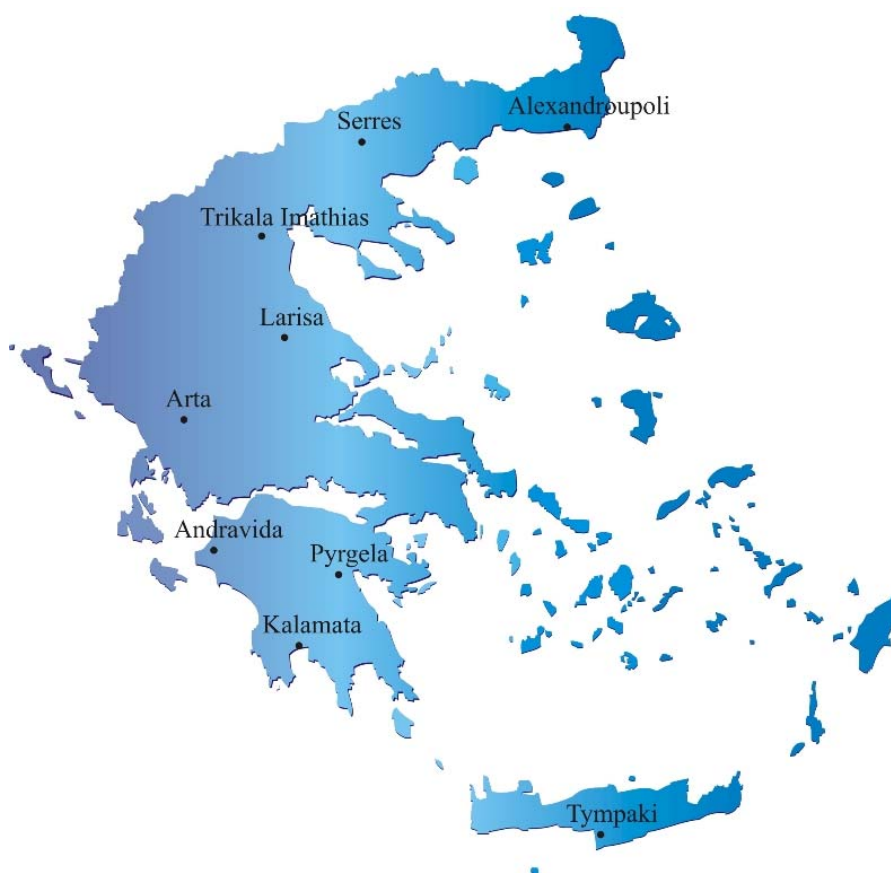




AGROMETEOROLOGICAL BULLETIN

September 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



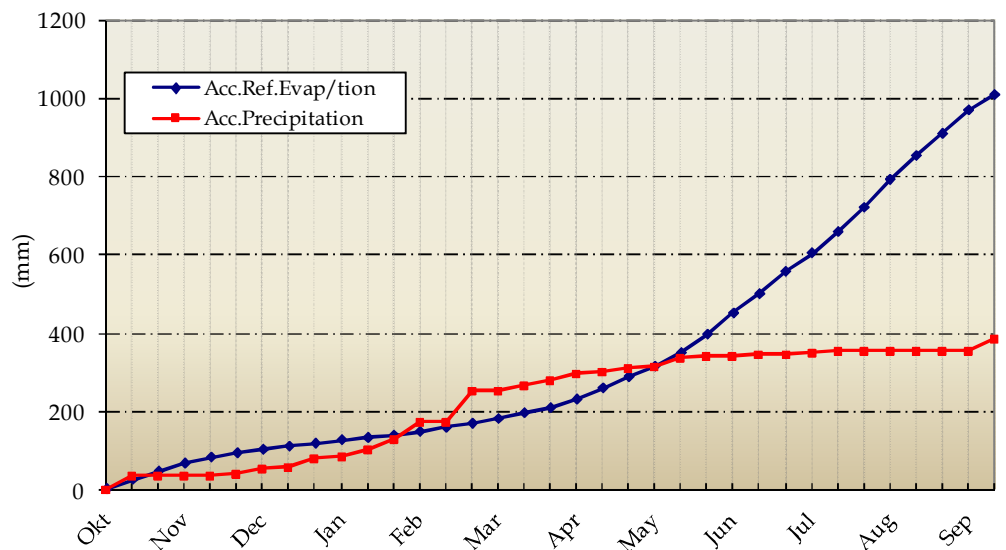
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

1st 10-day period (1-10/09/2009)		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	25.8	28.4	28.4	31.6	30.4	23.6	19.4	24.8	28.6	27.1	-	27.3
	Min	20.0	14.8	15.0	18.2	17.2	19.0	14.4	15.0	17.8	17.0	16.8	-	15.0
Relative Humidity	Max	81	76	80	87	88	96	98	89	88	83	87	-	-
	Min	28	29	33	45	44	34	65	67	49	33	43	-	-
Soil Temperature at 10 cm	06 UTC	26.5	25.4	25.0	25.0	25.2	26.4	23.5	18.2	18.8	19.5	23.4	-	21.2
	12 UTC	29.4	28.4	21.8	28.5	29.2	29.4	22.2	-	20.4	23.0	25.8	-	24.9
Sunshine Duration		11.0	11.6	11.1	11.6	11.4	6.9	0.0	0.0	0.8	9.0	7.3	-	8.8
Precipitation								19.0	13.8	0.0		32.8	-	6.6
Evaporation		14.0	5.0	6.0	6.0	8.1	3.6	3.6	3.1	4.4	4.2	58.0	-	73.7
Growing Degrees	5	19.9	15.3	16.7	18.3	19.4	19.7	14.0	12.2	16.3	17.8	169.6	-	161.8
	10	14.9	10.3	11.7	13.3	14.4	14.7	9.0	7.2	11.3	12.8	119.6	-	111.8

1st 10-day period (1-10/09/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	38.9	-	42.4
Precipitation - Reference Evapotranspiration	-6.1	-	-35.8
Number of Rainy Days	2.0	-	1.1
Number of Dry Days	58.0	-	-

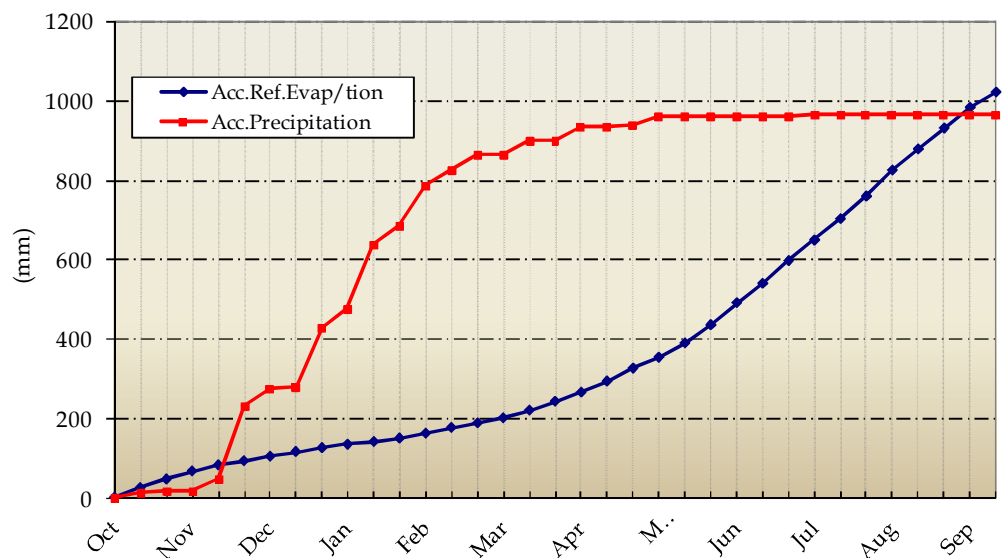
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/09/2009)		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	30.6	31.4	30.4	30.2	30.0	28.8	28.4	27.4	27.4	29.7	-	28.8
	Min	19.6	21.0	20.2	21.0	21.2	21.6	19.8	18.4	16.8	17.4	19.7	-	17.3
Relative Humidity	Max	91	93	93	96	96	98	94	84	90	90	92	-	-
	Min	42	46	45	53	54	60	43	33	44	43	46	-	-
Soil Temperature at 10 cm	06 UTC	28.2	28.6	28.4	28.6	28.6	29.0	27.8	27.0	25.6	25.8	27.8	-	24.8
	12 UTC	35.4	35.4	34.6	34.8	35.0	33.6	33.2	33.0	32.8	30.4	33.8	-	28.9
Sunshine Duration		11.0	9.9	10.7	10.9	10.1	8.7	10.2	10.3	7.5	0.3	9.0	-	9.7
Precipitation													-	5.8
Evaporation		2.4	10.5	6.3	8.2	2.0	10.9	4.3	13.0	2.3	4.7	64.6	-	62.5
Growing Degrees	5	20.8	20.8	20.8	20.7	20.7	20.8	19.3	18.4	17.1	17.4	196.8	-	180.3
	10	15.8	15.8	15.8	15.7	15.7	15.8	14.3	13.4	12.1	12.4	146.8	-	130.3

1st 10-day period (1-10/09/2009)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.4	-
Precipitation - Reference Evapotranspiration	-38.4	-34.6
Number of Rainy Days	0.0	1.2
Number of Dry Days	78.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

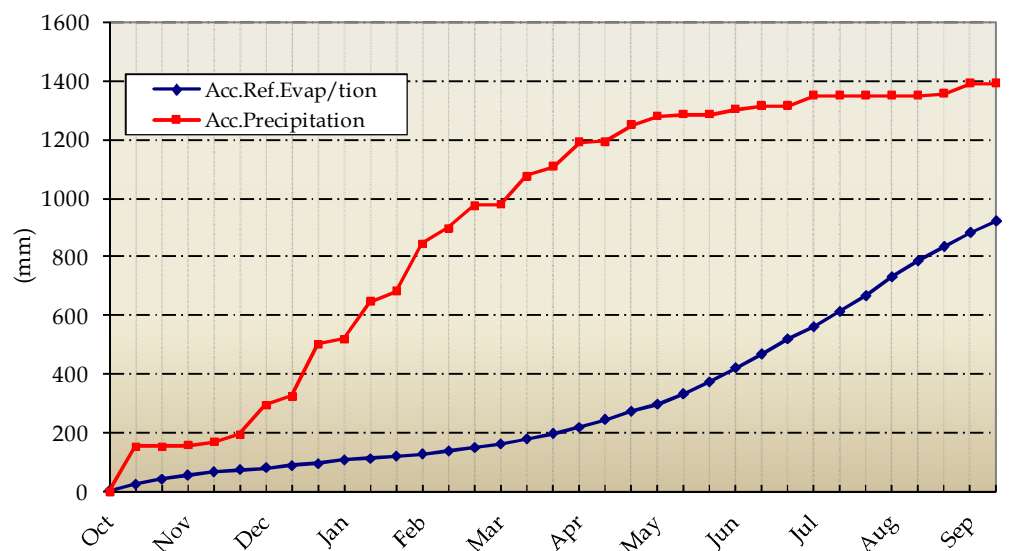




1st 10-day period (1-10/09/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	30.6	31.2	32.2	32.8	30.4	30.8	29.2	30.0	28.0	30.8	-	29.2
	Min	19.0	21.4	19.4	20.4	18.4	21.2	19.0	16.6	14.0	15.2	18.5	-	15.6
Relative Humidity	Max	89	96	98	99	99	96	71	81	87	100	92	-	-
	Min	39	42	41	45	34	51	37	31	32	40	39	-	-
Soil Temperature at 10 cm	06 UTC	26.2	26.8	26.6	27.0	26.4	27.4	26.4	26.0	23.8	25.0	26.2	-	22.9
	12 UTC	28.2	28.6	28.4	28.6	28.2	28.4	27.8	-	26.4	26.6	27.9	-	26.9
Sunshine Duration		11.4	10.8	10.5	10.1	10.3	8.1	6.9	8.9	10.1	4.4	9.2	-	9.0
Precipitation								0.2				0.2	-	14.4
Evaporation		6.4	3.0	6.4	6.4	4.6	5.4	5.4	4.8	6.0	3.3	51.7	-	-
Growing Degrees	5	21.0	21.0	20.3	21.3	20.6	20.8	19.9	17.9	17.0	16.6	196.4	-	174.0
	10	16.0	16.0	15.3	16.3	15.6	15.8	14.9	12.9	12.0	11.6	146.4	-	124.0

1st 10-day period (1-10/09/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	39.4	-	35.9
Precipitation - Reference Evapotranspiration	-39.2	-	-21.5
Number of Rainy Days	1.0	-	1.3
Number of Dry Days	7.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

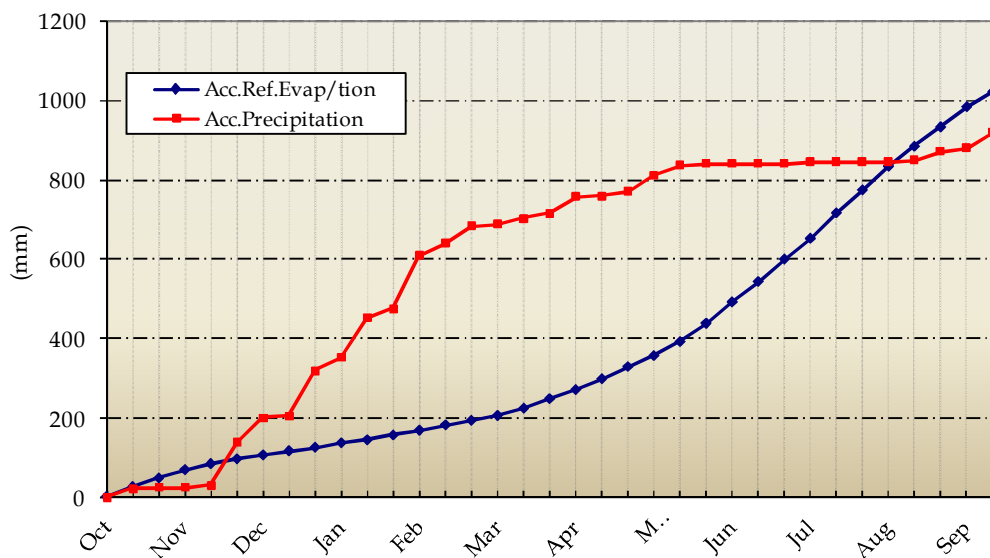


Kalamata

1st 10-day period (1-10/09/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	29.6	31.0	31.2	33.6	33.4	27.8	26.2	25.8	24.6	29.4	-	29.3
	Min	19.8	20.0	19.0	20.2	20.4	20.4	18.4	17.0	15.4	16.0	18.7	-	16.6
Relative Humidity	Max	92	96	96	96	93	93	98	98	98	98	96	-	-
	Min	49	63	49	50	41	43	66	60	63	67	55	-	-
Soil Temperature at 10 cm	06 UTC	25.2	25.2	25.0	25.4	25.8	25.8	25.8	23.4	23.0	23.4	24.8	-	23.8
	12 UTC	26.4	26.8	26.8	26.8	27.4	27.6	25.0	25.0	24.2	23.8	26.0	-	27.2
Sunshine Duration		10.3	11.5	11.3	10.5	11.5	11.3	3.6	7.2	6.5	0.0	8.4	-	9.3
Precipitation		0.2						17.9	20.6			38.7	-	7.7
Evaporation		4.2	5.0	8.0	2.0	7.0	7.0	3.9	4.6	2.0	3.0	46.7	-	67.1
Growing Degrees	5	20.1	19.8	20.0	20.7	22.0	21.9	18.1	16.6	15.6	15.3	190.1	-	179.8
	10	15.1	14.8	15.0	15.7	17.0	16.9	13.1	11.6	10.6	10.3	140.1	-	129.8

1st 10-day period (1-10/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	37.9	-	43.1
Precipitation - Reference Evapotranspiration	0.8	-	-35.4
Number of Rainy Days	3.0	-	1.1
Number of Dry Days	6.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

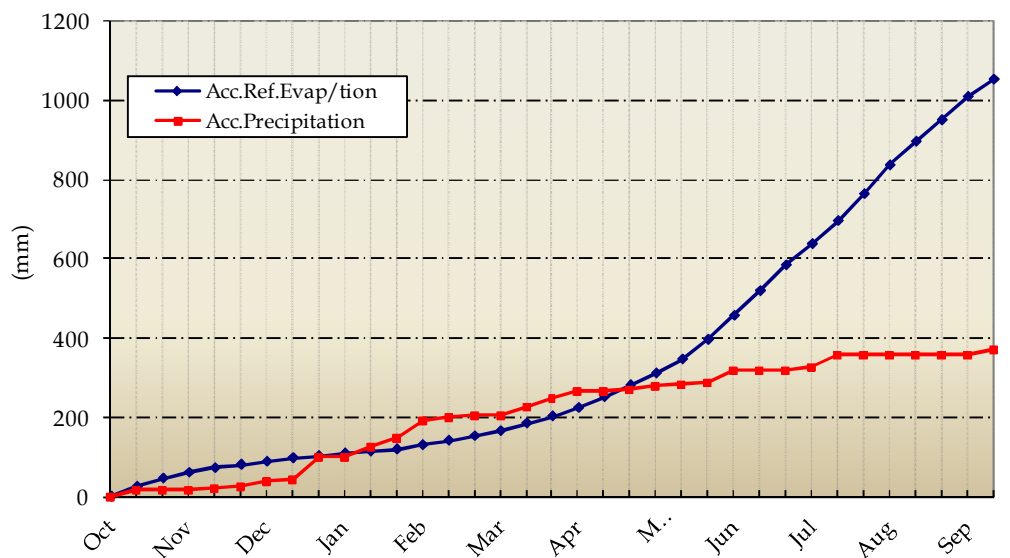


Larisa

1st 10-day period (1-10/09/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.2	32.4	34.0	34.8	35.2	28.4	23.6	25.4	27.0	27.4	29.8	-	29.4
	Min	20.2	16.2	17.4	19.0	19.0	18.0	17.0	10.5	19.2	14.8	17.1	-	14.9
Relative Humidity	Max	81	88	83	87	79	94	92	76	79	85	84	-	-
	Min	44	32	27	29	29	43	48	35	39	38	36	-	-
Soil Temperature at 10 cm	06 UTC	27.0	26.4	26.6	27.0	27.4	27.4	24.2	22.6	23.6	23.0	25.5	-	23.3
	12 UTC	29.4	29.6	29.2	29.6	30.0	28.4	26.2	25.0	26.0	25.4	27.9	-	25.4
Sunshine Duration		8.3	10.5	9.6	10.9	10.9	1.9	0.4	9.9	6.8	5.2	7.4	-	8.7
Precipitation							13.1	0.2				13.3	-	5.6
Evaporation		7.5	5.9	11.6	9.0	9.4	5.8	8.0	4.4	8.1	6.1	75.8	-	63.7
Growing Degrees	5	20.2	19.3	20.7	21.9	22.1	18.2	15.3	13.0	18.1	16.1	184.9	-	171.4
	10	15.2	14.3	15.7	16.9	17.1	13.2	10.3	8.0	13.1	11.1	134.9	-	121.4

1st 10-day period (1-10/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	42.8	-	42.5
Precipitation - Reference Evapotranspiration	-29.5	-	-36.9
Number of Rainy Days	2.0	-	1.4
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

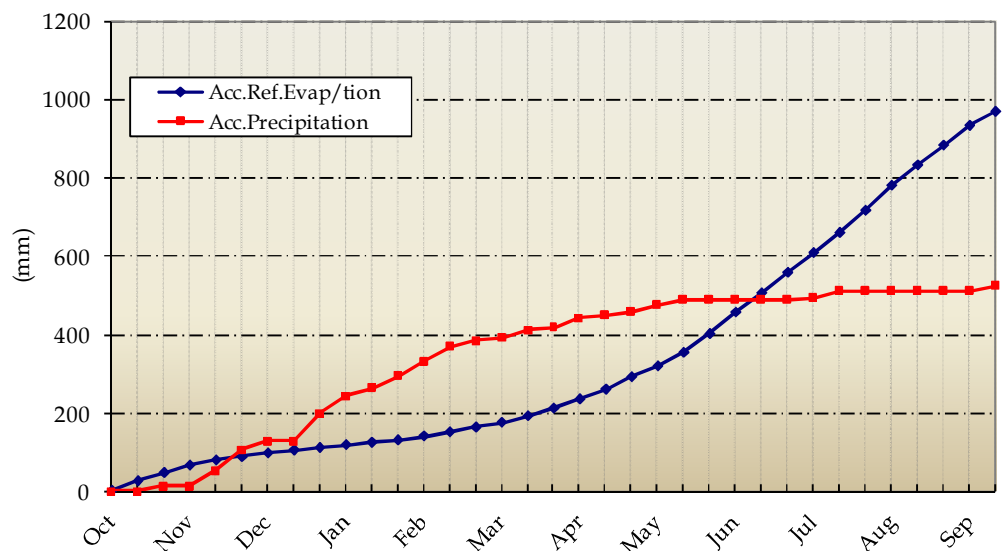


Pyrgela

1st 10-day period (1-10/09/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.4	29.4	32.0	33.4	34.4	34.0	28.6	27.8	29.2	27.6	31.1	-	30.9
	Min	18.8	19.2	17.0	16.2	16.8	16.8	19.6	18.8	12.4	15.0	17.1	-	14.7
Relative Humidity	Max	75	86	90	85	85	90	73	76	75	92	83	-	-
	Min	36	44	47	30	30	42	47	35	30	38	38	-	-
Soil Temperature at 10 cm	06 UTC	25.6	26.6	26.2	26.2	26.2	27.0	24.4	23.0	22.0	23.2	25.0	-	23.0
	12 UTC	33.0	33.4	33.6	34.0	34.0	33.4	27.2	29.4	29.0	29.0	31.6	-	30.4
Sunshine Duration		9.3	8.2	7.0	9.2	10.5	7.4	2.7	7.5	8.2	3.1	7.3	-	9.0
Precipitation							0.0	5.1			9.8	14.9	-	5.5
Evaporation		7.0	7.5	8.9	6.0	4.4	5.4	3.4	5.2	2.8	4.4	55.0	-	51.4
Growing Degrees	5	21.6	19.3	19.5	19.8	20.6	20.4	19.1	18.3	15.8	16.3	190.7	-	177.9
	10	16.6	14.3	14.5	14.8	15.6	15.4	14.1	13.3	10.8	11.3	140.7	-	127.9

1st 10-day period (1-10/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.8	-	39.4
Precipitation - Reference Evapotranspiration	-20.9	-	-33.9
Number of Rainy Days	2.0	-	1.3
Number of Dry Days	6.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

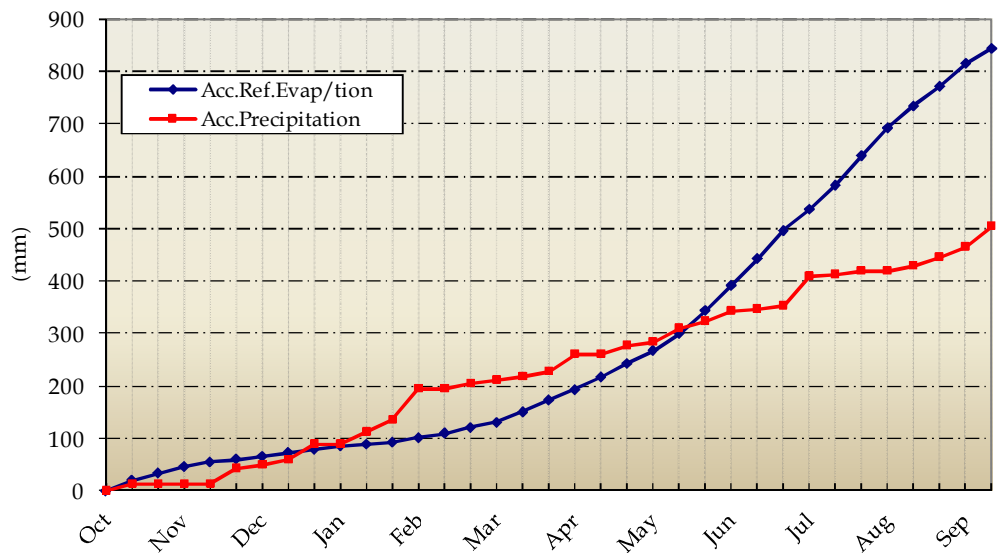


Series

1st 10-day period (1-10/09/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.4	32.0	33.6	35.0	34.2	28.8	22.8	21.8	23.4	30.0	29.4	-	29.0
	Min	20.0	20.8	19.0	19.0	19.8	17.2	17.0	14.2	16.0	16.8	18.0	-	15.4
Relative Humidity	Max	84	71	73	82	78	96	94	88	90	90	85	-	-
	Min	31	41	37	32	32	78	42	60	58	37	45	-	-
Soil Temperature at 10 cm	06 UTC	25.4	25.4	25.4	25.4	26.0	26.4	20.4	19.6	20.4	20.6	23.5	-	22.0
	12 UTC	27.6	27.2	28.4	28.4	28.6	20.4	21.2	20.6	20.8	23.2	24.6	-	25.6
Sunshine Duration		7.8	10.5	10.1	10.3	10.3	0.0	1.1	0.0	0.0	7.0	5.7	-	8.4
Precipitation							32.5	6.0	0.2	0.3		39.0	-	5.9
Evaporation		3.0	3.8	5.0	5.2	5.8	0.0	4.0	2.5	2.5	0.8	32.6	-	55.4
Growing Degrees	5	21.2	21.4	21.3	22.0	22.0	18.0	14.9	13.0	14.7	18.4	186.9	-	171.4
	10	16.2	16.4	16.3	17.0	17.0	13.0	9.9	8.0	9.7	13.4	136.9	-	121.6

1st 10-day period (1-10/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	28.9	-	33.8
Precipitation - Reference Evapotranspiration	10.1	-	-27.9
Number of Rainy Days	4.0	-	1.3
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

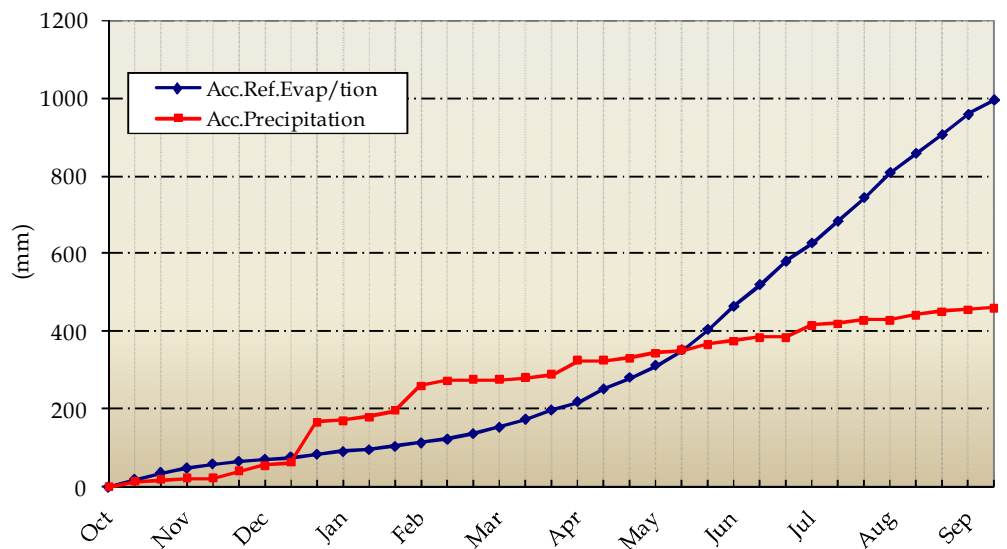


Trikala Imathias

1st 10-day period (1-10/09/2009)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.0	29.6	31.0	35.0	33.4	25.2	23.0	25.6	27.2	31.2	29.2	-	28.2
	Min	18.6	17.4	18.6	18.8	19.6	17.0	16.4	13.2	18.0	16.2	17.4	-	14.8
Relative Humidity	Max	93	98	91	95	96	92	86	87	74	93	90	-	-
	Min	56	52	52	30	34	60	42	25	43	36	43	-	-
Soil Temperature at 10 cm	06 UTC	26.6	26.2	26.4	26.2	26.6	27.0	23.0	21.0	22.4	22.4	24.8	-	22.7
	12 UTC	29.4	29.2	30.0	30.0	30.0	25.6	23.8	-	25.2	26.2	27.7	-	23.9
Sunshine Duration		9.5	9.0	9.3	10.6	9.8	0.0	0.6	3.4	2.0	8.6	6.3	-	8.2
Precipitation							4.5		0.2			4.7	-	5.1
Evaporation		3.5	3.2	3.1	3.4	4.9	2.2	2.7	4.9	3.6	3.4	34.9	-	45.0
Growing Degrees	5	19.8	18.5	19.8	21.9	21.5	16.1	14.7	14.4	17.6	18.7	183.0	-	164.8
	10	14.8	13.5	14.8	16.9	16.5	11.1	9.7	9.4	12.6	13.7	133.0	-	114.8

1st 10-day period (1-10/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	37.6	-	34.4
Precipitation - Reference Evapotranspiration	-32.9	-	-29.3
Number of Rainy Days	2.0	-	1.4
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

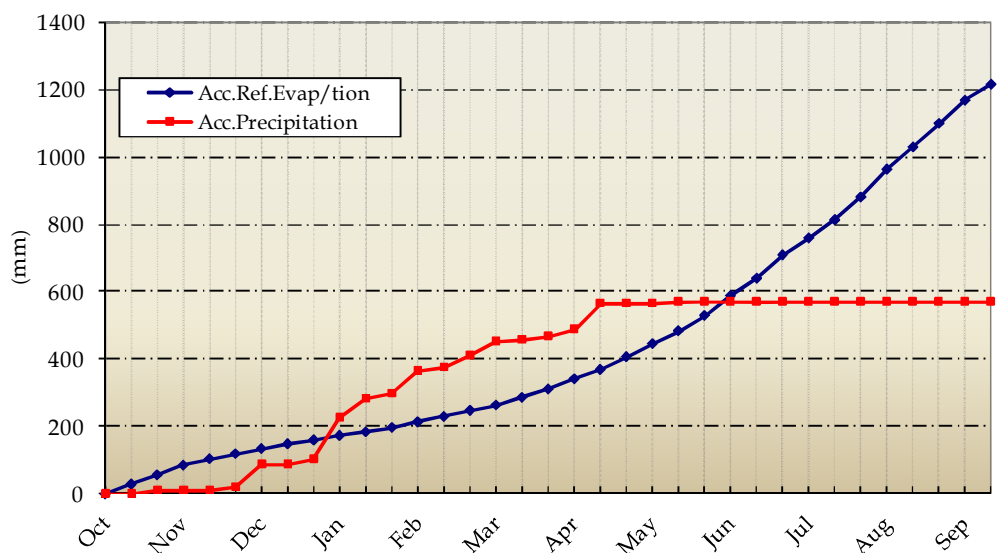


Tympaki

1st 10-day period (1-10/09/2009)		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	32.4	33.0	30.2	28.6	29.0	30.4	28.0	28.2	27.6	29.9	-	29.6
	Min	21.6	17.6	20.6	19.8	19.6	20.4	23.8	21.2	18.4	19.4	20.2	-	19.0
Relative Humidity	Max	54	79	68	98	96	93	62	76	84	100	81	-	-
	Min	31	21	21	29	36	42	34	38	40	42	33	-	-
Soil Temperature at 10 cm	06 UTC	28.8	27.6	28.0	28.0	28.2	27.4	29.8	26.6	25.6	26.2	27.6	-	28.3
	12 UTC	33.3	32.6	33.6	33.6	33.8	33.6	31.2	31.4	31.4	31.4	32.6	-	32.2
Sunshine Duration		10.1	10.0	9.9	9.0	10.5	10.3	9.5	7.5	10.5	7.6	9.5	-	10.4
Precipitation											0.0	0.0	-	1.5
Evaporation		11.7	13.3	10.9	6.7	7.3	6.1	12.8	10.6	9.1	6.3	94.8	-	88.0
Growing Degrees	5	21.8	20.0	21.8	20.0	19.1	19.7	22.1	19.6	18.3	18.5	200.9	-	193.1
	10	16.8	15.0	16.8	15.0	14.1	14.7	17.1	14.6	13.3	13.5	150.9	-	143.1

1st 10-day period (1-10/09/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.5	-	51.1
Precipitation - Reference Evapotranspiration	-47.5	-	-49.6
Number of Rainy Days	0.0	-	0.1
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_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

© HELLENIC NATIONAL METEOROLOGICAL SERVICE
 Reproduction is prohibited without written permission
 El. Venizelou street 14, Zip Code 16777
 Helliniko, Athens