OPENET

Filling the Biggest Data Gap in Water Management

EDF ENVIRONMENTAL DEFENSE FUND

NASA

Google Earth Engine

DRI

USGS science for a changing world

USDA ars

University of Idaho

WISCONSIN UNIVERSITY OF WISCONSIN-MADISON

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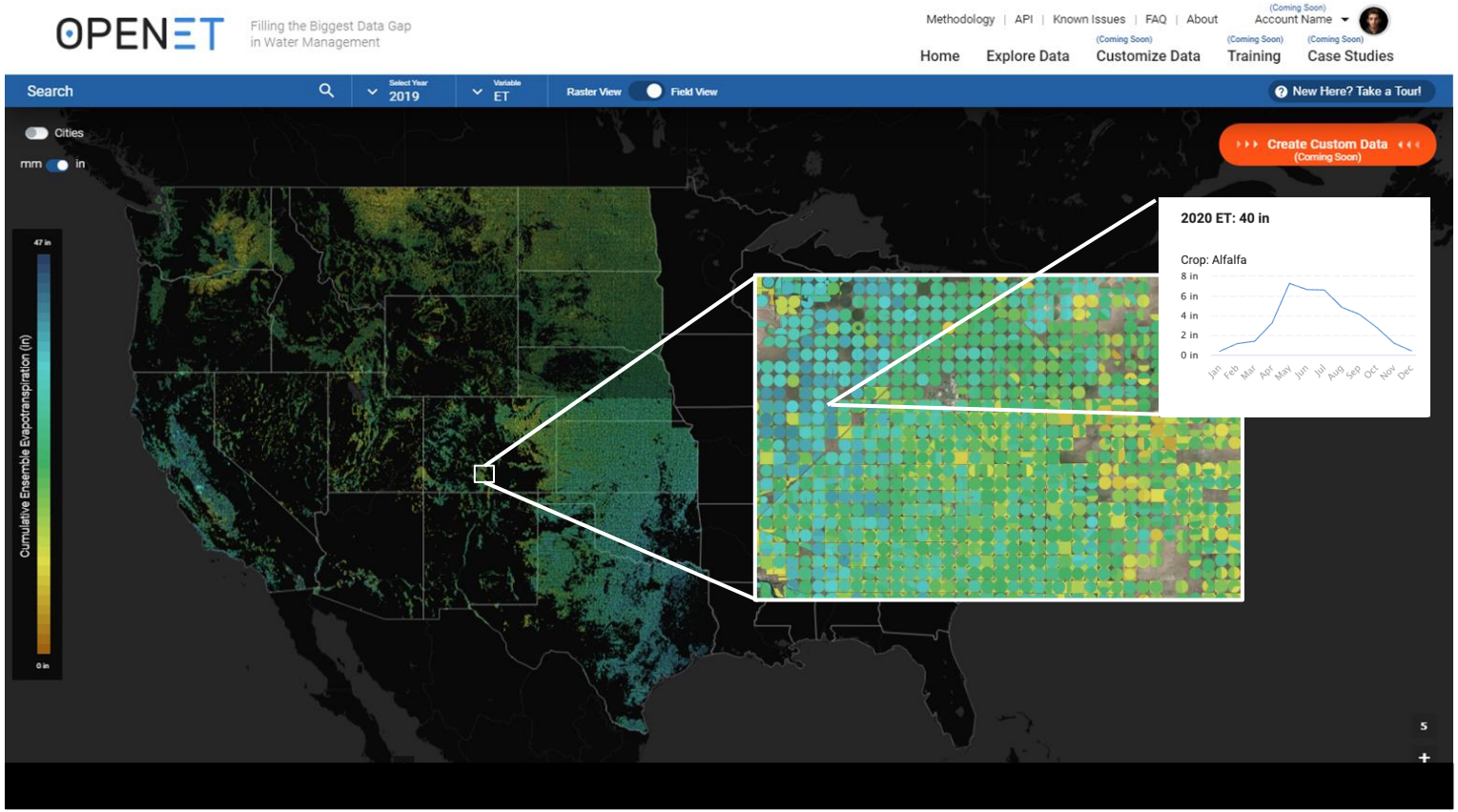
University of Nebraska Lincoln

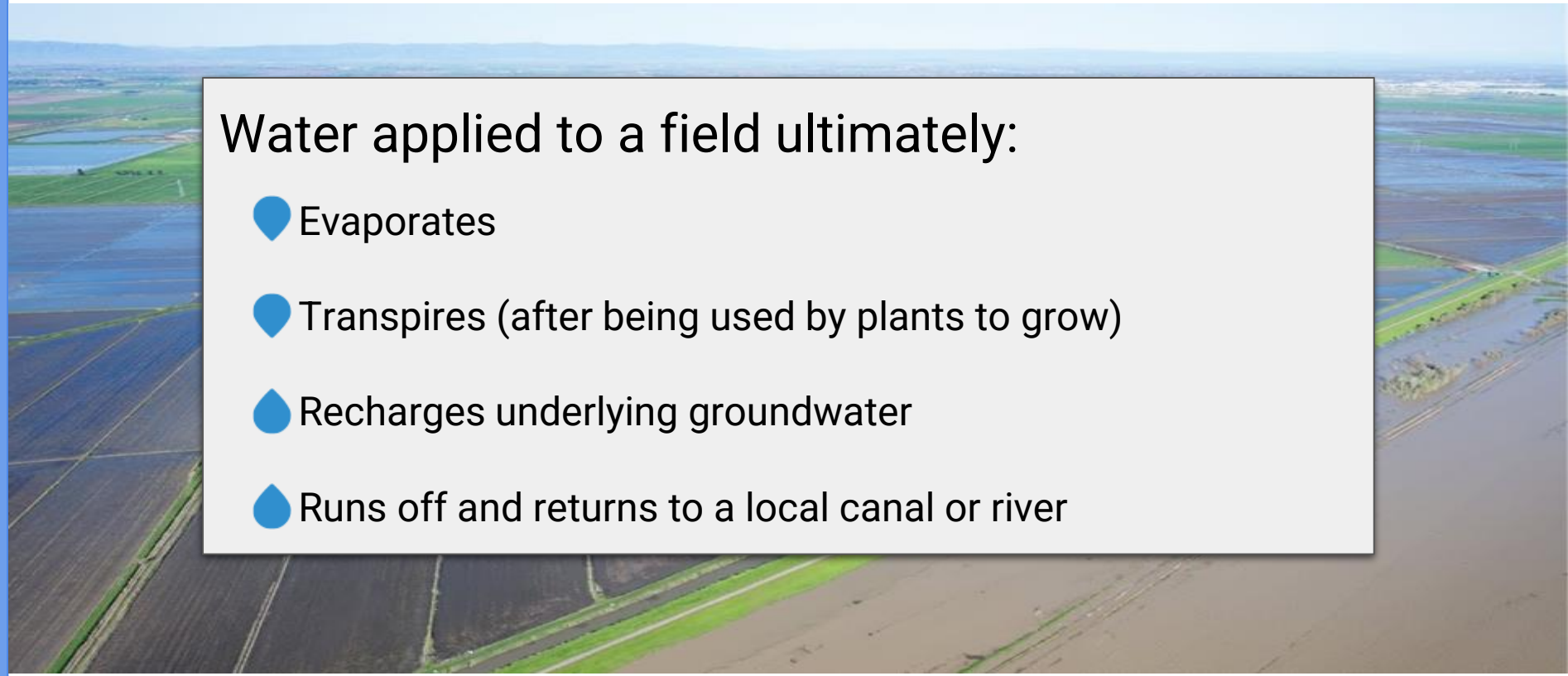
California State University MONTEREY BAY

HabitatSeven

OpenET: Reliable, accurate water data



What is evapotranspiration (ET)?

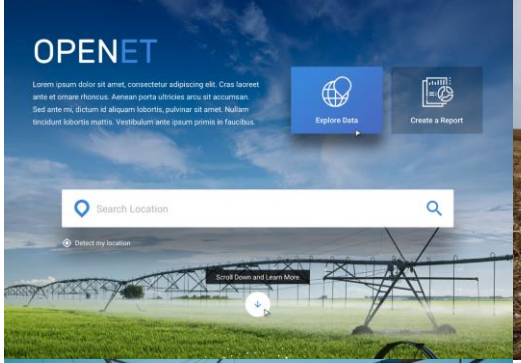


Water applied to a field ultimately:

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

OpenET can help:

- **Rural communities** to design locally driven water conservation and trading programs.
- **Water managers** to develop more accurate water budgets, incentive programs and other innovative strategies.
- **Policymakers** to more accurately track water supplies, simplify regulatory compliance, and co-develop solutions with local communities.
- **Farmers** to improve irrigation practices to maximize “crop per drop” and reduce costs for fertilizer, water, and energy.



- OpenET goals:

- Reliable and transparent ET data are produced and **easily accessible for all farmers, communities, and water managers in the west via openetdata.org**

- **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 **innovative and locally driven water management practices are enabled** at a much larger scale than currently possible.

Founded on open science

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

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

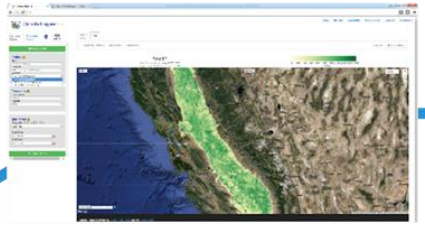
NASA JPL (PT JPL) Josh Fisher, Gregory Halverson

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

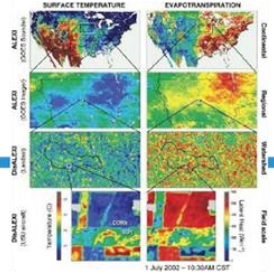
USGS (SSEBop) Gabriel Senay, MacKenzie Friedrichs

Google Earth Engine Tyler Erickson

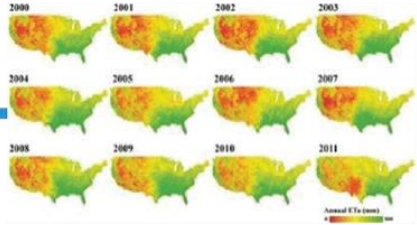
OpenET uses well-established methods



METRIC
30m | 20+ state water management agencies

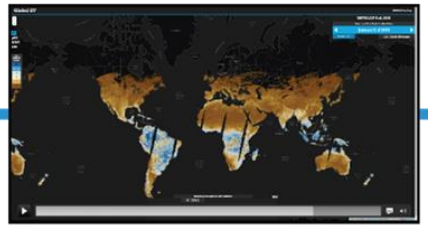


ALEXI/DisALeXI
500m-5km | NOAA, USDA, NASA, U.S. Drought Monitor

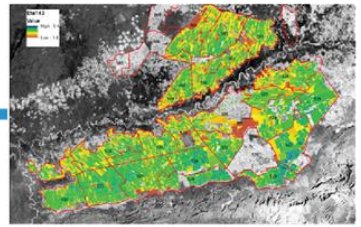


SSEBop
30m-1km | USGS National Water Census

SIMS
30m | CA Department of Water Resources, UCCE, +5 western states, NASA

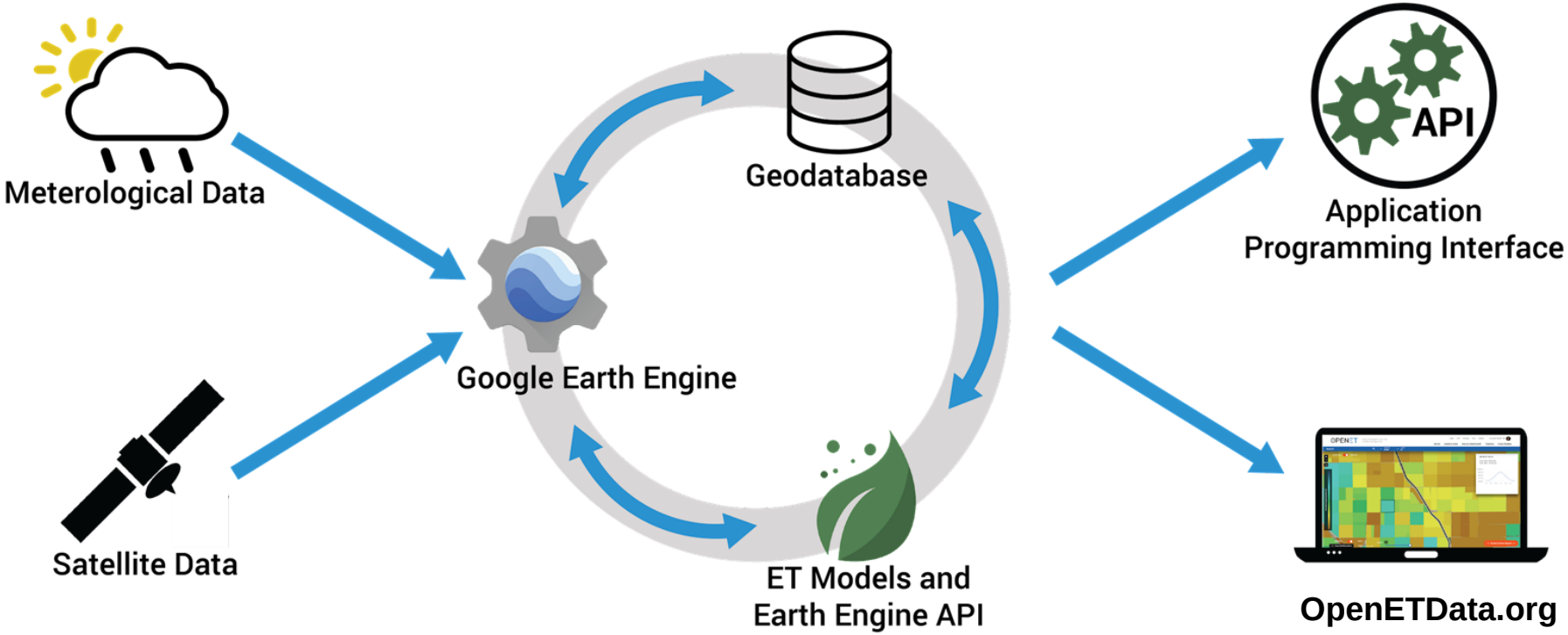


JPL-PT
30m-1km | New Mexico State Engineers Office, NASA



SEBAL
30-300m | World Bank, UN FAO, eLeaf

How OpenET works



OpenET Ensemble Value: Croplands

Accuracy Summary for Croplands for the OpenET Ensemble ET Value						
Time Period	**Slope**	**Mean Bias Error**	**Mean Absolute Error**	**Root Mean Squared Error**	**r-squared**	**Mean flux tower ET**
Water Year: 14 sites / 48 total water years	0.91	-90.75 mm (-9.0%)	101.71 mm (10.1%)	111.79 mm (11.1%)	0.88	1008 mm
Growing Season: 38 sites / 151 growing seasons	0.98	-13.72 mm (-2.3%)	77.03 mm (12.7%)	92.02 mm (15.1%)	0.87	608 mm
Monthly: 45 sites / 1,682 months	0.94	-5.86 mm (-6%)	15.71 mm (17.1%)	20.23 mm (22%)	0.90	92.04 mm
Daily: 49 sites / 4,804 days	0.86	-0.36 mm (-10.2%)	0.83 mm (23.5%)	1.09 mm (30.9%)	0.81	3.53 mm

Slope: Measure of overall bias; 1.0 is perfect
Mean Bias Error (MBE): Measure of bias; 0.0 is perfect
Mean Absolute Error (MAE): Measure of expected error; 0.0 is perfect
Root Mean Squared Error (RMSE): Measure of expected error with additional weight for outliers; 0.0 is perfect
r-squared: Measure of the ability of the model to reproduce observed variability; 1.0 is perfect

More information available at:
www.openetdata.org/methodologies
www.openetdata.org/accuracy

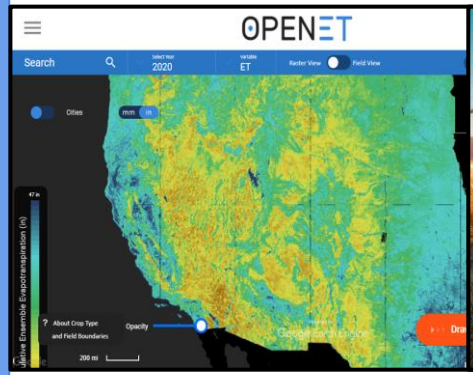
Dedicated to transparency and equal data access

Available on www.openetdata.org:

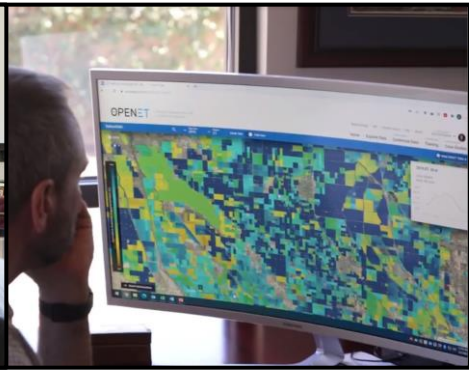
(and more)

OpenET, Inc. Vision

Advance solutions to our world's greatest water challenges through a shared understanding of water use.







OpenET, Inc. Goals

- Build organizational sustainability and ensure operational excellence.
- Foster acceptance and trust for OpenET data across the Western US.
- Inform improvements to land and water management through more accurate understanding of water use.
- Support innovative, locally-driven water management within rural, agricultural and disadvantaged communities.
- Expand geographically beyond the 17 Western states.

OPENET