

ACTUAL EVAPOTRANSPIRATION ANALYSIS

January 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)
Prior 12 months (FEB 1, 2022 - JAN 31, 2023)	255,042	11.2
Prior water year (OCT 1, 2021 - SEP 30, 2022)	257,436	8.6
Current water year to date (OCT 1, 2022 - JAN 31, 2023)	35,814	9.1
Prior water year to date (OCT 1, 2021 - JAN 31, 2023)	293,250	17.8

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	5
Almonds	13	10
Annual	5	4
Citrus	14	9
Fallow/Native	9	7
Grapes	7	4
Olives	0	0
Pistachios	12	12
Pomegranates	1	1
Walnuts	1	1

TABLE 3. PRECIPITATION MEASURED BY FIELD STATIONS

Station ID	Source	January Precipitation (in)
CIMIS #205: Coalinga	CIMIS	3.28
CIMIS #5: Shafter	CIMIS	2.52
CIMIS #15: Stratford	CIMIS	2.33
CIMIS #2: FivePoints	CIMIS	3.12
CIMIS #146: Belridge	CIMIS	2.96
CIMIS #182: Delano	CIMIS	3.28
CIMIS #169: Porterville	CIMIS	4.63
CIMIS #258: Lemon Cove	CIMIS	4.4
CIMIS #125: Arvin_Edison	CIMIS	1.71
LandIQ_EK_Full_Sumos	Land IQ	4.97

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
January 21, 2023	Sentinel-2
January 24, 2023	Landsat-8
January 26, 2023	Sentinel-2

TABLE 5. MONTHLY GSA ET_A

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

TABLE 6. MONTHLY FIELD ET_A

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

TABLE 7. MONTHLY GSA PRECIPITATION

Precipitation Unit	OCT, 2022	NOV, 2022	DEC, 2022	JAN, 2023
(mm)	0.0	19.8	97.7	113.6

(inch)	0.0	0.8	3.8	4.5
(AF)	0	7,628	37,624	43,744

ACCURACY OF REMOTE SENSING RESULTS

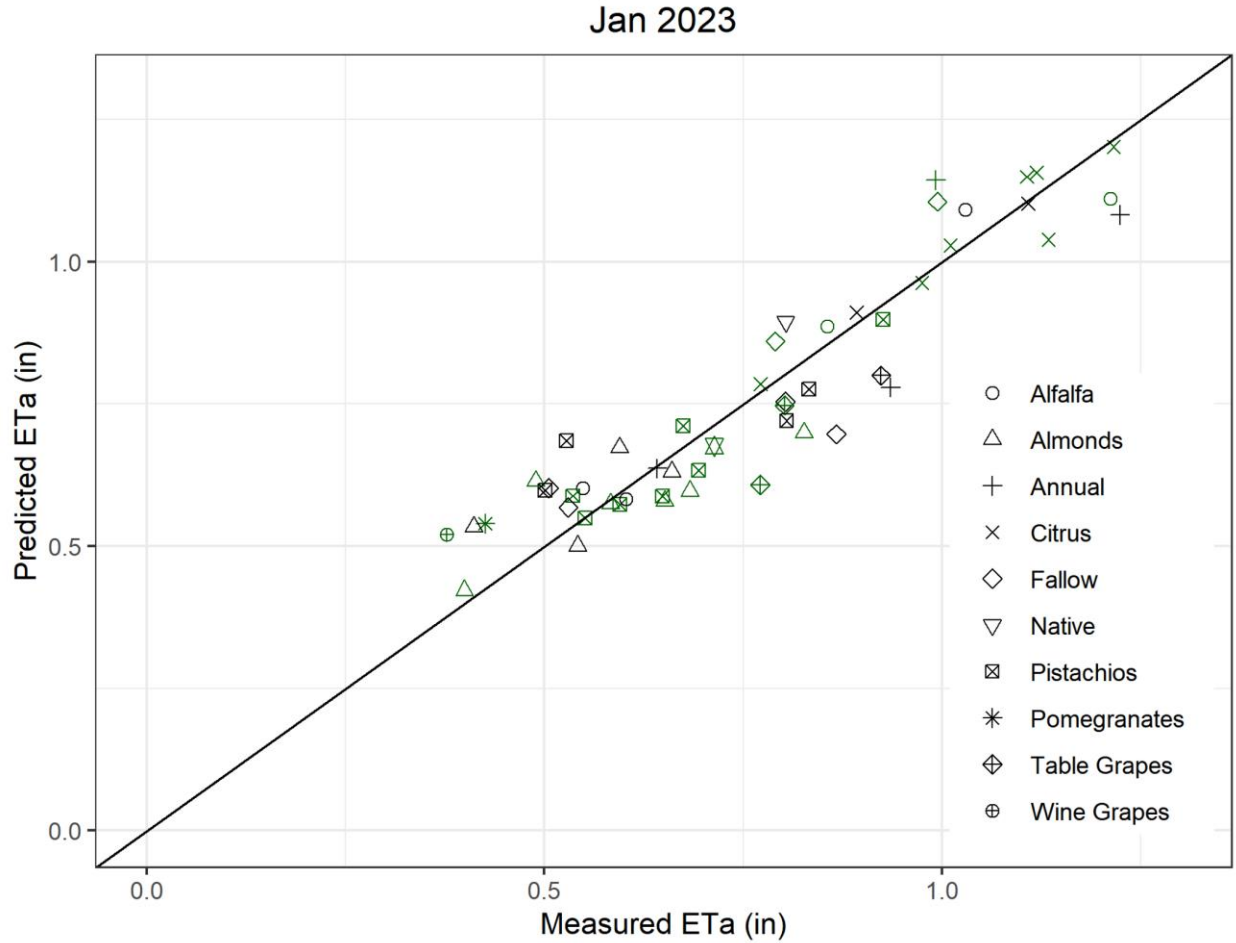


FIGURE 1. MEASURED VERSUS PREDICTED ET_A FOR THE MONTH. SYMBOL COLORS REPRESENT THE STATION TYPES (BLACK = FULL, GREEN = WATER IQ (WIQ))

TABLE 8. MEASURED VS. PREDICTED MONTHLY ET_A

R ²	RMSE (IN)
0.87	0.08

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.