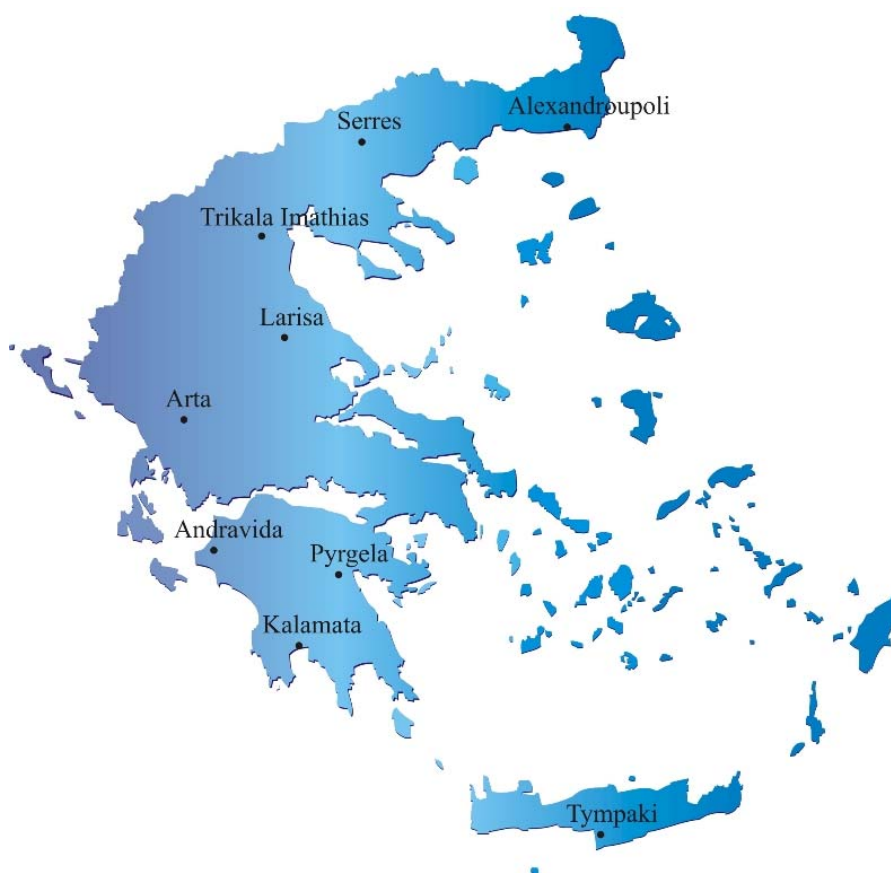




# AGROMETEOROLOGICAL BULLETIN

*May 2010*  
*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



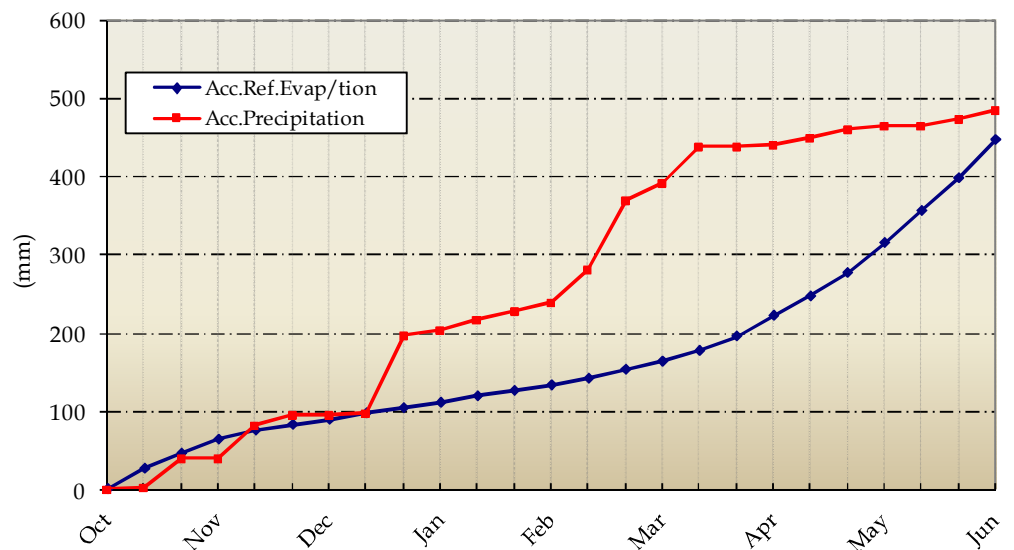
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*Web addresses of HNMS*  
[www.hnms.gr](http://www.hnms.gr)  
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[www.meteo.gov.gr](http://www.meteo.gov.gr)  
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3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.0	22.6	20.0	22.0	24.0	25.2	25.8	28.0	28.2	28.2	29.2	24.9	26.0	24.2
	Min	11.8	13.0	13.2	12.8	14.8	15.0	14.8	14.0	19.8	16.0	19.4	15.0	13.0	12.7
Relative Humidity	Max	88	89	91	89	93	80	85	85	85	87	78	86	83	-
	Min	52	47	62	62	51	47	50	38	45	38	32	48	37	-
Soil Temperature at 10 cm	06 UTC	18.8	16.8	17.8	17.6	21.0	20.6	21.0	21.8	23.4	23.6	24.0	20.6	21.8	19.3
	12 UTC	20.4	20.0	19.8	22.0	24.6	24.4	25.4	25.4	26.5	26.2	22.0	23.3	25.6	23.6
Sunshine Duration		4.5	8.8	6.9	10.7	13.4	13.9	13.3	10.1	11.4	10.3	8.4	10.2	11.9	8.3
Precipitation		8.8	1.3	0.0									10.1	0.4	12.4
Evaporation		5.2	2.4	3.6	11.6	1.3	3.5	3.7	8.0	5.8	9.6	5.3	60.0	97.0	70.1
Growing Degrees	5	11.4	12.8	11.6	12.4	14.4	15.1	15.3	16.0	19.0	17.1	19.3	164.4	159.5	147.7
	10	6.4	7.8	6.6	7.4	9.4	10.1	10.3	11.0	14.0	12.1	14.3	109.4	104.5	92.7

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.7	54.1	45.7
Precipitation - Reference Evapotranspiration	-38.6	-53.7	-33.3
Number of Rainy Days	2.0	1.0	2.4
Number of Dry Days	2.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

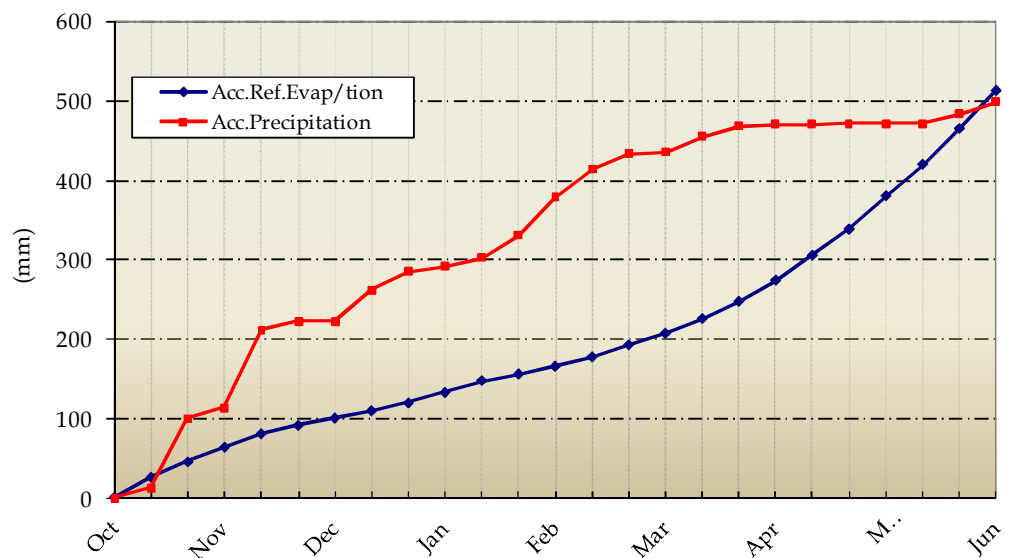


Andravida

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.6	21.4	22.4	22.8	23.4	26.4	26.8	27.6	27.4	27.4	31.0	25.1	28.1	25.4
	Min	13.2	12.4	12.6	13.6	12.8	13.6	14.6	14.2	15.2	16.8	16.8	14.2	16.0	14.0
Relative Humidity	Max	98	98	95	95	96	96	98	92	93	86	88	94	94	-
	Min	60	46	53	53	51	51	32	33	44	42	29	45	43	-
Soil Temperature at 10 cm	06 UTC	18.0	18.0	18.2	19.0	19.4	20.2	21.8	21.6	22.2	23.2	22.0	20.3	23.8	21.4
	12 UTC	20.4	21.4	25.2	25.4	25.6	25.8	29.6	29.0	30.2	26.4	29.0	26.2	30.8	25.8
Sunshine Duration		5.6	11.4	11.8	10.6	11.1	12.5	12.3	10.3	10.2	0.7	9.9	9.7	11.9	10.2
Precipitation		15.1											15.1		6.8
Evaporation		9.5	4.5	6.5	3.5	4.7	9.1	6.0	4.8	8.1	2.0	6.3	65.0	85.6	63.7
Growing Degrees	5	11.4	11.9	12.5	13.2	13.1	15.0	15.7	15.9	16.3	17.1	18.9	161.0	187.6	161.7
	10	6.4	6.9	7.5	8.2	8.1	10.0	10.7	10.9	11.3	12.1	13.9	106.0	132.6	106.7

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.2	55.4	48.0
Precipitation - Reference Evapotranspiration	-33.1	-55.4	-41.2
Number of Rainy Days	1.0	0.0	1.0
Number of Dry Days	0.0	33.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

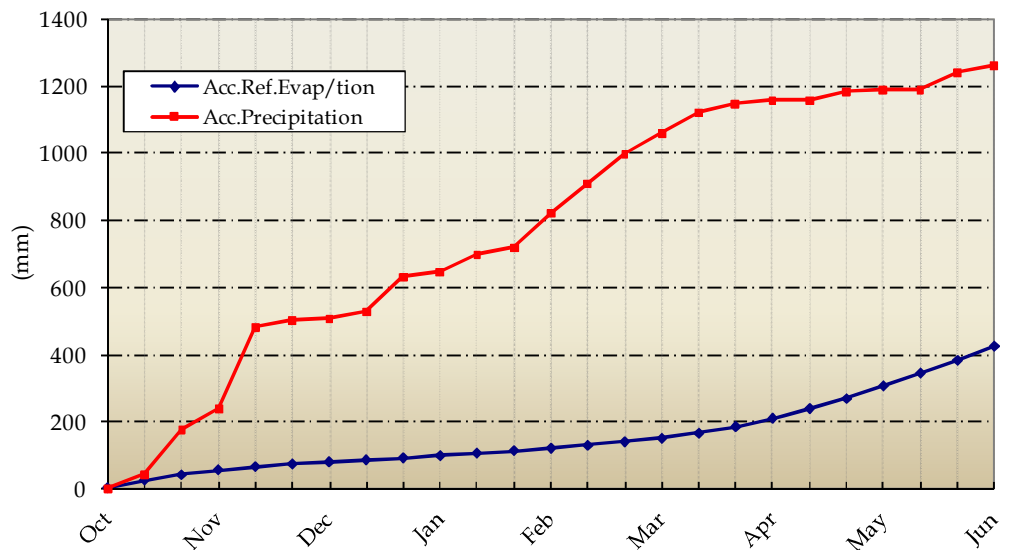


Arta

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.8	24.0	23.4	24.2	26.6	27.6	27.4	28.2	29.8	27.6	30.8	26.3	30.0	26.2
	Min	11.4	10.0	11.0	15.0	12.6	13.6	14.4	13.6	14.0	17.0	18.0	13.7	15.9	13.5
Relative Humidity	Max	95	96	95	95	90	95	88	95	85	93	69	91	96	-
	Min	56	38	50	48	53	38	55	20	35	29	39	42	26	-
Soil Temperature at 10 cm	06 UTC	18.2	18.0	18.2	20.0	21.0	20.4	21.0	21.2	21.0	22.0	22.0	20.3	23.6	21.1
	12 UTC	19.2	21.0	20.4	22.2	22.2	23.2	23.2	22.8	23.2	23.0	23.8	22.2	26.1	26.4
Sunshine Duration		2.4	8.3	9.2	9.6	11.6	11.5	12.6	7.4	8.6	2.3	10.2	8.5	10.4	9.1
Precipitation		15.5	6.3										21.8	16.1	13.7
Evaporation		2.3	4.0	5.6	5.6	4.8	5.7	7.3	5.1	5.0	3.6	6.5	55.5	67.9	-
Growing Degrees	5	10.6	12.0	12.2	14.6	14.6	15.6	15.9	15.9	16.9	17.3	19.4	165.0	197.2	163.6
	10	5.6	7.0	7.2	9.6	9.6	10.6	10.9	10.9	11.9	12.3	14.4	110.0	142.2	108.6

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.1	49.2	45.2
Precipitation - Reference Evapotranspiration	-21.3	-33.1	-31.5
Number of Rainy Days	2.0	4.0	2.2
Number of Dry Days	0.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

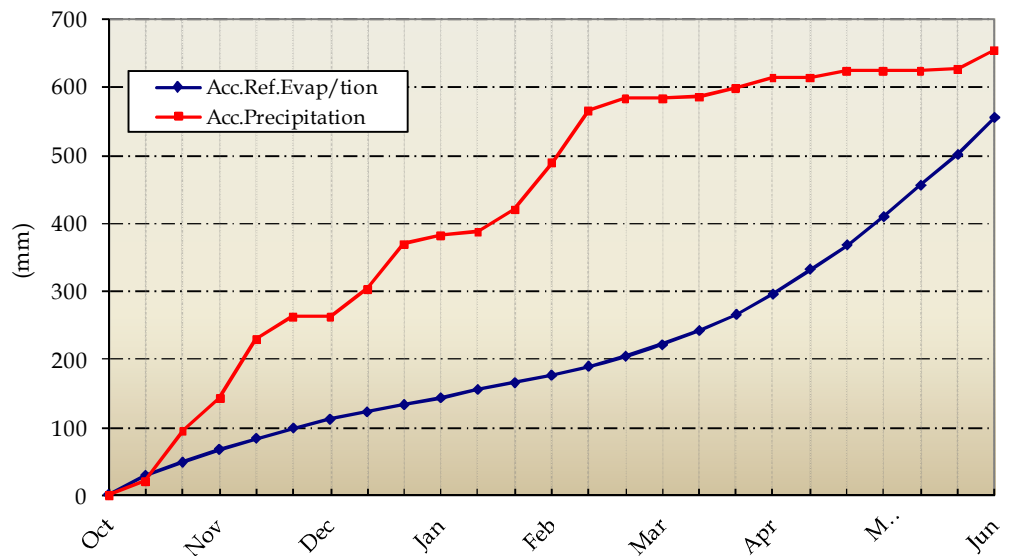


Kalamata

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	21.4	23.6	23.8	22.2	23.6	28.8	29.4	33.0	32.8	30.2	26.2	27.5	26.1
	Min	13.4	12.6	10.8	13.0	12.6	12.8	15.0	14.8	16.2	18.0	16.6	14.2	15.0	13.4
Relative Humidity	Max	98	95	97	95	93	95	93	83	83	78	87	91	94	-
	Min	65	53	45	52	54	41	28	26	21	24	31	40	46	-
Soil Temperature at 10 cm	06 UTC	18.4	18.0	17.6	18.6	19.0	19.2	19.8	20.0	20.2	21.0	21.2	19.4	20.6	20.5
	12 UTC	18.6	20.0	20.0	20.4	20.8	21.4	22.0	21.6	22.6	23.2	22.4	21.2	22.1	24.4
Sunshine Duration		4.0	9.7	12.3	8.6	9.6	12.2	12.8	10.7	12.6	6.1	12.3	10.1	11.9	9.6
Precipitation		14.5	12.7										27.2		3.4
Evaporation		1.5	8.3	2.8	6.2	4.6	7.8	10.0	6.4	8.4	7.5	6.5	70.0	71.0	68.8
Growing Degrees	5	11.2	12.0	12.2	13.4	12.4	13.2	16.9	17.1	19.6	20.4	18.4	166.8	-	162.7
	10	6.2	7.0	7.2	8.4	7.4	8.2	11.9	12.1	14.6	15.4	13.4	111.8	-	107.7

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.6	54.2	49.3
Precipitation - Reference Evapotranspiration	-27.4	-54.2	-45.9
Number of Rainy Days	2.0	0.0	1.1
Number of Dry Days	0.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

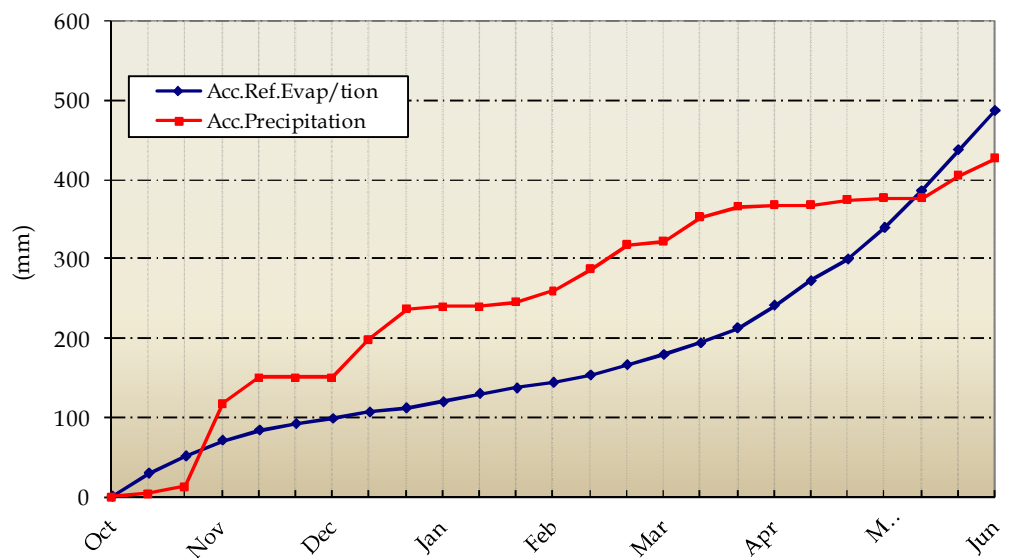


Larisa

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.8	23.4	23.8	25.6	28.2	31.0	33.4	31.2	33.0	29.6	34.4	28.4	29.8	27.7
	Min	12.8	13.4	11.2	11.2	11.4	13.0	12.8	14.8	16.0	16.4	18.4	13.8	14.7	12.6
Relative Humidity	Max	98	95	97	98	98	91	93	87	79	79	84	91	89	-
	Min	61	45	46	44	37	21	23	24	26	33	19	34	33	-
Soil Temperature at 10 cm	06 UTC	17.4	18.2	18.4	18.8	19.2	20.2	21.0	21.8	21.8	23.0	22.6	20.2	21.9	20.0
	12 UTC	18.6	20.2	20.4	21.8	22.6	23.8	24.4	24.6	25.4	24.2	25.2	22.8	24.8	22.3
Sunshine Duration		2.6	7.1	6.2	8.9	12.7	12.3	12.9	9.2	12.8	1.1	9.3	8.6	10.9	8.8
Precipitation		16.6	2.7	1.3	1.8								22.4	31.3	17.2
Evaporation		2.6	2.3	5.0	5.6	2.1	12.2	7.7	7.8	6.2	7.8	10.3	69.6	83.6	67.8
Growing Degrees	5	10.8	13.4	12.5	13.4	14.8	17.0	18.1	18.0	19.5	18.0	21.4	176.9	190.2	166.2
	10	5.8	8.4	7.5	8.4	9.8	12.0	13.1	13.0	14.5	13.0	16.4	121.9	135.2	111.2

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.6	60.8	50.4
Precipitation - Reference Evapotranspiration	-27.2	-29.5	-33.2
Number of Rainy Days	4.0	4.0	3.0
Number of Dry Days	0.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

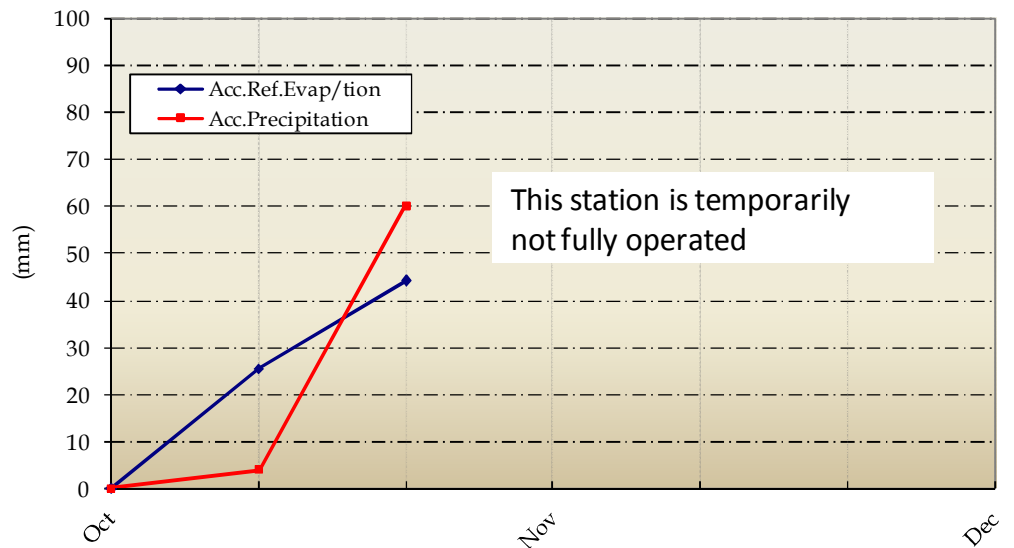


Pyrgela

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	-	30.2	27.8
	Min	12.4	12.0	-	9.6	11.8	10.6	10.4	11.6	12.6	15.2	15.4	12.2	13.7	11.5
Relative Humidity	Max	79	-	92	74	63	58	51	49	36	52	60	61	64	-
	Min	56	-	23	36	29	37	21	20	24	21	26	29	34	-
Soil Temperature at 10 cm	06 UTC	18.4	17.6	-	19.4	21.0	21.4	22.0	23.0	23.4	25.0	24.4	21.6	23.3	20.3
	12 UTC	24.4	24.4	-	28.0	30.0	30.0	31.0	31.4	32.0	32.4	32.4	29.6	31.2	28.3
Sunshine Duration		3.4	-	-	10.5	10.8	11.8	11.4	9.3	10.8	3.2	9.7	9.0	11.0	9.1
Precipitation		4.2	0.4										-		4.7
Evaporation		1.2	-	-	3.2	3.0	3.6	2.8	4.2	4.0	3.6	4.4	-	-	61.5
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	-	-	161.3
	10	-	-	-	-	-	-	-	-	-	-	-	-	-	106.3

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	55.0	46.9
Precipitation - Reference Evapotranspiration	-	-55.0	-42.2
Number of Rainy Days	-	0.0	1.8
Number of Dry Days	-	25.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

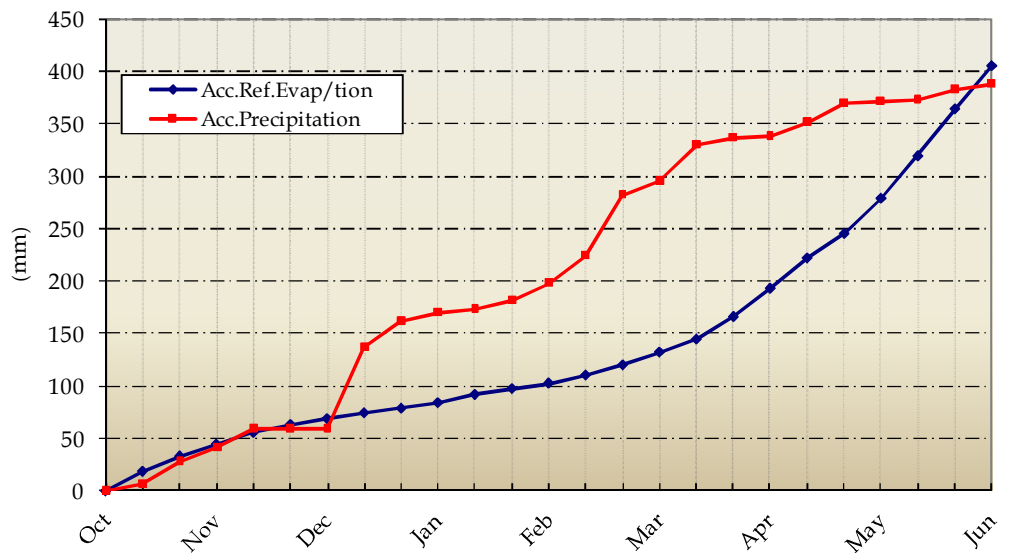


Series

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.4	25.8	24.0	26.4	30.2	33.0	34.0	28.0	33.2	31.4	31.0	28.6	30.1	26.9
	Min	13.0	12.2	12.4	11.2	12.8	12.6	12.4	16.2	15.8	16.4	18.8	14.0	15.6	14.1
Relative Humidity	Max	91	91	87	82	87	81	83	69	66	72	73	80	72	-
	Min	79	32	44	42	35	24	23	37	30	36	32	38	36	-
Soil Temperature at 10 cm	06 UTC	20.2	18.2	19.2	19.2	19.4	21.0	22.2	23.2	22.2	23.8	24.2	21.2	22.2	20.0
	12 UTC	20.2	20.6	20.4	20.6	22.8	28.4	28.4	24.2	26.8	26.2	25.8	24.0	23.9	23.6
Sunshine Duration		0.0	5.4	4.7	7.5	10.8	12.2	10.0	2.1	10.5	4.2	2.8	6.4	9.2	8.1
Precipitation		0.1	1.6			3.1							4.8	20.2	19.3
Evaporation		0.0	3.0	3.0	4.1	5.4	5.0	6.0	5.5	6.1	4.4	5.0	47.5	31.7	54.5
Growing Degrees	5	10.2	14.0	13.2	13.8	16.5	17.8	18.2	17.1	19.5	18.9	19.9	179.1	-	170.3
	10	5.2	9.0	8.2	8.8	11.5	12.8	13.2	12.1	14.5	13.9	14.9	124.1	-	115.3

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	41.2	48.1	44.2
Precipitation - Reference Evapotranspiration	-36.4	-27.9	-24.9
Number of Rainy Days	3.0	3.0	3.5
Number of Dry Days	4.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



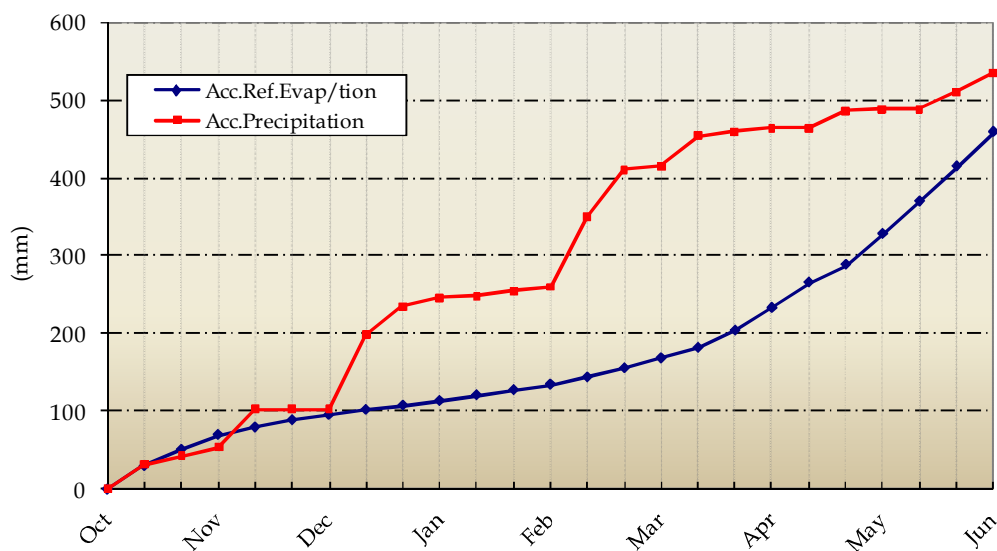


Trikala Imathias

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.0	25.6	-	25.4	27.4	30.2	30.0	28.4	31.6	26.8	27.2	26.9	28.9	26.6
	Min	12.4	12.2	-	12.8	14.0	15.0	15.0	16.0	16.0	17.0	19.4	15.0	15.5	14.1
Relative Humidity	Max	95	-	94	91	92	95	86	94	90	96	91	92	93	-
	Min	85	-	80	49	34	39	33	30	32	52	42	48	33	-
Soil Temperature at 10 cm	06 UTC	17.4	16.8	-	18.6	19.6	20.6	21.6	22.0	21.0	22.2	21.6	20.1	22.2	20.3
	12 UTC	17.4	20.0	-	22.4	24.0	25.2	25.6	24.6	25.8	24.0	24.0	23.3	26.0	22.0
Sunshine Duration		0.0	-	8.4	8.7	12.3	12.5	12.2	3.9	9.5	2.0	2.4	7.2	8.9	8.1
Precipitation		23.4									2.0		25.4	10.3	15.6
Evaporation		1.0	-	1.6	5.2	3.8	4.8	6.4	3.0	3.6	1.6	3.8	-	51.9	57.3
Growing Degrees	5	9.2	13.9	-	14.1	15.7	17.6	17.5	17.2	18.8	16.9	18.3	-	188.8	168.8
	10	4.2	8.9	-	9.1	10.7	12.6	12.5	12.2	13.8	11.9	13.3	-	133.8	113.8

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.3	59.1	46.0
Precipitation - Reference Evapotranspiration	-18.9	-48.8	-30.4
Number of Rainy Days	2.0	3.0	2.9
Number of Dry Days	0.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

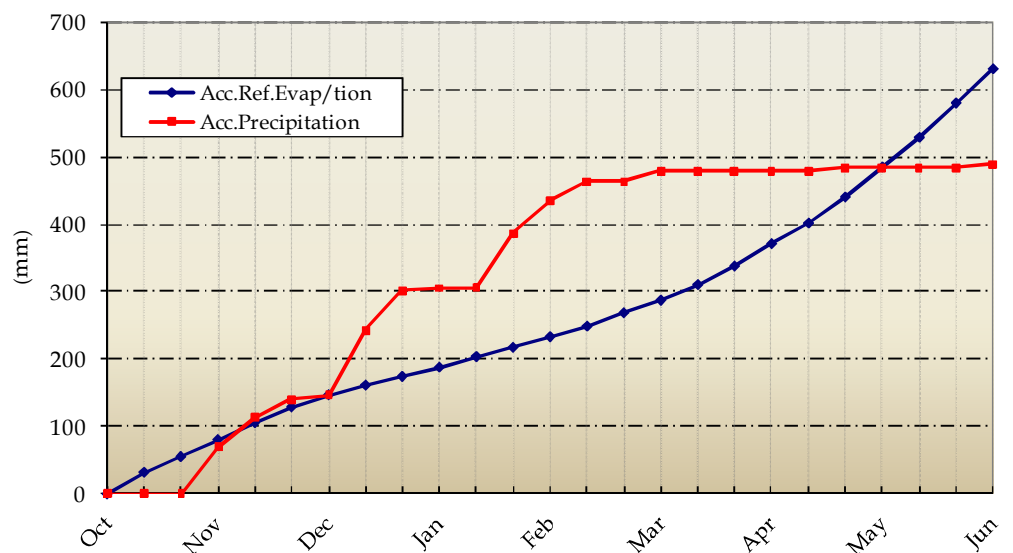


Tympaki

3rd 10-day period (21-31/05/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.4	21.4	23.0	22.6	24.8	23.6	24.8	26.4	29.0	30.0	28.6	25.4	27.4	26.1
	Min	13.4	13.4	12.8	13.2	13.6	16.2	13.6	14.0	16.6	17.4	19.6	14.9	15.9	15.3
Relative Humidity	Max	100	100	100	96	98	99	97	89	81	69	69	91	76	-
	Min	22	55	47	46	35	43	32	32	23	24	31	35	31	-
Soil Temperature at 10 cm	06 UTC	23.4	23.2	20.0	22.0	23.0	22.8	21.8	23.4	24.8	26.6	28.0	23.5	24.8	25.2
	12 UTC	28.0	25.8	27.2	28.6	28.2	23.4	29.2	30.6	31.6	33.8	34.8	29.2	31.3	30.3
Sunshine Duration		6.8	4.2	11.2	11.0	4.4	2.8	10.5	9.7	11.8	11.0	8.9	8.4	10.8	10.3
Precipitation		0.2	2.2				2.5						4.9		1.4
Evaporation		6.6	2.6	6.9	6.0	4.6	3.7	8.4	7.4	8.1	9.2	8.6	72.1	105.6	83.8
Growing Degrees	5	14.4	12.4	12.9	12.9	14.2	14.9	14.2	15.2	17.8	18.7	19.1	166.7	182.8	172.9
	10	9.4	7.4	7.9	7.9	9.2	9.9	9.2	10.2	12.8	13.7	14.1	111.7	127.8	117.9

3rd 10-day period (21-31/05/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.9	59.5	52.3
Precipitation - Reference Evapotranspiration	-46.0	-59.5	-50.9
Number of Rainy Days	3.0	0.0	0.6
Number of Dry Days	31.0	27.0	-

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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ΥΠΗΡΕΣΙΑ

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