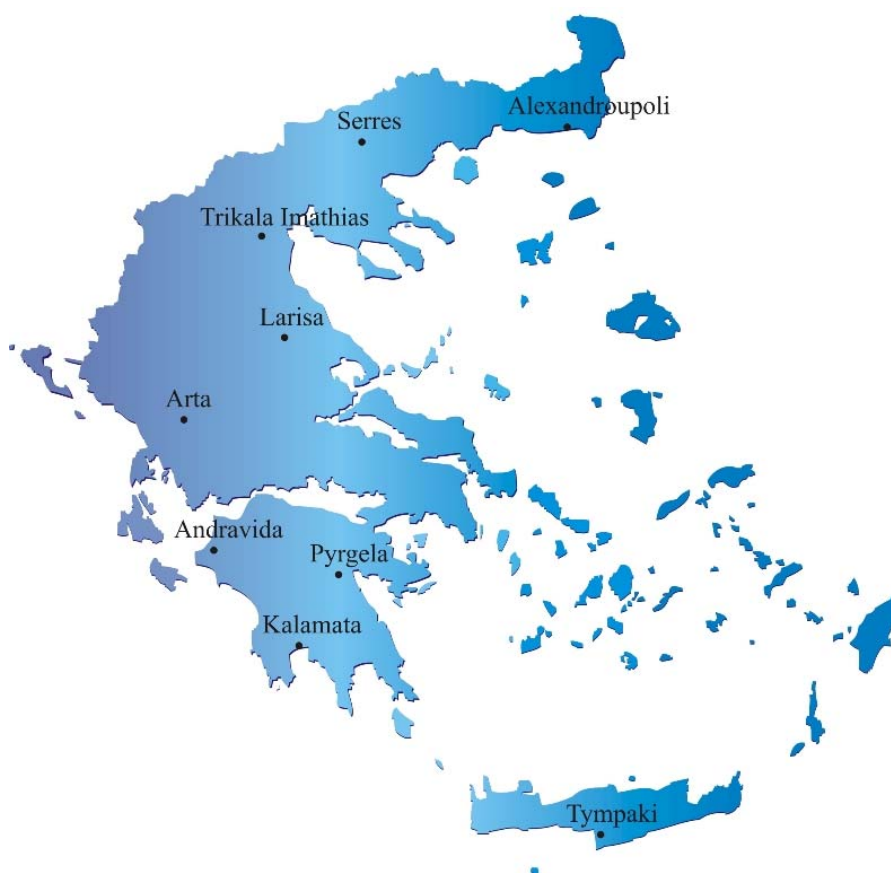




AGROMETEOROLOGICAL BULLETIN

July 2009
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



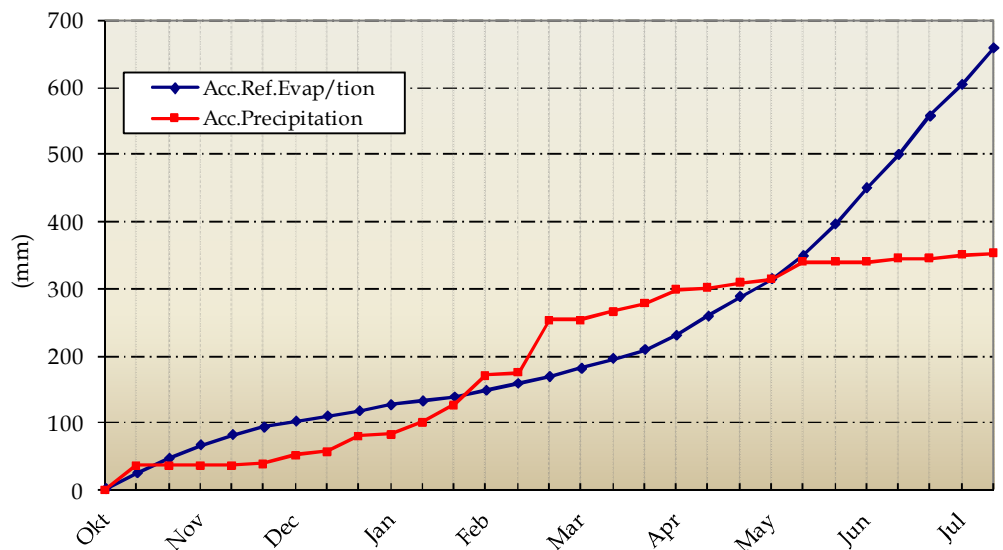
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	32.0	28.8	29.6	28.0	31.2	31.4	30.8	32.6	32.2	30.9	-	29.3
	Min	18.0	20.2	19.2	21.2	18.0	18.8	18.6	19.2	20.2	21.0	19.4	-	17.0
Relative Humidity	Max	77	81	76	81	80	85	85	76	82	84	81	-	-
	Min	36	34	48	49	53	50	42	45	49	43	45	-	-
Soil Temperature at 10 cm	06 UTC	25.6	25.8	27.4	27.4	25.4	25.8	27.0	27.4	28.2	28.4	26.8	-	23.7
	12 UTC	28.6	30.8	30.2	30.0	29.4	29.6	30.8	31.6	32.2	31.5	30.5	-	28.2
Sunshine Duration		10.7	12.9	9.3	5.4	9.0	10.3	13.0	13.0	12.1	11.6	10.7	-	10.3
Precipitation						0.1					1.9	2.0	-	12.1
Evaporation		7.0	6.0	6.0	12.0	5.1	7.5	10.1	9.7	7.5	9.2	80.1	-	85.9
Growing Degrees	5	20.0	21.1	19.0	20.4	18.0	20.0	20.0	20.0	21.4	21.6	201.5	-	181.3
	10	15.0	16.1	14.0	15.4	13.0	15.0	15.0	15.0	16.4	16.6	151.5	-	131.3

1st 10-day period (1-10/07/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	54.7	-	56.1
Precipitation - Reference Evapotranspiration	-52.7	-	-44.0
Number of Rainy Days	2.0	-	2.2
Number of Dry Days	8.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

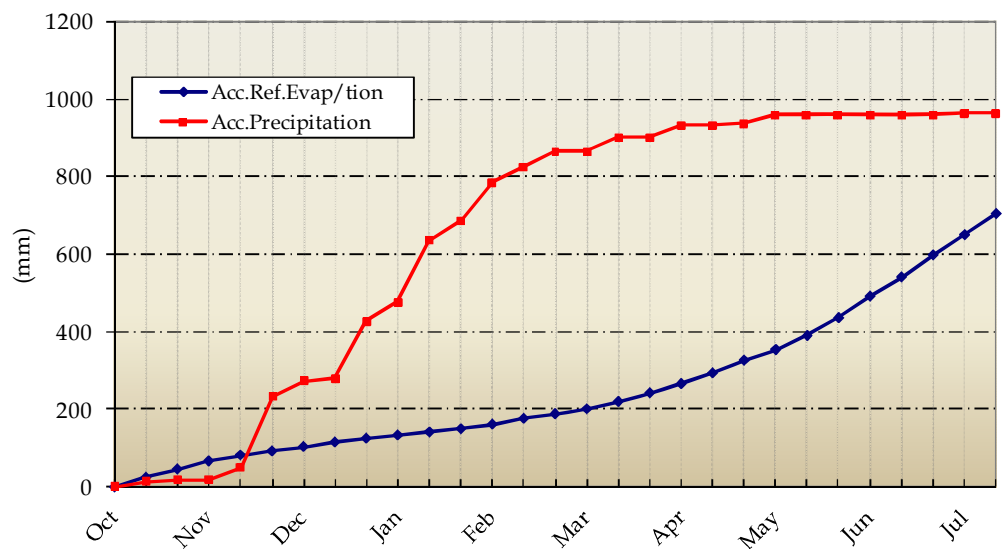


Andravida

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	27.0	28.4	28.2	28.2	29.8	31.0	31.4	32.2	30.6	29.4	-	29.5
	Min	18.0	18.6	20.2	19.0	20.2	19.6	19.8	19.2	19.4	19.4	19.3	-	17.7
Relative Humidity	Max	94	94	98	96	94	96	100	96	93	94	96	-	-
	Min	57	61	61	58	61	54	43	39	34	46	51	-	-
Soil Temperature at 10 cm	06 UTC	26.6	26.8	27.6	27.6	28.0	28.2	28.4	28.4	28.4	28.6	27.9	-	26.9
	12 UTC	33.4	33.8	34.0	34.0	33.8	35.0	35.4	36.0	36.2	35.8	34.7	-	31.6
Sunshine Duration		13.2	13.2	11.7	12.8	11.9	12.8	12.9	12.6	13.1	11.0	12.5	-	12.0
Precipitation													-	0.7
Evaporation		7.1	20.4	6.4	5.3	6.7	20.0	1.2	13.6	8.8	23.9	113.4	-	75.0
Growing Degrees	5	17.5	17.8	19.3	18.6	19.2	19.7	20.4	20.3	20.8	20.0	193.6	-	186.1
	10	12.5	12.8	14.3	13.6	14.2	14.7	15.4	15.3	15.8	15.0	143.6	-	136.1

1st 10-day period (1-10/07/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	54.4	-	53.6
Precipitation - Reference Evapotranspiration	-54.4	-	-52.9
Number of Rainy Days	0.0	-	0.3
Number of Dry Days	16.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

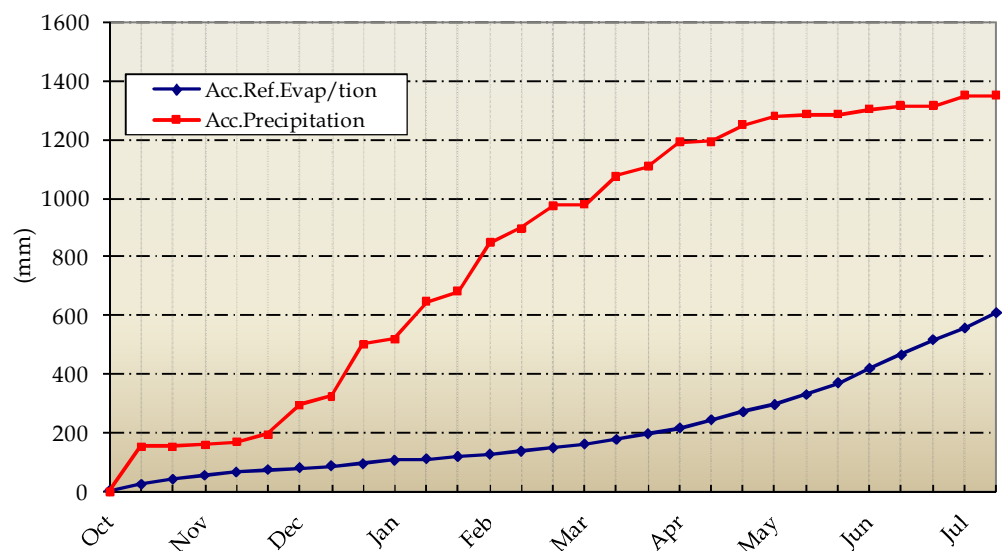




1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.2	29.0	29.8	29.6	30.0	31.0	30.8	32.2	32.6	31.2	30.5	-	30.7
	Min	18.0	17.4	18.6	19.4	18.4	18.4	19.4	19.8	18.4	17.4	18.5	-	16.9
Relative Humidity	Max	85	89	87	89	93	85	88	91	82	84	87	-	-
	Min	55	55	60	58	62	60	53	47	40	56	55	-	-
Soil Temperature at 10 cm	06 UTC	24.8	25.2	26.0	26.4	26.4	26.2	27.0	27.2	27.0	27.4	26.4	-	26.6
	12 UTC	27.0	27.8	28.2	29.8	28.6	28.6	29.2	29.8	29.8	29.4	28.8	-	32.0
Sunshine Duration		13.3	13.3	13.3	10.5	11.2	12.4	12.6	12.6	12.8	11.5	12.4	-	11.0
Precipitation						1.5						1.5	-	4.2
Evaporation		6.1	4.8	6.0	7.2	5.7	5.4	6.2	8.1	6.9	6.2	62.6	-	-
Growing Degrees	5	18.6	18.2	19.2	19.5	19.2	19.7	20.1	21.0	20.5	19.3	195.3	-	188.2
	10	13.6	13.2	14.2	14.5	14.2	14.7	15.1	16.0	15.5	14.3	145.3	-	138.2

1st 10-day period (1-10/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.4	-	50.4
Precipitation - Reference Evapotranspiration	-50.9	-	-46.2
Number of Rainy Days	1.0	-	0.8
Number of Dry Days	8.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

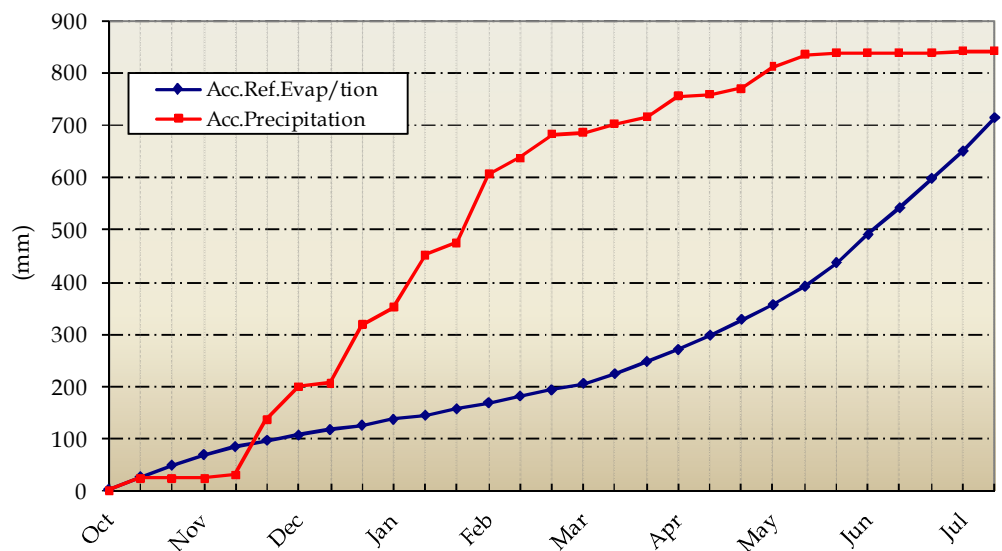


Kalamata

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	30.8	30.0	31.6	33.0	33.8	34.0	35.6	37.2	36.6	33.1	-	30.8
	Min	17.6	18.6	19.0	20.2	20.4	21.2	20.0	20.4	20.0	19.4	19.7	-	17.6
Relative Humidity	Max	92	94	94	91	93	86	91	94	76	78	89	-	-
	Min	49	38	48	46	38	32	32	24	24	18	35	-	-
Soil Temperature at 10 cm	06 UTC	24.2	24.4	24.6	25.0	25.0	25.4	25.4	25.6	25.0	25.2	25.0	-	25.3
	12 UTC	26.4	26.6	26.0	27.0	26.0	27.6	27.8	28.0	27.6	26.2	26.9	-	29.5
Sunshine Duration		12.5	12.8	12.7	12.8	12.7	12.7	12.7	12.7	12.6	12.1	12.6	-	11.4
Precipitation													-	1.0
Evaporation		6.0	9.0	7.0	7.0	9.0	8.0	8.0	9.0	11.0	11.0	85.0	-	89.7
Growing Degrees	5	17.9	19.7	19.5	20.9	21.7	22.5	22.0	23.0	23.6	23.0	213.8	-	191.7
	10	12.9	14.7	14.5	15.9	16.7	17.5	17.0	18.0	18.6	18.0	163.8	-	141.7

1st 10-day period (1-10/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	64.3	-	56.4
Precipitation - Reference Evapotranspiration	-64.3	-	-55.4
Number of Rainy Days	0.0	-	0.3
Number of Dry Days	15.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

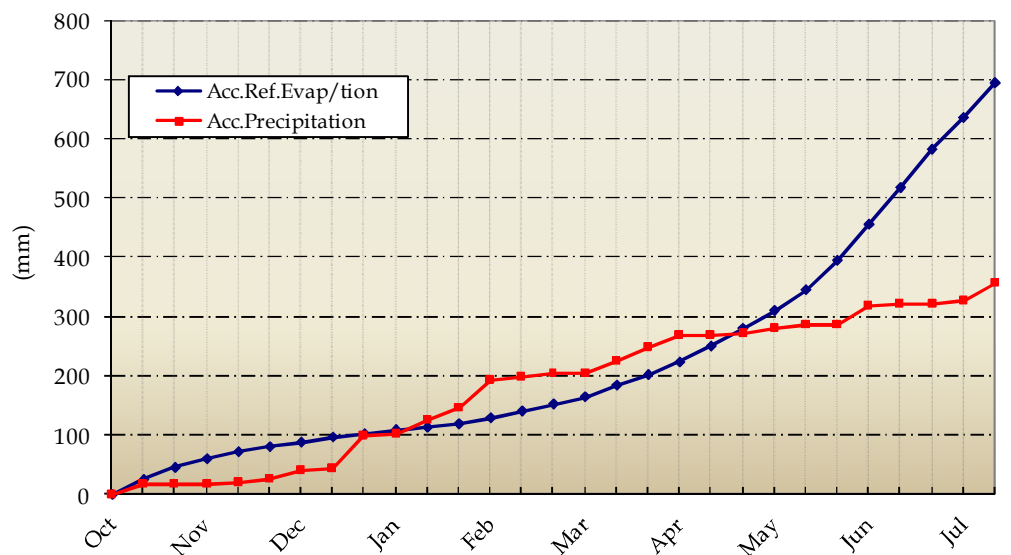


Larisa

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.6	31.2	32.4	32.4	32.0	34.0	33.0	36.6	38.0	34.0	33.4	-	32.9
	Min	16.4	15.4	18.0	20.0	18.4	18.2	17.4	19.2	19.8	22.6	18.5	-	17.5
Relative Humidity	Max	96	96	92	91	94	94	94	88	89	86	92	-	-
	Min	43	38	37	34	39	35	37	22	16	34	34	-	-
Soil Temperature at 10 cm	06 UTC	24.4	23.8	24.8	25.6	25.2	25.0	24.8	25.8	26.4	27.0	25.3	-	26.1
	12 UTC	27.4	27.6	28.0	28.6	28.4	28.8	28.0	28.4	29.2	29.0	28.3	-	28.7
Sunshine Duration		7.6	9.6	11.5	9.8	7.7	9.3	11.7	12.9	13.1	11.4	10.5	-	10.7
Precipitation		2.2			11.9	0.0	15.5	1.0				30.6	-	5.5
Evaporation		5.9	7.3	9.2	8.9	18.2	6.1	0.1	5.6	13.9	23.8	99.0	-	95.9
Growing Degrees	5	18.5	18.3	20.2	21.2	20.2	21.1	20.2	22.9	23.9	23.3	209.8	-	202.1
	10	13.5	13.3	15.2	16.2	15.2	16.1	15.2	17.9	18.9	18.3	159.8	-	152.1

1st 10-day period (1-10/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.6	-	62.4
Precipitation - Reference Evapotranspiration	-28.0	-	-56.9
Number of Rainy Days	4.0	-	1.4
Number of Dry Days	0.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

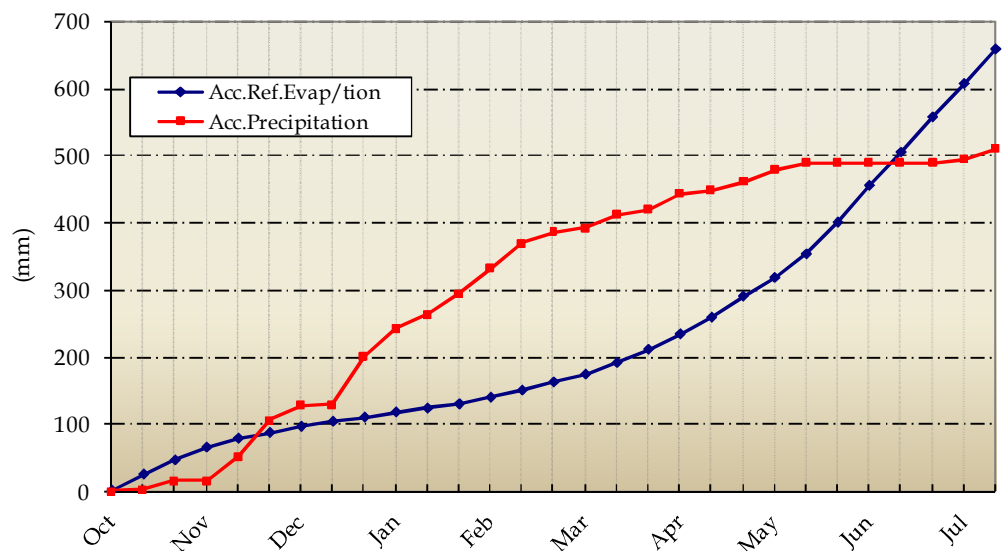


Pyrgela

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.0	33.4	33.4	34.6	33.6	34.4	32.0	37.6	38.8	36.8	34.6	-	33.4
	Min	16.6	15.8	18.2	17.8	18.2	19.0	18.4	18.6	17.6	16.2	17.6	-	16.2
Relative Humidity	Max	74	75	92	90	85	82	89	65	59	59	77	-	-
	Min	38	38	40	36	45	45	48	30	24	20	36	-	-
Soil Temperature at 10 cm	06 UTC	26.4	26.4	26.8	26.2	24.4	24.8	24.4	25.2	25.8	26.2	25.7	-	26.2
	12 UTC	34.6	35.6	35.6	-	32.6	32.2	32.8	34.6	36.4	-	34.3	-	34.9
Sunshine Duration		9.2	9.4	8.2	10.6	10.1	10.6	12.5	12.5	12.0	12.3	10.7	-	10.8
Precipitation				0.6	5.3	5.6	3.1					14.6	-	3.2
Evaporation		7.0	6.8	5.1	6.7	4.9	3.9	6.7	7.7	9.6	8.4	66.8	-	72.9
Growing Degrees	5	18.8	19.6	20.8	21.2	20.9	21.7	20.2	23.1	23.2	21.5	211.0	-	198.1
	10	13.8	14.6	15.8	16.2	15.9	16.7	15.2	18.1	18.2	16.5	161.0	-	148.1

1st 10-day period (1-10/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.6	-	52.5
Precipitation - Reference Evapotranspiration	-37.0	-	-49.3
Number of Rainy Days	4.0	-	1.1
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

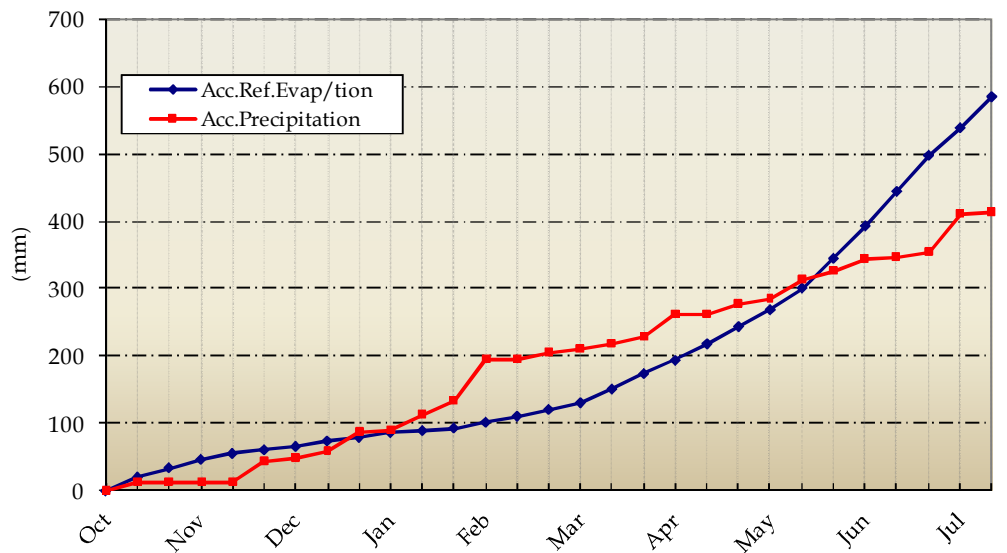


Series

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	32.0	33.0	34.4	34.0	32.0	33.0	35.0	37.0	33.0	33.3	-	31.9
	Min	18.0	17.4	19.0	21.0	19.2	20.0	18.0	19.4	20.4	21.0	19.3	-	18.2
Relative Humidity	Max	80	70	66	67	66	85	87	68	63	82	73	-	-
	Min	45	31	37	33	30	49	37	34	26	32	35	-	-
Soil Temperature at 10 cm	06 UTC	22.8	22.8	24.0	25.2	24.8	25.6	24.2	25.4	26.2	26.8	24.8	-	25.0
	12 UTC	25.4	26.0	26.4	27.4	28.0	27.6	26.0	26.4	28.0	28.0	26.9	-	28.8
Sunshine Duration		6.2	9.0	11.8	9.8	11.9	6.3	9.6	12.9	10.8	7.7	9.6	-	10.3
Precipitation							1.0				1.7	2.7	-	9.9
Evaporation		3.0	4.0	5.0	5.0	5.0	2.0	3.0	3.0	5.0	0.1	35.1	-	76.5
Growing Degrees	5	19.0	19.7	21.0	22.7	21.6	21.0	20.5	22.2	23.7	22.0	213.4	-	195.2
	10	14.0	14.7	16.0	17.7	16.6	16.0	15.5	17.2	18.7	17.0	163.4	-	146.6

1st 10-day period (1-10/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.0	-	51.2
Precipitation - Reference Evapotranspiration	-43.3	-	-41.3
Number of Rainy Days	2.0	-	2.1
Number of Dry Days	8.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

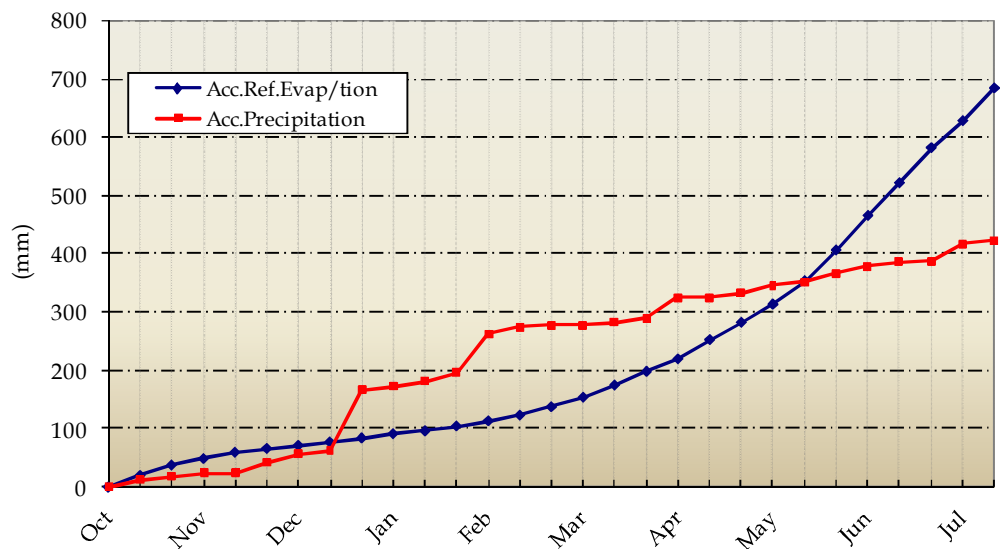


Trikala Imathias

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	33.0	32.4	33.4	35.0	32.2	32.0	35.4	36.0	33.0	33.2	-	31.1
	Min	19.4	18.8	19.4	20.4	19.8	21.4	18.4	19.6	20.0	21.2	19.8	-	17.8
Relative Humidity	Max	91	92	90	84	95	95	92	91	76	95	90	-	-
	Min	43	38	34	30	27	35	35	33	33	50	36	-	-
Soil Temperature at 10 cm	06 UTC	24.8	25.2	26.4	27.2	26.4	28.4	25.8	26.2	27.4	27.8	26.6	-	25.2
	12 UTC	28.0	29.6	31.0	-	32.8	32.4	29.6	32.4	32.4	32.2	31.2	-	26.8
Sunshine Duration		5.0	10.6	10.8	7.4	11.9	5.3	9.2	12.4	12.1	12.3	9.7	-	10.2
Precipitation							5.8					5.8	-	6.2
Evaporation		4.2	4.0	4.8	4.6	6.2	2.2	2.9	5.3	5.6	4.4	44.2	-	68.1
Growing Degrees	5	19.7	20.9	20.9	21.9	22.4	21.8	20.2	22.5	23.0	22.1	215.4	-	194.5
	10	14.7	15.9	15.9	16.9	17.4	16.8	15.2	17.5	18.0	17.1	165.4	-	144.5

1st 10-day period (1-10/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.1	-	52.1
Precipitation - Reference Evapotranspiration	-50.3	-	-45.9
Number of Rainy Days	1.0	-	1.3
Number of Dry Days	7.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

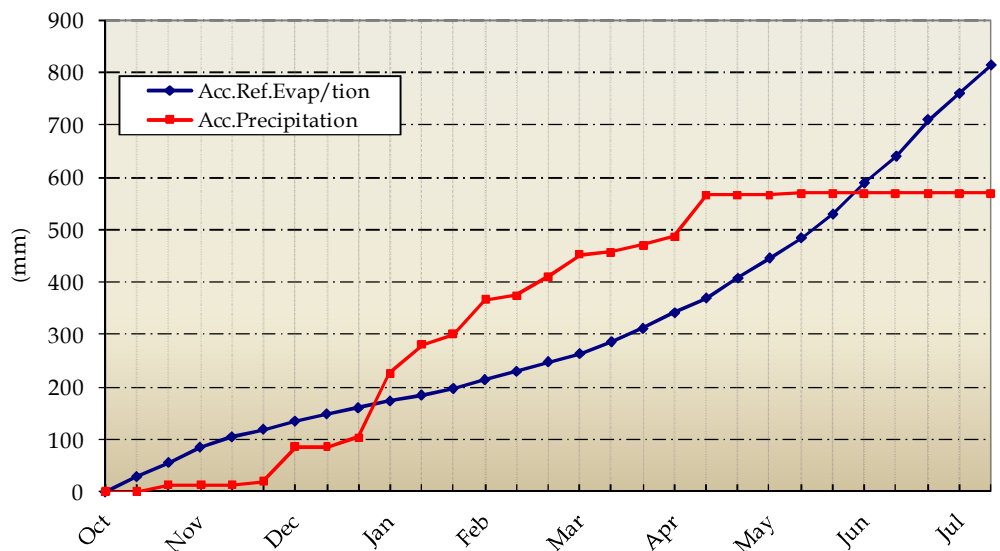


Tympaki

1st 10-day period (1-10/07/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	28.0	28.2	27.2	30.2	27.8	29.6	30.2	31.0	31.4	29.2	-	31.1
	Min	16.4	20.4	19.6	19.4	19.6	19.4	19.6	19.4	21.4	22.6	19.8	-	19.8
Relative Humidity	Max	96	96	94	94	94	96	98	91	86	81	93	-	-
	Min	41	39	37	56	36	51	44	40	36	24	40	-	-
Soil Temperature at 10 cm	06 UTC	29.0	29.6	29.4	29.6	29.6	30.0	30.2	30.2	31.0	31.4	30.0	-	31.0
	12 UTC	35.2	35.8	36.0	35.6	36.0	35.8	36.6	37.0	38.0	38.0	36.4	-	35.6
Sunshine Duration		12.8	12.5	12.4	11.0	11.9	12.2	12.6	13.2	11.9	11.4	12.2	-	12.4
Precipitation													-	0.0
Evaporation		8.8	9.5	7.5	8.8	8.2	7.4	8.1	8.9	8.5	12.4	88.1	-	112.2
Growing Degrees	5	17.2	19.2	18.9	18.3	19.9	18.6	19.6	19.8	21.2	22.0	194.7	-	204.6
	10	12.2	14.2	13.9	13.3	14.9	13.6	14.6	14.8	16.2	17.0	144.7	-	154.6

1st 10-day period (1-10/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.2	-	62.1
Precipitation - Reference Evapotranspiration	-54.2	-	-62.1
Number of Rainy Days	0.0	-	0.0
Number of Dry Days	67.0	-	-

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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ΜΕΤΕΩΡΟΛΟΓΙΚΗ
ΥΠΗΡΕΣΙΑ

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