



AGROMETEOROLOGICAL BULLETIN

January 2014
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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Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

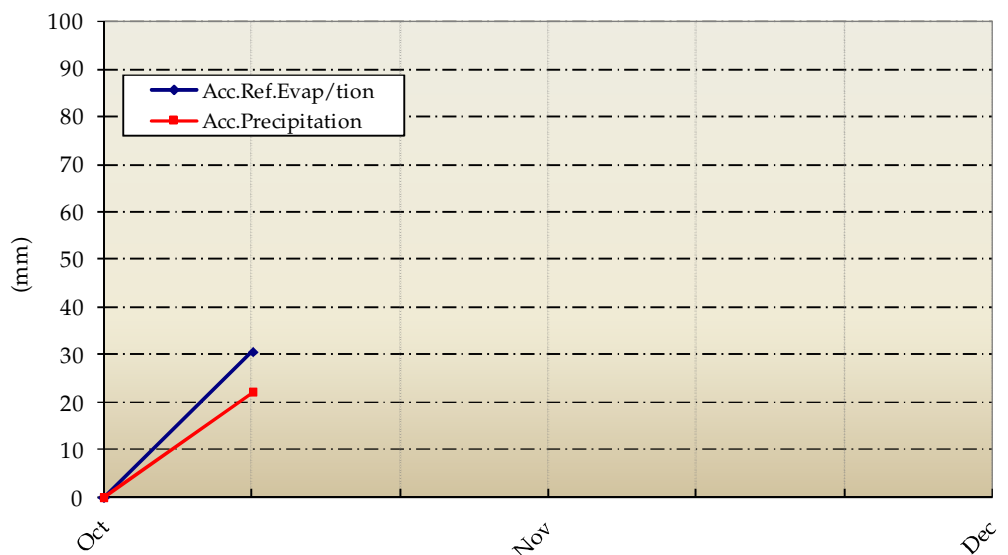
Agrinio

3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	14.0	13.8	-	-	-	-	-	-	-	13.9		13.9
	Min	10.0	6.0	-2.6	-5.2	-	-	5.4	5.0	6.0	5.4	4.0	3.8	4.8	3.3
Relative Humidity	Max	91	-	92	81	-	91	91	90	91	90	-	90	94	-
	Min	89	-	42	33	-	58	81	87	84	84	-	70	60	-
Soil Temperature at 10 cm	06 UTC	12.0	9.0	4.0	0.5	-	-	8.0	8.0	9.0	6.0	8.0	7.2	9.1	7.1
	12 UTC	13.0	13.0	12.0	8.0	-	-	12.0	10.0	11.0	10.0	12.0	11.2	9.7	8.9
Sunshine Duration		2.9	-	-	-	-	1.3	7.4	0.0	5.9	2.3	-	3.3	3.4	4.3
Precipitation		21.0	10.0						2.0	11.0			44.0	-	29.1
Evaporation		22.8	-	-	-	-	0.7	2.2	13.9	1.9	2.4	-	-	-	15.2
Growing Degrees	5	-	-	0.7	0.0	-	-	-	-	-	-	-	-	-	40.2
	10	-	-	0.0	0.0	-	-	-	-	-	-	-	-	-	5.9

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	11.5
Precipitation - Reference Evapotranspiration	-	-	17.6
Number of Rainy Days	4.0	5.0	3.9
Number of Dry Days	49.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

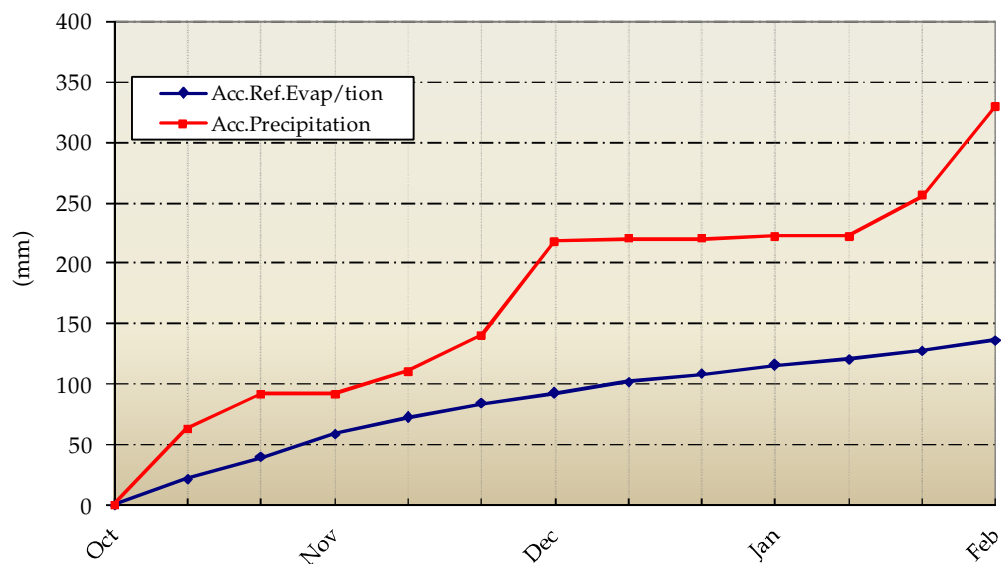
This station is not fully operated



3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	16.4	14.8	12.6	15.6	11.4	3.4	3.6	9.0	4.4	2.6	10.0	10.4	8.8
	Min	13.8	7.4	4.6	5.6	8.6	3.4	0.4	0.4	2.8	-0.8	-0.4	4.2	3.5	1.4
Relative Humidity	Max	95	100	97	95	97	94	88	97	97	89	89	94	94	-
	Min	77	63	74	83	75	80	74	83	71	62	81	75	70	-
Soil Temperature at 10 cm	06 UTC	12.0	10.4	8.8	8.2	10.0	9.0	5.8	4.6	5.8	3.8	3.0	7.4	7.3	4.6
	12 UTC	13.2	12.6	11.6	10.6	12.4	8.6	6.0	5.4	7.2	5.6	3.8	8.8	7.9	5.8
Sunshine Duration		1.6	7.3	8.1	0.5	4.2	0.0	0.0	0.0	1.4	1.3	0.0	2.2	3.4	3.3
Precipitation			0.7		1.5	11.1	32.3	1.9	1.5	24.5		0.1	73.6	40.0	16.6
Evaporation		1.4	1.0	0.1	0.5	0.0	9.4	0.4	0.8	0.6	0.0	0.0	14.2	12.6	10.0
Growing Degrees	5	10.1	6.9	4.7	4.1	7.1	2.4	0.0	0.0	0.9	0.0	0.0	36.2	36.7	16.7
	10	5.1	1.9	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	9.1	11.2	2.2

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.6	9.0	10.8
Precipitation - Reference Evapotranspiration	65.0	31.0	5.8
Number of Rainy Days	8.0	6.0	2.7
Number of Dry Days	1.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

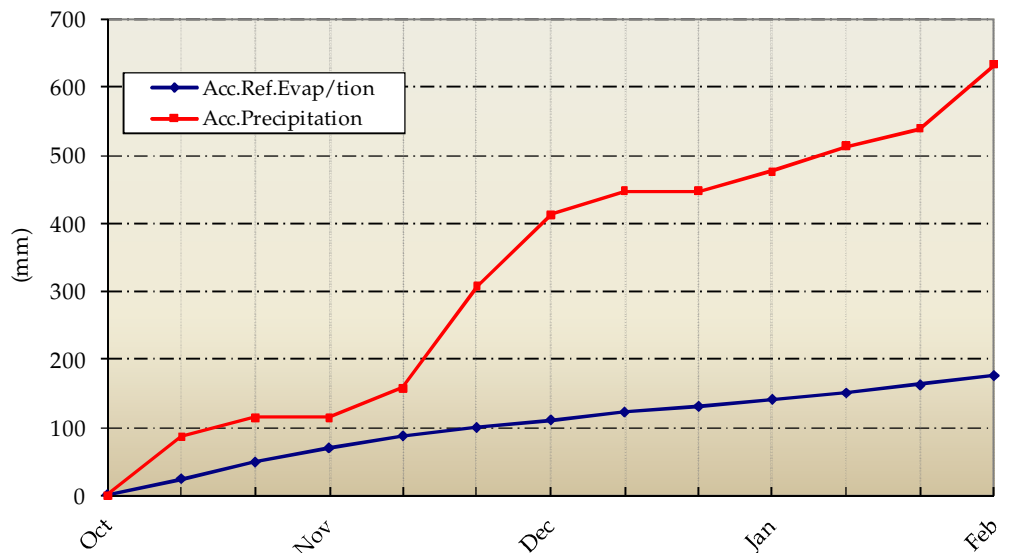


Andravida

3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.7	16.3	17.0	15.2	14.2	12.8	13.0	12.6	14.7	15.3	17.1	15.0	14.5	14.0
	Min	11.4	8.8	7.3	8.8	10.0	9.0	7.0	7.6	6.7	7.3	7.4	8.3	7.3	5.3
Relative Humidity	Max	88	87	88	92	91	85	88	92	92	79	84	88	88	-
	Min	51	47	48	53	63	59	57	66	51	46	53	54	59	-
Soil Temperature at 10 cm	06 UTC	13.3	11.4	10.6	11.2	11.6	10.8	10.1	10.2	9.8	9.6	10.0	10.8	10.1	8.6
	12 UTC	13.4	13.2	13.0	11.8	11.6	11.4	12.0	11.0	11.4	11.4	11.9	12.0	11.6	10.2
Sunshine Duration		2.2	8.1	7.3	0.0	0.0	0.1	1.8	0.4	7.4	1.6	1.2	2.7	3.2	4.8
Precipitation		9.8	0.1		14.4	11.9	5.9	3.5	32.9	14.8			93.3	66.0	33.1
Evaporation		2.7	0.7	1.1	1.6	2.1	0.7	0.8	0.9	1.8	1.0	0.2	13.6	11.2	18.6
Growing Degrees	5	9.1	7.6	7.2	7.0	7.1	5.9	5.0	5.1	5.7	6.3	7.3	73.1	64.7	51.2
	10	4.1	2.6	2.2	2.0	2.1	0.9	0.0	0.1	0.7	1.3	2.3	18.1	14.1	9.9

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.9	12.4	11.9
Precipitation - Reference Evapotranspiration	79.4	53.6	21.2
Number of Rainy Days	8.0	8.0	4.6
Number of Dry Days	4.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

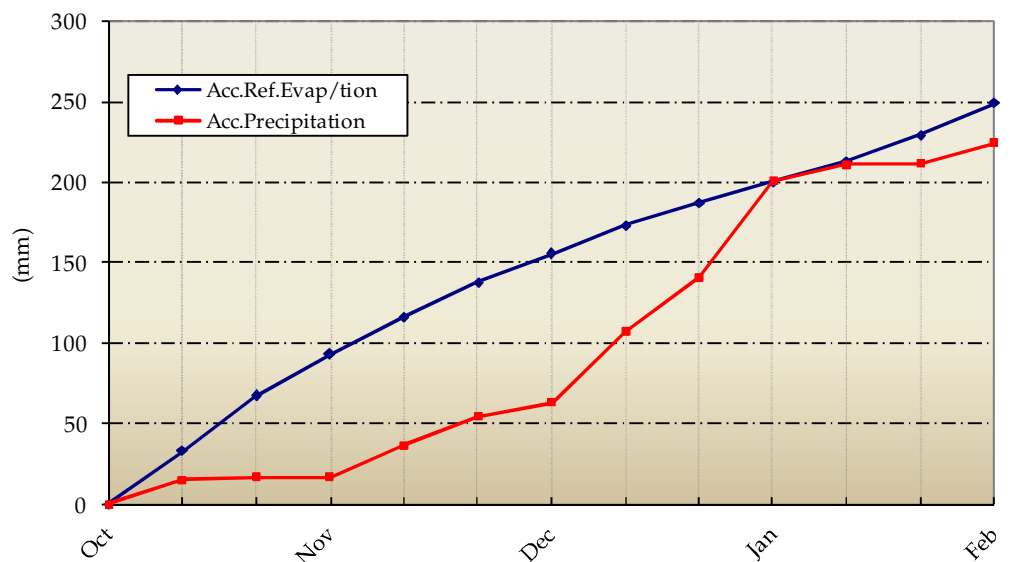


Iraklio

3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.0	18.2	17.4	17.5	21.2	15.6	14.0	17.5	18.0	17.0	16.0	17.6	16.3	15.0
	Min	14.0	11.8	9.0	9.0	14.5	10.4	8.0	7.5	11.4	9.0	11.0	10.5	10.4	8.9
Relative Humidity	Max	75	83	85	85	90	90	88	84	79	84	90	85	86	-
	Min	52	49	53	58	38	62	59	52	52	61	69	55	56	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		6.1	6.2	8.1	1.4	8.3	2.4	0.9	0.0	7.1	6.1	0.0	4.2	4.7	4.0
Precipitation						0.5	8.4	1.1		2.9			12.9	33.3	25.2
Evaporation		2.5	0.3	1.1	2.0	3.1	0.8	0.2	3.7	0.9	0.8	0.6	16.0	38.3	29.5
Growing Degrees	5	12.5	10.0	8.2	8.3	12.9	8.0	6.0	7.5	9.7	8.0	8.5	99.5	91.5	76.7
	10	7.5	5.0	3.2	3.3	7.9	3.0	1.0	2.5	4.7	3.0	3.5	44.5	36.5	23.4

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.0	20.1	-
Precipitation - Reference Evapotranspiration	-7.1	13.2	25.2
Number of Rainy Days	4.0	6.0	4.4
Number of Dry Days	8.0	5.0	-

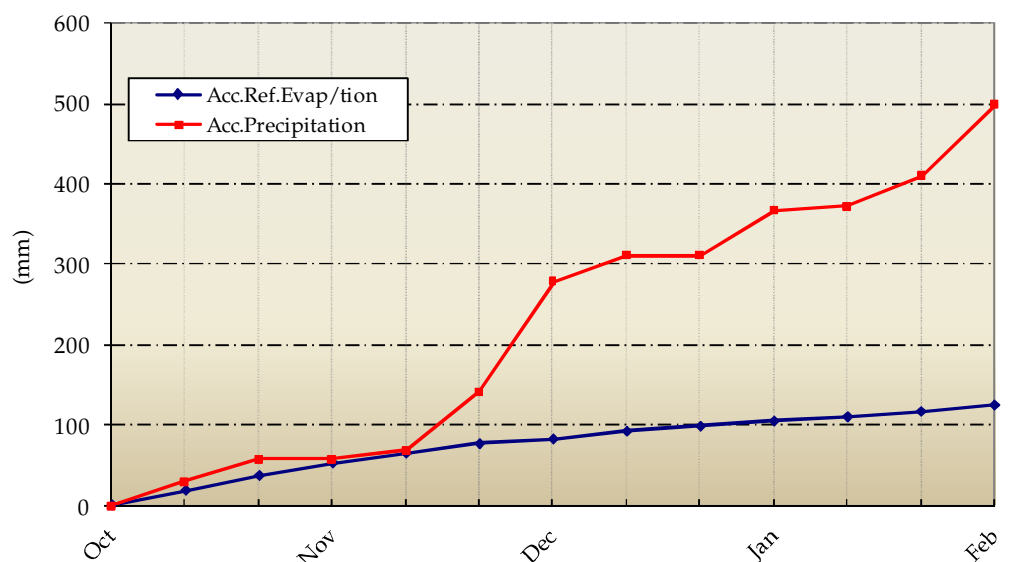
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.7	8.8	9.4	9.8	7.0	9.8	8.6	6.0	7.4	11.4	14.4	9.5	9.8	9.3
	Min	7.7	6.2	6.0	4.6	4.1	2.9	-2.9	3.5	0.9	0.1	2.8	3.3	2.6	0.7
Relative Humidity	Max	94	97	97	97	97	98	96	96	98	98	90	96	93	-
	Min	49	81	80	61	81	51	46	46	64	51	34	59	61	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6
Sunshine Duration		4.7	4.7	4.7	0.0	0.0	0.0	0.0	3.8	4.6	4.6	0.0	2.5	2.4	3.1
Precipitation		8.0	21.3	8.0	7.1	31.1	0.0		10.9	1.2	0.0		87.6	70.2	37.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	8.0
Growing Degrees	5	4.7	2.5	2.7	2.2	0.6	1.4	0.0	0.0	0.0	0.8	3.6	18.4	15.3	13.3
	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	0.1	0.4

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.1	9.0	8.6
Precipitation - Reference Evapotranspiration	79.5	61.2	28.6
Number of Rainy Days	7.0	6.0	4.3
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

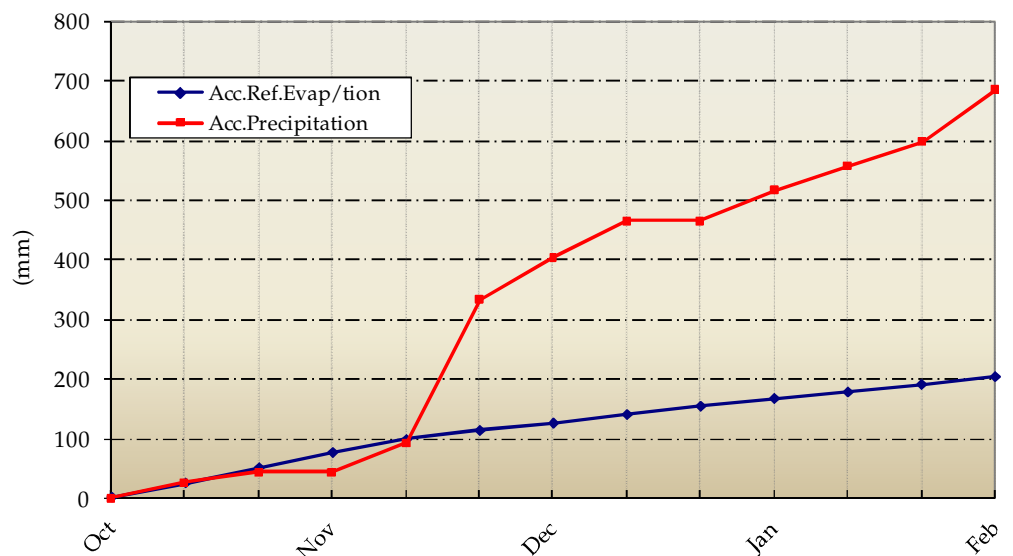


Kalamata

3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.5	17.9	18.5	16.7	16.0	15.1	13.5	13.0	14.6	16.6	17.3	16.2	15.3	14.8
	Min	11.2	7.2	4.9	5.0	9.8	8.1	3.6	6.7	5.9	4.4	8.0	6.8	6.4	5.3
Relative Humidity	Max	93	93	95	93	95	93	94	95	95	93	90	94	93	-
	Min	42	56	42	62	66	59	51	82	57	46	54	56	58	-
Soil Temperature at 10 cm	06 UTC	12.2	12.2	11.0	10.6	11.6	11.2	10.2	10.4	10.4	9.6	10.4	10.9	10.7	9.0
	12 UTC	13.2	12.6	11.6	11.0	12.2	11.6	10.0	10.6	10.6	10.0	10.6	11.3	11.3	10.3
Sunshine Duration		3.8	6.8	8.2	2.1	0.0	2.4	2.4	0.9	3.9	3.8	0.2	3.1	3.3	4.4
Precipitation		1.0	0.6		4.1	29.8	24.6	0.6	12.1	15.3			88.1	68.9	36.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	16.2	21.4
Growing Degrees	5	9.9	7.6	6.7	5.9	7.9	6.6	3.6	4.9	5.3	5.5	7.7	71.3	64.6	55.6
	10	4.9	2.6	1.7	0.9	2.9	1.6	0.0	0.0	0.3	0.5	2.7	17.9	11.3	9.3

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.7	14.4	13.4
Precipitation - Reference Evapotranspiration	74.4	54.5	23.1
Number of Rainy Days	8.0	7.0	4.7
Number of Dry Days	4.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

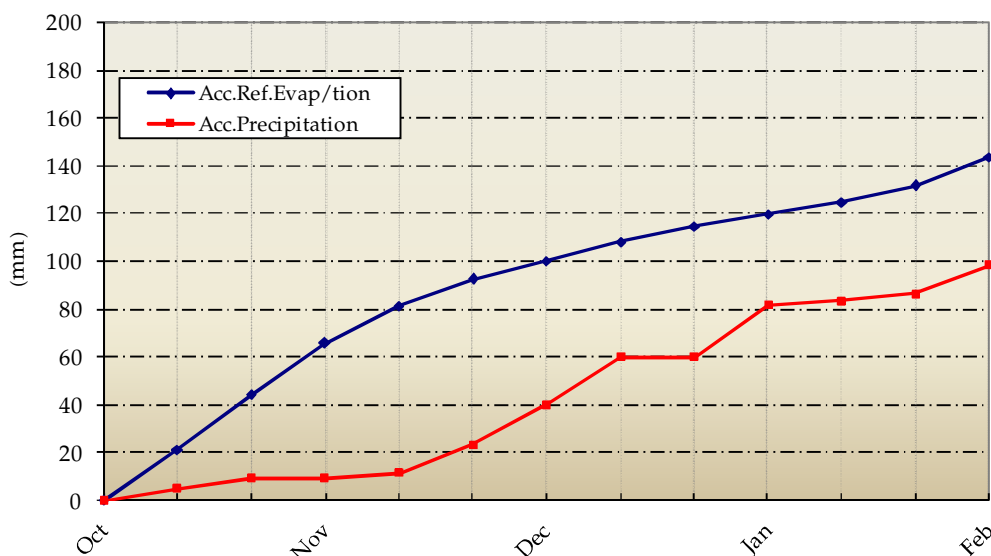


Larisa

3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	16.4	15.8	13.0	12.6	7.4	7.4	7.0	14.1	13.6	9.6	12.2	11.9	10.7
	Min	7.6	0.8	2.6	5.4	7.1	6.4	1.4	1.3	0.2	-0.6	7.2	3.6	1.6	1.2
Relative Humidity	Max	93	99	95	100	100	98	92	100	100	99	83	96	98	-
	Min	34	41	44	62	65	73	52	73	39	51	73	55	56	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.8	5.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.8	6.2
Sunshine Duration		5.8	4.8	2.3	0.0	0.1	0.0	4.3	0.0	7.7	3.9	0.0	2.6	3.2	3.5
Precipitation					0.0	6.8	1.1	0.9	2.9	0.0			11.7	18.1	10.7
Evaporation		3.3	1.7	1.0	0.0	0.0	2.0	0.1	0.1	0.3	2.1	1.2	11.8	7.9	7.0
Growing Degrees	5	7.7	3.6	4.2	4.2	4.9	1.9	0.0	0.0	2.2	1.5	3.4	33.5	21.0	18.5
	10	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.1	1.5

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.1	9.2	8.6
Precipitation - Reference Evapotranspiration	-0.4	8.9	2.1
Number of Rainy Days	4.0	3.0	3.0
Number of Dry Days	4.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

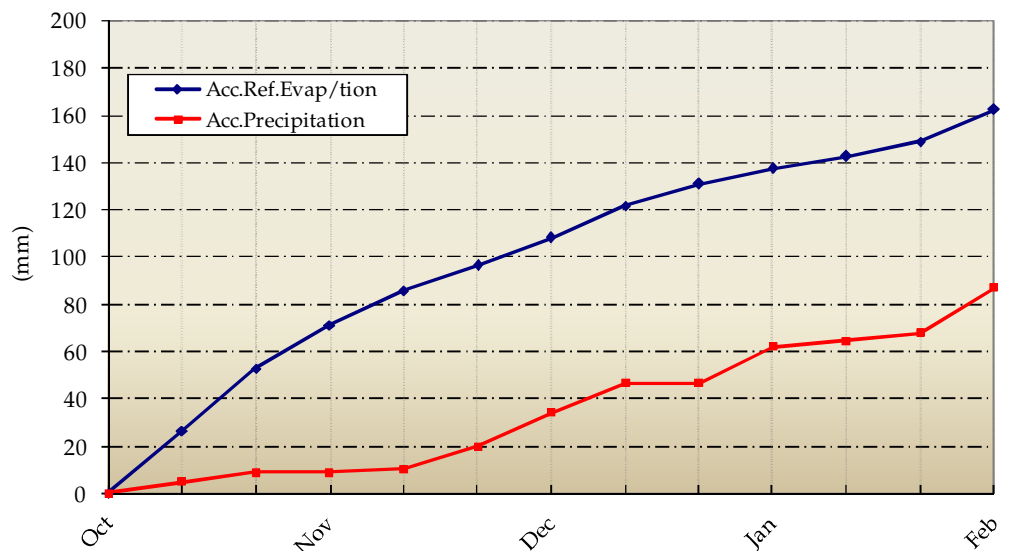


Mikra

3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.6	16.2	16.2	14.4	14.4	9.8	5.4	5.7	13.0	10.2	9.1	12.1	11.7	9.8
	Min	7.3	5.1	5.1	6.4	9.0	1.2	0.1	-0.4	4.4	0.8	6.1	4.1	2.6	1.9
Relative Humidity	Max	94	81	82	91	93	87	91	92	92	85	85	88	89	-
	Min	34	38	40	57	57	70	51	82	43	65	68	55	53	-
Soil Temperature at 10 cm	06 UTC	10.4	9.1	8.8	9.2	10.6	7.8	4.8	4.6	6.2	5.4	8.0	7.7	7.1	5.1
	12 UTC	11.8	11.8	10.8	10.7	11.8	7.0	6.0	7.0	8.2	7.6	8.0	9.2	8.7	6.5
Sunshine Duration		7.8	4.9	6.3	0.0	3.5	0.0	1.9	0.0	7.3	2.6	0.0	3.1	3.3	3.5
Precipitation					0.0	9.5	3.7	0.0	4.4	0.9		0.4	18.9	15.4	11.8
Evaporation		4.9	5.0	0.6	0.8	0.2	0.0	0.1	1.1	0.7	1.7	0.7	15.8	-	12.6
Growing Degrees	5	8.0	5.7	5.7	5.4	6.7	0.5	0.0	0.0	3.7	0.5	2.6	38.7	23.7	18.0
	10	3.0	0.7	0.7	0.4	1.7	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.4	1.5

3rd 10-day period (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.3	13.8	9.9
Precipitation - Reference Evapotranspiration	5.6	1.6	1.9
Number of Rainy Days	5.0	3.0	3.3
Number of Dry Days	4.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

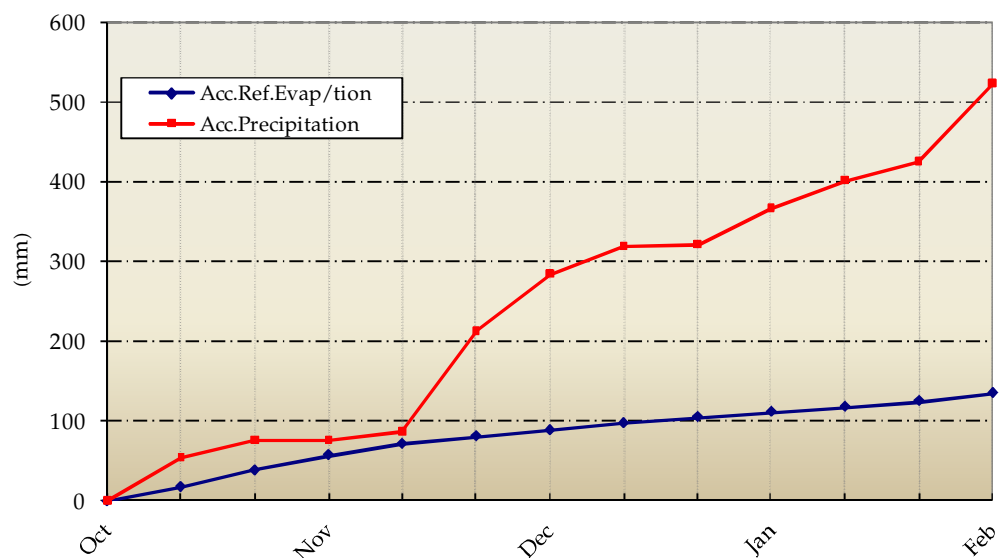


Tripoli

3rd 10-day period (21-31/01/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.2	11.9	13.4	12.9	8.4	10.4	7.8	5.3	10.4	11.4	9.5	10.4	10.6	9.8
	Min	6.3	5.7	0.8	0.5	5.3	3.6	-0.8	2.8	4.2	-1.8	6.7	3.0	1.8	0.9
Relative Humidity	Max	91	79	90	97	97	100	97	100	79	100	83	92	94	-
	Min	54	55	39	53	79	71	54	93	48	45	72	60	64	-
Soil Temperature at 10 cm	06 UTC	8.4	7.0	5.0	5.2	7.0	6.2	5.0	6.0	5.0	3.6	7.0	5.9	5.0	4.6
	12 UTC	10.2	8.8	8.4	6.6	7.8	-	7.4	6.0	7.0	6.4	7.4	7.6	7.7	5.4
Sunshine Duration		3.8	7.0	7.4	2.4	0.0	2.6	3.6	0.0	6.3	4.2	0.7	3.5	3.3	4.0
Precipitation		5.8	4.4		0.9	43.5	11.4		23.9	8.1		0.0	98.0	72.1	32.5
Evaporation		0.7	1.7	1.2	0.1	0.1	0.7	1.1	0.1	0.1	0.0	0.7	6.5	8.7	8.6
Growing Degrees	5	4.8	3.8	2.1	1.7	1.9	2.0	0.0	0.0	2.3	0.0	3.1	21.6	18.0	14.3
	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 (21-31/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.9	8.6	11.0
Precipitation - Reference Evapotranspiration	88.1	63.5	21.5
Number of Rainy Days	7.0	7.0	4.6
Number of Dry Days	4.0	1.0	-

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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