

Special Report: Wildfire Season Takes Off

The National Interagency Fire Center's outlook was for a bad fire season in the west, especially California, and that prediction is coming to pass. Large sections of Weed, California lie as a smoking ruin after a fierce wildfire burned through the city of 3,000 persons on September 15. Driven by 40 mph winds and fueled by dead brush, flames consumed over 100 homes and businesses with about 100 more suffering varying degrees of damage. Among total losses are two churches and a community center, with the elementary and high schools also taking damage.

The source of the fire is uncertain, a \$10,000 reward is being offered by CalFire for information leading to discovery of the cause. Losses in the town run into the tens of millions.



Devastation from the Sep. 15 wildfire that raced through Weed, California / Wayne Freedman

A second wildfire exploded onto the scene farther south on September 13. It grew rapidly as it consumed the extremely dry brush and forest, plagued by years of drought, in the foothills of the Sierra Nevada some 60 miles east of Sacramento. Known as the King Fire, a man suspected of intentionally starting this monstrous blaze was arrested on September 17. The fire more than tripled in size from 23,000 to 73,000 acres on September 18, and as of press time was at 96,000 acres in size, about 150 square miles. Some 8,000 firefighters are tackling it using equipment that includes 558 fire engines and 22 helicopters. The price tag to battle this inferno is already over \$50 million.

Thousands of residents were evacuated initially, but there is some good news: crews are getting the upper hand on the fire and the total number of structures in the risk zone has been greatly reduced: from 12,000 to only 300. A combination of rain and diligent firefighting efforts may have just averted a terrible disaster, but the fire is far from completely contained.



Smoke from the King fire is easily spotted on this September 18 visible satellite image (center). The dark spot to its right is Lake Tahoe / NOAA

Meteorological Mainstream: A Sleeper of a Season

In my August newsletter I shared the updated NOAA outlook that projected a 70% chance of a quieter-than-average Atlantic Basin hurricane season, and this has certainly come to pass. As of press time on September 26 there have only been five named storms at a point in a “normal” season when we would be on storm #8. It’s a VERY quiet season, and moving into October we would expect no more than one storm to impact the United States on average, so there’s still a threat for a few more weeks. Almost all October hurricanes that impact the U.S. begin in the Caribbean or the Gulf of Mexico, because storms forming farther east over the central Atlantic usually get picked by the jet stream before they make it westward to the coast.

Persistent dry air over the tropics along with strong wind shear and lower-than-average available sea energy are contributing to the unusually tranquil times.

As for the late-season outlook, Texas and Louisiana are rarely affected by tropical systems after October 1 as steering level winds push these systems farther east. The primary threat area for October lies along the eastern and central Gulf from Mississippi to Florida, as well as along the east coast from the Carolinas southward. Odds are lower than average based on the overall pattern.

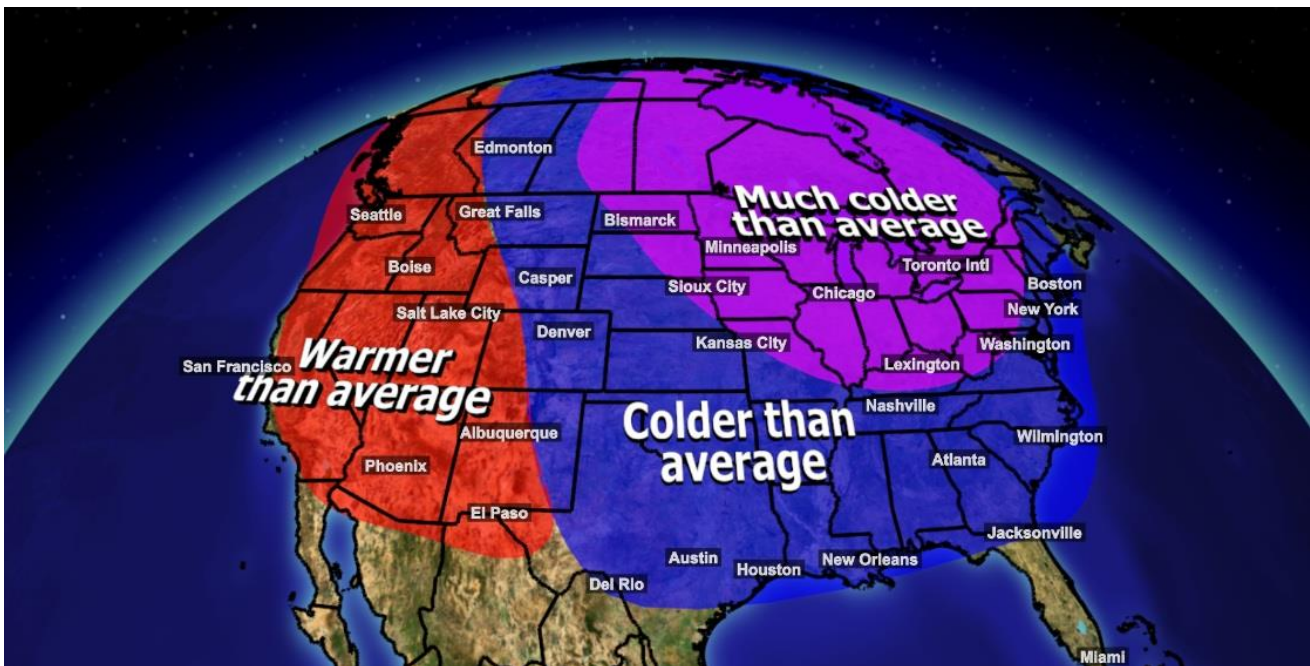
Heads Up: Secondary Severe Season is On!

The jet stream has begun its annual migration south and this signals the beginning of the “secondary tornado season”. Although it pales in comparison to the March-June primary season, significant outbreaks can occur, especially across the southern U.S. in October and November. A Canadian tornado this late in the year is very rare but not unheard of; an EF1 on 9 November 2005 did damage some buildings including a school in Hamilton, Ontario.

Winter: Last Year's Pattern

Last winter, a persistent trough in the eastern U.S. and Canada kept conditions much colder than normal from Toronto to Chicago and southward into the Tennessee Valley. Frequent blasts of polar/arctic air made for the highest ice content on the Great Lakes in decades and set all kinds of low- temperature records.

One factor responsible for last winter's deep freeze is the Arctic Oscillation (AO). The pattern is defined by pressure differences between the far northern latitudes, above the Arctic Circle, and those in the middle latitudes in places like Cincinnati. The AO is "negative" when pressures in the polar areas are higher than those across the middle of the U.S. Higher pressures give frigid air masses a shove southward like we saw with frequent cold outbreaks seen last winter, and also tend to form colder air masses:



A negative AO helped to make last winter a big-time icebox in eastern Canada and the Great Lakes/eastern U.S.

On the flipside, if the AO is positive with lower pressure up north, milder winters result as there's less of a push to get arctic air masses moving our way, and less cold air build-up. The polar jet also has a flatter trajectory, further limiting the arctic air's ability to get off of its ice couch and head southward.

This important oscillation is not like El Niño and La Niña, as they can often be foretold many months in advance. The AO cannot be predicted more than a week to ten days out. This means we might get one in any winter, but the effect is less pronounced during an El Niño.

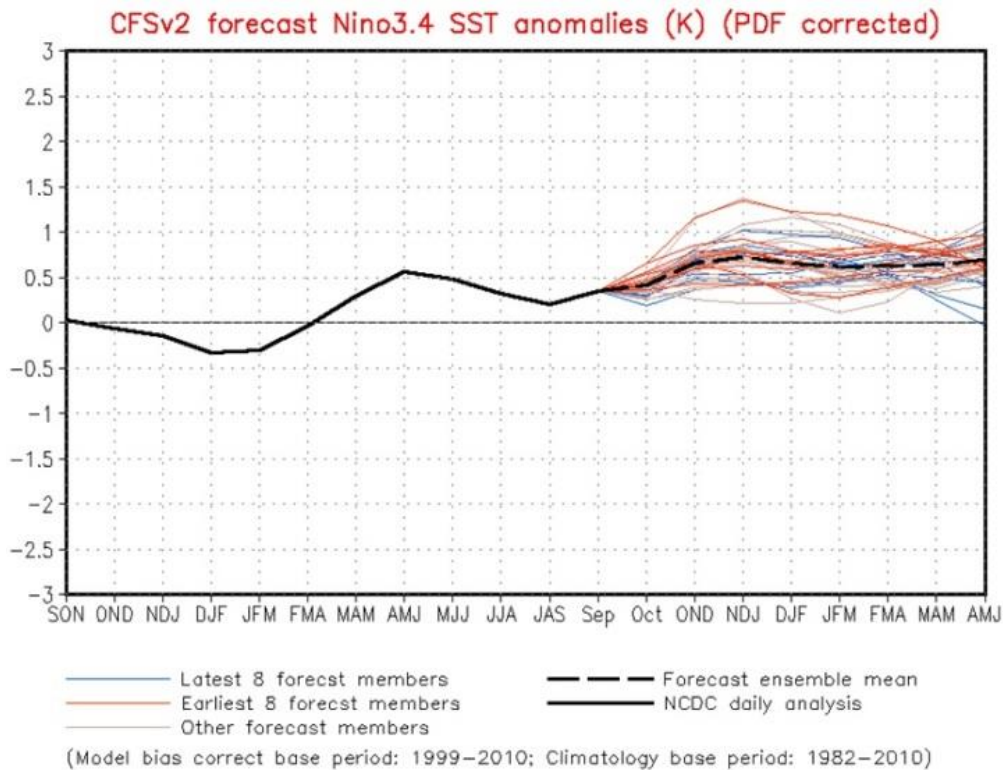
Winter: 2014-2015 Outlook

The driving force for **this** winter will probably be El Nino. Even though it is expected to be in the “weak-to-moderate” category, El Nino promotes shifts in the Polar Jet which should make for a milder winter across the northern portion of the U.S. and southern Canada, a bit colder than average and quite wet in the south. It also tends to dry out areas north of 40 degrees latitude and west of the Mississippi, meaning less snow for the northern plains and the eastern Rockies. The position of the polar jet (top arrows) and the southern branch of the jet (bottom arrows) can make a breeding ground for snow events when they “phase” along the eastern seaboard:



A typical effect of a weak to moderate El Nino: Increased threat of southern ice/snow, California mudslides and east coast snowstorms. Dry and mild in normally frigid places like North Dakota, with less snow than average in the northern Rockies.

Since it's expected to be a weaker event, high-accuracy long range prediction is tougher. However, the output from over 15 different climate models below show similar forecasts for a weak to possibly moderate El Nino this winter (scroll down), so that's a confidence builder.



Climate Prediction Center (CPC)

The **dashed** line on the graphic above represents the most likely path for sea surface temperatures to take, about 0.7C above normal, which is considered to be a weak El Nino. If the anomaly reached 1.0C, then a moderate El Nino would be in progress. Since the top few hundred feet of sea water has been warming in recent weeks, an El Nino developing into the winter is still the most likely result. The CPC offers a 60 to 65 percent chance of a weak to moderate El Nino this winter.

Bust Disclaimer:

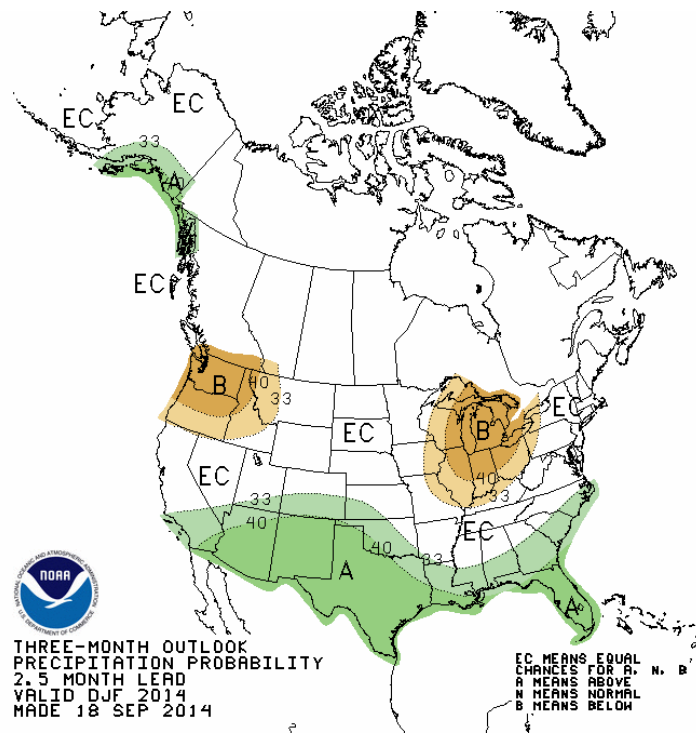
Of course, if El Nino fails to materialize then the mild winter forecast for the northern U.S. and southern Canada, and the wet outlook for the southern/southwestern states would be up for grabs. **However**, an El Nino bust doesn't automatically mean it would be super cold in Minneapolis, snowy in Montreal or bone dry in L.A., it means conditions would probably trend colder in the north and drier in California and the south compared to an El Nino winter.

The latest weekly measurement of the tropical eastern Pacific upper-ocean heat content shows that conditions are warming, consistent with a developing El Nino. It's comforting to forecasters that the "bust" potential is indeed on the lower side.

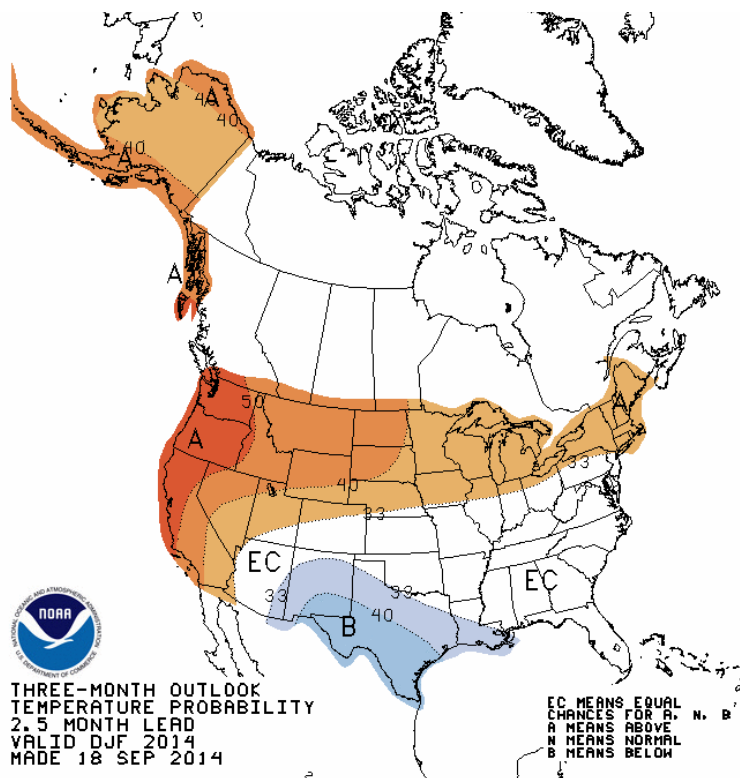
After all, two in three odds of cashing in on a good forecast are a lot better than you will get on anything in Vegas!

Seasonal Outlooks:

The Climate Prediction Center's (CPC) latest outlook is consistent with all available data: a weak to moderate El Niño will take shape into the late fall and early winter. Here are their latest outlooks for December through February:



Precipitation outlook for Dec 2014 to Feb 2015 / Climate Prediction Center (CPC)



Temperature outlook for Dec 2014 to Feb 2015 / Climate Prediction Center (CPC)

Bottom Line: Potential Adjuster Hot-Spots

Putting it all together, here's my best estimate as what to expect during the period December through February:

- Serious mud-slides and flooding are possible in southern California where years of severe drought and wildfires have left lots of grass and brush dead or gone; this vegetation is crucial for keeping soil on hillsides stable.
- Floods farther east would be more of the urban flash-flood situation for cities like San Antonio and Austin. So if El Nino brings above average precipitation to the southwestern/southern U.S. then damage from these events would make for an adjuster hot-spot.
- Ice and snow events will have a higher probability across the south. Ice storms are the worst type of winter event for dollar damages, and there's a significant risk of one or more of these.
- Severe weather events are more likely across the southern U.S. in between cold spells due to a stronger-than-average jet and higher available moisture. An example is the Feb 1998 outbreak of tornadoes in central Florida that killed 42 people; that was during a very strong El Nino, but tornado the potential this winter would still be slightly elevated compared to average.
- Snowstorms from Washington northward into southern Canada are more likely.
- Drought would increase in severity from Washington and Oregon eastward into the northern Rockies, and over the Great Lakes.

Here's hoping you enjoy a great October!

Steve LaNore, Certified Broadcast Meteorologist

Author of *Twister Tales: Unraveling Tornado Myths*, available on Amazon, Kobo and Google Play