

With Steve LaNore, CBM
January 2016

Mammoth Storm Paralyzes East Coast, “Multi-Billion Dollar Losses”

Over 50 million people were holed up in their homes the weekend of Jan 23-24 thanks to “The Blizzard of 2016”, a storm that racked up New York City’s second greatest snowfall on record, and spanned a huge area from Tennessee to Massachusetts.

Winds howled at 30-40 mph over a wide area inland, and up to 55 mph along the coast from North Carolina to Massachusetts. Snow fell to the tune of three inches per hour creating whiteout conditions. Drifts completely concealed vehicles, leaving only vague humps in the white.

Some snowfall totals:

- Washington D.C. Reagan International - 17.8" >>>Tied for 4th most snow in a storm<<<
- Washington D.C. Dulles Airport- 29.3" >>>2nd highest on record<<<
- Baltimore/Washington Int'l - 29.2"
- New York City: 26.8" >>>2nd highest total dating back to 1869!<<<
- Philadelphia: 22.4"
- Eastern Kentucky: 8-12"
- Boston...not so much...8"
- Highest total: Shepherdstown, West Virginia... 40.5"

Reinsurance broker Aon Benfield told Reuters that this will be a “multi-billion dollar” economic loss, but it’s too soon to calculate insured **property** losses. The total will probably be a few billion. Some structures collapsed from the weight of snow on rooftops, such as this guitar store near Baltimore:



Image from WJZ-TV Baltimore storm coverage

Compare this scale of damage to Hurricane Sandy, a storm which racked up some \$50 billion in damage in October of 2012. Some of the worst damage this go-round was due to coastal flooding in New Jersey, but this was also fairly minor in dollars compared to the ravages of “Sandy”.

The human toll was far higher at 48 persons. These included many killed in traffic accidents and some who had heart attacks while shoveling snow, including a 44-year old Washington D.C. police officer. His wife said “he died in seconds” after an hour of strenuous shoveling. That’s far too much time at one stretch. How tragic!



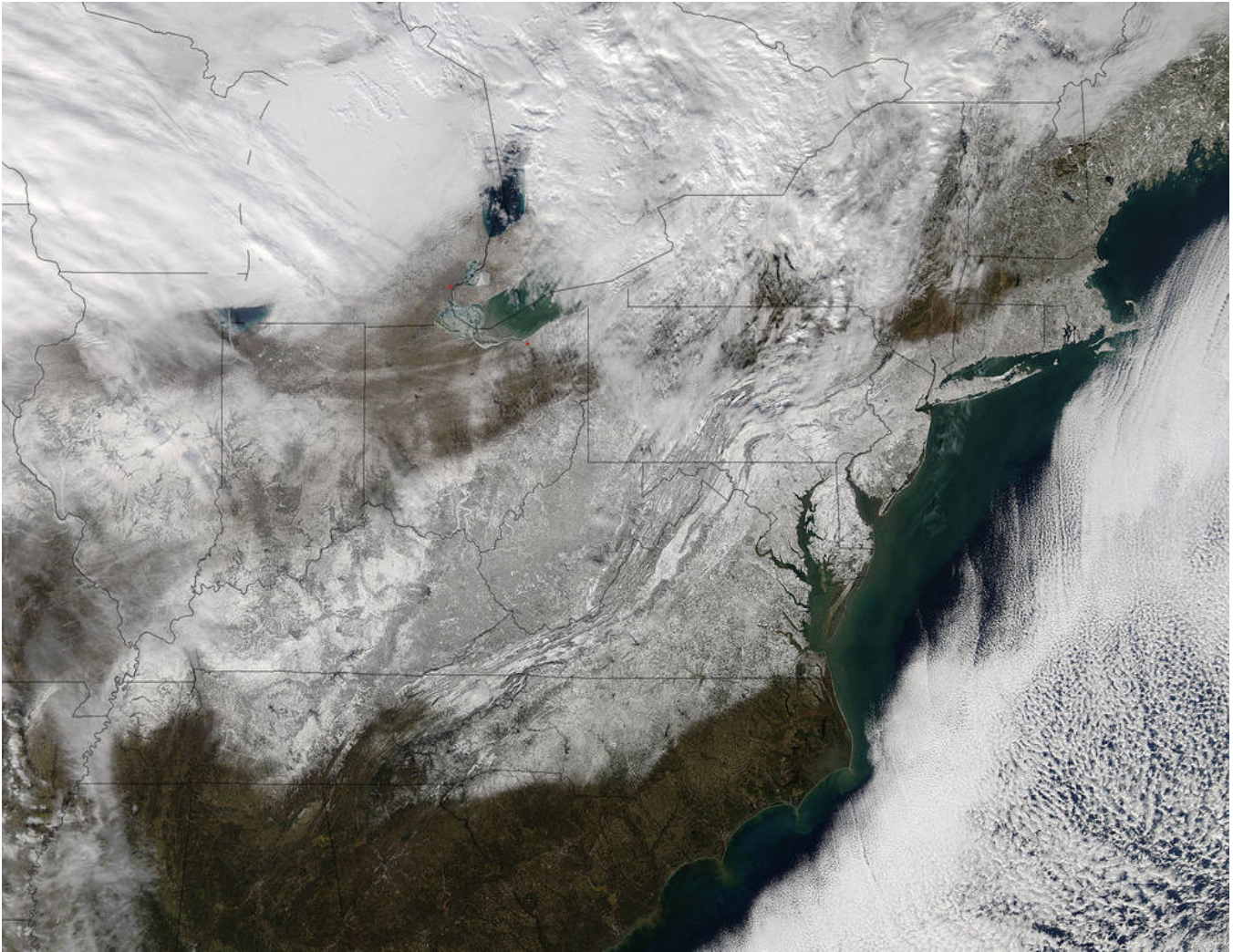
Neptune, New Jersey, a fitting name for the frigid world seen in this picture / George Kourounis



An atypical view of the nation's capital / CBS News



New York City literally encased in snow / CNN image



This image from the MODIS satellite shows a huge blanket of snow on the ground from Tennessee to South Carolina and northward all the way to Boston. Notice the sharp cut-off of the snow zone north of New York City. The white areas over northern New York State are clouds, not snow. NOAA image

SPECIAL REPORT: Super-Shoddy Construction Exposed by Texas Tornadoes

It's scary what engineers found...along the paths of two north Texas tornadoes...in the days after Christmas.

Tim Marshall is a top forensic engineer and a widely respected severe weather meteorologist; he inspected the damage along with a National Weather Service survey team from two tornadoes, one an EF4, (initial report in last month's edition) that clawed through Dallas and Ellis Counties, Texas on Dec 26, 2015.

His findings revealed shocking examples of poor construction from an elementary school to residential homes. The Dallas Morning News covered the story and said this about the school, "Had students been inside when the storm hit, they clearly could have been injured".

Marshall estimated the winds in the tornado striking the school near Red Oak, TX at only 90 mph; the building was designed to sustain little damage at that speed, but the very poor construction quality likely led to sections of it simply falling to pieces.

The shoddy workmanship consisted of walls not properly attached to the foundations, making it **much** easier for even a weak tornado to cause severe building damage. Marshall said the walls were “just falling down like a house of cards”. He noted, “There was no connection [between] walls, there was no connection at the roof.....that’s not going to cut it in my book, and it won’t cut it in any [building] code I know”.

The substandard work wasn’t limited to the school, either. In every surveyed residential neighborhood, Marshall found major shortcomings that made buildings less safe and more likely to fail in even low-end twisters; definitely not up to code. We’re talking different contractors, different types of homes, and potential storm death-traps.

Laws have been beefed up in some parts of the country such as Florida, and more recently Joplin, Missouri and Moore, Oklahoma (after catastrophic tornadoes in both locations) to make buildings less likely to succumb to lower-end tornado/hurricane winds. While it’s prohibitively expensive to build homes to withstand EF5 or even EF4 tornadoes, structures able to endure mid-range EF2 winds (125 mph) greatly limit the damage they receive, and how much debris they throw off. This is a big factor because the debris created by one structure is carried forward, adding additional damage projectiles for those downwind. This was clearly indicated from engineering studies after the 2011 Joplin catastrophe that killed 158 people and left \$2.9B in damage.

Tornado winds vary widely within the funnel; for instance the EF4 (166 to 200 mph) wind in the Garland twister covered less than 20% of the damage path, with about half of the damage path in the 110 mph range or less. This means residential structures can survive most tornadoes if codes are improved...and enforced.

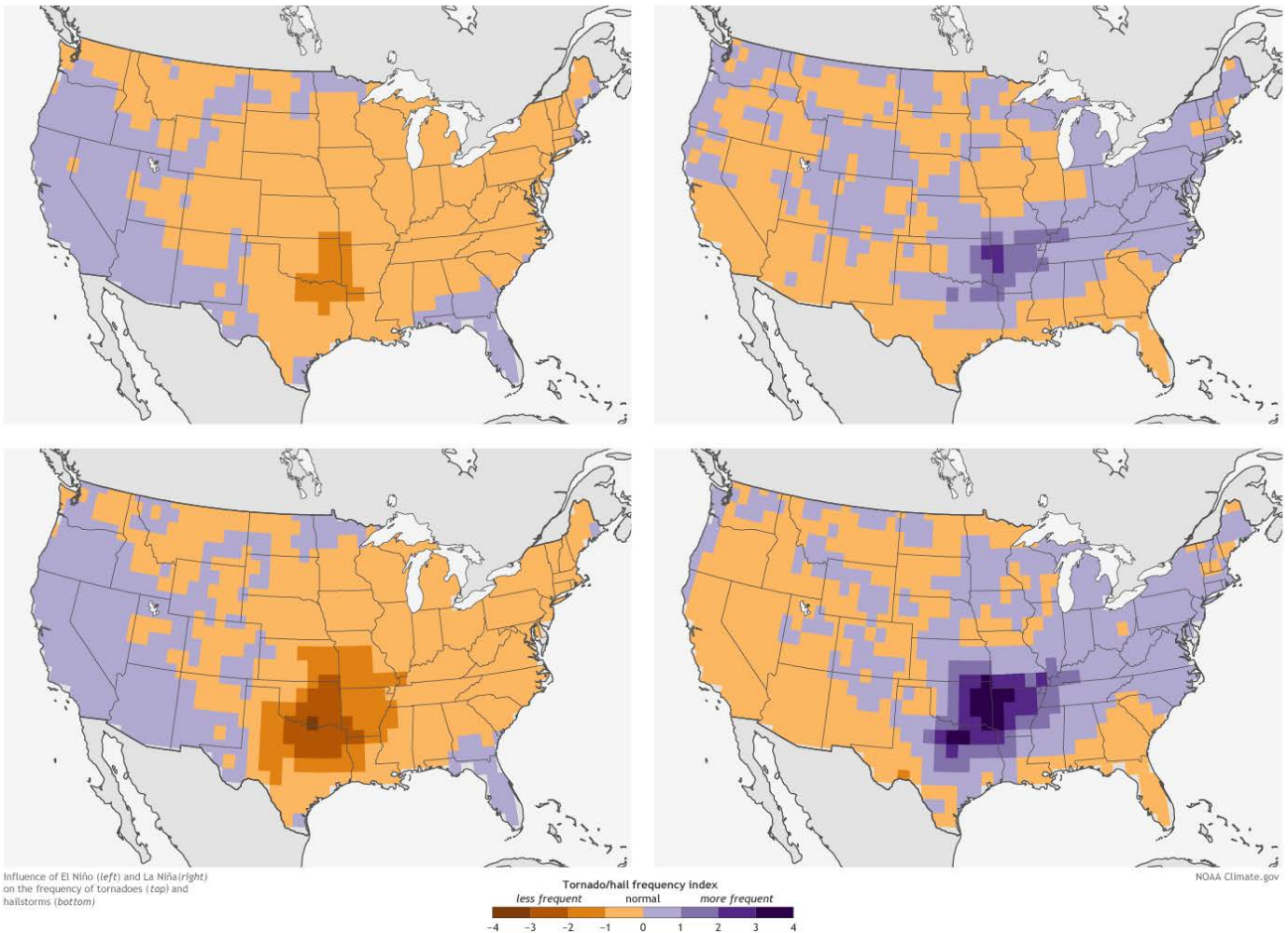
From a work standpoint, stronger building codes reduce losses while not affecting the need for adjusters in the storm aftermath, so it’s a win-win. In human terms it improves the chances of surviving the twister considerably. Of course, a safe room or certified shelter is always the best place to hide during any tornado threat, but some simply do not have this option.

In this author’s opinion, lawsuits over the substandard construction exposed by the Dallas County tornadoes could put a much needed black eye on a system that accepts poor craftsmanship in exchange for quick construction, often with improperly trained labor forces. Send them to the showers!

Newer Research Shows Reverse Link between El Nino and Spring Tornadoes

The third strongest El Nino on record has begun a very gradual decline, but it’s still in the “strong” category as of late January. It will likely weaken significantly by late March but still be an influence through the end of April, says the Climate Prediction Center models. The El Nino extending into the first half of tornado season lowers the threat of major tornado outbreaks through April.

A research paper published in *Nature Geoscience* (2015) shows a link between El Nino springs having fewer tornadoes and hail storms, whereas La Nina springs, such as 2011, 2008 and 1974, have a greater number of severe storms/tornadoes:



In the images above, the two left-hand maps show a less frequent occurrence of tornadoes and hail during El Niño spring seasons; the right-hand maps show a greater number of tornadoes and hail events during La Niña spring periods.

The study explained this: *“ENSO affects tornado and hailstorm frequency by influencing the position of the jet stream over North America. El Niño weakens the surface winds that carry warm, moist air from the Gulf of Mexico over Texas and neighboring states. La Niña, in contrast, concentrates hot, humid air over the region. The heat and humidity over the southern Plains states sets up a strong north-south temperature gradient, which in turn favors storm formation.”*

For instance, 2011, a strong La Niña year, had numerous major tornado outbreaks, the greatest number of April tornadoes ever, tens of billions in tornado damage, and the highest tornado death toll in 80 years. Another “strong La Niña” year, 2008, saw the greatest number of tornadoes ever observed in the U.S. at nearly 1900. Average is about 1250.

Of course, that doesn’t mean there will be no devastating tornadoes in El Niño springs, just that they are much less frequent. This new data goes somewhat contrary to previous thinking since El Niño winters have more tornadoes than average as we saw in December 2015, with two major outbreaks in just four days. However, the mechanism shifts in the spring as the Northern Hemisphere gets warmer. A noteworthy fact: four of the past five strong El Niño’s were immediately followed by a moderate to strong La Niña. This has large implications for hurricane season 2016....but more on that a bit later in the year!

Severe Weather Impacts for Spring 2016

The Climate Prediction Center (CPC) outlook shows the El Nino nearly gone by May, the peak month for tornadoes in the southern and central U.S. So, while March and April may see severe storm activity below normal, the El Nino effect should be largely gone by the fifth month of the year. May is normally the busiest tornado month (followed by June), so expect an average to slightly above average number of tornadoes in May and June if the weakening El Nino projections pan out.

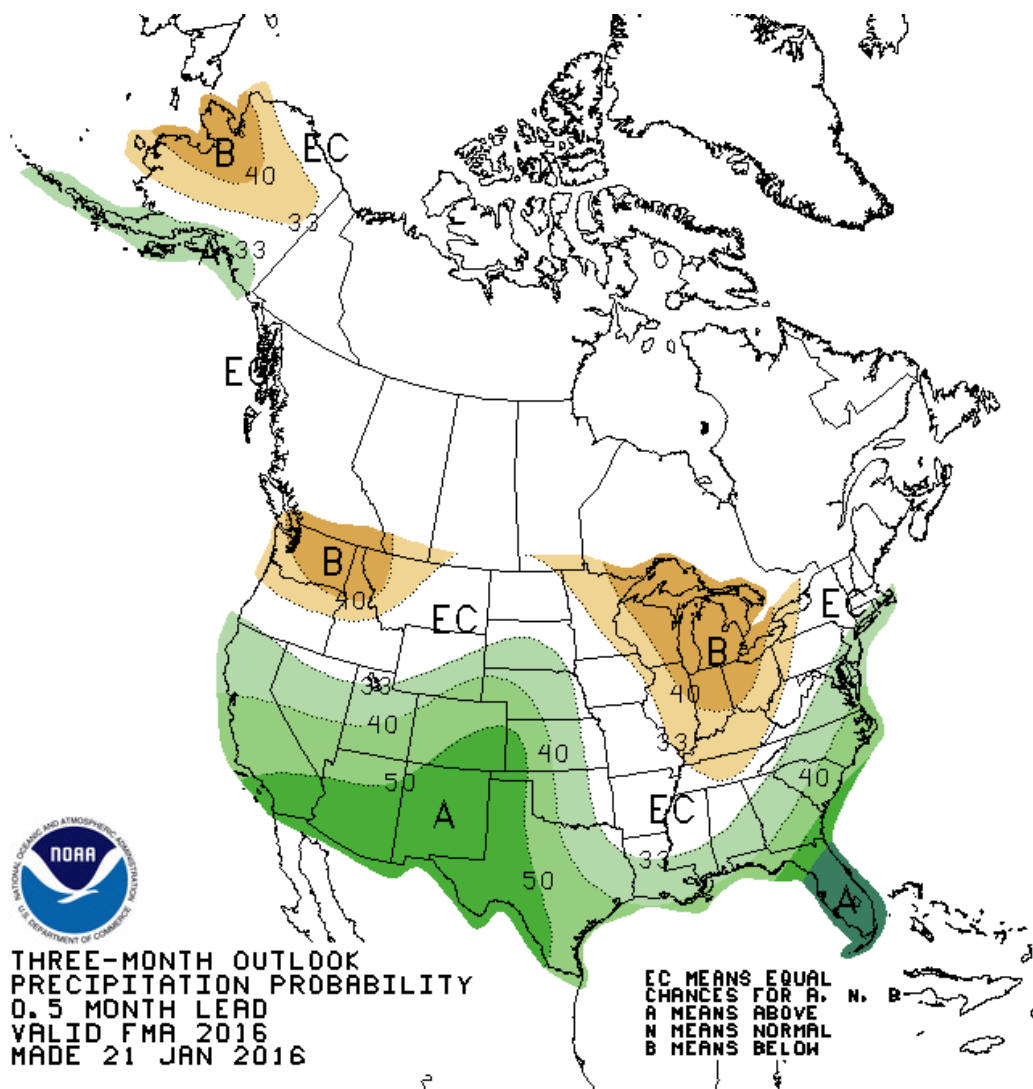
Effects during the summer are less conclusive, the study says, but it's reasonable to say that southern Canada's June-August tornado peak could be enhanced by the development of at least a weak La Nina by mid-summer. It's not a strong signal in the models right now, but it bears watching.

Feb-April 2016 Outlook

Look for more of the same: drier and warmer than average from eastern Canada southward through the Great Lakes; wet across the southern U.S. especially in the second half of February and through March. Floods may yet strike California, with an above average threat through late March. The state has been lucky so far, considering how strong this El Nino has been.

California's "luck" has been due to a sudden atmospheric shift in the second week of January, not consistent with a classic, strong-and-wet El Nino. There's been only one moderate flood event for the Los Angeles area; in fact, an above-average snowpack has been a beneficial aspect of El Nino for the parched state.

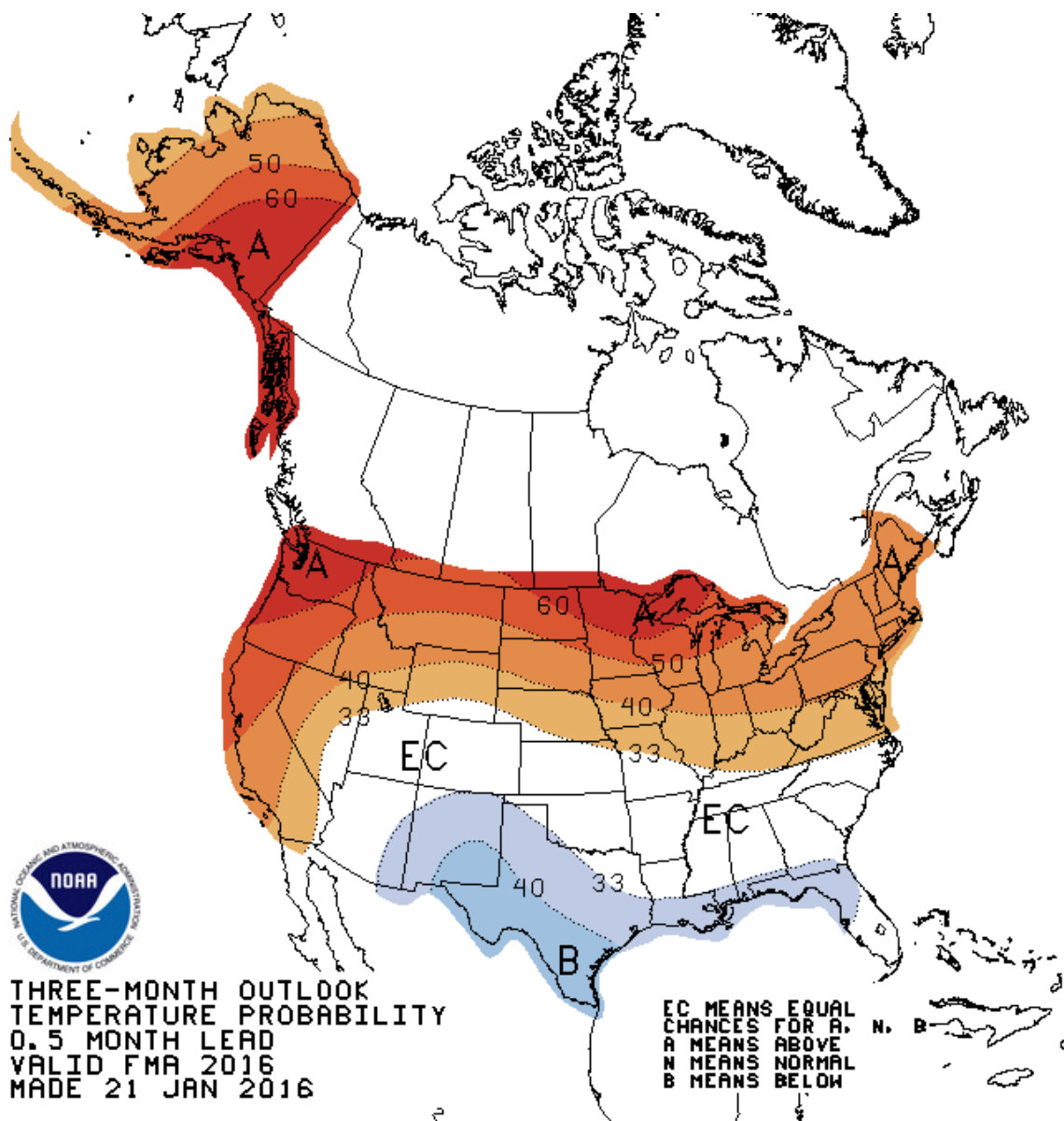
Statistically, California is far from out of the woods for a major flood event. It's one of the traditional areas that continue to be in line for more above-average rainfall (scroll to next page):



The highest odds for heavy rain continue to be along the Gulf coast westward to California; this forecast is through April.

Another east coast snowstorm of high intensity is a distinct possibility as the storm track and El Nino contribution helped spawn the Blizzard of 2016, and these persistent factors could certainly spin up another one (hopefully not as strong, but hefty).

This influence lasts through March.



A warm and dry north, due to sparse rain and snow with a cool and wet south are in the Feb to April outlook.

Potential Hot Spots for 2016:

Another major east coast winter storm

Fairly quiet early spring, above average late spring activity

Hurricane season: very active Aug-Oct if La Nina develops as expected

California: Floods increase late Feb-March

Drought: Fires could be bad in the west late summer if expected La Nina materializes

Safe to say the transition from El Nino to La Nina in 2016 offers an especially interesting year of change; stay tuned.

Steve LaNore, Certified Broadcast Meteorologist

Author of *"Twister Tales: Unraveling Tornado Myths"* and

"Weather Wits and Science Snickers"

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