ET and Irrigation Management

Irrigation Management with SIMS and CropManage:

Advancing sustainable practices for management of agricultural water supplies

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Key Partner

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Contributors

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Cal State Monterey Bay

ARC-CREST

UC University of California Cooperative Extension

ES2A

Virtuous Cycle
- User needs inform next iteration of programs, missions and initiatives

Public Understanding & Exchange
- Put more scientific understanding into public sphere
- Deliver applied science to users
- Participate in multi-way info exchange
- Use input to inform subsequent work

Solutions & Societal Value
- Offer models, scientific findings and info through Open-Source Science principles
- Support climate services
- Provide science applications and tools to inform decisions

Earth System Science & Applied Research
- Grow scientific understanding of Earth's systems
- Develop predictive modeling for science applications and tools to mitigate, adapt and respond to climate change

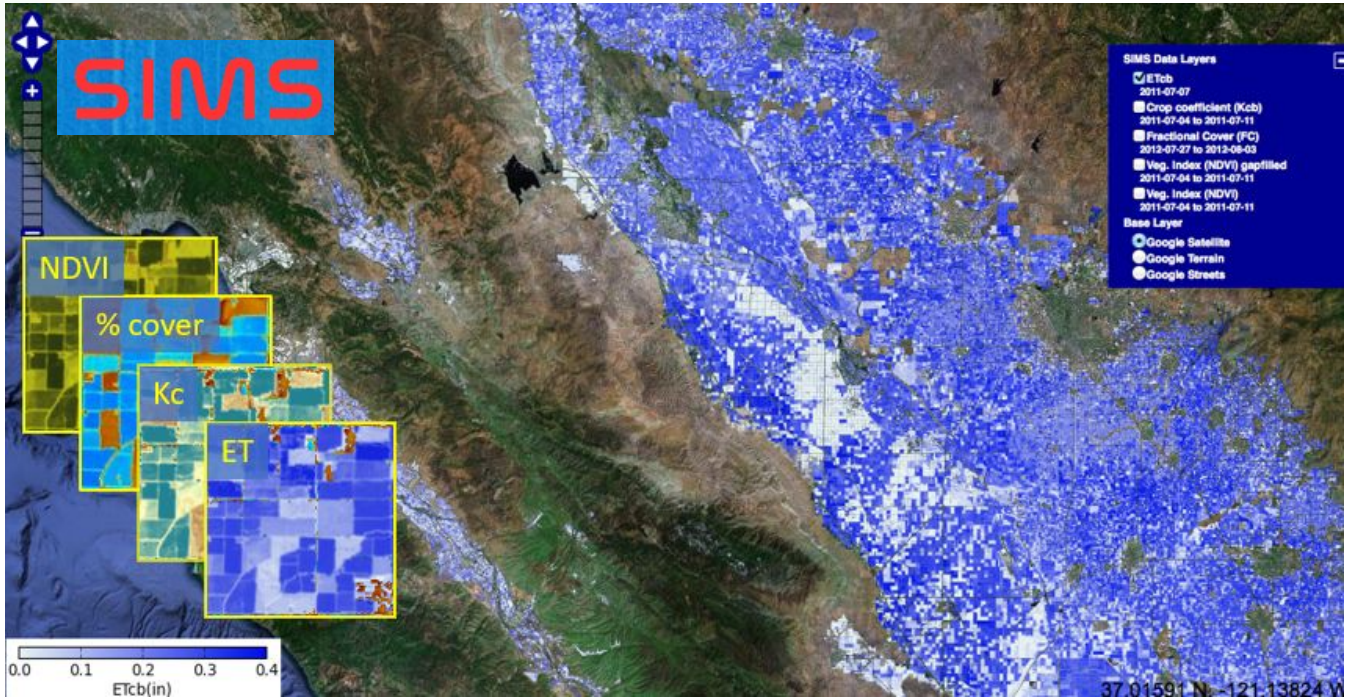
Foundational Knowledge, Technology, Missions & Data
- Technology innovation
- Earth observations missions
- Data collected from space, air and ground

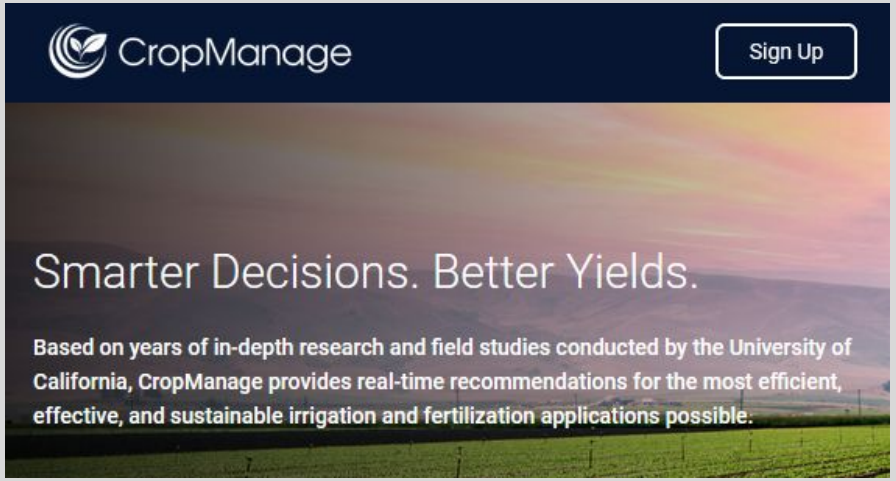
WWAO Factsheet:

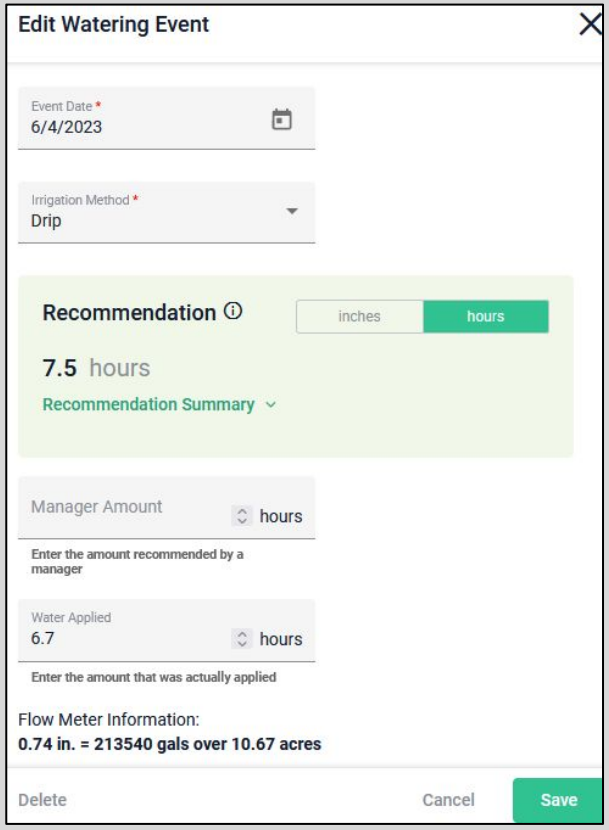
Applied Sciences Program
NASA Earth Science

Supporting Advances in On-farm Water Use Efficiency with Satellite Data:

Integration of the NASA Satellite Irrigation Management Support (SIMS) System and the UCANR CropManage Irrigation and Nutrient Management DSS

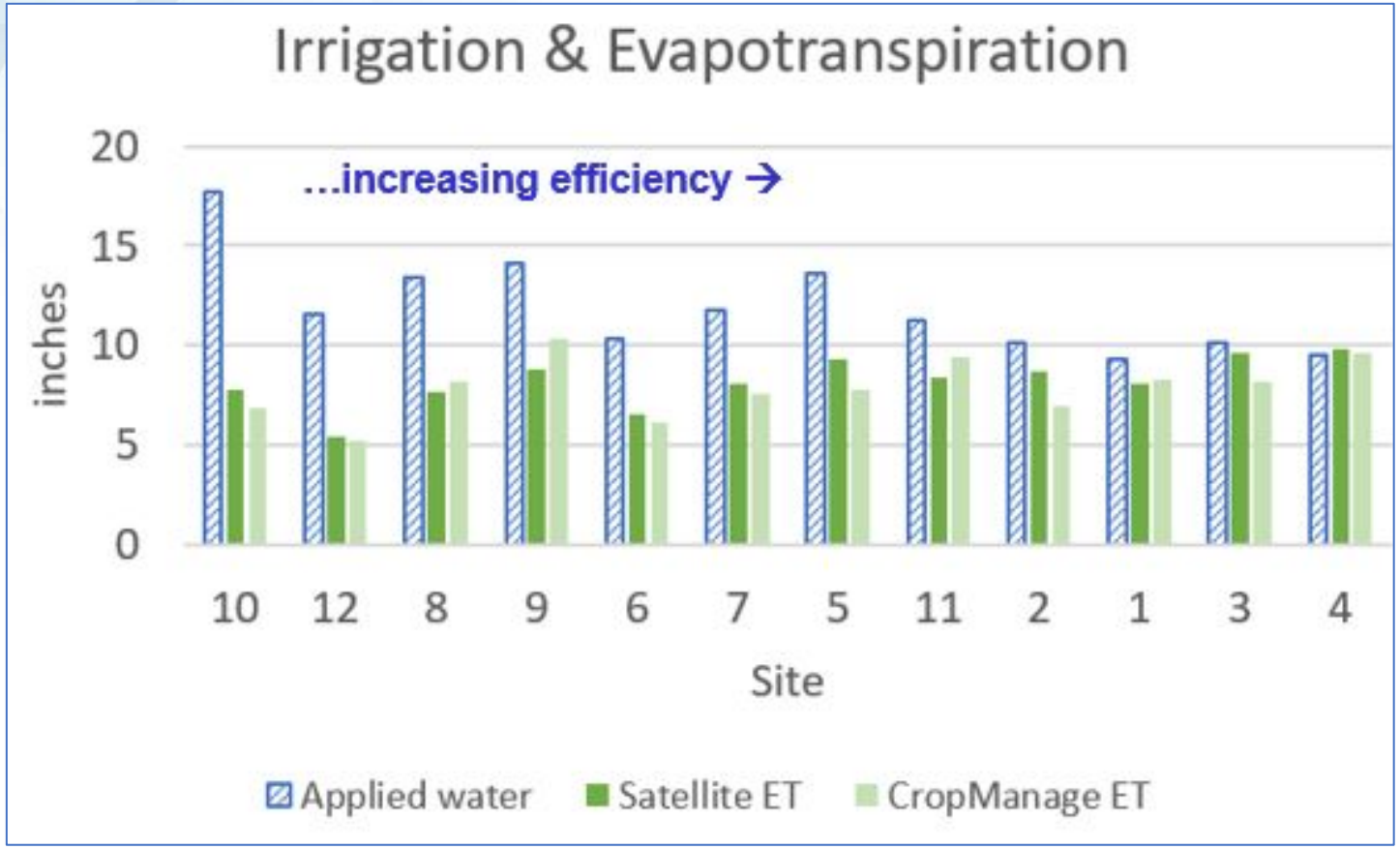






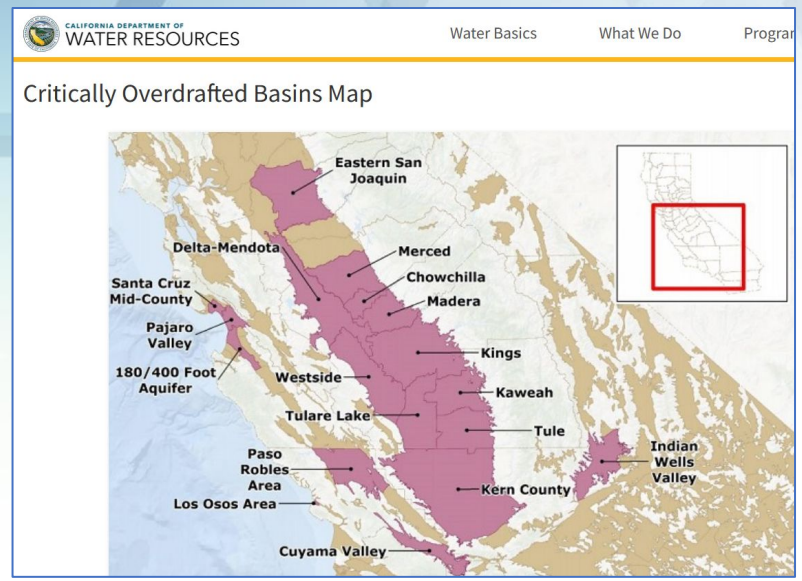
Motivation…

flowmeter



- 12 successful commercial lettuce plantings in Salinas Valley, 2022-23

Regulations



Common foundation

Observed via NDVI:

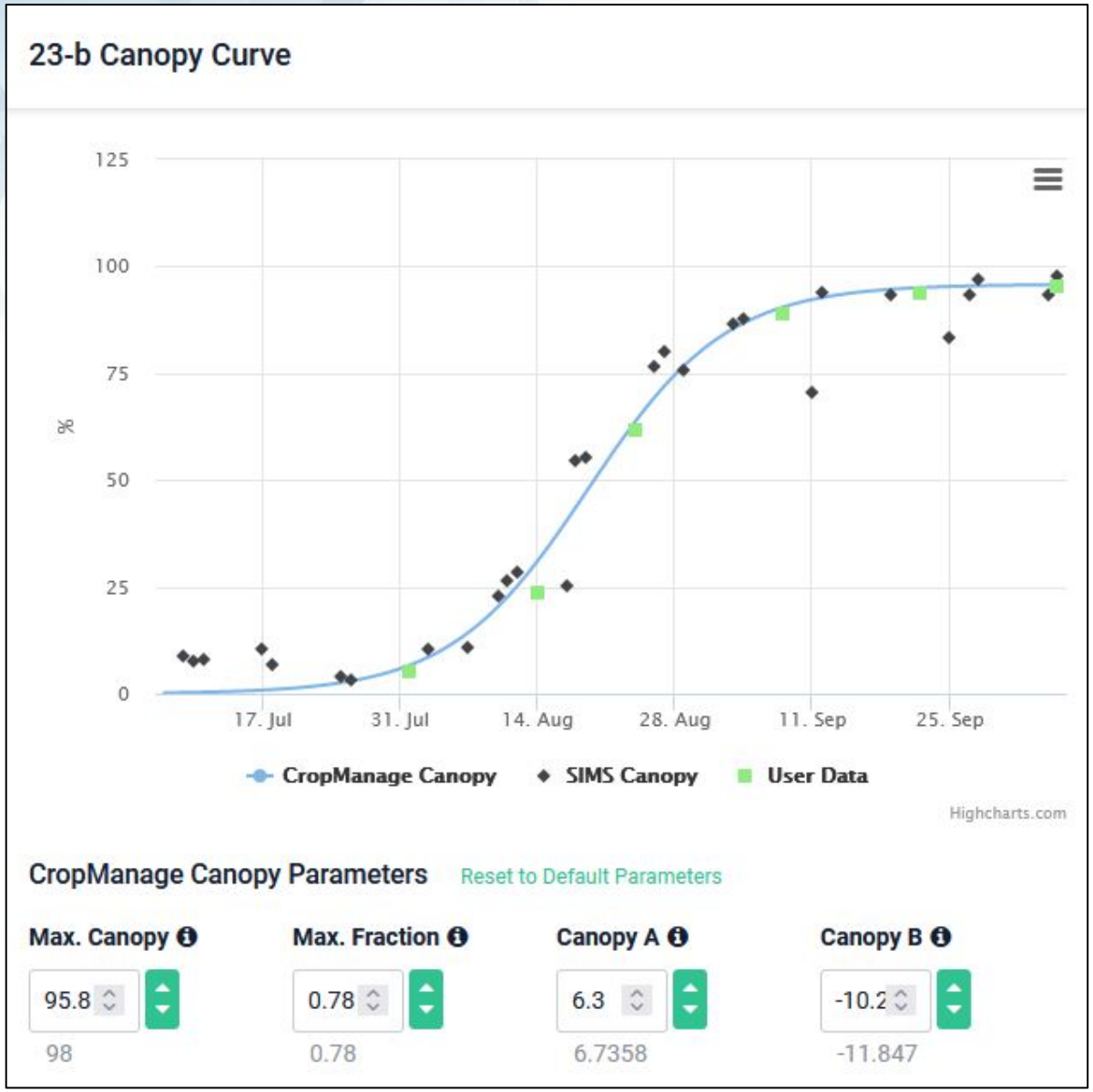
SIMS

Simulated via DAP:

CropManage

Green fractional canopy cover

SIMS-CM linkage



Canopy measurements can be used to adjust simulated phenology for anomalous conditions

Impacts…

CropManage use

- >12,000 annual irrigation recommendations (~2x increase since project start 2018)
- >500 farms
- Extended number of crop types including strawberry, grape, and orchards
- Expanded use in Central Valley (mainly orchards)

Broad support for industry

(~20,000 acre farm)

Commercial partnership example

CropManage

Irrigation recommendations

GEOVISUAL ANALYTICS

Regulatory support

- CropManage is an officially accepted method for consumptive use (ET) reporting by growers
- OpenET is on GSA “radar screen” for consumptive use reporting at field/farm & basin levels

Industry outreach

Incorporation of SIMS into OpenET model ensemble

OPENET

Filling the Biggest Data Gap in Water Management

What is ET? | How to Use Data | Methodologies | Known Issues | FAQ | Newsroom | About | Contact | Login

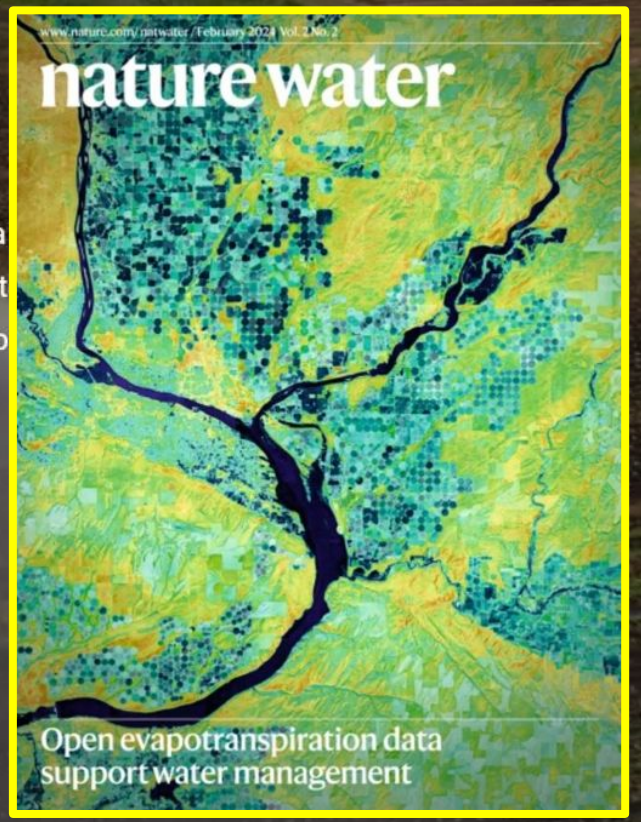
Home | Explore Data | Explore API | Use Cases | Accuracy

OPENET

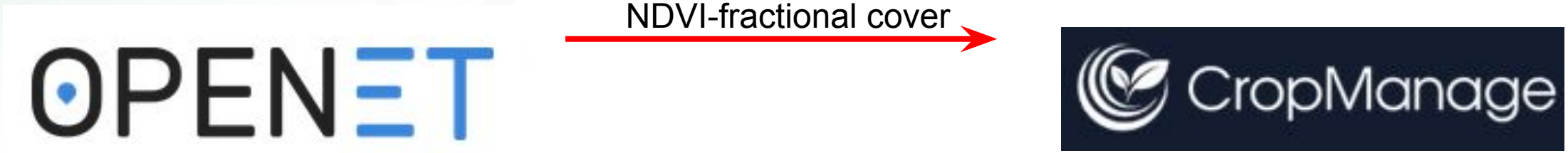
OpenET uses best available science to provide easily accessible satellite-based evapotranspiration (ET) data water management across the western United States. Using the Data Explorer or Application Programing Int users can accessET data at the field scale for millions of individual fields or at the original quarter-acre reso satellite data.

Explore Data

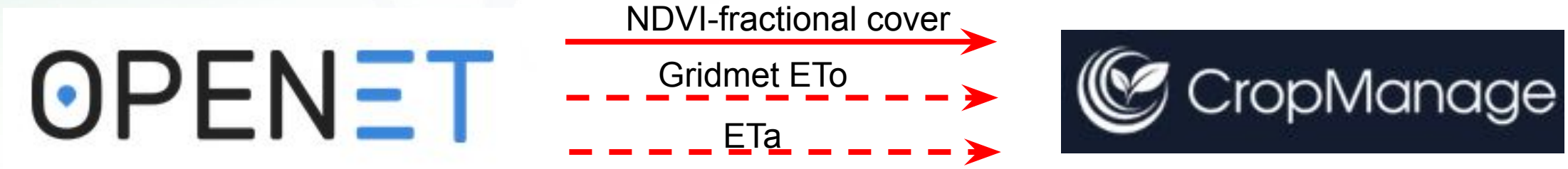
Explore API



OpenET linkage

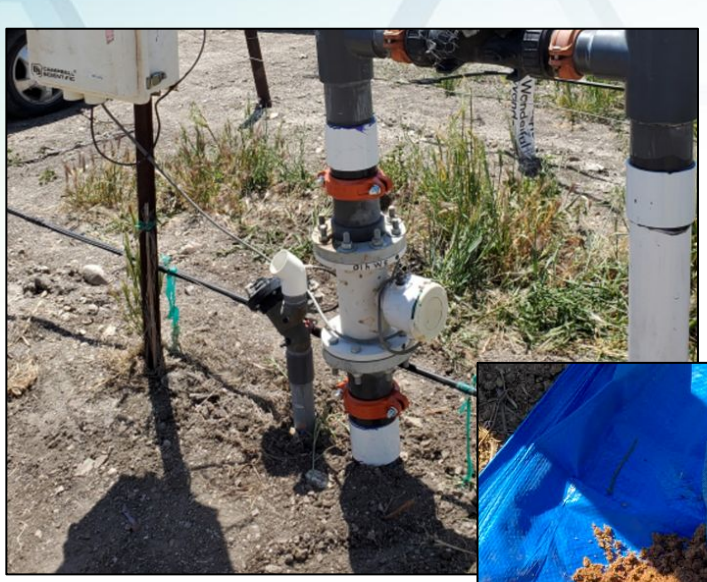


OpenET linkage



- Enable CM operations throughout Western States
- Added check on CM simulation
- Support by NASA/ROSES

Continued NASA/CSUMB/UCCE cooperation in monitoring of major Salinas Valley vegetable crops.



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Thanks!
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