

# Evaluating OpenET satellite measurements of crop water use in the Salinas Valley

## Presenters:

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<sup>2</sup>NASA Ames Earth Science Div.

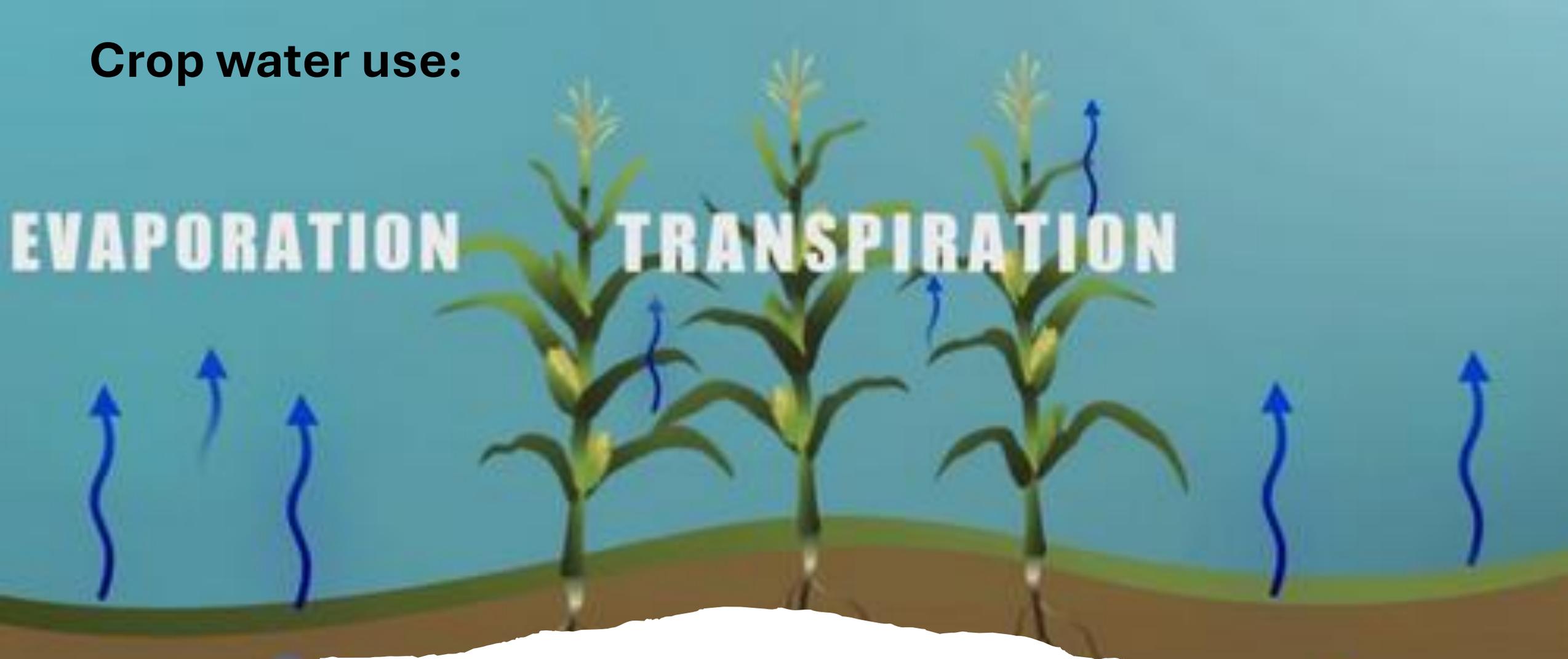
<sup>3</sup>UCCE Monterey

2026 UCCE Irrigation & Nutrient Management Meeting

## Crop water use:

EVAPORATION

TRANSPIRATION



Evapotranspiration (ET)

- also sometimes called “consumptive use”

# Outline of talk

1. Recent ET measurements in the valley
2. Use of OpenET FARMS tool for seasonal ET

# PART 1

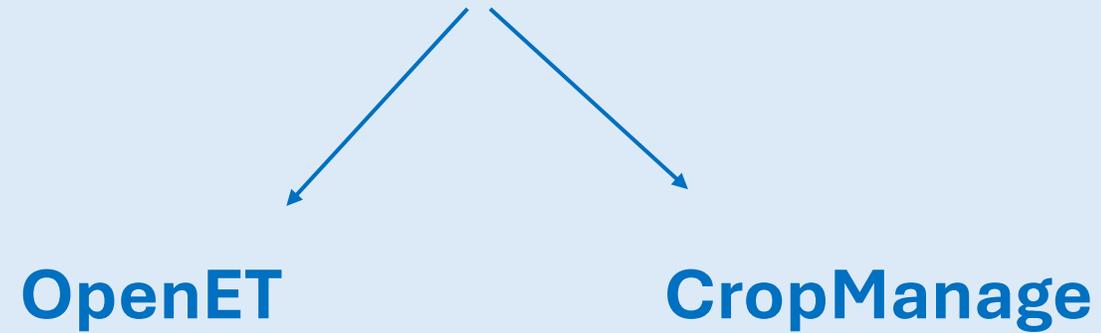
- Overview of ET measurements

# Motivation

Provide further basis for evaluating ET-related software apps

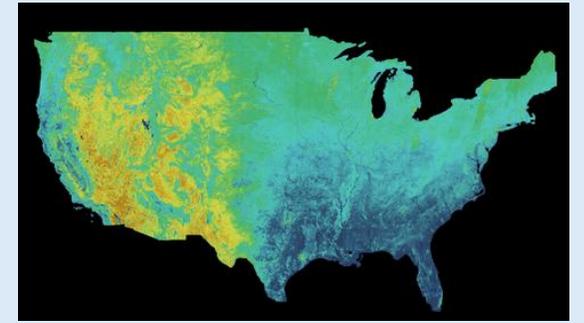
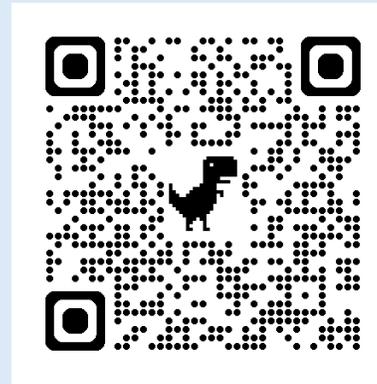
# Motivation

Provide further basis for evaluating ET-related software apps





etdata.org →

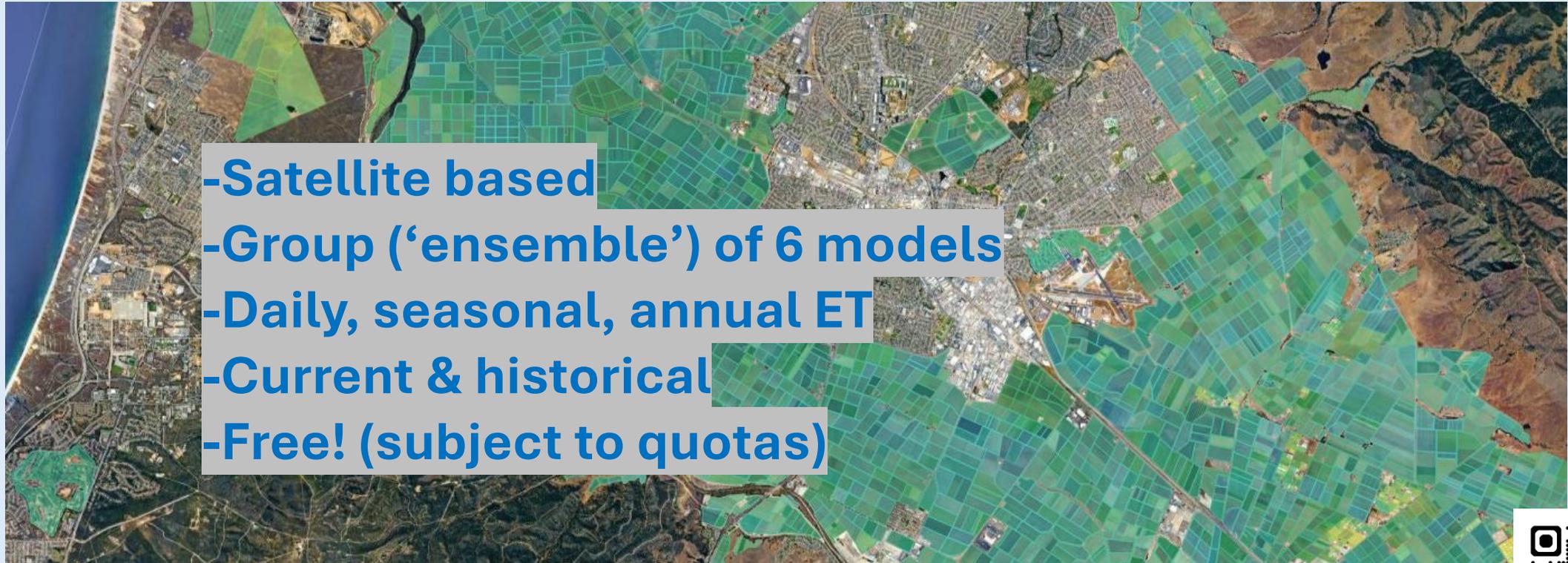
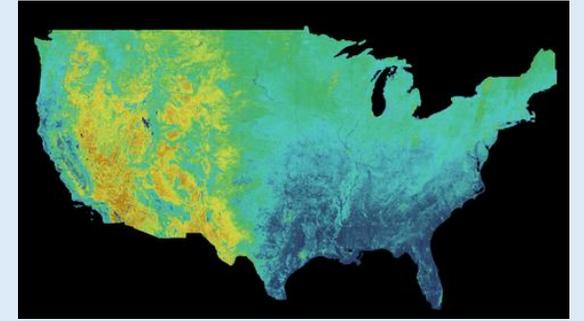
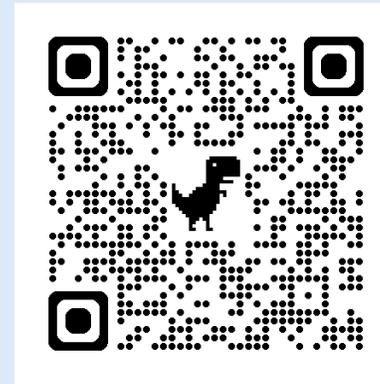


See also presentations at this meeting in 2024 & 2025 from [UCCE archive](#) →





etdata.org →

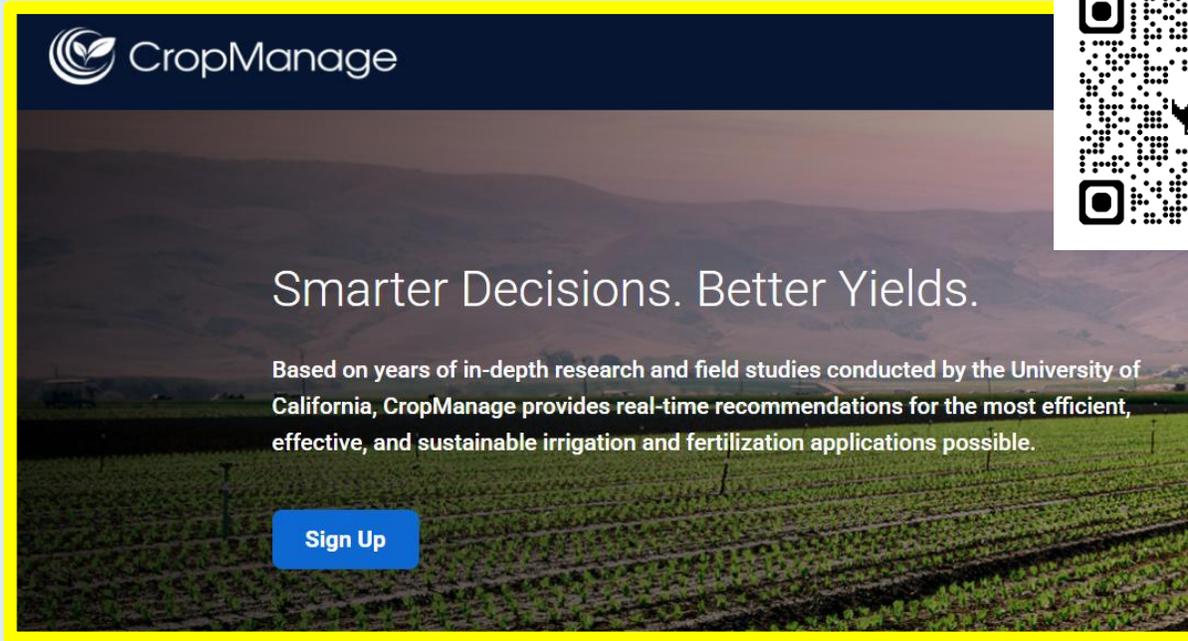


- Satellite based
- Group ('ensemble') of 6 models
- Daily, seasonal, annual ET
- Current & historical
- Free! (subject to quotas)

See also presentations at this meeting in 2024 & 2025 from [UCCE archive](#) →



## Full system:

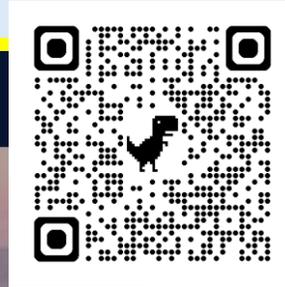


CropManage

Smarter Decisions. Better Yields.

Based on years of in-depth research and field studies conducted by the University of California, CropManage provides real-time recommendations for the most efficient, effective, and sustainable irrigation and fertilization applications possible.

Sign Up

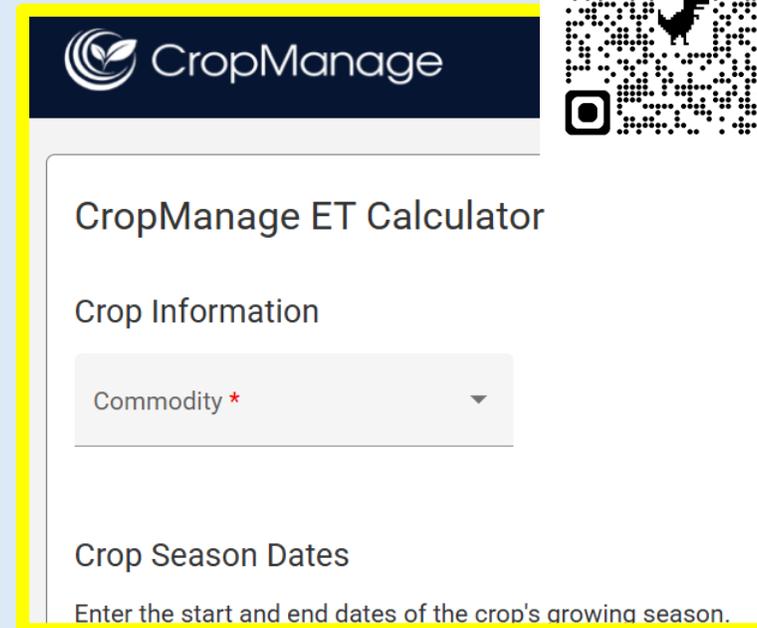


## CropManage:

- Irrigation scheduling
- Nutrient management
- Seasonal ET
- Archiving
- Free! Developed/operated by UCCE



## Seasonal ET quick calculator:



CropManage

CropManage ET Calculator

Crop Information

Commodity \*

Crop Season Dates

Enter the start and end dates of the crop's growing season.



# Ground data

- 4 crops x 2 reps

<u>Crop</u>	<u>Yr</u>	<u>season days</u>	<u>obs days*</u>
Broccoli	2023	92	64
Broccoli	2024	101	75
Cauliflower	2024	72	53
Cauliflower	2025	68	56
Head lettuce	2023	70	44
Head lettuce	2024	75	54
Romaine	2025	67	47
Romaine	2025	57	42
			<b>435</b>

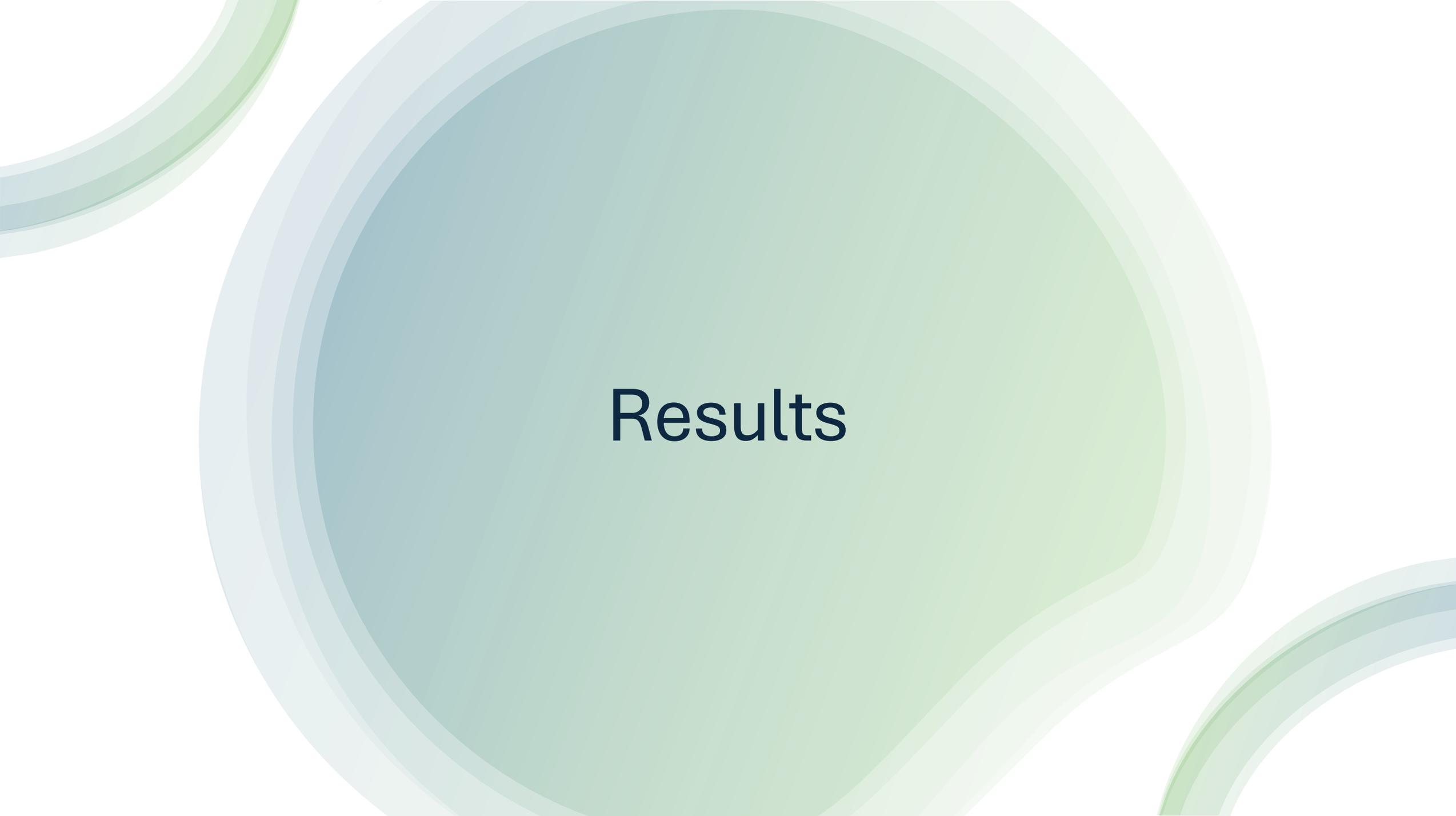
\*obs days represent 63-82% of full season

Eddy covariance station measures ET.



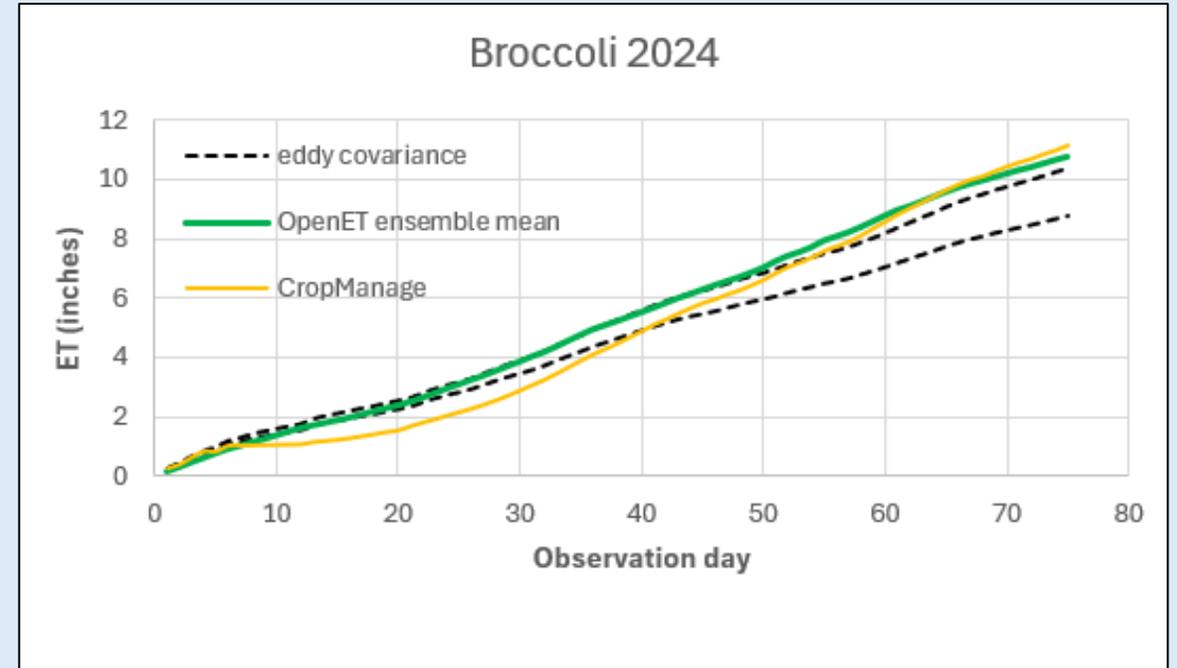
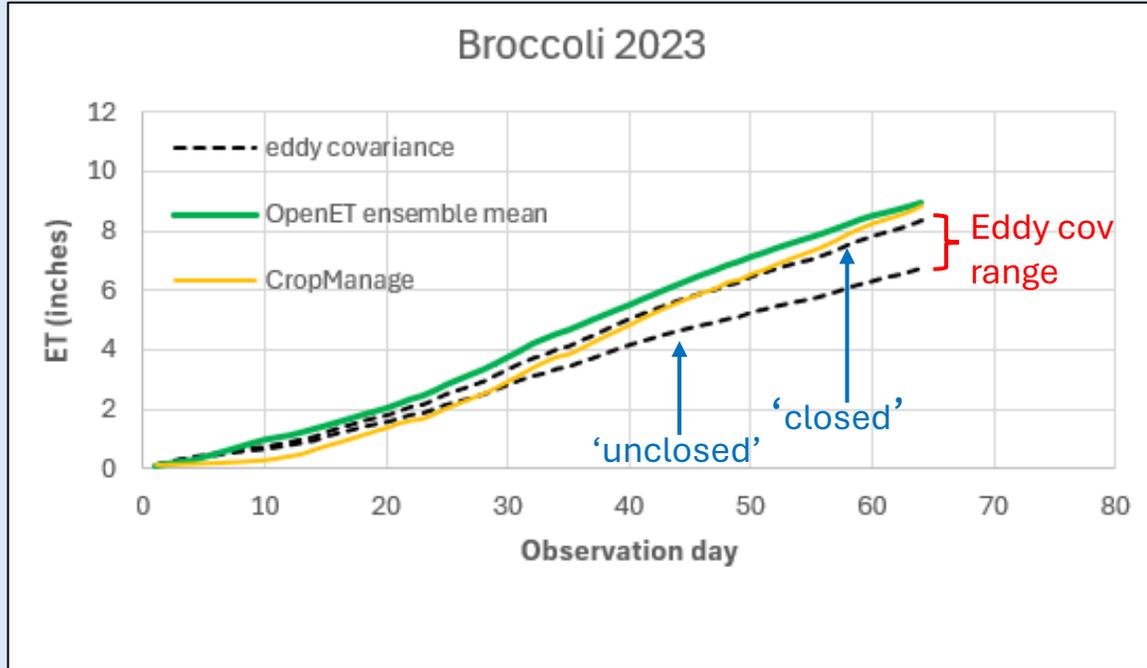
Optional: Flowmeter measures applied water  
(can add value to ET data)





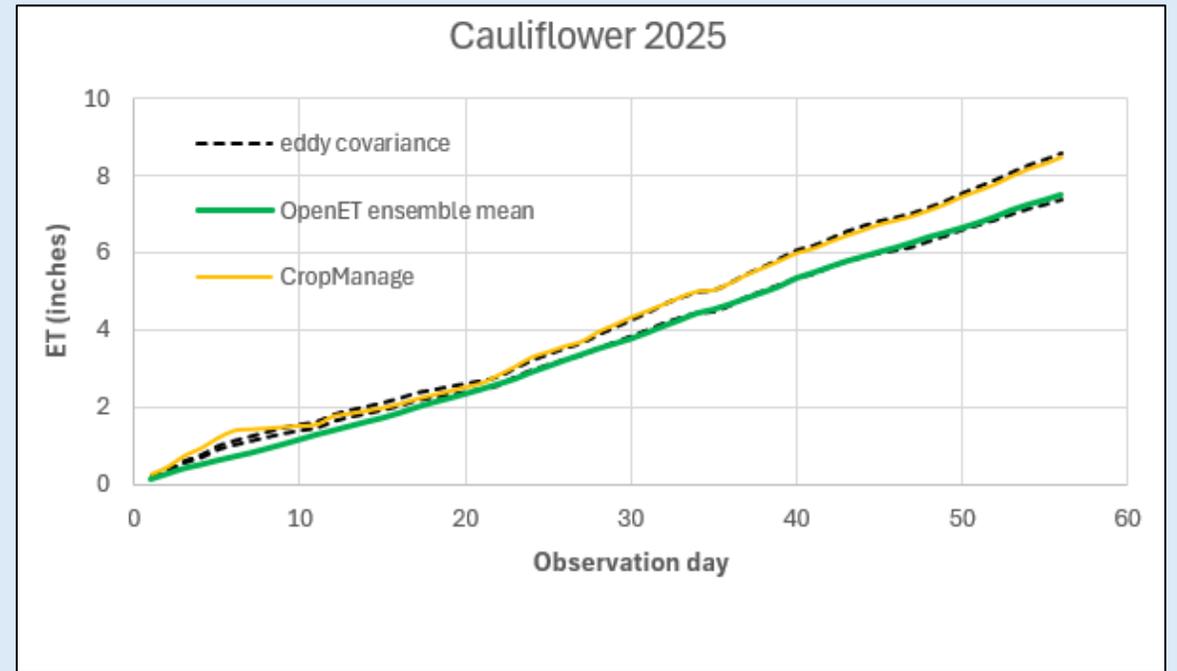
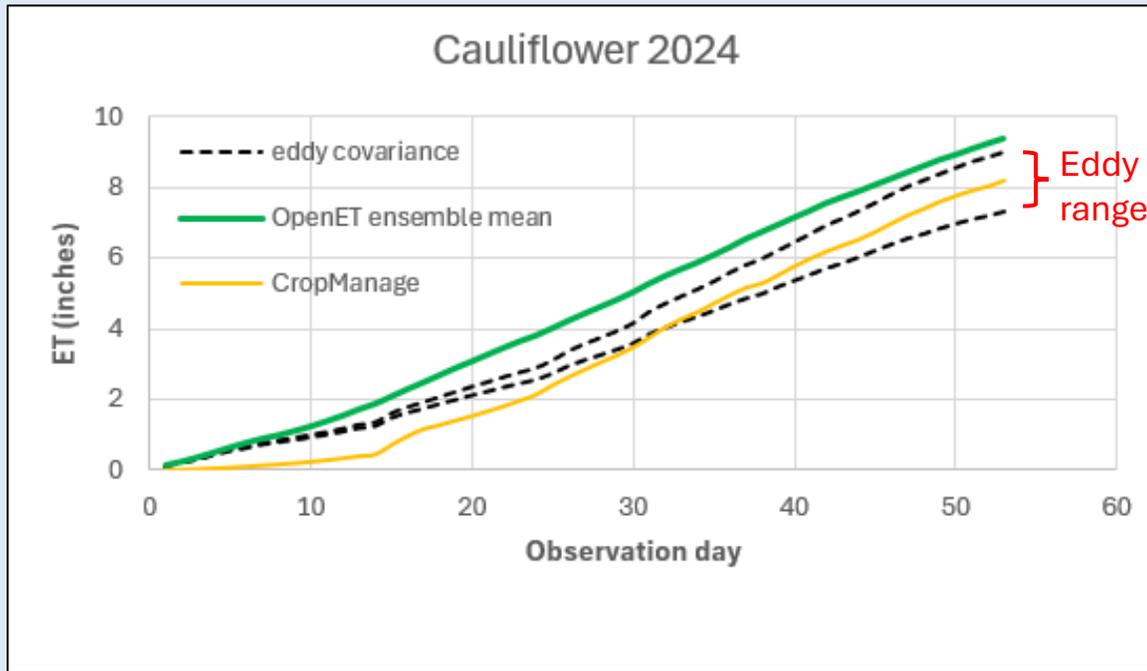
# Results

# Cumulative ET for observation days: broccoli



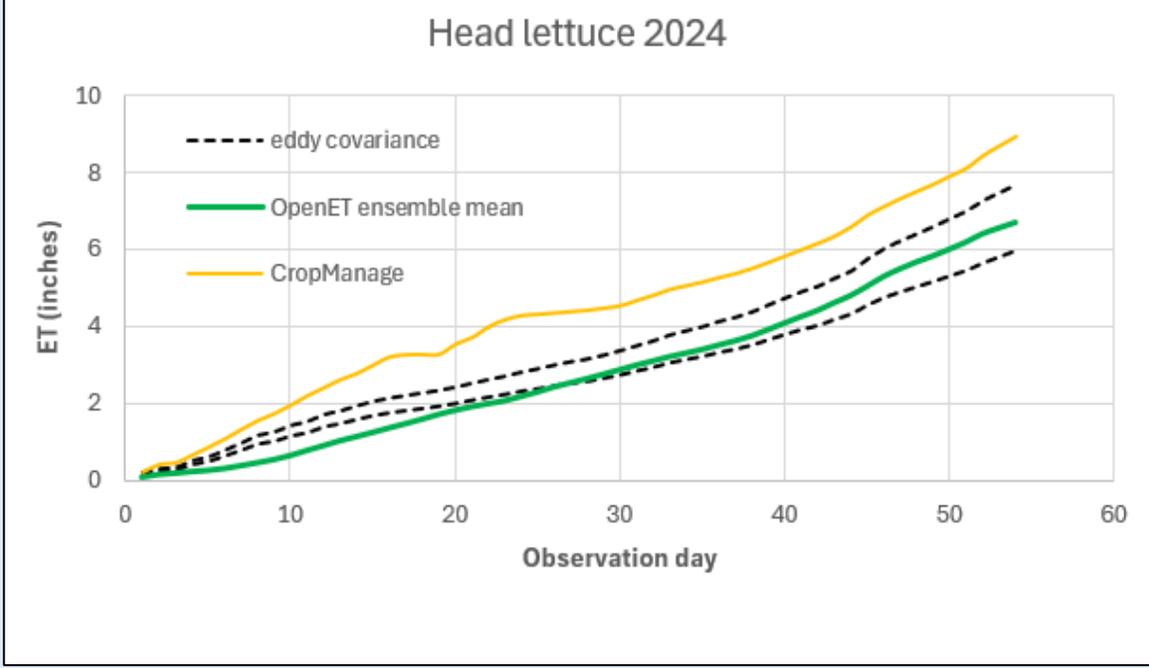
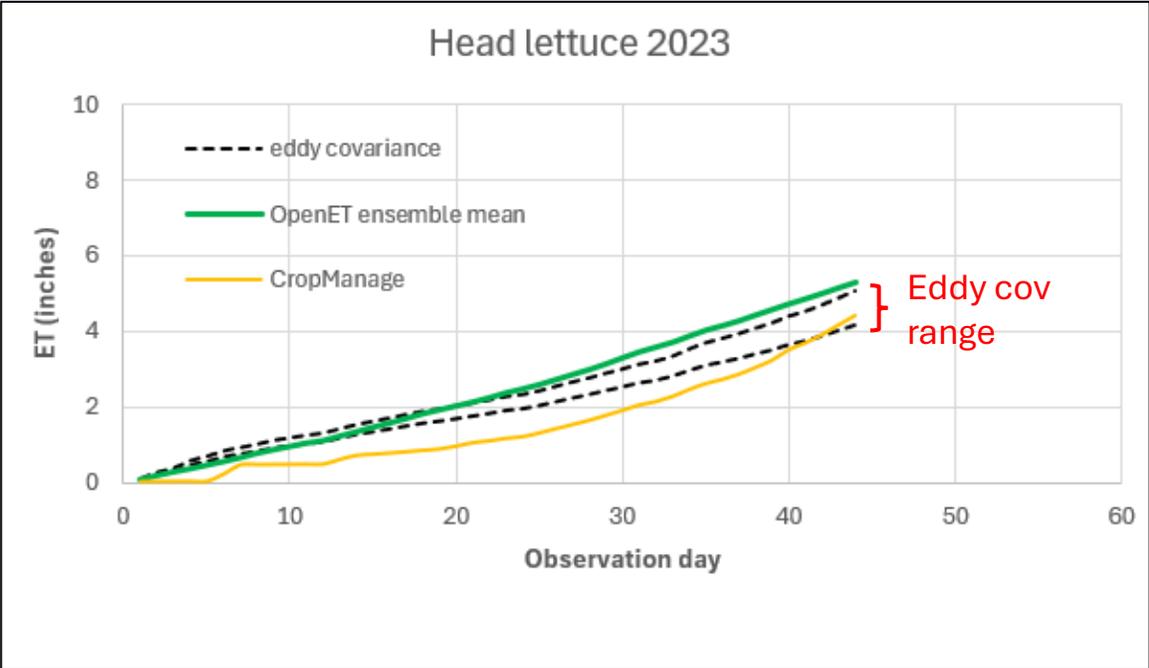
*Preliminary – subject to change – not for citation*

# Cumulative ET for observation days: cauliflower



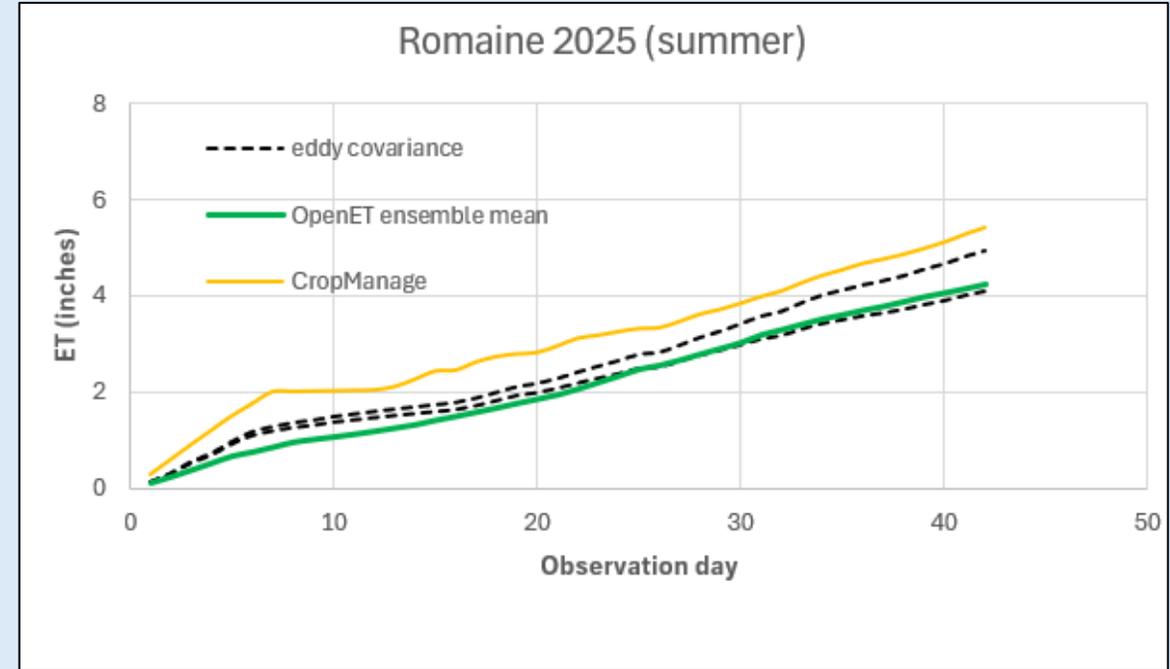
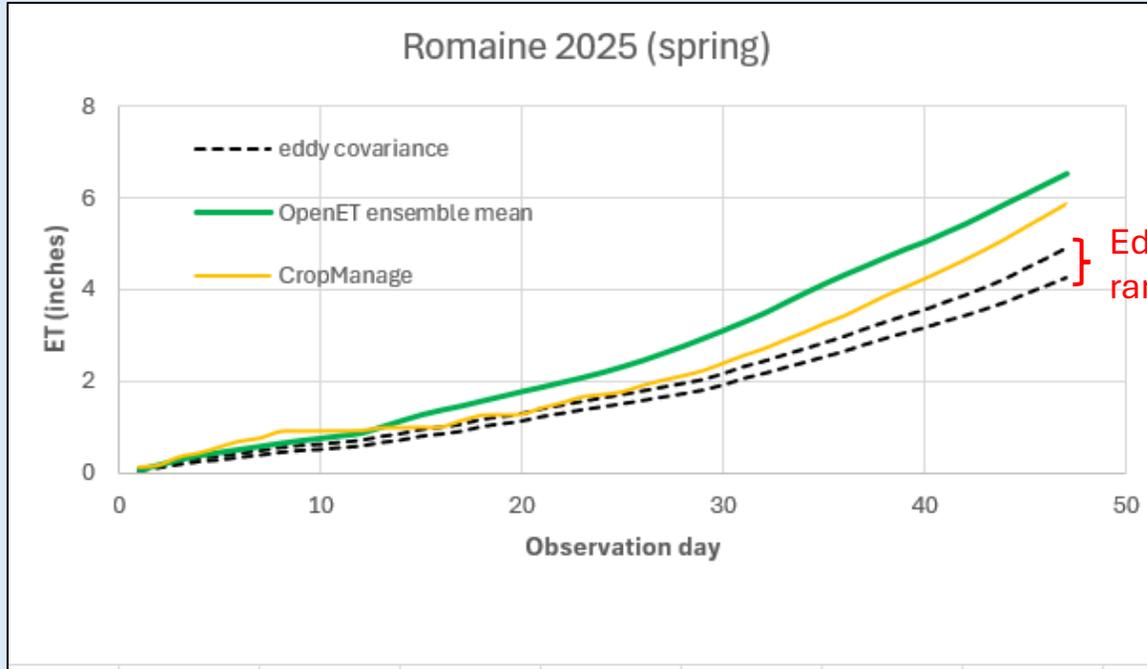
*Preliminary – subject to change – not for citation*

# Cumulative ET for observation days: head lettuce



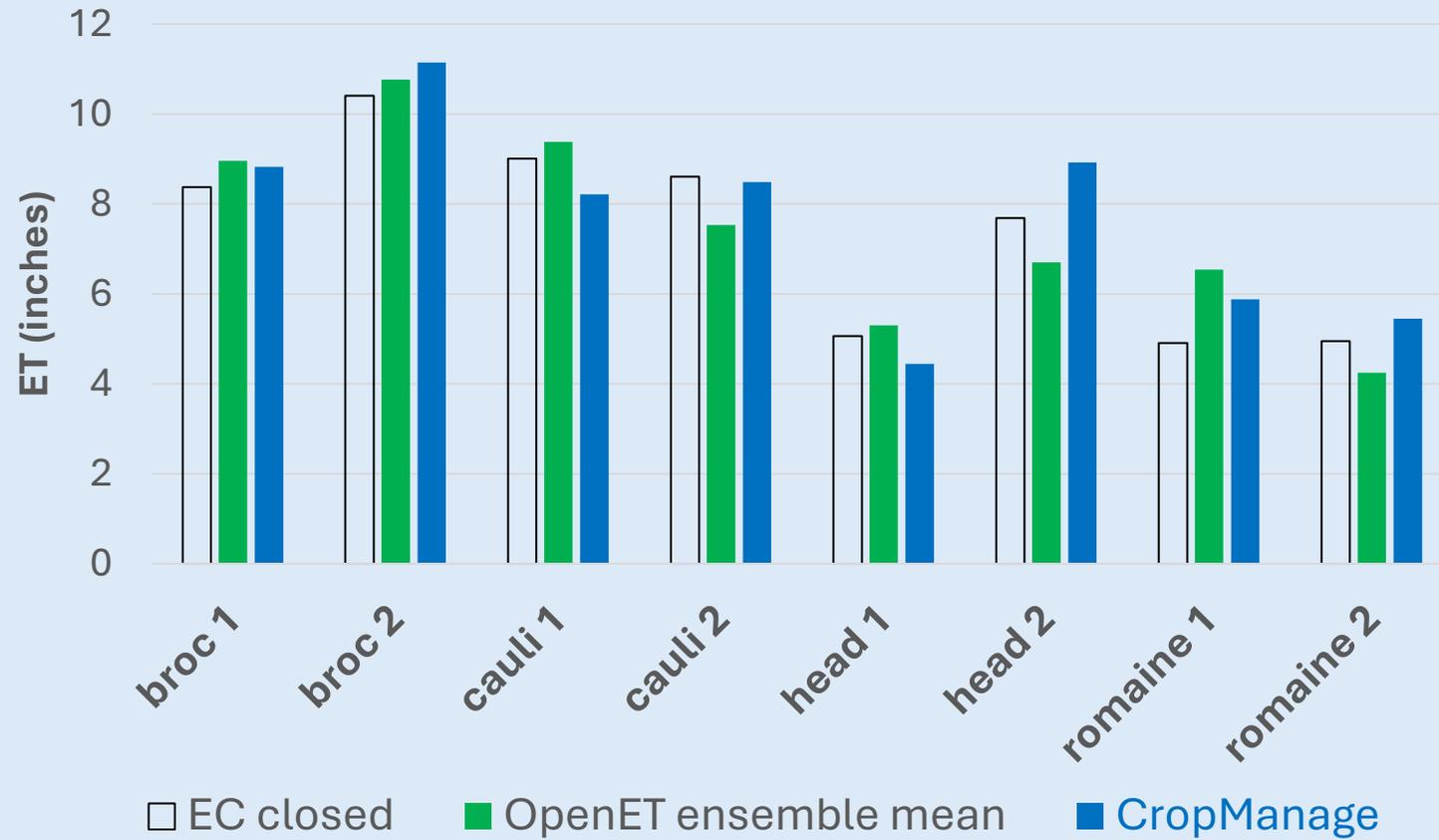
*Preliminary – subject to change – not for citation*

# Cumulative ET for observation days: romaine



*Preliminary – subject to change – not for citation*

# Difference vs eddy cov (EC) for all obs days per site

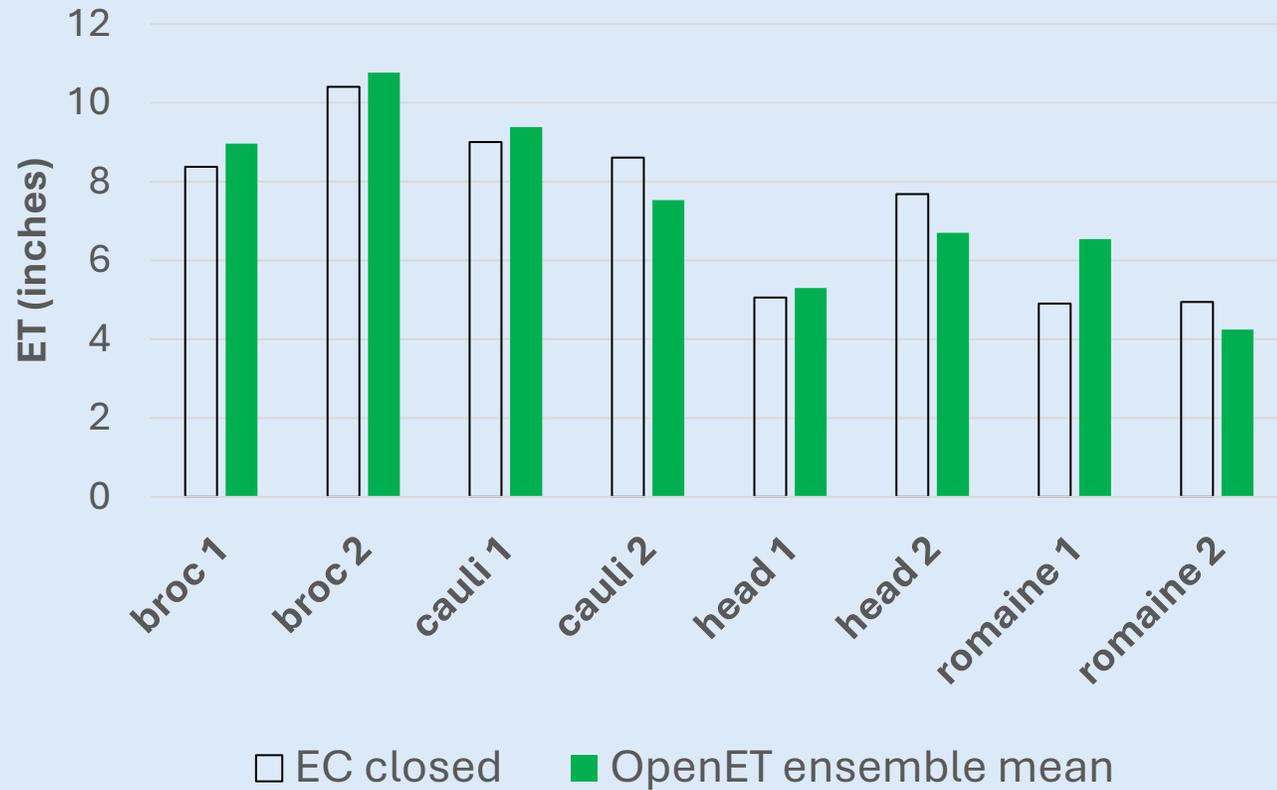


*Preliminary – subject to change – not for citation*

# Difference vs eddy cov (EC) for all obs days per site

**OpenET:**

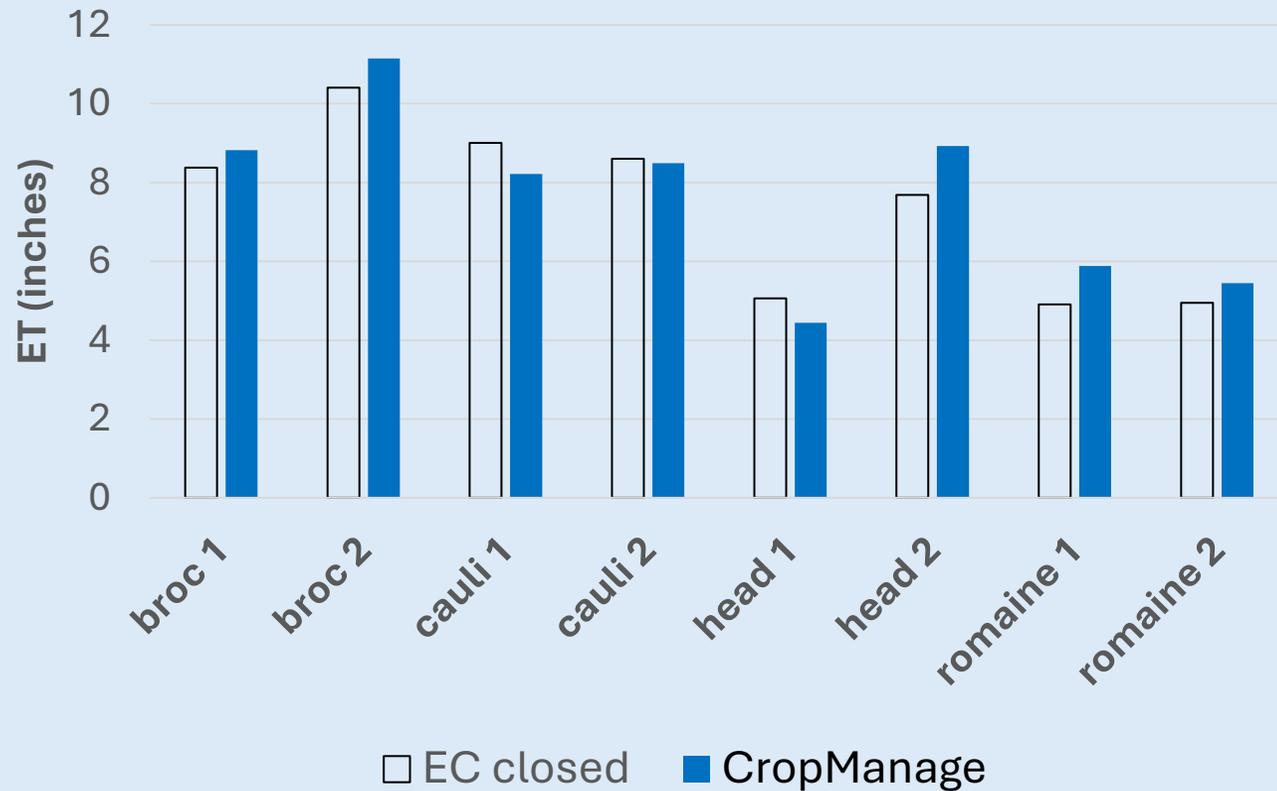
**+0.6" +0.4" +0.4" -1.1" +0.2" -1.0" +1.6" -0.7"**  
7% 3% 4% 12% 5% 13% 33% 14%



# Difference vs eddy cov (EC) for all obs days per site

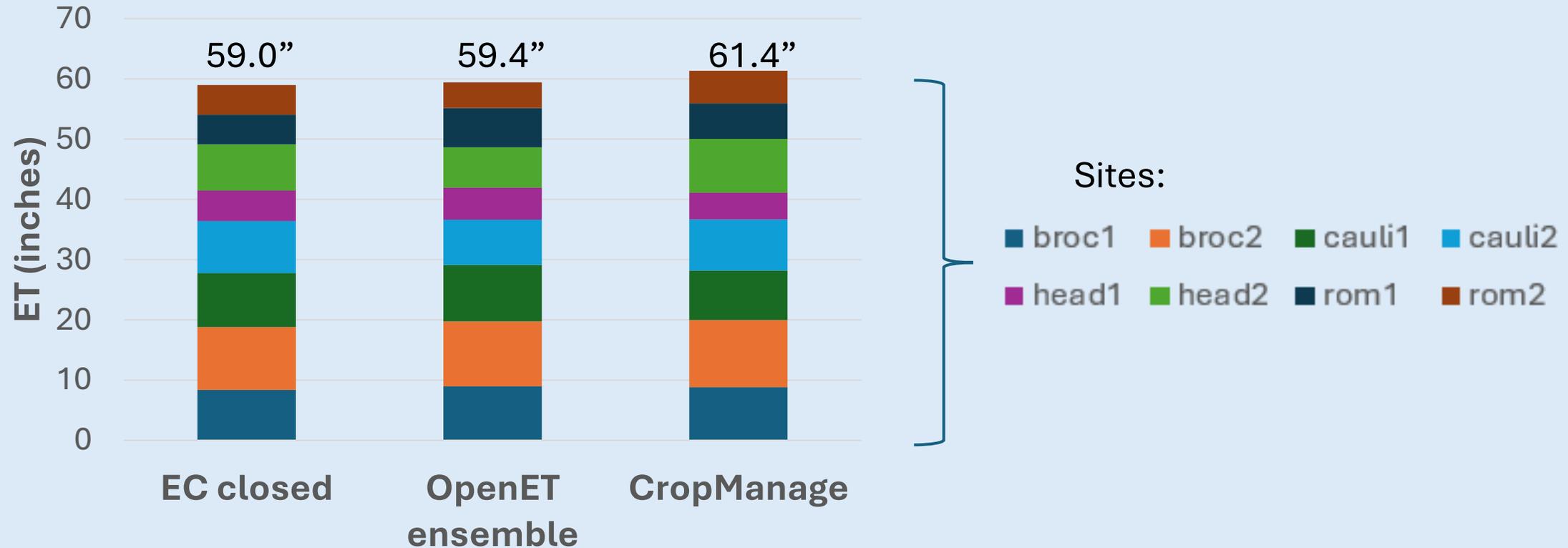
**CropManage:**

**+0.4" +0.7" -0.8" -0.1" -0.7" +1.2" +1.0" +0.5"**  
5% 7% 9% 1% 12% 16% 20% 10%



*Preliminary – subject to change – not for citation*

# ET grand total for all 435 obs days



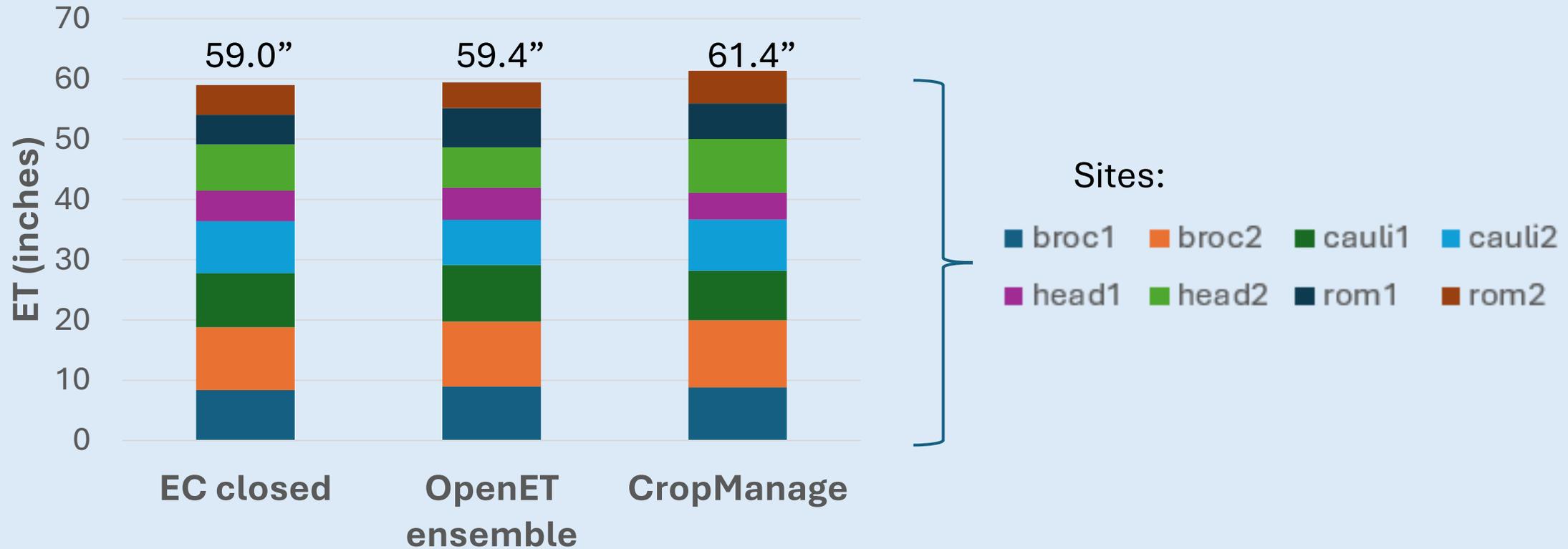
*Preliminary – subject to change – not for citation*

# ET grand total for all 435 obs days

Difference vs eddy cov (EC):

+ 0.4"  
<1%

2.4"  
4%



*Preliminary – subject to change – not for citation*

# Additional sites upcoming this season and next...

- Artichoke
- Brussels sprouts
- Cabbage

Interested in hosting?

# PART 2

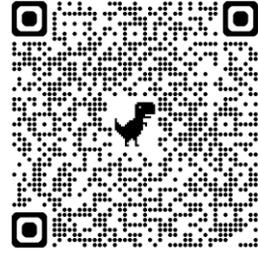
- Using OpenET **FARMS** Custom Reporting Tool

Get customized OpenET data reports for various uses, such as:

- Irrigation management
- Irrigation system design/eval
- Post-season assessment (eg, water efficiency)
- Reporting
- Archiving
- Other...

# FARMS: Farm and Ranch Management Support

Press release 3/25

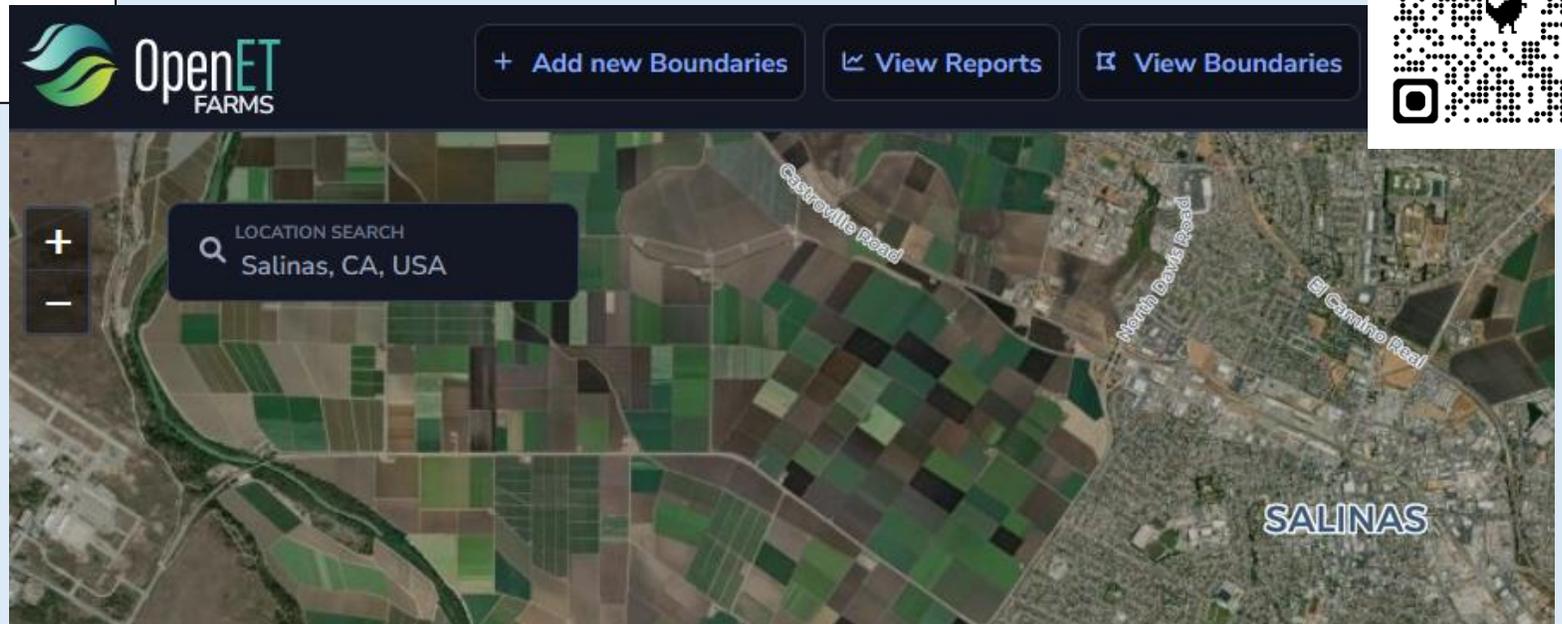


News & Events

6 MIN READ

## FARMing with Data: OpenET Launches new Tool for Farmers and Ranchers

Website [farms.etdata.org](https://farms.etdata.org)





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or, you can [signup here](#)

Email address

Password

Remember me

[Forgot your password?](#)

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Sign in with Google

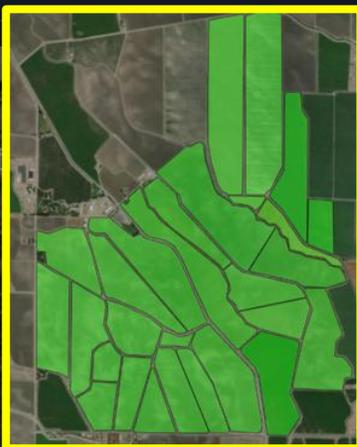
<https://account.etdata.org>

LOCATION SEARCH  
Salinas, CA, USA

# Add new boundaries

## Upload Shapes

Click here to upload a zipped shapefile or a geojson file.



## Draw your Own

Draw your own field boundaries using our drawing tools.



## Select Existing

Choose your fields from the existing OpenET boundaries.



Toggle Labels

Create Report



### Create Report



SELECT BOUNDARIES  
California (28 fields)

REPORT NAME  
Demo Report

REPORT INTERVAL  
Daily  Enable daily recurring

START DATE  
2025-07-14

END DATE  
2025-08-14

DISALEXI × EEMETRIC × ENSEMBLE × PT-JPL ×

GESEEBAL × SIMS × SSEBOP ×

Select models...

ET × ET FRACTION × ET REFERENCE × NDVI ×

PRECIP × Select variables...

REPORT DESCRIPTION

Click here to save your report

Customize &  
save report





# Demo Report



## Ensemble Evapotranspiration

215678



### Report Data

Field ID: 215678  
Acres: 65.84

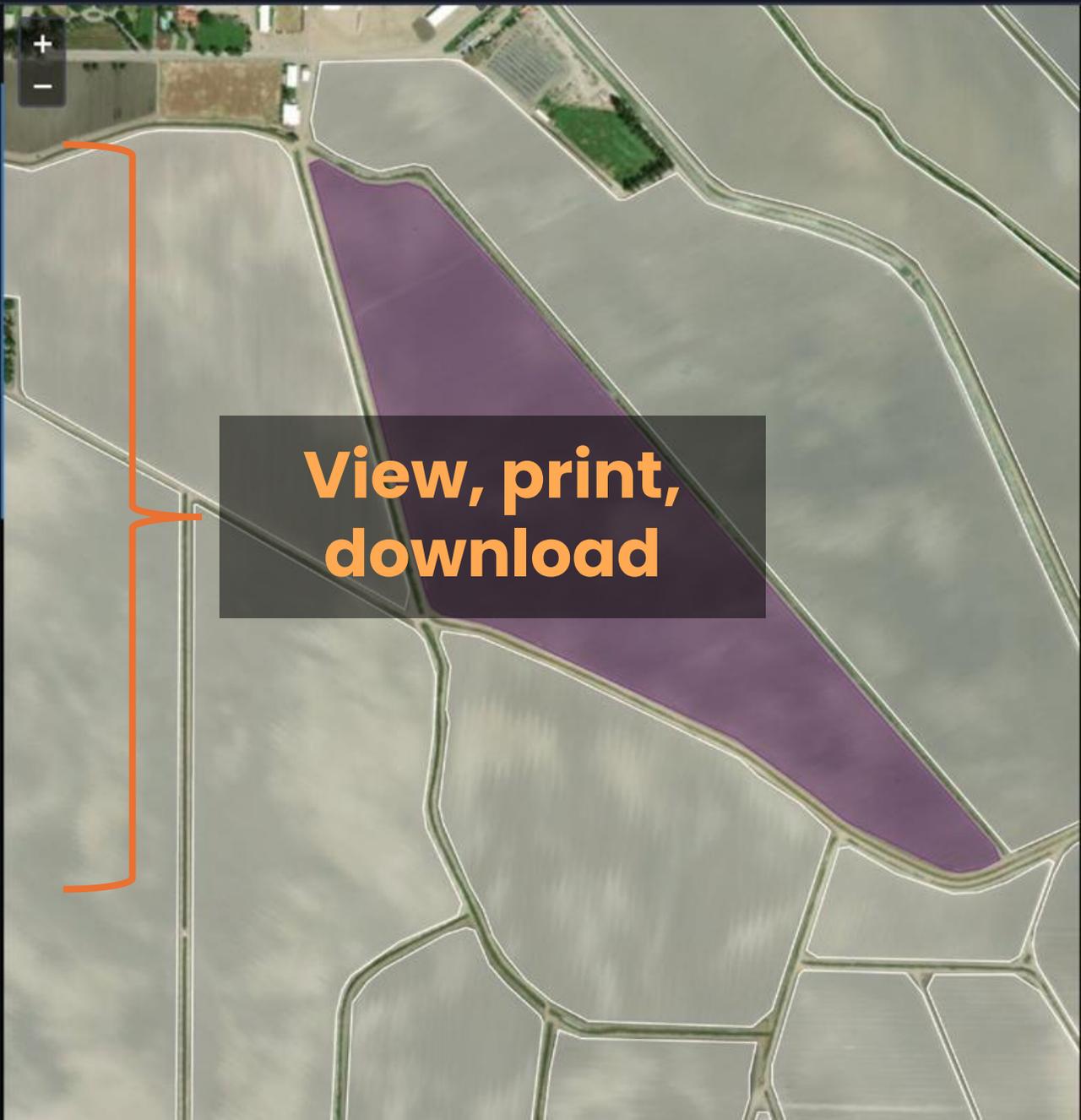


MODEL  
ensemble

VARIABLE  
et

Field ID: 215678

Date	Value (inches)	Acre-Feet
2025-08-12	0.135	0.741
2025-08-11	0.127	0.697
2025-08-10	0.139	0.763
2025-08-09	0.138	0.757



View, print,  
download

× Exit Report

? Help

# Manage security & sharing

## Manage Report

Created	2025-04-01
Interval	Monthly
Period	2022-04-01 to 2025-04-01
Variables	<span>ENSEMBLE</span> <span>ET</span> <span>LANDSAT</span> <span>NDVI</span>
Status	Completed

REPORT NAME

temp spence report

Make Report Public

Password Protect Report

Archive Report

YOUR REPORT URL

<https://farms.etdata.org/report/373> Copy

Save Report Settings Cancel





Extra

# FARMS main steps

- Login
- Define region of interest
- Build & save report
- View & download
- Share (optional)



Login

Create Account

Create a free account

## Sign in Below

or, you can [signup here](#)

Email address

Password

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[Forgot your password?](#)

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Privacy - Terms

Sign in



Sign in with Google

<https://account.etdata.org>

# Build a Report





🔍 LOCATION SEARCH



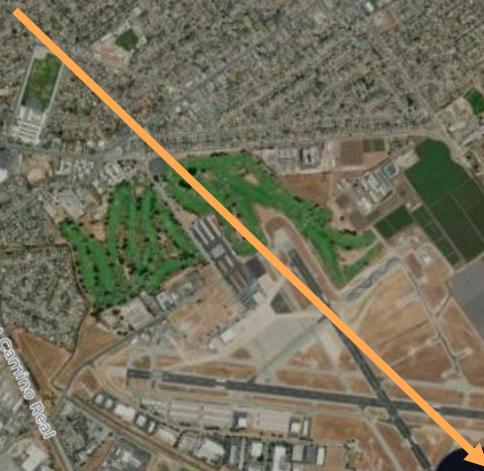
**Specify approx location**

UNITED STATES

LOCATION SEARCH  
Salinas, CA, USA



'Create report'



Toggle Labels

Create Report



LOCATION SEARCH

# Add new boundaries

## Upload Shapes

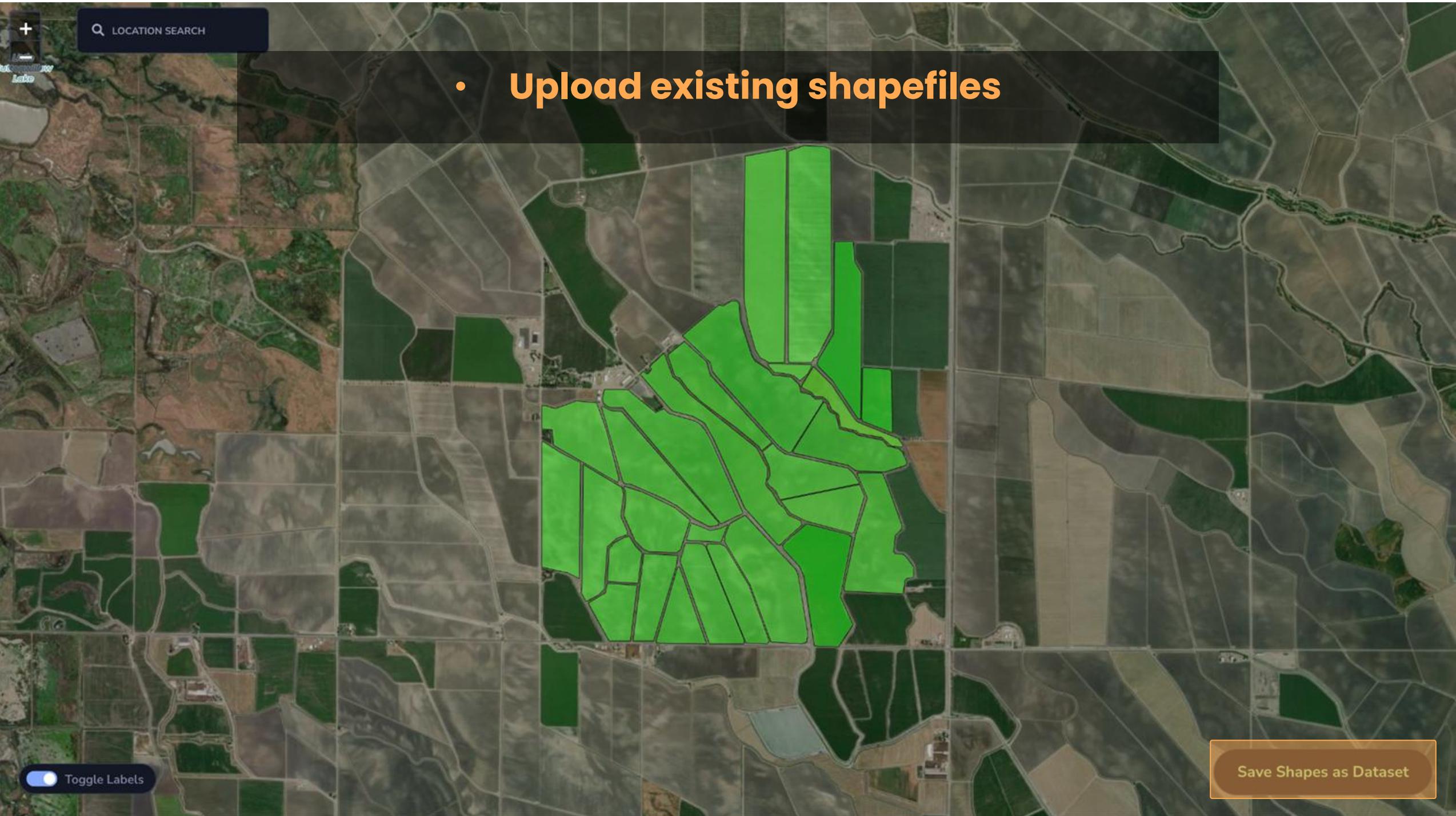
Click here to upload a zipped shapefile or a geojson file.

## Draw your Own

Draw your own field boundaries using our drawing tools.

## Select Existing

Choose your fields from the existing OpenET boundaries.



LOCATION SEARCH

Toggle Labels

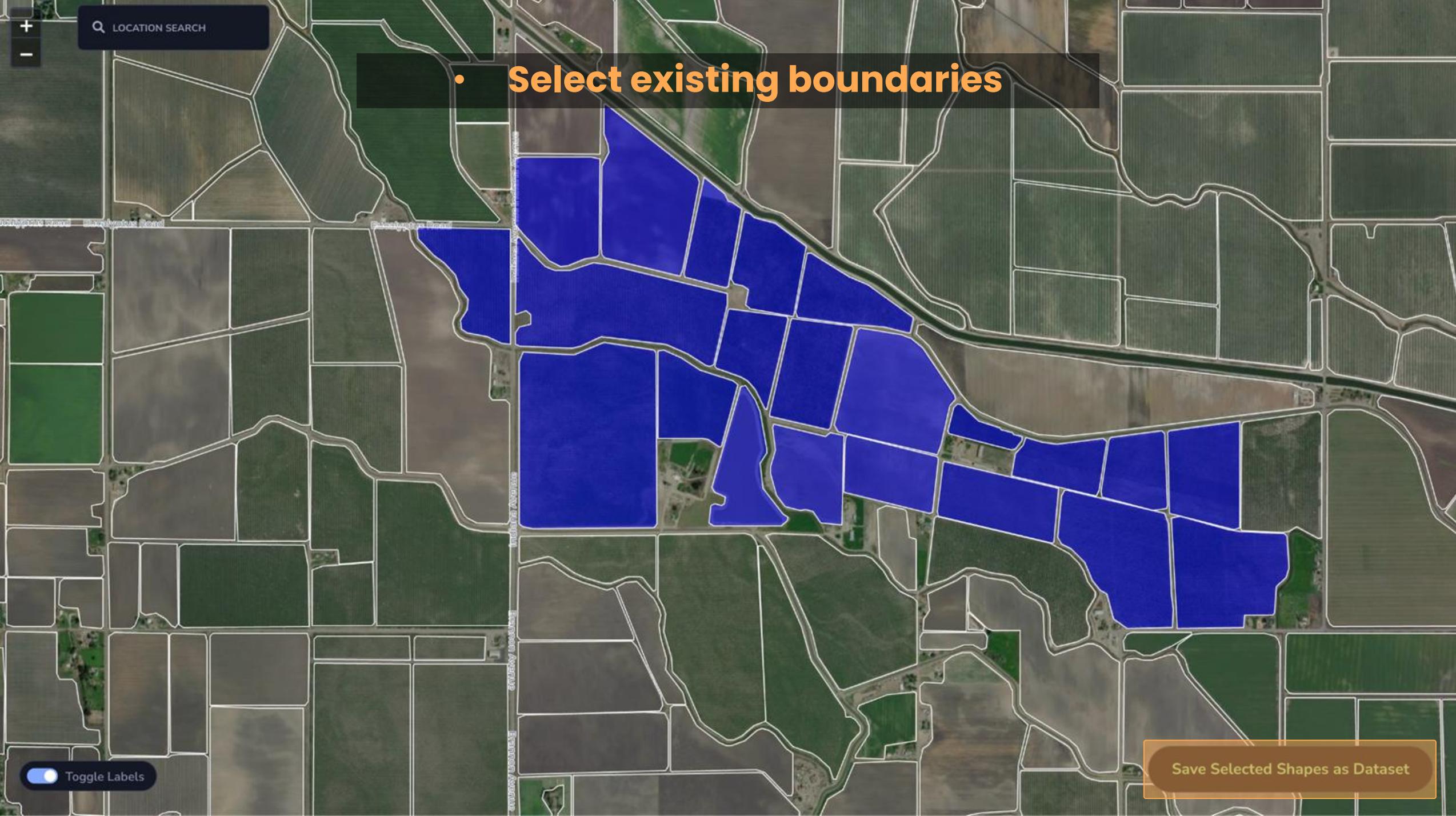
Save Shapes as Dataset

- Upload existing shapefiles



LOCATION SEARCH

• **Select existing boundaries**



Toggle Labels

Save Selected Shapes as Dataset



LOCATION SEARCH

Toggle Labels

Save Drawn Shapes as Dataset

- **Create your own with the draw tools**



### Create Report ✕

SELECT BOUNDARIES  
Choose your boundaries ▼

REPORT NAME

REPORT INTERVAL  
Daily ▼    Enable daily recurring

START DATE  
2025-07-14

END DATE  
2025-08-14

Select models...

Select variables...

REPORT DESCRIPTION

Click here to save your report



Name the report









### Create Report



SELECT BOUNDARIES  
California (28 fields)

REPORT NAME  
Demo Report

REPORT INTERVAL  
Daily  Enable daily recurring

START DATE  
2025-07-14

END DATE  
2025-08-14

DISALEXI × EEMETRIC × ENSEMBLE × PT-JPL ×

GESEBAL × SIMS × SSEBOP ×

Select models...

ET × ET FRACTION × ET REFERENCE × NDVI ×

PRECIP × Select variables...

REPORT DESCRIPTION

Click here to save your report

Run & save the report!



# View & manage report



## View Reports

[Create Report +](#)

### salinas fields



Monthly from 2023-04-01 to 2025-06-02

ENSEMBLE

ET

[View Report](#)

### fresno area



Monthly from 2022-10-16 to 2025-10-16

ENSEMBLE

ET

[View Report](#)

**View saved reports**

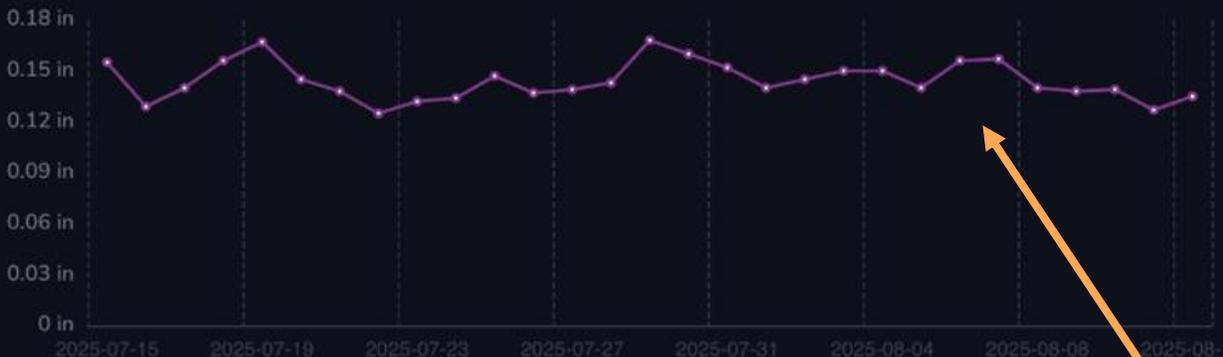


# Demo Report



## Ensemble Evapotranspiration

215678



### Report Data

Field ID: 215678  
Acres: 65.84

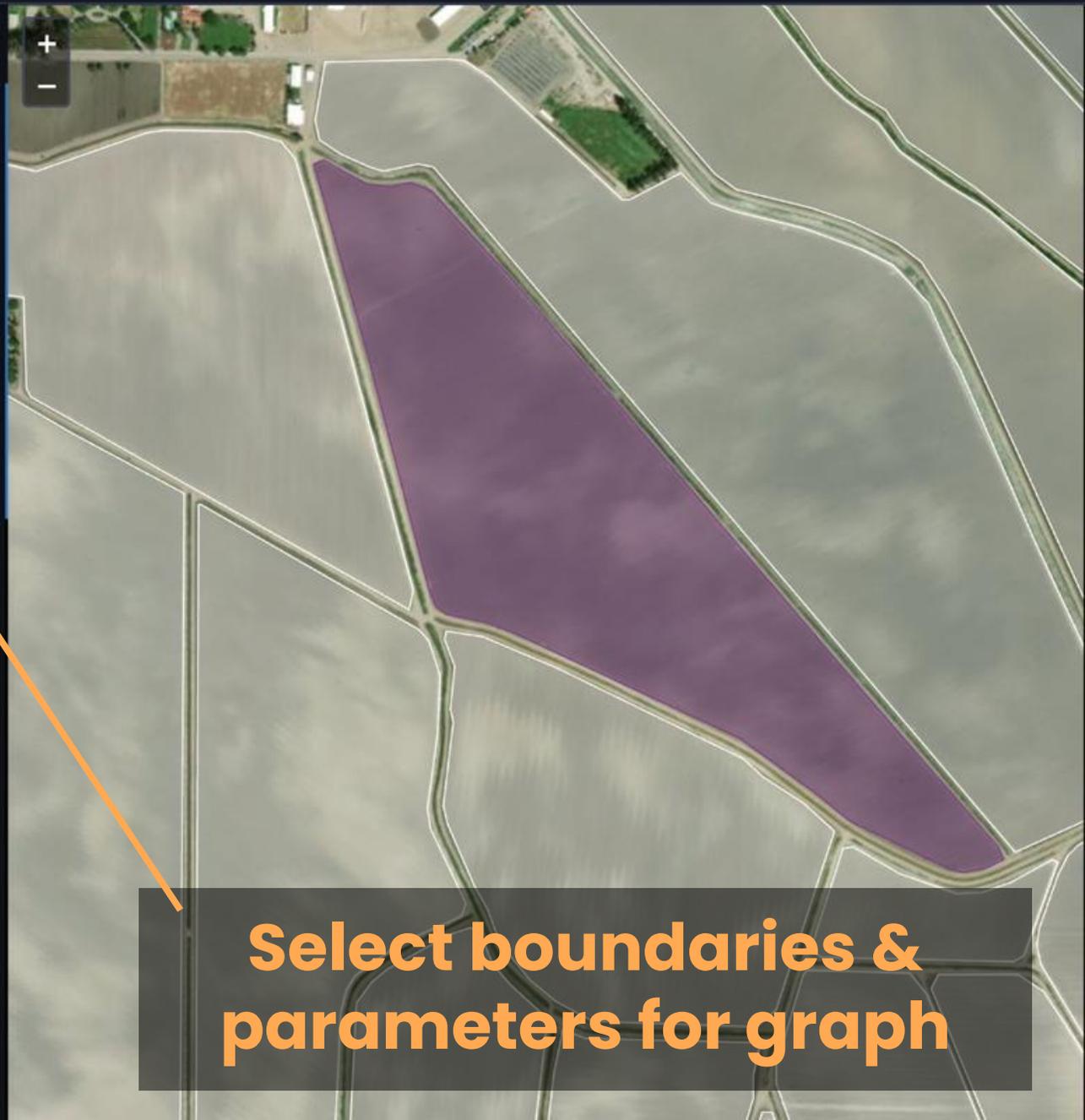


MODEL  
ensemble

VARIABLE  
et

Field ID: 215678

Date	Value (inches)	Acre-Feet
2025-08-12	0.135	0.741
2025-08-11	0.127	0.697
2025-08-10	0.139	0.763
2025-08-09	0.138	0.757



Select boundaries & parameters for graph



# Demo Report



## Ensemble Evapotranspiration

215678



### Report Data

Field ID: 215678  
Acres: 65.84

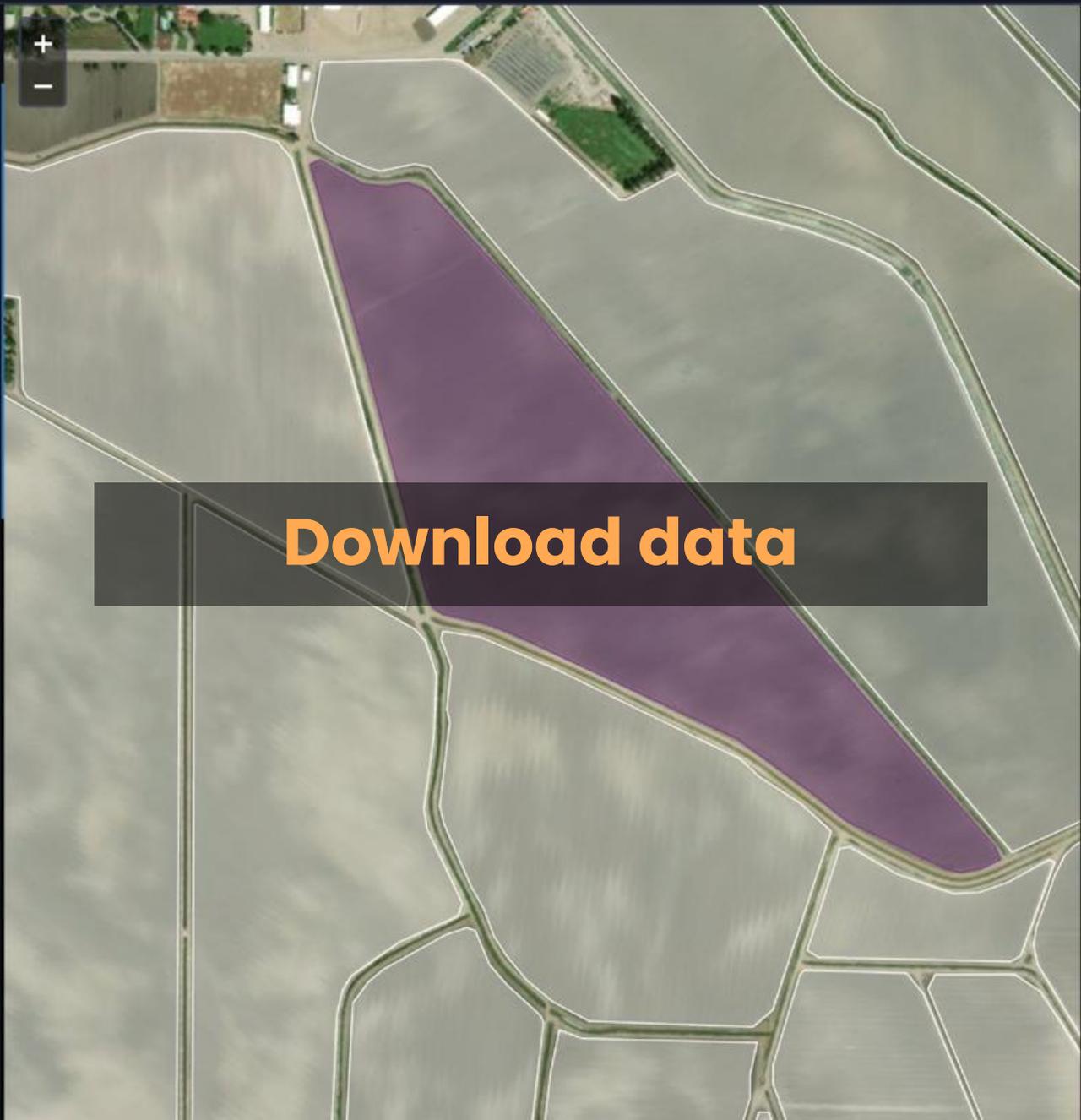


MODEL  
ensemble

VARIABLE  
et

Field ID: 215678

Date	Value (inches)	Acre-Foot
2025-08-12	0.135	0.741
2025-08-11	0.127	0.697
2025-08-10	0.139	0.763
2025-08-09	0.138	0.757



Download data



Configure report settings

# Demo Report

## Ensemble Evapotranspiration



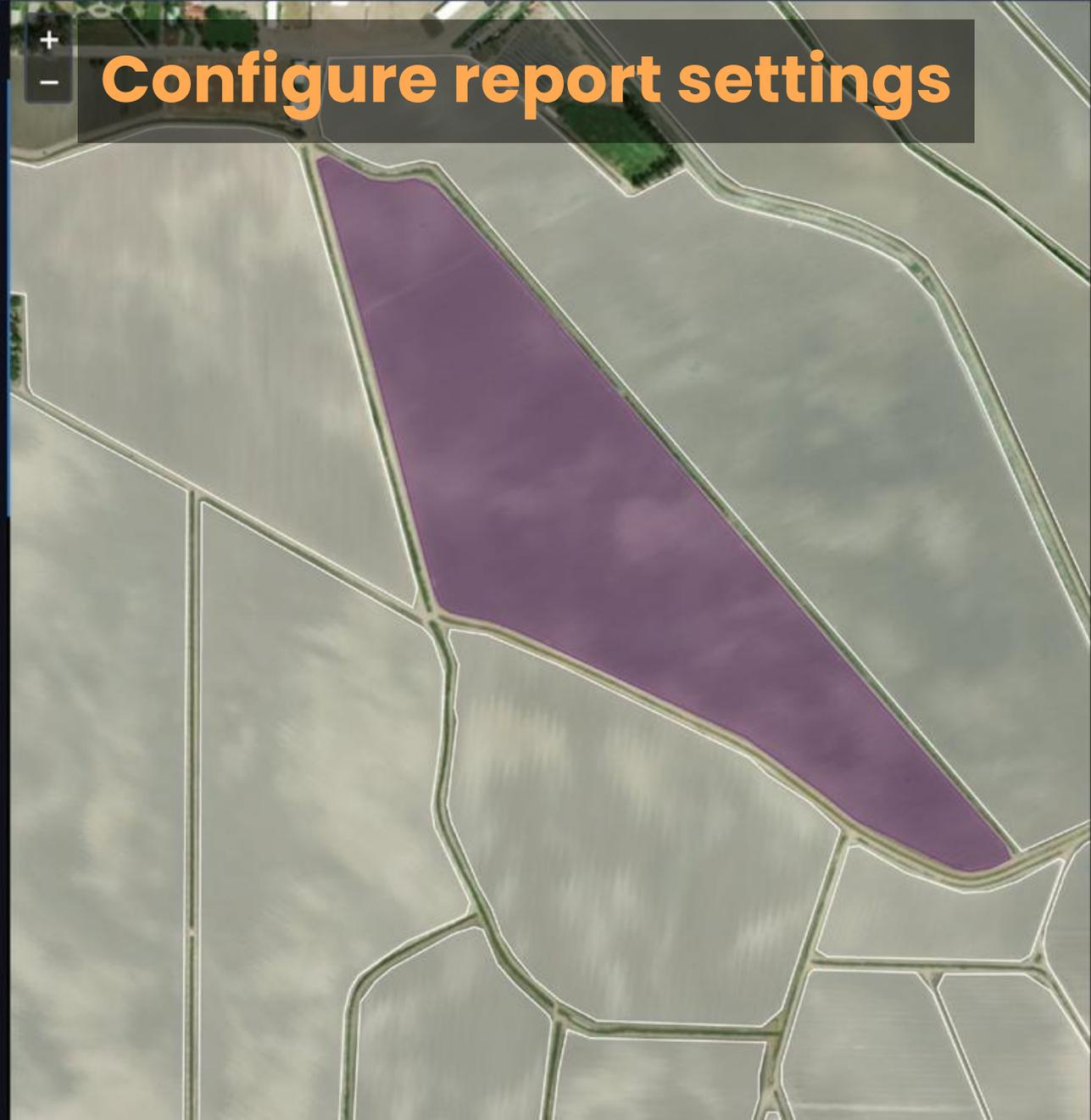
### Report Data

Field ID: 215678  
Acres: 65.84



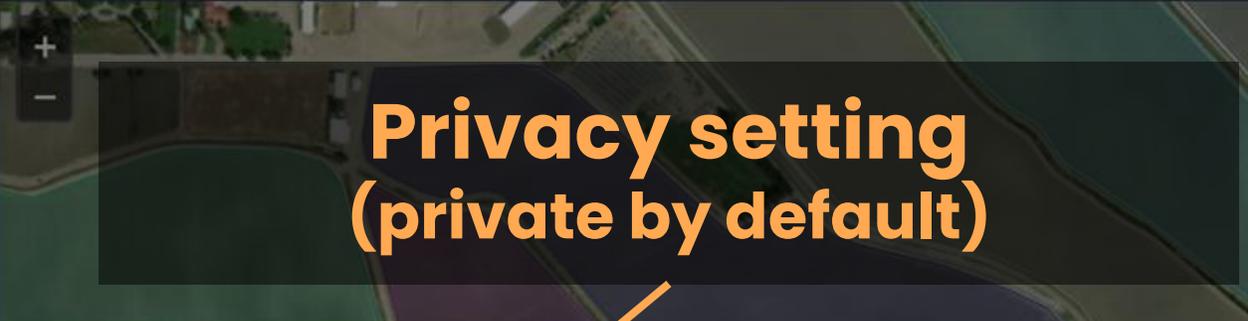
MODEL: ensemble | VARIABLE: et | Field ID: 215678

Date	Value (inches)	Acre-Feet
2025-08-12	0.135	0.741
2025-08-11	0.127	0.697
2025-08-10	0.139	0.763
2025-08-09	0.138	0.757





# Demo Report



Privacy setting  
(private by default)

### Manage Report

Created	2025-08-15
Interval	Daily
Period	2025-07-15 to 2025-08-15
Variables	<a href="#">view models</a>
Status	Completed

REPORT NAME: Demo Report

Make Report Public

Password Protect Report

Archive Report

YOUR REPORT URL: <https://farms.etdata.org/report/1345> [Copy](#)

[Save Report Settings](#) [Cancel](#)

## Report Data

Field ID: 215793  
Acres: 46.48

MODEL: sims | VARIABLE: et

Date	Value (inches)
2025-08-12	0.248
2025-08-11	0.234
2025-08-10	0.257
2025-08-09	0.255



# Demo Report



**Generate link to share report (optional)**

### Manage Report

Created	2025-08-15
Interval	Daily
Period	2025-07-15 to 2025-08-15
Variables	<a href="#">view models</a>
Status	Completed

REPORT NAME: Demo Report

Make Report Public

Password Protect Report

Archive Report

YOUR REPORT URL: <https://farms.etdata.org/report/1345> [Copy](#)

[Save Report Settings](#) [Cancel](#)

**Save settings**

## Report Data

Field ID: 215793  
Acres: 46.48

MODEL: sims | VARIABLE: et

Date	Value (inches)
2025-08-12	0.248
2025-08-11	0.234
2025-08-10	0.257
2025-08-09	0.255