



AGROMETEOROLOGICAL BULLETIN

September 2018
3rd 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



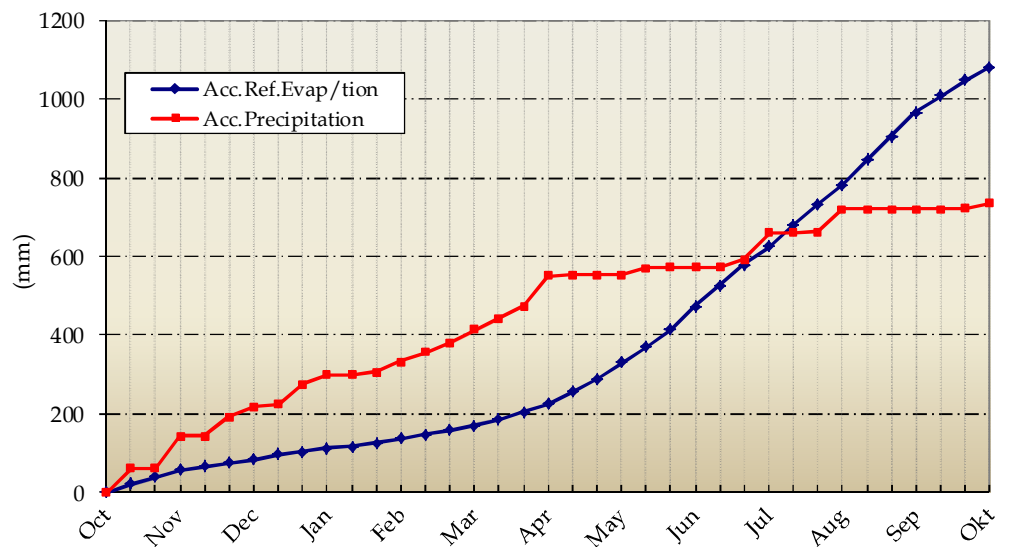
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 El. Venizelou Street 14, 16777
 Helliniko, Athens

Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
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3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	30.0	29.8	27.4	22.4	19.0	19.8	20.6	21.0	19.4	23.8	23.0	24.9
	Min	16.2	17.0	13.6	15.4	14.2	10.4	11.6	12.4	16.0	13.4	14.0	14.1	13.0
Relative Humidity	Max	80	90	89	89	55	39	46	62	95	91	74	90	-
	Min	38	33	35	51	36	21	24	31	63	70	40	51	-
Soil Temperature at 10 cm	06 UTC	23.0	23.0	22.0	23.0	22.8	18.6	17.0	18.0	19.6	18.2	20.5	20.8	19.0
	12 UTC	27.4	27.8	27.0	27.0	22.0	19.0	21.0	20.0	20.6	18.0	23.0	22.4	22.4
Sunshine Duration		10.9	10.7	10.5	10.6	0.1	8.1	5.0	3.0	1.4	0.0	6.0	6.1	7.5
Precipitation										0.9	12.2	13.1	12.6	12.3
Evaporation		3.6	4.0	4.0	8.1	6.3	6.0	9.8	3.9	0.3	0.2	46.2	43.2	59.3
Growing Degrees	5	17.4	18.5	16.7	16.4	13.3	9.7	10.7	11.5	13.5	11.4	139.1	135.7	139.4
	10	12.4	13.5	11.7	11.4	8.3	4.7	5.7	6.5	8.5	6.4	89.1	85.7	89.4

3rd 10-day period (21-30/09/2018)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	33.6	28.1	31.9
Precipitation - Reference Evapotranspiration	-20.5	-15.5	-19.6
Number of Rainy Days	2.0	5.0	1.1
Number of Dry Days	12.0	30.0	-

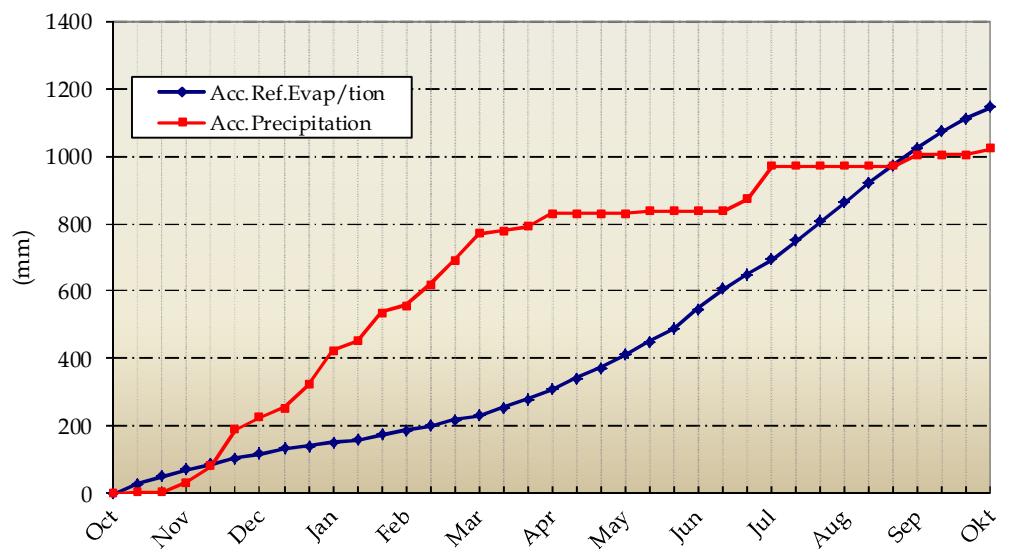
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	28.8	28.8	29.9	30.4	24.8	23.4	26.4	18.7	23.7	26.5	25.1	27.0
	Min	14.6	17.0	15.7	18.0	18.2	16.3	16.6	13.7	16.0	16.4	16.2	14.9	15.6
Relative Humidity	Max	84	91	91	94	99	65	69	93	96	91	87	84	-
	Min	30	32	49	34	32	24	28	33	74	53	39	38	-
Soil Temperature at 10 cm	06 UTC	24.8	24.6	24.8	25.0	25.4	25.5	23.2	23.2	24.8	21.0	24.2	23.6	22.0
	12 UTC	29.0	29.0	26.6	27.0	28.0	26.0	24.0	24.4	22.8	21.8	25.9	25.0	25.5
Sunshine Duration		10.2	10.1	10.0	9.8	9.6	9.1	7.6	1.9	0.0	2.1	7.0	7.1	8.1
Precipitation										16.9	0.8	17.7	5.6	16.0
Evaporation		6.0	5.6	6.0	7.7	8.0	9.4	7.6	9.3	12.4	1.0	73.0	46.1	48.4
Growing Degrees	5	17.3	17.9	17.3	19.0	19.3	15.6	15.0	15.1	12.4	15.1	163.7	150.2	162.7
	10	12.3	12.9	12.3	14.0	14.3	10.6	10.0	10.1	7.4	10.1	113.7	100.2	112.7

3rd 10-day period (21-30/09/2018)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	34.7	29.2	30.8
Precipitation - Reference Evapotranspiration	-17.0	-23.6	-14.8
Number of Rainy Days	2.0	1.0	1.5
Number of Dry Days	32.0	8.0	-

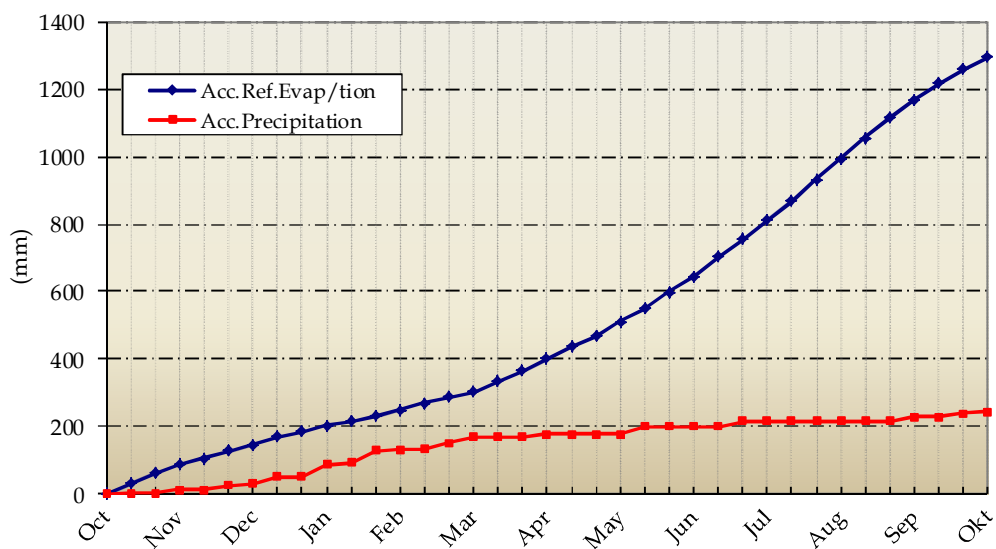
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.2	26.2	26.4	26.6	26.8	22.2	22.2	28.4	28.4	28.0	26.1	25.2	25.7
	Min	22.4	19.6	18.8	18.4	19.4	20.4	19.4	18.8	19.4	20.4	19.7	18.7	18.8
Relative Humidity	Max	87	92	94	90	86	83	90	96	83	81	88	84	-
	Min	65	70	70	62	68	63	70	60	54	62	64	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.3	10.4	10.4	10.4	9.6	7.5	0.7	7.7	7.0	8.4	8.2	7.1	8.3
Precipitation									4.0	0.1		4.1	6.7	4.1
Evaporation		5.7	3.1	2.8	5.8	4.7	7.1	1.2	3.9	5.4	2.4	42.1	43.8	61.7
Growing Degrees	5	19.3	17.9	17.6	17.5	18.1	16.3	15.8	18.6	18.9	19.2	179.2	169.6	172.5
	10	14.3	12.9	12.6	12.5	13.1	11.3	10.8	13.6	13.9	14.2	129.2	119.6	122.5

3rd 10-day period (21-30/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.3	32.9	-
Precipitation - Reference Evapotranspiration	-31.2	-26.2	4.1
Number of Rainy Days	2.0	2.0	0.6
Number of Dry Days	13.0	72.0	-

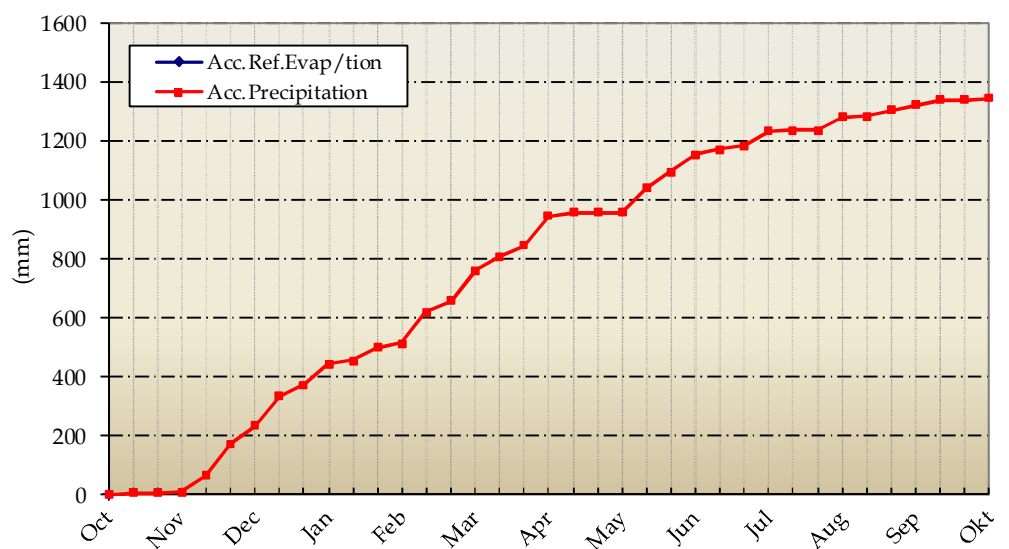
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	28.6	30.0	28.4	27.4	18.8	16.4	19.0	22.0	19.8	24.0	22.2	24.8
	Min	11.0	11.4	11.2	13.0	14.0	11.0	8.0	15.2	12.0	14.4	12.1	9.6	11.3
Relative Humidity	Max	100	100	100	100	98	74	62	100	95	100	93	96	-
	Min	31	35	33	35	36	39	22	38	32	72	37	40	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.5
Sunshine Duration		8.9	8.7	8.9	8.4	7.3	0.4	8.9	0.0	6.0	0.0	5.8	5.4	6.4
Precipitation									0.1		6.8	6.9	4.6	24.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	40.6
Growing Degrees	5	15.5	15.0	15.6	15.7	15.7	9.9	7.2	12.1	12.0	12.1	130.8	109.0	130.3
	10	10.5	10.0	10.6	10.7	10.7	4.9	2.2	7.1	7.0	7.1	80.8	59.0	80.3

3rd 10-day period (21-30/09/2018)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	25.1
Precipitation - Reference Evapotranspiration	-	-0.6
Number of Rainy Days	2.0	2.5
Number of Dry Days	19.0	-

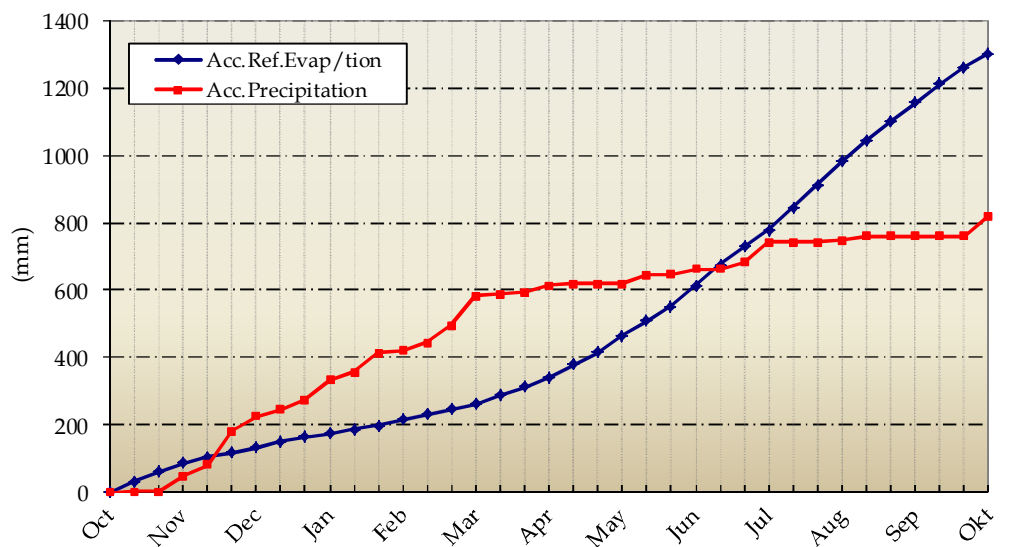
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.1	30.6	30.3	32.1	28.6	24.0	22.6	28.0	22.1	24.8	27.1	25.9	27.6
	Min	16.1	16.0	17.8	15.6	17.6	16.6	17.6	16.6	16.5	16.2	16.7	13.9	15.0
Relative Humidity	Max	87	84	80	86	86	70	47	90	91	91	81	84	-
	Min	50	30	33	32	37	25	32	34	76	51	40	36	-
Soil Temperature at 10 cm	06 UTC	25.0	24.8	25.0	24.4	25.0	24.6	22.4	21.6	21.2	20.4	23.4	-	21.4
	12 UTC	27.6	27.4	27.6	27.4	27.6	25.0	23.2	24.4	21.2	22.4	25.4	-	24.4
Sunshine Duration		9.9	10.6	10.9	10.8	8.9	7.8	2.4	4.5	0.0	4.3	7.0	7.2	7.7
Precipitation							0.1		6.6	50.8	3.5	61.0	7.0	12.3
Evaporation		5.8	8.0	6.4	6.4	6.3	7.8	7.2	1.0	6.5	2.8	58.2	47.1	51.4
Growing Degrees	5	17.1	18.3	19.1	18.9	18.1	15.3	15.1	17.3	14.3	15.5	168.9	149.3	162.8
	10	12.1	13.3	14.1	13.9	13.1	10.3	10.1	12.3	9.3	10.5	118.9	99.3	112.8

3rd 10-day period (21-30/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	41.3	33.4	32.9
Precipitation - Reference Evapotranspiration	19.7	-26.4	-20.6
Number of Rainy Days	4.0	4.0	1.7
Number of Dry Days	29.0	21.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

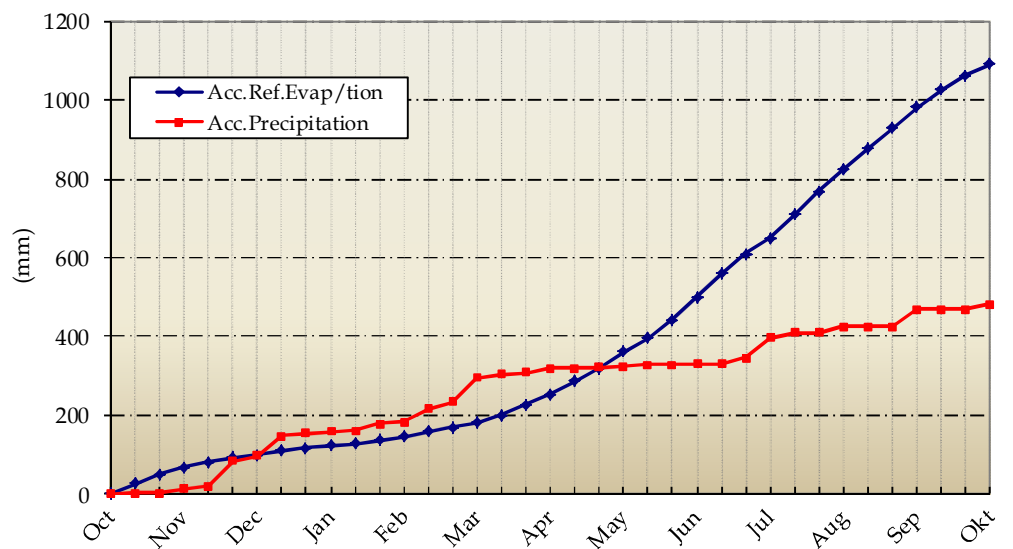


Larisa

3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.7	31.3	32.4	35.6	24.2	17.8	18.2	19.0	21.2	17.0	24.5	24.6	27.3
	Min	12.4	12.8	12.8	12.9	17.0	13.2	8.8	12.4	14.2	14.6	13.1	13.0	13.0
Relative Humidity	Max	82	82	78	82	63	54	52	66	89	96	74	82	-
	Min	26	26	23	18	28	33	28	40	48	70	34	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	20.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.7
Sunshine Duration		8.6	8.0	7.2	7.3	0.0	0.8	3.4	0.1	0.0	0.0	3.5	4.4	7.0
Precipitation									0.0	3.5	8.7	12.2	7.9	7.0
Evaporation		5.4	7.3	4.8	7.3	6.6	4.3	4.2	1.5	0.1	0.1	41.6	72.6	51.2
Growing Degrees	5	15.6	17.1	17.6	19.3	15.6	10.5	8.5	10.7	12.7	10.8	138.3	138.1	151.5
	10	10.6	12.1	12.6	14.3	10.6	5.5	3.5	5.7	7.7	5.8	88.3	88.1	101.5

3rd 10-day period (21-30/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.0	28.1	31.7
Precipitation - Reference Evapotranspiration	-16.8	-20.2	-24.7
Number of Rainy Days	2.0	5.0	1.7
Number of Dry Days	15.0	18.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

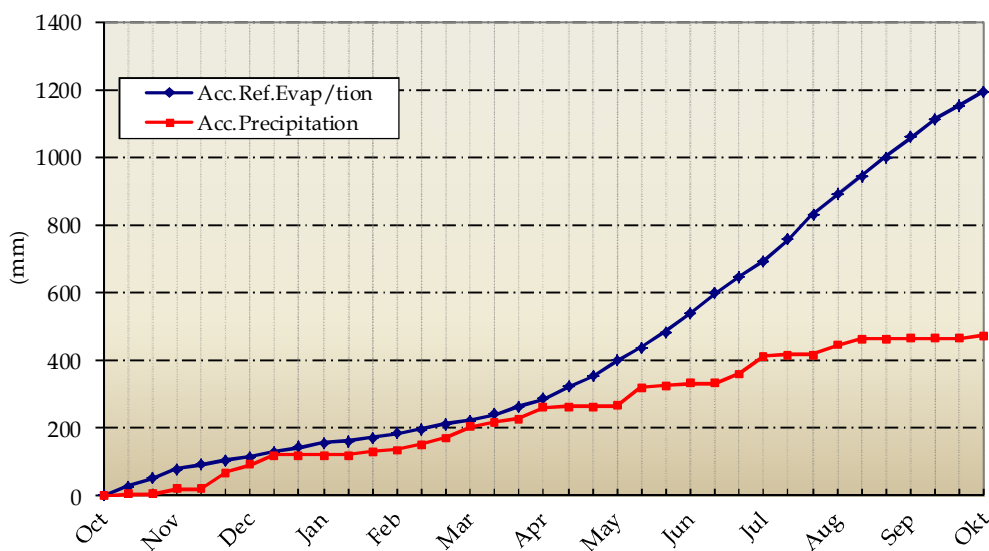


Mikra

3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.5	29.0	31.7	30.4	23.6	21.1	21.5	20.4	22.0	20.6	24.9	24.3	25.8
	Min	15.9	15.7	14.9	16.3	15.5	15.0	10.5	9.2	14.3	15.6	14.3	16.4	14.1
Relative Humidity	Max	71	72	75	63	48	35	52	66	74	86	64	63	-
	Min	31	31	23	22	23	16	20	20	10	62	26	32	-
Soil Temperature at 10 cm	06 UTC	24.2	22.0	24.0	24.0	22.6	21.2	20.0	19.4	19.6	19.4	21.6	22.0	19.9
	12 UTC	25.2	28.0	28.0	27.8	23.0	25.0	24.8	25.0	21.2	19.2	24.7	23.2	23.6
Sunshine Duration		10.5	10.5	10.5	9.4	0.0	6.9	7.3	3.5	0.0	0.0	5.9	6.3	6.9
Precipitation									0.6	0.0	7.0	7.6	2.7	10.7
Evaporation		5.7	4.4	4.3	10.0	12.0	9.8	4.0	4.7	2.0	0.2	57.1	54.2	49.1
Growing Degrees	5	17.2	17.4	18.3	18.4	14.6	13.1	11.0	9.8	13.2	13.1	145.9	153.2	149.6
	10	12.2	12.4	13.3	13.4	9.6	8.1	6.0	4.8	8.2	8.1	95.9	103.2	99.6

3rd 10-day period (21-30/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	39.7	35.3	29.8
Precipitation - Reference Evapotranspiration	-32.1	-32.6	-19.1
Number of Rainy Days	2.0	1.0	1.5
Number of Dry Days	14.0	28.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

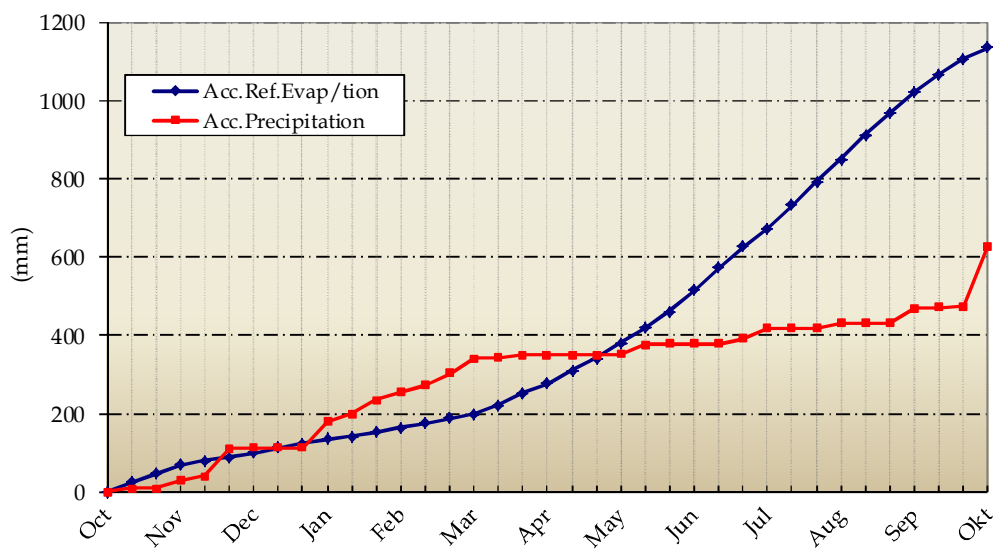


Tanagra

3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	28.4	30.6	32.8	20.5	18.8	16.8	17.4	17.5	16.2	22.6	24.0	26.5
	Min	15.9	13.5	14.0	15.0	19.6	16.5	14.6	13.8	14.2	15.0	15.2	15.0	13.9
Relative Humidity	Max	77	79	76	67	72	50	84	95	100	100	80	78	-
	Min	32	31	23	19	39	32	52	66	80	90	46	36	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.7	10.0	11.5	10.7	0.7	4.8	0.0	0.0	0.0	0.0	4.8	6.4	
Precipitation								0.5	5.9	39.6	110.4	156.4	2.8	7.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	16.5	16.0	17.3	18.9	15.1	12.7	10.7	10.6	10.9	10.6	139.1	145.1	
	10	11.5	11.0	12.3	13.9	10.1	7.7	5.7	5.6	5.9	5.6	89.1	95.1	

3rd 10-day period (21-30/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.0	28.4	
Precipitation - Reference Evapotranspiration	128.4	-25.6	7.7
Number of Rainy Days	4.0	2.0	1.7
Number of Dry Days	13.0	37.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

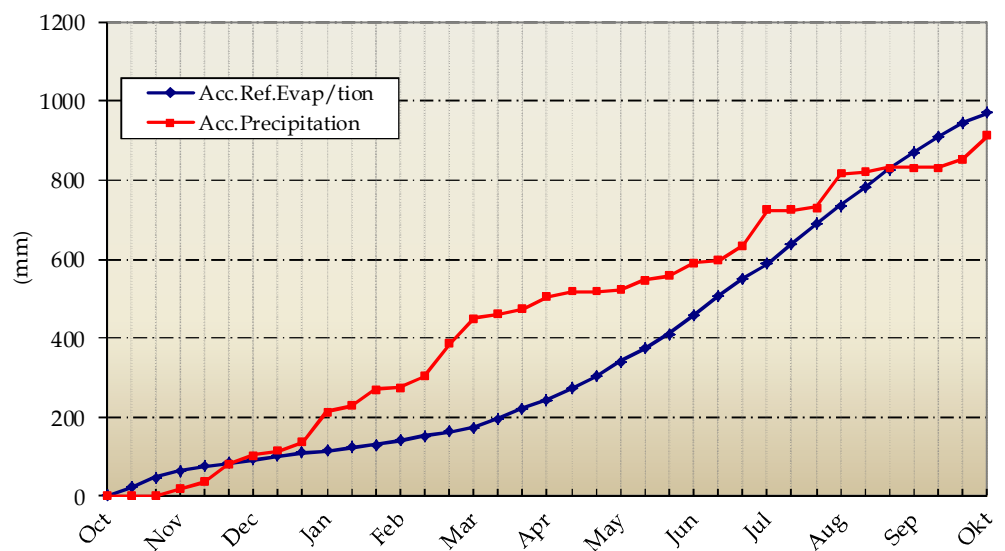


Tripoli

3rd 10-day period (21-30/09/2018)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.5	28.2	29.1	30.1	24.8	15.1	13.1	14.6	14.7	14.3	21.2	21.7	25.0
	Min	7.9	9.8	9.3	8.2	10.7	11.5	9.4	12.1	12.4	12.4	10.4	10.0	10.2
Relative Humidity	Max	98	97	98	96	99	72	90	100	100	100	95	94	-
	Min	19	28	18	19	42	43	67	78	95	83	49	36	-
Soil Temperature at 10 cm	06 UTC	19.2	19.8	20.0	19.8	20.4	18.8	15.8	16.0	15.8	15.8	18.1	20.2	18.9
	12 UTC	24.2	-	-	24.8	24.4	18.8	15.8	16.2	-	-	20.7	22.8	21.1
Sunshine Duration		9.8	8.4	10.0	10.5	9.0	2.6	0.0	0.0	0.0	0.0	5.0	6.4	7.8
Precipitation						3.9	0.2	0.4	3.5	46.6	3.9	58.5	16.6	11.6
Evaporation		3.2	5.8	6.6	2.8	0.8	8.4	0.9	0.1	0.2	1.2	30.0	-	36.1
Growing Degrees	5	12.7	14.0	14.2	14.2	12.8	8.3	6.3	8.4	8.6	8.4	107.6	108.3	126.3
	10	7.7	9.0	9.2	9.2	7.8	3.3	1.3	3.4	3.6	3.4	57.6	58.3	76.4

3rd 10-day period (21-30/09/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.8	25.6	29.5
Precipitation - Reference Evapotranspiration	33.7	-9.0	-17.9
Number of Rainy Days	6.0	4.0	1.5
Number of Dry Days	10.0	25.0	-

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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