



AGROMETEOROLOGICAL BULLETIN

February 2011
2nd 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
El. Venizelou Street 14, 16777
Helliniko, Athens

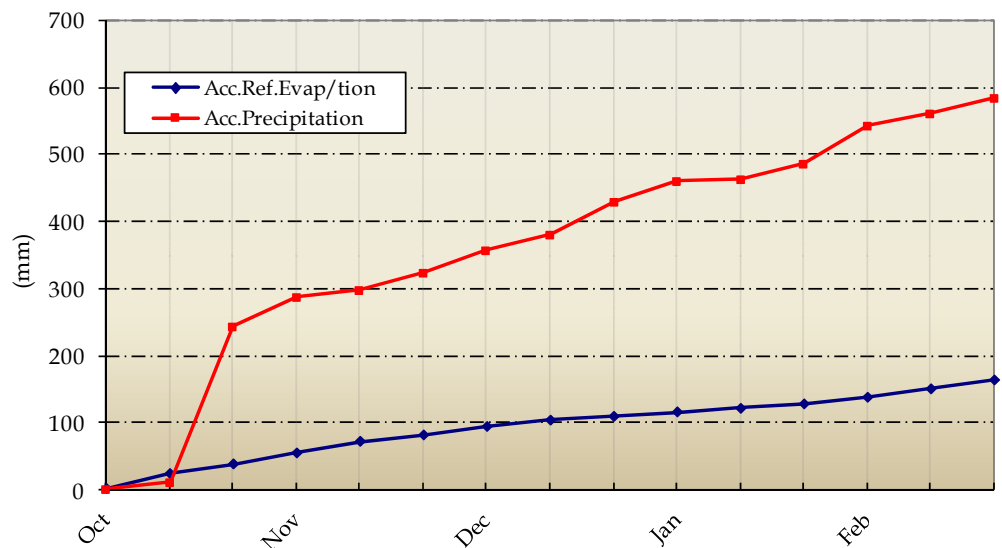
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Agrinio

2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	15.0	15.8	13.8	15.4	15.2	15.6	16.8	16.8	15.4	15.8	-	14.1
	Min	1.4	1.6	3.0	5.4	1.0	6.4	10.8	9.0	6.8	8.2	5.4	-	4.4
Relative Humidity	Max	94	97	100	97	100	89	95	97	97	97	96	-	-
	Min	39	60	55	68	47	50	70	49	46	65	55	-	-
Soil Temperature at 10 cm	06 UTC	7.0	5.6	8.4	8.8	7.6	9.2	10.6	9.6	8.6	10.4	8.6	-	7.5
	12 UTC	8.8	9.0	10.0	10.2	9.6	10.6	10.8	10.6	10.8	12.0	10.2	-	9.9
Sunshine Duration		8.8	6.1	5.0	0.5	5.7	2.9	0.3	0.6	5.1	4.4	3.9	-	4.3
Precipitation								4.3	14.2	5.3		23.8	-	44.0
Evaporation		1.0	2.2	1.3	0.6	1.0	1.9	1.2	1.1	0.8	1.7	12.8	-	16.7
Growing Degrees	5	4.6	3.3	4.4	4.6	3.2	5.8	8.2	7.9	6.8	6.8	55.6	-	43.7
	10	0.0	0.0	0.0	0.0	0.0	0.8	3.2	2.9	1.8	1.8	10.5	-	9.0

2nd 10-day period (11-20/02/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	13.4	-	13.8
Precipitation - Reference Evapotranspiration	10.4	-	30.2
Number of Rainy Days	3.0	-	5.0
Number of Dry Days	13.0	-	-

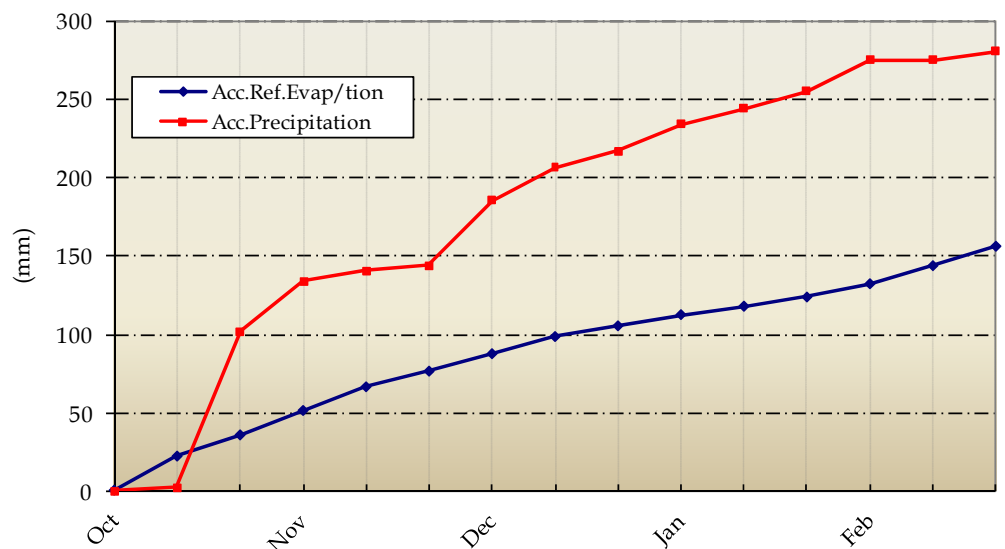
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.0	14.0	10.6	12.8	9.0	7.4	9.2	15.4	11.2	8.6	10.9	14.1	10.0
	Min	-3.0	7.0	4.8	1.0	3.4	1.8	2.0	7.0	8.6	4.4	3.7	6.2	2.2
Relative Humidity	Max	87	86	85	87	85	82	88	94	92	83	87	95	-
	Min	46	59	54	40	66	51	60	68	71	56	57	70	-
Soil Temperature at 10 cm	06 UTC	3.6	6.5	6.6	5.2	6.2	5.4	5.2	6.6	8.0	6.8	6.0	6.8	4.8
	12 UTC	5.8	7.6	6.0	6.4	6.4	6.2	6.0	7.5	8.0	6.8	6.7	8.2	6.1
Sunshine Duration		8.1	9.4	1.7	6.9	3.9	5.4	0.0	2.1	0.2	0.2	3.8	4.4	3.7
Precipitation									0.0	5.0		5.0	89.7	18.4
Evaporation		0.0	1.9	2.8	1.2	2.4	2.0	1.0	1.5	3.7	0.0	16.5	30.1	10.5
Growing Degrees	5	0.0	5.5	2.7	1.9	1.2	0.0	0.6	6.2	4.9	1.5	24.5	51.5	23.6
	10	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.7	9.7	4.0

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.5	11.5	12.3
Precipitation - Reference Evapotranspiration	-7.5	78.2	6.1
Number of Rainy Days	1.0	6.0	2.7
Number of Dry Days	25.0	0.0	-

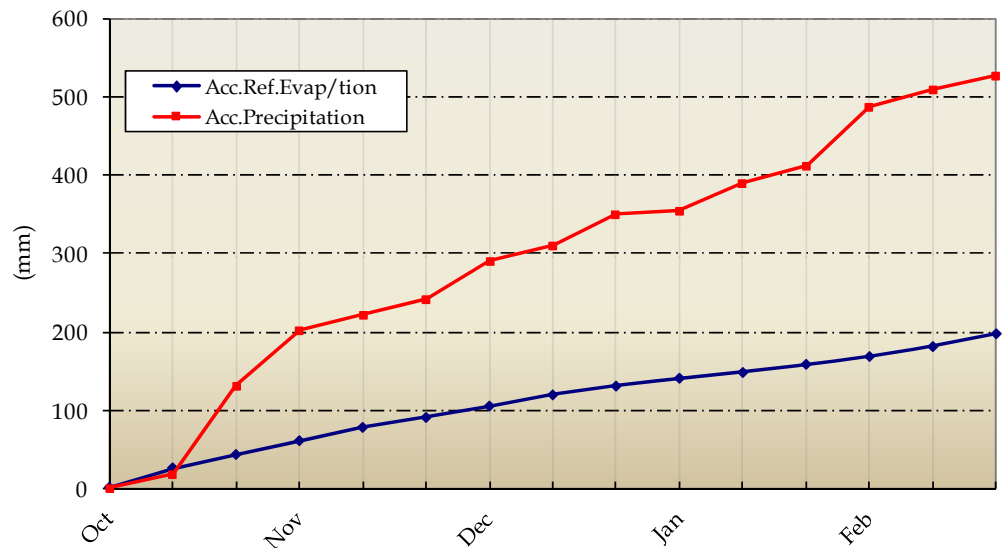
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.6	15.6	16.2	16.2	15.6	15.8	18.0	18.8	16.8	15.6	16.5	16.7	14.5
	Min	5.0	7.4	8.8	7.4	4.2	9.0	10.8	8.2	9.0	10.2	8.0	8.9	6.2
Relative Humidity	Max	94	92	90	89	93	89	84	92	90	87	90	95	-
	Min	55	47	55	47	46	60	58	34	55	60	52	57	-
Soil Temperature at 10 cm	06 UTC	10.0	10.6	11.8	11.2	10.0	11.4	12.2	11.0	11.0	12.0	11.1	11.2	9.1
	12 UTC	12.8	12.8	13.2	12.4	13.0	13.0	13.2	12.4	12.4	14.0	12.9	12.4	11.0
Sunshine Duration		8.4	5.1	4.7	4.5	7.7	5.6	3.6	0.6	8.3	7.0	5.6	3.5	4.8
Precipitation							0.9	0.6	10.0	5.8		17.3	20.3	37.6
Evaporation		1.4	3.7	0.1	2.9	0.0	1.7	2.7	4.1	9.4	1.0	27.0	21.0	21.3
Growing Degrees	5	5.8	6.5	7.5	6.8	4.9	7.4	9.4	8.5	7.9	7.9	72.6	78.0	54.0
	10	0.8	1.5	2.5	1.8	0.0	2.4	4.4	3.5	2.9	2.9	22.7	30.1	13.3

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.6	15.3	14.2
Precipitation - Reference Evapotranspiration	0.7	5.0	23.4
Number of Rainy Days	4.0	6.0	5.1
Number of Dry Days	12.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

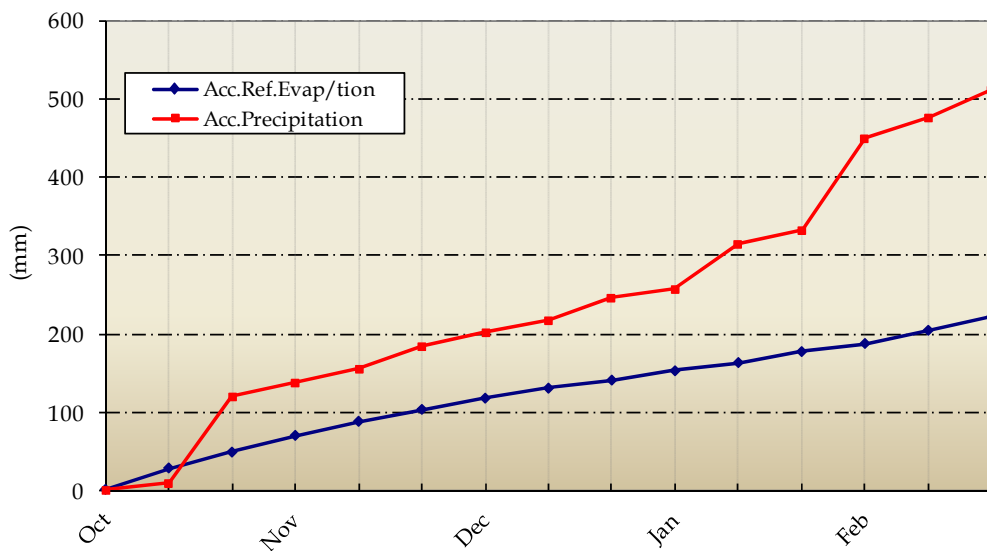


Kalamata

2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.2	16.0	17.4	15.4	16.2	14.2	17.4	19.2	18.2	16.8	16.8	16.7	15.1
	Min	7.8	5.0	4.6	5.6	4.4	5.4	6.8	5.6	9.8	8.6	6.4	7.8	5.9
Relative Humidity	Max	97	97	97	94	94	97	97	97	95	97	96	95	-
	Min	56	52	50	58	46	64	72	40	48	46	53	62	-
Soil Temperature at 10 cm	06 UTC	10.6	10.6	10.6	11.0	10.4	10.8	10.8	10.6	11.2	11.2	10.8	11.2	9.6
	12 UTC	11.4	11.0	11.6	11.6	11.6	11.0	11.6	11.8	12.4	12.8	11.7	11.9	10.9
Sunshine Duration		5.0	3.3	7.7	1.5	4.5	4.5	6.6	5.4	7.5	5.4	5.1	3.5	4.5
Precipitation							2.1		18.0	15.5	0.0	35.6	18.5	43.8
Evaporation		1.6	1.6	3.7	0.5	0.0	1.3	9.4	0.7	1.8	1.6	22.2	15.5	26.5
Growing Degrees	5	7.5	5.5	6.0	5.5	5.3	4.8	7.1	7.4	9.0	7.7	65.8	72.7	55.5
	10	2.5	0.5	1.0	0.5	0.3	0.0	2.1	2.4	4.0	2.7	16.0	24.9	12.8

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.4	14.7	15.6
Precipitation - Reference Evapotranspiration	18.2	3.8	28.2
Number of Rainy Days	3.0	7.0	5.2
Number of Dry Days	11.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

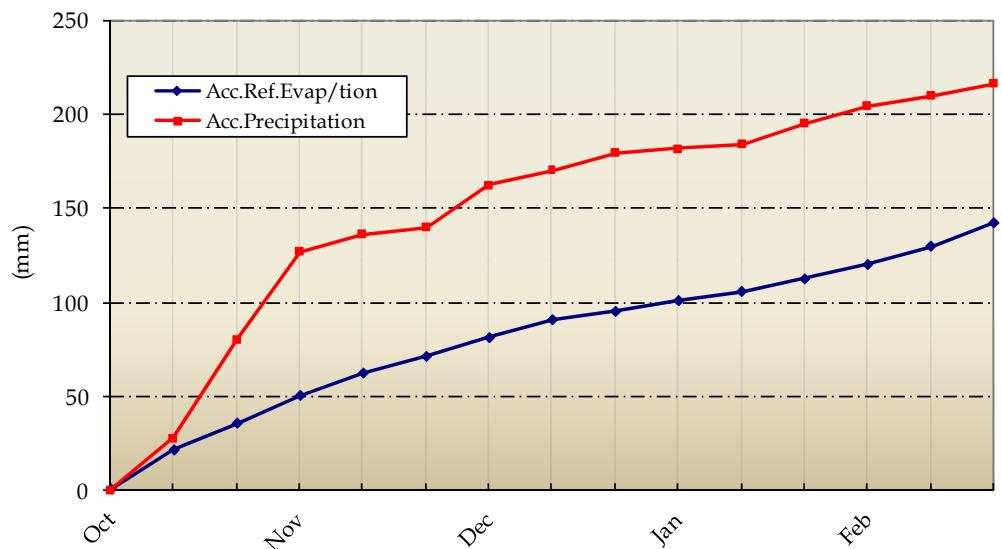


Larisa

2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.6	18.6	15.2	16.2	10.4	9.8	13.2	14.2	13.0	11.2	13.6	15.2	12.1
	Min	-3.4	-1.0	0.6	3.8	3.6	6.8	7.2	8.2	7.0	7.4	4.0	4.6	1.9
Relative Humidity	Max	92	96	92	94	94	97	94	97	97	91	94	97	-
	Min	34	28	52	46	84	77	66	77	71	68	60	56	-
Soil Temperature at 10 cm	06 UTC	5.4	5.6	6.2	-	8.2	8.0	8.6	8.4	6.4	9.2	7.3	8.1	6.7
	12 UTC	6.2	6.8	7.0	8.4	8.4	7.4	9.2	10.0	10.0	9.8	8.3	9.6	7.2
Sunshine Duration		9.0	8.0	8.2	5.0	0.0	0.0	1.2	0.4	0.3	2.1	3.4	3.9	4.0
Precipitation						0.0	0.1	0.2	0.0	6.1	0.0	6.4	30.5	12.7
Evaporation		1.4	3.0	1.1	2.0	0.0	0.0	0.9	0.7	0.2	0.9	10.2	14.3	10.0
Growing Degrees	5	0.6	3.8	2.9	5.0	2.0	3.3	5.2	6.2	5.0	4.3	38.3	49.1	25.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.2	0.0	0.0	1.4	10.1	3.3

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.5	13.2	12.0
Precipitation - Reference Evapotranspiration	-6.1	17.3	0.7
Number of Rainy Days	3.0	5.0	3.6
Number of Dry Days	12.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



Series

2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.6	18.8	15.2	13.8	12.4	7.6	5.4	9.8	14.4	11.2	12.3	13.3	10.9
	Min	-2.2	-2.8	4.8	6.4	5.4	3.4	3.8	4.4	8.2	6.4	3.8	3.1	1.9
Relative Humidity	Max	93	93	74	80	89	93	94	94	90	91	89	92	-
	Min	40	21	48	52	52	81	86	79	61	68	59	62	-
Soil Temperature at 10 cm	06 UTC	4.2	4.0	5.6	7.0	7.4	7.4	6.8	6.8	8.0	8.6	6.6	6.3	5.4
	12 UTC	5.0	4.8	6.8	7.6	7.8	7.2	6.6	7.4	8.2	8.8	7.0	7.4	6.5
Sunshine Duration		6.3	6.6	7.5	3.8	1.9	0.0	0.0	0.3	0.8	2.5	3.0	2.0	3.6
Precipitation					0.0		1.2	1.8	0.9	4.8	1.0	9.7	56.4	18.8
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	8.8
Growing Degrees	5	1.2	3.0	5.0	5.1	3.9	0.5	0.0	2.1	6.3	3.8	30.9	33.1	23.5
	10	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.3	0.0	1.4	3.8	3.3

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.9	9.6	9.5
Precipitation - Reference Evapotranspiration	-0.2	46.8	9.3
Number of Rainy Days	5.0	6.0	3.5
Number of Dry Days	23.0	0.0	-

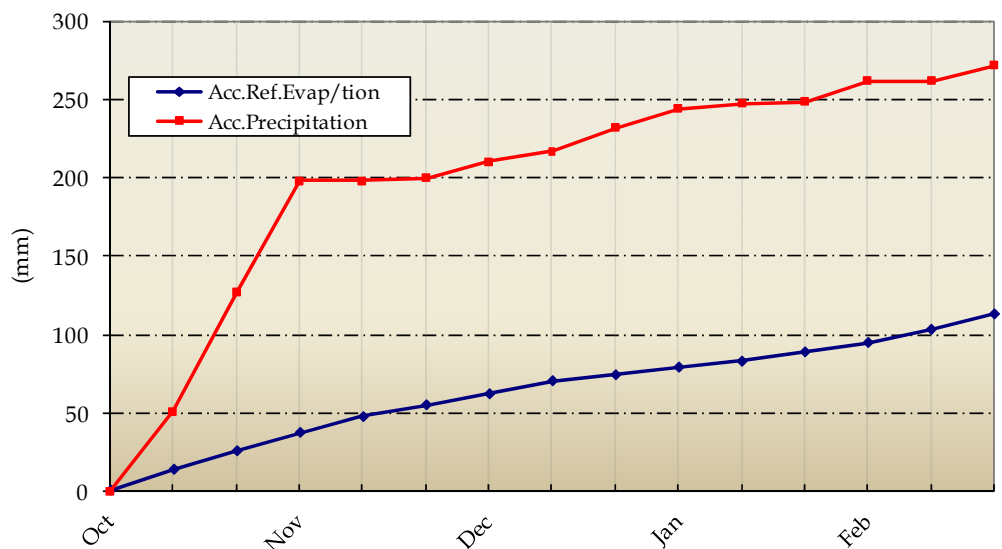


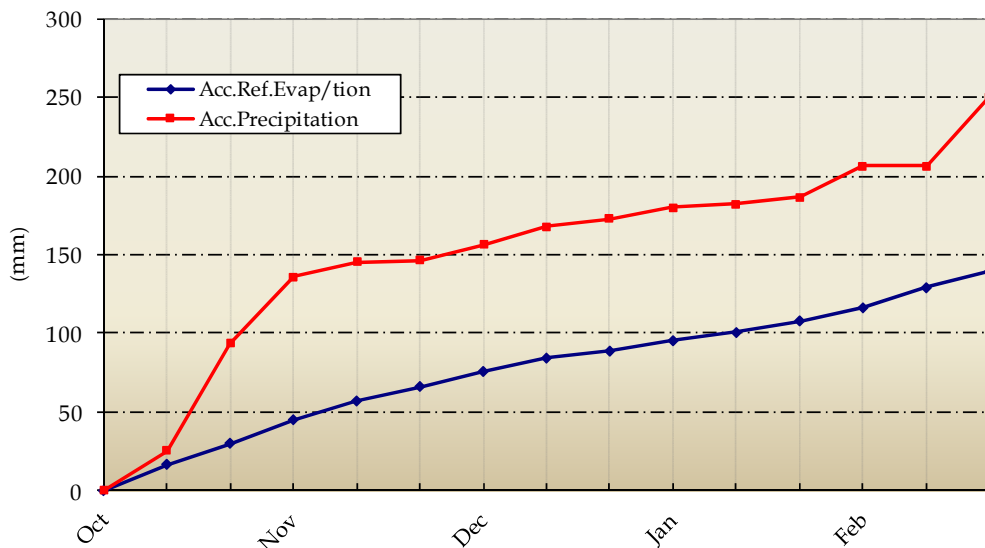
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

Trikala Imathias

2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	19.8	-	17.0	-	9.0	6.6	9.0	11.4	12.4	12.7	14.3	10.6
	Min	-0.8	-0.8	-	8.4	-	5.0	4.8	6.0	8.6	6.4	4.7	4.5	1.4
Relative Humidity	Max	95	-	94	-	100	100	100	100	92	99	98	96	-
	Min	37	-	90	-	90	88	91	91	85	48	78	52	-
Soil Temperature at 10 cm	06 UTC	5.0	5.2	-	8.2	-	8.4	7.4	6.8	8.4	8.2	7.2	6.9	6.4
	12 UTC	6.6	6.4	-	9.2	-	8.4	6.6	6.6	8.6	8.6	7.6	7.9	6.5
Sunshine Duration		9.2	-	8.8	-	2.1	0.0	0.0	0.0	0.1	3.3	2.9	3.6	4.1
Precipitation							0.8	9.0	6.2	27.9		43.9	61.0	15.6
Evaporation		1.5	-	-	-	-	0.6	0.5	0.4	0.5	0.8	-	11.7	7.2
Growing Degrees	5	2.8	4.5	-	7.7	-	2.0	0.7	2.5	5.0	4.4	-	43.8	21.6
	10	0.0	0.0	-	2.7	-	0.0	0.0	0.0	0.0	0.0	-	9.6	2.6

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.4	12.0	10.8
Precipitation - Reference Evapotranspiration	33.5	49.0	4.8
Number of Rainy Days	4.0	5.0	3.6
Number of Dry Days	16.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

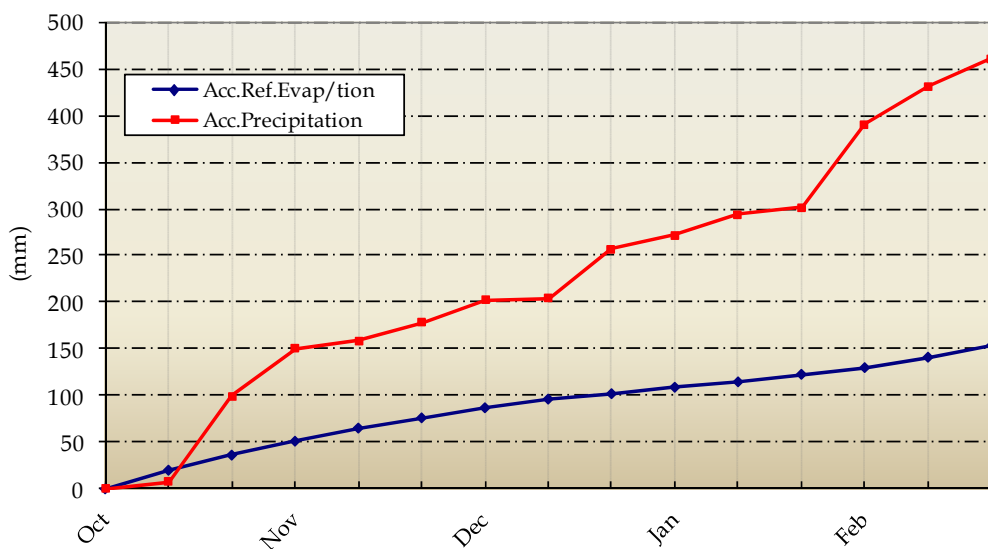


Tripoli

2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.8	13.4	15.4	10.4	12.8	10.6	14.6	12.8	10.2	13.0	12.7	-	10.2
	Min	-2.0	-0.6	-2.0	-1.0	-2.4	4.4	5.4	3.6	4.8	5.0	1.5	-	1.7
Relative Humidity	Max	100	96	96	100	96	97	89	93	94	97	96	-	-
	Min	52	45	46	62	52	70	61	61	64	59	57	-	-
Soil Temperature at 10 cm	06 UTC	4.0	4.2	3.6	4.2	4.4	6.8	7.4	6.8	6.6	6.6	5.5	-	4.8
	12 UTC	6.8	7.6	7.6	7.0	8.0	8.4	9.8	9.8	8.6	9.0	8.3	-	5.7
Sunshine Duration		6.6	9.1	8.7	2.6	5.8	3.7	5.6	2.9	4.3	4.8	5.4	-	4.3
Precipitation							0.0		15.9	12.1	2.4	30.4	-	39.0
Evaporation		0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.1	0.0	0.7	2.8	-	11.0
Growing Degrees	5	0.9	1.4	1.7	0.0	0.2	2.5	5.0	3.2	2.5	4.0	21.4	-	17.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	1.6

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.4	-	12.8
Precipitation - Reference Evapotranspiration	18.0	-	26.2
Number of Rainy Days	3.0	-	4.9
Number of Dry Days	13.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

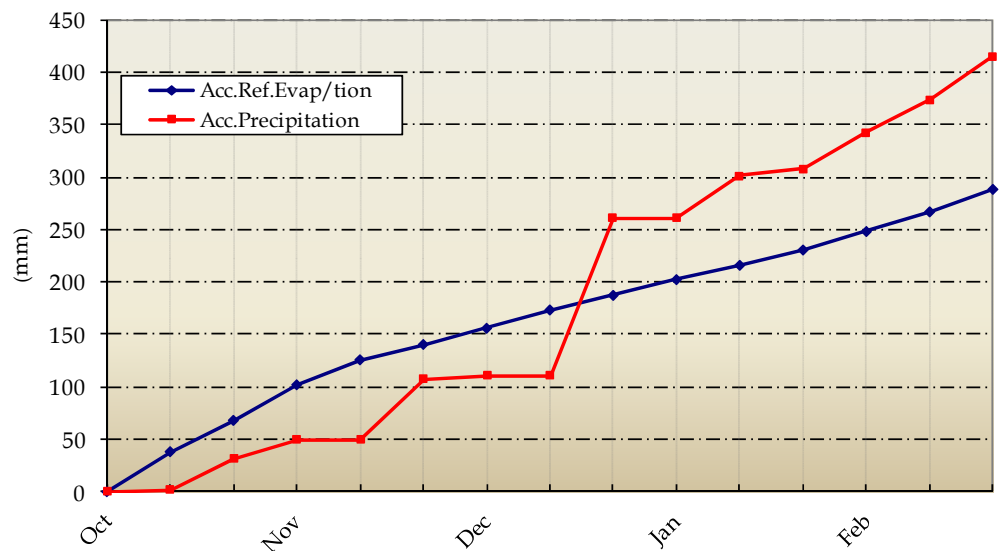


Tympaki

2nd 10-day period (11-20/02/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.0	16.2	17.2	15.8	17.0	17.2	17.0	20.4	18.0	18.0	17.3	20.7	16.2
	Min	7.0	4.4	7.6	10.0	10.6	10.4	6.4	8.4	12.8	12.6	9.0	10.6	7.6
Relative Humidity	Max	85	82	91	98	97	92	93	91	96	84	91	96	-
	Min	26	46	44	49	46	37	52	49	48	49	45	42	-
Soil Temperature at 10 cm	06 UTC	10.8	9.8	11.6	13.4	13.0	12.8	11.2	12.4	14.0	13.0	12.2	13.4	11.1
	12 UTC	14.0	13.4	15.4	15.4	15.2	15.4	15.0	15.6	15.2	15.0	15.0	16.6	13.3
Sunshine Duration		11.6	8.1	7.5	0.8	1.7	7.5	9.0	7.9	3.3	6.1	6.4	3.0	5.5
Precipitation					8.2	25.8	0.1			7.2		41.3		28.6
Evaporation		4.0	3.2	3.6	1.3	0.9	4.0	2.0	4.2	4.0	3.6	30.8	28.1	30.1
Growing Degrees	5	6.5	5.3	7.4	7.9	8.8	8.8	6.7	9.4	10.4	10.3	81.5	106.6	69.2
	10	1.5	0.3	2.4	2.9	3.8	3.8	1.7	4.4	5.4	5.3	31.5	56.6	21.2

2nd 10-day period (11-20/02/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.4	19.5	17.9
Precipitation - Reference Evapotranspiration	19.9	-19.5	10.7
Number of Rainy Days	4.0	0.0	3.8
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
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HELLENIC NATIONAL METEOROLOGICAL SERVICE

Division of Climatology-Applications

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