



AGROMETEOROLOGICAL BULLETIN

June 2016
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

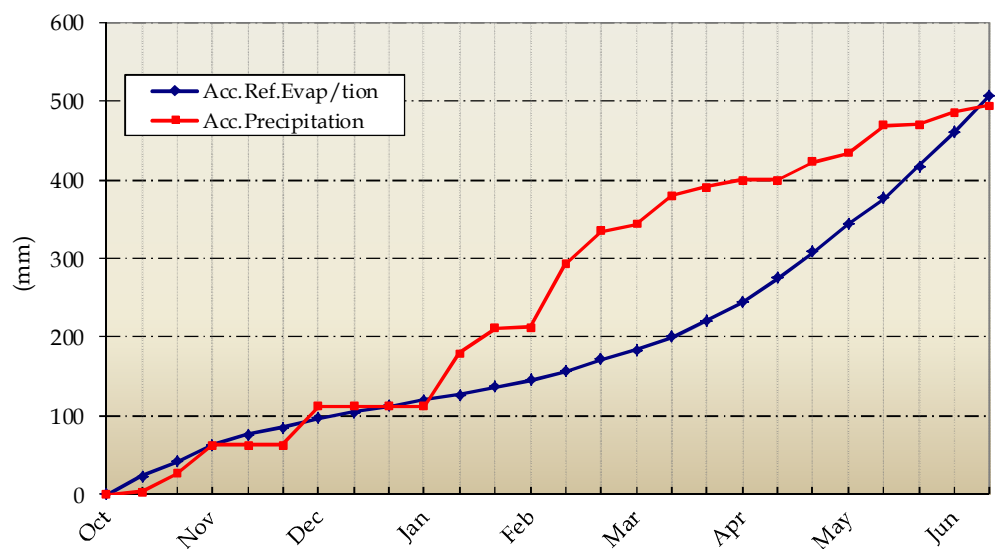
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Alexandroupoli

1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.2	28.6	27.2	27.8	28.0	25.0	26.0	24.6	25.0	26.4	26.8	26.3	25.8
	Min	15.8	17.4	15.6	15.2	16.4	17.0	17.0	15.8	11.2	12.0	15.3	16.3	14.0
Relative Humidity	Max	91	95	86	93	95	96	90	69	83	83	88	87	-
	Min	44	43	43	43	42	65	48	30	30	35	42	41	-
Soil Temperature at 10 cm	06 UTC	22.8	24.2	23.8	22.6	24.4	23.6	20.6	20.4	19.6	20.6	22.3	21.5	20.6
	12 UTC	29.6	30.4	26.4	29.6	29.0	24.2	24.2	26.1	27.6	28.2	27.5	25.7	25.3
Sunshine Duration		12.9	12.9	9.7	12.0	10.8	1.3	7.0	13.1	13.2	12.9	10.6	8.9	9.7
Precipitation				0.4			8.3	0.4				9.1	11.8	10.6
Evaporation		5.1	9.5	4.4	6.9	7.9	1.9	8.2	6.1	7.5	7.0	64.5	74.9	72.8
Growing Degrees	5	17.5	18.0	16.4	16.5	17.2	16.0	16.5	15.2	13.1	14.2	160.6	163.0	148.7
	10	12.5	13.0	11.4	11.5	12.2	11.0	11.5	10.2	8.1	9.2	110.6	113.0	98.7

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	48.0	48.0	48.0
Precipitation - Reference Evapotranspiration	-38.9	-36.2	-37.4
Number of Rainy Days	3.0	6.0	2.2
Number of Dry Days	6.0	5.0	-

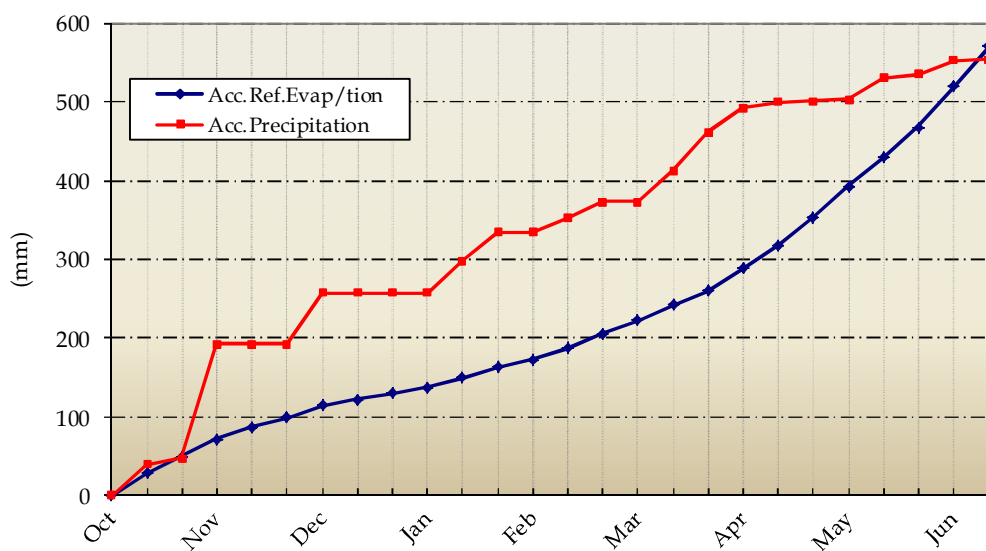
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.2	27.8	25.7	25.1	26.0	26.4	26.3	29.0	27.0	27.0	27.0	27.4	26.9
	Min	14.9	15.6	17.0	16.4	14.6	14.8	17.6	16.0	17.2	16.9	16.1	15.6	15.3
Relative Humidity	Max	89	86	84	84	89	87	85	88	88	86	87	87	-
	Min	25	31	43	48	46	40	44	31	47	46	40	38	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	23.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.7
Sunshine Duration		3.9	12.7	13.0	13.3	9.8	12.7	13.3	9.9	10.7	9.8	10.9	10.8	11.1
Precipitation									0.2	0.3		0.5	3.1	2.3
Evaporation		2.0	5.7	2.0	2.1	18.3	2.9	5.0	15.0	2.5	4.2	59.7	68.0	67.5
Growing Degrees	5	17.1	16.7	16.4	15.8	15.3	15.6	17.0	17.5	17.1	17.0	165.3	164.9	160.7
	10	12.1	11.7	11.4	10.8	10.3	10.6	12.0	12.5	12.1	12.0	115.3	114.9	110.7

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.1	51.4	48.5
Precipitation - Reference Evapotranspiration	-49.6	-48.3	-46.2
Number of Rainy Days	2.0	1.0	0.7
Number of Dry Days	17.0	16.0	-

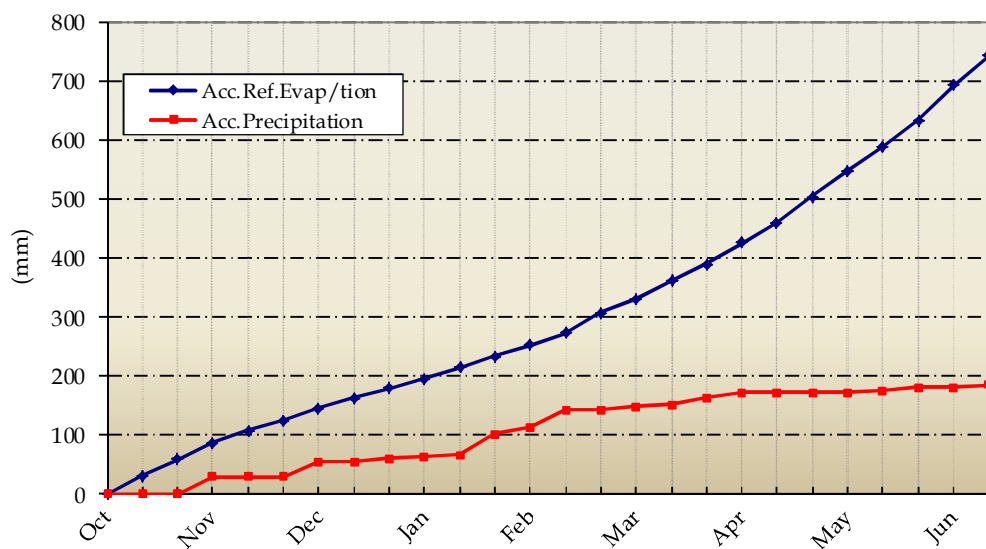
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2016)		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	28.0	28.0	26.2	25.4	26.8	26.4	24.0	23.8	25.0	26.2	23.7	25.7
	Min	19.6	21.4	22.0	16.8	18.4	19.6	18.0	21.0	19.8	15.6	19.2	17.2	17.9
Relative Humidity	Max	95	96	86	83	87	92	92	90	79	91	89	88	-
	Min	55	77	68	48	70	60	59	70	61	64	63	63	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		11.4	8.8	7.8	12.6	12.7	10.5	12.7	10.9	12.2	12.4	11.2	10.0	11.2
Precipitation									3.7			3.7	0.0	3.5
Evaporation		6.0	6.2	6.4	5.4	5.9	6.6	3.7	7.7	9.1	4.3	61.3	40.3	76.6
Growing Degrees	5	19.1	19.7	20.0	16.5	16.9	18.2	17.2	17.5	16.8	15.3	177.2	154.5	167.8
	10	14.1	14.7	15.0	11.5	11.9	13.2	12.2	12.5	11.8	10.3	127.2	104.5	117.8

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.2	45.4	-
Precipitation - Reference Evapotranspiration	-46.5	-45.4	3.5
Number of Rainy Days	1.0	0.0	0.5
Number of Dry Days	17.0	12.0	-

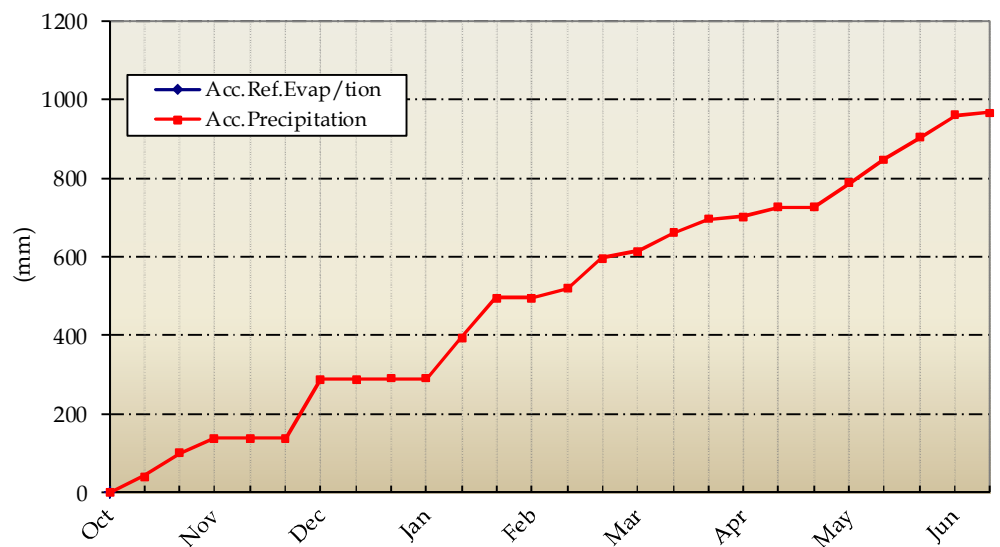
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.6	26.2	26.1	25.9	27.8	27.4	27.9	26.4	25.6	25.3	26.2	26.5	26.3
	Min	9.4	10.4	9.7	8.2	9.2	9.2	9.9	15.1	9.9	10.7	10.2	12.7	12.0
Relative Humidity	Max	98	100	100	100	100	100	99	100	100	100	100	95	-
	Min	55	37	32	32	26	33	38	31	34	34	35	36	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.9
Sunshine Duration		4.8	12.4	12.6	12.9	10.5	12.2	7.2	7.6	8.6	6.4	9.5	7.2	9.1
Precipitation		0.4						1.7	4.3		1.1	7.5	25.1	14.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	46.7
Growing Degrees	5	11.5	13.3	12.9	12.1	13.5	13.3	13.9	15.8	12.8	13.0	132.0	146.2	141.5
	10	6.5	8.3	7.9	7.1	8.5	8.3	8.9	10.8	7.8	8.0	82.0	96.2	91.5

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	43.4
Precipitation - Reference Evapotranspiration	-	-	-29.0
Number of Rainy Days	4.0	6.0	2.5
Number of Dry Days	10.0	3.0	-

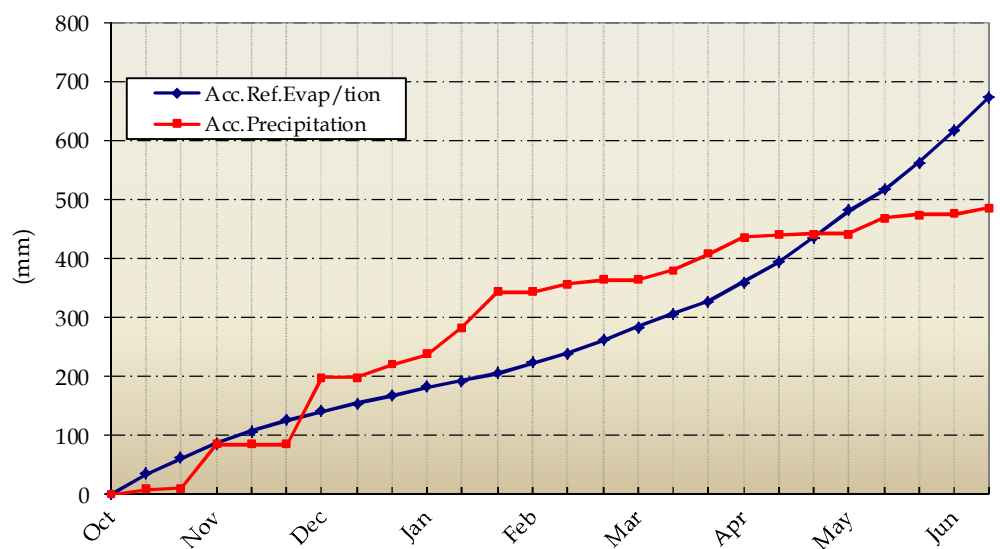
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.6	33.5	29.0	29.0	29.0	31.4	28.8	29.1	24.2	25.4	29.5	27.7	27.6
	Min	17.4	18.3	16.4	13.2	15.3	15.5	17.5	16.8	14.5	14.5	15.9	14.8	14.5
Relative Humidity	Max	64	74	86	88	88	81	84	94	94	94	85	90	-
	Min	14	20	21	31	34	24	31	40	58	54	33	37	-
Soil Temperature at 10 cm	06 UTC	22.4	22.8	22.6	22.0	22.4	22.6	23.0	23.4	22.0	22.0	22.5	20.6	21.6
	12 UTC	23.2	24.0	24.2	25.0	24.4	25.0	25.0	23.4	24.6	23.4	24.2	22.0	25.8
Sunshine Duration		9.9	11.5	13.0	13.0	12.2	6.8	13.1	3.7	8.0	5.8	9.7	7.6	10.5
Precipitation									9.7	0.0	0.0	9.7	43.3	2.7
Evaporation		10.2	9.2	7.8	10.6	8.5	8.5	8.4	0.0	7.4	3.8	74.4	-	75.1
Growing Degrees	5	21.5	20.9	17.7	16.1	17.2	18.5	18.2	18.0	14.4	15.0	177.2	162.7	160.6
	10	16.5	15.9	12.7	11.1	12.2	13.5	13.2	13.0	9.4	10.0	127.2	112.7	110.6

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.5	46.2	50.2
Precipitation - Reference Evapotranspiration	-46.8	-2.9	-47.5
Number of Rainy Days	1.0	5.0	0.9
Number of Dry Days	16.0	6.0	-

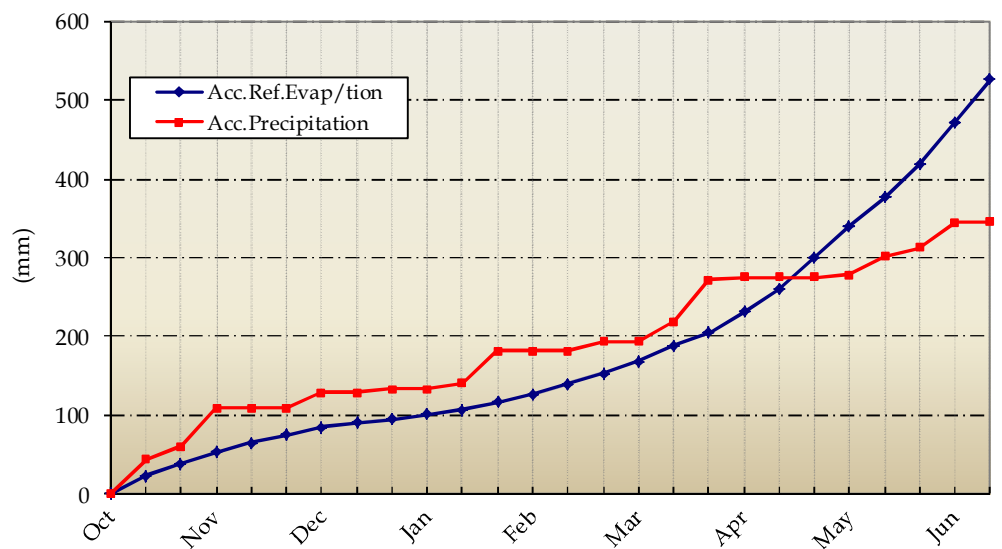
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.8	32.8	33.0	31.0	31.4	31.0	27.6	23.3	27.6	27.9	29.8	29.0	29.7
	Min	14.8	16.0	15.0	16.7	16.2	14.4	16.8	15.6	12.3	14.5	15.2	15.0	14.1
Relative Humidity	Max	79	70	76	69	99	100	96	100	97	87	87	90	-
	Min	12	19	14	20	27	28	38	40	29	29	26	26	-
Soil Temperature at 10 cm	06 UTC	23.2	23.4	17.0	24.0	24.0	24.0	24.0	23.2	23.0	23.0	22.9	23.3	21.7
	12 UTC	23.2	23.4	23.2	23.6	24.0	24.0	24.0	23.2	23.0	23.2	23.5	23.4	24.3
Sunshine Duration		7.1	12.0	12.0	11.3	9.0	11.3	4.4	6.6	12.1	9.6	9.5	8.5	10.4
Precipitation						0.2	0.4		0.5			1.1	6.4	9.2
Evaporation		8.1	18.5	1.8	10.5	10.9	7.4	8.4	7.9	8.1	8.5	90.1	68.5	79.0
Growing Degrees	5	18.8	19.4	19.0	18.9	18.8	17.7	17.2	14.5	15.0	16.2	175.4	169.6	169.0
	10	13.8	14.4	14.0	13.9	13.8	12.7	12.2	9.5	10.0	11.2	125.4	119.6	119.0

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.2	49.5	54.0
Precipitation - Reference Evapotranspiration	-53.1	-43.1	-44.8
Number of Rainy Days	3.0	3.0	2.3
Number of Dry Days	5.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

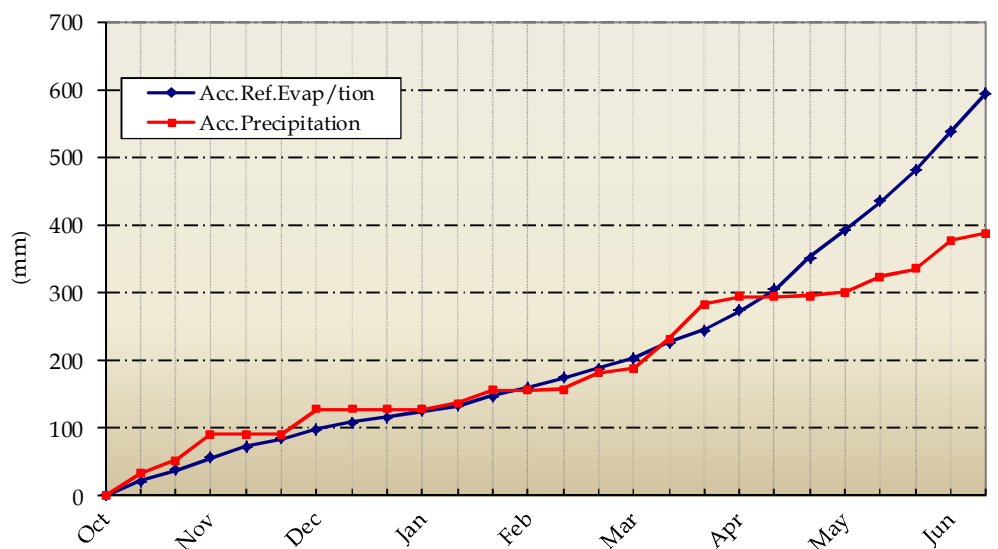


Mikra

1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.7	30.8	29.6	30.0	28.5	29.2	26.4	22.6	24.7	26.6	27.8	27.9	27.9
	Min	15.6	17.0	17.4	17.3	16.0	19.2	19.8	16.8	13.6	14.0	16.7	16.3	15.4
Relative Humidity	Max	79	85	74	73	81	82	93	93	91	89	84	82	-
	Min	31	23	25	25	36	33	45	47	38	30	33	34	-
Soil Temperature at 10 cm	06 UTC	24.0	24.2	25.4	24.8	24.8	24.5	25.1	22.8	20.8	21.6	23.8	23.0	22.3
	12 UTC	29.0	29.4	30.4	29.0	30.5	29.4	27.2	23.7	25.6	27.6	28.2	27.8	27.3
Sunshine Duration		7.1	13.6	12.2	13.5	11.7	12.0	3.1	7.8	9.9	12.1	10.3	8.7	10.0
Precipitation					1.6		0.6	5.0	2.8			10.0	19.6	11.2
Evaporation		7.0	11.7	8.0	11.7	13.0	10.5	3.4	3.4	5.2	9.8	83.7	63.5	74.4
Growing Degrees	5	17.7	18.9	18.5	18.7	17.3	19.2	18.1	14.7	14.2	15.3	172.4	170.9	166.4
	10	12.7	13.9	13.5	13.7	12.3	14.2	13.1	9.7	9.2	10.3	122.4	120.9	116.4

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.2	50.4	52.1
Precipitation - Reference Evapotranspiration	-46.2	-30.8	-40.9
Number of Rainy Days	4.0	5.0	2.7
Number of Dry Days	12.0	6.0	-

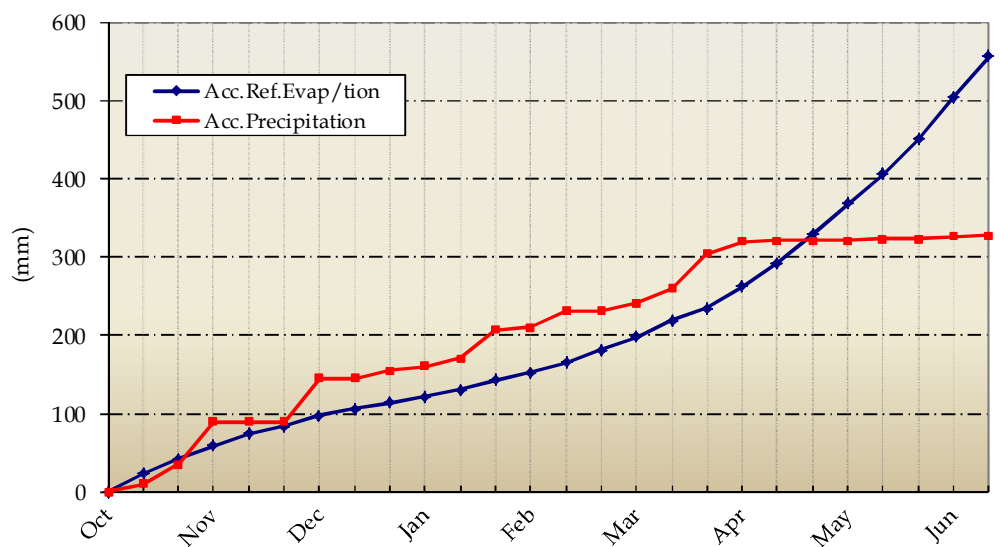
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.8	33.8	31.0	29.3	29.9	31.0	27.0	23.4	25.6	26.6	29.0	25.8	28.3
	Min	17.0	20.4	17.6	16.2	16.6	17.5	18.7	17.0	12.2	12.8	16.6	15.5	14.2
Relative Humidity	Max	62	48	63	67	70	70	72	84	71	77	68	77	-
	Min	19	17	18	26	30	23	39	29	32	28	26	37	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.6	11.3	13.3	10.6	8.1	12.4	3.5	8.6	12.5	10.9	9.9	7.7	
Precipitation									1.0			1.0	1.5	6.3
Evaporation		12.2	10.0	11.5	9.5	10.0	8.5	4.5	7.0	8.5	8.5	90.2	64.5	
Growing Degrees	5	19.9	22.1	19.3	17.8	18.3	19.3	17.9	15.2	13.9	14.7	178.2	156.8	
	10	14.9	17.1	14.3	12.8	13.3	14.3	12.9	10.2	8.9	9.7	128.2	106.8	

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.8	44.5	
Precipitation - Reference Evapotranspiration	-50.8	-43.0	6.3
Number of Rainy Days	1.0	1.0	2.0
Number of Dry Days	16.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

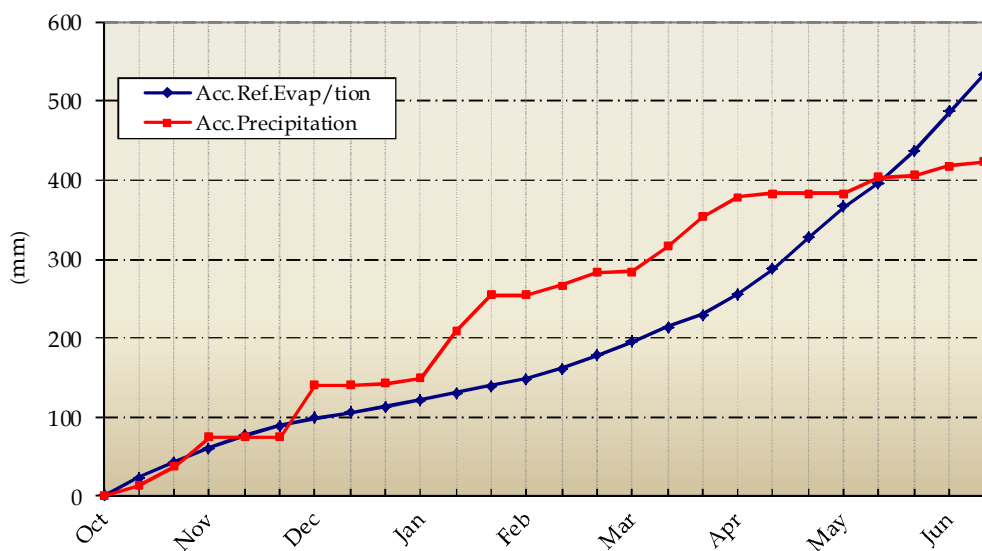


Tripoli

1st 10-day period (1-10/06/2016)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.1	29.3	29.2	26.8	28.2	29.0	27.2	23.3	23.0	23.1	27.2	24.9	26.4
	Min	11.5	12.9	11.7	8.4	9.2	9.8	9.6	12.3	7.6	12.4	10.5	11.4	10.7
Relative Humidity	Max	79	81	82	88	90	87	97	100	99	100	90	94	-
	Min	11	19	14	23	23	18	28	41	42	44	26	36	-
Soil Temperature at 10 cm	06 UTC	23.8	24.0	23.6	23.2	23.4	23.4	23.8	22.4	21.2	20.8	23.0	20.0	20.3
	12 UTC	30.6	32.2	30.8	-	-	30.8	28.8	27.0	26.4	24.2	28.8	26.0	23.4
Sunshine Duration		10.5	12.7	13.2	12.5	11.8	12.9	7.2	5.2	7.7	4.9	9.9	8.0	10.2
Precipitation								0.3		2.0	3.4	5.7	47.5	6.1
Evaporation		14.5	10.3	8.0	8.8	7.9	7.5	5.4	4.5	2.6	3.4	72.9	51.1	55.4
Growing Degrees	5	17.3	16.1	15.5	12.6	13.7	14.4	13.4	12.8	10.3	12.8	138.8	131.7	135.3
	10	12.3	11.1	10.5	7.6	8.7	9.4	8.4	7.8	5.3	7.8	88.8	81.7	85.3

1st 10-day period (1-10/06/2016)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.4	42.9	48.9
Precipitation - Reference Evapotranspiration	-40.7	4.6	-42.8
Number of Rainy Days	3.0	4.0	1.6
Number of Dry Days	15.0	7.0	-

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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