



AGROMETEOROLOGICAL BULLETIN

June 2019
2nd 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

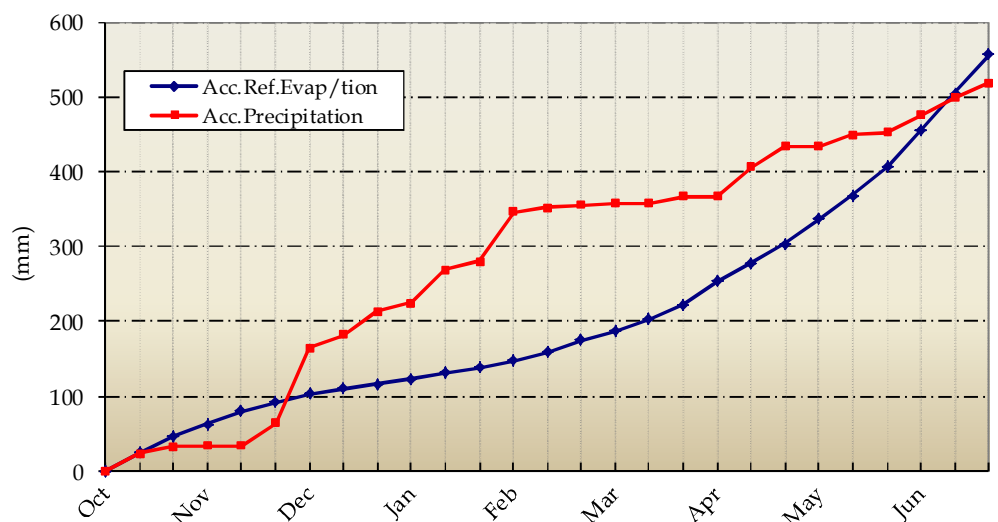
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Alexandroupoli

2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.2	27.6	31.0	33.4	30.2	31.8	32.0	32.0	30.8	30.0	30.8	30.4	27.5
	Min	16.8	19.8	18.4	19.0	22.8	19.6	18.0	22.4	18.6	16.0	19.1	17.7	15.2
Relative Humidity	Max	92	95	94	87	83	76	82	65	86	93	85	86	-
	Min	49	70	47	35	46	43	29	34	33	46	43	38	-
Soil Temperature at 10 cm	06 UTC	22.4	23.4	21.8	22.8	24.0	23.0	24.0	25.2	25.0	24.4	23.6	24.4	22.6
	12 UTC	25.8	25.0	24.4	26.6	26.6	27.2	27.0	29.0	29.4	27.2	26.8	27.6	27.3
Sunshine Duration		10.9	4.7	10.2	10.9	8.2	13.3	9.4	12.0	9.8	13.1	10.2	10.3	10.3
Precipitation			19.3			0.5						19.8	19.1	11.6
Evaporation		5.0	6.7	6.3	7.9	5.1	8.0	9.0	4.6	5.6	8.6	66.8	75.8	79.3
Growing Degrees	5	18.0	18.7	19.7	21.2	21.5	20.7	20.0	22.2	19.7	18.0	199.7	190.5	163.4
	10	13.0	13.7	14.7	16.2	16.5	15.7	15.0	17.2	14.7	13.0	149.7	140.5	113.4

2nd 10-day period (11-20/06/2019)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	52.1	52.6	52.7
Precipitation - Reference Evapotranspiration	-32.3	-33.5	-41.1
Number of Rainy Days	2.0	3.0	1.6
Number of Dry Days	1.0	20.0	-

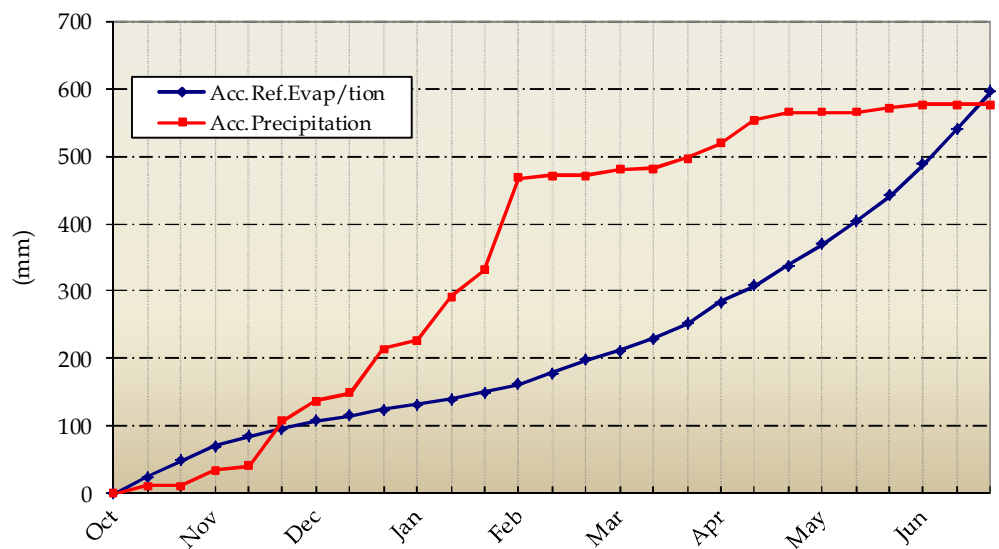
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.0	30.9	32.6	33.2	33.9	33.0	32.1	32.7	32.8	30.8	32.6	29.1	28.1
	Min	19.8	18.0	18.0	16.8	19.1	19.1	17.7	19.5	19.8	18.9	18.7	18.1	16.4
Relative Humidity	Max	95	100	89	83	92	88	94	91	95	100	93	97	-
	Min	34	29	27	25	32	32	27	32	31	45	31	41	-
Soil Temperature at 10 cm	06 UTC	25.4	25.0	25.8	25.8	26.2	27.0	25.2	26.6	27.2	27.4	26.2	26.3	24.8
	12 UTC	28.2	28.0	28.6	28.0	28.8	29.2	28.0	28.2	28.0	29.8	28.5	29.0	29.7
Sunshine Duration		13.2	12.3	12.6	13.0	12.3	10.6	12.6	12.9	13.4	13.2	12.6	7.0	11.5
Precipitation							0.5					0.5	35.1	2.1
Evaporation		8.0	8.5	11.0	10.0	9.3	7.5	13.4	9.0	10.3	9.8	96.8	62.3	71.4
Growing Degrees	5	21.9	19.5	20.3	20.0	21.5	21.1	19.9	21.1	21.3	19.9	206.4	185.7	172.2
	10	16.9	14.5	15.3	15.0	16.5	16.1	14.9	16.1	16.3	14.9	156.4	135.7	122.2

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.9	43.8	50.2
Precipitation - Reference Evapotranspiration	-56.4	-8.7	-48.1
Number of Rainy Days	1.0	2.0	0.4
Number of Dry Days	19.0	28.0	-

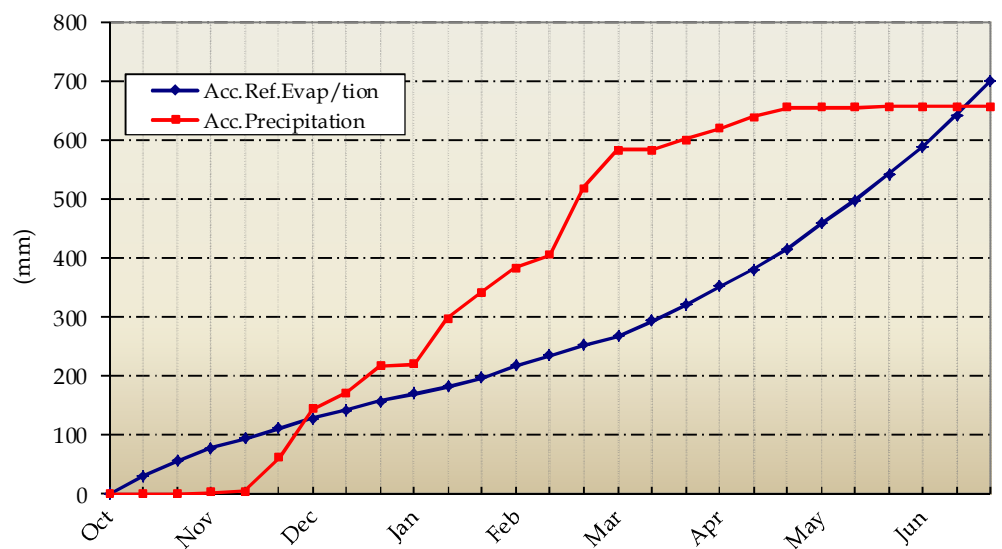
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.8	26.0	28.8	29.2	28.4	27.4	28.8	29.4	28.2	28.4	28.1	27.6	27.5
	Min	20.2	19.0	19.8	23.4	25.4	23.0	21.2	21.2	21.0	20.4	21.5	20.8	19.4
Relative Humidity	Max	85	79	80	65	70	80	80	71	71	82	76	84	-
	Min	53	66	50	47	52	56	48	42	54	58	53	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.6	12.8	12.3	12.6	12.7	8.3	12.6	12.2	12.7	12.7	12.2	10.4	12.0
Precipitation													15.1	0.2
Evaporation		5.0	6.3	6.9	8.2	5.1	8.4	6.4	5.8	7.7	3.3	63.1	68.8	83.8
Growing Degrees	5	18.5	17.5	19.3	21.3	21.9	20.2	20.0	20.3	19.6	19.4	198.0	191.9	184.4
	10	13.5	12.5	14.3	16.3	16.9	15.2	15.0	15.3	14.6	14.4	148.0	141.9	134.4

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.9	52.2	-
Precipitation - Reference Evapotranspiration	-58.9	-37.1	0.2
Number of Rainy Days	0.0	2.0	0.2
Number of Dry Days	36.0	38.0	-

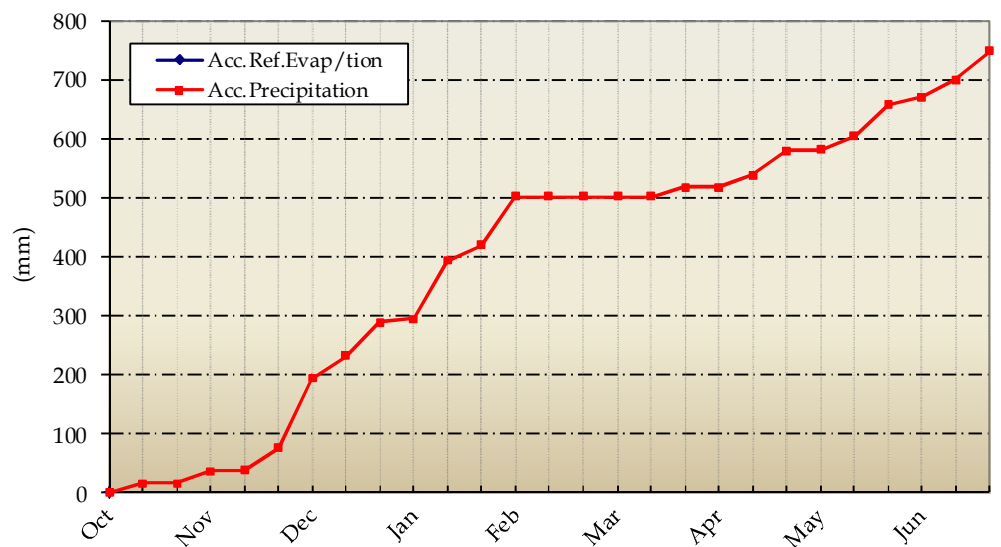
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.6	31.2	33.4	34.0	35.0	33.0	33.0	30.2	31.0	30.4	32.2	27.7	28.0
	Min	15.2	15.8	15.4	18.0	17.0	16.4	14.2	15.4	13.6	15.8	15.7	15.7	13.0
Relative Humidity	Max	100	100	100	84	100	100	100	88	100	94	97	97	-
	Min	40	44	33	41	36	37	33	47	38	42	39	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	20.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.0
Sunshine Duration		9.3	10.2	11.9	11.8	9.8	7.2	8.3	9.5	12.0	13.0	10.3	5.8	9.8
Precipitation		26.2	0.6				22.3	0.1				49.2	12.0	14.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	70.5
Growing Degrees	5	17.9	18.5	19.4	21.0	21.0	19.7	18.6	17.8	17.3	18.1	189.3	166.9	155.2
	10	12.9	13.5	14.4	16.0	16.0	14.7	13.6	12.8	12.3	13.1	139.3	116.9	105.2

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	46.5
Precipitation - Reference Evapotranspiration	-	-	-32.4
Number of Rainy Days	4.0	6.0	2.0
Number of Dry Days	5.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	28.9	29.2	30.6	31.1	32.3	29.5	31.9	29.6	31.3	30.2	29.7	29.3
	Min	17.3	16.6	18.7	16.2	18.6	17.4	17.0	18.0	17.9	18.6	17.6	17.9	15.9
Relative Humidity	Max	92	88	90	89	87	89	81	84	88	88	88	88	-
	Min	43	44	44	39	34	33	38	32	41	39	39	38	-
Soil Temperature at 10 cm	06 UTC	24.8	25.0	25.6	25.4	26.0	25.0	25.0	25.4	25.2	25.8	25.3	25.5	23.0
	12 UTC	25.6	29.0	29.4	29.0	30.0	28.6	29.0	29.5	27.4	29.6	28.7	28.3	27.4
Sunshine Duration		11.1	11.8	12.0	12.1	11.8	11.3	11.2	8.2	11.3	12.2	11.3	9.5	11.0
Precipitation		0.0				4.7			0.0			4.7	21.7	3.1
Evaporation		10.2	9.6	6.1	9.8	16.7	10.5	9.8	6.1	10.5	9.4	98.7	61.6	80.7
Growing Degrees	5	17.7	17.8	19.0	18.4	19.9	19.9	18.3	20.0	18.8	20.0	189.4	188.2	175.9
	10	12.7	12.8	14.0	13.4	14.9	14.9	13.3	15.0	13.8	15.0	139.4	138.2	125.9

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.1	53.1	54.6
Precipitation - Reference Evapotranspiration	-53.4	-31.4	-51.5
Number of Rainy Days	1.0	5.0	0.9
Number of Dry Days	4.0	14.0	-

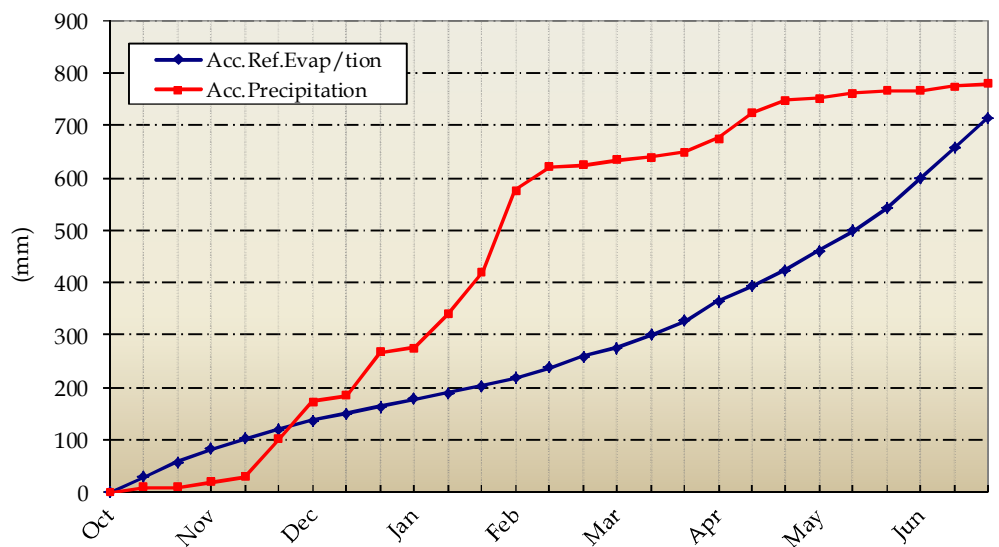


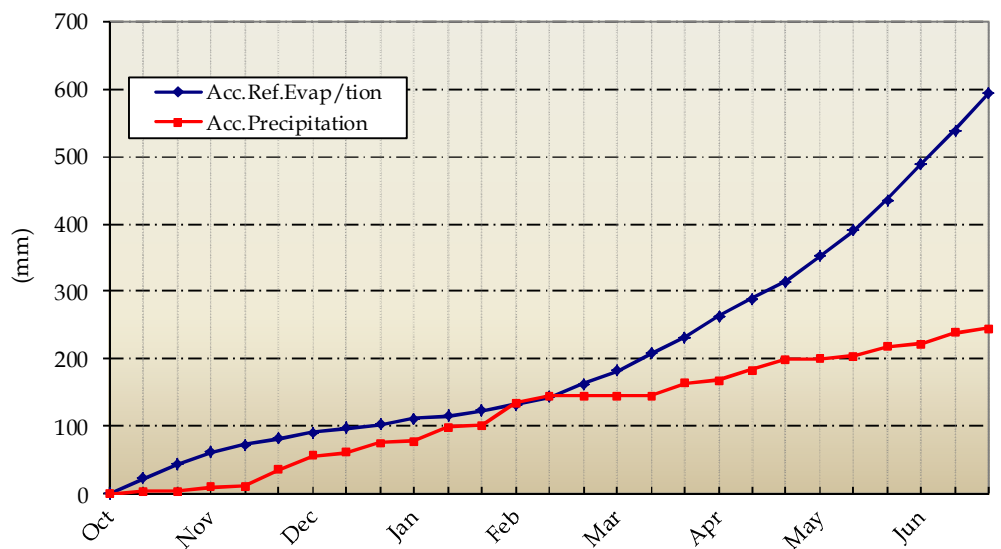
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

Larisa

2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.6	32.4	35.8	37.8	35.6	34.8	32.8	33.4	32.2	33.4	34.0	30.9	31.7
	Min	17.0	17.0	18.8	19.0	20.8	21.2	18.6	17.6	18.0	19.0	18.7	17.6	15.7
Relative Humidity	Max	92	87	88	74	70	95	95	90	89	79	86	88	-
	Min	32	28	28	26	21	29	38	33	34	33	30	31	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	23.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	26.6
Sunshine Duration		8.8	6.4	11.4	8.5	11.9	8.3	7.1	8.4	10.4	8.2	8.9	7.7	10.5
Precipitation							5.1	1.1	0.5			6.7	16.2	6.2
Evaporation		10.9	7.3	10.2	10.1	10.5	7.7	7.1	8.1	9.7	9.8	91.4	73.1	85.8
Growing Degrees	5	19.3	19.7	22.3	23.4	23.2	23.0	20.7	20.5	20.1	21.2	213.4	192.9	186.8
	10	14.3	14.7	17.3	18.4	18.2	18.0	15.7	15.5	15.1	16.2	163.4	142.9	136.8

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.9	49.3	58.5
Precipitation - Reference Evapotranspiration	-49.2	-33.1	-52.3
Number of Rainy Days	3.0	3.0	1.7
Number of Dry Days	10.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

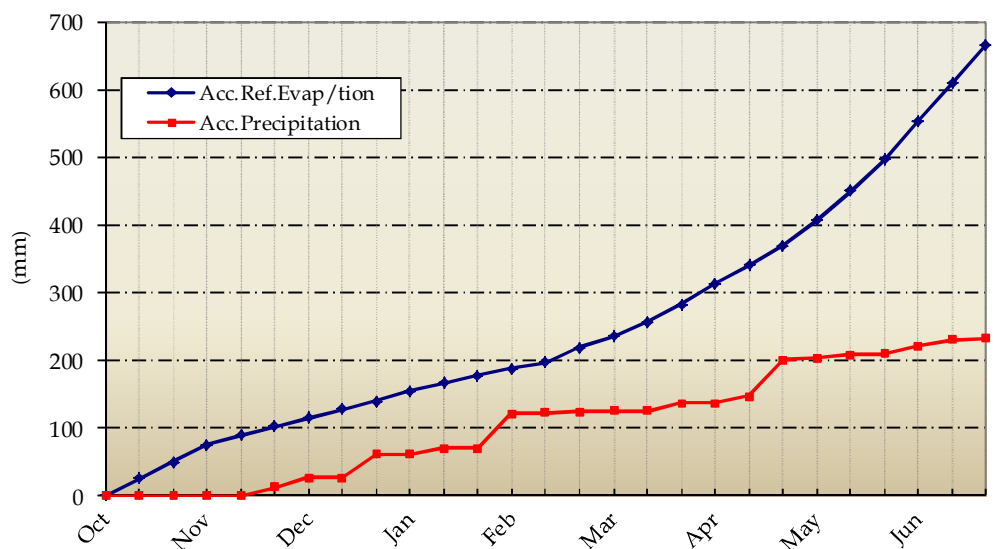


Mikra

2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	32.0	33.6	35.0	33.8	32.4	29.0	31.6	31.4	32.2	32.1	30.0	29.7
	Min	18.8	20.0	20.6	22.8	21.6	22.0	21.0	22.0	20.0	22.2	21.1	18.8	17.0
Relative Humidity	Max	83	81	74	73	77	77	78	82	82	81	79	83	-
	Min	35	31	30	27	36	34	56	36	32	34	35	36	-
Soil Temperature at 10 cm	06 UTC	23.6	24.2	25.2	25.2	26.0	27.4	26.8	25.0	25.8	26.2	25.5	24.7	24.4
	12 UTC	28.8	29.0	30.6	30.6	30.6	31.0	28.4	28.6	28.8	30.0	29.6	28.8	29.1
Sunshine Duration		10.7	13.0	12.9	9.2	12.3	9.2	5.9	7.5	8.5	10.3	10.0	7.3	10.3
Precipitation							0.0	2.4		0.9		3.3	26.9	11.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	65.8	85.4
Growing Degrees	5	19.4	21.0	22.1	23.9	22.7	22.2	20.0	21.8	20.7	22.2	216.0	194.0	183.4
	10	14.4	16.0	17.1	18.9	17.7	17.2	15.0	16.8	15.7	17.2	166.0	144.0	133.4

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.6	47.1	57.4
Precipitation - Reference Evapotranspiration	-54.3	-20.2	-45.9
Number of Rainy Days	2.0	4.0	1.8
Number of Dry Days	6.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

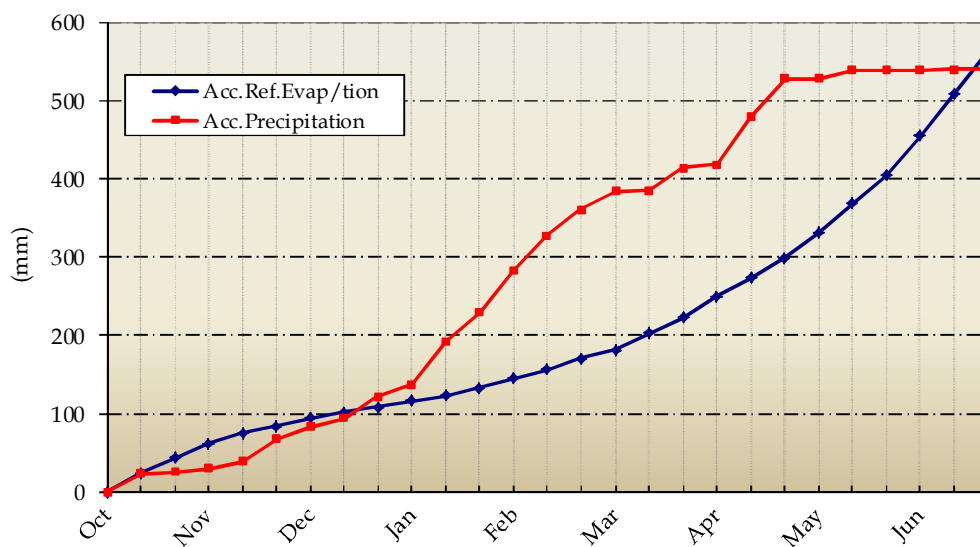


Tanagra

2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.0	33.0	33.9	35.8	32.8	32.6	32.0	32.0	30.7	31.8	32.6	30.2	30.3
	Min	18.2	17.1	18.6	18.1	20.8	21.9	18.8	20.0	18.8	18.8	19.1	18.8	15.8
Relative Humidity	Max	75	78	76	64	59	70	70	63	78	77	71	80	-
	Min	26	25	18	17	23	20	26	30	31	25	24	27	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.6	12.1	11.9	12.4	13.0	12.4	12.2	8.8	8.0	12.4	11.4	9.1	
Precipitation													12.5	2.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	19.6	20.1	21.3	22.0	21.8	22.3	20.4	21.0	19.8	20.3	208.4	195.2	
	10	14.6	15.1	16.3	17.0	16.8	17.3	15.4	16.0	14.8	15.3	158.4	145.2	

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.5	52.0	
Precipitation - Reference Evapotranspiration	-55.5	-39.5	2.8
Number of Rainy Days	0.0	2.0	1.4
Number of Dry Days	15.0	23.0	-

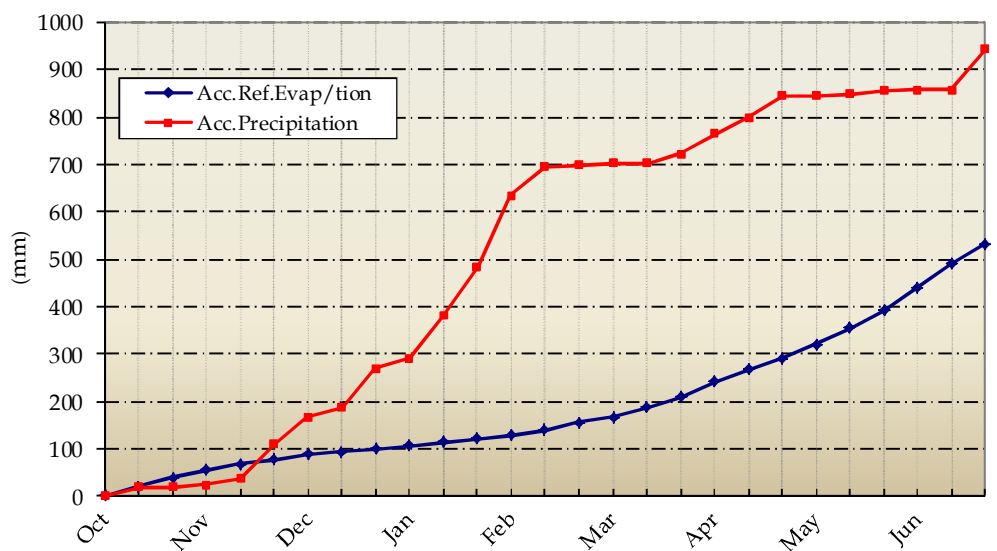
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/06/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.5	29.9	31.9	32.3	30.8	31.2	28.1	29.0	28.7	29.6	29.9	26.8	28.6
	Min	13.7	12.4	14.3	15.6	14.7	14.6	14.0	13.6	12.1	11.5	13.6	13.1	11.6
Relative Humidity	Max	100	100	98	100	100	-	100	100	100	100	100	94	-
	Min	32	32	30	31	30	-	30	28	29	29	30	36	-
Soil Temperature at 10 cm	06 UTC	24.0	20.0	21.8	22.8	20.8	-	-	20.4	19.2	18.6	21.0	22.8	22.7
	12 UTC	31.0	28.8	32.0	29.8	30.0	-	-	27.2	28.2	28.0	29.4	28.4	25.9
Sunshine Duration		6.6	10.8	11.8	5.6	10.1	8.8	5.1	5.3	8.0	9.5	8.2	8.7	10.8
Precipitation		38.4		2.8	22.4	0.0	5.7	0.0	1.8	16.1		87.2	38.2	5.7
Evaporation		0.5	18.7	4.6	10.0	-	-	-	2.3	15.1	3.4	-	56.7	62.0
Growing Degrees	5	15.6	16.2	18.1	19.0	17.8	17.9	16.1	16.3	15.4	15.6	167.8	149.6	151.2
	10	10.6	11.2	13.1	14.0	12.8	12.9	11.1	11.3	10.4	10.6	117.8	99.6	101.2

2nd 10-day period (11-20/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	42.5	43.3	52.3
Precipitation - Reference Evapotranspiration	44.7	-5.1	-46.6
Number of Rainy Days	6.0	5.0	1.4
Number of Dry Days	6.0	1.0	-

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_n 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.

Measurements 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

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Issue Editors :

Papakrivou Anastasia

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