



AGROMETEOROLOGICAL BULLETIN

November 2013
1st 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



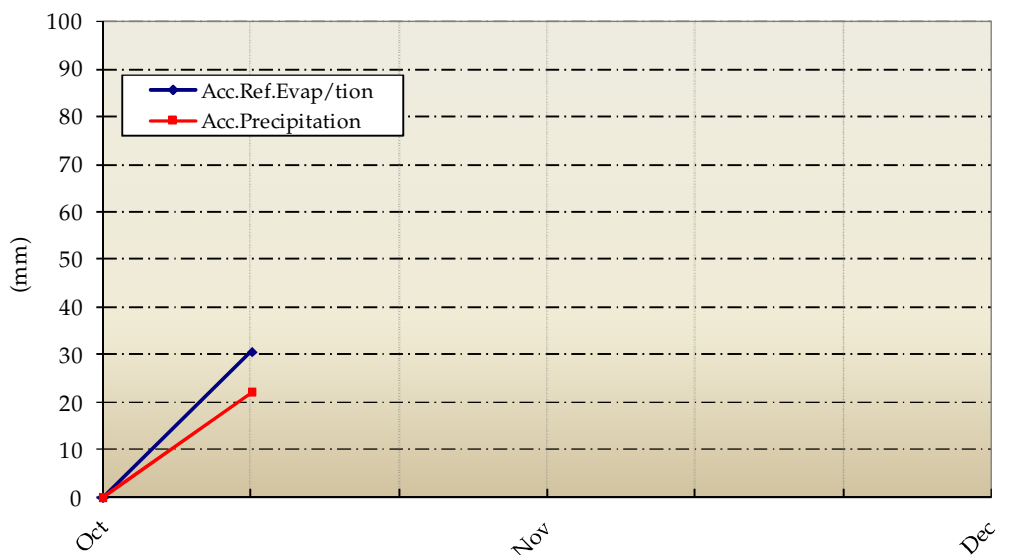
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1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-		21.4	20.1
	Min	9.0	-	-	9.0	9.0	12.0	10.0	-	-	-	9.8	10.1	8.3
Relative Humidity	Max	-	-	93	95	96	90	-	-	-	-	94	95	-
	Min	-	-	36	64	63	66	-	-	-	-	57	60	-
Soil Temperature at 10 cm	06 UTC	16.0	-	-	16.0	17.0	17.0	17.0	-	-	-	16.6	16.2	13.0
	12 UTC	-	-	-	17.0	18.0	-	19.0	-	-	-	18.0	17.3	15.7
Sunshine Duration		-	-	9.1	2.5	4.5	6.5	-	-	-	-	5.6	5.7	5.5
Precipitation						18.0	18.0					36.0	43.8	44.3
Evaporation		-	-	2.8	26.0	19.7	1.8	-	-	-	-	-	-	20.9
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	107.5	92.0
	10	-	-	-	-	-	-	-	-	-	-	-	57.5	43.1

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	12.2	13.9
Precipitation - Reference Evapotranspiration	-	31.6	30.4
Number of Rainy Days	2.0	4.0	3.0
Number of Dry Days	18.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

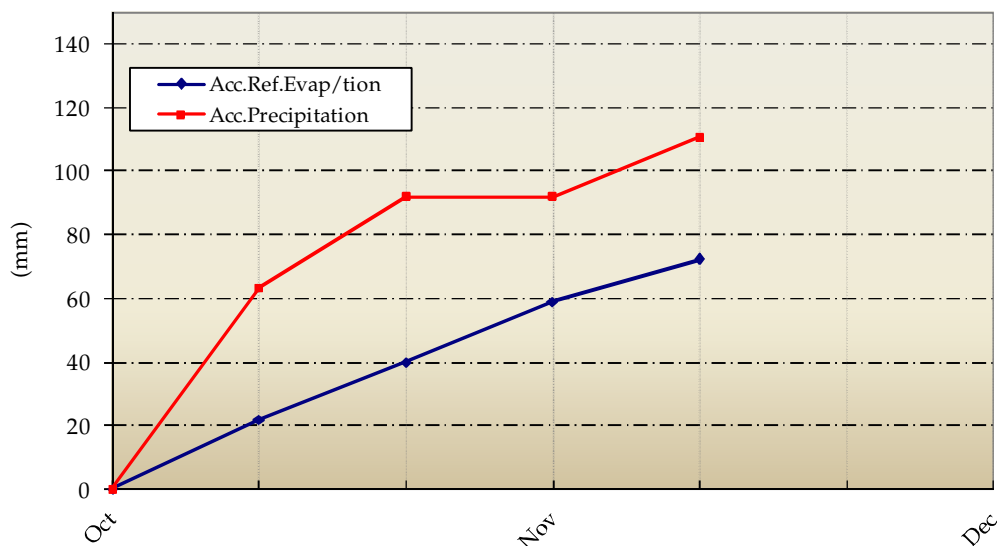


This station is not fully operated

1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.4	19.2	19.4	20.2	20.4	19.4	18.6	18.4	19.4	17.8	19.1	19.6	15.8
	Min	11.0	10.8	6.0	14.6	14.8	15.0	11.0	6.6	5.4	4.5	10.0	11.8	7.1
Relative Humidity	Max	83	90	92	96	94	96	95	94	91	91	92	88	-
	Min	55	57	73	71	79	74	51	59	33	65	62	56	-
Soil Temperature at 10 cm	06 UTC	15.4	15.2	13.0	15.6	17.4	17.0	15.6	12.8	12.4	11.6	14.6	15.9	11.0
	12 UTC	16.4	16.4	17.0	18.2	17.6	17.2	17.0	15.8	15.2	14.4	16.5	17.6	12.9
Sunshine Duration		0.5	6.3	3.8	4.8	0.1	0.5	8.7	9.1	8.9	8.9	5.2	5.4	4.1
Precipitation						1.1	4.1	13.7				18.9	3.5	19.0
Evaporation		3.5	3.0	0.4	1.7	3.0	0.8	5.3	1.8	1.5	0.9	21.9	22.4	25.4
Growing Degrees	5	9.7	10.0	7.7	12.4	12.6	12.2	9.8	7.5	7.4	6.2	95.5	106.9	64.9
	10	4.7	5.0	2.7	7.4	7.6	7.2	4.8	2.5	2.4	1.2	45.5	56.9	23.3

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.4	14.3	14.9
Precipitation - Reference Evapotranspiration	5.5	-10.8	4.1
Number of Rainy Days	3.0	2.0	1.9
Number of Dry Days	17.0	1.0	-

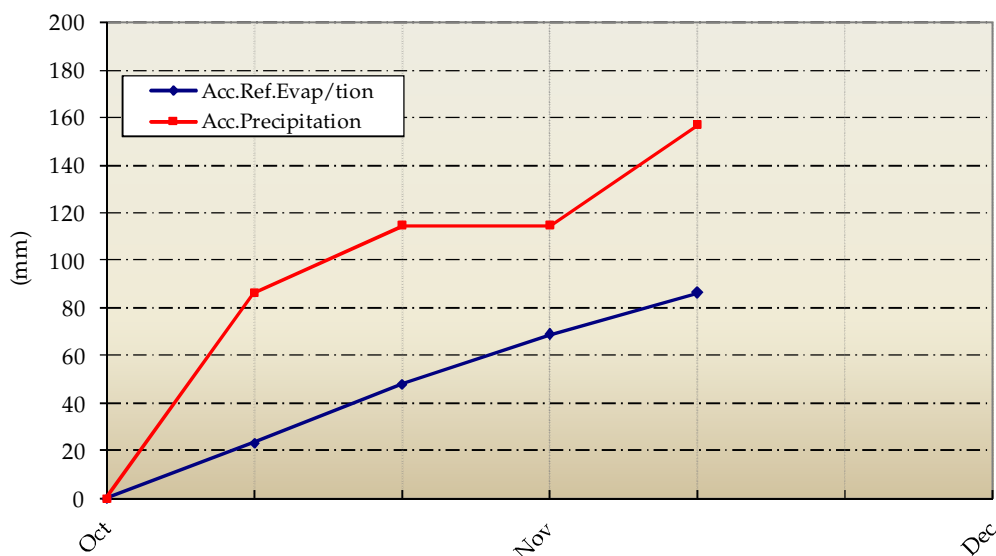
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.6	22.6	23.4	23.0	23.2	21.4	23.9	23.4	22.2	22.2	23.0	21.9	20.0
	Min	12.1	11.3	12.8	14.7	16.0	15.0	13.4	9.0	9.6	13.8	12.8	12.9	10.4
Relative Humidity	Max	90	91	87	90	91	87	90	88	89	89	89	90	-
	Min	33	54	54	63	60	65	36	38	49	65	52	53	-
Soil Temperature at 10 cm	06 UTC	17.0	16.4	17.0	16.8	18.4	17.4	16.2	15.0	15.0	16.2	16.5	17.4	14.3
	12 UTC	21.2	21.4	20.8	20.8	19.6	18.2	19.2	19.4	19.4	19.2	19.9	19.8	16.6
Sunshine Duration		8.9	8.3	8.7	3.8	5.3	2.5	9.1	9.3	9.2	4.7	7.0	5.9	6.0
Precipitation					1.7	19.2	21.4					42.3	9.3	45.1
Evaporation		2.8	2.3	4.2	4.2	4.2	12.8	4.0	4.0	5.4	1.2	45.1	19.3	25.9
Growing Degrees	5	13.4	12.0	13.1	13.9	14.6	13.2	13.7	11.2	10.9	13.0	128.8	124.1	101.6
	10	8.4	7.0	8.1	8.9	9.6	8.2	8.7	6.2	5.9	8.0	78.8	74.1	52.1

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.4	16.7	14.3
Precipitation - Reference Evapotranspiration	24.9	-7.4	30.8
Number of Rainy Days	3.0	3.0	3.2
Number of Dry Days	18.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

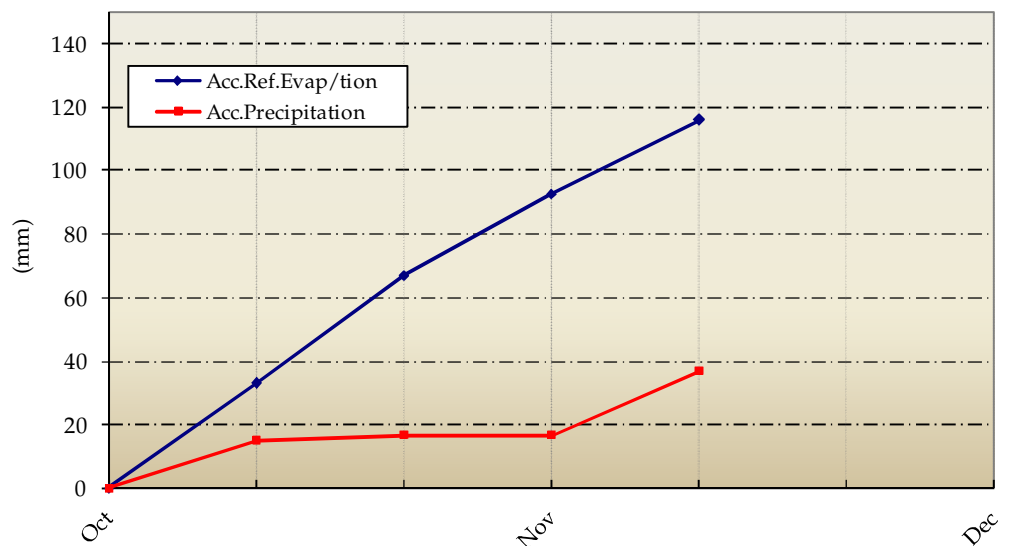


Iraklio

1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.8	21.6	22.4	24.0	24.4	26.6	22.0	21.4	22.0	22.4	22.9	23.6	20.4
	Min	15.6	17.0	13.6	15.6	16.4	19.8	16.6	18.0	18.4	14.0	16.5	18.0	14.3
Relative Humidity	Max	87	83	87	83	76	88	90	75	89	91	85	87	-
	Min	65	61	66	51	48	48	69	55	62	68	59	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		4.5	4.1	7.9	5.9	7.0	3.9	3.2	8.6	8.4	8.4	6.2	5.4	5.0
Precipitation							7.8	12.4				20.2	22.9	20.0
Evaporation		2.9	2.8	0.1	1.4	4.4	5.2	0.0	4.2	1.6	2.1	24.7	-	39.9
Growing Degrees	5	13.7	14.3	13.0	14.8	15.4	18.2	14.3	14.7	15.2	13.2	146.8	157.8	123.4
	10	8.7	9.3	8.0	9.8	10.4	13.2	9.3	9.7	10.2	8.2	96.8	107.8	73.4

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.1	26.8	-
Precipitation - Reference Evapotranspiration	-2.9	-3.9	20.0
Number of Rainy Days	2.0	3.0	2.6
Number of Dry Days	19.0	1.0	-

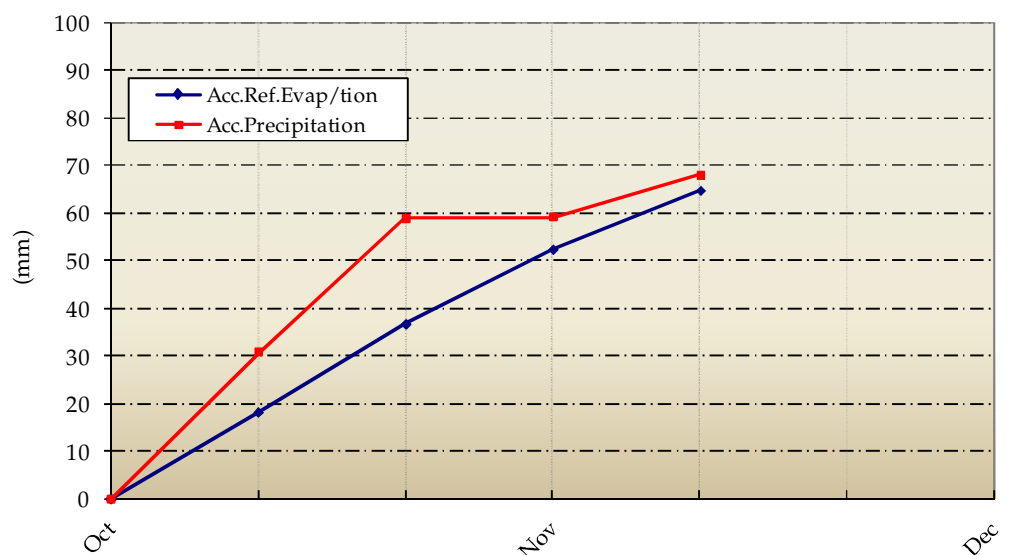
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.4	21.5	20.0	19.0	15.5	18.8	23.8	21.4	23.0	16.6	20.2	17.0	16.0
	Min	5.9	3.0	5.4	8.1	10.1	11.0	6.8	2.3	1.3	3.2	5.7	8.1	5.4
Relative Humidity	Max	99	100	100	100	99	99	98	98	98	98	99	96	-
	Min	29	36	49	49	84	47	19	26	31	50	42	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.8
Sunshine Duration		5.6	3.8	2.2	0.0	2.6	6.8	6.5	6.6	1.1	1.3	3.6	3.3	4.1
Precipitation				0.1	0.0	8.0					0.9	9.0	54.0	40.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	16.8
Growing Degrees	5	9.2	7.3	7.7	8.6	7.8	9.9	10.3	6.9	7.2	4.9	79.6	75.3	57.3
	10	4.2	2.3	2.7	3.6	2.8	4.9	5.3	1.9	2.2	0.0	29.7	28.2	16.4

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.4	10.4	10.7
Precipitation - Reference Evapotranspiration	-3.4	43.6	29.4
Number of Rainy Days	3.0	4.0	3.4
Number of Dry Days	2.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

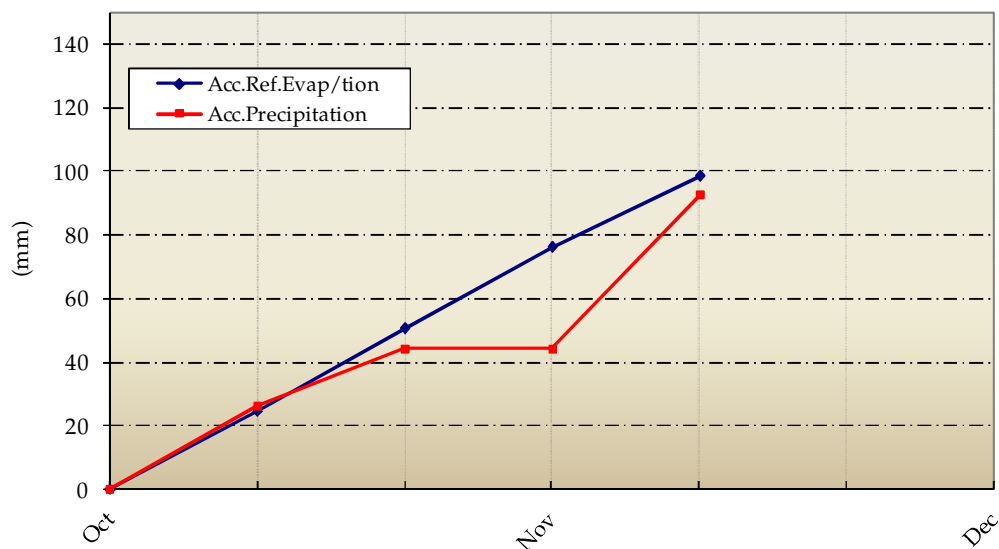


Kalamata

1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.5	24.3	25.6	24.8	22.8	21.8	24.8	24.4	23.2	23.5	23.9	24.2	21.0
	Min	11.2	13.4	10.9	12.0	14.9	15.5	14.0	9.0	9.5	11.1	12.2	12.2	10.2
Relative Humidity	Max	90	93	92	93	94	91	82	89	89	91	90	88	-
	Min	53	51	36	49	53	59	36	35	39	54	46	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	18.2	15.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	19.1	16.9
Sunshine Duration		8.2	8.4	9.0	7.7	5.1	3.4	8.6	9.1	9.2	5.5	7.4	6.8	5.6
Precipitation						29.0	19.3					48.3	0.7	35.3
Evaporation		3.4	3.8	4.4	-	-	-	-	-	-	-	-	31.0	30.4
Growing Degrees	5	12.4	13.9	13.3	13.4	13.9	13.7	14.4	11.7	11.4	12.3	130.1	132.5	105.8
	10	7.4	8.9	8.3	8.4	8.9	8.7	9.4	6.7	6.4	7.3	80.1	82.5	55.9

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.4	21.0	16.4
Precipitation - Reference Evapotranspiration	25.9	-20.3	18.9
Number of Rainy Days	2.0	2.0	3.1
Number of Dry Days	18.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

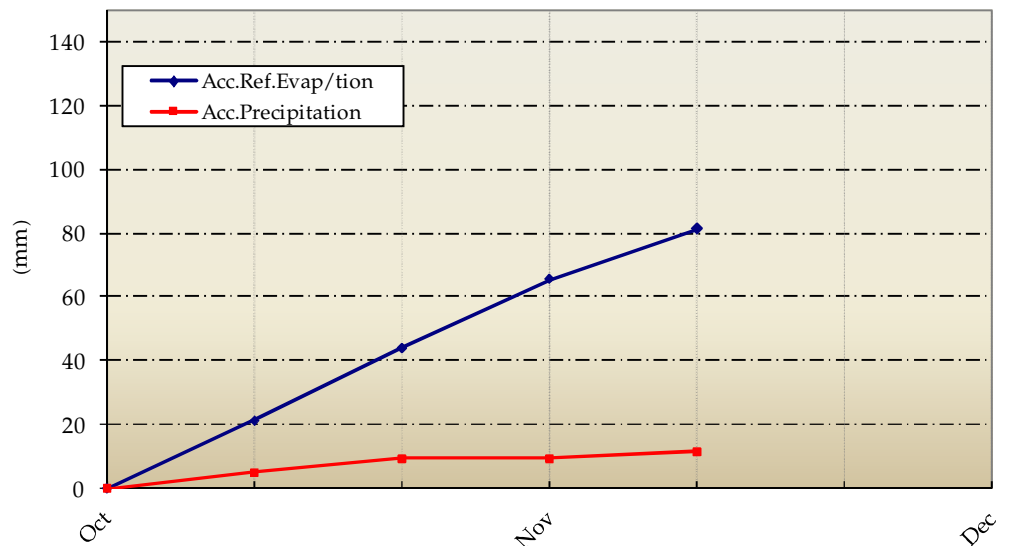


Larisa

1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.1	22.2	25.3	25.6	24.0	21.6	24.6	23.6	22.6	19.0	23.0	21.0	17.2
	Min	8.8	6.7	6.9	8.2	12.8	13.8	12.6	5.8	6.2	6.9	8.9	8.6	6.7
Relative Humidity	Max	94	96	95	95	92	96	90	97	98	99	95	97	-
	Min	49	44	31	32	38	56	16	25	40	61	39	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	15.4	12.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	16.6	13.2
Sunshine Duration		2.3	6.7	7.4	4.9	2.3	2.0	7.4	7.7	7.7	2.4	5.1	5.5	4.1
Precipitation							2.3					2.3	19.3	20.6
Evaporation		1.2	2.3	4.2	2.2	2.3	0.7	4.6	7.1	2.0	0.2	26.8	32.6	17.6
Growing Degrees	5	10.0	9.5	11.1	11.9	13.4	12.7	13.6	9.7	9.4	8.0	109.2	97.9	69.6
	10	5.0	4.5	6.1	6.9	8.4	7.7	8.6	4.7	4.4	3.0	59.2	48.2	25.7

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.7	12.9	11.7
Precipitation - Reference Evapotranspiration	-13.4	6.4	8.9
Number of Rainy Days	1.0	2.0	2.7
Number of Dry Days	20.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

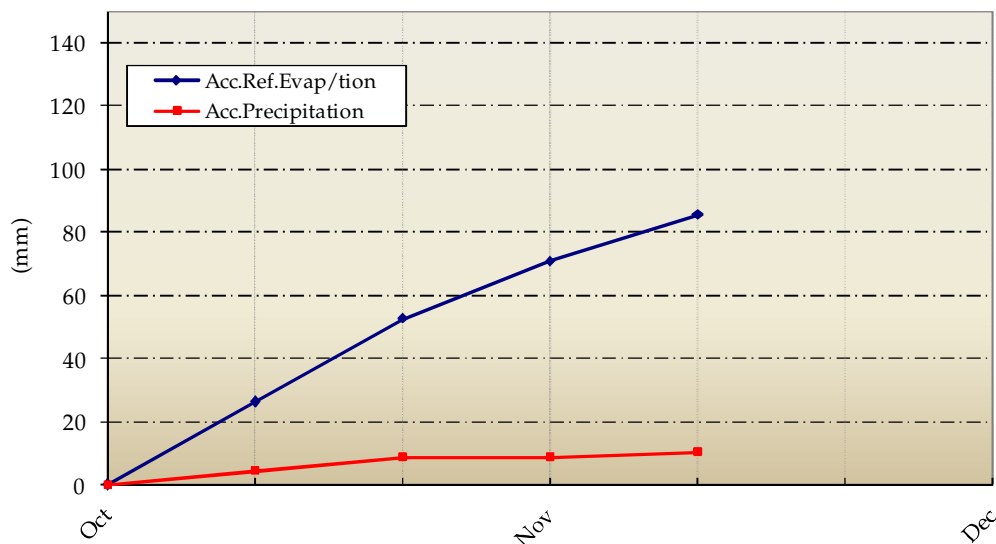


Mikra

1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.4	20.2	20.2	20.2	22.6	21.0	22.7	20.3	18.7	20.0	20.5	19.6	16.5
	Min	11.0	11.8	11.9	10.9	12.2	15.8	12.2	9.4	11.0	12.6	11.9	10.6	7.9
Relative Humidity	Max	82	84	88	90	89	88	79	87	88	89	86	90	-
	Min	62	57	60	65	48	53	27	60	66	62	56	52	-
Soil Temperature at 10 cm	06 UTC	16.8	17.2	17.0	16.6	17.0	18.6	16.0	15.0	15.8	16.8	16.7	15.5	11.5
	12 UTC	19.2	19.4	19.6	19.0	19.2	20.2	20.2	18.2	17.8	18.0	19.1	18.1	13.8
Sunshine Duration		1.4	5.0	5.9	1.5	4.4	2.5	8.9	8.7	2.2	6.1	4.7	6.0	4.0
Precipitation							0.7	0.8				1.5	21.2	18.1
Evaporation		0.8	1.8	1.0	2.0	1.4	5.5	2.8	2.0	1.8	0.8	19.9	-	22.5
Growing Degrees	5	10.2	11.0	11.1	10.6	12.4	13.4	12.5	9.9	9.9	11.3	112.1	101.4	72.4
	10	5.2	6.0	6.1	5.6	7.4	8.4	7.5	4.9	4.9	6.3	62.1	51.9	27.9

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.6	15.8	13.6
Precipitation - Reference Evapotranspiration	-13.1	5.4	4.5
Number of Rainy Days	2.0	3.0	2.5
Number of Dry Days	25.0	1.0	-

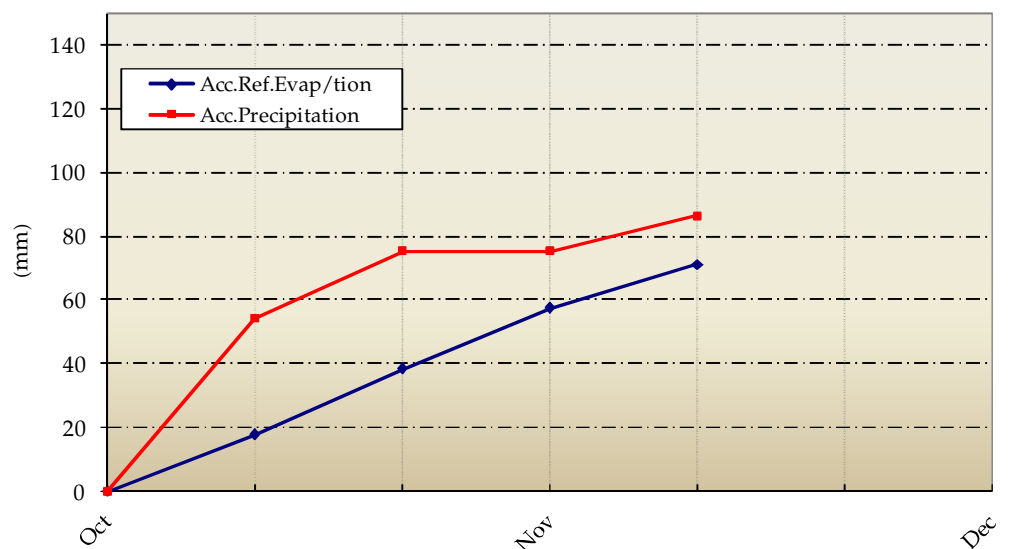
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.0	21.1	22.2	21.8	18.3	17.4	19.2	22.8	23.7	19.7	20.7	19.8	16.5
	Min	3.6	4.7	4.4	4.3	12.1	11.2	10.2	3.0	2.6	2.3	5.8	6.6	5.2
Relative Humidity	Max	90	100	99	100	82	97	71	97	98	98	93	91	-
	Min	42	40	80	41	60	57	45	67	27	71	53	47	-
Soil Temperature at 10 cm	06 UTC	11.4	12.2	12.4	12.0	14.0	13.8	13.4	10.6	10.2	10.0	12.0	12.2	11.0
	12 UTC	16.0	16.2	-	15.8	16.4	16.2	16.2	-	14.8	-	15.9	15.3	12.3
Sunshine Duration		7.7	7.8	7.8	6.3	4.0	3.3	8.5	8.1	7.8	5.3	6.7	6.2	5.1
Precipitation						3.4	7.6					11.0	3.6	28.3
Evaporation		1.4	2.5	1.1	2.4	0.2	1.6	2.3	1.6	1.7	0.7	15.5	15.0	18.0
Growing Degrees	5	7.3	7.9	8.3	8.1	10.2	9.3	9.7	7.9	8.2	6.0	82.8	81.7	58.6
	10	2.3	2.9	3.3	3.1	5.2	4.3	4.7	2.9	3.2	1.0	32.8	34.9	17.0

1st 10-day period (1-10/11/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.9	13.9	13.6
Precipitation - Reference Evapotranspiration	-2.9	-10.3	14.7
Number of Rainy Days	2.0	2.0	2.6
Number of Dry Days	18.0	2.0	-

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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