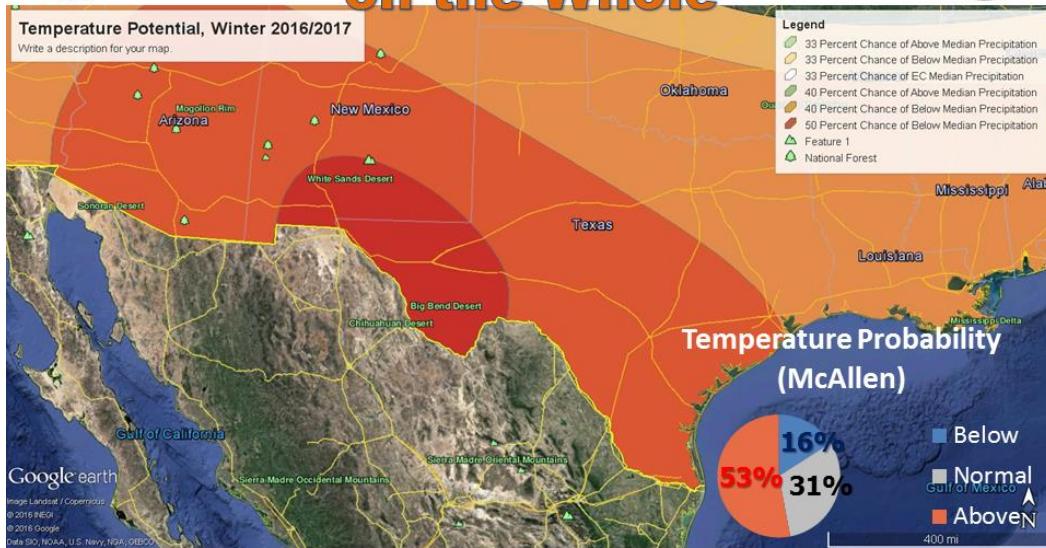


## Winter 2016-17 Outlook



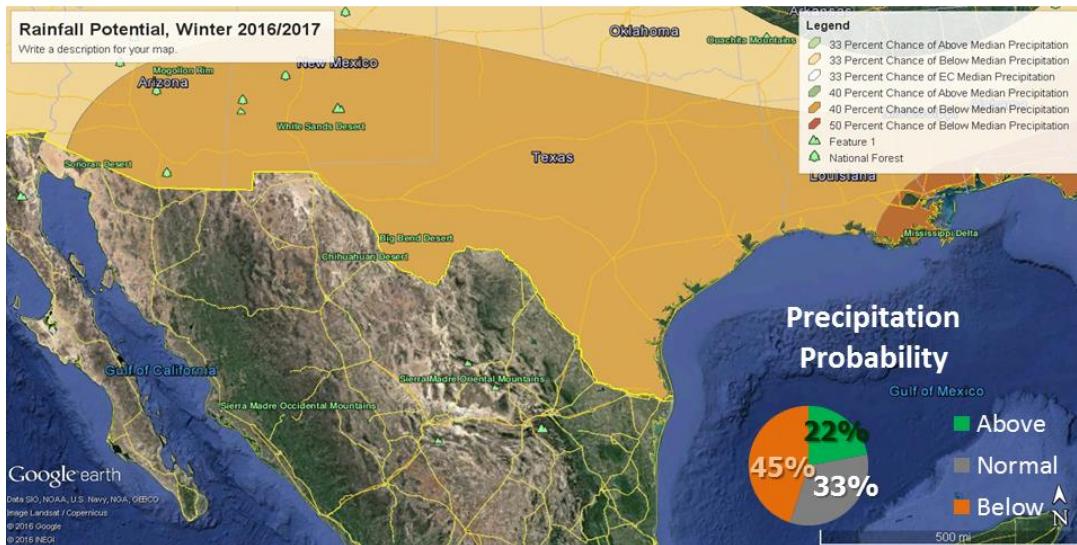
# Warmer than Average, on the Whole



Note: Average Temperature For Period (RGV): Approximately 63°F  
 Daytime: ~73°F, Wake-Up: ~53°F.



# Dry Winter Likely for RGV



Note: Average Precipitation for Period (RGV): **3 inches** along the Rio Grande (Starr, SW Hidalgo); **3.5 to 4 inches** Elsewhere except **4 to 4.5 inches** Along the Coast.

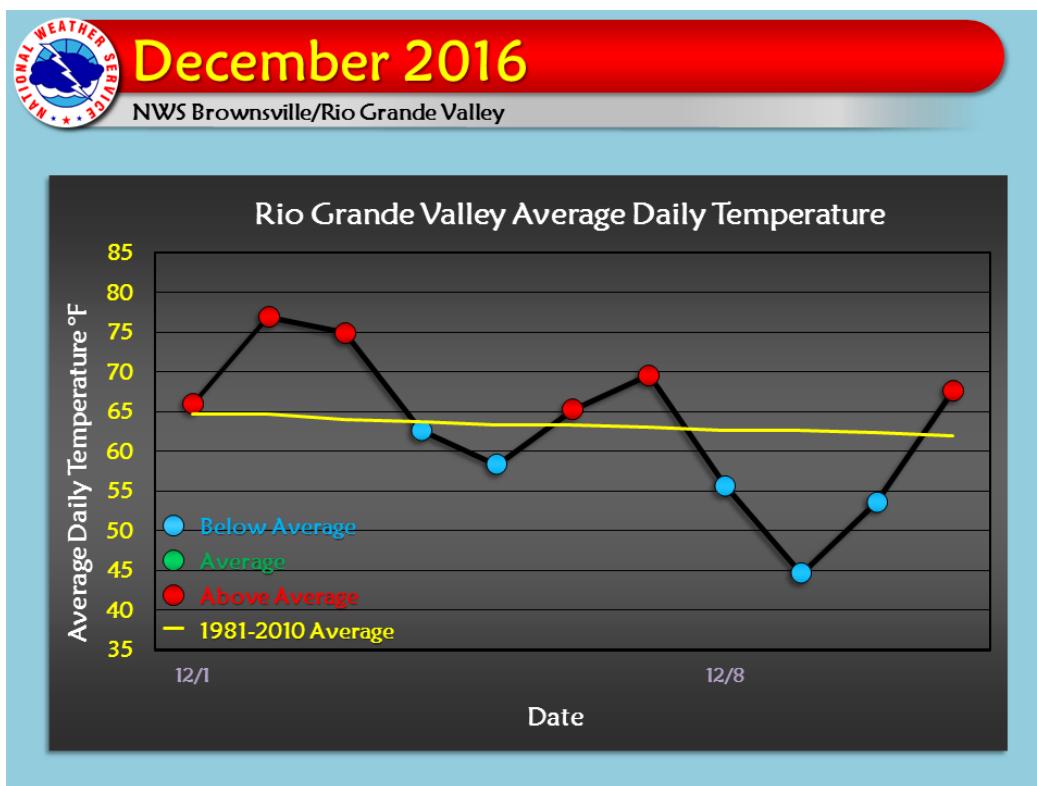
**Warmer and Drier, but Wild Cards in the Deck**  
 “Northerns”, Gray and Blue, Will Keep Winter Clothes in Rotation

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**A Valley-Wide Freeze Can't Be Ruled Out**

## Overview

December began where the hot summer and autumn left off: Unusually hot and largely rain-free. And then? The roller coaster ride began (below). The season's first "gray 'norther" brought daytime temperatures into the 50s for much of the region on December 4<sup>th</sup> – but that was only a preview of things to come. On December 8<sup>th</sup>, the first **true 'norther'** pushed temperatures down into the 40s, "feels like" temperatures into the upper 20s and 30s, and a full-bore Gale to the Lower Texas Gulf waters, replete with 14+ foot seas somewhere in the Beaufort Force 7 or 8 range. Another warm spell would soon push average monthly temperatures back above average by a couple degrees – and then, more big 'norther' appeared to be in the offing.



As mentioned in the [November to January](#) outlook, gray 'norther' were in the cards, at least twice, and they have indeed occurred. This should be an occasional feature into January, and perhaps beyond:

- Two to three more "gray 'norther'" that leave chilly winds and drizzle or light rain in their wake, with day and night temperatures in the 30s, 40s or 50s. .
- A "blue 'norther'" with just enough of a tap from western Canada to bring early morning temperatures to or below freezing, even in the more populated Rio Grande Valley.
- In each case the opportunity would continue into January and perhaps February.

## What to Watch For: Big Picture

Overall, by the end of February and headed into spring 2017, the following situations are expected to predominate:

- Though some rain will fall during the period, it should not be enough to quench the increasingly thirsty soil, especially in an overall warmer than average November to January period. If fronts come through "dry" vs. "wet", - or even drizzly/slate gray vs. truly rainy, the northwest wind and much lower humidity, combined with either Pacific (warm with low humidity) or Canadian (cool with low humidity), drought levels will increase to moderate to severe in most areas.
- We can't rule out another Texas Gulf low (or "Texas Nor'easter"). The first one occurred on Saturday and Sunday, December 3<sup>rd</sup> and 4<sup>th</sup>. The bulk of the heaviest precipitation in that case bypassed the Valley, but did drop between 1.5 and 3 inches across the northern ranchlands, and between 4 and 14

inches from the Coastal Bend through Houston. Just one event farther south could put the Valley in the jackpot – and provide seasonal rainfall (first page) in just a two to three day period.

- Wildfire behavior conditions will need to be monitored. If later winter fronts come through dry, we could see an increase in erratic fire behavior at some point in February.

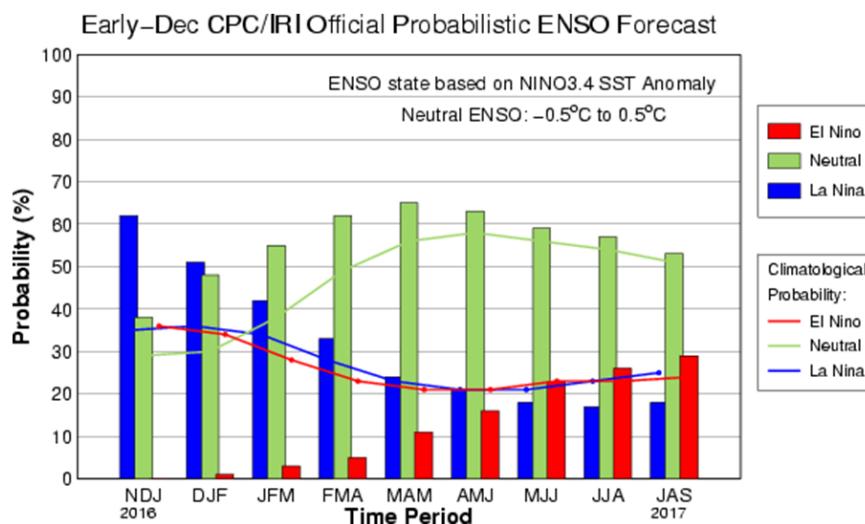
### **Teleconnections: Where Do They Go From Here?**

As you've seen in past summaries, we often take a look at teleconnections – ocean-atmospheric "puzzle pieces" that can combine to determine multi-weekly, monthly, and seasonal general weather outlooks. El Niño/Southern Oscillation (ENSO), the "800 lb. gorilla" in the room, is often cited as a large contributor to seasonal outlooks due to fairly decent correlations on the whole from past seasons. ENSO isn't the only game in town – and as shown during the Winter of 2015/16 (above), other smaller scale teleconnections can throw "monkey wrenches" into the mix. This winter, La Niña – albeit weak – is expected for the winter season before easing out to neutral by the end of it. For this winter, the combination of the weak La Niña with still above average sea surface temperatures in the eastern subtropical Pacific is expected to maintain the upper level ridging along or just west of the coast of Baja California, with a generally west to east flow prevailing across the southwestern states, the northern Gulf coast, and Florida.

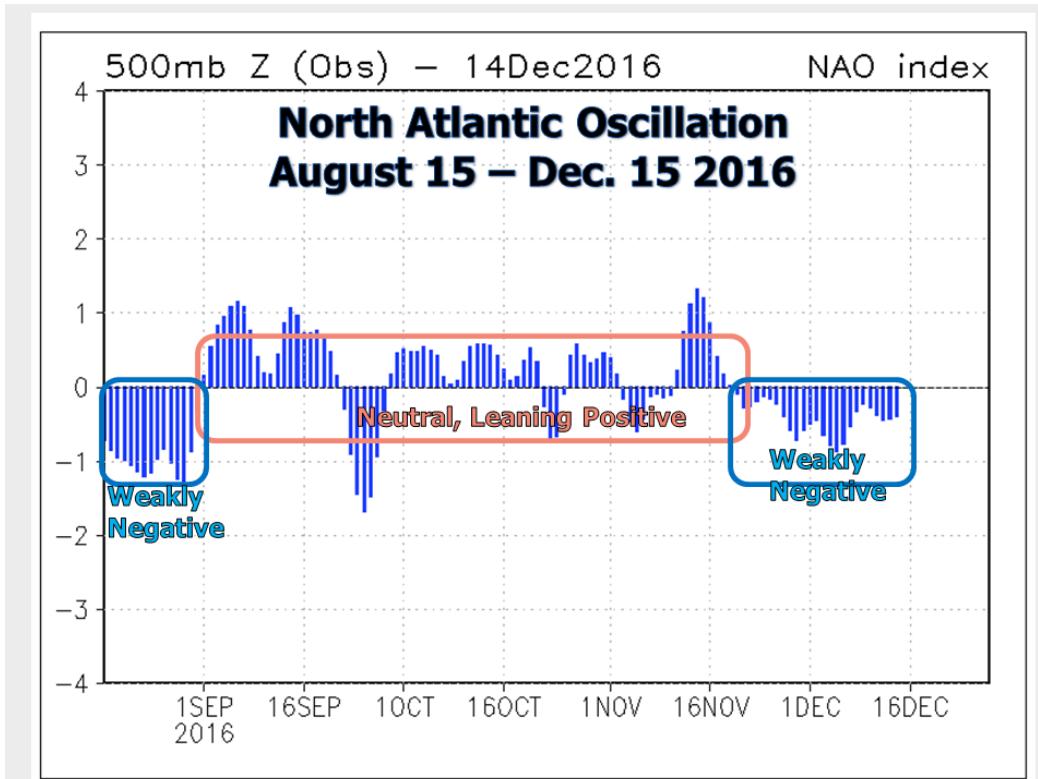
The Pacific-Decadal Oscillation (PDO), which was strongly positive through the first half of 2016 has eased back to weakly positive as of October. Unlike during the winter of 2014, when a weakly positive PDO followed a prolonged negative PDO, we have a bit more confidence that the prolonged positive PDO leading into 2017 will be a factor in maintaining the above average ridging west of Baja California which should be enough to verify the above average temperature forecast. To wit, the winter of 2013/2014, forecast to be warm and dry, ended much colder than average and a little wetter than average.

The North Atlantic Oscillation (NAO) has also been sitting near neutral since the end of August. How it evolves could also influence the outcome of Winter 2016/17. Still, only a prolonged positive (+NAO) or negative (-NAO) – and one that shows a strong value – may correlate with enhancing warmth (+NAO) or chill (-NAO). Because this oscillation is generally predictable out to two weeks, there is little confidence in how it will evolve. For what it's worth, there was negative lean to close November and head through mid-December – and with that, more robust cold fronts finally reached the Valley and helped dip the above normal departure to just a few tenths of a degree, Valley-wide.

This also explains why, while there is confidence in the warmer and drier than average winter 2016/2017 period verifying, there is less confidence on *embedded weather events* which could make the season more memorable for *opposite* impacts. The best example of this in recent years was during the winter of December 2010 – February 2011. That winter indeed ended up warmer and drier than average, but will be remembered by many for the very cold start that culminated in an early February Ice Storm that closed the region down for several days.



Above: Probabilistic ENSO forecast through late summer 2017, showing weak La Niña should dissipate to neutral by winter's end.

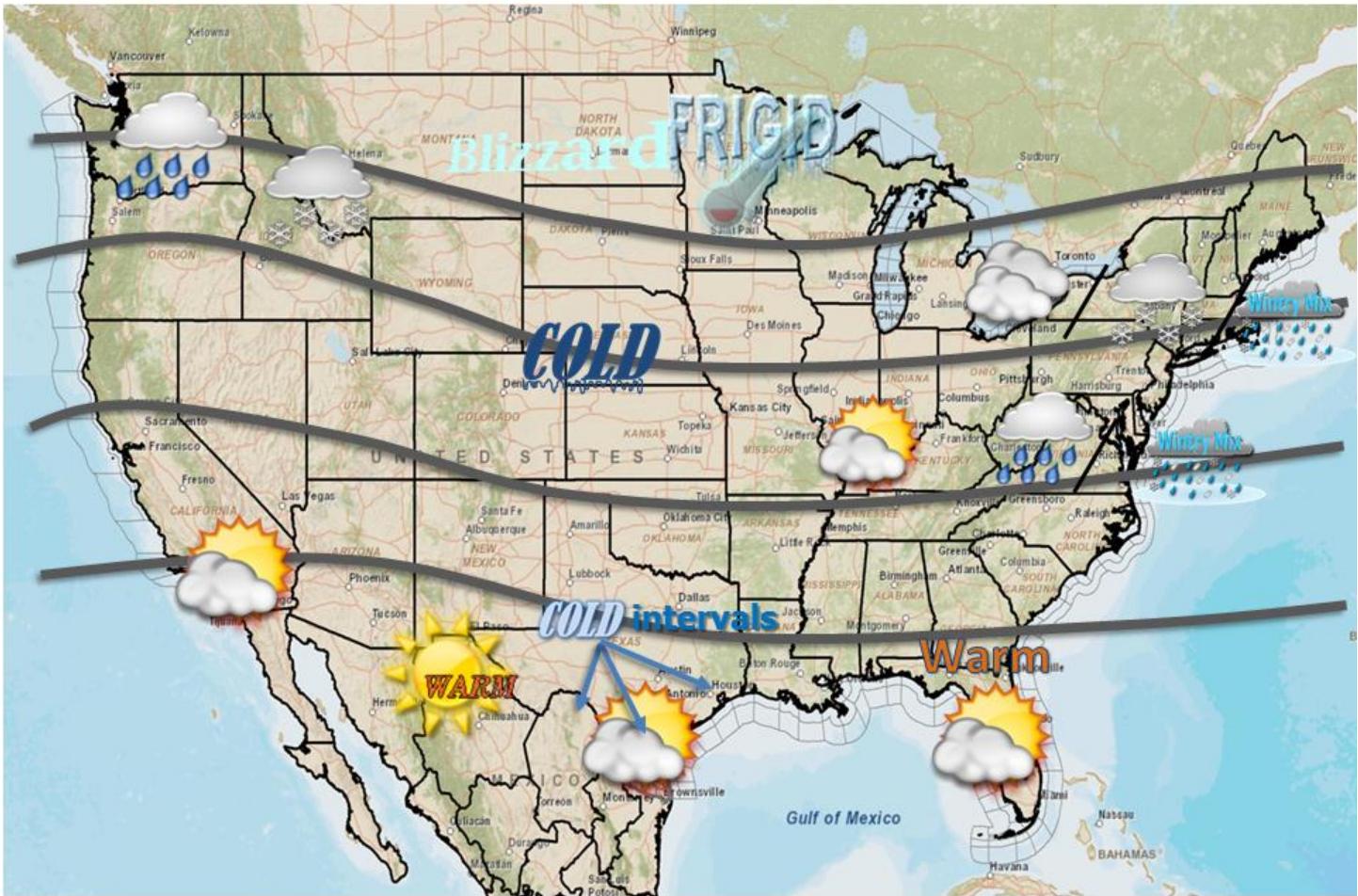


### **Pattern Matters**

Given all these factors, we expect the U.S. weather steering pattern from November through January to look as shown below. Should the eastern tropical Pacific cool a little, and the western U.S. ridge poke farther north than in 2015/16 [which would allow a potential “tap” of surface arctic air to come into the Lower 48 east of the Rockies, favoring the north central and Midwest states], periodic cooler to even cold and wetter (drizzle/light rain, at least) weather could continue to touch the Rio Grande Valley at times into January. Such is the “wild card” (blue arrows over south and central Texas) in this forecast. Based on persistence – July through October 2016 shattered temperature records and returned some level of drought to the Valley, the continued warm Eastern Pacific which has maintained the northwest Mexico through eastern subtropical Pacific ridge, and a weak La Niña - we’re favoring more fair and mild to warm days with the periodic return of the “Valley Wind Machine” – as we’ve already seen several times in December – but with the continued likelihood of pattern-busting cold fronts, and the possibility of a one to two week period of colder to much colder than average temperatures embedded within the season. Such a period would favor late December through early February.

Elsewhere in Texas, dry weather is expected to be dominant, and drought is expected to remain a critical factor across the southeast U.S. through February. Southern California will see continued devastating effects from the record drought which shows no signs of quitting. A mixed bag of weather is expected elsewhere, from an endless summer of sultry tropical breezes in south Florida to more periodic frigid temperatures for Big Sky Country through the Upper Midwest.

# Expected Steering Pattern, Winter 2016/17



## Outlook: December 2016 to February 2017

**December** began with near record heat and plenty of humidity, but a series of cooling ‘northerns’ interspersed with unseasonably warm to hot temperatures that followed them brought departures from average to around two degrees above by mid month. Another warm-up into the penultimate weekend of the month would be followed by one of the sharpest chill-downs since March 2014, and by Christmas Eve it was possible that the mean temperature across the Valley would be at or slightly *below* average. The early Christmas week blast may be strong enough for the season’s first freeze across the ranchlands along State Road 285. Prior to and especially following each front, Gulf and Laguna Madre waters would be agitated and dangerous, making December a month not fit for the day fisher or boater.

**January and February** should see a continued “Jekyll and Hyde” pattern, with Dr. Jekyll (the warmer version) winning out. A combination of several more “gray ‘northerns’” with weak upper level energy undercutting the western U.S. ridge would produce several days of blustery chilly weather (temperatures in the 40s and 50s) with light rain or drizzle could be expected. A dry front with a northwest Canadian source region could bring modified arctic air and a potential light freeze to the Rio Grande Valley and a harder freeze across the ranchlands. Could there even be ice or snow? The “arctic door” has already opened once (December 8-9) and would open again (18-19); given the teleconnections mentioned earlier, additional surges of even colder air from January to early February could be enough to produce an ice or sleet event; after all, a recent three-year rhythm (February 2011, January 2014) could mean something in early 2017. We’re not saying this will happen; only to not be totally shocked in a “one-off” type event occurs during the heart of this coming winter.

## **Preparedness, Awareness**

Just enough rain from mid-November through mid-December, combined with recent gray ‘northerns’ to reduce evaporation rates and/or provide some light drizzle to keep moisture locked in, should be enough to hold drought degradation at bay into January. However, if Texas Gulf lows fail to form far enough south – if at all – enough dry air and eventual late season warming, especially combined with any dry freezes, will cure fine fuels (ungrazed rangeland and grasses) and could create potential for erratic behavior of any wildfires that start, particularly in February and beyond.

Otherwise, should December’s “roller-coaster” pattern persist into January, residents will need to have all sort of seasonal clothing at the ready – for day to day changes and even hour to hour shifts. Strong winds ahead of and behind any ‘northerns’ will continue to stir up beach surf and create periodic run up and beach erosion during the “off season”, and should any fronts with polar-based air come through dry, a Valley-wide freeze can’t be ruled out from late December through early February. Flooding rains are not high on the hazard list given the expected lack of a deep and prolonged feed of tropical moisture this winter.

- ***Chilly Weather, Freezes, Ice?*** The “wildcards” mentioned above began to bear fruit in December, and could continue into early February. We start our winter weather awareness season at the beginning of December, so why not consider the following in November:
  - Get the cool weather clothes out, and be prepared to have them on hand should more sharp cold fronts arrive. Apparent temperatures have already crashed more than 30 degrees from one afternoon (Dec. 7) to the next (Dec. 8), and a 40+ drop was anticipated between the 17<sup>th</sup> and 18<sup>th</sup>. Another few fronts into January and February could do the same. In March, 2014, feels-like temperatures crashed from near 90 down to near 30 degrees in less than 24 hours!
  - If you have tender tropical vegetation, set aside blankets and light coverings now to be ready in case freeze warnings are issued during December and January
  - Have your vehicle checked for the following:
    - Brake pads/shoes – always important on rain-slick roads after dry spells
    - Windshield wipers/blades – dry rotting is common here, so frequent replacement ensures visibility.
    - Tires. Check tread wear and inflation pressures frequently, and repair/replace/inflate as necessary
    - Coolant. Anti-freeze is a necessity in both summer and winter, and sharp weather changes can cause stress on older vehicles’ cooling systems. Change as needed
    - Battery. Summer heat, humidity, salt air wear down batteries here more than most other places in the country. A cold snap could add further stress and the last thing you’d want is a stalled vehicle on a very cold day.
  - Keep the Elderly and Infirm in mind. Sharply cold weather can be taxing and even injurious on those acclimated to our semi-tropical climate. If you have family or friends with no heating capability, be sure to educate them on home safety – i.e. small heating units or space heaters – well before the cold arrives.
- ***Coastal and Marine Hazards.*** A full-throated Gale dominated the Gulf with frequent 34+ knot winds, 14+ foot rough seas, 7 to 10 foot surf waves, and plenty of tidal “run-up” to further erode beaches on South Padre Island. In fact, the December 8-9 event combined with light rain and a tidal surge from the north in Bahia Grande to confuse [brown pelicans](#) into “dropping” onto SR 48 east of the Port of Brownsville during the evening of the 8<sup>th</sup>. Cooler nearshore waters followed by a period of warm and humid return can bring thick “sea fog” with visibility reduced to near zero. Prepare for winter’s potential rough waters by:
  - Planning boating/fishing excursions carefully, and having a postpone/cancel plan ready for cases when fronts are forecast to surge through
  - Be alert to rapid sea fog development, particularly when warm, humid, breezy weather returns to land after a prolonged cool-down. That same air mass traveling over now cool Gulf waters can produce sea fog which can rapidly form and sustain itself for a few days in worse case scenarios
- ***Land Fog.*** Winter can be fog season for the Rio Grande Valley. This is most prevalent when cold conditions moderate slowly on the ground, while warmth and humidity surges just above the ground. The

denser air near the ground can keep winds near calm, and the difference in dew point temperatures from the ground (lower) to just above ground (higher) can produce the cloud on or just above the ground – fog.

- **Wildfire Behavior.** The worsening drought and drying of fine fuels (grasses) and “long period” fuels such as brush and trees (mesquite, live oak) may be sufficient to increase the threat for erratic wildfire behavior and spread, especially by late winter (February, mainly). A series of drying breezy to windy fronts with post-frontal sunshine and mild to warm air would quickly worsen the situation for rapid wildfire spread. Farmers and ranchers should continue to follow safety precautions, including parking vehicles on dirt or pavement, not driving them in high grasses on dry, windy/breezy days, and refraining from using welding/grinding equipment in or near high grass/brush. [Be Firewise!](#) Remember, [only you can prevent wildfires](#).

For all your winter safety tips, check out our Awareness “slide guides” here, in [English](#) and [En Español](#).