

SPOTTER NEWSLETTER

NWS PHOENIX SKYWARN NEWSLETTER

JULY 2024



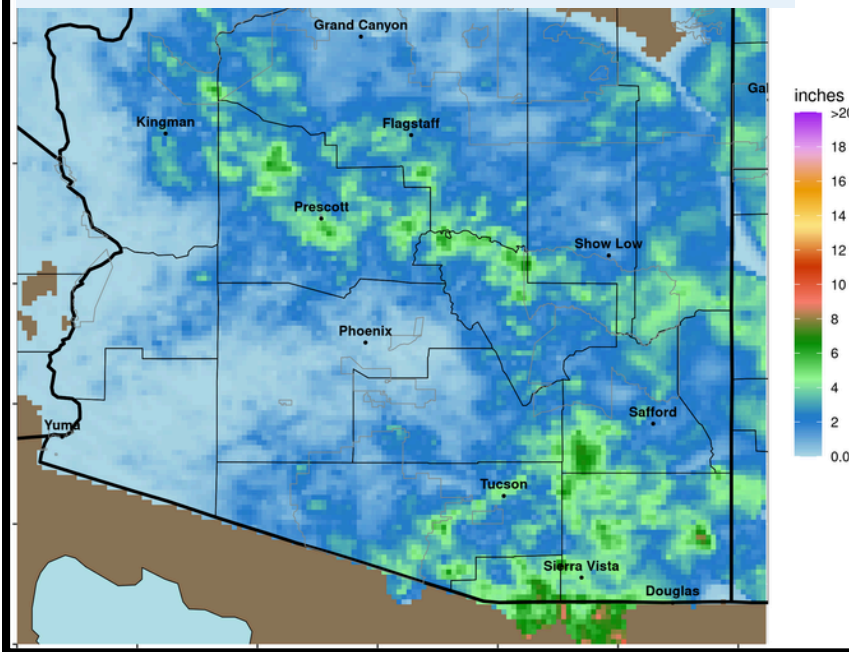
What's Inside

- Monsoon so Far
- August Outlook
- Downbursts
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- Storm Safety
- Storm Report review
- Update your contact information

Monsoon season got off to a good start with rain and thunderstorms across Arizona in June. Compared to last year, June saw an increase in thunderstorms and precipitation over the region. But, for a lot of places, notably the lower deserts, July has been disappointing so far. We'll look at Monsoon precipitation so far, and get a look at the August forecast. Also in this issue, we will delve into downbursts, discuss a parameter we look at for issuing Excessive Heat warnings, and review storm safety.

MONSOON SO FAR

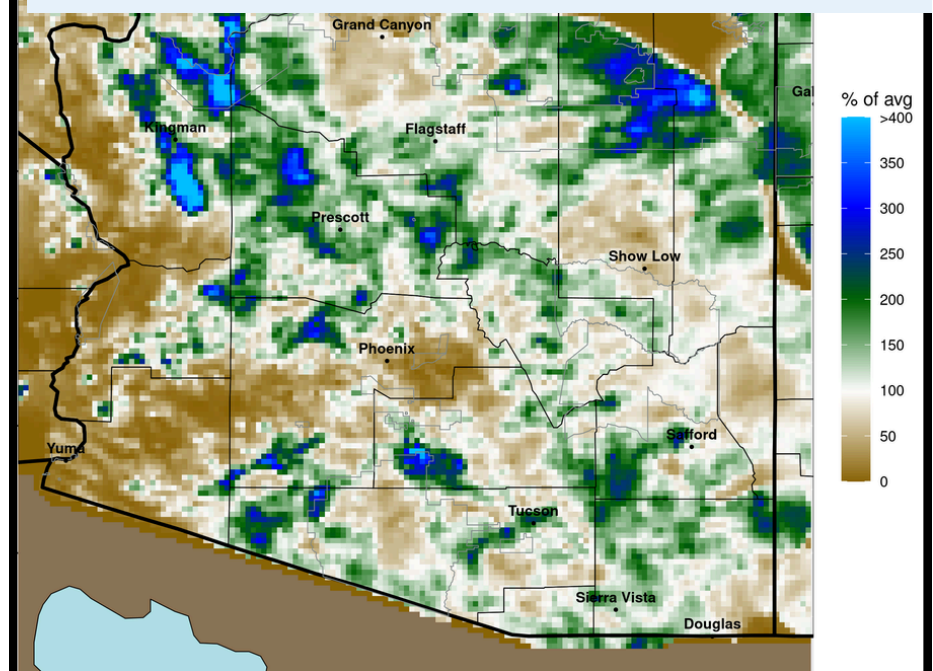
Total Rainfall June 15 - July 24



The map at left is for accumulated precipitation from June 15th - July 24th. In general, the areal distribution aligns pretty well with what we commonly see with higher terrain areas of central, northern, and southeast AZ receiving the most. And conversely, the lower deserts seeing the least.

So, how do the numbers from above compare to normal for this point in the Monsoon? As you can see on the map at right, it's a mixed bag. For much of the Phoenix area, we are on the low side (except for a pocket in the northeast Valley). But, some areas in northwest and southwest Maricopa, western Pinal, and northeast La Paz have fared well.

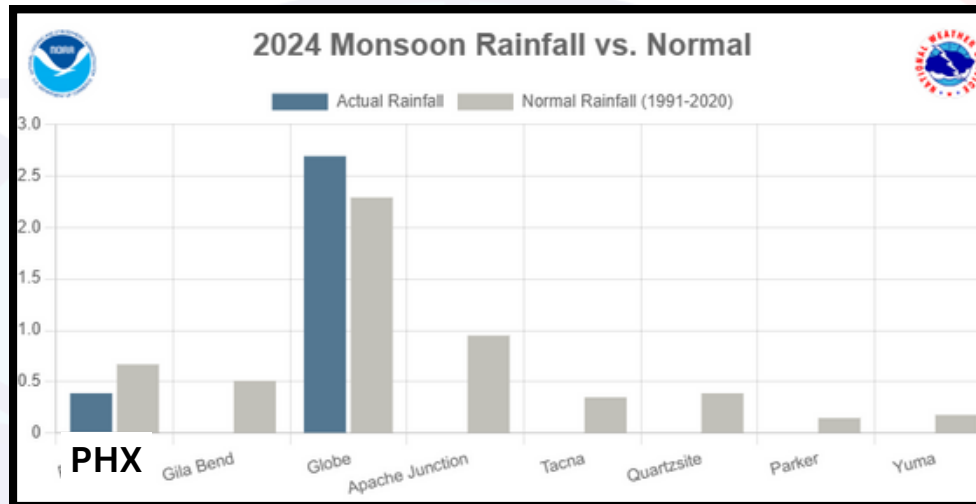
Percent of Average June 15 - July 24



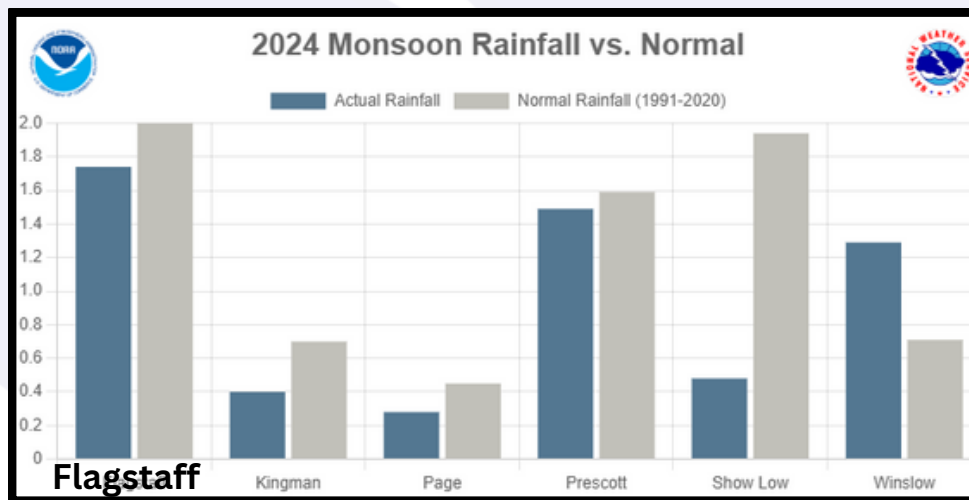
MONSOON SO FAR (CONT.)

The bar charts below are another way of looking at the mapped data but for individual locations.

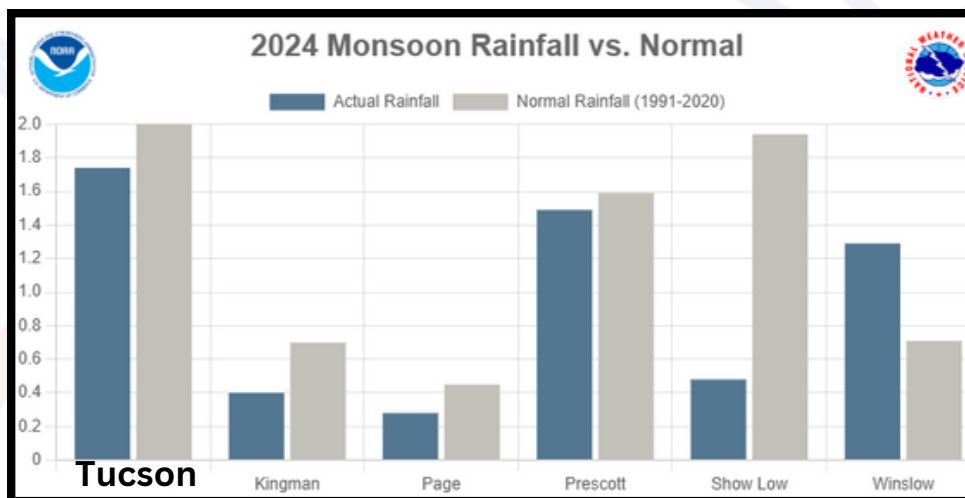
South-central and Southwest AZ



Northern AZ

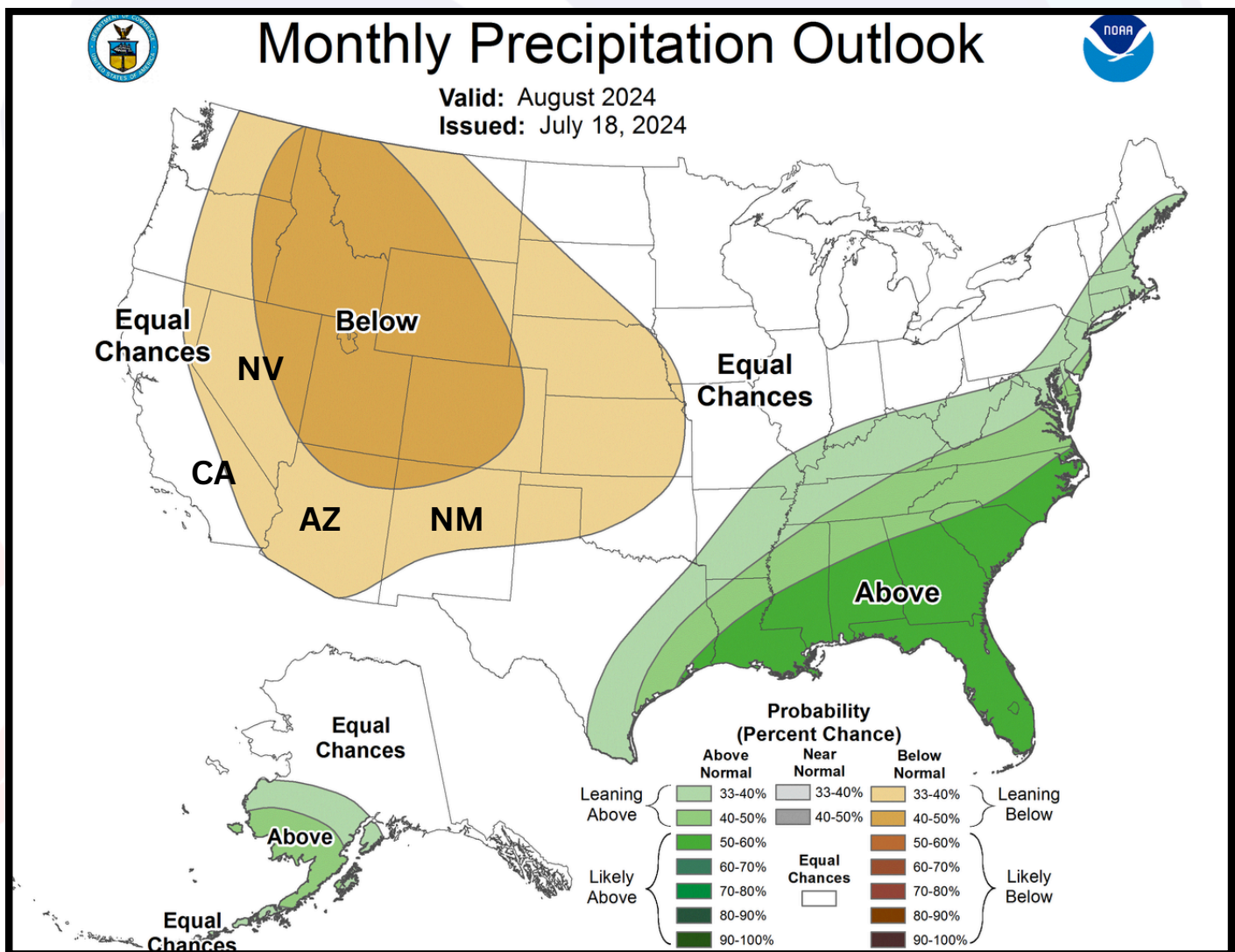


Southeast AZ



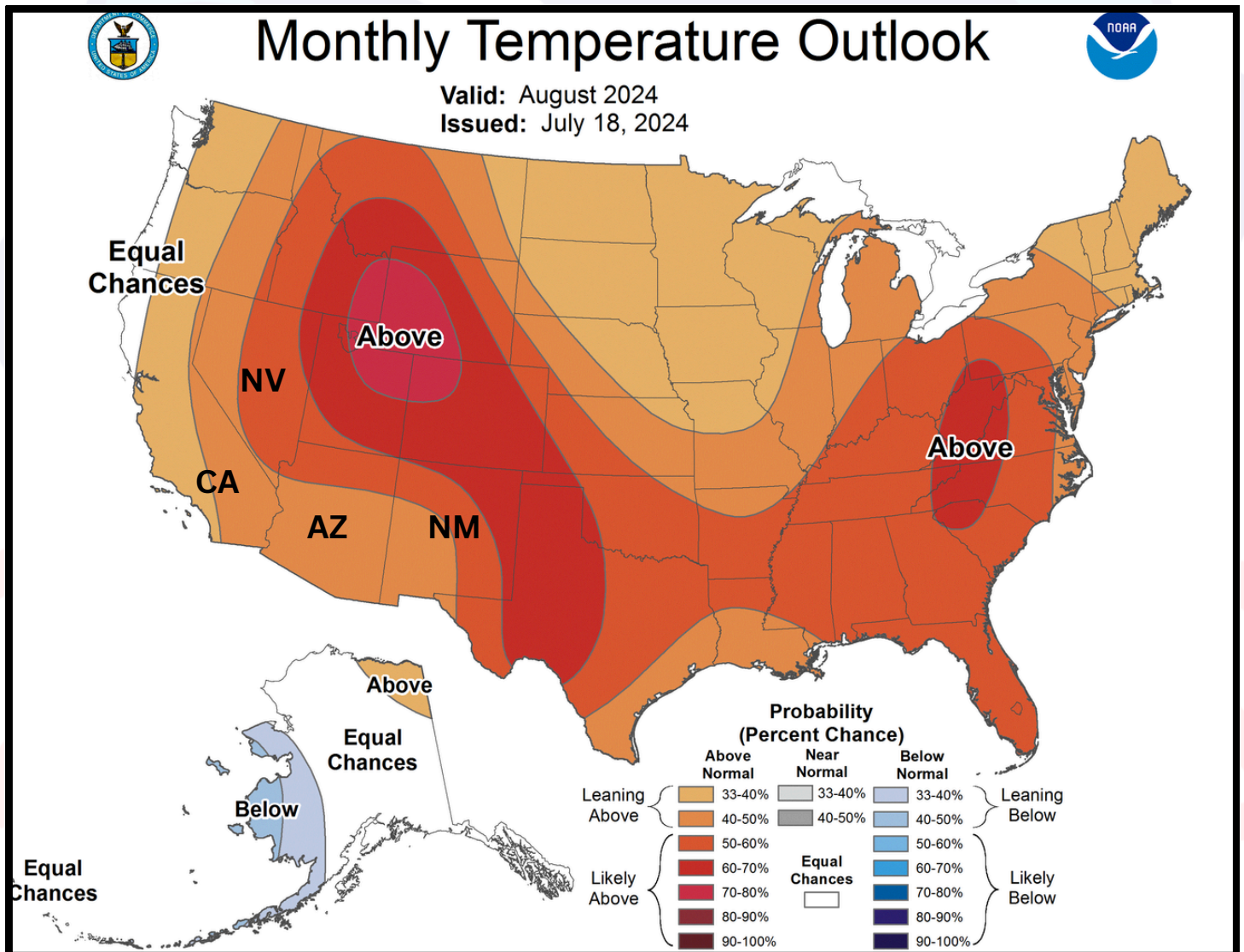
AUGUST OUTLOOK

Looking ahead to August, the forecast for next month is less pessimistic than the overall seasonal forecast had been back in June. Of three outcomes (Below Normal, Near Normal, and Above Normal), Below Normal edges out the others as the more likely outcome - but not by a lot. For AZ and a sliver of CA, that means 33% - 40% probability for Below Normal; 34% for Near Normal; 26% - 33% for Above Normal. When it comes to precipitation this time of year, it's important to remember how localized any given event can be. So, these are broad estimates of probability.



AUGUST OUTLOOK (CONT.)

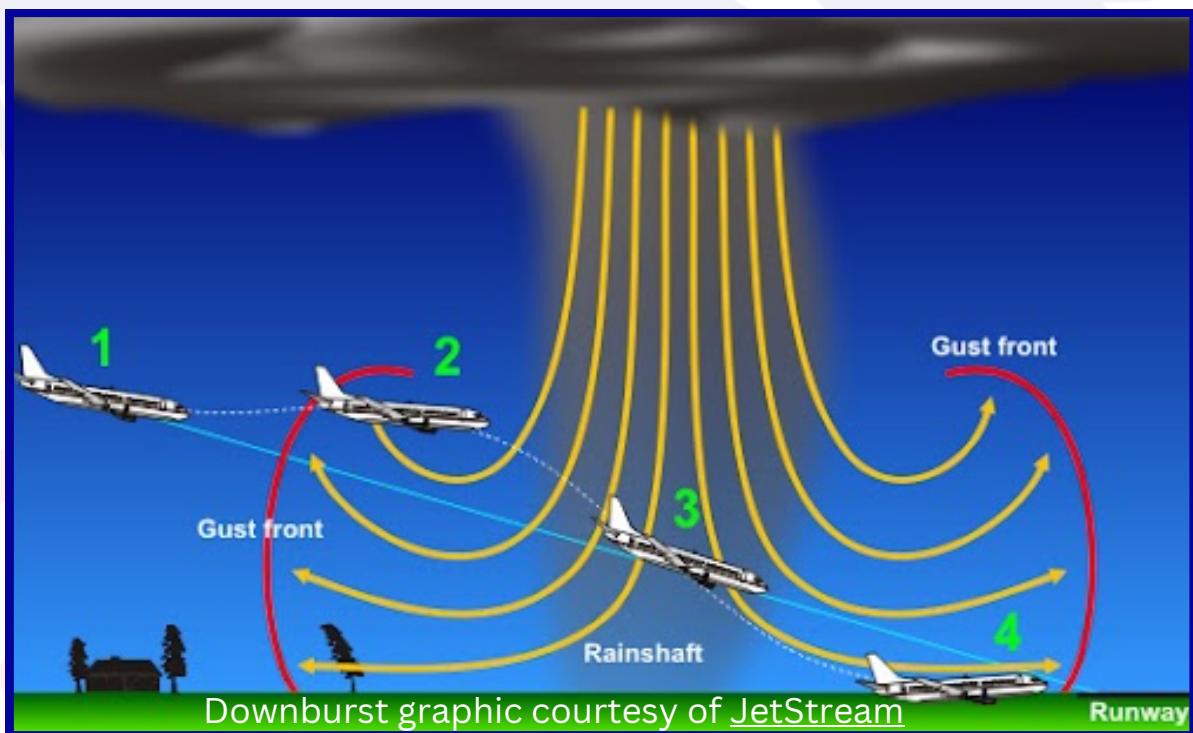
Similarly to the precipitation outlook, the temperature forecast for August is not quite as pessimistic (hot) as what the overall seasonal forecast had been. But, Above Normal is still the favored outcome - though not the only possible outcome. For much of AZ and part of CA, that means 40-50% likelihood of the month of August as a whole being above normal. That leaves 34% chance for Near Normal and 16-26% chance for Below Normal.



DOWNBURSTS

One of the hazards we encounter during the Monsoon is very strong winds from thunderstorms. Those winds can be so strong that they cause damage. A common cause is the downburst. A downburst is a thunderstorm downdraft that is so strong it can cause damage as it hits the ground and spreads horizontally over the ground. It's a hazard not only to people and objects on the ground but also for aviation due to the intense vertical and horizontal changes in the winds.

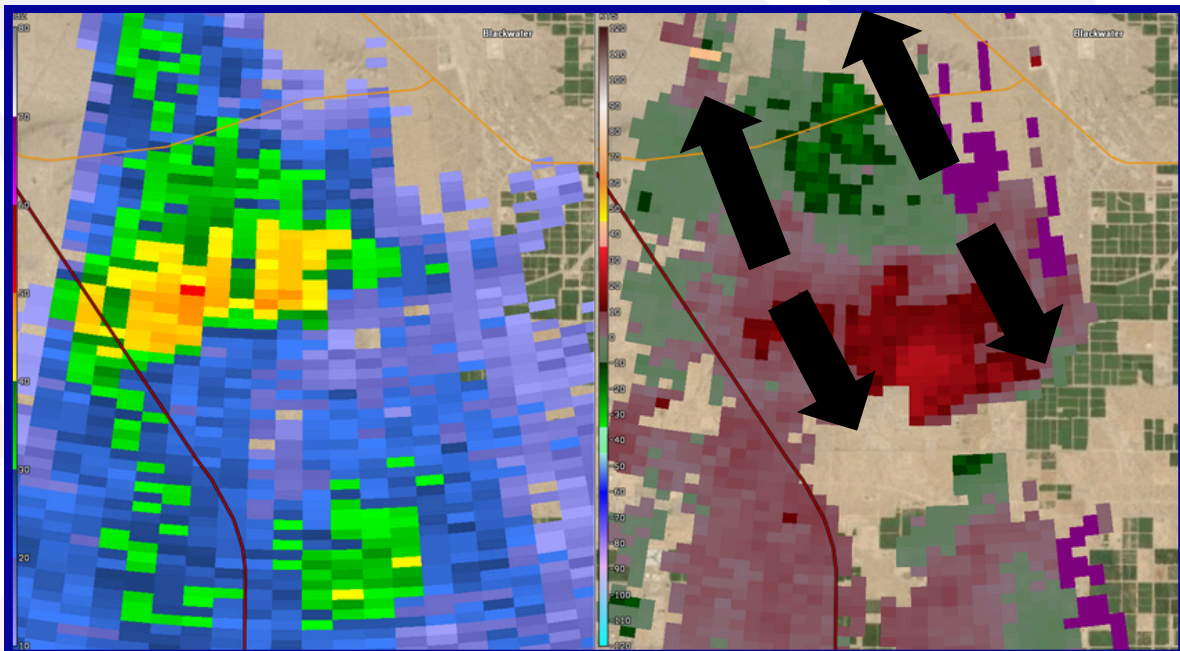
There tend to be different “flavors” of downburst. One type is a wet downburst driven by such heavy precipitation that drag from the large number of droplets helps intensify the downdraft. There are also “dry” downbursts which are driven by evaporative cooling which makes the downdraft colder and even more dense than its surroundings for added acceleration. But, you can have a mix of the two which we might call a “hybrid” and that is fairly common.



DOWNBURSTS (CONT.)

On June 28th, there was a downburst event in Pinal County centered over northern Casa Grande. Referring to the conceptual diagram on the previous page, you can get a sense of how the winds at/near the ground diverge away from the initial impact point. So, what does that look like on radar?

In the graphic below, there are two parameters shown: reflectivity (left) and velocity (right). Reflectivity is representing returned energy from the rain and cloud droplets. Velocity is actually radial velocity which is the portion of the particle movement that is in alignment with the radar beam. Green is movement toward the radar and red is away from the radar. Note: the radar can't detect vertical movement - it's the horizontal movement being picked up. However, we can infer vertical motions from signatures in the data. Notice, the couplet of inbound and outbound movement. That's a classic downburst signature.



Downburst on radar in Casa Grande on June 28, 2024

DOWNBURSTS (CONT.)

Here are a few pictures of the damage done by this downburst. Turns out, there were other downbursts in Pinal County that same afternoon.



RV garage under construction
Photo by Justin Aaron



Roof Shingles blown off a house
Photo by Josh Carstens



Brick wall knocked over
Photo by Josh Carstens

HEAT

Of the various weather related hazards (e.g. flooding, lightning, tornadoes, etc.) the number one killer is heat. That's true not only for the Desert Southwest but nationwide. Maricopa County keeps track of heat related illness and mortality. They have a dashboard that can be found [here](#).

Though average conditions in our part of the world are hot, not all days are equally hot. That's why we issue Excessive Heat Warnings. A key parameter we consider when issuing those warnings is HeatRisk. In short, it is a way of representing how unusual the temperatures are on a given day for any given place. So, it is relative to the locale and the time of year. Major (red) and Extreme (purple) will trigger warnings. But, meteorologists have discretion to take into account other factors as well when issuing the warnings. More information on HeatRisk can be found [here](#).

Category	Level	Meaning
Green	0	No Elevated Risk
Yellow	1	Low Risk for those extremely sensitive to heat, especially those without effective cooling and/or adequate hydration
Orange	2	Moderate Risk for those who are sensitive to heat, especially those without effective cooling and/or adequate hydration
Red	3	High Risk for much of the population, especially those who are heat sensitive and those without effective cooling and/or adequate hydration
Magenta	4	Very High Risk for entire population due to long duration heat, with little to no relief overnight

HEAT (CONT.)

With heat being so prevalent in our part of the world, it's easy to get more exposure to the heat than we would like. Even on days when there isn't a heat warning in effect, it's hot enough to have an impact. So, it's important to take precautions to avoid heat related illness. Even for those with air conditioning in their homes, cars, and workplaces, avoiding exertion outdoors during the hotter times of day is an easy prevention method. If you must work outdoors, be diligent about hydration and breaks in the shade. And for all of us, never leave kids or pets unattended in a vehicle, LOOK before you LOCK!



HEAT (CONT.)

What if you've overdone it? Take note of the symptoms in the chart.
NOTE: Heat Stroke is life threatening. Call 911 immediately!

HEAT EXHAUSTION	OR	HEAT STROKE
Faint or dizzy		Throbbing headache
Excessive sweating		No sweating
Cool, pale, clammy skin		Body temperature above 103° Red, hot, dry skin
Nausea or vomiting		Nausea or vomiting
Rapid, weak pulse		Rapid, strong pulse
Muscle cramps		May lose consciousness
<ul style="list-style-type: none">• Get to a cooler, air conditioned place• Drink water if fully conscious• Take a cool shower or use cold compresses		<h2>CALL 9-1-1</h2> <ul style="list-style-type: none">• Take immediate action to cool the person until help arrives

STORM SAFETY

There are a variety of thunderstorm related hazards that occur each Monsoon. Here are some basic tips that apply to weather hazards in general. Keeping these tips in mind will help you stay safe.

- Plan ahead, that includes knowing where you'll go for safety.
- Listen to the forecast.
- Cancel or postpone activities if thunderstorms are in the forecast.
- Monitor weather conditions.
- Take action early so you have time to get to a safe place.

There are also some specific tips for some of the more common hazards.

Lightning

When Thunder Roars, Go Indoors!

If you can hear thunder, you are within range of being struck. It's even possible for lightning to strike before you even hear the first rumble.



- If caught outside...
 - Get inside of sturdy shelter or a hard topped car immediately.
 - Until then, don't be, or be near, the tallest objects in the area.
 - Don't shelter under tall or isolated trees.
- If indoors...
 - Stay off corded phones. You can use cellular or cordless phones.
 - Don't touch corded appliances; you can use remote controls safely.
 - Avoid plumbing such as faucets and showers.

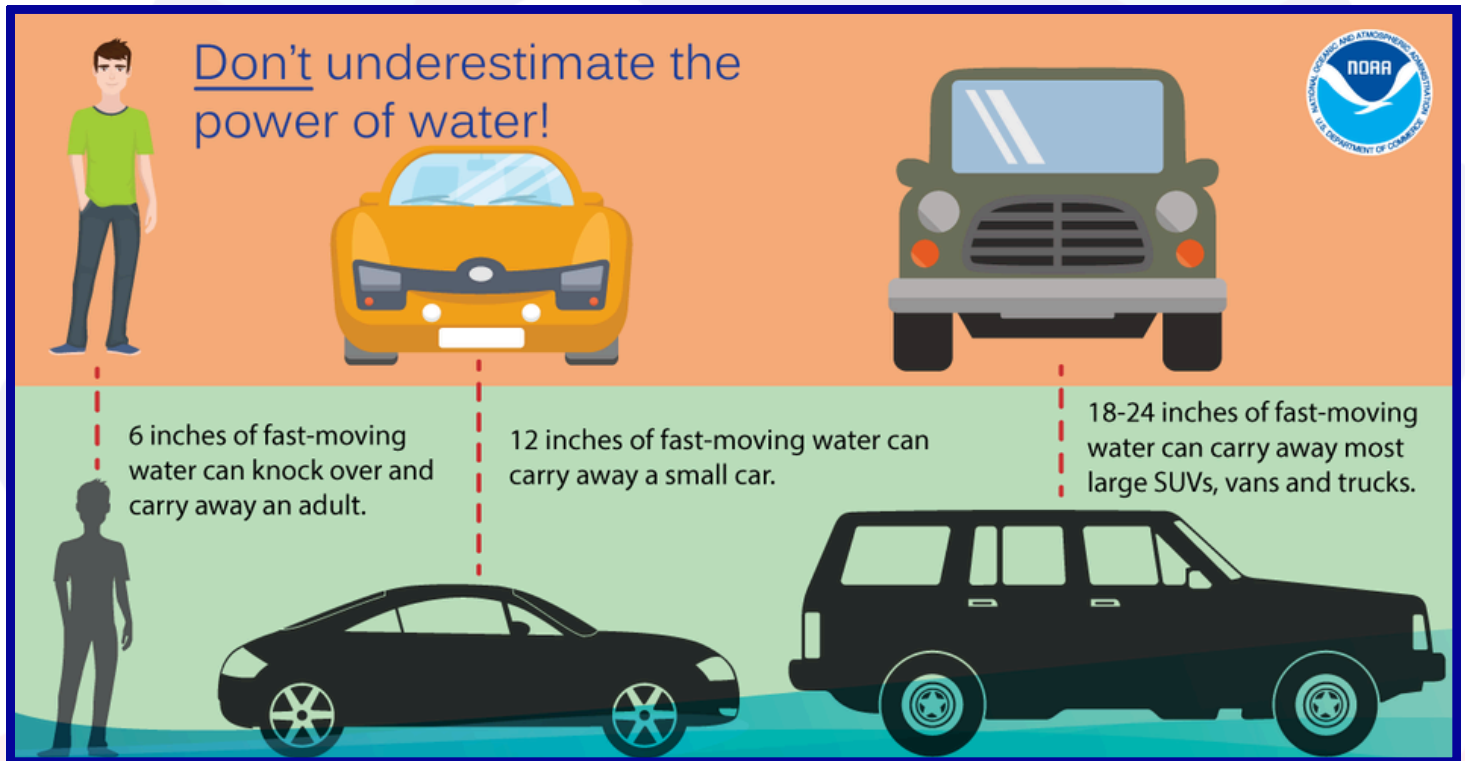
STORM SAFETY (CONT.)

Flooding

Turn Around, Don't Drown! The most common type of flooding related danger is flooded roadways. Over half of all flash flood deaths occur with people in their vehicles.



Spotter Nancy Rollins



- **Get to Higher Ground:** If you live in a flood prone area or are camping in a low lying area, get to higher ground immediately.
- **Obey Evacuation Orders:** If told to evacuate, do so immediately. Lock your home when you leave.
- **Practice Electrical Safety:** Don't go into any room if water covers the electrical outlets or if cords are submerged.

STORM SAFETY (CONT.)

Dust Storm

Pull Aside, Stay Alive! Ideally, you want to be aware of Advisories and Warnings to avoid encountering a dust storm. But, if you are on the road already and dense dust is observed blowing across or approaching a roadway:

- 1) Pull your vehicle off the pavement as far as possible (the shoulder isn't far enough!).
- 2) Stop.
- 3) Turn off lights.
- 4) Set the emergency brake.
- 5) Take your foot off of the brake pedal to be sure the tail lights are not illuminated.



Spotter Clinton Bancroft

SPOTTER REPORTS

Though a weather event may not bring much in the way of thunderstorms, it can still lead to other hazards. See below for a review of reporting criteria and methods.

Reporting Criteria:

- Tornado
- Funnel Cloud
- Storm Damage (broken tree limbs, shingles off roofs, etc.)
- Flooding (streets, running washes, etc.)
- Low Visibility
 - less than 1 mile due to dust, sand, fog, etc. (not rain though)
- Rotating Wall Cloud
- Heavy Rainfall
 - measured ½ inch or more accumulation in 30 min. or less
- Hail (diameter of largest stone - any size)
- Snow (accumulating or not)

Reporting Methods (for trained Spotters only):

- Web: <https://inws.ncep.noaa.gov/report/>
- Email: psr.spotters@noaa.gov
- Voice Hotline (unlisted – just for Spotters): 1-800-697-0655
- HAM Radio NET

Sector 2 – Maricopa and Pinal Counties: 443.050 MHz (PL 100.0)

Sector 6 – Southern Gila County: 147.200 MHz (PL 162.2)

Sector 7 – Yuma County: 146.780 MHz (PL 103.5)

Sector 8 – Imperial County: 146.670 MHz (PL 103.5)

Sector 9 – La Paz County and Blythe: 145.310 (PL 107.2) and 147.06 (PL 203.5)

STAYING CONNECTED

SOCIAL MEDIA

Be sure to stay up to date with the weather and our other programs by following us on social media.



/NWSPhoenix



@NWSPhoenix



/NWSPhoenix

HAS YOUR INFORMATION CHANGED?

If your email, phone number, or address has changed since your last class, please click the link to help us keep that information up to date.

[GOOGLE FORM TO CHANGE CONTACT INFORMATION](#)

FORGOT YOUR SPOTTER ID?

It happens to the best of us! Send Austin an email he will email you back with your information.

AUSTIN.JAMISON@NOAA.GOV

NO LONGER WANT TO BE A SPOTTER?

If you would no longer like to be one of our trained weather spotters, you can fill out this google form and we will remove you from our database of spotters.

[GOOGLE FORM TO BE TAKEN OFF SPOTTER DATABASE](#)