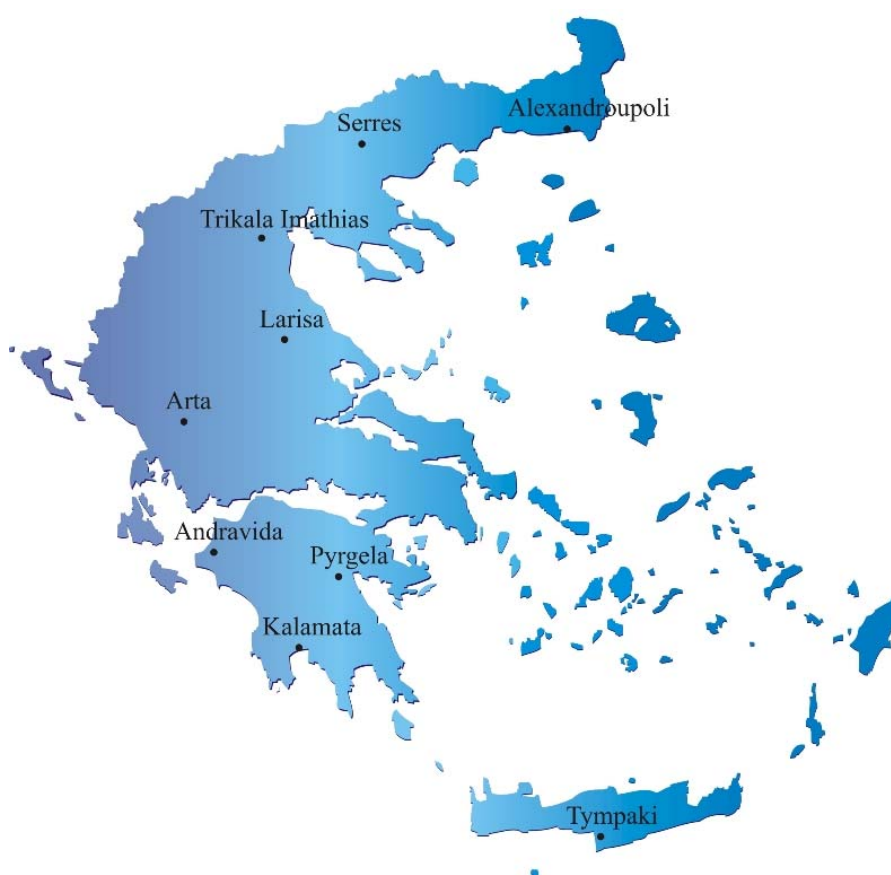




AGROMETEOROLOGICAL BULLETIN

August 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



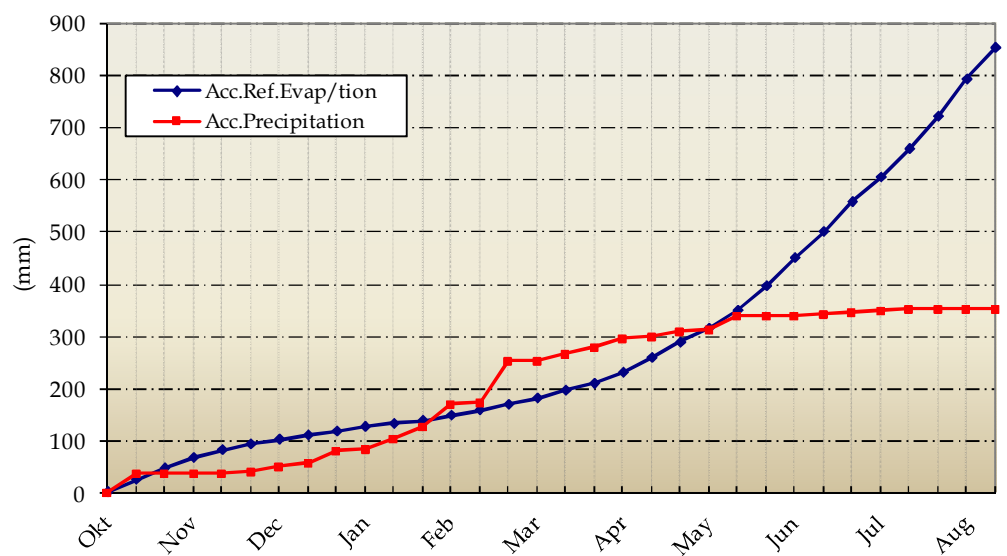
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.8	33.6	34.0	34.6	35.2	33.0	33.0	31.6	31.4	30.6	32.8	-	31.3
	Min	21.6	20.4	18.8	18.6	18.8	24.2	24.2	22.4	22.2	20.0	21.1	-	17.9
Relative Humidity	Max	68	79	79	83	78	68	70	71	71	74	74	-	-
	Min	35	30	32	24	24	35	35	32	28	29	30	-	-
Soil Temperature at 10 cm	06 UTC	27.4	27.4	27.6	28.0	28.2	29.0	28.4	27.8	27.2	27.0	27.8	-	24.7
	12 UTC	30.5	32.0	31.6	32.0	31.4	30.4	32.4	30.6	30.8	30.0	31.2	-	29.0
Sunshine Duration		11.4	11.9	12.9	13.0	12.8	7.1	10.2	10.9	12.2	10.0	11.2	-	10.7
Precipitation													-	4.0
Evaporation		8.2	11.0	7.5	6.0	13.5	9.9	11.6	9.1	10.5	10.1	97.4	-	96.8
Growing Degrees	5	21.2	22.0	21.4	21.6	22.0	23.6	23.6	22.0	21.8	20.3	219.5	-	195.9
	10	16.2	17.0	16.4	16.6	17.0	18.6	18.6	17.0	16.8	15.3	169.5	-	145.9

1st 10-day period (1-10/08/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	60.9	-	58.5
Precipitation - Reference Evapotranspiration	-60.9	-	-54.5
Number of Rainy Days	0.0	-	0.7
Number of Dry Days	31.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

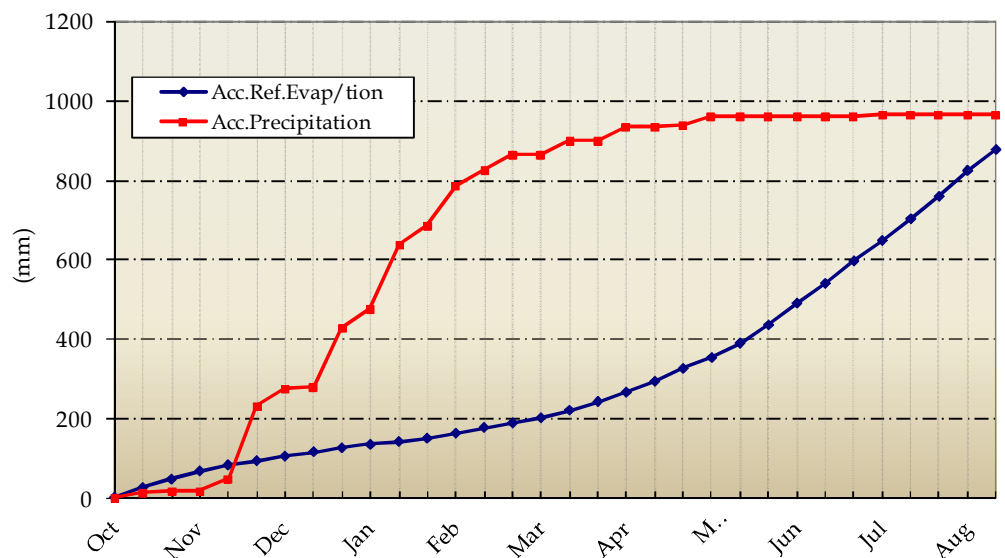


Andravida

1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.6	34.0	34.0	34.0	30.6	29.6	31.4	32.6	32.4	32.4	32.5	-	31.3
	Min	20.4	20.4	20.2	20.4	20.4	23.2	20.8	20.4	21.0	20.8	20.8	-	18.8
Relative Humidity	Max	87	86	89	89	94	81	91	93	91	89	89	-	-
	Min	33	32	33	27	59	51	50	40	34	29	39	-	-
Soil Temperature at 10 cm	06 UTC	29.0	29.0	29.2	29.0	29.2	29.6	29.2	29.4	29.4	29.2	29.2	-	27.8
	12 UTC	36.2	36.2	36.0	36.4	35.8	35.6	35.8	36.6	36.8	35.6	36.1	-	32.1
Sunshine Duration		11.6	11.9	12.1	11.8	10.9	10.9	11.8	12.2	11.8	11.5	11.6	-	11.6
Precipitation													-	0.2
Evaporation		10.2	8.3	8.5	13.9	6.5	6.4	8.0	8.9	6.7	4.7	82.1	-	74.9
Growing Degrees	5	22.0	22.2	22.1	22.2	20.5	21.4	21.1	21.5	21.7	21.6	216.3	-	200.3
	10	17.0	17.2	17.1	17.2	15.5	16.4	16.1	16.5	16.7	16.6	166.3	-	150.3

1st 10-day period (1-10/08/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	53.2	-	52.3
Precipitation - Reference Evapotranspiration	-53.2	-	-52.1
Number of Rainy Days	0.0	-	0.1
Number of Dry Days	47.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

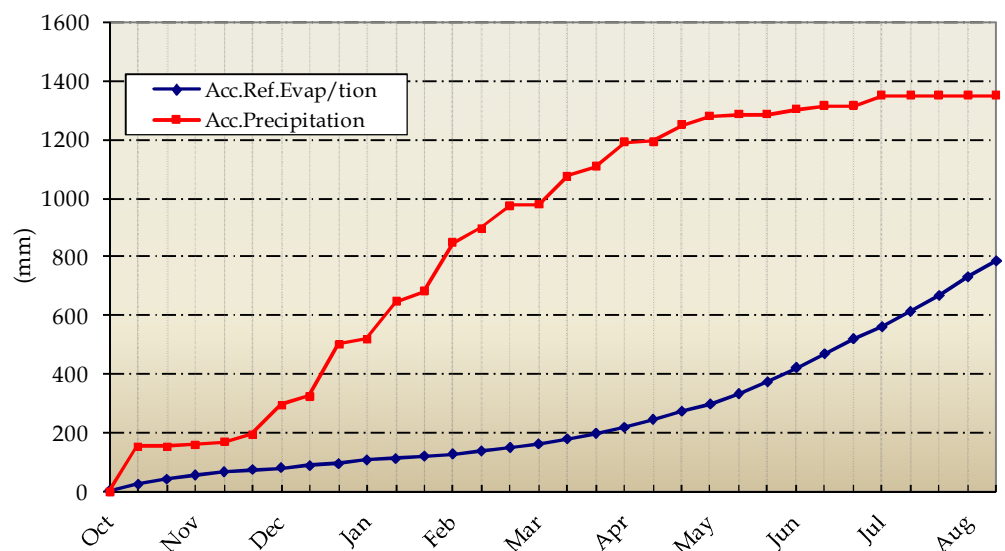




1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.0	35.0	34.8	34.8	32.6	33.0	34.0	34.0	34.2	33.0	34.0	-	32.4
	Min	20.0	19.4	20.0	17.8	18.8	19.0	19.8	20.2	22.4	18.8	19.6	-	18.2
Relative Humidity	Max	88	84	80	95	98	98	98	90	98	98	93	-	-
	Min	32	37	32	23	47	33	32	29	34	37	34	-	-
Soil Temperature at 10 cm	06 UTC	29.8	29.4	29.4	29.2	29.0	29.2	29.4	29.2	30.0	29.2	29.4	-	27.1
	12 UTC	31.4	31.2	31.4	31.2	30.8	31.0	31.0	30.8	31.4	30.8	31.1	-	31.7
Sunshine Duration		12.5	12.5	12.6	10.8	12.6	10.1	7.9	11.8	9.5	11.5	11.2	-	10.7
Precipitation													-	1.1
Evaporation		6.0	8.9	5.6	5.7	7.1	5.9	5.8	7.8	6.9	7.6	67.3	-	-
Growing Degrees	5	22.5	22.2	22.4	21.3	20.7	21.0	21.9	22.1	23.3	20.9	218.3	-	202.8
	10	17.5	17.2	17.4	16.3	15.7	16.0	16.9	17.1	18.3	15.9	168.3	-	152.8

1st 10-day period (1-10/08/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.6	-	47.6
Precipitation - Reference Evapotranspiration	-54.6	-	-46.5
Number of Rainy Days	0.0	-	0.3
Number of Dry Days	36.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

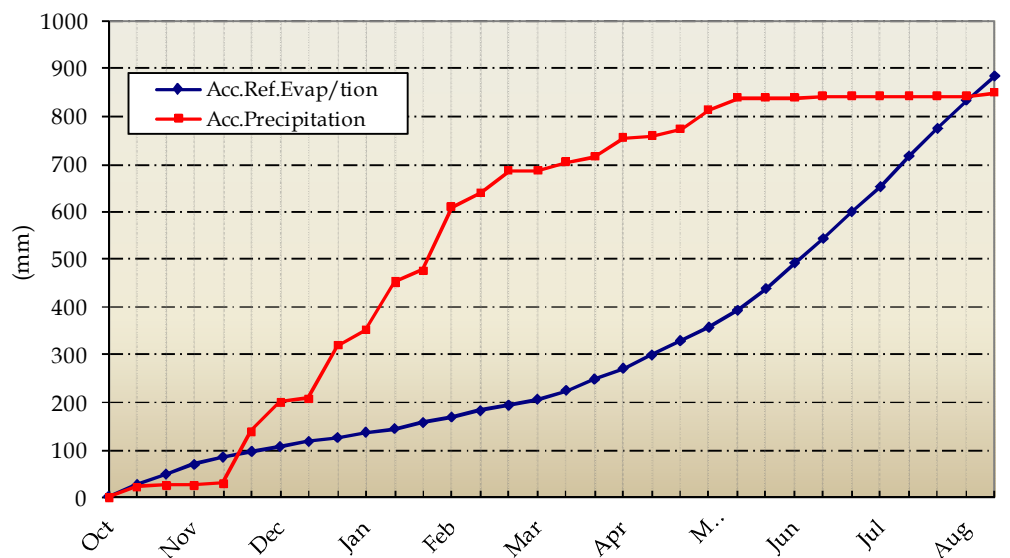


Kalamata

1st 10-day period (1-10/08/2009)		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	35.4	33.4	33.6	32.6	30.6	30.0	30.0	31.0	30.6	31.9	-	31.8
	Min	18.6	19.4	19.0	20.4	19.4	22.0	20.6	19.2	19.2	18.4	19.6	-	18.3
Relative Humidity	Max	89	78	84	82	87	95	94	96	98	93	90	-	-
	Min	40	29	30	26	29	52	54	59	43	47	41	-	-
Soil Temperature at 10 cm	06 UTC	24.4	23.8	25.4	25.6	25.4	26.4	26.0	25.4	25.2	25.0	25.3	-	26.3
	12 UTC	27.4	27.0	27.4	27.6	27.6	28.0	27.6	27.4	27.0	26.8	27.4	-	30.4
Sunshine Duration		10.3	10.9	12.3	12.5	11.8	9.7	9.2	6.2	10.9	11.8	10.6	-	11.0
Precipitation							4.5		1.5			6.0	-	3.9
Evaporation		7.0	9.0	8.0	10.0	6.0	5.5	6.0	2.5	5.0	10.0	69.0	-	84.1
Growing Degrees	5	20.3	22.4	21.2	22.0	21.0	21.3	20.3	19.6	20.1	19.5	207.7	-	200.7
	10	15.3	17.4	16.2	17.0	16.0	16.3	15.3	14.6	15.1	14.5	157.7	-	150.7

1st 10-day period (1-10/08/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.4	-	56.0
Precipitation - Reference Evapotranspiration	-44.4	-	-52.1
Number of Rainy Days	2.0	-	0.5
Number of Dry Days	41.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

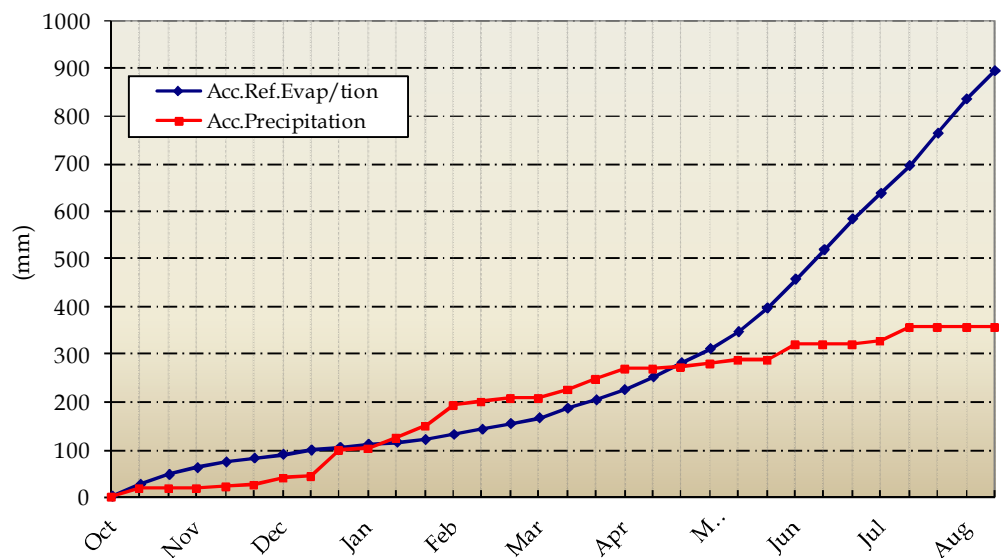


Larisa

1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.6	34.6	36.0	37.2	33.2	30.6	30.4	30.0	29.6	30.0	32.7	-	33.2
	Min	20.8	19.0	18.2	20.0	22.0	22.0	18.0	20.2	22.0	20.0	20.2	-	18.0
Relative Humidity	Max	69	77	69	71	66	65	79	84	71	75	73	-	-
	Min	24	27	20	27	29	34	40	48	38	42	33	-	-
Soil Temperature at 10 cm	06 UTC	28.2	28.4	28.4	28.8	29.2	28.4	28.2	27.8	27.8	27.6	28.3	-	27.1
	12 UTC	32.2	31.4	32.0	31.6	31.2	30.2	30.2	30.0	30.2	30.4	30.9	-	29.4
Sunshine Duration		11.0	11.6	11.6	11.6	9.4	7.5	8.3	4.6	7.6	11.5	9.5	-	10.5
Precipitation								0.1				0.1	-	4.2
Evaporation		6.4	11.2	12.6	10.9	15.8	5.7	5.0	6.5	17.5	11.0	102.6	-	91.8
Growing Degrees	5	23.2	21.8	22.1	23.6	22.6	21.3	19.2	20.1	20.8	20.0	214.7	-	206.1
	10	18.2	16.8	17.1	18.6	17.6	16.3	14.2	15.1	15.8	15.0	164.7	-	156.1

1st 10-day period (1-10/08/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.2	-	58.6
Precipitation - Reference Evapotranspiration	-59.1	-	-54.4
Number of Rainy Days	1.0	-	1.1
Number of Dry Days	30.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

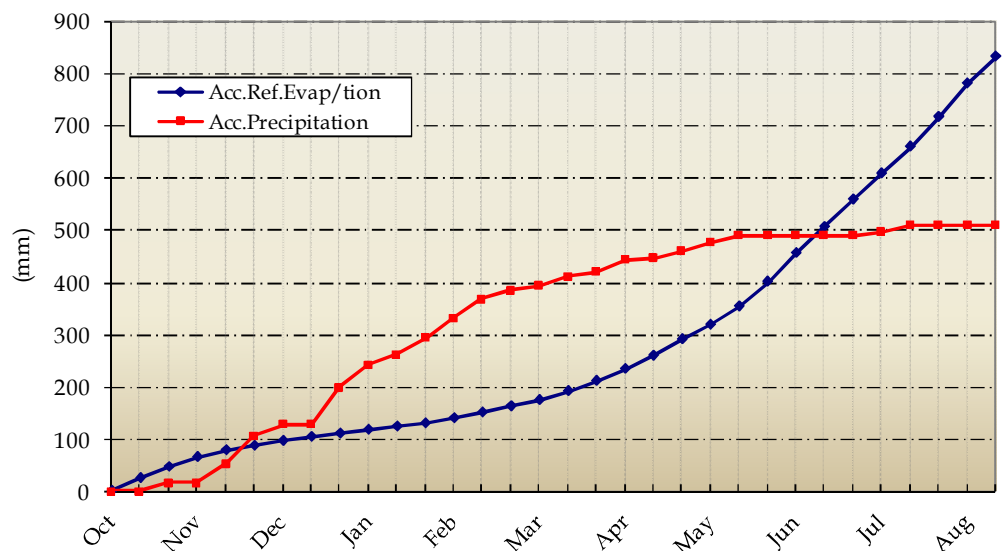


Pyrgela

1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.6	35.6	37.4	34.6	35.4	34.0	35.4	33.0	34.0	35.2	35.0	-	34.2
	Min	17.2	16.4	19.2	18.4	17.2	21.0	19.2	20.0	19.0	17.6	18.5	-	17.2
Relative Humidity	Max	70	60	64	62	64	70	70	60	61	55	64	-	-
	Min	29	32	27	33	27	40	29	30	30	30	31	-	-
Soil Temperature at 10 cm	06 UTC	27.8	27.8	28.2	28.6	27.8	29.6	28.4	29.0	28.6	27.8	28.4	-	26.7
	12 UTC	35.4	35.6	36.6	46.8	36.2	36.4	-	36.2	36.4	35.6	37.2	-	34.8
Sunshine Duration		11.5	12.5	12.0	11.7	11.6	9.9	8.3	10.8	10.1	10.7	10.9	-	10.7
Precipitation													-	0.5
Evaporation		8.4	10.3	7.9	7.5	7.6	7.5	6.6	10.4	8.6	8.0	82.8	-	72.9
Growing Degrees	5	21.4	21.0	23.3	21.5	21.3	22.5	22.3	21.5	21.5	21.4	217.7	-	206.8
	10	16.4	16.0	18.3	16.5	16.3	17.5	17.3	16.5	16.5	16.4	167.7	-	156.8

1st 10-day period (1-10/08/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.5	-	51.6
Precipitation - Reference Evapotranspiration	-51.5	-	-51.1
Number of Rainy Days	0.0	-	0.5
Number of Dry Days	35.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

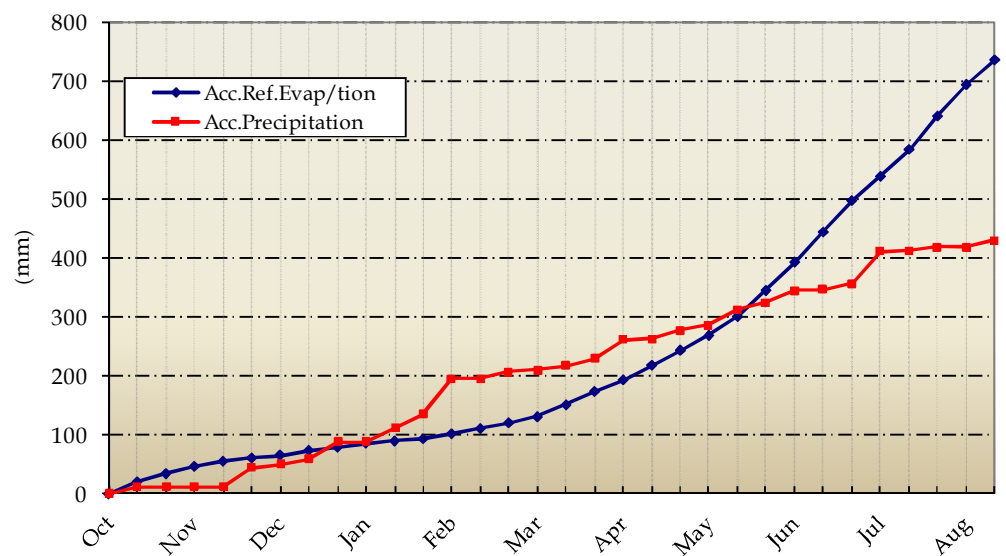


Series

1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.4	37.0	37.4	37.0	32.6	32.2	26.8	32.0	31.6	29.2	33.1	-	32.7
	Min	20.4	21.0	22.2	22.0	23.0	19.0	21.0	20.0	19.8	19.8	20.8	-	18.7
Relative Humidity	Max	55	68	65	69	73	92	89	89	82	91	77	-	-
	Min	26	24	33	30	47	48	72	42	36	60	42	-	-
Soil Temperature at 10 cm	06 UTC	28.0	28.4	28.6	29.2	29.6	28.0	26.6	25.2	25.6	26.8	27.6	-	26.0
	12 UTC	30.4	30.8	30.6	31.2	30.2	28.2	26.4	26.8	28.0	26.2	28.9	-	29.5
Sunshine Duration		11.0	11.9	12.4	12.1	5.9	4.6	1.1	3.5	8.7	2.7	7.4	-	10.1
Precipitation						0.4	6.4	0.5	0.0		4.0	11.3	-	7.4
Evaporation		8.0	8.0	7.0	6.8	5.0	4.6	2.9	3.6	4.4	3.0	53.3	-	70.0
Growing Degrees	5	22.9	24.0	24.8	24.5	22.8	20.6	18.9	21.0	20.7	19.5	219.7	-	198.0
	10	17.9	19.0	19.8	19.5	17.8	15.6	13.9	16.0	15.7	14.5	169.7	-	150.1

1st 10-day period (1-10/08/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	41.7	-	46.4
Precipitation - Reference Evapotranspiration	-30.4	-	-39.0
Number of Rainy Days	4.0	-	1.7
Number of Dry Days	24.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

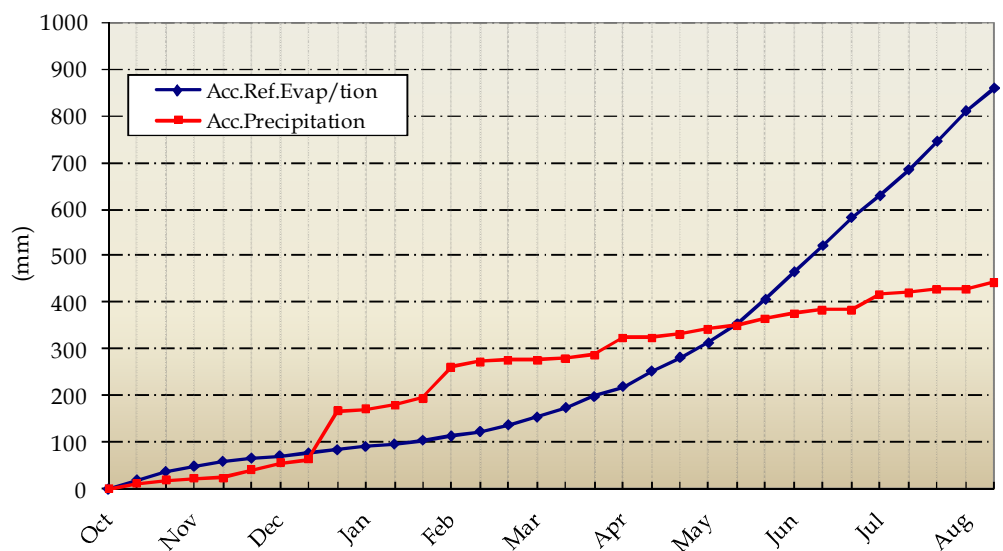


Trikala Imathias

1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.2	33.0	34.0	32.4	33.8	30.6	29.4	30.6	25.4	28.6	31.4	-	31.9
	Min	20.6	19.4	20.0	20.8	22.8	19.4	19.8	19.0	21.2	19.4	20.2	-	18.4
Relative Humidity	Max	98	91	96	95	98	95	96	99	96	94	96	-	-
	Min	31	39	39	44	38	36	45	38	46	59	42	-	-
Soil Temperature at 10 cm	06 UTC	29.2	29.0	28.8	28.8	29.2	27.0	25.8	26.0	27.2	25.2	27.6	-	25.9
	12 UTC	32.8	32.8	32.4	32.2	32.2	29.2	27.0	30.0	27.0	27.6	30.3	-	27.5
Sunshine Duration		10.9	10.9	10.5	9.9	7.0	6.1	6.8	10.2	2.9	6.7	8.2	-	10.0
Precipitation							13.7	0.6		1.2		15.5	-	5.7
Evaporation		4.9	4.8	4.4	5.1	4.1	5.6	2.8	3.8	2.2	3.0	40.7	-	58.3
Growing Degrees	5	23.4	21.2	22.0	21.6	23.3	20.0	19.6	19.8	18.3	19.0	208.2	-	201.3
	10	18.4	16.2	17.0	16.6	18.3	15.0	14.6	14.8	13.3	14.0	158.2	-	151.3

1st 10-day period (1-10/08/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.9	-	47.3
Precipitation - Reference Evapotranspiration	-33.4	-	-41.6
Number of Rainy Days	3.0	-	1.0
Number of Dry Days	25.0	-	-

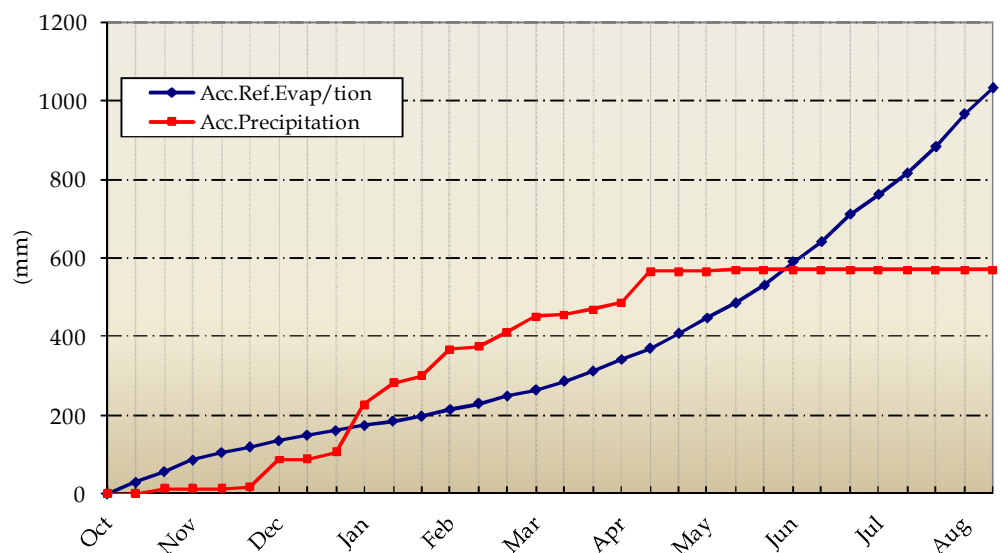
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/08/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.8	32.6	35.0	30.6	30.0	30.6	33.0	32.8	31.2	32.0	32.0	-	32.6
	Min	21.6	22.2	22.0	21.0	21.0	23.0	21.4	20.8	22.0	21.4	21.6	-	20.7
Relative Humidity	Max	45	56	61	68	91	91	76	72	67	51	68	-	-
	Min	32	35	24	21	27	40	29	32	34	24	30	-	-
Soil Temperature at 10 cm	06 UTC	29.8	29.6	30.0	30.0	29.2	31.0	30.4	30.0	30.2	29.4	30.0	-	31.1
	12 UTC	34.4	35.0	35.6	34.0	35.8	-	35.2	35.0	34.6	33.8	34.8	-	35.3
Sunshine Duration		11.5	11.0	11.2	11.6	11.0	10.1	11.4	10.8	11.1	11.4	11.1	-	12.0
Precipitation													-	
Evaporation		12.9	12.7	13.5	12.7	6.9	10.5	12.3	12.3	10.8	16.6	121.2	-	121.2
Growing Degrees	5	21.7	22.4	23.5	20.8	20.5	21.8	22.2	21.8	21.6	21.7	218.0	-	215.8
	10	16.7	17.4	18.5	15.8	15.5	16.8	17.2	16.8	16.6	16.7	168.0	-	166.0

1st 10-day period (1-10/08/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.4	-	64.7
Precipitation - Reference Evapotranspiration	-66.4	-	-64.7
Number of Rainy Days	0.0	-	0.0
Number of Dry Days	98.0	-	-

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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