

AGROMETEOROLOGICAL BULLETIN

*January 2011
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



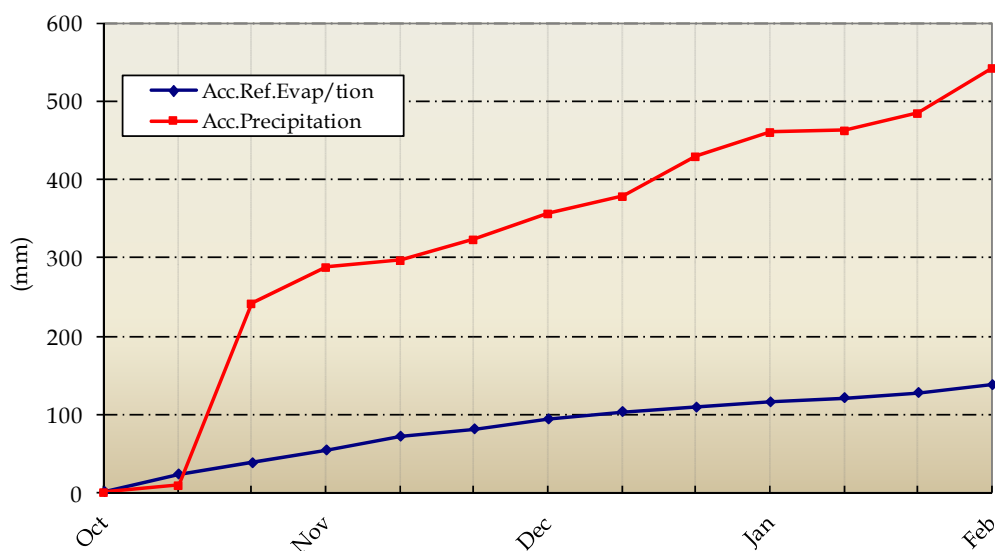
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www.hnms.gr
www.emy.gov.gr
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www.meteohellas.gr*

3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.2	16.0	14.4	10.6	9.6	10.8	13.4	11.6	11.4	12.0	14.6	12.4	-	13.9
	Min	7.0	9.2	7.4	4.2	1.5	-3.0	-2.0	8.0	7.0	5.0	5.2	4.5	-	3.3
Relative Humidity	Max	100	100	97	97	100	100	96	92	89	91	94	96	-	-
	Min	88	62	62	74	38	46	48	67	48	54	52	58	-	-
Soil Temperature at 10 cm	06 UTC	8.8	10.0	9.8	9.2	8.0	5.0	5.2	8.0	8.4	7.8	8.4	8.1	-	7.1
	12 UTC	8.8	11.0	10.6	10.0	8.8	7.8	6.6	8.6	9.8	9.0	10.6	9.2	-	8.9
Sunshine Duration		0.0	3.1	3.1	0.0	7.3	7.0	4.5	0.2	0.3	0.5	5.2	2.8	-	4.3
Precipitation		18.8	10.1	3.6	9.2	3.8			10.3	0.9		1.5	58.2	-	29.1
Evaporation		1.1	0.4	2.4	2.7	1.8	0.2	1.9	0.9	1.4	0.9	1.7	15.4	-	15.2
Growing Degrees	5	4.6	7.6	5.9	2.4	0.6	0.0	0.7	4.8	4.2	3.5	4.9	39.2	-	40.2
	10	0.0	2.6	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	-	5.9

3rd 10-day period (21-31/01/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	10.0	-	11.5
Precipitation - Reference Evapotranspiration	48.2	-	17.6
Number of Rainy Days	8.0	-	3.9
Number of Dry Days	8.0	-	-

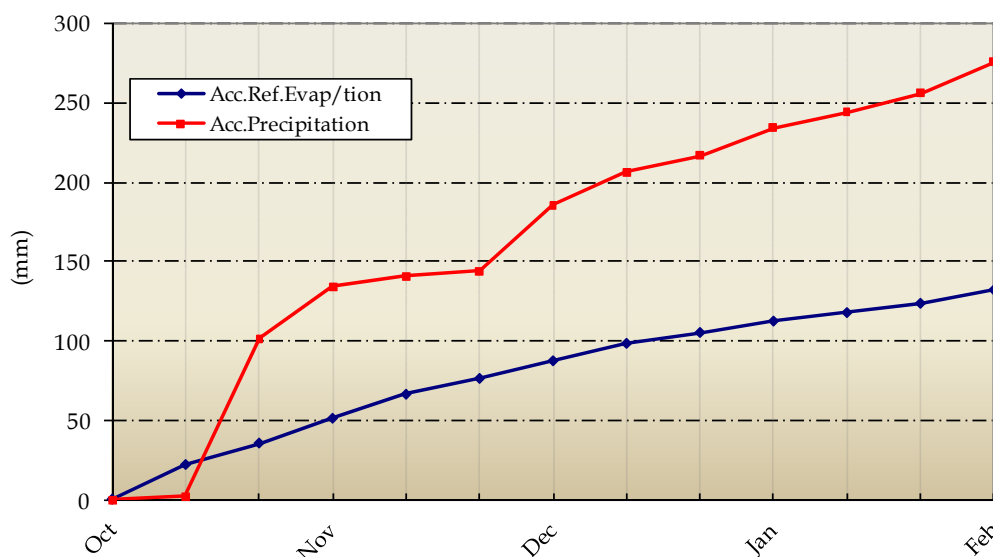
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.2	10.4	14.4	10.0	3.6	4.4	6.0	6.8	5.2	5.2	5.8	7.4	3.0	8.8
	Min	4.4	7.2	8.4	3.6	1.2	-2.2	-3.6	-2.4	1.2	-3.0	-6.8	0.7	-4.0	1.4
Relative Humidity	Max	97	97	97	89	96	89	96	96	85	87	90	93	92	-
	Min	89	90	54	67	61	62	81	61	49	39	46	64	60	-
Soil Temperature at 10 cm	06 UTC	5.8	6.8	8.4	6.6	5.0	3.6	4.0	2.4	3.6	2.2	1.4	4.5	1.8	4.6
	12 UTC	6.0	7.2	8.6	7.0	5.0	4.0	4.0	4.0	4.0	3.8	2.0	5.1	2.5	5.8
Sunshine Duration		0.0	0.0	7.9	1.0	0.0	6.9	7.4	0.2	5.5	9.0	8.0	4.2	2.1	3.3
Precipitation		5.1	9.1	1.0	4.9	0.0							20.1	12.6	16.6
Evaporation		0.8	0.7	2.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	10.0
Growing Degrees	5	1.8	3.8	6.4	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.8	4.4	16.7
	10	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	2.2

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.5	6.9	10.8
Precipitation - Reference Evapotranspiration	11.6	5.7	5.8
Number of Rainy Days	4.0	3.0	2.7
Number of Dry Days	4.0	8.0	-

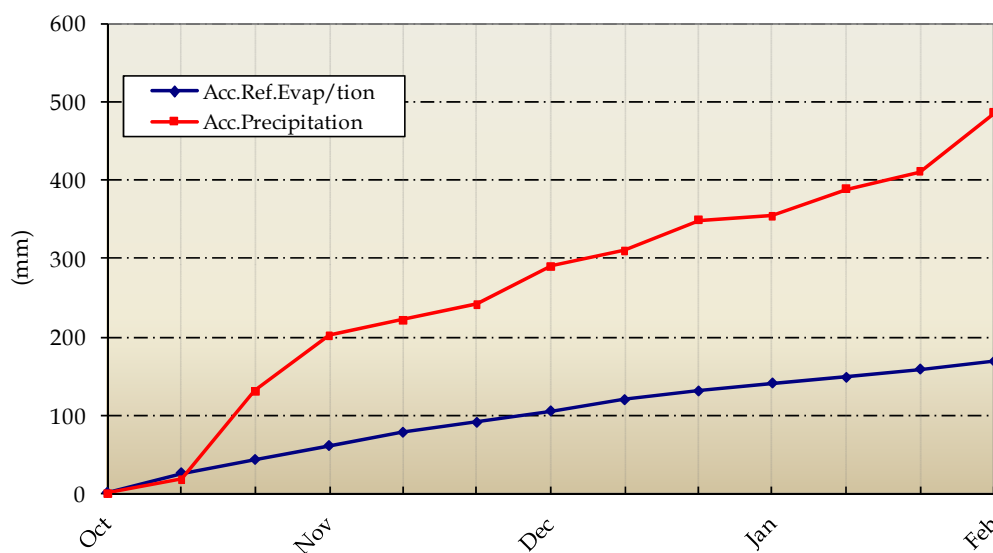
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2011)		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	16.4	13.4	12.0	9.4	11.8	12.8	13.0	12.0	11.4	15.0	12.8	11.6	14.0
	Min	9.0	8.6	8.2	5.0	3.0	1.4	2.2	8.4	8.4	7.6	4.2	6.0	5.4	5.3
Relative Humidity	Max	95	95	87	97	97	85	83	94	97	94	97	93	96	-
	Min	77	64	63	74	44	45	47	74	72	68	57	62	60	-
Soil Temperature at 10 cm	06 UTC	10.6	10.2	10.2	10.0	8.0	6.2	6.2	9.0	9.8	10.0	9.6	9.1	9.3	8.6
	12 UTC	11.2	11.2	11.4	11.4	9.2	9.2	8.6	10.2	11.2	11.2	12.2	10.6	10.1	10.2
Sunshine Duration		0.0	3.0	0.0	0.1	3.4	6.9	8.3	0.0	0.1	0.3	7.8	2.7	2.0	4.8
Precipitation		13.1	16.4	6.0	12.1	11.3			13.4	1.6	1.2	0.0	75.1	48.7	33.1
Evaporation		0.4	1.9	0.5	0.6	0.4	0.5	0.0	0.8	1.6	0.1	3.0	9.8	8.6	18.6
Growing Degrees	5	6.1	7.5	5.8	3.5	1.2	1.6	2.5	5.7	5.2	4.5	4.6	48.2	39.2	51.2
	10	1.1	2.5	0.8	0.0	0.0	0.0	0.0	0.7	0.2	0.0	0.0	5.3	7.0	9.9

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.0	9.7	11.9
Precipitation - Reference Evapotranspiration	65.1	39.0	21.2
Number of Rainy Days	8.0	8.0	4.6
Number of Dry Days	4.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

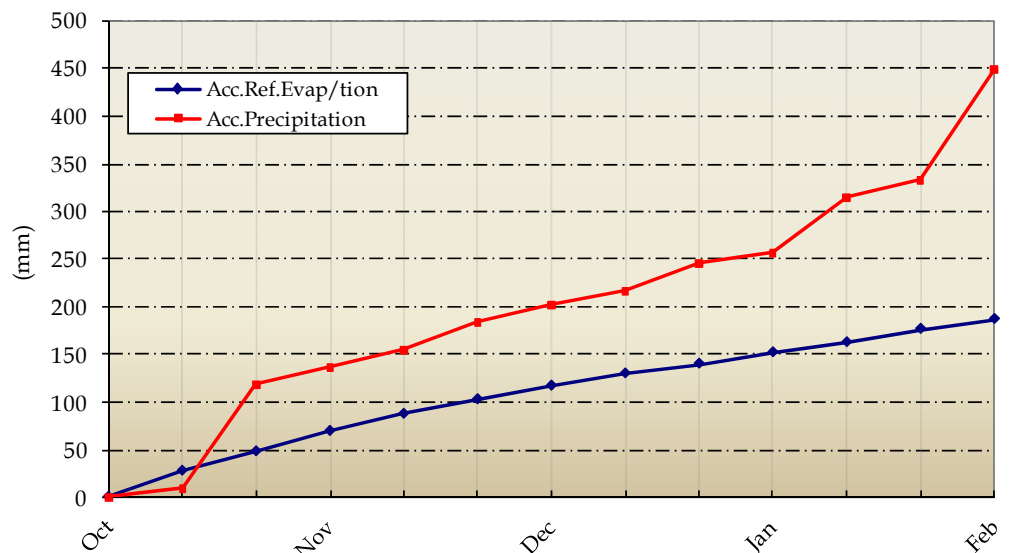


Kalamata

3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.2	16.4	16.0	11.2	10.4	11.6	13.4	11.0	10.6	8.4	14.8	12.3	12.3	14.8
	Min	5.8	6.4	7.2	7.2	2.0	0.6	-0.8	8.4	6.0	6.4	6.0	5.0	5.2	5.3
Relative Humidity	Max	97	100	97	97	97	96	100	100	97	97	97	98	92	-
	Min	92	66	57	93	58	38	47	88	80	91	59	70	64	-
Soil Temperature at 10 cm	06 UTC	11.0	11.0	11.4	11.4	10.4	9.2	8.8	8.8	7.4	10.2	10.0	10.0	9.8	9.0
	12 UTC	11.0	11.6	11.4	11.4	10.6	9.6	9.6	10.0	10.2	10.0	10.4	10.5	10.3	10.3
Sunshine Duration		0.0	5.1	3.5	0.0	6.3	8.5	5.6	0.0	0.0	0.0	4.9	3.1	2.5	4.4
Precipitation		11.7	32.5	2.2	7.1	2.6		0.7	22.8	23.4	5.1	9.1	117.2	68.4	36.5
Evaporation		1.5	1.2	1.1	0.5	1.5	2.7	1.8	0.6	0.4	0.2	1.6	13.1	21.9	21.4
Growing Degrees	5	3.5	6.4	6.6	4.2	1.2	1.1	1.3	4.7	3.3	2.4	5.4	40.1	41.5	55.6
	10	0.0	1.4	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.4	6.7	9.3

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.4	11.2	13.4
Precipitation - Reference Evapotranspiration	106.8	57.2	23.1
Number of Rainy Days	10.0	8.0	4.7
Number of Dry Days	8.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

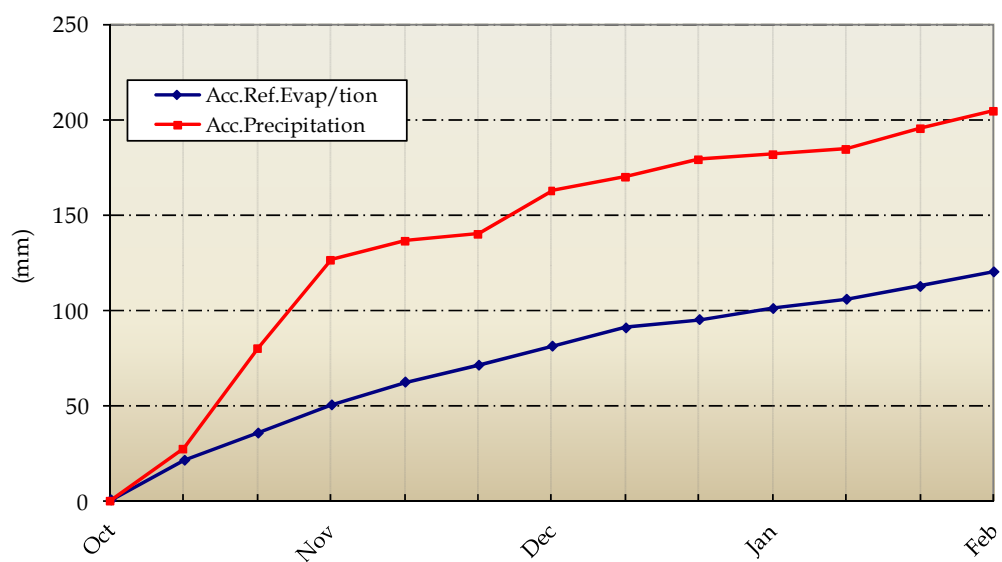


Larisa

3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.4	12.6	14.2	10.2	7.0	6.2	8.8	6.8	7.6	9.6	8.4	9.3	6.5	10.7
	Min	1.8	7.8	2.4	3.0	0.4	-6.4	-5.6	4.6	4.6	3.0	4.6	1.8	1.7	1.2
Relative Humidity	Max	97	97	97	92	92	95	95	94	91	93	-	94	95	-
	Min	87	76	50	60	44	37	51	79	69	69	-	62	71	-
Soil Temperature at 10 cm	06 UTC	7.0	8.8	8.4	4.0	7.2	1.4	1.0	6.4	6.4	6.2	7.2	5.8	6.1	5.5
	12 UTC	8.0	9.4	9.0	9.0	7.6	5.8	5.0	6.8	6.8	7.0	7.8	7.5	6.8	6.2
Sunshine Duration		0.0	1.1	6.0	0.5	6.4	7.7	6.4	0.0	0.2	1.5	-	3.0	1.9	3.5
Precipitation		0.3	0.0	0.0					7.0	1.8			9.1	13.5	10.7
Evaporation		0.3	0.3	1.3	1.5	0.0	0.0	0.0	0.1	0.4	0.0	0.5	4.4	8.2	7.0
Growing Degrees	5	1.1	5.2	3.3	1.6	0.0	0.0	0.0	0.7	1.1	1.3	1.5	15.8	8.0	18.5
	10	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.5

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.7	7.2	8.6
Precipitation - Reference Evapotranspiration	1.4	6.3	2.1
Number of Rainy Days	3.0	7.0	3.0
Number of Dry Days	4.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

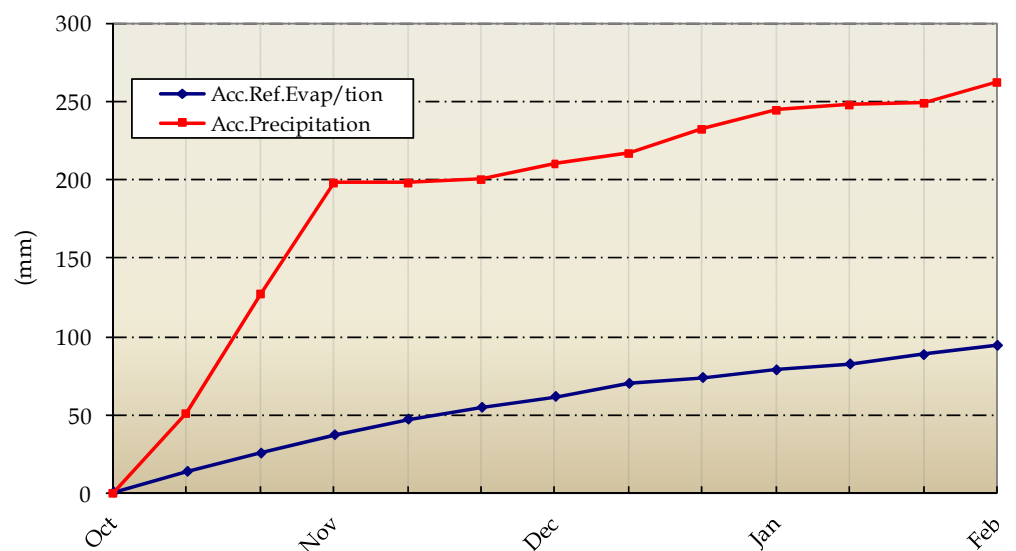


Series

3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.2	10.4	10.4	8.2	6.2	4.6	7.8	7.4	9.6	7.4	9.2	8.3	4.4	8.6
	Min	7.6	6.4	3.2	1.2	0.0	-5.8	-5.8	-0.6	2.4	-2.0	-3.4	0.3	-2.1	0.4
Relative Humidity	Max	97	97	96	96	93	93	96	88	79	92	96	93	88	-
	Min	86	91	67	72	45	57	47	65	43	53	51	62	64	-
Soil Temperature at 10 cm	06 UTC	7.2	8.2	8.0	6.8	6.6	4.4	3.6	3.4	4.8	5.2	4.2	5.7	3.9	3.9
	12 UTC	7.2	8.4	8.4	7.2	6.4	4.2	3.4	4.0	5.4	5.2	4.2	5.8	4.2	4.6
Sunshine Duration		0.0	0.0	2.5	2.5	0.8	1.5	3.3	0.0	2.8	0.9	4.8	1.7	1.0	3.2
Precipitation		5.7	6.0	1.7					0.0				13.4	16.3	11.3
Evaporation		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	2.9
Growing Degrees	5	3.9	3.4	1.8	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	10.1	1.8	9.9
	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	0.6

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.0	5.3	6.3
Precipitation - Reference Evapotranspiration	7.4	11.0	5.0
Number of Rainy Days	3.0	5.0	3.0
Number of Dry Days	4.0	2.0	-

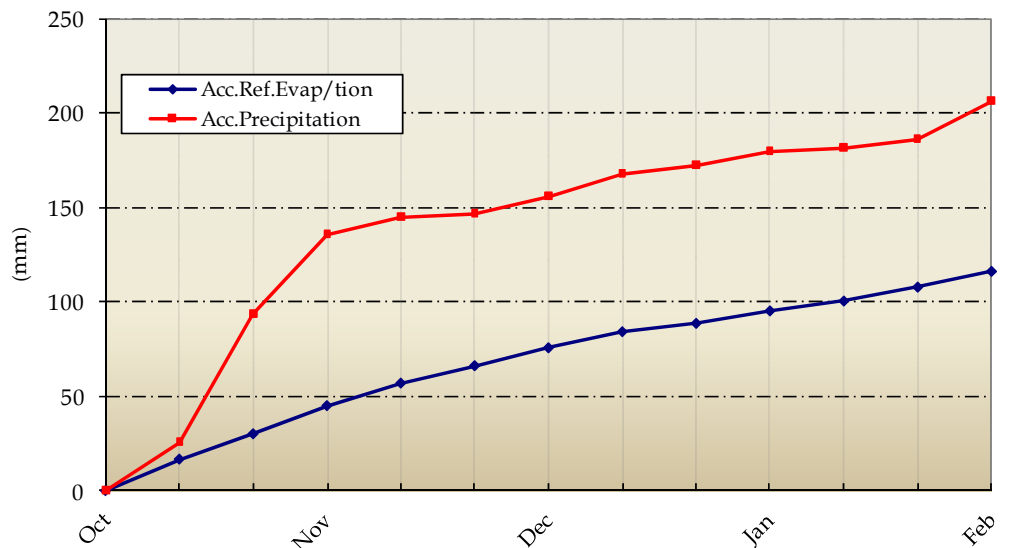
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.2	9.6	-	9.2	5.2	4.8	9.6	5.8	11.4	9.4	9.6	8.5	5.9	9.2
	Min	5.0	4.2	-	0.0	-1.0	-5.0	-4.0	1.8	3.0	2.6	2.4	0.9	0.3	0.9
Relative Humidity	Max	95	-	94	93	90	87	100	93	96	93	93	93	93	-
	Min	90	-	82	58	34	39	38	90	41	70	44	59	66	-
Soil Temperature at 10 cm	06 UTC	7.6	8.2	-	5.4	5.2	4.0	3.2	4.6	5.2	5.8	6.0	5.5	5.0	5.3
	12 UTC	7.6	8.0	-	5.6	6.0	4.0	3.2	4.8	6.0	6.4	6.8	5.8	5.4	5.5
Sunshine Duration		0.0	-	5.3	1.6	7.7	8.8	4.8	0.0	3.3	1.4	5.1	3.8	1.9	3.7
Precipitation		0.6	8.7						10.5		0.1		19.9	4.6	16.5
Evaporation		0.2	-	-	0.0	0.0	0.0	0.0	0.5	0.7	0.7	1.0	-	5.3	6.8
Growing Degrees	5	2.6	1.9	-	0.0	0.0	0.0	0.0	0.0	2.2	1.0	1.0	-	8.1	13.5
	10	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	1.2	0.5

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.3	7.2	8.6
Precipitation - Reference Evapotranspiration	11.6	-2.6	7.9
Number of Rainy Days	4.0	3.0	3.3
Number of Dry Days	4.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

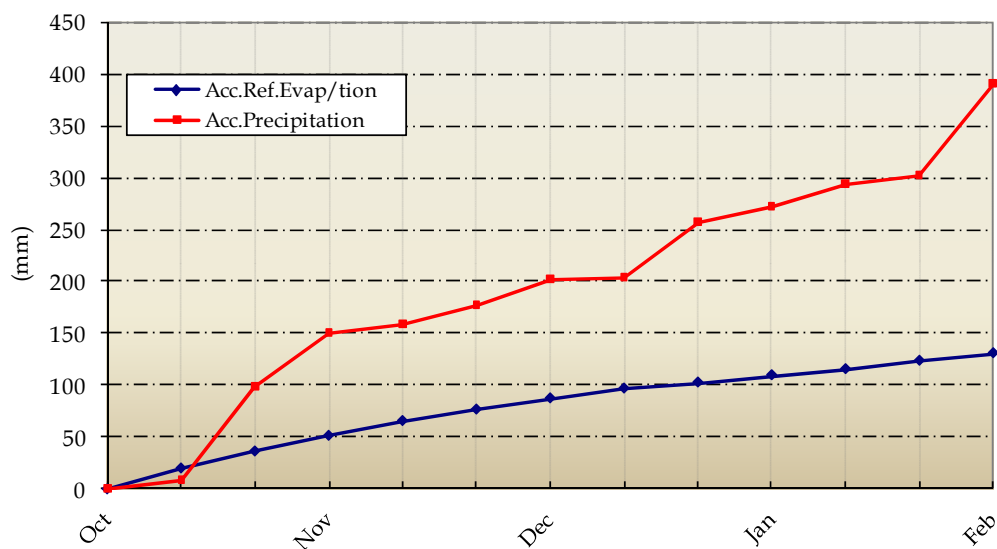


Tripoli

3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.8	12.6	9.0	7.0	5.4	6.4	8.0	5.6	4.6	4.0	5.0	6.9	-	9.8
	Min	1.6	4.0	5.4	2.8	0.2	-6.0	-6.0	3.6	0.4	2.0	1.6	0.9	-	0.9
Relative Humidity	Max	97	100	91	97	96	-	95	97	96	93	97	96	-	-
	Min	86	63	70	82	51	-	55	87	80	87	90	75	-	-
Soil Temperature at 10 cm	06 UTC	5.2	6.0	6.4	5.6	3.6	1.2	-	4.6	4.2	4.0	4.6	4.5	-	4.6
	12 UTC	6.6	8.6	7.8	6.8	5.6	3.4	3.8	4.8	5.0	5.4	5.4	5.7	-	5.4
Sunshine Duration		0.0	5.2	2.4	0.2	6.7	6.8	3.6	0.0	0.0	0.0	0.0	2.3	-	4.0
Precipitation		2.1	5.6	6.9	11.1	1.3			47.7	9.8	1.7	2.7	88.9	-	32.5
Evaporation		0.1	1.6	0.8	0.5	0.0	0.0	0.0	0.3	0.0	0.3	1.0	4.6	-	8.6
Growing Degrees	5	0.2	3.3	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	-	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	-	0.9

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.2	-	11.0
Precipitation - Reference Evapotranspiration	81.7	-	21.5
Number of Rainy Days	9.0	-	4.6
Number of Dry Days	8.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

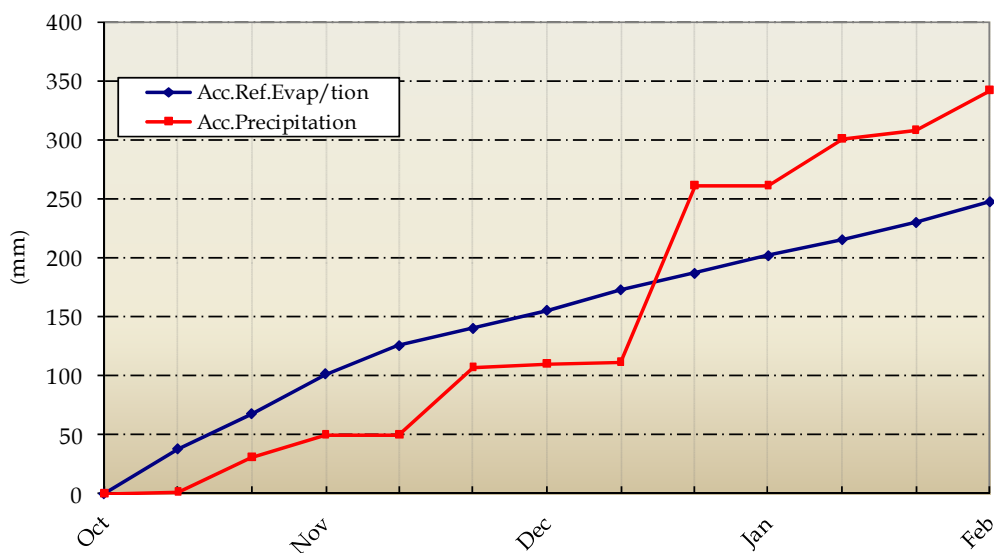


Tympaki

3rd 10-day period (21-31/01/2011)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.8	18.6	19.6	18.4	15.4	13.4	16.0	19.4	17.0	13.8	15.0	16.9	14.5	15.7
	Min	8.0	9.0	10.6	11.2	11.0	6.2	4.0	11.0	11.6	7.0	8.6	8.9	7.3	7.2
Relative Humidity	Max	98	95	98	96	95	96	97	96	90	90	83	94	95	-
	Min	48	54	52	60	43	33	32	60	53	40	43	47	53	-
Soil Temperature at 10 cm	06 UTC	11.2	12.2	13.2	13.6	13.6	10.6	9.0	12.2	13.4	11.0	10.6	11.9	10.5	10.5
	12 UTC	14.6	14.6	15.6	15.6	14.6	12.4	12.4	14.6	14.0	13.2	13.6	14.1	12.7	12.3
Sunshine Duration		6.2	5.3	3.8	2.7	6.5	1.2	6.4	0.0	2.4	8.4	4.1	4.3	4.2	4.9
Precipitation		0.2	14.7	4.5	2.5	2.0			10.1				34.0	49.1	32.4
Evaporation		1.9	0.6	1.8	3.4	4.3	0.8	1.2	2.3	3.4	3.5	2.7	25.9	30.2	25.8
Growing Degrees	5	8.4	8.8	10.1	9.8	8.2	4.8	5.0	10.2	9.3	5.4	6.8	86.8	64.8	70.7
	10	3.4	3.8	5.1	4.8	3.2	0.0	0.0	5.2	4.3	0.4	1.8	32.0	17.3	18.8

3rd 10-day period (21-31/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.6	15.8	16.3
Precipitation - Reference Evapotranspiration	16.4	33.3	16.1
Number of Rainy Days	6.0	4.0	3.8
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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ΥΠΗΡΕΣΙΑ**

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