



# AGROMETEOROLOGICAL BULLETIN

*June 2023*  
*1st 10-day period*

- Temperature
- Relative Humidity
- Soil Temperature
- Sunshine Duration
- Precipitation
- Evaporation
- Growing Degrees
- Reference Evapotranspiration
- Accumulated Rainfall from the beginning of wet period
- Accumulated Reference Evapotranspiration
- Number of dry days



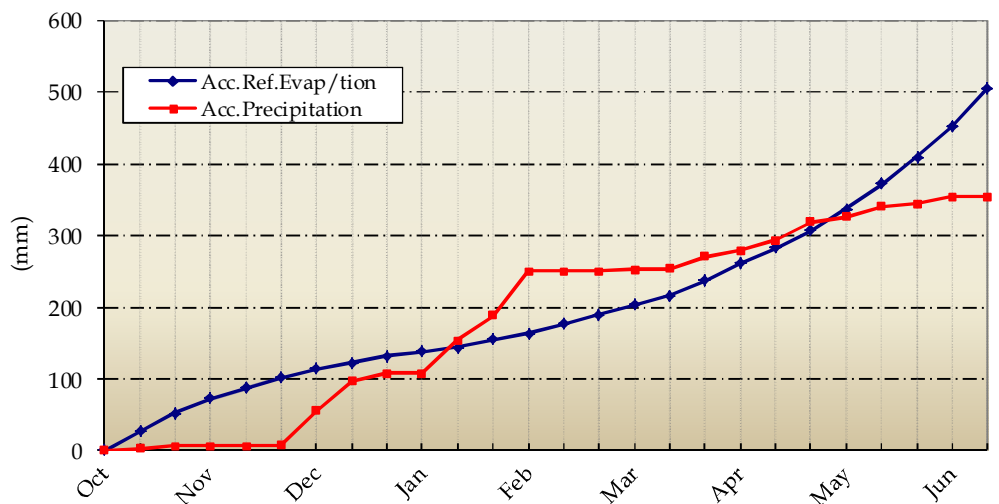
Hellenic National Meteorological Service  
Division of Climatology-Applications  
El. Venizelou Street 14, 16777  
Helliniko, Athens

*Web adresses of HNMS*  
[www.emy.gr](http://www.emy.gr)  
[www.hnms.gr](http://www.hnms.gr)  
[www.emy.gov.gr](http://www.emy.gov.gr)  
[www.meteo.gov.gr](http://www.meteo.gov.gr)  
[www.meteohellas.gr](http://www.meteohellas.gr)

1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.4	29.2	25.0	27.0	28.0	28.4	28.8	27.6	28.0	28.0	27.8	29.5	26.6
	Min	11.6	14.8	16.2	13.0	12.4	15.4	16.4	14.4	16.0	14.4	14.5	17.6	15.1
Relative Humidity	Max	93	68	68	89	89	73	73	78	85	89	80	88	87
	Min	35	28	41	42	25	32	30	37	39	47	36	45	46
Soil Temperature at 10 cm	06 UTC	19.8	20.4	21.0	21.0	21.4	22.0	22.6	22.8	22.6	23.6	21.7	24.2	21.7
	12 UTC	24.4	24.4	24.0	24.0	25.4	25.6	26.4	26.4	27.4	28.0	25.6	27.6	25.6
Sunshine Duration		13.0	10.4	7.4	11.2	13.8	13.0	13.8	8.1	13.2	11.0	11.5	10.3	9.5
Precipitation													7.3	6.7
Evaporation		8.8	5.2	7.0	9.0	7.5	9.5	8.5	5.5	10.0	7.0	78.0	79.1	67.5
Growing Degrees	5	15.0	17.0	15.6	15.0	15.2	16.9	17.6	16.0	17.0	16.2	161.5	185.5	138.1
	10	10.0	12.0	10.6	10.0	10.2	11.9	12.6	11.0	12.0	11.2	111.5	135.5	94.4

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.8	52.5	35.0
Precipitation - Reference Evapotranspiration	-53.8	-45.2	-28.3
Number of Rainy Days	0.0	3.0	1.6
Number of Dry Days	12.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

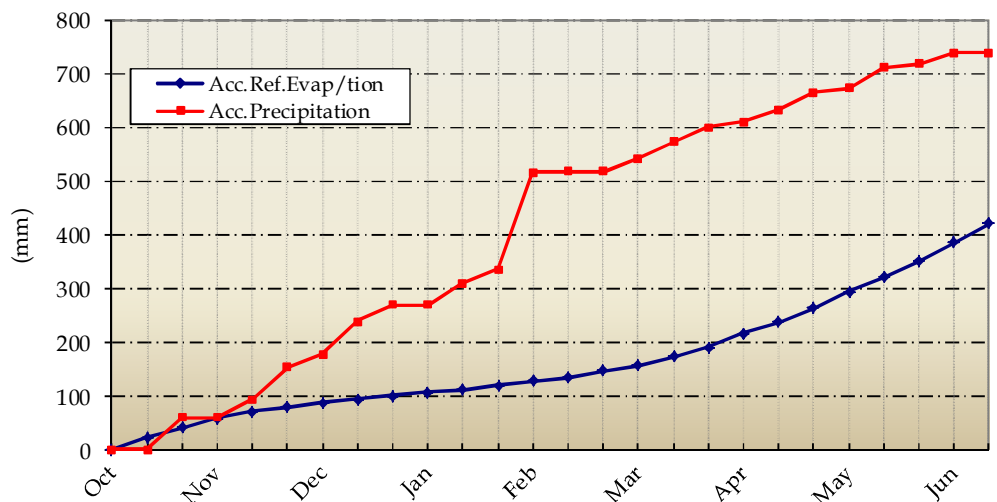


1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	26.1	25.9	26.6	28.0	29.6	26.8	28.2	28.2	27.0	27.6	30.9	27.2
	Min	14.2	15.2	15.8	14.0	14.6	14.6	15.7	20.2	17.0	16.3	15.8	18.7	15.8
Relative Humidity	Max	96	94	96	97	97	96	96	94	97	97	96	91	91
	Min	34	39	61	52	46	34	54	42	54	51	47	42	41
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	23.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	29.0
Sunshine Duration		7.8	5.9	7.4	7.6	7.8	7.0	5.6	5.6	7.3	3.5	6.6	11.6	10.9
Precipitation		0.6										0.6	6.7	1.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	68.7
Growing Degrees	5	16.9	15.7	15.9	15.3	16.3	17.1	16.3	19.2	17.6	16.7	166.8	198.0	135.2
	10	11.9	10.7	10.9	10.3	11.3	12.1	11.3	14.2	12.6	11.7	116.8	148.0	94.3

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.3	49.3	35.4
Precipitation - Reference Evapotranspiration	-34.7	-42.6	-34.0
Number of Rainy Days	1.0	1.0	0.6
Number of Dry Days	0.0	10.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



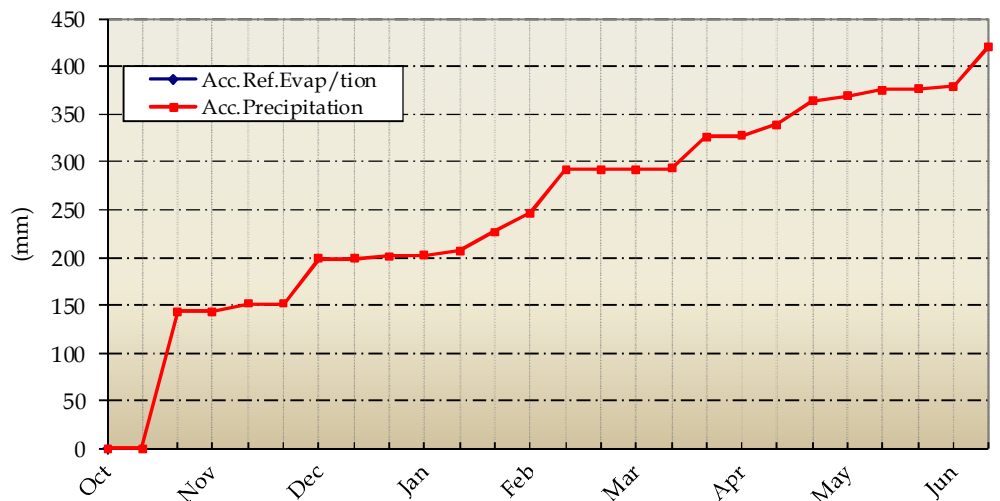
Iraklio

1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.4	19.4	23.4	24.0	23.0	24.0	24.2	24.0	25.0	25.8	23.6	28.0	26.3
	Min	18.4	16.4	15.4	16.2	17.2	16.2	17.8	19.0	18.2	18.0	17.3	21.1	18.1
Relative Humidity	Max	96	96	96	91	92	94	96	97	94	91	94	78	85
	Min	80	81	66	56	15	74	73	77	71	59	65	48	54
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.9	1.5	12.9	12.7	10.5	12.8	9.3	8.3	12.1	13.0	10.1	12.2	11.3
Precipitation		1.5	40.1					0.2				41.8		1.3
Evaporation		6.7	3.2	6.4	2.2	2.4	4.4	3.3	2.8	6.3	4.0	41.7	65.8	56.1
Growing Degrees	5	15.9	12.9	14.4	15.1	15.1	15.1	16.0	16.5	16.6	16.9	154.5	195.8	158.4
	10	10.9	7.9	9.4	10.1	10.1	10.1	11.0	11.5	11.6	11.9	104.5	145.8	112.5

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	
Number of Rainy Days	3.0	0.0	0.4
Number of Dry Days	0.0	19.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

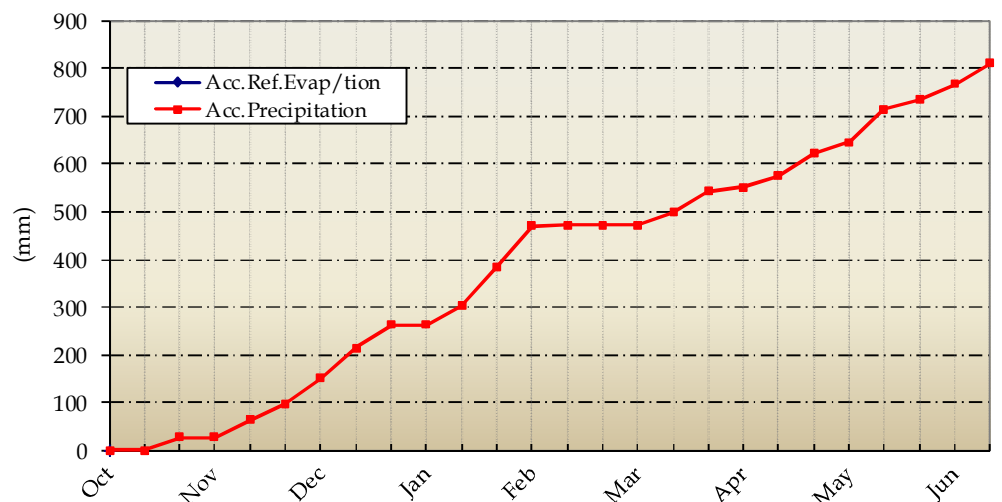


1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.7	25.8	26.4	25.0	25.9	28.8	26.4	27.6	28.3	26.7	26.8	31.2	26.2
	Min	10.9	9.0	10.0	9.5	11.7	12.5	12.9	13.1	12.1	12.7	11.4	14.7	12.3
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	99	100	85	94
	Min	33	34	48	45	41	32	42	33	46	44	40	36	52
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.4
Sunshine Duration		9.8	9.1	7.0	8.7	7.6	10.0	6.1	5.9	13.0	6.6	8.4	8.8	8.4
Precipitation				27.5	8.5	8.4			0.1			44.5	24.2	16.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	13.8	12.4	13.2	12.3	13.8	15.7	14.7	15.4	15.2	14.7	141.0	179.6	121.1
	10	8.8	7.4	8.2	7.3	8.8	10.7	9.7	10.4	10.2	9.7	91.0	129.6	78.9

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	29.2
Precipitation - Reference Evapotranspiration	-	-	-13.0
Number of Rainy Days	4.0	2.0	2.6
Number of Dry Days	2.0	10.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

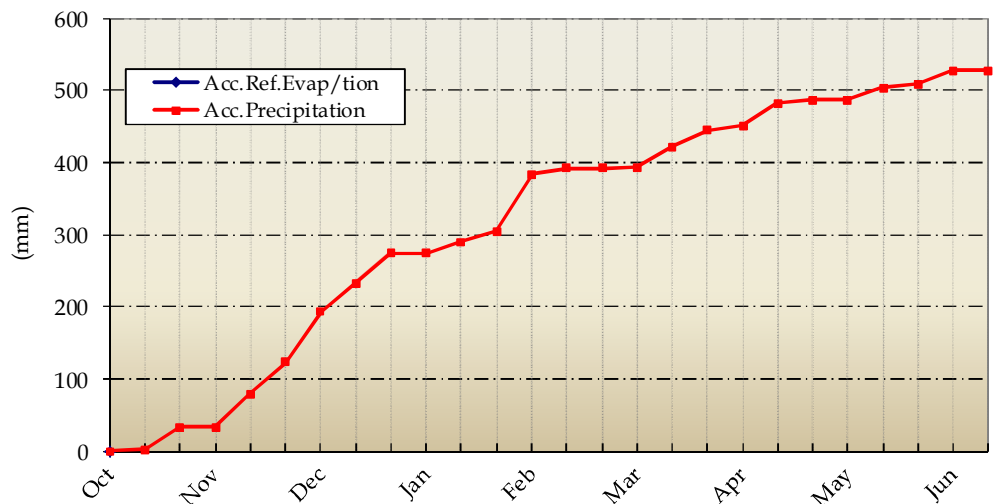


1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	26.3	28.5	28.5	28.4	28.2	27.6	27.6	29.3	30.3	28.3	31.9	28.1
	Min	14.7	14.5	13.4	14.4	14.0	13.0	14.5	18.5	16.0	17.7	15.1	17.7	15.2
Relative Humidity	Max	97	95	95	96	95	95	95	91	94	93	95	95	90
	Min	46	42	42	43	40	44	35	53	44	41	43	35	39
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	25.4	21.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	27.8	24.5
Sunshine Duration		7.5	6.4	11.0	12.8	11.9	11.9	2.7	6.4	12.5	8.0	9.1	11.9	10.5
Precipitation		0.2										0.2	5.6	5.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	66.4
Growing Degrees	5	16.5	15.4	16.0	16.5	16.2	15.6	16.1	18.1	17.7	19.0	166.8	198.0	147.7
	10	11.5	10.4	11.0	11.5	11.2	10.6	11.1	13.1	12.7	14.0	116.8	148.0	103.4

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	33.7
Precipitation - Reference Evapotranspiration	-	-	-28.7
Number of Rainy Days	1.0	2.0	0.9
Number of Dry Days	2.0	8.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

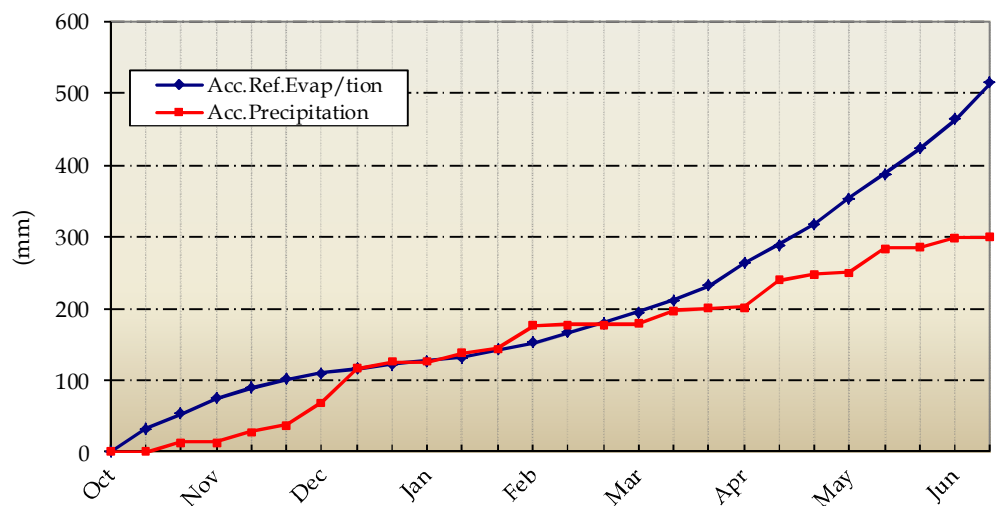


Larisa

1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	29.0	30.2	28.4	29.0	28.8	28.8	29.2	32.8	30.8	29.5	32.6	29.9
	Min	11.6	10.2	10.4	13.0	12.4	11.8	11.2	17.2	13.2	16.0	12.7	17.9	14.9
Relative Humidity	Max	100	95	100	100	96	100	84	79	87	100	94	89	88
	Min	28	25	25	39	36	18	30	35	26	25	29	33	30
Soil Temperature at 10 cm	06 UTC	20.8	21.2	21.0	21.8	22.0	22.4	22.4	22.2	22.6	23.0	21.9	25.6	22.5
	12 UTC	21.8	21.4	21.6	23.6	23.8	24.2	24.4	24.6	25.0	26.0	23.6	27.2	24.2
Sunshine Duration		8.4	10.3	7.0	7.8	10.6	10.4	10.0	3.7	10.4	4.0	8.3	8.2	9.2
Precipitation									0.2		1.1	1.3	30.6	5.4
Evaporation		6.6	8.7	7.4	10.4	5.2	9.8	11.4	9.8	10.0	5.9	85.2	78.3	84.9
Growing Degrees	5	14.8	14.6	15.3	15.7	15.7	15.3	15.0	18.2	18.0	18.4	161.0	202.5	157.2
	10	9.8	9.6	10.3	10.7	10.7	10.3	10.0	13.2	13.0	13.4	111.0	152.5	112.4

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.7	52.7	60.4
Precipitation - Reference Evapotranspiration	-49.4	-22.1	-55.0
Number of Rainy Days	2.0	5.0	1.7
Number of Dry Days	7.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



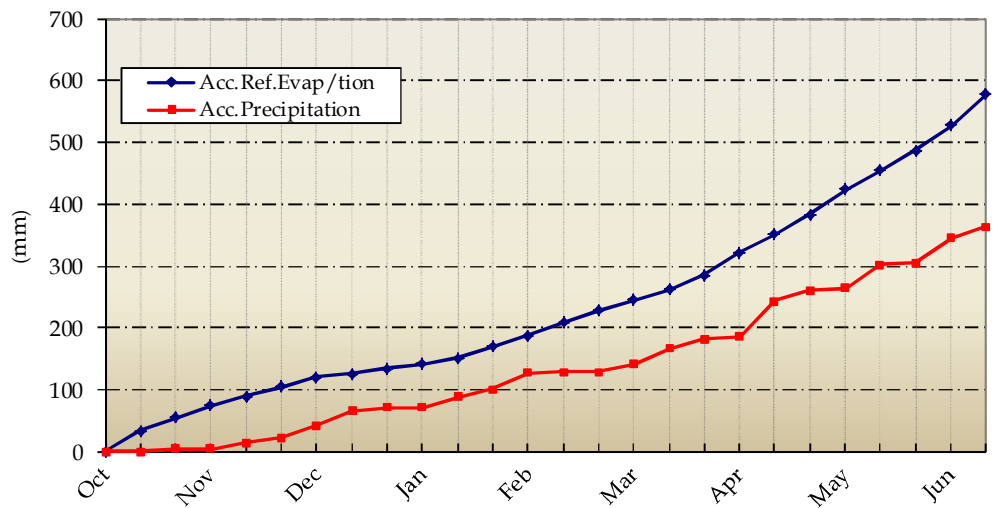


1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.2	27.6	28.2	24.6	26.7	26.7	27.0	27.5	29.0	28.2	27.3	30.9	28.2
	Min	14.0	14.2	16.0	16.9	15.2	15.6	15.0	15.4	15.8	18.6	15.7	19.0	16.8
Relative Humidity	Max	100	88	92	100	100	99	99	91	93	100	96	92	83
	Min	40	30	37	53	50	33	39	43	41	45	41	43	38
Soil Temperature at 10 cm	06 UTC	20.0	20.2	20.6	21.4	20.6	21.2	21.0	21.0	21.2	22.6	21.0	25.1	23.3
	12 UTC	21.2	22.2	22.8	22.5	22.2	22.8	22.6	23.0	24.0	25.0	22.8	28.0	28.2
Sunshine Duration		11.4	11.7	8.2	7.3	11.8	13.3	10.9	8.8	13.1	8.4	10.5	9.4	9.8
Precipitation					17.9							17.9	33.2	7.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	74.7
Growing Degrees	5	15.6	15.9	17.1	15.8	16.0	16.2	16.0	16.5	17.4	18.4	164.7	199.3	151.6
	10	10.6	10.9	12.1	10.8	11.0	11.2	11.0	11.5	12.4	13.4	114.7	149.3	108.4

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.5	55.8	40.2
Precipitation - Reference Evapotranspiration	-33.6	-22.6	-32.6
Number of Rainy Days	1.0	6.0	1.8
Number of Dry Days	3.0	2.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





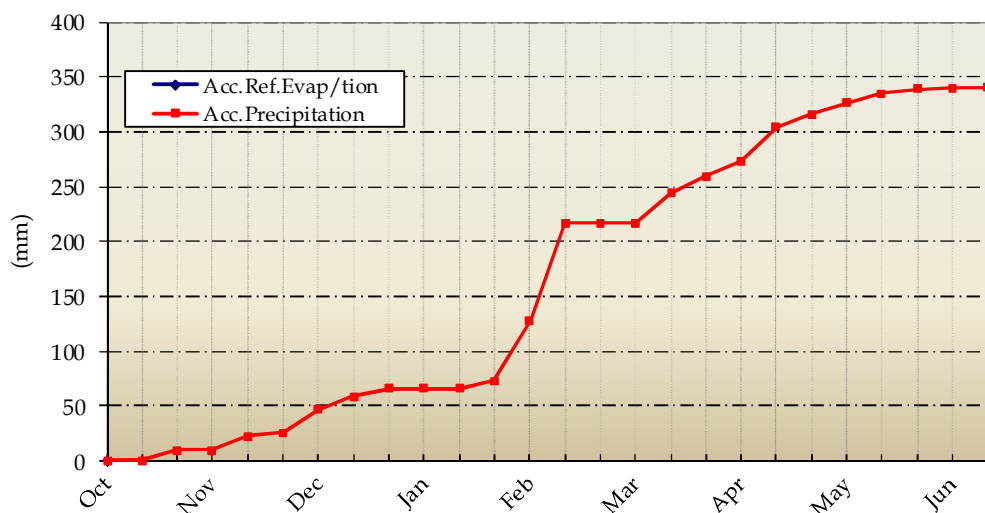
Tanagra

1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.1	25.7	29.0	27.8	27.0	27.4	28.0	27.8	29.3	30.4	28.0	31.4	28.5
	Min	14.4	15.2	12.8	12.3	13.4	12.7	13.6	16.8	15.2	15.8	14.2	18.5	15.3
Relative Humidity	Max	97	90	75	76	75	73	67	90	72	79	79	76	83
	Min	22	28	23	27	30	19	23	31	28	25	26	28	32
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		11.9	2.8	11.6	8.5	13.0	13.2	10.9	8.8	12.6	7.6	10.1	11.1	10.2
Precipitation									0.5			0.5	10.0	4.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	70.9
Growing Degrees	5	15.8	15.5	15.9	15.1	15.2	15.1	15.8	17.3	17.3	18.1	160.9	199.1	139.2
	10	10.8	10.5	10.9	10.1	10.2	10.1	10.8	12.3	12.3	13.1	110.9	149.1	98.0

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	-
Precipitation - Reference Evapotranspiration	-	-	-
Number of Rainy Days	1.0	3.0	1.2
Number of Dry Days	9.0	7.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

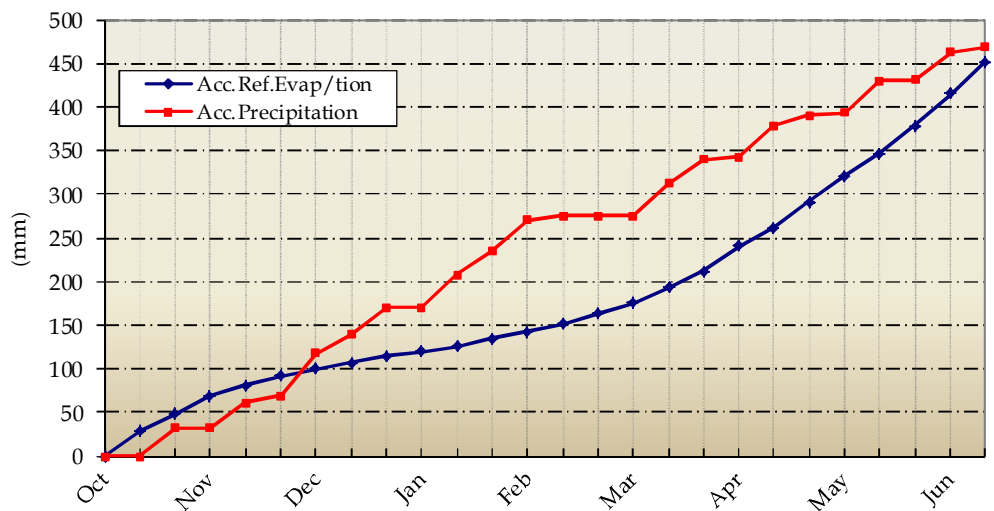


1st 10-day period (1-10/06/2023)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.0	22.2	25.0	25.4	26.0	26.0	24.4	24.9	25.6	26.7	24.9	29.0	26.6
	Min	13.3	10.1	15.3	7.0	8.4	8.7	7.5	14.8	13.1	10.6	10.9	14.0	10.8
Relative Humidity	Max	92	95	98	98	99	95	94	93	97	98	96	90	88
	Min	41	41	26	32	29	22	27	35	40	35	33	26	31
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	20.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.5
Sunshine Duration		6.8	4.7	7.1	8.6	12.7	12.6	6.0	1.7	8.0	5.9	7.4	10.6	10.0
Precipitation				0.1	5.9			0.0	0.2			6.2	5.9	8.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	49.4
Growing Degrees	5	13.2	11.2	15.2	11.2	12.2	12.4	11.0	14.9	14.4	13.7	129.0	165.1	117.9
	10	8.2	6.2	10.2	6.2	7.2	7.4	6.0	9.9	9.4	8.7	79.0	115.1	75.4

1st 10-day period (1-10/06/2023)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	37.2	48.3	42.0
Precipitation - Reference Evapotranspiration	-31.0	-42.4	-33.9
Number of Rainy Days	3.0	3.0	1.5
Number of Dry Days	3.0	0.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





◆ **List of Symbols and Abbreviations**

**Reference Evapotranspiration ETo (mm):**

Calculated by the FAO Penman-Montieth equation

$$ET_0 = \frac{0.408 * \Delta * (R_n - G) + \gamma * \frac{900}{T + 273} * u_2 * (e_s - e_a)}{\Delta + \gamma * (1 + 0.34 * u_2)}$$

using 10-day step.

R<sub>n</sub> is estimated from sunshine measurements and G assumed to be zero.

**Growing Degrees:** Degrees with mean temperature exceeding the base of 5 or 10 °C.

**Number of Rainy Days:** Number of days with precipitation of at least 0.1 mm.

**Number of Dry Days:** Number of dry days recorded since the last rainy day.

**Past Years Mean Values 1991-2020** (Evaporation, Reference Evapotranspiration, Max and Min Relative Humidity 2005-2020)

**Mesurements Units**

- ◆ Temperature : °C
- ◆ Relative Humidity : %
- ◆ Soil Temperature : °C
- ◆ Sunshine Duration : Hours
- ◆ Precipitation : mm
- ◆ Evaporation (Pan) : mm
- ◆ Growing Degrees : °C

**UTC (Universal Time coordinates) in Greece**

- ◆ Winter : Time(UTC) = Local time - 2
- ◆ Summer : Time(UTC) = Local time - 3

© HELLENIC NATIONAL METEOROLOGICAL SERVICE  
 Reproduction is prohibited without written permission  
 El. Venizelou street 14, Zip Code 16777  
 Helliniko, Athens

The present bulletin was designed and implemented under the support of Water Resources Management Division of Agriculture University of Athens