



AGROMETEOROLOGICAL BULLETIN

September 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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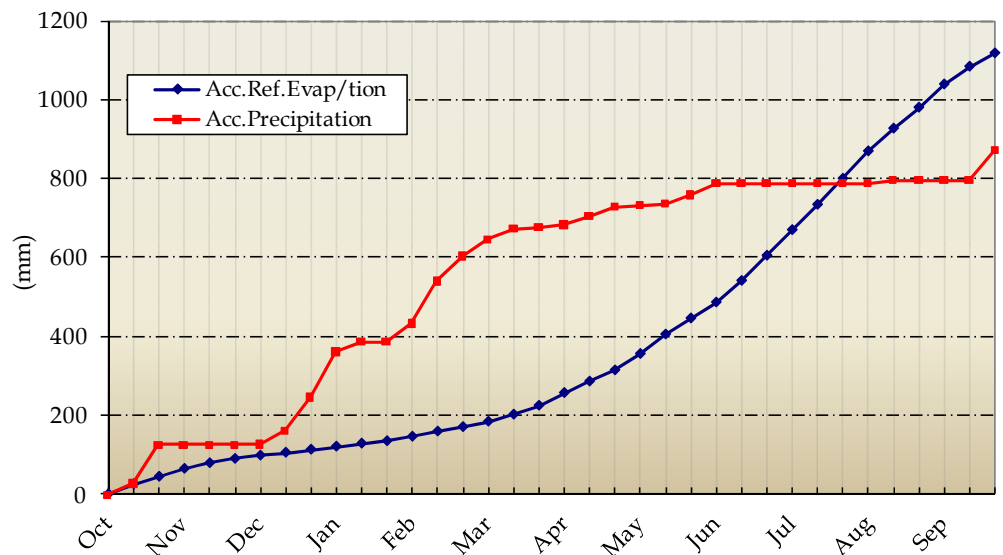
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www.emy.gov.gr
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Agrinio

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	30.6	30.0	24.6	22.0	27.6	28.0	29.4	29.4	28.4	28.2	34.6	30.1
	Min	14.4	16.5	15.6	19.0	18.0	14.6	16.6	16.2	18.5	15.8	16.5	16.5	14.7
Relative Humidity	Max	62	74	88	91	94	85	92	94	90	92	86	87	-
	Min	28	40	38	71	79	51	48	38	45	55	49	27	-
Soil Temperature at 10 cm	06 UTC	26.2	28.0	27.2	25.0	23.4	21.0	22.6	23.4	24.2	23.4	24.4	26.4	22.0
	12 UTC	31.6	31.4	30.8	24.2	22.6	24.6	25.6	26.4	26.8	26.0	27.0	30.2	27.0
Sunshine Duration		11.0	10.0	9.8	0.4	0.0	9.5	8.8	8.4	10.1	7.9	7.6	9.4	8.7
Precipitation					26.6	46.6					1.3	74.5	50.0	12.0
Evaporation		6.1	6.0	9.5	3.0	2.6	3.2	5.2	5.6	4.8	4.4	50.4	-	53.3
Growing Degrees	5	18.2	18.6	17.8	16.8	15.0	16.1	17.3	17.8	19.0	17.1	173.6	205.3	174.1
	10	13.2	13.6	12.8	11.8	10.0	11.1	12.3	12.8	14.0	12.1	123.6	155.3	124.1

2nd 10-day period (11-20/09/2012)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	34.0	39.6	35.5
Precipitation - Reference Evapotranspiration	40.5	10.4	-23.5
Number of Rainy Days	3.0	1.0	1.7
Number of Dry Days	42.0	12.0	-

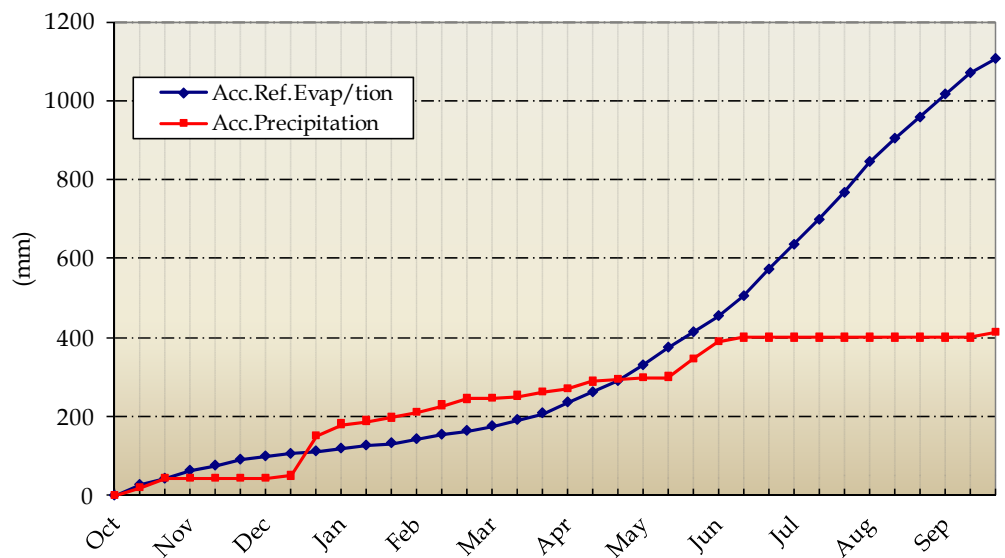
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.8	28.0	25.6	26.6	29.4	30.6	29.0	26.8	27.6	26.4	27.8	32.2	26.5
	Min	18.0	16.6	14.0	15.4	19.2	18.2	19.6	18.6	18.6	17.6	17.6	17.4	13.8
Relative Humidity	Max	72	91	91	82	90	80	87	83	81	92	85	74	-
	Min	35	32	54	57	38	39	44	51	52	61	46	27	-
Soil Temperature at 10 cm	06 UTC	25.6	25.2	25.0	24.8	24.6	25.6	25.6	23.4	22.2	22.6	24.5	24.7	19.9
	12 UTC	28.0	27.0	27.4	27.4	28.0	27.0	27.6	24.6	25.2	25.8	26.8	27.5	23.7
Sunshine Duration		10.1	10.9	11.2	8.5	9.5	5.7	4.6	3.1	9.0	9.1	8.2	10.7	8.5
Precipitation							0.3	12.1	0.0			12.4		5.2
Evaporation		9.3	15.5	8.6	3.3	5.6	7.2	1.1	4.5	4.8	5.0	64.9	90.8	66.6
Growing Degrees	5	17.9	17.3	14.8	16.0	19.3	19.4	19.3	17.7	18.1	17.0	176.8	198.1	151.3
	10	12.9	12.3	9.8	11.0	14.3	14.4	14.3	12.7	13.1	12.0	126.8	148.1	101.3

2nd 10-day period (11-20/09/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.0	46.4	37.1
Precipitation - Reference Evapotranspiration	-23.6	-46.4	-31.9
Number of Rainy Days	2.0	0.0	0.9
Number of Dry Days	18.0	40.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

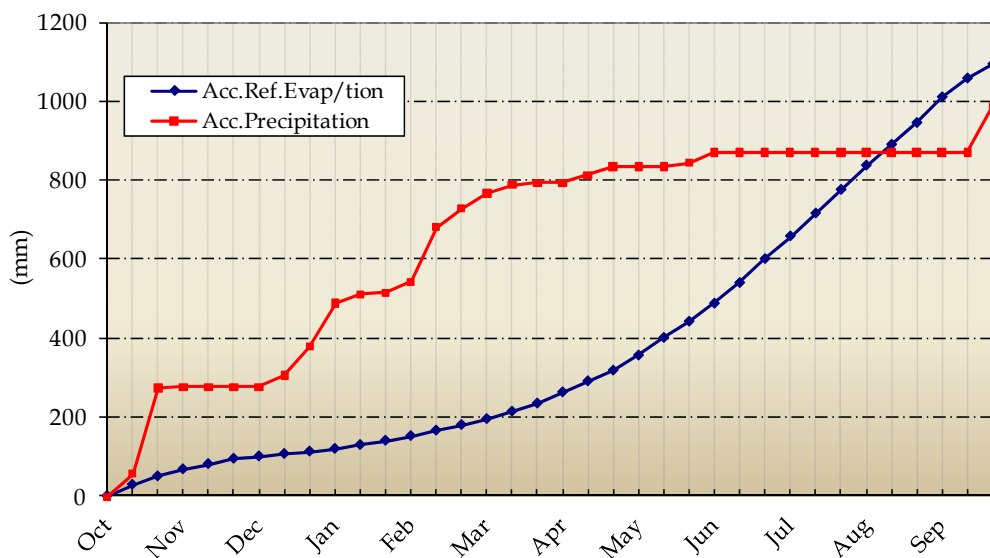


Andravida

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.0	29.2	29.0	27.2	22.4	25.8	26.3	27.2	27.0	27.9	27.3	31.4	28.2
	Min	15.5	17.4	19.1	19.7	17.6	15.4	17.0	17.2	18.9	18.5	17.6	18.8	16.5
Relative Humidity	Max	78	82	83	93	91	91	96	90	88	88	88	88	-
	Min	25	39	49	53	78	53	49	49	50	54	50	38	-
Soil Temperature at 10 cm	06 UTC	25.4	26.0	26.4	25.2	22.8	20.0	21.6	22.0	22.6	22.2	23.4	26.6	23.4
	12 UTC	32.6	32.8	33.0	24.2	22.8	25.8	25.6	27.2	27.2	-	27.9	32.4	26.9
Sunshine Duration		10.8	10.2	10.3	1.0	0.0	7.3	9.2	9.9	8.7	8.5	7.6	9.2	9.1
Precipitation					96.0	20.9						116.9	3.4	7.0
Evaporation		15.0	6.8	12.1	-	-	5.5	5.4	4.2	4.8	6.0	-	56.9	56.3
Growing Degrees	5	18.3	18.3	19.1	18.5	15.0	15.6	16.7	17.2	18.0	18.2	174.7	201.1	173.6
	10	13.3	13.3	14.1	13.5	10.0	10.6	11.7	12.2	13.0	13.2	124.7	151.1	123.6

2nd 10-day period (11-20/09/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.3	42.7	36.2
Precipitation - Reference Evapotranspiration	80.6	-39.3	-29.2
Number of Rainy Days	2.0	1.0	1.1
Number of Dry Days	107.0	96.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

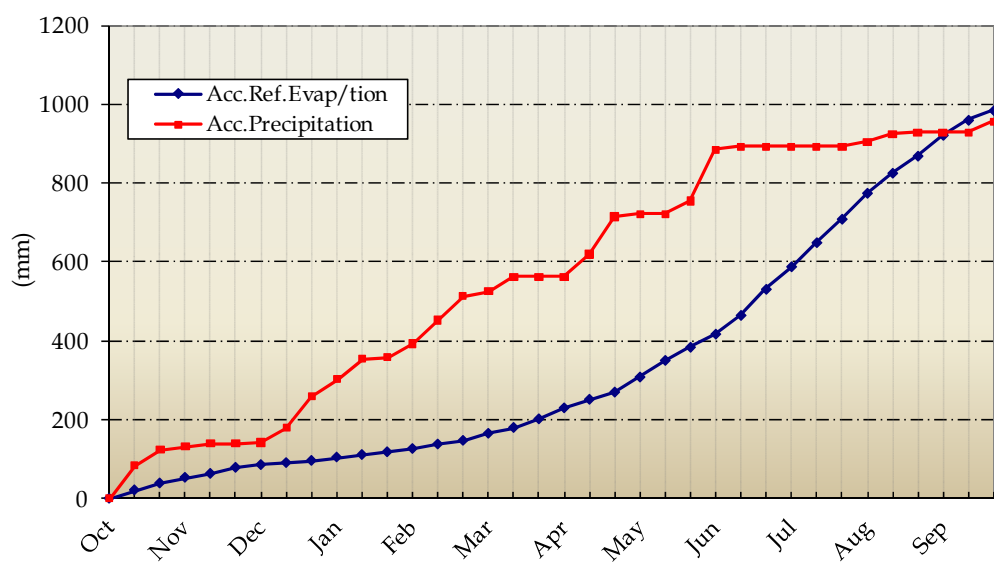


Ioannina

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.0	28.8	27.2	22.6	19.6	19.6	25.0	26.2	26.0	24.0	24.8	-	26.5
	Min	14.4	11.0	12.6	15.2	16.4	14.5	14.6	12.0	15.0	14.0	14.0	-	12.2
Relative Humidity	Max	76	95	93	96	96	94	96	92	96	98	93	-	-
	Min	25	30	41	63	77	66	47	45	54	53	50	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.1
Sunshine Duration		6.1	7.9	6.2	0.0	0.0	0.0	4.4	5.9	6.5	4.0	4.1	-	6.9
Precipitation		0.0			14.7	6.6	0.5	0.6	0.3		3.7	26.4	-	16.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	43.6
Growing Degrees	5	16.7	14.9	14.9	13.9	13.0	12.1	14.8	14.1	15.5	14.0	143.9	-	143.6
	10	11.7	9.9	9.9	8.9	8.0	7.1	9.8	9.1	10.5	9.0	93.9	-	93.6

2nd 10-day period (11-20/09/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.6	-	28.7
Precipitation - Reference Evapotranspiration	1.8	-	-12.3
Number of Rainy Days	6.0	-	2.1
Number of Dry Days	27.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

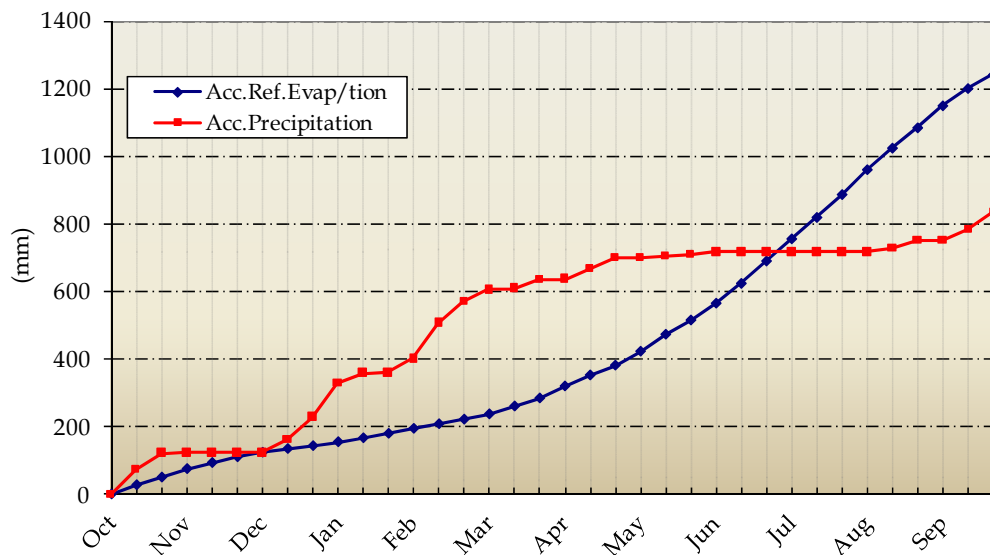


Kalamata

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.3	28.2	28.4	30.0	26.4	27.3	28.8	27.4	27.8	29.6	28.4	30.7	28.6
	Min	16.5	17.3	17.3	22.1	17.6	17.0	16.5	16.0	17.9	16.8	17.5	17.9	15.9
Relative Humidity	Max	79	89	93	80	95	95	92	93	93	91	90	90	-
	Min	29	47	49	52	70	51	40	48	50	42	48	38	-
Soil Temperature at 10 cm	06 UTC	24.4	23.8	23.6	24.2	24.6	22.0	22.4	22.6	22.6	22.6	23.3	24.4	22.6
	12 UTC	26.0	25.0	26.0	26.0	23.2	24.0	24.6	24.6	25.0	24.4	24.9	26.4	25.8
Sunshine Duration		11.3	10.2	10.2	7.1	4.4	8.5	9.9	9.6	7.5	9.7	8.8	10.2	8.7
Precipitation						33.8	16.8					50.6	40.8	6.3
Evaporation		3.4	5.8	9.6	4.2	10.1	8.2	8.9	3.1	10.0	4.8	68.1	55.5	60.4
Growing Degrees	5	18.4	17.8	17.9	21.1	17.0	17.2	17.7	16.7	17.9	18.2	179.6	193.0	172.4
	10	13.4	12.8	12.9	16.1	12.0	12.2	12.7	11.7	12.9	13.2	129.6	143.0	122.4

2nd 10-day period (11-20/09/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.4	46.2	38.1
Precipitation - Reference Evapotranspiration	10.2	-5.4	-31.8
Number of Rainy Days	2.0	1.0	1.0
Number of Dry Days	6.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

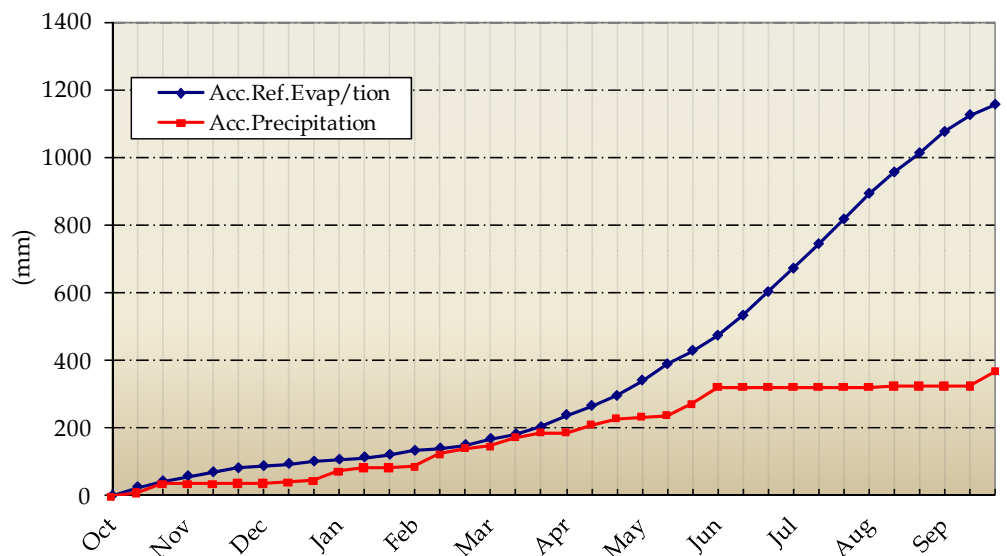


Larisa

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.1	29.4	31.2	24.5	20.4	25.7	26.4	26.4	29.1	30.4	27.3	32.7	29.0
	Min	14.8	14.6	16.0	18.4	17.8	16.6	17.2	18.4	16.6	16.3	16.7	16.7	14.0
Relative Humidity	Max	71	80	83	97	98	98	97	95	97	98	91	82	-
	Min	30	29	27	64	88	52	46	49	38	26	45	31	-
Soil Temperature at 10 cm	06 UTC	25.8	26.0	26.0	26.4	24.2	23.2	23.6	24.0	23.2	23.8	24.6	24.7	22.0
	12 UTC	27.4	27.6	26.0	-	24.2	24.0	24.6	24.8	24.8	25.4	25.4	26.7	24.1
Sunshine Duration		9.5	9.1	9.8	0.2	0.0	5.0	2.5	1.4	8.5	7.1	5.3	9.0	8.3
Precipitation					11.1	29.5	1.0	0.7				42.3	5.0	12.0
Evaporation		11.2	8.4	4.2	3.7	1.2	3.1	2.2	2.4	6.9	3.9	47.2	86.4	61.4
Growing Degrees	5	17.0	17.0	18.6	16.5	14.1	16.2	16.8	17.4	17.9	18.4	169.7	196.7	165.0
	10	12.0	12.0	13.6	11.5	9.1	11.2	11.8	12.4	12.9	13.4	119.7	146.7	115.0

2nd 10-day period (11-20/09/2012)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	30.9	43.1	38.0
Precipitation - Reference Evapotranspiration	11.4	-38.1	-26.0
Number of Rainy Days	4.0	1.0	1.2
Number of Dry Days	33.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

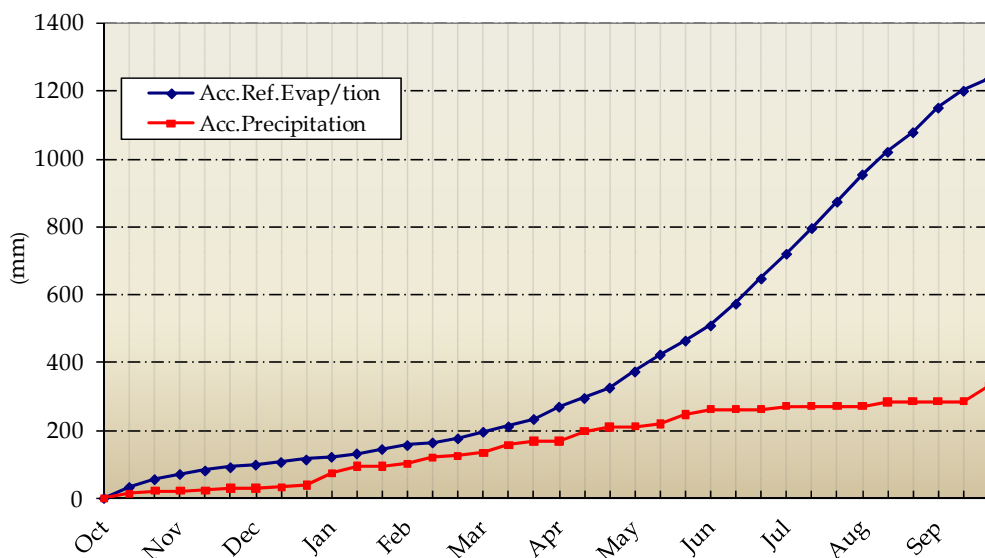


Mikra

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.8	26.9	28.2	27.8	22.4	24.0	23.8	26.4	26.6	26.6	26.0	-	27.5
	Min	18.6	17.7	16.0	19.8	19.2	17.9	18.5	18.4	18.0	18.0	18.2	-	15.2
Relative Humidity	Max	69	74	75	90	91	90	91	92	88	88	85	-	-
	Min	30	43	34	45	68	60	60	50	51	51	49	-	-
Soil Temperature at 10 cm	06 UTC	26.4	26.6	26.4	26.8	24.0	21.8	21.6	22.8	22.4	23.2	24.2	-	21.4
	12 UTC	30.8	30.8	30.2	28.4	24.0	24.4	23.0	25.8	26.4	26.4	27.0	-	25.2
Sunshine Duration		10.8	10.6	10.5	1.0	0.0	1.7	0.5	6.6	8.0	5.1	5.5	-	8.1
Precipitation					2.2	29.6	1.9	8.6	1.9		2.0	46.2	-	7.6
Evaporation		7.6	8.7	7.5	10.5	-	2.4	3.1	6.7	3.1	5.8	-	-	62.1
Growing Degrees	5	18.2	17.3	17.1	18.8	15.8	16.0	16.2	17.4	17.3	17.3	171.3	-	163.4
	10	13.2	12.3	12.1	13.8	10.8	11.0	11.2	12.4	12.3	12.3	121.3	-	113.4

2nd 10-day period (11-20/09/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	34.4	-	37.4
Precipitation - Reference Evapotranspiration	11.8	-	-29.8
Number of Rainy Days	6.0	-	1.4
Number of Dry Days	33.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

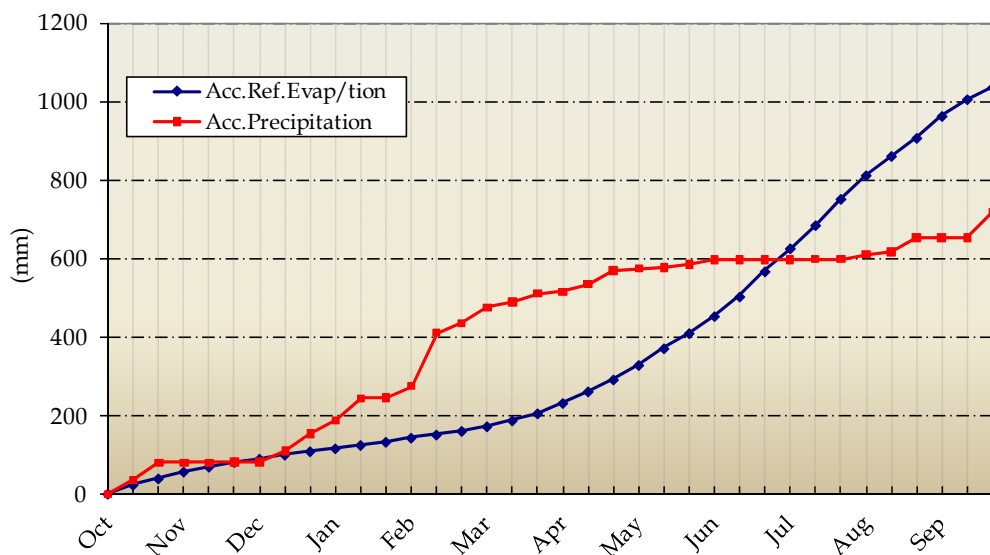


Tripoli

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.6	25.7	27.4	24.6	20.7	21.9	26.0	24.4	25.0	25.2	24.8	30.3	26.9
	Min	10.9	11.0	10.3	16.1	15.7	13.6	10.5	13.9	13.6	11.1	12.7	13.4	11.2
Relative Humidity	Max	69	84	91	-	96	96	96	95	95	94	91	84	-
	Min	22	33	22	56	72	52	32	42	42	36	41	23	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	22.1	20.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	27.2	22.5
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	10.0	8.5
Precipitation					2.3	30.3	32.4	0.2				65.2	7.2	5.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	58.4	40.3
Growing Degrees	5	14.3	13.4	13.9	15.4	13.2	12.8	13.3	14.2	14.3	13.2	137.6	168.5	140.2
	10	9.3	8.4	8.9	10.4	8.2	7.8	8.3	9.2	9.3	8.2	87.6	118.5	90.2

2nd 10-day period (11-20/09/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.3	38.9	34.4
Precipitation - Reference Evapotranspiration	34.9	-31.7	-28.5
Number of Rainy Days	4.0	1.0	1.0
Number of Dry Days	29.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

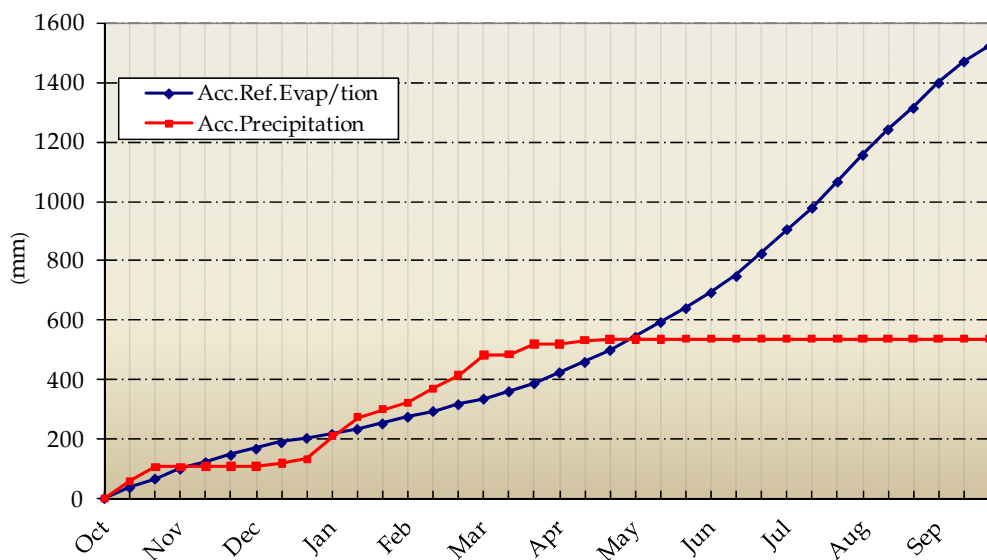


Tympaki

2nd 10-day period (11-20/09/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.8	31.0	28.8	30.8	30.8	33.4	29.2	27.6	27.6	27.8	29.6	31.1	28.9
	Min	20.6	18.4	17.4	18.0	18.2	19.6	20.6	18.4	18.0	18.4	18.8	18.5	18.0
Relative Humidity	Max	64	71	80	81	80	85	82	80	81	87	79	90	-
	Min	29	19	51	32	28	14	46	50	47	55	37	26	-
Soil Temperature at 10 cm	06 UTC	27.6	26.6	28.0	27.0	27.6	28.2	28.4	27.8	27.8	27.2	27.6	27.9	27.0
	12 UTC	31.0	31.6	32.0	32.2	-	-	33.4	32.8	32.4	32.4	32.2	32.9	30.9
Sunshine Duration		11.0	10.8	9.8	9.6	10.0	11.0	10.9	9.0	10.8	10.3	10.3	11.2	9.8
Precipitation														2.3
Evaporation		11.0	7.1	10.7	7.5	5.9	7.8	10.0	6.3	6.6	6.5	79.4	87.5	80.7
Growing Degrees	5	19.7	19.7	18.1	19.4	19.5	21.5	19.9	18.0	17.8	18.1	191.7	198.1	184.3
	10	14.7	14.7	13.1	14.4	14.5	16.5	14.9	13.0	12.8	13.1	141.7	148.1	134.3

2nd 10-day period (11-20/09/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.2	56.0	45.0
Precipitation - Reference Evapotranspiration	-51.2	-56.0	-42.7
Number of Rainy Days	0.0	0.0	0.2
Number of Dry Days	126.0	115.0	-

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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The present bulletin was designed and implemented under the support of Water Resources Management Division of Agriculture University of Athens (Professor A. Liakatas)