Water budget approach to drip irrigation scheduling

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Making a Difference for California

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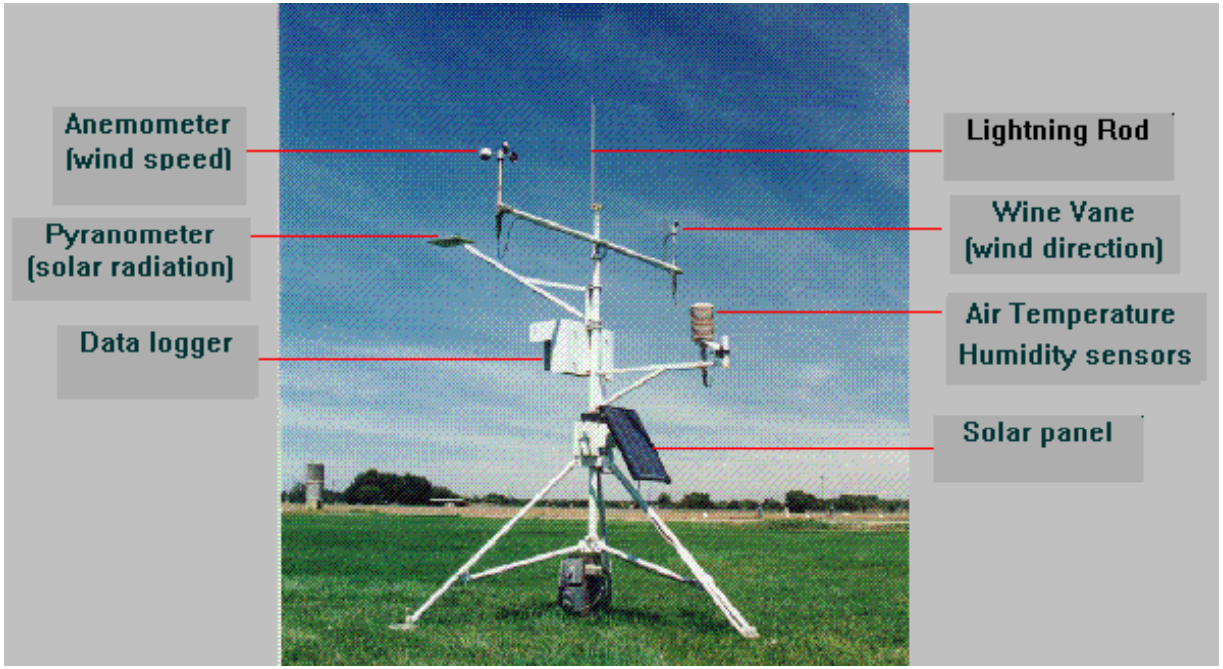
Irrigate to replace water ESTIMATED to have been lost through crop use and evaporation

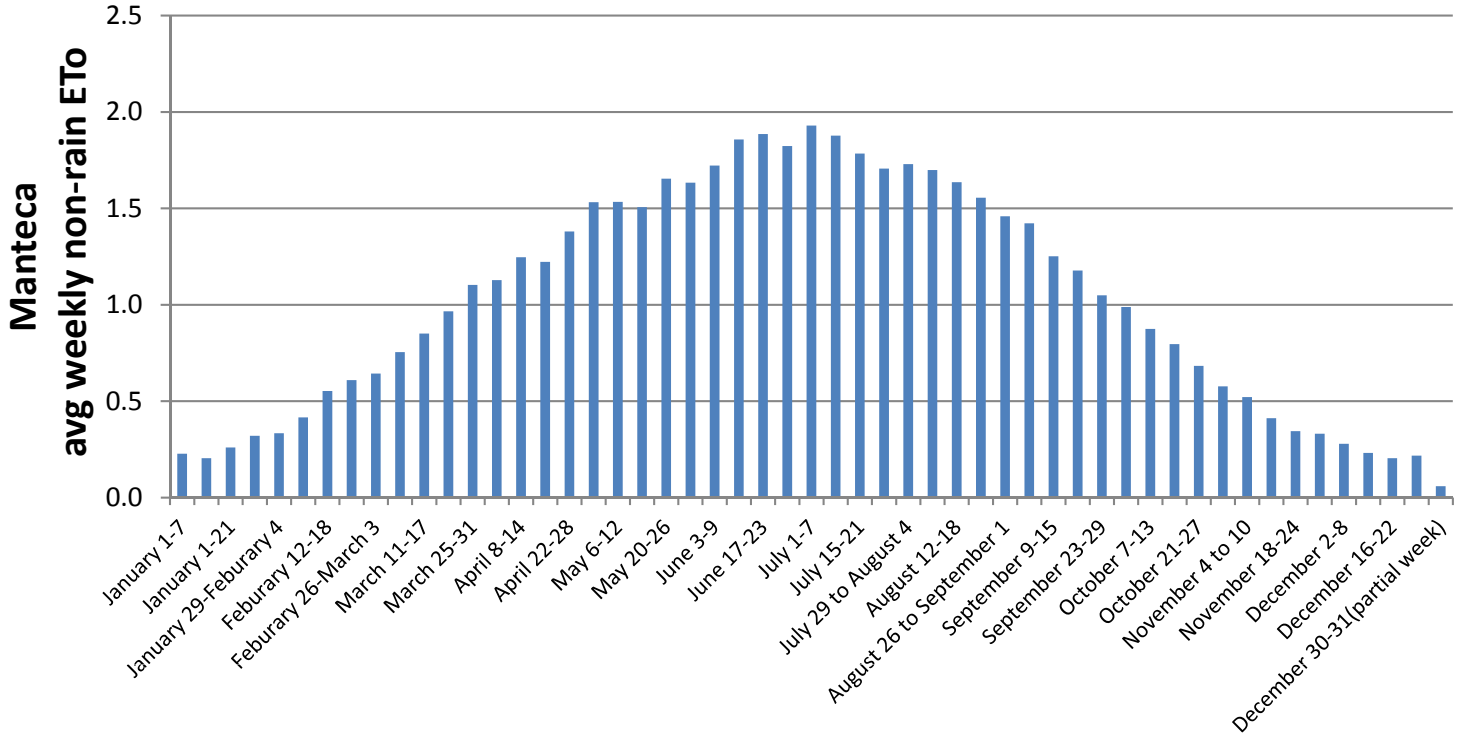
Back up this estimate with soil moisture measurements

Reference evapotranspiration (ET_o)



Historical ET_o

Available from CIMIS or UC IPM, or built-in to Terry Prichard's excel spreadsheet (we can give you the excel file)



Current Year ET_O

California Irrigation Management information System website

http://wwwcimis.water.ca.gov

Use historical ET_O to plan irrigations, then use actual ET_O of previous week to adjust as needed

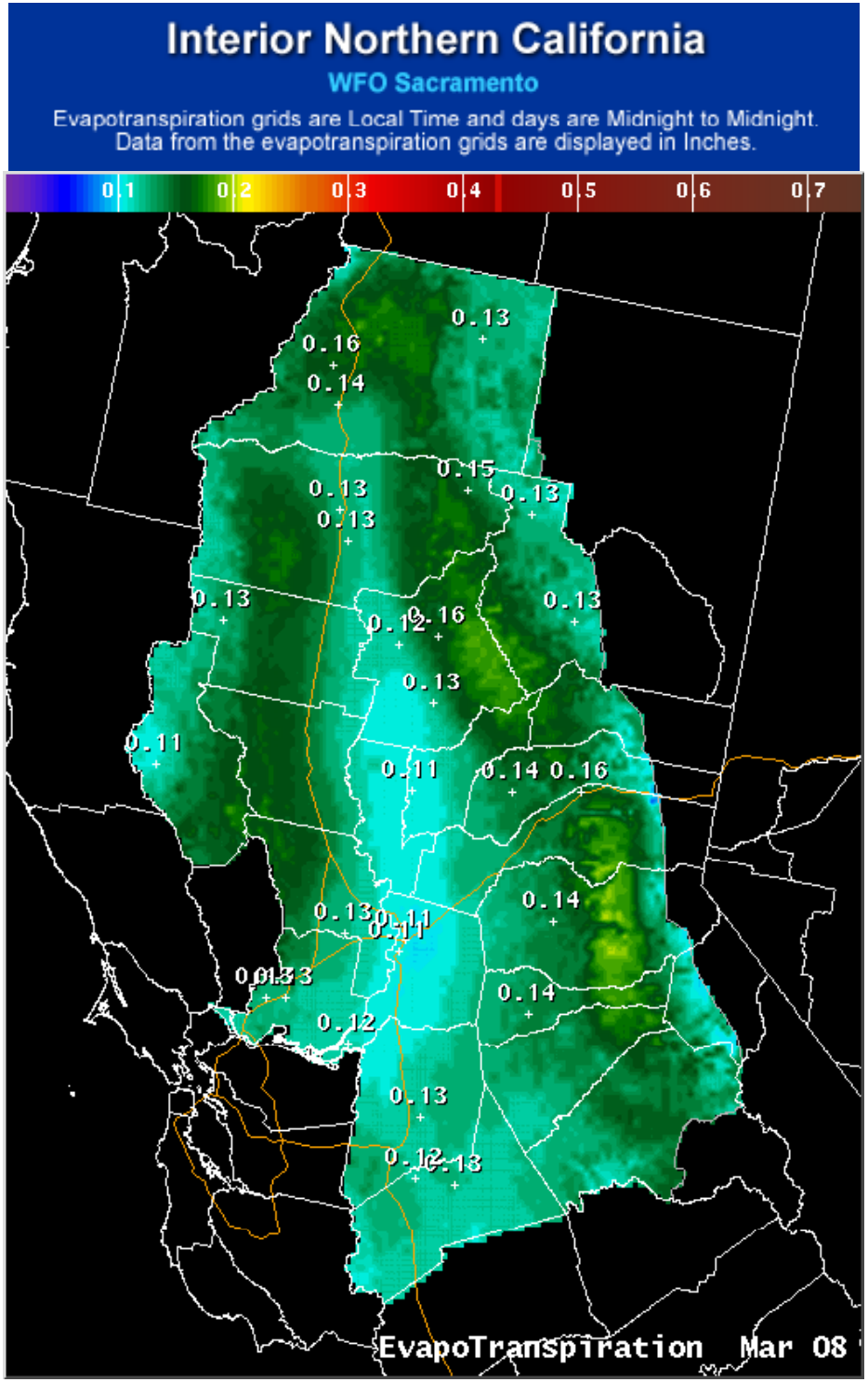
Or

Use daily ET_O and irrigate to replace what was lost in previous days

Forecasts

Evapotranspiration forecasts available from National Weather Service

Tabular form or map



ET_o = reference evapotranspiration

ET_c = crop evapotranspiration

ET_c = ET_o x fraction of ground surface covered x 1.1

Add 10 to 15% to account for non-uniformity of the drip system

Sample calculation

canopy width = 30” on a 60” bed (50% or 0.5)

daily ET_o is 0.25” (from CIMIS)

0.25” x 0.5 x 1.1 = 0.14” daily ET_c

0.14” + 15% = 0.16” daily irrigation requirement

Converting ‘inches’ to hours of irrigation

- Drip system output varies due to system design and operating pressure; typical systems deliver 1 inch in 20-24 hours

- Actual flow can vary significantly from the design specification, so a flow meter is a valuable tool

1 acre inch = 27,150 gallons
1 acre foot = 325,900 gallons

Drip irrigation frequency

Deplete no more than 20-30% of available moisture in the active root zone

Soil texture	Allowable depletion (inches)
Sandy loam	0.2 – 0.3
Loam	0.3 – 0.6
Clay loam	0.4 – 0.6