

# AGROMETEOROLOGICAL BULLETIN

*January 2012  
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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Division of Climatology-Applications  
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Helliniko, Athens

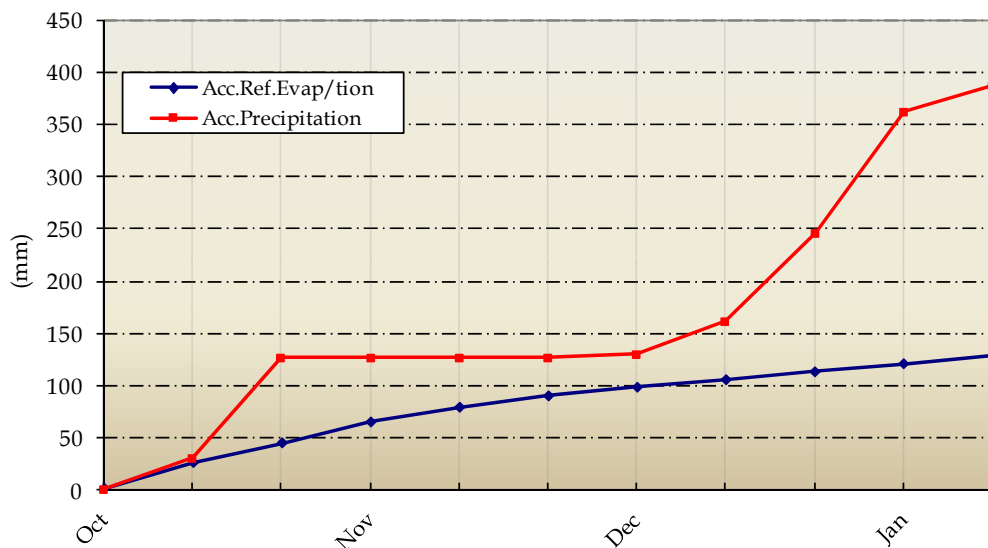
*Web addresses of HNMS  
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Agrinio

1st 10-day period (1-10/01/2012)		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	14.4	14.8	15.8	13.4	14.2	11.6	11.4	12.4	12.0	13.4	15.0	13.3
	Min	-0.4	-1.6	-2.0	-1.4	4.0	8.0	5.4	-1.6	-2.0	-1.0	0.7	2.5	3.1
Relative Humidity	Max	93	92	96	96	95	93	94	96	100	86	94	99	-
	Min	45	43	45	47	62	67	48	48	43	33	48	60	-
Soil Temperature at 10 cm	06 UTC	7.2	6.4	5.6	5.6	7.2	9.2	8.6	6.6	5.6	5.2	6.7	7.8	7.4
	12 UTC	8.2	7.4	7.0	7.0	8.4	10.0	9.4	7.6	6.6	6.4	7.8	9.2	9.1
Sunshine Duration		7.8	7.7	7.8	7.7	2.6	0.4	4.8	7.3	7.6	8.3	6.2	4.5	3.9
Precipitation						0.8	18.9	5.3				25.0	2.7	32.5
Evaporation		2.0	0.5	0.5	0.6	0.5	1.7	1.0	0.4	2.2	0.8	10.2	7.7	13.9
Growing Degrees	5	1.8	1.4	1.4	2.2	3.7	6.1	3.5	0.0	0.2	0.5	20.8	37.5	34.7
	10	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	1.1	2.4	5.2

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.7	5.4	8.0
Precipitation - Reference Evapotranspiration	17.3	-2.7	24.5
Number of Rainy Days	3.0	2.0	3.8
Number of Dry Days	4.0	4.0	-

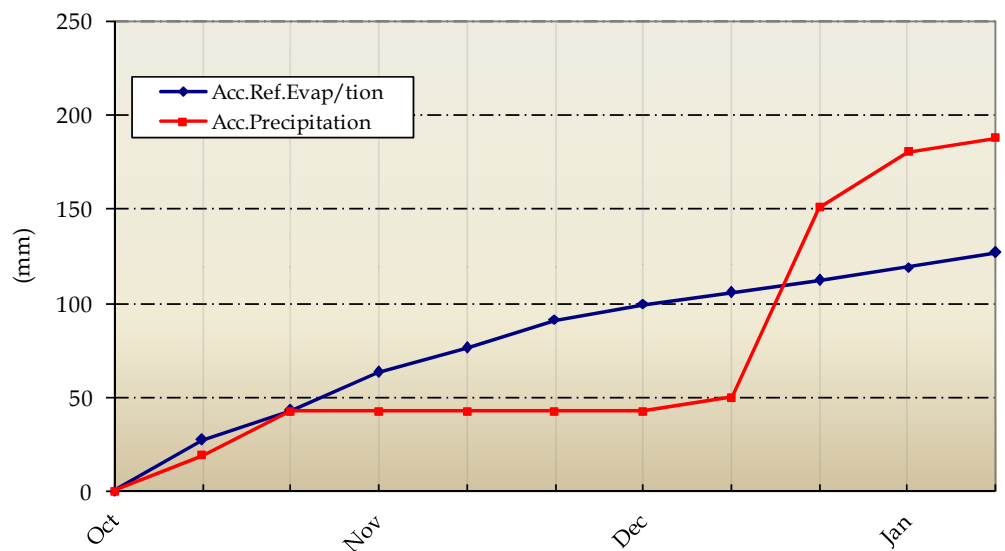
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.8	8.6	11.2	8.6	11.0	13.4	13.0	7.2	7.2	7.6	9.7	8.5	8.9
	Min	3.0	-4.0	-2.2	-2.0	1.2	10.0	7.2	3.4	0.0	-3.4	1.3	0.4	1.5
Relative Humidity	Max	72	96	96	97	93	88	92	90	93	87	90	91	-
	Min	44	42	70	89	71	77	60	60	57	38	61	67	-
Soil Temperature at 10 cm	06 UTC	5.4	3.8	3.4	3.8	5.0	6.6	9.0	7.2	5.6	2.2	5.2	4.1	5.6
	12 UTC	6.0	4.8	4.2	4.4	8.8	8.4	9.0	7.2	6.2	5.0	6.4	4.9	6.6
Sunshine Duration		5.5	6.9	7.4	0.6	7.2	0.0	1.5	0.4	3.8	6.0	3.9	3.9	2.7
Precipitation							6.5	0.9				7.4	9.8	17.5
Evaporation		0.0	0.0	0.0	0.0	0.5	2.4	1.0	3.0	0.0	0.0	6.9	3.1	8.4
Growing Degrees	5	0.9	0.0	0.0	0.0	1.1	6.7	5.1	0.3	0.0	0.0	14.1	3.8	17.3
	10	0.0	0.0	0.0	0.0	0.0	1.7	0.1	0.0	0.0	0.0	1.8	0.0	2.8

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.7	5.4	7.7
Precipitation - Reference Evapotranspiration	-0.3	4.4	9.8
Number of Rainy Days	2.0	1.0	2.8
Number of Dry Days	5.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

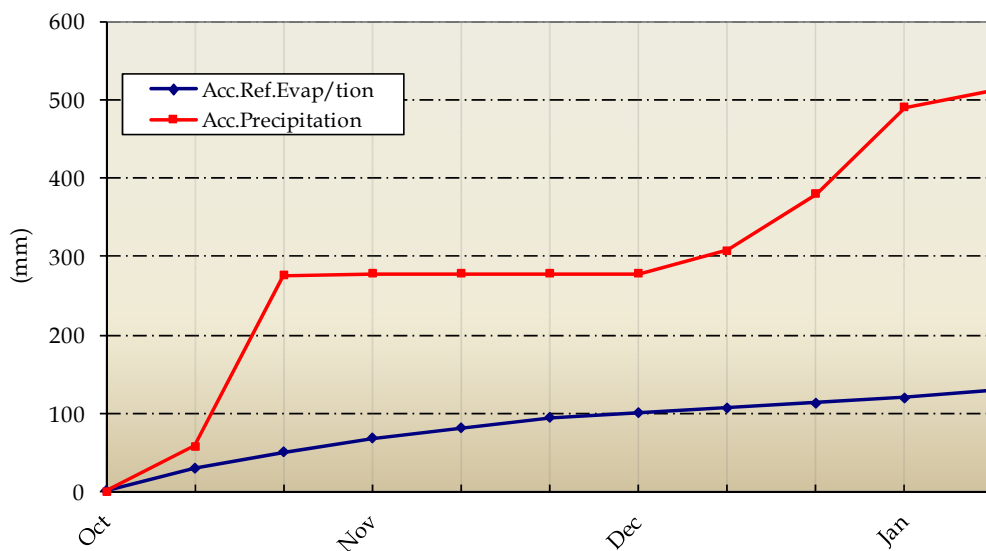


Andravida

1st 10-day period (1-10/01/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.8	13.4	15.2	14.4	14.6	15.0	12.0	11.2	11.4	11.0	13.1	15.1	13.8
	Min	1.4	-0.2	2.0	2.0	7.0	10.0	6.0	1.8	3.4	3.0	3.6	5.3	5.4
Relative Humidity	Max	96	100	100	94	95	95	91	97	97	74	94	93	-
	Min	48	49	47	55	66	68	47	50	48	39	52	60	-
Soil Temperature at 10 cm	06 UTC	7.2	6.0	6.4	6.8	8.4	10.6	9.2	6.2	7.8	5.6	7.4	9.1	8.9
	12 UTC	9.6	9.6	10.0	10.2	11.6	12.0	10.2	9.4	8.8	7.8	9.9	11.3	10.3
Sunshine Duration		7.9	8.1	8.0	8.0	3.9	0.7	3.5	7.9	4.2	8.3	6.0	5.3	4.5
Precipitation							17.6	0.9		4.3		22.8	35.3	38.0
Evaporation		2.9	0.0	0.5	0.4	1.0	0.7	1.5	2.5	2.2	1.8	13.5	15.9	17.8
Growing Degrees	5	2.1	1.6	3.6	3.2	5.8	7.5	4.0	1.5	2.4	2.0	33.7	52.0	46.8
	10	0.0	0.0	0.0	0.0	0.8	2.5	0.0	0.0	0.0	0.0	3.3	6.8	10.2

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.8	7.3	9.2
Precipitation - Reference Evapotranspiration	13.0	28.0	28.8
Number of Rainy Days	3.0	3.0	4.0
Number of Dry Days	5.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

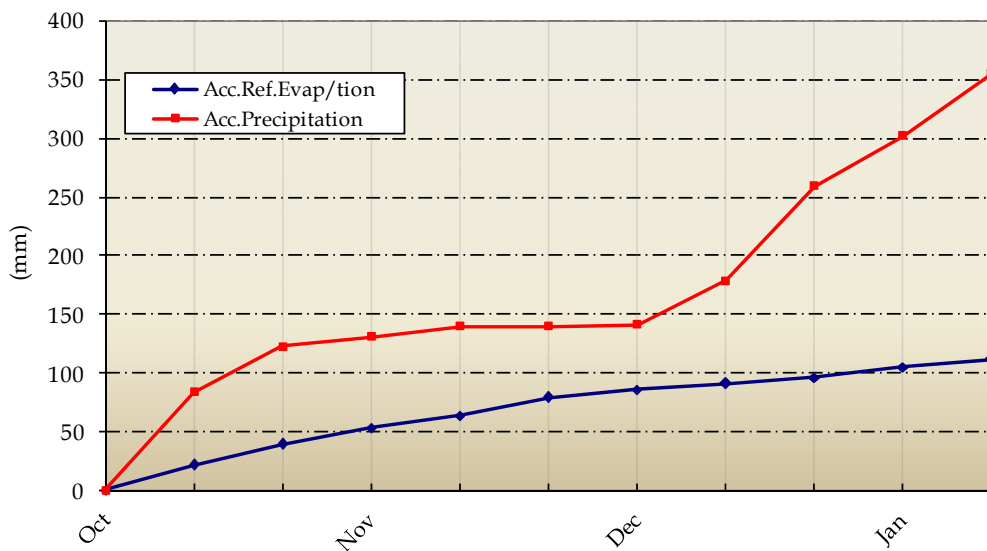


Ioannina

1st 10-day period (1-10/01/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.2	7.2	10.4	10.0	6.4	8.6	7.6	6.0	7.6	7.2	7.7	-	8.6
	Min	-4.0	-5.5	-5.0	-4.4	-2.0	4.4	2.0	-3.8	-5.2	2.0	-2.2	-	0.3
Relative Humidity	Max	87	95	89	100	97	97	93	91	86	82	92	-	-
	Min	56	20	41	46	85	80	44	46	34	33	48	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.3
Sunshine Duration		5.3	5.1	5.2	4.2	0.0	0.0	1.9	3.9	5.0	4.9	3.6	-	2.9
Precipitation						1.8	49.3	2.0				53.1	-	36.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	0.6
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	1.5	-	11.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.3

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.3	-	6.1
Precipitation - Reference Evapotranspiration	46.8	-	30.1
Number of Rainy Days	3.0	-	4.0
Number of Dry Days	4.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

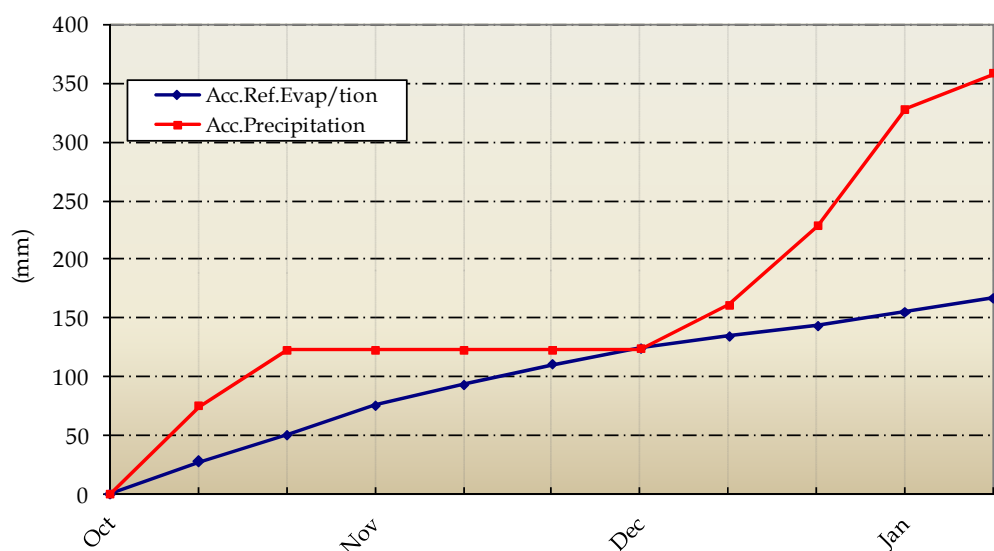


Kalamata

1st 10-day period (1-10/01/2012)		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	15.4	15.0	15.4	15.8	14.6	12.4	12.4	12.8	13.2	14.1	15.5	14.7
	Min	2.2	3.4	1.2	1.8	3.4	9.2	6.0	2.0	1.4	4.2	3.5	5.0	5.3
Relative Humidity	Max	97	97	96	97	100	93	97	100	96	76	95	97	-
	Min	39	49	41	53	61	77	54	50	47	34	50	60	-
Soil Temperature at 10 cm	06 UTC	9.6	9.0	8.8	8.6	9.0	10.6	10.0	9.8	8.0	8.0	9.1	11.0	9.3
	12 UTC	10.4	10.0	9.6	9.8	10.2	11.4	10.6	9.8	10.0	8.6	10.0	11.6	10.4
Sunshine Duration		7.9	8.2	8.0	7.7	4.8	0.0	5.5	6.9	4.7	7.9	6.2	5.1	4.5
Precipitation							27.0	2.0		1.5		30.5	58.4	30.6
Evaporation		2.0	0.6	1.6	1.4	0.6	1.6	2.6	0.4	1.1	2.6	14.5	10.7	22.0
Growing Degrees	5	3.1	4.4	3.1	3.6	4.6	6.9	4.2	2.2	2.1	3.7	37.9	52.4	49.2
	10	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	1.9	5.8	10.6

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.6	10.6	11.0
Precipitation - Reference Evapotranspiration	18.9	47.8	19.6
Number of Rainy Days	3.0	3.0	4.0
Number of Dry Days	5.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

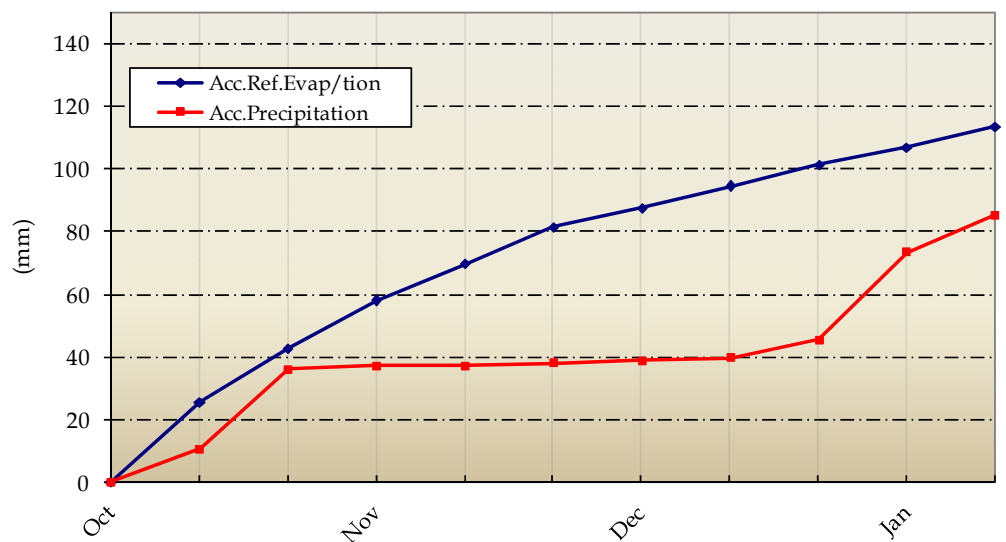


Larisa

1st 10-day period (1-10/01/2012)		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	9.6	10.0	10.6	10.8	12.6	9.0	8.4	9.0	8.6	9.8	9.6	9.7
	Min	1.6	-4.0	-4.4	-4.0	-3.2	3.2	3.8	0.0	-2.8	1.0	-0.9	0.7	0.5
Relative Humidity	Max	92	92	96	96	96	92	93	88	92	81	92	96	-
	Min	44	44	50	52	56	72	62	42	51	44	52	68	-
Soil Temperature at 10 cm	06 UTC	5.2	6.0	5.0	6.6	6.0	5.0	5.8	5.2	6.0	5.6	5.6	4.6	5.3
	12 UTC	6.0	7.4	7.6	8.2	7.6	5.6	6.4	5.8	7.8	8.8	7.1	7.1	5.9
Sunshine Duration		7.3	6.9	6.9	6.9	6.5	0.0	0.7	5.2	6.4	5.4	5.2	3.3	3.9
Precipitation							9.0	3.0				12.0	2.5	11.6
Evaporation		0.4	0.2	0.2	0.2	1.0	0.5	0.4	0.2	2.0	1.0	6.1	9.3	5.2
Growing Degrees	5	0.5	0.0	0.0	0.0	0.0	2.9	1.4	0.0	0.0	0.0	4.8	4.5	13.7
	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	1.0

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.8	4.9	6.2
Precipitation - Reference Evapotranspiration	5.2	-2.4	5.4
Number of Rainy Days	2.0	2.0	2.5
Number of Dry Days	5.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

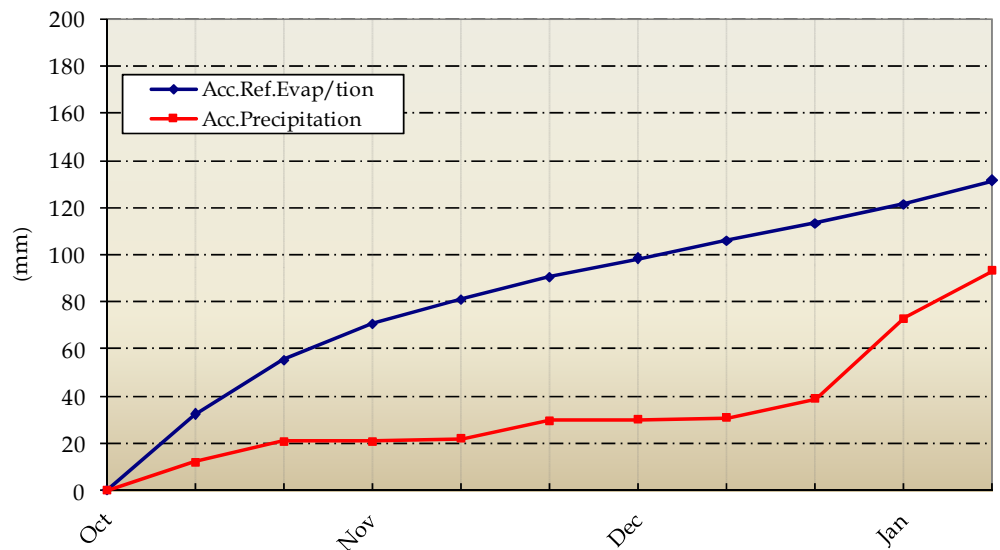


Mikra

1st 10-day period (1-10/01/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.0	7.4	8.6	9.0	8.6	13.2	7.0	6.4	8.0	8.2	8.4	-	9.2
	Min	2.8	-2.8	-2.6	-1.8	-1.6	4.4	3.6	3.0	2.0	-2.6	0.4	-	1.5
Relative Humidity	Max	92	100	96	96	96	100	90	67	81	92	91	-	-
	Min	46	55	63	65	76	75	57	46	51	38	57	-	-
Soil Temperature at 10 cm	06 UTC	4.6	3.4	3.4	3.4	4.0	6.0	5.8	4.8	4.0	4.0	4.3	-	4.9
	12 UTC	5.5	5.4	4.8	5.4	6.4	7.2	7.0	7.0	5.4	5.4	6.0	-	6.2
Sunshine Duration		8.0	8.0	8.1	8.0	6.4	0.0	0.0	2.2	5.9	7.1	5.4	-	3.7
Precipitation							8.5	11.9				20.4	-	14.1
Evaporation		0.7	1.5	1.6	0.0	0.0	2.5	4.8	3.0	0.1	2.6	16.8	-	8.7
Growing Degrees	5	0.4	0.0	0.0	0.0	0.0	3.8	0.3	0.0	0.0	0.0	4.5	-	16.0
	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

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.7	-	8.8
Precipitation - Reference Evapotranspiration	10.7	-	5.3
Number of Rainy Days	2.0	-	2.6
Number of Dry Days	5.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



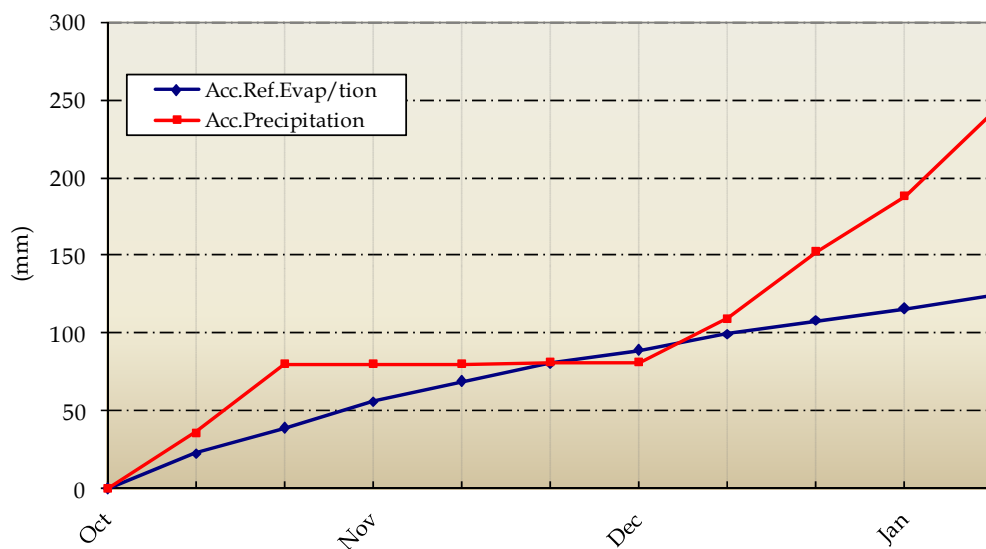


Tripoli

1st 10-day period (1-10/01/2012)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.4	10.4	13.5	12.4	12.4	10.3	6.8	7.8	8.4	5.6	9.6	11.2	9.6
	Min	-3.3	-5.2	-4.7	-5.1	-4.2	7.3	2.7	-4.1	-3.6	0.3	-2.0	0.6	0.7
Relative Humidity	Max	97	95	-	97	96	90	95	96	84	74	92	98	-
	Min	51	33	24	40	45	69	66	33	46	52	46	68	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	2.0	-	5.2	4.9
	12 UTC	-	-	-	-	-	-	-	-	3.4	2.8	-	7.3	5.6
Sunshine Duration		-	-	-	-	-	-	-	-	5.7	5.7	-	4.5	4.3
Precipitation		0.0	0.0			0.0	49.1	5.7	0.0			54.8	22.1	34.2
Evaporation		-	-	-	-	-	-	-	-	1.0	1.0	-	2.7	7.0
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	3.8	12.0	14.2
	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 (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.5	5.8	8.3
Precipitation - Reference Evapotranspiration	46.3	16.3	25.9
Number of Rainy Days	2.0	2.0	3.6
Number of Dry Days	5.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

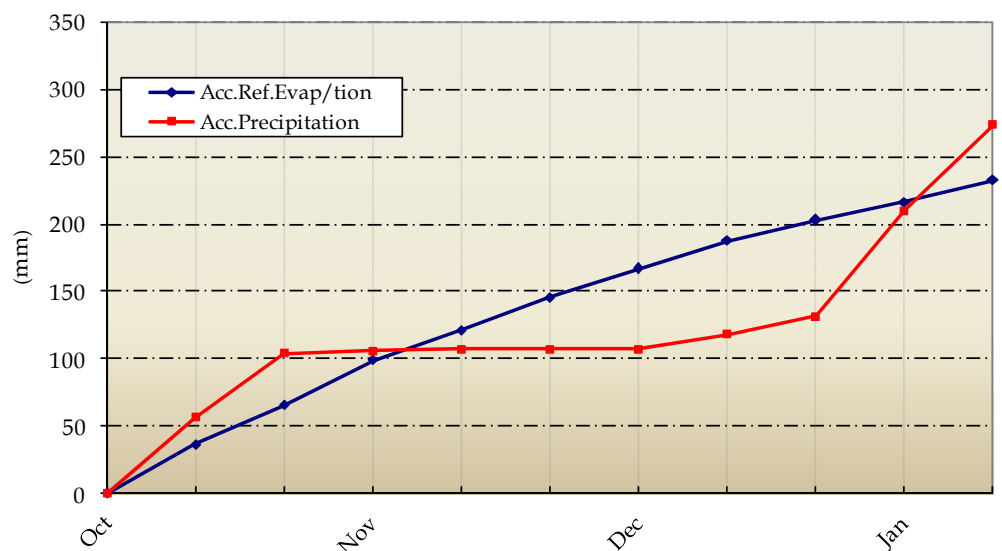


Tympaki

1st 10-day period (1-10/01/2012)		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	14.2	15.0	16.6	15.4	17.4	14.8	15.0	15.0	12.4	15.1	16.8	15.8
	Min	7.2	6.2	2.2	2.6	8.6	9.0	8.4	6.2	8.8	7.4	6.7	7.6	7.6
Relative Humidity	Max	97	95	100	100	100	100	100	91	100	82	96	96	-
	Min	34	32	37	40	60	81	50	29	40	34	44	44	-
Soil Temperature at 10 cm	06 UTC	10.4	9.2	6.6	8.2	10.4	11.6	11.8	10.6	10.0	10.4	9.9	10.6	11.5
	12 UTC	12.4	11.6	10.8	11.6	12.8	13.4	12.6	12.0	12.0	11.0	12.0	13.2	13.0
Sunshine Duration		8.5	8.8	9.0	8.2	5.4	1.8	1.7	4.3	2.8	3.7	5.4	6.1	4.5
Precipitation							27.0	21.9	0.5	5.9	8.6	63.9	40.7	35.1
Evaporation		3.5	2.6	3.6	0.5	2.9	2.7	2.5	1.8	0.6	3.0	23.7	21.5	26.2
Growing Degrees	5	6.1	5.2	3.6	4.6	7.0	8.2	6.6	5.6	6.9	4.9	58.7	71.8	67.0
	10	1.1	0.2	0.0	0.0	2.0	3.2	1.6	0.6	1.9	0.0	10.6	21.8	20.7

1st 10-day period (1-10/01/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.5	13.6	14.4
Precipitation - Reference Evapotranspiration	47.4	27.1	20.7
Number of Rainy Days	5.0	4.0	3.9
Number of Dry Days	5.0	13.0	-

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<sub>n</sub> 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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