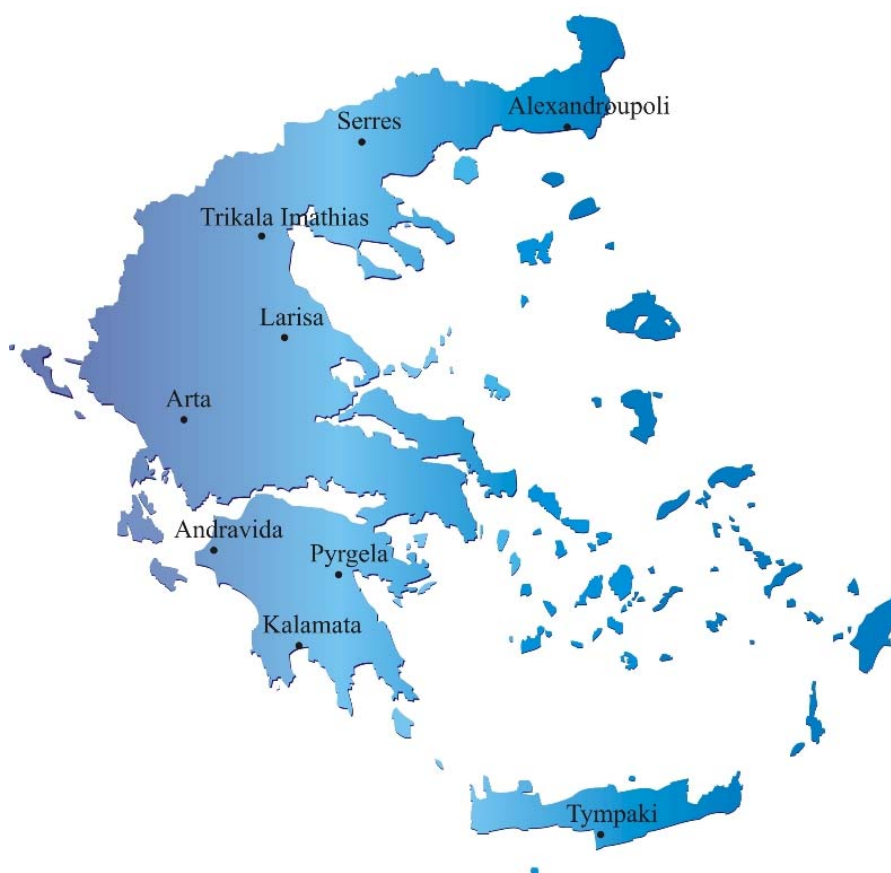


# AGROMETEOROLOGICAL BULLETIN

*September 2009*  
*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



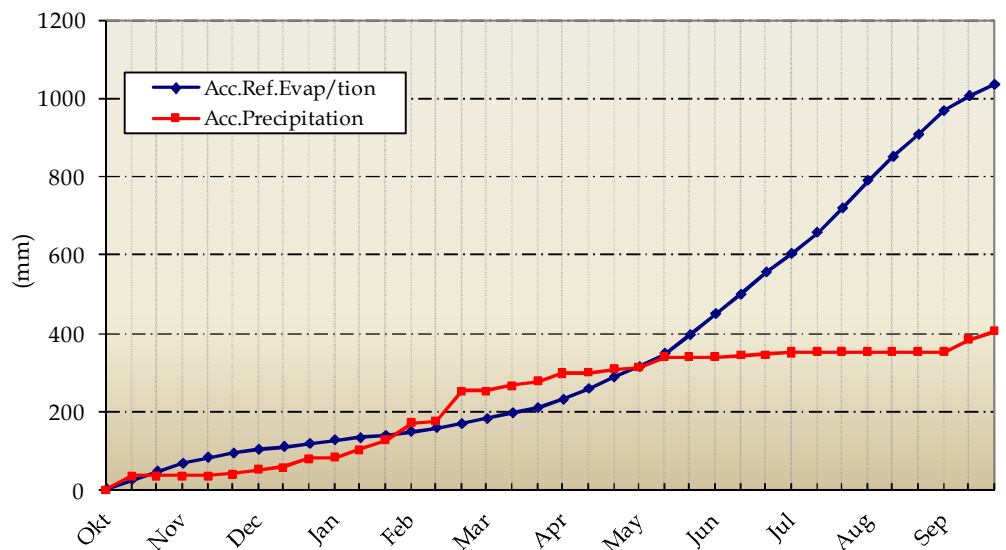
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2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.4	23.0	24.8	23.8	28.0	28.0	27.4	25.4	25.0	23.6	25.2	-	26.5
	Min	20.0	19.4	19.2	14.0	17.0	15.8	15.0	19.0	19.4	16.0	17.5	-	13.8
Relative Humidity	Max	81	96	86	93	92	90	94	90	83	78	88	-	-
	Min	50	65	48	56	45	38	42	52	48	35	48	-	-
Soil Temperature at 10 cm	06 UTC	21.2	21.0	19.8	19.0	19.6	20.6	21.0	22.4	21.8	20.5	20.7	-	19.9
	12 UTC	22.2	20.8	22.0	22.0	23.0	23.4	23.4	24.4	24.2	23.8	22.9	-	23.7
Sunshine Duration		0.0	0.0	6.9	0.4	8.8	10.9	8.7	0.0	4.5	10.7	5.1	-	8.5
Precipitation			20.2							0.0		20.2	-	5.2
Evaporation		3.2	2.3	0.6	5.0	10.2	1.2	4.8	3.5	3.1	8.4	42.3	-	66.6
Growing Degrees	5	16.7	16.2	17.0	13.9	17.5	16.9	16.2	17.2	17.2	14.8	163.6	-	151.3
	10	11.7	11.2	12.0	8.9	12.5	11.9	11.2	12.2	12.2	9.8	113.6	-	101.3

2nd 10-day period (11-20/09/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	29.3	-	37.1
Precipitation - Reference Evapotranspiration	-9.1	-	-31.9
Number of Rainy Days	1.0	-	0.9
Number of Dry Days	3.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

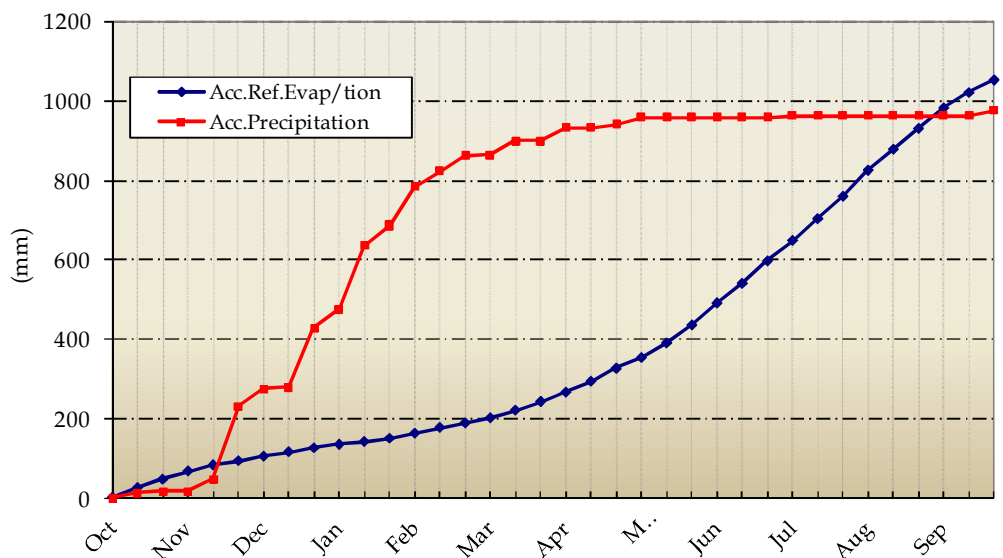


Andravida

2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	28.8	28.8	28.4	28.4	29.2	28.0	27.4	27.6	26.0	28.1	-	28.2
	Min	18.8	16.8	16.8	19.6	17.2	18.0	19.4	18.4	19.6	19.6	18.4	-	16.5
Relative Humidity	Max	88	90	94	94	94	96	94	98	96	96	94	-	-
	Min	35	37	47	53	55	52	57	60	55	53	50	-	-
Soil Temperature at 10 cm	06 UTC	25.8	24.4	24.6	25.6	23.4	23.6	24.2	23.2	24.2	24.8	24.4	-	23.4
	12 UTC	28.6	30.6	30.2	30.4	28.8	30.4	28.0	28.4	28.8	27.6	29.2	-	26.9
Sunshine Duration		0.3	9.3	6.9	3.8	9.9	10.4	4.3	9.8	9.8	1.7	6.6	-	9.1
Precipitation					2.7	1.8		4.1			3.4	12.0	-	7.0
Evaporation		4.2	1.9	5.1	6.6	4.0	4.4	6.7	6.9	2.5	4.4	46.7	-	56.3
Growing Degrees	5	18.4	17.8	17.8	19.0	17.8	18.6	18.7	17.9	18.6	17.8	182.4	-	173.6
	10	13.4	12.8	12.8	14.0	12.8	13.6	13.7	12.9	13.6	12.8	132.4	-	123.6

2nd 10-day period (11-20/09/2009)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.7	-
Precipitation - Reference Evapotranspiration	-19.7	-29.2
Number of Rainy Days	4.0	1.1
Number of Dry Days	81.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

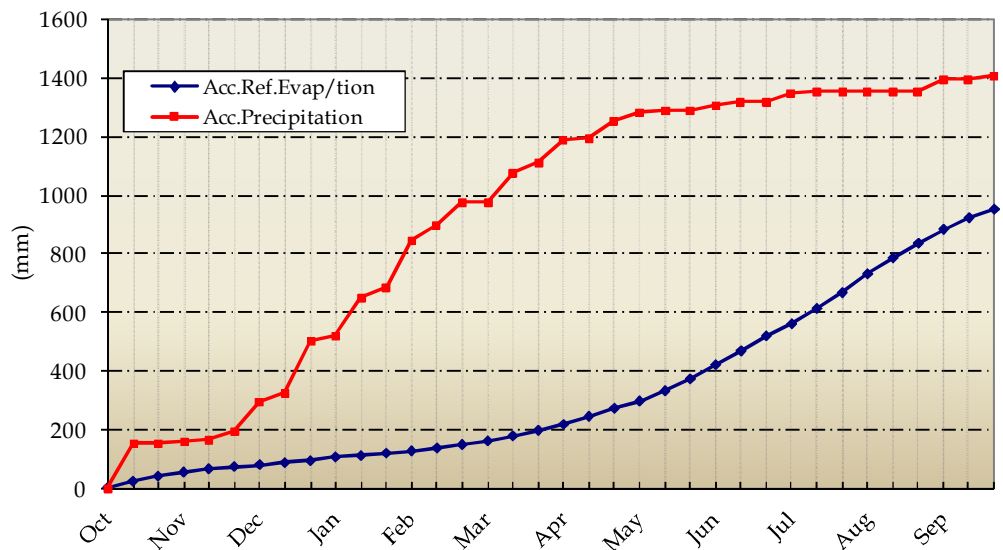


Arta

2nd 10-day period (11-20/09/2009)		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	30.6	29.0	28.6	30.0	31.0	29.4	29.8	30.6	27.4	29.6	-	28.9
	Min	15.0	18.6	15.6	17.8	17.8	16.4	18.0	15.4	16.8	17.6	16.9	-	15.1
Relative Humidity	Max	95	94	77	92	94	96	98	96	90	96	93	-	-
	Min	35	23	48	40	37	30	40	46	48	41	39	-	-
Soil Temperature at 10 cm	06 UTC	24.6	24.8	24.2	24.8	24.4	24.0	24.6	23.2	23.6	24.0	24.2	-	21.3
	12 UTC	26.0	26.6	25.8	26.4	26.2	25.8	25.0	25.0	25.0	25.2	25.7	-	25.4
Sunshine Duration		5.8	7.2	8.3	7.6	10.4	9.1	3.8	9.9	8.8	4.9	7.6	-	8.6
Precipitation					3.6			10.4		0.2		14.2	-	11.9
Evaporation		3.5	5.6	3.7	2.3	7.7	2.1	3.2	3.2	5.5	2.8	39.6	-	-
Growing Degrees	5	17.5	19.6	17.3	18.2	18.9	18.7	18.7	17.6	18.7	17.5	182.7	-	169.9
	10	12.5	14.6	12.3	13.2	13.9	13.7	13.7	12.6	13.7	12.5	132.7	-	119.9

2nd 10-day period (11-20/09/2009)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.2	- 32.0
Precipitation - Reference Evapotranspiration	-15.0	- -20.1
Number of Rainy Days	3.0	- 1.5
Number of Dry Days	6.0	- -

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

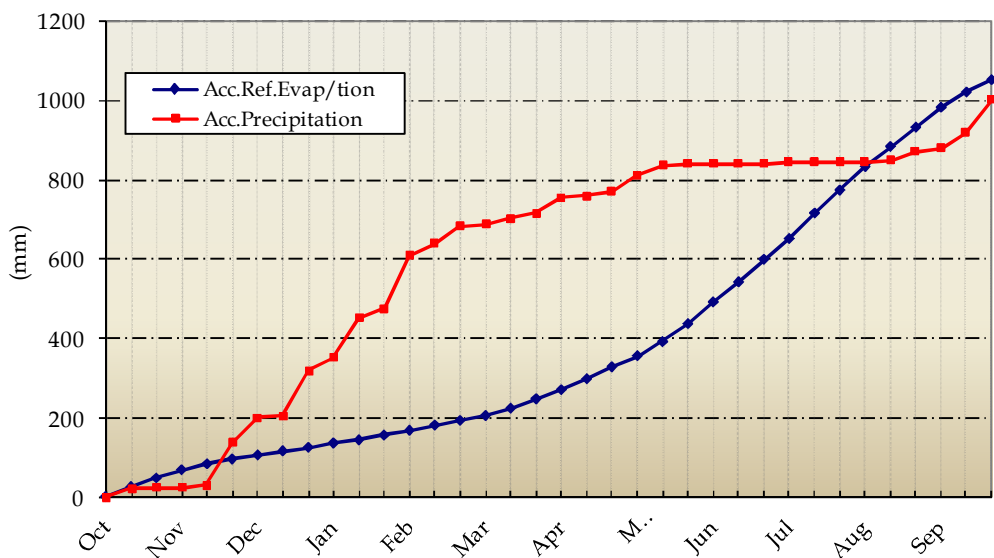


Kalamata

2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.6	29.8	27.8	28.4	26.6	27.6	29.0	30.2	27.0	24.2	27.7	-	28.6
	Min	20.6	16.0	17.2	19.4	16.6	18.2	19.4	18.6	18.0	16.8	18.1	-	15.9
Relative Humidity	Max	92	96	94	100	100	98	98	96	96	100	97	-	-
	Min	53	39	52	63	67	65	54	48	52	68	56	-	-
Soil Temperature at 10 cm	06 UTC	23.4	22.6	22.8	23.2	22.4	23.0	23.8	23.6	23.2	21.4	22.9	-	22.6
	12 UTC	23.8	23.2	24.4	24.2	24.8	24.8	25.0	25.2	25.0	22.2	24.3	-	25.8
Sunshine Duration		1.2	10.2	8.0	5.7	9.1	10.1	7.6	10.3	9.3	1.5	7.3	-	8.7
Precipitation				0.0	14.2	0.2				1.7	66.9	83.0	-	6.3
Evaporation		3.0	6.0	3.9	1.0	11.0	7.0	1.0	7.0	22.8	13.0	75.7	-	60.4
Growing Degrees	5	18.6	17.9	17.5	18.9	16.6	17.9	19.2	19.4	17.5	15.5	179.0	-	172.4
	10	13.6	12.9	12.5	13.9	11.6	12.9	14.2	14.4	12.5	10.5	129.0	-	122.4

2nd 10-day period (11-20/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.6	-	38.1
Precipitation - Reference Evapotranspiration	51.4	-	-31.8
Number of Rainy Days	4.0	-	1.0
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

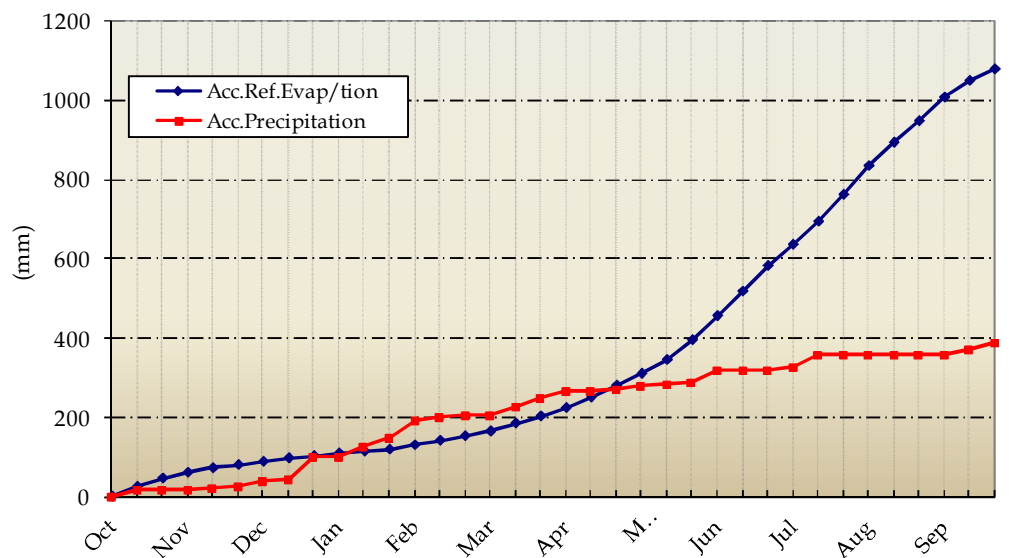


Larisa

2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	21.2	27.2	26.4	27.6	28.6	28.2	28.8	26.4	22.0	26.3	-	29.0
	Min	19.2	17.0	15.0	17.8	19.0	16.0	18.0	15.6	19.2	17.0	17.4	-	14.0
Relative Humidity	Max	92	96	93	92	92	96	92	93	90	94	93	-	-
	Min	40	65	38	53	51	41	39	42	55	63	49	-	-
Soil Temperature at 10 cm	06 UTC	24.0	22.6	21.4	22.4	23.0	22.8	23.2	22.8	23.4	22.2	22.8	-	22.0
	12 UTC	25.0	22.8	24.2	24.6	25.0	24.8	25.4	25.2	25.0	23.6	24.6	-	24.1
Sunshine Duration		1.9	0.0	2.2	6.7	6.5	6.1	5.8	6.8	3.4	0.0	3.9	-	8.3
Precipitation		0.1	11.6		0.8	0.5			0.2	1.2	3.0	17.4	-	12.0
Evaporation		1.8	1.9	3.1	7.7	4.6	3.1	5.0	8.1	3.8	0.5	39.6	-	61.4
Growing Degrees	5	18.1	14.1	16.1	17.1	18.3	17.3	18.1	17.2	17.8	14.5	168.6	-	165.0
	10	13.1	9.1	11.1	12.1	13.3	12.3	13.1	12.2	12.8	9.5	118.6	-	115.0

2nd 10-day period (11-20/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.8	-	38.0
Precipitation - Reference Evapotranspiration	-11.4	-	-26.0
Number of Rainy Days	7.0	-	1.2
Number of Dry Days	3.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

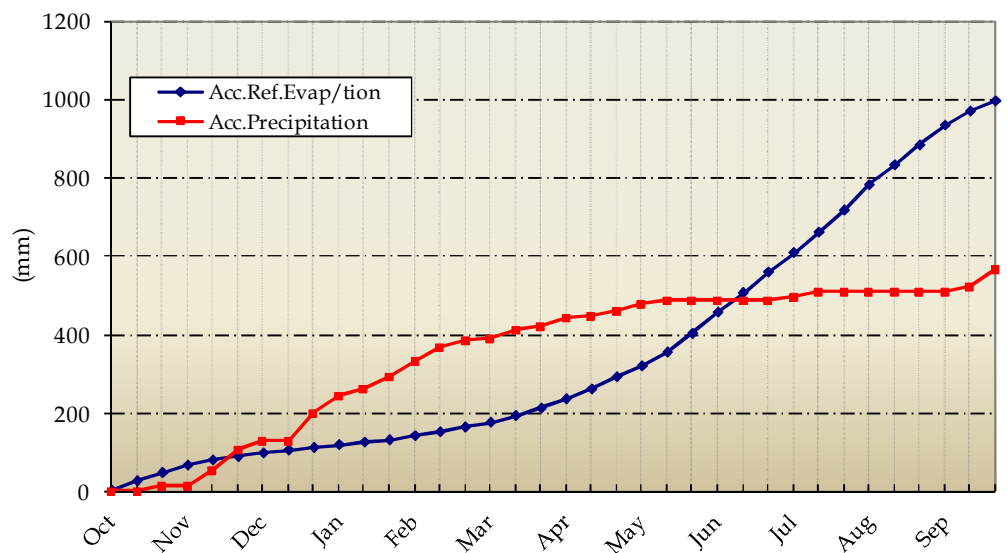


Pyrgela

2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	27.4	28.2	27.4	30.0	26.4	30.0	30.4	29.4	23.6	27.7	-	30.2
	Min	16.8	17.0	14.4	19.4	20.6	18.0	18.8	16.4	18.4	18.2	17.8	-	14.1
Relative Humidity	Max	76	88	91	91	91	89	94	94	94	88	90	-	-
	Min	51	40	45	70	40	44	49	49	47	71	51	-	-
Soil Temperature at 10 cm	06 UTC	22.2	21.0	20.0	22.0	22.2	22.0	23.4	22.0	22.0	21.8	21.9	-	21.7
	12 UTC	24.0	24.0	-	-	27.8	28.6	29.2	27.8	27.6	23.4	26.6	-	29.0
Sunshine Duration		0.0	2.2	5.0	2.5	8.2	8.4	7.8	9.2	6.4	0.4	5.0	-	8.5
Precipitation		0.0	4.3	0.3	2.3	4.1		1.6	6.3	22.6	1.2	42.7	-	3.5
Evaporation		0.7	3.6	2.6	0.3	5.1	4.4	2.8	5.4	4.7	1.5	31.1	-	45.1
Growing Degrees	5	15.6	17.2	16.3	18.4	20.3	17.2	19.4	18.4	18.9	15.9	177.6	-	171.4
	10	10.6	12.2	11.3	13.4	15.3	12.2	14.4	13.4	13.9	10.9	127.6	-	121.4

2nd 10-day period (11-20/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.8	-	32.8
Precipitation - Reference Evapotranspiration	16.9	-	-29.3
Number of Rainy Days	8.0	-	1.0
Number of Dry Days	1.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

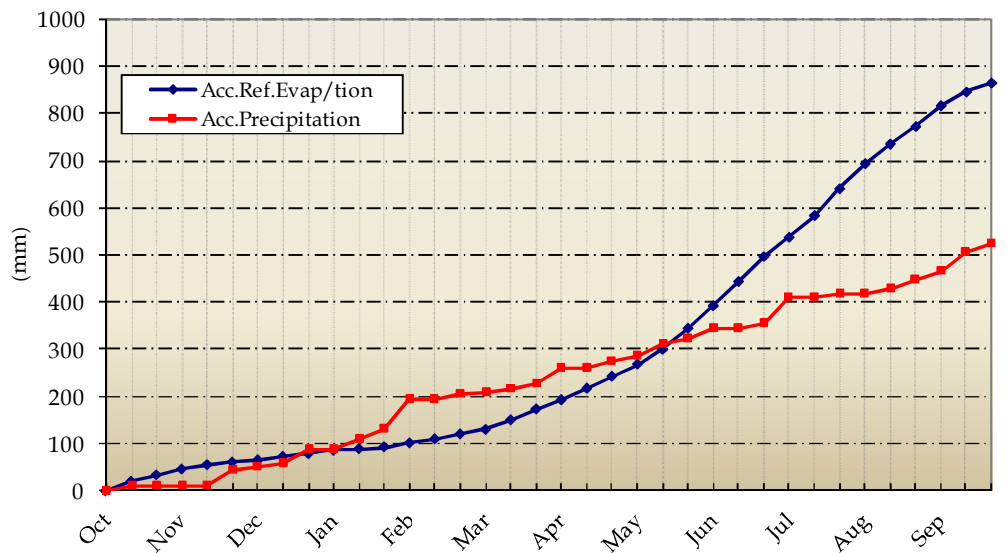


Series

2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.0	23.0	26.4	22.4	29.0	30.0	27.0	25.0	26.2	22.0	25.6	-	28.4
	Min	16.6	15.8	17.8	17.2	15.0	15.0	15.4	18.0	14.4	15.8	16.1	-	14.3
Relative Humidity	Max	92	89	78	92	92	88	83	94	96	98	90	-	-
	Min	49	70	45	63	35	36	44	61	62	62	53	-	-
Soil Temperature at 10 cm	06 UTC	21.4	21.2	21.0	21.2	20.2	20.6	21.6	21.4	21.2	20.6	21.0	-	20.6
	12 UTC	23.0	22.4	25.0	22.0	24.4	-	22.4	22.4	23.0	21.6	22.9	-	24.0
Sunshine Duration		1.6	0.0	3.7	0.0	9.5	9.3	1.9	1.2	0.3	1.6	2.9	-	8.1
Precipitation		0.4	0.8		2.8			0.0	5.7	9.8		19.5	-	7.9
Evaporation		1.8	4.0	2.4	1.4	2.4	2.6	0.3	1.2	0.3	2.7	19.1	-	47.8
Growing Degrees	5	15.8	14.4	17.1	14.8	17.0	17.5	16.2	16.5	15.3	13.9	158.5	-	162.6
	10	10.8	9.4	12.1	9.8	12.0	12.5	11.2	11.5	10.3	8.9	108.5	-	112.8

2nd 10-day period (11-20/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.6	-	29.3
Precipitation - Reference Evapotranspiration	-0.1	-	-21.4
Number of Rainy Days	5.0	-	1.4
Number of Dry Days	1.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



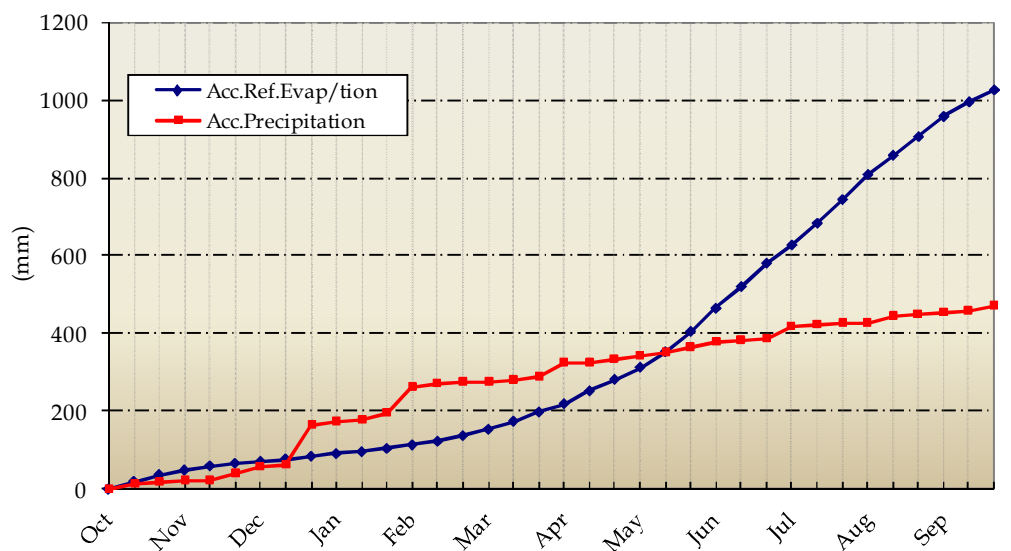


Trikala Imathias

2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.4	25.2	31.0	20.8	29.6	32.0	27.6	28.4	25.0	25.6	27.3	-	28.3
	Min	19.4	18.4	17.0	18.0	15.6	16.6	19.2	15.8	17.8	17.0	17.5	-	14.2
Relative Humidity	Max	97	94	92	96	94	94	97	96	94	98	95	-	-
	Min	34	52	25	77	45	34	50	49	50	42	46	-	-
Soil Temperature at 10 cm	06 UTC	24.2	23.2	22.2	22.6	21.0	21.4	23.0	22.0	22.4	21.6	22.4	-	21.6
	12 UTC	26.0	23.4	24.4	22.8	24.6	25.4	25.0	25.2	23.4	23.8	24.4	-	22.8
Sunshine Duration		3.9	0.4	6.1	0.2	9.0	9.0	2.7	7.5	1.6	5.9	4.6	-	7.7
Precipitation		1.9	0.5	1.5	2.6			3.1	1.6	0.1		11.3	-	4.6
Evaporation		3.2	2.2	2.7	0.7	2.8	2.8	1.8	0.8	3.1	2.1	22.2	-	39.1
Growing Degrees	5	18.4	16.8	19.0	14.4	17.6	19.3	18.4	17.1	16.4	16.3	173.7	-	162.6
	10	13.4	11.8	14.0	9.4	12.6	14.3	13.4	12.1	11.4	11.3	123.7	-	112.6

2nd 10-day period (11-20/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.1	-	30.4
Precipitation - Reference Evapotranspiration	-19.8	-	-25.8
Number of Rainy Days	7.0	-	1.2
Number of Dry Days	2.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

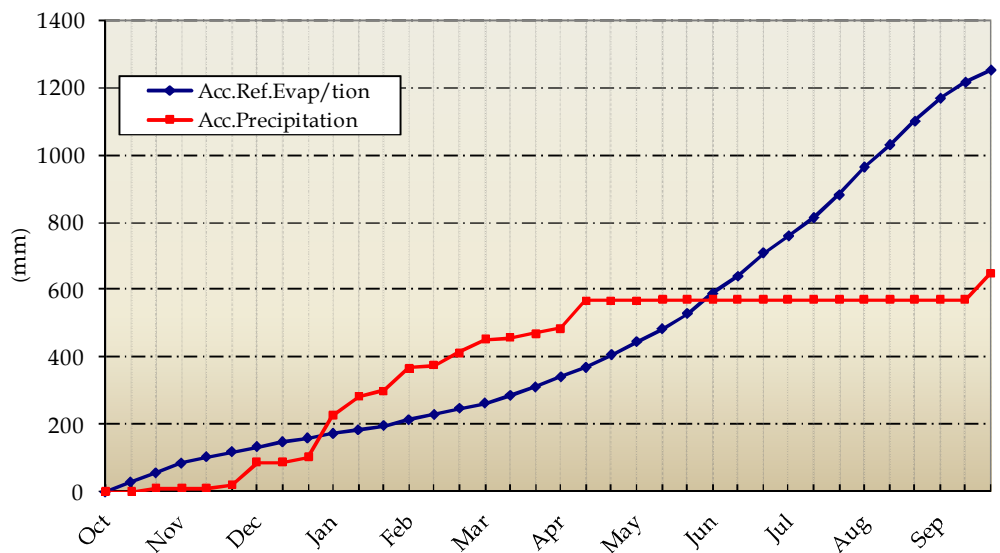


Tympaki

2nd 10-day period (11-20/09/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.8	28.0	27.2	28.8	28.6	29.0	31.0	28.0	28.6	24.8	27.7	-	28.9
	Min	19.0	19.6	19.6	19.8	22.0	20.4	19.2	21.0	20.4	19.6	20.1	-	18.0
Relative Humidity	Max	100	93	96	85	90	88	77	80	81	71	86	-	-
	Min	79	42	52	34	47	34	22	34	37	41	42	-	-
Soil Temperature at 10 cm	06 UTC	25.2	22.4	23.0	24.6	25.6	25.4	25.2	26.0	26.2	26.0	25.0	-	27.0
	12 UTC	24.0	26.8	29.0	29.2	31.2	31.2	30.0	31.6	31.0	29.2	29.3	-	30.9
Sunshine Duration		0.7	9.1	9.6	4.8	8.4	7.7	6.1	8.6	8.9	3.7	6.8	-	9.8
Precipitation		79.9										79.9	-	2.3
Evaporation		4.5	7.4	6.3	5.2	7.3	8.4	8.1	8.0	6.7	9.4	71.3	-	80.7
Growing Degrees	5	15.9	18.8	18.4	19.3	20.3	19.7	20.1	19.5	19.5	17.2	188.7	-	184.3
	10	10.9	13.8	13.4	14.3	15.3	14.7	15.1	14.5	14.5	12.2	138.7	-	134.3

2nd 10-day period (11-20/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.6	-	45.0
Precipitation - Reference Evapotranspiration	44.3	-	-42.7
Number of Rainy Days	1.0	-	0.2
Number of Dry Days	129.0	-	-

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<sub>n</sub> 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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ΕΘΝΙΚΗ  
ΜΕΤΕΩΡΟΛΟΓΙΚΗ  
ΥΠΗΡΕΣΙΑ

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