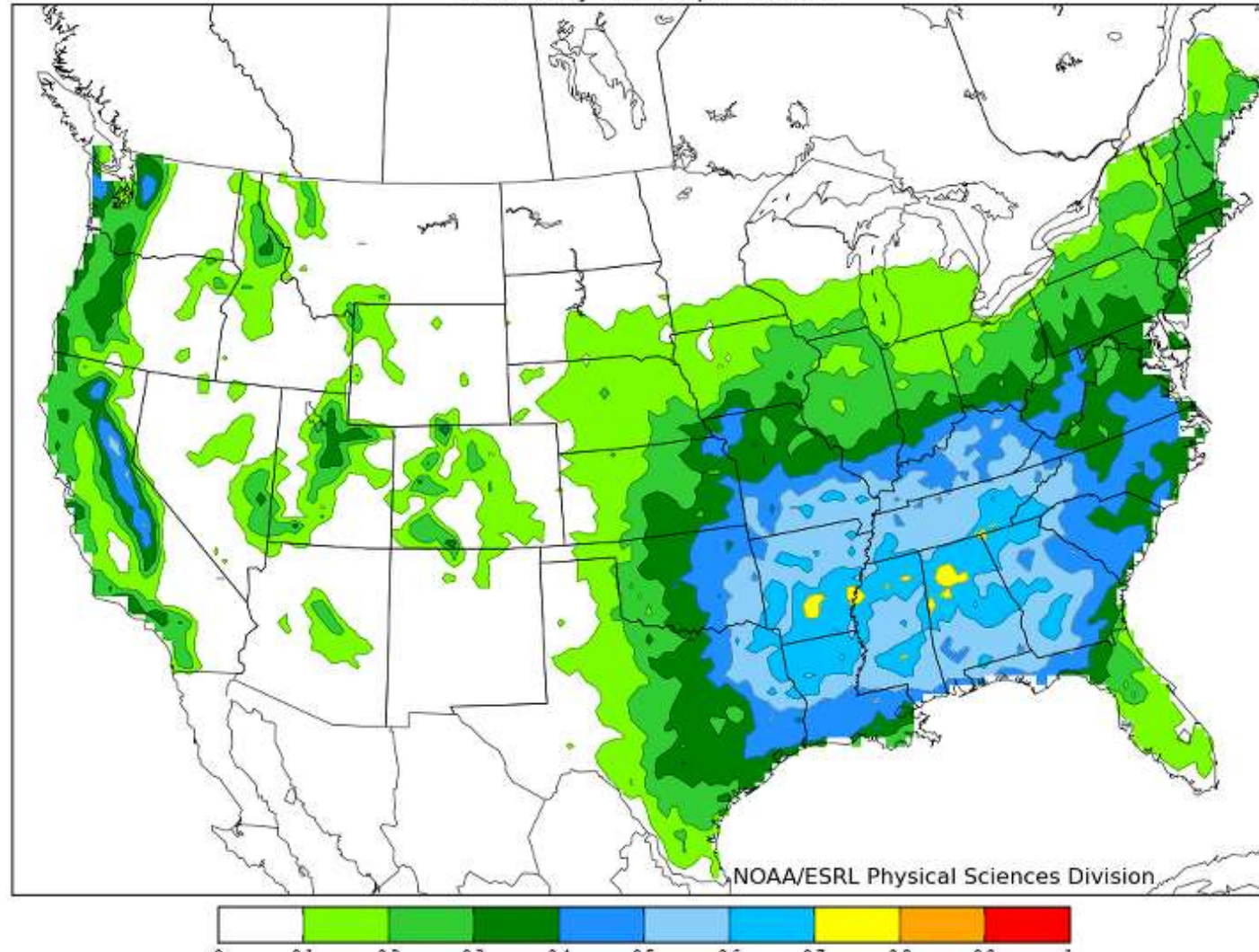
Comparing to Climatology (departure from normal)

Reforecast Model Data

168-336hr fcst from 00Z Thu Mar 21. Valid 00Z Thu Mar 28 - 00Z Thu Apr 04

Calibrated with 1985-2010 Reforecast2 data.

Probability of Precip > 25mm

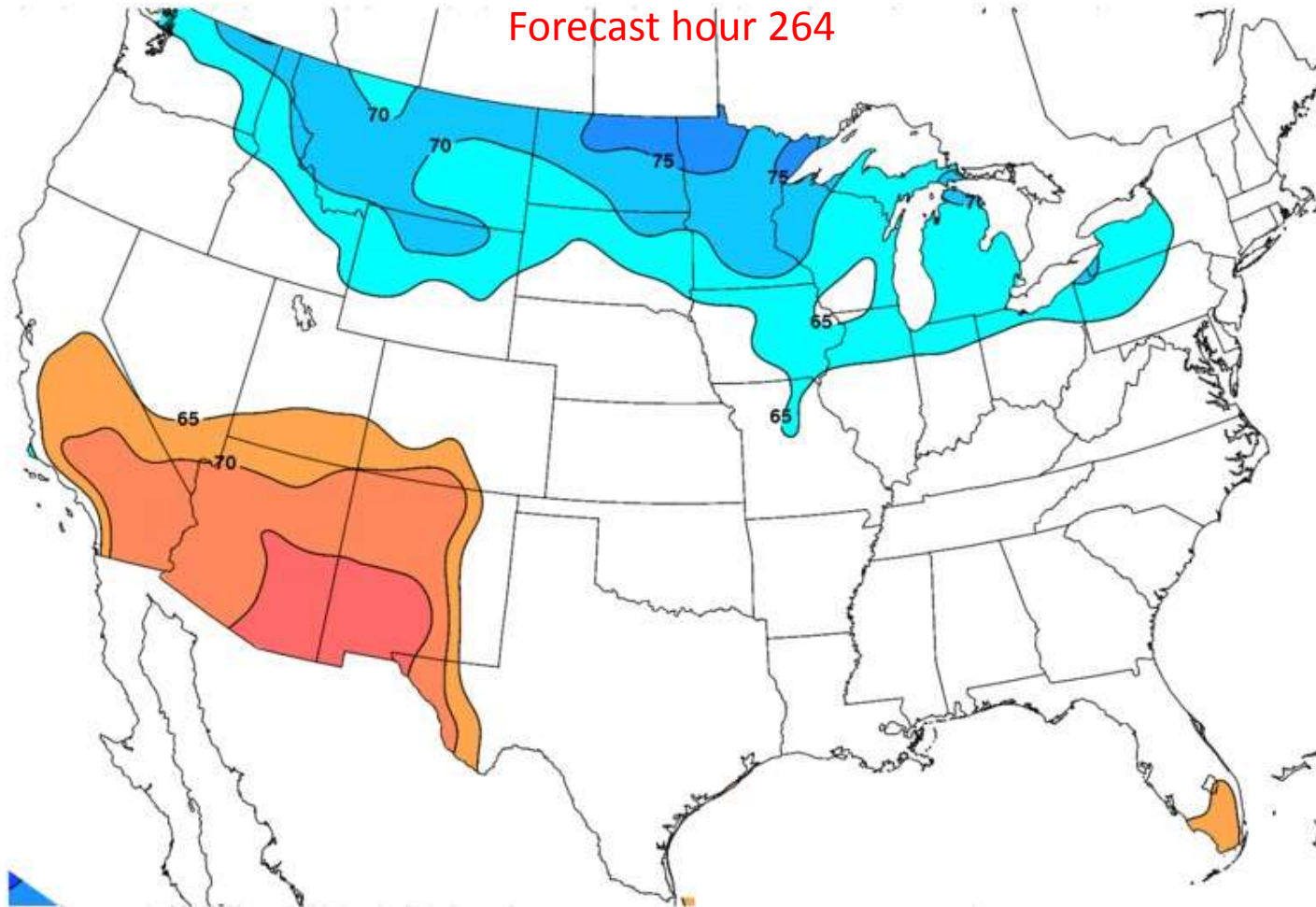


1 to 2 week range
Pattern Changes?

2 week prediction - Calibration with Reforecast data

Long range probabilistic forecasts

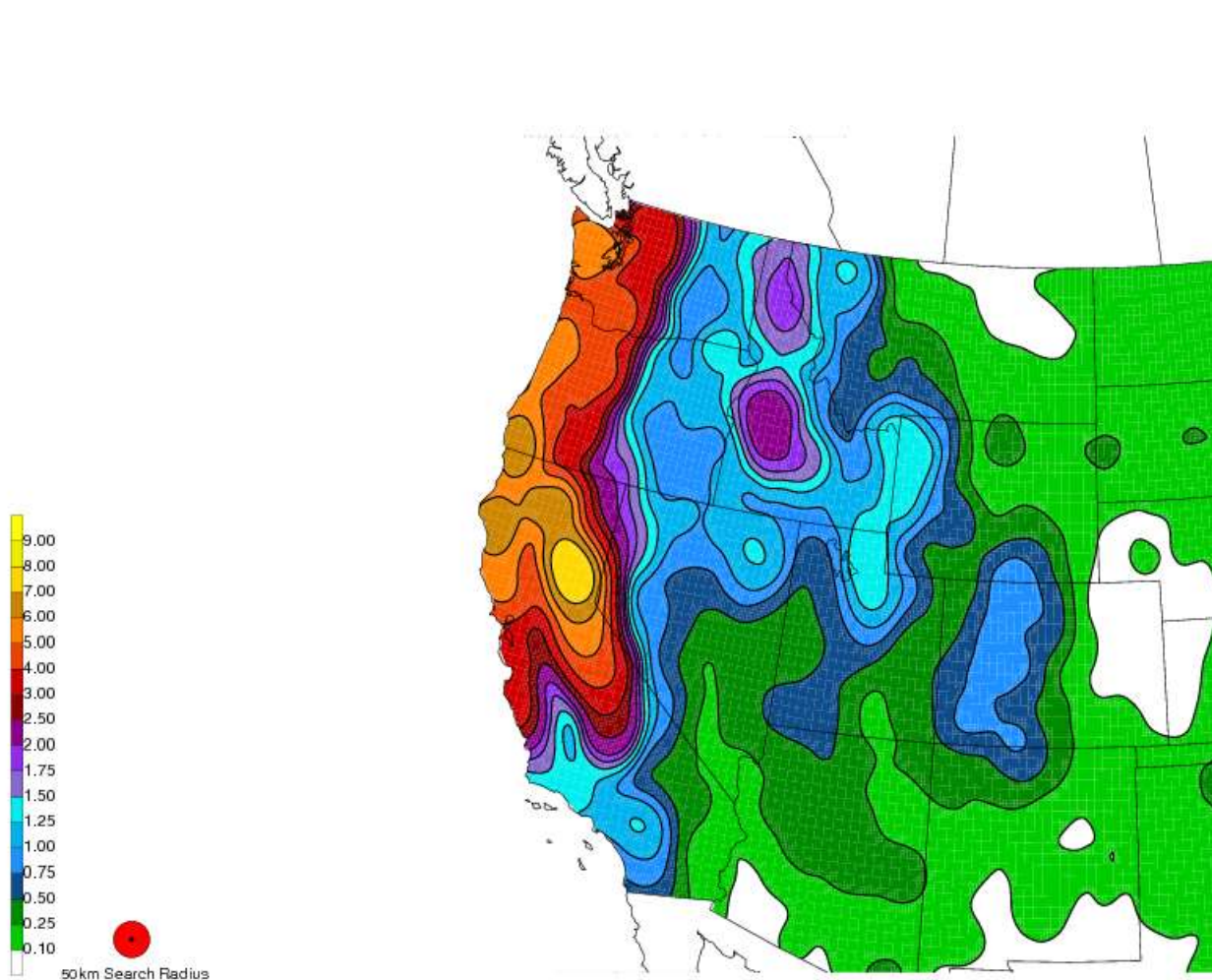
GEFS probability departure from
normal based on top 5 analogs
Forecast hour 264



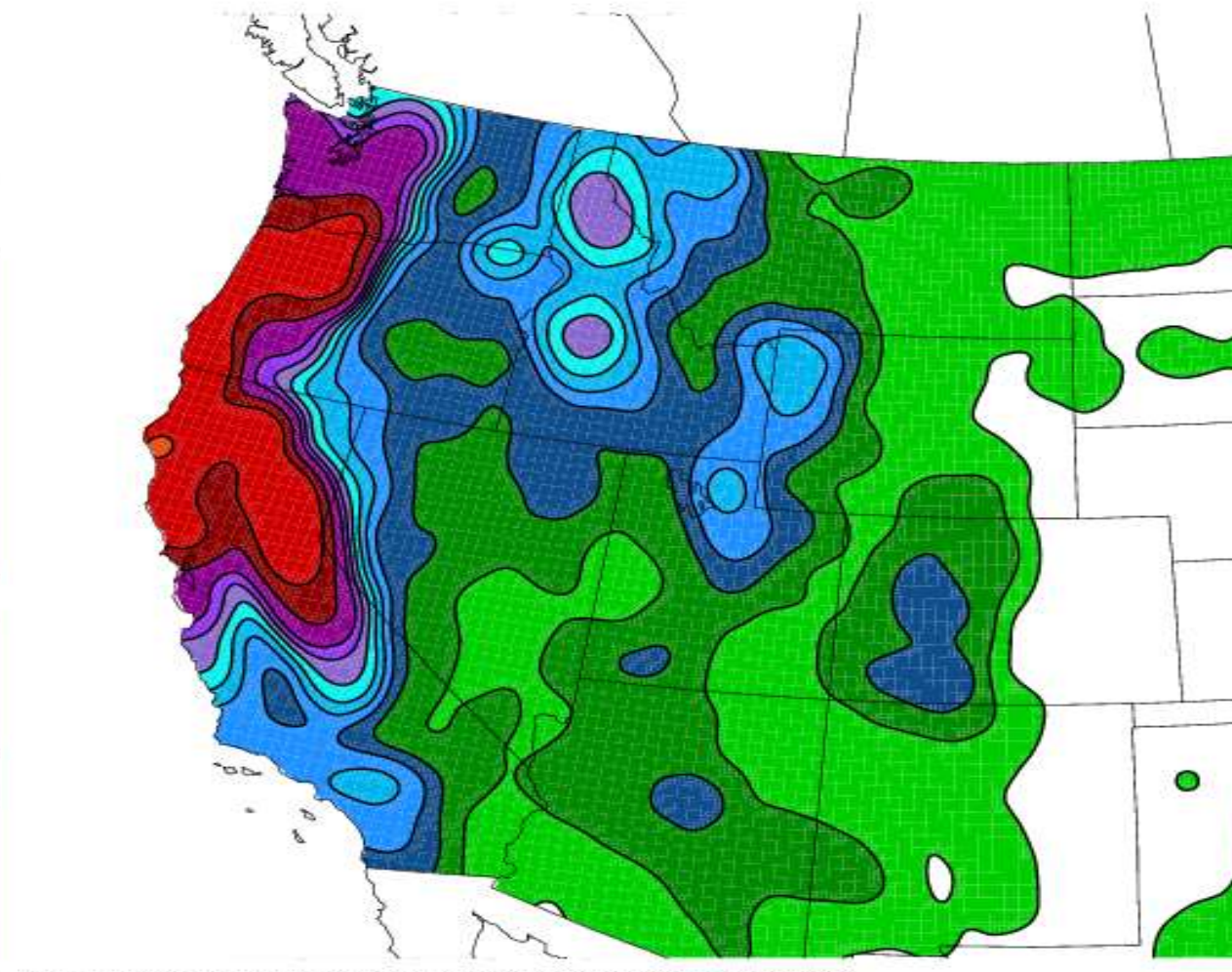
9-13 DAY TEMP PROB [%] ABOVE/BELOW NORMAL BASED ON TOP 5 ANALOG FROM EACH
GEFS MEMBER [105 total analogs] centered on 20130406/1200F264 and valid 20130417/1200

GEFS with Top Matching Analogs (pattern matching with NWP)

Look at analogs- compare to past events and weather patterns

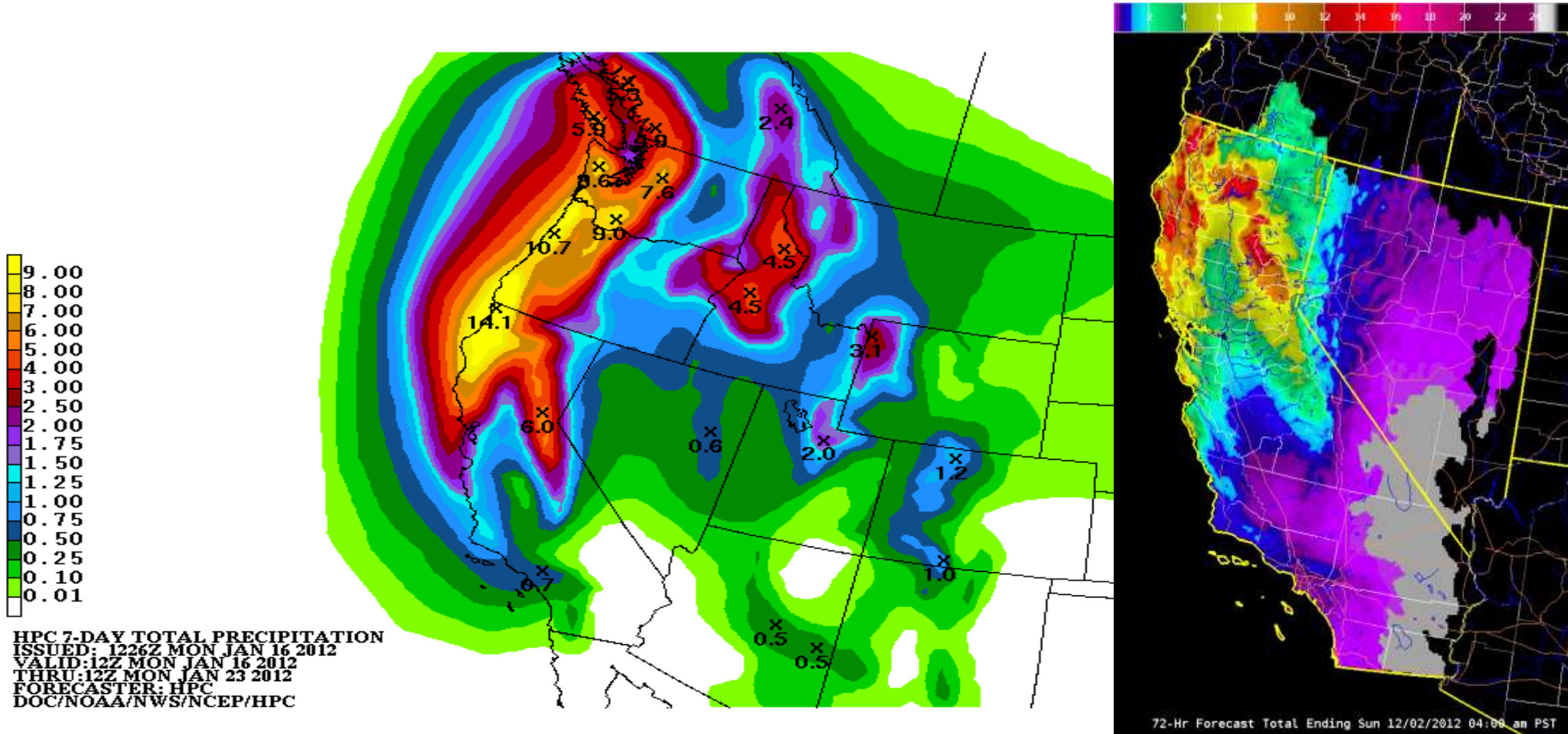


MEAN 120-h UPD PRECIP [in] WITHIN 50km GRID POINT TOP 15 ANALOG
NAM212 20121201/0000F036 valid at 20121202/1200



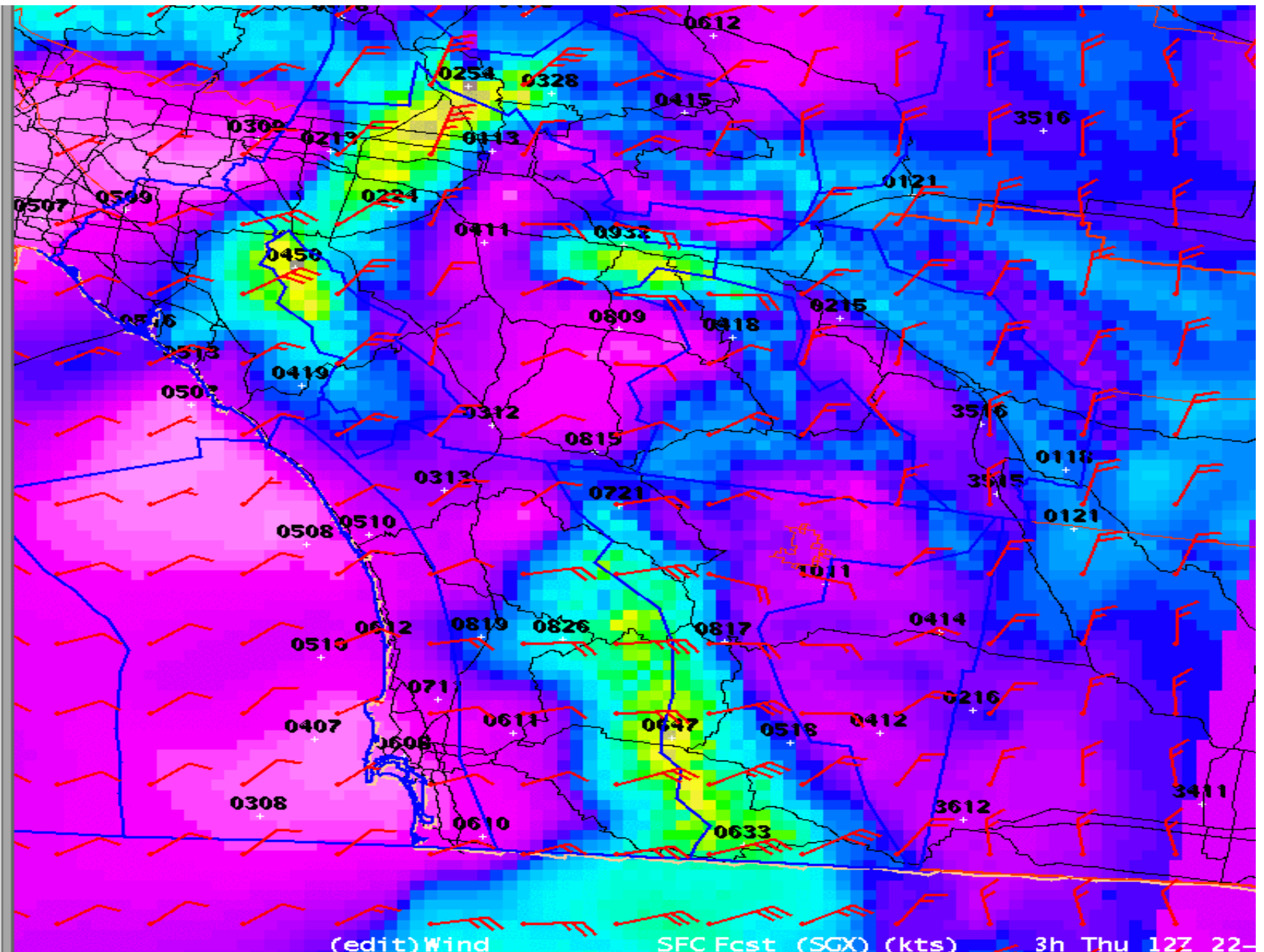
UPD PRECIP [in] WITHIN 50km GRID POINT TOP 15 ANALOG
3FS212 20120114/1200F120 valid at 20120119/1200

National or Regional guidance

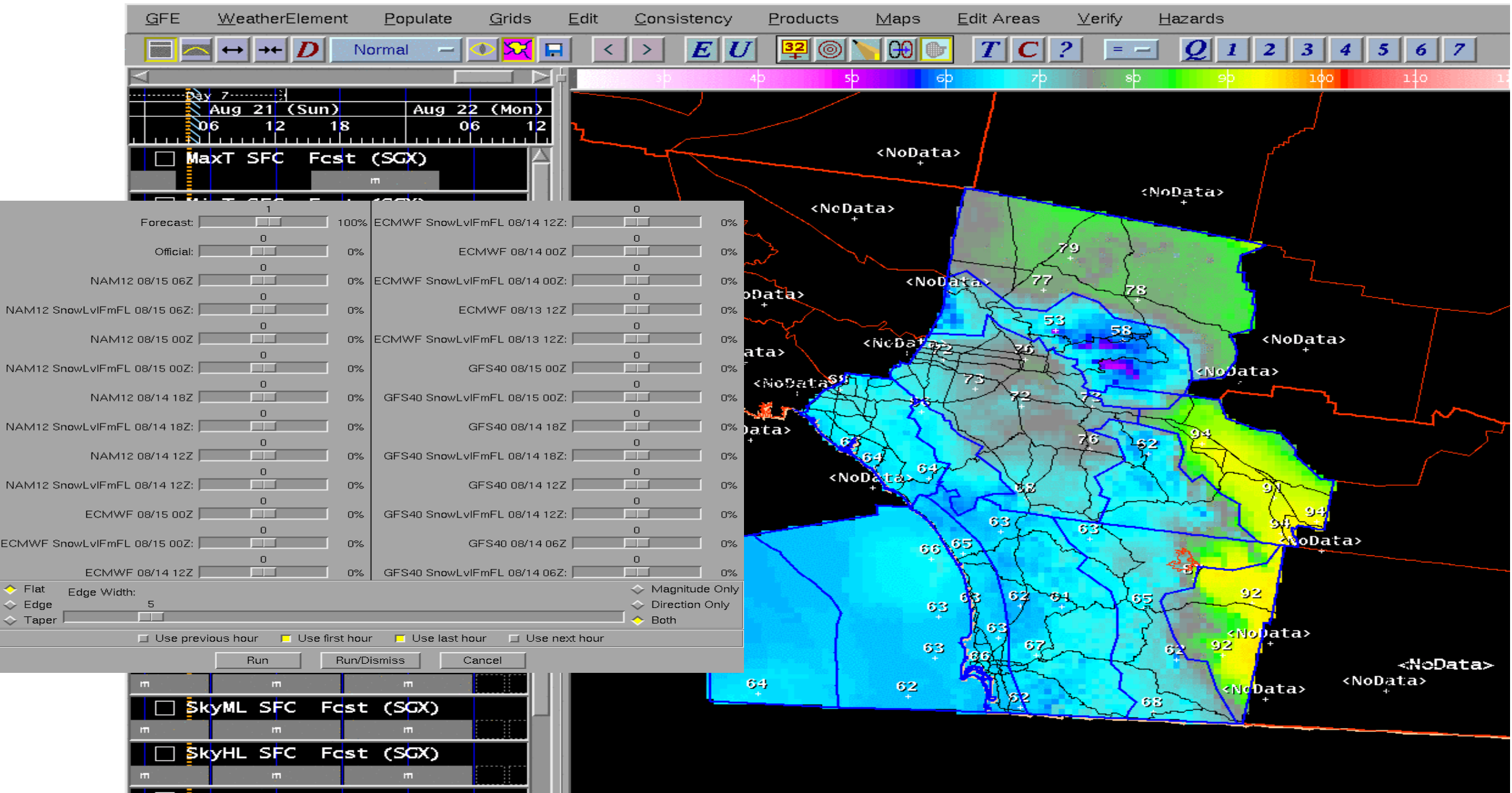


Put together into a graphical forecast

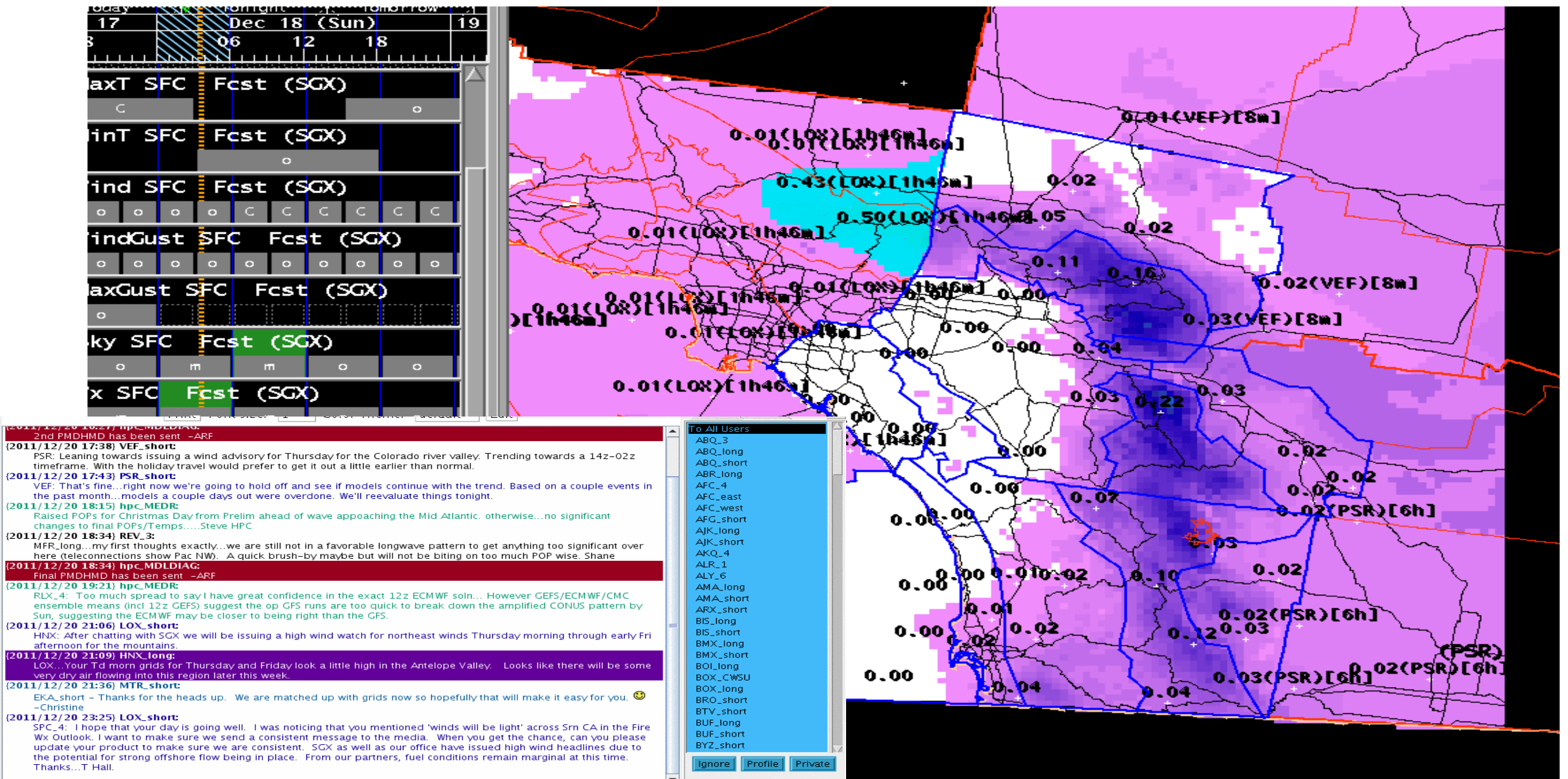
Tomorrow Night		Day 3	
Dec 22 (Thu)		Dec 23 (Fri)	
06	12	06	12
☐ MaxT	SFC	Fcst	(SGX)
☐ MinT	SFC	Fcst	(SGX)
☒ Wind	SFC	Fcst	(SGX)
☐ WindGust	SFC	Fcst	(SGX)
☐ MaxGust	SFC	Fcst	(SGX)
☐ Sky	SFC	Fcst	(SGX)
☐ Wx	SFC	Fcst	(SGX)
☐ PoP	SFC	Fcst	(SGX)
☐ ClimoPoP	SFC	Fcst	(SGX)
☐ QPF	SFC	Fcst	(SGX)
☐ StormTotalQPF	SFC	Fcst	(SGX)
☐ SnowAnt	SFC	Fcst	(SGX)
☐ StormTotalSnow	SFC	Fcst	(SGX)
☐ SnowLevel	SFC	Fcst	(SGX)



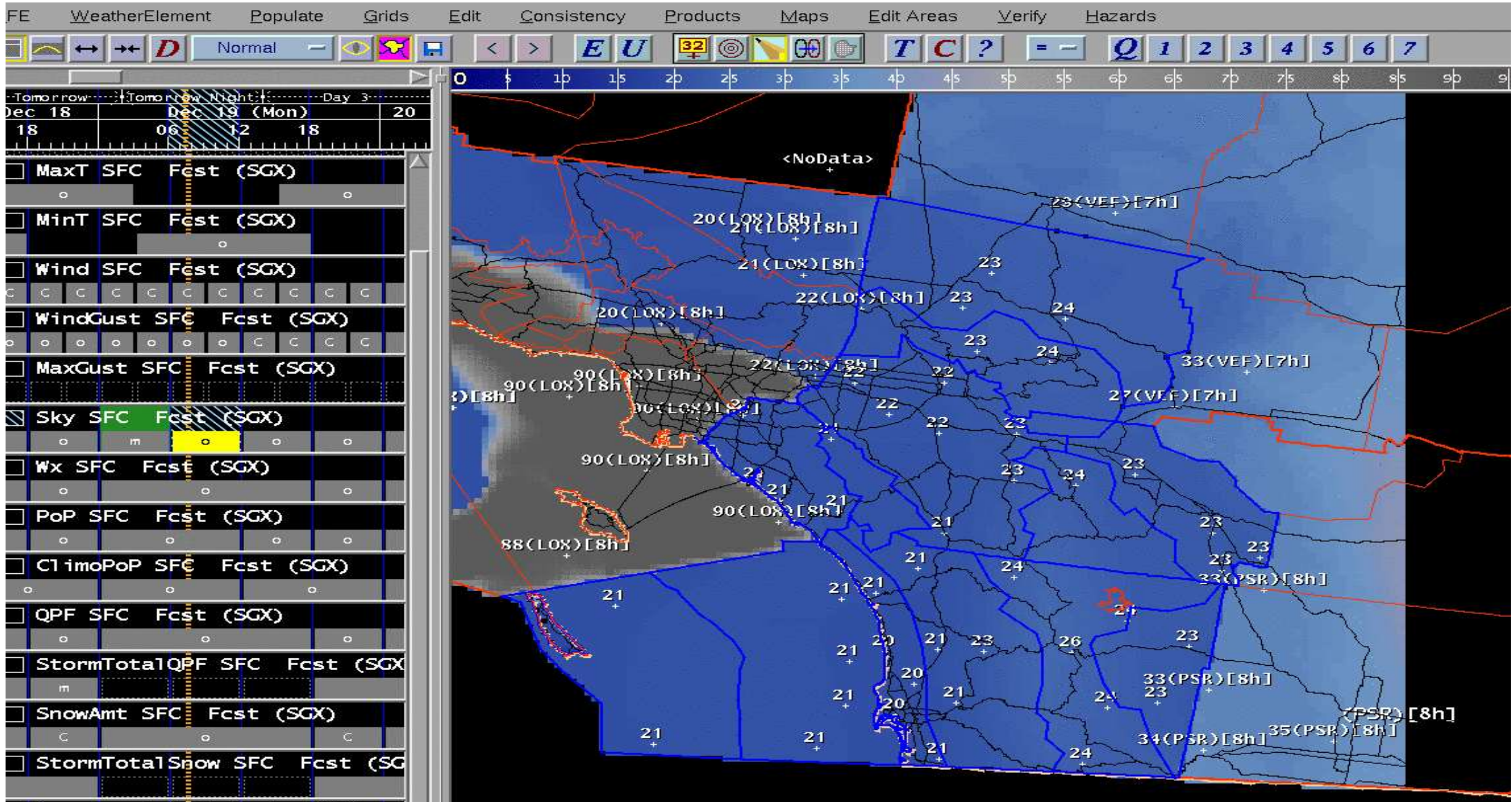
Put together into a graphic
using “tools”



Collaborate with adjacent offices

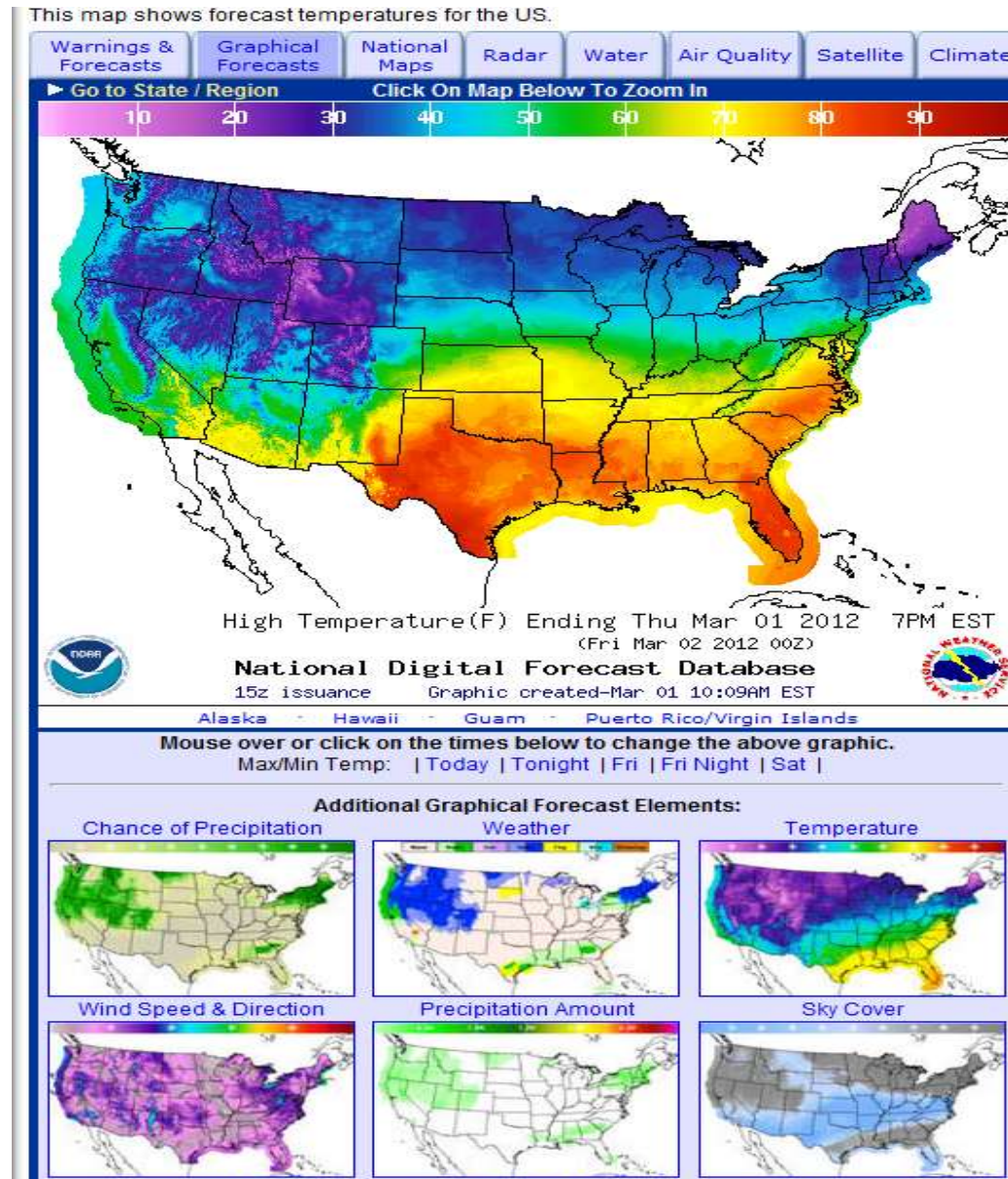


Meshing the borders



National Grid

Meshing the borders for the United States



Making a text forecast product

The screenshot shows a software window titled "Text 1" with a menu bar (File, Edit, Options, Version, Tools, Scripts, Products) and a Help button. Below the menu is a toolbar with buttons for "WWAS", "Public", "Fire", "Aviation", "Marine", "Hydro", "Change+", "Obs", "Quake", "Hurricane", "MOS", "Disc", and "Admin". A secondary toolbar contains "AFOS Browser", "Load History", "WMO Search", "Enter Editor", "Accum" (checkbox), "Update Obs" (checkbox), and "Clear". Below these are input fields for "AFOS Cmd:", "WMO TTAai CCCC:", and "AWIPS ID:". The main text area contains a weather forecast product, with the first part being a "SPECIAL WEATHER STATEMENT" from the "NATIONAL WEATHER SERVICE SAN DIEGO CA" dated "250 AM PDT FRI AUG 12 2011". The product includes a "TEST" message and a "RECOMMENDED ACTIONS..." section. An "AWIPS Header Block" dialog box is open over the text, showing fields for "WWUS86", "KSGX", "NOR", "A", "LAX", "SPS", "SGX", "TTAAii", "CCCC", "BBB", "BBB Version", "WSFO ID (Optional)", "Product Category", "Product Designator", "Addressee" (000), "DEF", and "ALL" (highlighted). The dialog has "Enter" and "Cancel" buttons. At the bottom of the window, it says "Entering Editor..."

Text 1

File Edit Options Version Tools Scripts Products Help

WWAS Public Fire Aviation Marine Hydro Change+ Obs Quake Hurricane MOS Disc Admin

AFOS Browser Load History WMO Search Enter Editor ☐ Accum ☐ Update Obs Clear

AFOS Cmd: WMO TTAai CCCC: AWIPS ID:

WWUS86 KSGX DDHHMM
SPSSGX

Save Cut Copy Paste Fill Edit Header Send Cancel Attach INS

SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE SAN DIEGO CA
250 AM PDT FRI AUG 12 2011

TEST TEST TEST TEST TEST TEST

CAZ042-043-121139-
ORANGE COUNTY COASTAL AREAS-SAN DIEGO COUNTY
250 AM PDT FRI AUG 12 2011

THIS IS A TEST MESSAGE...THIS IS ONLY A TEST.
IS IN EFFECT. THIS IS A TEST MESSAGE...THIS I

...TEST TSUNAMI WATCH IS IN EFFECT FOR THE IM
OF SOUTHERN AND CENTRAL CALIFORNIA...

RECOMMENDED ACTIONS...
A TSUNAMI MAY HAVE BEEN GENERATED...BUT IT IS NOT KNOWN AT THIS TIME
HOW THIS WILL IMPACT THE CALIFORNIA COAST. PERSONS IN LOW-LYING
COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR LOCAL
EMERGENCY OFFICIALS.

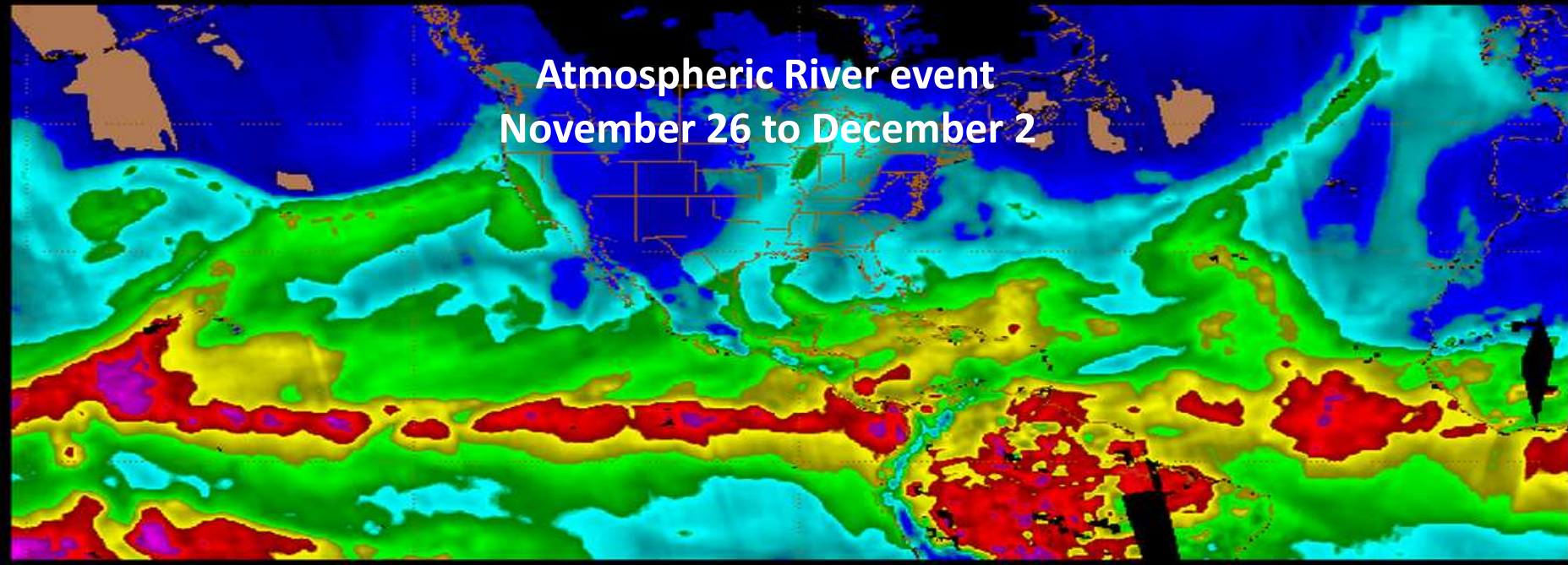
TSUNAMIS OFTEN ARRIVE AS A SERIES OF WAVES OR SURGES WHICH COULD BE
DANGEROUS FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL. IF A

Entering Editor...

AWIPS Header Block

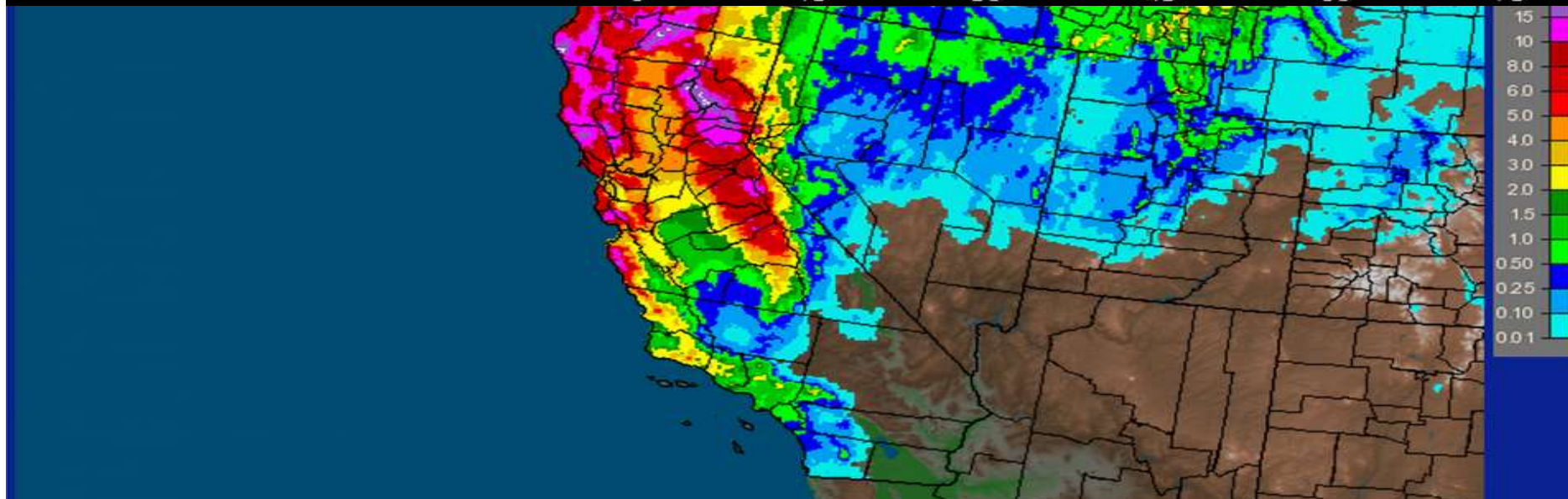
WWUS86 TTAai
KSGX CCCC
NOR BBB
A BBB Version
LAX WSFO ID (Optional)
SPS Product Category
SGX Product Designator
ALL Addressee 000 DEF ALL
Enter Cancel

Atmospheric River event
November 26 to December 2



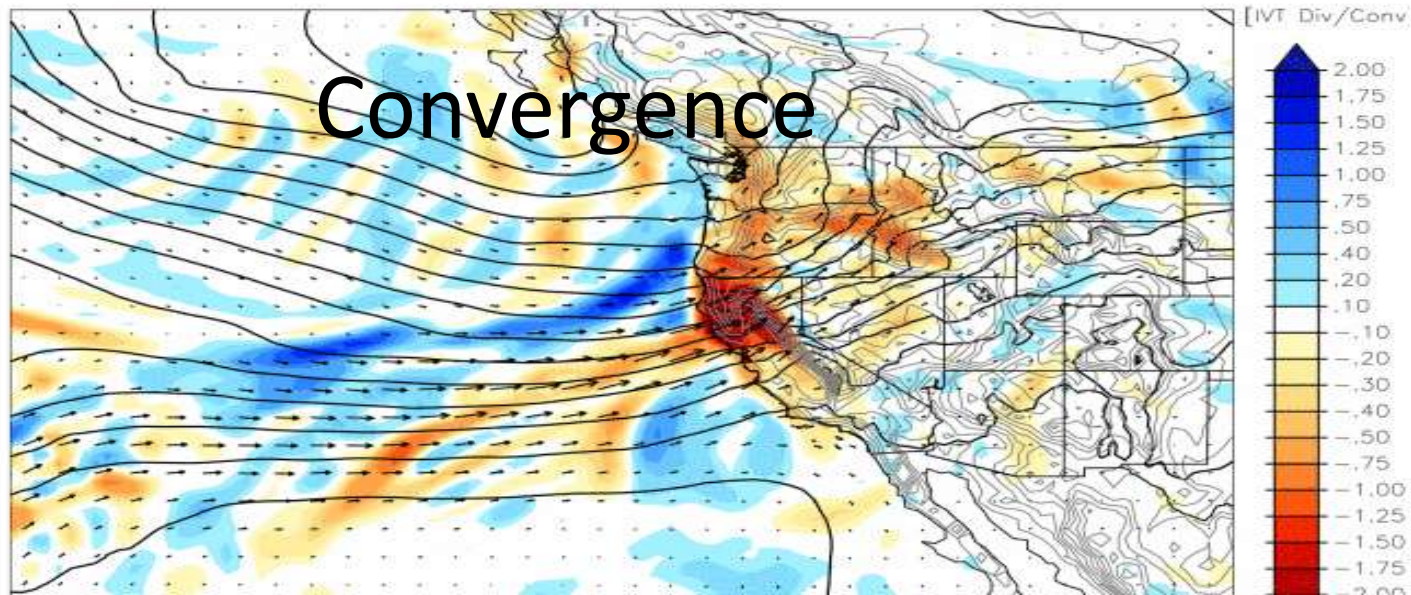
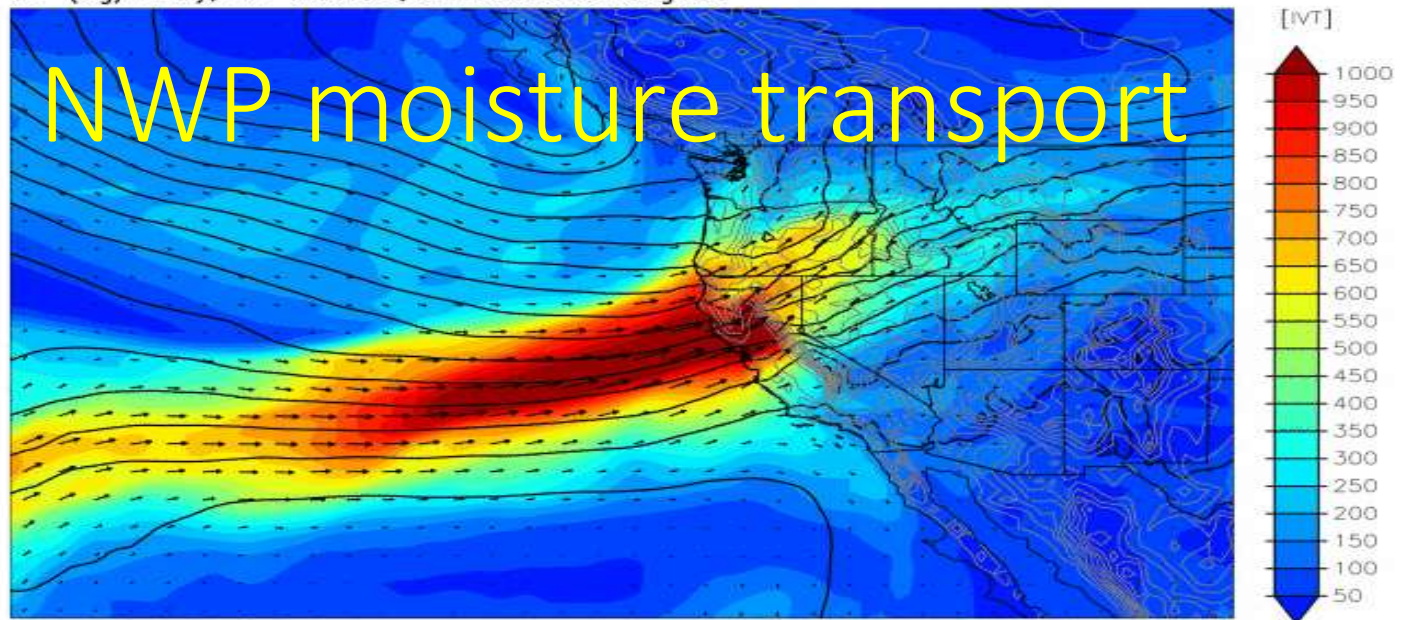
2012-12-02 2047-0443 UTC

0 15 30 45 60 75 mm



12z Nov 30, 2012 GFS F45 valid 09z Dec 02, 2012

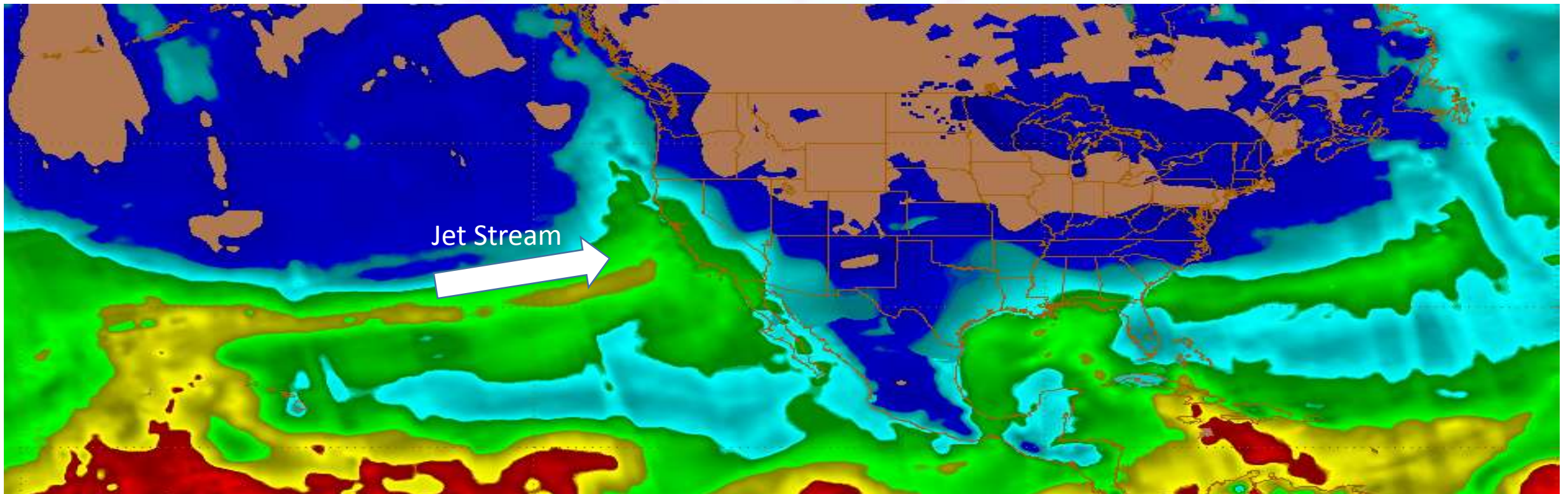
IVT ($\text{kg}/\text{m}\cdot\text{s}$), IVT Vectors, and 850mb Heights





It can happen in San Diego ARkStorm

*Deep moisture plume pointed at Southern California
across the east Pacific poised to move onshore
Friday evening December 17*



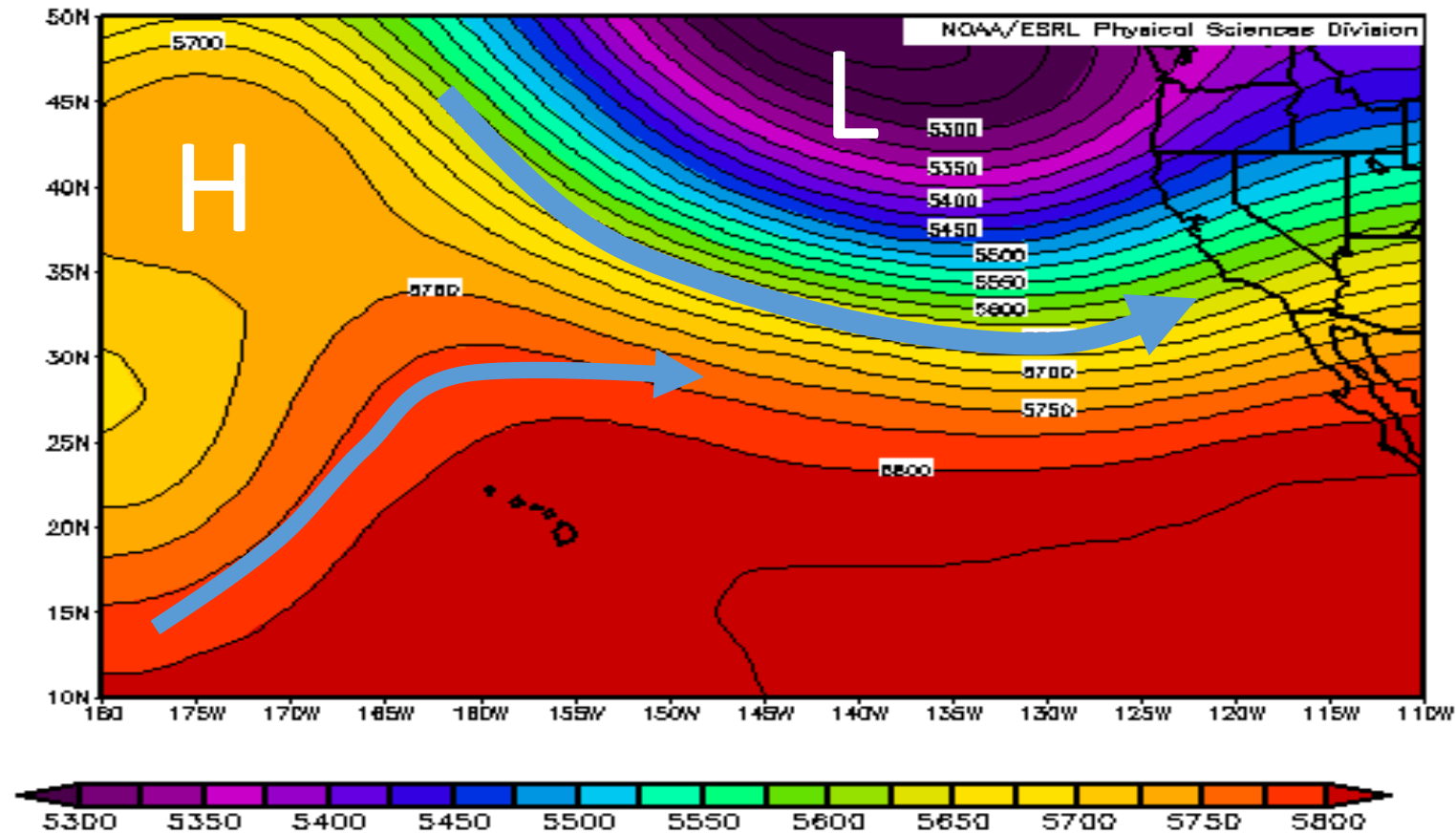
highest moisture in yellow and red



Large persistence storm track
pointed at California
(Arkstorm or Atmospheric River scenario)

7-day average of jet stream

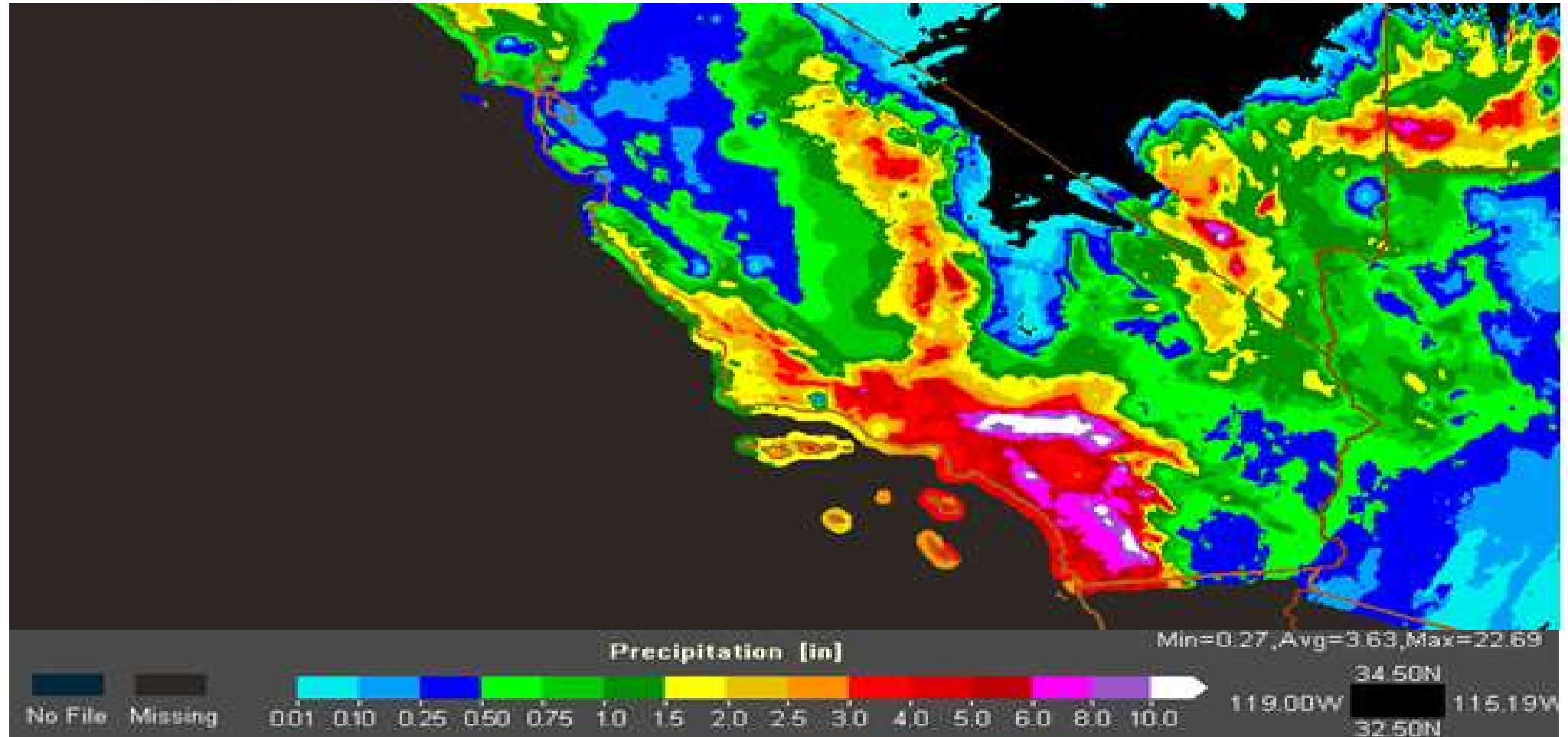
December 16 to 23 average storm track





National Weather Service
San Diego, CA

3 day precipitation – Southern California



Heavy Rain and Flooding Turn Around Don't Drown



NWS San Diego

Provide link from weather to climate



Summary

- Recap 2012 record heat and drought
- Top weather of 2012
- Past winter precipitation and weather pattern 2012-13
- Current conditions
- Weather Patterns and ENSO
- Outlook for spring and summer 2013

Last year warmest year on record (2012)

CONUS (exceeding 1998, 2006, 1999, 1935)

US: Hottest
March and July
ever
350 All-time
records broken

San Diego:
August was 10th
warmest
September was
5th warmest

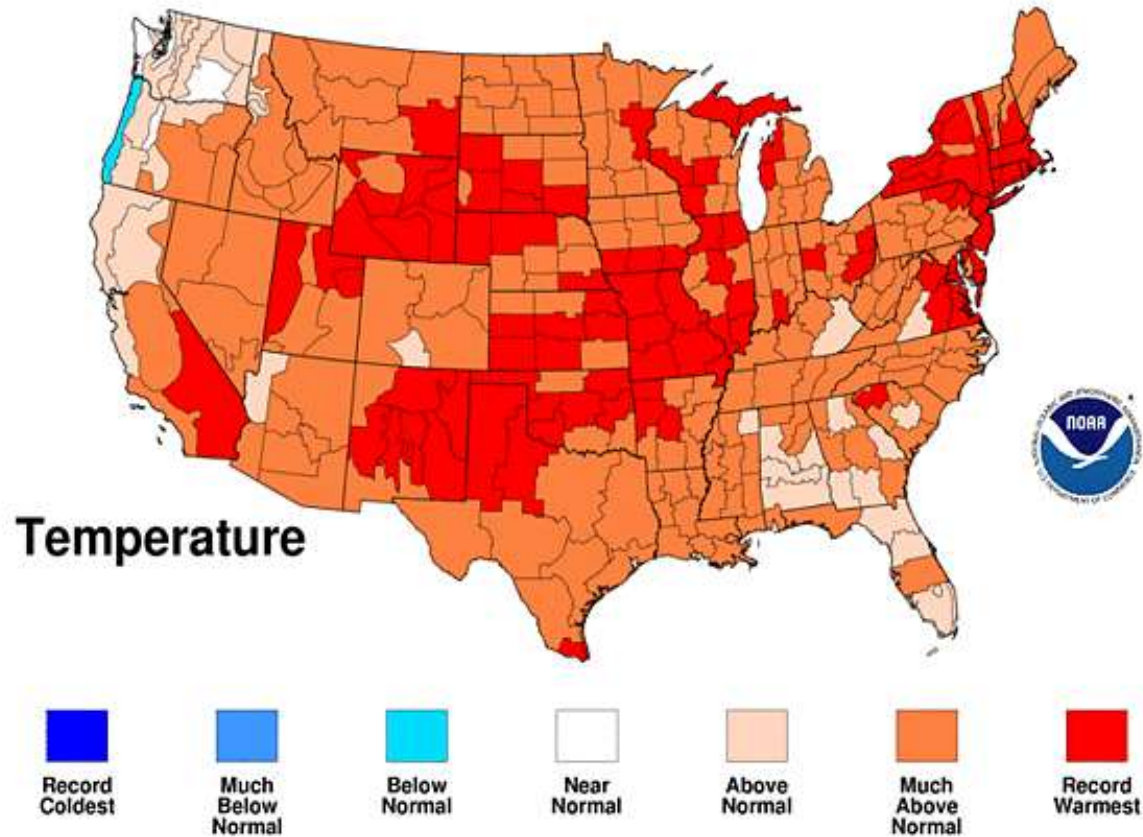
2012 is 17th
warmest at 64.2

Ontario:
26 days in 2012
of 100+

55.3 average temperature (exceeding 1998 by 1 degree)

Jan - Dec 2012

National Climatic Data Center/NESDIS/NOAA

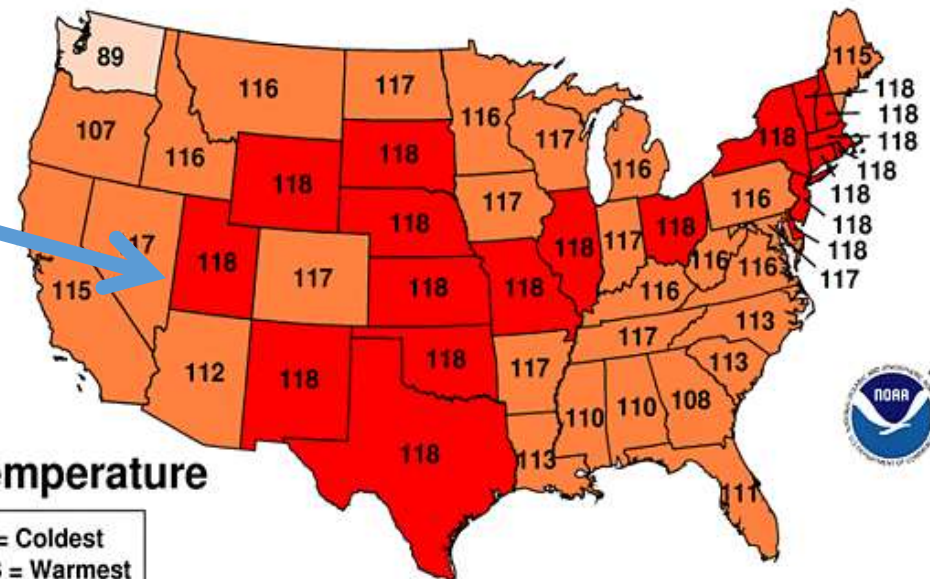


State 2012 Ranks (118 years of data)

- Excessive Heat Wave for Inland Empire August 5 to 20 with temperatures 96 to 110 (107 August 6 and October 1 at ONT)
- Record Heat in Coachella Valley starting May and June (114 on May 31 at PSP)
- 100 to 109 for Coastal San Diego County on September 14-15

January-December 2012 Statewide Ranks

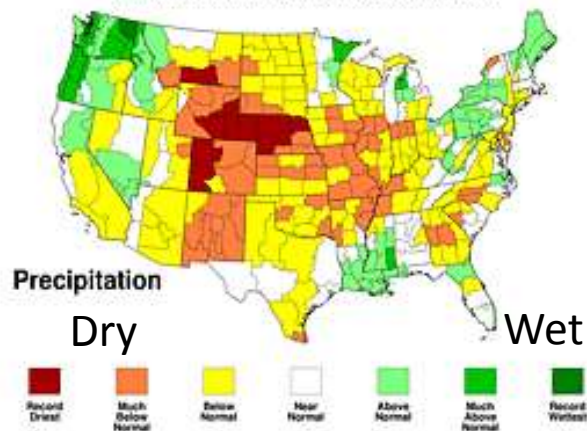
National Climatic Data Center/NESDIS/NOAA



Warm Winter,
Extreme Summer and
Worse Drought

Precipitation Jan - Dec 2012

National Climatic Data Center/NESDIS/NOAA

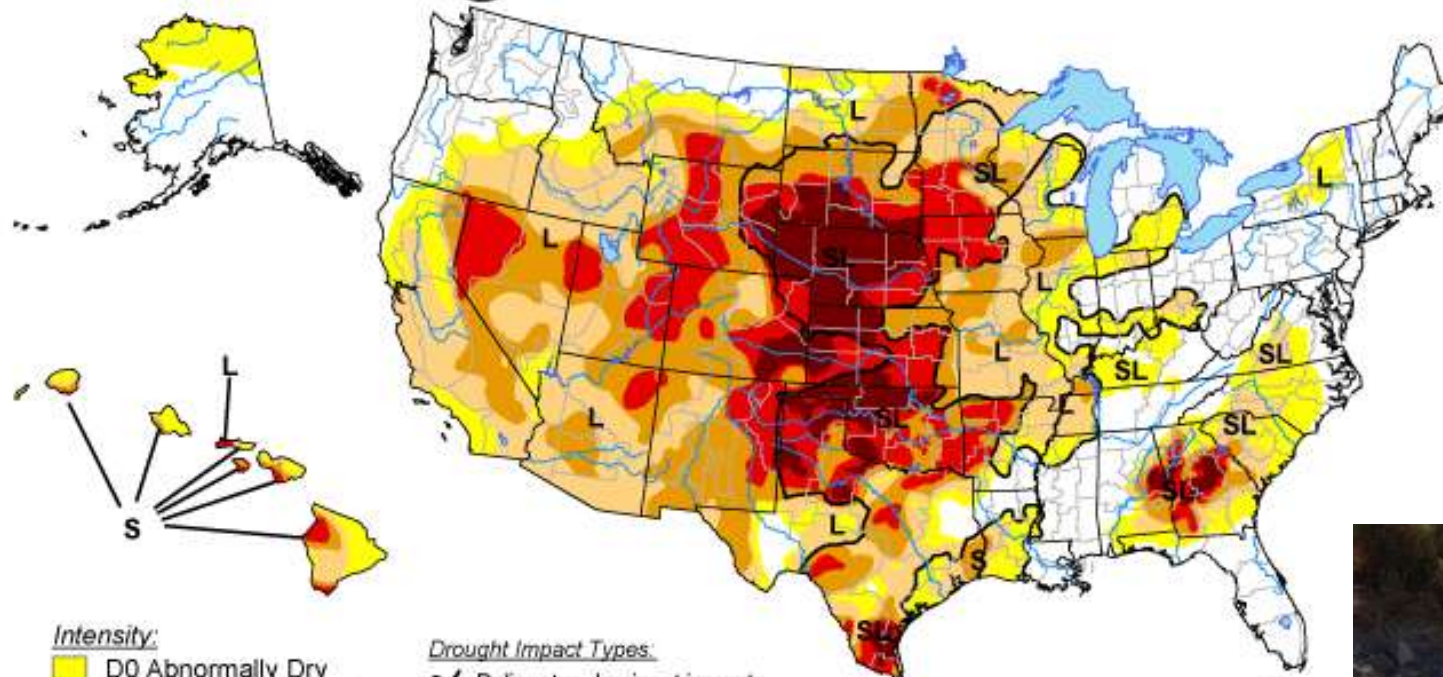


60 percent of US in drought worse since 1956

U.S. Drought Monitor

November 20, 2012

Valid 7 a.m. EST



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Wednesday, November 21,
Author: Eric Luebehusen, U.S. Department of Agriculture



List for the top ten U.S. weather/climate events which occurred during 2012

These events were selected by a panel of weather/climate experts from around the country

Rank	Event
1	Hurricane/Post-Tropical Storm Sandy
2	Contiguous U.S. Drought
3	Contiguous U.S. Warmest Year on Record
4	Record Wildfire Activity
5	Multi-State Derecho
6	March 2 nd -3 rd Severe Weather Outbreak
7	Alaska Cold Winter/Snow Records
8	Near-Record Low Great Lakes Levels
9	Contiguous U.S. Snow Cover
10	Hurricane Isaac

Preliminary Significant U.S. Weather and Climate Events for 2012

SNOW PACK

3rd smallest winter snow cover extent. Below-average snowpack was observed for much of the West.

WARM

Warmest year on record for the nation. 19 states record warm. The 4th warmest winter, warmest spring, and second warmest summer contributed to 2012 having an average temperature 3.2F above average and 1.0F above the previous record warm year of 1998.

WILDFIRES

Over 9.2 million acres burned nationwide during 2012. CO experienced its most costly fire on record in June. The Whitewater-Baldy fire was the largest on record for NM.

COLD

Coldest January on record in AK. The monthly average temperature in Bettles was -35.6F. Snowiest winter in Anchorage with 134.5 inches.

FLOOD

Storms caused record flooding in and around Duluth, MN on June 20th with over 8 inches of rainfall observed in 24 hours. Rivers in the area reached their highest levels on record.

TORNADOES

An early season tornado outbreak on March 2-3 in IN, OH, WV, and KY resulted in 42 fatalities. This was the deadliest tornado outbreak of 2012.

DROUGHT

The 2012 drought peaked in July with over 60% (PDSI) of the nation experiencing drought conditions, comparable to the drought episodes of the 1950s. Corn and soybean crops failed across a large portion of the Great Plains and Midwest. Water levels along the Mississippi approached record lows and slowed commercial shipping.

STORMS

On March 9th a storm system brought severe weather to HI. A rare tornado hit Oahu. Largest hailstone on record for the state in Oahu.

POST-TROPICAL CYCLONE SANDY

Made landfall near Atlantic City, NJ with sustained winds of 80 mph in late October. Record storm surge along NJ and NY coasts along with heavy rain and snow. Over 8 million people lost power, 131 fatalities.

STORMS

A straight-line wind storm called a derecho caused significant damage from IN to MD. Over 250,000 customers lost power, including the densely populated Washington, D.C. area.

HURRICANE ISAAC

Made landfall near the mouth of the Mississippi River in late August with winds of 80 mph. Significant storm surge and flooding rains along the Gulf Coast. 9 fatalities.

WET

Florida had its wettest summer on record, partially due to Hurricane Isaac and Tropical Storm Debby. Seasonal precipitation was 140 percent of average.



NOAA's

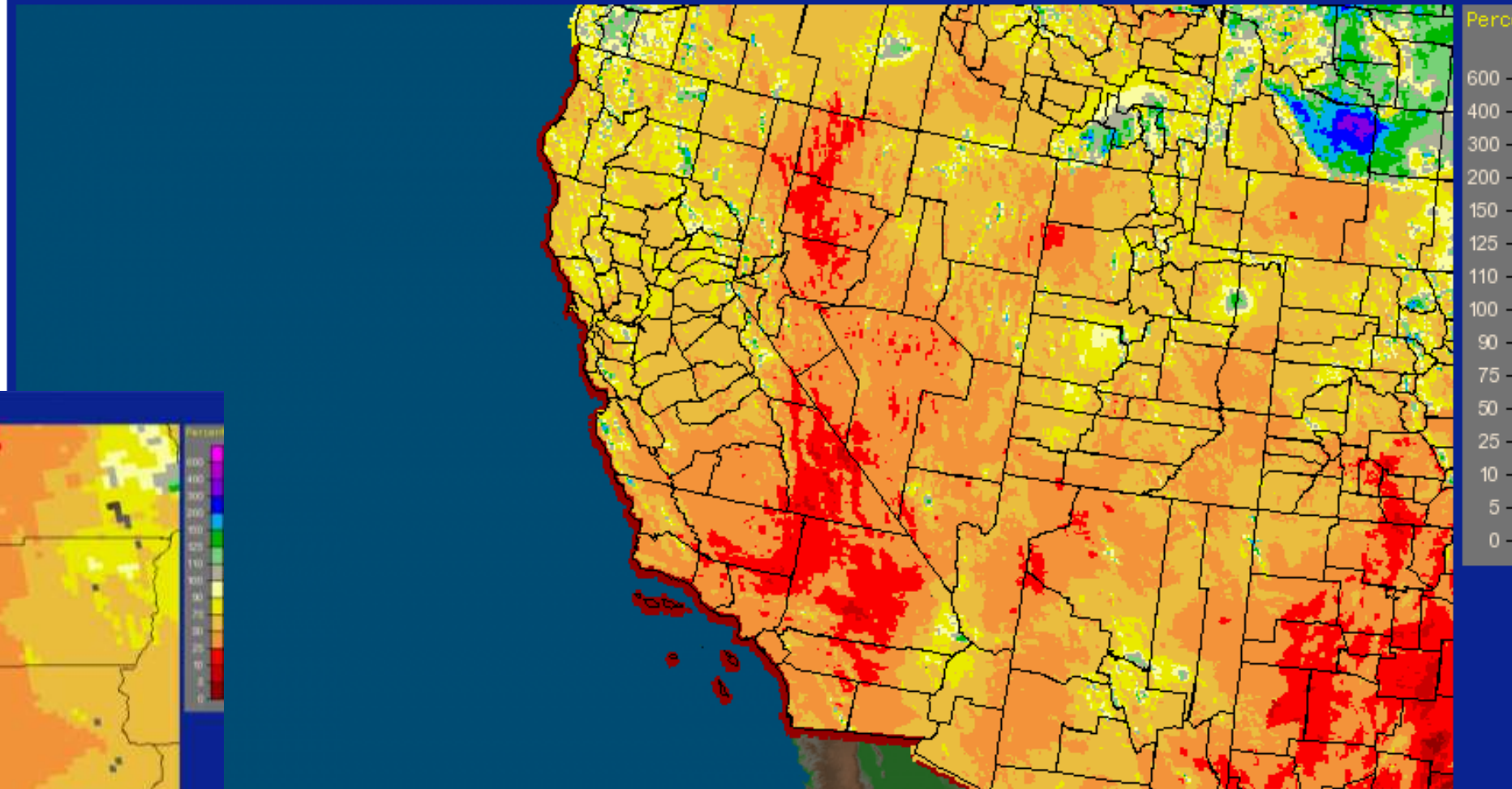
National Climatic Data Center

Climate information

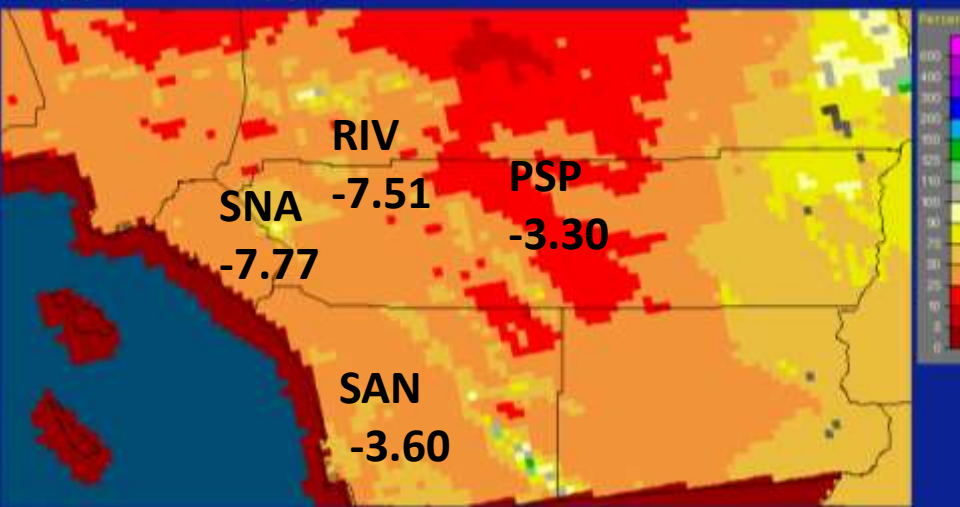
Percent of Normal since October 1, 2012

Idyllwild – 69 %
Big Bear Lake – 70 %
Palomar Mtn – 55 %

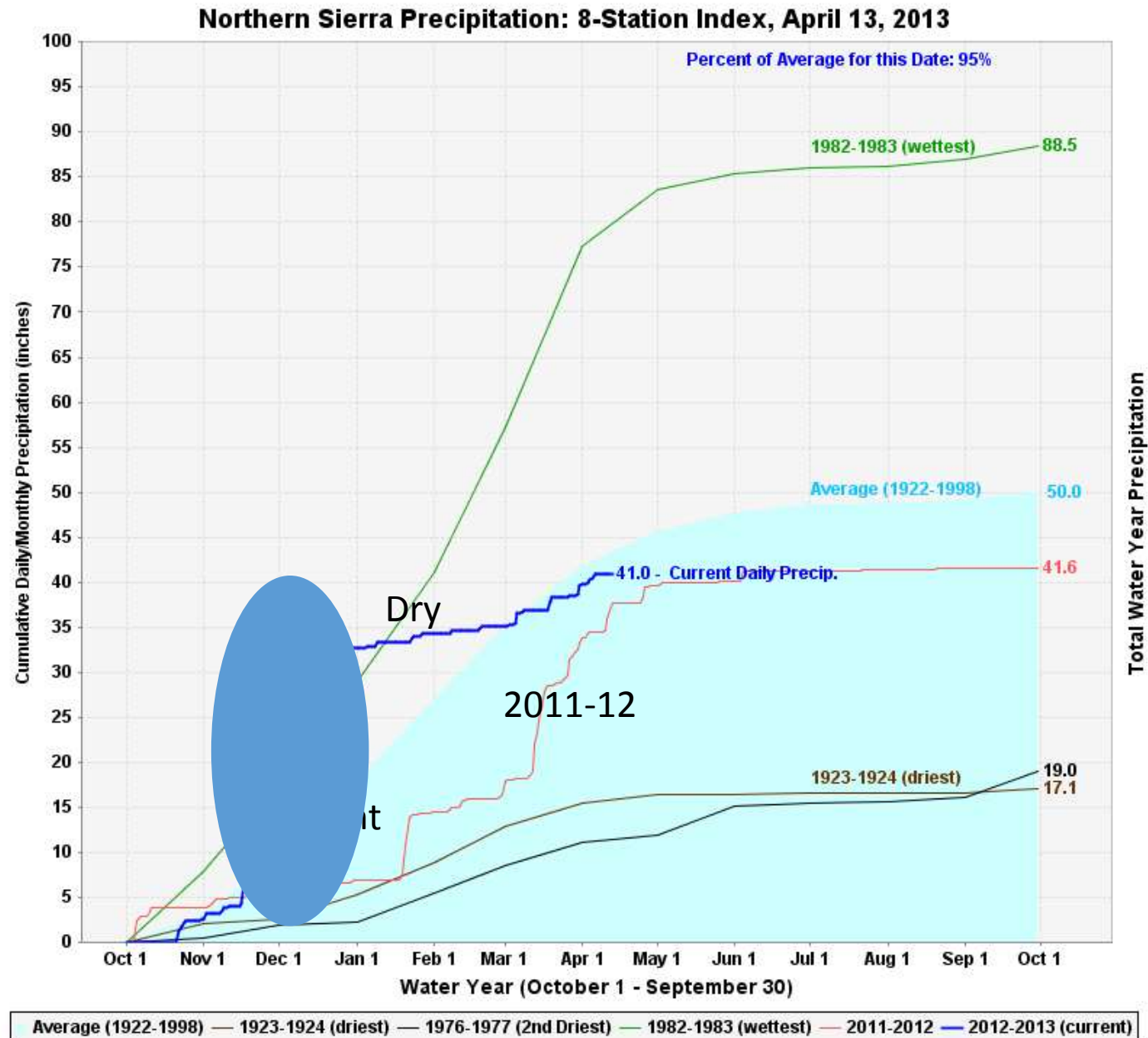
California: Current Water-Year (Oct 1) Percent of Normal Precipitation
Valid at 4/26/2013 1200 UTC - Created 4/26/13 22:32 UTC



San Diego, CA (SDGX): Current Water-Year (Oct 1) Percent of Normal Precipitation
Valid at 4/26/2013 1200 UTC - Created 4/26/13 22:34 UTC



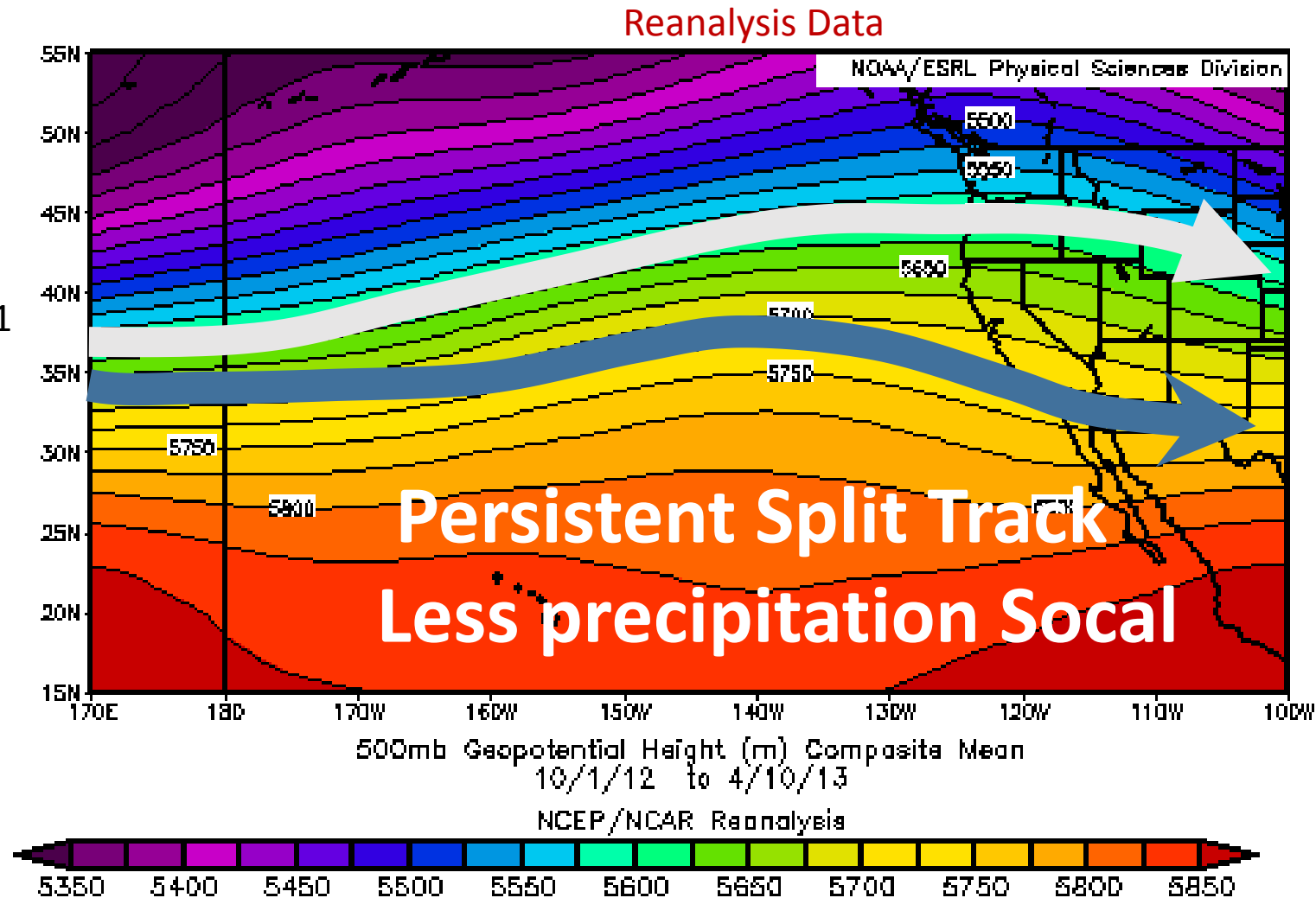
Sierra Nevada precipitation 2012-13



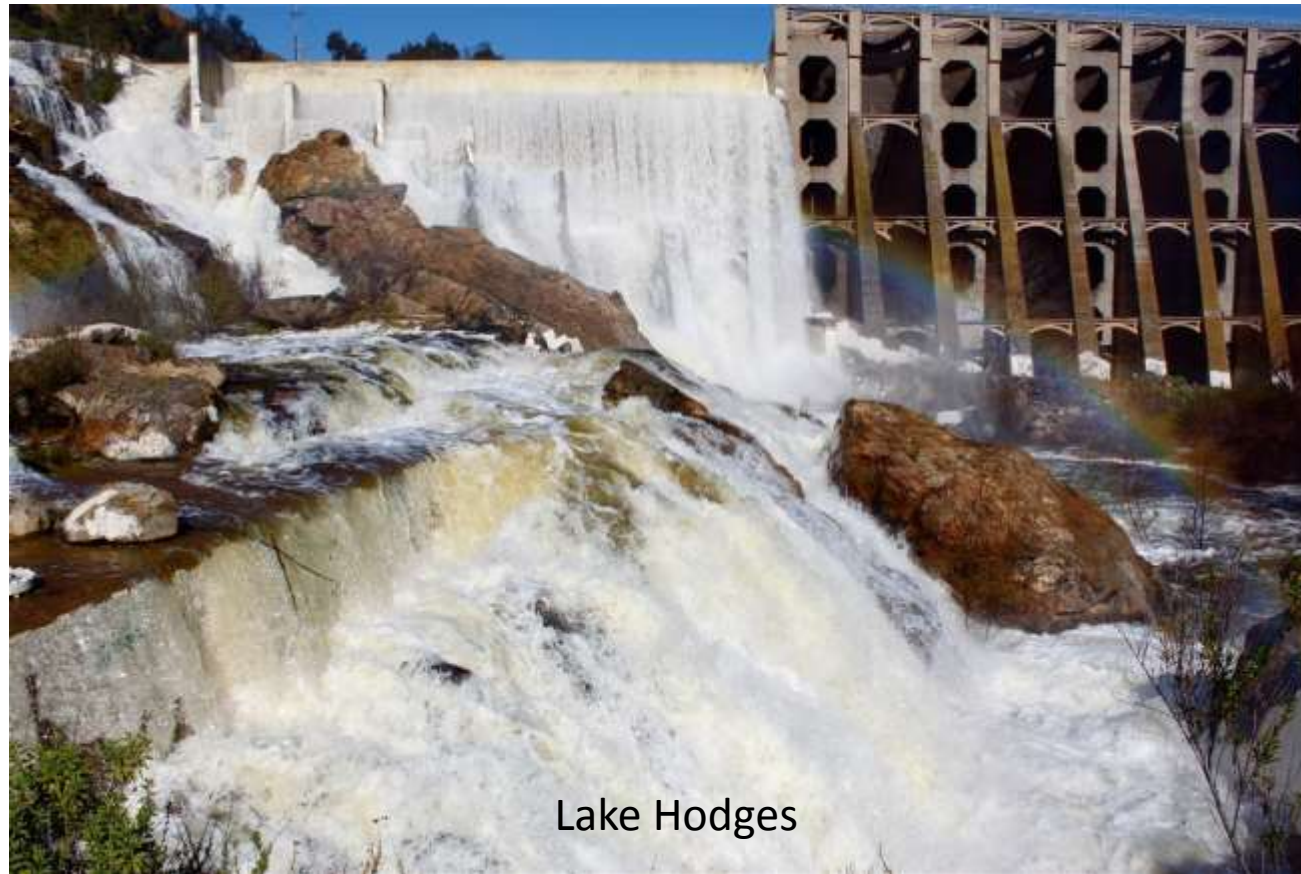
Jet stream (storm track) composite October 2012 to April 10, 2013

Precipitation Events

October 10-11
November 8-10
November 30-December 1
December 12-14
December 24 and 26
December 30-31
January 6-7
January 14-17 (wind)
January 27-28
February 8-10
February 14-15 (wind)
February 19-21
March 7-9



How is the water supply and what are current conditions?

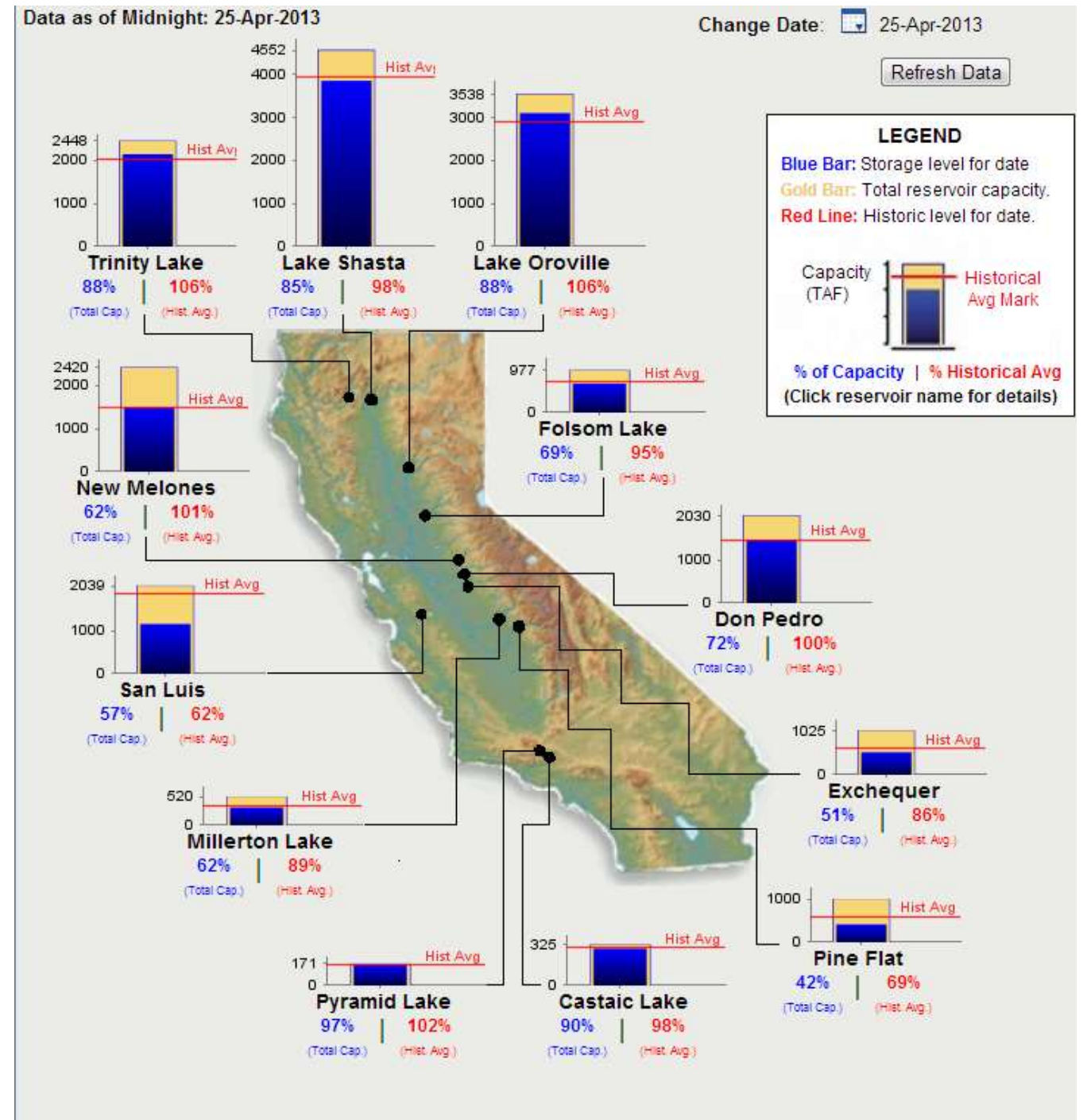


Lake Hodges

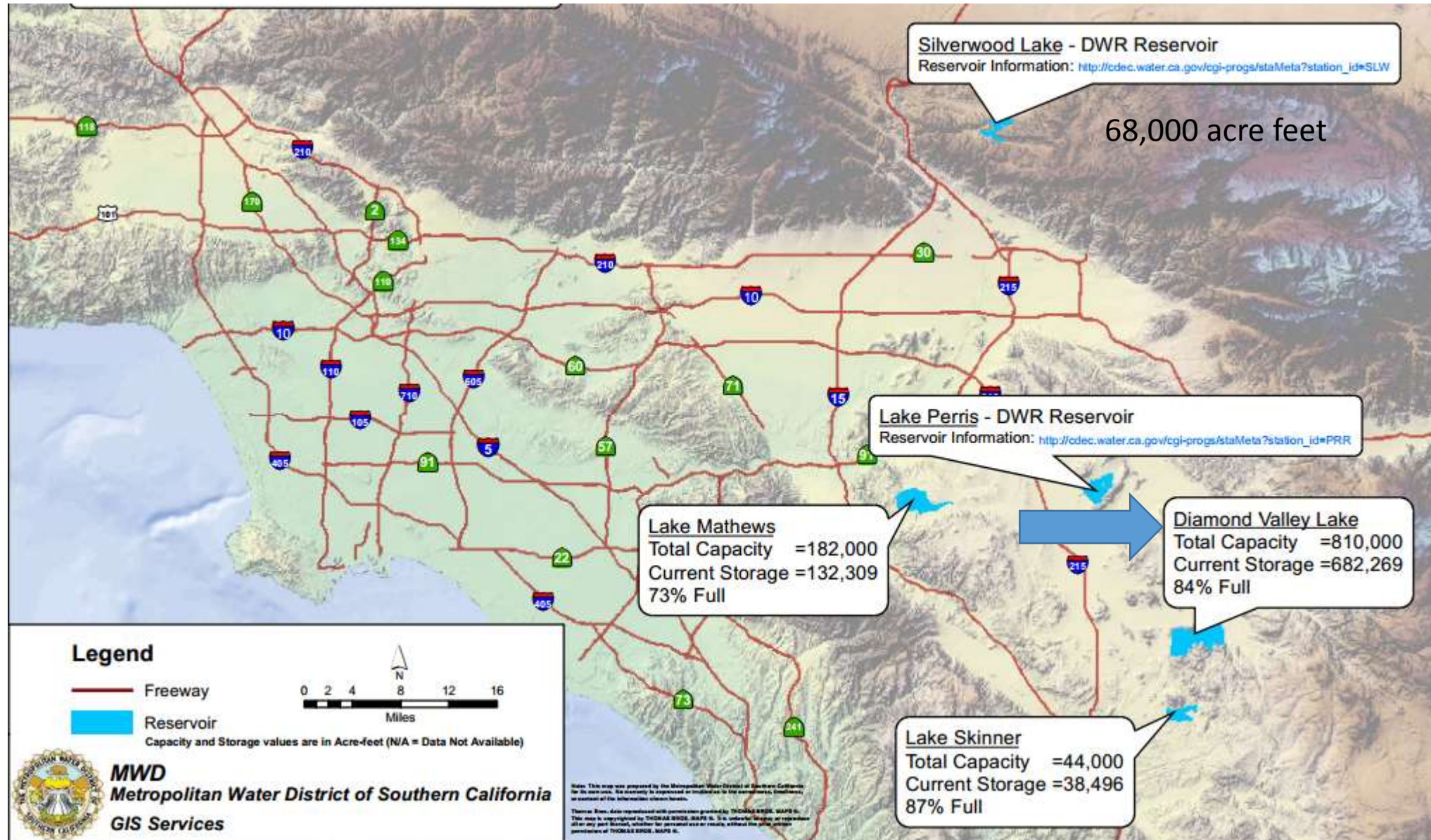
Reservoir conditions (our water)

Large Supply near 100 % average

Runoff will be considerably less



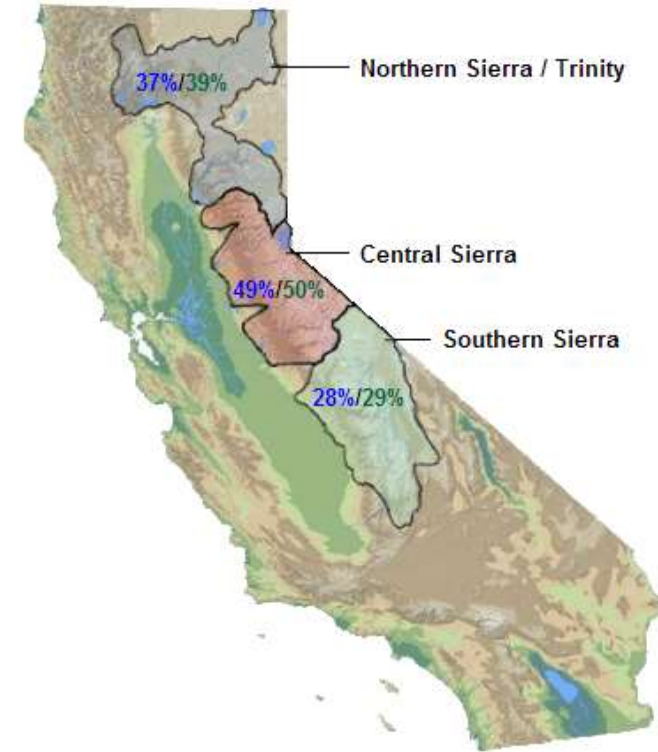
Southern California water supply



Less snowpack = less runoff this spring

Data For: 11-Apr-2013

% Apr 1 Avg. / % Normal for this Date



NORTH

Data For: 11-Apr-2013

Number of Stations Reporting	30
Average snow water equivalent	10.4"
Percent of April 1 Average	37%
Percent of normal for this date	39%

CENTRAL

Data For: 11-Apr-2013

Number of Stations Reporting	40
Average snow water equivalent	15.1"
Percent of April 1 Average	49%
Percent of normal for this date	50%

SOUTH

Data For: 11-Apr-2013

Number of Stations Reporting	29
Average snow water equivalent	7.0"
Percent of April 1 Average	28%
Percent of normal for this date	29%

STATEWIDE SUMMARY

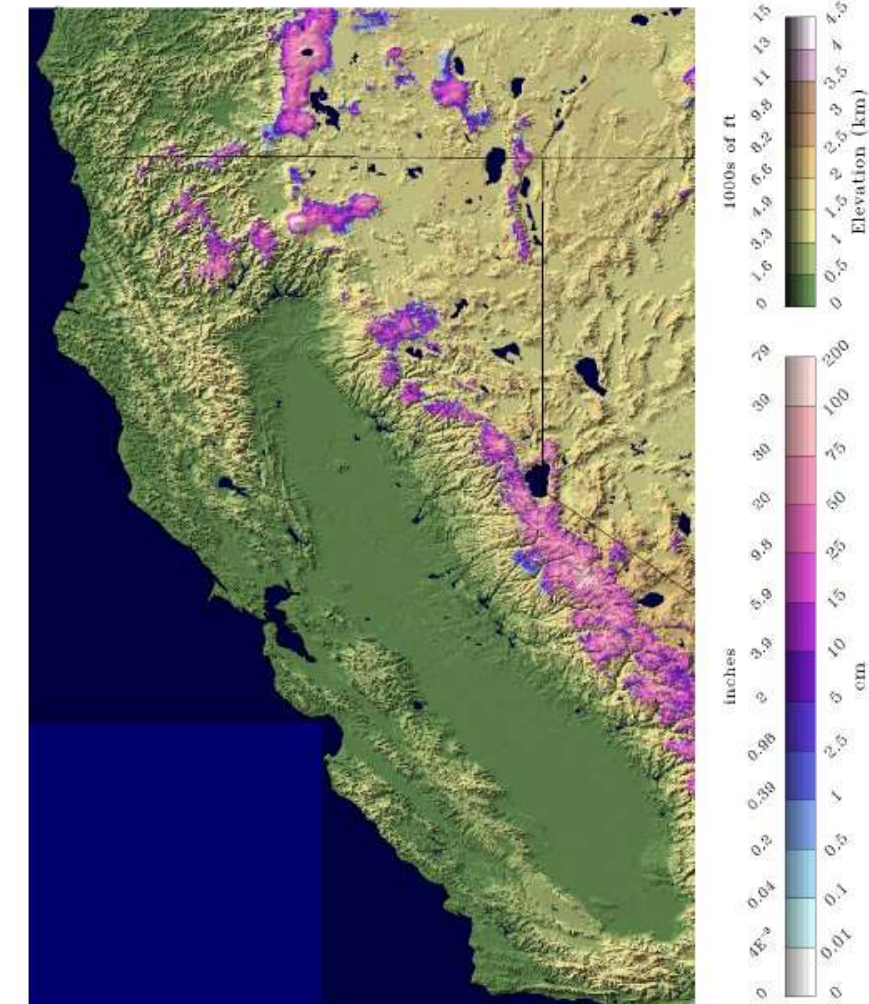
Data For: 11-Apr-2013

Number of Stations Reporting	99
Average snow water equivalent	11.3"
Percent of April 1 Average	40%
Percent of normal for this date	41%

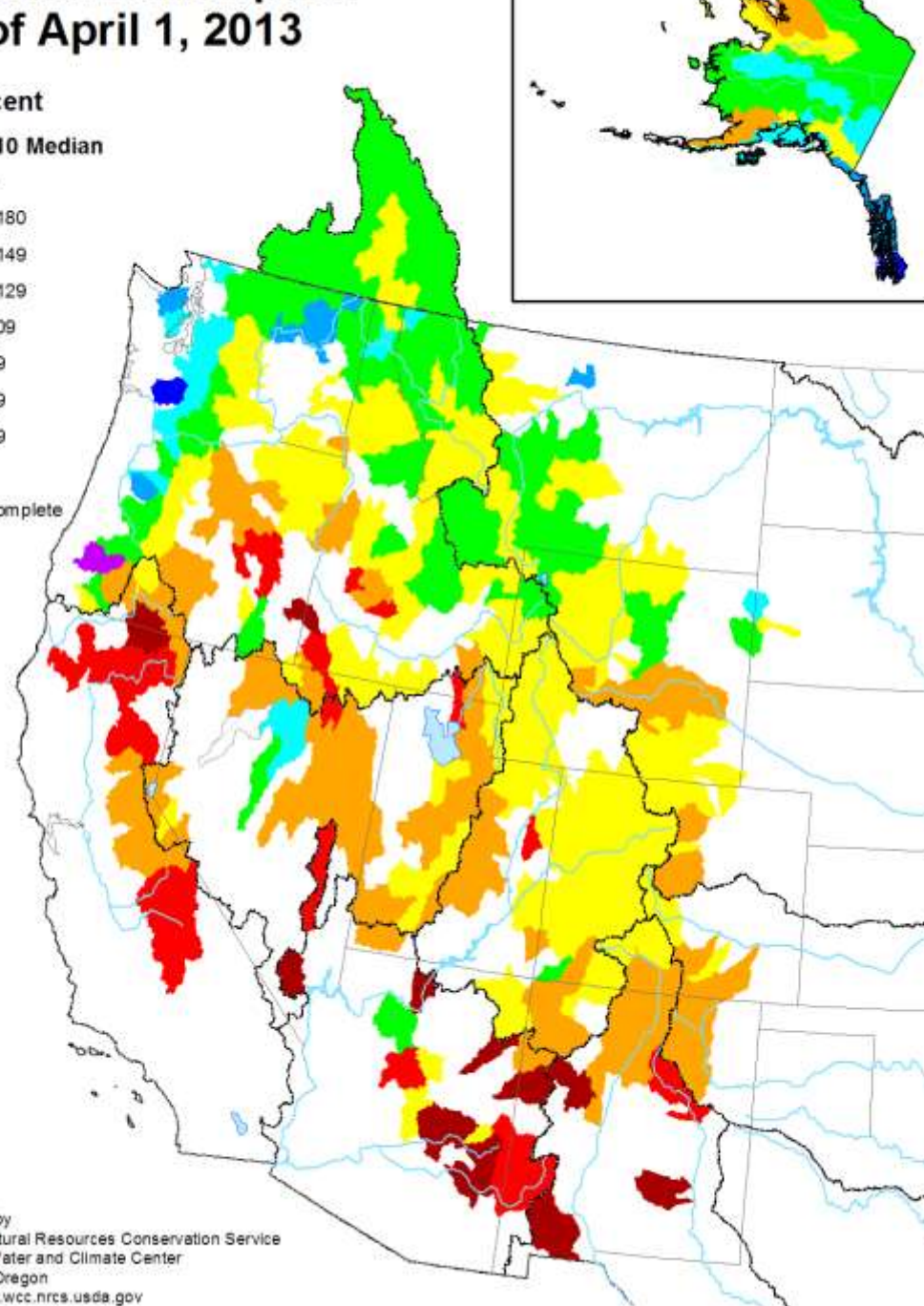
Change Date :

Snow Water Equivalent

2013-04-14 06



as of April 1, 2013



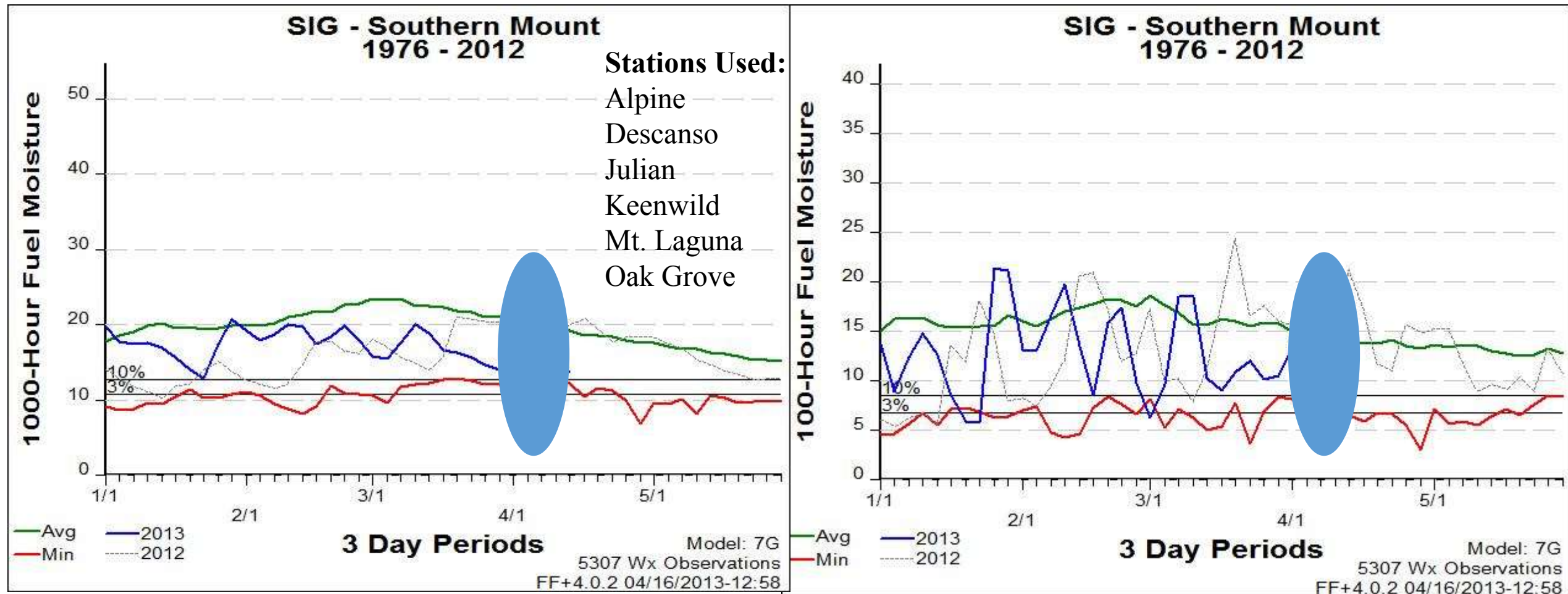
Percent of normal snowpack

Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

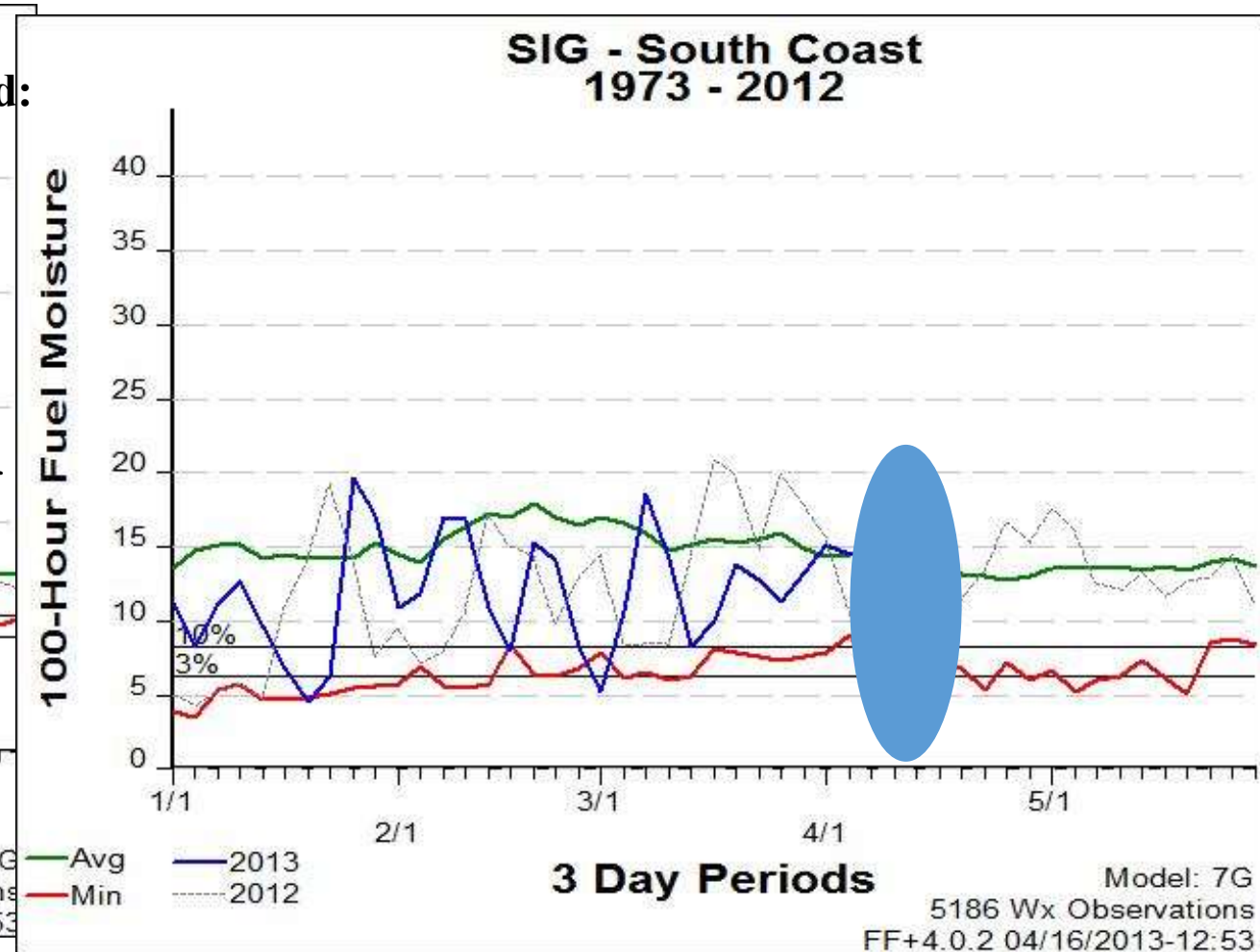
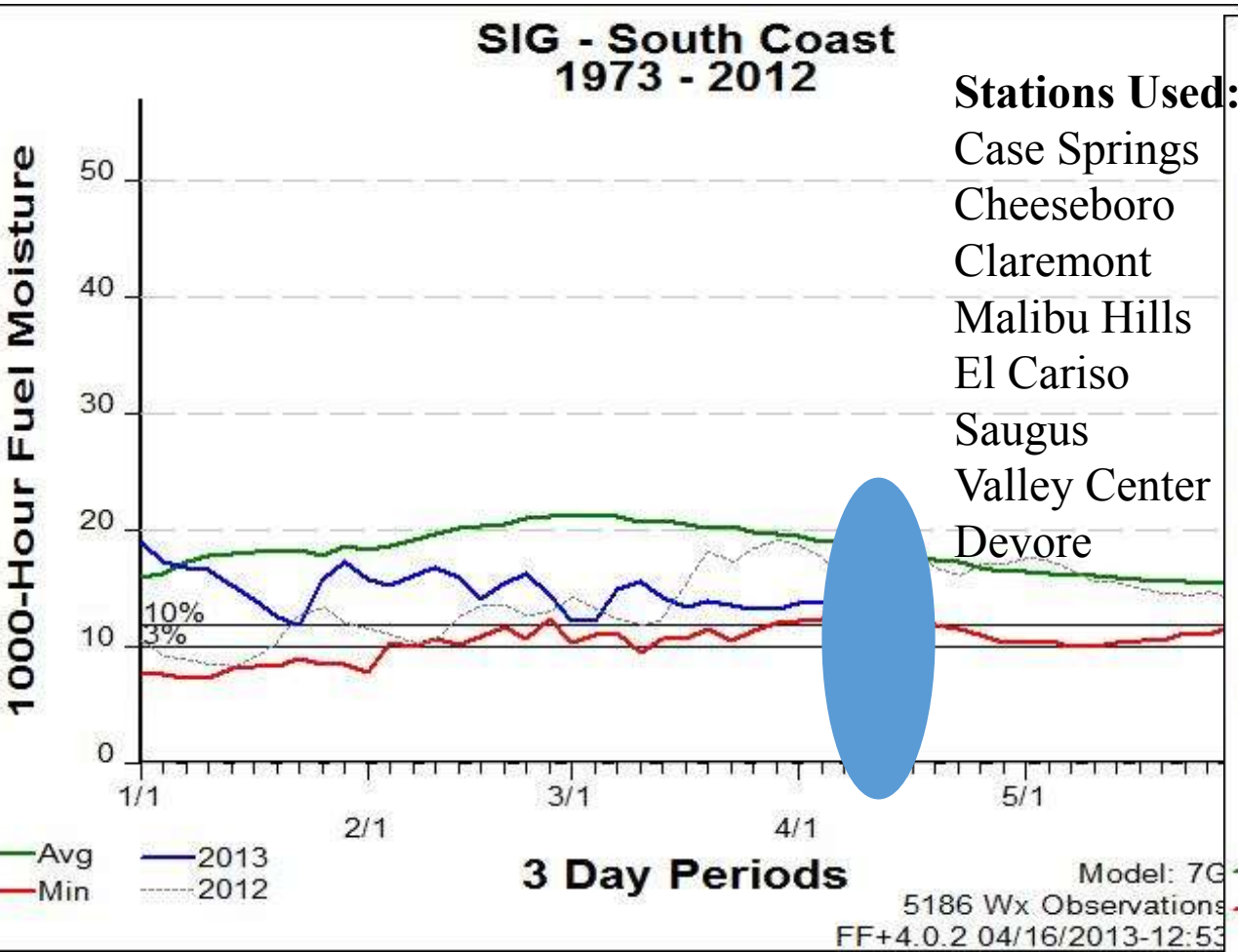
State of Fuels



Dead fuel moisture - mountains

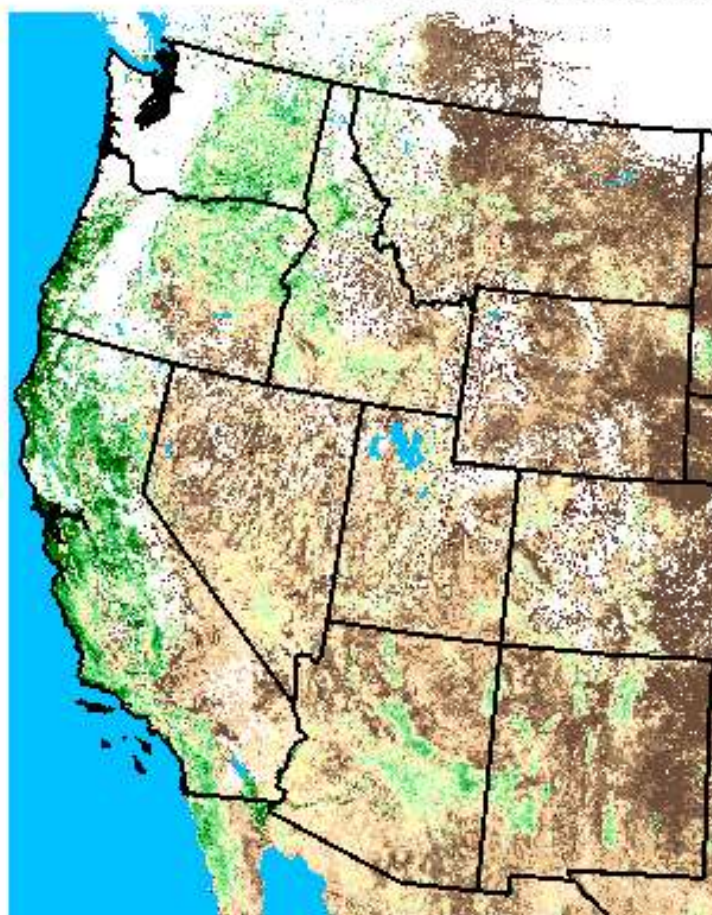


Southern Coast Dead Fules



Experimental Shrub Moisture:

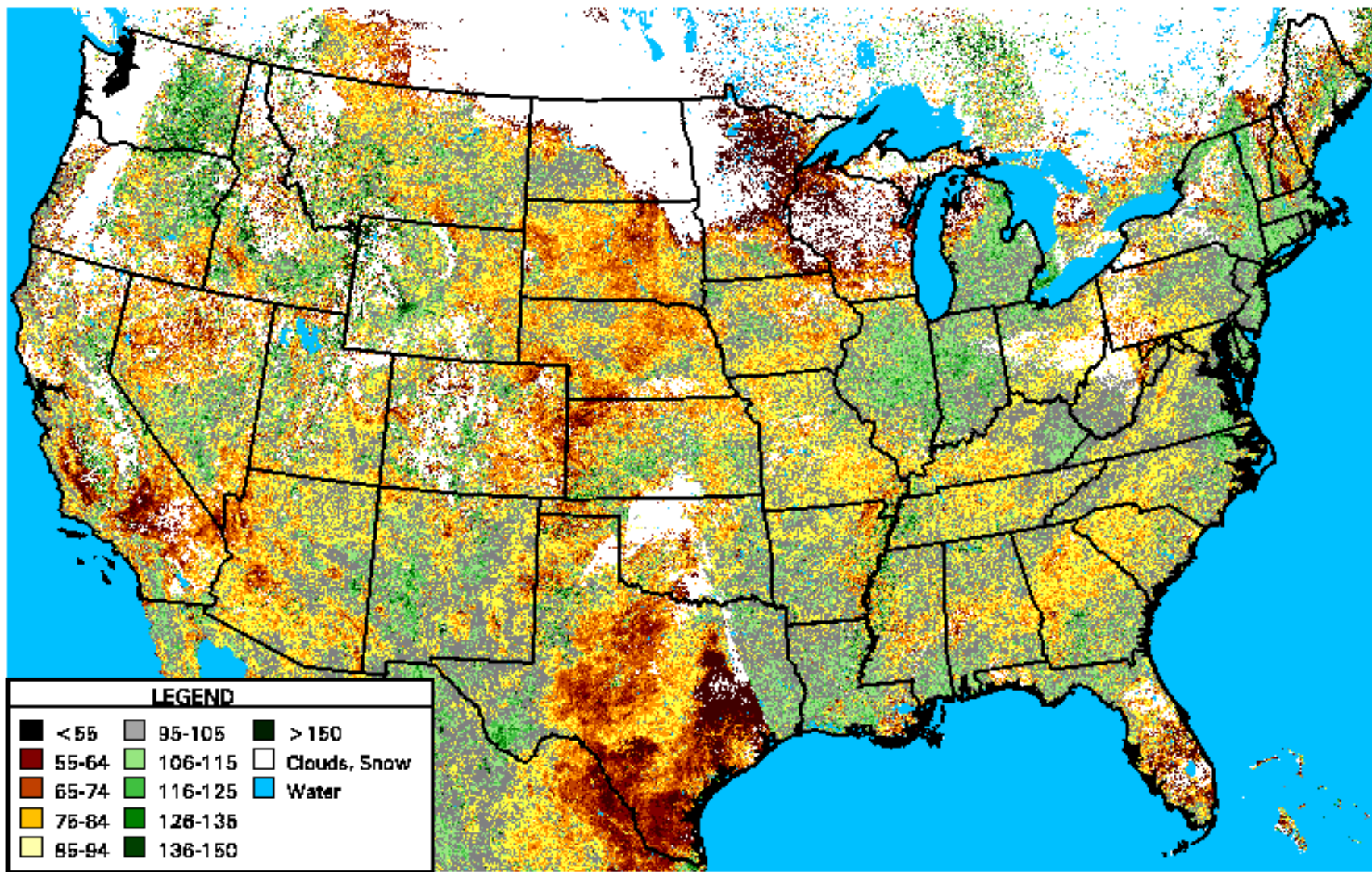
Apr 02 - Apr 08 2013



LEGEND

50-60%	91-100%	176-225%
61-70%	101-120%	> 225%
71-80%	121-150%	Clouds, Snow
81-90%	161-175%	Water

Departure from Average Greenness: Apr 02 - Apr 08 2013



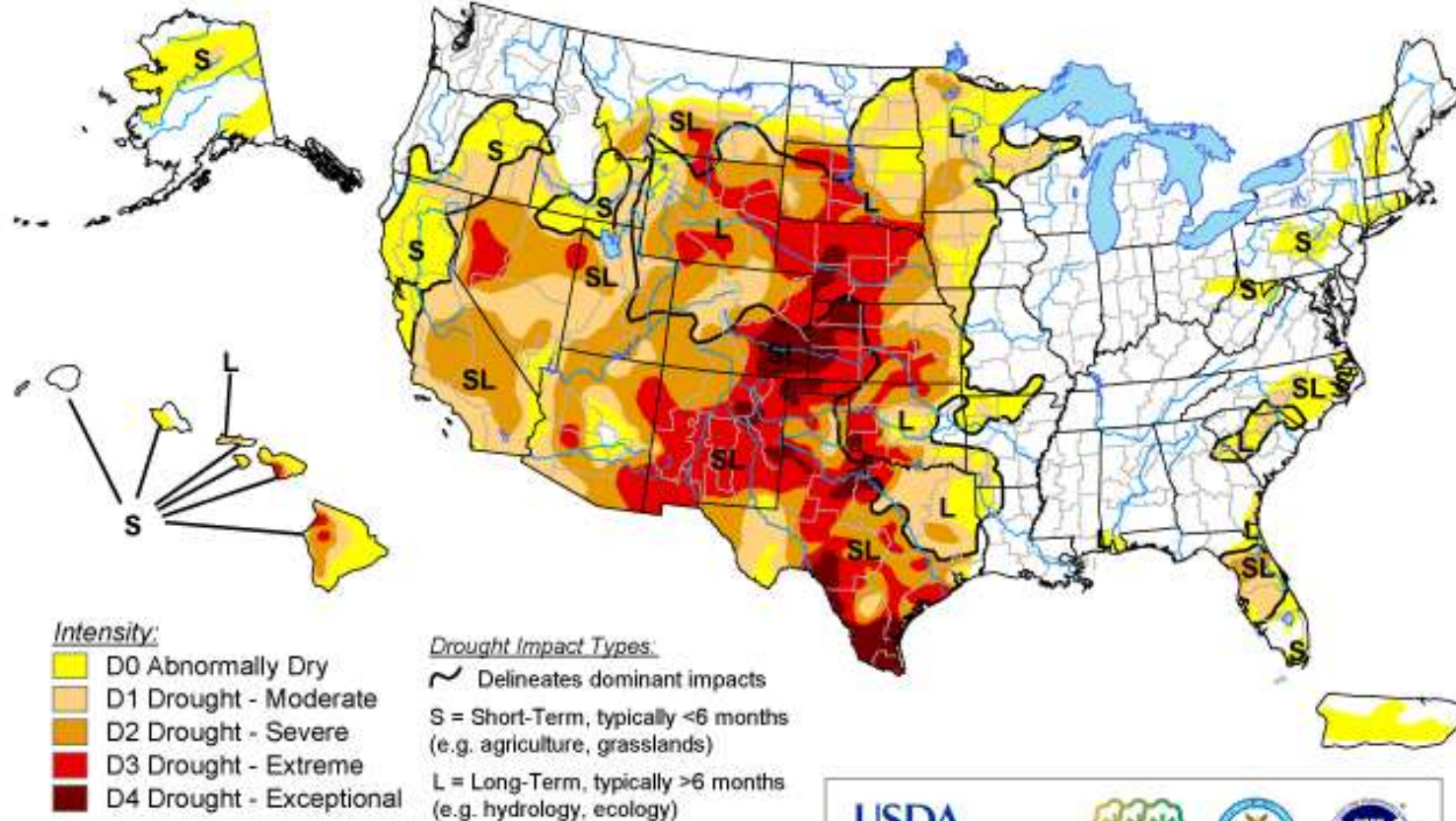
LEGEND

<55	95-105	> 150
55-64	106-115	Clouds, Snow
65-74	116-125	Water
75-84	126-135	
85-94	136-150	

Current 2013 Drought

U.S. Drought Monitor

April 23, 2013
Valid 7 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, April 25, 2013

Author: Eric Luebehusen, U.S. Department of Agriculture

ENSO and state of the ocean

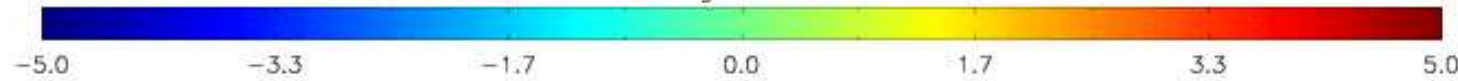
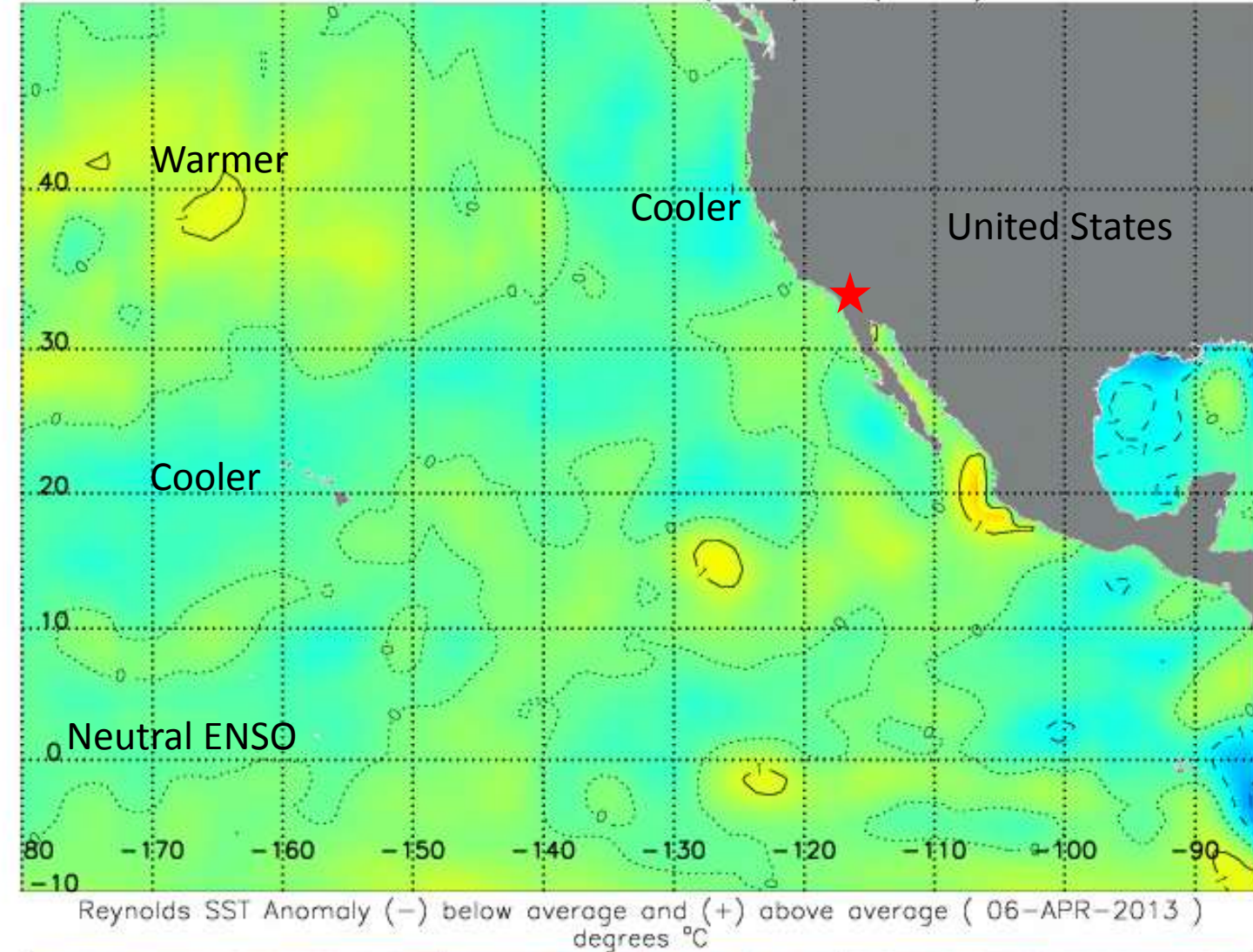
Heavy Rain and Flooding
Turn Around Don't Drown



Current sea Surface temperature Departure from Normal



National Hurricane Center (NCEP/NWS/NOAA)



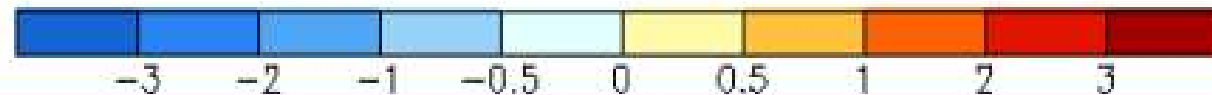
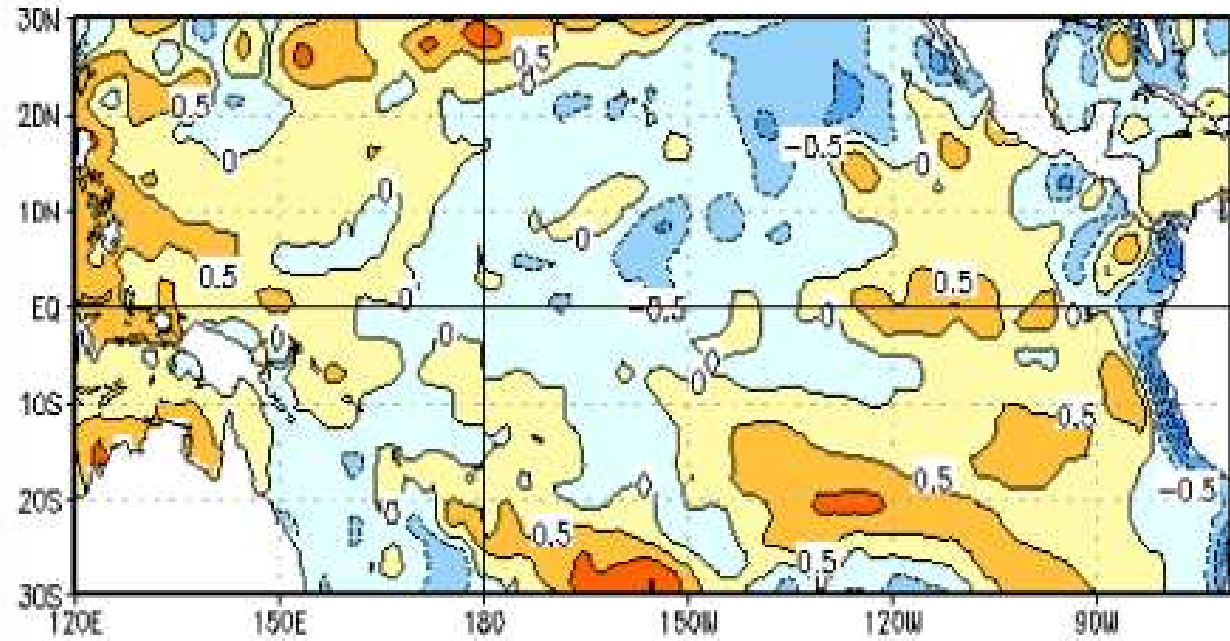
ENSO neutral past winter



SST Departures ($^{\circ}\text{C}$) in the Tropical Pacific During the Last 4 Weeks

During the last 4-weeks, SSTs were near average across much of the equatorial Pacific, except greater than $+0.5^{\circ}\text{C}$ in a small area of the eastern Pacific.

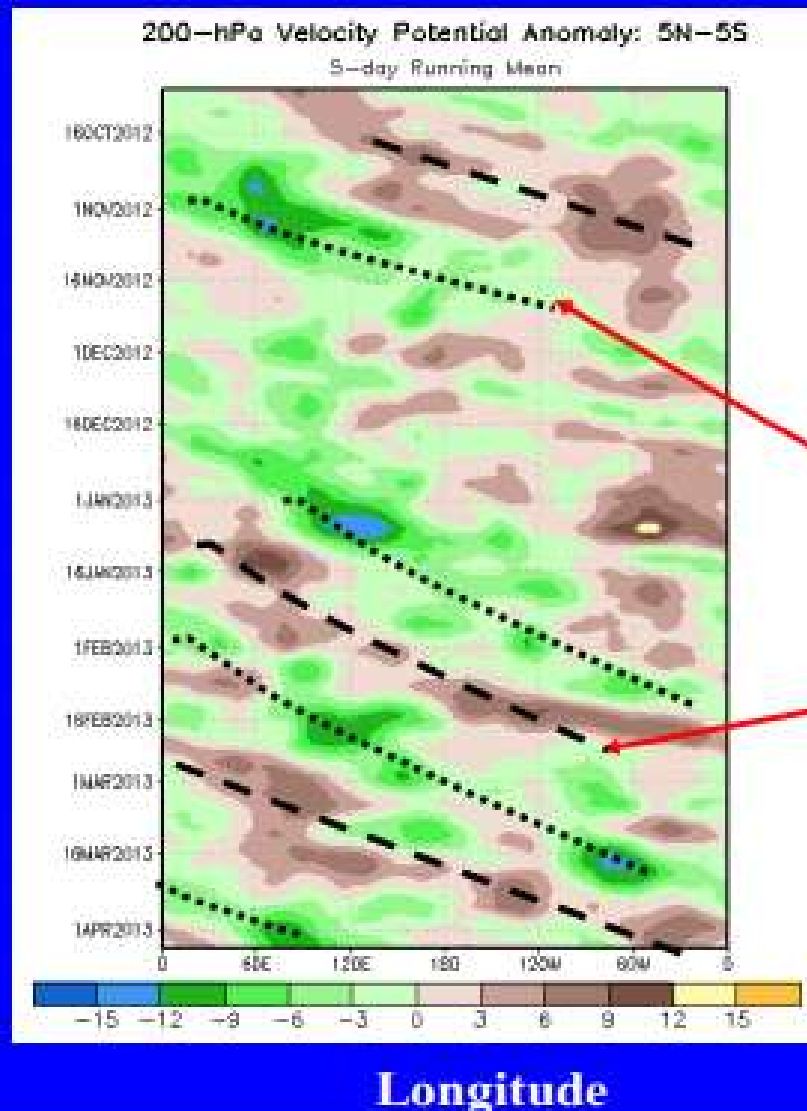
Average SST Anomalies
10 MAR 2013 – 6 APR 2013





200-hPa Velocity Potential Anomalies (5°N-5°S)

Time



Positive anomalies (brown shading) indicate unfavorable conditions for precipitation.

Negative anomalies (green shading) indicate favorable conditions for precipitation.

During mid October through mid November, an MJO was evident.

The Madden Julian Oscillation (MJO) has been active from early January 2013 through the present.

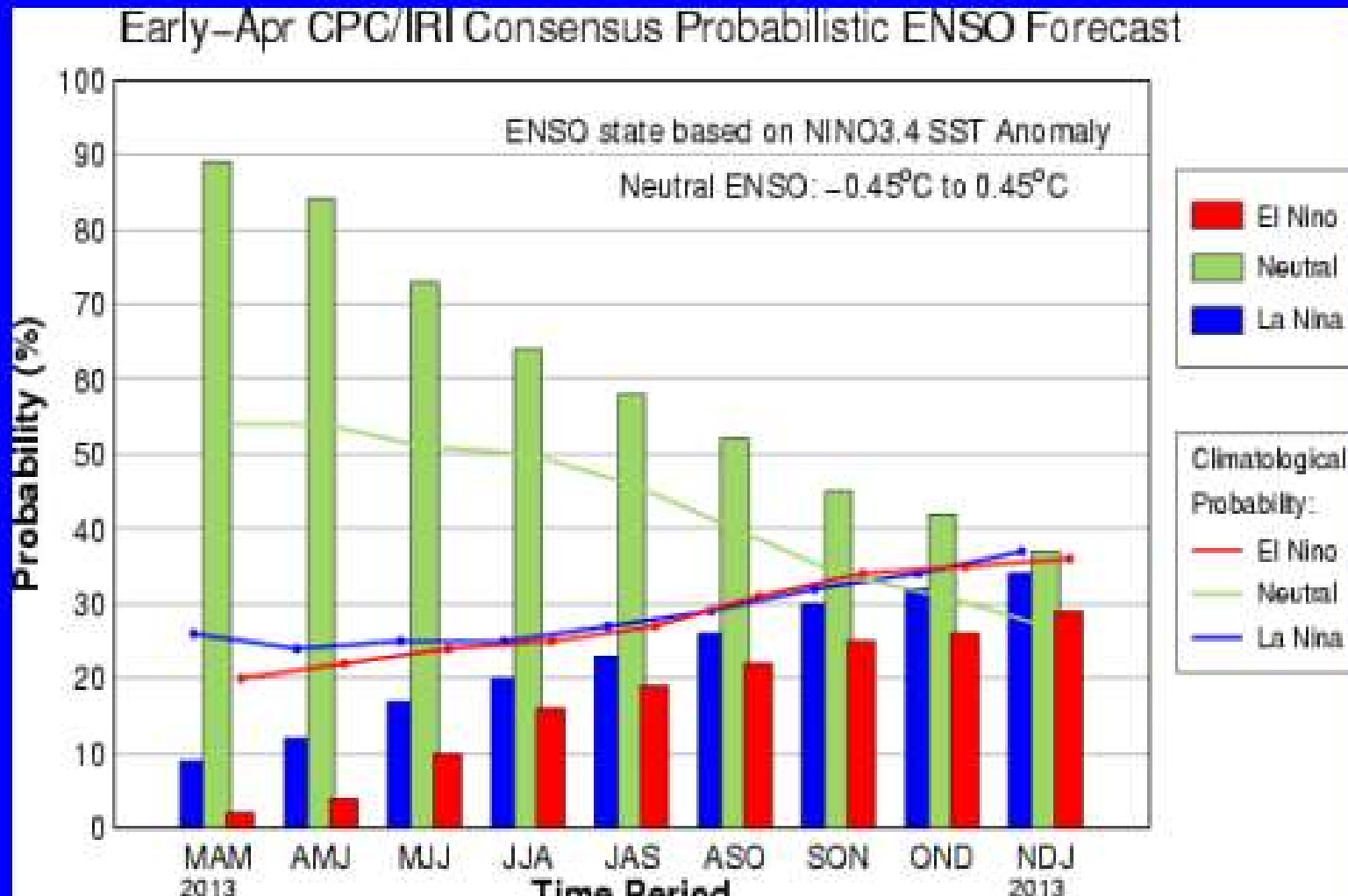
Tropical Activity
past year
can impact ENSO



CPC/IRI Probabilistic ENSO Outlook

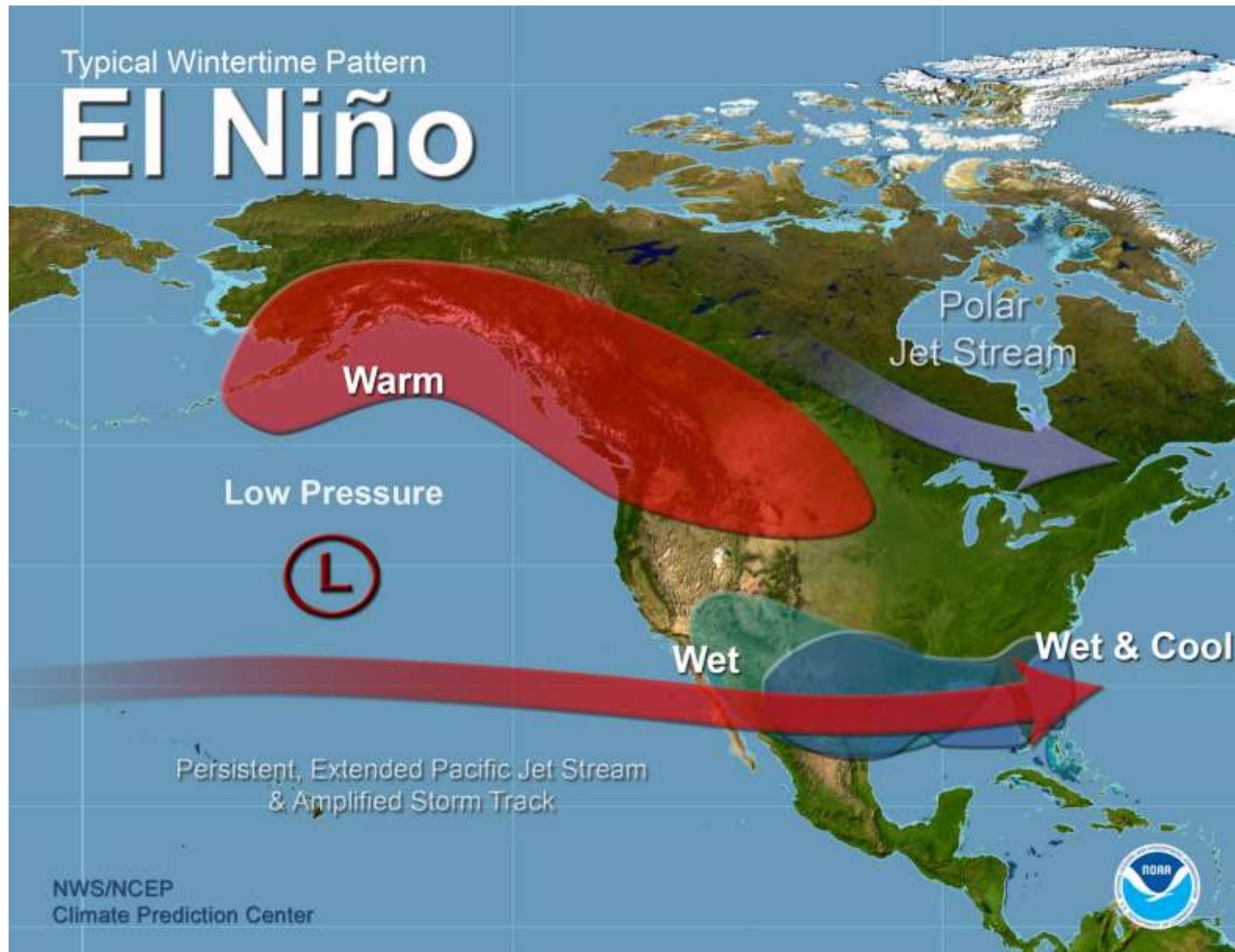
(updated 4 April 2013)

ENSO-neutral is favored into the Northern Hemisphere fall 2013.



El Niño composite (what does it mean)

more of a consolidated elongated Pacific Jet

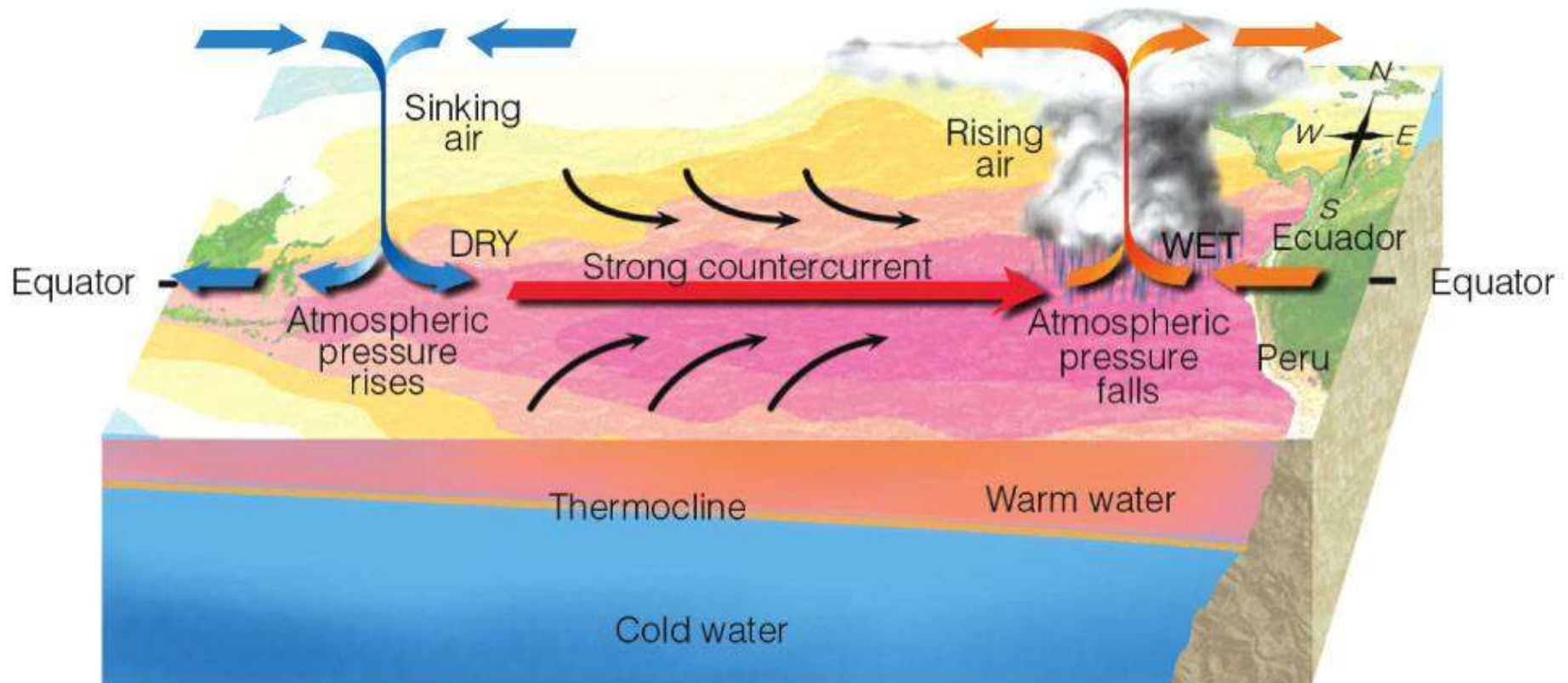


ENSO – La Nina

variable jet stream pattern



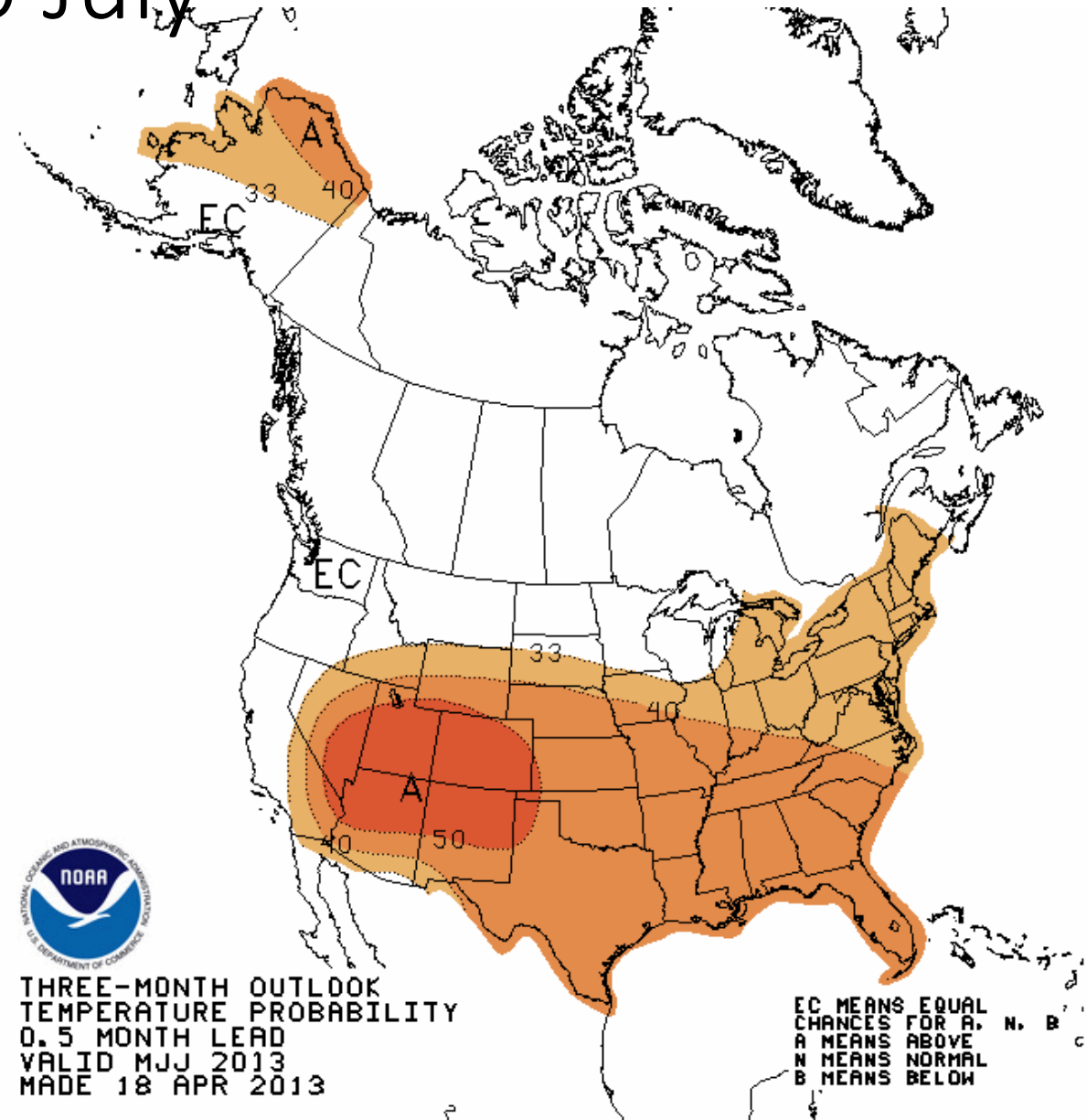
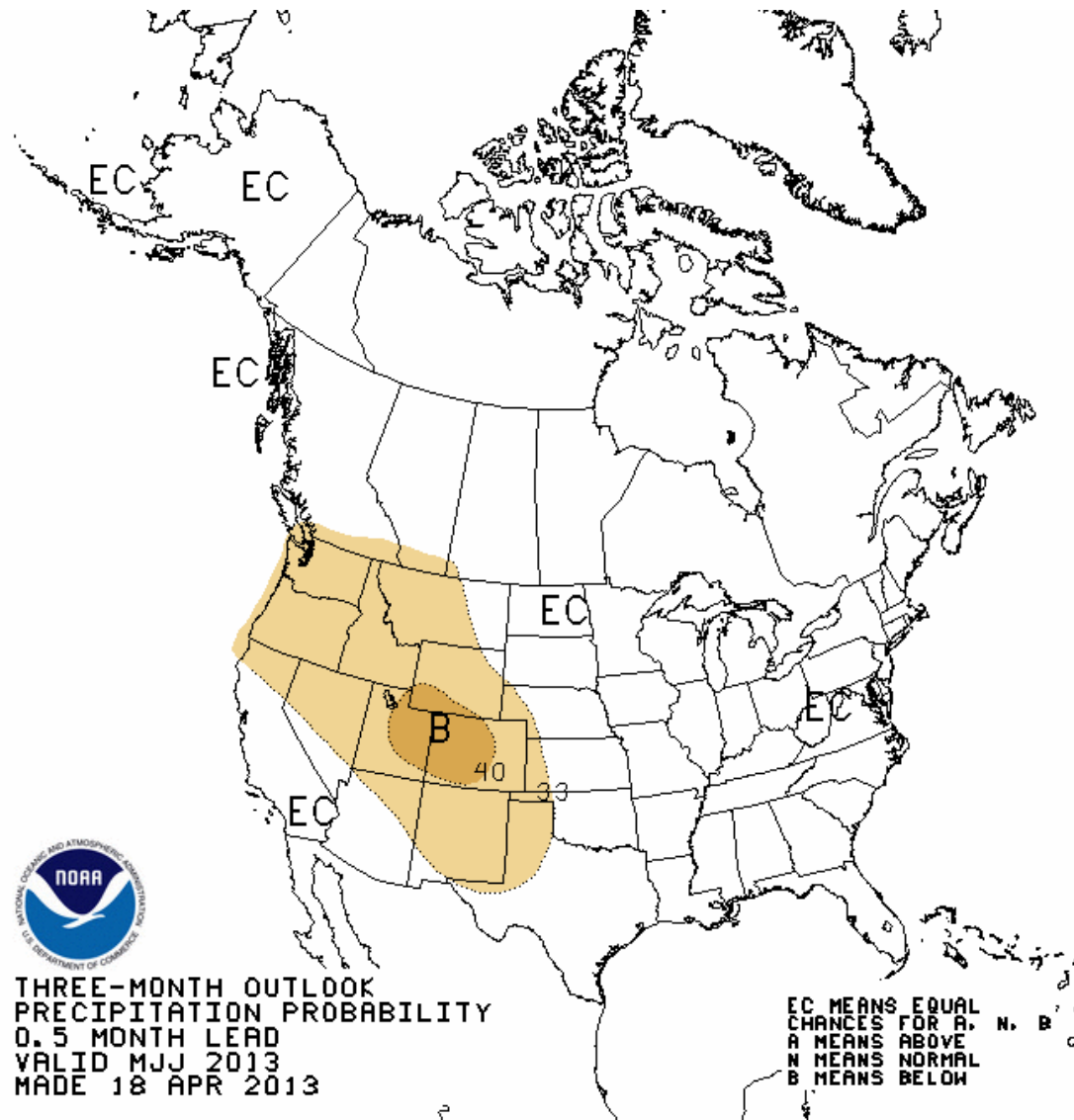
Ocean and Atmosphere interaction



(b) El Niño Conditions

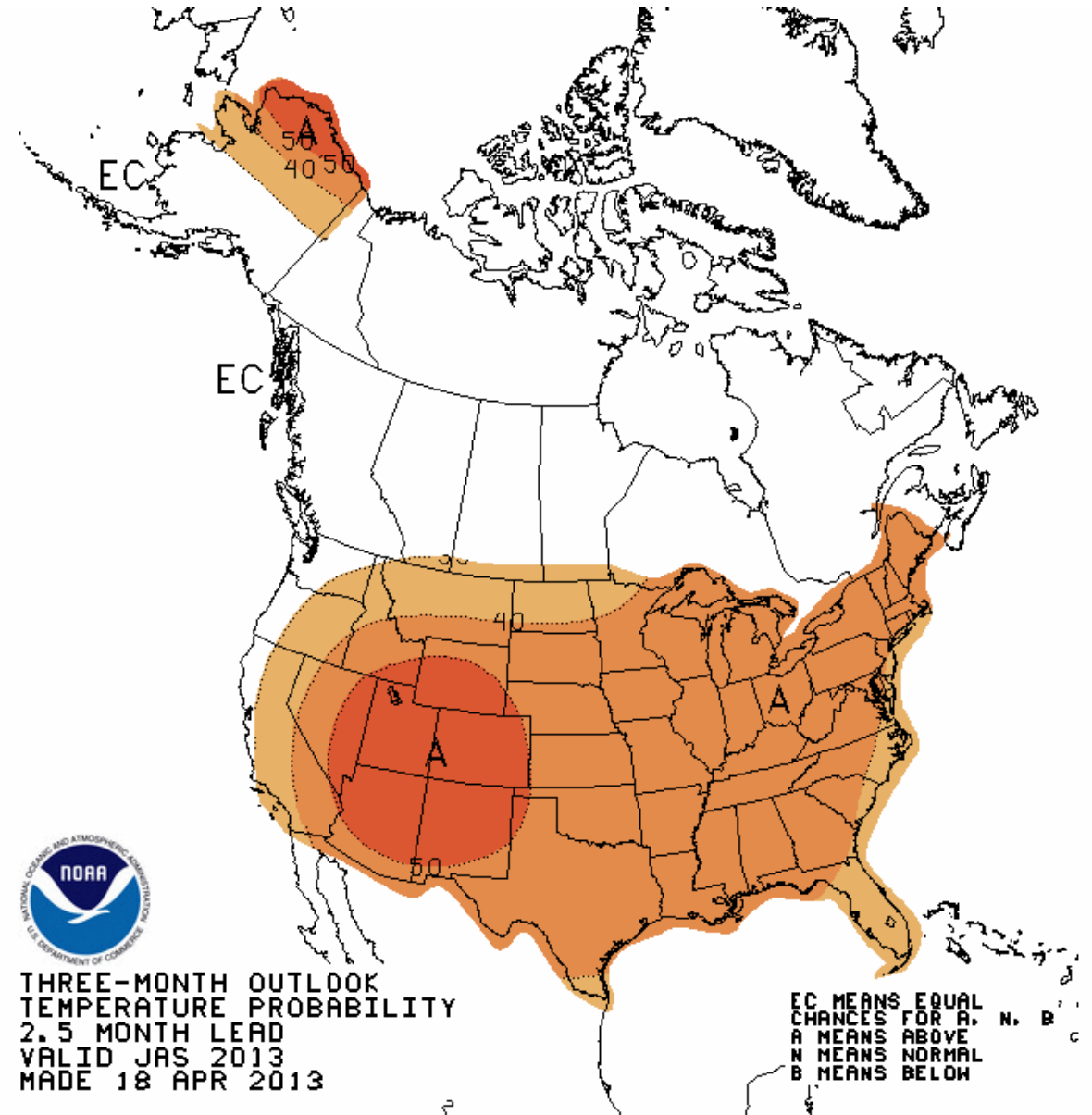
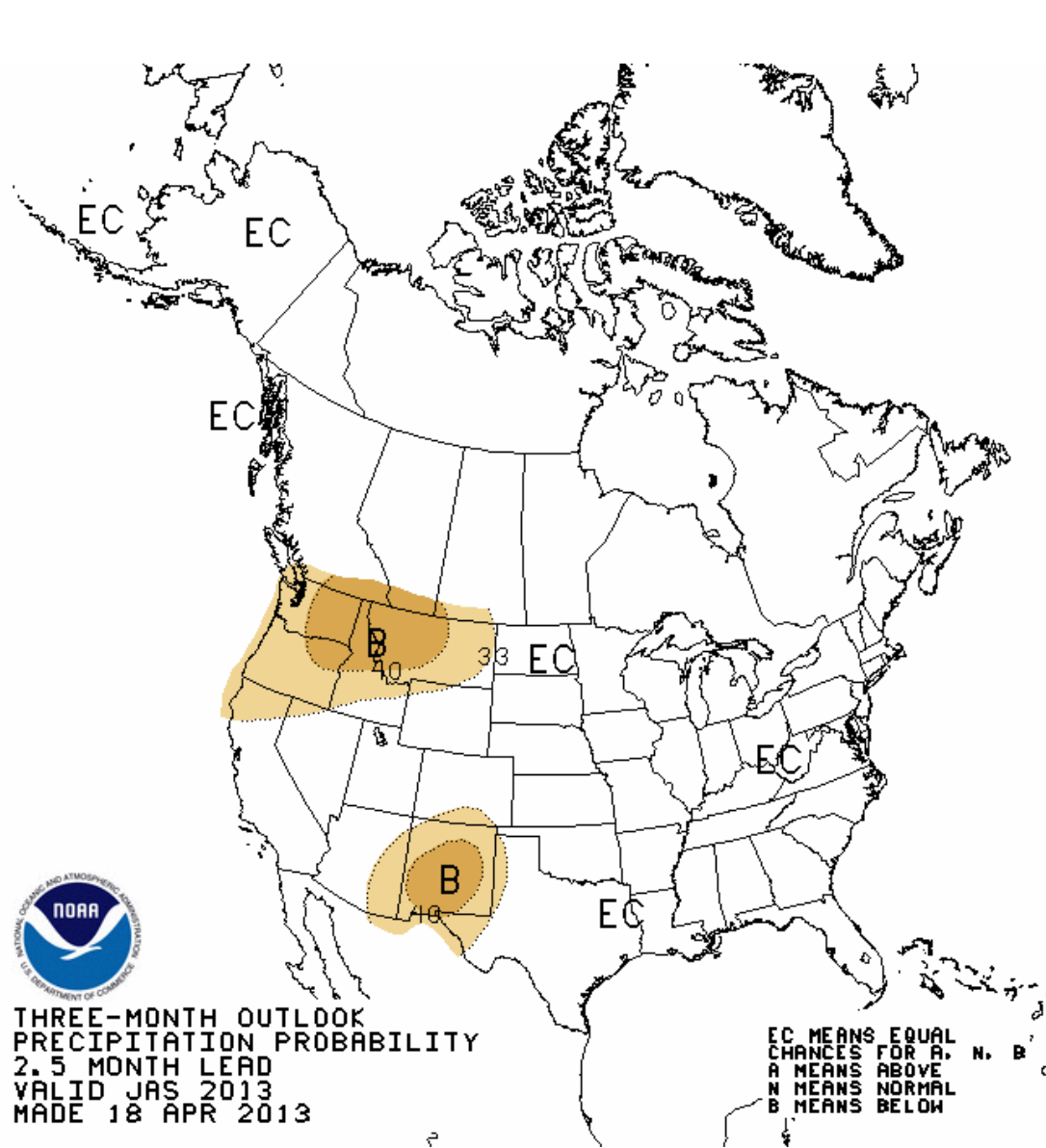
Early Summer Outlook

May to July



Summer outlook

July to September





Links

Alex Tardy

Warning Coordination Meteorologist



Monitor Hazards

<http://www.wrh.noaa.gov/wrh/whv/?wfo=SGX> (all graphical hazards)

<http://preview.weather.gov/edd/>

<http://preview.weather.gov/graphical/> **NEW**

Monitor weather

<http://www.wrh.noaa.gov/sgx/gmap/index.php>

<http://www.weather.gov/forecasts/wfo/sectors/sgx.php> (digital forecast graphics)

visit <http://weather.gov/sandiego>

for WATCHES, ADVISORIES and WARNINGS

