

AGROMETEOROLOGICAL BULLETIN

*January 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



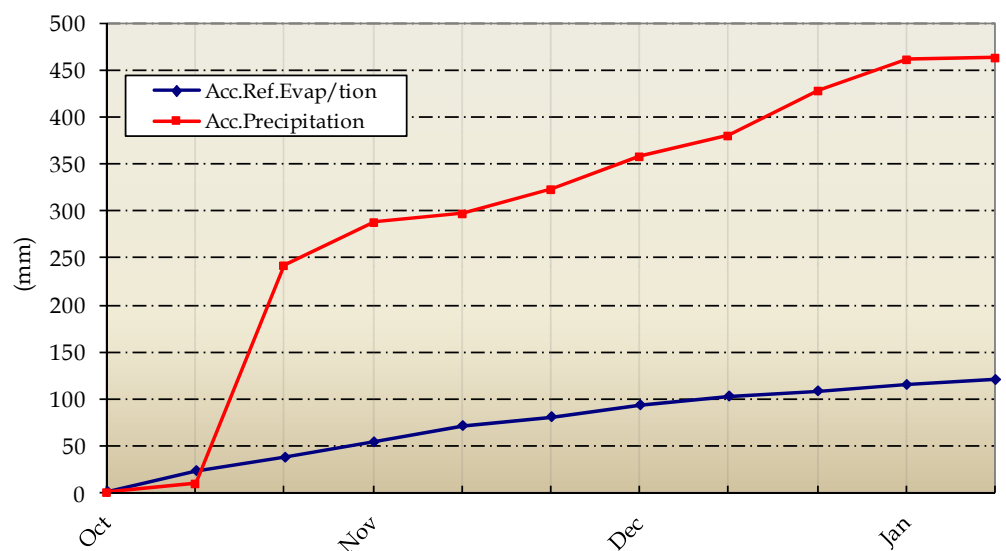
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1st 10-day period (1-10/01/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.6	14.0	16.6	13.6	13.8	15.4	14.7	16.4	17.6	13.6	15.0	-	13.3
	Min	5.8	5.0	7.8	2.0	0.4	0.8	0.0	0.6	1.0	1.2	2.5	-	3.1
Relative Humidity	Max	100	95	97	100	100	100	97	100	100	100	99	-	-
	Min	57	71	56	50	58	50	57	63	62	75	60	-	-
Soil Temperature at 10 cm	06 UTC	8.4	10.2	10.4	8.8	5.4	6.8	6.6	7.6	7.0	7.2	7.8	-	7.4
	12 UTC	9.8	10.2	11.4	10.0	8.0	8.0	8.0	9.2	8.4	8.8	9.2	-	9.1
Sunshine Duration		4.1	0.0	3.2	8.0	3.2	6.4	6.2	6.7	6.1	1.5	4.5	-	3.9
Precipitation			0.8	1.9								2.7	-	32.5
Evaporation		0.2	0.5	0.8	0.8	0.8	1.3	0.9	0.4	0.9	1.1	7.7	-	13.9
Growing Degrees	5	5.2	4.5	7.2	2.8	2.1	3.1	2.4	3.5	4.3	2.4	37.5	-	34.7
	10	0.2	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	-	5.2

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.4	-	8.0
Precipitation - Reference Evapotranspiration	-2.7	-	24.5
Number of Rainy Days	2.0	-	3.8
Number of Dry Days	4.0	-	-

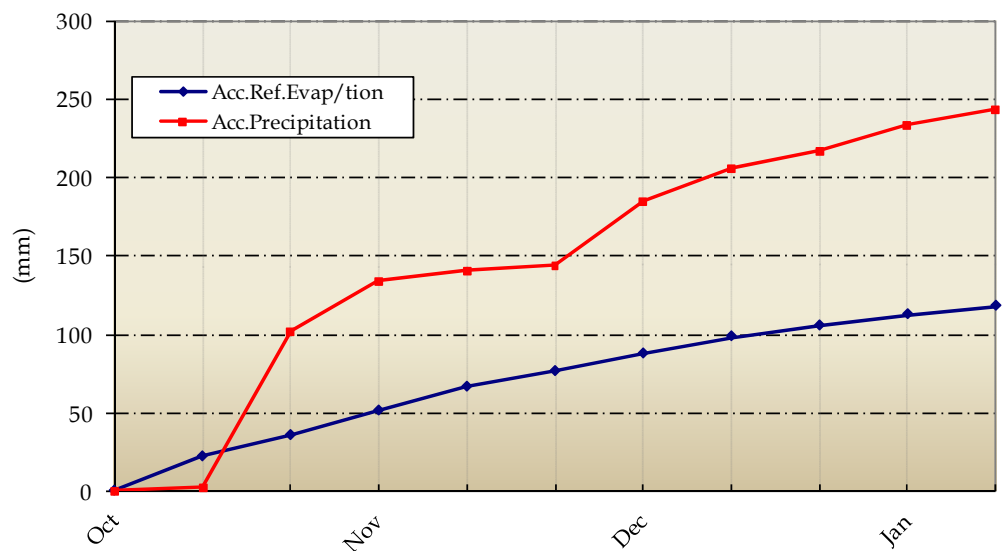
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2011)		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	9.4	8.4	4.8	6.4	7.2	8.2	11.2	11.8	8.6	8.5	14.4	8.9
	Min	-3.4	0.6	4.4	2.2	1.2	1.0	-4.4	-1.0	2.8	0.6	0.4	8.1	1.5
Relative Humidity	Max	96	97	97	70	77	89	91	97	97	100	91	92	-
	Min	65	77	60	55	53	69	65	72	75	83	67	66	-
Soil Temperature at 10 cm	06 UTC	3.6	4.2	7.0	4.8	3.8	4.2	0.6	3.4	4.6	4.6	4.1	10.1	5.6
	12 UTC	4.0	5.0	6.2	5.0	4.6	4.8	3.4	4.8	5.6	6.0	4.9	11.0	6.6
Sunshine Duration		6.1	2.6	0.0	0.0	2.7	3.1	6.8	7.7	4.3	5.5	3.9	1.8	2.7
Precipitation			0.0	9.8								9.8	12.3	17.5
Evaporation		0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	2.8	3.1	12.1	8.4
Growing Degrees	5	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.1	2.3	0.0	3.8	68.0	17.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.6	2.8

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.4	8.3	7.7
Precipitation - Reference Evapotranspiration	4.4	4.0	9.8
Number of Rainy Days	1.0	3.0	2.8
Number of Dry Days	5.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

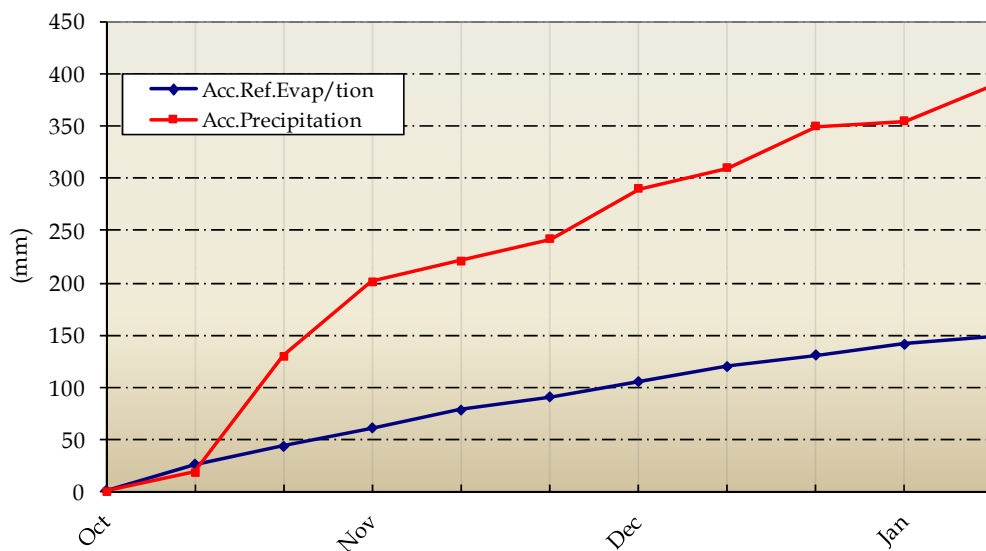


Andravida

1st 10-day period (1-10/01/2011)		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	13.2	15.8	12.8	13.0	15.8	15.2	16.2	17.2	16.4	15.1	17.4	13.8
	Min	4.6	6.4	10.2	7.2	4.0	0.8	2.0	5.0	7.0	5.8	5.3	10.6	5.4
Relative Humidity	Max	91	90	95	88	93	96	93	94	95	97	93	89	-
	Min	58	73	60	52	55	50	58	61	68	69	60	56	-
Soil Temperature at 10 cm	06 UTC	9.2	10.0	10.8	10.2	8.4	7.4	7.8	8.4	9.2	9.8	9.1	13.1	8.9
	12 UTC	11.6	10.8	13.8	11.2	10.2	10.2	10.4	11.4	12.2	11.6	11.3	14.2	10.3
Sunshine Duration		3.4	0.3	5.3	7.9	4.4	7.6	7.8	7.0	7.3	2.1	5.3	3.4	4.5
Precipitation			4.1	28.0	3.2							35.3	11.0	38.0
Evaporation		3.2	1.9	1.7	3.6	1.9	1.3	0.6	1.0	0.4	0.3	15.9	24.0	17.8
Growing Degrees	5	5.0	4.8	8.0	5.0	3.5	3.3	3.6	5.6	7.1	6.1	52.0	89.9	46.8
	10	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.6	2.1	1.1	6.8	40.7	10.2

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.3	15.1	9.2
Precipitation - Reference Evapotranspiration	28.0	-4.1	28.8
Number of Rainy Days	3.0	4.0	4.0
Number of Dry Days	4.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

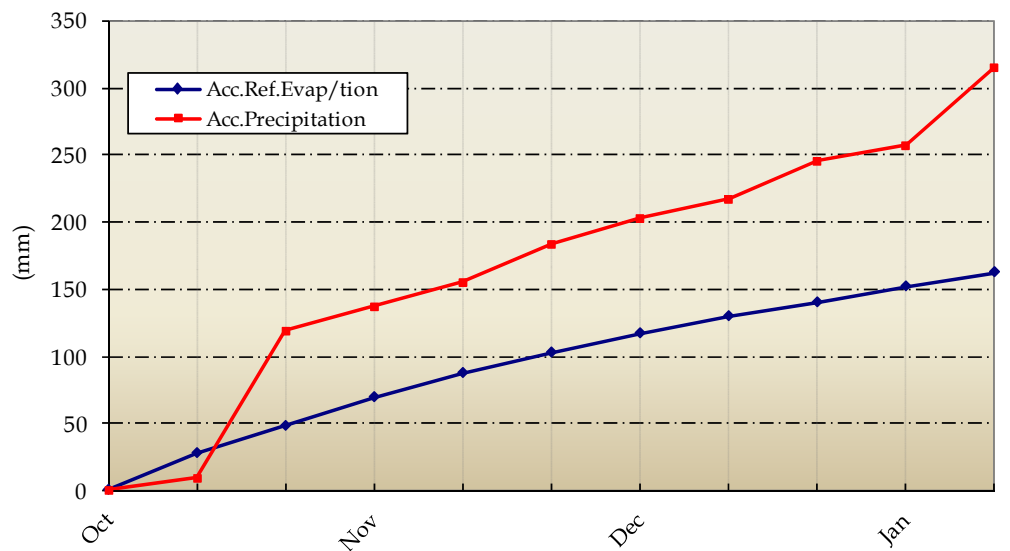


Kalamata

1st 10-day period (1-10/01/2011)		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	13.6	14.0	14.4	13.2	15.8	16.2	17.4	18.4	17.2	15.5	17.4	14.7
	Min	8.4	6.4	7.0	3.8	2.6	4.0	3.2	3.2	6.4	4.6	5.0	8.8	5.3
Relative Humidity	Max	98	100	97	97	97	97	97	97	97	97	97	93	-
	Min	71	80	75	47	57	52	47	49	50	68	60	63	-
Soil Temperature at 10 cm	06 UTC	12.6	12.4	12.0	11.2	10.4	10.4	10.0	10.2	10.6	10.6	11.0	12.9	9.3
	12 UTC	13.0	12.0	11.8	11.4	11.0	11.0	11.8	11.0	11.6	11.6	11.6	13.4	10.4
Sunshine Duration		3.5	0.8	2.3	7.9	0.5	6.4	8.0	7.8	7.9	5.9	5.1	3.5	4.5
Precipitation		3.4	41.7	13.3		0.0						58.4	6.2	30.6
Evaporation		1.5	0.0	0.2	2.6	0.9	1.1	0.6	1.4	1.4	1.0	10.7	12.2	22.0
Growing Degrees	5	6.7	5.0	5.5	4.1	2.9	4.9	4.7	5.3	7.4	5.9	52.4	81.3	49.2
	10	1.7	0.0	0.5	0.0	0.0	0.0	0.0	0.3	2.4	0.9	5.8	33.4	10.6

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.6	12.2	11.0
Precipitation - Reference Evapotranspiration	47.8	-6.0	19.6
Number of Rainy Days	3.0	4.0	4.0
Number of Dry Days	0.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

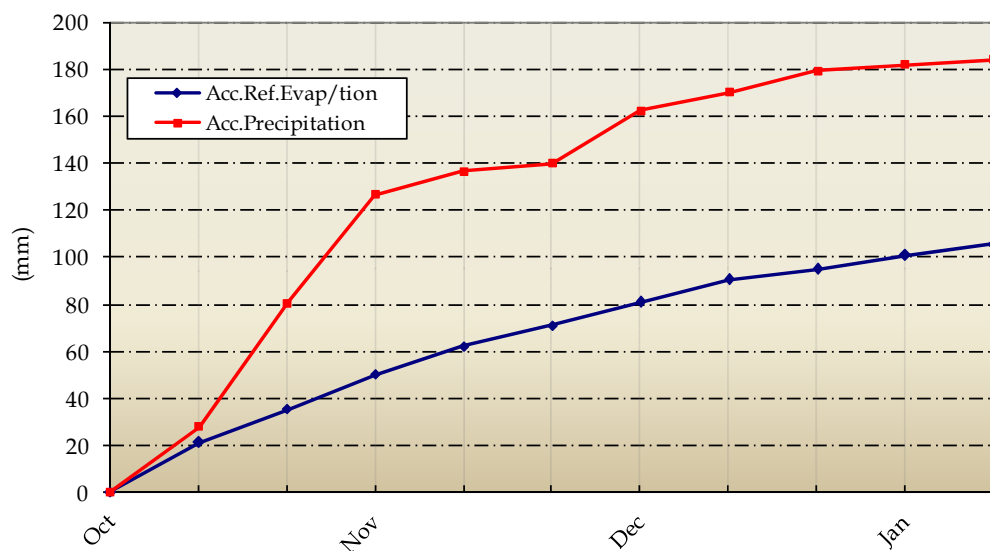


Larisa

1st 10-day period (1-10/01/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.2	6.0	8.8	6.4	8.0	9.2	11.8	12.0	13.0	10.2	9.6	15.2	9.7
	Min	-3.0	0.6	5.6	3.8	2.0	2.6	-1.0	-1.8	-1.6	0.0	0.7	4.7	0.5
Relative Humidity	Max	96	100	100	91	93	97	96	96	96	100	96	90	-
	Min	60	88	81	59	64	61	56	63	61	85	68	51	-
Soil Temperature at 10 cm	06 UTC	3.2	5.2	5.4	5.2	6.4	5.2	4.8	4.6	3.2	3.0	4.6	8.3	5.3
	12 UTC	6.0	6.6	6.8	7.8	8.0	7.8	7.4	6.6	6.8	7.0	7.1	9.3	5.9
Sunshine Duration		6.6	0.0	0.0	0.4	1.2	1.5	7.4	7.2	7.8	0.8	3.3	4.6	3.9
Precipitation			2.3	0.2	0.0							2.5		11.6
Evaporation		0.0	2.5	0.5	0.7	2.3	0.0	1.4	0.9	0.2	0.8	9.3	16.0	5.2
Growing Degrees	5	0.0	0.0	2.2	0.1	0.0	0.9	0.4	0.1	0.7	0.1	4.5	49.7	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	10.8	1.0

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	4.9	10.6	6.2
Precipitation - Reference Evapotranspiration	-2.4	-10.6	5.4
Number of Rainy Days	2.0	0.0	2.5
Number of Dry Days	5.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

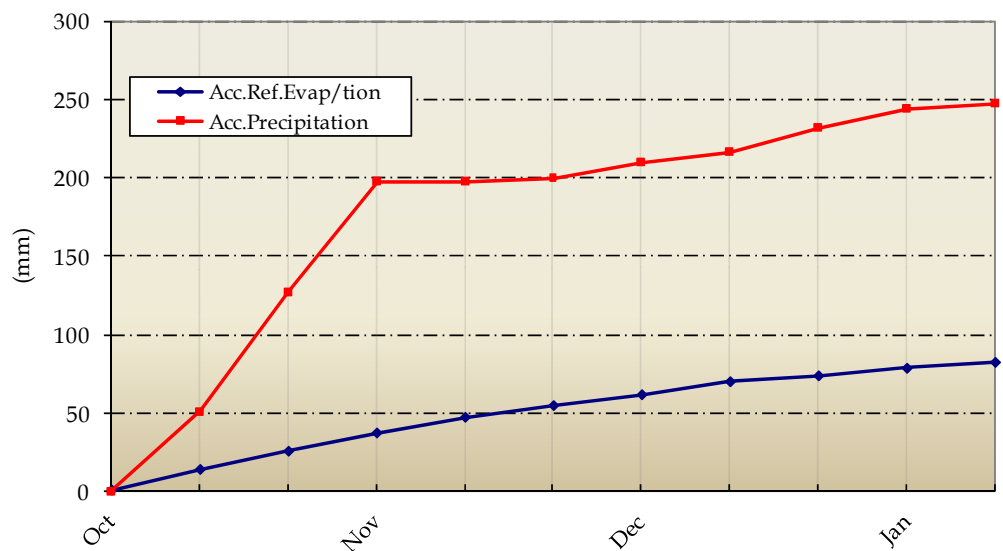


Series

1st 10-day period (1-10/01/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.0	3.8	5.2	4.6	3.4	7.4	9.6	10.8	11.0	12.6	7.6	13.2	7.6
	Min	-4.4	-3.4	2.4	1.8	1.0	1.2	1.0	-1.6	-0.8	-1.4	-0.4	4.6	-0.4
Relative Humidity	Max	96	97	97	96	96	96	96	96	97	97	96	86	-
	Min	60	82	93	82	79	70	62	63	66	59	72	56	-
Soil Temperature at 10 cm	06 UTC	3.0	2.6	2.6	4.2	4.4	4.8	4.6	4.2	3.6	3.4	3.7	7.2	3.6
	12 UTC	3.2	2.6	3.2	4.2	4.8	5.2	5.2	4.2	4.2	4.4	4.1	8.1	4.1
Sunshine Duration		-	0.0	0.0	0.0	0.0	0.2	2.1	2.8	3.9	2.6	1.3	2.5	3.4
Precipitation				2.6	0.3	0.1	0.0					3.0	3.0	10.6
Evaporation		0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.8	7.8	5.2
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.6	1.0	44.2	7.5
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	0.3

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	3.8	7.8	4.2
Precipitation - Reference Evapotranspiration	-0.8	-4.8	6.4
Number of Rainy Days	3.0	1.0	2.4
Number of Dry Days	6.0	7.0	-

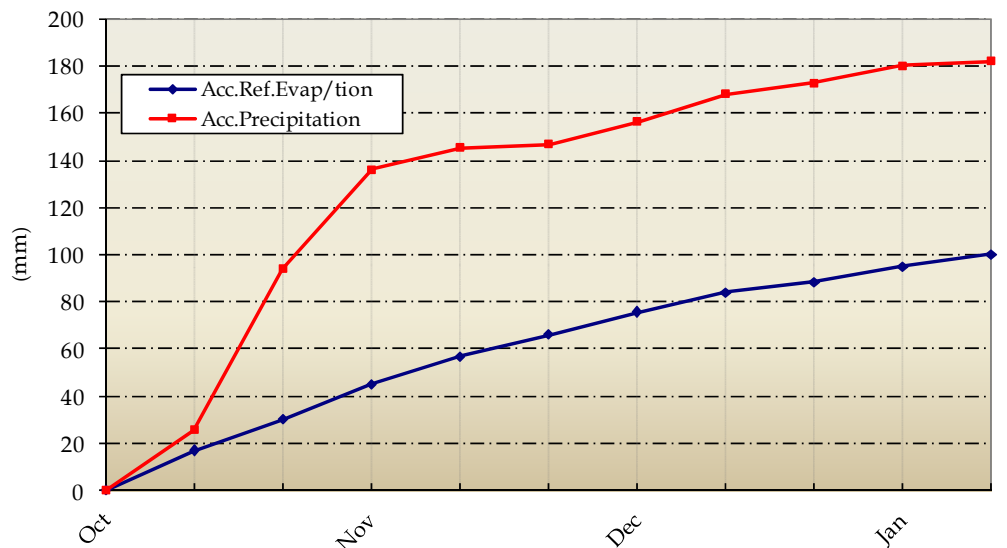
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.4	-	5.2	4.0	4.0	-	11.2	12.4	15.6	11.4	9.3	13.6	9.1
	Min	-4.0	-	3.6	0.4	1.6	-	-1.0	-0.2	0.0	0.4	0.1	5.4	0.5
Relative Humidity	Max	-	99	90	92	-	100	99	93	100	96	96	87	-
	Min	-	80	69	52	-	72	58	58	56	69	64	62	-
Soil Temperature at 10 cm	06 UTC	4.2	-	5.4	5.2	5.4	-	4.8	4.6	5.0	4.8	4.9	8.0	5.6
	12 UTC	4.6	-	5.6	5.2	5.2	-	5.2	5.4	5.8	5.4	5.3	8.7	5.7
Sunshine Duration		-	0.0	0.0	0.0	-	0.5	6.9	7.9	7.6	4.3	3.4	3.1	3.9
Precipitation				1.8								1.8	1.6	14.0
Evaporation		0.0	-	1.6	1.2	-	-	0.0	0.0	0.6	0.8	-	7.8	4.4
Growing Degrees	5	0.0	-	0.0	0.0	0.0	-	0.1	1.1	2.8	0.9	-	50.0	14.2
	10	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	14.9	0.8

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.2	7.5	5.7
Precipitation - Reference Evapotranspiration	-3.4	-5.9	8.3
Number of Rainy Days	1.0	4.0	2.3
Number of Dry Days	6.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

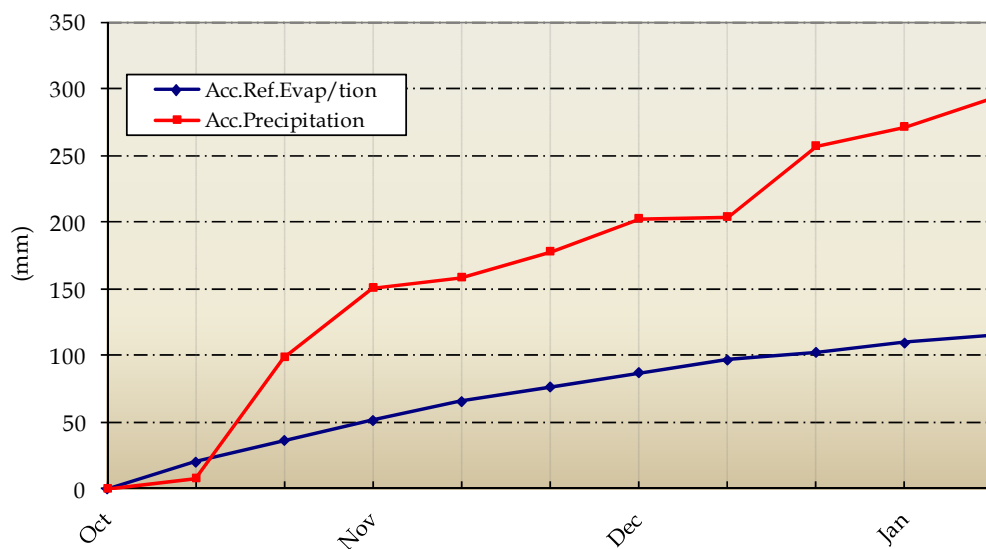


Tripoli

1st 10-day period (1-10/01/2011)		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	8.6	7.2	8.8	8.6	11.4	11.4	12.6	15.6	14.8	11.2	-	9.6
	Min	4.4	3.4	4.4	0.6	-3.0	3.4	-2.2	-2.2	-1.4	-1.0	0.6	-	0.7
Relative Humidity	Max	94	97	97	100	100	97	100	100	96	100	98	-	-
	Min	54	94	94	93	70	52	56	52	53	62	68	-	-
Soil Temperature at 10 cm	06 UTC	7.4	7.6	6.8	5.8	3.4	5.8	4.0	3.4	3.6	3.8	5.2	-	4.9
	12 UTC	9.6	8.0	7.6	6.8	5.6	8.4	6.6	6.4	7.4	7.0	7.3	-	5.6
Sunshine Duration		4.8	0.0	0.0	3.3	4.5	6.7	5.7	7.4	7.4	5.2	4.5	-	4.3
Precipitation		0.0	8.0	14.1								22.1	-	34.2
Evaporation		0.2	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.7	-	7.0
Growing Degrees	5	3.6	1.0	0.8	0.0	0.0	2.4	0.0	0.2	2.1	1.9	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	-	0.7

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.8	-	8.3
Precipitation - Reference Evapotranspiration	16.3	-	25.9
Number of Rainy Days	2.0	-	3.6
Number of Dry Days	4.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

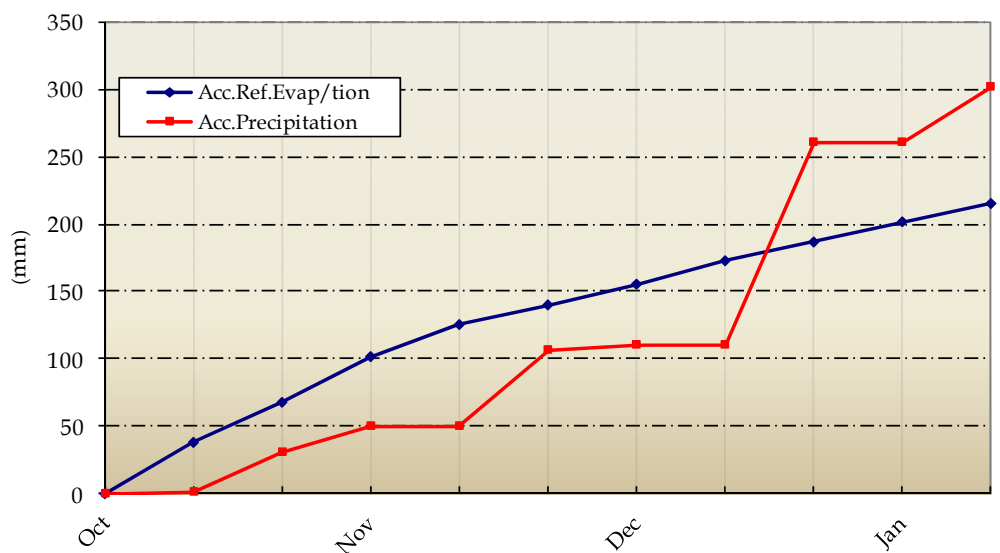


Tympaki

1st 10-day period (1-10/12/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.0	17.0	16.6	15.8	15.8	15.8	16.0	16.0	18.8	19.2	16.8	19.5	15.8
	Min	5.6	7.0	11.0	8.0	7.2	9.2	6.8	6.6	6.6	7.6	7.6	10.4	7.6
Relative Humidity	Max	89	98	97	95	95	93	95	95	100	98	96	96	-
	Min	31	51	54	42	44	45	35	45	44	50	44	51	-
Soil Temperature at 10 cm	06 UTC	10.0	10.8	12.6	11.8	10.6	11.4	9.8	9.4	9.4	10.6	10.6	13.6	11.5
	12 UTC	13.4	12.4	15.4	13.0	13.0	13.2	12.4	12.2	12.6	14.6	13.2	16.6	13.0
Sunshine Duration		6.6	1.1	4.3	1.3	5.3	5.8	9.0	9.3	9.4	8.9	6.1	4.8	4.5
Precipitation			12.6	22.9	0.4		4.8					40.7	0.1	35.1
Evaporation		1.7	4.2	1.3	1.3	1.2	2.6	3.0	2.9	1.7	1.6	21.5	28.9	26.2
Growing Degrees	5	6.3	7.0	8.8	6.9	6.5	7.5	6.4	6.3	7.7	8.4	71.8	99.6	67.0
	10	1.3	2.0	3.8	1.9	1.5	2.5	1.4	1.3	2.7	3.4	21.8	49.6	20.7

1st 10-day period (1-10/01/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.6	15.5	14.4
Precipitation - Reference Evapotranspiration	27.1	-15.4	20.7
Number of Rainy Days	4.0	1.0	3.9
Number of Dry Days	13.0	10.0	-

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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