



AGROMETEOROLOGICAL BULLETIN

June 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 (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-		30.7	29.2
	Min	-	-	11.4	13.0	13.8	13.0	16.0	-	-	14.0	13.5	14.1	14.5
Relative Humidity	Max	-	93	89	89	94	90	-	-	89	79	89	77	-
	Min	-	51	48	65	46	46	-	-	32	47	48	38	-
Soil Temperature at 10 cm	06 UTC	-	-	20.2	21.8	21.8	21.8	23.0	-	-	23.8	22.1	22.7	22.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	27.2	29.1
Sunshine Duration		-	-	13.3	12.3	13.2	11.6	-	-	-	9.2	11.9	13.0	10.4
Precipitation														6.6
Evaporation		-	6.0	6.0	8.0	9.0	7.0	-	-	10.0	8.5	-	74.9	77.7
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	173.7	168.5
	10	-	-	-	-	-	-	-	-	-	-	-	123.7	118.5

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	54.8	50.8
Precipitation - Reference Evapotranspiration	-	-54.8	-44.2
Number of Rainy Days	0.0	0.0	1.4
Number of Dry Days	17.0	11.0	-

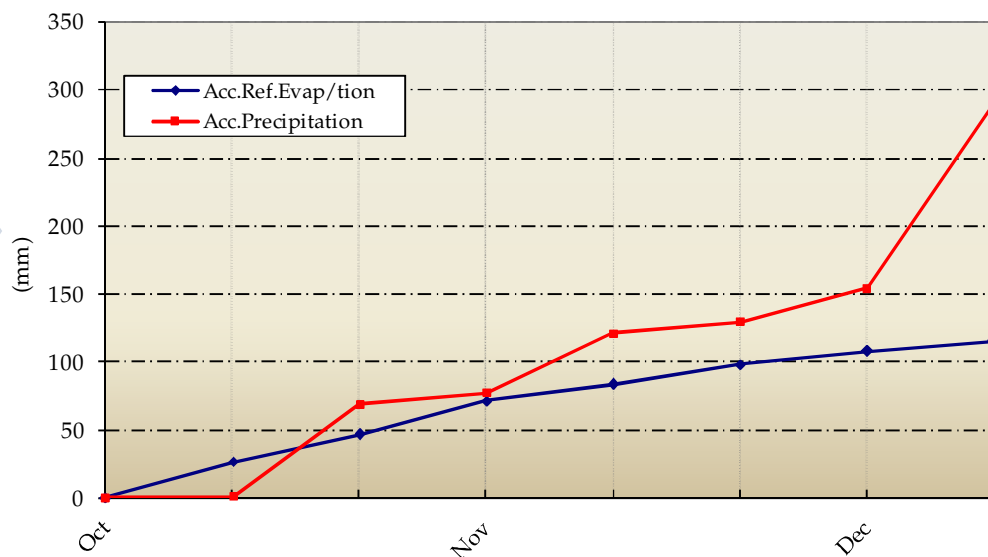


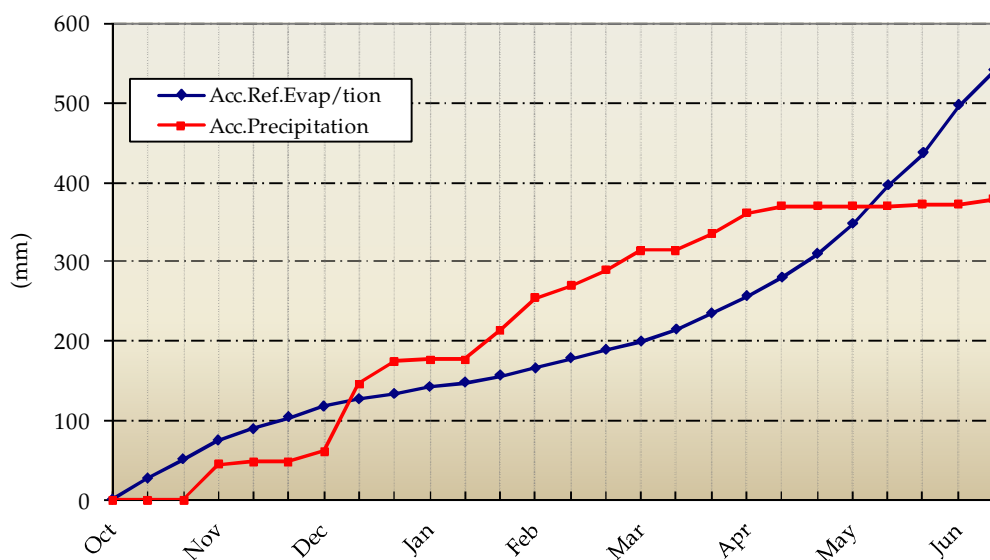
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

This station is not fully operated

1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.0	23.6	23.8	28.2	24.2	24.6	25.0	26.4	26.4	26.8	25.4	27.3	25.8
	Min	15.4	15.0	12.8	12.8	14.2	14.4	15.8	16.0	14.8	16.6	14.8	15.6	14.0
Relative Humidity	Max	83	98	88	85	82	88	90	88	83	84	87	90	-
	Min	34	70	50	32	54	48	45	41	41	49	46	45	-
Soil Temperature at 10 cm	06 UTC	24.2	24.2	19.4	18.0	21.6	21.6	22.6	22.6	20.6	22.4	21.7	22.6	20.6
	12 UTC	27.6	22.6	24.2	27.6	25.4	26.2	25.2	25.8	26.0	27.6	25.8	26.6	25.3
Sunshine Duration		13.6	0.9	13.6	9.0	8.1	10.8	8.3	4.9	8.5	12.7	9.0	12.0	9.7
Precipitation			6.3		0.5			0.4	0.2			7.4	8.5	10.6
Evaporation		3.9	3.7	9.5	8.9	7.2	7.0	4.0	5.0	1.0	8.6	58.8	69.1	72.8
Growing Degrees	5	15.2	14.3	13.3	15.5	14.2	14.5	15.4	16.2	15.6	16.7	150.9	164.7	148.7
	10	10.2	9.3	8.3	10.5	9.2	9.5	10.4	11.2	10.6	11.7	100.9	114.7	98.7

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.7	50.3	48.0
Precipitation - Reference Evapotranspiration	-36.3	-41.8	-37.4
Number of Rainy Days	4.0	2.0	2.2
Number of Dry Days	19.0	0.0	-

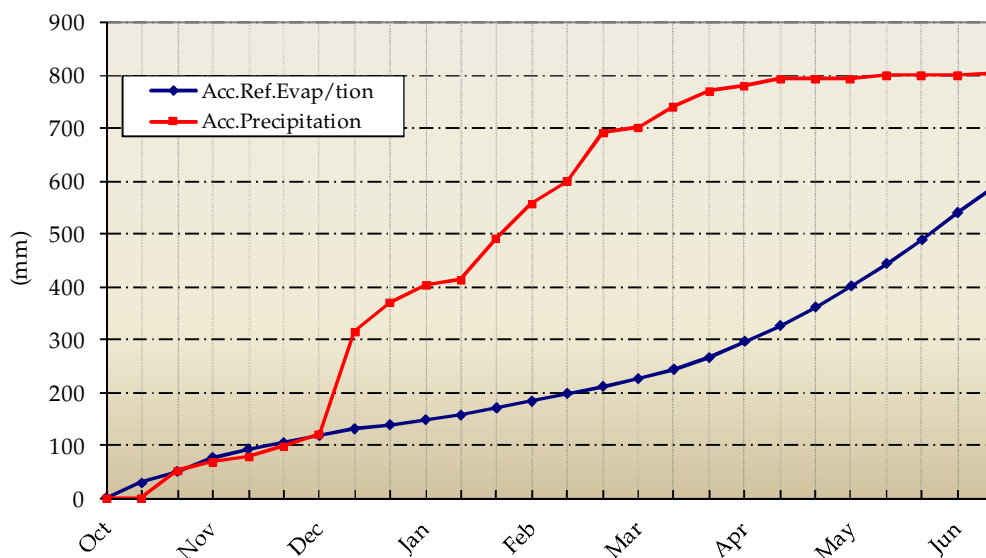
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.2	22.2	23.9	24.5	25.3	25.1	27.9	25.5	27.4	30.6	25.5	26.9	26.9
	Min	12.1	13.6	13.2	14.6	13.8	14.0	15.9	14.6	15.7	15.8	14.3	15.3	15.3
Relative Humidity	Max	87	89	89	89	87	87	82	88	89	84	87	89	-
	Min	42	50	43	43	40	42	43	48	36	25	41	42	-
Soil Temperature at 10 cm	06 UTC	22.4	21.2	20.4	21.8	22.2	23.0	24.2	23.2	24.6	24.6	22.8	23.4	23.0
	12 UTC	26.8	26.0	28.0	28.6	29.8	30.0	27.8	30.8	31.8	32.0	29.2	30.7	27.7
Sunshine Duration		4.9	12.4	12.4	12.7	13.2	11.6	4.4	13.3	13.3	9.9	10.8	12.6	11.1
Precipitation		0.1	3.1								0.9	4.1		2.3
Evaporation		2.9	6.3	4.7	8.7	6.0	7.1	6.2	9.6	7.2	7.9	66.6	75.5	67.5
Growing Degrees	5	12.2	12.9	13.6	14.6	14.6	14.6	16.9	15.1	16.6	18.2	149.0	161.0	160.7
	10	7.2	7.9	8.6	9.6	9.6	9.6	11.9	10.1	11.6	13.2	99.0	111.0	110.7

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.8	52.2	48.5
Precipitation - Reference Evapotranspiration	-42.7	-52.2	-46.2
Number of Rainy Days	3.0	0.0	0.7
Number of Dry Days	7.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

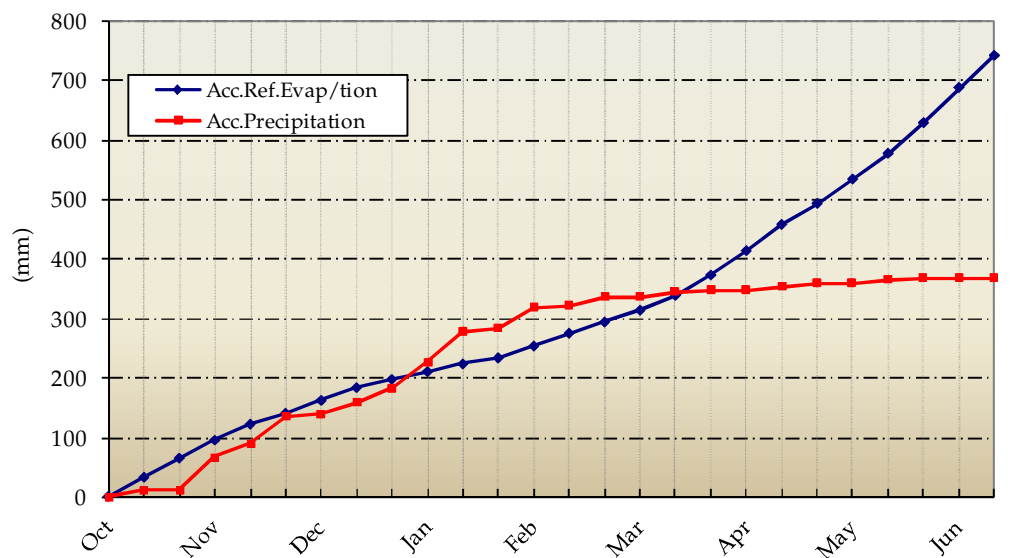


Iraklio

1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.8	27.8	23.2	24.8	28.8	25.2	32.6	25.0	25.4	28.8	26.5	-	25.7
	Min	17.6	21.0	17.4	16.2	18.4	18.8	15.4	21.0	17.6	15.2	17.9	-	17.9
Relative Humidity	Max	73	73	88	87	71	85	73	87	88	70	80	-	-
	Min	46	32	58	58	32	54	29	57	65	53	48	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.6	12.6	12.9	12.8	11.2	12.6	7.1	11.0	12.8	12.6	11.5	-	11.2
Precipitation								0.0				0.0	-	3.5
Evaporation		9.7	7.7	1.8	5.5	5.9	5.6	7.1	6.7	4.9	5.6	60.5	-	76.6
Growing Degrees	5	15.7	19.4	15.3	15.5	18.6	17.0	19.0	18.0	16.5	17.0	172.0	-	167.8
	10	10.7	14.4	10.3	10.5	13.6	12.0	14.0	13.0	11.5	12.0	122.0	-	117.8

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.0	-	-
Precipitation - Reference Evapotranspiration	-54.0	-	3.5
Number of Rainy Days	0.0	-	0.5
Number of Dry Days	23.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

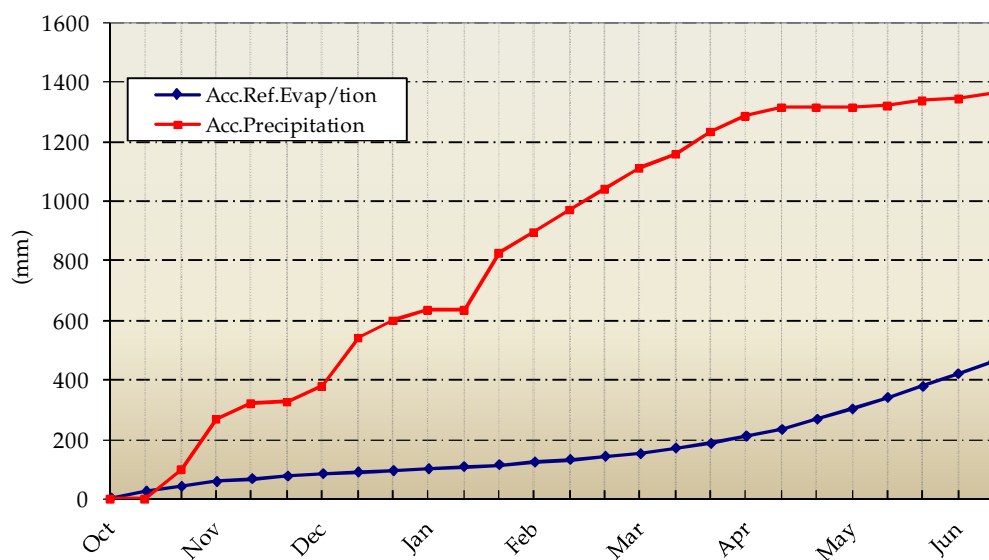


Ioannina

1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.5	18.2	22.2	23.2	21.6	24.4	28.5	26.0	26.4	27.4	23.9	27.2	26.3
	Min	6.4	10.6	8.4	14.9	10.0	7.7	11.2	11.5	10.3	11.7	10.3	13.5	12.0
Relative Humidity	Max	72	97	97	84	98	97	72	95	71	79	86	87	-
	Min	40	55	44	53	44	29	21	32	37	30	38	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.9
Sunshine Duration		6.0	4.0	12.1	5.0	8.2	11.4	12.6	10.8	13.0	12.2	9.5	10.9	9.1
Precipitation			12.6		4.9	0.1			0.2			17.8	7.3	14.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	46.7
Growing Degrees	5	9.0	9.4	10.3	14.1	10.8	11.1	14.9	13.8	13.4	14.6	121.1	153.6	141.5
	10	4.0	4.4	5.3	9.1	5.8	6.1	9.9	8.8	8.4	9.6	71.1	103.6	91.5

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	41.0	47.6	43.4
Precipitation - Reference Evapotranspiration	-23.2	-40.3	-29.0
Number of Rainy Days	4.0	2.0	2.5
Number of Dry Days	1.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

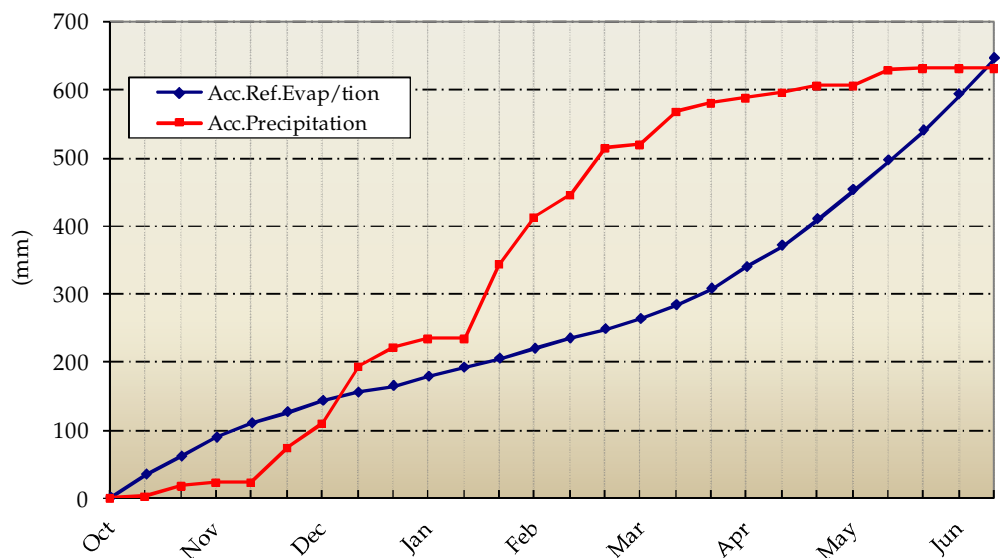


Kalamata

1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.1	25.3	27.2	24.4	26.2	29.2	28.5	30.8	27.4	28.2	26.9	28.2	27.6
	Min	11.4	14.9	11.2	13.2	12.1	14.4	16.4	18.0	15.4	13.8	14.1	14.8	14.5
Relative Humidity	Max	90	89	92	91	93	85	76	83	91	89	88	87	-
	Min	45	38	30	51	30	21	32	19	43	38	35	36	-
Soil Temperature at 10 cm	06 UTC	19.6	19.4	19.2	20.0	20.2	20.4	21.2	21.2	20.4	21.4	20.3	21.6	21.6
	12 UTC	21.0	22.0	22.2	22.8	23.0	23.2	22.6	22.8	23.0	24.4	22.7	25.0	25.8
Sunshine Duration		2.1	11.7	12.7	12.9	12.5	11.3	8.5	13.0	13.0	10.5	10.8	13.1	10.5
Precipitation		0.7										0.7		2.7
Evaporation		1.4	4.6	11.6	8.0	4.5	12.3	5.6	5.0	15.0	5.0	73.0	72.6	75.1
Growing Degrees	5	11.8	15.1	14.2	13.8	14.2	16.8	17.5	19.4	16.4	16.0	155.1	164.7	160.6
	10	6.8	10.1	9.2	8.8	9.2	11.8	12.5	14.4	11.4	11.0	105.1	114.7	110.6

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.9	58.7	50.2
Precipitation - Reference Evapotranspiration	-52.2	-58.7	-47.5
Number of Rainy Days	1.0	0.0	0.9
Number of Dry Days	14.0	17.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

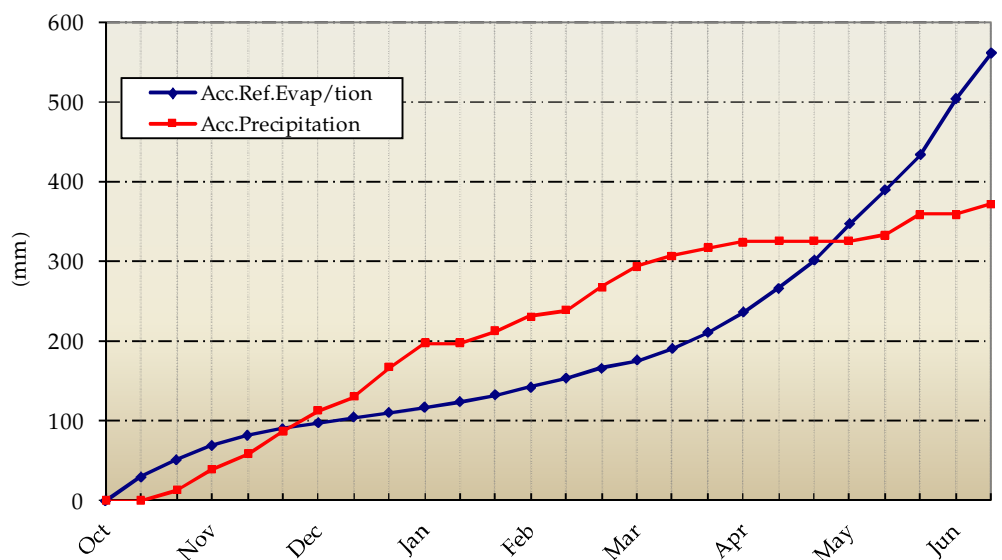


Larisa

1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.8	25.8	30.5	29.6	28.8	29.8	27.8	28.6	30.2	32.8	29.2	31.8	29.7
	Min	9.0	13.2	10.6	13.0	12.3	12.1	16.2	15.8	14.2	15.7	13.2	15.2	14.1
Relative Humidity	Max	81	95	81	83	77	80	96	99	96	92	88	84	-
	Min	18	24	18	18	22	23	34	31	31	29	25	26	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	21.4	21.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	22.8	24.3
Sunshine Duration		12.6	8.5	9.9	11.0	10.5	12.4	12.7	8.6	12.4	12.4	11.1	12.5	10.4
Precipitation			6.4					0.0	6.8			13.2		9.2
Evaporation		14.5	8.6	8.8	7.7	7.4	11.1	10.1	7.9	8.3	7.0	91.4	80.3	79.0
Growing Degrees	5	13.4	14.5	15.6	16.3	15.6	16.0	17.0	17.2	17.2	19.3	161.9	185.4	169.0
	10	8.4	9.5	10.6	11.3	10.6	11.0	12.0	12.2	12.2	14.3	111.9	135.4	119.0

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.1	59.2	54.0
Precipitation - Reference Evapotranspiration	-43.9	-59.2	-44.8
Number of Rainy Days	2.0	0.0	2.3
Number of Dry Days	15.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

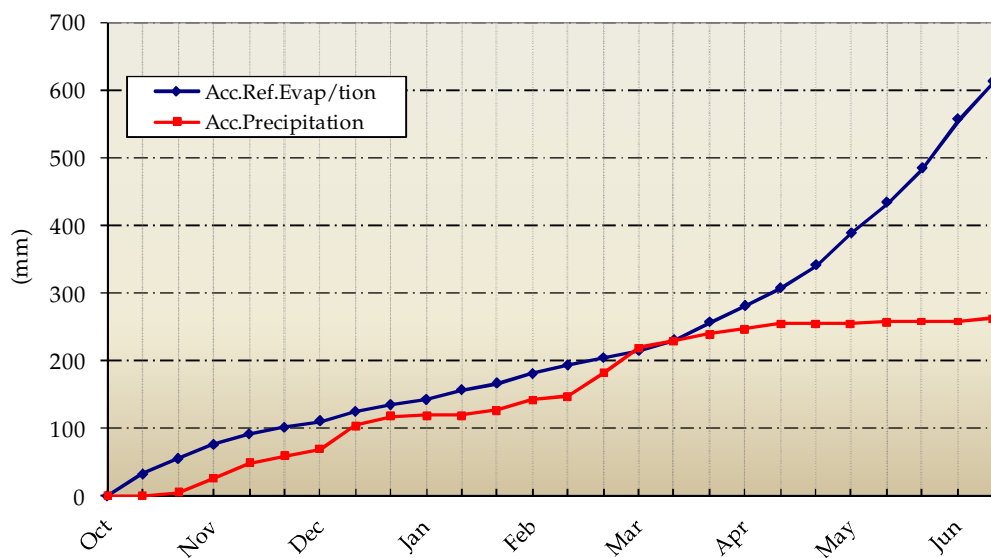


Mikra

1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.1	23.8	27.4	26.6	26.7	28.0	27.0	28.7	29.0	30.2	27.4	29.5	27.9
	Min	11.6	17.4	11.8	14.0	15.8	14.0	18.6	16.2	16.0	16.8	15.2	16.8	15.4
Relative Humidity	Max	55	74	89	69	80	83	74	80	79	81	76	78	-
	Min	20	40	25	29	31	28	33	29	34	29	30	32	-
Soil Temperature at 10 cm	06 UTC	25.0	26.2	23.8	25.0	26.0	25.4	26.8	26.6	25.8	27.0	25.8	23.6	22.3
	12 UTC	32.0	31.0	31.0	32.0	32.0	32.0	32.4	33.0	32.6	33.0	32.1	27.8	27.3
Sunshine Duration		13.5	4.0	12.5	10.3	9.2	12.1	11.1	11.7	11.4	10.1	10.6	12.5	10.0
Precipitation			0.0				0.0		0.8		3.1	3.9	0.0	11.2
Evaporation		4.6	12.2	7.4	8.8	7.4	8.8	11.0	11.0	4.8	11.3	87.3	92.6	74.4
Growing Degrees	5	13.9	15.6	14.6	15.3	16.3	16.0	17.8	17.5	17.5	18.5	162.9	181.3	166.4
	10	8.9	10.6	9.6	10.3	11.3	11.0	12.8	12.5	12.5	13.5	112.9	131.3	116.4

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.6	64.0	52.1
Precipitation - Reference Evapotranspiration	-51.7	-64.0	-40.9
Number of Rainy Days	2.0	0.0	2.7
Number of Dry Days	25.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

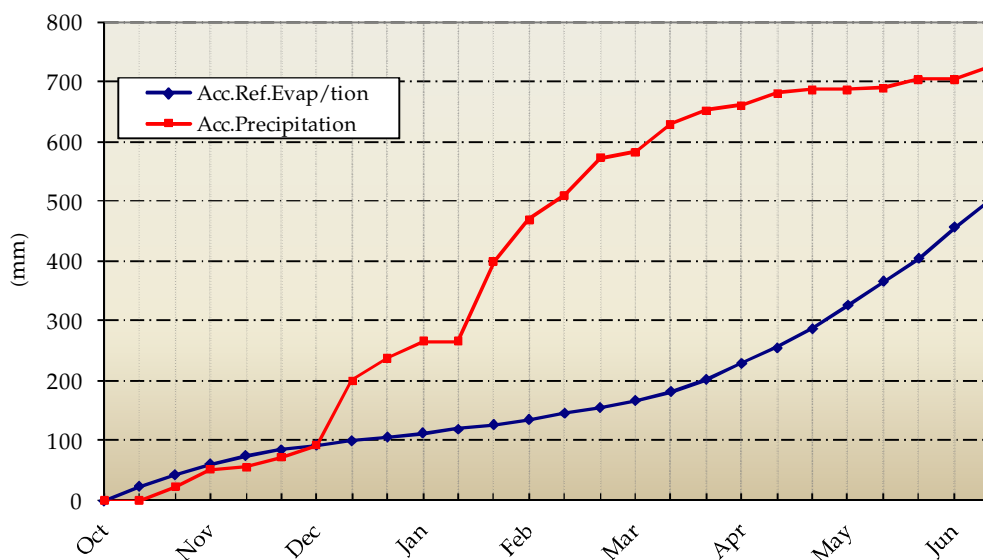


Tripoli

1st 10-day period (1-10/06/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.3	20.2	26.3	23.8	24.1	28.3	26.8	28.0	27.5	30.2	25.6	28.2	26.4
	Min	6.8	11.2	5.9	8.0	7.7	6.8	14.1	9.7	10.2	10.3	9.1	10.1	10.7
Relative Humidity	Max	81	85	91	91	68	64	59	88	88	94	81	79	-
	Min	27	40	31	27	27	19	25	15	51	25	29	26	-
Soil Temperature at 10 cm	06 UTC	21.4	19.6	19.4	20.8	21.4	21.6	23.8	21.8	20.4	20.2	21.0	21.3	20.3
	12 UTC	25.8	25.4	28.0	28.6	29.0	29.6	26.0	30.4	-	29.0	28.0	28.5	23.4
Sunshine Duration		4.5	12.8	13.3	13.2	12.9	13.0	3.4	9.9	8.8	11.1	10.3	11.8	10.2
Precipitation		1.6	1.5						18.0		0.0	21.1	0.1	6.1
Evaporation		2.2	6.9	6.2	7.4	6.7	7.4	4.4	10.2	5.6	5.6	62.6	66.0	55.4
Growing Degrees	5	8.6	10.7	11.1	10.9	10.9	12.6	15.5	13.9	13.9	15.3	123.1	141.7	135.3
	10	3.6	5.7	6.1	5.9	5.9	7.6	10.5	8.9	8.9	10.3	73.1	91.7	85.3

1st 10-day period (1-10/06/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.9	49.9	48.9
Precipitation - Reference Evapotranspiration	-23.8	-49.8	-42.8
Number of Rainy Days	3.0	1.0	1.6
Number of Dry Days	14.0	3.0	-

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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HELLENIC NATIONAL METEOROLOGICAL SERVICE

Division of Climatology-Applications

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