



AGROMETEOROLOGICAL BULLETIN

*October 2012
2nd 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
Division of Climatology-Applications
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Helliniko, Athens

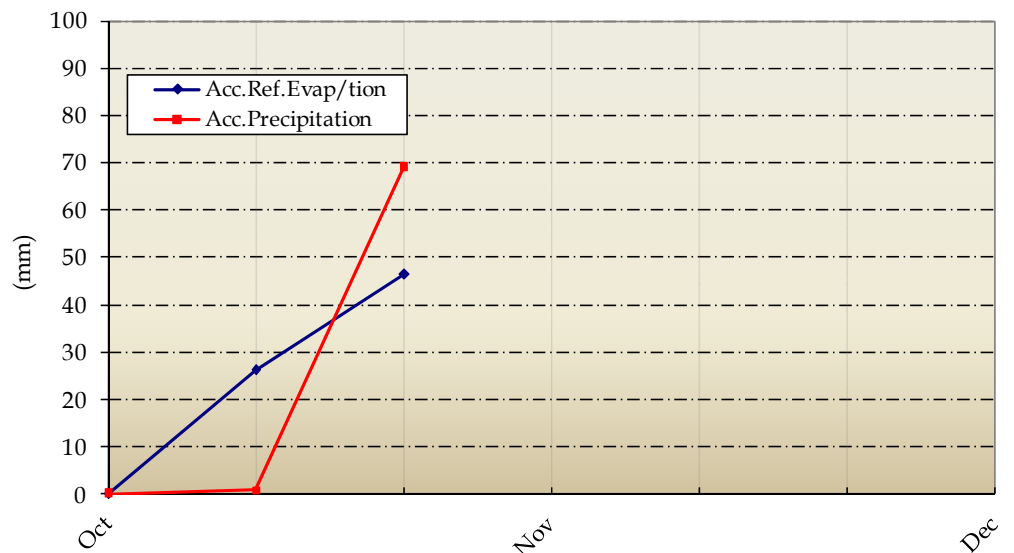
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www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Agrinio

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	26.8	25.6	23.0	23.0	28.8	27.8	28.0	28.0	27.8	26.6	20.8	24.9
	Min	15.0	14.6	17.0	17.4	15.6	14.8	15.4	14.0	14.6	11.6	15.0	7.9	11.5
Relative Humidity	Max	93	92	98	96	98	96	98	95	85	95	95	89	-
	Min	45	49	60	90	70	54	59	52	43	40	56	47	-
Soil Temperature at 10 cm	06 UTC	22.2	21.8	22.4	22.4	21.0	20.0	20.6	20.6	20.6	19.6	21.1	15.7	17.3
	12 UTC	24.0	23.6	23.6	22.6	19.6	21.4	22.0	22.0	22.0	21.6	22.2	17.6	20.9
Sunshine Duration		9.6	8.0	4.6	1.4	3.6	2.5	7.9	9.4	10.1	9.8	6.7	7.7	6.5
Precipitation				8.6	16.8	30.8	12.0					68.2	97.6	29.2
Evaporation		3.8	3.4	1.9	2.9	1.5	2.6	3.2	3.2	2.6	3.7	28.8	27.6	33.7
Growing Degrees	5	16.0	15.7	16.3	15.2	14.3	16.8	16.6	16.0	16.3	14.7	157.9	93.2	131.9
	10	11.0	10.7	11.3	10.2	9.3	11.8	11.6	11.0	11.3	9.7	107.9	43.2	81.9

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.2	19.0	21.9
Precipitation - Reference Evapotranspiration	48.0	78.6	7.3
Number of Rainy Days	4.0	3.0	2.7
Number of Dry Days	2.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

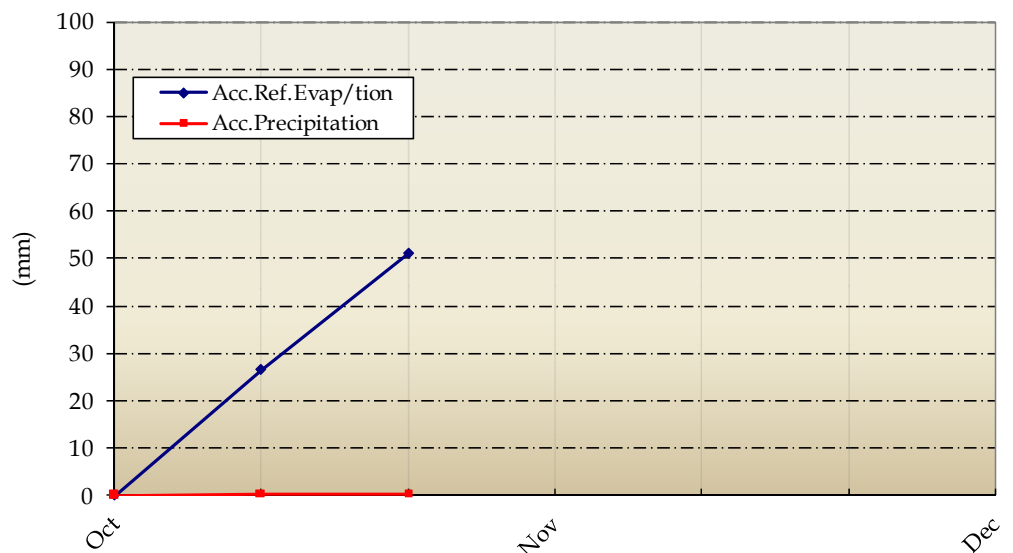


Alexandroupoli

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.0	23.8	23.8	26.2	25.0	25.4	27.0	26.8	24.8	23.6	24.9	15.6	20.8
	Min	11.8	12.4	12.0	17.0	19.6	15.6	16.8	16.4	14.8	11.4	14.8	8.3	10.8
Relative Humidity	Max	81	100	97	92	91	94	91	74	79	88	89	90	-
	Min	37	56	68	68	64	68	62	30	29	34	52	55	-
Soil Temperature at 10 cm	06 UTC	19.4	19.0	19.4	20.6	22.4	21.4	22.0	21.6	20.6	19.2	20.6	13.1	15.2
	12 UTC	21.4	21.6	21.2	22.6	24.0	23.4	23.8	21.8	22.4	21.2	22.3	14.2	18.0
Sunshine Duration		7.5	11.0	5.2	7.6	8.9	7.9	10.3	10.0	10.3	9.5	8.8	3.8	5.9
Precipitation				0.0								0.0	23.5	15.0
Evaporation		2.6	4.5	0.6	0.6	4.7	2.0	3.8	7.5	5.6	5.0	36.9	-	42.1
Growing Degrees	5	12.4	13.1	12.9	16.6	17.3	15.5	16.9	16.6	14.8	12.5	148.6	69.5	107.7
	10	7.4	8.1	7.9	11.6	12.3	10.5	11.9	11.6	9.8	7.5	98.6	25.1	58.4

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.4	15.7	22.7
Precipitation - Reference Evapotranspiration	-24.4	7.8	-7.7
Number of Rainy Days	0.0	4.0	1.9
Number of Dry Days	12.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

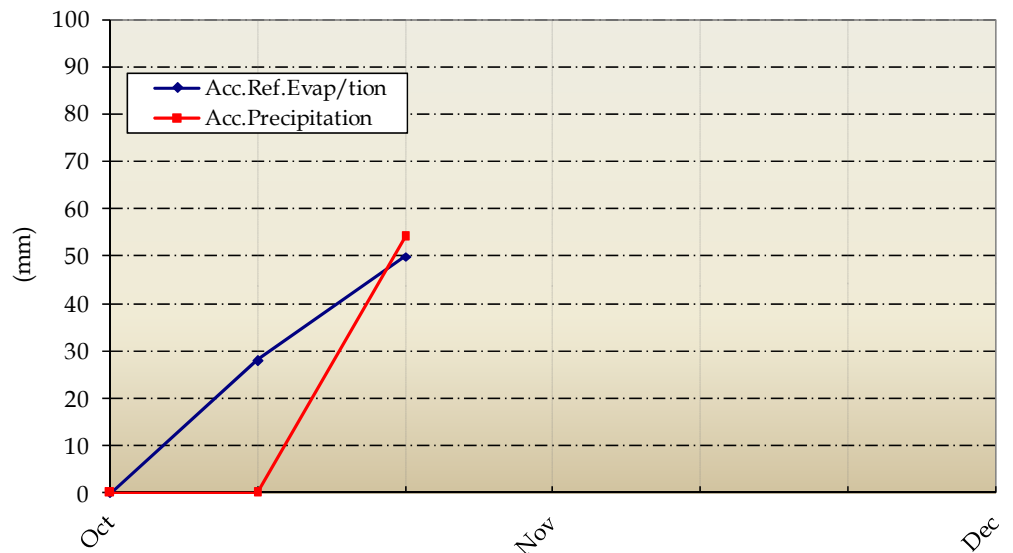


Andravida

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.3	26.3	25.5	25.2	25.7	26.9	26.0	25.9	27.4	25.7	26.1	20.6	24.1
	Min	14.4	17.0	16.8	17.3	16.4	16.0	19.0	14.8	14.0	12.8	15.8	10.2	13.2
Relative Humidity	Max	89	87	93	96	91	92	92	93	91	91	92	90	-
	Min	46	54	49	65	57	55	69	57	39	43	53	48	-
Soil Temperature at 10 cm	06 UTC	21.2	21.8	21.2	21.2	20.4	19.6	21.0	20.4	20.2	19.4	20.6	14.6	18.6
	12 UTC	26.2	24.8	23.8	23.4	20.4	22.0	23.2	23.6	24.4	23.6	23.5	18.9	21.5
Sunshine Duration		7.9	6.4	3.2	3.1	3.6	2.1	3.9	8.9	9.0	9.1	5.7	6.9	7.1
Precipitation				16.1	28.6	9.3						54.0	218.0	23.9
Evaporation		4.6	1.5	0.5	0.5	3.1	1.1	1.0	2.0	3.3	3.9	21.5	25.2	36.4
Growing Degrees	5	15.4	16.7	16.2	16.3	16.1	16.5	17.5	15.4	15.7	14.3	159.7	104.1	136.6
	10	10.4	11.7	11.2	11.3	11.1	11.5	12.5	10.4	10.7	9.3	109.7	54.1	86.6

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.9	21.3	22.5
Precipitation - Reference Evapotranspiration	32.1	196.7	1.4
Number of Rainy Days	3.0	2.0	2.6
Number of Dry Days	27.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

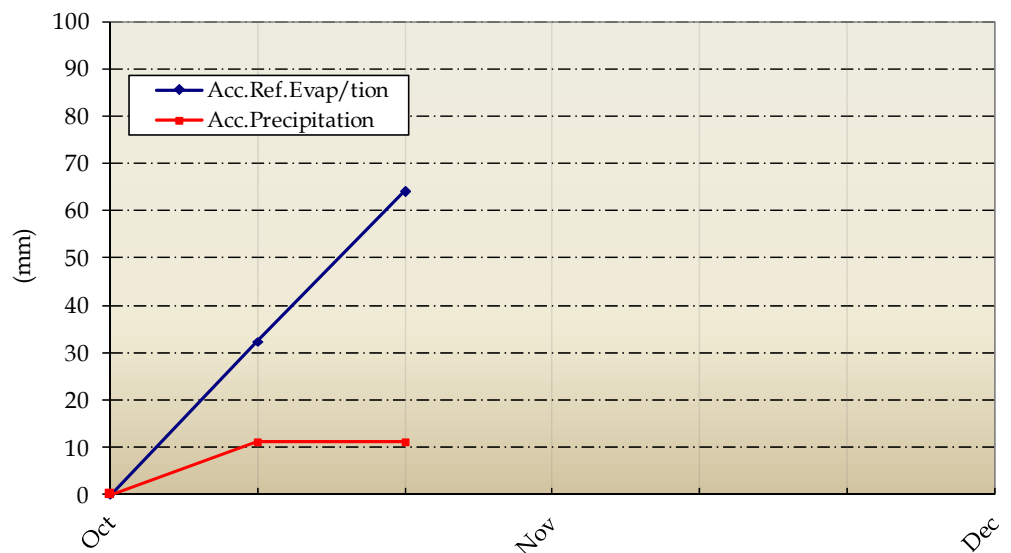


Iraklio

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.0	25.4	25.8	26.4	32.0	27.8	27.6	26.2	25.2	24.6	26.6	-	24.0
	Min	16.8	17.4	18.4	18.4	20.6	22.4	19.0	19.8	22.4	19.2	19.4	-	17.1
Relative Humidity	Max	90	92	86	88	73	95	95	94	81	82	88	-	-
	Min	68	66	66	63	39	53	56	69	68	52	60	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.9	8.3	8.7	9.0	8.0	9.0	8.6	8.1	7.5	8.6	8.5	-	6.5
Precipitation													-	12.5
Evaporation		2.7	1.0	4.2	3.0	3.1	3.4	2.5	3.5	4.3	5.0	32.7	-	49.3
Growing Degrees	5	15.9	16.4	17.1	17.4	21.3	20.1	18.3	18.0	18.8	16.9	180.2	-	155.9
	10	10.9	11.4	12.1	12.4	16.3	15.1	13.3	13.0	13.8	11.9	130.2	-	105.9

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.8	-	-
Precipitation - Reference Evapotranspiration	-31.8	-	12.5
Number of Rainy Days	0.0	-	1.7
Number of Dry Days	10.0	-	-

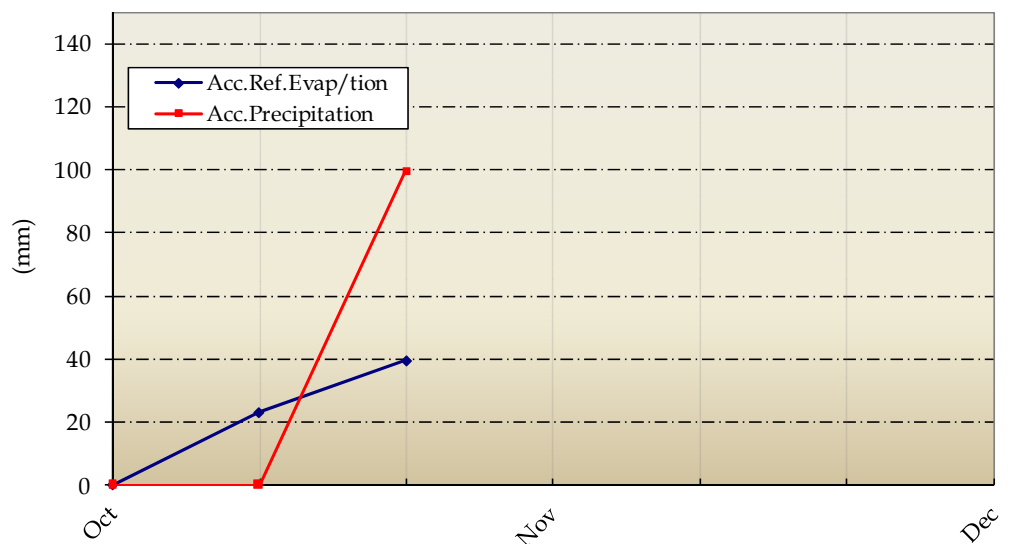
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.0	22.0	21.8	18.8	21.6	18.4	24.0	26.2	25.0	25.6	22.7	17.4	20.6
	Min	13.0	10.0	12.0	16.2	14.0	12.5	13.2	10.0	8.0	6.0	11.5	4.9	8.9
Relative Humidity	Max	93	98	98	96	95	98	98	97	89	97	96	88	-
	Min	41	58	65	80	61	88	48	41	46	37	56	45	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	14.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.3
Sunshine Duration		7.9	3.6	2.6	0.0	3.0	0.0	5.4	5.6	7.5	5.8	4.1	5.8	5.3
Precipitation			0.0	27.4	22.8	5.9	43.6					99.7	38.8	37.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	30.1
Growing Degrees	5	13.5	11.0	11.9	12.5	12.8	10.5	13.6	13.1	11.5	10.8	121.2	61.2	98.7
	10	8.5	6.0	6.9	7.5	7.8	5.5	8.6	8.1	6.5	5.8	71.2	20.0	49.1

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.5	17.5	17.6
Precipitation - Reference Evapotranspiration	83.2	21.3	19.5
Number of Rainy Days	4.0	2.0	3.4
Number of Dry Days	22.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

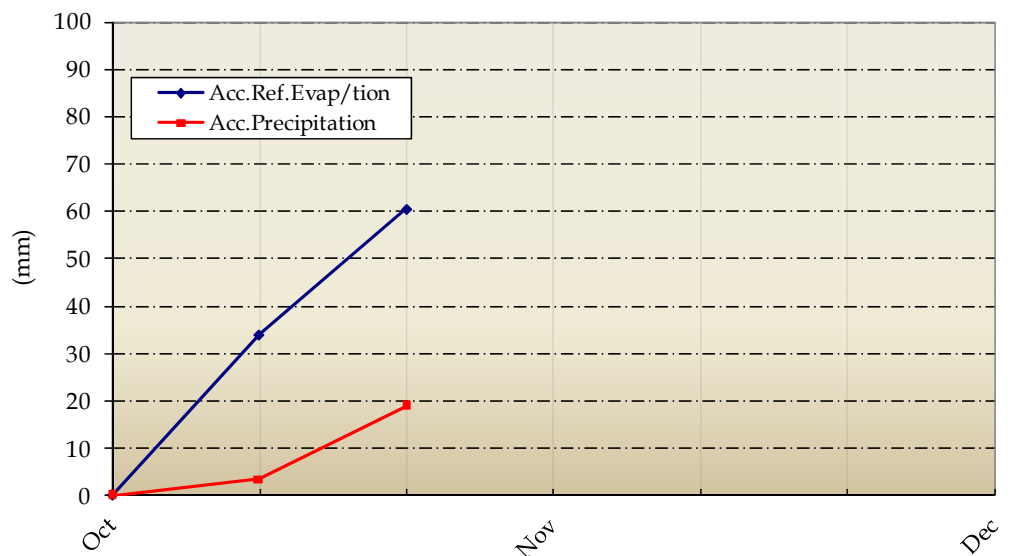


Kalamata

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.9	24.8	25.3	26.0	27.4	28.4	31.9	28.7	27.7	26.4	27.2	21.3	24.7
	Min	15.0	15.3	16.1	16.0	15.2	17.9	18.5	15.5	15.8	13.8	15.9	9.5	13.1
Relative Humidity	Max	94	93	95	93	93	94	94	90	87	90	92	92	-
	Min	54	62	52	60	56	54	35	34	35	39	48	51	-
Soil Temperature at 10 cm	06 UTC	21.0	21.0	21.0	20.6	20.6	22.0	22.0	21.2	21.2	20.6	21.1	17.4	18.6
	12 UTC	22.4	22.2	21.0	22.2	22.0	22.6	23.0	23.0	23.2	23.8	22.5	18.8	20.9
Sunshine Duration		8.5	4.8	2.9	7.6	6.5	6.7	5.8	8.6	9.4	9.2	7.0	7.3	6.8
Precipitation				8.9	6.0	0.6						15.5	48.1	24.4
Evaporation		4.7	1.7	1.5	2.8	7.2	3.4	2.6	3.6	4.6	4.2	36.3	-	39.0
Growing Degrees	5	15.5	15.1	15.7	16.0	16.3	18.2	20.2	17.1	16.8	15.1	165.8	103.7	138.6
	10	10.5	10.1	10.7	11.0	11.3	13.2	15.2	12.1	11.8	10.1	115.8	53.7	88.6

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.5	22.8	24.3
Precipitation - Reference Evapotranspiration	-11.0	25.3	0.1
Number of Rainy Days	3.0	2.0	2.7
Number of Dry Days	3.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

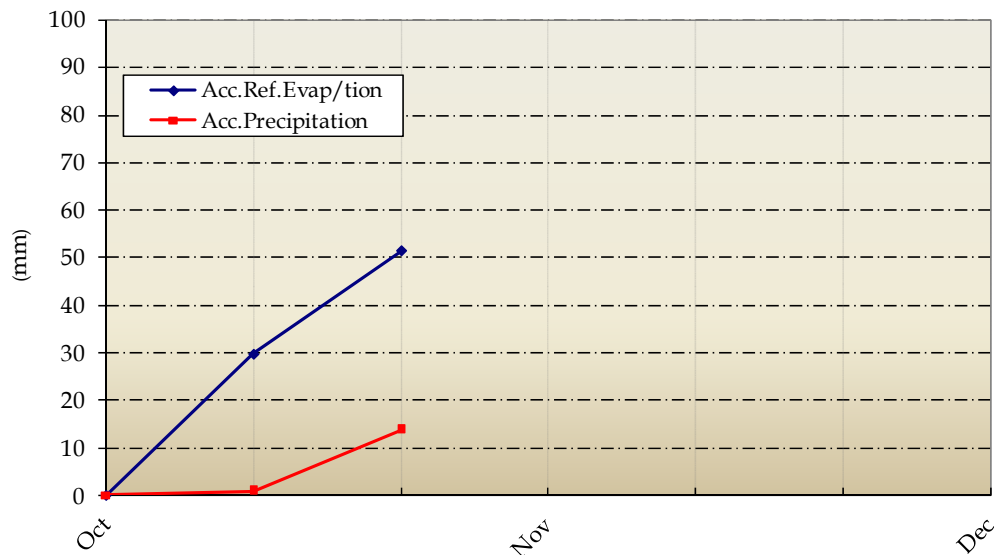


Larisa

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.3	27.8	28.8	26.7	21.8	25.2	29.6	27.2	26.2	27.0	26.6	18.6	23.0
	Min	16.3	11.9	15.8	16.8	12.1	11.4	13.6	12.0	10.7	9.9	13.0	6.7	10.1
Relative Humidity	Max	91	92	91	91	99	100	100	98	97	98	96	91	-
	Min	39	37	31	40	63	56	36	37	39	36	41	38	-
Soil Temperature at 10 cm	06 UTC	21.4	20.8	21.4	21.8	21.0	19.6	20.0	20.2	19.6	18.4	20.4	15.4	17.2
	12 UTC	22.2	22.2	22.4	22.4	21.0	20.8	21.2	21.4	21.2	20.2	21.5	16.8	18.6
Sunshine Duration		6.4	7.7	7.8	2.1	2.5	3.0	7.9	6.8	7.7	7.5	5.9	3.5	5.6
Precipitation		0.1		0.0	0.0	10.2	2.4	0.2				12.9	25.5	14.1
Evaporation		4.7	5.2	4.1	0.7	3.8	0.8	5.5	1.5	1.6	7.0	34.9	24.7	31.3
Growing Degrees	5	15.8	14.9	17.3	16.8	12.0	13.3	16.6	14.6	13.5	13.5	148.1	76.8	115.6
	10	10.8	9.9	12.3	11.8	7.0	8.3	11.6	9.6	8.5	8.5	98.1	28.9	65.8

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.7	17.2	20.6
Precipitation - Reference Evapotranspiration	-8.8	8.3	-6.5
Number of Rainy Days	4.0	3.0	2.4
Number of Dry Days	0.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

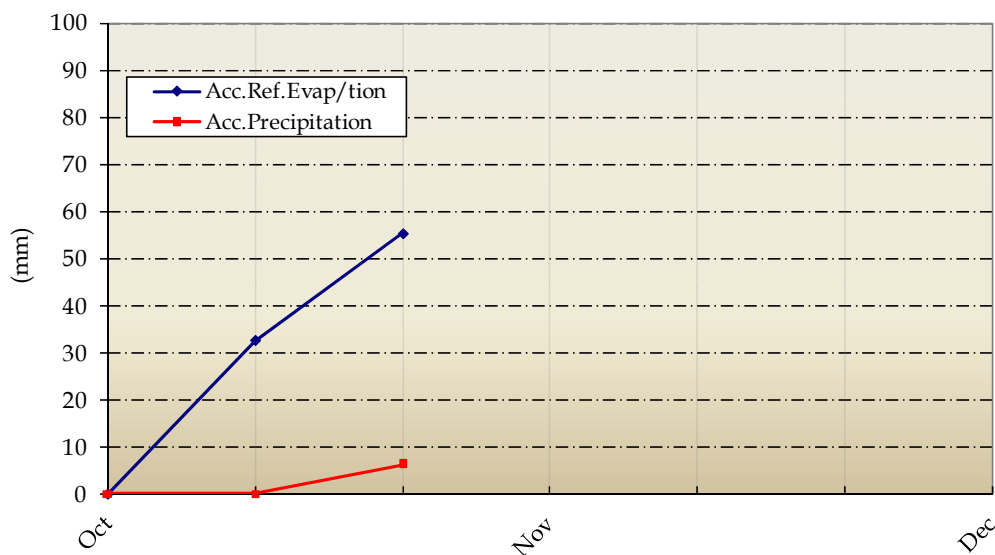


Mikra

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.5	25.4	25.8	26.0	23.2	23.6	27.0	25.0	25.0	24.9	25.0	17.5	21.6
	Min	14.2	13.4	17.0	17.8	15.8	13.8	15.6	11.2	13.4	12.3	14.4	8.5	11.6
Relative Humidity	Max	84	78	76	84	87	90	90	87	87	87	85	78	-
	Min	30	47	42	49	64	68	40	49	47	44	48	43	-
Soil Temperature at 10 cm	06 UTC	20.4	20.2	21.2	22.0	21.2	19.4	20.0	16.6	19.0	18.4	19.8	13.7	16.5
	12 UTC	23.4	23.6	26.2	24.0	23.6	21.6	26.2	22.0	26.2	26.0	24.3	15.8	19.4
Sunshine Duration		9.7	5.4	7.8	6.6	5.1	1.0	9.5	9.0	9.6	9.1	7.3	5.3	5.3
Precipitation				0.0	0.0	5.6	0.6					6.2	8.9	13.0
Evaporation		5.4	4.2	2.6	7.0	2.3	3.6	2.2	3.8	3.8	5.2	40.1	27.0	31.8
Growing Degrees	5	14.4	14.4	16.4	16.9	14.5	13.7	16.3	13.1	14.2	13.6	147.5	79.6	116.2
	10	9.4	9.4	11.4	11.9	9.5	8.7	11.3	8.1	9.2	8.6	97.5	31.1	66.2

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.9	23.2	20.4
Precipitation - Reference Evapotranspiration	-16.7	-14.3	-7.4
Number of Rainy Days	2.0	2.0	2.0
Number of Dry Days	24.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

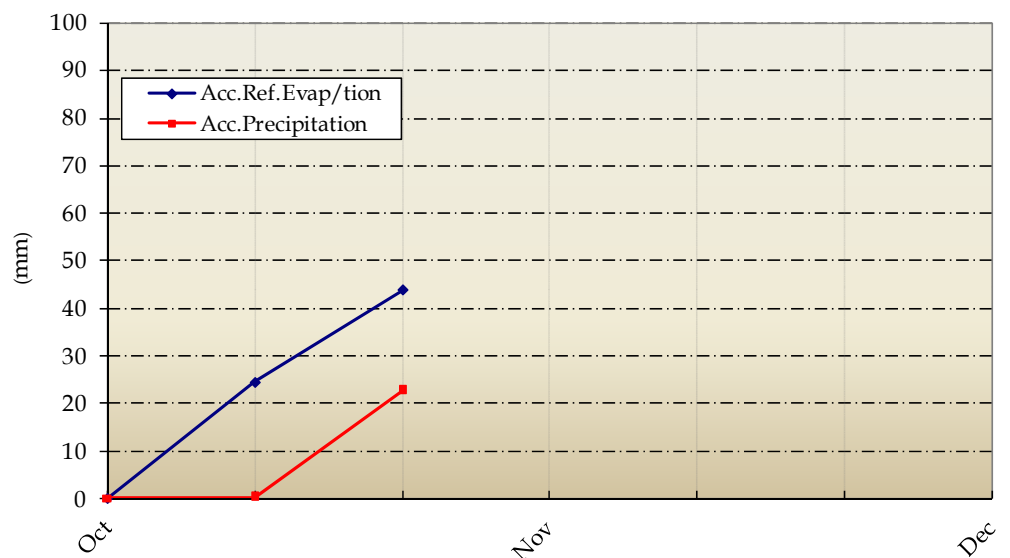


Tripoli

2nd 10-day period (11-20/10/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.4	23.1	23.1	24.7	24.1	26.5	26.7	25.2	24.7	24.6	24.5	17.3	21.3
	Min	8.9	12.4	11.1	12.0	9.9	12.6	11.5	9.2	10.1	6.0	10.4	4.3	8.2
Relative Humidity	Max	94	96	95	96	95	95	95	94	85	95	94	96	-
	Min	49	46	54	45	59	40	37	39	37	27	43	49	-
Soil Temperature at 10 cm	06 UTC	17.8	17.6	18.0	17.4	16.0	17.2	17.2	15.8	16.4	15.0	16.8	10.8	15.5
	12 UTC	21.4	21.4	20.2	21.8	20.4	22.4	21.4	21.0	20.4	20.2	21.1	14.7	17.2
Sunshine Duration		4.7	4.2	4.0	7.6	4.6	7.5	4.7	8.6	9.2	8.8	6.4	5.7	6.8
Precipitation		3.2		0.7	17.3	1.2						22.4	43.9	15.9
Evaporation		1.2	2.2	0.7	0.0	1.4	1.7	2.1	2.4	2.8	3.2	17.7	-	28.1
Growing Degrees	5	10.7	12.8	12.1	13.4	12.0	14.6	14.1	12.2	12.4	10.3	124.4	57.7	97.5
	10	5.7	7.8	7.1	8.4	7.0	9.6	9.1	7.2	7.4	5.3	74.4	17.2	48.2

2nd 10-day period (11-20/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.3	16.0	21.4
Precipitation - Reference Evapotranspiration	3.1	27.9	-5.5
Number of Rainy Days	4.0	5.0	2.7
Number of Dry Days	6.0	0.0	-

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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HELLENIC NATIONAL METEOROLOGICAL SERVICE

Division of Climatology-Applications

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The present bulletin was designed and implemented under the support of Water Resources Management Division of Agriculture University of Athens