



AGROMETEOROLOGICAL BULLETIN

March 2013
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



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www.hnms.gr
www.emy.gov.gr
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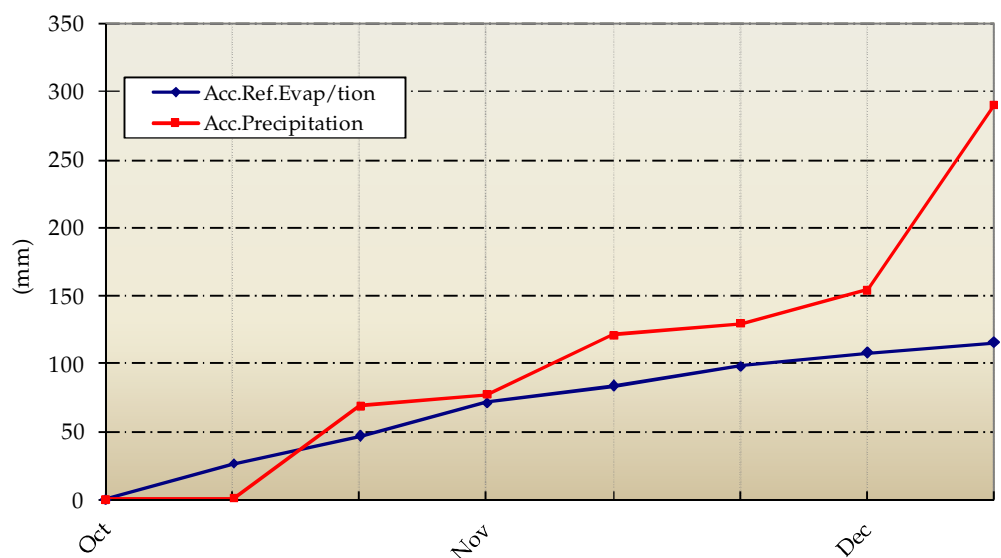
Agrinio

1st 10-day period (1-10/03/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-		15.9	15.8
	Min	3.4	-	-	2.0	3.2	8.4	10.2	10.0	-	-	6.2	5.8	4.1
Relative Humidity	Max	-	-	95	96	93	64	90	-	-	97	89	91	-
	Min	-	-	45	43	40	41	80	-	-	75	54	57	-
Soil Temperature at 10 cm	06 UTC	9.4	-	-	9.2	9.4	10.6	11.4	10.8	-	-	10.1	9.3	8.5
	12 UTC	10.8	-	-	10.8	10.8	11.6	11.2	-	-	-	11.0	10.5	11.6
Sunshine Duration		-	-	-	10.2	9.4	0.0	0.0	-	-	-	4.9	4.9	5.6
Precipitation								8.0	0.2				25.9	25.5
Evaporation		-	-	3.0	3.2	4.2	4.8	1.2	-	-	4.2	-	16.4	24.4
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	58.5	50.4
	10	-	-	-	-	-	-	-	-	-	-	-	16.4	10.7

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	17.7	18.5
Precipitation - Reference Evapotranspiration	-	8.2	7.0
Number of Rainy Days	2.0	3.0	3.2
Number of Dry Days	7.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

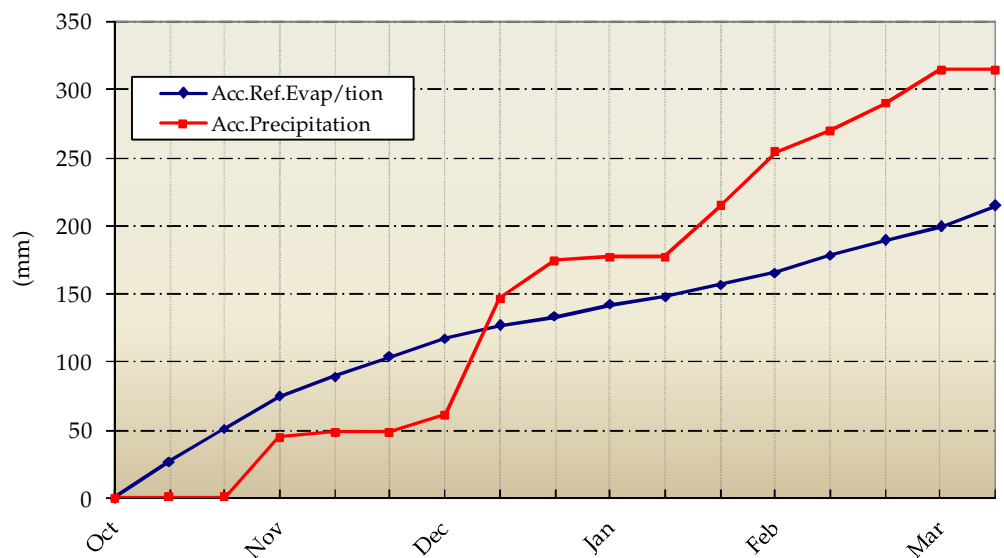
This station is not fully operated



1st 10-day period (1-10/03/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.6	12.4	10.6	12.6	11.6	11.8	11.8	13.4	17.4	17.4	13.0	10.0	10.6
	Min	0.6	2.8	6.0	-1.6	2.6	-1.4	5.2	8.8	8.2	10.4	4.2	0.9	2.2
Relative Humidity	Max	89	92	92	88	86	84	92	95	95	95	91	88	-
	Min	50	65	41	42	39	27	69	79	74	61	55	48	-
Soil Temperature at 10 cm	06 UTC	5.2	6.6	8.4	5.8	7.2	6.0	7.4	9.4	10.6	11.2	7.8	5.2	5.9
	12 UTC	8.0	9.4	8.8	8.6	8.8	8.6	9.6	11.6	12.8	13.4	10.0	6.7	8.0
Sunshine Duration		9.0	4.4	2.6	8.9	8.6	6.1	0.8	1.7	3.2	8.3	5.4	5.9	4.8
Precipitation								0.0	0.0			0.0	5.6	16.7
Evaporation		2.5	1.0	0.0	0.0	0.0	0.0	2.8	0.2	2.5	-	-	16.0	18.5
Growing Degrees	5	0.6	2.6	3.3	0.5	2.1	0.2	3.5	6.1	7.8	8.9	35.6	9.3	22.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.8	3.9	7.8	0.0	2.2

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.1	15.8	16.2
Precipitation - Reference Evapotranspiration	-15.1	-10.2	0.5
Number of Rainy Days	0.0	2.0	2.2
Number of Dry Days	12.0	7.0	-

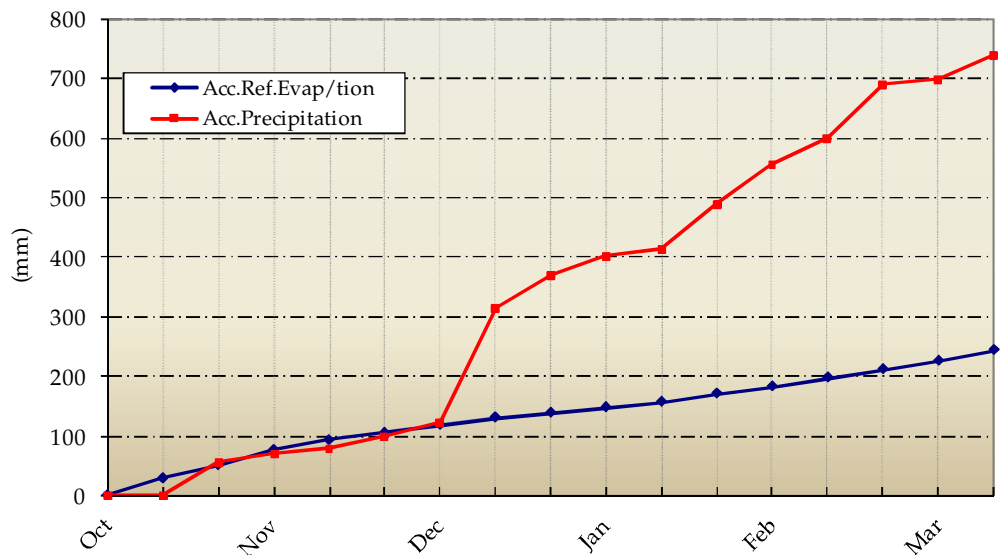
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/03/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.4	15.8	15.7	15.6	18.0	15.6	12.6	17.4	18.6	19.4	16.4	16.3	15.2
	Min	4.4	5.8	8.4	3.9	4.0	6.6	9.7	10.6	13.3	10.6	7.7	6.9	5.8
Relative Humidity	Max	89	91	89	91	91	88	88	91	93	91	90	89	-
	Min	53	49	52	55	41	38	65	71	70	65	56	49	-
Soil Temperature at 10 cm	06 UTC	10.6	11.0	11.8	10.8	11.6	12.0	12.4	12.4	14.0	14.0	12.1	9.9	10.0
	12 UTC	14.6	13.6	14.2	13.6	14.6	14.2	12.8	14.4	16.4	16.0	14.4	12.2	12.2
Sunshine Duration		9.6	1.8	7.6	9.5	8.8	0.9	0.0	2.8	8.7	5.8	5.6	4.8	6.1
Precipitation				24.5				3.7	2.3	9.2		39.7	21.9	26.8
Evaporation		2.4	5.1	0.4	1.5	1.9	2.1	1.0	0.4	2.2	1.8	18.8	22.7	25.2
Growing Degrees	5	4.9	5.8	7.1	4.8	6.0	6.1	6.2	9.0	11.0	10.0	70.7	66.1	55.6
	10	0.0	0.8	2.1	0.0	1.0	1.1	1.2	4.0	6.0	5.0	21.1	20.2	13.0

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.7	18.8	18.0
Precipitation - Reference Evapotranspiration	22.0	3.1	8.8
Number of Rainy Days	4.0	5.0	3.2
Number of Dry Days	2.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

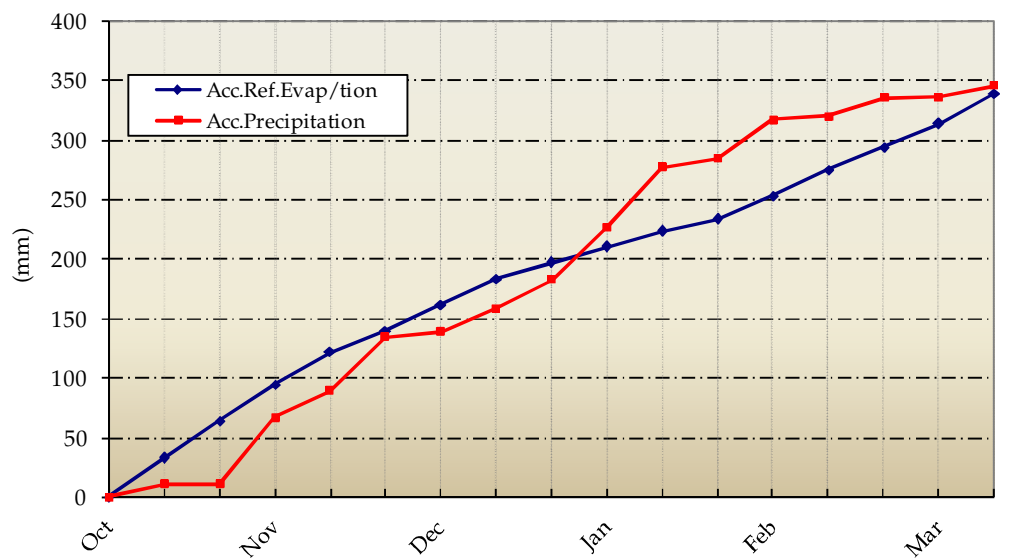


Iraklio

1st 10-day period (1-10/03/2013)		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	16.0	15.4	15.2	15.6	15.4	16.8	20.5	19.2	22.5	17.1	-	15.6
	Min	11.2	6.2	9.8	11.2	12.4	9.4	11.8	11.2	12.2	11.6	10.7	-	8.9
Relative Humidity	Max	88	85	92	88	79	78	70	86	83	83	83	-	-
	Min	59	58	64	63	50	60	55	55	63	45	57	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.1	7.1	6.0	7.7	8.3	7.3	0.1	7.9	8.6	9.4	7.0	-	5.3
Precipitation				9.6								9.6	-	20.8
Evaporation		2.0	-	2.0	3.4	3.5	1.2	2.8	1.8	2.0	6.0	-	-	33.2
Growing Degrees	5	7.6	6.1	7.6	8.2	9.0	7.4	9.3	10.9	10.7	12.1	88.8	-	72.7
	10	2.6	1.1	2.6	3.2	4.0	2.4	4.3	5.9	5.7	7.1	38.8	-	25.3

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.2	-	-
Precipitation - Reference Evapotranspiration	-15.6	-	20.8
Number of Rainy Days	1.0	-	3.3
Number of Dry Days	8.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

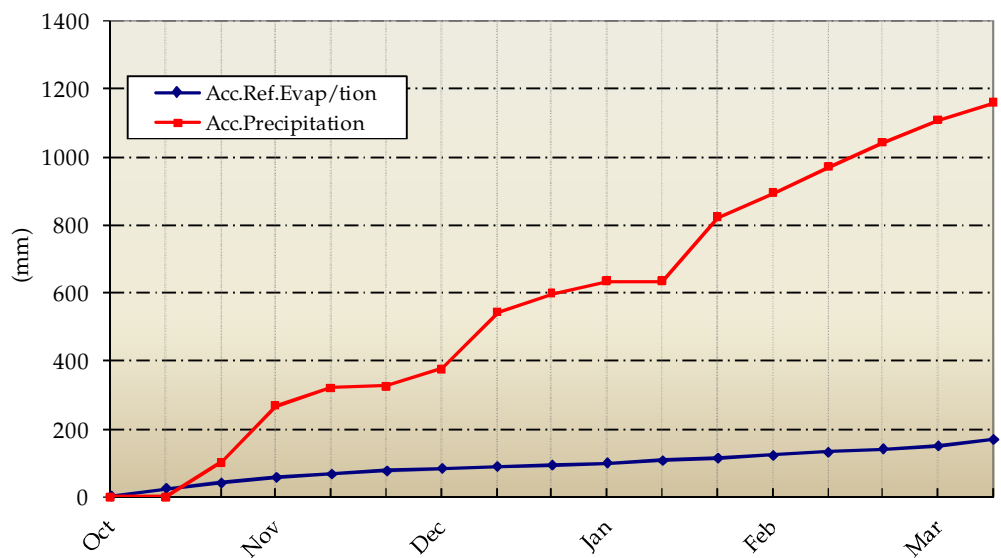


Ioannina

1st 10-day period (1-10/03/2013)		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	11.2	13.2	15.0	16.0	14.0	8.8	11.2	17.1	16.4	13.7	13.1	12.2
	Min	-1.4	0.5	8.1	-2.8	-2.3	2.6	7.0	7.6	9.2	5.7	3.4	2.8	1.7
Relative Humidity	Max	99	98	90	98	99	-	97	-	99	98	97	92	-
	Min	33	40	32	21	23	-	56	-	51	45	38	53	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.3
Sunshine Duration		-	6.7	0.0	8.0	7.9	6.4	0.0	-	0.0	3.2	4.0	3.4	4.6
Precipitation				0.0				17.0	7.6	25.8	0.1	50.5	37.4	27.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	14.8
Growing Degrees	5	1.3	0.9	5.7	1.1	1.9	3.3	2.9	4.4	8.2	6.1	35.6	31.2	25.1
	10	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	3.2	1.1	4.9	0.3	2.0

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.6	14.8	15.2
Precipitation - Reference Evapotranspiration	30.9	22.6	12.1
Number of Rainy Days	4.0	5.0	3.5
Number of Dry Days	7.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

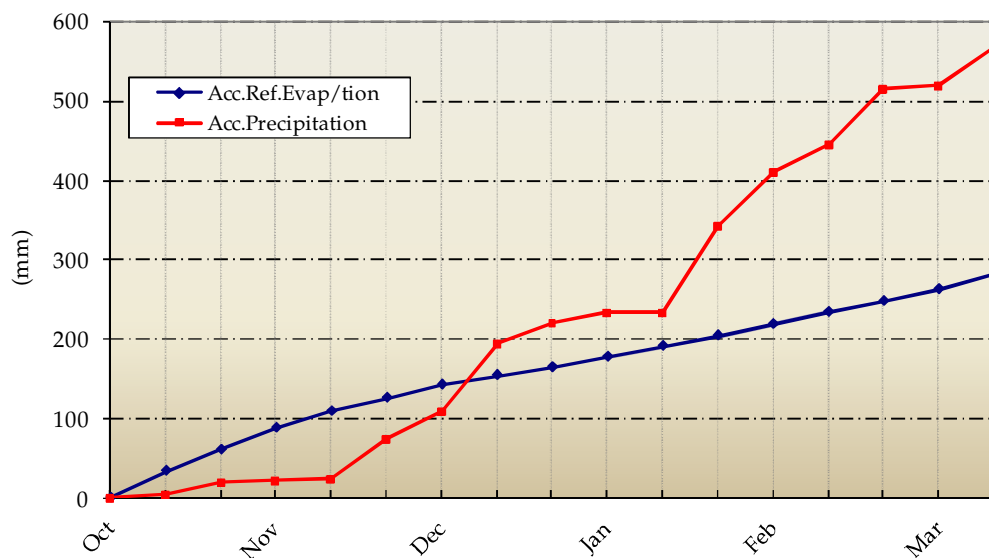


Kalamata

1st 10-day period (1-10/03/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	16.6	16.2	16.2	18.1	17.1	15.6	16.8	20.1	22.3	17.5	17.3	16.0
	Min	5.3	5.4	8.0	3.7	5.6	5.9	8.6	8.6	13.3	9.1	7.4	6.2	5.6
Relative Humidity	Max	93	95	96	93	93	79	95	92	94	95	92	90	-
	Min	48	47	46	53	36	31	67	66	61	49	50	47	-
Soil Temperature at 10 cm	06 UTC	11.6	11.4	11.8	11.0	11.8	11.4	11.8	12.2	13.0	12.2	11.8	10.1	10.3
	12 UTC	12.6	12.4	12.0	11.6	12.4	12.2	12.2	12.8	14.0	14.4	12.7	11.5	12.1
Sunshine Duration		8.1	3.6	3.3	9.1	9.8	1.5	0.0	0.0	6.7	8.6	5.1	6.9	5.8
Precipitation			0.0	36.4				9.1	0.5	2.0	0.3	48.3	4.1	26.1
Evaporation		4.0	2.7	1.8	2.9	1.1	2.2	3.7	0.0	4.0	2.0	24.4	27.1	29.9
Growing Degrees	5	5.9	6.0	7.1	5.0	6.9	6.5	7.1	7.7	11.7	10.7	74.5	67.4	58.2
	10	0.9	1.0	2.1	0.0	1.9	1.5	2.1	2.7	6.7	5.7	24.5	21.4	14.6

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.3	23.3	18.8
Precipitation - Reference Evapotranspiration	28.0	-19.2	7.3
Number of Rainy Days	5.0	2.0	3.2
Number of Dry Days	3.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

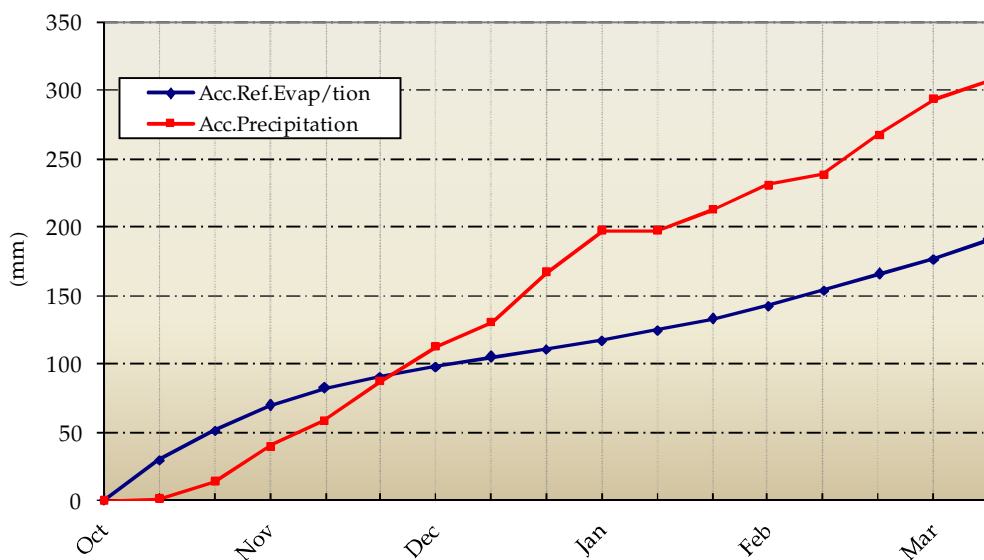


Larisa

1st 10-day period (1-10/03/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.0	12.0	12.1	15.8	10.2	11.0	9.6	15.6	19.2	21.5	14.2	11.9	13.6
	Min	1.2	2.0	3.0	-1.4	0.8	0.0	5.9	7.2	6.2	4.0	2.9	3.6	2.4
Relative Humidity	Max	100	100	100	100	98	82	100	100	100	100	98	91	-
	Min	47	56	57	37	63	54	73	68	57	38	55	57	-
Soil Temperature at 10 cm	06 UTC	8.0	8.4	9.2	7.0	8.2	7.2	9.0	9.6	10.4	10.4	8.7	6.8	7.8
	12 UTC	10.0	9.6	9.6	9.6	9.2	9.0	9.4	11.0	11.6	12.4	10.1	7.7	8.9
Sunshine Duration		8.4	0.0	1.1	8.9	1.2	0.0	0.0	3.8	6.9	8.2	3.8	2.8	4.9
Precipitation				0.8				4.8	4.0	3.6		13.2	26.1	10.9
Evaporation		1.2	0.4	2.8	2.2	2.3	0.5	0.0	0.4	2.8	4.4	17.0	30.8	18.9
Growing Degrees	5	3.1	2.0	2.6	2.2	0.5	0.5	2.8	6.4	7.7	7.8	35.5	-	34.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	2.7	2.8	6.9	-	4.1

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.5	13.8	17.1
Precipitation - Reference Evapotranspiration	-1.3	12.3	-6.2
Number of Rainy Days	4.0	5.0	3.2
Number of Dry Days	4.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

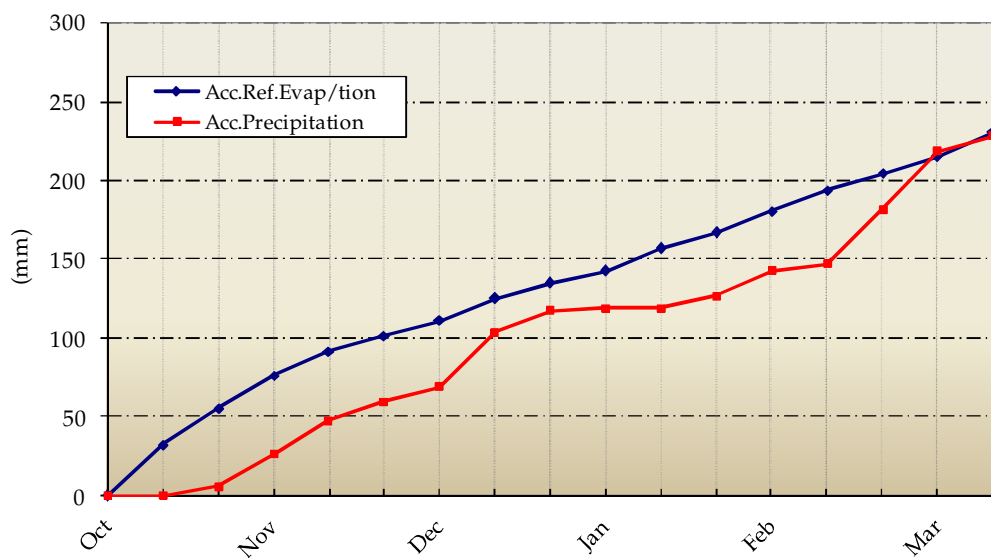


Mikra

1st 10-day period (1-10/03/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.9	10.4	11.5	14.8	13.4	12.0	11.2	12.4	15.0	19.8	13.3	11.0	12.6
	Min	1.0	2.4	6.6	0.2	3.0	3.0	7.8	9.0	10.0	5.8	4.9	4.0	3.4
Relative Humidity	Max	92	87	89	92	84	83	91	92	93	94	90	85	-
	Min	45	69	55	31	47	49	65	74	73	52	56	56	-
Soil Temperature at 10 cm	06 UTC	9.0	8.8	9.2	7.8	8.0	8.6	9.6	10.2	11.4	11.0	9.4	7.0	7.2
	12 UTC	10.4	9.8	9.6	10.2	10.2	10.0	10.0	11.6	12.0	13.8	10.8	8.0	9.8
Sunshine Duration		9.6	0.0	4.0	9.9	6.7	0.7	0.0	0.8	3.4	6.5	4.2	3.0	4.9
Precipitation			1.8	3.5				0.2	3.3	1.3		10.1	23.3	13.0
Evaporation		1.9	1.4	1.2	0.6	4.6	0.8	1.8	1.1	0.4	1.3	15.1	27.2	22.1
Growing Degrees	5	2.0	1.4	4.1	2.5	3.2	2.5	4.5	5.7	7.5	7.8	41.1	26.0	33.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.5	2.8	6.0	3.2	4.3

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.6	15.7	17.6
Precipitation - Reference Evapotranspiration	-5.5	7.6	-4.6
Number of Rainy Days	5.0	5.0	3.2
Number of Dry Days	2.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

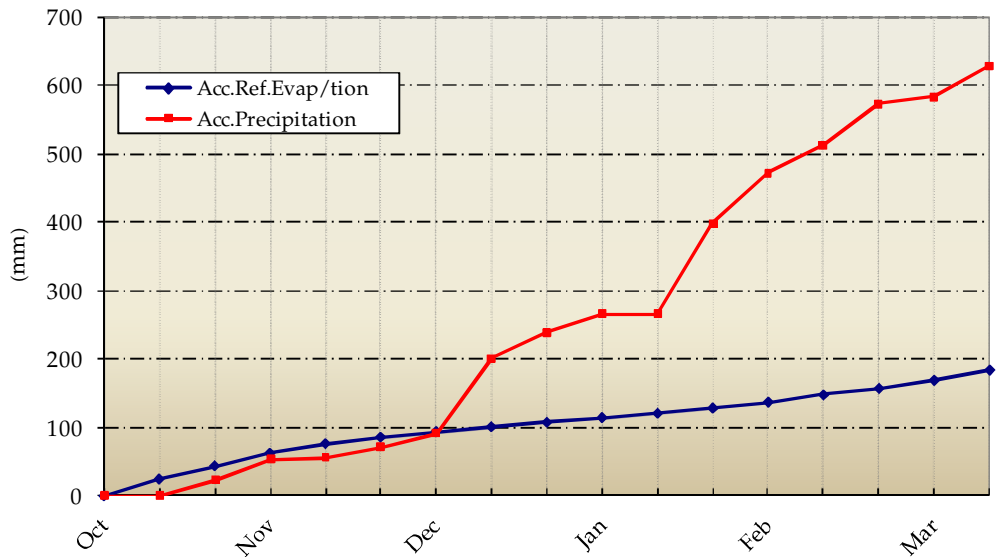


Tripoli

1st 10-day period (1-10/03/2013)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.9	11.1	9.6	13.7	10.8	11.5	9.2	14.3	17.2	19.3	13.0	12.8	11.8
	Min	2.7	0.0	0.3	-1.3	-1.7	-0.7	5.0	4.7	9.0	6.4	2.4	1.2	1.3
Relative Humidity	Max	98	99	100	100	100	97	99	100	92	87	97	92	-
	Min	48	52	68	45	49	32	87	60	48	43	53	55	-
Soil Temperature at 10 cm	06 UTC	6.6	6.6	5.2	5.0	5.6	5.6	7.6	7.8	10.0	9.0	6.9	7.0	6.2
	12 UTC	10.4	9.6	6.8	9.2	10.0	9.6	8.2	11.2	12.2	12.0	9.9	9.3	7.4
Sunshine Duration		6.3	2.4	2.2	4.6	7.3	1.9	0.0	3.8	6.5	7.2	4.2	3.8	5.4
Precipitation		1.0		29.9				8.5	0.3	5.0	1.8	46.5	13.3	26.7
Evaporation		1.3	0.0	3.0	1.5	1.6	1.1	0.0	0.9	2.4	1.8	13.6	-	15.8
Growing Degrees	5	2.8	0.6	0.0	1.2	0.0	0.4	2.1	4.5	8.1	7.9	27.5	24.4	22.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	2.9	6.0	0.0	1.9

1st 10-day period (1-10/03/2013)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.9	15.0	17.7
Precipitation - Reference Evapotranspiration	31.6	-1.7	9.0
Number of Rainy Days	6.0	5.0	3.4
Number of Dry Days	0.0	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.

Measurements 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
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