

OPENET

Filling the Biggest Data Gap in Water Management



Evapotranspiration and Consumptive Use

Water applied to a field ultimately:

- ◆ Evaporates
- ◆ Transpires (after being used by plants to grow)
- ◆ Recharges underlying groundwater
- ◆ Runs off and returns to a local canal or river

[Create Custom Data](#)
(Coming Soon)

Search  Select Year: 2019 Variable: ET Raster View Field View

Cities

mm in

47 in

Cumulative Ensemble Evapotranspiration (in)

0 in

 About Field Boundaries

100 mi 

Opacity

1 

6

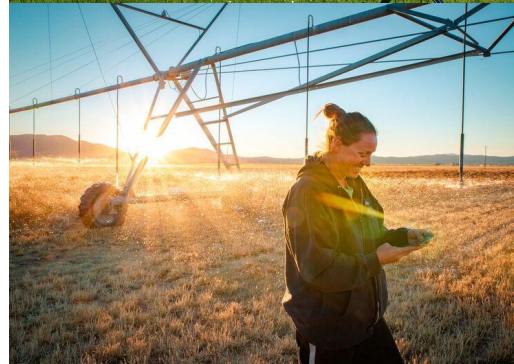
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Measuring ET enables:

- Development of realistic water budgets
- Incentives for conservation and innovation
- Proper credit for reduced use
- Reduced transaction costs for water trading programs
- Increased on-farm efficiencies





OpenET Goals:

Reliable ET data are produced and available at low cost, and are **easily accessible via openetdata.org** for any area within the Western US.

There is trust in the validity of the data and information provided by the platform, and it is utilized by farmers, and private and public resource managers at the local, state and federal levels.

A variety of **sustainable resource management practices are enabled** at a much larger scale than currently possible.



OREGON

IDAHO

WYOMING

NEVADA

UTAH

COLORADO

KANSAS

CALIFORNIA

ARIZONA

NEW MEXICO

TEXAS

LEGEND

-  Groundwater Management
-  Irrigation and Crop Management
-  Regulatory Compliance
-  Watershed Management
-  Water Trading

Harney Basin

Colusa Groundwater Authority

Sacramento-San Joaquin Delta

Almond Board of California

Rosedale-Rio Bravo
Water Storage District

Diamond Valley

Navajo Nation

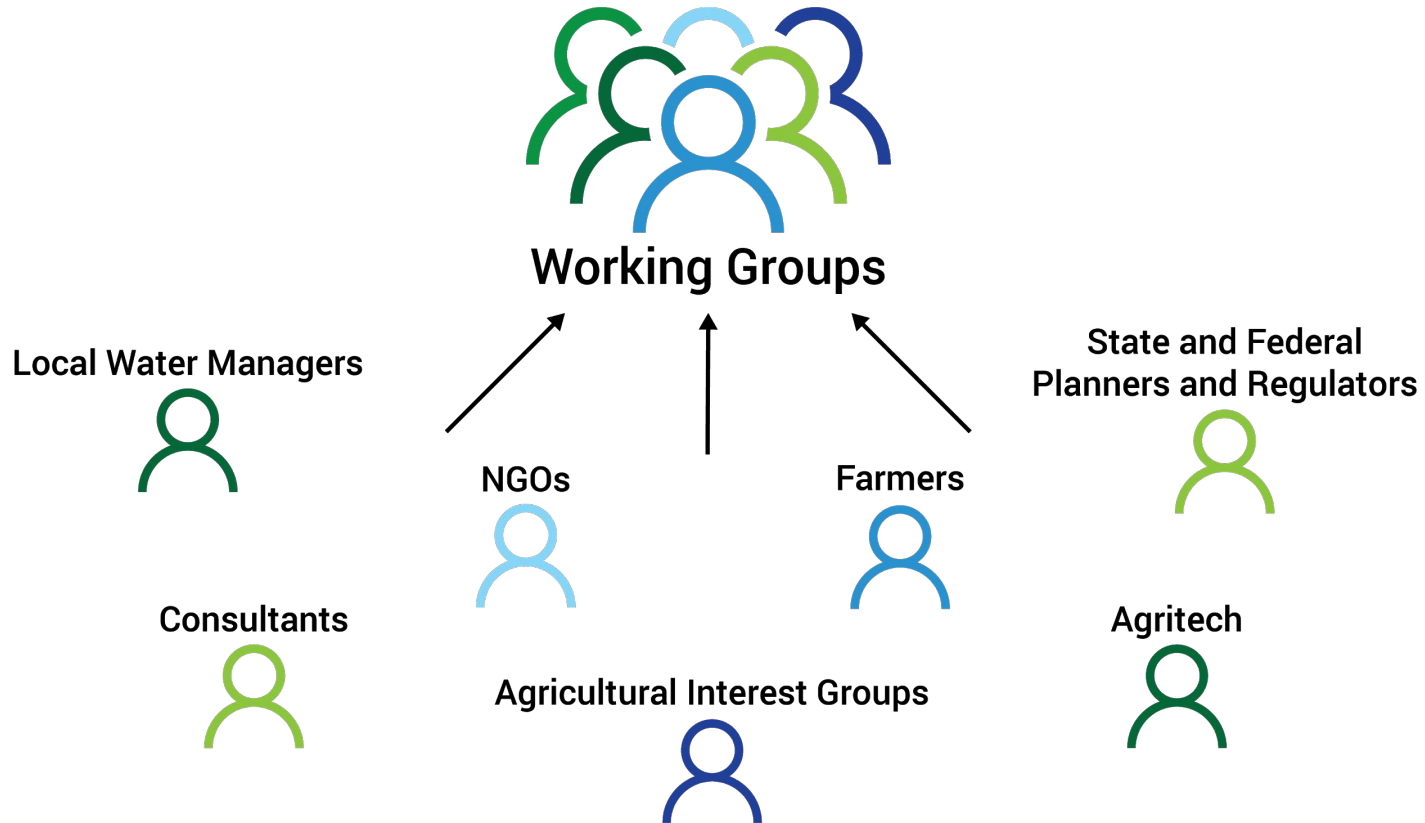
Salt River Project

U.S. Bureau of Reclamation

Water Conservation in the
Upper Colorado River Basin

Texas Water Development Board

Partnering with Other Experts to Guide Development



Community Support for OpenET

“We have used ET data to gain a better understanding of our water consumption and design more efficient irrigation systems that use about 15% less water. With the demands on water from a growing population and feeding more people, we have to figure out how to get the best value from every drop of water. ET data is crucial to providing this information.”

MARK OWENS
OREGON STATE REPRESENTATIVE/GROWER

“OpenET represents a game-changing leap forward for water management in the West. OpenET will give water users in the Delta a much less expensive alternative method for complying with the state requirement to monitor and report on their water diversions.”

MICHAEL GEORGE
DELTA WATERMASTER, CALIFORNIA STATE WATER RESOURCES
CONTROL BOARD

“OpenET is a great step forward for managing water needs in a time when demand far surpasses supply. Helping our farmers and ranchers more effectively manage their water use not only helps their crop and bottom line, but creates opportunities for more water to remain in our river systems to benefit both people and nature.”

AARON DERWINGSON
WATER PROJECTS DIRECTOR, THE NATURE CONSERVANCY

“Saving water saves farmers money, so they have a strong incentive to conserve. If a program like OpenET makes cents – as in dollars and cents – then make it available to farmers, move out of the way and they’ll adopt it. I’ve talked to farmers who are eager to get their hands on this data,”

DON PARRISH
AMERICAN FARM BUREAU

The OPENET Team

Environmental Defense Fund Robyn Grimm, Dana Rollison, Maurice Hall

DRI, NASA Ames, Habitat Seven (Multimodel Development, Integration, API, UI) Justin Huntington, Forrest Melton, Jamie Herring, Charles Morton, Britta Daudert, Alberto Guzman, Jody Hansen, Jordan Harding, Matt Bromley

USDA, NASA Marshall Space Flight Center, U. Maryland, U. Wisconsin (ALEXI/DisALEXI) Martha Anderson, Yun Yang, Christopher Hain, Mitch Schull, Mutlu Ozdogan

U. of Nebraska, U. of Idaho, DRI (EE METRIC) Ayse Kilic, Rick Allen, Peter Revelle, Samuel Ortega

NASA JPL (PT JPL) Josh Fisher, Gregory Halverson

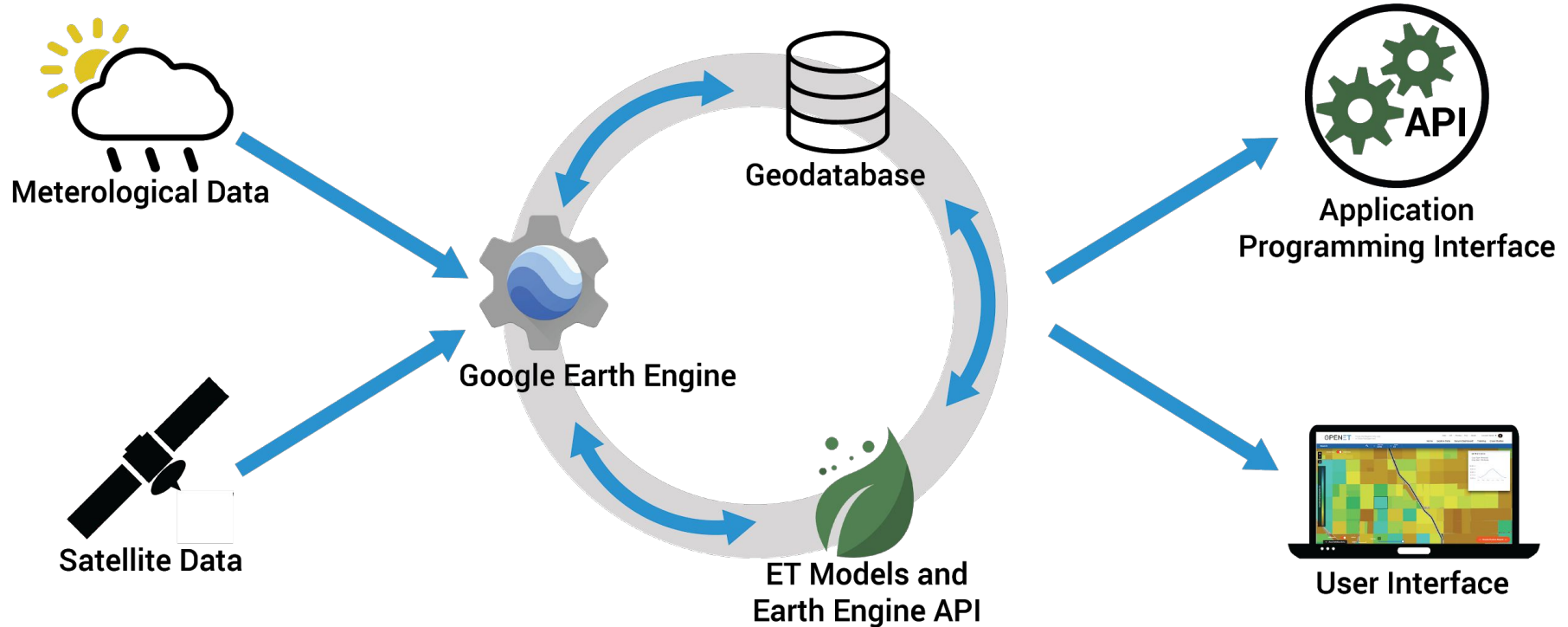
NASA Ames, CSUMB, Stanford University (SIMS) Forrest Melton, Alberto Guzman, Lee Johnson, Tianxin Wang, Conor Doherty

USGS (SSEBop) Gabriel Senay, MacKenzie Friedrichs

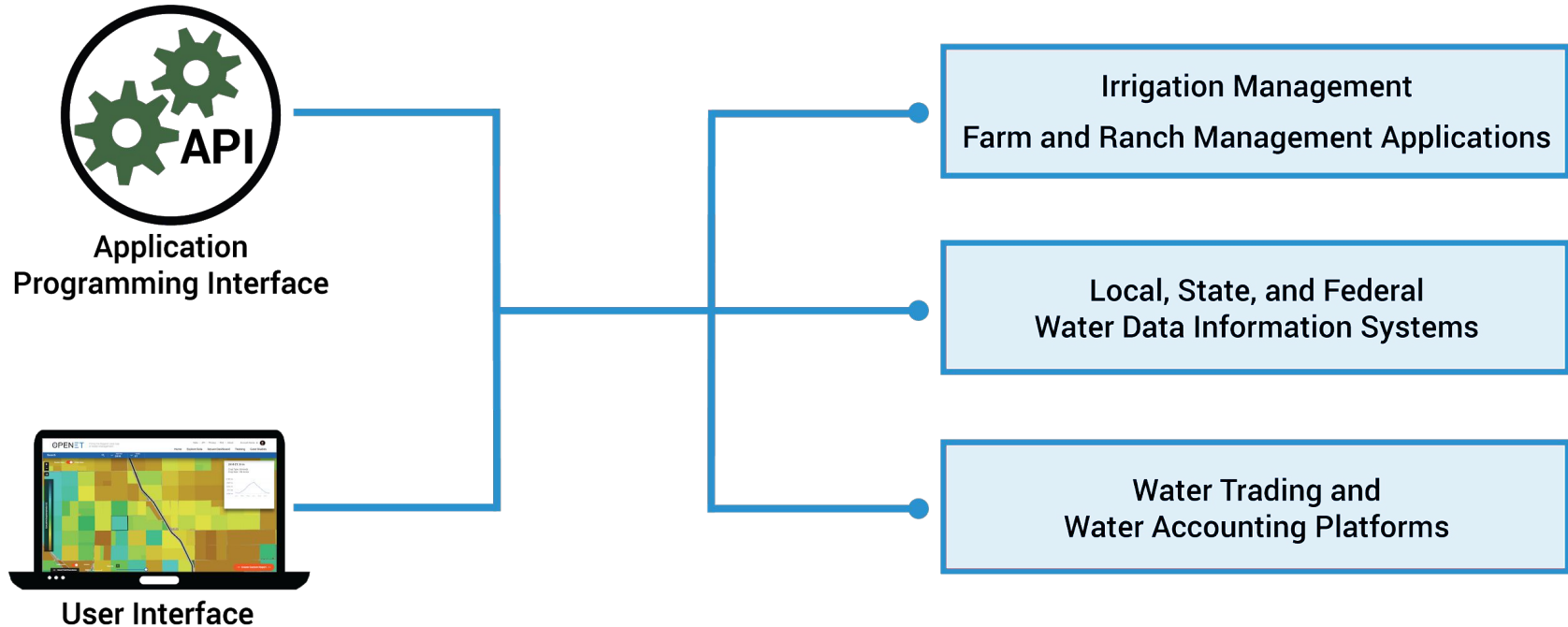
Google Earth Engine Tyler Erickson



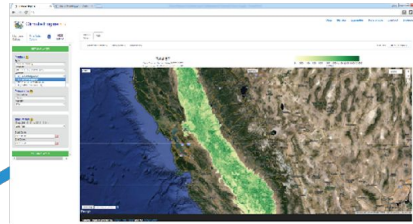
How OpenET Works



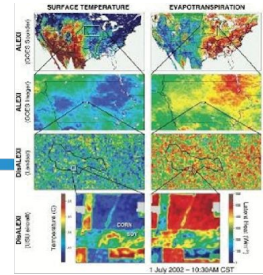
OpenET API for Integration with Other Software



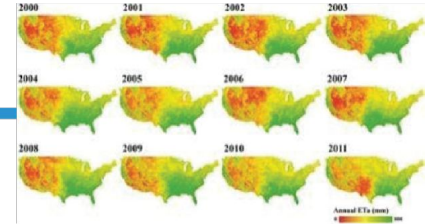
OpenET Uses Well-Established Methods



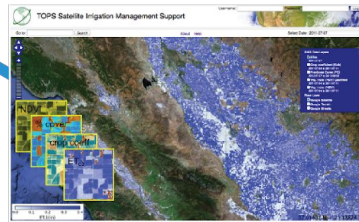
EE METRIC
University of Nebraska,
University of Idaho



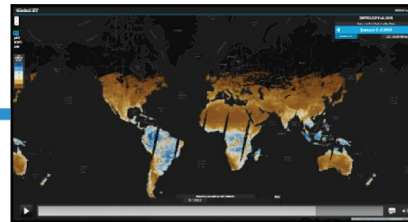
ALEXI/DisALEXI
USDA, NASA, University of Maryland,
University of Wisconsin



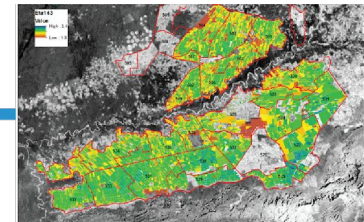
SSEBop
USGS



SIMS
NASA, CSUMB, Stanford University

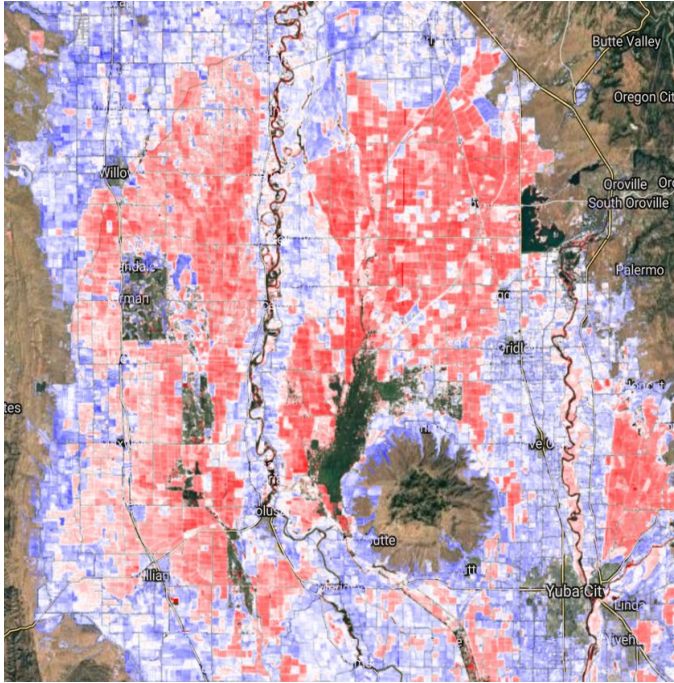


PT-JPL
NASA



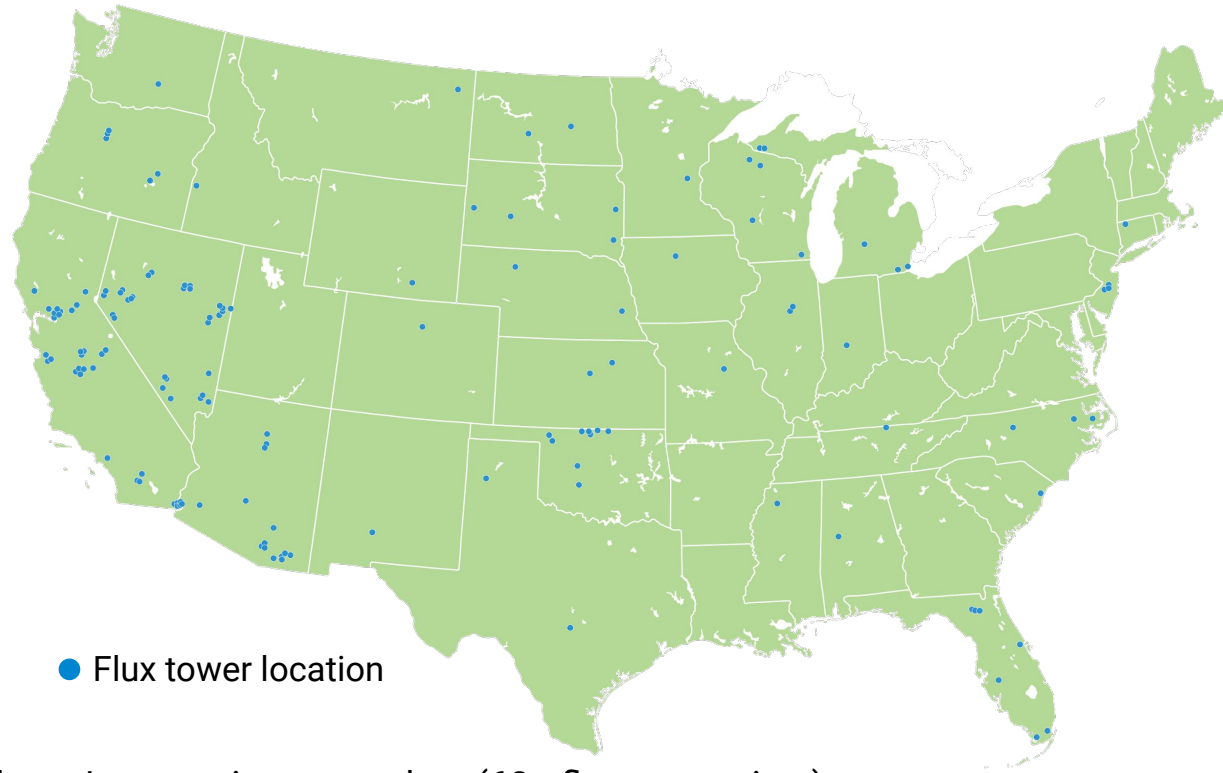
SEBAL

The Value of a Community Effort



- Ability to rapidly compare results from different models to identify consistent differences
- Identification of opportunities to improve methods / models
- Collaboration to improve consistency of data inputs and reduce redundancy
- Collaboration on evaluation and intercomparison → larger pool of ground measurements and approaches

Intercomparison and Accuracy Assessment



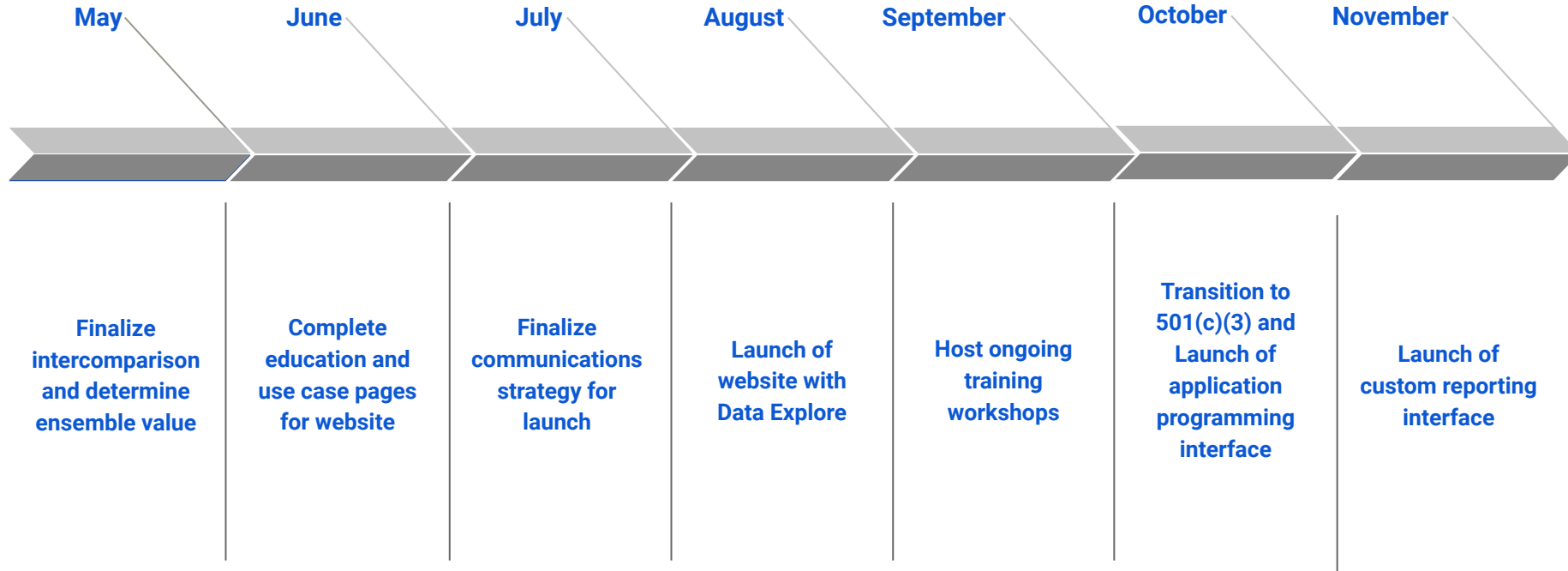
● Flux tower location

Phase I comparison complete (60+ flux tower sites)

Phase II 'blind' comparison ongoing for 130+ flux tower sites



Key Milestones for Next 7 Months



What's next for OpenET?

- Scaling to new geographies

- Most immediately in the US: Mississippi Alluvial Plain, Apalachicola-Chattahoochee-Flint River Basin
- Eventual global expansion: Mexico, India, Brazil

- Greater focus on applications, case studies and uptake

- Locally-driven conservation programs
- Exploring the use of OpenET for forest and fire management
- Water accounting and trading programs
- Irrigation scheduling and other farm management applications
- Helping agency partners integrate OpenET into Federal and State water management programs and models

- Further development in the underlying science

- Improving the models for open water evaporation, and for forested and other non-agricultural landscapes
- Exploring the use of OpenET for parks, golf courses, and other urban settings
- Building out other polygon datasets for the platform (wetlands, watershed boundaries, etc...)

