

# WRITERS OF THE STORM

WFO PUEBLO / SOUTHEAST COLORADO NEWS

VOLUME 10

AUGUST 2018

**In this issue:**

<b>Tom Magnuson's Retirement</b>	<b>2</b>
<b>Dr. Uccellini's Visit</b>	<b>3</b>
<b>Post Fire Flooding Workshop in Colorado Springs</b>	<b>4</b>
<b>NWS Pueblo's 8th Annual Food Drive</b>	<b>5</b>
<b>The Spring Fire</b>	<b>6-7</b>
<b>Situation Reports</b>	<b>8</b>
<b>CSEPP Readiness Exercise</b>	<b>10</b>
<b>What the Hail is Going On This Year??</b>	<b>11-13</b>
<b>What Does it Mean?</b>	<b>14</b>

# ***Tom Magnuson's Retirement...***



Tom began his career as a professional meteorologist nearly 40 years ago in early 1978, as the first broadcast meteorologist in his hometown of Rockford, Illinois at WIFR-TV. He then moved on to work at a private weather consulting firm, Weather Central in Madison, Wisconsin. His time working there was challenging, because of the especially snowy winter of '78-'79 in the Midwest that affected their clients, which included gas and electric companies, departments of transportation, and radio stations. After that experience, Tom landed a position at WEAU-TV in Eau Claire, Wisconsin where he spent 4 years as the weekend, and then chief meteorologist. Next, he loaded up the moving van, and along with his wife and young daughter, moved to his next position as weekend meteorologist at WISH-TV in Indianapolis, Indiana.

After working 6 years at WISH-TV, he transitioned to the National Weather Service (NWS) at the Indianapolis office. This was the time when the NWS was about to be "modernized", which meant a new local forecast office structure and new positions. Tom's supervisor mentioned that some day he would make a good Warning Coordination Meteorologist (WCM). With that goal in mind, he knew he would need to advance quickly. After 15 months as an intern, he was promoted to general forecaster at NWS Minneapolis. Fifteen months later he went to the NWS Training Center in Kansas City, as an instructor in forecaster development, writing and broadcasting.

Fifteen months later he came to WFO Pueblo as the WCM. For nearly 23 years Tom has had the pleasure to serve as the liaison between the NWS and the Emergency Management, Media Communities, as well as other core partners and the public. He also has served as a program manager, a fill in weather forecaster, and occasional station manager.

The most rewarding part of his career has been educating people about weather forecasting and safety, keeping them safe and sound in the occasionally hazardous weather world. His most memorable event was on June 16, 2004, when, he was serving as the staff member who was trying to verify severe weather warnings with ground truth reports from weather spotters and other citizens. He called a family in very rural southeast Colorado with word of an impending tornado. They were not following the weather that afternoon, and he quickly gave them instructions on where to seek shelter. The tiny closet they went to was the only place in the house with four walls remaining after the tornado struck. He reminded southern Colorado folks not to expect that kind of personalized service in the future, but was glad to help out in that case.

In the future Tom hopes to help people in other ways through professional or volunteer work, and to pursue a few of his hobbies and passions he didn't have enough time for, such as hiking, biking, and photography.

# Dr. Uccellini's Visit

By Kyle Mozley

On August 6<sup>th</sup>, Director of the National Weather Service, Dr. Louis Uccellini visited the National Weather Service Office in Pueblo. This was his first site visit to our office. While here, staff presented slides on research topics such as lightning, satellite hot spot detection, tornado exercises and El Nino prediction. He had many questions about our research and how it was being implemented here at our office. For lunch, we had a potluck with everything from brisket, baked beans, lasagna and brats. We all enjoyed the meal and conversation. After lunch, Dr. Uccellini continued by presenting on topics such as Weather Ready Nation and where the National Weather Service is heading. By mid-afternoon, the weather became active and Dr. Uccellini was able to witness our office in action! He had many questions about how we split duties among forecasters, ham radio operations and radar analysis. We were impressed how we all worked as a team, providing advanced lead time for the large, destructive hail that went through Colorado Springs and Fountain that afternoon.



# Post-fire Flooding Workshop in Colorado Springs

By Tony Anderson

The Western Region of the NWS and Colorado Springs Utilities will be hosting a Post-fire Flooding Workshop in Colorado Springs this September. The workshop will run from September 18<sup>th</sup> to the 21<sup>st</sup>. Approximately 40 to 50 forecasters and scientists from the NWS and NOAA are expected to attend along with invited partners from other agencies. The Pueblo office has been closely engaged in the planning of this workshop and will be the de facto host office. Colorado Springs Utilities are acting as a Co-sponsor and host of the event which will be held at their Conservation and Environment Center in Colorado Springs. While Colorado Springs is actually outside of the Western Region of the Weather Service, it was chosen as the host location because of the community's response to the Waldo Canyon Fire and the resultant post fire flooding that has threatened the area. Many of our state and local partners have stepped up and offered their help to make this event happen.

One highlight of the workshop will be presentations by a representative of the Santa Barbara, California Fire Department about the 2017 Thomas Fire and the resultant debris flow in Montecito. Other speakers from the local area will represent Colorado Springs Utilities, the City of Colorado Springs, the Coalition for the Upper South Platte, and a host of federal officials involved in post-fire issues.

Post fire flooding and debris flows are becoming a more common hazard across the western United States. The isolated nature of the events and the difficulty in identifying the right combination of conditions necessary to initiate them has created a challenge for the NWS. The workshop is being convened to gather knowledge from our partners, to share experiences, and to chart a path forward for the NWS with regard to post-fire floods and debris flows. The final event in the workshop will be a tour of significant flood sites related to the Waldo Canyon Fire.



Colorado Springs Utilities  
*It's how we're all connected*



# NWS Pueblo's 8th Annual Food Drive

2017 marked the 8th year NWS Pueblo has held a food drive for Care and Share Food Bank of Southern Colorado. Once again, we asked other offices from across the region to join us for bragging rights! The Forecast Offices in Boulder, Grand Junction, Goodland, Dodge City along with the Central Weather Service Unit in Longmont all participated. The winner this year was WFO Goodland, but the real winners are those who benefit from our donations!

**Goodland: 1135 pounds**

**Boulder/Longmont: 667 pounds**

**Pueblo: 447 pounds**

**Grand Junction: 205 pounds**

**Dodge City: 165 pounds**

**Total = 2619 pounds of food donated to our local food banks!**



**CARE AND SHARE™**  
FOOD BANK FOR SOUTHERN COLORADO

# The Spring Fire

By Eric Petersen

All through the spring and summer of 2018, meteorologists, fire fighters and residents anxiously watched and waited as severe drought and critical fire weather conditions spread across the forests and grasslands of Southern Colorado. By late June, exceptional drought was noted over the higher elevations of the Sangre de Cristo Mountains, with extreme drought conditions across the surrounding lower elevations.

## U.S. Drought Monitor Colorado

June 26, 2018

(Released Thursday, Jun. 28, 2018)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	21.33	78.67	66.90	52.31	36.46	8.81
Last Week 06-19-2018	21.33	78.67	66.90	50.67	34.19	7.79
3 Months Ago 03-27-2018	9.65	90.35	73.50	48.55	20.61	0.00
Start of Calendar Year 01-02-2018	6.57	93.43	33.53	7.27	0.00	0.00
Start of Water Year 09-26-2017	67.63	32.37	3.72	0.00	0.00	0.00
One Year Ago 06-27-2017	93.82	6.18	0.00	0.00	0.00	0.00

### Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

### Author:

Richard Heim  
NCEI/NOAA

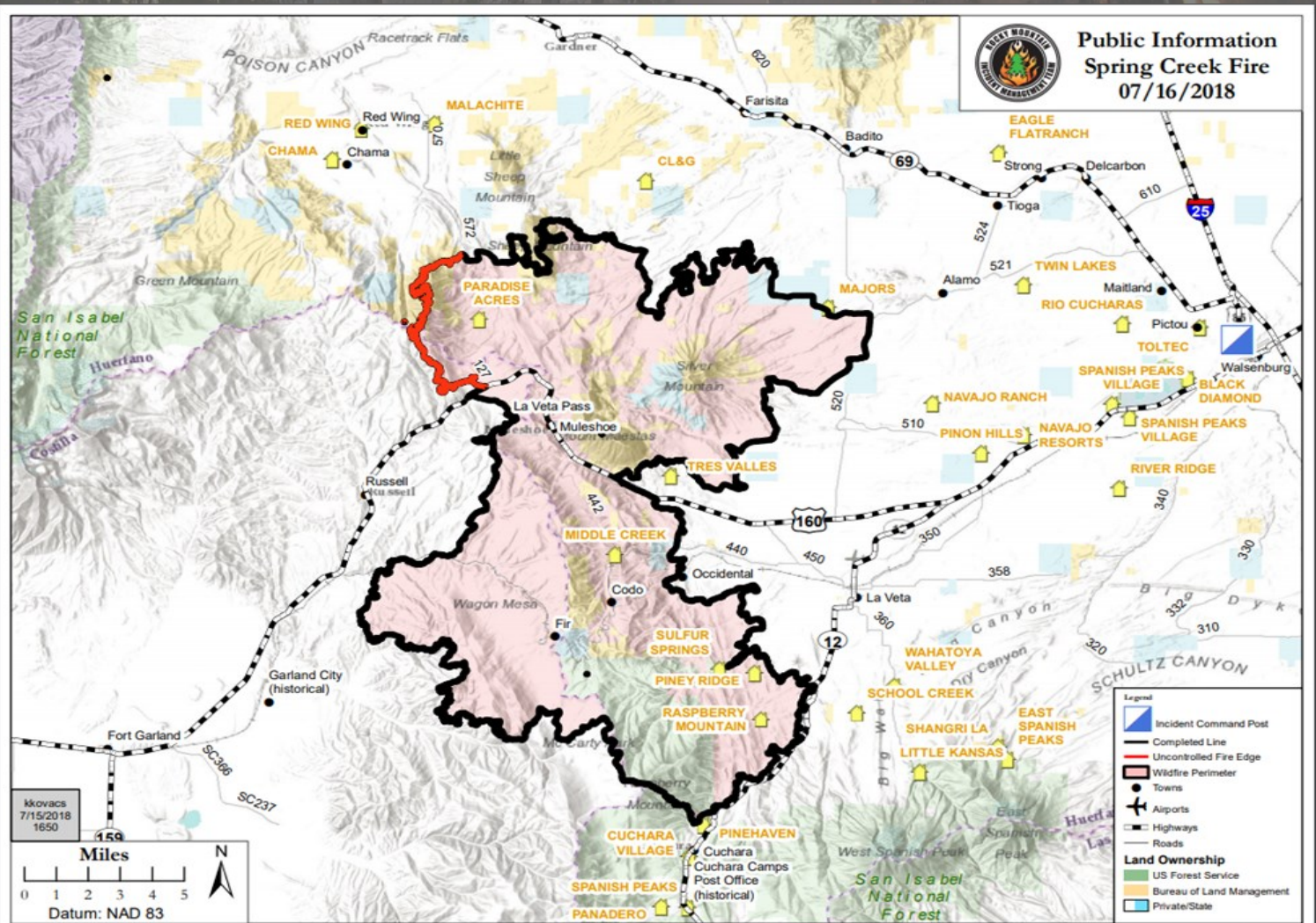


<http://droughtmonitor.unl.edu/>

## Drought Monitor from June 26<sup>th</sup>, 2018

As mid-summer heat developed over the region in late June, fuel moisture throughout the forest had fallen to extremely low levels, with historical dryness reported even across the normally moist higher alpine elevations of the area. Unfortunately, the fire that many had feared and hoped would never come, was ignited by arson late in the afternoon on June 27<sup>th</sup>, at a location roughly 5 miles northeast of Fort Garland on the lower west slopes of the Sangre de Cristo Range. The fire, which was named the Spring Fire (sometimes referred to as the "Spring Creek Fire") then spread rapidly

eastward through the Forbes Park Ranch and Wagon Creek communities the first 48 hours, then roared over La Veta Pass and threatened the towns of La Veta and Cuchara by early July. A northward extension of the fire pushed across Highway 160 as well, expanding the fire perimeter over Mount Mestas and into the Sheep Mountain and Silver Mountain areas. While prevailing winds tended to move the fire in a general easterly direction, a cold front and accompanying wind shift pushed the fire westward through the Paradise Acres subdivision north of La Veta Pass on the evening of July 4<sup>th</sup>. Many structures were lost as a “tsunami” of fire and flames 200-300 feet in height overwhelmed firelines in the area. Hard work by a large number of fire fighters (nearly 1800 personnel were working on the fire at one point) and a gradual improvement in the weather pattern saved the Cuchara and Le Veta communities from destruction and finally helped increase containment, with the fire reported to be 91 percent contained as of July 27<sup>th</sup> after burning an estimated 108,045 acres. At least 225 structures were lost in the fire, including over 140 homes. By acreage, the Spring Creek Fire ranks as the second largest single fire (the West Fork Complex was larger, but was made up of several different fires) in state history, behind only the Hayman Fire in 2002. By number of structures lost, the fire will likely end up as one of the top 10 worst in Colorado by the time the finally damage numbers are calculated.




Perimeter of the Spring Fire on July 16<sup>th</sup>, 2018.

# Situation Reports

By Larry Walrod


The National Weather Service (NWS) has embarked on a journey to evolve its science and services to better meet the needs of a Weather-Ready Nation. The Central Region of the NWS has helped lead this effort, developing new concepts for delivering forecast and warning messages. As one step in this endeavor, NWS Pueblo began issuing Situation Reports in the spring of this year. Consisting primarily of graphics and bullets, Situation Reports allow us to deliver our “Weather Message of the Day” in a visual format that is clear, concise, and straight to the point. Plus, the format gives us a forum to share other useful information with you such as our “Confidence” levels and expected “Impacts.” Now that we’ve hyped it up so much, it’s time to deliver the goods and let you be the judge. A partial example of a Situation Report from earlier this year is shown below. Where can you find our Situation Reports in real time? While not routinely available, during hazardous weather you can find them on our web page. Just go to [weather.gov/pueblo](http://weather.gov/pueblo) and look for the Situation Report thumbnail near the top of the page.




National Weather Service  
Pueblo, Colorado

### Situation Report

Wednesday, July 04, 2018 6:10 AM



National Weather Service  
Pueblo, Colorado




National Weather Service  
Pueblo, Colorado

### Situation Report

Wednesday, July 04, 2018 6:10 AM





## Potential for Burn Scar Flash Flooding

### Flood Watches Warnings and Advisories



Graphic Created July 4th, 2018 6:11 AM MDT

### Key Points

-  **Hazards, Timing and Duration:** Potential burn scar flash flooding Thursday afternoon and evening.
-  **Areas Impacted:** Currently active Spring and Chateau fire scars. The Hayden Pass and Junkins scars may also be impacted.
-  **Confidence:** Medium. Forecast models currently indicate plenty of moisture for storms. However, the exact placement of storms remains in question. Consequently, we cannot say with high confidence that any burn scar will take a direct hit. But, it is possible.
-  **Impacts:** Experience from past fresh burn scars indicates that dangerous flash flooding and/or debris flows will be possible with just a small amount of rainfall. Flooding may occur on or downstream of burn scars. Firefighters and other personnel on the fire should plan escape routes and safety zones accordingly. Those downstream of the scar should remain alert to the situation and be prepared to move to higher ground.

**Weather Message of the Day:**

Potential for flash flooding on burn scars Thursday due to a brief influx of monsoon moisture.


This may impact the currently active Spring and Chateau Fire burn scars. It may also impact the Hayden Pass and Junkins burn scars.

**Important Forecast Changes**

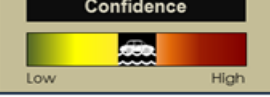
No changes from previous report.

**NEW**


### Impact Severity



### Confidence



### Flood Watches Warnings and Advisories



No watches or warnings are currently in effect but the potential exists for burn scar flash flooding.

[Click for a description of this product](#)

[Click to evaluate this product](#)

[Click for a description of this product](#)

[Click to evaluate this product](#)

Partial Example of a Situation Report issued by NWS Pueblo on July 4<sup>th</sup>





# Readiness Exercise

By Tony Anderson

Meteorologist Kyle Mozley and Service Hydrologist Tony Anderson from WFO-Pueblo provided logistic and decision support to the Pueblo County Chemical Stockpile Emergency Preparedness Program's (CSEPP) annual response exercise. The event was held on May 2<sup>nd</sup> this year and involved first responders from the Pueblo Chemical Depot, Pueblo County, Pueblo (city), and Pueblo West, as well as personnel from local schools, hospitals, and relief agencies. The exercise simulated the failure of a large Dam in Huerfano County as well as a simultaneous bus crash, a chemical release, and a dangerous situation at a local school. It was designed to test the county's resources and it succeeded.

Kyle and Tony participated in the planning of the event by providing realistic weather scenarios to create the dam failure. They also provided the exercise participants with fictitious NWS products including Hazardous Weather Outlooks, Flood Watches, Flood Warnings, and Flash Flood Warnings. These products were delivered to exercise "players" in the days leading up to the drill and during the drill itself.

Tony continued his participation by becoming a player in the exercise and was stationed in the Pueblo County Emergency Operations Center. While there, he provided hydrologic information to the EOC staff. At one point he switched from exercise player to exercise planner and wrote a Flash Flood Warning as an inject into the scenario.

Tony then participated in the debrief immediately following the exercise and in a meeting to discuss the evaluation of the exercise held a week later. The evaluators looked favorably on Pueblo County's program and their responses during the drill. One aspect they reported quite favorably upon was the "real-life" HAZ-MAT incident that occurred during the drill. First responders were pulled from the exercise to respond to a real-world HAZ-MAT incident. The EOC was already activated for the drill and the "real-life" incident was handled in-between responding to the fictional situation presented by the drill.

It is the hope of the National Weather Service that we can improve our operations through these exercises and learn to provide more effective and efficient decision support should an incident at the Chemical Depot ever occur.

# Impact-Based Decision Support Services...

## A New Approach!

By Paul Wolyn

The National Weather Service (NWS) is continuing to enhance the services provided to the public and our partners. The NWS is known for weather watches, weather warnings, weather advisories, general weather forecast, aviation products, fire weather, and marine products, for example. In addition to these traditional services, the NWS is evolving its Impact-based Decision Support Services (IDSS). IDSS provides forecast advice and interpretive services to assist core partners in their decision making. For example, an Emergency Manager will be in contact with the office to ask for detailed forecast for public safety at a large event. The Incident Meteorologist is an excellent example of this support provided by a NWS meteorologist to provide on-site forecasts for battling wildfires and for fire fighter safety.

The NWS has implemented a training series for all NWS meteorologists and hydro-meteorological technicians. This training is over 27 hours long. It consists of a basic understanding of the Incident Command System (which is used to manage all incidents), partner-focused support, and effective communication. This training will help NWS staff better communicate weather information with core partners to meet their needs.

There is an additional 85 hours of training which can be taken for staff to become “deployment ready”. “Deployment ready” staff will be able to deploy to Emergency Operation Centers and other remote locations to provide direct support to core partners. Being onsite and able to provide face-to-face contact, the meteorologist will be able to more quickly answer any questions and more easily give briefings. Meteorologists have already been deployed to many events in the country including the Super Bowl and Indianapolis 500. Their mission is to support the many personnel providing public safety for the event, and they do not provide weather support to the event organizers for the running of the event.



# FEMA

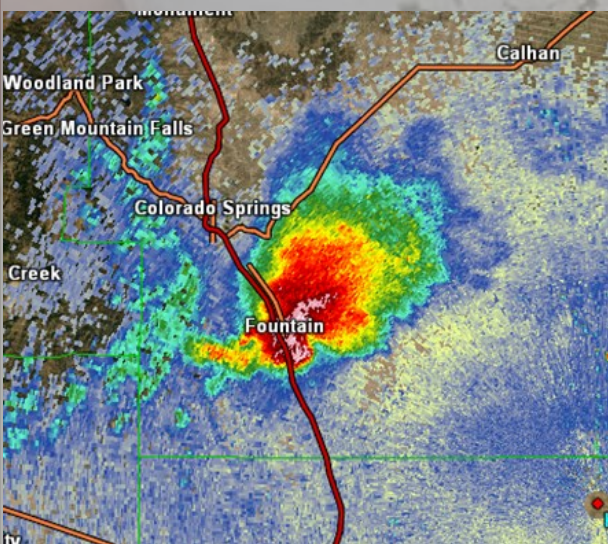


# What the Hail is Going On This Year??

By Stephen Hodanish

The 2018 severe weather season over southeast Colorado started slow this year. With dry southwest mid-level flow over the region, the area experienced below normal precipitation and above normal temperatures through most of the spring (April, May and into June). With the warm and dry weather over the region, thunderstorm coverage was less than normal, and little severe weather occurred over the region.

One notable exception did occur, however. During the early morning hours of 13 June, a thunderstorm developed over the Colorado Springs region. The atmosphere during this time was quite unstable for this time of the day, and the wind flow aloft allowed for the storm to become severe. In addition, the steering winds allowed the storm to move slowly south-southeast. The combination of the unstable atmosphere, the slow storm motion and the strong wind shear permitted the storm to produce destructive hail over the Ft Carson and Security areas. Several reports of hailstones of 2 to 3 inches in diameter were received. The storm lasted for over 2 hours, and only traveled about 15 miles during this time period.



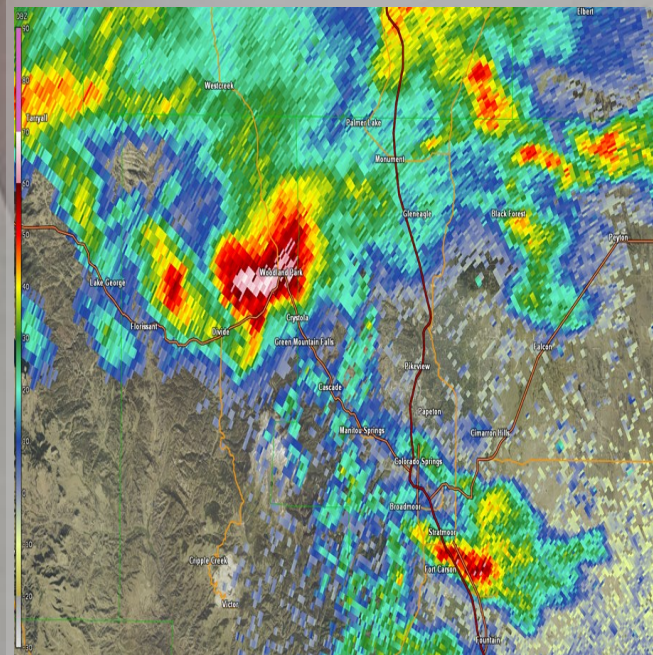
PUB	6/13/18 0:30	EL PASO	6 SE AIR FORCE ACADEMY	HAIL	1.00
PUB	6/13/18 0:30	EL PASO	2 WSW BLACK FOREST	HAIL	1.25
PUB	6/13/18 0:35	EL PASO	7 NNE COLORADO SPRINGS	HAIL	1.00
PUB	6/13/18 0:35	EL PASO	7 NNE COLORADO SPRINGS	HAIL	1.00
PUB	6/13/18 0:36	EL PASO	2 SSW COLORADO	HAIL	1.00
PUB	6/13/18 0:37	EL PASO	2 N BLACK FOREST	HAIL	1.25
PUB	6/13/18 0:38	EL PASO	4 SSE COLORADO SPRINGS	HAIL	1.00
PUB	6/13/18 0:38	EL PASO	2 SW BLACK FOREST	HAIL	1.25
PUB	6/13/18 0:39	EL PASO	3 NE COLORADO SPRINGS	HAIL	1.00
PUB	6/13/18 0:40	EL PASO	3 ESE SECURITY	HAIL	1.50
PUB	6/13/18 0:45	EL PASO	2 SE SECURITY	HAIL	2.00
PUB	6/13/18 0:49	EL PASO	2 WSW PETERSON AFB	HAIL	1.00
PUB	6/13/18 0:50	EL PASO	3 WSW PETERSON AFB	HAIL	1.00
PUB	6/13/18 0:55	EL PASO	3 WSW PETERSON AFB	HAIL	3.00
PUB	6/13/18 0:57	EL PASO	3 SW PETERSON AFB	HAIL	1.25
PUB	6/13/18 1:00	EL PASO	3 N SECURITY	HAIL	2.50
PUB	6/13/18 1:00	EL PASO	2 ESE FOUNTAIN	HAIL	3.00
PUB	6/13/18 1:02	EL PASO	1 E SECURITY	HAIL	1.00
PUB	6/13/18 1:02	EL PASO	SECURITY	HAIL	1.00
PUB	6/13/18 1:05	EL PASO	3 W PETERSON AFB	HAIL	1.50
PUB	6/13/18 1:06	EL PASO	2 WSW PETERSON AFB	HAIL	2.00
PUB	6/13/18 1:11	EL PASO	1 NNE SECURITY	HAIL	1.00
PUB	6/13/18 1:45	EL PASO	3 NNE FOUNTAIN	HAIL	2.00
PUB	6/13/18 1:59	EL PASO	FOUNTAIN	HAIL	1.25
PUB	6/13/18 2:04	EL PASO	FOUNTAIN	HAIL	1.75
PUB	6/13/18 2:16	EL PASO	FOUNTAIN	HAIL	2.50
PUB	6/13/18 2:19	EL PASO	2 NE FOUNTAIN	HAIL	2.50
PUB	6/13/18 14:40	PUEBLO	3 SE COLORADO CITY	HAIL	1.00

WSR-88D Base Reflectivity of 13 June 2018 Supercell thunderstorm at 2:01 AM. This was the time that Fountain Falls was receiving destructive hail.

During July and into August, the severe weather activity increased over the region. Typically during this time of the year, severe weather activity (defined here as large hail [ $\geq 1.0''$ ], damaging wind [ $\geq 58$  mph] or a tornado) decreases as the jet stream retreats northward into the northern Plains and Canada, and monsoon moisture moves into the

Southwest United States. However, this year has been different as a modest northwesterly jet stream has remained over the region at times. The combination of this modest northwesterly flow aloft and monsoon moisture has allowed for strong storms to develop over the region, with some of these storms being quite severe.

On the afternoon of 23 July, a long tracked supercell thunderstorm affected the region. This storm initially formed in Park County and then moved southeast into Teller County, affecting the US Highway 24 corridor from Woodland Park down into Manitou Springs. Significant flash flooding was noted along Fountain Creek from Woodland Park into Manitou Springs, along with damaging hail. This same thunderstorm continued south-southeast across south and western Colorado Springs, the Fort Carson region, Security/Widefield area and then into Pueblo County, finally weakening in east central Pueblo County. Significant hail was reported along most of the storm's track. Flash flooding destroyed a culvert north of Pueblo in which a vehicle crashed into. A fire rescue team responded to this crash, but did not see the destroyed culvert as they approached the scene and also crashed into the culvert. Two fire personnel were injured. Twenty power poles were also destroyed in Pueblo County on Old Pueblo Road by the storm along with a 78 mph wind gust measured at the Pueblo Airport. Overall, this long lived storm traveled over 120 miles and lasted over 5 hours.

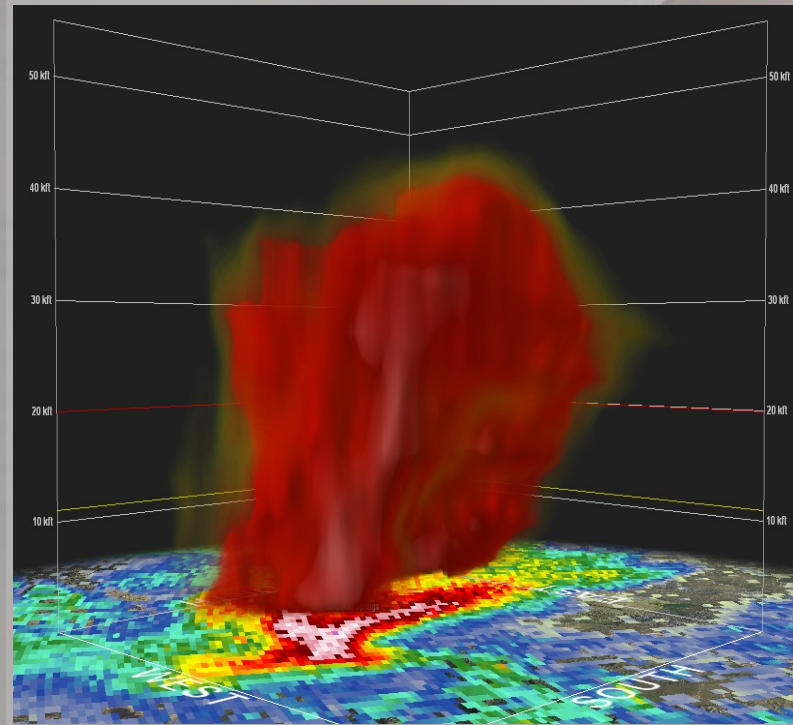


PUB	7/23/18 14:15	CUSTER	3 N SILVER CLIFF	HAIL	1.00
PUB	7/23/18 15:30	TELLER	1 W WOODLAND PARK	HAIL	1.00
PUB	7/23/18 15:44	TELLER	WOODLAND PARK	HAIL	1.00
PUB	7/23/18 16:43	EL PASO	3 SE SECURITY	HAIL	1.00
PUB	7/23/18 16:43	EL PASO	4 S COLORADO SPRINGS	TSTM WND	60.00
PUB	7/23/18 16:49	EL PASO	3 NE FOUNTAIN	HAIL	1.00
PUB	7/23/18 17:55	PUEBLO	5 NE BLENDE	TSTM WND	78.00
PUB	7/23/18 18:10	PUEBLO	2 W BOONE	HAIL	1.75
PUB	7/23/18 18:20	PUEBLO	3 WSW BLENDE	HAIL	1.00
PUB	7/23/2018 16:22	EL PASO	1 E CHIPITA PARK	DEBRIS FLOW	0
PUB	7/23/2018 16:25	EL PASO	1 NNE GREEN MOUNTAIN FA	FLOOD	0
PUB	7/23/2018 16:47	EL PASO	2 NW COLORADO SPRINGS	HEAVY RAIN	1.8
PUB	7/23/2018 16:52	EL PASO	2 NW MANITOU SPRINGS	FLOOD	0
PUB	7/23/2018 17:08	EL PASO	3 NE FOUNTAIN	FLOOD	0
PUB	7/23/2018 17:30	EL PASO	1 SSE COLORADO SPRINGS	FLOOD	0
PUB	7/23/2018 17:53	COSTILLA	2 NNW LA VETA PASS	FLOOD	0
PUB	7/23/2018 17:55	EL PASO	2 SW COLORADO SPRINGS	HEAVY RAIN	1.44
PUB	7/23/2018 18:16	EL PASO	4 SSE FOUNTAIN	FLASH FLOOD	0
PUB	7/23/2018 18:22	EL PASO	3 SSW COLORADO SPRINGS	HEAVY RAIN	2.75
PUB	7/23/2018 18:45	FREMONT	9 NW ROYAL GORGE	FLASH FLOOD	0
PUB	7/23/2018 18:45	PUEBLO	1 ENE PUEBLO WEST	HEAVY RAIN	1.68
PUB	7/23/2018 19:50	FREMONT	2 NW FLORENCE	FLASH FLOOD	0
PUB	7/23/2018 21:00	OTERO	1 WNW LA JUNTA	FLASH FLOOD	0
PUB	7/23/2018 21:19	EL PASO	2 ESE FOUNTAIN	HEAVY RAIN	3.25
PUB	7/23/2018 21:55	PROWERS	LAMAR	FLASH FLOOD	0
PUB	7/23/2018 22:45	FREMONT	5 WNW ROYAL GORGE	DEBRIS FLOW	0
PUB	7/23/2018 23:10	PROWERS	5 W BRISTOL	FLASH FLOOD	0
PUB	7/23/2018 23:27	PUEBLO	8 SE BOONE	HEAVY RAIN	1.2
PUB	7/23/2018 23:59	OTERO	1 N LA JUNTA	HEAVY RAIN	2.48
PUB	7/23/2018 23:59	EL PASO	1 ESE MANITOU SPRINGS	HEAVY RAIN	3

Severe weather, flood and heavy rain reports received by NWS Pueblo (PUB) on 23 July 2018.

Another devastating hailstorm affected the Pikes Peak region during the afternoon of 6 August. This storm originated in eastern Park County and moved east-southeast across Teller County and then into El Paso County. This storm then took a similar track as the 13 June storm as it tracked from the Broadmoor region of Colorado Springs and then south-

southeast across Ft Carson and Security. Hail up to 4.5 inches in diameter was reported. Severe hail damage occurred at the Cheyenne Mountain Zoo where multiple people were injured and several animals were killed. Hundreds of cars in the zoo's parking lot were pulverized by the large hail. Hail damage across Ft Carson was also widespread.



PUB	8/6/18 13:30	TELLER	3 WNW DIVIDE	HAIL	1.00
PUB	8/6/18 14:00	EL PASO	3 S COLORADO SPRINGS	HAIL	2.75
PUB	8/6/18 14:00	EL PASO	4 S COLORADO SPRINGS	HAIL	2.75
PUB	8/6/18 14:10	EL PASO	4 SSW BLACK FOREST	HAIL	1.00
PUB	8/6/18 14:14	EL PASO	2 NW COLORADO SPRINGS	HAIL	1.00
PUB	8/6/18 14:14	EL PASO	3 ENE MANITOU SPRINGS	HAIL	1.00
PUB	8/6/18 14:15	EL PASO	2 NW COLORADO SPRINGS	HAIL	1.00
PUB	8/6/18 14:15	EL PASO	2 WSW COLORADO	HAIL	2.00
PUB	8/6/18 14:16	EL PASO	1 ESE COLORADO SPRINGS	HAIL	1.00
PUB	8/6/18 14:16	EL PASO	1 ESE COLORADO SPRINGS	HAIL	1.00
PUB	8/6/18 14:16	EL PASO	2 WSW COLORADO	HAIL	2.50
PUB	8/6/18 14:19	EL PASO	3 SE MANITOU SPRINGS	HAIL	1.00
PUB	8/6/18 14:19	EL PASO	2 SSW COLORADO	HAIL	1.50
PUB	8/6/18 14:19	EL PASO	3 WSW COLORADO	HAIL	2.00
PUB	8/6/18 14:20	EL PASO	3 ENE MANITOU SPRINGS	HAIL	1.00
PUB	8/6/18 14:20	EL PASO	3 S COLORADO SPRINGS	HAIL	2.75
PUB	8/6/18 14:30	EL PASO	3 SE MANITOU SPRINGS	HAIL	1.25
PUB	8/6/18 14:30	EL PASO	2 N SECURITY	HAIL	1.50
PUB	8/6/18 14:31	EL PASO	1 NE SECURITY	HAIL	1.50
PUB	8/6/18 14:32	EL PASO	1 NE SECURITY	HAIL	1.00
PUB	8/6/18 14:34	EL PASO	1 NE SECURITY	HAIL	2.00
PUB	8/6/18 14:37	EL PASO	3 N FOUNTAIN	HAIL	2.50
PUB	8/6/18 14:40	EL PASO	1 ENE FALCON	HAIL	1.25
PUB	8/6/18 14:40	EL PASO	2 E FALCON	HAIL	1.50
PUB	8/6/18 14:41	EL PASO	9 SSW PEYTON	HAIL	1.00
PUB	8/6/18 14:44	EL PASO	1 WNW COLORADO	HAIL	1.00
PUB	8/6/18 14:46	EL PASO	3 NNE FOUNTAIN	HAIL	1.75
PUB	8/6/18 14:46	EL PASO	3 NNE FOUNTAIN	HAIL	1.75
PUB	8/6/18 14:57	EL PASO	2 ESE SECURITY	HAIL	4.00
PUB	8/6/18 15:19	EL PASO	2 N COLORADO SPRINGS	HAIL	1.00
PUB	8/6/18 15:24	EL PASO	10 NE PINON	HAIL	3.00
PUB	8/6/18 15:50	EL PASO	4 SSW COLORADO	HAIL	2.75
PUB	8/6/18 16:08	PUEBLO	10 ENE PUEBLO DEPOT	HAIL	2.50
PUB	8/6/18 16:55	EL PASO	13 NE PINON	HAIL	1.75
PUB	8/6/18 17:59	PUEBLO	12 SSW AVONDALE	HAIL	1.75
PUB	8/6/18 18:45	EL PASO	8 S FOUNTAIN	HAIL	1.00
PUB	8/6/18 19:30	LAS ANIMAS	6 E MODEL	HAIL	1.00

3D analysis with core up to 45,000 feet! Hail reports received by NWS Pueblo on 6 August 2018

So why has there been so many destructive hail storms in the Colorado Springs region this year? The answer is related to the combination of the northwesterly jet stream flow AND monsoon moisture. Typically during July and August, the monsoon flow is over our region, but the winds aloft at jet stream level are weak. This year we have had both the jet stream over us and plenty of moisture. The combination of these two events working together allows storms to become severe. *In addition, the northwest jet stream flow allows the storms to move on a more southerly track and affect the metro areas along the I-25 corridor.* Typically during our spring severe weather season storms move due east and become severe over the eastern plains well east of the I-25 corridor.



WFO Pueblo  
3 Eaton way  
Pueblo co 81001

Weather.gov/pub  
Tel: 719-948-9429  
E-mail: nws.pueblo@noaa.gov



/NWSPueblo



@NWSPueblo



## Watch....Warning....Advisory

### WHAT'S THE DIFFERENCE???

How many times have you seen the TV crawler with “National Weather Service has issued a Watch/Warning/Advisory” and wondered

“ What’s the difference? ”

The difference determines the risk to life and property of the citizens of the United States, and more specifically, those folks that are in the hazard area that is defined.

The National Weather Service issues a variety of products to keep our customers in-formed of unusual, inconvenient and hazardous weather conditions. A multi-tier concept is employed to accomplish this task with Outlooks, Watches, Warnings and Advisories to point out specific conditions.

## Definitions:

**Outlook:** Used to give considerable lead time that a hazardous event may develop.

**Watch:** Issued when the risk of a hazardous weather or hydrologic event has increased significantly, but its occurrence, location, and/or timing is still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so.

**Warning:** Issued when a hazardous event is occurring or has a very high probability of occurrence. Warnings advise of a **threat to life or property.**

**Advisory:** Issued when a hazardous event is occurring or has a very high probability of occurrence. Advisories describe events that **cause significant inconvenience.**

Here at NWS Pueblo.. we tweet and we post, using Twitter and Facebook as additional sources to reach the citizens that rely on us.

You can follow us either way, to stay in touch and stay informed, as the seasons, and weather, change.

**Stay safe, Stay dry and Stay informed.**

Stay up to date with your winter weather at:

**WEATHER.GOV/PUB**