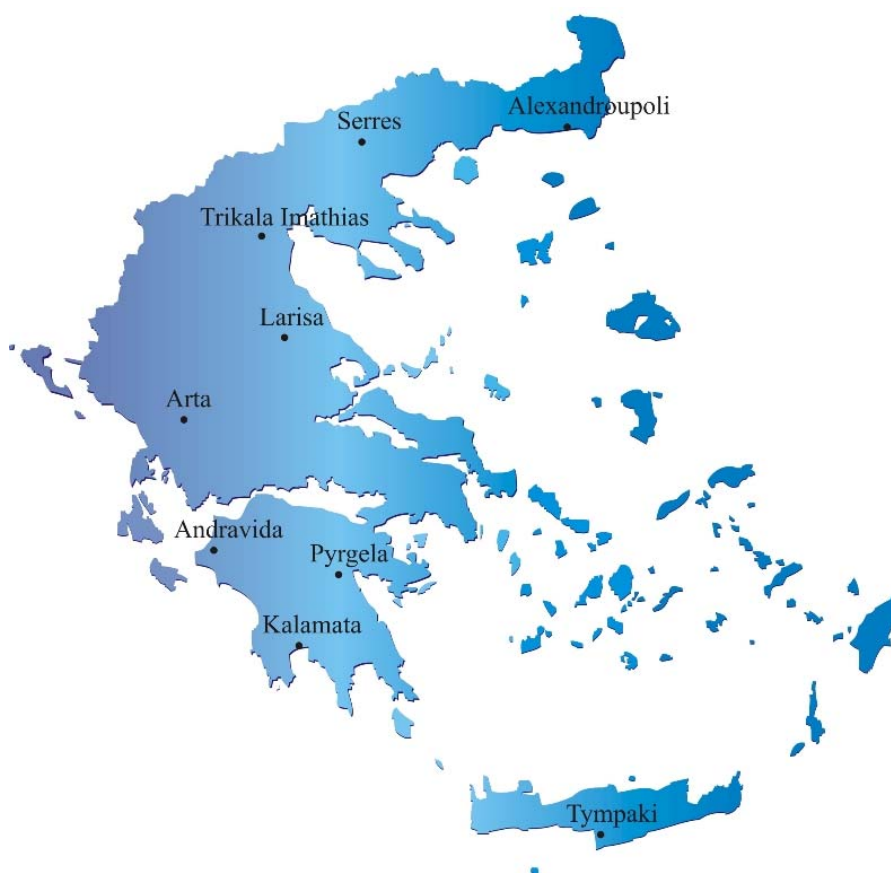




AGROMETEOROLOGICAL BULLETIN

July 2010
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



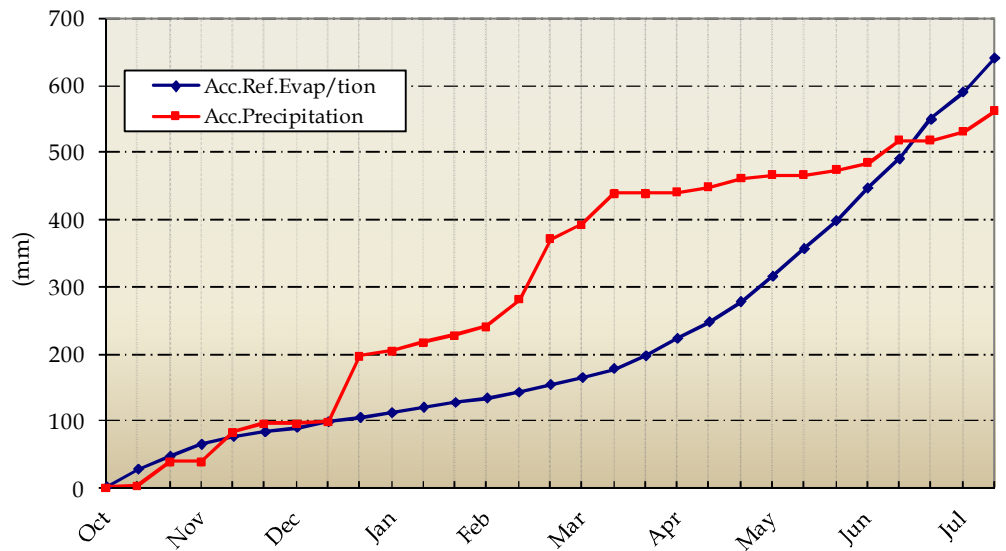
Hellenic National Meteorological Service
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El. Venizelou Street 14, 16777
Helliniko, Athens

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

1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	30.4	31.0	31.4	30.4	28.6	31.4	28.2	25.6	27.0	29.4	30.9	29.3
	Min	19.0	21.0	20.8	20.2	18.6	18.2	22.8	14.6	16.2	20.0	19.1	19.4	17.0
Relative Humidity	Max	82	87	86	79	79	79	76	98	94	81	84	81	-
	Min	47	48	47	32	32	37	36	60	49	46	43	45	-
Soil Temperature at 10 cm	06 UTC	23.8	25.4	23.6	23.4	25.0	24.4	26.2	26.0	21.4	21.6	24.1	26.8	23.7
	12 UTC	28.8	27.8	26.0	27.4	28.0	28.0	28.2	23.8	24.2	24.0	26.6	30.5	28.2
Sunshine Duration		10.8	7.4	12.0	12.3	11.3	11.7	10.3	3.0	6.8	8.1	9.4	10.7	10.3
Precipitation			9.6						21.4	0.0		31.0	2.0	12.1
Evaporation		7.7	5.1	7.6	8.4	9.0	9.0	7.4	2.0	5.0	7.0	68.2	80.1	85.9
Growing Degrees	5	19.5	20.7	20.9	20.8	19.5	18.4	22.1	16.4	15.9	18.5	192.7	201.5	181.3
	10	14.5	15.7	15.9	15.8	14.5	13.4	17.1	11.4	10.9	13.5	142.7	151.5	131.3

1st 10-day period (1-10/07/2010)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	50.6	54.7	56.1
Precipitation - Reference Evapotranspiration	-19.6	-52.7	-44.0
Number of Rainy Days	2.0	2.0	2.2
Number of Dry Days	1.0	8.0	-

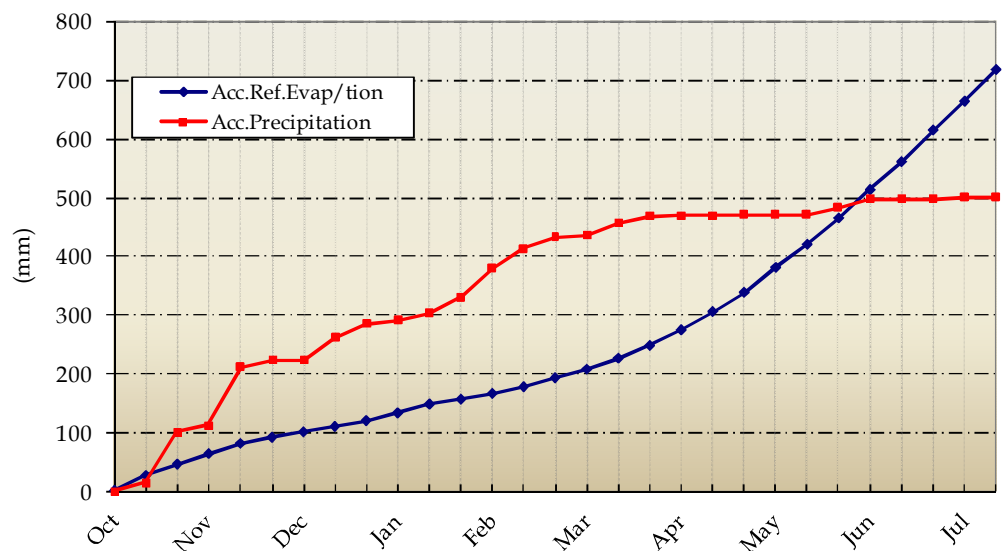
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	28.4	28.6	29.8	30.4	31.4	31.2	28.0	28.8	29.8	29.4	29.4	29.5
	Min	19.0	18.6	18.8	19.6	20.4	19.8	19.8	19.8	17.2	18.6	19.2	19.3	17.7
Relative Humidity	Max	94	93	98	94	96	91	94	95	94	92	94	96	-
	Min	55	55	54	50	52	47	48	43	32	36	47	51	-
Soil Temperature at 10 cm	06 UTC	27.2	27.6	27.4	27.8	28.2	28.2	28.4	28.8	27.2	27.0	27.8	27.9	26.9
	12 UTC	34.2	34.6	34.4	34.2	35.4	35.8	36.0	35.8	33.4	34.9	34.9	34.7	31.6
Sunshine Duration		12.2	12.8	10.6	12.2	12.6	13.0	12.5	11.6	10.3	12.7	12.0	12.5	12.0
Precipitation														0.7
Evaporation		9.8	7.8	2.5	11.9	7.0	8.2	9.8	8.6	2.8	7.6	76.0	113.4	75.0
Growing Degrees	5	18.5	18.5	18.7	19.7	20.4	20.6	20.5	18.9	18.0	19.2	193.0	193.6	186.1
	10	13.5	13.5	13.7	14.7	15.4	15.6	15.5	13.9	13.0	14.2	143.0	143.6	136.1

1st 10-day period (1-10/07/2010)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.0	54.4
Precipitation - Reference Evapotranspiration	-54.0	-54.4
Number of Rainy Days	0.0	0.0
Number of Dry Days	17.0	16.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

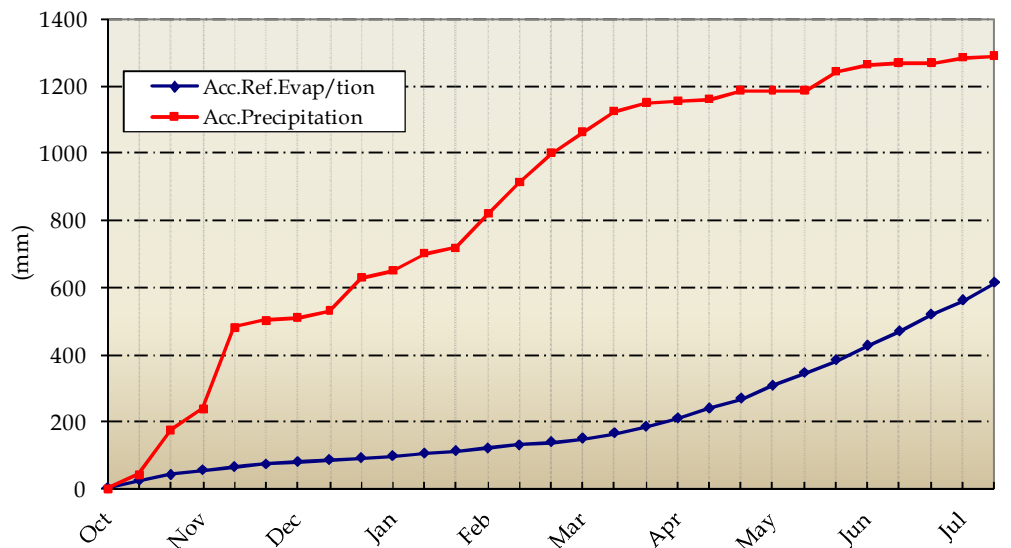




1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	31.8	31.2	31.4	32.0	33.0	34.8	31.0	31.2	32.4	31.8	30.5	30.7
	Min	18.0	17.8	16.6	17.4	17.6	20.6	19.6	19.6	16.4	17.0	18.1	18.5	16.9
Relative Humidity	Max	97	84	97	95	86	95	95	95	80	95	92	87	-
	Min	47	59	35	40	53	40	23	30	19	25	37	55	-
Soil Temperature at 10 cm	06 UTC	27.6	25.4	25.6	25.8	25.4	26.2	27.0	27.2	26.4	26.8	26.3	26.4	26.6
	12 UTC	27.8	28.0	28.2	28.6	28.0	29.0	29.4	29.4	28.8	29.2	28.6	28.8	32.0
Sunshine Duration		13.0	12.9	13.0	11.8	13.0	12.9	9.5	13.0	12.8	12.6	12.4	12.4	11.0
Precipitation					4.0							4.0	1.5	4.2
Evaporation		7.6	6.4	6.9	7.4	7.2	7.9	5.9	10.0	7.5	7.7	74.5	62.6	-
Growing Degrees	5	18.8	19.8	18.9	19.4	19.8	21.8	22.2	20.3	18.8	19.7	199.5	195.3	188.2
	10	13.8	14.8	13.9	14.4	14.8	16.8	17.2	15.3	13.8	14.7	149.5	145.3	138.2

1st 10-day period (1-10/07/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.1	52.4	50.4
Precipitation - Reference Evapotranspiration	-49.1	-50.9	-46.2
Number of Rainy Days	1.0	1.0	0.8
Number of Dry Days	11.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

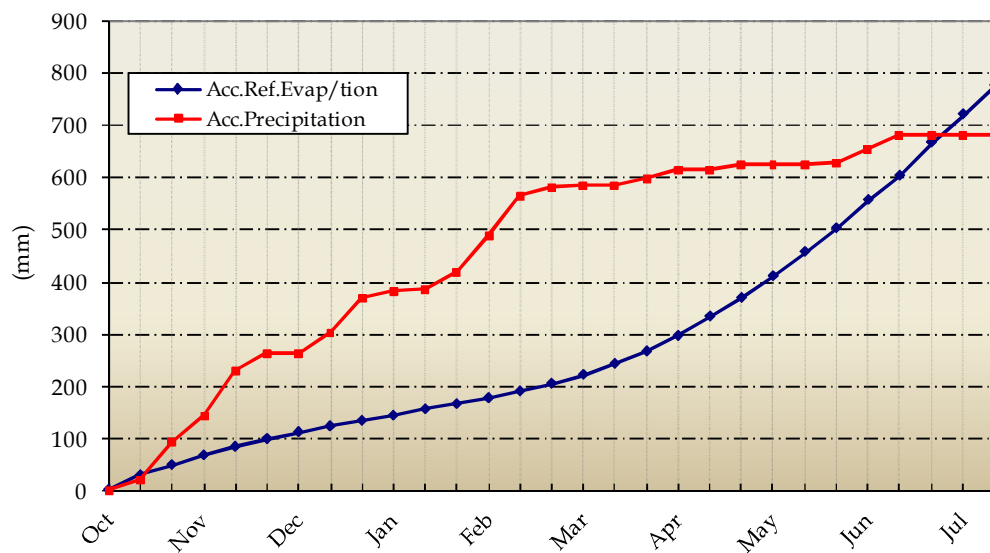


Kalamata

1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.8	30.8	28.8	28.6	30.6	29.4	31.2	33.2	28.8	27.8	29.7	33.1	30.8
	Min	18.0	18.8	19.0	18.8	19.8	18.4	17.8	19.0	19.0	17.8	18.6	19.7	17.6
Relative Humidity	Max	90	94	94	91	95	96	89	96	85	90	92	89	-
	Min	54	42	56	53	45	52	43	24	50	55	47	35	-
Soil Temperature at 10 cm	06 UTC	23.6	24.0	24.4	24.8	25.0	25.2	25.0	25.2	25.0	24.4	24.7	25.0	25.3
	12 UTC	26.6	27.4	26.4	27.8	28.0	28.2	28.2	28.2	27.4	27.4	27.6	26.9	29.5
Sunshine Duration		12.3	12.2	12.5	11.5	12.6	12.4	12.8	12.7	5.7	9.3	11.4	12.6	11.4
Precipitation														1.0
Evaporation		7.0	8.2	8.4	6.0	7.3	6.9	2.0	7.8	5.8	7.2	66.6	85.0	89.7
Growing Degrees	5	17.9	19.8	18.9	18.7	20.2	18.9	19.5	21.1	18.9	17.8	191.7	213.8	191.7
	10	12.9	14.8	13.9	13.7	15.2	13.9	14.5	16.1	13.9	12.8	141.7	163.8	141.7

1st 10-day period (1-10/07/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.4	64.3	56.4
Precipitation - Reference Evapotranspiration	-55.4	-64.3	-55.4
Number of Rainy Days	0.0	0.0	0.3
Number of Dry Days	17.0	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

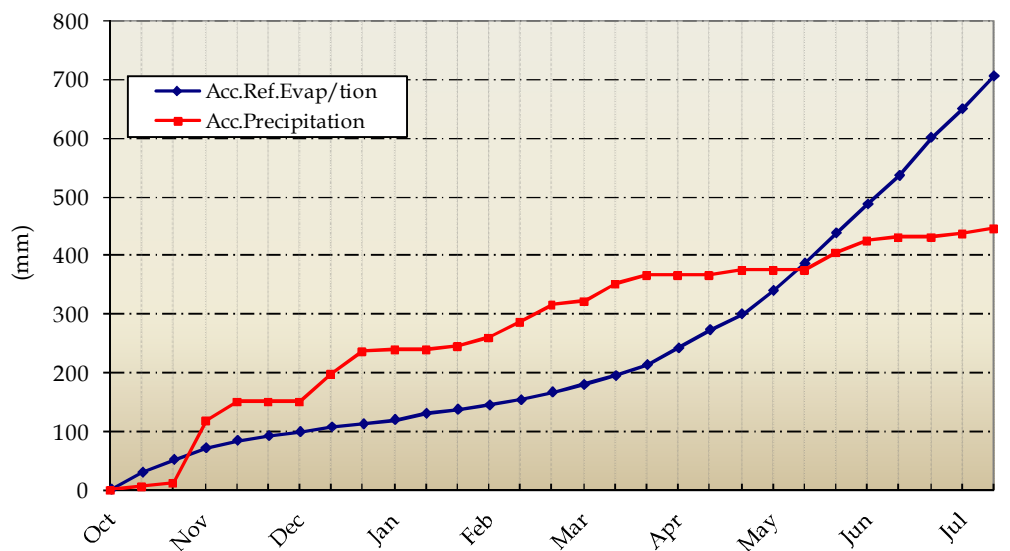


Larisa

1st 10-day period (1-10/07/2010)		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	32.2	30.8	33.4	33.8	34.6	33.6	28.6	32.4	32.6	32.4	33.4	32.9
	Min	19.0	18.4	18.2	18.4	19.0	20.8	23.0	19.0	16.2	22.0	19.4	18.5	17.5
Relative Humidity	Max	83	92	94	94	83	75	75	63	68	66	79	92	-
	Min	37	39	42	30	30	24	30	28	26	26	31	34	-
Soil Temperature at 10 cm	06 UTC	25.2	25.4	24.4	24.8	25.0	26.4	26.8	26.4	25.8	26.8	25.7	25.3	26.1
	12 UTC	28.0	33.4	27.4	27.8	28.6	29.0	30.2	29.2	29.8	29.8	29.3	28.3	28.7
Sunshine Duration		7.8	6.7	9.7	9.9	12.6	10.4	10.0	11.4	9.4	11.0	9.9	10.5	10.7
Precipitation			9.3					0.2	0.1			9.6	30.6	5.5
Evaporation		6.2	6.3	7.6	7.8	12.0	9.4	12.6	7.1	6.6	14.0	89.6	99.0	95.9
Growing Degrees	5	20.5	20.3	19.5	20.9	21.4	22.7	23.3	18.8	19.3	22.3	209.0	209.8	202.1
	10	15.5	15.3	14.5	15.9	16.4	17.7	18.3	13.8	14.3	17.3	159.0	159.8	152.1

1st 10-day period (1-10/07/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.2	58.6	62.4
Precipitation - Reference Evapotranspiration	-46.6	-28.0	-56.9
Number of Rainy Days	3.0	4.0	1.4
Number of Dry Days	3.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

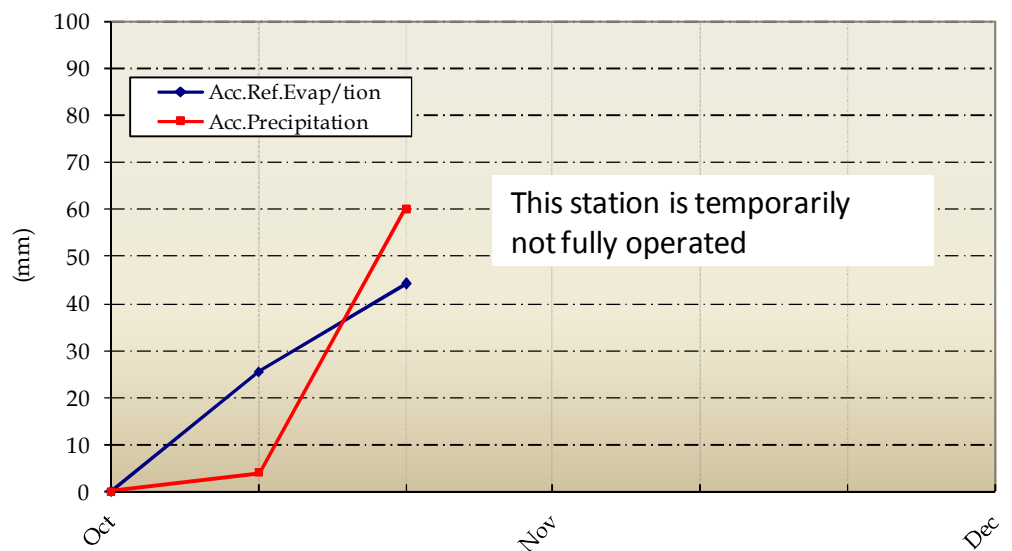


Pyrgela

1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	34.6	33.4
	Min	16.2	17.0	18.6	16.6	19.1	19.0	19.6	18.8	16.8	16.0	17.8	17.6	16.2
Relative Humidity	Max	63	66	62	70	61	60	55	65	58	54	61	77	-
	Min	31	33	24	27	24	30	26	32	23	26	28	36	-
Soil Temperature at 10 cm	06 UTC	27.0	27.4	28.0	26.4	28.0	29.0	29.6	28.6	26.6	27.4	27.8	25.7	26.2
	12 UTC	36.0	36.6	36.6	35.4	37.4	38.4	38.0	36.0	35.0	36.4	36.6	34.3	34.9
Sunshine Duration		8.2	7.7	7.2	11.3	10.8	8.9	7.6	7.8	11.5	11.3	9.2	10.7	10.8
Precipitation				1.4					0.8			2.2	14.6	3.2
Evaporation		5.6	7.8	5.6	7.0	6.8	8.0	7.4	6.4	7.0	7.6	69.2	66.8	72.9
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	211.0	198.1
	10	-	-	-	-	-	-	-	-	-	-	-	161.0	148.1

1st 10-day period (1-10/07/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	51.6	52.5
Precipitation - Reference Evapotranspiration	-	-37.0	-49.3
Number of Rainy Days	-	4.0	1.1
Number of Dry Days	-	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

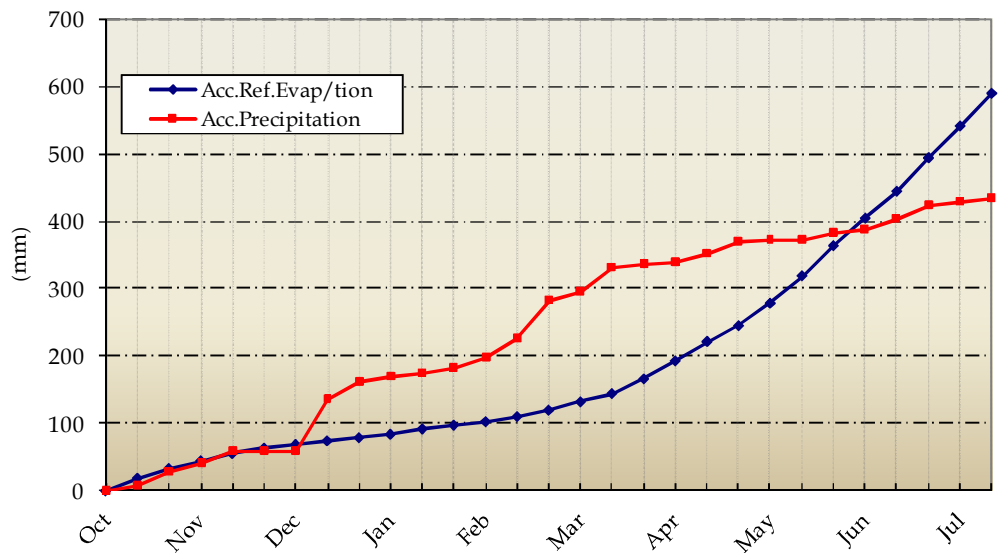


Series

1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.4	32.2	31.6	35.4	33.8	34.6	34.4	28.4	30.8	32.8	32.7	33.3	31.9
	Min	19.0	20.4	20.2	19.6	18.2	17.2	19.4	16.0	17.4	18.6	18.6	19.3	18.2
Relative Humidity	Max	77	78	81	73	64	65	55	61	66	76	70	73	-
	Min	35	39	41	34	23	26	26	35	31	30	32	35	-
Soil Temperature at 10 cm	06 UTC	25.2	25.6	25.2	25.4	26.0	26.2	26.8	26.4	24.6	25.2	25.7	24.8	25.0
	12 UTC	26.2	27.0	26.6	27.2	27.2	27.4	28.0	26.4	27.0	26.6	27.0	26.9	28.8
Sunshine Duration		7.1	4.2	4.1	10.9	11.0	12.1	10.7	7.9	8.5	6.2	8.3	9.6	10.3
Precipitation			0.3						5.1		0.6	6.0	2.7	9.9
Evaporation		5.8	3.7	5.6	7.1	9.8	7.8	6.4	6.0	7.6	3.0	62.8	35.1	76.5
Growing Degrees	5	21.2	21.3	20.9	22.5	21.0	20.9	21.9	17.2	19.1	20.7	206.7	213.4	195.2
	10	16.2	16.3	15.9	17.5	16.0	15.9	16.9	12.2	14.1	15.7	156.7	163.4	146.6

1st 10-day period (1-10/07/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.5	46.0	51.2
Precipitation - Reference Evapotranspiration	-42.5	-43.3	-41.3
Number of Rainy Days	3.0	2.0	2.1
Number of Dry Days	3.0	8.0	-

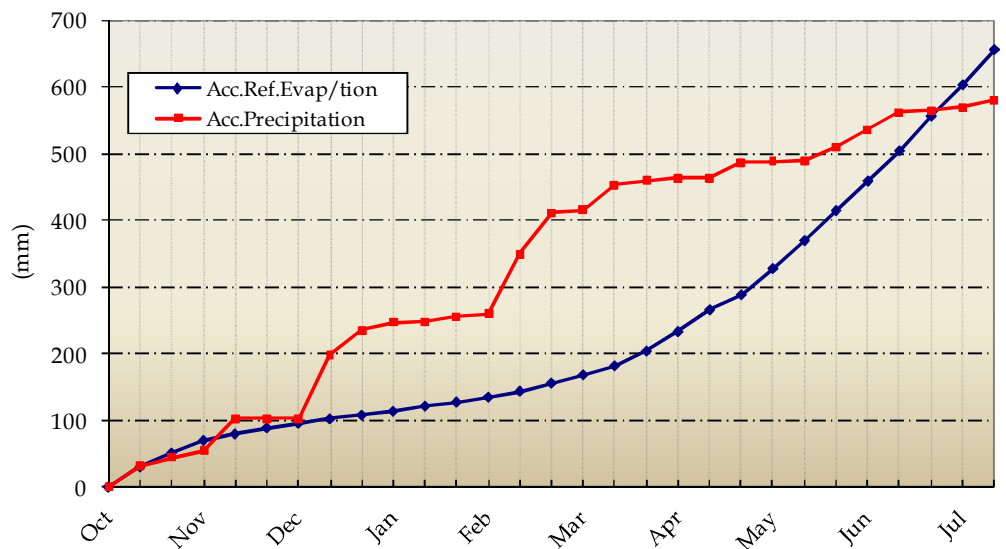
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.6	31.0	30.4	34.0	33.2	33.8	33.2	28.2	32.0	33.0	32.0	33.2	31.1
	Min	19.4	18.8	18.4	19.4	21.4	17.6	20.6	15.0	15.2	18.4	18.4	19.8	17.8
Relative Humidity	Max	91	96	98	91	66	71	90	90	90	96	88	90	-
	Min	39	52	42	41	30	34	30	32	31	34	36	36	-
Soil Temperature at 10 cm	06 UTC	25.8	25.6	24.8	25.0	26.2	26.0	26.8	26.2	24.4	25.6	25.6	26.6	25.2
	12 UTC	29.0	29.6	26.8	29.0	30.0	30.2	30.6	28.2	28.2	29.2	29.1	31.2	26.8
Sunshine Duration		8.8	6.9	7.2	11.6	11.6	12.6	12.0	12.3	12.4	12.1	10.8	9.7	10.2
Precipitation		3.2	4.4						3.2			10.8	5.8	6.2
Evaporation		3.8	5.0	4.8	3.7	5.9	6.2	7.8	6.8	5.6	5.2	54.8	44.2	68.1
Growing Degrees	5	20.5	19.9	19.4	21.7	22.3	20.7	21.9	16.6	18.6	20.7	202.3	215.4	194.5
	10	15.5	14.9	14.4	16.7	17.3	15.7	16.9	11.6	13.6	15.7	152.3	165.4	144.5

1st 10-day period (1-10/07/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.9	56.1	52.1
Precipitation - Reference Evapotranspiration	-42.1	-50.3	-45.9
Number of Rainy Days	3.0	1.0	1.3
Number of Dry Days	9.0	7.0	-

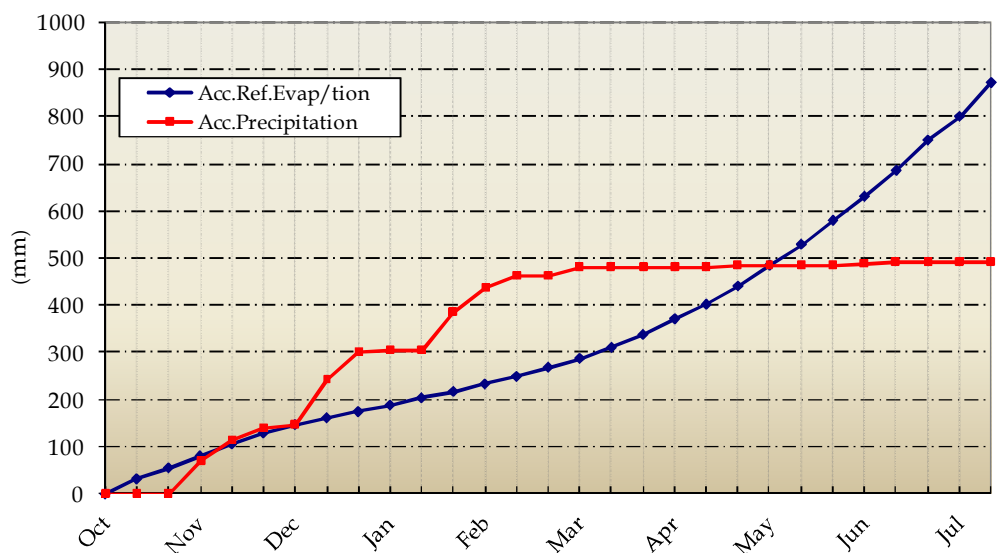
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/07/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.8	29.0	33.8	33.2	34.4	36.0	35.8	31.6	30.2	31.6	32.3	29.2	31.1
	Min	18.6	20.4	20.8	21.6	21.6	23.2	23.2	22.8	25.0	20.0	21.7	19.8	19.8
Relative Humidity	Max	93	91	69	84	63	55	61	94	84	71	76	93	-
	Min	41	35	27	27	34	21	23	46	35	36	32	40	-
Soil Temperature at 10 cm	06 UTC	29.0	29.4	30.0	30.2	30.4	31.0	31.2	31.6	31.2	30.2	30.4	30.0	31.0
	12 UTC	34.6	35.2	35.8	36.0	36.2	37.4	37.4	37.6	35.4	34.6	36.0	36.4	35.6
Sunshine Duration		11.6	12.3	12.2	12.2	12.5	12.3	11.9	11.9	12.4	12.6	12.2	12.2	12.4
Precipitation														0.0
Evaporation		9.9	8.8	12.8	13.4	15.3	15.1	15.8	10.0	11.3	11.8	124.2	88.1	112.2
Growing Degrees	5	18.2	19.7	22.3	22.4	23.0	24.6	24.5	22.2	22.6	20.8	220.3	194.7	204.6
	10	13.2	14.7	17.3	17.4	18.0	19.6	19.5	17.2	17.6	15.8	170.3	144.7	154.6

1st 10-day period (1-10/07/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	71.5	54.2	62.1
Precipitation - Reference Evapotranspiration	-71.5	-54.2	-62.1
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	35.0	67.0	-

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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