



AGROMETEOROLOGICAL BULLETIN

September 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

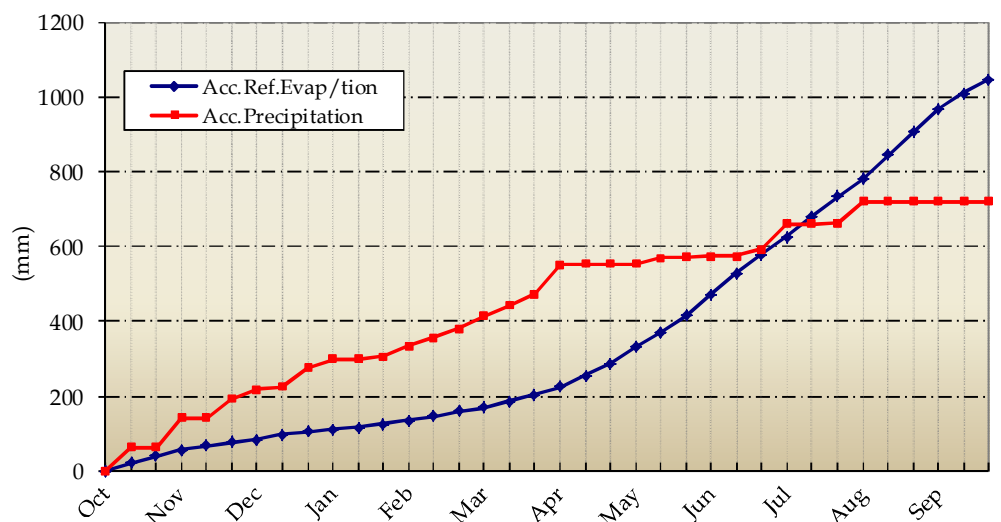
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Alexandroupoli

2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.6	28.6	28.0	27.2	28.6	29.4	28.2	27.0	28.0	27.0	28.0	30.8	26.5
	Min	15.4	12.8	17.6	15.6	16.2	14.6	19.6	17.8	17.6	16.4	16.4	17.4	13.8
Relative Humidity	Max	74	80	73	85	90	76	81	72	65	80	78	90	-
	Min	42	38	35	54	50	39	39	32	30	34	39	48	-
Soil Temperature at 10 cm	06 UTC	23.6	22.8	23.4	22.6	23.0	23.4	23.8	23.6	23.0	22.8	23.2	24.5	19.9
	12 UTC	27.4	27.4	26.8	26.6	27.6	28.0	27.6	27.2	27.2	27.0	27.3	27.7	23.7
Sunshine Duration		8.0	6.3	5.3	9.2	10.4	8.7	9.6	11.3	9.9	10.7	8.9	10.8	8.5
Precipitation							0.5					0.5		5.2
Evaporation		7.4	5.8	4.6	2.9	7.1	4.2	8.5	5.7	8.8	6.4	61.4	57.5	66.6
Growing Degrees	5	16.5	15.7	17.8	16.4	17.4	17.0	18.9	17.4	17.8	16.7	171.6	190.9	151.3
	10	11.5	10.7	12.8	11.4	12.4	12.0	13.9	12.4	12.8	11.7	121.6	140.9	101.3

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.0	38.5	37.1
Precipitation - Reference Evapotranspiration	-37.5	-38.5	-31.9
Number of Rainy Days	1.0	0.0	0.9
Number of Dry Days	7.0	29.0	-

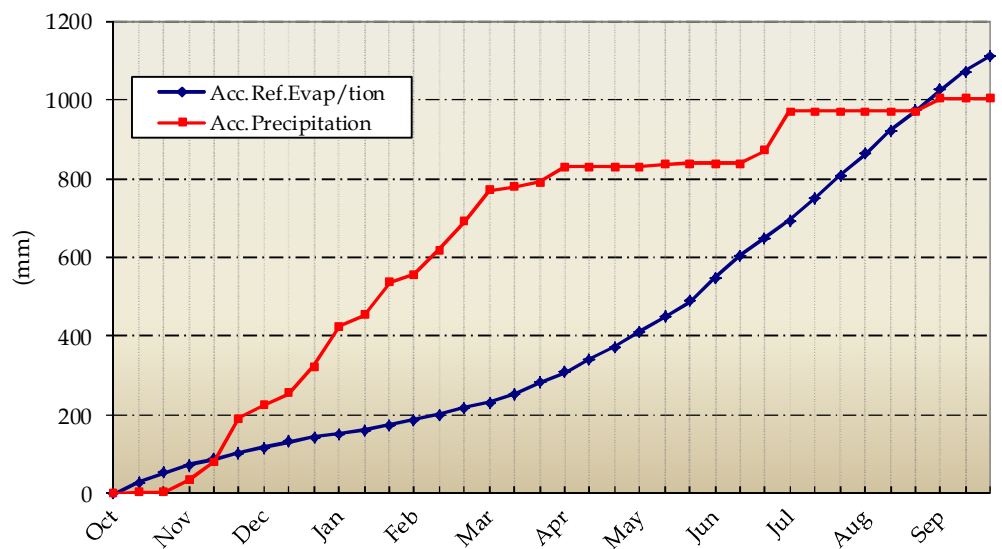
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.2	30.8	29.0	29.4	28.6	29.8	33.0	31.4	30.2	29.9	30.2	29.9	28.2
	Min	17.4	16.7	14.3	17.2	17.6	17.4	15.8	17.0	16.0	14.4	16.4	17.5	16.5
Relative Humidity	Max	81	89	82	87	85	86	87	72	82	88	84	87	-
	Min	35	25	30	30	46	40	19	28	28	31	31	35	-
Soil Temperature at 10 cm	06 UTC	25.4	26.0	26.2	25.2	26.0	25.8	25.4	25.6	25.4	24.2	25.5	26.0	23.4
	12 UTC	28.4	29.0	29.2	30.5	27.6	30.6	27.4	28.2	28.6	29.0	28.8	28.2	26.9
Sunshine Duration		9.7	10.7	10.2	8.5	10.4	10.0	10.4	9.8	10.2	10.2	10.0	9.8	9.1
Precipitation													0.6	7.0
Evaporation		6.6	6.0	6.0	10.0	7.0	6.8	10.6	9.6	8.0	5.0	75.6	53.6	56.3
Growing Degrees	5	18.8	18.8	16.7	18.3	18.1	18.6	19.4	19.2	18.1	17.2	183.1	186.9	173.6
	10	13.8	13.8	11.7	13.3	13.1	13.6	14.4	14.2	13.1	12.2	133.1	136.9	123.6

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	39.6	41.1	36.2
Precipitation - Reference Evapotranspiration	-39.6	-40.5	-29.2
Number of Rainy Days	0.0	1.0	1.1
Number of Dry Days	24.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

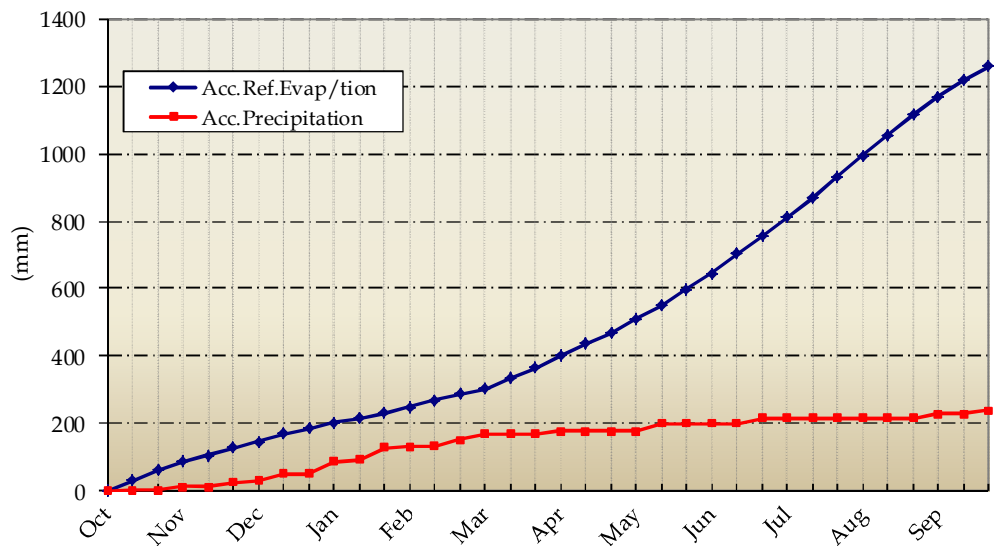


Iraklio

2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.6	27.2	25.2	27.0	26.8	27.4	27.2	26.0	25.8	25.8	26.6	29.0	26.4
	Min	24.6	24.4	16.4	19.0	19.2	20.0	24.2	24.0	22.6	21.4	21.6	20.6	19.5
Relative Humidity	Max	83	82	91	94	94	90	81	81	79	87	86	84	-
	Min	67	62	63	70	72	67	73	67	68	68	68	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.6	8.8	4.6	9.3	10.7	10.7	9.5	10.0	9.7	9.9	9.4	9.2	9.4
Precipitation				11.7	1.0							12.7		6.0
Evaporation		7.0	6.2	3.8	1.3	3.0	3.9	9.9	4.6	6.5	6.3	52.5	47.6	64.4
Growing Degrees	5	21.1	20.8	15.8	18.0	18.0	18.7	20.7	20.0	19.2	18.6	190.9	198.1	179.8
	10	16.1	15.8	10.8	13.0	13.0	13.7	15.7	15.0	14.2	13.6	140.9	148.1	129.8

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.2	42.9	-
Precipitation - Reference Evapotranspiration	-27.5	-42.9	6.0
Number of Rainy Days	2.0	0.0	0.5
Number of Dry Days	14.0	64.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

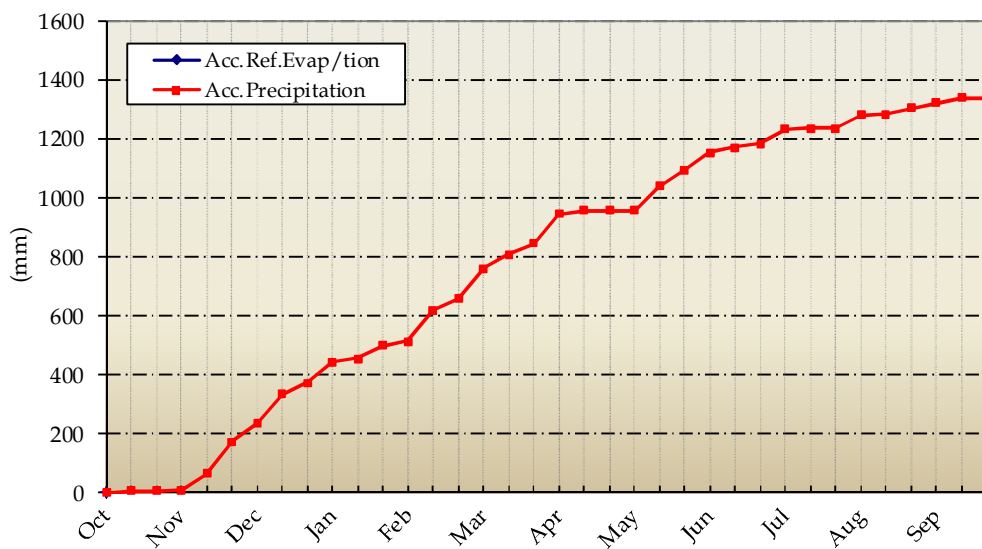


Ioannina

2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.2	27.4	27.6	28.2	28.6	29.0	29.6	29.0	29.4	31.0	29.0	29.8	26.5
	Min	13.4	15.0	13.2	15.0	13.0	12.6	13.0	12.4	13.0	11.8	13.2	11.5	12.2
Relative Humidity	Max	98	97	95	100	100	100	100	100	100	100	99	96	-
	Min	31	33	30	40	37	35	32	30	30	32	33	28	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.1
Sunshine Duration		8.2	9.3	7.9	8.0	9.0	7.6	9.3	8.5	9.1	8.7	8.6	8.6	6.9
Precipitation													8.5	16.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	43.6
Growing Degrees	5	16.8	16.2	15.4	16.6	15.8	15.8	16.3	15.7	16.2	16.4	161.2	156.6	143.6
	10	11.8	11.2	10.4	11.6	10.8	10.8	11.3	10.7	11.2	11.4	111.2	106.6	93.6

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	28.7
Precipitation - Reference Evapotranspiration	-	-	-12.3
Number of Rainy Days	0.0	3.0	2.1
Number of Dry Days	12.0	1.0	-

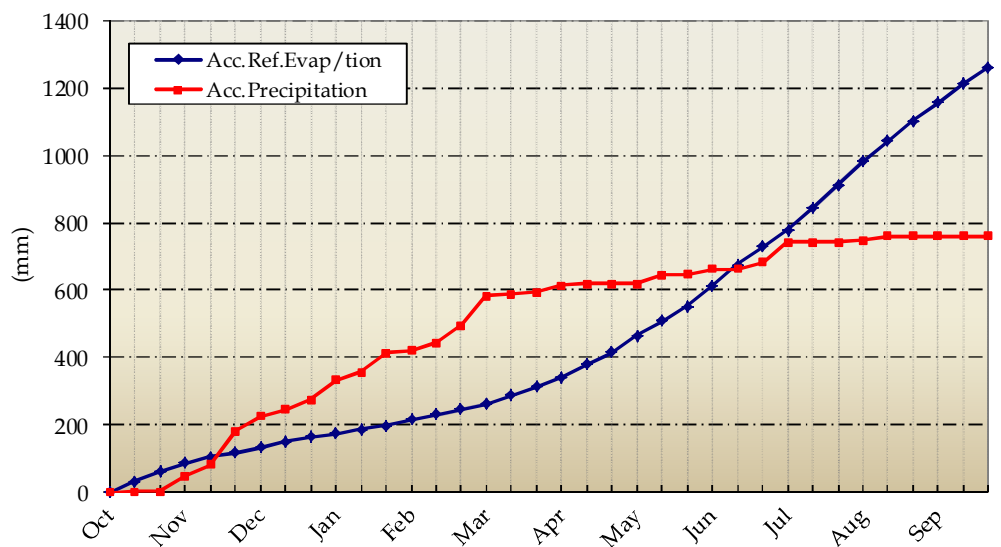
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.3	31.2	30.4	27.7	29.0	33.6	34.4	31.6	29.4	28.4	30.5	32.2	28.6
	Min	16.8	17.6	15.8	16.7	15.8	18.6	18.7	21.4	17.2	16.4	17.5	16.6	15.9
Relative Humidity	Max	86	65	76	83	86	78	70	71	86	86	79	85	-
	Min	42	19	23	37	35	18	18	26	29	39	29	30	-
Soil Temperature at 10 cm	06 UTC	25.6	25.6	24.4	25.0	24.0	24.8	25.0	25.0	25.0	25.2	25.0	-	22.6
	12 UTC	27.2	28.0	27.4	26.0	26.6	27.4	27.4	27.4	27.6	28.0	27.3	-	25.8
Sunshine Duration		9.9	8.8	11.4	1.9	9.7	10.5	9.9	10.2	10.3	10.2	9.3	10.6	8.7
Precipitation		0.0										0.0		6.3
Evaporation		6.8	7.0	6.4	6.4	5.4	6.6	8.8	9.8	5.6	6.8	69.6	72.1	60.4
Growing Degrees	5	18.1	19.4	18.1	17.2	17.4	21.1	21.6	21.5	18.3	17.4	190.0	194.0	172.4
	10	13.1	14.4	13.1	12.2	12.4	16.1	16.6	16.5	13.3	12.4	140.0	144.0	122.4

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.5	49.2	38.1
Precipitation - Reference Evapotranspiration	-47.5	-49.2	-31.8
Number of Rainy Days	0.0	0.0	1.0
Number of Dry Days	24.0	21.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

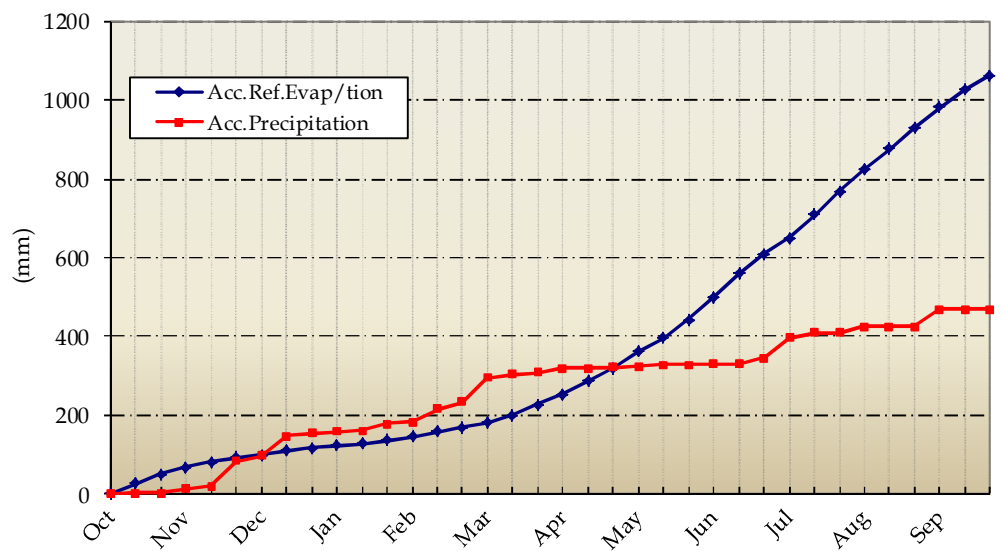


Larisa

2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	30.0	28.0	30.8	31.4	32.2	28.3	26.8	27.2	28.2	29.2	34.0	29.0
	Min	14.4	17.8	14.7	12.4	16.0	15.9	16.5	15.4	15.3	13.0	15.1	15.8	14.0
Relative Humidity	Max	76	90	96	88	81	82	88	89	90	89	87	73	-
	Min	30	28	39	27	29	30	40	49	45	32	35	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	24.1
Sunshine Duration		6.4	8.5	8.7	8.6	9.3	7.9	9.1	4.3	5.6	8.7	7.7	8.9	8.3
Precipitation				1.8					0.0			1.8		12.0
Evaporation		9.2	8.1	5.1	7.2	5.9	9.2	8.1	4.2	5.4	7.6	70.0	86.9	61.4
Growing Degrees	5	17.0	18.9	16.4	16.6	18.7	19.1	17.4	16.1	16.3	15.6	172.0	199.0	165.0
	10	12.0	13.9	11.4	11.6	13.7	14.1	12.4	11.1	11.3	10.6	122.0	149.0	115.0

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	37.1	47.4	38.0
Precipitation - Reference Evapotranspiration	-35.3	-47.4	-26.0
Number of Rainy Days	1.0	0.0	1.2
Number of Dry Days	15.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

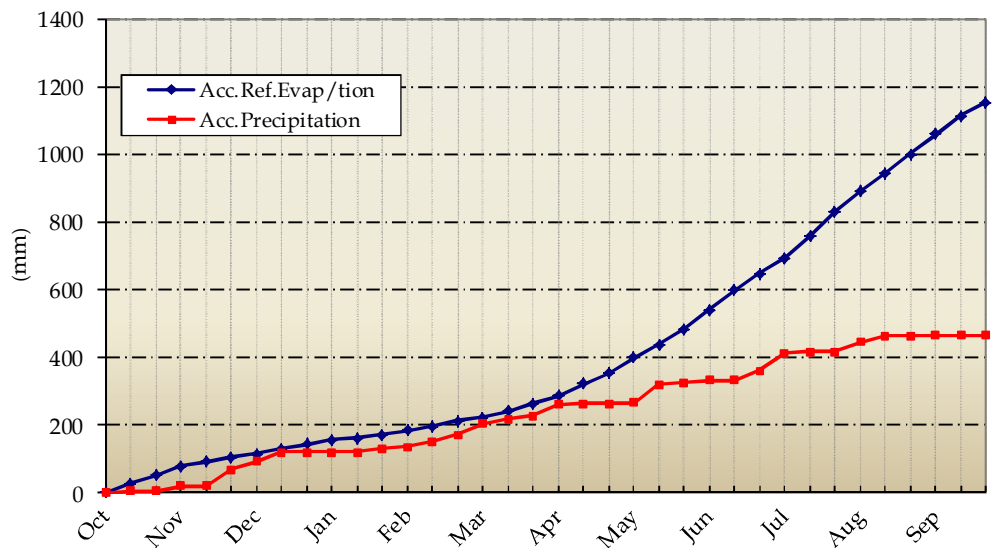


Mikra

2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.4	29.8	28.0	29.7	31.0	30.4	28.8	27.8	27.4	28.3	29.1	32.1	27.5
	Min	17.6	18.1	18.1	17.7	16.4	17.8	16.8	18.4	17.8	15.2	17.4	17.2	15.2
Relative Humidity	Max	61	64	74	74	75	73	73	72	75	74	72	75	-
	Min	27	26	34	24	31	28	39	41	40	32	32	25	-
Soil Temperature at 10 cm	06 UTC	25.4	25.0	25.0	25.0	25.0	25.6	25.0	25.4	25.0	24.0	25.0	24.4	21.4
	12 UTC	29.0	28.3	28.4	28.4	28.6	30.0	28.5	28.0	27.8	25.2	28.2	27.3	25.2
Sunshine Duration		7.7	8.9	11.1	11.6	10.7	10.6	9.4	8.5	8.7	10.2	9.7	10.5	8.1
Precipitation			0.2	0.1								0.3	0.0	7.6
Evaporation		6.6	6.9	8.1	7.4	10.4	9.3	5.3	5.4	6.6	7.7	73.7	68.6	62.1
Growing Degrees	5	18.5	19.0	18.1	18.7	18.7	19.1	17.8	18.1	17.6	16.8	182.3	196.7	163.4
	10	13.5	14.0	13.1	13.7	13.7	14.1	12.8	13.1	12.6	11.8	132.3	146.7	113.4

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	41.9	41.5	37.4
Precipitation - Reference Evapotranspiration	-41.6	-41.5	-29.8
Number of Rainy Days	2.0	0.0	1.4
Number of Dry Days	14.0	21.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

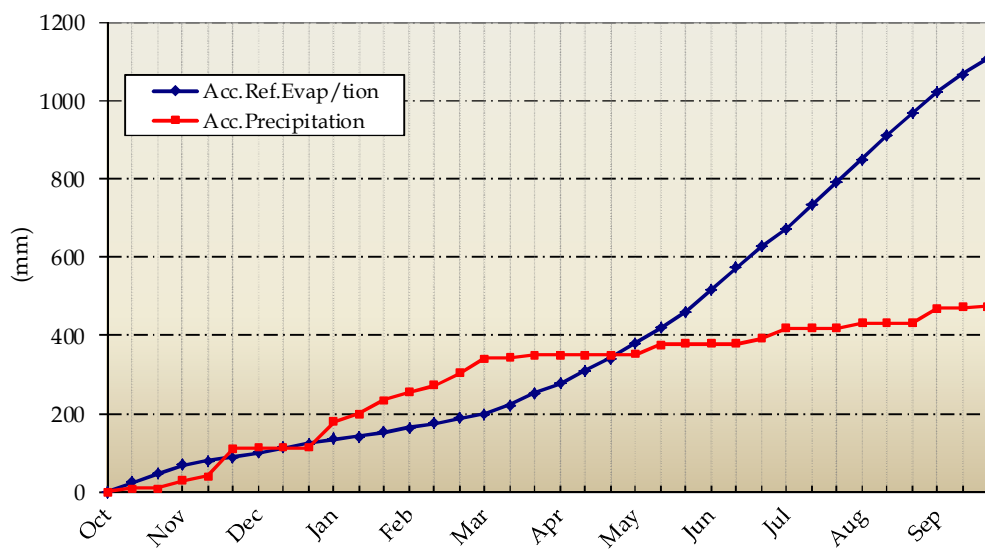


Tanagra

2nd 10-day period (11-20/09/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.0	26.7	25.8	28.2	30.0	30.0	27.8	26.3	26.1	26.0	27.6	33.9	28.3
	Min	15.8	17.5	18.3	15.8	15.7	16.7	18.5	17.6	16.2	17.2	16.9	17.8	15.0
Relative Humidity	Max	62	61	94	81	81	73	70	77	78	74	75	70	-
	Min	26	33	45	31	28	30	34	37	35	35	33	18	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.6	8.3	8.3	8.4	11.0	10.2	10.0	11.0	10.9	10.8	9.8	10.4	
Precipitation			0.0	1.9								1.9		3.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	17.4	17.1	17.1	17.0	17.9	18.4	18.2	17.0	16.2	16.6	172.6	208.5	
	10	12.4	12.1	12.1	12.0	12.9	13.4	13.2	12.0	11.2	11.6	122.6	158.5	

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	39.5	45.0	
Precipitation - Reference Evapotranspiration	-37.6	-45.0	3.2
Number of Rainy Days	1.0	0.0	1.0
Number of Dry Days	4.0	30.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

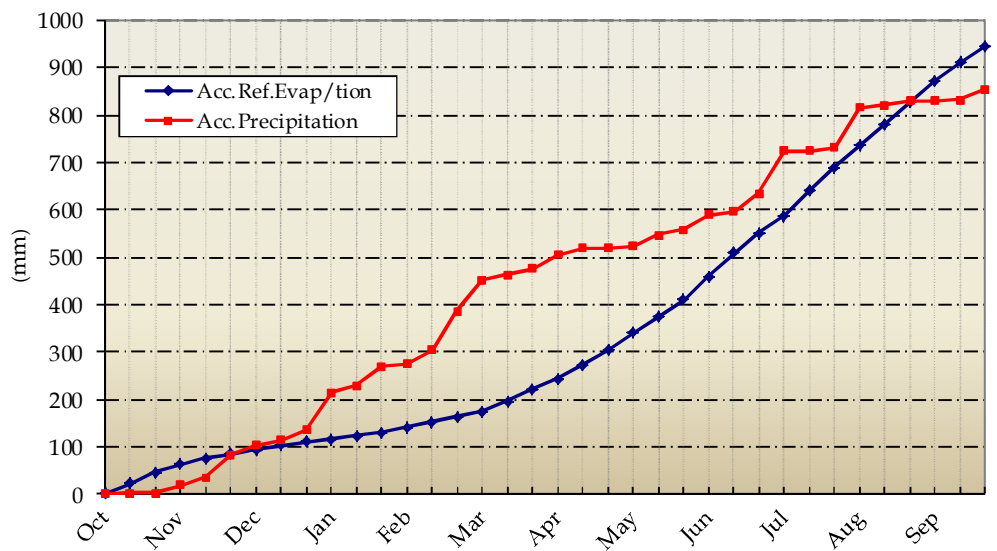


Tripoli

2nd 10-day period (11-20/09/2018)		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	24.5	25.5	25.4	28.0	28.7	27.0	26.3	26.6	25.5	26.6	32.4	26.9
	Min	11.1	13.0	10.8	11.7	11.0	11.3	12.1	13.7	9.2	8.4	11.2	12.0	11.2
Relative Humidity	Max	100	80	100	100	100	98	91	91	96	98	95	86	-
	Min	30	31	32	30	24	22	31	32	27	36	30	17	-
Soil Temperature at 10 cm	06 UTC	21.8	20.0	18.4	19.2	-	19.4	19.6	20.0	19.4	19.2	19.7	24.3	20.2
	12 UTC	26.8	24.0	24.4	23.2	-	-	25.0	-	24.4	24.4	24.6	28.0	22.5
Sunshine Duration		7.8	5.9	8.8	10.3	10.3	9.5	10.5	10.5	10.5	10.3	9.4	10.5	8.5
Precipitation		15.0		5.4	0.5							20.9		5.9
Evaporation		6.6	4.0	3.6	3.2	3.6	4.1	5.1	5.4	4.6	5.1	45.3	60.1	40.3
Growing Degrees	5	14.7	13.8	13.2	13.6	14.5	15.0	14.6	15.0	12.9	12.0	139.0	172.2	140.2
	10	9.7	8.8	8.2	8.6	9.5	10.0	9.6	10.0	7.9	7.0	89.0	122.2	90.2

2nd 10-day period (11-20/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	33.7	40.4	34.4
Precipitation - Reference Evapotranspiration	-12.8	-40.4	-28.5
Number of Rainy Days	3.0	0.0	1.0
Number of Dry Days	1.0	21.0	-

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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