



# AGROMETEOROLOGICAL BULLETIN

*September 2017*  
*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



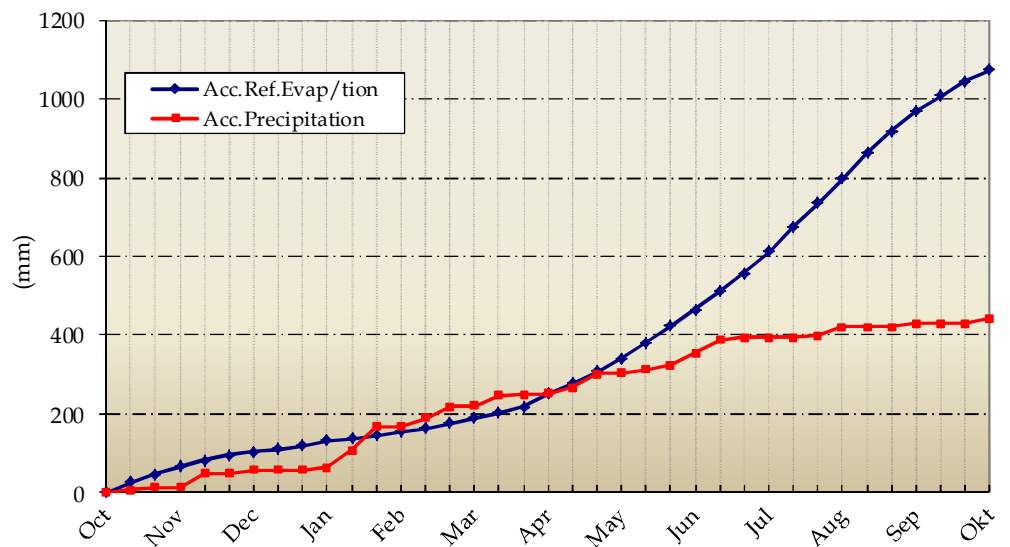
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3rd 10-day period (21-30/09/2017)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	22.8	23.6	26.2	26.0	26.8	23.4	20.4	18.2	16.2	23.0	23.9	24.9
	Min	19.4	13.8	9.0	9.0	15.0	15.4	16.6	14.8	14.4	14.0	14.1	9.9	13.0
Relative Humidity	Max	95	89	95	92	75	94	96	93	85	87	90	85	-
	Min	44	45	40	37	41	65	53	57	61	68	51	34	-
Soil Temperature at 10 cm	06 UTC	25.6	23.6	20.6	20.2	21.2	22.2	20.0	18.8	17.8	17.6	20.8	18.8	19.0
	12 UTC	27.6	24.8	23.6	23.8	23.6	22.2	21.2	19.8	19.8	17.6	22.4	24.6	22.4
Sunshine Duration		11.5	3.9	9.6	10.4	10.1	3.6	5.5	0.3	5.7	0.0	6.1	8.3	7.5
Precipitation			0.4	1.3			9.9		0.8		0.2	12.6	2.0	12.3
Evaporation		8.1	5.7	2.2	5.8	5.7	1.6	4.0	4.8	5.1	0.2	43.2	46.6	59.3
Growing Degrees	5	17.9	13.3	11.3	12.6	15.5	16.1	15.0	12.6	11.3	10.1	135.7	119.3	139.4
	10	12.9	8.3	6.3	7.6	10.5	11.1	10.0	7.6	6.3	5.1	85.7	69.3	89.4

3rd 10-day period (21-30/09/2017)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	28.1	27.9	31.9
Precipitation - Reference Evapotranspiration	-15.5	-25.9	-19.6
Number of Rainy Days	5.0	2.0	1.1
Number of Dry Days	30.0	0.0	-

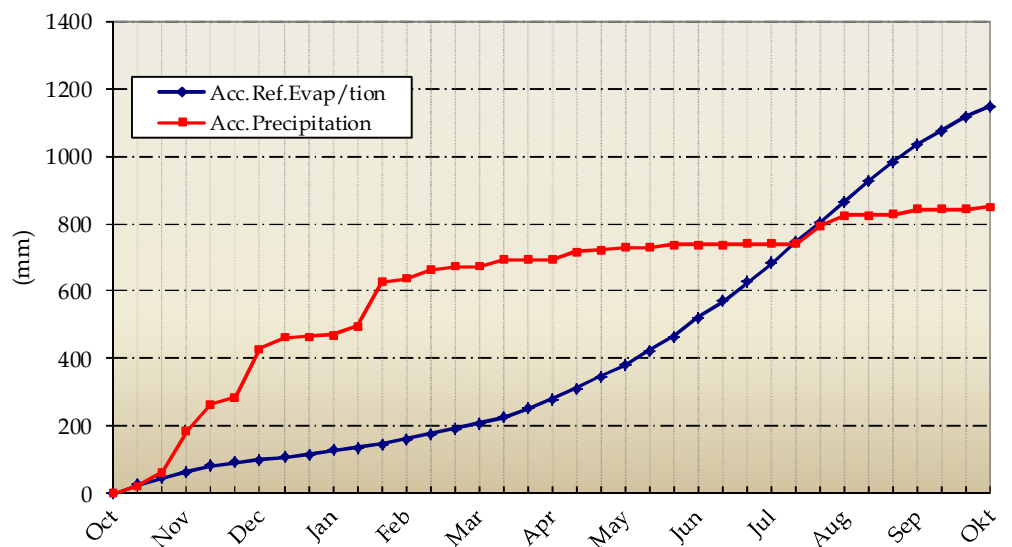
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2017)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	24.2	24.4	26.4	26.0	25.4	26.2	26.2	23.6	24.3	25.1	26.0	27.0
	Min	15.6	15.3	12.0	13.8	17.3	14.3	15.3	15.5	16.6	13.6	14.9	14.1	15.6
Relative Humidity	Max	81	77	82	73	88	88	86	88	90	83	84	86	-
	Min	36	35	34	32	41	42	43	40	41	35	38	38	-
Soil Temperature at 10 cm	06 UTC	24.5	24.2	23.0	23.0	24.2	24.0	23.4	23.6	23.5	23.0	23.6	-	22.0
	12 UTC	26.0	25.8	25.0	25.0	25.4	25.0	25.4	25.4	23.5	23.2	25.0	-	25.5
Sunshine Duration		8.9	9.6	11.0	6.9	5.2	9.5	9.7	1.9	0.1	8.3	7.1	8.3	8.1
Precipitation						0.0				5.6		5.6		16.0
Evaporation		8.0	5.5	6.0	4.0	4.0	4.0	1.0	8.6	3.0	2.0	46.1	29.8	48.4
Growing Degrees	5	15.0	14.8	13.2	15.1	16.7	14.9	15.8	15.9	15.1	14.0	150.2	150.4	162.7
	10	10.0	9.8	8.2	10.1	11.7	9.9	10.8	10.9	10.1	9.0	100.2	100.4	112.7

3rd 10-day period (21-30/09/2017)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	29.2	28.1	30.8
Precipitation - Reference Evapotranspiration	-23.6	-28.1	-14.8
Number of Rainy Days	1.0	0.0	1.5
Number of Dry Days	8.0	11.0	-

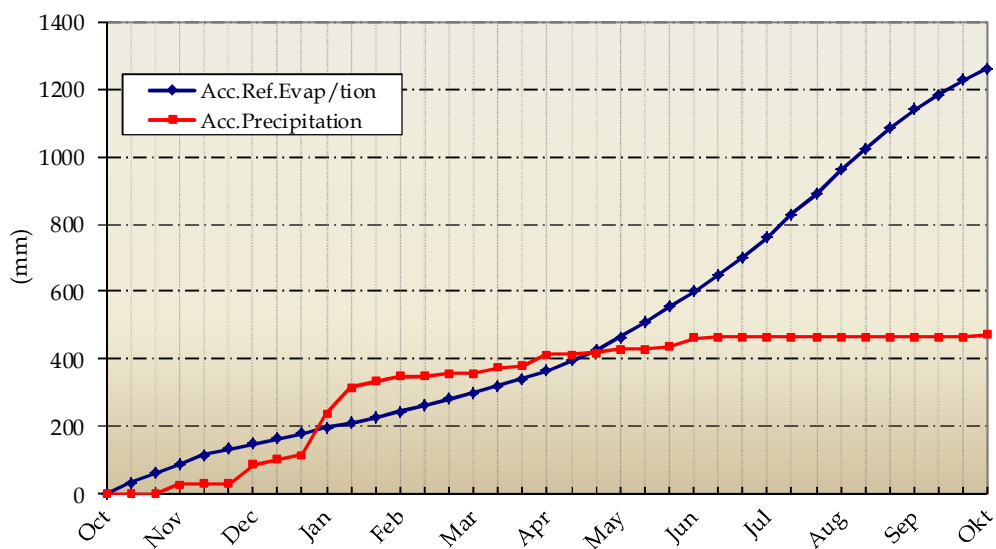
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2017)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	25.8	25.8	25.6	25.8	26.4	25.6	25.6	21.4	21.8	25.2	24.7	25.7
	Min	22.2	21.0	17.4	16.2	16.8	17.8	19.4	17.6	19.0	20.0	18.7	19.8	18.8
Relative Humidity	Max	82	68	78	83	88	88	86	90	88	90	84	79	-
	Min	43	47	47	56	59	58	65	66	73	67	58	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.3	9.5	8.4	8.6	8.6	8.7	8.7	7.4	0.8	0.7	7.1	8.8	8.3
Precipitation										5.6	1.1	6.7	9.0	4.1
Evaporation		7.0	9.2	1.9	3.8	7.7	3.5	3.3	4.5	1.3	1.6	43.8	57.3	61.7
Growing Degrees	5	20.1	18.4	16.6	15.9	16.3	17.1	17.5	16.6	15.2	15.9	169.6	172.8	172.5
	10	15.1	13.4	11.6	10.9	11.3	12.1	12.5	11.6	10.2	10.9	119.6	122.8	122.5

3rd 10-day period (21-30/09/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.9	38.6	-
Precipitation - Reference Evapotranspiration	-26.2	-29.6	4.1
Number of Rainy Days	2.0	1.0	0.6
Number of Dry Days	72.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

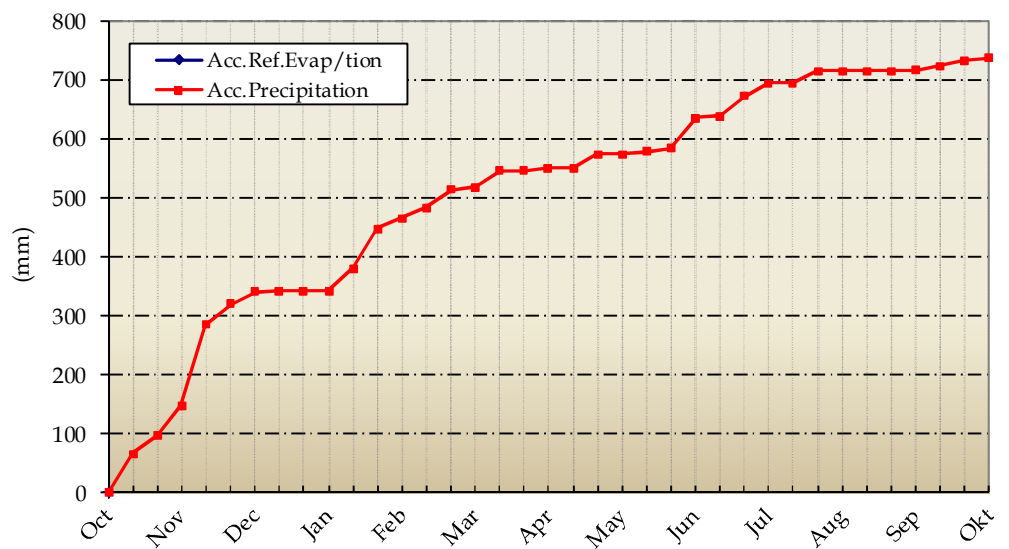


Ioannina

3rd 10-day period (21-30/09/2017)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.2	22.0	24.0	25.2	19.0	24.4	22.6	23.2	20.4	20.4	22.2	23.6	24.8
	Min	8.0	4.4	4.8	10.8	13.4	9.6	9.0	10.6	16.0	9.0	9.6	8.0	11.3
Relative Humidity	Max	100	100	97	100	100	100	100	100	74	91	96	100	-
	Min	45	28	27	27	68	33	52	41	41	36	40	39	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.5
Sunshine Duration		5.1	8.4	9.1	7.2	0.0	7.8	2.9	4.8	6.6	1.8	5.4	7.1	6.4
Precipitation		0.3				4.1	0.0	0.2				4.6	5.7	24.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	40.6
Growing Degrees	5	9.6	8.2	9.4	13.0	11.2	12.0	10.8	11.9	13.2	9.7	109.0	107.7	130.3
	10	4.6	3.2	4.4	8.0	6.2	7.0	5.8	6.9	8.2	4.7	59.0	57.7	80.3

3rd 10-day period (21-30/09/2017)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	25.1
Precipitation - Reference Evapotranspiration	-	-0.6
Number of Rainy Days	3.0	2.5
Number of Dry Days	0.0	-

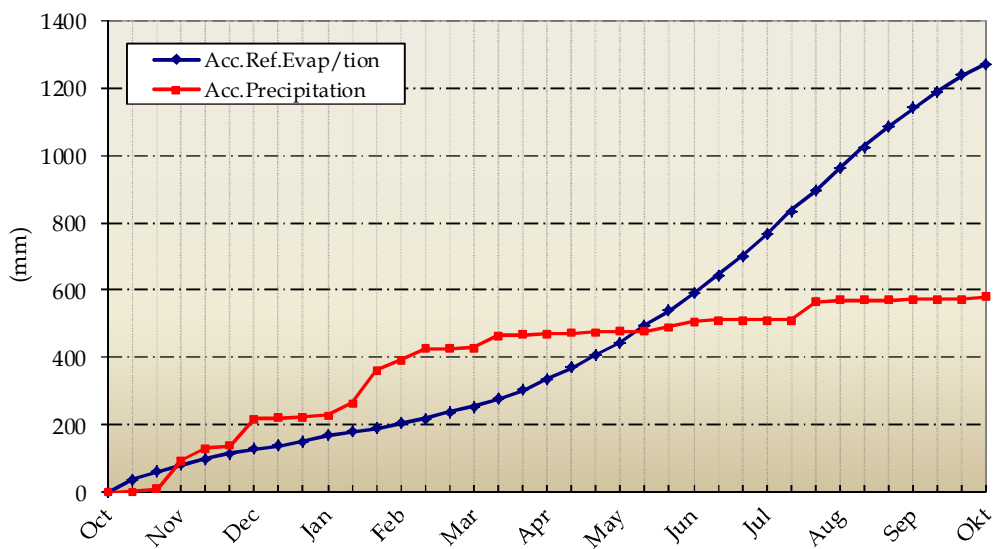
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2017)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	26.5	27.3	26.0	25.0	27.0	26.5	25.7	24.8	24.1	25.9	26.9	27.6
	Min	13.8	11.7	11.8	12.8	16.2	14.2	13.7	13.1	16.7	15.2	13.9	15.1	15.0
Relative Humidity	Max	82	84	75	73	91	92	89	91	89	71	84	86	-
	Min	32	25	26	36	33	44	37	49	39	44	36	37	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	24.4
Sunshine Duration		8.3	10.6	10.7	8.9	6.6	9.5	10.1	5.4	0.1	2.2	7.2	9.0	7.7
Precipitation		0.1				2.1			0.1	4.7	0.0	7.0	0.1	12.3
Evaporation		7.0	7.0	6.8	5.5	1.8	5.2	4.6	1.8	3.8	3.6	47.1	46.3	51.4
Growing Degrees	5	15.1	14.1	14.6	14.4	15.6	15.6	15.1	14.4	15.8	14.7	149.3	160.2	162.8
	10	10.1	9.1	9.6	9.4	10.6	10.6	10.1	9.4	10.8	9.7	99.3	110.2	112.8

3rd 10-day period (21-30/09/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	33.4	34.1	32.9
Precipitation - Reference Evapotranspiration	-26.4	-34.0	-20.6
Number of Rainy Days	4.0	1.0	1.7
Number of Dry Days	21.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

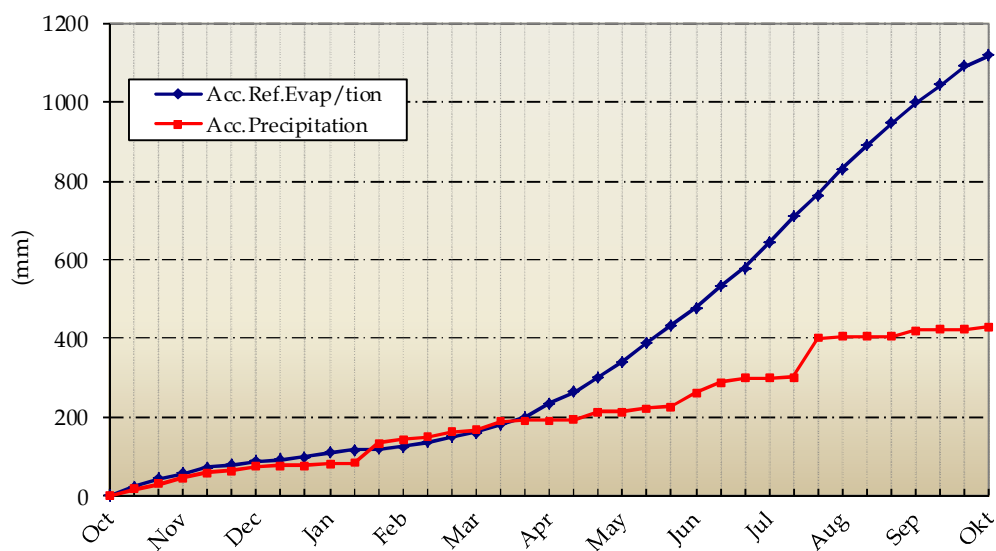


Larisa

3rd 10-day period (21-30/09/2017)		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	27.0	26.2	27.7	24.6	26.2	26.0	21.2	20.4	19.6	24.6	24.4	27.3
	Min	15.2	10.6	8.0	9.0	15.4	13.0	13.0	16.0	16.4	13.6	13.0	11.8	13.0
Relative Humidity	Max	54	68	68	72	94	95	95	96	89	94	82	100	-
	Min	24	17	21	21	35	33	42	58	47	48	35	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	22.3	20.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	22.1	22.7
Sunshine Duration		6.6	8.4	8.6	7.9	0.3	6.1	5.3	0.0	0.0	0.4	4.4	6.5	7.0
Precipitation		0.0				0.9	0.1	4.0	2.6		0.3	7.9	4.8	7.0
Evaporation		8.2	4.8	6.7	7.2	14.4	4.3	2.9	5.0	3.1	16.0	72.6	39.8	51.2
Growing Degrees	5	16.1	13.8	12.1	13.4	15.0	14.6	14.5	13.6	13.4	11.6	138.1	130.9	151.5
	10	11.1	8.8	7.1	8.4	10.0	9.6	9.5	8.6	8.4	6.6	88.1	80.9	101.5

3rd 10-day period (21-30/09/2017)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	28.1	26.1	31.7
Precipitation - Reference Evapotranspiration	-20.2	-21.3	-24.7
Number of Rainy Days	5.0	1.0	1.7
Number of Dry Days	18.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

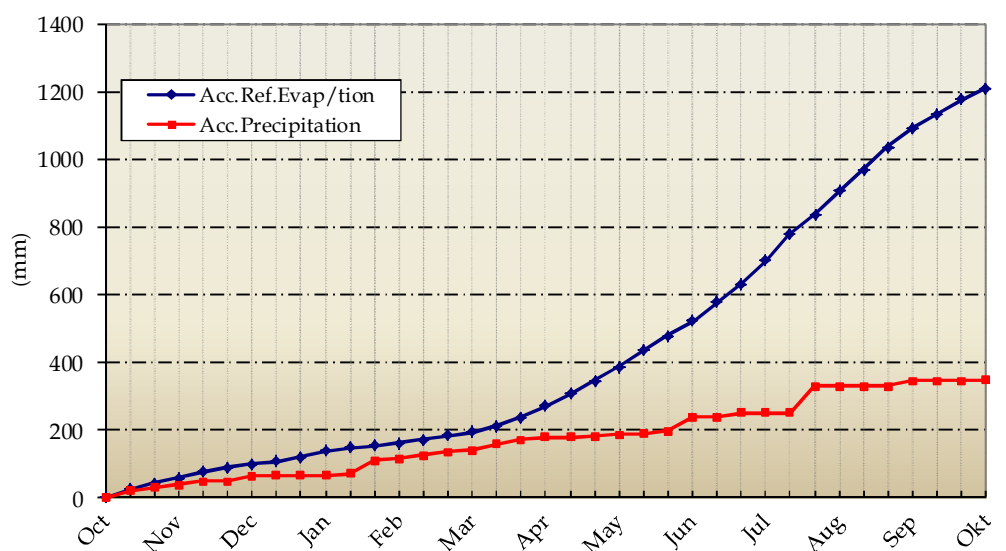


Mikra

3rd 10-day period (21-30/09/2017)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.8	24.5	25.9	26.8	24.8	23.4	25.1	22.4	21.8	21.4	24.3	23.8	25.8
	Min	18.6	17.0	17.0	12.7	16.4	18.4	12.1	17.7	17.4	16.2	16.4	13.3	14.1
Relative Humidity	Max	46	48	55	61	66	73	81	85	60	59	63	87	-
	Min	25	24	20	27	38	40	32	49	34	34	32	35	-
Soil Temperature at 10 cm	06 UTC	24.6	22.6	22.4	20.8	22.8	22.8	21.1	22.2	20.5	19.8	22.0	19.3	19.9
	12 UTC	26.0	24.0	24.4	22.0	24.4	22.4	24.0	23.6	20.8	20.0	23.2	22.4	23.6
Sunshine Duration		9.0	9.8	10.4	9.7	1.2	5.5	9.8	2.4	1.3	3.5	6.3	8.0	6.9
Precipitation									2.7			2.7	1.3	10.7
Evaporation		10.8	7.8	6.3	6.2	2.4	6.2	1.5	5.4	2.8	4.8	54.2	45.1	49.1
Growing Degrees	5	17.7	15.8	16.5	14.8	15.6	15.9	13.6	15.1	14.6	13.8	153.2	135.9	149.6
	10	12.7	10.8	11.5	9.8	10.6	10.9	8.6	10.1	9.6	8.8	103.2	85.9	99.6

3rd 10-day period (21-30/09/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.3	30.6	29.8
Precipitation - Reference Evapotranspiration	-32.6	-29.3	-19.1
Number of Rainy Days	1.0	2.0	1.5
Number of Dry Days	28.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



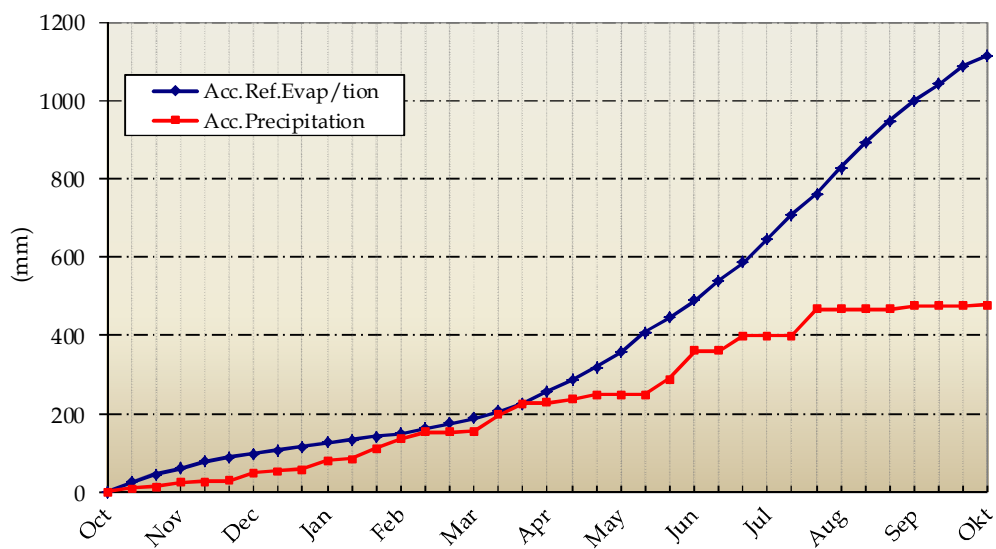


Tanagra

3rd 10-day period (21-30/09/2017)		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	25.5	25.8	26.0	25.7	26.8	25.0	21.0	20.4	16.8	24.0	24.1	26.5
	Min	16.2	12.6	13.1	13.0	15.2	15.8	14.4	17.0	17.3	15.6	15.0	12.9	13.9
Relative Humidity	Max	62	64	69	74	71	85	94	98	61	98	78	84	-
	Min	19	19	24	22	32	35	43	59	47	59	36	32	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.7	10.9	10.4	8.0	6.9	7.9	7.1	0.9	0.9	0.0	6.4	8.0	
Precipitation								0.0	2.2		0.6	2.8	5.5	7.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	16.6	14.1	14.5	14.5	15.5	16.3	14.7	14.0	13.9	11.2	145.1	135.1	
	10	11.6	9.1	9.5	9.5	10.5	11.3	9.7	9.0	8.9	6.2	95.1	85.1	

3rd 10-day period (21-30/09/2017)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.4	27.6
Precipitation - Reference Evapotranspiration	-25.6	-22.1
Number of Rainy Days	2.0	3.0
Number of Dry Days	37.0	1.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

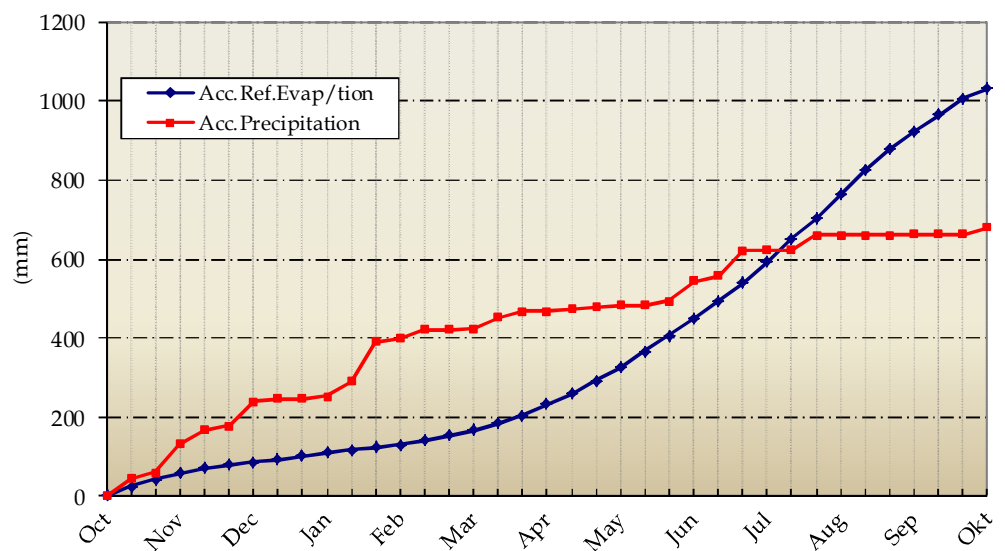


Tripoli

3rd 10-day period (21-30/09/2017)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.5	22.3	23.8	24.5	23.1	22.2	24.9	21.2	17.0	16.4	21.7	23.2	25.0
	Min	13.6	7.1	5.3	6.8	12.5	9.9	9.0	10.0	13.3	12.1	10.0	9.0	10.2
Relative Humidity	Max	78	92	87	89	99	100	100	100	95	98	94	98	-
	Min	31	25	24	28	28	40	30	43	59	54	36	33	-
Soil Temperature at 10 cm	06 UTC	23.8	21.6	20.4	20.4	22.2	19.8	18.8	19.2	18.4	17.2	20.2	18.0	18.9
	12 UTC	25.6	24.8	-	-	24.2	22.4	22.0	21.4	19.2	-	22.8	22.0	21.1
Sunshine Duration		9.7	10.6	10.5	8.7	3.0	5.7	8.3	4.0	0.0	4.0	6.4	8.5	7.8
Precipitation						5.0	1.8		3.2	6.6		16.6		11.6
Evaporation		4.6	4.7	4.0	4.9	3.0	1.6	3.1	1.7	2.5	-	-	-	36.1
Growing Degrees	5	12.6	9.7	9.6	10.7	12.8	11.1	12.0	10.6	10.2	9.3	108.3	110.7	126.3
	10	7.6	4.7	4.6	5.7	7.8	6.1	7.0	5.6	5.2	4.3	58.3	60.7	76.4

3rd 10-day period (21-30/09/2017)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.6	26.7	29.5
Precipitation - Reference Evapotranspiration	-9.0	-26.7	-17.9
Number of Rainy Days	4.0	0.0	1.5
Number of Dry Days	25.0	10.0	-

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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