



# AGROMETEOROLOGICAL BULLETIN

*August 2018  
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  
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 Helliniko, Athens

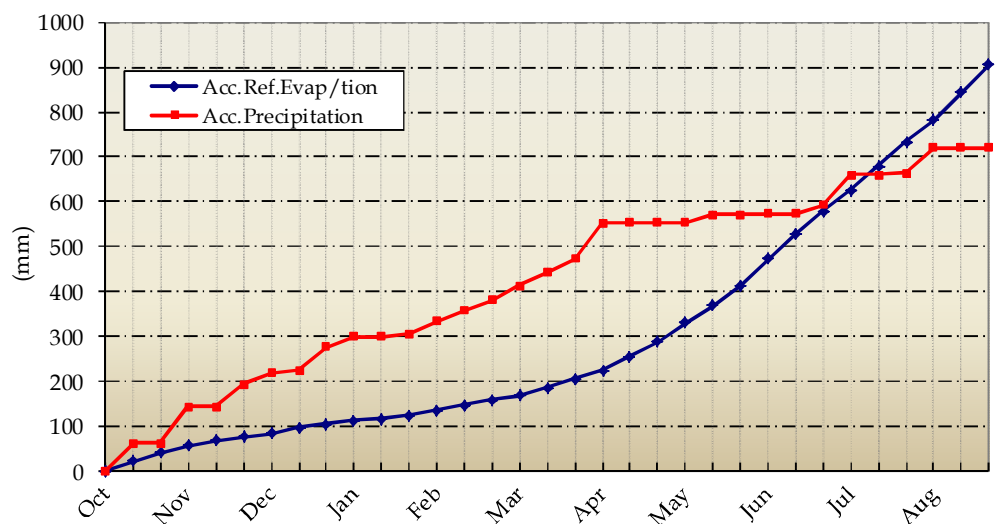
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Alexandroupoli

2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.4	31.2	31.2	31.4	33.0	34.2	33.4	34.8	35.6	32.6	32.9	34.0	30.5
	Min	22.0	18.0	17.0	17.2	20.2	17.0	18.6	18.6	25.0	24.2	19.8	19.3	17.7
Relative Humidity	Max	60	78	81	84	71	80	73	75	48	66	72	78	-
	Min	36	28	31	36	32	30	26	27	24	29	30	33	-
Soil Temperature at 10 cm	06 UTC	26.8	25.8	25.8	26.0	26.6	26.2	26.8	25.6	27.8	27.6	26.5	23.4	23.8
	12 UTC	29.8	29.8	29.8	29.6	29.6	30.6	30.8	31.0	31.6	30.6	30.3	29.7	27.9
Sunshine Duration		11.5	12.8	12.8	12.5	11.1	11.0	12.5	12.1	12.1	12.2	12.1	11.5	10.0
Precipitation														3.9
Evaporation		7.8	11.4	3.6	13.4	9.6	9.6	3.5	16.7	10.0	13.0	98.6	96.6	94.5
Growing Degrees	5	21.7	19.6	19.1	19.3	21.6	20.6	21.0	21.7	25.3	23.4	213.3	216.8	191.3
	10	16.7	14.6	14.1	14.3	16.6	15.6	16.0	16.7	20.3	18.4	163.3	166.8	141.3

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.2	55.4	55.4
Precipitation - Reference Evapotranspiration	-60.2	-55.4	-51.5
Number of Rainy Days	0.0	0.0	1.0
Number of Dry Days	22.0	23.0	-

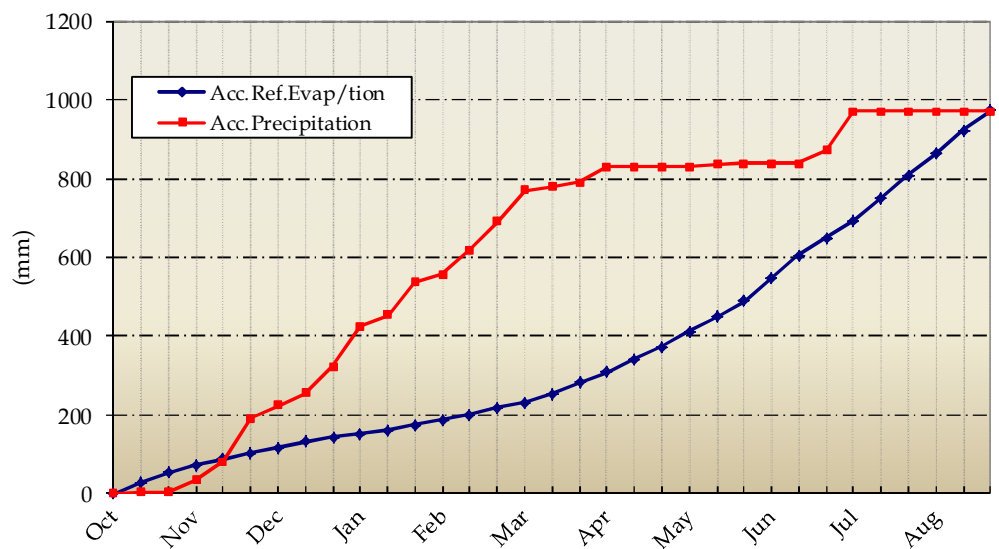
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.2	31.0	31.4	31.4	32.4	31.6	30.2	31.8	32.9	34.9	32.0	32.4	31.2
	Min	18.0	16.8	17.6	21.1	21.8	21.7	19.1	19.8	18.6	17.8	19.2	19.7	18.7
Relative Humidity	Max	71	90	92	90	92	86	87	87	86	75	86	82	-
	Min	31	34	28	44	37	31	42	36	30	20	33	32	-
Soil Temperature at 10 cm	06 UTC	28.0	27.2	27.4	28.4	29.0	29.0	29.0	28.2	28.6	29.0	28.4	28.6	27.4
	12 UTC	32.0	29.6	29.4	29.4	20.0	29.6	31.0	30.6	31.4	30.9	29.4	31.0	31.7
Sunshine Duration		12.9	12.9	13.1	11.5	11.7	5.7	11.9	11.8	11.0	10.6	11.3	11.8	11.2
Precipitation							1.1					1.1		4.0
Evaporation		9.4	9.0	9.4	10.0	8.5	8.0	6.6	7.0	9.0	10.5	87.4	82.0	73.5
Growing Degrees	5	20.1	18.9	19.5	21.3	22.1	21.7	19.7	20.8	20.8	21.4	206.1	210.4	199.2
	10	15.1	13.9	14.5	16.3	17.1	16.7	14.7	15.8	15.8	16.4	156.1	160.4	149.2

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.5	55.7	49.2
Precipitation - Reference Evapotranspiration	-50.4	-55.7	-45.2
Number of Rainy Days	1.0	0.0	0.3
Number of Dry Days	47.0	24.0	-

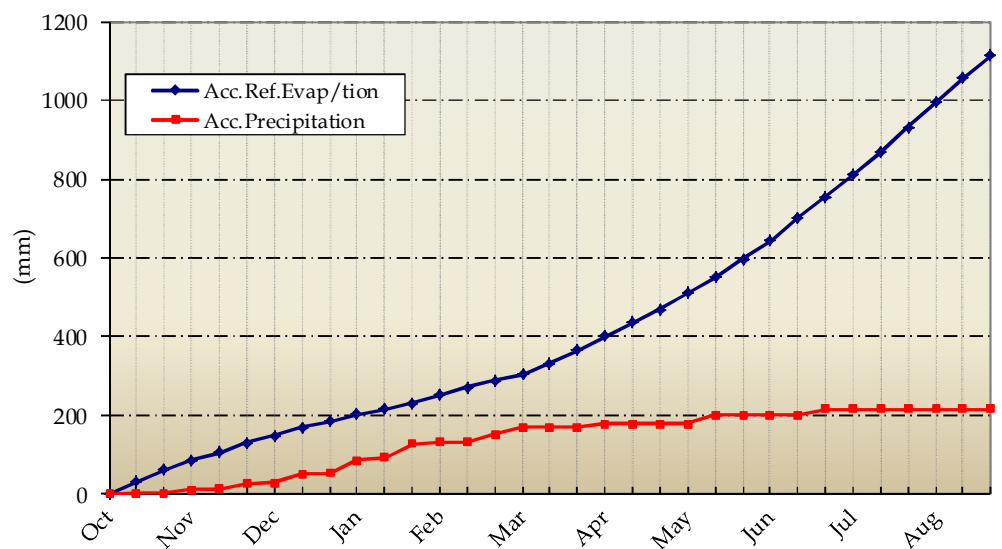
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	28.0	28.2	28.8	28.8	29.8	29.2	30.0	29.8	29.0	29.0	29.6	28.2
	Min	26.0	25.0	23.4	24.0	21.2	22.0	23.6	22.4	26.8	26.8	24.1	24.3	22.2
Relative Humidity	Max	77	76	73	72	76	80	86	87	68	85	78	70	-
	Min	62	56	51	53	61	51	64	51	48	63	56	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.6	11.8	11.3	11.8	11.9	11.5	11.5	11.4	11.4	10.5	11.4	11.1	11.0
Precipitation														0.0
Evaporation		7.0	6.4	7.0	7.1	5.2	7.8	5.7	7.8	8.6	5.4	68.0	82.0	81.3
Growing Degrees	5	22.1	21.5	20.8	21.4	20.0	20.9	21.4	21.2	23.3	22.9	215.5	219.2	202.0
	10	17.1	16.5	15.8	16.4	15.0	15.9	16.4	16.2	18.3	17.9	165.5	169.2	152.0

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.1	60.3	-
Precipitation - Reference Evapotranspiration	-58.1	-60.3	0.0
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	21.0	33.0	-

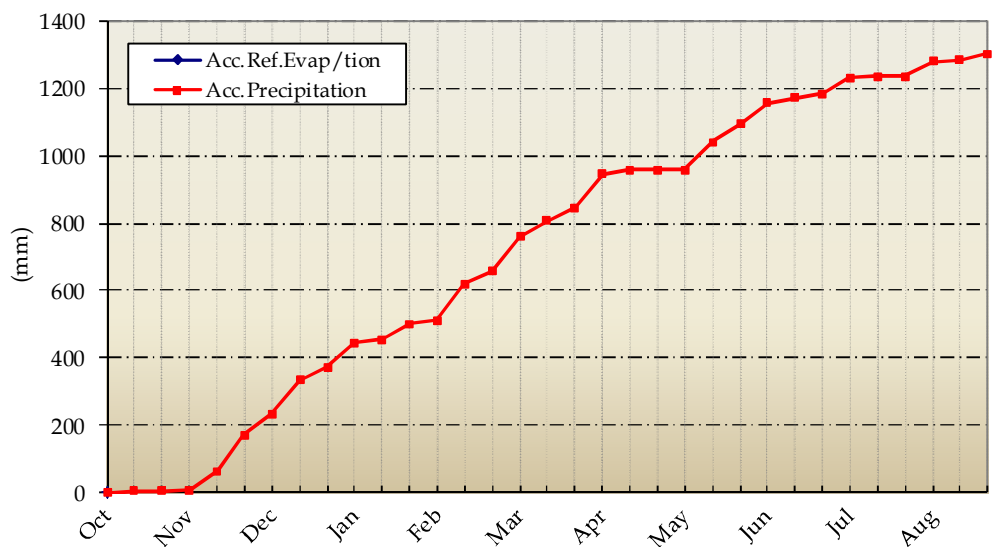
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	32.2	33.0	32.0	31.8	27.6	31.0	31.0	30.4	31.6	31.3	34.4	30.9
	Min	20.6	17.6	16.8	18.0	18.8	16.0	14.4	16.5	15.4	16.5	17.1	15.8	15.4
Relative Humidity	Max	100	92	100	88	100	98	100	100	94	100	97	90	-
	Min	40	42	35	48	45	49	32	45	31	31	40	21	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	23.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.1
Sunshine Duration		11.2	9.8	11.2	6.5	7.0	2.4	7.6	7.6	10.5	9.4	8.3	10.2	9.5
Precipitation			0.0			15.3	0.1	1.6	3.5			20.5		11.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	64.1
Growing Degrees	5	21.6	19.9	19.9	20.0	20.3	16.8	17.7	18.8	17.9	19.1	191.9	201.1	176.6
	10	16.6	14.9	14.9	15.0	15.3	11.8	12.7	13.8	12.9	14.1	141.9	151.1	127.8

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	45.3
Precipitation - Reference Evapotranspiration	-	-	-34.0
Number of Rainy Days	4.0	0.0	1.8
Number of Dry Days	11.0	12.0	-

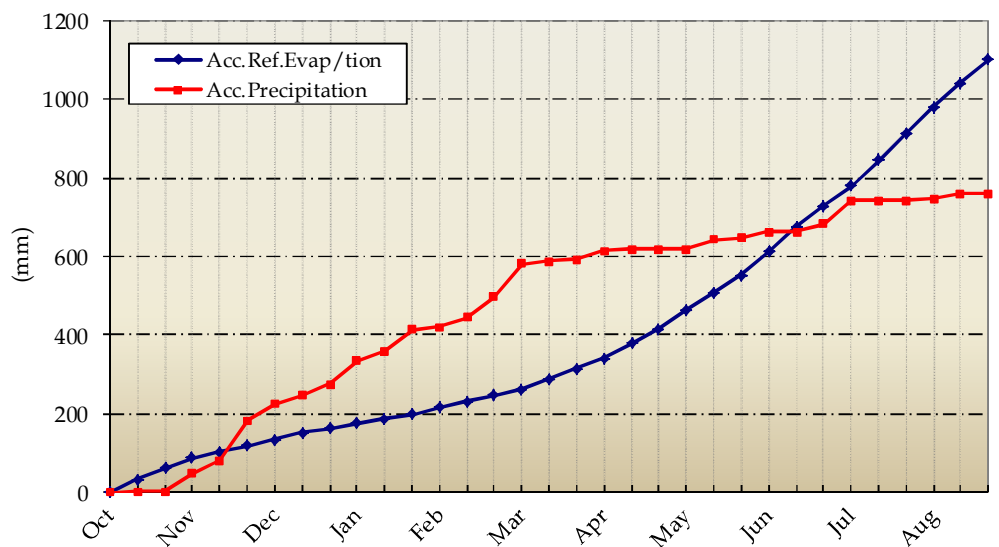
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.1	33.8	30.7	30.8	33.4	31.0	31.5	33.5	36.1	34.0	32.8	34.5	31.4
	Min	19.8	17.0	16.3	18.7	21.8	19.4	19.1	21.6	19.8	21.6	19.5	19.2	18.2
Relative Humidity	Max	81	78	82	88	89	87	87	79	71	81	82	79	-
	Min	24	28	35	48	37	50	44	28	25	22	34	26	-
Soil Temperature at 10 cm	06 UTC	27.0	26.4	26.4	26.8	27.6	26.4	26.4	27.0	25.6	27.0	26.7	-	25.7
	12 UTC	30.4	29.8	30.0	30.2	30.6	29.6	29.8	30.4	30.4	30.4	30.2	-	29.6
Sunshine Duration		12.4	12.5	12.3	11.5	11.9	9.8	8.5	10.2	11.1	11.4	11.2	11.6	10.6
Precipitation							0.0					0.0		3.9
Evaporation		9.0	9.2	6.0	10.0	10.2	4.0	4.4	9.0	7.6	7.0	76.4	69.3	78.6
Growing Degrees	5	21.5	20.4	18.5	19.8	22.6	20.2	20.3	22.6	23.0	22.8	211.5	218.8	198.2
	10	16.5	15.4	13.5	14.8	17.6	15.2	15.3	17.6	18.0	17.8	161.5	168.8	148.2

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.8	62.4	50.7
Precipitation - Reference Evapotranspiration	-58.8	-62.4	-46.8
Number of Rainy Days	0.0	0.0	0.7
Number of Dry Days	17.0	24.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

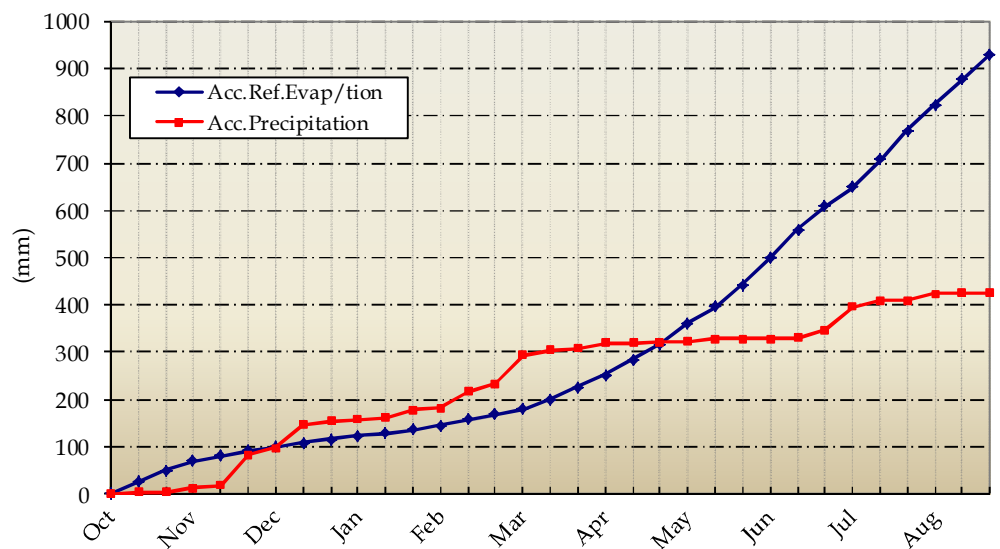


Larisa

2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.7	31.4	33.4	32.1	32.2	32.2	33.3	33.8	34.6	32.8	32.6	34.5	32.3
	Min	17.6	17.0	16.8	18.0	17.2	19.0	20.6	19.2	18.8	19.8	18.4	20.0	17.5
Relative Humidity	Max	72	75	83	85	85	87	80	75	69	65	78	68	-
	Min	35	37	33	37	36	28	28	27	20	31	31	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	26.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	28.7
Sunshine Duration		11.0	10.5	10.8	6.5	7.7	5.0	5.5	11.0	10.3	10.8	8.9	11.3	9.9
Precipitation														6.2
Evaporation		0.6	8.6	11.3	8.9	8.7	8.7	4.9	10.9	11.2	5.1	78.9	112.2	84.1
Growing Degrees	5	19.2	19.2	20.1	20.1	19.7	20.6	22.0	21.5	21.7	21.3	205.3	222.3	199.1
	10	14.2	14.2	15.1	15.1	14.7	15.6	17.0	16.5	16.7	16.3	155.3	172.3	149.1

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.6	57.9	53.3
Precipitation - Reference Evapotranspiration	-52.6	-57.9	-47.1
Number of Rainy Days	0.0	0.0	1.4
Number of Dry Days	17.0	24.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

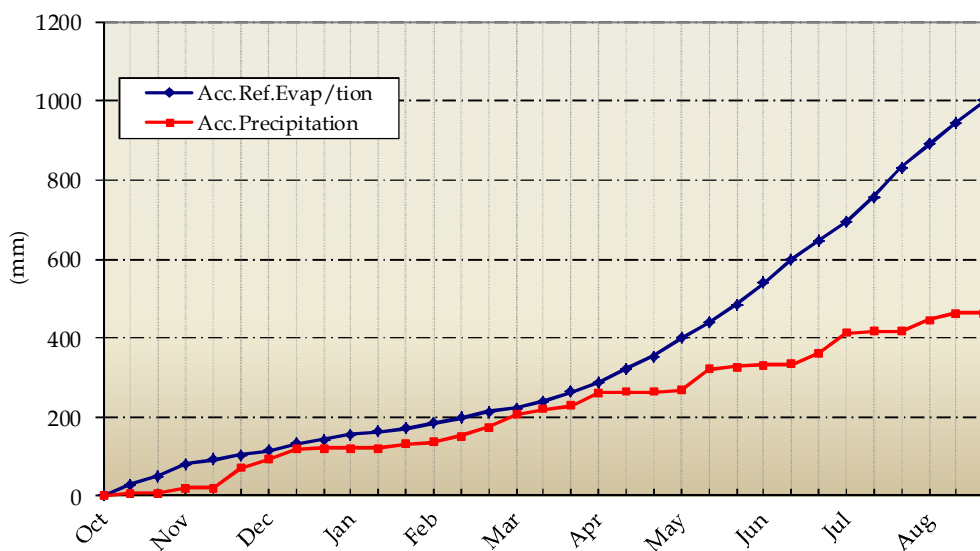


Mikra

2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	30.7	31.1	30.8	31.3	31.0	33.0	33.8	36.2	36.4	32.5	33.9	31.3
	Min	23.0	20.6	19.4	19.6	21.5	22.0	20.4	21.4	23.8	24.5	21.6	21.8	18.9
Relative Humidity	Max	62	72	77	77	74	69	71	70	53	62	69	61	-
	Min	29	34	34	34	31	28	24	23	14	29	28	24	-
Soil Temperature at 10 cm	06 UTC	27.0	27.0	26.8	27.0	27.6	27.9	27.0	28.0	28.0	28.5	27.5	29.7	26.0
	12 UTC	30.2	30.2	30.6	30.2	30.6	30.2	30.6	31.0	35.8	31.8	31.1	32.9	30.5
Sunshine Duration		11.6	11.3	12.2	9.5	9.9	2.5	11.8	11.8	11.1	11.2	10.3	11.3	10.0
Precipitation														6.6
Evaporation		8.9	8.5	9.5	8.2	9.5	5.5	9.8	7.8	11.0	8.8	87.5	99.8	83.0
Growing Degrees	5	21.7	20.7	20.3	20.2	21.4	21.5	21.7	22.6	25.0	25.5	220.5	228.5	201.0
	10	16.7	15.7	15.3	15.2	16.4	16.5	16.7	17.6	20.0	20.5	170.5	178.5	151.0

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.6	67.6	52.4
Precipitation - Reference Evapotranspiration	-55.6	-67.6	-45.8
Number of Rainy Days	0.0	0.0	1.1
Number of Dry Days	17.0	34.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



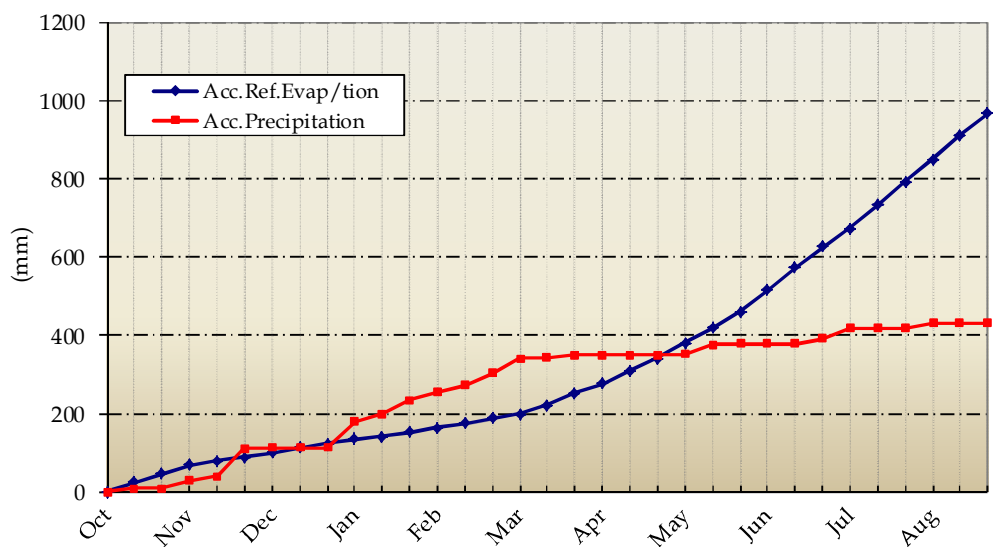


Tanagra

2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.8	29.7	30.4	32.4	31.6	32.4	32.6	32.4	31.6	30.2	31.2	32.9	31.8
	Min	21.3	18.8	17.8	17.4	18.7	18.5	19.0	20.6	22.8	22.8	19.8	20.6	18.4
Relative Humidity	Max	62	69	66	69	65	76	69	58	54	52	64	59	-
	Min	31	30	27	20	25	23	22	26	27	29	26	22	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.5	10.1	12.4	12.4	10.8	10.5	11.7	12.0	11.9	12.1	11.6	12.1	
Precipitation														3.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	20.1	19.3	19.1	19.9	20.2	20.5	20.8	21.5	22.2	21.5	204.9	217.6	
	10	15.1	14.3	14.1	14.9	15.2	15.5	15.8	16.5	17.2	16.5	154.9	167.6	

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.0	56.8	
Precipitation - Reference Evapotranspiration	-56.0	-56.8	3.4
Number of Rainy Days	0.0	0.0	0.8
Number of Dry Days	20.0	24.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

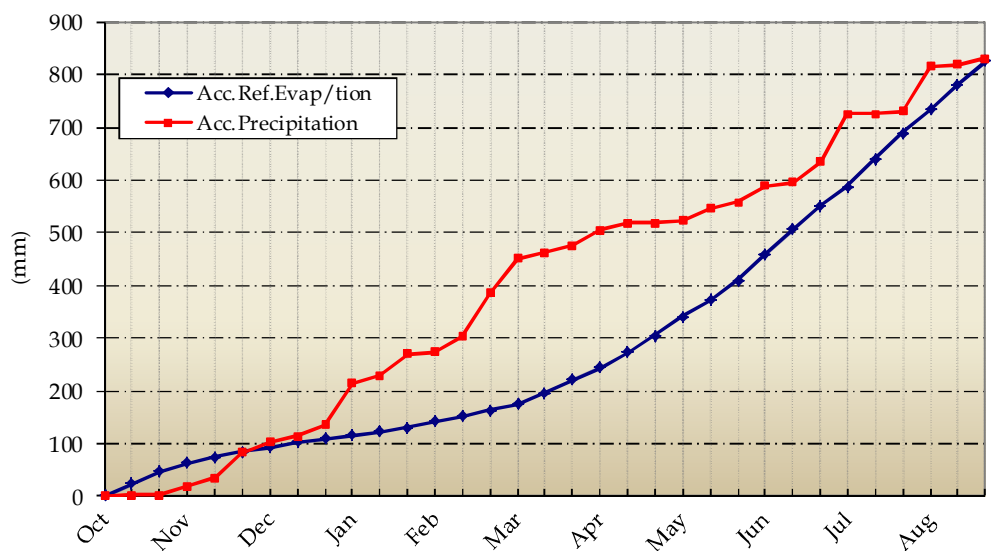


Tripoli

2nd 10-day period (11-20/08/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.7	28.5	30.3	31.6	29.6	28.2	28.7	30.9	30.5	29.7	29.7	32.7	29.9
	Min	17.7	12.6	10.5	13.3	14.9	14.3	13.8	14.4	13.9	19.6	14.5	15.2	14.5
Relative Humidity	Max	71	83	93	100	100	100	100	100	90	77	91	77	-
	Min	27	30	26	19	33	35	33	27	24	26	28	21	-
Soil Temperature at 10 cm	06 UTC	25.0	24.4	24.2	25.0	-	22.2	21.8	-	-	23.8	23.8	28.1	24.7
	12 UTC	-	-	30.2	30.8	-	26.4	27.6	-	-	29.0	28.8	31.5	27.4
Sunshine Duration		12.2	11.7	12.2	9.0	8.9	5.7	11.7	-	11.8	9.5	10.3	10.8	9.7
Precipitation					7.3	0.8	2.5	0.1				10.7		13.8
Evaporation		7.8	6.6	6.4	-	-	1.1	-	-	-	6.8	-	-	56.3
Growing Degrees	5	18.2	15.6	15.4	17.5	17.3	16.3	16.3	17.7	17.2	19.7	170.9	189.8	172.3
	10	13.2	10.6	10.4	12.5	12.3	11.3	11.3	12.7	12.2	14.7	120.9	139.8	122.3

2nd 10-day period (11-20/08/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.9	52.2	47.6
Precipitation - Reference Evapotranspiration	-34.2	-52.2	-33.8
Number of Rainy Days	4.0	0.0	1.4
Number of Dry Days	10.0	24.0	-

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<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.

**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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