



AGROMETEOROLOGICAL BULLETIN

December 2012
3rd 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

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	-	12.4	14.0
	Min	0.0	-	-	-0.8	-	-	5.8	5.4	-	-	1.4	2.4	3.1	3.8
Relative Humidity	Max	-	-	96	-	-	96	95	-	-	100	-	97	91	-
	Min	-	-	35	-	-	50	75	-	-	56	-	54	58	-
Soil Temperature at 10 cm	06 UTC	7.6	-	-	6.6	-	-	8.2	9.0	-	-	7.8	7.8	7.9	7.7
	12 UTC	8.4	-	-	7.4	-	-	9.4	-	-	-	-	8.4	8.7	9.5
Sunshine Duration		-	-	8.1	-	-	5.1	1.0	-	-	2.3	-	4.1	4.2	3.3
Precipitation		-	-	-	-	-	-	-	-	-	-	-	-	115.6	49.6
Evaporation		-	-	1.8	-	-	2.0	1.2	-	-	2.0	-	-	-	14.2
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	-	30.0	43.3
	10	-	-	-	-	-	-	-	-	-	-	-	-	0.0	7.7

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	7.8	8.7
Precipitation - Reference Evapotranspiration	-	107.8	40.9
Number of Rainy Days	-	5.0	4.2
Number of Dry Days	-	0.0	-

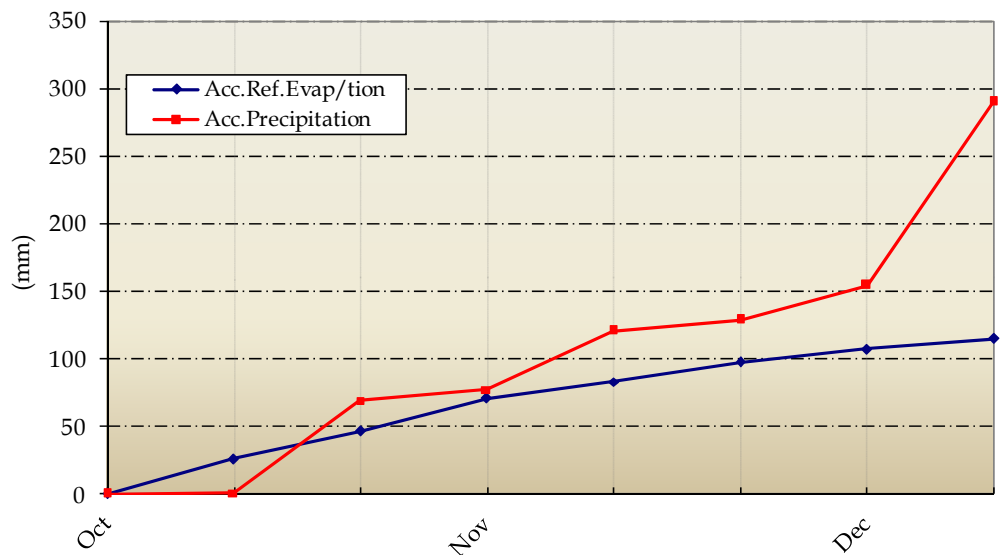


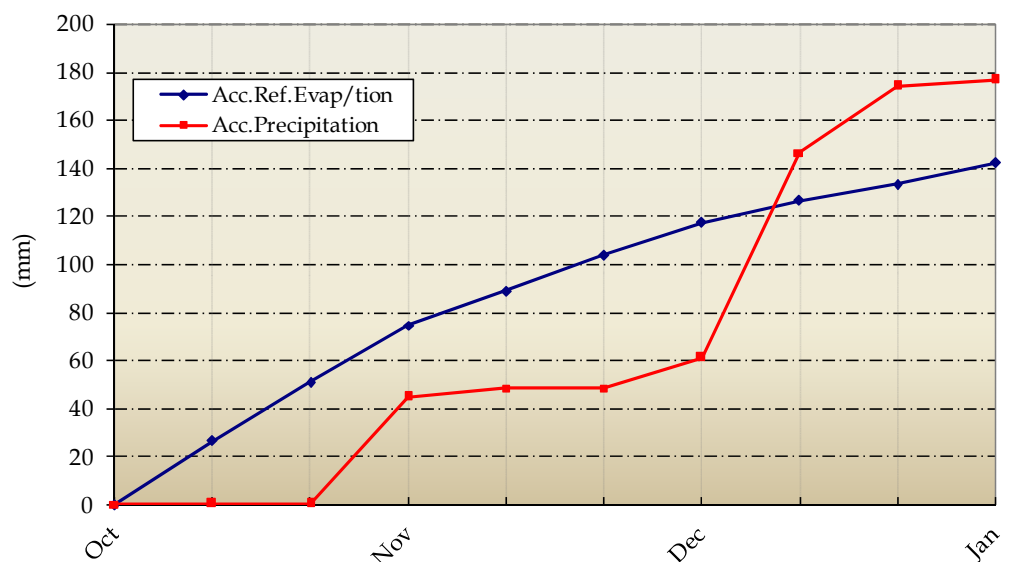
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

This station is not fully operated

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	2.6	6.4	7.6	8.2	11.6	14.2	15.8	13.6	8.4	8.2	8.4	9.5	6.5	9.8
	Min	-3.0	-1.6	0.0	-1.2	-2.4	2.0	8.2	7.8	4.8	4.0	5.0	2.1	0.3	2.4
Relative Humidity	Max	83	76	75	88	91	94	95	97	86	73	81	85	91	-
	Min	54	49	49	60	68	80	69	79	59	56	51	61	66	-
Soil Temperature at 10 cm	06 UTC	3.8	3.4	3.4	3.6	3.8	4.6	7.6	8.4	7.4	6.4	6.2	5.3	5.1	6.0
	12 UTC	3.8	4.2	4.8	4.6	5.2	6.4	9.2	9.4	7.6	7.0	7.0	6.3	5.5	7.2
Sunshine Duration		0.0	0.0	5.9	6.5	7.0	1.0	2.2	2.2	0.0	0.5	0.0	2.3	2.9	2.6
Precipitation										2.6			2.6	29.6	24.7
Evaporation		0.0	0.0	0.0	0.0	0.0	0.5	1.3	2.6	0.0	1.2	7.0	12.6	-	12.0
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	3.1	7.0	5.7	1.6	1.1	1.7	20.2	4.4	24.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.7	0.0	0.0	0.0	2.7	0.0	4.2

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.8	7.1	8.4
Precipitation - Reference Evapotranspiration	-6.2	22.5	16.3
Number of Rainy Days	1.0	4.0	2.9
Number of Dry Days	9.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

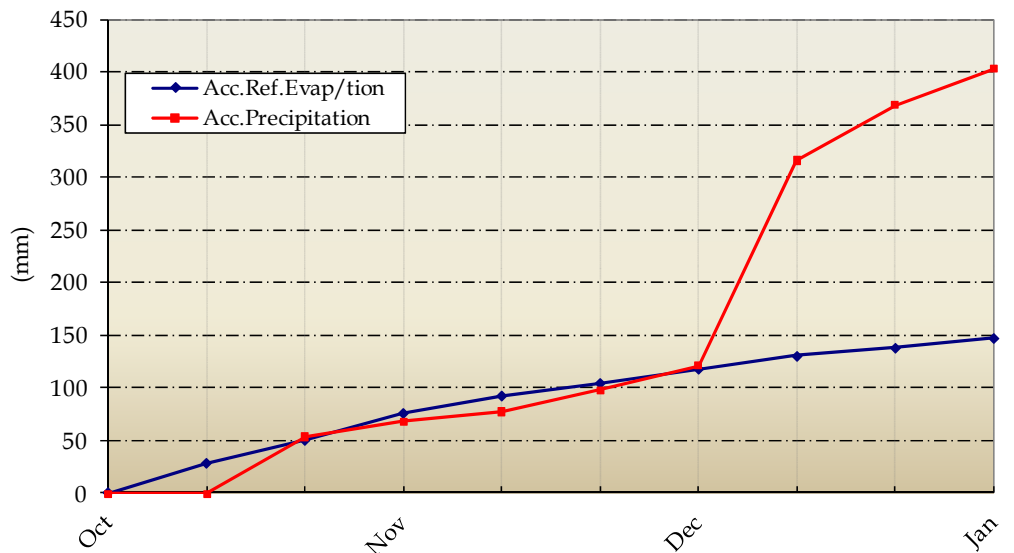


Andravida

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.5	10.3	12.6	14.2	15.8	16.7	17.1	16.7	16.1	15.1	15.4	15.0	12.7	14.4
	Min	2.4	7.2	4.7	1.1	1.9	3.8	9.4	9.6	7.6	7.8	4.2	5.4	5.1	6.0
Relative Humidity	Max	87	93	89	91	91	90	92	93	87	90	90	90	95	-
	Min	55	75	48	42	52	65	65	70	50	48	51	56	62	-
Soil Temperature at 10 cm	06 UTC	8.8	10.4	8.2	8.8	8.6	8.8	10.6	11.0	10.5	11.0	9.6	9.7	8.8	9.0
	12 UTC	10.8	11.0	11.2	11.2	12.0	10.4	11.8	12.6	13.0	12.4	10.6	11.5	10.6	10.5
Sunshine Duration		2.8	0.0	7.8	7.8	7.8	4.3	3.4	4.7	6.9	7.6	3.3	5.1	3.0	4.0
Precipitation			26.7					1.5	5.2	0.2	0.6		34.2	109.7	44.5
Evaporation		-	0.5	-	-	5.2	1.0	0.2	0.5	1.6	0.9	0.4	-	-	21.9
Growing Degrees	5	3.5	3.8	3.7	2.7	3.9	5.3	8.3	8.2	6.9	6.5	4.8	57.1	43.1	57.7
	10	0.0	0.0	0.0	0.0	0.0	0.3	3.3	3.2	1.9	1.5	0.0	10.0	0.8	13.8

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.3	6.8	9.5
Precipitation - Reference Evapotranspiration	24.9	102.9	35.0
Number of Rainy Days	5.0	7.0	4.8
Number of Dry Days	2.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

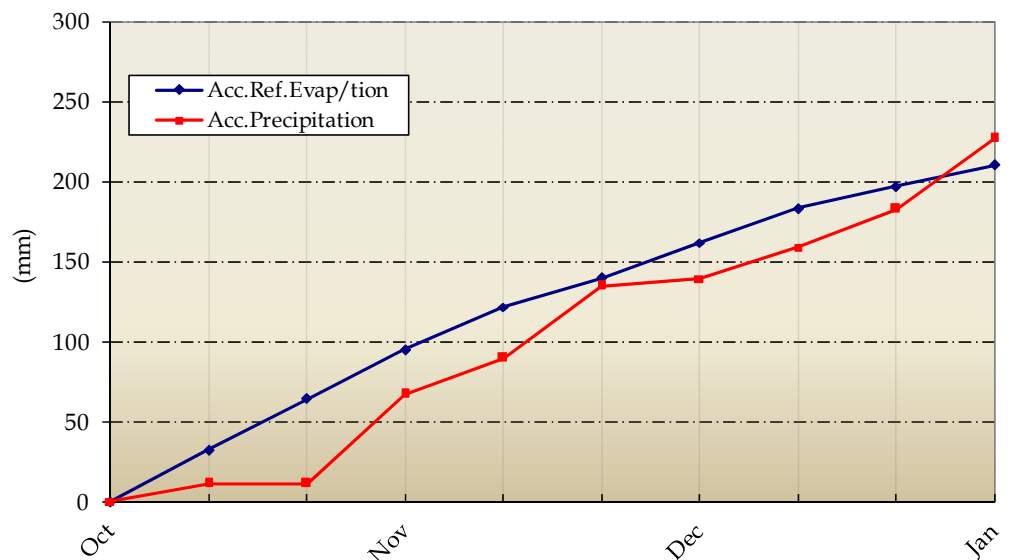


Iraklio

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	14.6	12.4	13.4	15.4	16.8	19.0	18.6	17.4	16.4	16.0	15.8	-	15.9
	Min	9.8	9.8	12.0	12.4	11.4	8.2	10.2	13.6	10.4	8.0	9.0	10.4	-	10.0
Relative Humidity	Max	90	93	88	86	89	90	90	89	95	94	88	90	-	-
	Min	64	77	78	68	68	70	65	71	61	65	71	69	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		2.5	0.0	0.0	0.0	0.0	7.4	8.0	0.5	5.0	8.0	1.1	3.0	-	3.8
Precipitation		0.7	1.2	32.2	2.5					1.6	6.1	0.0	44.3	-	34.5
Evaporation		1.8	2.7	4.9	4.6	2.5	0.7	4.3	2.1	-	4.5	0.6	-	-	28.1
Growing Degrees	5	6.6	7.2	7.2	7.9	8.4	7.5	9.6	11.1	8.9	7.2	7.5	89.1	-	87.3
	10	1.6	2.2	2.2	2.9	3.4	2.5	4.6	6.1	3.9	2.2	2.5	34.1	-	33.4

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.4	-	-
Precipitation - Reference Evapotranspiration	30.9	-	34.5
Number of Rainy Days	6.0	-	4.5
Number of Dry Days	0.0	-	-

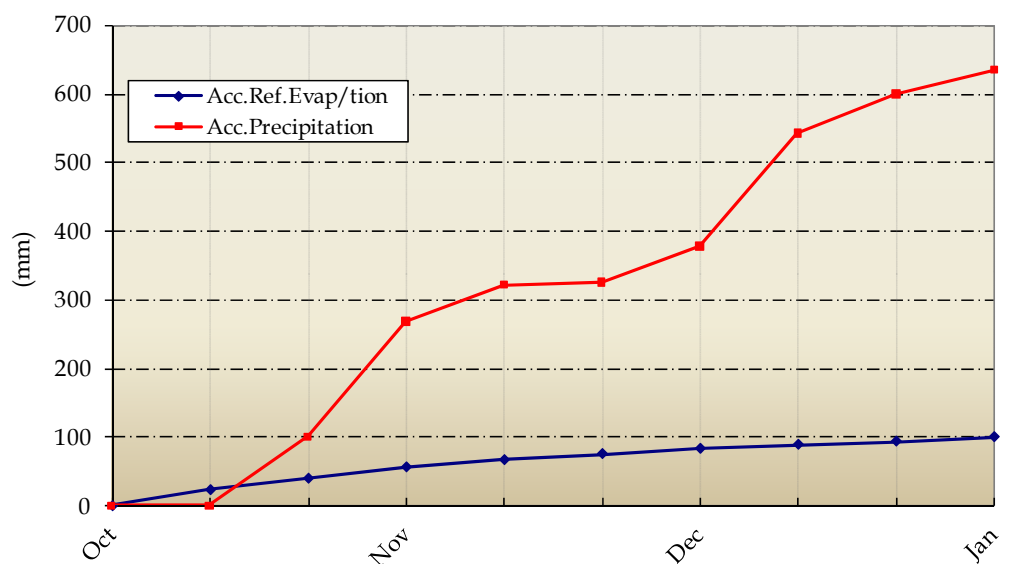
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	4.4	8.0	7.8	10.4	10.2	9.6	10.8	9.8	9.8	10.0	12.2	9.4	6.8	8.8
	Min	-3.0	2.0	-2.4	-0.4	-2.4	-1.6	5.4	6.8	6.0	5.6	-1.5	1.3	-0.1	0.9
Relative Humidity	Max	96	93	100	96	100	96	97	97	94	84	92	95	89	-
	Min	70	51	47	48	67	87	89	88	81	56	61	68	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7
Sunshine Duration		0.0	0.0	5.3	5.3	5.0	1.3	0.0	0.2	0.0	1.4	6.0	2.2	3.0	2.4
Precipitation		0.0						9.4	5.0	21.0			35.4	42.2	50.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	9.0
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	3.1	3.3	2.9	2.8	0.4	12.5	3.1	14.1
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.4	8.6	6.2
Precipitation - Reference Evapotranspiration	29.0	33.6	44.4
Number of Rainy Days	3.0	4.0	4.3
Number of Dry Days	8.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

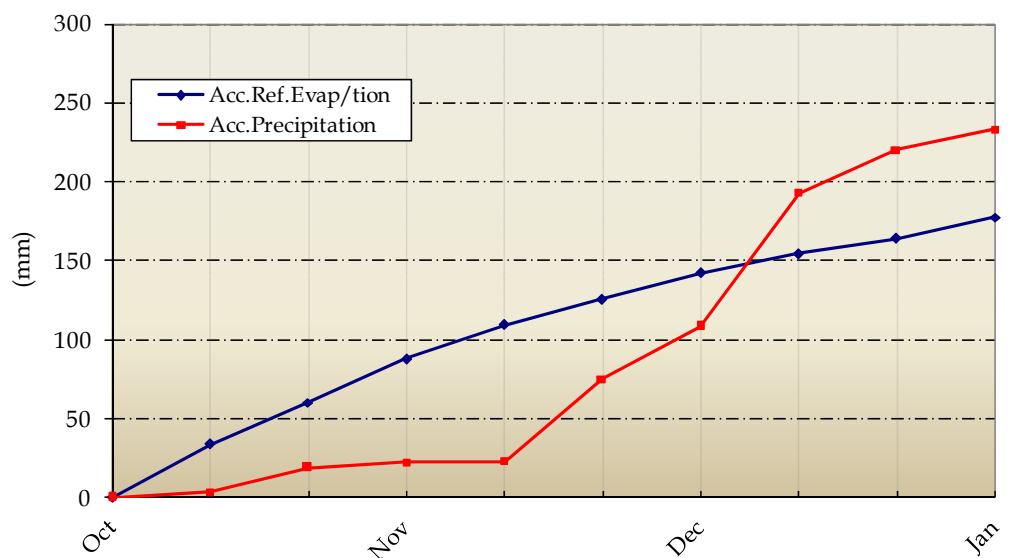


Kalamata

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.4	15.4	15.4	15.6	16.8	17.6	19.7	18.8	16.6	18.3	17.6	16.9	14.1	15.2
	Min	1.6	7.4	6.5	2.9	3.3	3.2	5.4	6.8	8.1	6.8	6.2	5.3	6.1	6.1
Relative Humidity	Max	91	94	74	94	94	94	95	95	95	84	84	90	93	-
	Min	49	48	42	50	49	53	53	52	51	40	42	48	58	-
Soil Temperature at 10 cm	06 UTC	10.2	11.0	11.0	10.2	10.0	10.0	10.2	10.8	11.6	11.0	11.0	10.6	10.4	10.0
	12 UTC	10.6	11.4	11.6	10.8	10.8	10.8	11.2	11.6	12.2	11.4	12.0	11.3	11.1	10.9
Sunshine Duration		3.3	1.9	8.0	7.7	7.6	4.7	5.4	6.5	6.9	7.5	5.9	5.9	3.3	3.9
Precipitation			9.8							3.2			13.0	99.1	41.5
Evaporation		0.0	1.4	2.8	2.0	1.0	0.0	1.2	0.2	1.2	8.2	1.4	19.4	21.2	22.7
Growing Degrees	5	3.0	6.4	6.0	4.3	5.1	5.4	7.6	7.8	7.4	7.6	6.9	67.2	56.2	62.1
	10	0.0	1.4	1.0	0.0	0.1	0.4	2.6	2.8	2.4	2.6	1.9	15.0	4.6	14.5

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.4	11.7	11.8
Precipitation - Reference Evapotranspiration	-0.4	87.4	29.7
Number of Rainy Days	2.0	6.0	4.8
Number of Dry Days	2.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

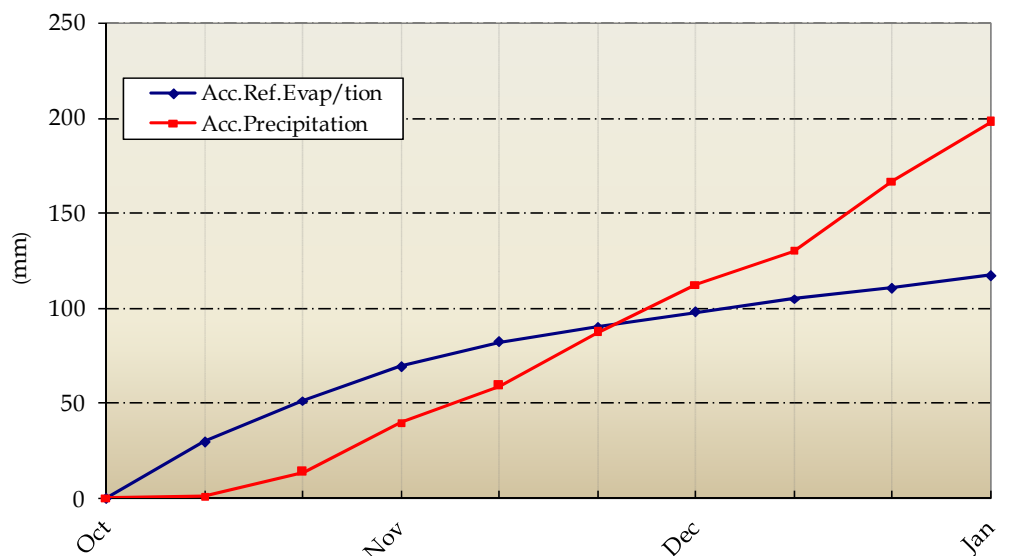


Larisa

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.8	7.0	8.6	8.9	12.0	9.8	14.4	15.4	11.4	8.8	9.0	10.2	7.2	10.0
	Min	-3.2	3.4	1.9	-2.8	-2.8	-2.4	-0.6	-0.7	6.6	6.4	6.0	1.1	0.8	1.1
Relative Humidity	Max	99	90	96	99	100	100	100	100	98	93	99	98	94	-
	Min	59	58	48	57	54	72	60	62	71	61	78	62	65	-
Soil Temperature at 10 cm	06 UTC	6.6	7.4	7.4	6.2	6.0	6.6	6.2	6.2	10.2	8.0	8.2	7.2	6.3	5.7
	12 UTC	6.8	7.8	7.8	6.6	7.4	6.2	7.0	7.2	8.4	8.0	8.4	7.4	7.0	6.1
Sunshine Duration		1.2	0.0	3.0	5.3	6.9	2.5	6.6	6.5	0.0	0.0	0.0	2.9	2.3	3.0
Precipitation			0.0							24.3	6.4		30.7	27.9	14.0
Evaporation		0.8	1.1	0.5	1.5	0.6	-	2.8	1.0	0.4	0.5	0.5	-	11.9	7.2
Growing Degrees	5	0.0	0.2	0.3	0.0	0.0	0.0	1.9	2.4	4.0	2.6	2.5	13.8	0.6	18.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.7	5.6	6.4
Precipitation - Reference Evapotranspiration	24.0	22.3	7.6
Number of Rainy Days	2.0	4.0	3.0
Number of Dry Days	9.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

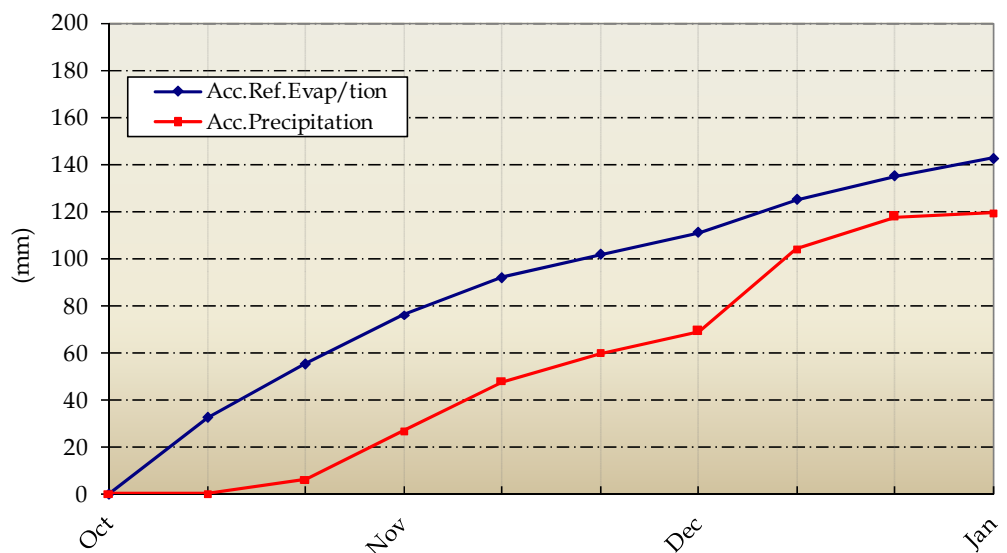


Mikra

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	7.9	8.0	7.0	8.4	10.6	10.6	12.3	9.0	13.0	10.8	8.6	9.7	6.4	10.2
	Min	-2.0	3.2	1.0	-2.6	-1.4	0.6	4.2	4.2	7.4	7.0	1.5	2.1	-0.5	2.2
Relative Humidity	Max	87	85	88	90	92	92	93	95	94	89	92	91	96	-
	Min	49	57	47	51	48	66	73	92	54	50	74	60	61	-
Soil Temperature at 10 cm	06 UTC	5.4	6.6	6.4	5.0	5.0	5.4	7.2	8.0	9.0	8.6	7.0	6.7	4.6	5.3
	12 UTC	6.6	6.8	7.0	9.0	9.0	7.0	13.6	9.0	9.2	10.6	10.2	8.9	5.8	6.8
Sunshine Duration		4.7	0.0	7.0	6.6	7.9	2.0	3.3	0.0	0.0	1.2	0.0	3.0	4.1	3.0
Precipitation										1.8			1.8	34.1	14.9
Evaporation		0.0	1.7	0.0	0.0	2.6	1.0	0.0	0.4	-	0.8	1.2	-	-	13.5
Growing Degrees	5	0.0	0.6	0.0	0.0	0.0	0.6	3.3	1.6	5.2	3.9	0.1	15.2	0.0	22.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	3.0

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.6	8.3	8.7
Precipitation - Reference Evapotranspiration	-5.8	25.8	6.2
Number of Rainy Days	1.0	3.0	3.0
Number of Dry Days	9.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

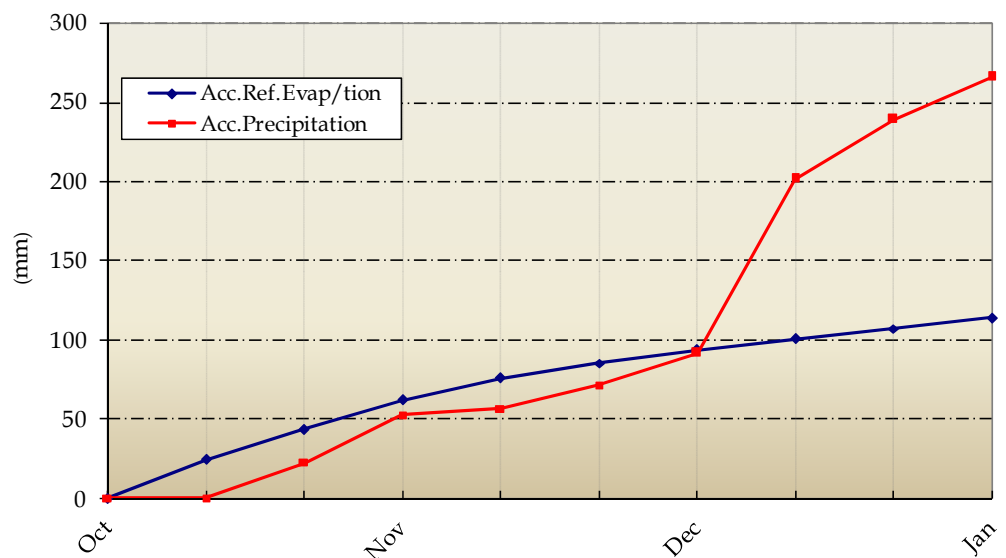


Tripoli

3rd 10-day period (21-31/12/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.1	5.4	6.1	11.9	16.4	16.0	15.9	15.6	13.9	8.0	9.3	11.5	7.9	9.8
	Min	-3.7	2.7	2.4	-4.0	-2.8	-2.4	-0.2	0.4	4.4	4.0	3.1	0.4	0.9	1.5
Relative Humidity	Max	100	95	97	98	100	100	96	100	100	81	92	96	93	-
	Min	59	80	72	66	98	83	52	48	52	78	84	70	59	-
Soil Temperature at 10 cm	06 UTC	3.4	5.4	4.8	2.4	2.6	3.2	3.6	4.8	6.4	6.4	5.8	4.4	-	5.3
	12 UTC	5.6	-	-	-	-	-	7.2	7.6	8.8	-	-	7.3	-	6.0
Sunshine Duration		1.8	0.0	1.6	6.8	7.1	6.0	6.9	7.1	3.8	0.2	0.0	3.8	-	3.7
Precipitation			8.7							7.7	9.7	0.4	26.5	35.6	36.8
Evaporation		-	0.5	0.0	0.0	-	-	0.6	0.4	0.8	1.3	0.2	-	-	9.0
Growing Degrees	5	0.0	0.0	0.0	0.0	1.8	1.8	2.9	3.0	4.2	1.0	1.2	15.8	3.8	18.6
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8

3rd 10-day period (21-31/12/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.8	7.4	8.4
Precipitation - Reference Evapotranspiration	19.7	28.2	28.4
Number of Rainy Days	4.0	7.0	4.5
Number of Dry Days	3.0	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.

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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