

LAND IQ ET

OPEN ET <sup>1</sup>

Spatial Extent	California's Southern San Joaquin Valley	17 Western US States
Unit of Analysis	Pixel, which can be aggregated to field, parcel, district or region	Pixel, averaged by field at each timestep
Analysis Approach	From the bottom up – starting at the field level	From the top down – starting at the sky
Spatial Resolution	10m x 10m (0.02 acres)	30m x 30m (0.22 acres)
Time Interval of Analysis (Temporal Resolution)	Monthly and yearly	Daily, monthly, and yearly
Time Interval of Deliverables	Monthly, delivered within 25 days of the end of the month	Monthly, delivered within six weeks or less of the end of the month Daily data, delivered within two days of satellite overpass
Data Delivery	Multiple formats including web-based tools, GIS compatible shape files and written reports.	Application Programming Interface (API) and custom reporting tools
Model	Data-driven model informed by multiple image resources, current land use datasets and extensive field measurements	Simplified empirical model utilizing multiple models to produce a single, “ensemble” value
Imagery	Landsat (every 16 days) Sentinel (every 5 days) ECOSTRESS (multiple dates per month)	Landsat (every 16 days) GOES Sentinel-2 (every 5 days) Suomi NPP Terra Aqua
Land Use and Field Boundary Dataset	Land IQ 2022	Land IQ 2018 and USDA Cropland Data Layer
Precipitation	Spatial map of precipitation at the field-level included in deliverables	Unknown
Ground Truth Data Collection (Field Stations)	Over 90 Residual Energy Balance (eddy covariance) and Water IQ (modified surface renewal) stations in the Southern San Joaquin Valley	120 flux tower sites across the 17 western US states, including Ameriflux and other collaborators such as USDA, USGS and partner Universities, in addition to CIMIS stations in California
Ground Truth Field Station Density	1 for every 20-30,000 acres	1 for every 130,000 acres (CIMIS)

<sup>1</sup> Information derived from Open ET FAQ at <https://openetdata.org/faq.pdf>



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QA/QC	Dedicated team reviewing station data, data driven model and model results monthly	Unknown
Accuracy & Validation	Sets aside data from ground truth stations to perform independent validation and accuracy comparisons against applied water.  Accuracy is 5 - 8%.	Compares results against ET measurements collected from flux tower sites, groundwater pumping records and water balances at the watershed scale.  Accuracy is 15 - 20%.
Calibration & Validation to Individual Crop Type	Yes	No
Expert Independent Review	Independent review of monthly results by University of California Cooperative Extension Emeriti	Unknown
Longevity	Field-level consumptive use analysis on a small scale (<10,000 acres) beginning in 2014 and on a large scale (>100,000 acres) beginning in 2016	Downloadable data expected to be released to the public in early 2022
Customers Served	Irrigation Districts and Groundwater Sustainability Agencies accounting for more than 3 million acres	Intended for use by farmers, landowners, irrigation district, and GSA managers
Urban Landscape ET Analysis	Yes	No
Confidentiality	Data are the property of the client and are not shared without permission	Data are publicly accessible
Public/Private Partnerships	Yes, with UC Davis Department of Land, Air and Water Scientists, United Nations Food and Agriculture Organization, UC Agriculture and Natural Resources and UC Cooperative Extension	Yes, with NASA, Desert Research Institute, Environmental Defense Fund, and Google Earth Engine
Cost	Current rate is cents/acre/year depending on size and client duration	Limited amount of downloadable data is available at no cost, details on acquiring data for larger organizations will be available when the API launches in 2022

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Land IQ is a specialized Agricultural Science and Remote Sensing firm that pairs scientific knowledge of agronomic, native plant and land systems with advanced remote sensing technologies, custom modeling, and analytical methods to develop powerful and cost-effective client solutions. We focus on large scale land systems and management applications.

Land IQ's dedicated ET team consists of multiple spatial scientists that are 100% dedicated to this project, agronomists with specific crop knowledge and grower relationships, as well as biometeorologists dedicated to station maintenance and data review.

Land IQ understands the need for sound scientific support as well as practical experience. Many of our staff have roots in agriculture and bring first hand and irreplaceable understanding of agricultural production systems to projects.