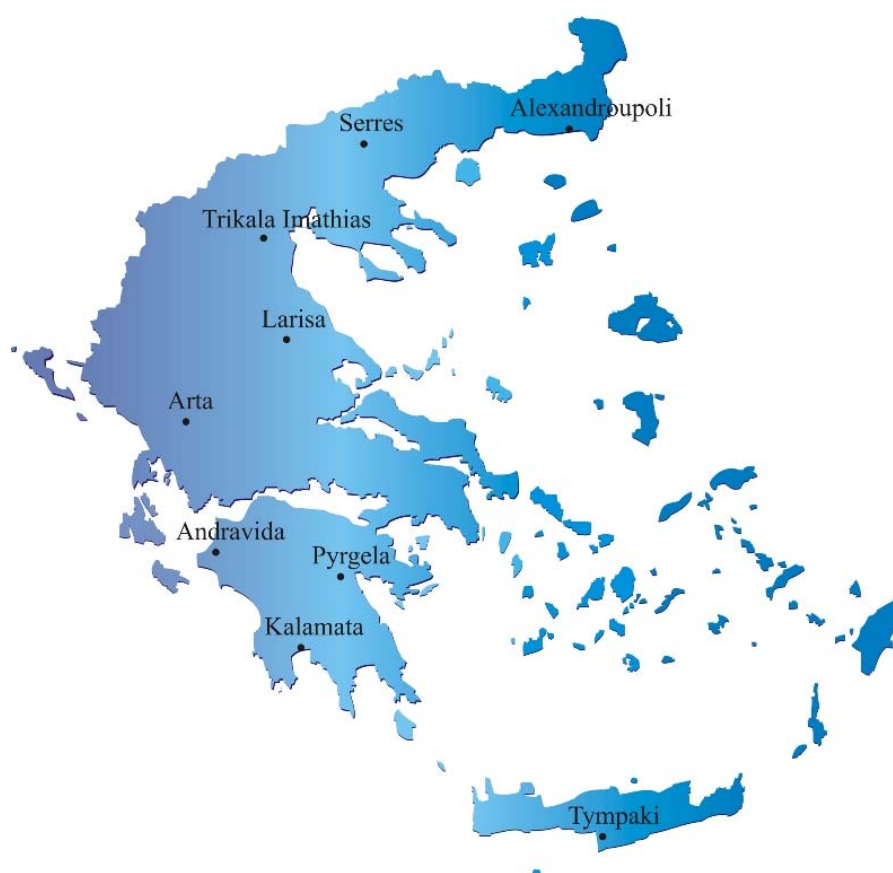


# AGROMETEOROLOGICAL BULLETIN

*October 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  
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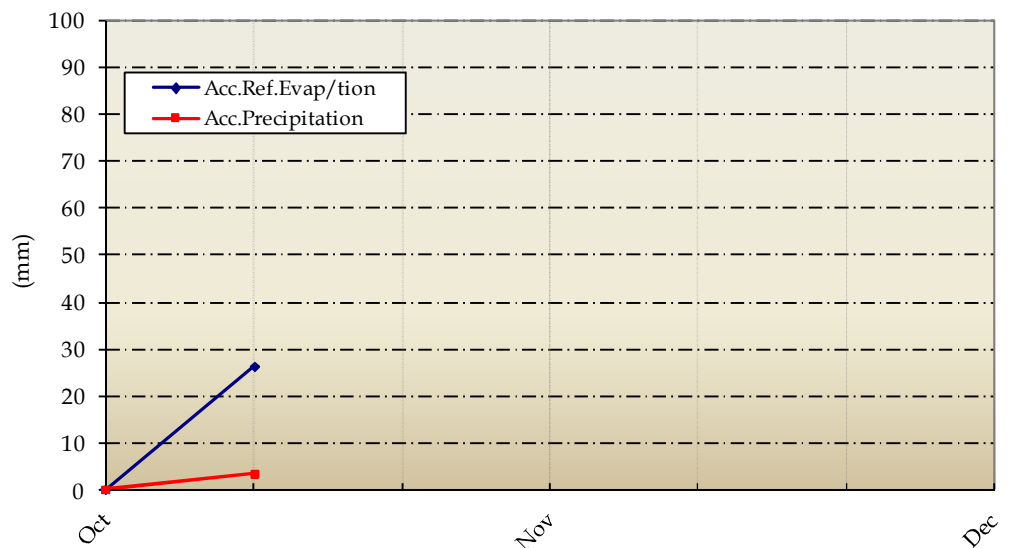
*Web addresses of HNMS*  
[www.hnms.gr](http://www.hnms.gr)  
[www.emy.gov.gr](http://www.emy.gov.gr)  
[www.meteo.gov.gr](http://www.meteo.gov.gr)  
[www.meteohellas.gr](http://www.meteohellas.gr)

Alexandroupoli

1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.4	25.2	24.0	23.6	23.2	25.2	26.6	26.2	25.8	28.0	25.3	-	22.8
	Min	11.8	11.6	17.8	17.6	15.8	11.2	11.8	14.4	8.4	10.8	13.1	-	11.7
Relative Humidity	Max	89	90	94	95	96	84	83	83	88	90	89	-	-
	Min	51	52	68	67	59	39	28	30	41	33	47	-	-
Soil Temperature at 10 cm	06 UTC	19.0	19.0	20.6	20.8	19.2	17.8	18.2	19.2	18.6	19.0	19.1	-	17.4
	12 UTC	22.6	23.8	22.4	21.0	21.4	21.8	21.8	21.4	21.6	21.0	21.9	-	20.5
Sunshine Duration		8.7	9.0	2.4	2.2	2.1	10.1	10.4	10.5	10.5	9.9	7.6	-	6.7
Precipitation				2.2	1.1							3.3	-	17.2
Evaporation		2.7	2.4	3.5	1.6	3.2	3.5	3.7	6.0	5.7	4.2	36.5	-	48.1
Growing Degrees	5	13.6	13.4	15.9	15.6	14.5	13.2	14.2	15.3	12.1	14.4	142.2	-	122.8
	10	8.6	8.4	10.9	10.6	9.5	8.2	9.2	10.3	7.1	9.4	92.2	-	73.0

1st 10-day period (1-10/10/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	26.3	-	27.4
Precipitation - Reference Evapotranspiration	-23.0	-	-10.2
Number of Rainy Days	2.0	-	1.6
Number of Dry Days	20.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

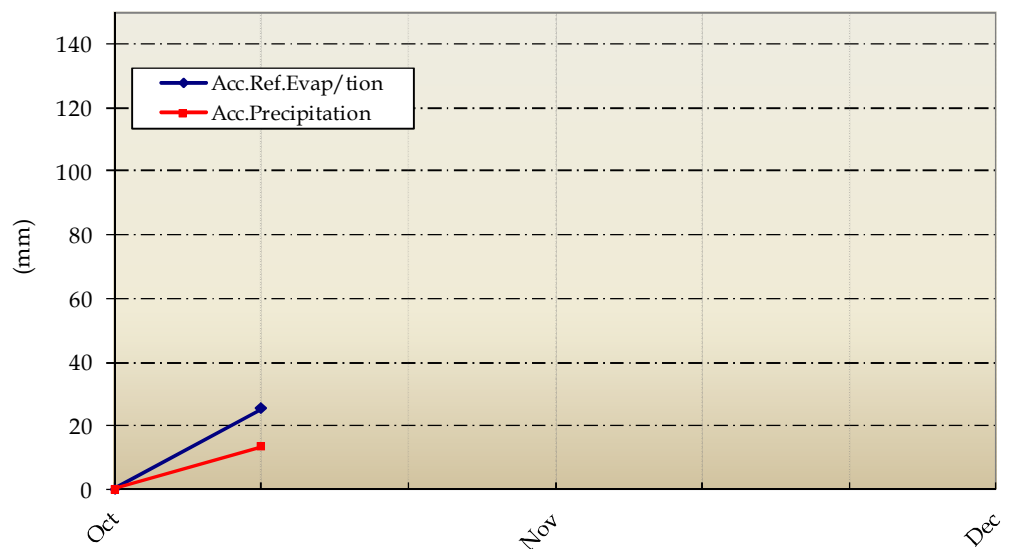


Andravida

1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.8	26.4	24.6	24.8	24.2	24.8	27.8	27.4	26.0	26.6	25.8	-	25.6
	Min	16.6	17.0	20.4	15.6	14.6	13.8	14.0	11.4	13.6	13.8	15.1	-	14.3
Relative Humidity	Max	92	86	96	98	95	98	98	91	96	96	95	-	-
	Min	59	49	64	48	53	53	35	30	42	48	48	-	-
Soil Temperature at 10 cm	06 UTC	21.0	21.0	21.8	20.4	19.8	19.2	19.4	18.6	18.8	20.0	20.0	-	20.5
	12 UTC	25.8	26.0	25.8	25.0	24.0	24.0	24.0	24.8	25.0	25.6	25.0	-	23.8
Sunshine Duration		7.2	5.8	4.3	8.9	9.3	9.0	8.7	9.4	9.0	8.9	8.0	-	7.7
Precipitation			1.7	11.7								13.4	-	23.2
Evaporation		1.0	3.4	5.0	0.4	3.8	4.3	7.3	3.8	1.0	0.6	30.6	-	42.9
Growing Degrees	5	16.2	16.7	17.5	15.2	14.4	14.3	15.9	14.4	14.8	15.2	154.6	-	149.6
	10	11.2	11.7	12.5	10.2	9.4	9.3	10.9	9.4	9.8	10.2	104.6	-	99.6

1st 10-day period (1-10/10/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	25.4	-	26.8
Precipitation - Reference Evapotranspiration	-12.0	-	-3.6
Number of Rainy Days	2.0	-	2.2
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

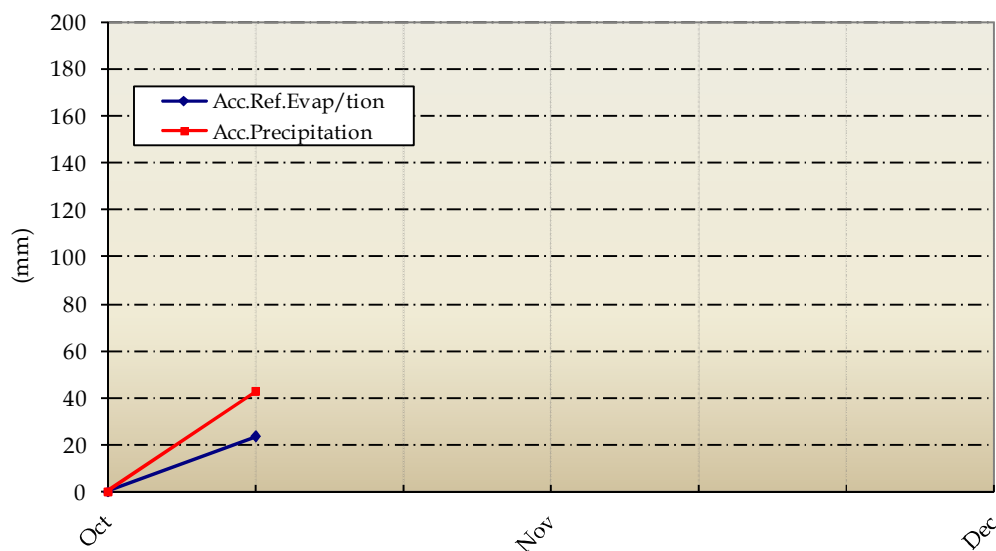




1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	26.0	24.2	24.2	25.0	27.6	29.6	30.0	29.0	28.8	27.3	-	26.3
	Min	14.2	15.2	17.0	12.6	11.8	12.2	13.6	13.0	11.0	12.6	13.3	-	13.2
Relative Humidity	Max	91	100	100	98	95	98	96	95	95	100	97	-	-
	Min	51	54	78	48	51	32	22	15	38	32	42	-	-
Soil Temperature at 10 cm	06 UTC	21.2	21.4	20.0	20.0	19.4	19.6	20.0	19.8	19.6	20.0	20.1	-	19.2
	12 UTC	23.4	23.2	22.0	22.0	21.6	22.0	22.4	22.0	21.8	22.2	22.3	-	22.7
Sunshine Duration		8.5	3.2	4.6	9.3	10.2	9.9	9.7	10.0	9.7	10.0	8.5	-	7.2
Precipitation			4.9	37.4								42.3	-	29.9
Evaporation		4.5	1.3	0.3	2.0	7.5	2.7	4.0	3.7	3.5	4.1	33.6	-	-
Growing Degrees	5	16.2	15.6	15.6	13.4	13.4	14.9	16.6	16.5	15.0	15.7	152.9	-	147.3
	10	11.2	10.6	10.6	8.4	8.4	9.9	11.6	11.5	10.0	10.7	102.9	-	97.5

1st 10-day period (1-10/10/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	23.3	-	22.6
Precipitation - Reference Evapotranspiration	19.0	-	7.3
Number of Rainy Days	2.0	-	2.3
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

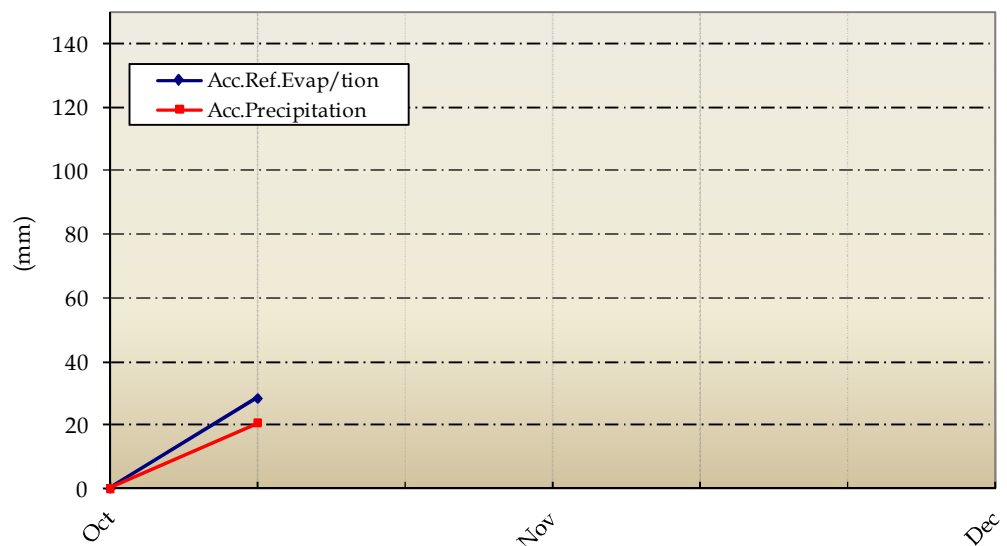


Kalamata

1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.4	25.0	26.4	26.6	25.4	26.0	26.4	26.4	26.0	26.2	26.1	-	26.1
	Min	14.4	13.4	19.8	15.8	13.8	13.4	14.6	11.0	11.6	12.4	14.0	-	13.8
Relative Humidity	Max	95	98	98	96	91	93	93	94	95	94	95	-	-
	Min	46	53	61	42	45	48	43	44	49	48	48	-	-
Soil Temperature at 10 cm	06 UTC	21.2	20.6	21.6	21.6	21.6	21.4	21.6	19.6	19.4	19.4	20.8	-	20.0
	12 UTC	22.2	21.8	22.4	22.6	22.4	22.2	22.4	22.0	22.0	22.0	22.2	-	22.6
Sunshine Duration		9.7	7.6	5.0	8.8	10.1	10.1	11.3	10.0	10.0	9.7	9.2	-	7.4
Precipitation			0.0	20.4								20.4	-	17.8
Evaporation		4.0	0.5	5.9	14.0	6.0	4.0	4.0	10.0	5.0	4.0	57.4	-	46.9
Growing Degrees	5	15.4	14.2	18.1	16.2	14.6	14.7	15.5	13.7	13.8	14.3	150.5	-	149.4
	10	10.4	9.2	13.1	11.2	9.6	9.7	10.5	8.7	8.8	9.3	100.5	-	99.4

1st 10-day period (1-10/10/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.5	-	28.3
Precipitation - Reference Evapotranspiration	-8.1	-	-10.5
Number of Rainy Days	1.0	-	2.3
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

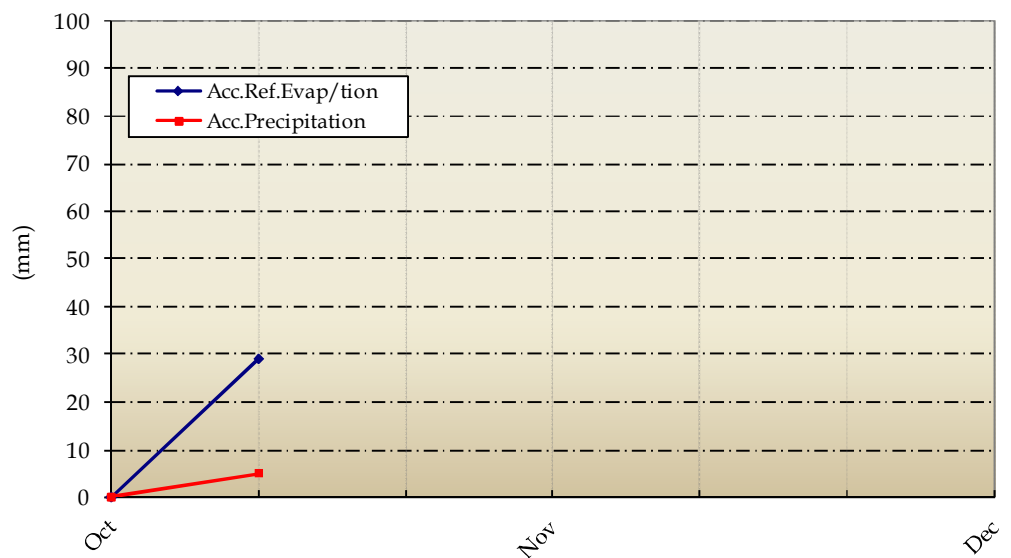


Larisa

1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.0	28.4	27.2	26.8	26.4	28.0	27.2	27.2	30.0	30.0	28.0	-	25.0
	Min	11.6	12.0	17.0	13.0	11.4	11.6	12.0	9.0	9.8	10.2	11.8	-	11.6
Relative Humidity	Max	86	96	98	93	93	91	90	82	87	82	90	-	-
	Min	30	35	49	35	35	40	26	26	26	26	33	-	-
Soil Temperature at 10 cm	06 UTC	20.4	20.6	22.0	20.6	19.6	19.8	20.0	19.2	19.0	18.4	20.0	-	19.3
	12 UTC	23.0	22.6	23.2	22.4	22.0	22.0	22.0	21.0	21.6	22.0	22.2	-	20.9
Sunshine Duration		8.1	6.3	5.2	7.9	8.0	8.4	8.5	8.0	8.6	8.4	7.7	-	6.2
Precipitation			0.3	4.6								4.9	-	10.5
Evaporation		4.7	5.3	6.2	2.0	6.0	6.2	2.8	4.0	6.5	6.1	49.8	-	41.2
Growing Degrees	5	15.3	15.2	17.1	14.9	13.9	14.8	14.6	13.1	14.9	15.1	148.9	-	133.0
	10	10.3	10.2	12.1	9.9	8.9	9.8	9.6	8.1	9.9	10.1	98.9	-	83.0

1st 10-day period (1-10/10/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.1	-	26.4
Precipitation - Reference Evapotranspiration	-24.2	-	-15.9
Number of Rainy Days	2.0	-	2.1
Number of Dry Days	4.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

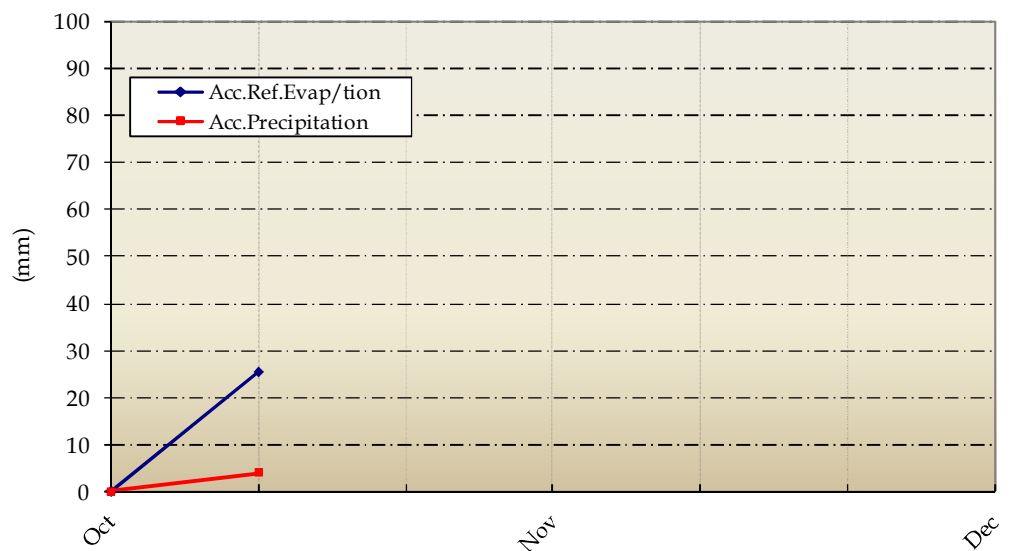


Pyrgela

1st 10-day period (1-10/10/2009)		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	26.0	26.6	29.4	29.0	28.4	29.0	29.6	30.8	30.6	28.6	-	26.7
	Min	13.2	13.4	17.0	12.6	10.0	11.0	13.8	11.0	8.8	9.2	12.0	-	12.3
Relative Humidity	Max	90	-	94	93	90	85	52	53	86	83	81	-	-
	Min	54	-	52	25	23	33	26	21	18	79	37	-	-
Soil Temperature at 10 cm	06 UTC	19.4	17.2	-	19.0	18.0	18.2	19.0	18.2	18.0	17.6	18.3	-	19.0
	12 UTC	25.4	25.0	24.4	24.4	24.0	24.2	25.0	24.4	24.4	24.4	24.6	-	25.2
Sunshine Duration		8.3	7.3	4.8	9.7	9.6	-	9.9	10.1	9.5	9.4	8.7	-	7.3
Precipitation			0.0	3.9								3.9	-	7.1
Evaporation		3.1	1.7	2.7	3.6	2.8	5.6	6.0	4.4	5.6	3.8	39.3	-	31.4
Growing Degrees	5	15.1	14.7	16.8	16.0	14.5	14.7	16.4	15.3	14.8	14.9	153.2	-	143.4
	10	10.1	9.7	11.8	11.0	9.5	9.7	11.4	10.3	9.8	9.9	103.2	-	93.9

1st 10-day period (1-10/10/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.4	-	24.5
Precipitation - Reference Evapotranspiration	-21.5	-	-17.4
Number of Rainy Days	1.0	-	1.5
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

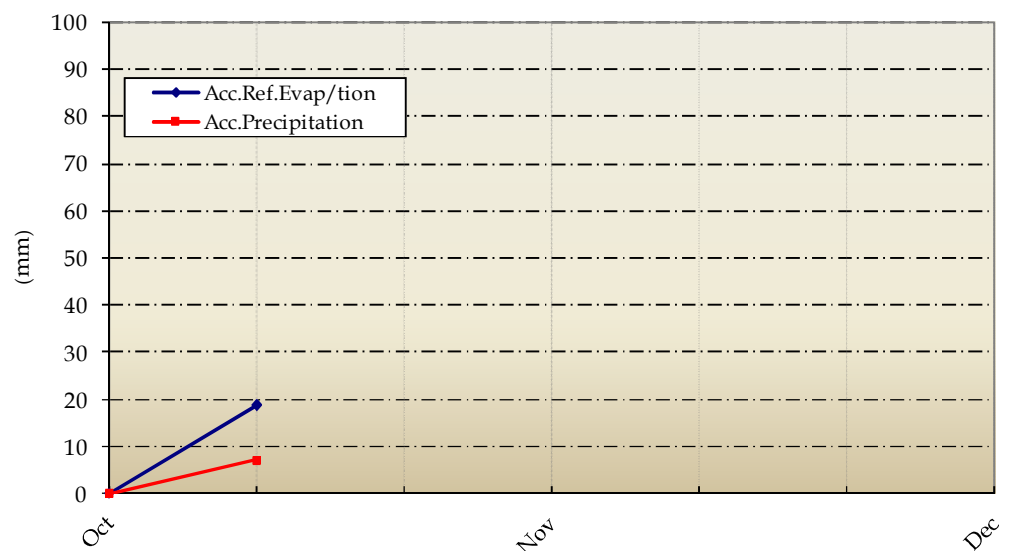


Series

1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.0	28.4	22.0	20.2	25.4	26.0	27.8	28.0	29.6	28.4	26.5	-	24.2
	Min	12.4	11.4	15.0	13.0	13.0	12.0	12.8	12.0	12.0	12.0	12.6	-	11.6
Relative Humidity	Max	79	81	92	87	96	95	95	77	87	87	88	-	-
	Min	25	32	71	71	45	47	33	28	35	35	42	-	-
Soil Temperature at 10 cm	06 UTC	18.8	19.2	20.4	19.8	19.0	18.0	18.8	18.6	18.4	18.8	19.0	-	17.5
	12 UTC	21.2	21.2	20.6	19.8	21.6	20.0	-	-	22.0	22.0	21.0	-	20.0
Sunshine Duration		8.9	5.9	0.0	0.0	5.6	8.7	9.0	8.7	8.8	8.7	6.4	-	6.4
Precipitation				7.1								7.1	-	10.5
Evaporation		2.0	0.0	1.9	0.0	7.0	2.0	3.0	3.0	4.0	5.0	27.9	-	30.9
Growing Degrees	5	15.7	14.9	13.5	11.6	14.2	14.0	15.3	15.0	15.8	15.2	145.2	-	128.0
	10	10.7	9.9	8.5	6.6	9.2	9.0	10.3	10.0	10.8	10.2	95.2	-	78.4

1st 10-day period (1-10/10/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.7	-	19.8
Precipitation - Reference Evapotranspiration	-11.6	-	-9.3
Number of Rainy Days	1.0	-	1.6
Number of Dry Days	13.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



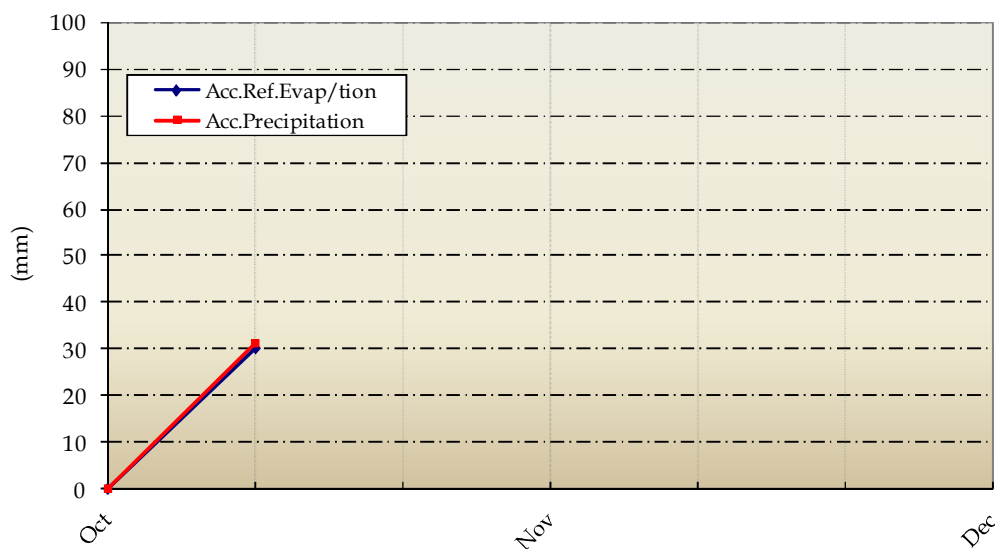


Trikala Imathias

1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.8	27.6	22.6	23.6	27.8	29.0	29.2	30.8	30.2	30.2	28.1	-	24.3
	Min	11.2	13.8	14.8	13.0	11.6	13.0	13.0	12.6	12.6	13.6	12.9	-	12.0
Relative Humidity	Max	96	99	98	99	98	91	99	98	90	94	96	-	-
	Min	37	50	70	44	39	40	35	28	38	26	41	-	-
Soil Temperature at 10 cm	06 UTC	20.6	21.0	21.4	18.6	17.6	18.6	19.2	19.0	19.0	19.6	19.5	-	19.1
	12 UTC	23.8	24.0	22.4	20.2	21.0	22.5	22.2	23.0	23.2	22.8	22.5	-	20.2
Sunshine Duration		9.5	5.1	1.0	3.2	10.0	9.0	9.3	9.8	9.2	9.2	7.5	-	6.0
Precipitation				31.2								31.2	-	22.2
Evaporation		5.2	5.4	4.6	1.4	4.4	4.6	1.5	3.2	4.3	0.7	35.3	-	27.7
Growing Degrees	5	15.5	15.7	13.7	13.3	14.7	16.0	16.1	16.7	16.4	16.9	155.0	-	130.4
	10	10.5	10.7	8.7	8.3	9.7	11.0	11.1	11.7	11.4	11.9	105.0	-	80.7

1st 10-day period (1-10/10/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.1	-	21.1
Precipitation - Reference Evapotranspiration	1.1	-	1.1
Number of Rainy Days	1.0	-	2.4
Number of Dry Days	13.0	-	-

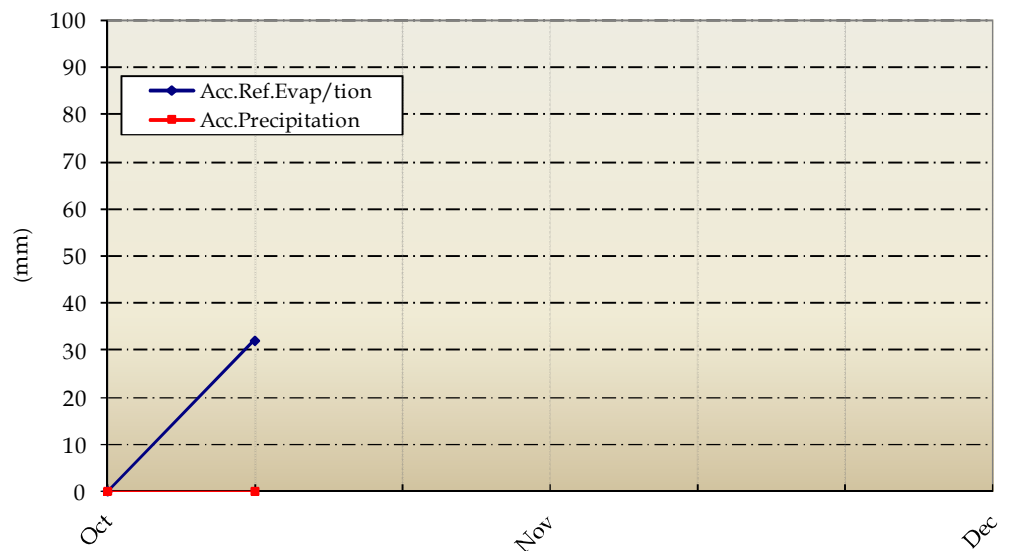
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/10/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.0	26.0	27.4	26.6	27.0	27.2	27.0	28.4	27.0	27.4	27.0	-	26.4
	Min	16.4	16.2	18.0	20.4	17.6	16.0	16.4	15.0	15.6	15.2	16.7	-	15.7
Relative Humidity	Max	95	96	98	97	84	85	92	92	97	94	93	-	-
	Min	44	61	63	68	32	37	41	37	33	29	44	-	-
Soil Temperature at 10 cm	06 UTC	23.2	23.4	24.4	25.4	24.4	23.4	23.0	22.6	22.6	22.6	23.5	-	23.6
	12 UTC	28.4	23.4	28.6	30.0	29.6	28.0	27.4	28.0	28.2	28.0	28.0	-	27.5
Sunshine Duration		7.5	7.3	5.6	8.3	8.3	8.7	8.8	8.7	9.1	9.0	8.1	-	8.6
Precipitation													-	7.2
Evaporation		4.0	5.1	6.9	6.2	6.7	8.1	7.9	7.9	5.9	6.6	65.3	-	61.4
Growing Degrees	5	16.2	16.1	17.7	18.5	17.3	16.6	16.7	16.7	16.3	16.3	168.4	-	159.8
	10	11.2	11.1	12.7	13.5	12.3	11.6	11.7	11.7	11.3	11.3	118.4	-	110.0

1st 10-day period (1-10/10/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.0	-	34.5
Precipitation - Reference Evapotranspiration	-32.0	-	-27.3
Number of Rainy Days	0.0	-	0.7
Number of Dry Days	15.0	-	-

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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