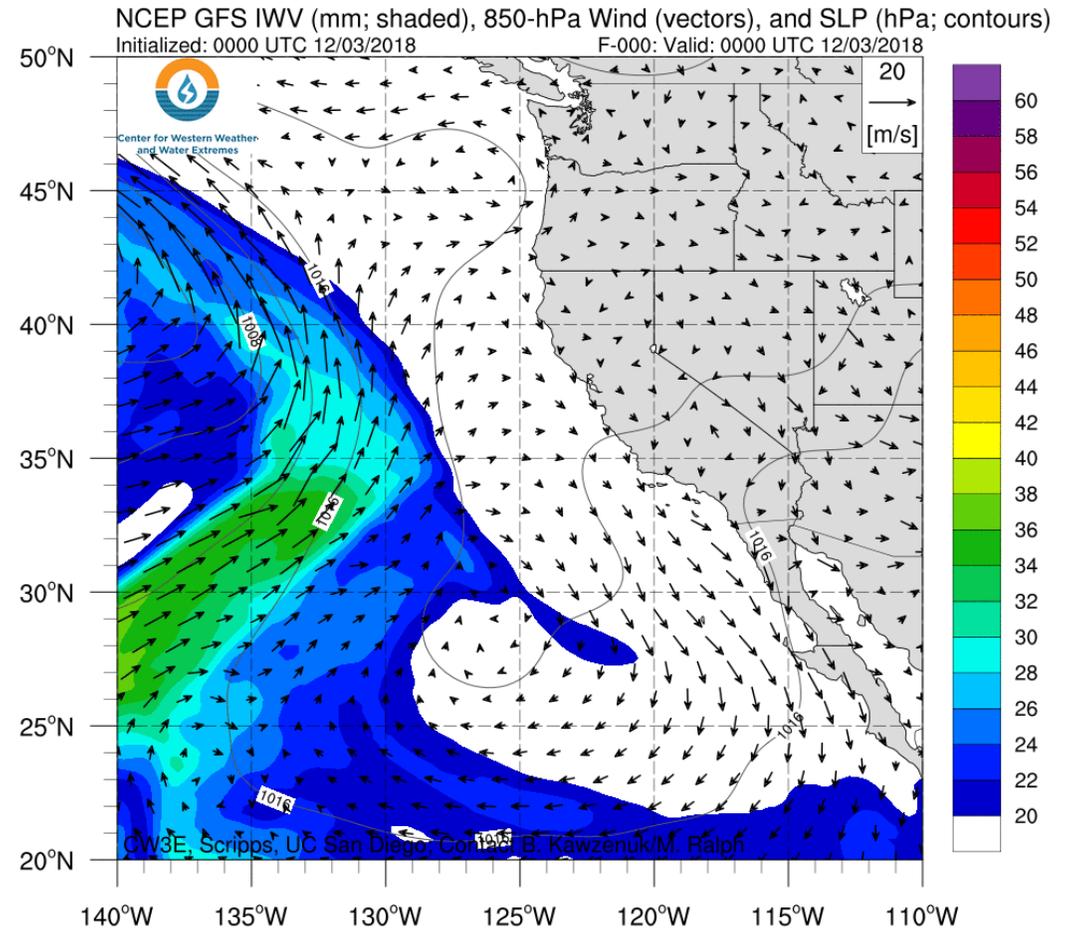
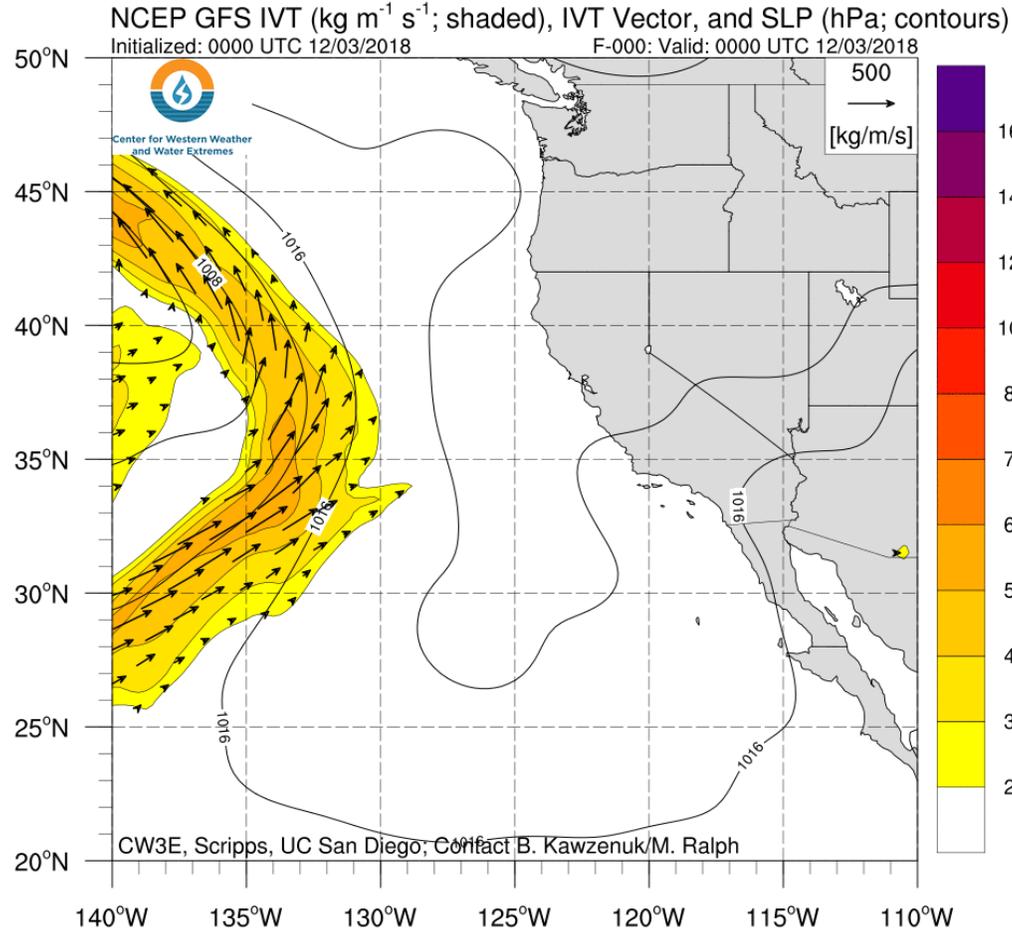


Southern California Storm Summary (Dec. 5-6, 2018)

Maryam A. Lamjiri, Brian Kawzenuk, F. Martin Ralph

CW3E Storm Summary (Dec. 5-6, 2018)



- An AR associated with a cutoff low made landfall near Point Concepcion, CA around 00 UTC 05 December 2018
- The AR propagated southward bringing AR conditions to a larger portion of Coastal Southern California
- The cutoff low also propagated over extreme Southern California, resulting in more precipitation for Los Angeles, Orange, and San Diego Counties on the 7th

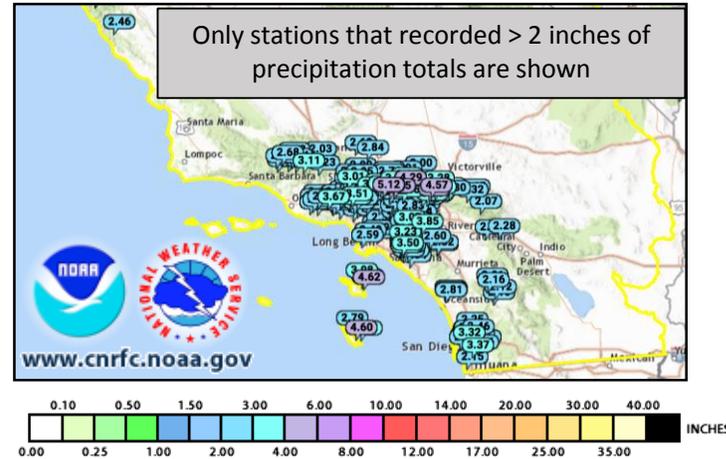
CW3E Storm Summary (Dec. 5-6, 2018)



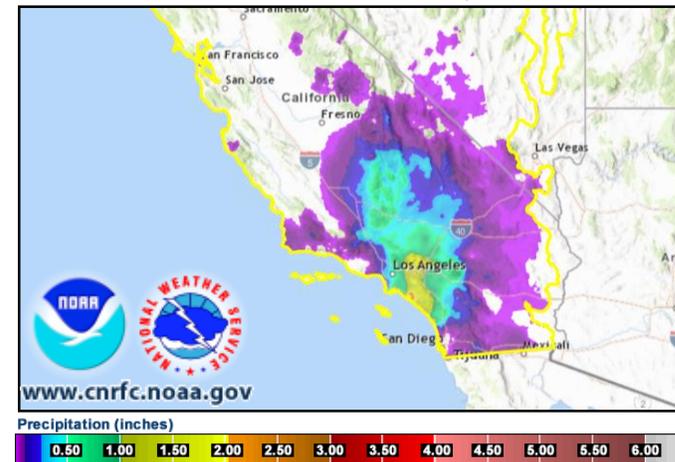
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- Heavy storm swept through Southern California on Dec 5-6 2018, and brought heavy rainfall to many stations in the region.
- Debris flow events were reported during this storm, mostly in regions affected by recent wildfires.
- Many stations in Los Angeles and San Diego counties (along with other counties in the south coast) experienced 3-day precipitation totals larger than 2.5 inches.
- Some coastal regions experienced more than 2 inches of rain during only a 6-hour period.

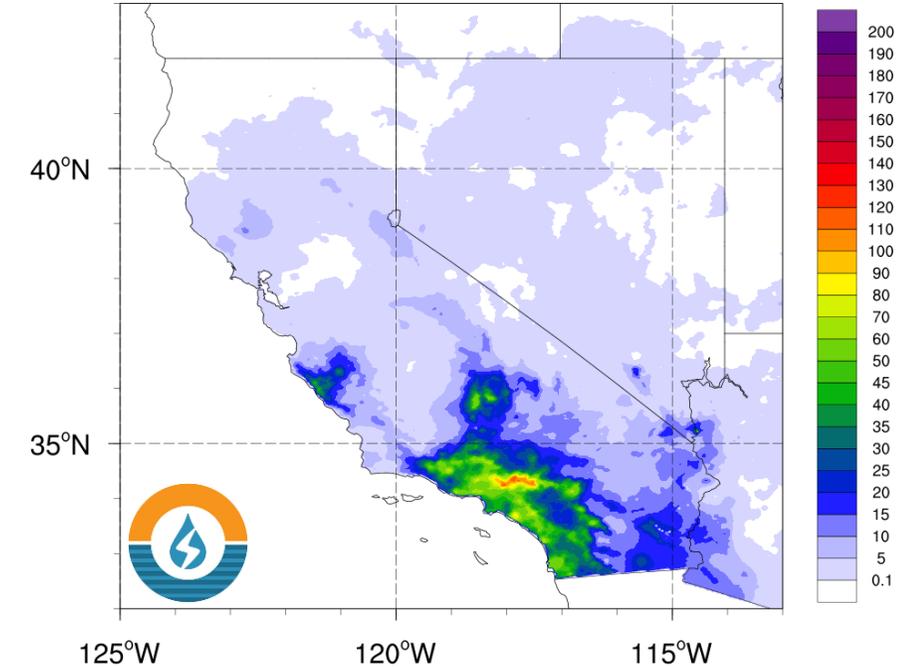
72-h Accumulated Precipitation (inches) ending 2000 UTC Dec 2018



6-h Accumulated Precipitation (inches) Dec 06 1800 UTC to Dec 07 0000 UTC, 2018



NCEP Stage IV 48-h Accumulated Precipitation (mm)
 1200 UTC 05-07 Dec 2018



<http://cw3e.ucsd.edu/precipitation-observations/>

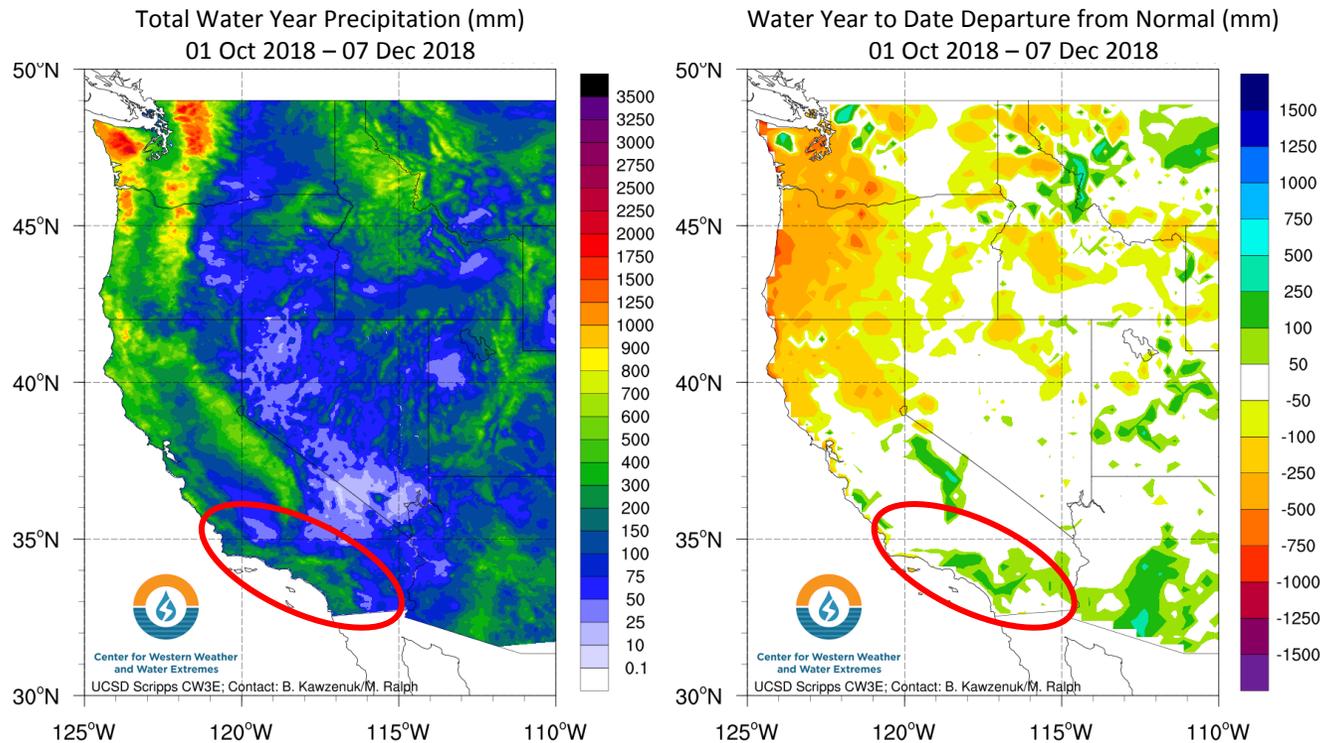
CW3E Storm Summary (Dec. 5-6, 2018)



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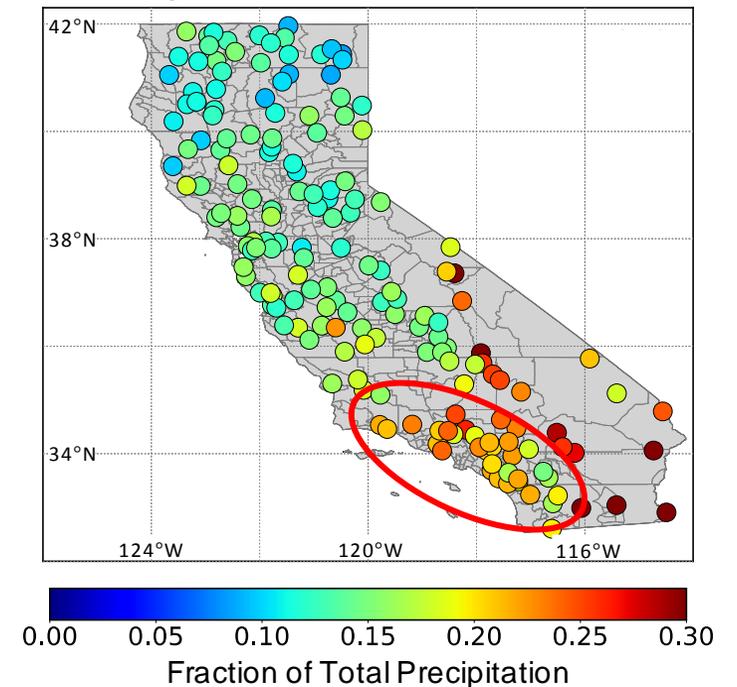
WY2018-to-date compared to normal



<http://cw3e.ucsd.edu/precipitation-observations/>

In the south coast region (enclosed by the red oval in figures above), total precipitation for WY2018-to-date exceeds 200 mm, which is 50-250% above normal in most regions.

Median Fraction of Total Rainfall from the Largest Rainfall Event, 1995-2016



From Lamjiri et al. (2018, SFEWS, in press.)

Based on observations from 1995-2016, in the south coast, generally more than 20% of annual rainfall comes from only one big storm.

CW3E Storm Summary (Dec. 5-6, 2018)



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San Diego County Dec. 6, 2018

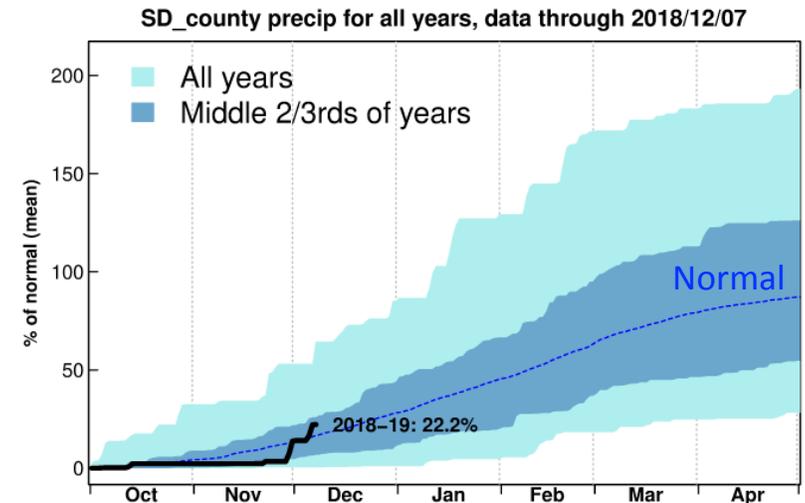
% of normal accumulated WY2018-to-date precipitation total (first column) and 1-day, 2-day, and 3-day changes (columns 2-4)

Current:	22.2%	1-day Δ:	0.12%	2-day Δ:	5.60%	3-day Δ:	8.12%

	(1999/12/07)						
Rec_low:	0.4%	50-ptile:	0.41%	50-ptile:	0.69%	50-ptile:	0.92%
Typ_low:	6.9%	90-ptile:	3.51%	90-ptile:	5.28%	90-ptile:	6.56%
Mean:	16.5%	95-ptile:	5.44%	95-ptile:	8.17%	95-ptile:	9.95%
Typ_high:	25.8%	99-ptile:	9.92%	99-ptile:	14.73%	99-ptile:	19.84%
Rec_high:	64.4%	Record:	26.79%	Record:	33.23%	Record:	40.17%
	(1966/12/07)		(1965/11/23)		(1965/11/23)		(1966/12/07)

<http://cw3e.ucsd.edu/precipitation-observations/>

<http://cirrus.ucsd.edu/~pierce/sdprecip/>



CNAP
California-Nevada Climate Applications Program
A NOAA RISA team



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- Precipitation total in San Diego county to date has reached 22.2% of a normal WY.
- The recent event raised the to-date precipitation total above the to-date normal (thick black line has reached above dashed blue line).
- 1-day, 2-day, and 3-day precipitation accumulations ending in Dec 6 2018 are among 95-percentile, 90-percentile, and 90-percentiles, respectively.

CW3E Storm Summary (Dec. 5-6, 2018)



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Greater Los Angeles Region Dec. 6, 2018

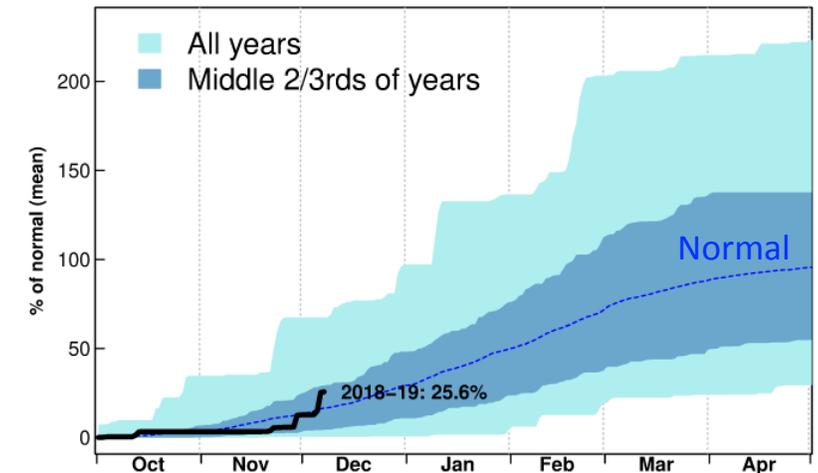
% of normal accumulated WY2018-to-date precipitation total (first column) and 1-day, 2-day, and 3-day changes (columns 2-4)

Current: 25.2%	1-day Δ: 10.27%	2-day Δ: 12.38%	3-day Δ: 12.44%
-----	-----	-----	-----
(2017/12/06)			
Rec_low: 0.4%	50-ptile: 0.23%	50-ptile: 0.37%	50-ptile: 0.49%
Typ_low: 4.2%	90-ptile: 3.77%	90-ptile: 5.64%	90-ptile: 6.95%
Mean: 16.1%	95-ptile: 5.98%	95-ptile: 9.39%	95-ptile: 11.48%
Typ_high: 28.9%	99-ptile: 10.62%	99-ptile: 17.91%	99-ptile: 21.23%
Rec_high: 67.4%	Record: 22.75%	Record: 30.36%	Record: 37.03%
(1965/12/06)	(1970/11/29)	(2005/01/10)	(2005/01/10)

<http://cw3e.ucsd.edu/precipitation-observations/>

<http://cirrus.ucsd.edu/~pierce/sdprecip/>

LA_basin precip for all years, data through 2018/12/07



- Precipitation total in greater Los Angeles Region to date has reached 25.2% of a normal WY.
- The recent event raised the to-date precipitation total above the to-date normal (thick black line has reached above dashed blue line).
- 1-day, 2-day, and 3-day precipitation accumulations ending in Dec 6 2018 are close to 99-percentile, 95-percentile, and 95-percentiles, respectively.

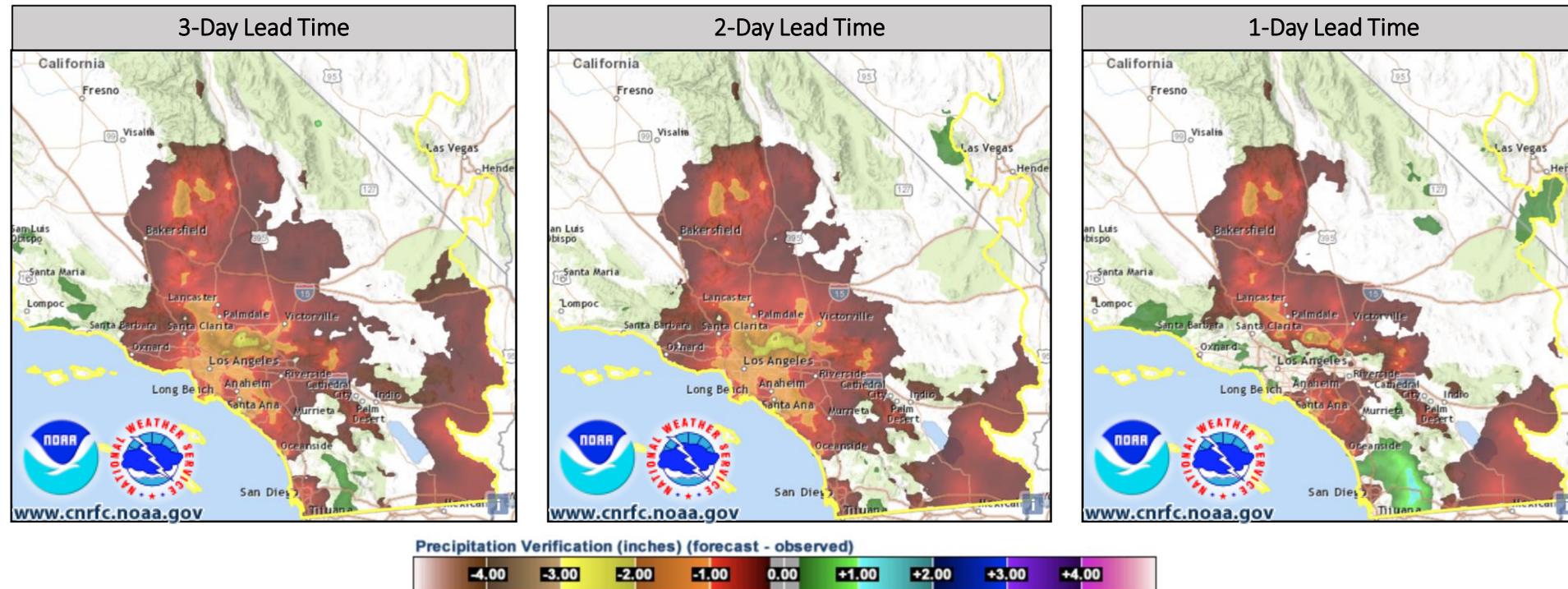
CW3E Storm Summary (Dec. 5-6, 2018)



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24-h QPF Verification ending at 1200 UTC Dec 7, 2018



3-Day, 2-Day, and 1-Day 24-h precipitation forecasts valid at 1200 UTC Dec 7 underestimated precipitation total in most regions along the south coast, especially in Los Angeles. 1-Day forecasts overestimated precipitation total in San Diego by about 1 inch.