



AGROMETEOROLOGICAL BULLETIN

December 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



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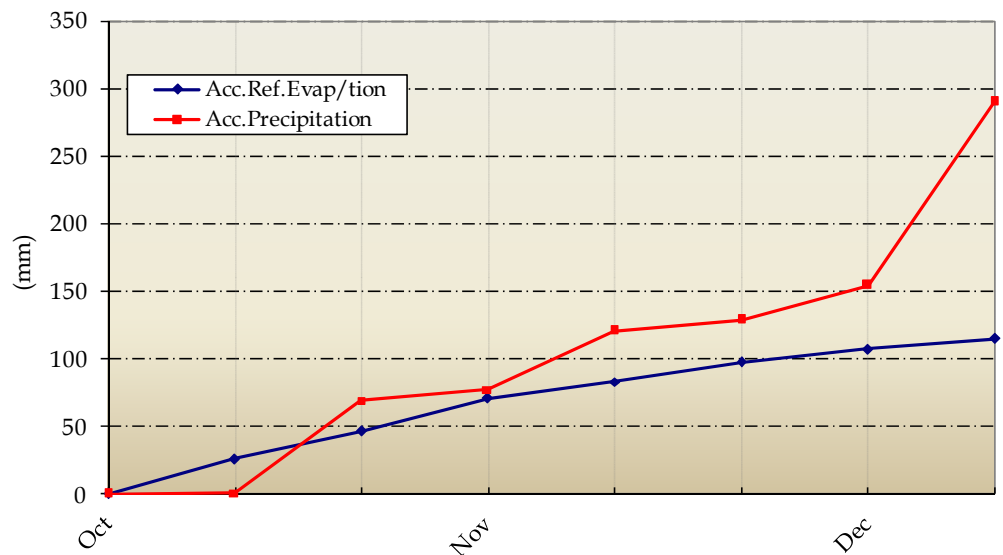
Agrinio

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.0	-	-	-	-	-	-	-	-	-	-	15.4	14.6
	Min	4.2	1.2	-1.4	1.2	-	-	10.0	8.0	3.0	0.2	3.3	7.0	4.3
Relative Humidity	Max	90	97	96	-	-	100	100	95	97	96	96	97	-
	Min	80	64	45	-	-	55	82	79	70	42	65	72	-
Soil Temperature at 10 cm	06 UTC	8.6	8.0	7.0	7.6	-	-	11.4	12.2	9.8	9.2	9.2	11.5	8.3
	12 UTC	10.0	8.6	7.6	7.6	-	-	12.4	-	10.4	9.0	9.4	12.1	10.0
Sunshine Duration		1.6	3.8	7.1	-	-	0.5	1.4	2.0	3.4	8.0	3.5	2.2	3.5
Precipitation		4.8				-	-	5.4	18.2			-	84.8	49.2
Evaporation		3.0	0.8	1.0	-	-	1.6	0.5	0.0	1.1	1.3	-	14.6	13.6
Growing Degrees	5	4.1	-	-	-	-	-	-	-	-	-	-	-	45.7
	10	0.0	-	-	-	-	-	-	-	-	-	-	-	9.2

2nd 10-day period (11-20/12/2012)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	-	7.6	7.4
Precipitation - Reference Evapotranspiration	-	77.2	41.8
Number of Rainy Days	-	7.0	4.5
Number of Dry Days	-	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

This station is not fully operated

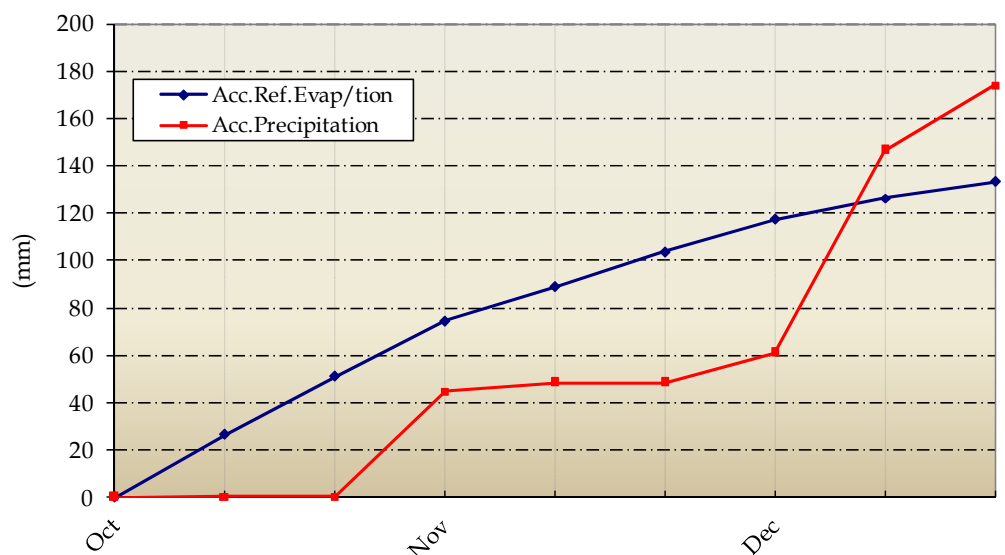


Alexandroupoli

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.8	9.4	4.4	7.2	7.4	7.2	8.4	10.0	9.2	5.0	8.0	14.7	10.6
	Min	0.0	1.0	-1.4	-3.5	-3.0	0.6	4.4	2.8	2.6	1.0	0.4	8.2	3.1
Relative Humidity	Max	97	89	-	82	92	97	100	94	94	89	93	95	-
	Min	62	53	-	42	57	92	79	74	73	47	64	75	-
Soil Temperature at 10 cm	06 UTC	6.6	7.0	5.4	-	3.6	5.4	6.8	6.4	7.2	5.2	6.0	10.4	6.3
	12 UTC	7.4	7.6	5.4	4.2	4.6	-	-	7.4	6.6	5.8	6.1	11.1	7.5
Sunshine Duration		1.3	7.9	5.9	7.8	7.5	0.0	0.0	0.0	0.0	0.6	3.1	2.6	2.5
Precipitation		11.0					0.3	5.2	0.0	11.2	0.0	27.7	101.0	23.7
Evaporation		0.5	0.0	0.0	0.0	0.0	3.6	4.0	3.7	9.4	0.0	21.2	3.9	11.7
Growing Degrees	5	0.9	0.2	0.0	0.0	0.0	0.0	1.4	1.4	0.9	0.0	4.8	64.6	26.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	5.3

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.8	6.5	8.1
Precipitation - Reference Evapotranspiration	20.9	94.5	15.6
Number of Rainy Days	4.0	3.0	2.9
Number of Dry Days	0.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

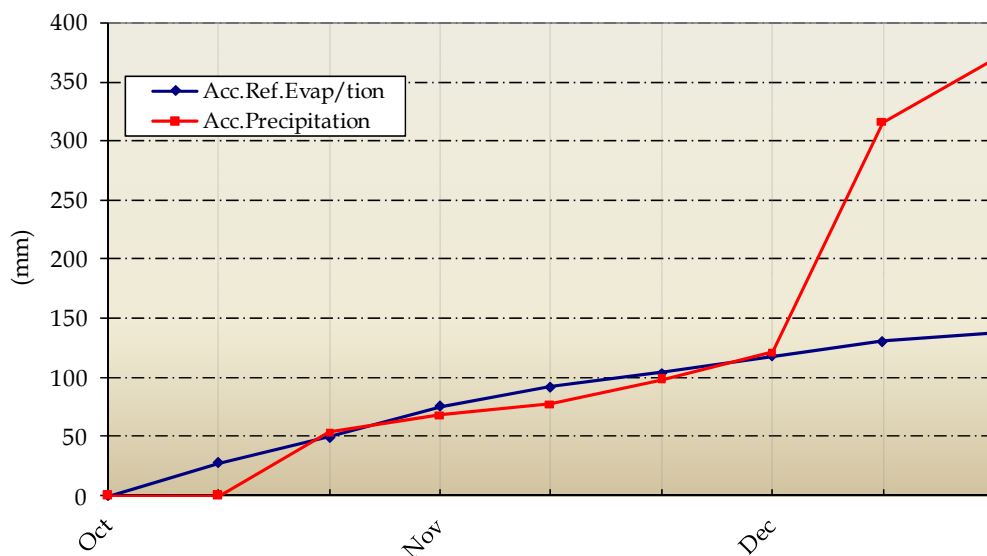


Andravida

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.5	13.3	11.6	10.0	12.4	18.5	18.7	16.4	10.6	12.3	14.0	17.0	15.1
	Min	7.0	5.1	3.6	3.8	7.8	12.2	12.5	9.8	6.9	2.4	7.1	9.6	6.8
Relative Humidity	Max	87	89	88	87	91	90	91	92	92	93	90	95	-
	Min	54	42	37	48	66	73	70	58	75	51	57	65	-
Soil Temperature at 10 cm	06 UTC	9.8	9.8	9.6	8.6	10.6	12.2	13.0	13.6	12.2	9.0	10.8	12.2	9.7
	12 UTC	11.6	11.8	11.8	11.0	11.4	14.0	14.0	14.4	11.6	12.0	12.4	14.0	11.2
Sunshine Duration		1.9	4.1	7.7	4.3	0.5	2.5	1.3	2.9	0.0	7.9	3.3	3.2	4.1
Precipitation		3.3	5.6	0.3	0.3	2.5	2.5	3.9	13.6	20.9		52.9	72.3	43.9
Evaporation		1.6	0.6	1.0	0.2	-	0.6	5.0	0.7	6.2	-	-	-	19.6
Growing Degrees	5	6.8	4.2	2.6	1.9	5.1	10.4	10.6	8.1	3.8	2.4	55.7	83.3	59.8
	10	1.8	0.0	0.0	0.0	0.1	5.4	5.6	3.1	0.0	0.0	15.9	34.3	16.6

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.8	6.1	9.0
Precipitation - Reference Evapotranspiration	45.1	66.2	34.9
Number of Rainy Days	9.0	6.0	4.7
Number of Dry Days	0.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

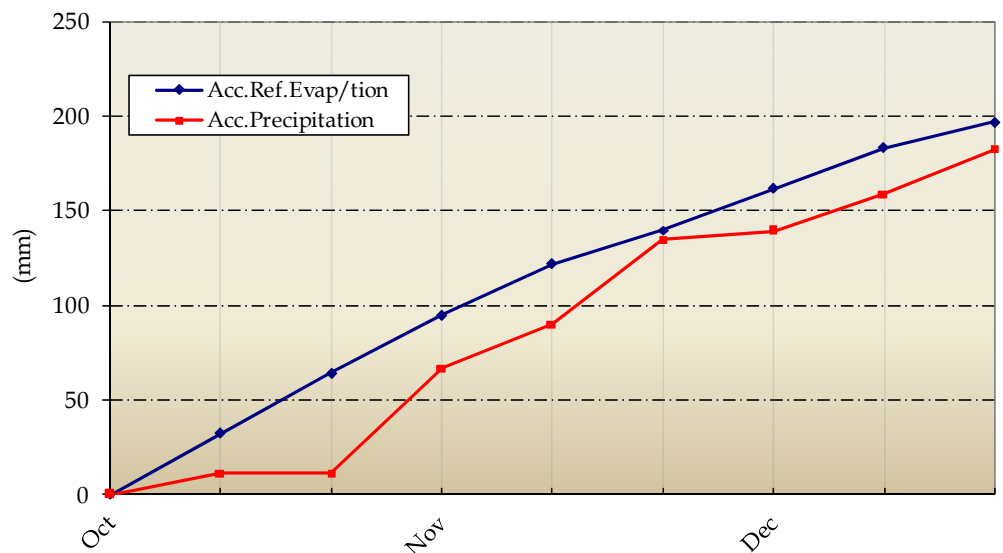


Iraklio

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.4	16.6	14.8	14.0	14.4	20.4	20.4	19.6	15.4	12.6	16.7	-	16.6
	Min	10.4	13.4	9.0	11.0	11.4	9.4	15.4	14.0	11.0	9.0	11.4	-	10.5
Relative Humidity	Max	75	89	92	80	87	87	87	88	95	95	88	-	-
	Min	39	75	62	59	66	57	65	69	64	65	62	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		6.5	0.0	1.5	2.3	0.6	5.6	1.3	3.9	1.3	0.6	2.4	-	3.8
Precipitation		1.8	2.2	0.6					1.3	7.7	10.3	23.9	-	23.4
Evaporation		3.2	1.8	7.7	4.0	0.9	0.5	0.8	3.8	12.8	4.1	39.6	-	25.9
Growing Degrees	5	9.4	10.0	6.9	7.5	7.9	9.9	12.9	11.8	8.2	5.8	90.3	-	85.7
	10	4.4	5.0	1.9	2.5	2.9	4.9	7.9	6.8	3.2	0.8	40.3	-	36.5

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.5	-	-
Precipitation - Reference Evapotranspiration	10.4	-	23.4
Number of Rainy Days	6.0	-	3.8
Number of Dry Days	0.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

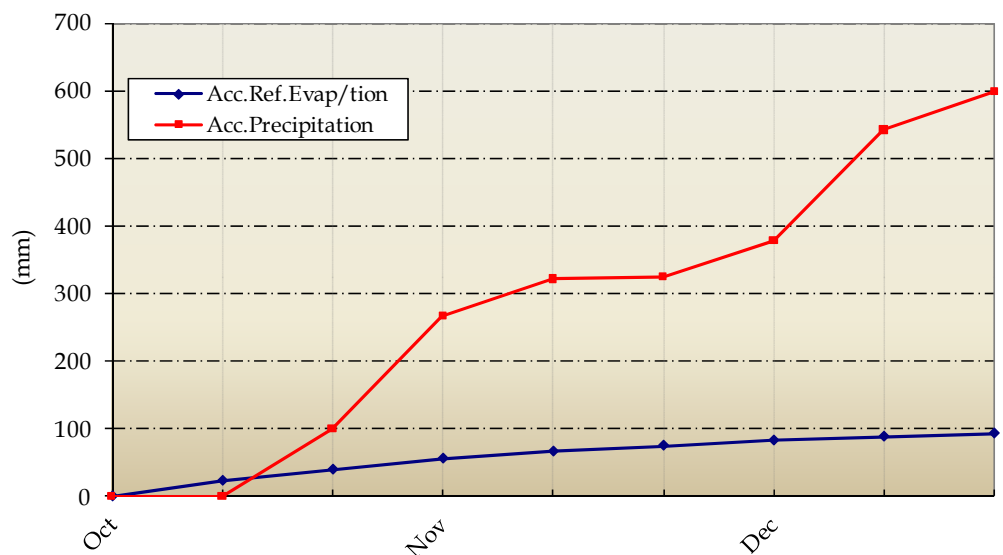


Ioannina

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.6	3.4	4.6	8.0	7.2	13.4	12.2	9.4	9.0	7.8	8.2	10.2	9.6
	Min	-0.4	-1.6	-3.0	-3.0	3.0	6.6	8.8	-	4.8	-2.4	1.4	4.5	1.6
Relative Humidity	Max	97	100	100	94	97	95	96	94	97	100	97	96	-
	Min	79	75	62	82	82	79	88	81	69	39	74	76	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.7
Sunshine Duration		0.0	0.0	3.3	4.0	0.0	1.2	-	0.0	1.0	5.5	1.7	1.3	2.5
Precipitation		28.0	0.1			0.9	1.2	4.4	21.9			56.5	80.7	54.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	5.5
Growing Degrees	5	0.0	0.0	0.0	0.0	0.1	5.0	5.5	-	1.9	0.0	-	25.5	16.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-	0.0	0.0	-	2.2	0.8

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	4.6	5.5	5.7
Precipitation - Reference Evapotranspiration	51.9	75.2	48.8
Number of Rainy Days	6.0	7.0	4.4
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

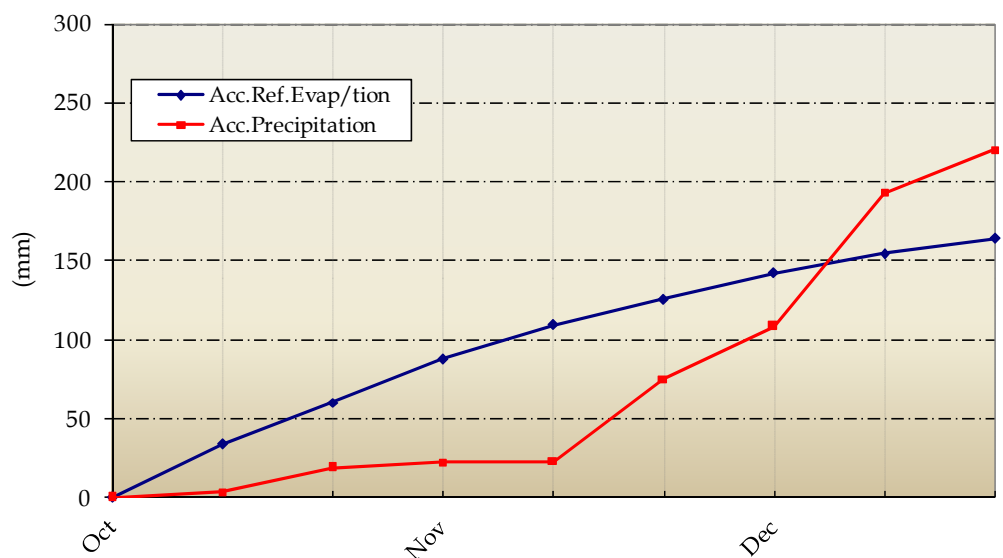


Kalamata

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.6	14.6	14.4	15.8	14.8	19.0	19.1	16.3	13.5	14.8	15.8	17.1	15.9
	Min	6.2	3.8	2.3	3.4	9.1	8.8	11.1	10.1	6.3	2.7	6.4	8.5	6.6
Relative Humidity	Max	95	95	93	92	93	95	95	94	93	93	94	98	-
	Min	64	47	29	47	62	65	66	68	65	48	56	71	-
Soil Temperature at 10 cm	06 UTC	11.2	11.0	10.4	10.2	11.4	12.0	13.0	13.6	12.6	10.8	11.6	12.7	10.6
	12 UTC	11.8	11.6	15.0	11.0	12.0	12.2	13.2	13.6	-	11.6	12.4	13.1	11.5
Sunshine Duration		0.4	4.0	10.2	6.4	0.6	2.3	2.6	5.6	1.4	6.2	4.0	3.0	3.9
Precipitation		7.7	0.1			3.4	0.2	0.0	13.2	2.3		26.9	67.6	53.6
Evaporation		0.9	6.8	0.2	0.2	1.2	0.8	1.0	0.0	7.6	2.2	20.9	11.2	23.9
Growing Degrees	5	5.9	4.2	3.4	4.6	7.0	8.9	10.1	8.2	4.9	3.8	60.9	-	62.3
	10	0.9	0.0	0.0	0.0	2.0	3.9	5.1	3.2	0.0	0.0	15.1	-	17.2

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.8	8.6	10.5
Precipitation - Reference Evapotranspiration	17.1	59.0	43.1
Number of Rainy Days	6.0	7.0	4.7
Number of Dry Days	0.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

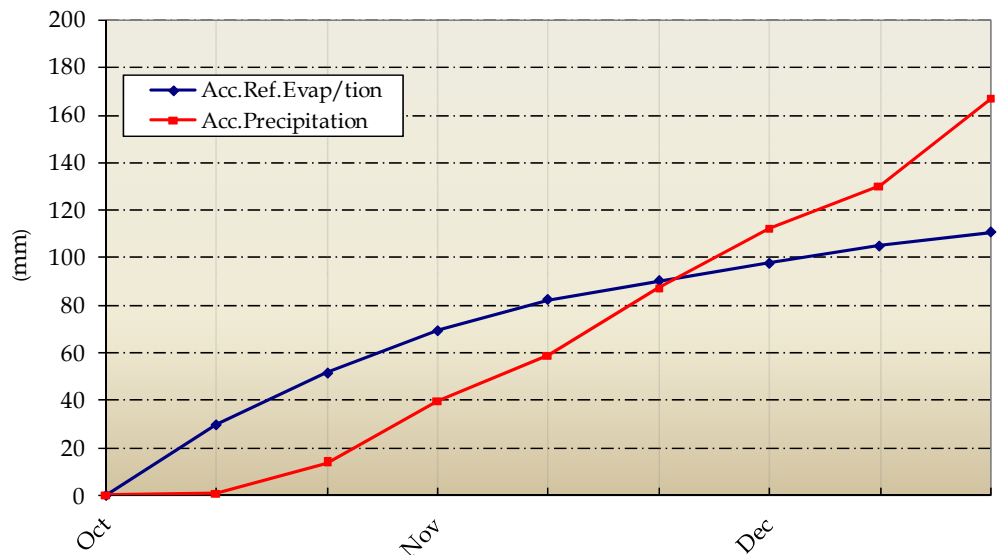


Larisa

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.1	8.8	7.6	8.8	9.8	8.2	10.8	11.6	7.6	9.6	9.1	14.2	11.0
	Min	-1.3	-0.2	-4.8	-2.0	-2.0	1.6	1.2	5.0	5.6	2.4	0.6	3.9	1.7
Relative Humidity	Max	100	94	97	98	100	100	100	100	97	97	98	92	-
	Min	66	44	46	52	58	78	82	79	63	44	61	56	-
Soil Temperature at 10 cm	06 UTC	7.8	7.0	6.4	7.0	6.2	6.8	7.0	8.0	8.6	8.0	7.3	7.5	6.9
	12 UTC	8.0	7.6	6.6	6.8	6.8	7.4	7.6	8.6	8.6	8.4	7.6	9.1	7.3
Sunshine Duration		2.2	5.2	6.0	5.1	5.8	0.0	1.2	0.0	0.2	6.7	3.2	3.4	3.1
Precipitation		2.7					0.0		32.2	1.7		36.6	5.9	14.0
Evaporation		0.2	0.7	0.8	0.9	0.2	0.3	0.0	5.9	0.8	0.4	10.2	-	6.0
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.3	1.6	1.0	6.9	-	20.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	2.1

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.6	6.8	5.8
Precipitation - Reference Evapotranspiration	31.0	-0.9	8.2
Number of Rainy Days	3.0	2.0	3.3
Number of Dry Days	1.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

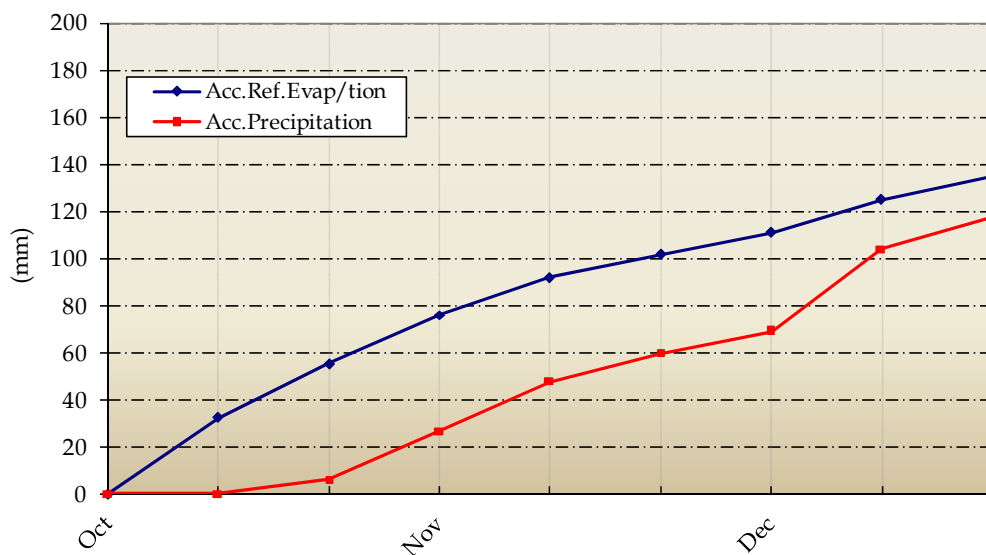


Mikra

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	4.6	6.8	7.2	6.9	7.2	9.2	12.2	9.8	9.6	9.2	8.3	12.9	10.6
	Min	-1.8	2.0	0.6	-4.6	-0.4	5.4	7.4	7.4	6.8	4.3	2.7	6.8	3.0
Relative Humidity	Max	95	53	79	90	90	90	93	93	78	81	84	95	-
	Min	56	40	35	52	71	82	78	70	58	50	59	67	-
Soil Temperature at 10 cm	06 UTC	5.2	4.8	4.0	3.2	4.6	7.0	8.4	9.0	8.6	6.6	6.1	9.7	6.2
	12 UTC	5.4	5.2	7.2	7.2	6.2	8.0	8.4	9.2	9.0	7.2	7.3	10.6	7.7
Sunshine Duration		0.0	7.1	8.9	7.7	0.1	0.0	0.9	0.0	0.0	6.1	3.1	2.6	2.8
Precipitation		3.4					0.3	2.2	7.3	0.4		13.6	8.1	12.5
Evaporation		0.7	0.0	0.0	0.0	8.2	0.0	1.3	-	0.9	0.0	-	11.8	10.6
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	2.3	4.8	3.6	3.2	1.8	15.7	48.6	24.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	2.8

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.9	7.2	8.4
Precipitation - Reference Evapotranspiration	3.7	0.9	4.1
Number of Rainy Days	5.0	3.0	2.9
Number of Dry Days	1.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

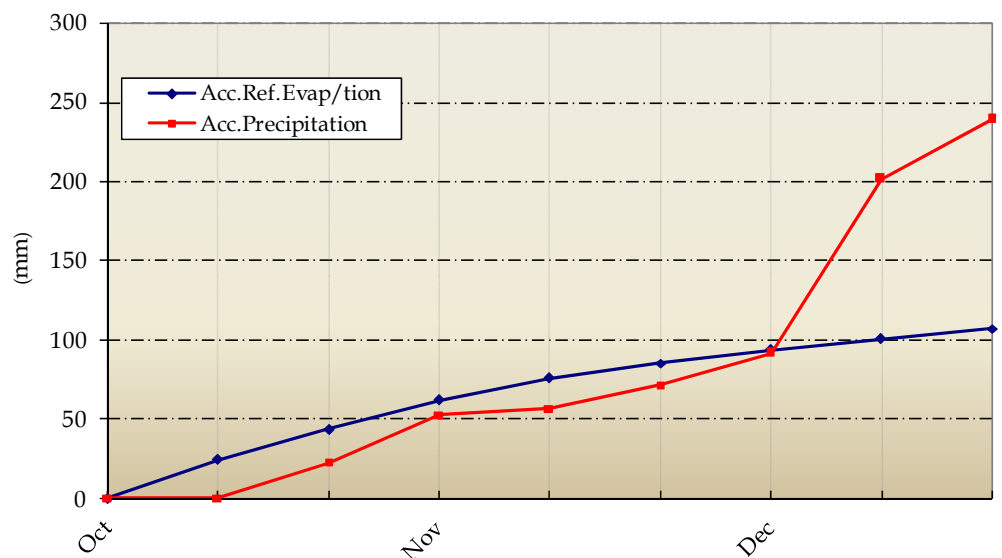


Tripoli

2nd 10-day period (11-20/12/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.9	9.7	8.9	11.6	11.5	13.0	13.4	12.9	9.1	9.3	10.9	13.2	10.8
	Min	0.4	-0.9	-4.4	-3.0	4.5	8.2	9.9	4.5	0.8	-3.0	1.7	5.1	1.8
Relative Humidity	Max	95	95	98	96	99	-	91	99	97	100	97	91	-
	Min	75	46	31	49	69	-	76	53	59	59	57	53	-
Soil Temperature at 10 cm	06 UTC	4.2	3.4	2.6	2.6	5.6	7.2	9.0	9.2	5.8	3.6	5.3	-	6.0
	12 UTC	6.4	6.4	5.2	5.4	8.2	-	-	10.8	7.6	6.6	7.1	-	6.7
Sunshine Duration		0.7	4.4	6.5	6.7	3.3	0.6	0.4	4.0	3.2	4.2	3.4	-	3.6
Precipitation		14.5				4.8		0.7	17.5			37.5	42.7	40.9
Evaporation		0.5	0.0	0.0	-	0.0	0.4	0.0	1.6	1.9	0.0	-	-	10.0
Growing Degrees	5	0.2	0.0	0.0	0.0	3.0	5.6	6.7	3.7	0.0	0.0	19.1	41.8	19.6
	10	0.0	0.0	0.0	0.0	0.0	0.6	1.7	0.0	0.0	0.0	2.3	4.2	1.5

2nd 10-day period (11-20/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.5	8.8	7.6
Precipitation - Reference Evapotranspiration	31.0	33.9	33.3
Number of Rainy Days	4.0	8.0	4.3
Number of Dry Days	0.0	4.0	-

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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