

AGROMETEOROLOGICAL BULLETIN

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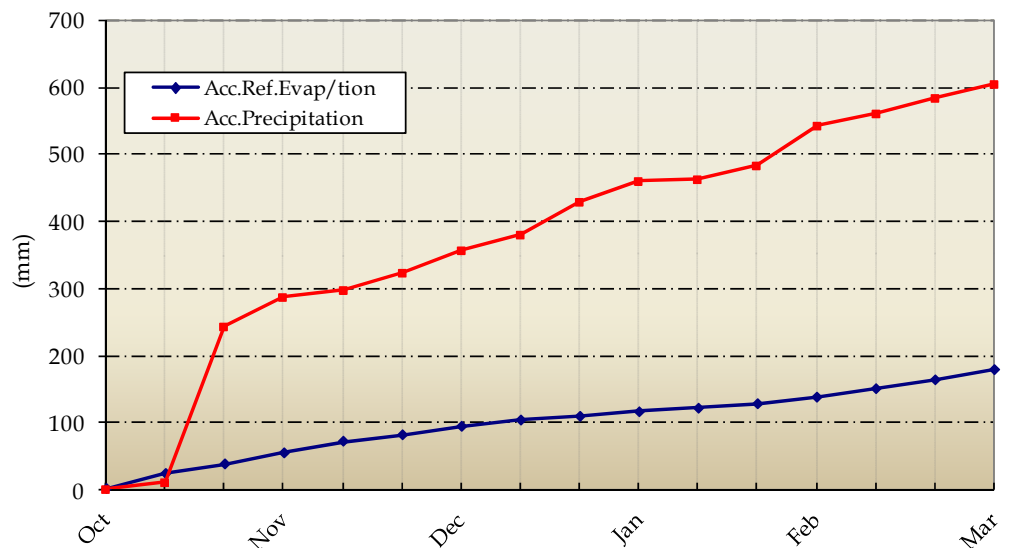
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Agrinio

3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.6	13.8	16.4	16.0	16.4	15.3	13.6	15.2	15.0	-	14.5
	Min	7.0	8.2	3.0	10.4	8.5	5.6	5.8	3.0	6.4	-	3.6
Relative Humidity	Max	97	97	100	80	60	76	87	87	86	-	-
	Min	71	69	50	45	39	44	45	45	51	-	-
Soil Temperature at 10 cm	06 UTC	10.4	10.2	7.0	10.6	10.8	10.0	9.0	9.2	9.6	-	7.6
	12 UTC	11.4	11.6	11.0	11.4	11.6	11.4	10.8	10.6	11.2	-	10.5
Sunshine Duration		0.1	3.3	6.3	1.1	9.8	6.0	8.0	5.4	5.0	-	5.1
Precipitation		18.5	2.5							21.0	-	30.5
Evaporation		1.9	1.2	2.0	3.0	3.8	4.0	3.8	1.4	21.1	-	16.9
Growing Degrees	5	5.3	6.0	4.7	8.2	7.5	5.5	4.7	4.1	45.9	-	34.1
	10	0.3	1.0	0.0	3.2	2.5	0.5	0.0	0.0	7.4	-	6.4

3rd 10-day period (21-28/02/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	15.4	-	12.9
Precipitation - Reference Evapotranspiration	5.6	-	17.6
Number of Rainy Days	2.0	-	3.0
Number of Dry Days	1.0	-	-

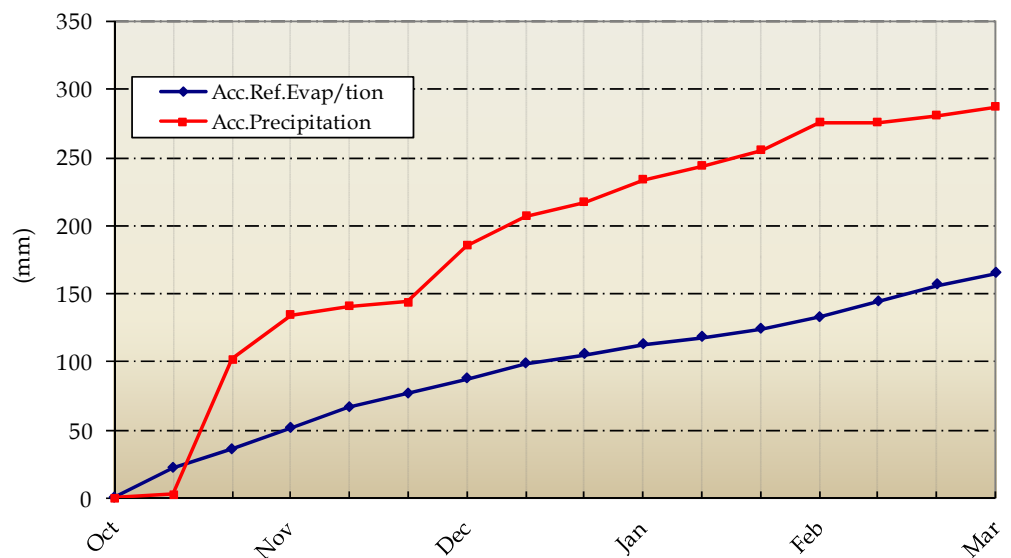
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.8	5.4	9.4	6.8	4.0	2.4	2.4	4.8	5.5	13.6	9.7
	Min	0.8	3.2	4.8	3.0	2.2	-1.6	-1.8	0.0	1.3	7.0	1.6
Relative Humidity	Max	89	97	87	87	83	-	88	78	87	95	-
	Min	55	73	69	69	65	-	51	52	62	64	-
Soil Temperature at 10 cm	06 UTC	5.2	5.4	5.6	5.4	4.6	3.5	-	2.6	4.6	9.2	5.7
	12 UTC	6.0	5.6	6.0	5.2	4.4	3.6	3.4	3.6	4.7	10.2	7.3
Sunshine Duration		5.5	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.9	4.9	4.8
Precipitation			6.3		0.0	0.0	0.0			6.3	22.1	14.4
Evaporation		0.0	0.1	2.8	0.2	0.0	0.0	0.0	1.0	4.1	1.5	9.4
Growing Degrees	5	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	2.1	42.2	17.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	2.5

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.5	10.4	12.0
Precipitation - Reference Evapotranspiration	-2.2	11.7	2.4
Number of Rainy Days	1.0	3.0	1.9
Number of Dry Days	2.0	7.0	-

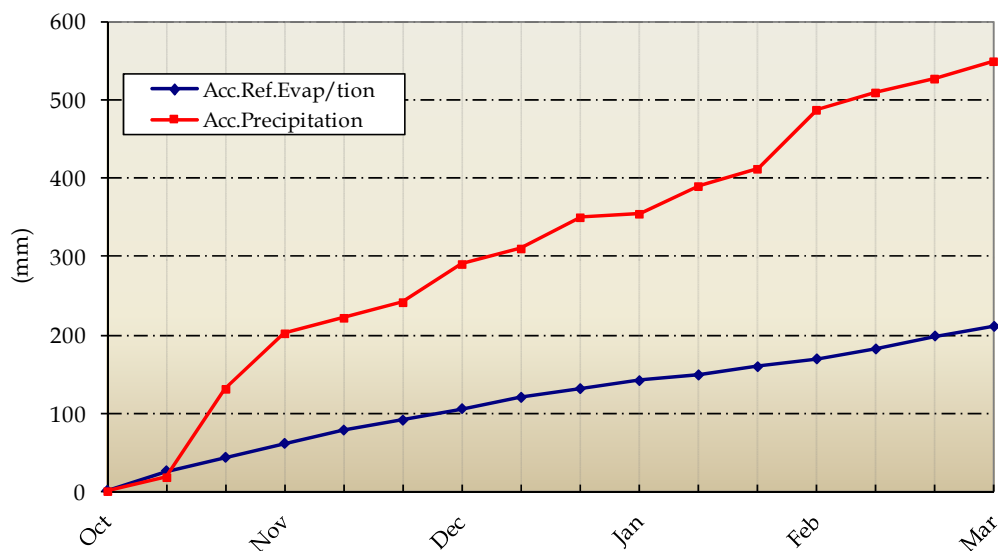
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.2	15.8	16.8	15.6	16.6	13.8	14.4	15.2	15.4	16.3	14.1
	Min	8.8	8.4	4.0	10.4	9.0	7.0	6.0	3.0	7.1	9.2	5.3
Relative Humidity	Max	95	95	97	82	77	91	91	91	90	95	-
	Min	63	50	47	56	43	55	50	50	52	60	-
Soil Temperature at 10 cm	06 UTC	11.0	11.6	10.2	12.0	11.0	11.0	11.0	10.4	11.0	12.5	9.0
	12 UTC	12.4	13.6	13.2	12.8	12.0	12.6	13.0	13.2	12.8	14.3	11.2
Sunshine Duration		0.9	3.0	6.6	0.5	3.5	0.6	5.0	6.6	3.3	5.6	5.7
Precipitation		16.0	4.6		1.1		0.1			21.8	2.1	22.1
Evaporation		0.9	1.2	4.8	1.1	3.5	1.5	3.2	0.4	16.6	20.9	19.2
Growing Degrees	5	7.0	7.1	5.4	8.0	7.8	5.4	5.2	4.1	50.0	61.7	39.2
	10	2.0	2.1	0.4	3.0	2.8	0.4	0.2	0.0	10.9	21.7	8.3

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.3	14.7	12.9
Precipitation - Reference Evapotranspiration	9.5	-12.6	9.2
Number of Rainy Days	4.0	1.0	3.2
Number of Dry Days	1.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

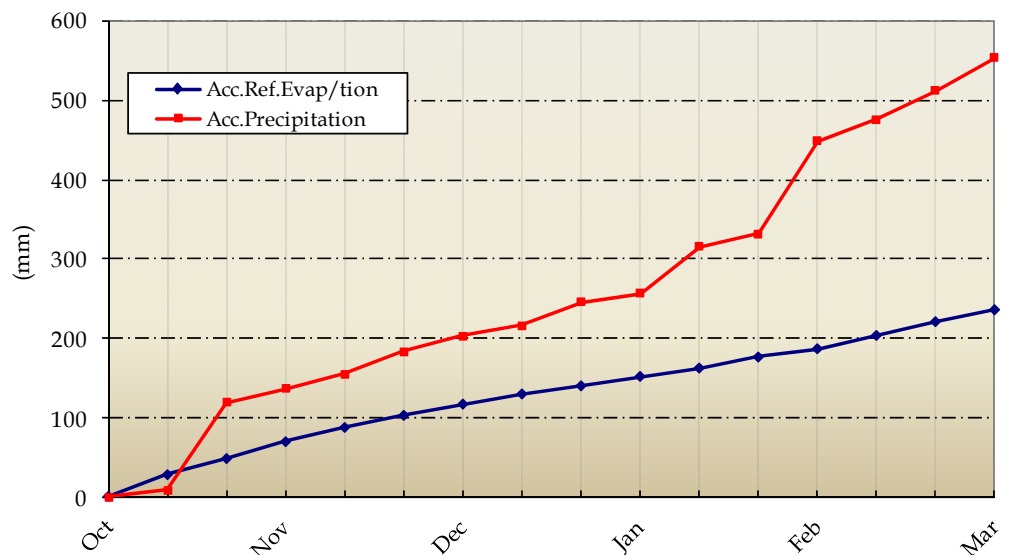


Kalamata

3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.6	16.4	15.8	16.2	17.4	16.4	14.6	14.8	15.9	18.0	14.8
	Min	4.8	9.4	3.8	9.0	10.0	8.4	7.6	3.0	7.0	7.9	5.1
Relative Humidity	Max	97	97	97	95	88	84	77	95	91	94	-
	Min	57	64	53	52	43	44	47	44	50	50	-
Soil Temperature at 10 cm	06 UTC	11.4	12.0	11.0	12.0	12.0	11.8	12.0	10.8	11.6	12.5	9.6
	12 UTC	12.4	13.0	12.4	12.6	12.4	13.4	12.4	12.0	12.6	13.2	11.1
Sunshine Duration		2.0	4.2	8.5	1.4	5.5	7.0	2.9	5.1	4.6	6.6	5.3
Precipitation		8.6	23.2		9.1	0.9	0.1			41.9	1.2	28.6
Evaporation		1.8	1.8	2.1	0.9	6.8	4.1	3.1	2.1	22.7	20.0	20.1
Growing Degrees	5	5.2	7.9	4.8	7.6	8.7	7.4	6.1	3.9	51.6	63.7	40.8
	10	0.2	2.9	0.0	2.6	3.7	2.4	1.1	0.0	12.9	23.7	8.0

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.1	16.8	13.5
Precipitation - Reference Evapotranspiration	26.8	-15.6	15.1
Number of Rainy Days	5.0	1.0	3.3
Number of Dry Days	1.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

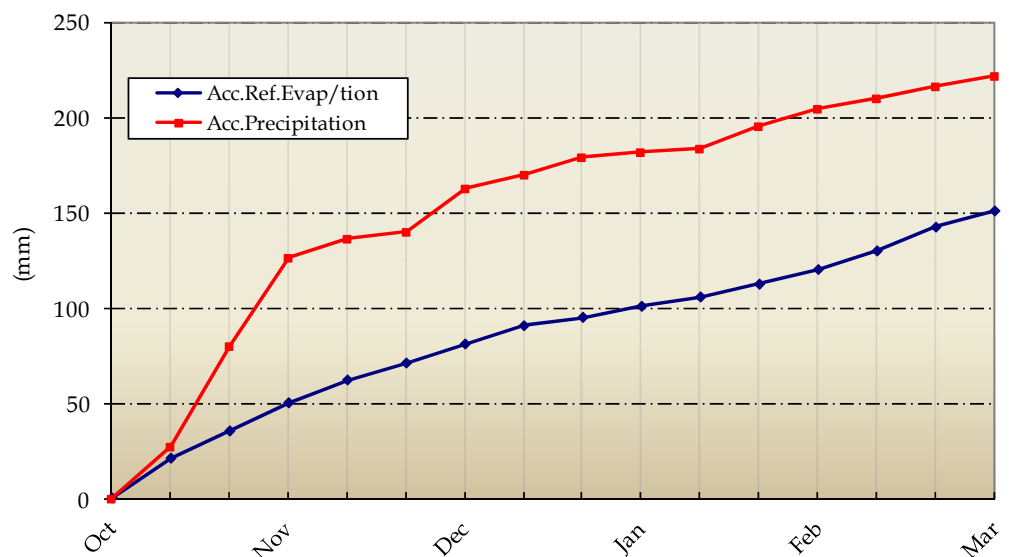


Larisa

3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.6	12.0	11.2	10.0	7.8	7.8	6.8	8.6	9.2	15.1	11.9
	Min	6.8	7.8	7.4	7.8	5.6	4.8	4.4	4.6	6.2	4.8	1.7
Relative Humidity	Max	97	97	91	83	81	87	97	97	91	90	-
	Min	87	69	73	62	61	69	74	73	71	48	-
Soil Temperature at 10 cm	06 UTC	5.0	5.2	9.6	9.4	7.8	8.0	8.0	7.0	7.5	9.6	7.0
	12 UTC	8.8	9.2	10.0	9.0	8.4	8.6	8.2	6.4	8.6	10.4	7.7
Sunshine Duration		0.0	3.6	0.3	0.6	0.0	0.0	0.0	0.0	0.6	4.9	4.6
Precipitation		0.3	5.4			0.0	0.0			5.7	5.3	13.4
Evaporation		0.8	0.2	0.4	0.4	1.0	2.1	2.1	0.0	7.0	17.7	9.6
Growing Degrees	5	3.2	4.9	4.3	3.9	1.7	1.3	0.6	1.6	21.5	39.6	20.2
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	2.5

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.5	12.7	11.5
Precipitation - Reference Evapotranspiration	-2.8	-7.4	1.9
Number of Rainy Days	2.0	4.0	2.6
Number of Dry Days	1.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

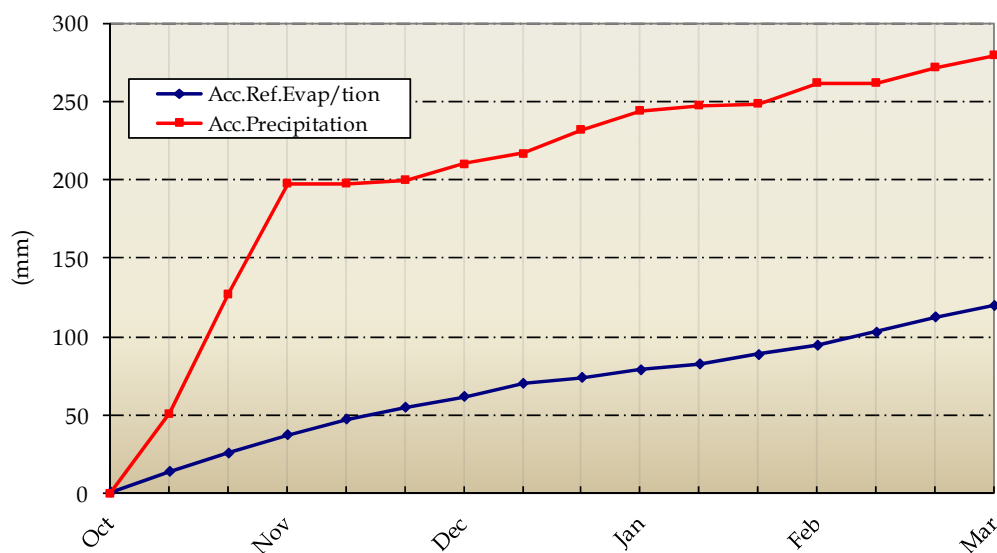


3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	7.6	8.6	13.0	10.2	8.2	8.6	7.0	8.2	8.9	15.1	11.3
	Min	5.0	3.8	4.4	4.0	5.0	2.4	2.6	3.0	3.8	4.9	1.7
Relative Humidity	Max	93	97	94	87	86	93	76	77	88	83	-
	Min	67	70	50	58	70	55	55	55	60	51	-
Soil Temperature at 10 cm	06 UTC	8.2	7.4	7.6	8.6	8.4	7.6	7.4	7.4	7.8	8.3	6.0
	12 UTC	8.0	7.6	9.0	8.8	8.4	7.4	7.6	8.0	8.1	9.4	7.4
Sunshine Duration		0.0	0.3	5.4	0.0	0.0	2.2	0.3	0.0	1.0	4.1	4.9
Precipitation		0.5	5.3			0.0	2.0			7.8	13.5	11.2
Evaporation		0.0	0.0	2.4	0.4	0.0	0.4	0.8	1.9	5.9	6.8	8.7
Growing Degrees	5	1.3	1.2	3.7	2.1	1.6	0.5	0.0	0.6	11.0	40.1	20.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	2.6

Series

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.3	12.3	9.5
Precipitation - Reference Evapotranspiration	0.5	1.2	1.7
Number of Rainy Days	3.0	4.0	2.1
Number of Dry Days	0.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

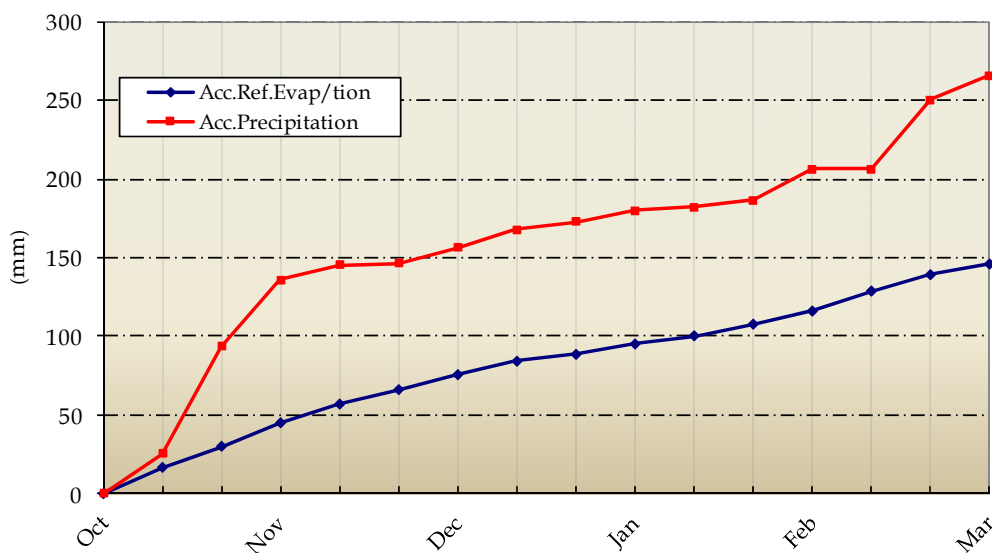


Trikala Imathias

3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.0	9.4	8.8	-	5.0	5.2	5.8	9.4	7.5	16.0	11.9
	Min	5.6	5.0	4.6	-	2.0	1.2	2.8	3.8	3.6	5.0	2.1
Relative Humidity	Max	100	94	-	85	84	85	97	98	92	91	-
	Min	91	78	-	65	65	73	73	65	73	42	-
Soil Temperature at 10 cm	06 UTC	8.2	8.0	8.4	-	5.6	5.6	5.8	6.2	6.8	8.7	7.2
	12 UTC	8.6	8.4	8.4	-	5.8	5.8	5.8	6.4	7.0	9.8	7.5
Sunshine Duration		0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	4.6	4.8
Precipitation		9.1	5.8	0.5			0.1			15.5	4.4	17.2
Evaporation		0.5	0.8	-	-	1.0	0.5	0.7	0.8	-	10.8	7.8
Growing Degrees	5	2.3	2.2	1.7	-	0.0	0.0	0.0	1.6	-	44.3	23.6
	10	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	10.4	3.8

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.8	12.6	11.1
Precipitation - Reference Evapotranspiration	8.7	-8.2	6.1
Number of Rainy Days	4.0	3.0	2.7
Number of Dry Days	1.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

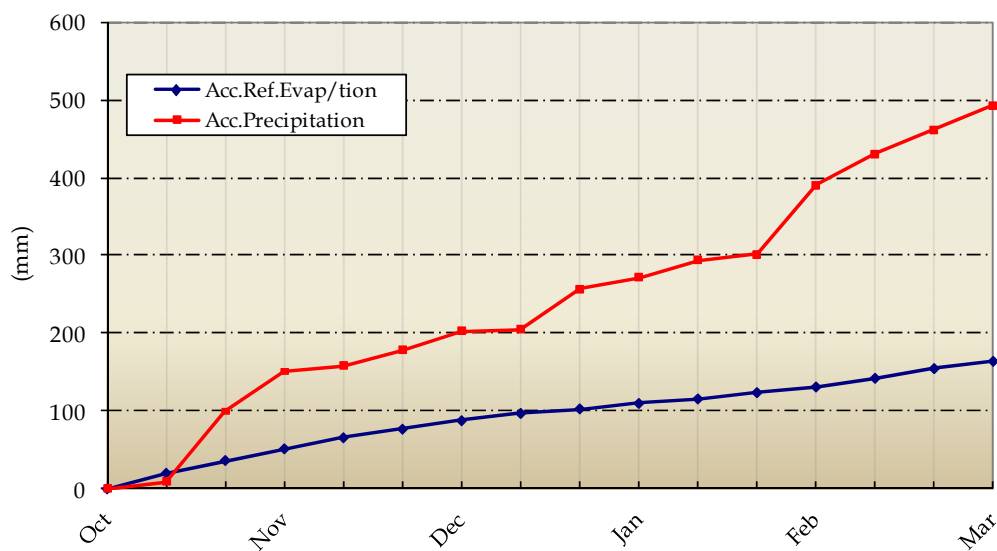


Tripoli

3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.0	10.8	12.2	8.8	9.0	9.0	5.4	9.6	9.6	-	10.1
	Min	0.8	4.0	0.6	5.8	5.2	3.4	2.0	2.8	3.1	-	1.0
Relative Humidity	Max	100	94	100	97	84	87	82	84	91	-	-
	Min	58	79	58	78	69	81	73	63	70	-	-
Soil Temperature at 10 cm	06 UTC	5.8	7.0	6.2	7.8	6.4	6.2	4.6	4.8	6.1	-	5.0
	12 UTC	9.0	8.8	9.8	8.8	7.8	6.8	5.0	7.4	7.9	-	6.2
Sunshine Duration		1.4	1.8	5.7	0.0	3.6	0.0	0.0	2.7	1.9	-	5.1
Precipitation		0.6	16.5	0.5	10.4	3.6				31.6	-	27.0
Evaporation		0.3	0.2	0.1	0.4	0.0	0.0	0.1	2.0	3.1	-	9.7
Growing Degrees	5	1.4	2.4	1.4	2.3	2.1	1.2	0.0	1.2	12.0	-	14.5
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	1.4

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.3	-	12.6
Precipitation - Reference Evapotranspiration	22.3	-	14.4
Number of Rainy Days	5.0	-	3.2
Number of Dry Days	0.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

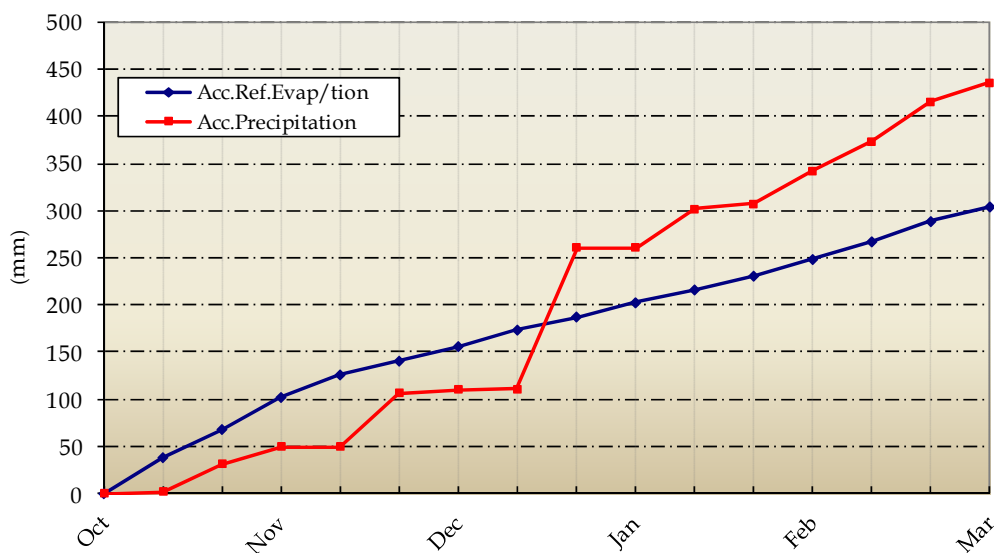


Tympaki

3rd 10-day period (21-28/02/2011)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.0	18.4	17.8	14.6	16.6	16.4	16.4	15.0	16.5	18.3	15.4
	Min	7.8	8.8	8.6	9.6	6.8	9.4	9.4	9.8	8.8	10.0	7.2
Relative Humidity	Max	94	97	94	97	96	95	97	88	95	95	-
	Min	57	38	51	72	54	50	52	40	52	42	-
Soil Temperature at 10 cm	06 UTC	12.0	13.6	13.6	13.4	11.4	12.0	12.8	12.0	12.6	13.8	11.0
	12 UTC	16.0	16.6	17.0	13.8	15.2	14.6	15.2	14.4	15.4	17.0	13.5
Sunshine Duration		6.6	4.1	7.7	0.0	7.0	3.9	1.3	9.9	5.1	3.9	6.1
Precipitation				0.2	8.1	3.4		7.9	1.4	21.0	15.1	18.3
Evaporation		2.4	2.9	3.2	0.1	1.6	2.1	1.2	3.4	16.9	30.9	25.3
Growing Degrees	5	7.4	8.6	8.2	7.1	6.7	7.9	7.9	7.4	61.2	73.4	52.1
	10	2.4	3.6	3.2	2.1	1.7	2.9	2.9	2.4	21.2	33.4	14.4

3rd 10-day period (21-28/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.5	18.7	16.3
Precipitation - Reference Evapotranspiration	5.5	-3.6	2.0
Number of Rainy Days	5.0	2.0	2.7
Number of Dry Days	3.0	11.0	-

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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**ΕΘΝΙΚΗ
ΜΕΤΕΩΡΟΛΟΓΙΚΗ
ΥΠΗΡΕΣΙΑ**

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