

AGROMETEOROLOGICAL BULLETIN

June 2012
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



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Division of Climatology-Applications
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Helliniko, Athens

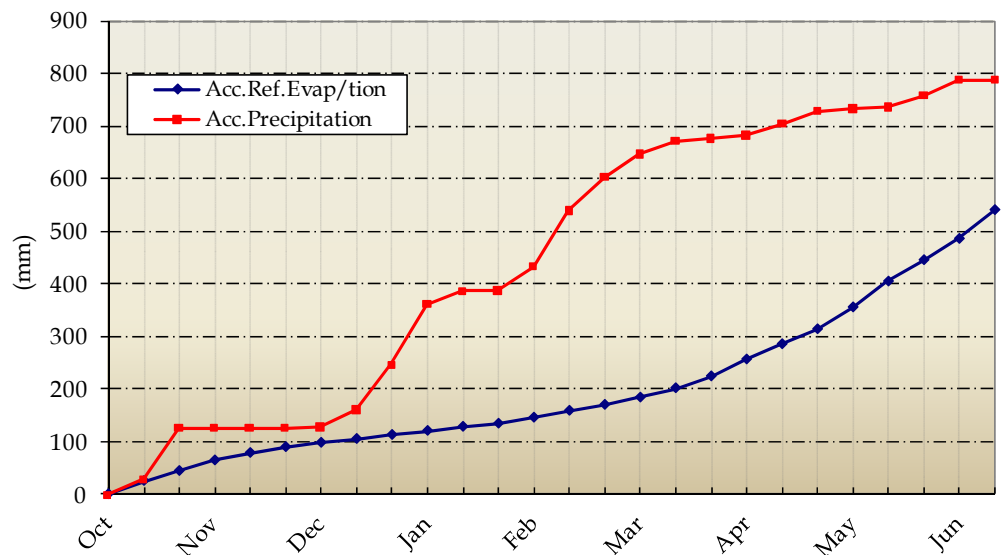
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Agrinio

1st 10-day period (1-10/06/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	29.6	31.0	30.0	26.6	27.4	30.4	32.4	35.4	35.4	30.7	31.0	29.2
	Min	12.4	12.0	12.6	12.4	14.0	13.4	14.8	15.6	15.4	18.0	14.1	16.1	14.5
Relative Humidity	Max	82	75	75	72	68	81	81	80	76	80	77	92	-
	Min	41	35	31	35	32	49	50	39	33	34	38	36	-
Soil Temperature at 10 cm	06 UTC	20.0	20.4	21.2	21.4	22.4	22.2	23.0	24.4	25.4	26.8	22.7	24.5	22.9
	12 UTC	23.0	23.4	26.4	27.2	26.2	26.6	28.4	29.4	30.2	31.0	27.2	29.5	29.1
Sunshine Duration		12.0	13.5	13.3	13.2	11.7	13.0	13.2	13.4	13.4	13.6	13.0	10.7	10.4
Precipitation														6.6
Evaporation		6.8	6.6	7.4	5.6	8.4	7.0	7.1	9.5	6.0	10.5	74.9	83.0	77.7
Growing Degrees	5	15.5	15.8	16.8	16.2	15.3	15.4	17.6	19.0	20.4	21.7	173.7	185.4	168.5
	10	10.5	10.8	11.8	11.2	10.3	10.4	12.6	14.0	15.4	16.7	123.7	135.4	118.5

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.8	52.6	50.8
Precipitation - Reference Evapotranspiration	-54.8	-52.6	-44.2
Number of Rainy Days	0.0	0.0	1.4
Number of Dry Days	11.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

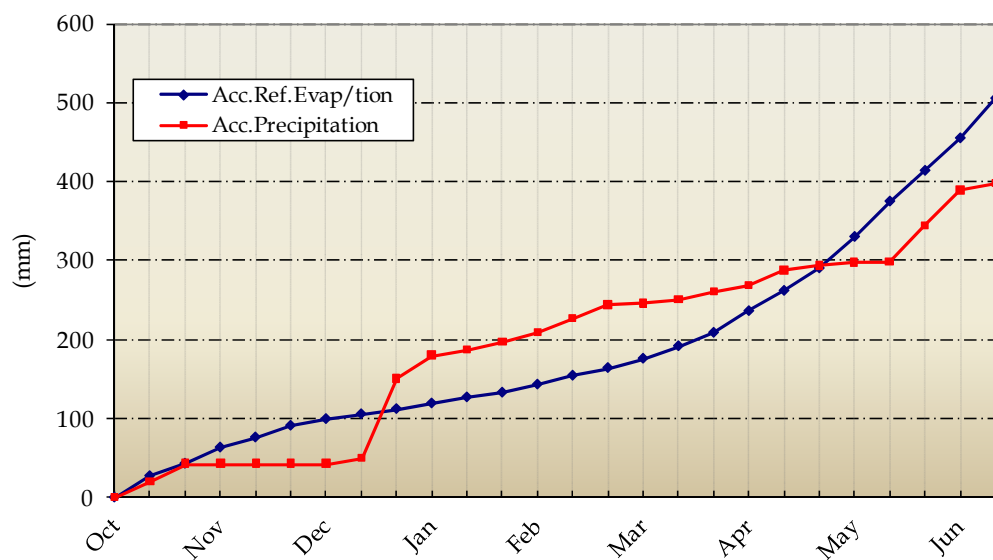


Alexandroupoli

1st 10-day period (1-10/06/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	26.4	28.2	28.2	27.2	24.2	25.6	26.8	31.2	31.2	27.3	28.8	25.8
	Min	14.4	14.6	16.4	14.8	14.0	16.4	17.0	14.0	16.4	18.0	15.6	16.9	14.0
Relative Humidity	Max	93	92	94	91	85	90	90	90	89	83	90	87	-
	Min	57	53	41	39	51	54	40	43	40	28	45	42	-
Soil Temperature at 10 cm	06 UTC	20.0	21.6	22.6	23.2	23.6	23.8	21.4	22.2	23.4	24.4	22.6	22.1	20.6
	12 UTC	24.6	26.4	27.4	27.8	26.8	25.2	25.2	26.8	27.8	28.0	26.6	25.8	25.3
Sunshine Duration		10.5	13.7	11.4	13.6	11.8	5.1	13.6	13.8	13.3	13.0	12.0	10.6	9.7
Precipitation		0.5					8.0					8.5	1.3	10.6
Evaporation		5.8	8.6	5.1	7.3	7.9	3.4	7.1	4.5	10.4	9.0	69.1	75.7	72.8
Growing Degrees	5	14.4	15.5	17.3	16.5	15.6	15.3	16.3	15.4	18.8	19.6	164.7	178.3	148.7
	10	9.4	10.5	12.3	11.5	10.6	10.3	11.3	10.4	13.8	14.6	114.7	128.3	98.7

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.3	50.4	48.0
Precipitation - Reference Evapotranspiration	-41.8	-49.1	-37.4
Number of Rainy Days	2.0	1.0	2.2
Number of Dry Days	0.0	11.0	-

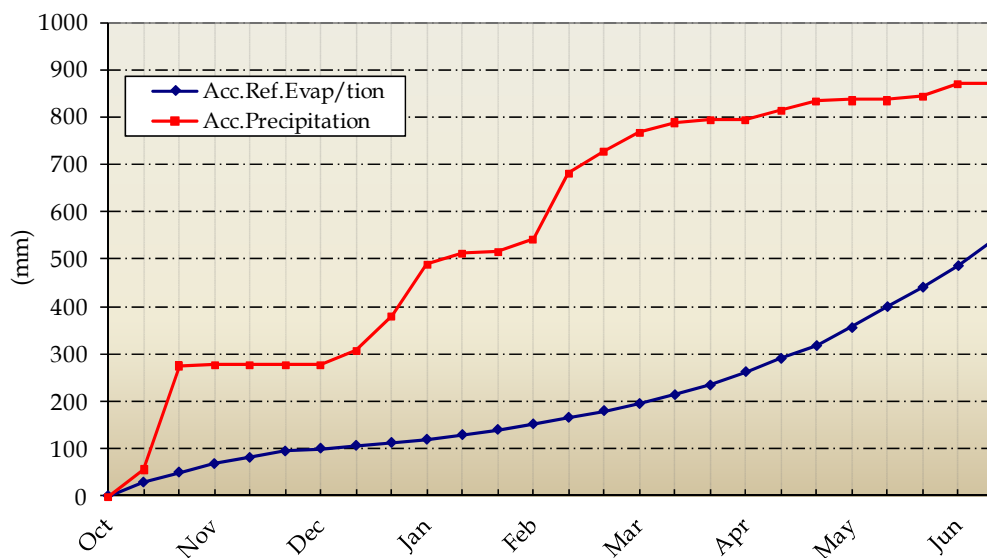
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.5	26.6	27.0	26.8	25.2	24.2	25.3	28.3	30.0	30.2	26.9	29.6	26.9
	Min	13.3	14.5	14.0	14.2	15.1	16.6	15.0	15.3	17.2	17.6	15.3	16.9	15.3
Relative Humidity	Max	91	90	89	87	84	89	91	92	89	89	89	90	-
	Min	44	36	34	33	47	55	49	43	41	38	42	38	-
Soil Temperature at 10 cm	06 UTC	21.6	22.2	22.6	23.0	23.2	23.4	23.6	23.6	24.8	26.0	23.4	24.3	23.0
	12 UTC	28.0	29.6	30.8	29.8	30.2	30.2	30.6	31.4	32.8	33.4	30.7	31.3	27.7
Sunshine Duration		12.2	12.7	12.7	12.6	12.1	13.0	12.7	13.0	12.8	12.7	12.6	10.6	11.1
Precipitation													0.0	2.3
Evaporation		7.0	7.1	9.0	9.6	5.7	8.0	7.1	5.9	8.9	7.2	75.5	70.4	67.5
Growing Degrees	5	14.4	15.6	15.5	15.5	15.2	15.4	15.2	16.8	18.6	18.9	161.0	182.3	160.7
	10	9.4	10.6	10.5	10.5	10.2	10.4	10.2	11.8	13.6	13.9	111.0	132.3	110.7

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.2	50.8	48.5
Precipitation - Reference Evapotranspiration	-52.2	-50.8	-46.2
Number of Rainy Days	0.0	0.0	0.7
Number of Dry Days	12.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

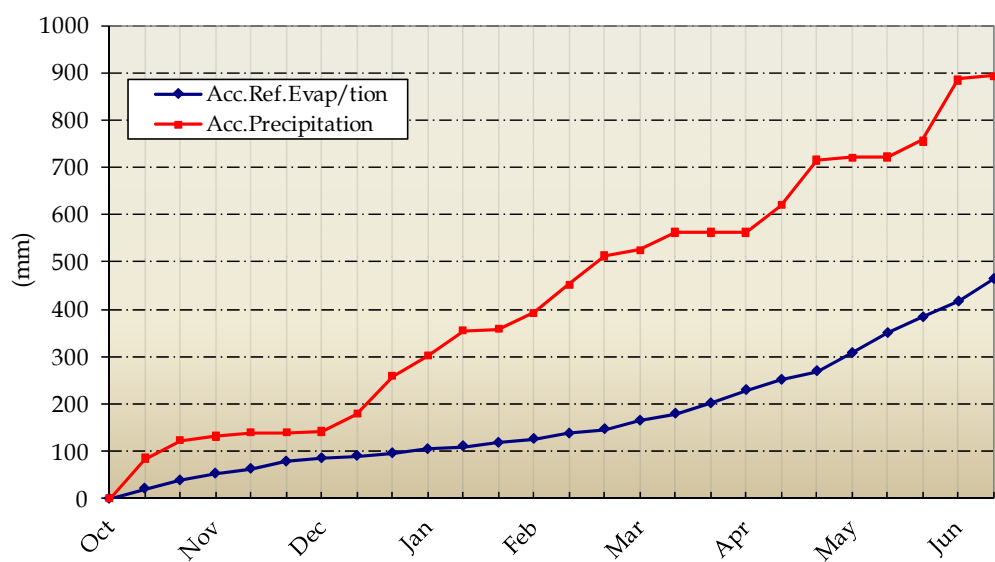


Ioannina

1st 10-day period (1-10/06/2012)		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	27.0	26.6	20.0	24.8	27.2	30.0	33.0	31.2	27.2	-	26.3
	Min	11.5	10.6	16.0	12.2	13.0	9.5	11.4	13.0	21.2	17.0	13.5	-	12.0
Relative Humidity	Max	95	98	81	80	93	90	95	76	81	79	87	-	-
	Min	41	30	36	37	65	47	44	40	40	47	43	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.9
Sunshine Duration		9.3	12.1	10.7	12.4	2.5	12.6	11.6	13.1	12.7	11.7	10.9	-	9.1
Precipitation		0.5				6.8						7.3	-	14.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	46.7
Growing Degrees	5	13.8	13.3	16.5	14.4	11.5	12.2	14.3	16.5	22.1	19.1	153.6	-	141.5
	10	8.8	8.3	11.5	9.4	6.5	7.2	9.3	11.5	17.1	14.1	103.6	-	91.5

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.6	-	43.4
Precipitation - Reference Evapotranspiration	-40.3	-	-29.0
Number of Rainy Days	2.0	-	2.5
Number of Dry Days	0.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

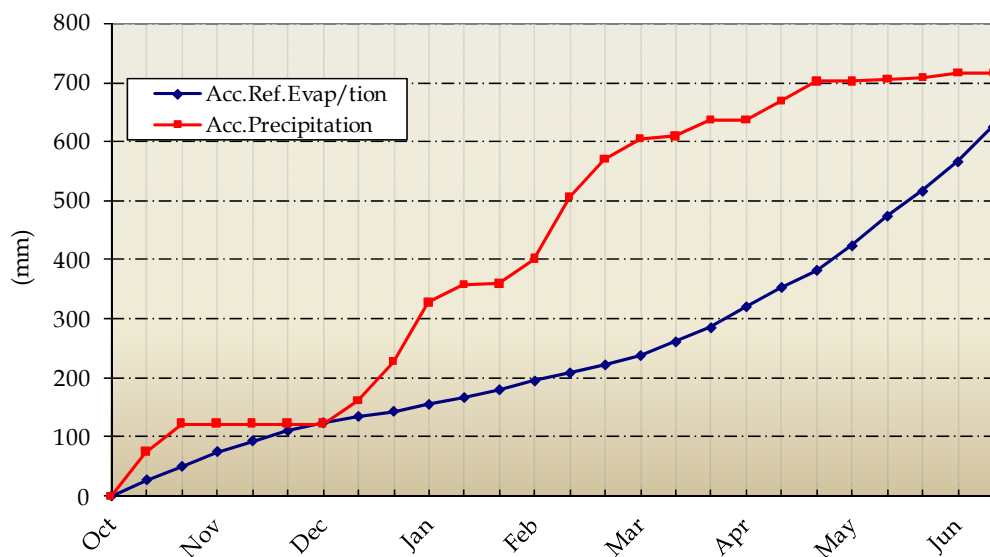


Kalamata

1st 10-day period (1-10/06/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.2	27.3	27.7	28.4	28.4	28.8	27.4	27.3	29.8	30.4	28.2	28.8	27.6
	Min	12.8	12.0	13.9	14.2	15.8	15.6	16.8	14.8	15.6	16.2	14.8	16.1	14.5
Relative Humidity	Max	91	89	86	78	90	82	88	91	87	88	87	95	-
	Min	43	34	40	26	25	36	44	40	33	39	36	50	-
Soil Temperature at 10 cm	06 UTC	20.0	19.8	21.0	21.4	21.8	21.6	22.0	22.4	22.8	23.0	21.6	21.7	21.6
	12 UTC	24.0	24.4	24.6	25.0	25.0	24.8	25.0	25.6	26.0	26.0	25.0	24.7	25.8
Sunshine Duration		13.4	12.4	13.4	13.6	12.4	13.3	13.2	12.9	12.9	13.3	13.1	10.3	10.5
Precipitation														2.7
Evaporation		11.8	3.8	7.2	5.6	9.6	9.8	8.2	6.4	7.0	3.2	72.6	72.4	75.1
Growing Degrees	5	14.5	14.7	15.8	16.3	17.1	17.2	17.1	16.1	17.7	18.3	164.7	174.7	160.6
	10	9.5	9.7	10.8	11.3	12.1	12.2	12.1	11.1	12.7	13.3	114.7	124.7	110.6

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.7	50.8	50.2
Precipitation - Reference Evapotranspiration	-58.7	-50.8	-47.5
Number of Rainy Days	0.0	0.0	0.9
Number of Dry Days	17.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

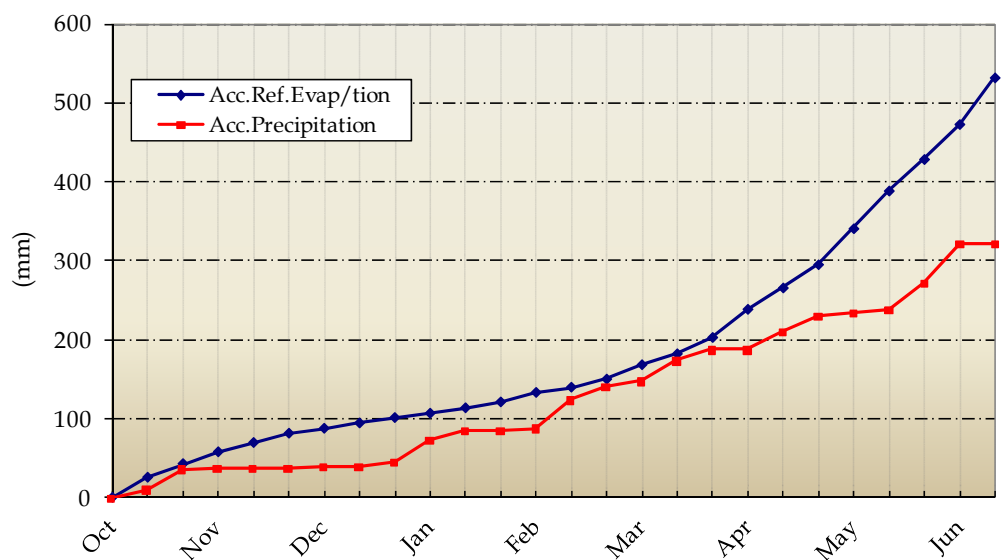


Larisa

1st 10-day period (1-10/06/2012)		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	30.8	31.4	34.0	29.8	30.3	30.8	32.2	35.4	33.8	31.8	30.0	29.7
	Min	13.4	14.2	15.6	15.0	17.0	14.8	13.2	15.0	16.2	18.0	15.2	15.6	14.1
Relative Humidity	Max	97	96	92	92	65	77	84	83	79	78	84	88	-
	Min	30	30	31	17	23	28	25	25	24	31	26	36	-
Soil Temperature at 10 cm	06 UTC	19.4	20.0	20.8	21.6	21.6	21.6	21.6	22.0	22.4	23.2	21.4	21.3	21.7
	12 UTC	21.2	21.6	22.4	22.6	22.6	21.8	23.4	24.0	24.2	24.6	22.8	23.8	24.3
Sunshine Duration		10.1	13.2	13.3	13.3	9.0	13.2	13.1	13.2	13.2	13.2	12.5	8.8	10.4
Precipitation													0.0	9.2
Evaporation		4.5	6.9	8.0	8.4	6.7	6.6	11.1	7.4	8.5	12.2	80.3	63.6	79.0
Growing Degrees	5	16.6	17.5	18.5	19.5	18.4	17.6	17.0	18.6	20.8	20.9	185.4	177.8	169.0
	10	11.6	12.5	13.5	14.5	13.4	12.6	12.0	13.6	15.8	15.9	135.4	127.8	119.0

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.2	51.3	54.0
Precipitation - Reference Evapotranspiration	-59.2	-51.3	-44.8
Number of Rainy Days	0.0	0.0	2.3
Number of Dry Days	11.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

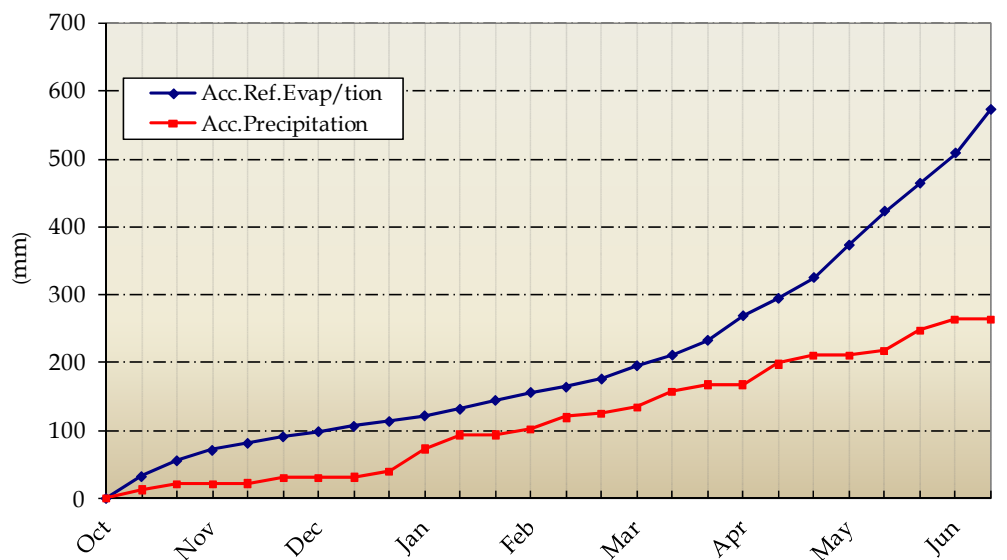


Mikra

1st 10-day period (1-10/06/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.6	28.1	29.4	31.0	27.2	27.6	29.1	29.4	33.1	32.4	29.5	-	27.9
	Min	14.1	15.2	15.8	16.0	17.4	19.7	17.8	16.2	16.4	19.0	16.8	-	15.4
Relative Humidity	Max	82	87	85	80	69	60	75	82	79	79	78	-	-
	Min	38	41	32	25	33	27	30	29	27	36	32	-	-
Soil Temperature at 10 cm	06 UTC	19.0	22.4	23.6	23.8	24.2	23.2	23.6	25.0	25.0	26.0	23.6	-	22.3
	12 UTC	26.0	26.0	26.4	28.0	29.0	27.2	28.0	28.6	29.8	29.4	27.8	-	27.3
Sunshine Duration		12.6	13.1	12.8	13.0	8.3	13.5	13.8	13.8	13.1	11.3	12.5	-	10.0
Precipitation							0.0					0.0	-	11.2
Evaporation		8.0	8.0	7.6	10.0	9.2	9.2	7.4	8.6	11.6	13.0	92.6	-	74.4
Growing Degrees	5	15.9	16.7	17.6	18.5	17.3	18.7	18.5	17.8	19.8	20.7	181.3	-	166.4
	10	10.9	11.7	12.6	13.5	12.3	13.7	13.5	12.8	14.8	15.7	131.3	-	116.4

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	64.0	-	52.1
Precipitation - Reference Evapotranspiration	-64.0	-	-40.9
Number of Rainy Days	0.0	-	2.7
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

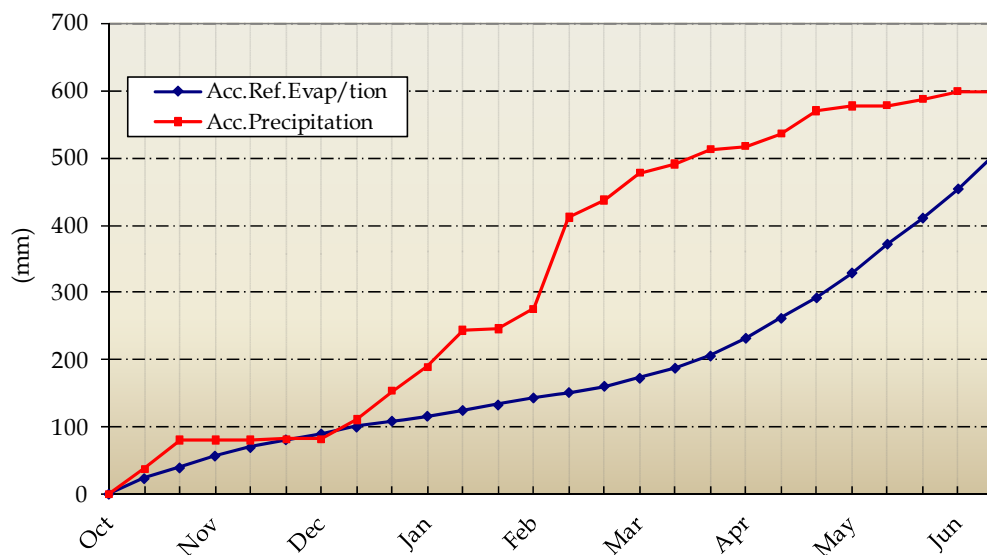


Tripoli

1st 10-day period (1-10/06/2012)		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	26.5	27.8	27.4	25.5	26.0	28.2	29.8	32.7	32.7	28.2	27.4	26.4
	Min	8.1	6.9	9.2	10.4	10.3	9.7	10.9	11.7	11.0	13.2	10.1	12.1	10.7
Relative Humidity	Max	90	92	84	88	77	83	77	70	74	54	79	90	-
	Min	29	22	22	22	22	35	29	27	23	24	26	38	-
Soil Temperature at 10 cm	06 UTC	18.6	18.2	19.6	20.6	21.8	22.0	21.8	22.6	23.4	24.6	21.3	20.7	20.3
	12 UTC	25.8	26.8	27.4	28.8	28.8	28.8	28.6	29.4	29.8	31.2	28.5	27.3	23.4
Sunshine Duration		9.0	11.8	10.8	13.4	12.3	12.1	10.9	11.8	13.5	11.9	11.8	10.6	10.2
Precipitation		0.1										0.1	0.0	6.1
Evaporation		2.6	5.1	8.5	6.8	7.5	5.0	5.9	8.1	7.9	8.6	66.0	52.0	55.4
Growing Degrees	5	11.8	11.7	13.5	13.9	12.9	12.9	14.6	15.8	16.9	18.0	141.7	147.6	135.3
	10	6.8	6.7	8.5	8.9	7.9	7.9	9.6	10.8	11.9	13.0	91.7	97.6	85.3

1st 10-day period (1-10/06/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.9	47.0	48.9
Precipitation - Reference Evapotranspiration	-49.8	-47.0	-42.8
Number of Rainy Days	1.0	0.0	1.6
Number of Dry Days	3.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

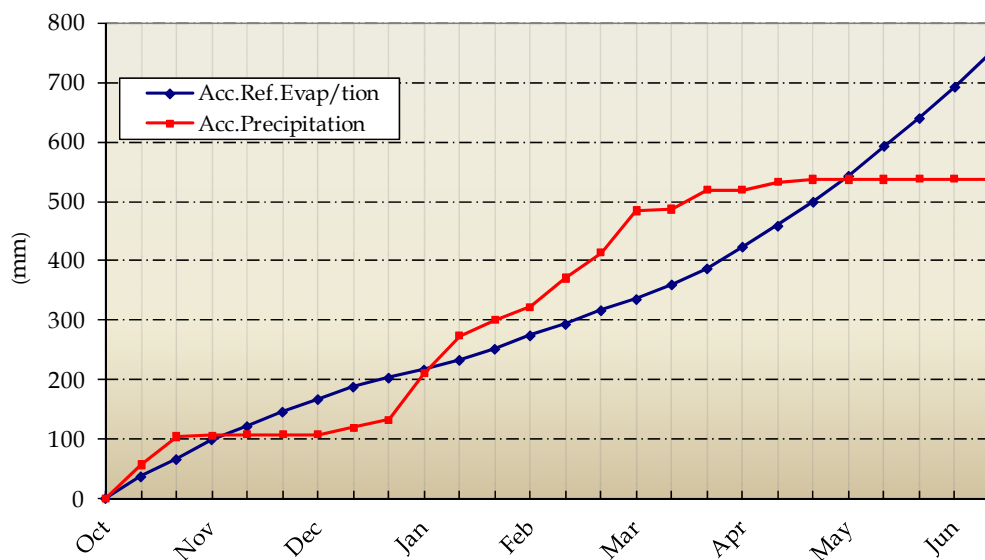


Tympani

1st 10-day period (1-10/06/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.2	23.4	24.0	26.4	24.2	24.2	26.0	30.8	28.8	30.0	26.2	28.1	27.1
	Min	13.8	15.2	13.6	13.8	13.4	15.8	15.6	17.4	18.6	18.6	15.6	18.6	16.3
Relative Humidity	Max	94	93	94	93	94	94	93	53	73	92	87	86	-
	Min	30	45	53	34	69	74	31	16	22	26	40	31	-
Soil Temperature at 10 cm	06 UTC	25.0	25.2	24.6	25.4	25.8	26.2	26.2	27.2	27.6	27.2	26.0	28.0	26.9
	12 UTC	31.4	29.4	31.2	32.4	32.4	32.8	32.8	34.2	34.4	35.0	32.6	33.7	32.0
Sunshine Duration		13.5	7.1	12.3	13.0	13.5	12.8	13.6	13.7	13.7	13.3	12.6	10.5	11.4
Precipitation														0.4
Evaporation		6.5	5.8	7.0	4.8	7.2	8.9	8.8	13.1	11.3	9.3	82.7	82.4	87.9
Growing Degrees	5	14.0	14.3	13.8	15.1	13.8	15.0	15.8	19.1	18.7	19.3	158.9	183.8	165.3
	10	9.0	9.3	8.8	10.1	8.8	10.0	10.8	14.1	13.7	14.3	108.9	133.8	115.8

1st 10-day period (1-10/06/2012)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.0	56.8
Precipitation - Reference Evapotranspiration	-55.0	-56.8
Number of Rainy Days	0.0	0.3
Number of Dry Days	24.0	13.0

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.

Mesurements 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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