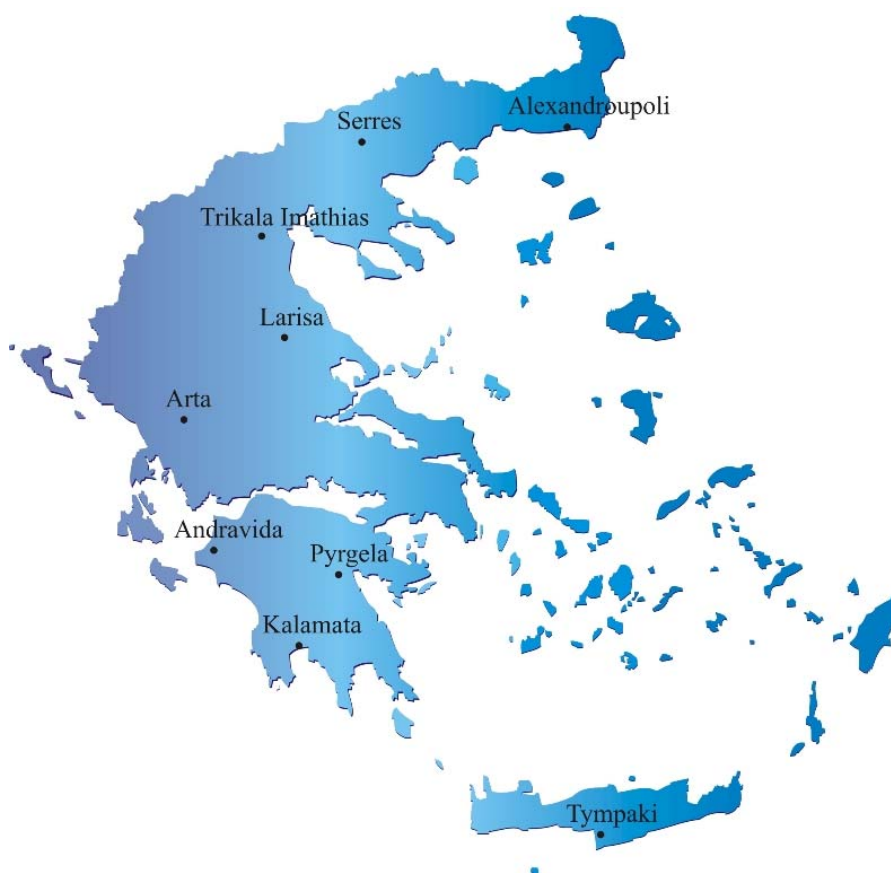


AGROMETEOROLOGICAL BULLETIN

June 2010
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



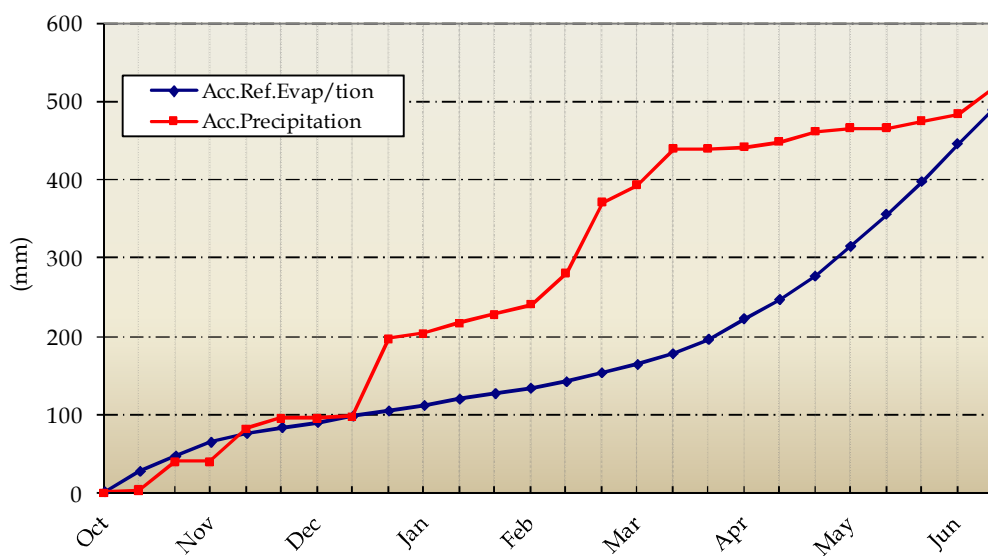
Hellenic National Meteorological Service
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Helliniko, Athens

Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.2	22.4	24.0	25.2	26.0	24.4	26.8	26.2	28.0	31.0	26.0	28.0	25.8
	Min	19.6	14.6	14.2	15.2	15.8	16.6	19.4	19.8	17.0	17.6	17.0	16.1	14.0
Relative Humidity	Max	89	87	83	86	96	96	75	81	89	92	87	85	-
	Min	57	41	43	53	49	51	30	36	51	30	44	44	-
Soil Temperature at 10 cm	06 UTC	24.6	21.0	20.4	20.6	22.0	20.5	19.2	20.6	20.6	21.8	21.1	23.0	20.6
	12 UTC	25.5	24.2	22.2	25.0	25.0	20.6	21.5	22.0	23.6	25.0	23.5	26.4	25.3
Sunshine Duration		1.3	11.4	7.7	13.5	9.1	1.5	7.7	2.6	10.1	13.5	7.8	10.4	9.7
Precipitation		0.0	0.1			15.4	16.3		0.0	0.3	0.1	32.2	4.4	10.6
Evaporation		1.2	5.0	4.0	4.0	3.0	5.7	6.6	4.2	6.5	7.2	47.4	79.6	72.8
Growing Degrees	5	17.9	13.5	14.1	15.2	15.9	15.5	18.1	18.0	17.5	19.3	165.0	170.8	148.7
	10	12.9	8.5	9.1	10.2	10.9	10.5	13.1	13.0	12.5	14.3	115.0	120.8	98.7

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.7	49.8	48.0
Precipitation - Reference Evapotranspiration	-11.5	-45.4	-37.4
Number of Rainy Days	5.0	1.0	2.2
Number of Dry Days	10.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

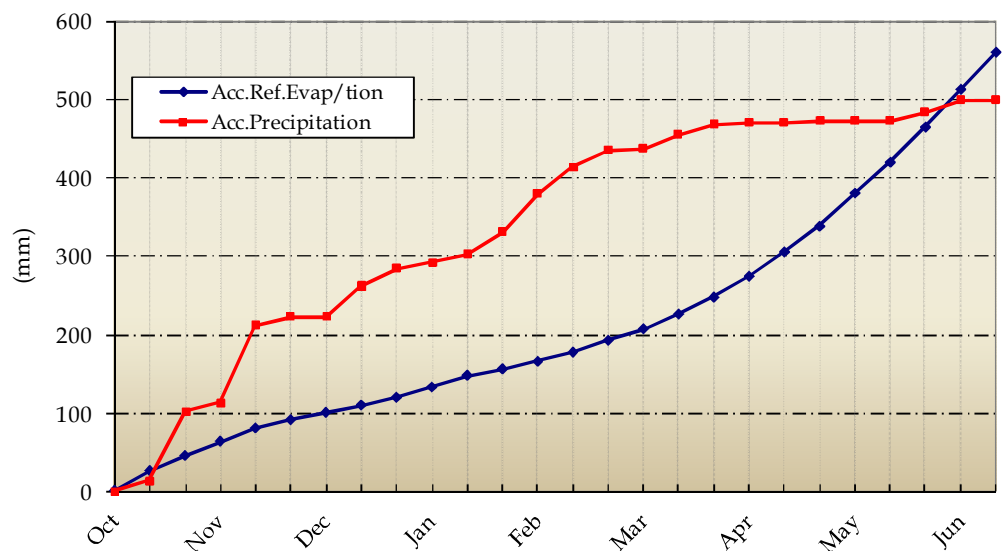


Andravida

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.6	23.0	24.2	24.8	23.4	26.8	26.2	27.4	26.6	27.6	25.6	27.8	26.9
	Min	18.6	12.2	15.4	14.4	16.8	13.8	16.4	15.6	16.0	17.4	15.7	16.2	15.3
Relative Humidity	Max	94	88	92	96	90	95	94	96	98	96	94	93	-
	Min	52	54	57	51	54	39	53	40	49	54	50	41	-
Soil Temperature at 10 cm	06 UTC	23.2	20.0	21.4	22.0	22.4	22.2	23.6	24.0	24.4	25.4	22.9	24.0	23.0
	12 UTC	26.0	28.2	28.0	30.0	27.6	30.2	28.0	32.4	32.8	33.2	29.6	30.7	27.7
Sunshine Duration		2.8	10.5	12.9	11.4	10.2	13.1	11.9	12.9	12.5	13.0	11.1	10.9	11.1
Precipitation						0.2						0.2		2.3
Evaporation		7.9	3.0	6.5	2.8	10.3	4.9	4.8	8.1	2.7	9.3	60.3	87.4	67.5
Growing Degrees	5	17.1	12.6	14.8	14.6	15.1	15.3	16.3	16.5	16.3	17.5	156.1	169.8	160.7
	10	12.1	7.6	9.8	9.6	10.1	10.3	11.3	11.5	11.3	12.5	106.1	119.8	110.7

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.6	49.3	48.5
Precipitation - Reference Evapotranspiration	-47.4	-49.3	-46.2
Number of Rainy Days	1.0	0.0	0.7
Number of Dry Days	14.0	43.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

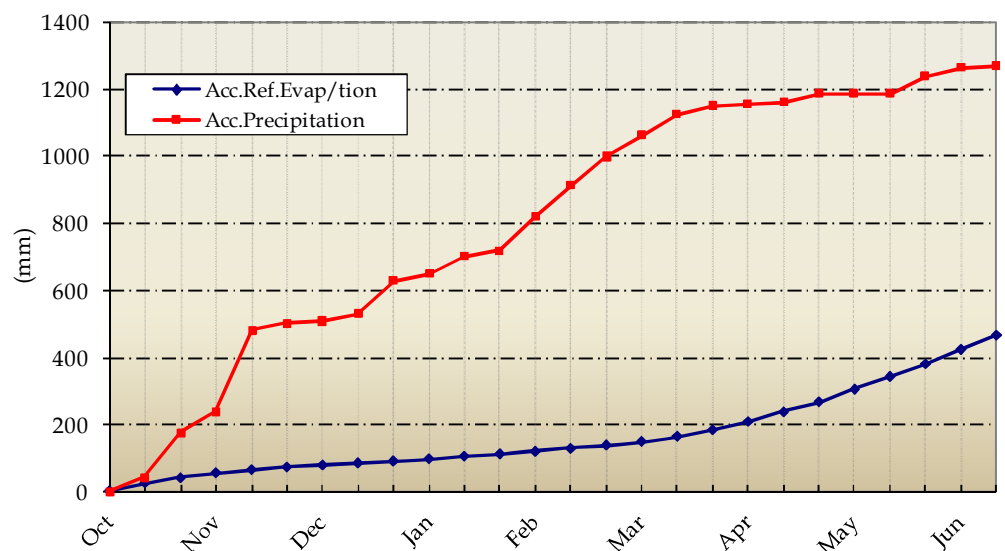


Arta

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	24.0	25.4	26.2	26.0	30.2	27.0	27.6	30.0	31.6	27.2	28.8	27.8
	Min	15.8	10.4	11.6	14.4	15.4	14.0	16.0	18.4	14.2	16.0	14.6	14.6	14.7
Relative Humidity	Max	95	74	95	83	96	88	93	84	86	90	88	83	-
	Min	38	50	26	48	32	41	45	55	46	40	42	44	-
Soil Temperature at 10 cm	06 UTC	22.0	20.2	19.4	21.0	21.8	21.0	22.0	23.0	21.8	22.2	21.4	23.2	22.6
	12 UTC	22.8	21.8	22.2	23.6	23.0	24.0	24.8	25.4	24.2	24.6	23.6	25.4	28.3
Sunshine Duration		7.0	6.5	11.5	11.6	3.8	10.1	12.7	8.2	12.6	12.0	9.6	11.0	10.1
Precipitation		0.6				6.4						7.0	12.3	7.4
Evaporation		3.9	3.9	6.2	6.6	2.5	6.1	7.1	5.0	5.0	7.7	54.0	59.6	-
Growing Degrees	5	15.1	12.2	13.5	15.3	15.7	17.1	16.5	18.0	17.1	18.8	159.3	-	162.3
	10	10.1	7.2	8.5	10.3	10.7	12.1	11.5	13.0	12.1	13.8	109.3	-	112.3

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	42.8	46.5	45.3
Precipitation - Reference Evapotranspiration	-35.8	-34.2	-37.9
Number of Rainy Days	2.0	1.0	1.4
Number of Dry Days	9.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

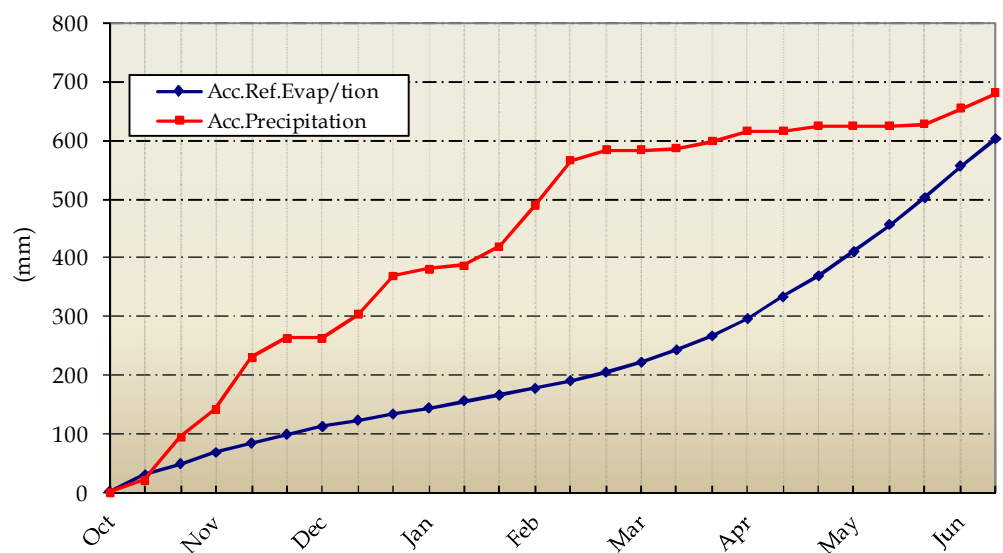


Kalamata

1st 10-day period (1-10/06/2010)		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	24.8	23.6	23.6	24.0	23.2	26.2	27.0	26.2	29.2	25.3	29.0	27.6
	Min	14.0	15.0	12.6	12.8	15.4	14.4	13.8	15.6	16.0	16.2	14.6	16.1	14.5
Relative Humidity	Max	89	88	96	98	98	98	95	96	94	94	95	87	-
	Min	47	39	43	61	57	58	48	48	53	43	50	38	-
Soil Temperature at 10 cm	06 UTC	20.6	20.0	20.0	20.0	20.4	20.4	20.0	21.0	21.2	21.6	20.5	21.6	21.6
	12 UTC	22.0	20.4	22.2	22.4	22.2	22.4	22.8	23.4	23.8	24.2	22.6	23.6	25.8
Sunshine Duration		1.5	11.8	12.7	10.2	7.2	8.9	12.7	11.5	11.7	8.9	9.7	11.0	10.5
Precipitation						25.9					0.0	25.9	2.0	2.7
Evaporation		4.6	5.8	9.0	5.1	5.8	4.0	6.6	8.0	4.2	5.0	58.1	67.1	75.1
Growing Degrees	5	14.5	14.9	13.1	13.2	14.7	13.8	15.0	16.3	16.1	17.7	149.3	175.6	160.6
	10	9.5	9.9	8.1	8.2	9.7	8.8	10.0	11.3	11.1	12.7	99.3	125.6	110.6

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.3	51.0	50.2
Precipitation - Reference Evapotranspiration	-20.4	-49.0	-47.5
Number of Rainy Days	1.0	3.0	0.9
Number of Dry Days	13.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

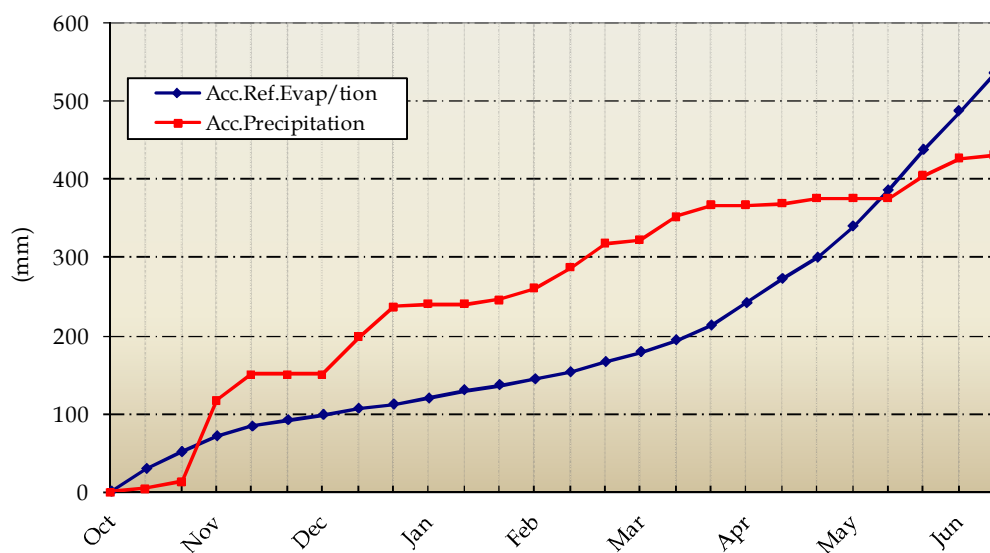


Larisa

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.2	26.2	27.2	28.2	22.4	27.0	29.8	31.2	32.0	31.0	28.4	32.5	29.7
	Min	18.6	13.6	13.4	13.6	18.2	16.2	14.0	14.4	19.4	18.6	16.0	16.0	14.1
Relative Humidity	Max	87	93	96	93	92	94	91	87	81	81	90	84	-
	Min	43	35	37	34	73	35	36	28	29	32	38	25	-
Soil Temperature at 10 cm	06 UTC	23.0	20.4	20.6	21.4	22.4	20.6	21.6	22.0	23.2	23.2	21.8	23.3	21.7
	12 UTC	23.0	22.8	23.4	24.2	22.6	24.0	24.4	25.2	25.2	26.0	24.1	26.5	24.3
Sunshine Duration		3.1	9.9	10.6	11.3	0.2	9.9	10.9	12.0	7.4	12.2	8.8	10.8	10.4
Precipitation		1.5				1.6	0.2	0.0		0.4		3.7	1.2	9.2
Evaporation		3.0	4.8	6.7	8.0	2.9	5.4	9.4	9.5	5.6	11.1	66.4	89.9	79.0
Growing Degrees	5	18.9	14.9	15.3	15.9	15.3	16.6	16.9	17.8	20.7	19.8	172.1	192.4	169.0
	10	13.9	9.9	10.3	10.9	10.3	11.6	11.9	12.8	15.7	14.8	122.1	142.4	119.0

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.5	61.8	54.0
Precipitation - Reference Evapotranspiration	-44.8	-60.6	-44.8
Number of Rainy Days	4.0	1.0	2.3
Number of Dry Days	7.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

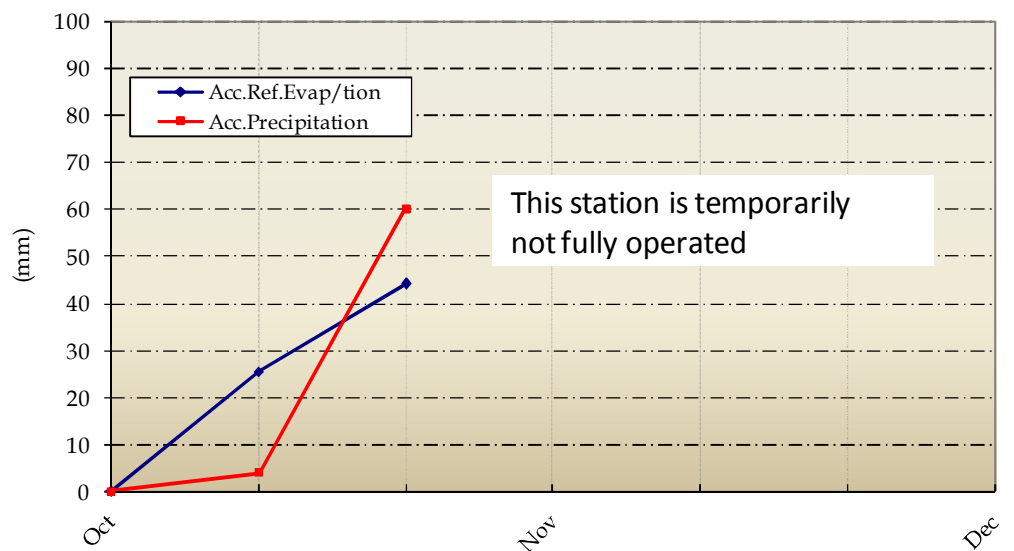


Pyrgela

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	32.4	29.8
	Min	14.0	13.6	15.0	11.0	-	14.0	12.4	13.6	13.6	14.6	13.5	13.5	12.9
Relative Humidity	Max	62	50	52	-	92	65	51	56	47	57	59	67	-
	Min	36	32	27	-	35	45	23	26	26	24	30	32	-
Soil Temperature at 10 cm	06 UTC	24.4	23.0	24.4	24.0	-	20.8	20.6	22.8	24.0	24.6	23.2	24.3	22.1
	12 UTC	29.0	31.0	32.4	32.0	-	24.0	31.4	31.4	32.0	32.6	30.6	32.7	30.5
Sunshine Duration		2.2	9.2	10.4	-	-	5.3	11.2	8.3	10.1	11.9	8.6	10.8	10.2
Precipitation							4.0					-		4.7
Evaporation		2.4	3.6	2.2	-	-	3.4	3.6	4.6	3.4	4.8	-	69.4	65.8
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	179.3	163.5
	10	-	-	-	-	-	-	-	-	-	-	-	129.3	113.5

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	49.6	47.2
Precipitation - Reference Evapotranspiration	-	-49.6	-42.5
Number of Rainy Days	-	0.0	1.3
Number of Dry Days	-	35.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

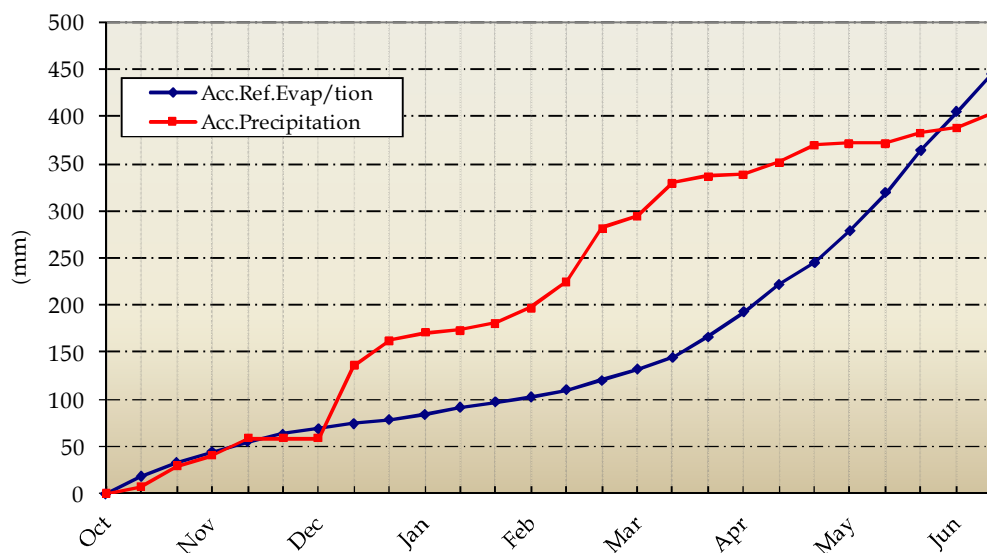


Series

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.4	26.0	26.0	27.4	24.0	26.8	30.4	30.8	32.4	33.2	28.2	32.4	28.7
	Min	16.8	10.8	14.8	15.0	14.8	16.8	14.6	14.2	14.8	17.0	15.0	16.5	15.4
Relative Humidity	Max	90	87	89	80	86	94	86	70	72	81	84	71	-
	Min	58	35	35	40	42	61	31	28	29	26	38	33	-
Soil Temperature at 10 cm	06 UTC	24.2	19.4	21.2	21.8	22.0	21.6	20.4	22.0	23.2	23.4	21.9	23.0	21.3
	12 UTC	23.8	23.8	22.6	24.2	24.0	23.0	22.6	23.0	24.8	25.0	23.7	25.4	25.2
Sunshine Duration		1.6	8.8	8.3	7.4	1.8	4.2	12.0	8.8	8.8	11.5	7.3	10.2	9.3
Precipitation		4.7	0.0	0.5		2.3	7.8					15.3	1.0	18.7
Evaporation		1.1	3.8	5.0	3.8	2.9	1.4	4.7	5.0	5.0	6.5	39.2	28.6	61.1
Growing Degrees	5	16.1	13.4	15.4	16.2	14.4	16.8	17.5	17.5	18.6	20.1	166.0	194.4	170.3
	10	11.1	8.4	10.4	11.2	9.4	11.8	12.5	12.5	13.6	15.1	116.0	144.4	120.3

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	39.9	51.2	45.4
Precipitation - Reference Evapotranspiration	-24.6	-50.2	-26.7
Number of Rainy Days	4.0	1.0	3.0
Number of Dry Days	6.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

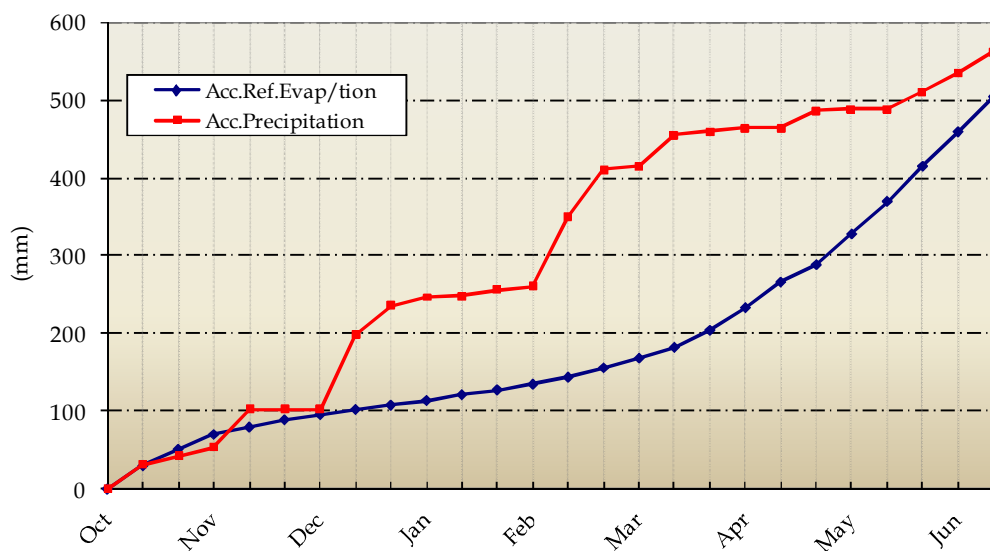


Trikala Imathias

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.2	24.8	25.0	26.0	21.6	27.0	29.2	31.2	31.6	32.0	27.3	30.6	28.7
	Min	16.8	14.2	16.0	15.8	17.0	16.6	15.0	16.2	19.4	18.8	16.6	17.1	15.8
Relative Humidity	Max	94	92	92	94	96	92	99	96	91	90	94	92	-
	Min	46	42	42	46	83	42	41	36	36	40	45	34	-
Soil Temperature at 10 cm	06 UTC	22.0	19.8	20.8	21.4	22.2	20.2	20.4	21.6	23.8	24.4	21.7	23.0	21.9
	12 UTC	21.2	23.2	24.0	25.2	22.0	22.4	24.8	26.6	28.0	28.2	24.6	27.4	23.7
Sunshine Duration		4.8	11.5	9.4	9.3	0.1	4.8	12.8	11.8	11.4	12.8	8.9	9.7	9.8
Precipitation		10.5		0.5		15.4						26.4	8.2	9.9
Evaporation		1.9	3.7	4.8	3.2	1.6	3.0	3.6	5.8	5.2	5.6	38.4	48.9	60.8
Growing Degrees	5	15.5	14.5	15.5	15.9	14.3	16.8	17.1	18.7	20.5	20.4	169.2	188.5	171.3
	10	10.5	9.5	10.5	10.9	9.3	11.8	12.1	13.7	15.5	15.4	119.2	138.5	121.8

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.2	56.3	48.7
Precipitation - Reference Evapotranspiration	-18.8	-48.1	-38.8
Number of Rainy Days	3.0	2.0	2.1
Number of Dry Days	1.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

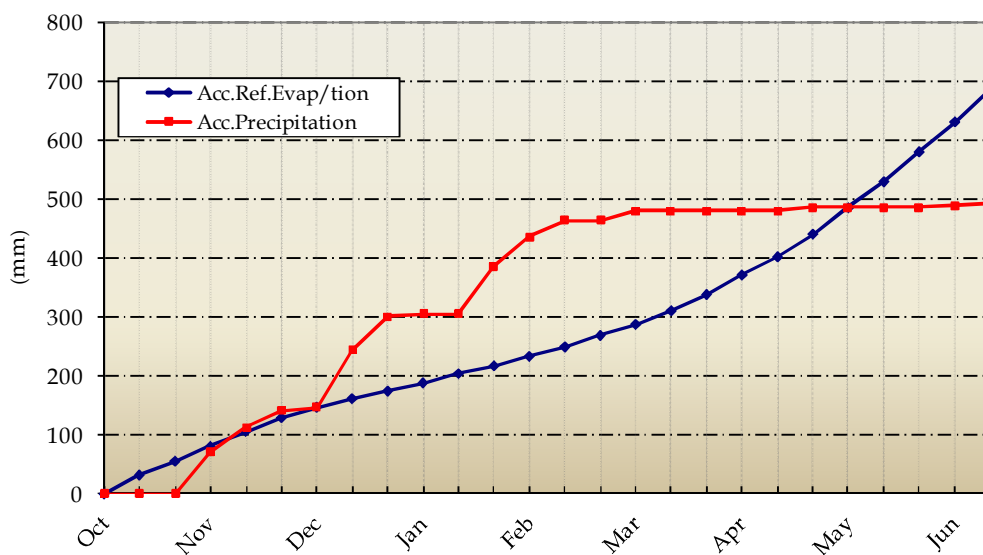


Tympaki

1st 10-day period (1-10/06/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.8	27.4	23.6	24.4	29.8	26.6	27.2	26.6	25.0	31.4	27.1	28.6	27.1
	Min	17.0	19.4	16.8	17.4	19.0	17.2	16.8	16.0	16.4	17.4	17.3	17.8	16.3
Relative Humidity	Max	98	99	98	99	100	97	67	97	96	69	92	79	-
	Min	32	44	59	69	36	37	29	46	40	29	42	35	-
Soil Temperature at 10 cm	06 UTC	27.4	27.6	27.0	27.0	26.2	26.0	26.2	26.2	26.2	27.4	26.7	26.9	26.9
	12 UTC	32.8	33.0	32.6	32.8	29.6	32.4	31.2	32.8	32.6	33.0	32.3	33.6	32.0
Sunshine Duration		8.2	6.8	11.4	9.9	7.1	12.6	12.0	11.8	11.7	11.7	10.3	9.8	11.4
Precipitation						1.9						1.9		0.4
Evaporation		10.6	8.0	8.4	5.6	6.4	9.6	13.8	6.9	7.6	9.7	86.6	93.2	87.9
Growing Degrees	5	17.9	18.4	15.2	15.9	19.4	16.9	17.0	16.3	15.7	19.4	172.1	182.1	165.3
	10	12.9	13.4	10.2	10.9	14.4	11.9	12.0	11.3	10.7	14.4	122.1	132.1	115.8

1st 10-day period (1-10/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.8	51.2	51.1
Precipitation - Reference Evapotranspiration	-52.9	-51.2	-50.7
Number of Rainy Days	1.0	0.0	0.3
Number of Dry Days	9.0	37.0	-

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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