

Shandon area water studies

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Estimating actual ET with satellites

- How accurate?
- And at what scale?

The image is a screenshot of the OpenET website. The header is dark blue with white text for navigation: 'INTRO', 'WHAT IS ET', 'WHY IS IT NEEDED', 'OPENET' (with a blue dot), 'WATER MANAGEMENT TOOL', 'THE TEAM', and a blue 'CONTACT' button. The main heading is 'Filling the Biggest Data Gap in Water Management' in white. Below it, a paragraph explains the importance of water management and the role of satellite-based ET data. At the bottom, there are two blue buttons: 'DOWNLOAD FAQ' and 'SIGN UP FOR UPDATES'.

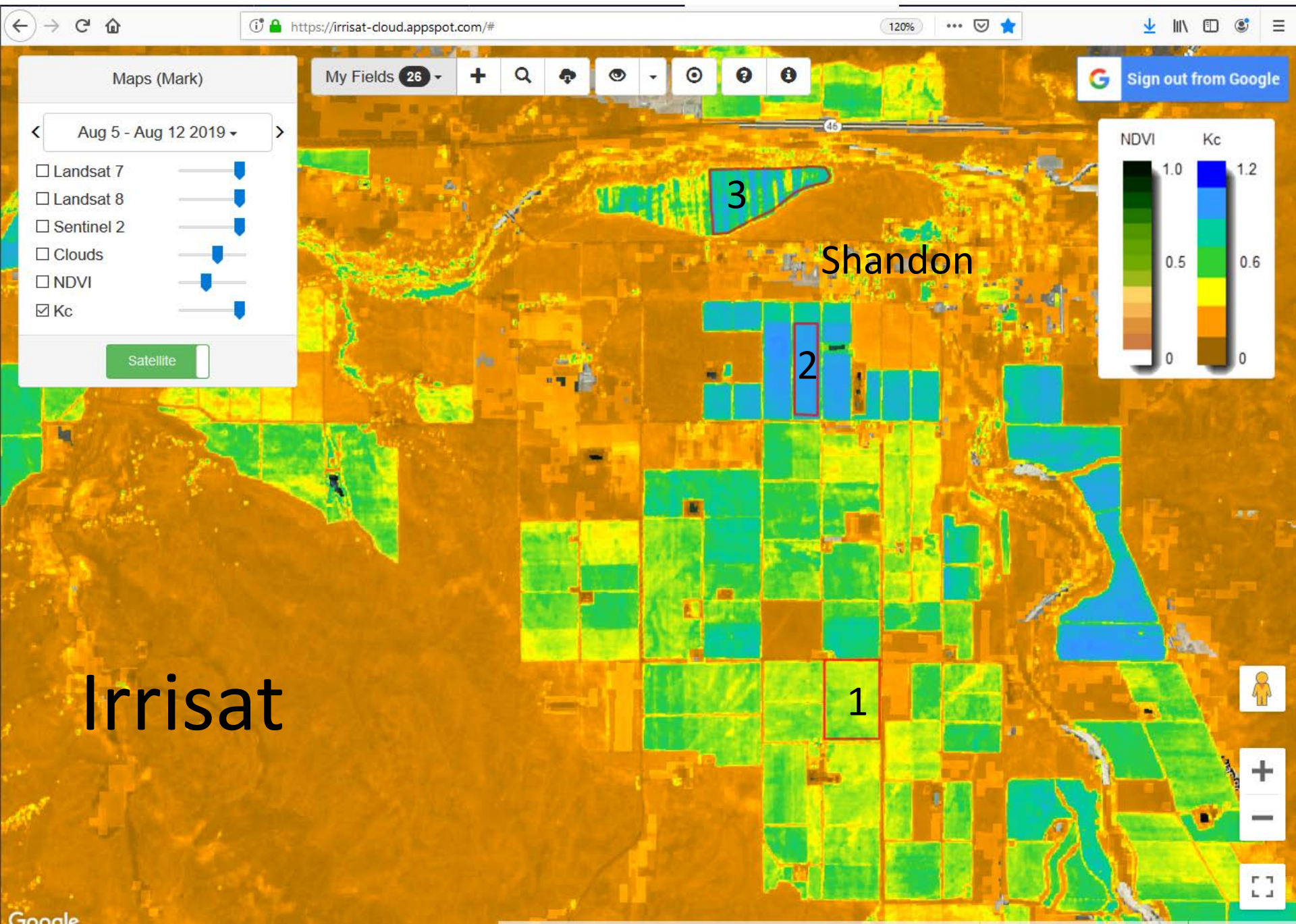
INTRO WHAT IS ET WHY IS IT NEEDED **OPENET** WATER MANAGEMENT TOOL THE TEAM [CONTACT](#)

Filling the Biggest Data Gap in Water Management

Sustainable water management is one of the most challenging issues of our time, especially in the arid western U.S. Adequate water supplies are crucial to maintaining the health of communities, rivers, and wildlife, and nothing is more important to agriculture's ability to produce food for the world's growing population. Maximizing the benefits of our water supplies requires careful measurement of their availability and use. For irrigated agriculture, satellite-based estimates of evapotranspiration (ET) provide a measure of the water used to grow food — the biggest share of water consumption in most arid environments around the world. However, access to this data has been limited and expensive, keeping it out of the hands of most water users and decision-makers.

OpenET aims to provide open, easily accessible satellite-based ET data for improved water management.

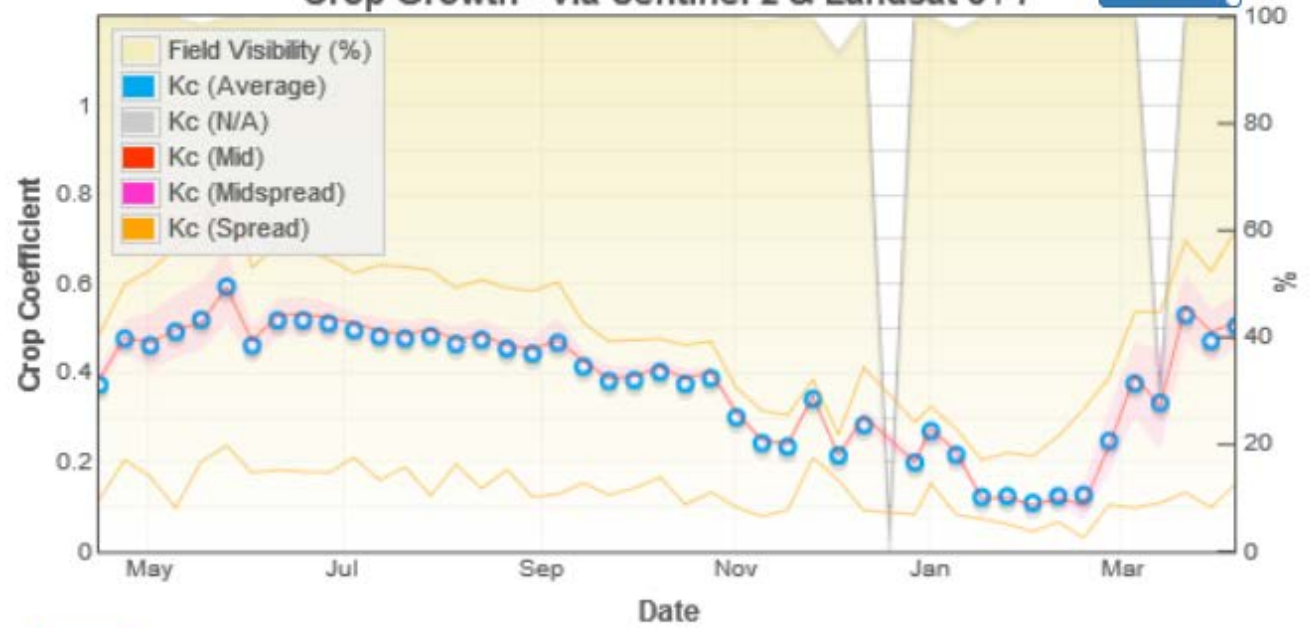
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Crop Growth - via Sentinel 2 & Landsat 8 / 7

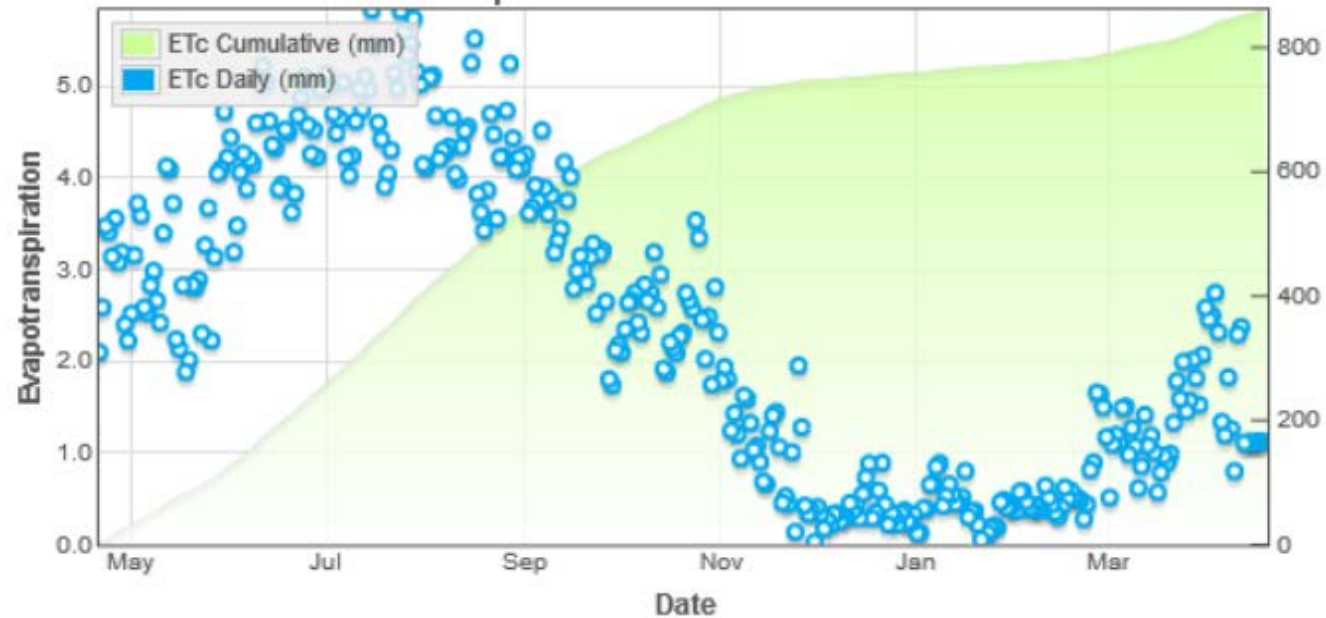
Edit

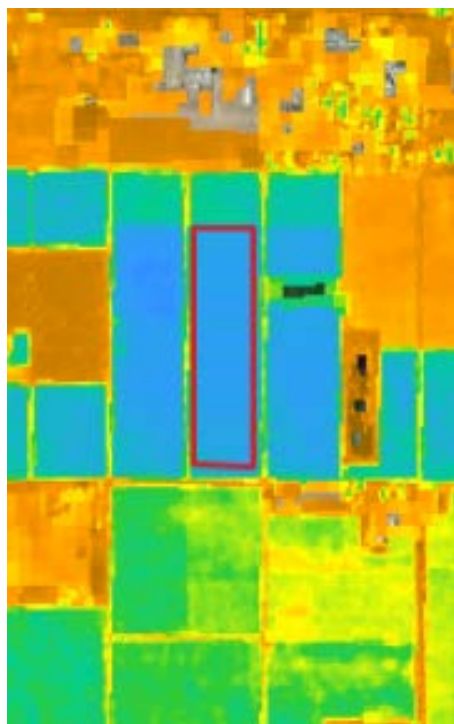


Graph

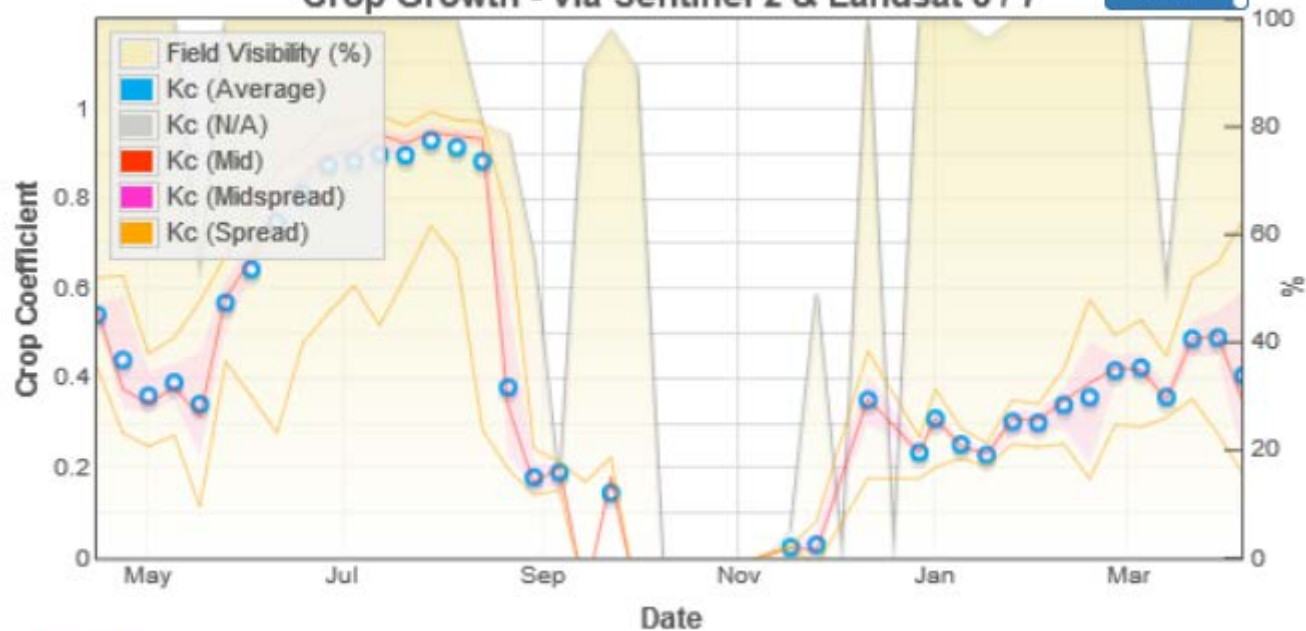
Data

Crop Water Use - via GridMET

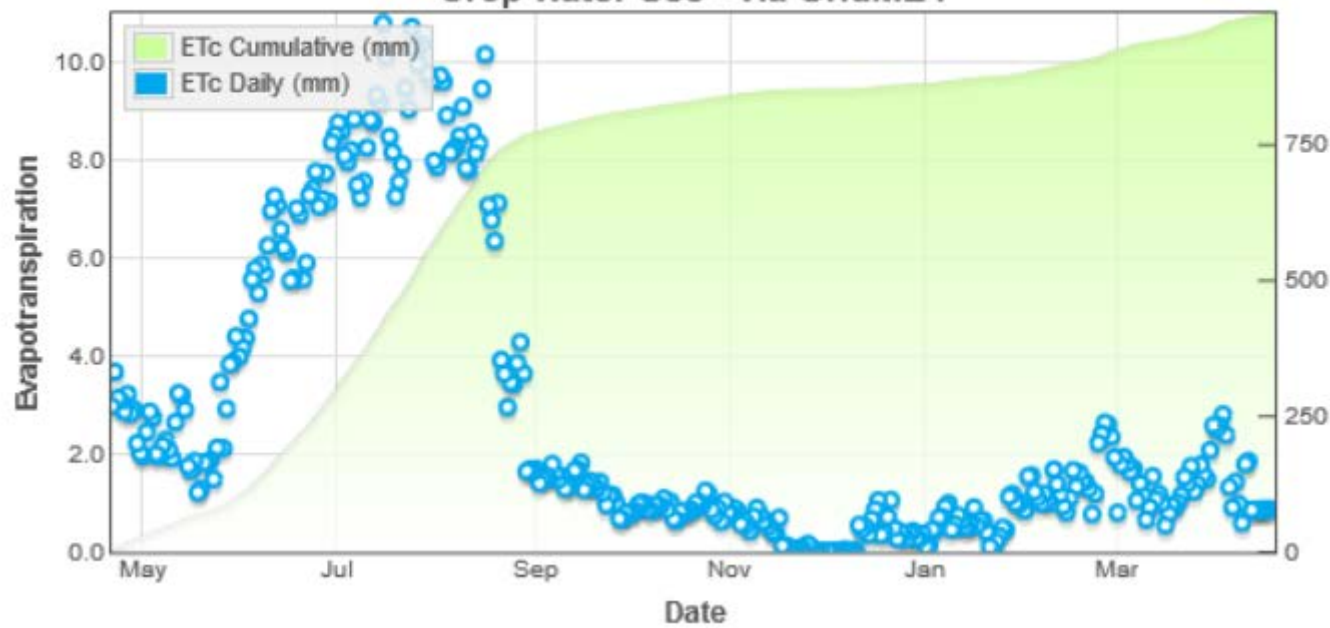


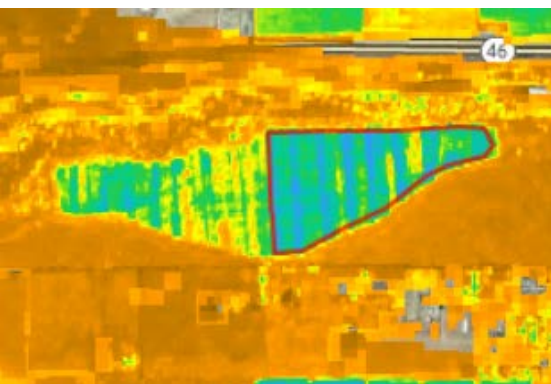


Crop Growth - via Sentinel 2 & Landsat 8 / 7

[Edit](#)[Graph](#)[Data](#)

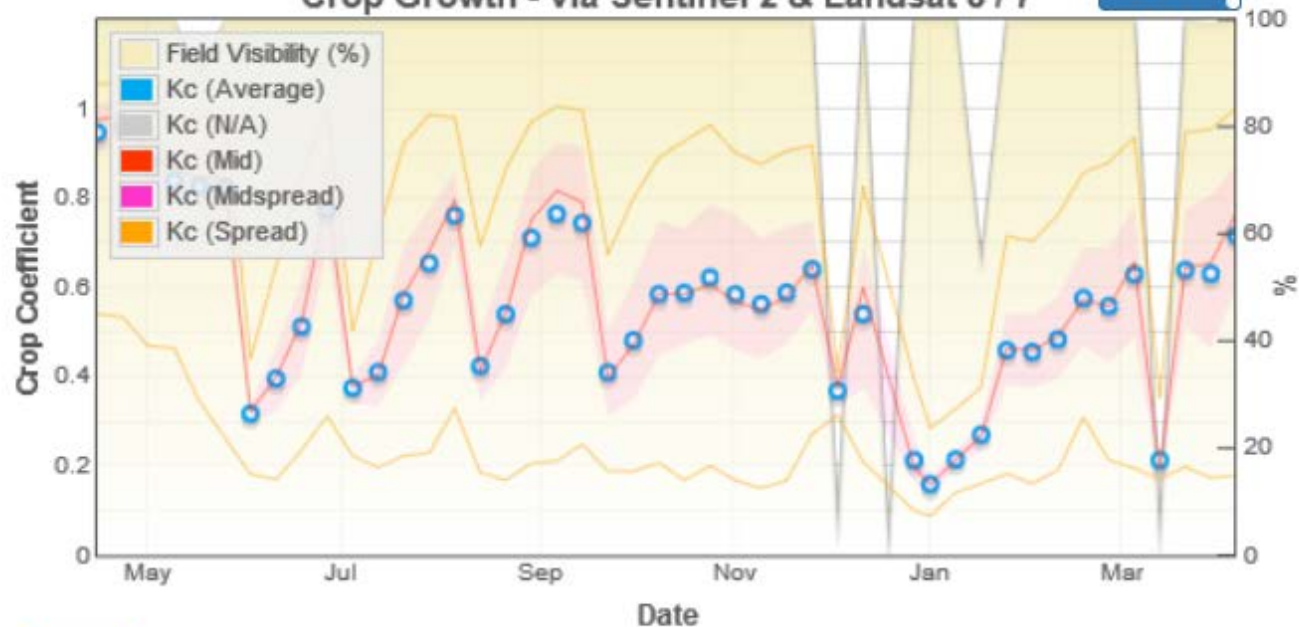
Crop Water Use - via GridMET





Crop Growth - via Sentinel 2 & Landsat 8 / 7

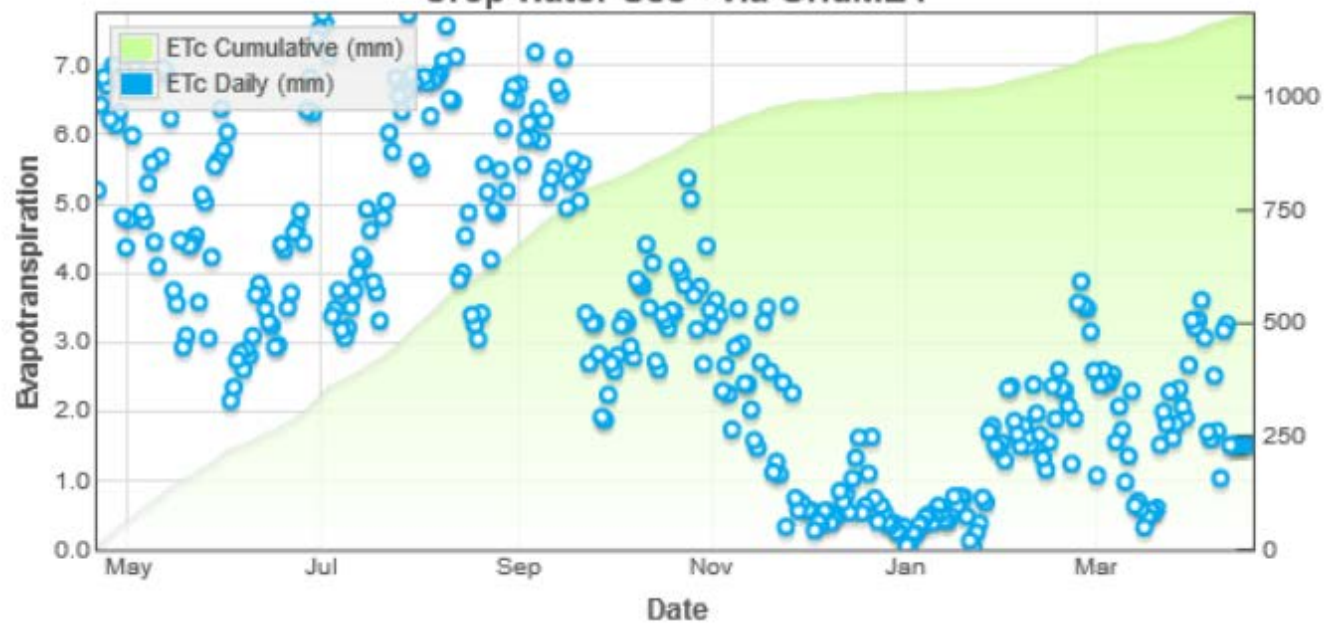
Edit



Graph

Data

Crop Water Use - via GridMET



How to improve?

- Need to calibrate satellite data and the water use models with actual ground conditions
- Examples:
 - Percentage canopy cover
 - Aerial images, camera on pole, shade measurements
 - Measured evapotranspiration
 - Eddy covariance station in the field
 - Surface renewal station in the field (Tule)

Eddy covariance station



Source: www.agronomy.org

Tule sensor (simplified surface renewal)



Source: www.tuletechnologies.com

Projects for Shandon

- Lee Johnson (NASA) & UC collaborators
- Measure actual ET with eddy covariance system
- Incorporate into UC CropManage system
- 2021-2022 seasons if funded



Projects for Shandon

- Compare manual shaded area measurements to satellite data
- Also compare to aerial imagery, above-canopy images



Upgrading local weather stations

- Have 20 stations to install in Paso – Shandon region
- Make data available online:
 - Rainfall, soil moisture
 - Inversions, frost
 - Spray drift risk

