

New hope in parched West

In the next installment of our *Common Ground* series, exploring how America's farms, forests and coasts are the new frontier in the battle against climate change, meet the ranchers harnessing satellite data to tackle drought.

COLORADO RANCHER PAUL BRUCHEZ learned his first hard lesson about drought in college, when he had to convince bankers not to foreclose on his family's land. His father had been diagnosed with cancer and a bad harvest caused by a dry year had left the family short of hay to sell to pay their mortgage.

Almost two decades later, conditions are again bleak. The entire western United States is suffering the worst drought in 500 years. The Colorado River, which provides drinking water to 40 million people and irrigates 5.5 million acres of farmland, has shrunk nearly 20% compared to a century ago. Climate science predicts worse to come, even as populations continue to grow.

"Demand is rising and supply is shrinking," says Bruchez (*pictured*) whose high altitude 6,000-acre ranch is crossed by the Colorado River. "Water conservation in all sectors is going to be required."

That's why Bruchez and eight other ranchers are working with EDF, Colorado

State and Utah State universities, The Nature Conservancy and others on a four-year project to test the impact of using less water on their fields. The goal: to learn more about how much water pastures need, establish the science required to develop better conservation policy and help landowners adapt to dwindling supplies.

"If we are going to talk about water conservation, we need the most accurate data," says Bruchez.

One critical element of the effort is an online platform called OpenET — a joint project of EDF, NASA, Desert Research Institute, Google and others — which makes satellite-based water consumption data widely accessible to farmers, ranchers and water managers. This summer, OpenET will go live with data on 17 western states.

In Colorado, OpenET will estimate water use on nearly 1,500 acres of pastureland to help assess the long-term impacts of varying irrigation levels. The

study will seek to answer a number of questions. For example, how is hay production affected on fields that use less water? And do more noxious weeds grow on those fields? By analyzing how different fields respond and why — say, varying soil types or field locations — farmers will be able to figure out where they can safely use less water in the future.

Tracking water use with satellites instead of ground-based towers makes it possible to cover much larger swaths of land. This can help inform and improve water management across much of the parched West.

"OpenET will enable locally developed, sustainable water management solutions to be easily expanded to other communities," says Robyn Grimm, EDF's manager of water information systems. "This is crucial to adapt to climate change and water scarcity across the West."

For Bruchez, who faces not only drought but also wildfires fueled by climate change, such innovations can't come soon enough.

"Farmers and ranchers are on the front lines of climate change," he says. "We can help develop the right tools to succeed in growing more food with less water."

Ronna Kelly

Learn more about the **OpenET project** at openetdata.org

THE BASICS: OpenET

What is it? An online platform that makes satellite-based data on water use available to landowners, regulators and the public.

What's it for? To help us manage water use as climate change worsens.

Isn't ET an alien? Yes ... but it also stands for evapotranspiration, the process by which water evaporates from the land and transpires from, or is exhaled by, plants.

Where does the satellite come in? ET causes plants to cool. The temperature changes show up in satellite images so scientists can estimate how much water is being consumed by crops. Farmers can compare that data to irrigation rates and field productivity and adjust their water use accordingly.



RUSS SCHNITZER