

OPENET

FILLING THE BIGGEST DATA GAP IN WATER MANAGEMENT

VISION

Our goal is simple, but transformative: to fill a critical data gap in water management across the western U. S. through a transparent, credible, and easily accessible web-based platform—OpenET.

OVERVIEW

A growing scarcity of water, compounded by the impacts of a changing climate and a growing population, has made sustainable water management one of the most challenging issues of our time. Adequate freshwater supplies are critical for the health of communities and wildlife, and nothing is more important to agriculture's ability to grow food. But in arid regions such as the western U. S., freshwater resources are dwindling.

To maximize the benefits of our water supplies, we must know how much water is available and how much is being used.

Evapotranspiration (ET) is a measure of the water used by agriculture to grow food, and it represents the biggest share of water consumption in most arid environments around the world. Scientists are currently using satellite and weather data to map ET at the individual field level. However, access to this data has been limited and expensive, keeping it out of the hands of most water users and decision-makers.

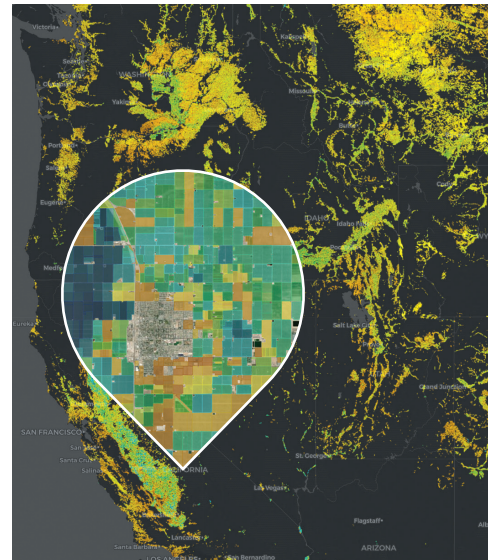
Evapotranspiration (ET) is the process by which water is transferred from the land to the atmosphere. It includes both evaporation from soil and transpiration from plants. ET is a core driver of the Earth's water cycle, returning water to the atmosphere to fall again as precipitation. For irrigated agricultural fields, ET is necessary for plant growth and food production.

Introducing OpenET: A Tool For Effective Water Management

It is now possible to generate field scale ET data across vast areas, thanks to a growing array of satellites and powerful cloud computing resources like Google Earth Engine and the NASA Earth Exchange. The OpenET platform leverages these resources and applies an ensemble of trusted methods to generate ET data from satellite observations for user-defined geographies and time frames (from weekly to annual time steps) across the western U.S. We're bringing together a community of scientists and nationally recognized experts to develop a credible, trusted source of ET data and to define and improve the accuracy of this information.

With OpenET, low-cost, reliable, and widely accessible data at the field scale will be used to deliver benefits for agricultural sustainability in the following ways:

- ✓ **Expand ET-based irrigation practices** that maximize both crop production and on-farm water use efficiency;
- ✓ **Support groundwater management and water trading programs** that protect the financial viability of farms during droughts, while ensuring that water is also available for other beneficial uses; and
- ✓ **Develop more accurate water budgets** (the inflow and outflow of water through a specified region) and innovative management programs that ensure water is available for agriculture, people, and ecosystems.

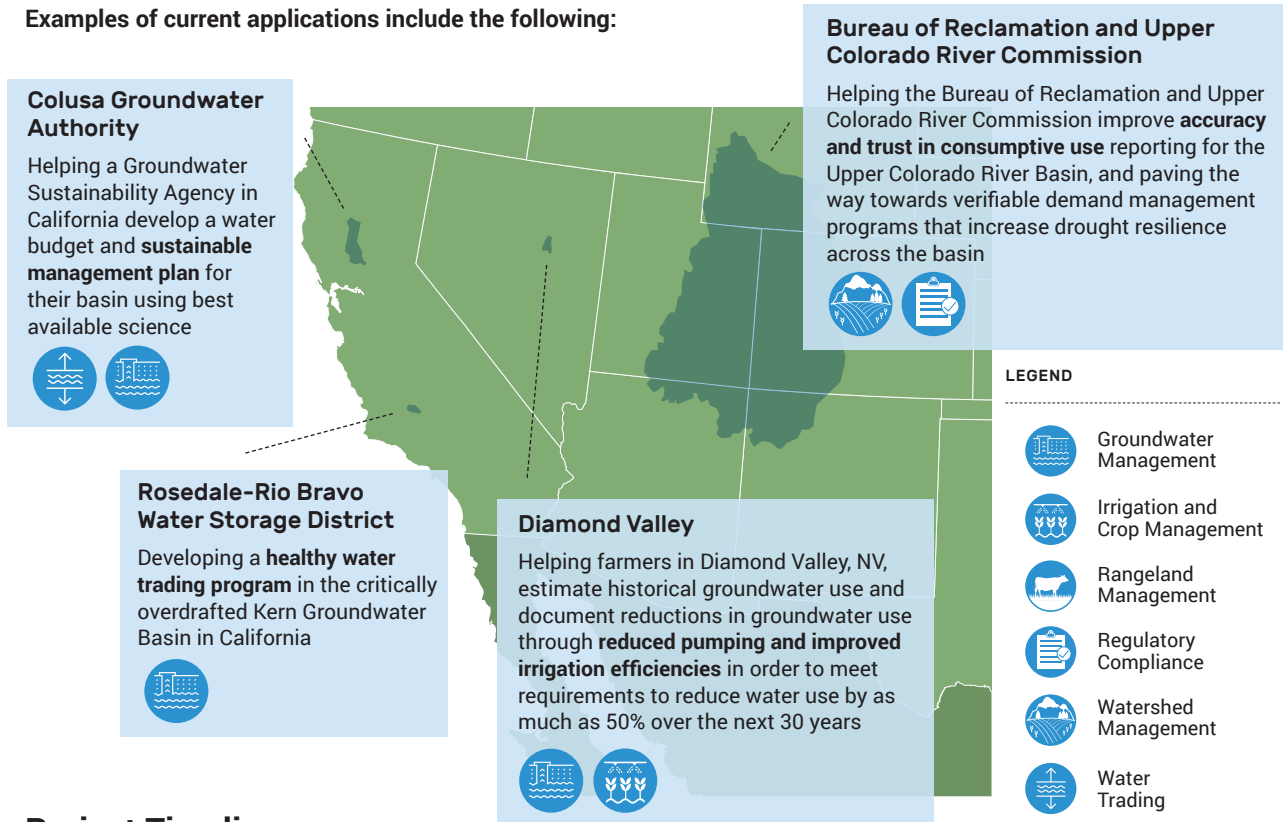


ET data at the field scale is accessible across the western U.S. from the OpenET web interface

Use Cases and Applications

Project partners have developed use cases and applications to demonstrate OpenET's value in supporting sustainable land and water management practices at the local, regional, and even international scales. While OpenET is focusing initially on use cases in the western U.S., other regions will be explored and considered as the project progresses and according to funding availability.

Examples of current applications include the following:



Project Timeline

The OpenET project formed in 2018, and the platform is still in development with input from use case partners. A public launch of the platform is anticipated in 2021 with the following goals:

- ✓ ET data is produced at low cost and available and easily accessible to end users for any area within the western U.S.
- ✓ Users trust the validity of the data and information provided by the OpenET platform, and the data is used by private and public resource managers at local, state, and federal levels.
- ✓ By the mid 2020s, the OpenET platform is used to support and advance sustainable resource management practices at a much larger scale than is currently possible.

PROJECT PARTNERS

The team includes leading national and international experts in remote sensing of ET, cloud computing, and water resources, policy, and markets, partnered with nationally recognized web development teams specializing in translating scientific data and information for advanced decision support. The OpenET platform receives financial support from the NASA Applied Sciences Program, the S.D. Bechtel, Jr. Foundation, the Gordon and Betty Moore Foundation, the Walton Family Foundation, the Delta Water Agencies, and the Windward Fund. In-kind support is provided by partners in the agricultural and water management communities, Google Earth Engine, and the Water Funder Initiative.

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Learn more about OpenET at OpenETdata.org.