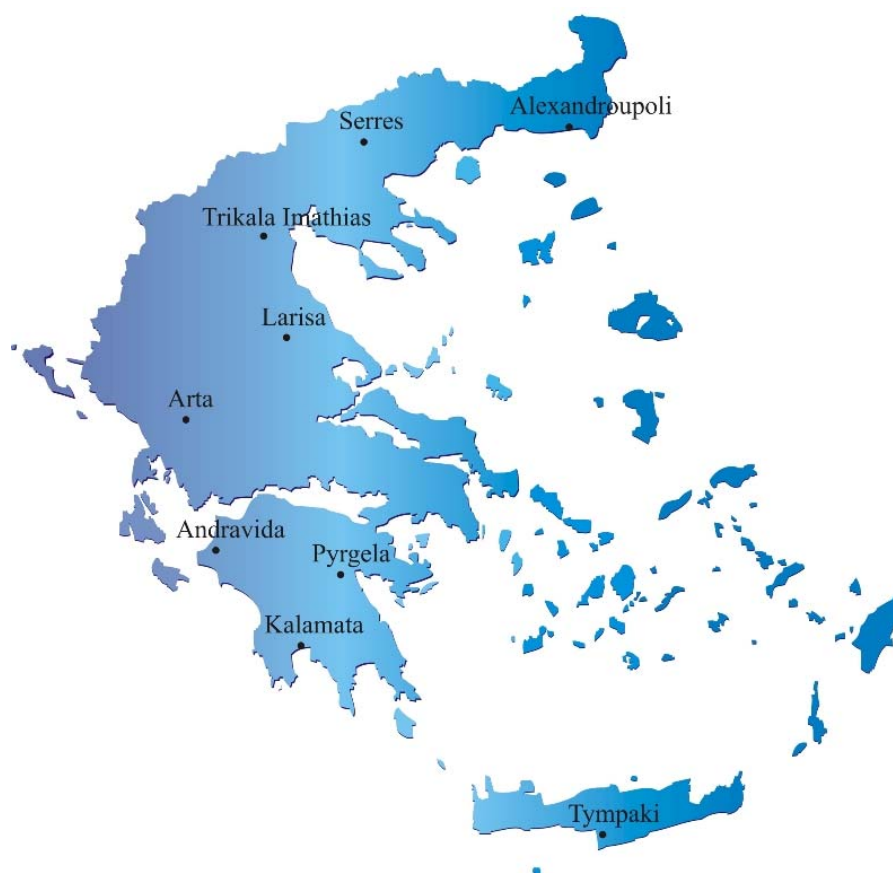


AGROMETEOROLOGICAL BULLETIN

June 2010
2nd 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



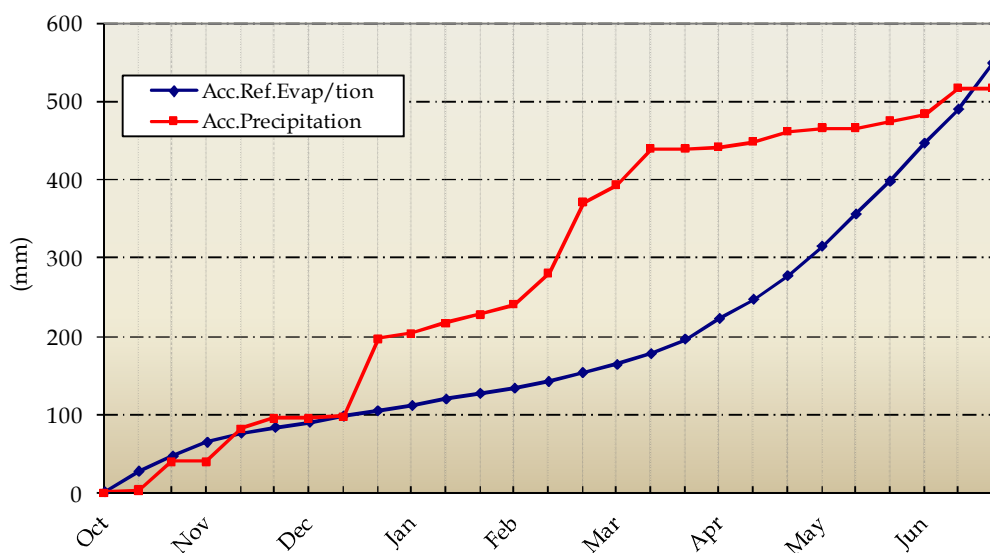
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.6	31.0	31.2	32.4	32.8	34.0	35.0	30.8	29.6	30.0	31.8	29.7	27.5
	Min	16.8	17.6	19.0	20.0	20.0	24.6	23.4	21.6	21.0	20.2	20.4	16.8	15.2
Relative Humidity	Max	82	73	78	86	81	77	86	77	77	83	80	78	-
	Min	31	32	38	34	37	27	44	43	51	42	38	28	-
Soil Temperature at 10 cm	06 UTC	22.6	23.8	24.6	25.6	26.0	27.0	28.0	27.6	27.0	26.8	25.9	25.2	22.6
	12 UTC	26.4	27.0	26.8	28.2	28.6	29.4	30.0	30.0	29.0	29.2	28.5	28.9	27.3
Sunshine Duration		13.7	13.8	13.4	11.1	12.4	12.1	13.5	11.2	10.2	11.4	12.3	11.4	10.3
Precipitation													2.1	11.6
Evaporation		8.7	10.6	10.4	7.0	8.0	11.5	12.7	9.8	8.2	9.0	95.9	103.1	79.3
Growing Degrees	5	19.2	19.3	20.1	21.2	21.4	24.3	24.2	21.2	20.3	20.1	211.3	182.7	163.4
	10	14.2	14.3	15.1	16.2	16.4	19.3	19.2	16.2	15.3	15.1	161.3	132.7	113.4

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.2	57.4	52.7
Precipitation - Reference Evapotranspiration	-59.2	-55.3	-41.1
Number of Rainy Days	0.0	2.0	1.6
Number of Dry Days	10.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

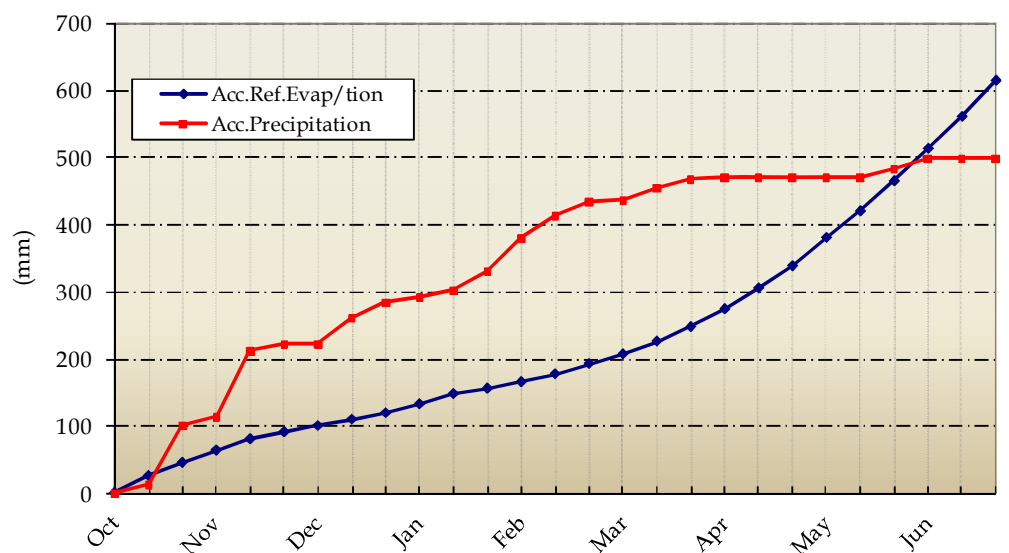


Andravida

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	31.2	31.4	31.6	31.4	36.4	30.0	33.0	32.0	28.8	31.6	30.6	28.1
	Min	17.2	18.4	19.0	17.8	19.0	19.8	17.8	19.8	20.4	21.0	19.0	17.8	16.4
Relative Humidity	Max	96	90	94	92	92	83	87	91	91	91	91	93	-
	Min	42	43	31	32	39	22	54	46	34	39	38	40	-
Soil Temperature at 10 cm	06 UTC	25.4	26.4	26.4	26.2	27.0	27.6	27.2	27.8	28.2	28.2	27.0	26.7	24.8
	12 UTC	34.0	34.8	35.0	34.2	35.4	36.4	35.8	36.4	35.0	35.8	35.3	34.2	29.7
Sunshine Duration		12.9	12.3	10.2	7.4	10.0	12.0	11.5	11.3	11.6	11.6	11.1	13.0	11.5
Precipitation														2.1
Evaporation		3.9	10.5	13.4	8.3	7.5	8.7	5.0	6.7	9.1	14.5	87.6	115.2	71.4
Growing Degrees	5	18.6	19.8	20.2	19.7	20.2	23.1	18.9	21.4	21.2	19.9	203.0	191.7	172.2
	10	13.6	14.8	15.2	14.7	15.2	18.1	13.9	16.4	16.2	14.9	153.0	141.7	122.2

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.1	56.9	50.2
Precipitation - Reference Evapotranspiration	-54.1	-56.9	-48.1
Number of Rainy Days	0.0	0.0	0.4
Number of Dry Days	15.0	53.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

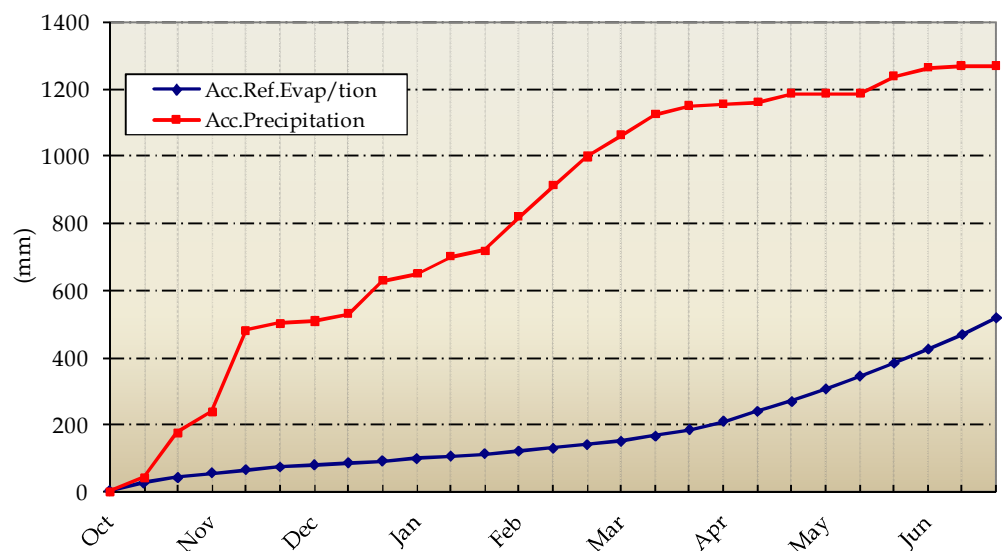




2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	32.0	32.0	31.0	33.2	35.6	32.6	34.0	32.2	29.0	32.3	32.1	28.8
	Min	16.6	18.4	18.0	17.8	18.4	20.6	17.8	20.2	18.4	17.0	18.3	17.3	15.7
Relative Humidity	Max	97	87	65	86	76	78	71	83	82	90	82	81	-
	Min	43	44	46	44	42	30	47	35	42	48	42	41	-
Soil Temperature at 10 cm	06 UTC	23.8	24.2	22.6	23.8	24.8	25.2	25.4	26.0	26.2	25.4	24.7	26.5	24.3
	12 UTC	26.8	26.8	27.4	27.4	27.8	28.2	28.2	29.2	28.8	27.4	27.8	28.8	30.1
Sunshine Duration		12.8	12.8	11.5	6.6	9.1	11.7	12.6	12.1	11.0	11.6	11.2	11.8	10.6
Precipitation														8.3
Evaporation		7.6	7.5	7.1	4.8	4.7	8.5	6.8	9.4	4.2	8.0	68.6	71.2	-
Growing Degrees	5	18.9	20.2	20.0	19.4	20.8	23.1	20.2	22.1	20.3	18.0	203.0	196.9	172.3
	10	13.9	15.2	15.0	14.4	15.8	18.1	15.2	17.1	15.3	13.0	153.0	146.9	122.3

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.3	51.8	47.4
Precipitation - Reference Evapotranspiration	-50.3	-51.8	-39.1
Number of Rainy Days	0.0	0.0	1.2
Number of Dry Days	15.0	17.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

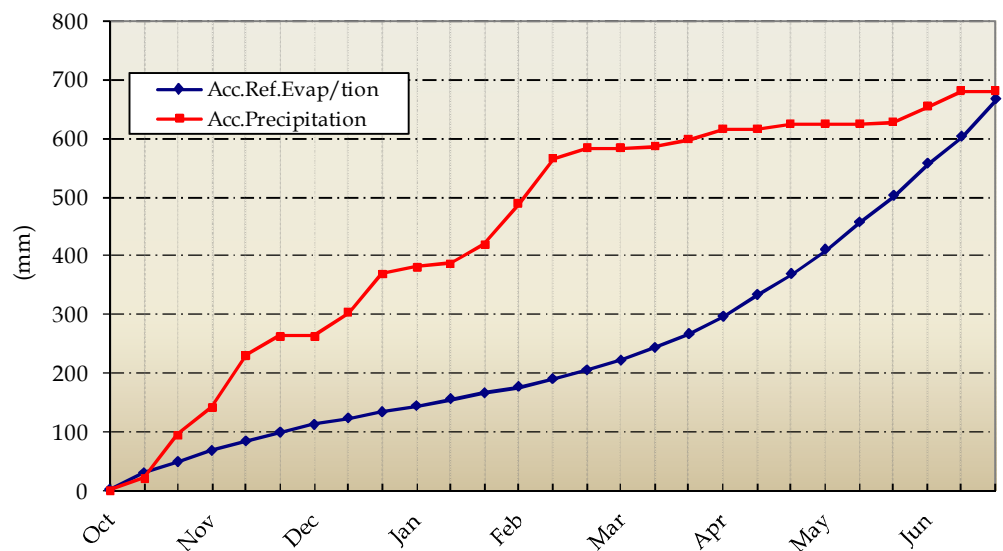


Kalamata

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.4	34.4	33.4	31.6	38.6	37.4	36.0	31.4	30.6	31.4	33.7	31.0	29.3
	Min	17.2	16.8	18.6	21.6	20.8	22.0	18.4	18.6	18.2	17.6	19.0	17.5	15.9
Relative Humidity	Max	98	92	92	71	66	76	70	87	90	94	84	90	-
	Min	32	27	26	38	17	24	24	41	49	32	31	38	-
Soil Temperature at 10 cm	06 UTC	21.8	22.2	22.8	23.0	23.4	24.0	23.6	24.0	23.8	23.2	23.2	23.0	23.0
	12 UTC	24.4	24.8	25.4	25.4	26.0	26.6	26.4	26.6	26.6	25.4	25.8	25.6	27.4
Sunshine Duration		12.8	12.2	12.2	10.0	10.5	12.5	12.6	10.6	12.4	10.3	11.6	12.6	11.0
Precipitation														3.1
Evaporation		6.2	7.4	7.2	5.4	9.3	8.1	4.8	6.4	4.6	8.8	68.2	86.0	80.7
Growing Degrees	5	19.8	20.6	21.0	21.6	24.7	24.7	22.2	20.0	19.4	19.5	213.5	192.7	175.9
	10	14.8	15.6	16.0	16.6	19.7	19.7	17.2	15.0	14.4	14.5	163.5	142.7	125.9

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.7	56.8	54.6
Precipitation - Reference Evapotranspiration	-63.7	-56.8	-51.5
Number of Rainy Days	0.0	0.0	0.9
Number of Dry Days	15.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

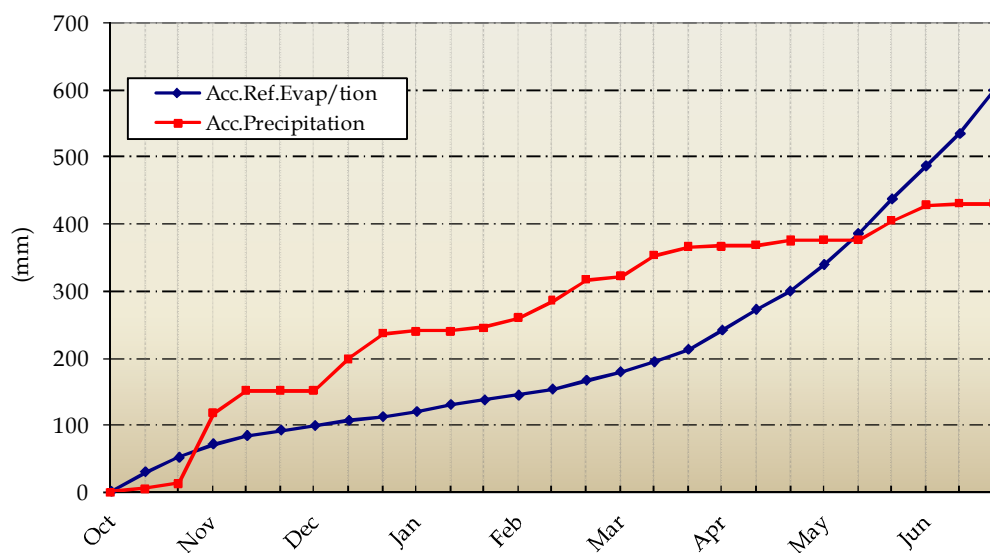


Larisa

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.2	36.4	37.0	38.0	38.8	39.2	34.8	32.8	32.4	30.8	35.4	32.9	31.7
	Min	16.8	20.0	20.0	20.0	21.8	24.0	20.4	23.0	17.2	20.0	20.3	17.3	15.7
Relative Humidity	Max	72	70	73	77	76	70	81	81	88	87	78	80	-
	Min	26	23	26	21	18	18	29	42	34	28	26	25	-
Soil Temperature at 10 cm	06 UTC	23.4	24.2	25.2	25.8	26.2	23.0	27.0	27.4	26.8	25.8	25.5	25.3	23.9
	12 UTC	26.8	27.4	28.0	28.2	29.0	29.4	29.6	24.8	29.2	28.0	28.0	28.1	26.6
Sunshine Duration		13.2	12.5	8.4	9.9	9.7	11.1	11.7	7.7	9.2	10.6	10.4	11.2	10.5
Precipitation									0.0	0.1		0.1	0.9	6.2
Evaporation		8.2	10.8	8.1	11.7	19.3	5.2	13.3	7.6	8.1	10.0	102.3	101.5	85.8
Growing Degrees	5	20.5	23.2	23.5	24.0	25.3	26.6	22.6	22.9	19.8	20.4	228.8	201.1	186.8
	10	15.5	18.2	18.5	19.0	20.3	21.6	17.6	17.9	14.8	15.4	178.8	151.1	136.8

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	65.1	64.8	58.5
Precipitation - Reference Evapotranspiration	-65.0	-63.9	-52.3
Number of Rainy Days	1.0	1.0	1.7
Number of Dry Days	9.0	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

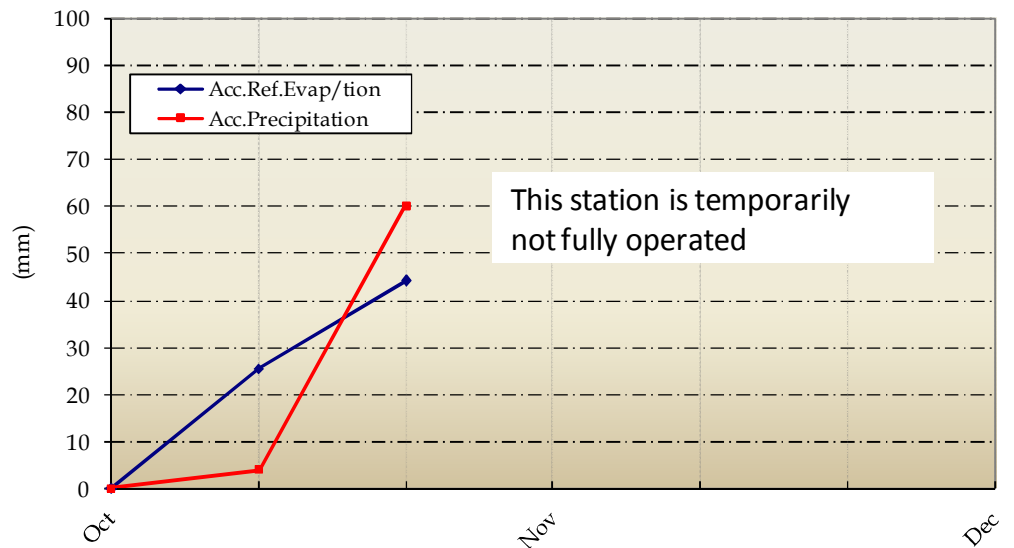


Pyrgela

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	34.2	31.1
	Min	15.0	15.8	16.0	18.8	18.4	19.0	-	17.8	16.6	16.0	17.0	14.5	13.8
Relative Humidity	Max	37	36	46	42	45	-	42	38	75	58	47	61	-
	Min	20	18	24	26	24	-	18	23	24	18	22	26	-
Soil Temperature at 10 cm	06 UTC	25.4	26.6	27.4	28.0	29.0	29.0	-	29.4	28.0	26.6	27.7	26.6	24.0
	12 UTC	33.8	35.4	25.6	36.0	-	37.0	37.6	37.0	35.4	35.0	34.8	34.9	32.8
Sunshine Duration		12.2	11.6	10.2	9.1	9.9	-	11.4	7.1	9.4	11.4	10.3	10.3	10.6
Precipitation										0.0		-		1.6
Evaporation		5.2	5.6	5.8	7.2	7.8	-	7.6	5.4	7.2	9.4	-	61.8	70.1
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	193.5	174.5
	10	-	-	-	-	-	-	-	-	-	-	-	143.5	124.5

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	52.6	50.4
Precipitation - Reference Evapotranspiration	-	-52.6	-48.8
Number of Rainy Days	-	0.0	1.2
Number of Dry Days	-	45.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

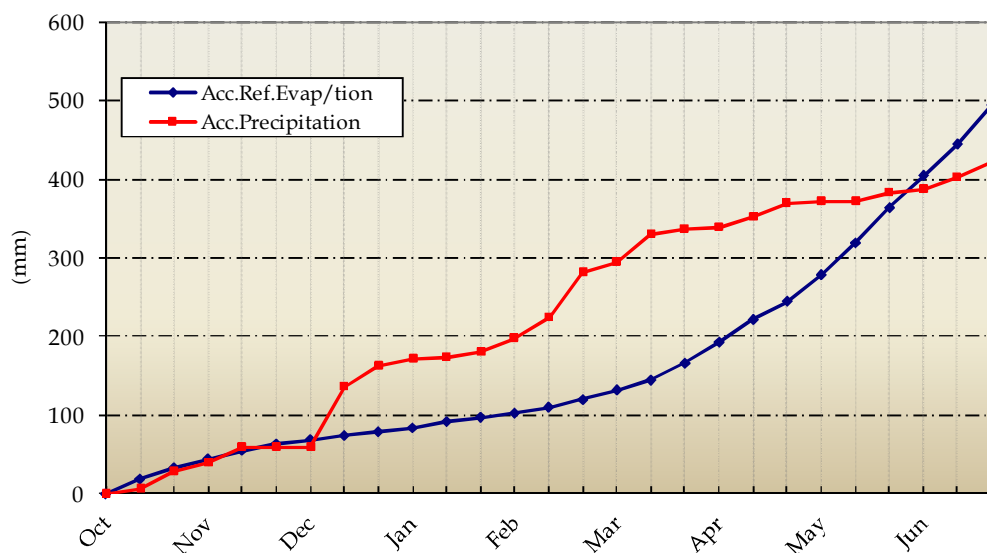


Series

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.9	36.4	37.0	37.0	38.6	38.2	36.6	30.2	30.8	25.6	34.7	33.3	30.1
	Min	18.0	19.2	21.0	20.8	21.0	23.4	22.0	18.4	18.2	17.2	19.9	17.5	16.9
Relative Humidity	Max	65	58	62	60	62	69	76	92	87	90	72	60	-
	Min	24	29	26	30	28	28	27	51	42	59	34	27	-
Soil Temperature at 10 cm	06 UTC	24.2	25.6	26.4	26.2	27.2	28.4	28.8	28.2	24.9	25.0	26.5	25.3	23.1
	12 UTC	27.4	27.6	28.0	27.8	28.0	30.0	30.4	29.2	26.6	25.4	28.0	27.0	27.0
Sunshine Duration		12.2	11.6	7.4	11.2	9.7	10.7	6.8	4.5	8.5	4.5	8.7	10.7	9.7
Precipitation									14.3		5.2	19.5	9.1	13.8
Evaporation		6.5	7.0	7.0	8.2	7.8	8.7	6.4	3.2	3.4	2.2	60.4	30.2	66.8
Growing Degrees	5	22.5	22.8	24.0	23.9	24.8	25.8	24.3	19.3	19.5	16.4	223.3	203.8	185.2
	10	17.5	17.8	19.0	18.9	19.8	20.8	19.3	14.3	14.5	11.4	173.3	153.8	135.2

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.7	53.3	48.5
Precipitation - Reference Evapotranspiration	-30.2	-44.2	-34.7
Number of Rainy Days	2.0	2.0	2.4
Number of Dry Days	11.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

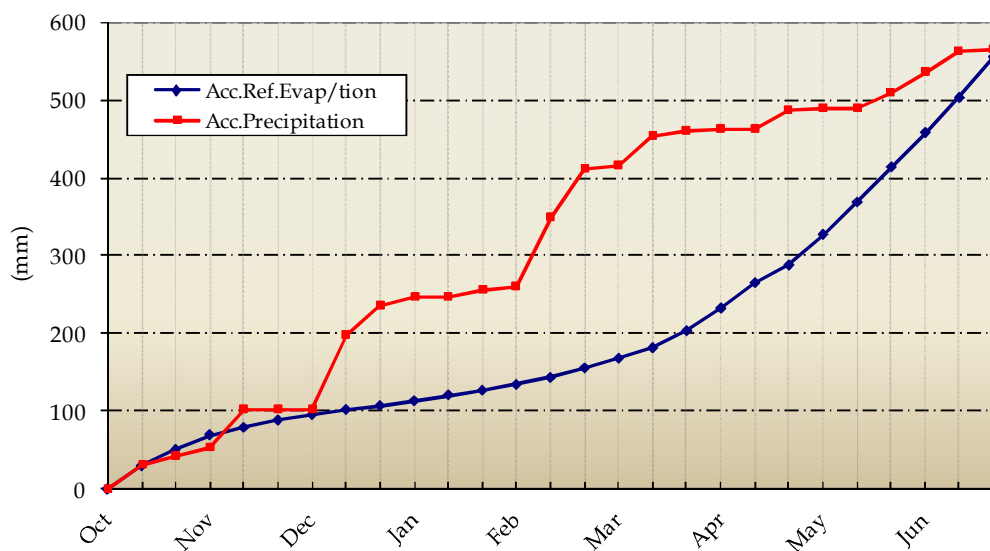


Trikala Imathias

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.0	33.6	33.8	34.8	36.2	36.6	35.4	30.0	30.4	29.2	33.4	31.8	29.6
	Min	18.8	20.0	20.4	20.8	21.0	23.6	21.8	19.6	18.4	18.4	20.3	17.3	16.3
Relative Humidity	Max	89	98	92	85	85	95	98	92	98	98	93	86	-
	Min	34	37	43	33	38	38	44	71	39	69	45	34	-
Soil Temperature at 10 cm	06 UTC	25.0	25.6	26.0	26.4	26.2	27.4	27.2	27.4	25.4	25.2	26.2	25.6	23.4
	12 UTC	29.0	29.6	29.4	29.8	30.0	31.4	31.2	30.4	27.8	28.4	29.7	29.7	25.1
Sunshine Duration		12.6	11.6	9.6	9.3	8.8	10.1	11.2	6.5	8.0	7.9	9.6	10.6	9.7
Precipitation										1.0	2.1	3.1	0.9	9.0
Evaporation		3.7	6.9	3.8	6.0	4.0	5.2	6.6	3.4	3.7	2.4	45.7	62.8	63.6
Growing Degrees	5	21.4	21.8	22.1	22.8	23.6	25.1	23.6	19.8	19.4	18.8	218.4	195.5	179.2
	10	16.4	16.8	17.1	17.8	18.6	20.1	18.6	14.8	14.4	13.8	168.4	145.5	129.2

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.2	59.8	50.0
Precipitation - Reference Evapotranspiration	-49.1	-58.9	-41.0
Number of Rainy Days	2.0	1.0	2.0
Number of Dry Days	13.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

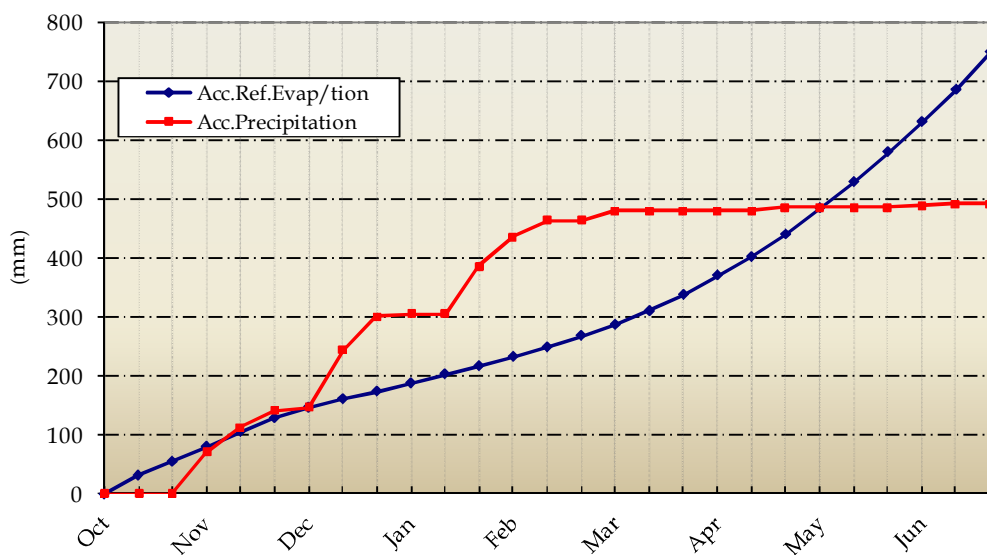


Tympaki

2nd 10-day period (11-20/06/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	32.6	27.8	28.8	31.0	39.0	35.0	35.6	33.2	30.8	32.6	32.6	28.8
	Min	18.6	18.6	20.2	19.2	21.6	23.6	25.4	20.4	24.4	20.6	21.3	19.6	17.7
Relative Humidity	Max	75	72	90	88	81	51	73	69	79	96	77	62	-
	Min	24	29	39	34	33	14	22	28	32	40	30	24	-
Soil Temperature at 10 cm	06 UTC	27.4	28.2	28.8	29.2	30.0	31.0	32.2	31.4	32.0	31.2	30.1	29.0	28.7
	12 UTC	33.2	34.6	35.2	35.2	37.4	37.6	38.0	38.2	38.0	38.0	36.5	35.1	33.6
Sunshine Duration		12.5	12.3	11.7	9.3	8.8	9.5	10.0	10.9	11.1	10.2	10.6	11.8	12.2
Precipitation														0.0
Evaporation		14.8	10.3	8.4	7.9	9.5	15.5	10.2	10.8	9.2	3.6	100.2	128.6	98.1
Growing Degrees	5	20.3	20.6	19.0	19.0	21.3	26.3	25.2	23.0	23.8	20.7	219.2	211.2	182.4
	10	15.3	15.6	14.0	14.0	16.3	21.3	20.2	18.0	18.8	15.7	169.2	161.2	132.4

2nd 10-day period (11-20/06/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	64.0	69.7	55.6
Precipitation - Reference Evapotranspiration	-64.0	-69.7	-55.6
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	15.0	47.0	-

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.

Mesurements 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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