



AGROMETEOROLOGICAL BULLETIN

*October 2014
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



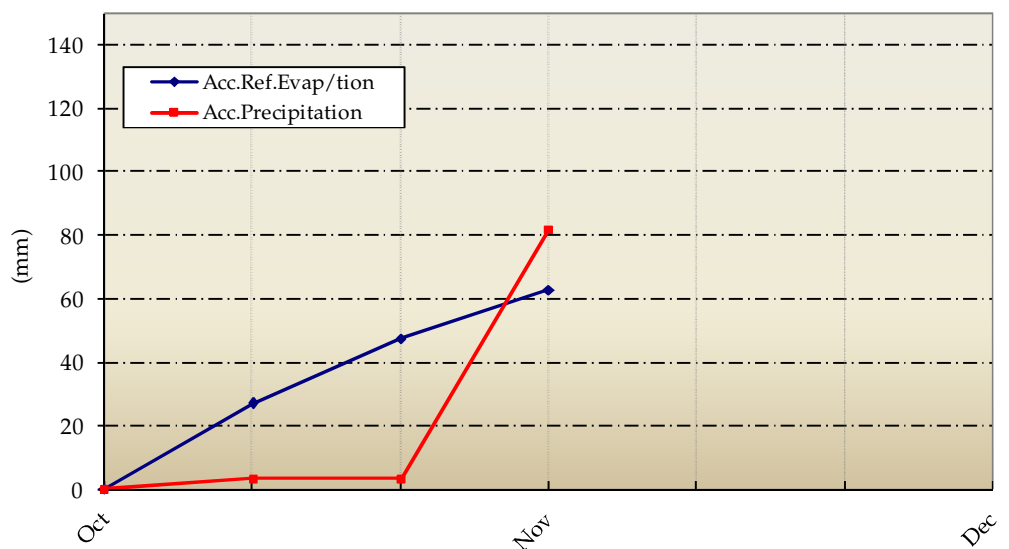
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www.hnms.gr
www.emy.gov.gr
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3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.6	22.8	21.4	18.2	16.0	11.4	10.2	11.4	11.6	14.0	12.8	15.5	20.5	17.4
	Min	6.0	10.4	14.6	9.0	9.6	7.6	6.6	8.0	9.2	10.6	8.0	9.1	8.4	8.0
Relative Humidity	Max	92	89	93	95	91	86	91	74	92	93	92	90	92	-
	Min	67	60	73	61	67	61	64	58	73	71	65	65	53	-
Soil Temperature at 10 cm	06 UTC	15.0	16.6	19.0	14.5	14.4	11.8	10.4	10.0	11.0	12.0	11.4	13.3	13.8	12.7
	12 UTC	18.8	18.4	19.8	17.8	14.8	13.2	10.6	11.0	12.2	13.6	12.6	14.8	17.0	15.2
Sunshine Duration		9.7	3.5	0.4	2.1	2.4	0.0	0.0	0.0	0.0	0.0	0.0	1.6	9.0	5.2
Precipitation				14.6	0.8	24.9	9.8	18.3		4.7	2.1	3.2	78.4		22.3
Evaporation		2.4	3.1	1.8	2.0	7.3	2.0	6.6	4.9	4.5	1.2	0.0	35.8	25.6	41.1
Growing Degrees	5	8.3	11.6	13.0	8.6	7.8	4.5	3.4	4.7	5.4	7.3	5.4	80.0	104.3	85.3
	10	3.3	6.6	8.0	3.6	2.8	0.0	0.0	0.0	0.4	2.3	0.4	27.4	49.3	34.4

3rd 10-day period (21-31/10/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.2	19.2	20.4
Precipitation - Reference Evapotranspiration	63.2	-19.2	1.9
Number of Rainy Days	8.0	0.0	2.2
Number of Dry Days	14.0	13.0	-

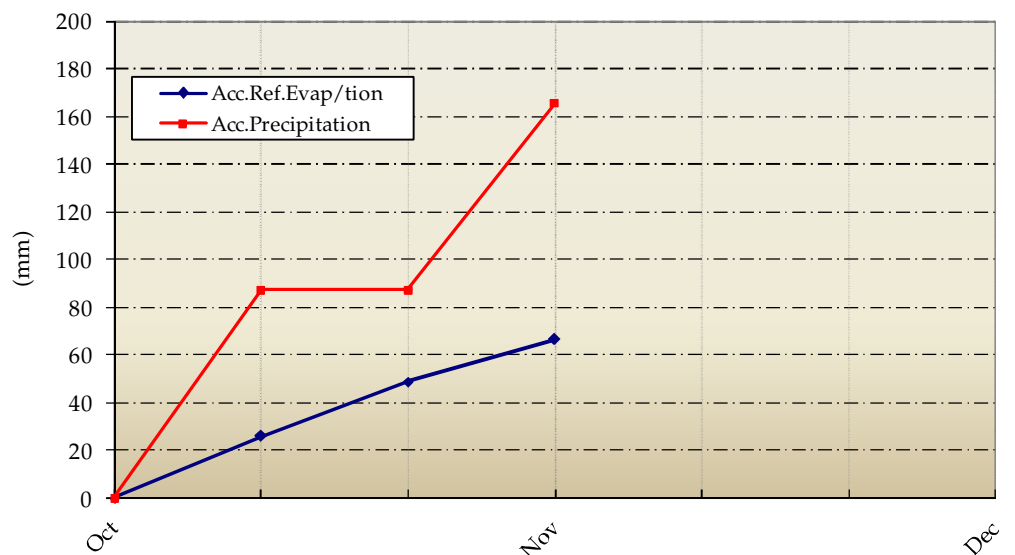
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.4	22.4	21.4	14.8	19.4	20.8	19.8	15.8	20.2	19.8	20.6	19.9	23.7	21.5
	Min	11.5	14.0	12.5	10.6	12.0	12.0	10.2	12.3	12.8	8.6	9.4	11.4	11.0	11.4
Relative Humidity	Max	87	90	87	93	89	89	89	93	92	93	91	90	91	-
	Min	45	66	50	79	50	48	45	80	52	54	43	56	49	-
Soil Temperature at 10 cm	06 UTC	18.0	18.6	19.0	16.2	16.0	16.2	16.4	16.4	16.4	15.2	15.6	16.7	16.6	16.1
	12 UTC	21.2	22.2	19.8	18.6	18.0	18.2	18.4	17.2	17.4	18.2	18.2	18.9	21.1	18.7
Sunshine Duration		9.0	1.9	4.6	0.0	6.0	4.2	5.0	0.0	1.2	9.2	5.9	4.3	9.1	6.3
Precipitation			0.7	11.9	37.8	0.9			14.2	1.9		10.9	78.3		50.1
Evaporation		5.8	2.7	0.2	1.9	1.0	1.0	0.1	3.4	2.6	0.8	0.5	20.0	25.4	31.6
Growing Degrees	5	12.5	13.2	12.0	7.7	10.7	11.4	10.0	9.1	11.5	9.2	10.0	117.2	135.5	126.2
	10	7.5	8.2	7.0	2.7	5.7	6.4	5.0	4.1	6.5	4.2	5.0	62.2	80.5	71.3

3rd 10-day period (21-31/10/2014)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	18.0	20.8	18.7
Precipitation - Reference Evapotranspiration	60.3	-20.8	31.4
Number of Rainy Days	7.0	0.0	3.7
Number of Dry Days	13.0	15.0	-

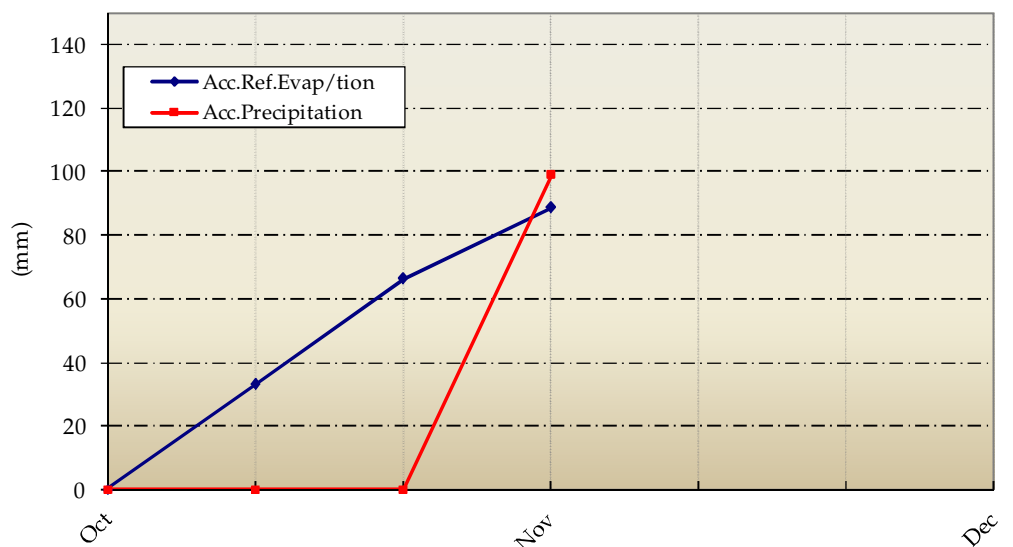
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.6	26.0	25.6	25.0	23.2	20.5	18.5	19.8	21.5	18.8	18.4	21.8	22.3	21.6
	Min	14.4	16.2	19.0	16.0	17.0	14.8	15.4	13.4	14.0	13.4	14.0	15.2	15.0	15.6
Relative Humidity	Max	76	82	81	88	81	89	89	93	95	93	93	87	87	-
	Min	57	49	49	52	51	66	68	67	65	74	68	61	61	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.0	5.4	1.7	3.1	7.5	3.6	0.0	0.0	6.2	3.1	1.4	3.6	8.0	5.7
Precipitation				0.1	3.3	1.5	1.3	0.6	13.9	13.3	19.3	45.8	99.1		29.2
Evaporation		3.2	4.2	3.0	3.7	3.0	1.8	0.3	3.9	1.8	8.3	31.3	64.5	24.1	48.8
Growing Degrees	5	13.5	16.1	17.3	15.5	15.1	12.7	12.0	11.6	12.8	11.1	11.2	148.8	149.9	149.6
	10	8.5	11.1	12.3	10.5	10.1	7.7	7.0	6.6	7.8	6.1	6.2	93.8	94.9	94.6

3rd 10-day period (21-31/10/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.5	25.7	-
Precipitation - Reference Evapotranspiration	76.6	-25.7	29.2
Number of Rainy Days	9.0	0.0	3.0
Number of Dry Days	24.0	14.0	-

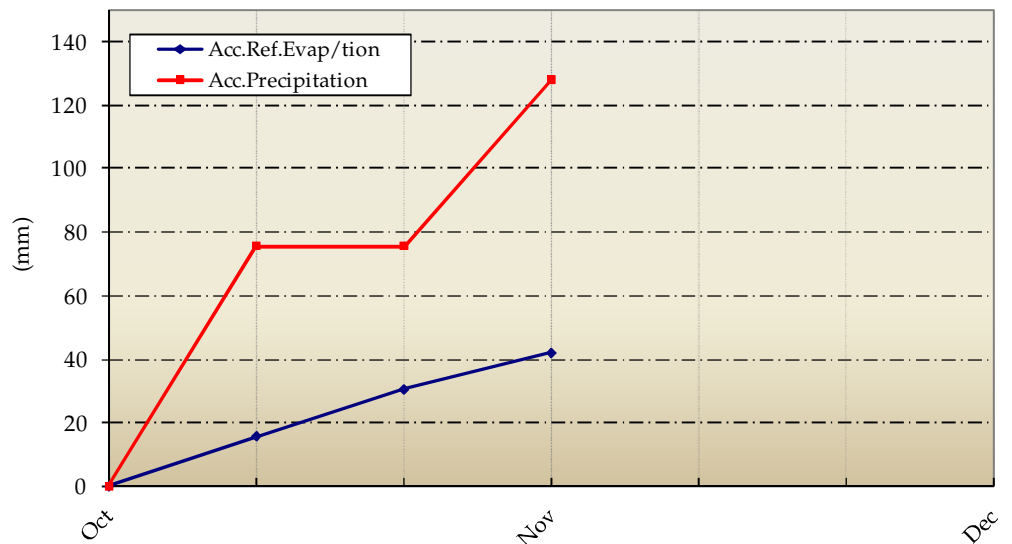
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.4	19.4	17.0	8.6	16.7	17.5	16.0	17.4	16.6	15.4	16.8	16.7	22.7	17.6
	Min	5.2	12.8	7.9	5.3	3.4	6.2	2.0	1.4	4.3	2.2	3.2	4.9	4.3	7.0
Relative Humidity	Max	100	100	96	100	98	93	82	97	94	100	100	96	97	-
	Min	74	66	71	96	48	38	38	37	49	41	34	54	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	11.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	13.8
Sunshine Duration		5.0	1.6	2.3	0.0	0.0	6.8	7.0	4.6	2.0	4.2	7.3	3.7	6.7	4.6
Precipitation		0.0	0.1	11.6	40.6	0.4	0.0						52.7	0.2	37.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	18.9
Growing Degrees	5	8.8	11.1	7.5	2.0	5.1	6.9	4.0	4.4	5.5	3.8	5.0	63.9	93.5	81.3
	10	3.8	6.1	2.5	0.0	0.1	1.9	0.0	0.0	0.5	0.0	0.0	14.7	38.5	30.0

3rd 10-day period (21-31/10/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.3	15.6	14.7
Precipitation - Reference Evapotranspiration	41.4	-15.4	22.9
Number of Rainy Days	4.0	2.0	3.8
Number of Dry Days	14.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

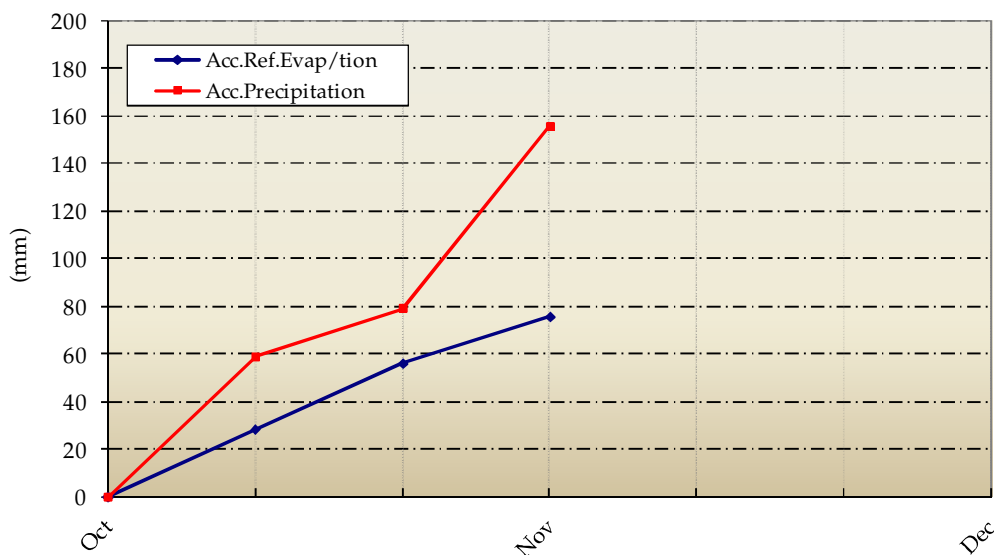


Kalamata

3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.1	23.8	20.8	19.6	19.8	20.6	17.5	16.4	17.8	22.1	20.2	20.2	24.4	22.3
	Min	8.6	10.6	10.7	8.6	11.0	10.2	12.6	12.2	11.3	9.6	10.5	10.5	10.2	11.5
Relative Humidity	Max	91	94	93	93	94	94	93	95	95	94	93	94	91	-
	Min	26	53	37	61	52	57	68	74	75	39	66	55	40	-
Soil Temperature at 10 cm	06 UTC	18.4	18.6	19.4	18.0	17.4	17.4	17.6	17.4	16.8	16.4	16.4	17.6	-	16.7
	12 UTC	20.8	19.2	19.4	18.2	17.6	18.0	18.0	17.6	17.4	17.2	17.0	18.2	-	18.5
Sunshine Duration		9.9	5.0	6.6	1.5	5.7	3.7	0.0	0.0	0.9	9.3	3.9	4.2	9.5	5.9
Precipitation			0.3	24.5	13.5	2.7	1.2	7.2	12.2	9.8		5.5	76.9		43.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	46.4	36.3
Growing Degrees	5	11.4	12.2	10.8	9.1	10.4	10.4	10.1	9.3	9.6	10.9	10.4	114.3	135.2	130.7
	10	6.4	7.2	5.8	4.1	5.4	5.4	5.1	4.3	4.6	5.9	5.4	59.3	80.2	75.7

3rd 10-day period (21-31/10/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.7	25.7	21.6
Precipitation - Reference Evapotranspiration	57.2	-25.7	22.0
Number of Rainy Days	9.0	0.0	3.7
Number of Dry Days	2.0	14.0	-

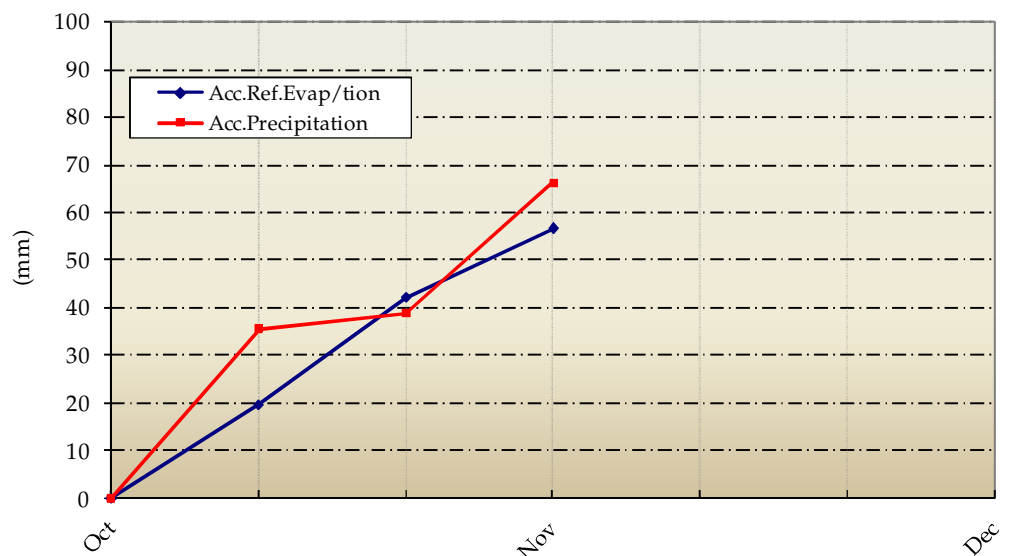
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.5	25.2	21.0	13.5	15.5	13.0	14.6	13.1	15.2	18.0	14.6	17.1	25.6	18.9
	Min	7.6	6.8	12.2	6.5	9.4	8.8	9.8	9.3	10.4	8.0	9.2	8.9	6.6	8.3
Relative Humidity	Max	100	100	100	100	100	98	97	88	100	100	99	98	93	-
	Min	35	32	32	78	55	62	55	65	57	55	62	53	28	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	14.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	15.6
Sunshine Duration		7.2	6.9	3.4	0.0	1.3	0.0	1.5	0.0	0.0	4.7	0.1	2.3	7.6	4.4
Precipitation				5.3	13.9	1.6	6.8			0.0			27.6		23.9
Evaporation		3.3	0.3	4.7	0.0	0.0	13.2	2.4	1.1	0.7	1.7	0.4	27.8	40.4	24.8
Growing Degrees	5	11.1	11.0	11.6	5.0	7.5	5.9	7.2	6.2	7.8	8.0	6.9	88.1	122.1	94.1
	10	6.1	6.0	6.6	0.0	2.5	0.9	2.2	1.2	2.8	3.0	1.9	33.1	67.1	41.5

3rd 10-day period (21-31/10/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.4	21.5	16.4
Precipitation - Reference Evapotranspiration	13.2	-21.5	7.5
Number of Rainy Days	4.0	0.0	3.5
Number of Dry Days	3.0	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

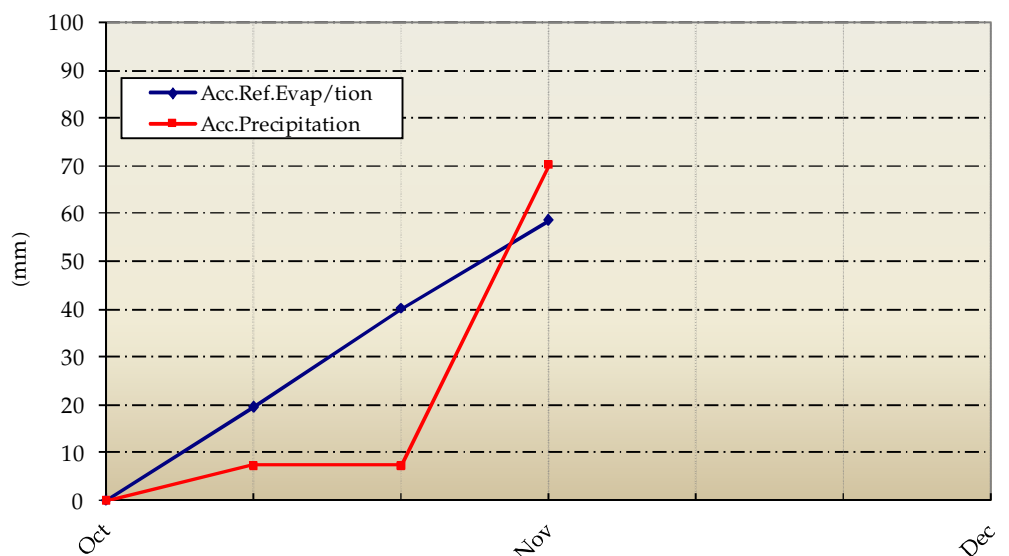


Mikra

3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.9	22.7	20.5	14.2	14.3	13.2	14.5	14.7	16.2	18.5	16.2	17.1	22.3	18.1
	Min	9.3	10.8	12.1	6.0	11.5	8.6	10.2	10.0	8.7	6.4	10.9	9.5	10.6	9.2
Relative Humidity	Max	89	90	93	90	86	69	80	84	88	92	87	86	87	-
	Min	42	48	58	70	61	56	51	54	55	45	56	54	48	-
Soil Temperature at 10 cm	06 UTC	16.4	16.8	18.4	14.0	12.8	12.0	12.8	13.8	13.4	13.2	13.4	14.3	17.0	13.8
	12 UTC	19.6	19.4	17.2	14.2	14.2	13.2	14.6	13.2	15.6	15.8	14.4	15.6	20.3	16.0
Sunshine Duration		9.4	7.2	2.2	0.0	0.0	0.7	0.2	1.7	1.5	8.5	0.0	2.9	7.5	4.6
Precipitation				14.6	17.7	29.9	0.5	0.0	0.0			0.1	62.8		21.1
Evaporation		1.4	9.4	11.4	11.3	1.7	0.5	2.8	3.2	0.7	3.3	0.9	46.6	32.2	29.7
Growing Degrees	5	11.1	11.8	11.3	5.1	7.9	5.9	7.4	7.4	7.5	7.5	8.6	91.2	125.6	95.5
	10	6.1	6.8	6.3	0.1	2.9	0.9	2.4	2.4	2.5	2.5	3.6	36.2	70.6	42.9

3rd 10-day period (21-31/10/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.4	18.3	17.3
Precipitation - Reference Evapotranspiration	44.4	-18.3	3.8
Number of Rainy Days	5.0	0.0	3.2
Number of Dry Days	14.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

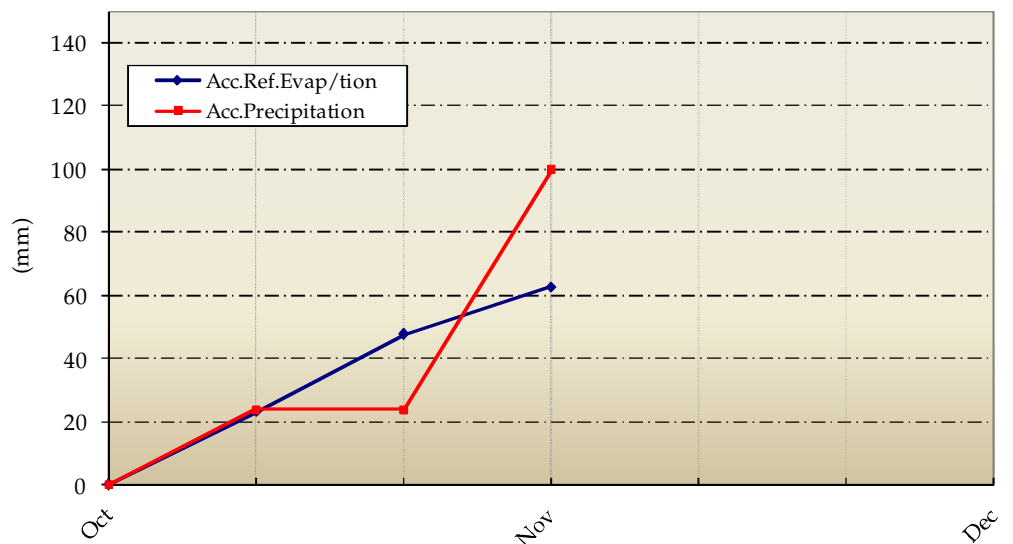


Tanagra

3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.0	24.8	21.9	17.2	15.7	13.4	14.1	13.5	13.4	17.8	14.2	17.3	23.7	19.8
	Min	8.9	10.0	20.5	7.6	8.9	9.2	10.5	11.2	11.4	8.7	9.1	10.5	9.4	10.1
Relative Humidity	Max	89	95	83	100	100	98	97	97	99	99	100	96	92	-
	Min	27	35	37	64	57	72	80	82	88	55	61	60	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.6	8.5	2.9	0.5	2.4	0.0	0.8	0.0	0.0	6.8	0.2	2.8	-	-
Precipitation				1.0	60.2	0.5	5.6	1.8	0.4	5.3		1.1	75.9	0.0	27.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	11.5	12.4	16.2	7.4	7.3	6.3	7.3	7.4	7.4	8.3	6.7	98.0	-	-
	10	6.5	7.4	11.2	2.4	2.3	1.3	2.3	2.4	2.4	3.3	1.7	43.0	-	-

3rd 10-day period (21-31/10/2014)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.1	-
Precipitation - Reference Evapotranspiration	60.8	27.5
Number of Rainy Days	8.0	3.7
Number of Dry Days	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

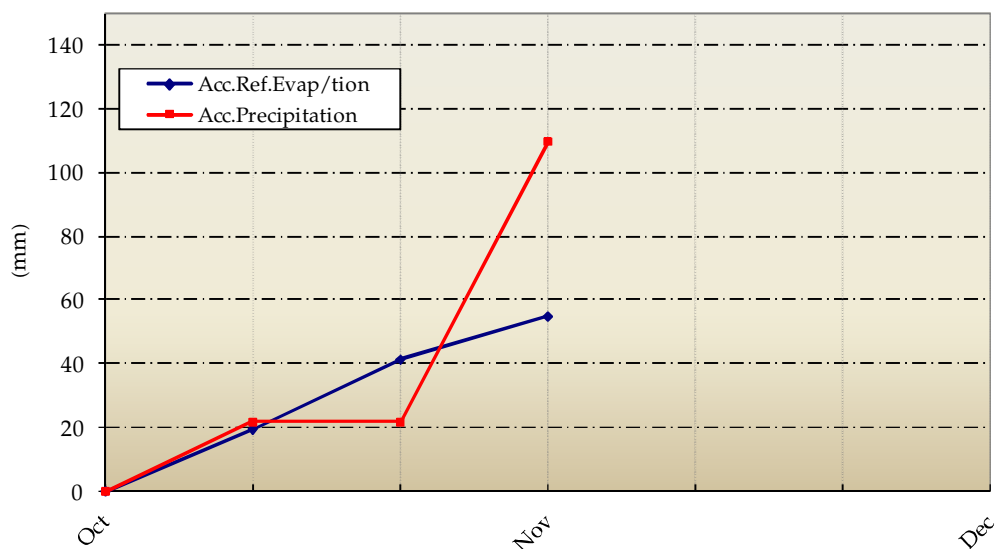


Tripoli

3rd 10-day period (21-31/10/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.7	19.2	16.4	12.8	15.7	14.3	12.5	10.3	11.4	17.4	15.3	15.4	23.9	17.6
	Min	1.6	4.2	7.9	5.9	7.2	6.0	8.7	8.3	8.4	7.2	4.2	6.3	2.3	6.5
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	100	89	-
	Min	12	54	46	80	51	64	66	79	89	48	48	58	28	-
Soil Temperature at 10 cm	06 UTC	12.8	13.2	15.6	12.4	11.2	11.4	12.0	11.8	11.8	11.4	10.6	12.2	11.3	12.8
	12 UTC	17.4	16.6	16.8	11.4	-	-	13.4	-	12.4	14.4	13.6	14.5	16.6	14.2
Sunshine Duration		9.6	6.1	7.3	1.5	3.9	0.6	0.0	0.0	0.0	6.0	3.2	3.5	8.4	5.3
Precipitation				4.8	40.5	7.8	0.0	1.8	11.0	21.9	0.1		87.9		39.1
Evaporation		1.9	1.1	2.2	0.5	1.4	1.5	0.2	0.0	14.8	1.1	1.1	25.8	26.0	23.9
Growing Degrees	5	7.7	6.7	7.2	4.4	6.5	5.2	5.6	4.3	4.9	7.3	4.8	64.3	89.1	77.8
	10	2.7	1.7	2.2	0.0	1.5	0.2	0.6	0.0	0.0	2.3	0.0	11.0	34.1	27.7

3rd 10-day period (21-31/10/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.6	19.1	18.0
Precipitation - Reference Evapotranspiration	74.3	-19.1	21.1
Number of Rainy Days	7.0	0.0	3.8
Number of Dry Days	14.0	14.0	-

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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