

AGROMETEOROLOGICAL BULLETIN

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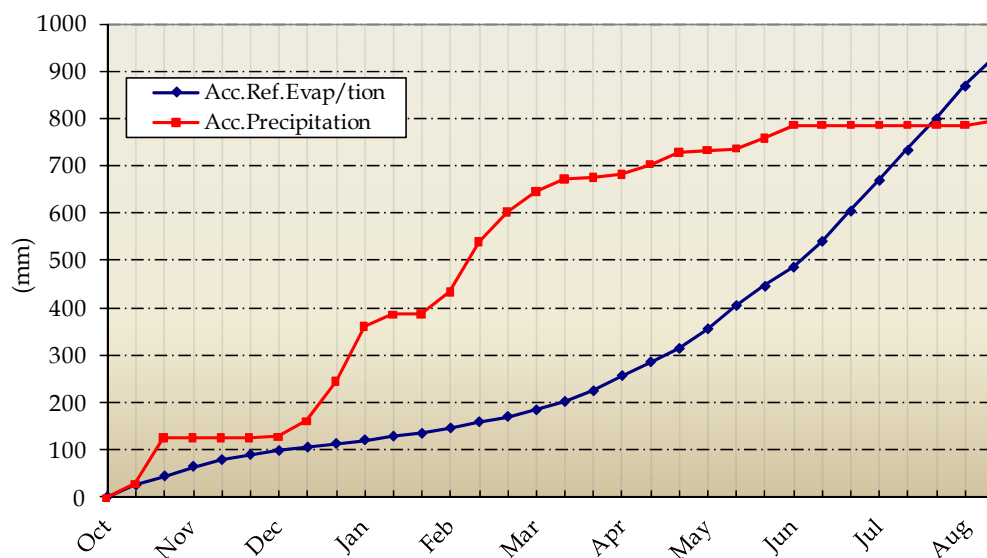
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Agrinio

1st 10-day period (1-10/08/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.0	36.0	35.4	36.0	37.0	39.6	41.0	41.0	38.0	37.2	37.8	34.9	34.0
	Min	21.0	18.0	19.6	19.4	20.4	21.0	20.2	21.6	20.0	20.2	20.1	18.4	17.6
Relative Humidity	Max	89	91	88	75	71	76	67	61	70	75	76	85	-
	Min	27	30	29	29	26	26	23	21	30	31	27	33	-
Soil Temperature at 10 cm	06 UTC	32.4	28.4	28.0	28.6	29.2	30.4	29.6	31.2	31.5	31.2	30.0	31.2	27.9
	12 UTC	38.0	33.8	35.0	32.8	34.0	35.0	36.0	36.0	36.0	36.0	35.3	36.2	34.1
Sunshine Duration		8.2	9.5	12.8	12.6	12.6	12.6	12.2	12.5	12.5	12.0	11.8	12.6	11.2
Precipitation		0.0	8.6									8.6		3.2
Evaporation		3.8	14.8	8.8	8.8	9.0	8.8	9.2	9.8	8.8	10.0	91.8	94.9	80.8
Growing Degrees	5	24.0	22.0	22.5	22.7	23.7	25.3	25.6	26.3	24.0	23.7	239.8	216.4	208.2
	10	19.0	17.0	17.5	17.7	18.7	20.3	20.6	21.3	19.0	18.7	189.8	166.4	158.2

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.7	58.1	53.6
Precipitation - Reference Evapotranspiration	-49.1	-58.1	-50.4
Number of Rainy Days	1.0	0.0	0.5
Number of Dry Days	63.0	54.0	-

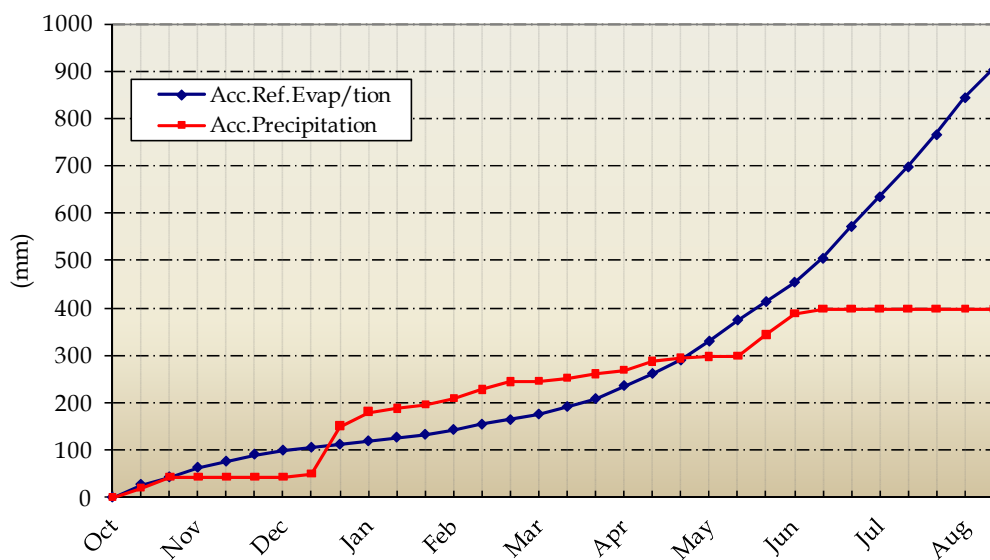
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/08/2012)		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	35.4	33.6	34.2	36.6	37.8	37.6	39.2	36.2	35.4	35.9	32.7	31.3
	Min	23.2	18.6	23.0	22.2	23.6	23.0	21.8	21.0	24.4	23.6	22.4	20.9	17.9
Relative Humidity	Max	67	85	69	73	63	72	74	74	68	56	70	77	-
	Min	27	19	41	40	26	24	28	16	30	24	28	31	-
Soil Temperature at 10 cm	06 UTC	30.8	29.6	29.6	30.2	30.0	30.4	31.0	30.8	31.8	31.2	30.5	27.3	24.7
	12 UTC	33.4	32.8	32.6	33.2	33.4	33.6	34.0	33.8	34.2	33.6	33.5	30.2	29.0
Sunshine Duration		8.7	11.4	11.8	11.6	12.7	12.6	11.8	12.2	10.6	10.8	11.4	11.4	10.7
Precipitation													2.5	4.0
Evaporation		8.4	8.5	8.0	9.0	6.1	15.6	8.9	12.8	12.9	11.4	101.6	82.5	96.8
Growing Degrees	5	23.3	22.0	23.3	23.2	25.1	25.4	24.7	25.1	25.3	24.5	241.9	218.2	195.9
	10	18.3	17.0	18.3	18.2	20.1	20.4	19.7	20.1	20.3	19.5	191.9	168.2	145.9

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.1	61.5	58.5
Precipitation - Reference Evapotranspiration	-59.1	-59.0	-54.5
Number of Rainy Days	0.0	1.0	0.7
Number of Dry Days	65.0	28.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

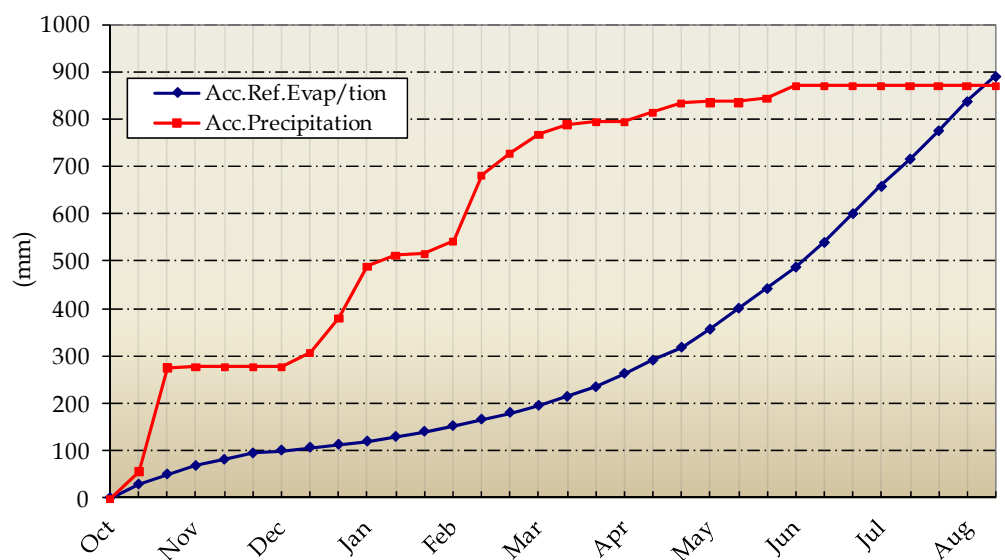


Andravida

1st 10-day period (1-10/08/2012)		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	31.6	31.4	32.1	32.9	33.8	36.5	38.2	34.5	34.0	33.9	31.2	31.3
	Min	21.1	18.3	19.8	20.9	20.6	21.6	20.8	22.1	20.0	19.4	20.5	19.6	18.8
Relative Humidity	Max	83	88	88	87	87	86	82	76	89	88	85	92	-
	Min	32	34	35	38	40	35	28	19	34	36	33	43	-
Soil Temperature at 10 cm	06 UTC	30.0	28.4	29.2	29.8	30.0	30.2	30.0	30.4	29.8	29.8	29.8	28.1	27.8
	12 UTC	38.2	38.0	37.2	38.0	37.8	38.0	38.2	38.6	38.4	38.4	38.1	34.3	32.1
Sunshine Duration		9.1	12.0	11.8	11.5	11.8	11.7	12.1	12.1	12.0	11.5	11.6	11.6	11.6
Precipitation		0.0										0.0		0.2
Evaporation		13.0	7.6	8.4	8.0	6.5	3.9	13.3	8.5	10.0	4.9	84.1	82.6	74.9
Growing Degrees	5	22.8	20.0	20.6	21.5	21.8	22.7	23.7	25.2	22.3	21.7	222.0	203.9	200.3
	10	17.8	15.0	15.6	16.5	16.8	17.7	18.7	20.2	17.3	16.7	172.0	153.9	150.3

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.9	53.0	52.3
Precipitation - Reference Evapotranspiration	-52.9	-53.0	-52.1
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	73.0	56.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

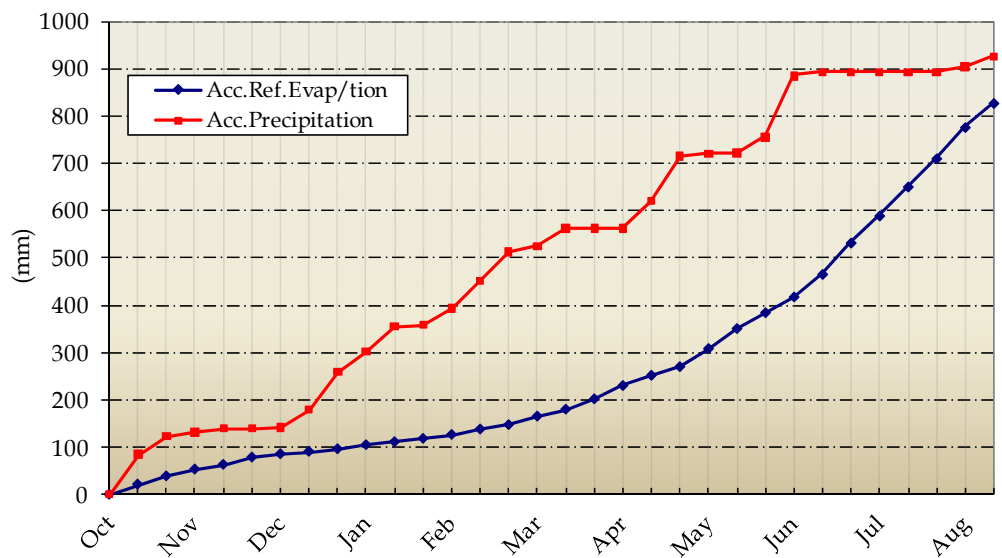


Ioannina

1st 10-day period (1-10/08/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	31.4	32.6	34.6	34.8	37.8	40.0	39.0	36.8	33.6	35.2	-	31.8
	Min	17.0	16.0	15.0	17.2	18.2	19.0	17.0	19.6	18.4	20.0	17.7	-	15.9
Relative Humidity	Max	96	90	94	94	90	71	88	76	57	88	84	-	-
	Min	32	42	29	29	30	24	17	24	23	33	28	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	24.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	28.0
Sunshine Duration		6.3	7.8	9.3	11.0	12.1	10.8	11.1	11.5	10.4	7.8	9.8	-	10.1
Precipitation			6.9	0.4							14.3	21.6	-	5.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	79.9
Growing Degrees	5	19.1	18.7	18.8	20.9	21.5	23.4	23.5	24.3	22.6	21.8	214.6	-	183.5
	10	14.1	13.7	13.8	15.9	16.5	18.4	18.5	19.3	17.6	16.8	164.6	-	134.7

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.0	-	50.7
Precipitation - Reference Evapotranspiration	-29.4	-	-44.9
Number of Rainy Days	3.0	-	1.3
Number of Dry Days	1.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

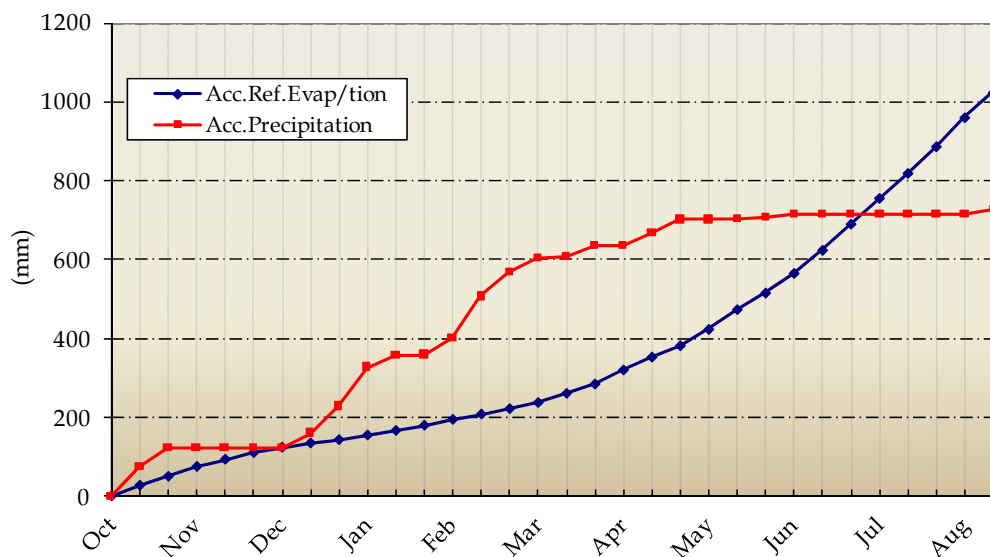


Kalamata

1st 10-day period (1-10/08/2012)		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	31.6	33.0	34.2	35.8	36.5	41.8	41.3	35.6	33.6	35.6	31.4	31.8
	Min	20.4	18.3	20.4	20.0	22.2	21.2	22.4	23.6	20.1	17.7	20.6	19.3	18.3
Relative Humidity	Max	94	87	84	81	79	74	82	67	85	85	82	91	-
	Min	35	34	32	31	24	26	13	14	26	29	26	40	-
Soil Temperature at 10 cm	06 UTC	28.0	26.0	26.4	26.6	27.0	27.2	27.6	27.6	27.6	27.4	27.1	26.2	26.3
	12 UTC	30.0	29.0	29.0	29.2	29.6	29.2	29.6	30.0	30.0	30.0	29.6	29.0	30.4
Sunshine Duration		6.7	11.4	11.5	11.6	12.3	12.0	12.0	11.5	11.6	11.9	11.2	11.7	11.0
Precipitation		11.4										11.4	0.0	3.9
Evaporation		5.7	6.7	-	5.8	4.0	7.4	9.6	4.3	7.5	9.0	-	85.0	84.1
Growing Degrees	5	21.7	20.0	21.7	22.1	24.0	23.9	27.1	27.5	22.9	20.7	231.4	203.3	200.7
	10	16.7	15.0	16.7	17.1	19.0	18.9	22.1	22.5	17.9	15.7	181.4	153.3	150.7

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.9	57.9	56.0
Precipitation - Reference Evapotranspiration	-52.5	-57.9	-52.1
Number of Rainy Days	1.0	0.0	0.5
Number of Dry Days	68.0	56.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

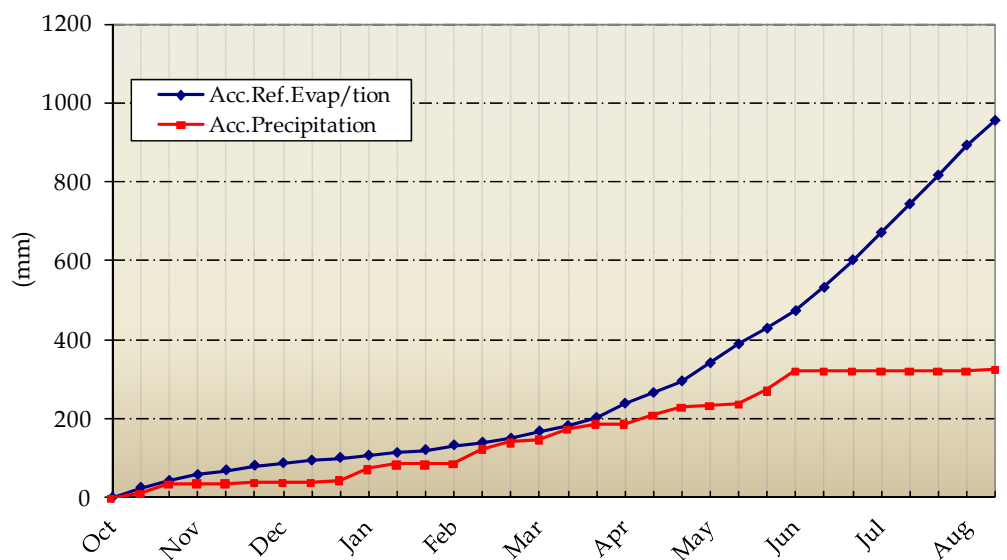


Larisa

1st 10-day period (1-10/08/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	33.2	36.6	37.0	38.6	39.6	41.8	40.2	35.6	33.2	36.8	33.4	33.2
	Min	22.2	18.6	17.7	18.9	20.2	20.2	20.2	21.9	25.6	23.4	20.9	19.4	18.0
Relative Humidity	Max	81	85	79	65	66	62	66	56	56	85	70	92	-
	Min	35	30	16	20	18	16	11	13	28	26	21	39	-
Soil Temperature at 10 cm	06 UTC	30.8	29.0	28.4	28.8	29.2	29.6	29.8	30.2	30.6	30.8	29.7	27.4	27.1
	12 UTC	31.6	30.6	30.2	30.8	31.2	31.4	31.8	32.2	32.2	31.6	31.4	29.6	29.4
Sunshine Duration		5.7	6.1	11.0	11.9	12.1	11.8	11.6	11.4	11.6	6.6	10.0	11.4	10.5
Precipitation		0.8									1.8	2.6	22.8	4.2
Evaporation		6.3	4.7	10.3	9.4	12.9	10.5	12.4	9.2	12.7	7.5	95.9	91.8	91.8
Growing Degrees	5	22.4	20.9	22.2	23.0	24.4	24.9	26.0	26.1	25.6	23.3	238.7	213.9	206.1
	10	17.4	15.9	17.2	18.0	19.4	19.9	21.0	21.1	20.6	18.3	188.7	163.9	156.1

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.7	57.6	58.6
Precipitation - Reference Evapotranspiration	-60.1	-34.8	-54.4
Number of Rainy Days	2.0	4.0	1.1
Number of Dry Days	36.0	46.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

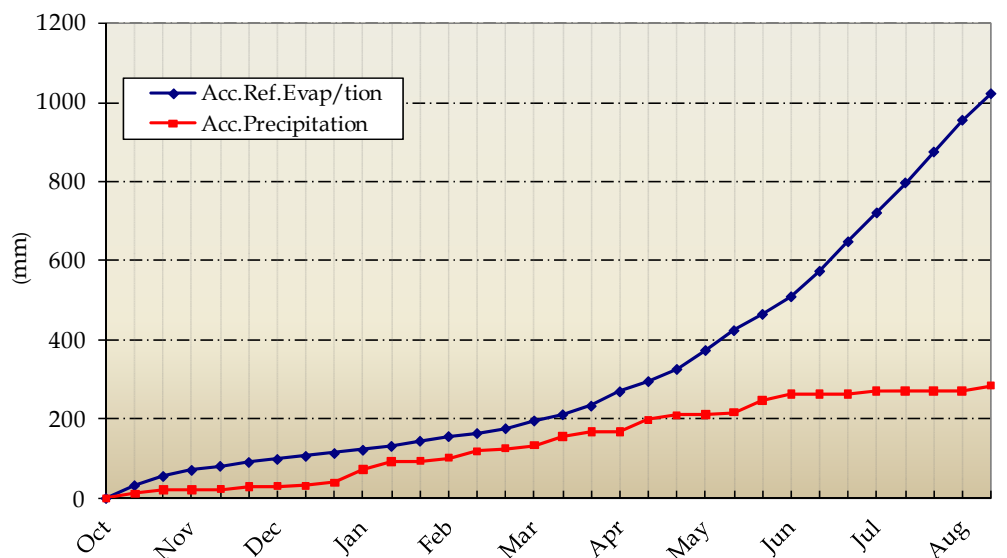


Mikra

1st 10-day period (1-10/08/2012)		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	32.2	34.6	35.4	36.7	36.8	39.0	37.2	34.0	32.4	35.1	-	31.9
	Min	21.0	21.6	21.9	21.0	21.6	23.0	23.6	23.0	23.5	21.8	22.2	-	19.4
Relative Humidity	Max	84	83	70	63	70	65	68	54	84	81	72	-	-
	Min	34	32	21	24	19	21	16	20	31	31	25	-	-
Soil Temperature at 10 cm	06 UTC	31.6	28.0	28.4	28.6	29.0	29.8	30.2	30.8	31.0	29.6	29.7	-	26.9
	12 UTC	35.4	35.6	36.0	33.6	34.6	34.6	35.0	35.4	35.0	33.2	34.8	-	31.6
Sunshine Duration		6.1	10.3	11.5	12.2	10.5	12.1	11.8	12.0	7.5	8.0	10.2	-	10.2
Precipitation		7.6	0.6								5.2	13.4	-	5.3
Evaporation		5.5	10.4	14.6	10.8	17.0	10.0	10.0	7.0	4.2	11.1	100.6	-	88.0
Growing Degrees	5	21.7	21.9	23.3	23.2	24.2	24.9	26.3	25.1	23.8	22.1	236.4	-	206.4
	10	16.7	16.9	18.3	18.2	19.2	19.9	21.3	20.1	18.8	17.1	186.4	-	156.4

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.7	-	56.6
Precipitation - Reference Evapotranspiration	-53.3	-	-51.3
Number of Rainy Days	3.0	-	1.3
Number of Dry Days	36.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

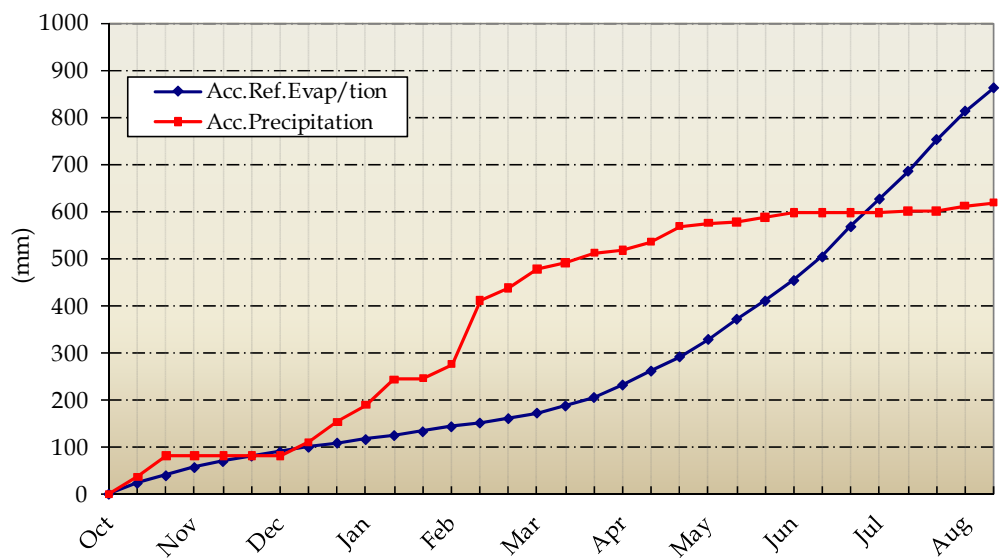


Tripoli

1st 10-day period (1-10/08/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	28.5	32.2	34.0	36.0	37.1	37.1	38.0	34.7	33.7	34.2	31.6	30.8
	Min	17.6	15.8	14.5	15.4	16.0	15.7	17.1	20.3	17.2	16.2	16.6	14.6	14.8
Relative Humidity	Max	93	91	93	56	89	76	42	56	69	66	73	91	-
	Min	28	33	18	21	16	14	13	13	17	18	19	33	-
Soil Temperature at 10 cm	06 UTC	23.8	22.2	21.4	-	23.8	24.6	26.4	27.0	26.2	27.2	24.7	24.4	25.8
	12 UTC	30.6	27.4	28.8	31.2	32.0	33.0	33.6	34.0	34.0	34.0	31.9	31.6	28.5
Sunshine Duration		6.1	4.7	-	9.0	10.7	12.8	12.3	9.6	11.3	8.9	9.5	9.7	10.5
Precipitation		4.2	1.8		0.0							6.0	17.9	6.7
Evaporation		3.8	-	-	5.9	8.8	14.5	6.6	11.9	9.4	3.1	-	63.7	66.4
Growing Degrees	5	19.4	17.2	18.4	19.7	21.0	21.4	22.1	24.2	21.0	20.0	204.2	181.0	178.4
	10	14.4	12.2	13.4	14.7	16.0	16.4	17.1	19.2	16.0	15.0	154.2	131.0	128.4

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.2	45.3	53.5
Precipitation - Reference Evapotranspiration	-43.2	-27.4	-46.8
Number of Rainy Days	2.0	3.0	1.1
Number of Dry Days	0.0	46.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

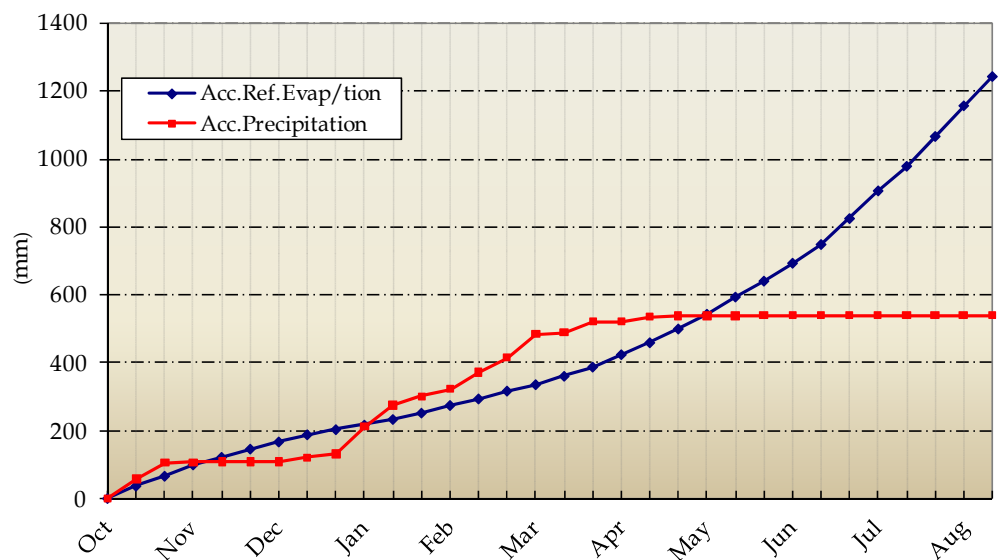


Tympaki

1st 10-day period (1-10/08/2012)		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	34.8	35.4	36.8	37.0	38.4	37.0	39.4	39.4	36.6	36.9	33.9	32.6
	Min	23.6	21.6	20.6	28.4	21.4	21.6	25.6	28.6	25.0	24.6	24.1	21.0	20.7
Relative Humidity	Max	61	56	83	82	70	44	58	54	68	83	66	60	-
	Min	19	17	17	18	14	14	31	10	13	24	18	24	-
Soil Temperature at 10 cm	06 UTC	32.4	31.8	31.0	31.2	32.4	32.2	33.0	34.0	33.6	33.4	32.5	31.0	31.1
	12 UTC	36.6	36.6	36.4	37.4	37.4	37.6	37.8	39.0	39.0	37.8	37.6	36.0	35.3
Sunshine Duration		12.7	12.6	12.7	12.8	12.6	12.6	12.7	12.5	12.1	12.1	12.5	12.8	12.0
Precipitation														
Evaporation		14.6	14.4	15.4	12.9	16.3	18.4	11.4	15.1	13.7	13.7	145.9	128.7	121.2
Growing Degrees	5	24.1	23.2	23.0	27.6	24.2	25.0	26.3	29.0	27.2	25.6	255.2	224.5	215.8
	10	19.1	18.2	18.0	22.6	19.2	20.0	21.3	24.0	22.2	20.6	205.2	174.5	166.0

1st 10-day period (1-10/08/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	86.1	81.2	64.7
Precipitation - Reference Evapotranspiration	-86.1	-81.2	-64.7
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	85.0	74.0	-

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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