



AGROMETEOROLOGICAL BULLETIN

February 2011
1st 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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Helliniko, Athens

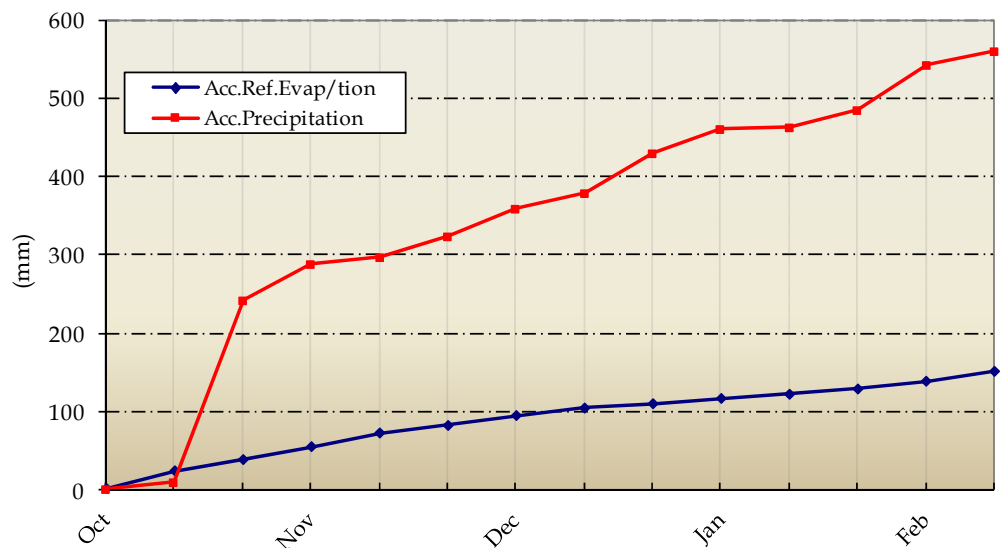
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www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Agrinio

1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	11.7	10.2	13.0	15.5	17.6	19.4	21.5	18.4	18.5	15.9	-	14.2
	Min	1.4	2.5	5.6	5.6	-2.6	-1.2	-1.0	0.6	0.8	0.2	1.2	-	2.8
Relative Humidity	Max	96	79	88	57	92	96	100	96	97	96	90	-	-
	Min	47	37	64	33	29	35	30	35	42	42	39	-	-
Soil Temperature at 10 cm	06 UTC	7.2	7.6	6.4	7.6	4.2	5.2	6.0	6.6	7.0	6.8	6.5	-	7.6
	12 UTC	8.6	7.8	8.2	8.6	6.8	7.2	7.4	8.6	8.4	8.8	8.0	-	9.8
Sunshine Duration		8.9	2.6	1.2	7.2	8.9	8.6	9.1	9.4	9.2	8.9	7.4	-	4.8
Precipitation				17.5								17.5	-	36.3
Evaporation		3.2	3.8	1.2	0.7	2.8	1.6	1.9	1.0	1.3	2.4	19.9	-	16.2
Growing Degrees	5	2.2	2.1	2.9	4.3	1.5	3.2	4.2	6.1	4.6	4.4	35.4	-	36.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	-	4.3

1st 10-day period (1-10/02/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	12.7	-	12.1
Precipitation - Reference Evapotranspiration	4.8	-	24.2
Number of Rainy Days	1.0	-	3.7
Number of Dry Days	2.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

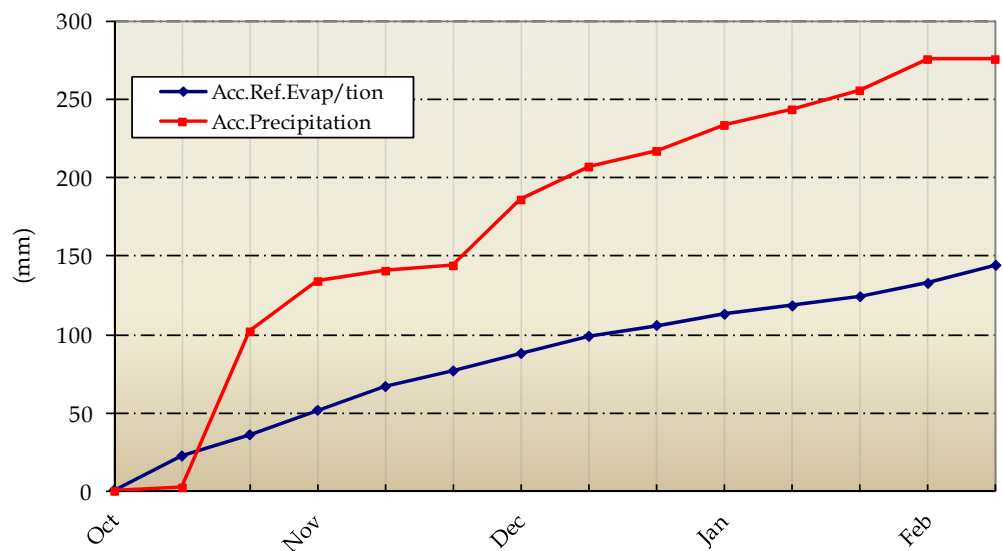


Alexandroupoli

1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	5.4	7.6	7.0	7.2	9.8	13.0	15.8	15.2	14.4	12.0	10.7	7.1	9.1
	Min	-4.6	-6.6	-5.6	-0.6	-3.4	0.4	-0.4	-0.2	0.6	-2.2	-2.3	0.1	0.8
Relative Humidity	Max	84	90	85	81	91	89	89	93	88	92	88	94	-
	Min	41	37	46	34	46	61	40	44	31	30	41	64	-
Soil Temperature at 10 cm	06 UTC	2.2	1.2	1.0	2.4	2.0	3.2	3.6	4.2	4.4	4.2	2.8	3.2	5.3
	12 UTC	2.2	7.0	3.6	3.2	3.6	5.0	5.0	5.4	6.0	5.4	4.6	3.7	6.6
Sunshine Duration		9.9	8.1	3.9	8.8	9.2	9.2	9.1	10.1	9.3	8.4	8.6	2.8	3.9
Precipitation													40.4	19.4
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	12.5	11.6
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	1.7	2.7	2.5	2.5	0.0	9.4	5.7	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	0.5	1.4

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.6	8.4	10.9
Precipitation - Reference Evapotranspiration	-11.6	32.0	8.5
Number of Rainy Days	0.0	4.0	2.5
Number of Dry Days	17.0	0.0	-

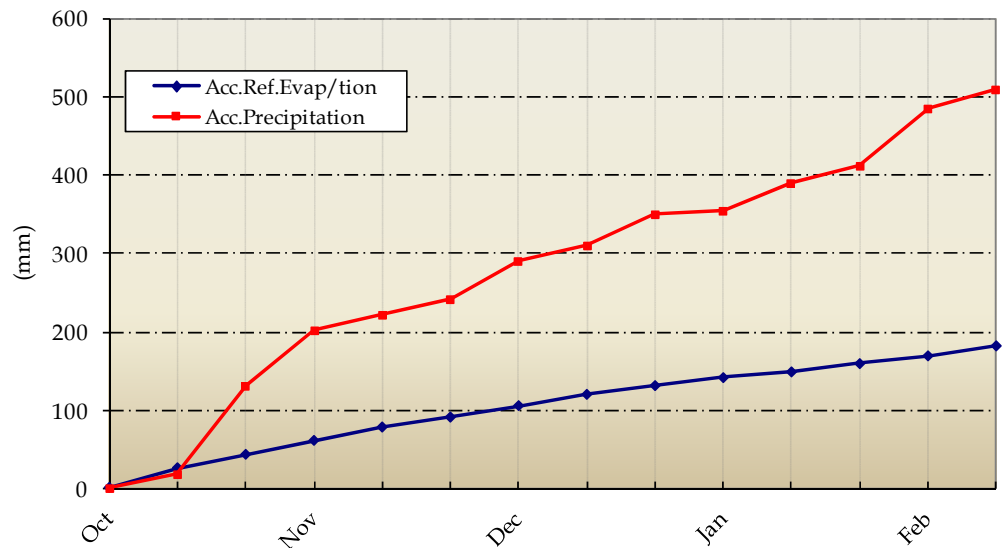
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.0	11.4	10.8	14.4	14.0	15.8	16.0	18.0	16.4	16.0	14.7	13.3	14.0
	Min	2.8	-0.2	6.2	7.0	-0.6	0.6	2.0	2.2	6.6	4.0	3.1	5.5	4.8
Relative Humidity	Max	94	94	91	84	92	88	93	93	94	94	92	90	-
	Min	44	34	60	40	37	39	50	50	65	55	47	60	-
Soil Temperature at 10 cm	06 UTC	8.4	8.2	8.2	8.2	8.2	6.6	7.4	8.0	9.2	9.2	8.2	9.5	9.2
	12 UTC	11.2	9.2	9.6	10.2	9.4	10.2	10.4	11.8	12.2	12.2	10.6	10.7	10.9
Sunshine Duration		8.3	2.3	0.0	4.7	9.0	9.1	8.4	9.0	9.2	9.0	6.9	3.7	5.2
Precipitation			9.8	13.5								23.3	34.4	28.0
Evaporation		0.6	0.0	1.0	1.4	1.6	4.1	4.5	0.6	1.0	3.5	18.3	7.9	19.1
Growing Degrees	5	3.4	0.6	3.5	5.7	1.7	3.2	4.0	5.1	6.5	5.0	38.7	43.8	44.7
	10	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.1	1.5	0.0	2.3	6.5	7.9

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.7	11.7	12.4
Precipitation - Reference Evapotranspiration	10.6	22.7	15.6
Number of Rainy Days	2.0	6.0	4.1
Number of Dry Days	2.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

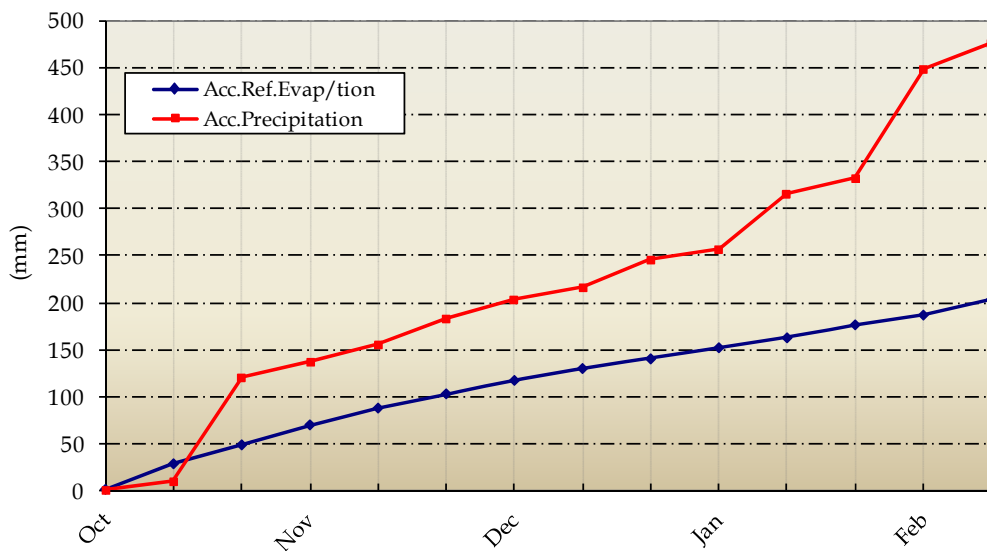


Kalamata

1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.4	12.4	9.4	12.4	16.2	17.6	17.6	18.8	17.6	17.2	15.4	13.9	14.9
	Min	4.4	1.2	5.8	7.0	4.4	1.0	2.4	3.0	3.2	3.4	3.6	4.5	4.8
Relative Humidity	Max	85	94	97	94	89	93	97	97	97	97	94	94	-
	Min	41	40	61	56	30	40	44	33	53	58	46	56	-
Soil Temperature at 10 cm	06 UTC	9.6	8.4	9.2	9.2	8.8	8.4	8.6	9.0	8.8	10.0	9.0	9.9	9.7
	12 UTC	10.2	9.2	9.2	9.6	9.4	9.2	9.6	10.0	10.2	10.6	9.7	10.3	11.0
Sunshine Duration		8.8	2.9	0.0	0.4	8.9	8.9	9.1	9.1	8.9	7.7	6.5	4.2	5.1
Precipitation			6.3	19.1	1.4							26.8	76.4	28.3
Evaporation		2.6	0.5	0.5	0.4	2.6	2.1	2.3	3.0	1.2	5.0	20.2	9.0	24.5
Growing Degrees	5	4.4	1.8	2.6	4.7	5.3	4.3	5.0	5.9	5.4	5.3	44.7	42.4	48.9
	10	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.9	0.4	0.3	1.9	6.2	8.7

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.9	13.2	14.4
Precipitation - Reference Evapotranspiration	9.9	63.2	13.9
Number of Rainy Days	3.0	8.0	4.1
Number of Dry Days	1.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

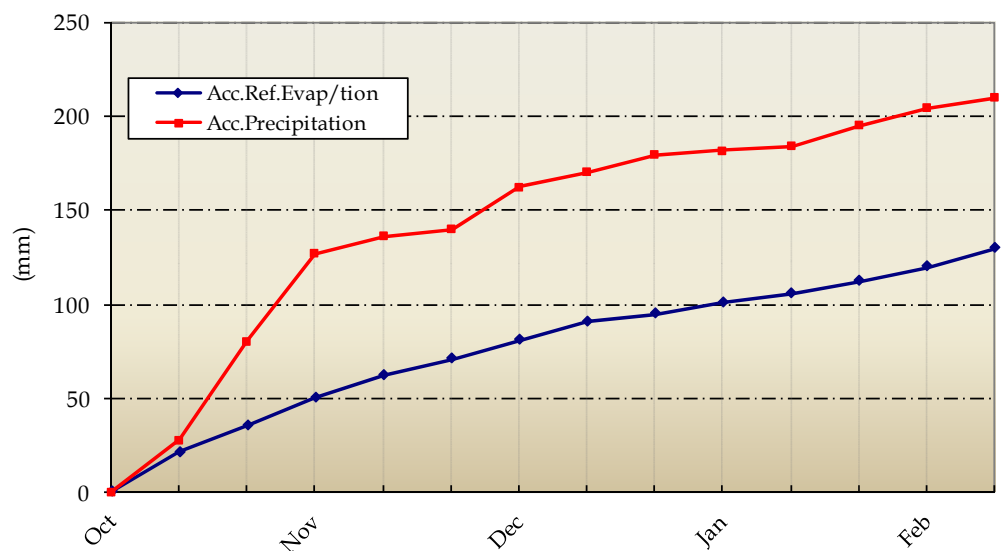


Larisa

1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.2	6.6	5.8	7.8	11.0	14.8	17.6	18.0	17.0	14.6	12.1	9.7	11.2
	Min	2.4	0.6	2.8	1.0	-3.6	-3.0	-1.4	-1.0	0.0	-1.0	-0.3	1.5	0.4
Relative Humidity	Max	96	96	93	88	96	96	93	96	93	92	94	94	-
	Min	68	77	73	44	45	41	35	38	37	20	48	58	-
Soil Temperature at 10 cm	06 UTC	6.8	6.4	6.2	6.0	3.8	3.4	2.8	5.6	5.0	5.2	5.1	6.1	6.1
	12 UTC	7.6	6.8	4.6	6.2	5.0	5.4	6.6	6.8	7.4	7.0	6.3	6.6	6.8
Sunshine Duration		1.2	0.0	0.0	1.9	7.5	8.0	8.2	8.4	8.2	7.9	5.1	4.1	4.3
Precipitation				5.4								5.4	27.0	9.7
Evaporation		1.3	0.9	0.1	0.0	0.0	0.0	1.9	1.5	4.0	1.1	10.8	3.9	6.9
Growing Degrees	5	0.3	0.0	0.0	0.0	0.0	0.9	3.1	3.5	3.5	1.8	13.1	11.5	16.7
	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	0.7

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.8	9.1	9.6
Precipitation - Reference Evapotranspiration	-4.4	17.9	0.1
Number of Rainy Days	1.0	5.0	2.8
Number of Dry Days	4.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

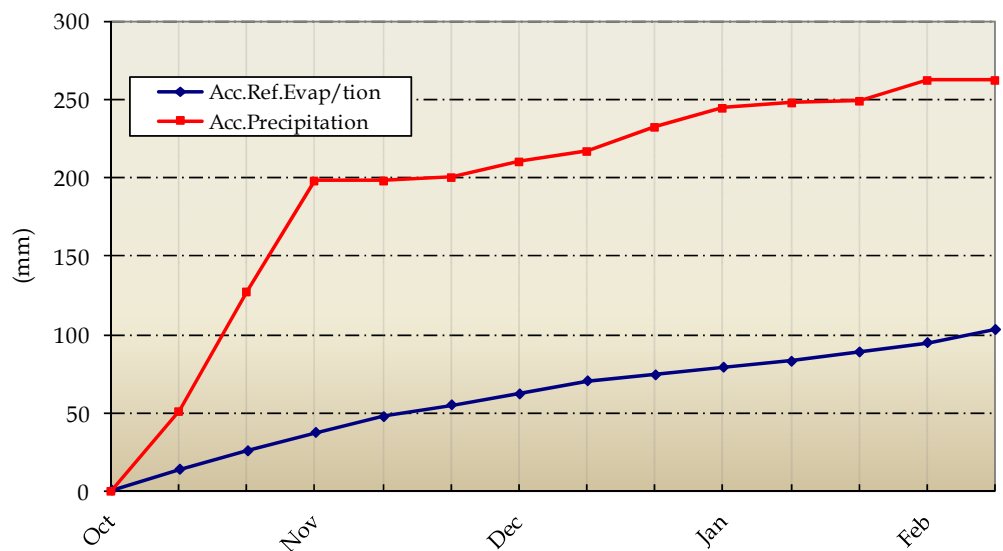


1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.2	10.0	8.2	9.8	12.8	14.2	18.6	18.4	19.0	15.2	13.5	7.6	9.9
	Min	-2.0	-4.6	-2.2	-2.8	-4.6	-2.4	-2.0	-1.4	-1.4	-0.8	-2.4	0.1	0.5
Relative Humidity	Max	91	95	88	79	86	89	89	93	92	93	90	90	-
	Min	42	39	46	29	30	38	29	31	25	19	33	63	-
Soil Temperature at 10 cm	06 UTC	3.8	3.4	3.0	3.0	2.8	2.0	3.0	3.4	3.8	4.4	3.3	3.9	4.6
	12 UTC	4.0	3.4	3.4	3.2	2.8	3.4	4.0	4.4	5.0	4.6	3.8	4.4	5.8
Sunshine Duration		4.5	4.0	2.0	5.7	6.5	5.3	6.5	6.7	6.8	6.7	5.5	2.3	4.2
Precipitation													27.7	11.0
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.7
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.9	3.3	3.5	3.8	2.2	13.7	3.3	12.7
	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	0.4

Series

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.4	7.6	7.7
Precipitation - Reference Evapotranspiration	-8.4	20.1	3.3
Number of Rainy Days	0.0	5.0	2.4
Number of Dry Days	18.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

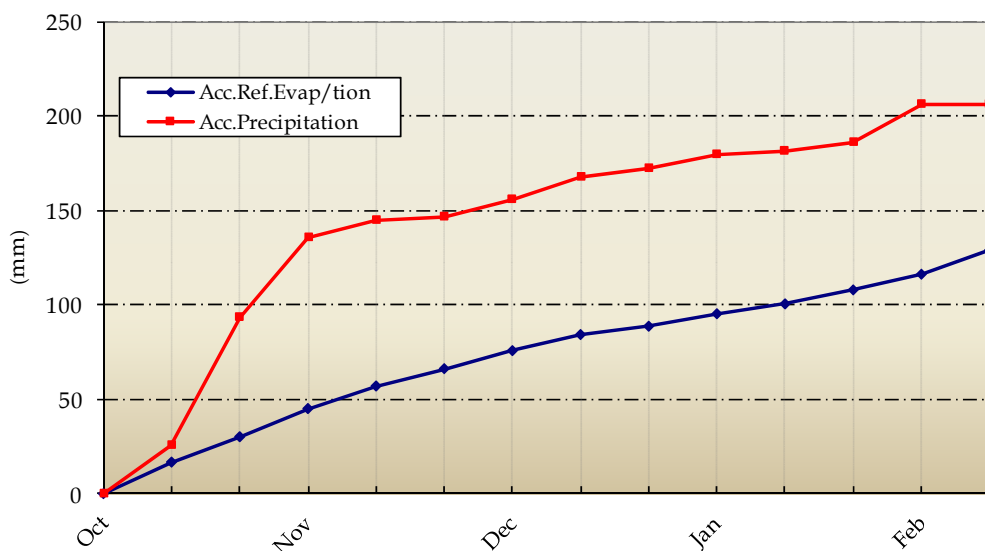


Trikala Imathias

1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.4	11.0	5.0	8.4	15.0	-	19.8	19.6	19.8	14.8	13.6	7.9	10.6
	Min	-0.2	-3.4	0.2	-2.0	-4.2	-	4.2	1.6	-0.6	-2.0	-0.7	0.6	0.7
Relative Humidity	Max	100	96	75	95	-	73	98	100	96	76	90	89	-
	Min	36	37	41	26	-	45	31	29	23	16	32	55	-
Soil Temperature at 10 cm	06 UTC	5.2	3.8	7.8	4.0	3.6	-	5.2	5.4	5.4	5.4	5.1	4.9	6.0
	12 UTC	5.6	4.0	5.2	4.6	5.4	-	6.4	6.6	5.8	6.4	5.6	5.3	6.1
Sunshine Duration		7.2	7.4	0.9	7.2	-	8.0	9.0	8.7	9.2	9.3	7.4	4.0	4.6
Precipitation													90.2	15.2
Evaporation		0.0	0.0	0.0	0.0	-	-	2.4	1.1	2.0	1.6	-	2.2	7.0
Growing Degrees	5	0.0	0.0	0.0	0.0	0.4	-	7.0	5.6	4.6	1.4	-	4.8	16.6
	10	0.0	0.0	0.0	0.0	0.0	-	2.0	0.6	0.0	0.0	-	0.0	0.4

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.7	9.1	9.5
Precipitation - Reference Evapotranspiration	-12.7	81.1	5.7
Number of Rainy Days	0.0	5.0	2.6
Number of Dry Days	11.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

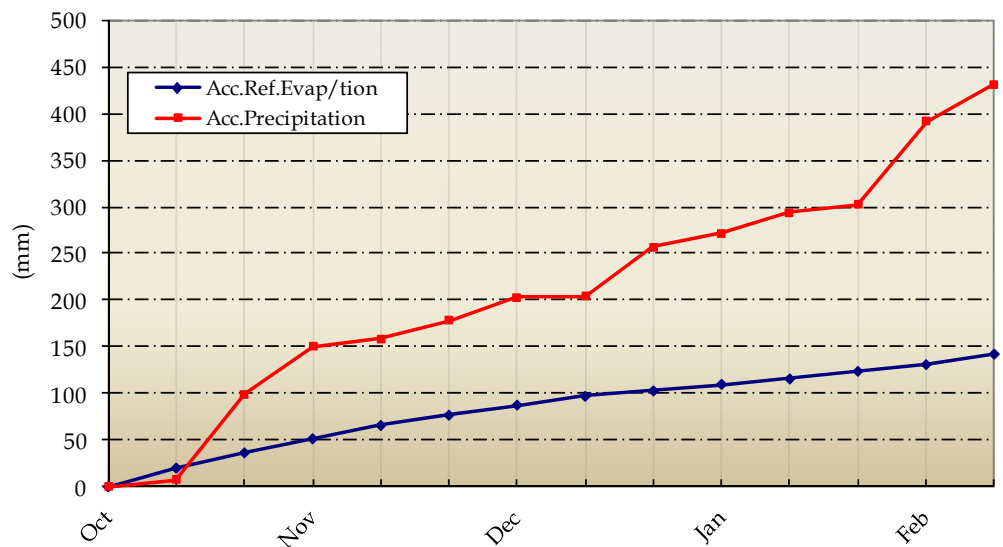


Tripoli

1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	5.6	5.6	2.4	4.8	10.0	14.4	15.6	15.8	16.2	13.8	10.4	-	10.0
	Min	1.0	-4.6	0.6	2.4	-3.8	-5.2	-3.6	-3.0	-3.0	-3.6	-2.3	-	0.4
Relative Humidity	Max	87	96	96	89	96	95	96	96	96	96	94	-	-
	Min	58	49	89	66	37	32	27	37	35	39	47	-	-
Soil Temperature at 10 cm	06 UTC	4.4	2.0	3.4	2.6	1.6	1.6	2.4	2.8	3.2	3.0	2.7	-	5.0
	12 UTC	5.8	3.8	2.4	4.4	4.4	4.4	5.6	6.4	6.8	6.6	5.1	-	5.8
Sunshine Duration		2.6	3.6	0.0	2.1	7.9	7.9	8.3	8.7	8.5	7.6	5.7	-	4.9
Precipitation			0.7	35.1	4.1							39.9	-	26.5
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	8.6
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.4	1.6	0.1	4.1	-	13.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.4

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.2	-	11.6
Precipitation - Reference Evapotranspiration	28.7	-	14.9
Number of Rainy Days	3.0	-	4.1
Number of Dry Days	1.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

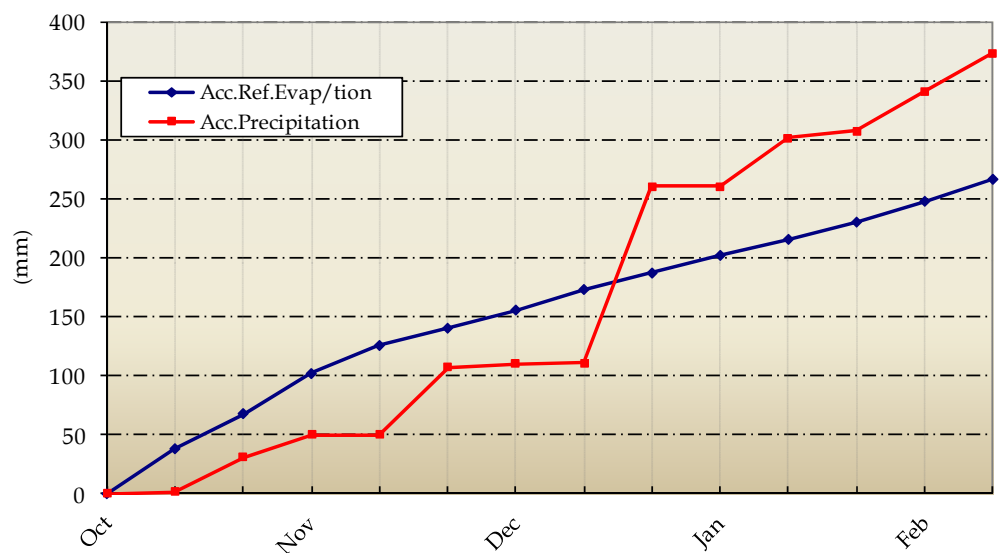


Tympani

1st 10-day period (1-10/02/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.8	11.6	15.2	14.6	15.2	17.0	18.4	18.0	17.2	18.2	15.9	15.6	15.4
	Min	6.8	3.6	8.4	11.2	6.6	7.2	6.6	8.4	7.4	8.4	7.5	6.8	6.8
Relative Humidity	Max	85	99	98	89	98	98	91	90	94	99	94	94	-
	Min	30	59	80	54	50	42	27	37	42	32	45	48	-
Soil Temperature at 10 cm	06 UTC	10.2	8.6	10.6	11.2	10.2	11.4	10.6	10.8	11.8	12.6	10.8	10.0	10.8
	12 UTC	12.8	10.0	11.6	13.0	12.6	14.6	14.4	14.0	15.2	15.6	13.4	12.6	12.9
Sunshine Duration		9.3	0.0	0.0	9.5	6.8	9.4	9.4	8.9	8.2	9.6	7.1	3.9	5.7
Precipitation			3.9	26.6	0.3		0.2				0.7	31.7	28.7	25.1
Evaporation		3.2	0.2	1.2	4.3	1.3	3.1	2.9	3.3	2.4	4.9	26.8	26.3	29.6
Growing Degrees	5	5.3	2.6	6.8	7.9	5.9	7.1	7.5	8.2	7.3	8.3	66.9	62.2	61.0
	10	0.3	0.0	1.8	2.9	0.9	2.1	2.5	3.2	2.3	3.3	19.3	16.0	15.3

1st 10-day period (1-10/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.7	15.9	17.0
Precipitation - Reference Evapotranspiration	13.0	12.8	8.1
Number of Rainy Days	5.0	4.0	3.3
Number of Dry Days	4.0	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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