

Gap weather radar arrives in Gunnison

Installation set for September

August 21, 2024

By [Bella Biondini](#) | Gunnison Country Times Editor



Photo by Bella Biondini, Gunnison Country Times

Once installed, a new gap weather radar is expected to produce a stream of data that will vastly improve water supply and weather predictions in the Gunnison Basin — an area that has historically had limited access to accurate forecasts due to its remote location.

The project, led by the Western Water and Weather Intelligence Center, is years in the making. The nonprofit selected Gunnison County roughly three years ago for its first permanent “gap filling” radar, primarily because of its location at the headwaters of the Colorado River, and support from Emergency Manager Scott Morrill and Sonja Chavez, general manager at the Upper Gunnison River Water Conservancy District. The installation of the new weather station, which will be placed just south of Blue Mesa Reservoir on Big Mesa, is planned for September.

Historically, communities across the country have relied on the National Weather Service (NWS) and its system of radars for weather forecasts. But there are limitations to its coverage, which often show up in communities that are far from large population centers, or tucked between mountains and valleys. These radar gaps create holes in weather and water forecasts across the western United States.

But up to 80% of Colorado’s snowpack comes from the mountainous areas that are poorly covered by existing NWS radars. For example, the Gunnison Valley relies on weather forecasts from Grand Junction, roughly 130

miles away. In addition to creating undependable runoff forecasts, the radar gaps also make it difficult for meteorologists to predict severe localized weather events such as flash floods, and wind and snowstorms.

As changing weather patterns across the West mean less water and more wildfires, the need for more reliable forecasts is only growing. With limited action from the federal government, the private sector has begun to take weather forecasting into its own hands. By installing these radars across the region, Intelligence Center hopes to help rural communities like Gunnison fill in the gaps.

While the National Oceanic and Atmospheric Administration (NOAA) has a billion-dollar budget, it has chosen not to address the problem, said Vern Tharp, president of the Intelligence Center.

“This is a regional issue ... You have NOAA with the mission and the budget, but we’ve got people in the communities like here and Sonja who need the data, so there’s this huge disconnect,” Tharp said.

The Intelligence Center, along with representatives from Advanced Radar Company, delivered the gap radar to Gunnison last week. The water district displayed it on a trailer in front of its office on Spencer Avenue, allowing residents to view the \$1.4 million radar and ask questions. The Colorado Wildlife Foundation paid for the radar and plans to fund the installation of three others on the Western Slope, all in different river basins.

Once it’s up and running, the gap radar will give water managers in the Upper Gunnison Basin a better idea of exactly how much has fallen across the landscape by winter’s end. This is the snow that eventually melts and refills the valley’s rivers and reservoirs.

While the Colorado Basin River Forecast Center uses models to predict runoff, the margin of error can be large. This is especially true in the spring when ranchers begin to irrigate their fields and water is released downstream from reservoirs, Chavez said.

For example, the margin of error in May at Taylor Reservoir on average is 14%. This is the equivalent of 11,000 acre-feet of water (an acre-foot of water is the amount of water it takes to cover an acre of land one foot deep) or two weeks worth of water releases at 400 cubic feet per second. The error at Paonia Reservoir is nearly its entire capacity. In some past years, it has been up to 270,000 acre-feet at Blue Mesa, a fourth of its volume.

Chavez said the Bureau of Reclamation, the federal agency that manages water releases from Blue Mesa and the rest of the Aspinall Unit, said it did not believe the discrepancies made a large difference.

“That’s fishing, hotels, food and restaurant visits. That’s people buying from our stores ... My message back to the Bureau of Reclamation was 10,000 or 20,000 acre-feet is a big deal to my community, and this is why we are doing it. We need to be able to forecast how much snow we’re getting at greater accuracy.”

The District currently measures snowfall using a number of different SNOTEL sites scattered across the basin. These sites produce localized snow depth measurements, and are used to make an educated guess about how much snow sits in the surrounding valleys and mountains. This data is supplemented with Airborne Snow Observatory (ASO) flights, which can map the amount of snow sitting on the ground at a given time with much more accuracy.

But the flights are expensive and only flown a couple of times a year. Some of the old water prediction models struggle because they are not used to seeing a “gory level of detail” about how much snow high elevation pockets are holding and how much of an impact a rain on snow event can have on the spring melt season, said David Gochis, a hydrometeorologist who works with ASO.

“These are the key things that control our hydrology, and this asset here, the radar, is going to be a really big improvement in our ability to see that ... Predicting the weather is the hardest thing, but as long as we can see

what's happening and know what's on the ground, we're going to be continuing to make really good strides in improving our water forecast," Gochis said.

The weather radar has a range of nearly 60 miles and can scan over 400 square miles every 52 seconds. It will be accompanied by an instrument called a radiometer, a ground-based instrument that acts like a weather balloon. The weather-hardy radiometer will be stationed outside, unlike the radar, which will be sheltered by a white dome. Similar instruments have been deployed in Alaska and Antarctica, and are used by the U.S. Air Force, SpaceX and NASA to support launch weather decisions, said Eric Plomodon of Radio Metrics.

Once the data starts flowing, the team managing the radar will need to figure out how to translate it. The Intelligence Center will then share it with the agencies and organizations within the community and eventually the NWS. Gunnison County will have access to the data for free in exchange for serving as a "learning laboratory" for the Intelligence Center to better understand the practical day-to-day use of the radar, Tharp said.

The applications will extend far beyond water resources. Chavez said she is hopeful the weather data can eventually be used at the Gunnison-Crested Butte Regional Airport, by emergency medical service providers at Gunnison Valley Hospital, the local ski resorts and the Colorado Department of Transportation.

The end goal is also to get it into the hands of residents who use unreliable weather apps to make decisions about when it's safe to drive over Monarch, when thunderstorms are expected and which areas are prone to flooding and fire.

"For the two hours that I watched the television this morning, I did not hear anything about the local weather," Plomodon said. "[The radar] is going to provide that kind of information." *(Bella Biondini can be contacted at 970.641.1414 or bella@gunnisontimes.com.)*



UGRWCD's Sonja Chavez (second from left), UGRWCD Board members, agency partners and radar staff celebrate the arrival of the gap radar.



Sonja Chavez and Vern Tharpe explain the benefits of the Gap Doppler Radar to the crowd.

Vern Tharpe of Western Water and Weather Intelligence Center discusses some of the features that will be available with the gap Doppler radar.

