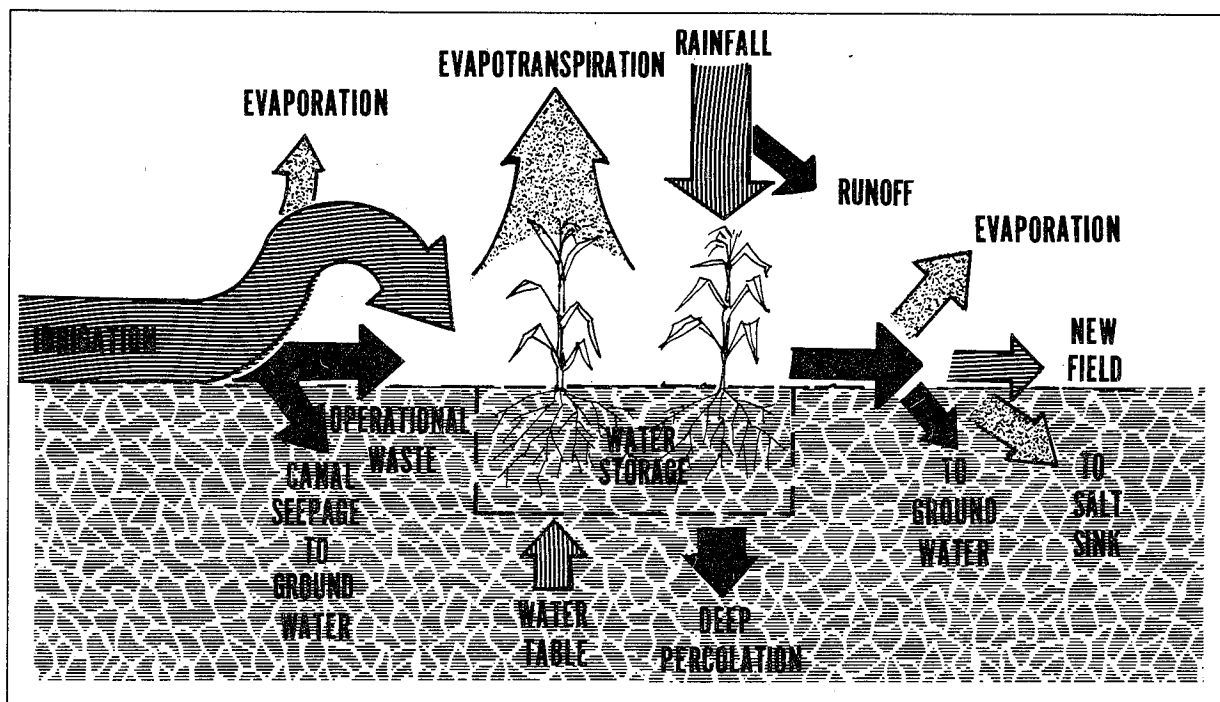


Determining Daily Reference Evapotranspiration (ET_o)



Introduction

Evapotranspiration (ET) information can be used to determine how much water has evaporated from a cropped field. In most situations, daily ET by a crop equals the depletion of water from the soil that day. Therefore, records of accumulated ET between waterings can be used to determine when and how much irrigation water to apply to a crop.

If too much irrigation water is being applied, ET information may reduce water and energy expenses, reduce fertilizer requirements, and improve pest management, cultural practices, and labor. If too little water is being applied, using ET information may increase crop yield and improve quality.

Anyone interested in better water management or in the on-farm application of computers will find this leaflet useful as a first step in developing an ET-based irrigation scheduling program. Information and procedures to determine daily reference ET for calculating "normal" crop ET for any location in California are presented.

Cooperative Extension **University of California**
Division of Agriculture and Natural Resources

Leaflet 21426

Evapotranspiration

Evapotranspiration (ET) is the sum of evaporation (E) from soil and plant surfaces and transpiration (T), which is the evaporation that takes place within plant leaves and the vapor that diffuses into the air through pores (stomata) on the leaf surfaces. The amount of ET that takes place on any day depends on the weather, crop age, and crop size and roughness. To obtain exact crop ET values, sophisticated equipment and substantial investment of time and money are required. Satisfactory results, however, can be obtained by using a reference ET value (ETo) and a correction factor (Kc) to relate the reference value to the ET of a particular crop (ETc). Average or normal daily ETo rates for any location in California can be developed from information provided in this leaflet.

Reference evapotranspiration (ETo) approximates the ET of a large field of 4- to 7-inch tall, cool-season grass (or uncut pasture) that is not water stressed. The ETo can be measured directly, but usually it is calculated from measured weather data. The calculated ETo represents an extensive area around the measurement site. Hence, ETo from a central location can be used by many nearby growers to estimate ETc for a variety of crops. The area represented by ETo from a particular location varies in size, depending on consistency of climate within the region. ETo calculations from inland California valleys represent large areas. The areas are much smaller along the coast where wind, fog, and cloudiness vary considerably within short distances.

This leaflet provides information to help determine normal daily ETo, which can be beneficial to growers in itself. Real-time (current) ETo information for most agricultural regions of the state is also available through the California Irrigation Management Information System (CIMIS). These real-time data can be substituted for normal data if a refined irrigation schedule is desired. Information on the computer dialup service and access to the ETo information can be obtained by writing:

California Department of Water Resources
Water Conservation Office
1020 9th Street, 3rd floor
Sacramento, CA 95814

Daily ETo values are multiplied by crop coefficient (Kc) values to determine daily evapotranspiration for a particular crop (ETc). This relationship is $ETo \times Kc = ETc$. Many crop coefficients and the methodology to determine ETc for a variety of crops are discussed in UC Leaflet 21427 for agronomic crops, grasses, and vegetable crops and in UC Leaflet 21428 for trees and vines. For estimating ETc for turfgrass, use Kc values of 0.8 and 0.6 for cool-season and warm-season species, respectively.

Calculating Normal Daily ETo

Average ETo values in inches per month are given in table 1 by county and city for many locations in California. It is not possible to list ETo for all places, but ETo values for an unlisted site are often close to those of a listed nearby location.

Site-specific ETo estimates for an unlisted location can be determined using UC Bulletin 1922, which has 12 California monthly maps containing iso-lines of average ETo in millimeters per day. Average ETo in millimeters per day can be selected from each map and converted to inches per month by multiplying by the number of days per month and dividing by 25.4.

Normal daily ETo is estimated using monthly ETo values, either graphically or with a computer program. For example, read the monthly ETo for Modesto from table 1 and add them to obtain a cumulative total at the end of each month for the year as shown in table 2. Then plot the values of cumulative ETo versus date on a graph as in the figure and draw a smooth curve through the points. The cumulative ETo (CETo) on any date can be determined by following a line upward from the bottom scale to the ETo curve and then to the left-hand scale where the value is read. The accumulated ETo between any two dates can be calculated as a difference in cumulative ETo. For example, the cumulative ETo from April 6 through April 12 inclusive equals the CETo on April 12 minus that on April 5 or $7.2 - 6.2 = 1.0$.

It is difficult to make estimates of daily ETo using the graphical method because the difference between cumulative ETo from one day to the next is too small to differentiate visually. An approximation can be made by taking the difference in cumulative ETo over some equal length time intervals and dividing by the number of days per interval. The result is an estimate of daily ETo rate during the time interval. For example, an approximation for normal daily ETo rate at Modesto during the period from April 6 through April 12 is calculated as $1.0 \div 7 = 0.14$ inch per day.

A computer program written in QUICKBASIC is provided to make daily ETo estimates from monthly ETo. The filename for the program is "NEWETO" and the listing is included at the end of this leaflet. A cubic spline procedure is used to derive a smooth curve of ETo at the end of each month versus the day of the year corresponding to the end of each month. An example of the daily ETo calculation for Modesto is given in table 3.

In many locations within California normal ETo information will provide sufficiently accurate estimates of ETo to be useful for irrigation scheduling. However, during extreme weather conditions and in regions with variable fog, clouds, and wind speeds, real-time updates of ETo can improve accuracy and lead to more refined irrigation scheduling.

References

- Pennington, R. H. 1970. Computer methods and numerical analysis, 2nd edition. The MacMillan Company, Toronto, Canada.
- Pruitt, W. O., E. Fereres, K. Kaita, and R. L. Snyder. 1987. Reference evapotranspiration (ETo) for California. UC Bulletin 1922.
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Table 1. Average ETo by county and city in inches per month

County & city	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
----- ETo total inches per month -----												
ALAMEDA	1.22	1.54	2.93	4.37	5.86	6.61	7.44	6.35	5.31	3.17	1.54	0.85
Livermore	1.46	1.54	2.81	3.98	5.13	5.31	5.98	5.49	4.84	3.05	1.42	0.85
Oakland												
ALPINE	0.73	0.88	1.95	3.54	5.00	6.14	7.32	6.35	4.37	2.56	1.18	0.49
Markleeville												
AMADOR	1.16	1.54	2.81	4.37	5.98	7.20	7.93	7.20	5.31	3.17	1.42	0.85
Jackson												
BUTTE	1.22	1.76	2.93	4.72	6.10	7.38	8.54	7.32	5.43	3.66	1.65	0.98
Chico	1.22	1.76	2.99	4.72	6.10	7.74	8.54	7.08	5.43	3.66	1.65	0.98
Gridley	1.22	1.65	2.81	4.72	6.10	7.56	8.54	7.32	5.31	3.66	1.65	0.98
Oroville												
CALAVERAS	1.16	1.54	2.81	4.37	5.98	7.32	7.93	7.02	5.31	3.17	1.42	0.73
San Andreas												
COLUSA	1.10	1.65	2.81	4.84	6.59	7.44	8.18	6.96	5.67	3.54	1.65	0.98
Colusa	1.22	1.65	2.93	4.49	6.10	7.20	8.54	7.32	5.31	3.42	1.59	1.04
Williams												
CONTRA COSTA	0.98	1.54	2.93	4.49	6.10	7.09	7.93	6.71	5.20	3.17	1.42	0.73
Brenwood	1.10	1.43	2.43	4.02	5.49	5.91	6.96	5.98	4.84	3.17	1.30	0.73
Concord	1.22	1.43	2.43	3.90	5.25	5.55	6.71	5.61	4.72	3.05	1.18	0.73
Martinez	0.98	1.54	2.81	4.13	5.61	6.38	7.44	6.35	4.96	3.17	1.30	0.73
Pittsburg												
DEL NORTE	0.49	0.88	1.95	2.95	3.66	3.54	4.27	3.66	2.95	1.95	0.94	0.49
Crescent City												
EL DORADO	0.98	1.68	2.48	3.90	5.98	7.20	7.75	6.82	5.10	3.10	1.50	0.93
Camino												
FRESNO	0.98	1.54	3.17	4.84	6.35	7.74	8.54	7.32	5.31	3.42	1.42	0.73
Clovis	1.22	1.65	3.11	4.61	6.22	7.20	8.54	7.32	5.31	3.42	1.59	0.73
Coalinga	0.92	1.65	3.30	4.96	6.59	7.68	8.54	7.32	5.43	3.42	1.48	0.85
Five Points	0.85	1.65	3.30	4.84	6.71	7.80	8.42	7.08	5.20	3.17	1.42	0.61
Fresno	1.22	1.54	3.05	4.72	6.35	7.68	8.54	7.32	5.31	3.42	1.42	0.73
Friant	0.85	1.49	3.23	4.84	6.59	7.74	8.42	7.20	5.31	3.42	1.42	0.73
Kerman	0.98	1.54	3.36	4.84	6.59	7.74	8.42	7.20	5.31	3.42	1.42	0.73
Kingsburg	1.10	1.54	3.17	4.72	6.35	7.68	8.54	7.32	5.31	3.42	1.42	0.73
Reedley												
GLENN	1.22	1.65	3.05	4.84	6.71	7.44	8.79	7.32	5.79	3.78	1.65	1.10
Oroland	1.22	1.71	2.93	4.72	6.10	7.20	8.54	7.32	5.31	3.60	1.65	1.04
Willows												
HUMBOLDT	0.49	1.10	1.95	2.95	3.66	3.66	3.66	3.66	2.95	1.95	0.94	0.49
Eureka	0.49	1.10	1.95	2.95	3.66	3.66	3.66	3.66	2.95	1.95	0.94	0.49
Ferris	0.61	1.18	2.20	3.07	4.52	5.02	5.49	4.88	3.78	2.44	1.00	0.67
Carberville	0.49	1.10	2.07	2.95	4.39	5.43	6.10	5.13	3.84	2.44	0.94	0.67
Hoopa												

Table 1—Continued.

County & city	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
----- ETo total inches per month -----												
IMPERIAL	2.81	3.75	5.86	8.03	10.37	11.46	11.72	10.01	8.39	6.22	3.54	2.07
Brawley	2.87	3.86	6.10	8.27	10.50	11.81	11.96	10.37	8.62	6.47	3.78	2.26
Calipatria	2.69	3.53	5.61	7.91	10.13	11.10	11.59	9.52	8.27	6.10	3.31	1.95
El Centro	2.81	3.75	5.86	7.91	10.37	11.57	11.96	10.01	8.62	6.22	3.54	2.07
Holtville	3.05	4.08	6.59	8.74	10.98	12.40	12.69	10.98	8.86	6.59	3.96	2.56
Yuma												
INYO	1.71	2.65	4.76	6.73	8.18	10.87	9.76	9.64	7.44	4.76	2.48	1.59
Bishop	2.20	3.31	5.37	7.68	9.76	11.10	11.35	10.13	8.27	5.37	2.89	1.71
Death Valley	1.71	2.65	3.42	6.61	8.54	9.45	9.76	8.54	7.09	3.91	2.01	1.46
Independence												
Lower	1.83	2.65	4.39	7.09	8.54	9.45	9.76	8.54	7.09	4.15	2.60	1.46
Haiwee Res.												
KERN	1.16	1.76	3.48	4.72	6.59	7.44	8.06	7.32	5.31	3.42	1.65	0.98
Arvin	1.04	1.76	3.48	4.72	6.59	7.68	8.54	7.32	5.31	3.54	1.59	0.85
Bakersfield	0.98	1.76	3.17	4.72	6.59	7.68	8.54	7.32	5.43	3.42	1.54	0.85
Builtonwillow	2.07	3.20	5.25	7.68	9.15	10.04	10.98	9.76	7.32	4.88	2.72	1.71
China Lake	0.92	1.76	3.42	4.72	6.59	7.68	8.54	7.32	5.43	3.42	1.42	0.73
Delano	1.34	1.76	3.05	4.37	5.61	6.79	7.57	6.83	5.91	3.36	1.89	0.98
Grapevine	1.95	3.09	4.88	7.32	8.54	9.69	10.98	9.40	7.09	5.13	2.60	1.71
Inyokern	1.16	1.43	2.75	4.37	5.80	7.32	7.93	6.96	4.96	3.23	1.65	0.85
Isabella Dam	0.61	1.10	2.56	4.37	6.96	7.68	8.54	7.08	4.96	3.91	1.83	0.37
Lost Hills	0.98	1.65	3.42	4.96	6.59	7.68	8.30	7.32	5.43	3.42	1.54	0.85
Shafter	1.28	1.76	3.11	4.23	6.22	7.32	8.54	7.32	5.37	3.42	1.65	0.98
Taft	1.40	1.76	3.17	4.96	6.10	7.68	7.93	7.32	5.91	3.42	2.07	1.22
Tehachapi												
KINGS	0.85	1.54	3.30	5.20	7.20	7.91	8.42	7.32	5.79	3.42	1.42	0.73
Corcoran	0.85	1.54	3.42	4.96	6.59	7.68	8.30	7.20	5.43	3.42	1.42	0.73
Hanford	0.98	1.76	3.42	5.31	7.20	7.91	8.42	7.44	5.91	3.66	1.65	0.98
Kettleman City	0.85	1.54	3.42	4.96	6.59	7.68	8.30	7.32	5.43	3.42	1.42	0.73
Lemoore												
LAKE	1.10	1.32	2.56	3.54	5.13	6.02	7.32	6.10	4.72	2.93	1.24	0.85
Lakeport	1.22	1.43	2.69	4.49	5.25	6.26	7.44	6.41	4.96	3.05	1.30	0.92
Lower Lake												
LASSEN	0.61	1.05	2.32	4.13	5.61	6.73	7.93	7.32	4.72	2.81	1.18	0.49
Ravendale	0.73	0.99	2.20	4.13	5.61	6.50	7.81	6.96	4.61	2.81	1.18	0.49
Susanville												
LOS ANGELES	2.07	2.76	3.66	4.72	5.13	6.02	6.59	6.71	5.43	4.03	2.60	1.95
Burbank	1.95	2.54	3.60	4.49	5.37	6.14	7.32	6.83	5.67	4.15	2.60	1.95
Glendora	1.59	2.15	3.42	4.61	5.49	7.38	7.69	7.08	5.91	3.60	2.36	1.10
Gorman	2.14	2.98	4.64	5.91	8.54	9.69	10.98	9.76	7.32	4.64	2.78	1.71
Lancaster	2.20	2.54	3.42	3.78	4.76	4.96	5.25	4.88	4.49	3.42	2.36	1.95
Long Beach	2.20	2.65	3.66	4.72	5.49	5.79	6.22	5.86	5.02	3.91	2.60	1.95
Los Angeles	1.95	2.65	4.15	5.08	7.57	8.54	9.89	9.76	6.73	4.15	2.60	1.71
Palmdale	2.07	2.65	3.66	4.72	5.13	6.02	7.08	6.71	5.55	4.15	2.60	1.95
Pasadena	1.71	2.43	3.66	4.72	7.32	7.68	9.89	7.93	6.38	4.03	2.60	1.59
Pearblossom	2.20	2.43	3.30	4.72	7.32	4.52	4.72	3.78	4.76	4.37	2.81	2.36
Redondo Beach	1.95	2.65	3.54	4.61	5.49	5.91	7.32	6.71	5.31	3.91	2.60	1.95
San Fernando												

Continued on next page.

Table 1—Continued.

County & city	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
-----Eto total inches per month-----												
MADERA	0.98	1.43	3.17	4.72	6.59	7.80	8.54	7.32	5.31	3.42	1.42	0.67
Chowchilla	0.92	1.43	3.17	4.84	6.59	7.80	8.54	7.32	5.31	3.42	1.42	0.73
Madera	1.22	1.54	2.99	4.61	6.10	7.56	8.42	7.32	5.20	3.42	1.42	0.73
Raymond												
MARIN	1.34	1.54	2.43	3.54	4.39	6.02	5.86	5.37	4.37	2.81	1.42	0.73
Novato	1.22	1.32	2.44	3.30	4.03	4.84	4.84	4.88	4.25	2.69	1.30	0.73
San Rafael												
MARIPOSA	1.10	1.54	2.81	4.37	5.86	7.32	8.06	6.96	5.31	3.36	1.42	0.73
Coulterville	1.10	1.54	2.81	4.43	5.86	7.38	8.24	7.08	5.02	3.42	1.42	0.73
Mariposa												
Yosemite												
Village	0.73	0.99	2.32	3.66	5.13	6.50	7.08	6.10	4.43	2.87	1.06	0.55
MENDOCINO	0.85	1.27	2.20	2.95	3.66	3.54	3.66	3.66	2.95	2.32	1.18	0.73
Fort Bragg	1.10	1.32	2.56	3.43	5.00	5.91	6.47	5.74	4.49	2.81	1.30	0.73
Hopland	0.98	1.32	2.32	2.95	3.66	3.90	3.66	3.66	2.95	2.32	1.18	0.73
Point Arena	0.98	1.32	2.32	2.95	3.66	3.90	3.66	3.66	2.95	2.32	1.18	0.73
Ukiah	0.98	1.32	2.32	2.95	3.66	3.90	3.66	3.66	2.95	2.32	1.18	0.73
MERCED	0.98	1.54	3.17	4.72	6.10	7.38	8.18	7.02	5.31	3.42	1.42	0.73
Los Banos	0.98	1.54	3.17	4.72	6.59	7.91	8.54	7.20	5.31	3.42	1.42	0.73
Merced												
MONO	0.73	0.88	2.20	3.84	5.49	6.61	7.44	6.71	4.72	2.69	1.18	0.49
Bridgeport												
MONTREY	1.59	1.76	2.69	3.54	4.39	4.37	4.52	4.15	3.78	2.81	1.77	1.34
Castroville	1.71	1.98	3.42	4.37	5.61	6.14	6.71	6.47	5.20	2.24	1.34	1.34
King City	1.53	1.87	3.17	4.13	5.80	6.50	7.32	6.71	5.31	3.60	1.95	1.22
Long Valley	1.71	1.76	2.69	3.54	4.03	4.13	4.27	4.15	3.54	2.81	1.89	1.46
Monterey	1.59	1.87	2.72	3.78	4.76	4.72	5.00	4.52	4.02	2.93	1.89	1.34
Salinas	1.71	1.98	3.42	4.37	5.49	5.43	6.47	6.22	5.20	3.66	2.24	1.46
Soledad												
NAPA	1.22	1.54	2.81	3.90	5.13	6.14	6.96	6.22	4.84	3.05	1.42	0.85
St. Helena	1.34	1.65	2.81	3.90	5.13	6.02	7.08	6.10	4.84	3.05	1.54	0.85
Yountville												
NEVADA	1.10	1.54	2.56	4.02	5.74	7.09	7.93	7.08	5.31	3.23	1.48	0.92
Grass Valley	1.10	1.54	2.56	3.90	5.80	6.85	7.93	6.96	5.31	3.17	1.42	0.85
Nevada City	0.73	0.66	1.77	2.95	4.27	5.31	6.20	5.49	4.13	2.50	0.71	0.67
Soda Springs	0.73	0.66	1.71	3.19	4.39	5.43	6.35	5.74	4.13	2.44	0.83	0.61
Truckee												
ORANGE	2.20	2.65	3.42	3.78	4.64	4.61	4.88	4.88	4.37	3.42	2.36	1.95
Laguna Beach	2.20	2.65	3.66	4.49	4.64	5.43	6.22	6.10	4.72	3.66	2.48	1.95
Santa Ana												
PLACER	1.22	1.65	2.81	4.37	6.10	7.38	8.30	7.32	5.43	3.42	1.59	0.98
Auburn	0.73	1.05	2.14	3.43	4.76	6.02	7.20	6.10	4.61	2.87	0.94	0.61
Blue Canyon	1.10	1.54	2.56	4.02	5.80	7.09	7.93	7.02	5.31	3.17	1.42	0.92
Colfax	1.22	1.65	2.81	4.72	6.10	7.44	8.42	7.32	5.43	3.66	1.89	1.22
Lincoln	1.10	1.71	3.05	4.72	6.22	7.68	8.54	7.32	5.55	3.66	1.65	0.98
Roseville	0.73	0.66	1.71	2.95	4.27	5.43	6.10	5.61	4.13	2.44	0.83	0.61
Tahoe City												

Table 1—Continued.

County & city	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
-----Eto total inches per month-----												
PLUMAS	0.73	0.88	1.95	3.54	4.88	5.91	7.32	5.86	4.25	2.69	0.94	0.49
Portola	0.73	0.94	2.20	3.54	4.88	5.91	7.32	5.86	4.37	2.81	1.18	0.49
Quincy												
RIVERSIDE	1.95	2.31	3.42	4.37	6.10	7.09	7.57	7.93	6.02	3.91	2.60	1.71
Beaumont	3.17	4.19	6.71	8.86	11.11	12.40	12.81	11.11	9.09	6.71	4.02	2.69
Blythe	2.93	4.08	6.22	8.39	10.50	11.93	12.33	10.13	8.86	6.22	3.78	2.44
Cocachella	2.93	4.08	6.35	8.50	10.98	12.05	12.20	11.11	8.98	6.35	3.90	2.56
Desert Center	2.07	2.76	3.91	4.43	5.86	7.09	7.63	7.02	5.79	3.91	2.60	1.95
Elsinore	2.93	3.97	6.22	8.27	10.50	11.93	12.33	10.01	8.86	6.35	3.78	2.44
Indio	2.69	2.75	5.86	8.03	10.37	11.69	11.59	10.01	8.39	6.22	3.43	2.07
Oasis	1.95	3.53	4.88	7.68	8.54	10.63	9.76	9.15	8.39	6.10	2.72	1.77
Palm Desert	1.95	2.87	4.88	7.20	8.30	8.50	11.59	8.30	7.20	5.86	2.72	1.71
Palm Springs	2.07	2.87	4.03	4.13	6.10	7.09	7.93	7.57	6.14	4.15	2.60	1.95
Riverside												
SACRAMENTO	0.92	1.54	2.93	4.43	6.10	6.85	7.93	6.71	5.31	3.17	1.36	0.73
Courtland	0.98	1.76	3.17	4.72	6.35	7.68	8.36	7.20	5.43	3.66	1.65	0.92
Sacramento												
SAN BENITO	1.46	1.76	3.05	4.25	5.49	5.67	6.35	5.86	4.96	3.54	1.65	1.10
Hollister												
SAN BERNARDINO	2.69	3.86	6.10	8.27	10.37	11.81	12.20	10.98	8.86	6.10	3.31	2.07
Bakers	2.56	3.64	5.74	7.91	10.13	11.57	11.96	10.37	8.62	5.74	3.31	2.07
Barstow	2.07	2.87	3.91	4.49	5.74	6.50	7.32	7.08	5.91	4.15	2.60	1.95
Chino	1.46	1.87	3.30	4.37	5.49	6.61	7.81	7.08	5.43	3.54	2.24	1.59
Cresline	2.20	2.87	5.13	6.50	9.15	10.98	11.35	9.89	7.44	5.00	2.95	1.83
Laceme Valley	3.17	4.19	6.59	8.86	10.98	12.40	12.81	10.98	8.86	6.59	4.02	2.69
Needles	1.95	2.65	3.78	4.61	5.74	6.85	7.93	7.44	5.91	4.15	2.60	1.95
San Bernardino												
Twentynine	2.56	3.64	5.86	7.91	10.13	11.22	11.23	10.25	8.62	5.86	3.43	2.20
Palms	2.32	3.09	4.88	6.73	9.28	10.04	11.23	9.76	7.44	5.13	2.83	1.83
Victorville												
SAN DIEGO	2.20	2.65	3.42	3.78	4.88	4.72	5.49	4.88	4.49	3.42	2.36	1.95
Chula Vista	2.07	2.76	3.78	4.72	5.49	6.14	6.71	6.47	5.43	3.78	2.48	1.95
Escondido	2.07	2.65	3.78	4.72	5.49	6.14	6.84	6.47	5.43	3.78	2.48	1.95
Fallbrook	2.20	2.65	3.42	3.78	4.88	4.72	4.88	5.13	4.13	3.30	2.36	1.95
Oceanside	1.46	1.76	2.93	4.13	5.49	6.85	7.93	7.32	5.91	4.03	2.24	1.47
Pine Valley	2.07	2.54	3.91	4.72	5.49	6.50	7.32	6.96	5.55	3.91	2.60	1.71
Ramona	2.20	2.65	3.42	3.78	4.88	4.88	5.13	4.88	4.49	3.42	2.36	1.95
San Diego	2.07	2.65	3.66	4.49	5.49	6.14	6.84	6.22	5.43	3.78	2.60	1.95
Santee	2.07	2.65	3.66	4.49	5.49	6.14	6.84	6.22	5.43	3.78	2.60	1.95
Warner Springs	1.59	2.20	3.66	4.72	5.74	7.56	8.30	7.69	6.26	4.03	2.48	1.47
SAN FRANCISCO	1.46	1.32	2.44	2.95	3.66	4.61	4.88	4.76	4.13	2.81	1.30	0.73
San Francisco												
SAN JOAQUIN	1.46	1.49	2.93	4.72	6.22	7.56	8.06	6.83	5.31	3.30	1.42	0.73
Farmington	0.85	1.54	2.93	5.08	6.47	6.97	7.69	7.69	5.20	3.05	1.30	0.73
Lodi	1.46	1.49	2.99	4.72	6.35	7.56	8.06	6.83	5.31	3.30	1.42	0.61
Manresa	0.79	1.54	2.93	4.72	6.22	7.44	8.06	6.83	5.31	3.23	1.42	0.61
Stockton	0.98	1.54	2.93	4.49	6.10	7.32	7.93	6.71	5.31	3.17	1.30	0.73
Tracy												

Continued on next page.

Table 1—Continued.

County & city	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
-----Eto total inches per month-----												
SAN LUIS OBISPO												
Arroyo Grande	1.95	2.20	3.17	3.78	4.27	4.72	4.27	4.64	3.78	3.17	2.36	1.71
Atascadero	1.22	1.54	2.81	3.90	4.52	6.02	6.71	6.22	4.96	3.17	1.65	0.98
Morro Bay	1.95	2.20	3.11	3.54	4.27	4.49	4.64	4.58	3.84	3.48	2.13	1.71
Paso Robles	1.59	1.98	3.17	4.25	5.49	6.26	7.32	6.71	5.08	3.66	2.13	1.40
San Luis Obispo	1.95	2.20	3.17	4.13	4.88	5.31	4.64	5.49	4.37	3.54	2.36	1.71
San Miguel	1.59	1.98	3.23	4.25	5.00	6.38	7.44	6.83	5.08	3.66	2.13	1.40
San Simeon	1.95	1.98	2.93	3.54	4.15	4.43	4.58	4.27	3.54	3.05	2.01	1.71
SAN MATEO												
Half Moon Bay	1.46	1.65	2.44	2.95	3.91	4.25	4.27	4.15	3.54	2.81	1.30	0.98
Redwood City	1.46	1.76	2.87	3.84	5.19	5.31	6.22	5.61	4.84	3.11	1.65	0.98
SANTA BARBARA												
Carpenteria	1.95	2.43	3.17	3.90	4.76	5.20	5.49	5.74	4.49	3.42	2.36	1.95
Guadalupe	1.95	2.20	3.17	3.66	4.88	4.61	4.52	4.58	4.13	3.30	2.36	1.71
Lompoc	1.95	2.20	3.17	3.66	4.76	4.61	4.88	4.76	3.90	3.17	2.36	1.71
Los Alamos	1.83	1.98	3.17	4.13	4.88	5.31	5.74	5.49	4.43	3.66	2.36	1.59
Santa Barbara	1.95	2.54	3.17	3.78	4.64	5.08	5.49	4.49	3.42	2.36	1.83	1.83
Santa Maria	1.83	2.20	3.17	4.02	5.00	5.08	5.13	5.13	4.49	3.54	2.36	1.71
Solvang	1.95	1.98	3.30	4.25	5.00	5.55	6.10	5.61	4.37	3.66	2.24	1.59
SANTA CLARA												
Gilroy	1.34	1.76	3.05	4.13	5.25	5.55	6.10	5.49	4.72	3.42	1.65	1.10
Los Gatos	1.46	1.76	2.81	3.90	5.00	5.61	6.22	5.49	4.72	3.17	1.65	0.98
Palo Alto	1.46	1.76	2.81	3.84	5.19	5.31	6.22	5.61	4.96	3.17	1.65	0.98
San Jose	1.46	1.76	3.05	4.13	5.49	5.79	6.47	5.86	5.20	3.30	1.77	0.98
SANTA CRUZ												
Santa Cruz	1.46	1.76	2.56	3.54	4.27	4.37	4.76	4.39	3.78	2.81	1.65	1.22
Watsonville	1.46	1.76	2.69	3.66	4.64	4.49	4.88	4.15	4.02	2.93	1.77	1.22
SHASTA												
Burney	0.73	0.99	2.14	3.54	4.88	5.91	7.44	6.41	4.37	2.93	0.94	0.61
Fall River Mills	0.61	0.99	2.07	3.66	5.00	6.14	7.81	6.71	4.61	2.81	0.94	0.49
Glenburn	0.61	0.99	2.07	3.66	5.00	6.26	7.81	6.71	4.72	2.81	0.94	0.55
Redding	1.22	1.43	2.62	4.13	5.61	7.09	8.54	7.32	5.31	3.23	1.42	0.85
SIERRA												
Downsville	0.73	0.99	2.26	3.54	5.00	6.02	7.44	6.22	4.72	2.81	0.94	0.61
Sieraville	0.73	1.10	2.20	3.19	4.52	5.91	7.32	6.35	4.25	2.62	0.94	0.49
SISKIYOU												
Happy Camp	0.49	0.88	1.95	2.95	4.27	5.20	6.10	5.25	4.13	2.44	0.94	0.49
Mt. Shasta	0.49	0.88	1.95	2.95	4.52	5.31	6.71	5.74	4.02	2.20	0.71	0.49
Tulelake	0.49	0.88	2.07	3.43	5.25	5.91	7.93	6.71	4.37	2.69	0.94	0.49
Wood	0.49	0.88	1.95	2.48	4.52	5.31	6.71	5.49	3.66	1.95	0.94	0.49
Yreka	0.61	0.88	2.14	2.95	4.88	5.79	7.32	6.47	4.25	2.50	0.94	0.49
SOLANO												
Benicia	1.34	1.43	2.69	3.78	4.88	5.02	6.35	5.49	4.43	2.93	1.18	0.73
Fairfield	1.10	1.65	2.81	4.02	5.49	6.14	7.81	5.98	4.84	3.05	1.42	0.85
Rio Vista	0.85	1.65	2.81	4.37	5.86	6.73	7.93	6.47	5.08	3.17	1.30	0.73

Table 1—Continued.

County & city	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
-----Eto total inches per month-----												
SONOMA												
Cloverdale	1.10	1.43	2.56	3.43	5.00	5.91	6.22	5.61	4.49	2.81	1.42	0.73
Fort Ross	1.22	1.43	2.20	2.95	3.66	4.49	4.13	4.27	3.43	2.44	1.18	0.49
Healdsburg	1.22	1.54	2.43	3.54	5.00	5.91	6.10	5.61	4.49	2.81	1.42	0.73
Petaluma	1.22	1.54	2.81	3.66	4.64	5.61	6.64	5.74	4.49	2.93	1.42	0.85
Santa Rosa	1.22	1.65	2.81	3.66	5.00	6.02	6.10	5.86	4.49	2.93	1.54	0.73
STANISLAUS												
La Grange	1.22	1.54	3.11	4.72	6.22	7.68	8.54	7.32	5.31	3.42	1.42	0.73
Modesto	0.85	1.43	3.17	4.72	6.41	7.68	8.06	6.83	5.02	3.42	1.42	0.73
Newman	0.98	1.54	3.17	4.61	6.22	7.44	8.06	6.71	4.96	3.42	1.42	0.73
Oakdale	1.22	1.49	3.17	4.72	6.22	7.68	8.06	7.08	5.08	3.42	1.42	0.73
Turlock	0.85	1.49	3.17	4.72	6.47	7.68	8.18	7.02	5.08	3.42	1.42	0.73
SUTTER												
Yuba City	1.34	2.09	2.81	4.37	5.74	7.20	7.08	6.10	4.72	3.17	1.18	0.85
TEHAMA												
Corning	1.22	1.76	2.93	4.49	6.10	7.26	8.06	7.20	5.31	3.66	1.65	1.10
Red Bluff	1.22	1.76	2.93	4.37	5.86	7.44	8.54	7.32	5.43	3.54	1.65	1.04
TRINITY												
Hayfork	0.49	1.10	2.32	3.54	4.88	5.91	6.96	5.98	4.49	2.75	0.94	0.73
Weaverville	0.61	1.10	2.20	3.31	4.88	5.91	7.32	5.98	4.37	2.69	0.94	0.73
TUOLUMNE												
Groveland	1.10	1.54	2.75	4.13	5.74	7.20	7.93	6.59	5.08	3.30	1.42	0.73
Sonora	1.10	1.54	2.75	4.13	5.80	7.20	7.93	6.71	5.08	3.23	1.42	0.73
TULARE												
Alpaugh	0.85	1.71	3.42	4.84	6.59	7.68	8.18	7.32	5.43	3.42	1.42	0.73
Badger	0.98	1.32	2.69	4.13	5.98	7.32	7.69	6.96	4.84	3.30	1.36	0.73
Dinuba	1.10	1.54	3.17	4.72	6.22	7.68	8.54	7.32	5.31	3.42	1.42	0.73
Porterville	1.22	1.76	3.42	4.72	6.59	7.68	8.54	7.32	5.31	3.42	1.42	0.73
Visalia	0.98	1.76	3.42	5.43	6.96	8.15	8.42	7.20	5.67	3.78	1.65	0.85
VENTURA												
Orland	2.20	2.54	3.17	3.66	4.39	4.61	5.37	4.76	4.02	3.30	2.36	1.95
Thousand Oaks	2.20	2.65	3.42	4.49	5.37	5.91	6.71	6.35	5.43	3.91	2.60	1.95
Ventura	2.20	2.65	3.17	3.78	4.64	4.72	5.49	4.88	4.13	3.42	2.48	1.95
YOLO												
Davis	0.98	1.87	3.30	4.96	6.35	7.56	8.18	7.08	5.43	4.03	1.77	0.98
Winters	1.71	1.65	2.93	4.37	5.80	7.09	7.93	6.71	5.31	3.30	1.59	0.98
Woodland	1.04	1.76	3.17	4.72	6.10	7.68	8.18	7.20	5.43	3.66	1.65	1.04
YUBA												
Brownsville	1.10	1.43	2.56	4.02	5.74	6.79	7.93	6.83	5.31	3.36	1.48	0.85

Table 2. Monthly reference evapotranspiration (ET_o) and cumulative evapotranspiration (CET_o) for Modesto

Month	Monthly ET _o (in)	Cumulative ET _o (in)
January	0.85	0.85
February	1.43	2.28
March	3.17	5.45
April	4.76	10.21
May	6.41	16.62
June	7.68	24.73
July	8.06	32.36
August	6.83	39.19
September	5.02	44.21
October	3.42	47.63
November	1.42	49.05
December	0.73	49.78

Table 3. Reference evapotranspiration (ET_o) in inches per day for Modesto

DAY	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.02	0.04	0.08	0.13	0.18	0.24	0.26	0.24	0.19	0.14	0.07	0.03
2	0.02	0.04	0.08	0.14	0.19	0.24	0.26	0.24	0.19	0.14	0.07	0.03
3	0.02	0.04	0.08	0.14	0.19	0.24	0.26	0.24	0.19	0.13	0.07	0.03
4	0.02	0.04	0.08	0.14	0.19	0.24	0.26	0.23	0.19	0.13	0.07	0.03
5	0.02	0.04	0.08	0.14	0.19	0.24	0.26	0.23	0.18	0.13	0.06	0.03
6	0.02	0.04	0.09	0.14	0.19	0.25	0.26	0.23	0.18	0.13	0.06	0.03
7	0.02	0.04	0.09	0.14	0.19	0.25	0.26	0.23	0.18	0.13	0.06	0.03
8	0.02	0.04	0.09	0.15	0.20	0.25	0.26	0.23	0.18	0.12	0.06	0.03
9	0.02	0.05	0.09	0.15	0.20	0.25	0.26	0.23	0.18	0.12	0.06	0.03
10	0.02	0.05	0.09	0.15	0.20	0.25	0.26	0.22	0.18	0.12	0.06	0.03
11	0.02	0.05	0.09	0.15	0.20	0.25	0.26	0.22	0.17	0.12	0.05	0.03
12	0.02	0.05	0.10	0.15	0.20	0.25	0.26	0.22	0.17	0.12	0.05	0.03
13	0.03	0.05	0.10	0.16	0.20	0.25	0.26	0.22	0.17	0.11	0.05	0.02
14	0.03	0.05	0.10	0.16	0.21	0.26	0.26	0.22	0.17	0.11	0.05	0.02
15	0.03	0.05	0.10	0.16	0.21	0.26	0.26	0.22	0.17	0.11	0.05	0.02
16	0.03	0.05	0.10	0.16	0.21	0.26	0.26	0.22	0.17	0.11	0.05	0.02
17	0.03	0.05	0.11	0.16	0.21	0.26	0.26	0.21	0.16	0.11	0.04	0.02
18	0.03	0.06	0.11	0.16	0.21	0.26	0.26	0.21	0.16	0.10	0.04	0.02
19	0.03	0.06	0.11	0.17	0.21	0.26	0.26	0.21	0.16	0.10	0.04	0.02
20	0.03	0.06	0.11	0.17	0.22	0.26	0.25	0.21	0.16	0.10	0.04	0.02
21	0.03	0.06	0.11	0.17	0.22	0.26	0.25	0.21	0.16	0.10	0.04	0.02
22	0.03	0.06	0.12	0.17	0.22	0.26	0.25	0.21	0.15	0.09	0.04	0.02
23	0.03	0.06	0.12	0.17	0.22	0.26	0.25	0.20	0.15	0.09	0.04	0.02
24	0.03	0.07	0.12	0.17	0.22	0.26	0.25	0.20	0.15	0.09	0.04	0.02
25	0.03	0.07	0.12	0.17	0.23	0.26	0.25	0.20	0.15	0.09	0.04	0.02
26	0.04	0.07	0.12	0.18	0.23	0.26	0.25	0.20	0.15	0.08	0.04	0.02
27	0.04	0.07	0.13	0.18	0.23	0.26	0.25	0.20	0.15	0.08	0.03	0.02
28	0.04	0.07	0.13	0.18	0.23	0.26	0.24	0.20	0.14	0.08	0.03	0.02
29	0.04	-	0.13	0.18	0.23	0.26	0.24	0.20	0.14	0.08	0.03	0.02
30	0.04	-	0.13	0.18	0.23	0.26	0.24	0.19	0.14	0.08	0.03	0.02
31	0.04	-	0.13	-	0.24	-	0.24	0.19	-	0.07	-	0.02

```

SUB PRINTRESULTS (DA(), X(), Y(), Y2(), N, X, Y, DVO)
'#####
'#####
'#####
DIM ETO(12, 31)
OPEN "O", #1, "NEWETO.DAT"
X = 0
FOR M% = 1 TO 12: FOR DX = 1 TO DA(M%): X = X + 1
CALL SPLINT(X(), Y(), Y2(), N, X, Y, DVO)
Y@ = Y: ETO(M%, DX) = Y@
PRINT #1, Y@
NEXT DX: NEXT M%
CLOSE #1
OPEN "O", #2, "ETOTAB.DAT"
PRINT #2, " DAY Jan Feb Mar Apr May Jun Jul Aug Sep Oct
Nov Dec"
PRINT #2, ""
FOR DX = 1 TO 31: PRINT #2, USING " ##"; DX;
FOR M% = 1 TO 12: IF ETO(M%, DX) = 0 THEN GOTO PDASH
PRINT #2, USING "###.##"; ETO(M%, DX); : GOTO FNODASH
PDASH: PRINT #2, " - ";
FNODASH:
NEXT M%: PRINT #2, ""
NEXT DX
CLOSE #2
GOSUB FIRST
QINPUT:
Q$ = INKEY$: IF Q$ = "" THEN GOTO QINPUT
Q = ASC(RIGHT$(Q$, 1)): IF LEN(Q$) = 2 THEN Q = Q + 256
IF Q = 27 THEN GOTO LEAVE
IF Q = 329 THEN GOSUB FIRST
IF Q = 337 THEN GOSUB LAST
GOTO QINPUT
FIRST: CLS
LOCATE 23, 5: PRINT " <Esc> exit <PgUp> first half months <PgDn> last half
months "
LOCATE 3, 1
PRINT " DAY Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov
Dec"
FOR DX = 1 TO 15: PRINT USING " ##"; DX;
FOR M% = 1 TO 12: IF ETO(M%, DX) = 0 THEN GOTO FDASH
PRINT USING "###.##"; ETO(M%, DX); : GOTO FNODASH
FDASH: PRINT " - ";
FNODASH:
NEXT M%: PRINT
NEXT DX
RETURN
LAST: CLS
LOCATE 23, 5: PRINT " <Esc> exit <PgUp> first half months <PgDn> last half
months "
LOCATE 3, 1
PRINT " DAY Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov
Dec"
FOR DX = 16 TO 31: PRINT USING " ##"; DX;
FOR M% = 1 TO 12: IF ETO(M%, DX) = 0 THEN GOTO LDASH

```

```

DECLARE SUB PRINTRESULTS (DA(), X(), Y(), Y2(), N, X, Y, DVO)
DECLARE SUB DISPLAYTABLE (FR, BK, MO$( ), METO$( ))
DECLARE SUB SPLINT (X(), Y(), Y2(), N, X, Y, DVO)
DECLARE SUB SPLINE (X(), Y(), N, U(), YP1, YPN, Y2())
DECLARE SUB TABLEOUT (ETO())
' NEWETO.BAS
revised September 24, 1992
' This program estimates daily reference evapotranspiration (ETo) from
' monthly average ETo in inches or mm per day. The program was written
' by R.L. Snyder, Extension Biometeorologist, Dept. of Land, Air and Water
' Resources, Univ. of California, Davis, CA 95616
' The program outputs a sequential listing of daily ETo estimates to the file
' "NEWETO.DAT" and a tabular listing by month and day to the file "ETOTAB.DAT".
' The tabular output is similar to Table 3 in UC Leaflet 21426.
DIM X(14), Y(14), Y2(14), U(14)
DIM DA(12), CDA(12), MO$(12), METO$(12)
DIM ETO(12, 31)
DATA 1.15,45.74,105.135,166.196,225.258,288.319,349.365
FOR IX = 1 TO 14: READ X(IX): NEXT IX
DATA 31.28,31.30,31.30,31.31,30.31,30.31,30.31
FOR M% = 1 TO 12: READ DA(M%): CDA(M% - 1) + DA(M%): NEXT M%
DATA "January", "February", "March", "April", "May", "June"
DATA "July", "August", "September", "October", "November", "December"
FOR M% = 1 TO 12: READ MO$(M%): NEXT M%
BL = 7: FR = 15: BK = 1: N = 14: DPY = 365: KX = 0
NORMETO: COLOR FR, BK: CLS
CALL DISPLAYTABLE(FR, BK, MO$( ), METO$( ))
CET = 0: N = 14
LOCATE 20, 20: PRINT " Calculating ETo - One moment please "
FOR IX = 2 TO 13: Y(IX) = VAL(METO$(IX - 1)) / DA(IX - 1): NEXT IX
MN = Y(2): IF Y(13) < MN THEN MN = Y(13)
DMIN:
MN = MN - .005: Y(1) = MN: Y(14) = Y(1)
CALL SPLINE(X(), Y(), N, U(), YP1, YPN, Y2())
FOR X = 1 TO 2
CALL SPLINT(X(), Y(), Y2(), N, X, Y, DVO)
YT(X) = Y
NEXT X
FOR X = 364 TO 365
CALL SPLINT(X(), Y(), Y2(), N, X, Y, DVO)
YT(X - 361) = Y
NEXT X
IF YT(2) > YT(1) AND YT(3) > YT(4) THEN
CALL PRINTRESULTS(DA(), X(), Y(), Y2(), N, X, Y, DVO)
ELSE GOTO DMIN
END IF
GOTO NORMETO

```



```

SUB DISPLAYTABLE (FR, BK, MO$( ), METO$( ))
'#####'
COLOR FR, BK: GLS
LOCATE 4, 20: PRINT " Input average monthly total ETO "
FOR IX = 1 TO 12: LOCATE 5 + IX, 20
PRINT "
NEXT IX
FOR MX = 1 TO 12
LOCATE 5 + MX, 30: PRINT USING "\ " ; MO$(MX)
NEXT MX
FOR MX = 1 TO 12: LOCATE 5 + MX, 45
DT$(MX) = " " + METO$(MX) : DT$(MX) = RIGHT$(DT$, 6)
PRINT DT$: NEXT MX
MX = 1
LOCATE 20, 20: PRINT " F1 continue <Esc> exit "
SELECTION:
DAT$(MX) = METO$(MX) : DT$(MX) = " " + DAT$: DT$(MX) = RIGHT$(DT$, 6)
LOCATE 5 + MX, 45: COLOR BK, FR: PRINT USING "\ " ; DT$
QS = INKEY$: IF QS = "" THEN GOTO SELECTION
Q = ASC(RIGHT$(QS, 1)) : IF LEN(QS) = 2 THEN Q = Q + 256
LOCATE 5 + MX, 45: COLOR FR, BK: PRINT USING "\ " ; DT$
IF Q = 27 THEN END
IF Q = 315 THEN GOTO STOPENTRY
MOVEU: IF Q <> 328 THEN GOTO MOVED
MX = MX - 1 : IF MX < 1 THEN MX = 12
GOTO SELECTION
MOVED: IF Q = 13 THEN Q = 336
IF Q <> 336 THEN GOTO DELA
MX = MX + 1 : IF MX > 12 THEN MX = 1
GOTO SELECTION
DELA: IF Q <> 339 THEN GOTO BKSPA
DAT$(MX) = " " : GOTO NEXTSELECTION
BKSPA: IF Q <> 8 THEN GOTO DATINA
LX = LEN(DAT$(MX)) - 1 : DAT$(MX) = LEFT$(DAT$(MX), LX)
GOTO NEXTSELECTION
DATINA: IF LEN(DAT$(MX)) = 6 THEN GOTO NEXTSELECTION
IF Q < 46 OR Q > 57 THEN GOTO NEXTSELECTION
IF Q = 47 THEN GOTO NEXTSELECTION
DAT$(MX) = DAT$(MX) + QS
NEXTSELECTION: METO$(MX) = DAT$(MX) : GOTO SELECTION
STOPENTRY:
END SUB

```

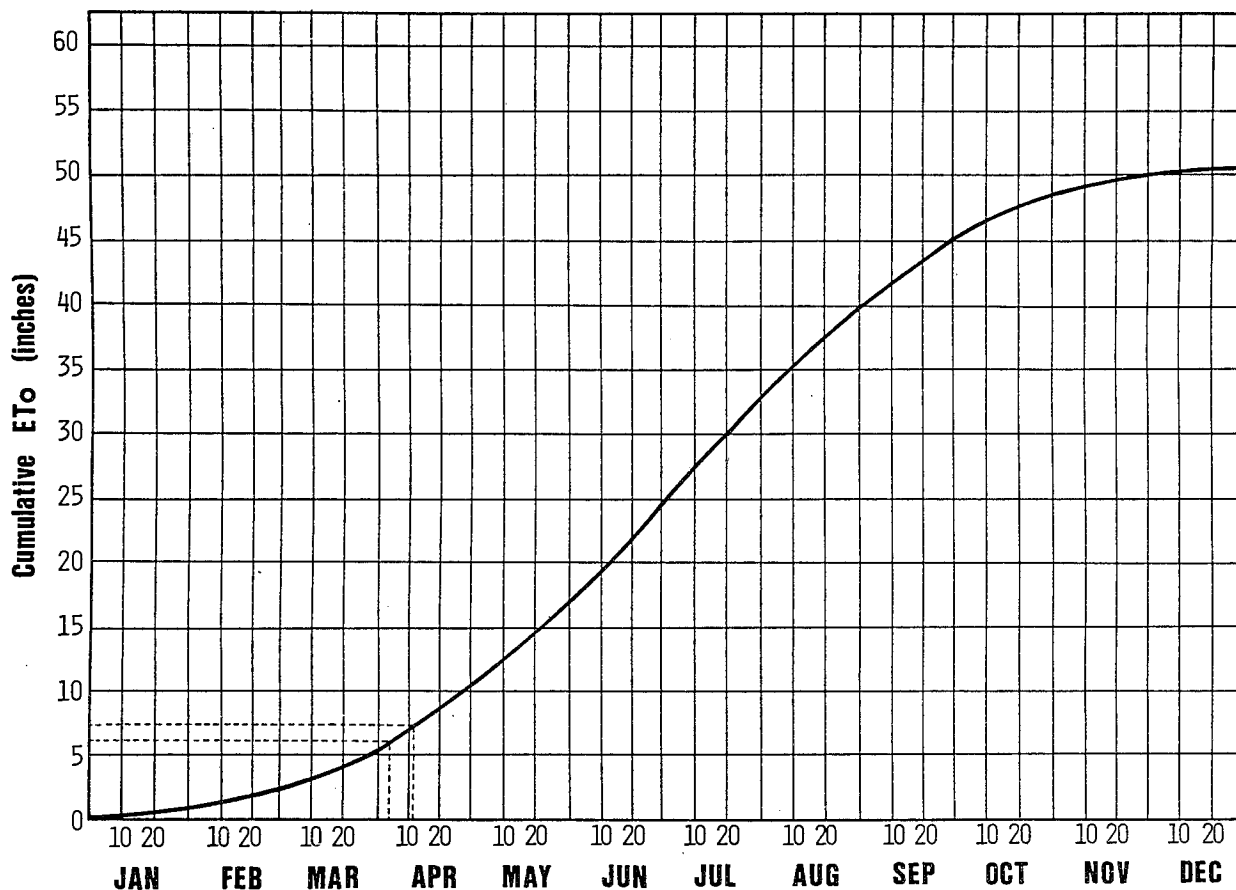
```

PRINT USING "###.###"; ETO(MX, DX) : GOTO LNO DASH
LDASH: PRINT " - " ;
LNO DASH:
NEXT MX: PRINT
NEXT DX
RETURN
LEAVE:
END SUB

SUB SPLINE (X(), Y(), N, U(), YPL, YPN, Y2())
'#####'
Y2(1) = -.5
U(1) = (3 / (X(2) - X(1))) * ((Y(2) - Y(1)) / (X(2) - X(1)) - YPL)
IF YPL >= 1E+31 THEN Y2(1) = 0 AND U(1) = 0
FOR IX = 2 TO N - 1
SIG = (X(IX) - X(IX - 1)) / (X(IX) + 1) - X(IX) - Y(IX - 1)
P = SIG * Y2(IX - 1) + 2 : Y2(IX) = (SIG - 1) / P
U = (Y(IX) + 1) - Y(IX) / (X(IX) + 1) - X(IX)
U = U - (Y(IX) - Y(IX - 1)) / (X(IX) - X(IX - 1))
U = U / (X(IX) + 1) - X(IX - 1)
NEXT IX
U(IX) = (6 * U - SIG * U(IX - 1)) / P
NEXT IX
QN = 5
UN = (3 / (X(N) - X(N - 1))) * (YPN - Y(N) - Y(N - 1)) / (X(N) - X(N - 1))
IF YPN >= 1E+29 THEN QN = 0 AND UN = 0
Y2(N) = (UN - QN * U(N - 1)) / (QN * Y2(N - 1) + 1)
FOR IX = 1 TO N - 1
K = N - IX : Y2(K) = Y2(K) * Y2(K + 1) + U(K)
NEXT IX
END SUB

SUB SPLINT (X(), Y(), Y2(), N, X, Y, DVO)
'#####'
WHILE KHI - KLO > 1
K = (KHI + KLO) / 2
IF X(K) > X THEN KHI = K ELSE KLO = K
WEND
H = X(KHI) - X(KLO) : IF H <> 0 THEN GOTO CALCY
DVO = 1 : GOTO DIVZERO
CALCY:
A = (X(KHI) - X) / H : B = (X - X(KLO)) / H
Y = A * Y(KLO) + B * Y(KHI)
Y = Y + ((A ^ 3 - A) * Y2(KLO) + (B ^ 3 - B) * Y2(KHI)) * (H ^ 2) / 6
DIVZERO:
END SUB

```



Cumulative normal reference evapotranspiration (CETo) for Modesto, California.

The Authors

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