

ACTUAL EVAPOTRANSPIRATION ANALYSIS

February 2023

Prepared for
East Kaweah Groundwater Sustainability Agency



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SUMMARY

TABLE 1. SUMMARY OF GSA ET AND PRECIPITATION (117,346 AC)

	ET (ac-ft)	Precipitation (in)
Current water year to date (OCT 1, 2022 - SEP 30, 2022)	47,679	12.5
Prior year period (OCT 1, 2021 - Feb 30, 2022)	51,290	7.0
Full prior water year (OCT 1, 2021 - SEP 30, 2022)	257,436	8.6
Full water year from two years ago (OCT 1, 2020 - SEP 30, 2021)	256,352	4.7

TABLE 2. SENSORS USED IN DAILY AND MONTHLY ET_A ANALYSIS BY CROP CATEGORY

	Number of Active Stations	Number of Used Stations in model
Alfalfa	6	6
Almonds	13	12
Annual	5	3
Citrus	14	9
Fallow/Native	8	6
Grapes	7	6
Olives	0	0
Pistachios	13	12
Pomegranates	1	1
Walnuts	2	2

TABLE 3. PRECIPITATION MEASURED BY FIELD STATIONS

Station ID	Source	February Precipitation (in)
CIMIS #205: Coalinga	CIMIS	1.7
CIMIS #5: Shafter	CIMIS	2.15
CIMIS #15: Stratford	CIMIS	2.77
CIMIS #2: FivePoints	CIMIS	2.25
CIMIS #146: Belridge	CIMIS	4.95
CIMIS #39: Parlier	CIMIS	4.19
CIMIS #182: Delano	CIMIS	2.88
CIMIS #169: Porterville	CIMIS	3.14
CIMIS #258: Lemon Cove	CIMIS	3.61
CIMIS #125: Arvin_Edison	CIMIS	2.07
CIMIS #7: Firebaugh	CIMIS	1.21
CIMIS #206: Denair II	CIMIS	2.48
LandIQ_EK_Full_Sumos	Land IQ	3.15
LandIQ_GK_Full_Murcotts	Land IQ	3.91

CIMIS - California Irrigation Management Information System; CNRFC - California Nevada River Forecast Center; GHCN - Global Historical Climate Network.

REMOTE SENSING RESULTS

TABLE 4. IMAGE DATES AND SOURCES

Date	Image Source
2/1/2023	Landsat-9
2/9/2023	Landsat-8
2/15/2023	Sentinel-2

TABLE 5. MONTHLY GSA ET_a

Unit	OCT, 2022	NOV, 2022	DEC, 2022	JAN, 2023	FEB, 2023
(mm)	40.9	19.8	11.5	21.2	30.8
(inch)	1.6	0.8	0.5	0.8	1.2
(AF)	15,727	7,632	4,427	8,149	11,856

TABLE 6. MONTHLY FIELD ET_a

ET _a (in) Including Fallow						
	Field Size (ac)	OCT, 2022	NOV, 2022	DEC, 2022	JAN, 2023	FEB, 2023
Maximum	230.1	3.3	1.6	0.8	1.4	1.9
Minimum	0.04	0.0	0.0	0.2	0.1	0.4
Average	10.1	1.9	0.9	0.5	0.9	1.2
ET _a (in) Excluding Fallow						
	Field Size (ac)	OCT, 2022	NOV, 2022	DEC, 2022	JAN, 2023	FEB, 2023
Maximum	230.1	3.3	1.6	0.8	1.4	1.9
Minimum	0.04	0.0	0.0	0.2	0.1	0.4
Average	10.3	2.1	1.0	0.5	0.9	1.2

TABLE 7. MONTHLY GSA PRECIPITATION

Precipitation Unit	OCT, 2022	NOV, 2022	DEC, 2022	JAN, 2023	FEB, 2023
(mm)	0.0	19.8	97.7	113.6	87.4
(inch)	0.0	0.8	3.8	4.5	3.4

(AF)	0	7,628	37,624	43,744	33,651
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ACCURACY OF REMOTE SENSING RESULTS

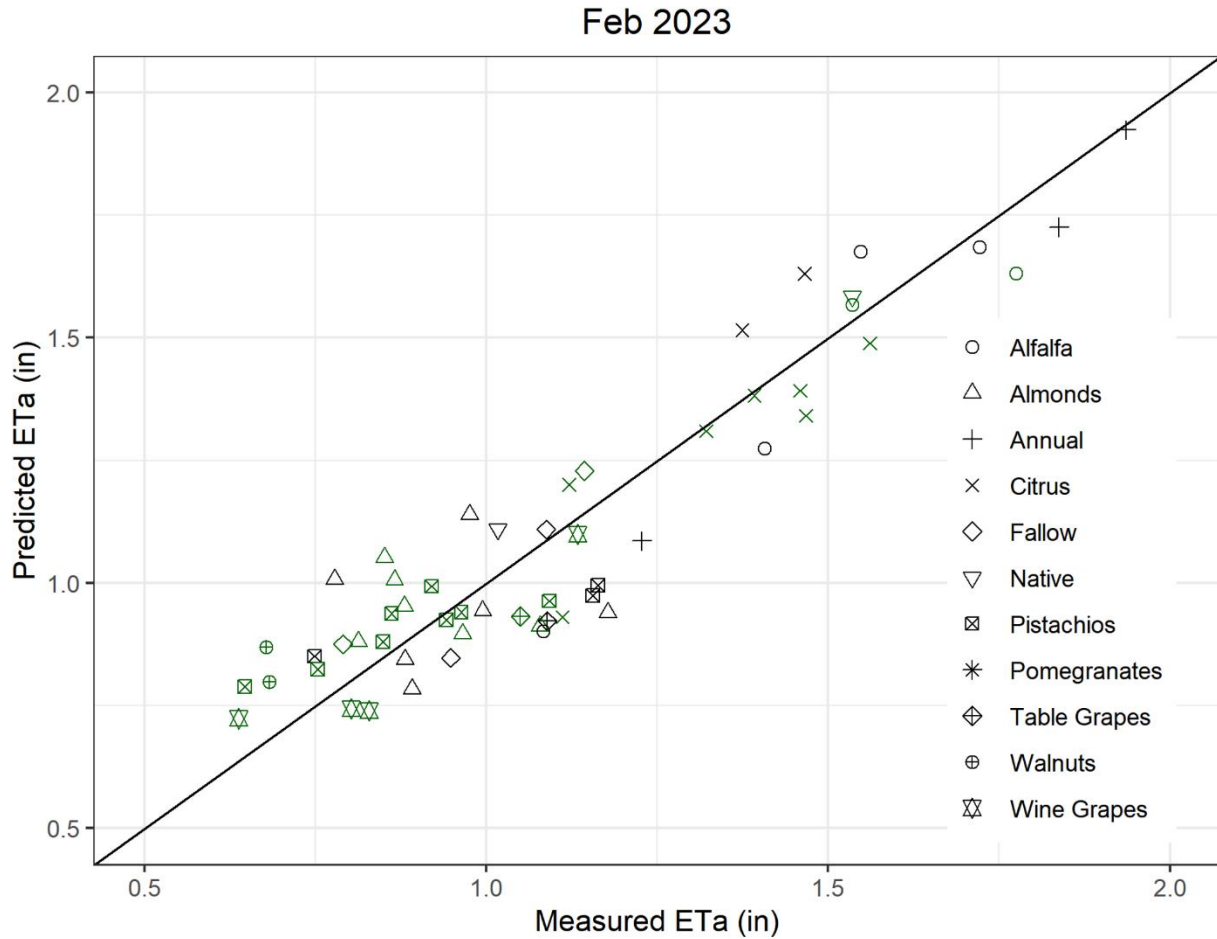


FIGURE 1. MEASURED VERSUS PREDICTED ET_A FOR THE MONTH. SYMBOL COLORS REPRESENT THE STATION TYPES (BLACK = FULL, GREEN = WATER IQ (WIQ))

TABLE 8. MEASURED VS. PREDICTED MONTHLY ET_A

R ²	RMSE (IN)
0.86	0.12

Note: The R² value is the relative measure of fit of the observed data to the predicted result, where a value of 1 indicates a perfect fit. RMSE can be interpreted as the standard deviation, where a value of 0 indicates a perfect fit to the observed data.