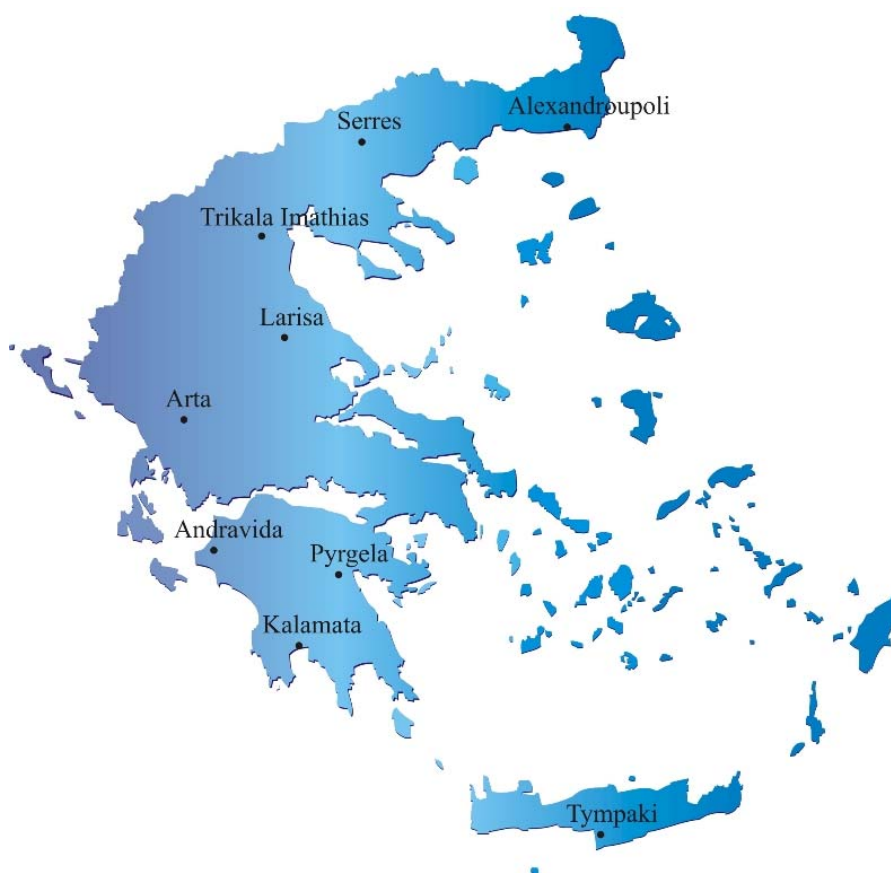




AGROMETEOROLOGICAL BULLETIN

September 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



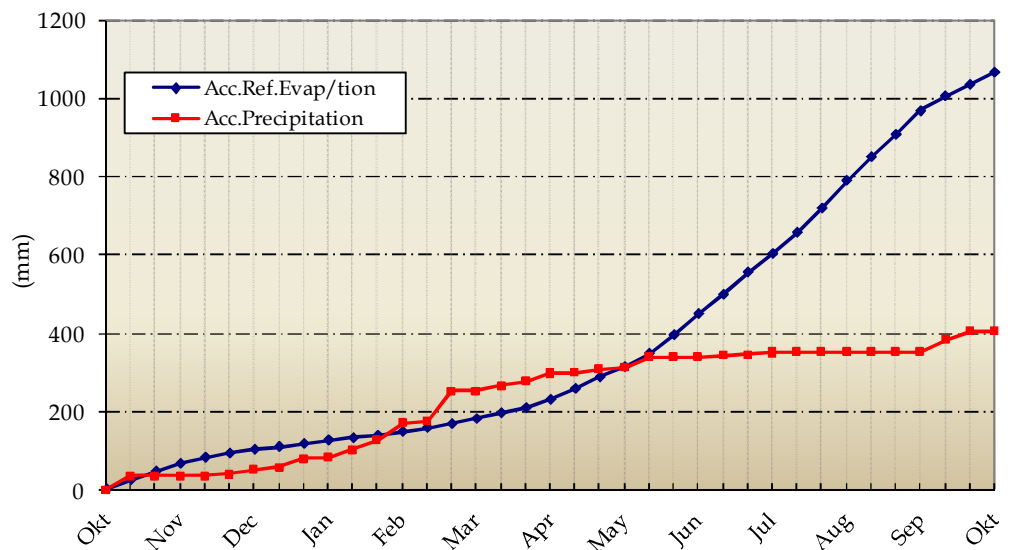
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.6	25.2	26.4	25.6	26.0	26.2	24.0	23.6	23.2	23.2	24.7	-	24.9
	Min	13.0	12.2	8.0	12.0	15.6	17.0	16.2	13.0	9.0	11.0	12.7	-	13.0
Relative Humidity	Max	88	91	87	79	80	80	81	81	87	92	85	-	-
	Min	36	23	28	34	40	39	37	36	45	53	37	-	-
Soil Temperature at 10 cm	06 UTC	19.4	18.0	18.6	19.2	20.0	20.2	20.0	19.2	18.2	18.5	19.1	-	19.0
	12 UTC	23.2	-	22.6	22.2	22.6	23.0	24.0	22.0	22.2	22.0	22.6	-	22.4
Sunshine Duration		10.8	11.0	10.9	8.3	5.4	6.9	9.5	10.7	10.2	10.1	9.4	-	7.5
Precipitation													-	12.3
Evaporation		4.9	6.3	8.5	4.4	5.1	7.0	9.2	3.9	3.6	3.8	56.7	-	59.3
Growing Degrees	5	13.3	13.7	12.2	13.8	15.8	16.6	15.1	13.3	11.1	12.1	137.0	-	139.4
	10	8.3	8.7	7.2	8.8	10.8	11.6	10.1	8.3	6.1	7.1	87.0	-	89.4

3rd 10-day period (21-30/09/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	31.4	-	31.9
Precipitation - Reference Evapotranspiration	-31.4	-	-19.6
Number of Rainy Days	0.0	-	1.1
Number of Dry Days	18.0	-	-

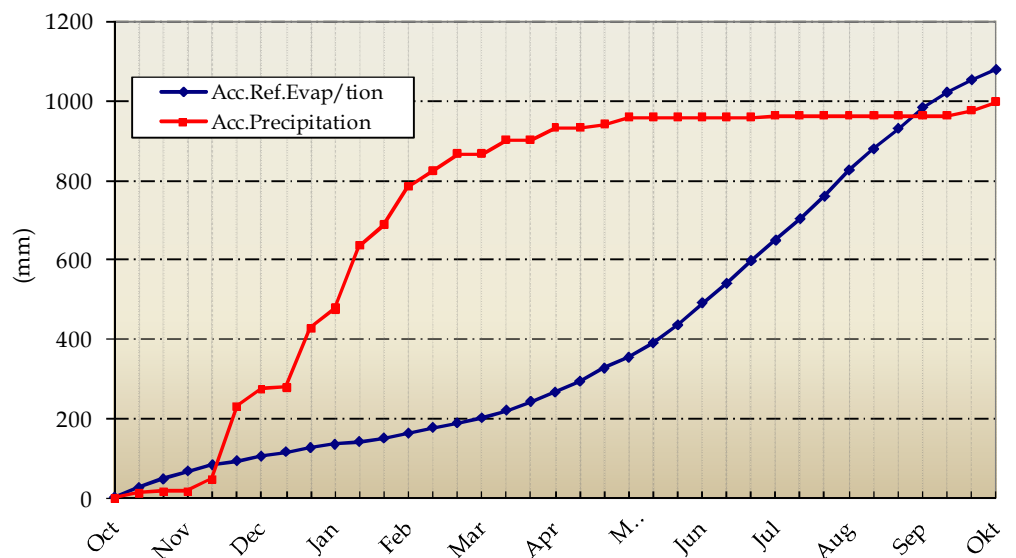
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.8	26.6	27.2	24.2	28.4	22.0	28.2	26.4	24.6	26.2	26.1	-	27.0
	Min	15.2	14.8	13.2	13.8	17.2	17.2	17.8	14.6	14.0	17.0	15.5	-	15.6
Relative Humidity	Max	98	87	87	85	98	98	96	96	95	96	94	-	-
	Min	39	30	25	35	36	77	38	41	56	59	44	-	-
Soil Temperature at 10 cm	06 UTC	20.4	20.4	20.0	20.8	21.6	21.0	20.6	20.2	19.6	21.4	20.6	-	22.0
	12 UTC	29.0	27.8	28.0	27.0	27.2	-	24.4	24.4	24.2	26.4	26.5	-	25.5
Sunshine Duration		6.6	9.7	7.6	1.3	3.8	0.0	4.0	9.4	9.3	9.1	6.1	-	8.1
Precipitation						5.4	15.4					20.8	-	16.0
Evaporation		4.8	2.4	7.8	1.4	8.8	9.0	1.2	4.0	3.1	4.7	47.2	-	48.4
Growing Degrees	5	16.0	15.7	15.2	14.0	17.8	14.6	18.0	15.5	14.3	16.6	157.7	-	162.7
	10	11.0	10.7	10.2	9.0	12.8	9.6	13.0	10.5	9.3	11.6	107.7	-	112.7

3rd 10-day period (21-30/09/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	25.6	-	30.8
Precipitation - Reference Evapotranspiration	-4.8	-	-14.8
Number of Rainy Days	2.0	-	1.5
Number of Dry Days	4.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

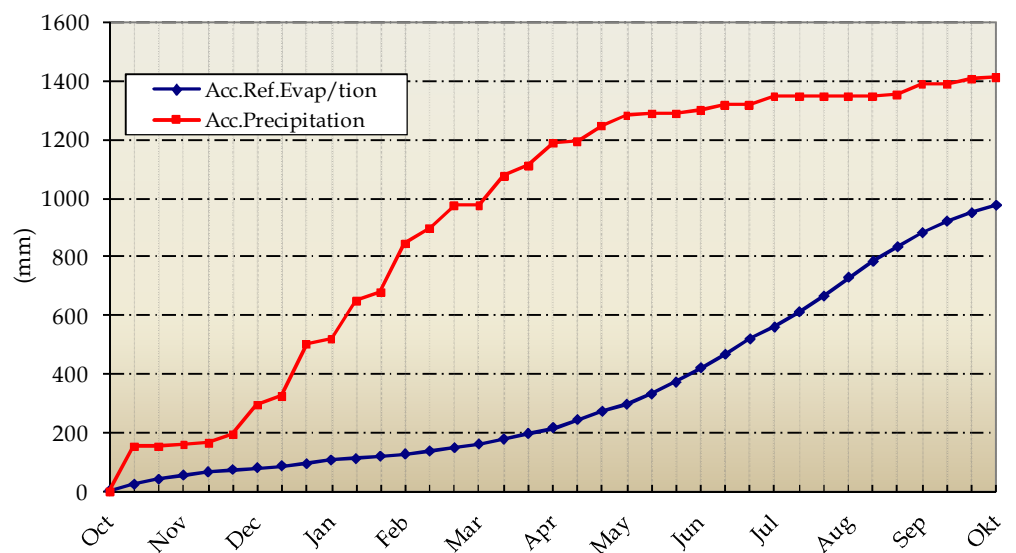




3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	27.6	29.0	24.6	27.2	24.2	27.0	27.6	26.6	27.2	26.9	-	27.4
	Min	12.6	12.6	10.8	14.0	14.4	17.2	21.0	16.0	12.4	13.6	14.5	-	14.5
Relative Humidity	Max	83	100	91	100	96	92	48	63	89	96	86	-	-
	Min	44	30	33	35	45	38	35	36	48	40	38	-	-
Soil Temperature at 10 cm	06 UTC	22.6	22.0	21.4	22.0	21.6	21.6	21.2	20.4	20.4	20.0	21.3	-	20.6
	12 UTC	24.0	24.6	24.8	23.8	25.0	22.6	23.0	23.2	23.2	23.6	23.8	-	24.1
Sunshine Duration		7.6	10.2	9.3	5.8	3.0	0.0	5.3	10.2	9.0	9.1	7.0	-	7.7
Precipitation						6.5	0.8					7.3	-	21.5
Evaporation		3.3	5.2	5.9	0.8	3.4	2.2	6.9	3.1	3.7	3.5	38.0	-	-
Growing Degrees	5	15.3	15.1	14.9	14.3	15.8	15.7	19.0	16.8	14.5	15.4	156.8	-	159.3
	10	10.3	10.1	9.9	9.3	10.8	10.7	14.0	11.8	9.5	10.4	106.8	-	109.5

3rd 10-day period (21-30/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.4	-	27.2
Precipitation - Reference Evapotranspiration	-18.1	-	-5.7
Number of Rainy Days	2.0	-	1.8
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

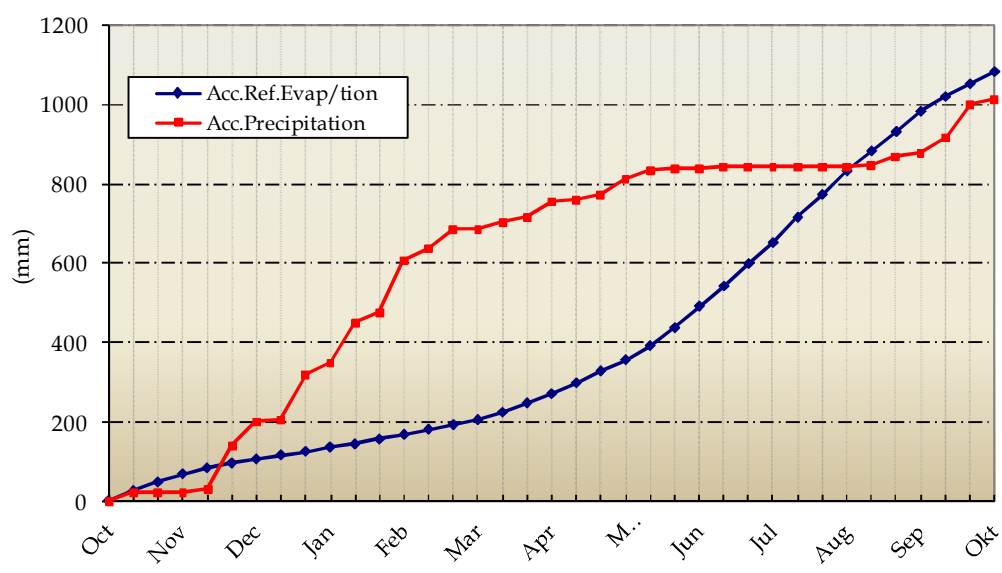


Kalamata

3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.2	25.6	26.0	26.4	26.2	22.8	27.8	26.6	25.6	26.8	26.0	-	27.6
	Min	16.2	15.8	14.6	14.0	15.0	17.4	17.8	16.2	13.8	15.6	15.6	-	15.0
Relative Humidity	Max	94	89	89	91	89	94	88	96	96	96	92	-	-
	Min	46	41	41	40	44	79	44	40	54	53	48	-	-
Soil Temperature at 10 cm	06 UTC	21.4	21.2	21.0	21.0	21.2	21.6	20.8	20.4	20.4	20.2	20.9	-	21.4
	12 UTC	22.6	22.6	-	22.4	22.6	21.6	22.6	21.6	21.8	22.2	22.2	-	24.4
Sunshine Duration		9.0	10.3	10.1	7.6	9.5	0.0	5.5	9.0	9.6	9.3	8.0	-	7.7
Precipitation							11.9	0.3				12.2	-	12.3
Evaporation		4.0	6.0	5.0	3.0	2.0	0.4	6.0	3.0	6.0	3.0	38.4	-	51.4
Growing Degrees	5	16.2	15.7	15.3	15.2	15.6	15.1	17.8	16.4	14.7	16.2	158.2	-	162.8
	10	11.2	10.7	10.3	10.2	10.6	10.1	12.8	11.4	9.7	11.2	108.2	-	112.8

3rd 10-day period (21-30/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.4	-	32.9
Precipitation - Reference Evapotranspiration	-19.2	-	-20.6
Number of Rainy Days	2.0	-	1.7
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

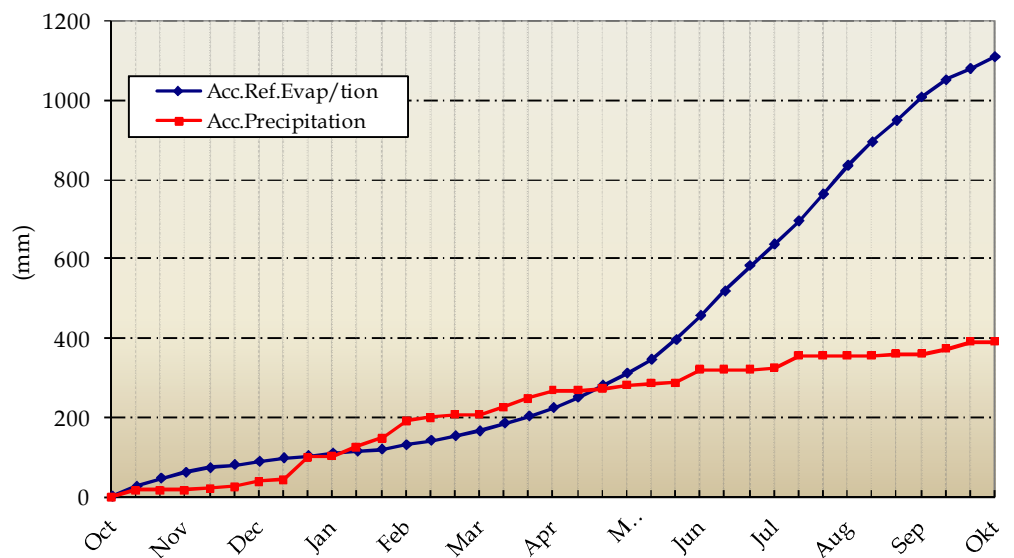


Larisa

3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.6	24.4	26.2	26.4	25.6	24.0	24.2	24.4	27.0	29.4	25.5	-	27.3
	Min	15.0	12.2	8.6	12.0	14.6	16.6	16.4	11.8	10.2	11.0	12.8	-	13.0
Relative Humidity	Max	91	90	92	83	91	90	94	90	93	80	89	-	-
	Min	44	39	30	26	39	58	38	39	32	33	38	-	-
Soil Temperature at 10 cm	06 UTC	21.4	20.4	19.2	20.0	21.0	20.8	21.0	19.8	19.2	20.0	20.3	-	20.9
	12 UTC	23.0	21.8	22.0	22.2	22.8	23.0	22.8	22.2	21.8	22.4	22.4	-	22.7
Sunshine Duration		6.8	5.3	8.9	4.8	3.5	0.0	8.3	8.2	8.4	8.4	6.3	-	7.0
Precipitation							0.2	0.2				0.4	-	7.0
Evaporation		4.9	1.0	3.9	7.2	3.9	1.8	6.3	3.4	7.2	2.4	42.0	-	51.2
Growing Degrees	5	14.3	13.3	12.4	14.2	15.1	15.3	15.3	13.1	13.6	15.2	141.8	-	151.5
	10	9.3	8.3	7.4	9.2	10.1	10.3	10.3	8.1	8.6	10.2	91.8	-	101.5

3rd 10-day period (21-30/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.7	-	31.7
Precipitation - Reference Evapotranspiration	-29.3	-	-24.7
Number of Rainy Days	2.0	-	1.7
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

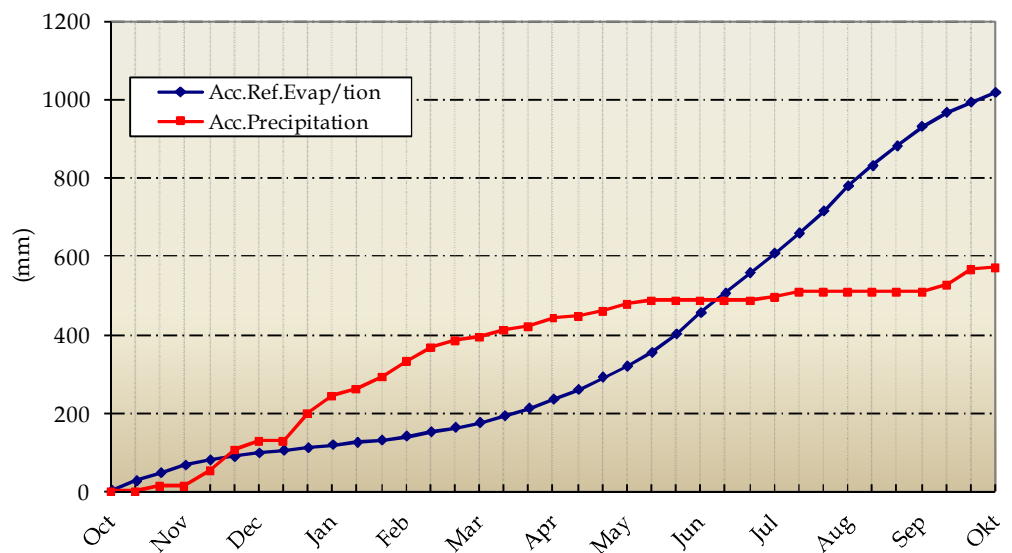


Pyrgela

3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.0	25.4	27.0	28.0	25.8	21.6	25.0	24.0	27.4	31.0	26.1	-	28.5
	Min	12.4	10.4	11.0	10.0	14.2	15.6	17.4	13.6	8.8	12.6	12.6	-	13.3
Relative Humidity	Max	83	89	79	81	86	86	76	69	83	93	82	-	-
	Min	33	35	37	23	48	73	47	42	29	28	40	-	-
Soil Temperature at 10 cm	06 UTC	18.4	17.4	16.8	17.8	19.6	20.4	19.4	17.4	17.2	18.4	18.3	-	20.4
	12 UTC	22.6	21.0	22.8	23.4	27.4	-	22.2	22.8	24.0	24.6	23.4	-	26.9
Sunshine Duration		7.2	8.2	9.1	6.5	8.9	0.0	1.0	8.0	9.5	8.8	6.7	-	7.6
Precipitation							0.7	2.5				3.2	-	6.5
Evaporation		2.6	4.4	3.6	3.6	4.7	0.6	2.8	3.1	3.9	3.5	32.8	-	37.6
Growing Degrees	5	14.2	12.9	14.0	14.0	15.0	13.6	16.2	13.8	13.1	16.8	143.6	-	157.4
	10	9.2	7.9	9.0	9.0	10.0	8.6	11.2	8.8	8.1	11.8	93.6	-	107.9

3rd 10-day period (21-30/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.4	-	28.2
Precipitation - Reference Evapotranspiration	-22.2	-	-21.7
Number of Rainy Days	2.0	-	1.5
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

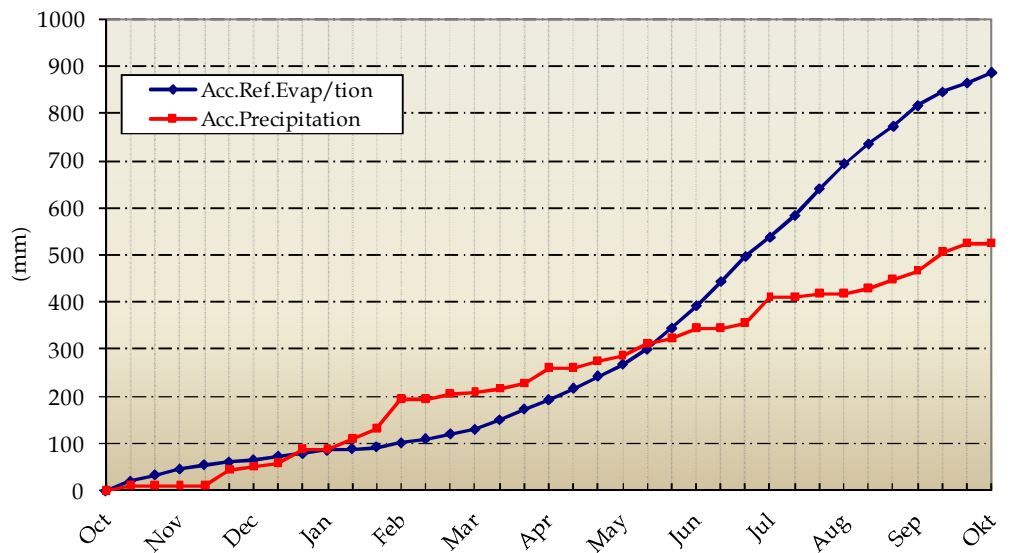


Series

3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.4	25.8	26.8	27.4	24.6	26.4	27.0	24.4	27.8	29.2	26.5	-	26.8
	Min	14.2	13.4	11.6	11.0	14.4	15.6	13.2	11.0	14.0	10.8	12.9	-	13.1
Relative Humidity	Max	85	74	88	85	85	83	81	85	87	92	84	-	-
	Min	44	33	30	32	47	35	34	35	35	21	35	-	-
Soil Temperature at 10 cm	06 UTC	20.2	20.0	19.2	18.6	20.2	19.8	19.2	19.0	18.6	19.2	19.4	-	19.3
	12 UTC	22.8	22.0	23.2	23.4	22.8	-	22.4	20.8	21.2	21.0	22.2	-	22.2
Sunshine Duration		10.3	10.1	8.9	8.8	0.7	6.1	8.3	7.4	9.3	8.9	7.9	-	7.2
Precipitation													-	6.6
Evaporation		4.0	4.0	3.2	4.8	4.8	3.2	2.0	2.0	3.0	9.0	40.0	-	38.3
Growing Degrees	5	14.8	14.6	14.2	14.2	14.5	16.0	15.1	12.7	15.9	15.0	147.0	-	147.0
	10	9.8	9.6	9.2	9.2	9.5	11.0	10.1	7.7	10.9	10.0	97.0	-	97.8

3rd 10-day period (21-30/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.9	-	24.2
Precipitation - Reference Evapotranspiration	-21.9	-	-17.6
Number of Rainy Days	0.0	-	1.7
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

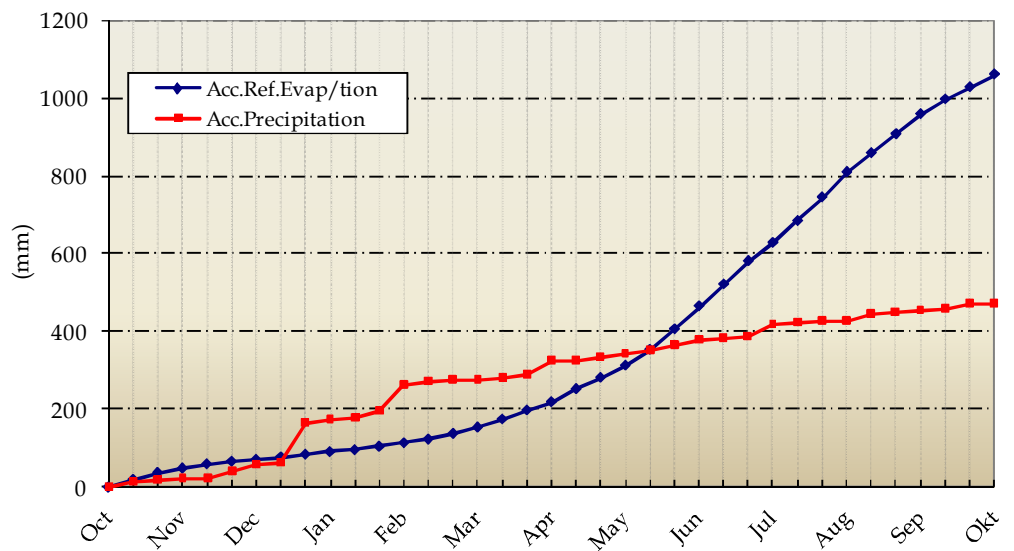


Trikala Imathias

3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.4	30.0	28.6	28.0	30.6	28.6	27.4	27.6	28.8	30.0	28.5	-	26.5
	Min	16.6	15.0	11.4	13.2	16.4	17.0	15.0	14.8	11.0	12.4	14.3	-	13.4
Relative Humidity	Max	91	91	97	83	98	98	91	95	99	99	94	-	-
	Min	44	28	23	36	31	35	41	39	33	30	34	-	-
Soil Temperature at 10 cm	06 UTC	22.0	21.4	21.0	21.0	22.2	22.4	21.6	21.8	20.8	21.0	21.5	-	20.5
	12 UTC	25.0	25.0	24.2	24.0	24.4	24.2	25.0	24.6	23.4	24.4	24.4	-	21.6
Sunshine Duration		8.2	10.2	9.9	3.7	5.9	1.8	8.3	9.6	9.1	9.2	7.6	-	6.8
Precipitation													-	6.9
Evaporation		4.5	6.2	2.7	1.9	5.0	2.3	4.1	5.4	2.9	3.7	38.7	-	34.1
Growing Degrees	5	16.0	17.5	15.0	15.6	18.5	17.8	16.2	16.2	14.9	16.2	163.9	-	149.0
	10	11.0	12.5	10.0	10.6	13.5	12.8	11.2	11.2	9.9	11.2	113.9	-	99.2

3rd 10-day period (21-30/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	33.0	-	25.6
Precipitation - Reference Evapotranspiration	-33.0	-	-18.7
Number of Rainy Days	0.0	-	1.6
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

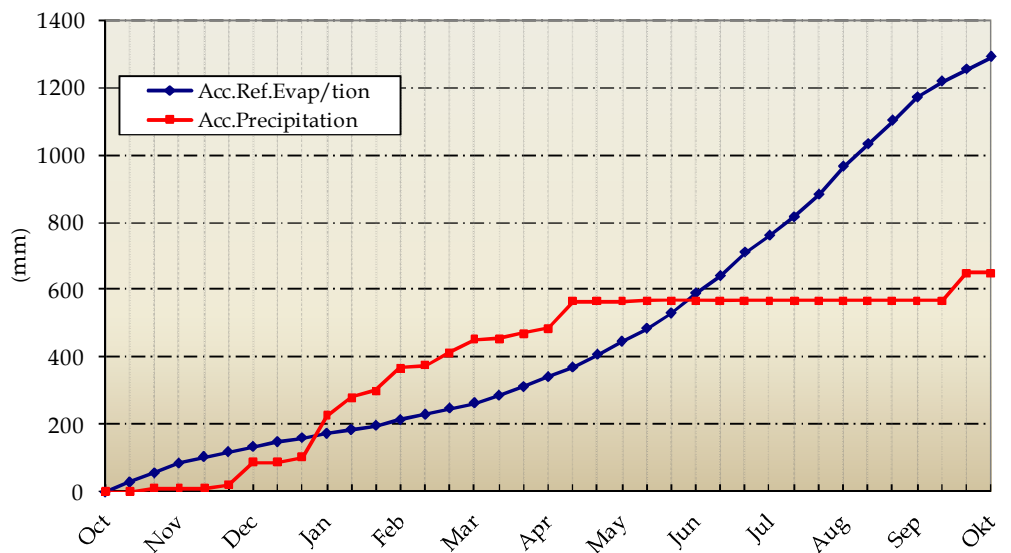


Tympaki

3rd 10-day period (21-30/09/2009)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.2	26.0	26.4	26.6	25.2	29.0	29.2	25.4	27.2	28.0	26.8	-	27.8
	Min	18.6	16.0	15.6	16.0	16.4	19.0	20.2	17.6	16.4	15.6	17.1	-	17.1
Relative Humidity	Max	51	70	71	86	94	92	76	67	61	79	75	-	-
	Min	34	39	27	31	48	34	36	39	19	34	34	-	-
Soil Temperature at 10 cm	06 UTC	24.0	23.2	23.0	23.2	24.0	23.6	25.0	24.6	23.2	23.0	23.7	-	25.4
	12 UTC	28.2	28.2	28.8	29.2	28.2	29.2	30.4	28.4	28.0	28.6	28.7	-	29.1
Sunshine Duration		9.2	8.9	8.9	7.5	2.4	8.5	6.3	7.2	7.5	7.9	7.4	-	8.7
Precipitation						0.3						0.3	-	4.2
Evaporation		10.1	9.9	7.8	7.0	3.7	8.0	8.5	9.2	9.7	8.3	82.2	-	67.1
Growing Degrees	5	16.9	16.0	16.0	16.3	15.8	19.0	19.7	16.5	16.8	16.8	169.8	-	174.3
	10	11.9	11.0	11.0	11.3	10.8	14.0	14.7	11.5	11.8	11.8	119.8	-	124.3

3rd 10-day period (21-30/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	37.3	-	38.0
Precipitation - Reference Evapotranspiration	-37.0	-	-33.8
Number of Rainy Days	1.0	-	0.6
Number of Dry Days	13.0	-	-

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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