

A weather station is mounted on a white tripod in an open field. The station includes a wind vane, a cup anemometer, a radiation shield, and a solar panel. The background shows a clear blue sky and a green field.

# **CEMIS**

## **REFERENCE EVAPOTRANSPIRATION ZONES**

### **CALIFORNIA IRRIGATION MANAGEMENT INFORMATION SYSTEM**

The color map inside shows the reference evapotranspiration zones in California. It may be used to help in urban and agricultural water management planning and water budgeting, as well as designing irrigation systems, planning irrigation schedules, and designing open water evaporation systems.

The map was developed as a cooperative project between the Department of Land, Air and Water Resources, University of California, Davis and the Office of Water Use Efficiency, California Department of Water Resources; Baryohay Davidoff.

The map was prepared by David W. Jones, 1999. The data was developed by Richard L. Snyder, Simon Eching, and Helena Gomez-MacPherson. The background data came from Teale and USGS sources.

CALIFORNIA IRRIGATION MANAGEMENT INFORMATION SYSTEM (CIMIS)  
**REFERENCE EVAPOTRANSPIRATION ZONES**



DEPARTMENT OF  
 WATER RESOURCES



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Lambert Conformal Conic Projection  
 1927 North American Datum

## Reference EvapoTranspiration (ETo) Zones

- |   |   |
|---|---|
| <p><b>1</b> <b>COASTAL PLAINS HEAVY FOG BELT</b> lowest ETo in California, characterized by dense fog</p> <p><b>2</b> <b>COASTAL MIXED FOG AREA</b> less fog and higher ETo than zone 1</p> <p><b>3</b> <b>COASTAL VALLEYS &amp; PLAINS &amp; NORTH COAST MOUNTAINS</b> more sunlight than zone 2</p> <p><b>4</b> <b>SOUTH COAST INLAND PLAINS &amp; MOUNTAINS NORTH OF SAN FRANCISCO</b> more sunlight and higher summer ETo than zone 3</p> <p><b>5</b> <b>NORTHERN INLAND VALLEYS</b> valleys north of San Franciaco</p> <p><b>6</b> <b>UPLAND CENTRAL COAST &amp; LOS ANGELES BASIN</b> higher elevation coastal areas</p> <p><b>7</b> <b>NORTHEASTERN PLAINS</b></p> <p><b>8</b> <b>INLAND SAN FRANCISCO BAY AREA</b> inland area near San Francisco with some marine influence</p> <p><b>9</b> <b>SOUTH COAST MARINE TO DESERT TRANSITION</b> inland area between marine &amp; desert climates</p> <p><b>10</b> <b>NORTH CENTRAL PLATEAU &amp; CENTRAL COAST RANGE</b> cool, high elevation areas with strong summer sunlight; zone has limited climate data &amp; the zones selection is somewhat subjective</p> | <p><b>11</b> <b>CENTRAL SIERRA NEVADA</b> mountain valleys east of Sacramento with some influence from delta breeze in summer</p> <p><b>12</b> <b>EAST SIDE SACRAMENTO-SAN JOAQUIN VALLEY</b> low winter &amp; high summer ETo with slightly lower ETo than zone 14</p> <p><b>13</b> <b>NORTHERN SIERRA NEVADA</b> northern Sierra Nevada mountain valleys with less marine influence than zone 11</p> <p><b>14</b> <b>MID-CENTRAL VALLEY, SOUTHERN SIERRA NEVADA, TEHACHAPI &amp; HIGH DESERT MOUNTAINS</b> high summer sunshine and wind in some locations</p> <p><b>15</b> <b>NORTHERN &amp; SOUTHERN SAN JOAQUIN VALLEY</b> slightly lower winter ETo due to fog and slightly higher summer ETo than zones 12 &amp; 14</p> <p><b>16</b> <b>WESTSIDE SAN JOAQUIN VALLEY &amp; MOUNTAINS EAST &amp; WEST OF IMPERIAL VALLEY</b></p> <p><b>17</b> <b>HIGH DESERT VALLEYS</b> valleys in the high desert near Nevada and Arizona</p> <p><b>18</b> <b>IMPERIAL VALLEY, DEATH VALLEY &amp; PALO VERDE</b> low desert areas with high sunlight &amp; considerable heat advection</p> |
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### Monthly Average Reference Evapotranspiration by ETo Zone (inches/month)

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.93	1.40	2.48	3.30	4.03	4.50	4.65	4.03	3.30	2.48	1.20	0.62	32.9
2	1.24	1.68	3.10	3.90	4.65	5.10	4.96	4.65	3.90	2.79	1.80	1.24	39.0
3	1.86	2.24	3.72	4.80	5.27	5.70	5.58	5.27	4.20	3.41	2.40	1.86	46.3
4	1.86	2.24	3.41	4.50	5.27	5.70	5.89	5.58	4.50	3.41	2.40	1.86	46.6
5	0.93	1.68	2.79	4.20	5.58	6.30	6.51	5.89	4.50	3.10	1.50	0.93	43.9
6	1.86	2.24	3.41	4.80	5.58	6.30	6.51	6.20	4.80	3.72	2.40	1.86	49.7
7	0.62	1.40	2.48	3.90	5.27	6.30	7.44	6.51	4.80	2.79	1.20	0.62	43.3
8	1.24	1.68	3.41	4.80	6.20	6.90	7.44	6.51	5.10	3.41	1.80	0.93	49.4
9	2.17	2.80	4.03	5.10	5.89	6.60	7.44	6.82	5.70	4.03	2.70	1.86	55.1
10	0.93	1.68	3.10	4.50	5.89	7.20	8.06	7.13	5.10	3.10	1.50	0.93	49.1
11	1.55	2.24	3.10	4.50	5.89	7.20	8.06	7.44	5.70	3.72	2.10	1.55	53.1
12	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40	3.72	1.80	0.93	53.4
13	1.24	1.96	3.10	4.80	6.51	7.80	8.99	7.75	5.70	3.72	1.80	0.93	54.3
14	1.55	2.24	3.72	5.10	6.82	7.80	8.68	7.75	5.70	4.03	2.10	1.55	57.0
15	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.9
16	1.55	2.52	4.03	5.70	7.75	8.70	9.30	8.37	6.30	4.34	2.40	1.55	62.5
17	1.86	2.80	4.65	6.00	8.06	9.00	9.92	8.68	6.60	4.34	2.70	1.86	66.5
18	2.48	3.36	5.27	6.90	8.68	9.60	9.61	8.68	6.90	4.96	3.00	2.17	71.6

Variability between stations within single zones is as high as 0.02 inches per day for zone 1 and during winter months in zone 13. The average standard deviation of the ETo between estimation sites within a zone for all months is about 0.01 inches per day for the 200 sites used to develop the map.



STATE OF CALIFORNIA  
THE NATURAL RESOURCES AGENCY  
DEPARTMENT OF WATER RESOURCES

**CIMIS Information**  
**[www.cimis.water.ca.gov](http://www.cimis.water.ca.gov)**