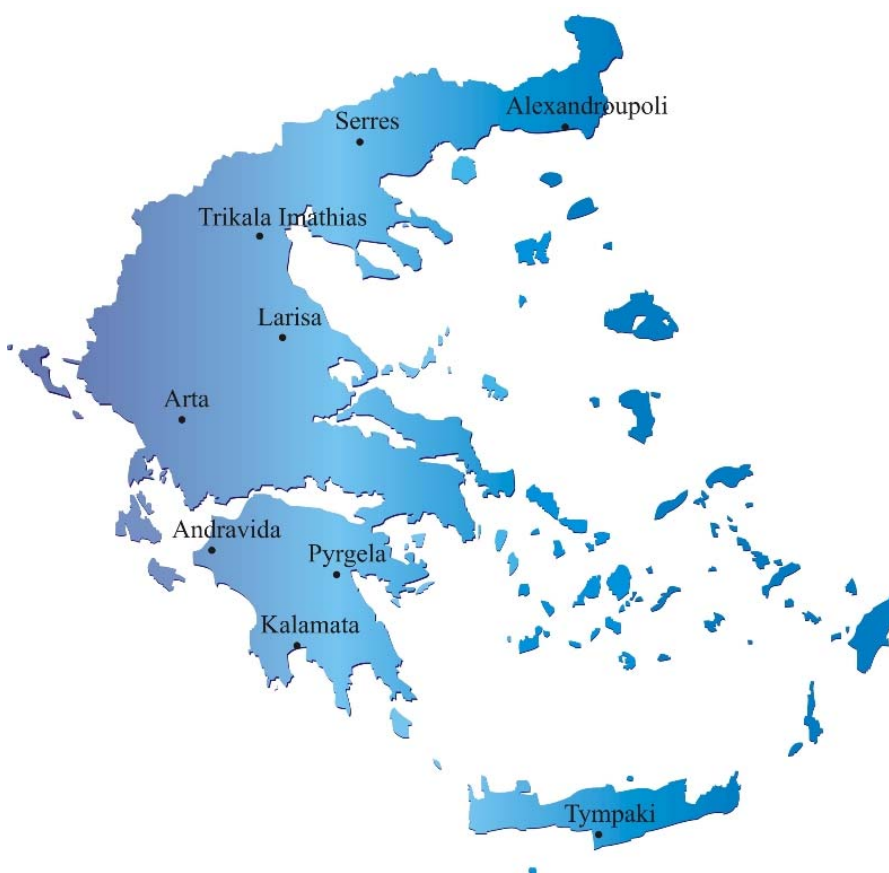




AGROMETEOROLOGICAL BULLETIN

June 2009
3rd 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



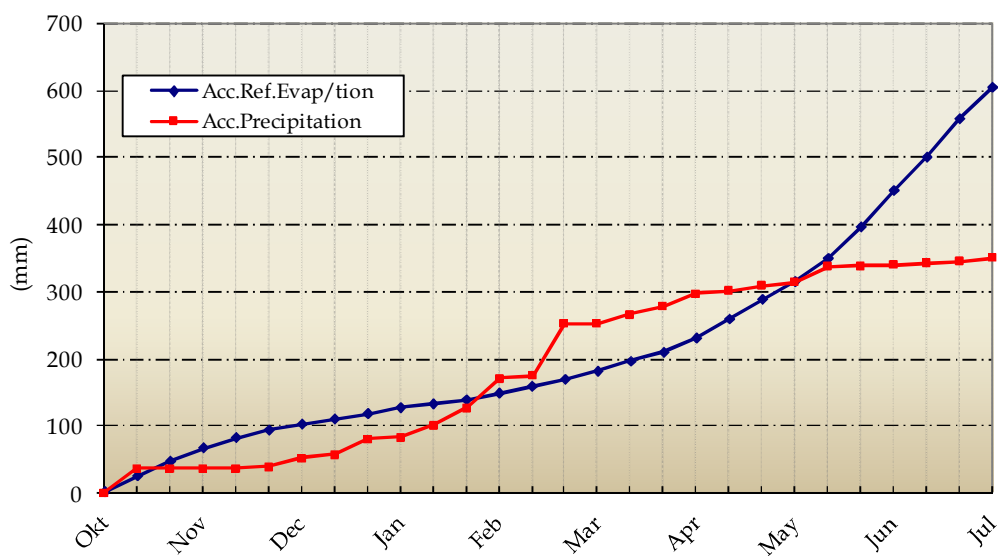
Hellenic National Meteorological Service
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El. Venizelou Street 14, 16777
Helliniko, Athens

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

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.4	28.0	26.2	26.8	24.4	24.2	26.4	27.8	28.4	27.8	26.7	-	28.7
	Min	15.6	16.4	15.8	17.4	19.0	15.8	15.4	16.4	17.2	17.0	16.6	-	16.0
Relative Humidity	Max	89	90	89	90	92	94	86	90	90	88	90	-	-
	Min	51	41	54	51	65	62	53	48	48	46	52	-	-
Soil Temperature at 10 cm	06 UTC	25.6	25.8	25.6	25.6	26.8	22.8	23.2	24.0	25.4	24.6	24.9	-	23.1
	12 UTC	29.4	30.0	29.0	29.0	27.0	24.4	26.2	28.4	28.5	29.0	28.1	-	27.7
Sunshine Duration		12.6	12.7	12.8	12.2	4.9	4.5	7.5	11.0	7.4	13.0	9.9	-	10.9
Precipitation				0.4		1.3	3.0					4.7	-	4.4
Evaporation		7.2	8.2	5.4	13.0	6.2	2.1	6.2	8.4	6.5	5.1	68.3	-	85.9
Growing Degrees	5	16.5	17.2	16.0	17.1	16.7	15.0	15.9	17.1	17.8	17.4	166.7	-	173.3
	10	11.5	12.2	11.0	12.1	11.7	10.0	10.9	12.1	12.8	12.4	116.7	-	123.3

3rd 10-day period (21-30/06/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	47.1	-	55.0
Precipitation - Reference Evapotranspiration	-42.4	-	-50.6
Number of Rainy Days	3.0	-	1.3
Number of Dry Days	4.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

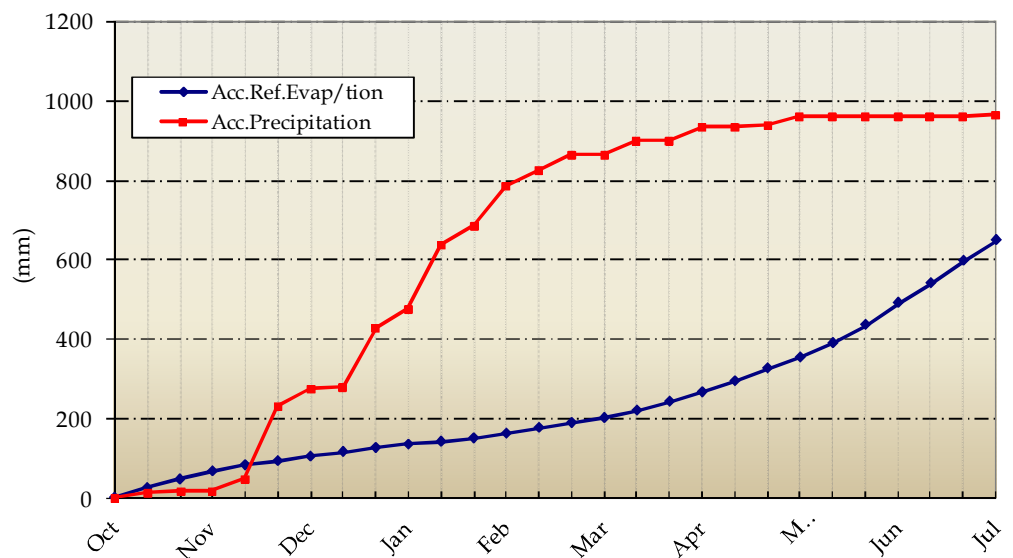


Andravida

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.4	28.2	26.8	24.6	24.2	26.2	27.6	27.8	27.2	27.6	26.9	-	28.9
	Min	18.0	23.4	17.4	18.0	15.6	15.8	17.4	17.8	17.4	19.6	18.0	-	17.0
Relative Humidity	Max	90	88	94	90	93	96	94	94	96	96	93	-	-
	Min	49	51	49	50	50	44	54	52	51	49	50	-	-
Soil Temperature at 10 cm	06 UTC	27.4	28.0	26.2	25.2	23.4	23.8	25.0	26.0	26.0	26.4	25.7	-	25.9
	12 UTC	34.0	32.6	31.4	28.6	30.2	31.8	31.8	33.0	32.8	33.4	32.0	-	30.7
Sunshine Duration		10.5	10.9	10.9	9.1	13.3	13.2	10.8	12.5	13.3	13.6	11.8	-	12.3
Precipitation				1.0	4.5							5.5	-	1.3
Evaporation		9.0	7.8	8.7	5.1	7.0	6.2	4.1	10.6	5.0	8.9	72.4	-	74.3
Growing Degrees	5	18.2	20.8	17.1	16.3	14.9	16.0	17.5	17.8	17.3	18.6	174.5	-	179.7
	10	13.2	15.8	12.1	11.3	9.9	11.0	12.5	12.8	12.3	13.6	124.5	-	129.7

3rd 10-day period (21-30/06/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	51.8	-	53.3
Precipitation - Reference Evapotranspiration	-46.3	-	-52.0
Number of Rainy Days	2.0	-	0.2
Number of Dry Days	55.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

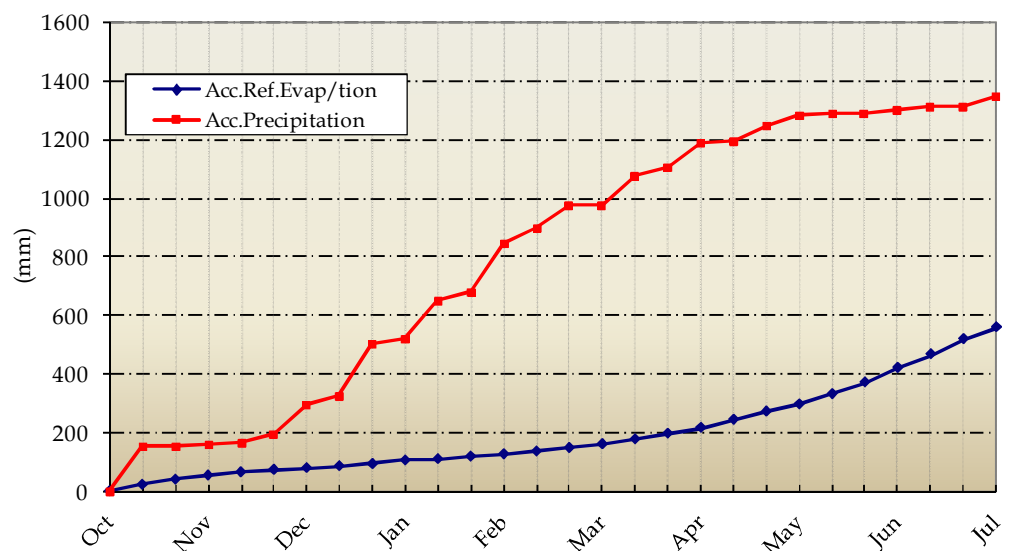


Arta

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	26.6	26.0	24.0	24.4	22.4	27.6	27.6	28.0	28.2	26.5	-	29.8
	Min	17.8	19.0	14.8	16.8	14.4	14.6	16.0	16.6	16.6	17.6	16.4	-	16.2
Relative Humidity	Max	80	90	96	84	88	94	94	83	85	84	88	-	-
	Min	32	52	54	54	59	74	53	56	56	55	54	-	-
Soil Temperature at 10 cm	06 UTC	26.6	27.4	24.2	23.8	23.2	22.8	22.0	23.2	23.2	24.2	24.1	-	25.5
	12 UTC	28.2	28.4	25.0	24.6	24.8	23.8	24.4	25.2	26.0	26.8	25.7	-	31.3
Sunshine Duration		8.6	4.6	6.9	8.1	7.0	6.8	8.2	8.7	10.4	13.3	8.3	-	11.3
Precipitation			13.5	3.3	9.2		6.6					32.6	-	2.0
Evaporation		6.0	2.7	2.6	5.0	5.9	0.0	6.1	3.6	7.0	5.5	44.4	-	-
Growing Degrees	5	18.9	17.8	15.4	15.4	14.4	13.5	16.8	17.1	17.3	17.9	164.5	-	174.3
	10	13.9	12.8	10.4	10.4	9.4	8.5	11.8	12.1	12.3	12.9	114.5	-	125.9

3rd 10-day period (21-30/06/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	40.7	-	49.8
Precipitation - Reference Evapotranspiration	-8.1	-	-47.8
Number of Rainy Days	4.0	-	0.4
Number of Dry Days	18.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

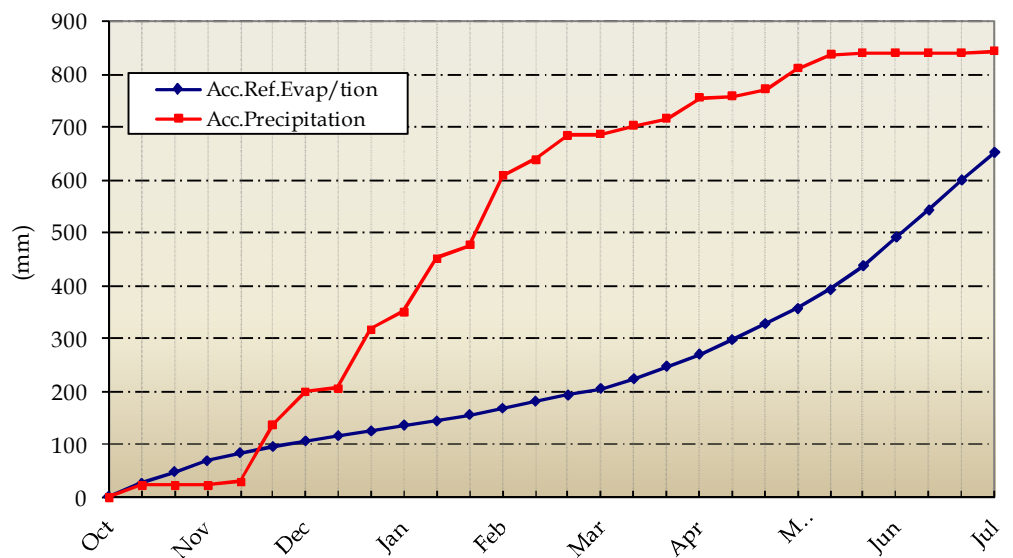


Kalamata

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.8	28.0	27.6	29.0	23.0	28.6	28.2	29.4	28.4	29.2	28.0	-	30.4
	Min	17.4	19.6	15.2	18.8	17.0	15.4	15.8	17.2	17.0	18.6	17.2	-	16.7
Relative Humidity	Max	94	94	91	88	96	93	90	92	94	90	92	-	-
	Min	37	41	48	37	34	32	47	43	42	45	41	-	-
Soil Temperature at 10 cm	06 UTC	24.0	23.2	23.6	23.6	23.2	22.6	22.8	23.6	23.4	24.2	23.4	-	24.2
	12 UTC	25.4	26.6	26.4	-	25.4	25.2	25.2	25.6	26.4	26.2	25.8	-	28.7
Sunshine Duration		12.0	12.1	12.0	11.0	11.7	12.4	11.0	12.0	10.1	12.7	11.7	-	11.8
Precipitation					0.0	1.9						1.9	-	0.4
Evaporation		7.0	8.0	7.0	6.9	6.0	9.0	5.0	8.0	5.0	10.0	71.9	-	88.4
Growing Degrees	5	18.1	18.8	16.4	18.9	15.0	17.0	17.0	18.3	17.7	18.9	176.1	-	185.7
	10	13.1	13.8	11.4	13.9	10.0	12.0	12.0	13.3	12.7	13.9	126.1	-	135.7

3rd 10-day period (21-30/06/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.4	-	58.1
Precipitation - Reference Evapotranspiration	-50.5	-	-57.7
Number of Rainy Days	1.0	-	0.3
Number of Dry Days	20.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

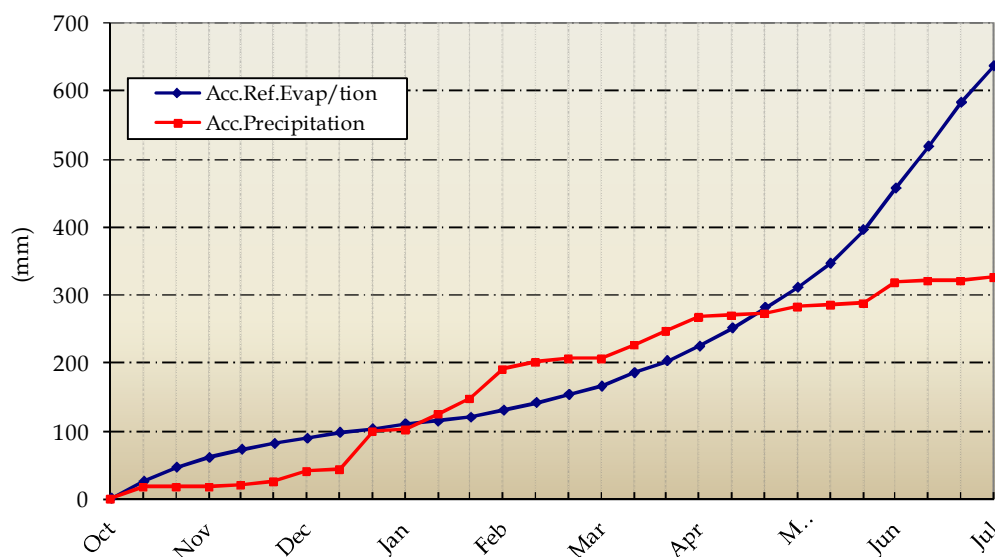


Larisa

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	31.2	29.0	27.6	28.6	30.0	31.0	29.6	30.6	31.4	30.2	-	32.8
	Min	15.0	18.2	14.2	16.0	13.6	14.0	19.0	18.0	15.6	17.0	16.1	-	16.5
Relative Humidity	Max	87	88	87	77	89	93	75	98	98	96	89	-	-
	Min	26	29	30	30	28	26	29	36	36	36	31	-	-
Soil Temperature at 10 cm	06 UTC	24.8	25.0	24.8	24.4	24.0	24.0	25.0	25.0	23.4	24.2	24.5	-	25.0
	12 UTC	27.8	27.8	27.2	26.6	27.0	27.6	27.2	27.6	26.4	27.4	27.3	-	27.7
Sunshine Duration		10.8	8.5	9.2	11.0	8.1	7.7	9.5	6.2	6.8	10.8	8.9	-	11.1
Precipitation					0.4		0.4		3.5		0.6	4.9	-	6.4
Evaporation		7.6	11.4	5.4	10.5	6.5	9.4	7.9	3.7	6.4	8.7	77.5	-	93.9
Growing Degrees	5	19.0	19.7	16.6	16.8	16.1	17.0	20.0	18.8	18.1	19.2	181.3	-	196.6
	10	14.0	14.7	11.6	11.8	11.1	12.0	15.0	13.8	13.1	14.2	131.3	-	146.6

3rd 10-day period (21-30/06/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.7	-	61.9
Precipitation - Reference Evapotranspiration	-48.8	-	-55.5
Number of Rainy Days	4.0	-	0.9
Number of Dry Days	3.0	-	-

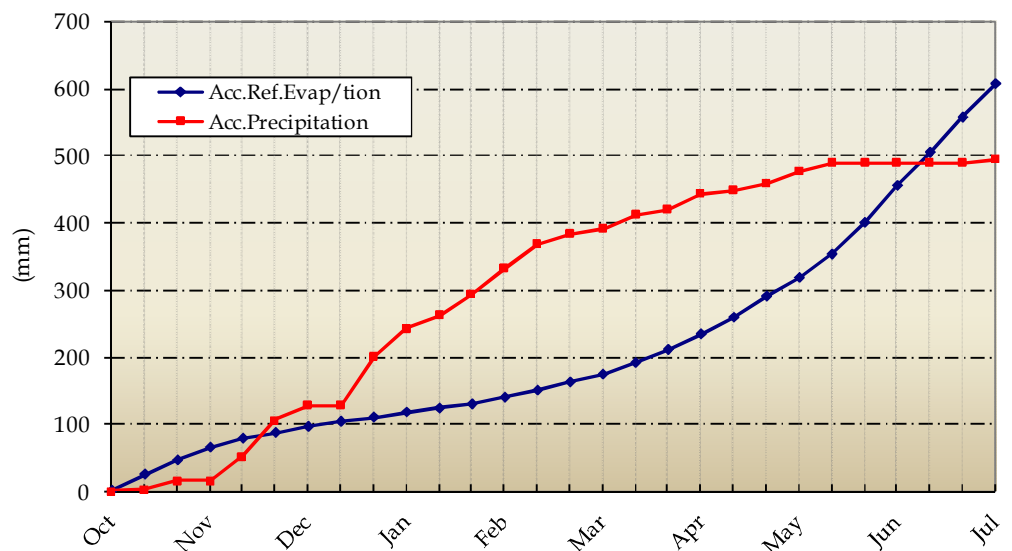
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	34.6	29.6	30.0	30.4	29.6	31.0	29.8	29.8	31.6	30.7	-	32.5
	Min	13.4	16.2	14.0	15.6	15.8	13.0	14.8	14.8	14.4	15.6	14.8	-	14.8
Relative Humidity	Max	81	42	60	46	58	-	68	65	84	84	65	-	-
	Min	42	17	41	31	26	-	33	47	48	43	36	-	-
Soil Temperature at 10 cm	06 UTC	23.0	23.6	23.0	23.4	24.4	23.8	24.4	25.2	25.4	23.6	24.0	-	25.0
	12 UTC	-	30.4	31.6	29.6	33.2	32.8	33.2	33.4	34.0	34.4	32.5	-	34.0
Sunshine Duration		8.3	12.3	11.1	9.8	11.7	11.9	11.8	10.4	9.0	10.9	10.7	-	11.1
Precipitation		6.3					0.0					6.3	-	4.2
Evaporation		3.4	7.4	7.1	6.8	7.8	6.2	6.1	8.4	5.3	7.0	65.5	-	71.8
Growing Degrees	5	16.9	20.4	16.8	17.8	18.1	16.3	17.9	17.3	17.1	18.6	177.2	-	185.4
	10	11.9	15.4	11.8	12.8	13.1	11.3	12.9	12.3	12.1	13.6	127.2	-	135.6

3rd 10-day period (21-30/06/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.1	-	52.0
Precipitation - Reference Evapotranspiration	-43.8	-	-47.8
Number of Rainy Days	1.0	-	0.7
Number of Dry Days	45.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

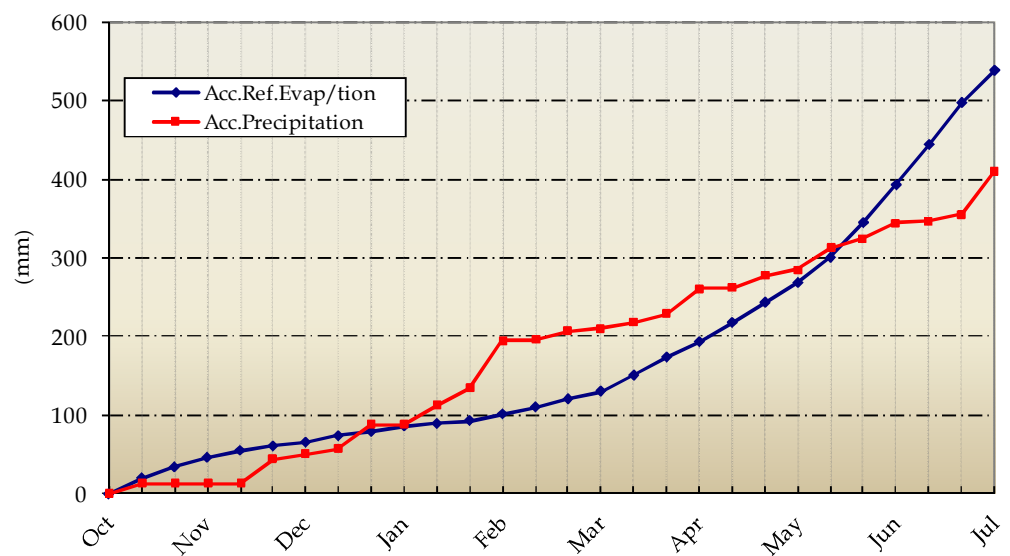


Series

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	25.4	29.2	24.0	28.6	29.6	29.0	30.0	30.0	30.2	28.8	-	31.5
	Min	18.0	19.0	15.0	14.8	14.4	17.0	16.0	16.0	16.8	18.2	16.5	-	17.5
Relative Humidity	Max	74	91	96	96	96	85	87	80	71	70	85	-	-
	Min	29	53	35	54	38	36	45	46	36	47	42	-	-
Soil Temperature at 10 cm	06 UTC	24.6	24.6	16.6	20.4	19.2	21.0	21.4	22.4	21.8	22.8	21.5	-	24.0
	12 UTC	26.4	25.4	-	20.0	22.4	23.2	24.0	25.6	27.4	26.0	24.5	-	28.2
Sunshine Duration		9.1	3.7	9.1	2.7	9.0	6.6	10.1	5.2	8.8	7.9	7.2	-	10.6
Precipitation		3.7	8.5	14.7	27.2			1.2				55.3	-	11.1
Evaporation		5.0	1.0	5.0	0.6	3.8	3.6	4.2	3.6	4.0	3.0	33.8	-	70.6
Growing Degrees	5	20.0	17.2	17.1	14.4	16.5	18.3	17.5	18.0	18.4	19.2	176.6	-	194.9
	10	15.0	12.2	12.1	9.4	11.5	13.3	12.5	13.0	13.4	14.2	126.6	-	144.9

3rd 10-day period (21-30/06/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.8	-	51.1
Precipitation - Reference Evapotranspiration	14.5	-	-40.0
Number of Rainy Days	5.0	-	1.6
Number of Dry Days	2.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

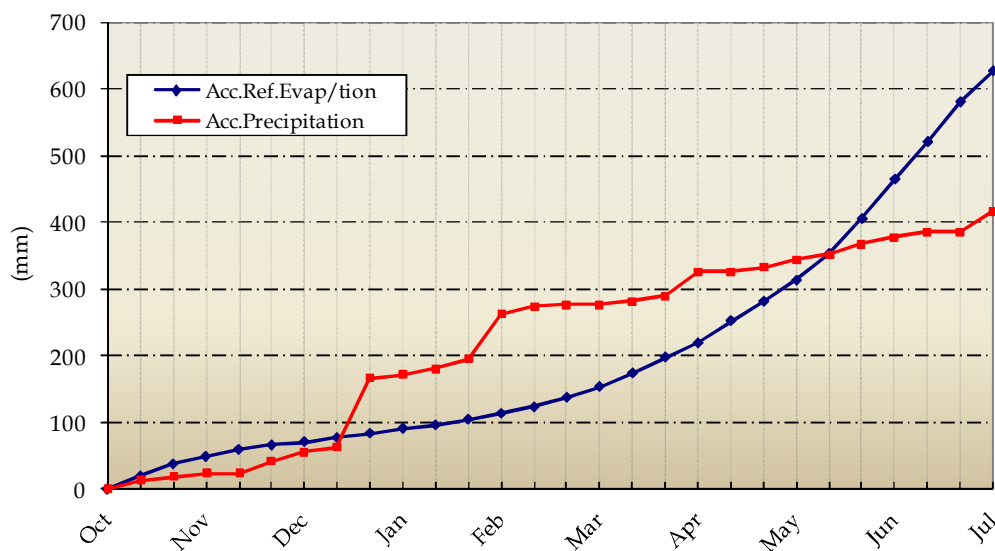


Trikala Imathias

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	27.0	28.0	23.4	26.8	29.2	28.4	29.0	29.2	29.0	28.0	-	30.8
	Min	17.2	17.0	15.2	17.0	13.8	16.2	16.8	17.2	17.4	17.8	16.6	-	17.0
Relative Humidity	Max	90	92	90	92	92	95	94	94	95	86	92	-	-
	Min	43	52	34	73	40	32	41	40	43	46	44	-	-
Soil Temperature at 10 cm	06 UTC	25.4	25.2	23.4	23.0	21.2	22.8	23.0	23.2	23.2	24.4	23.5	-	24.2
	12 UTC	30.0	25.8	26.8	24.8	25.6	26.4	27.0	27.2	28.4	28.6	27.1	-	25.9
Sunshine Duration		7.4	4.6	10.9	3.9	9.3	11.1	9.8	8.3	8.9	5.5	8.0	-	10.5
Precipitation		0.7	6.7		6.3			12.0	4.8			30.5	-	9.1
Evaporation		2.9	2.7	6.2	1.4	3.4	4.2	3.2	3.3	2.9	2.6	32.8	-	66.6
Growing Degrees	5	18.8	17.0	16.6	15.2	15.3	17.7	17.6	18.1	18.3	18.4	173.0	-	189.1
	10	13.8	12.0	11.6	10.2	10.3	12.7	12.6	13.1	13.3	13.4	123.0	-	139.1

3rd 10-day period (21-30/06/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.6	-	52.3
Precipitation - Reference Evapotranspiration	-16.1	-	-43.2
Number of Rainy Days	5.0	-	1.0
Number of Dry Days	2.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

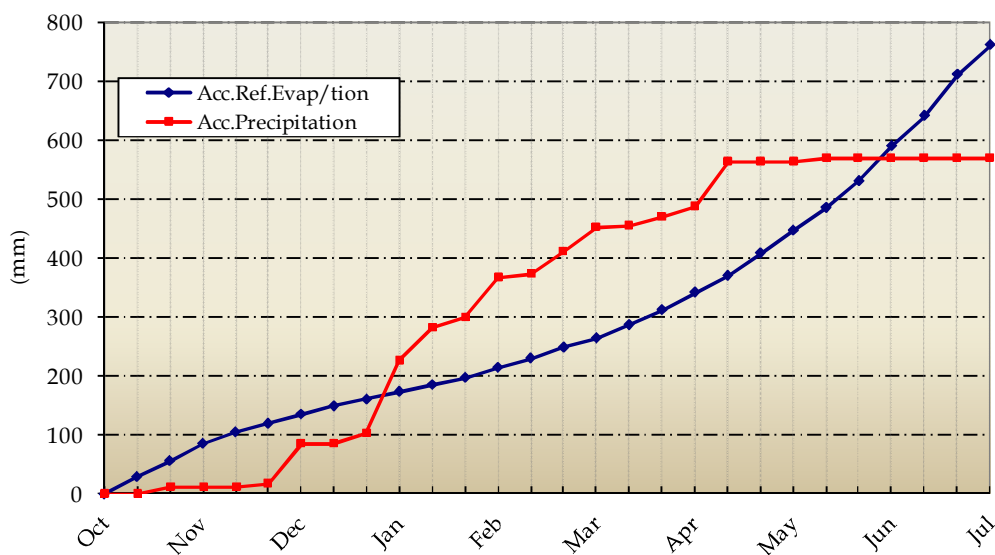


Tympaki

3rd 10-day period (21-30/06/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.4	27.4	28.0	26.8	26.2	26.0	26.4	26.4	26.6	27.4	26.9	-	30.0
	Min	19.0	21.4	20.4	19.6	16.8	18.0	17.8	18.8	19.0	17.6	18.8	-	18.5
Relative Humidity	Max	96	96	91	84	90	92	94	91	96	96	93	-	-
	Min	50	75	40	61	48	42	47	72	69	45	55	-	-
Soil Temperature at 10 cm	06 UTC	29.4	30.4	30.2	29.6	28.4	28.0	27.8	28.8	29.6	29.0	29.1	-	29.2
	12 UTC	36.0	36.0	36.0	34.8	34.4	34.0	34.0	35.0	35.2	35.4	35.1	-	34.1
Sunshine Duration		11.7	9.4	10.9	11.3	8.5	10.5	9.9	11.1	11.5	12.7	10.8	-	12.5
Precipitation													-	
Evaporation		6.9	7.9	8.4	10.2	7.9	9.5	7.7	7.6	7.8	9.1	83.0	-	97.7
Growing Degrees	5	18.2	19.4	19.2	18.2	16.5	17.0	17.1	17.6	17.8	17.5	178.5	-	192.5
	10	13.2	14.4	14.2	13.2	11.5	12.0	12.1	12.6	12.8	12.5	128.5	-	142.5

3rd 10-day period (21-30/06/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.2	-	58.6
Precipitation - Reference Evapotranspiration	-50.2	-	-58.6
Number of Rainy Days	0.0	-	0.0
Number of Dry Days	57.0	-	-

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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