

# AGROMETEOROLOGICAL BULLETIN

*March 2010*  
*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



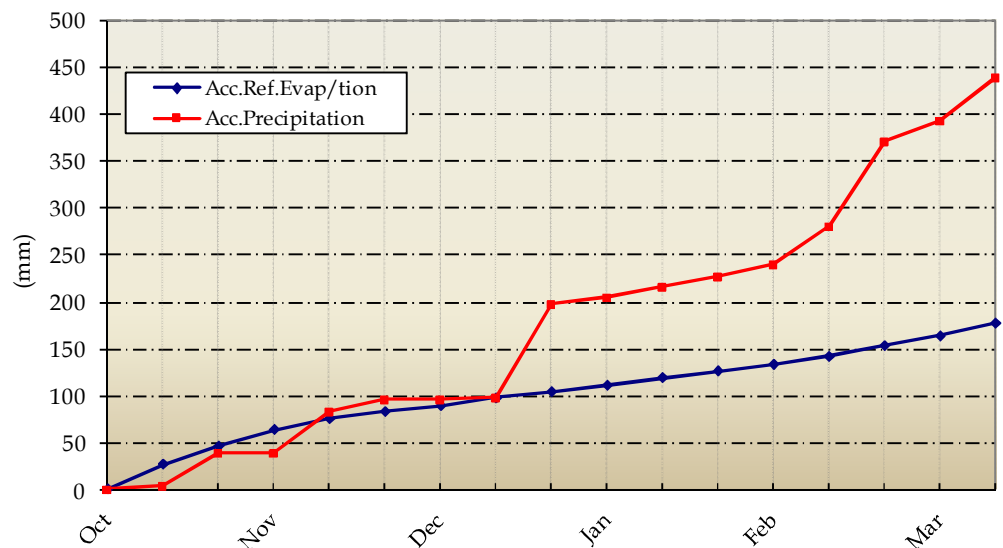
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1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.2	15.2	14.2	14.8	13.6	11.2	6.4	5.2	4.0	6.0	10.6	13.4	10.6
	Min	7.8	10.0	8.0	7.4	8.4	2.4	-1.2	1.8	2.4	0.4	4.7	6.8	2.2
Relative Humidity	Max	91	93	94	92	92	97	93	93	93	87	92	92	-
	Min	64	52	54	49	66	69	37	80	73	61	60	67	-
Soil Temperature at 10 cm	06 UTC	8.8	10.0	9.6	9.6	9.6	9.2	4.2	4.6	3.4	2.6	7.2	8.8	5.9
	12 UTC	10.4	10.6	11.4	10.4	10.6	8.6	5.6	4.2	4.0	4.0	8.0	10.2	8.0
Sunshine Duration		3.6	2.0	6.0	3.2	4.9	0.1	10.4	0.0	0.0	1.8	3.2	3.3	4.8
Precipitation			18.0	0.0		1.4	3.0		12.1	12.1		46.6	13.3	16.7
Evaporation		0.5	5.5	3.1	1.3	3.4	0.0	0.0	1.6	1.2	0.8	17.4	13.4	18.5
Growing Degrees	5	6.5	7.6	6.1	6.1	6.0	1.8	0.0	0.0	0.0	0.0	34.1	51.4	22.8
	10	1.5	2.6	1.1	1.1	1.0	0.0	0.0	0.0	0.0	0.0	7.3	7.9	2.2

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.8	15.1	16.2
Precipitation - Reference Evapotranspiration	32.8	-1.8	0.5
Number of Rainy Days	5.0	4.0	2.2
Number of Dry Days	2.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

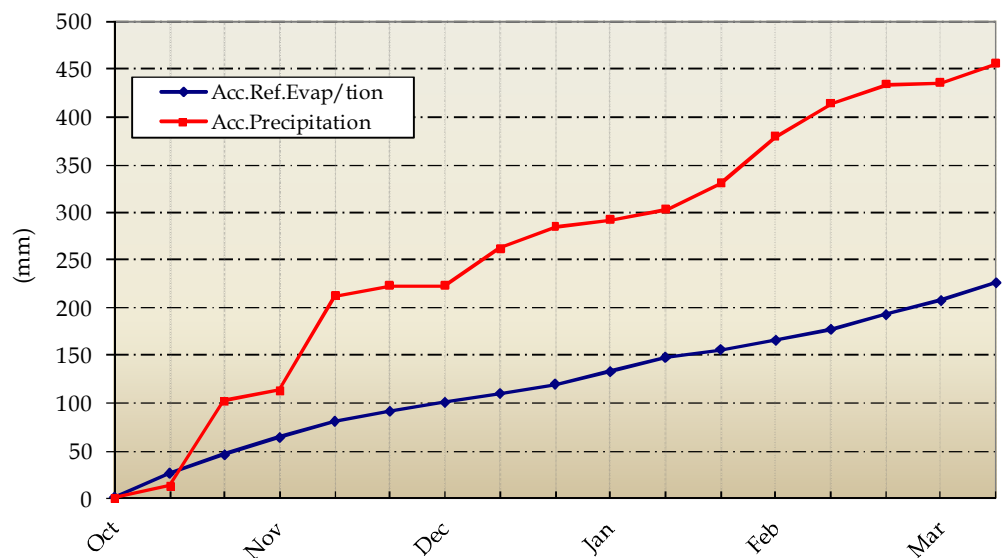


Andravida

1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.2	18.0	16.2	19.2	17.0	14.8	11.0	21.6	16.4	16.4	17.3	15.9	15.2
	Min	6.2	7.0	7.2	10.0	12.4	9.8	7.4	9.2	8.8	8.2	8.6	7.7	5.8
Relative Humidity	Max	91	97	94	90	90	93	97	97	97	100	95	94	-
	Min	17	61	52	44	64	63	78	51	54	56	54	59	-
Soil Temperature at 10 cm	06 UTC	11.8	11.2	12.4	12.8	13.4	13.0	11.6	11.4	12.6	12.6	12.3	10.9	10.0
	12 UTC	14.2	14.4	14.2	14.2	16.0	13.2	12.2	14.6	15.4	13.4	14.2	12.5	12.2
Sunshine Duration		5.2	8.7	4.5	0.4	5.2	2.7	0.0	2.1	4.3	0.0	3.3	5.3	6.1
Precipitation							7.5	6.9	0.8	2.0	2.4	19.6	35.1	26.8
Evaporation		3.1	3.1	0.7	7.2	2.8	0.9	0.5	2.0	1.3	0.0	21.6	32.1	25.2
Growing Degrees	5	9.2	7.5	6.7	9.6	9.7	7.3	4.2	10.4	7.6	7.3	79.5	67.8	55.6
	10	4.2	2.5	1.7	4.6	4.7	2.3	0.0	5.4	2.6	2.3	30.3	19.8	13.0

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.8	18.9	18.0
Precipitation - Reference Evapotranspiration	0.8	16.2	8.8
Number of Rainy Days	5.0	5.0	3.2
Number of Dry Days	11.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

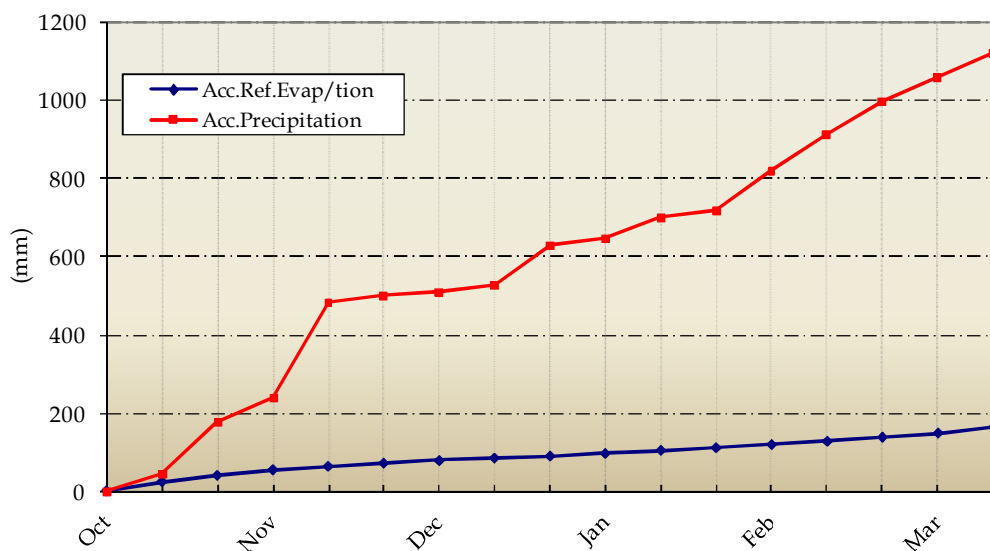




1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.6	21.0	18.4	14.0	16.6	15.4	9.4	13.8	15.2	18.4	16.4	16.4	15.9
	Min	4.6	4.2	4.0	7.8	11.0	7.6	4.0	6.0	5.6	8.4	6.3	5.9	4.9
Relative Humidity	Max	91	100	97	95	96	95	90	83	94	-	93	98	-
	Min	27	29	30	76	42	40	53	34	49	-	42	44	-
Soil Temperature at 10 cm	06 UTC	9.4	9.6	9.8	10.4	11.2	11.4	10.0	9.0	8.6	10.4	10.0	9.6	8.6
	12 UTC	10.8	11.4	11.0	11.0	12.0	11.8	10.2	9.2	10.0	10.6	10.8	10.4	11.1
Sunshine Duration		5.7	9.7	2.6	0.0	2.4	4.9	0.0	0.0	6.3	-	3.5	5.6	5.6
Precipitation					3.0	7.6	5.1	4.6	11.0	16.4	13.8	61.5	99.0	27.5
Evaporation		1.6	2.4	1.2	0.7	0.4	2.9	0.6	1.8	2.0	-	-	-	-
Growing Degrees	5	8.1	7.6	6.2	5.9	8.8	6.5	1.7	4.9	5.4	8.4	63.5	61.8	54.2
	10	3.1	2.6	1.2	0.9	3.8	1.5	0.0	0.0	0.4	3.4	16.9	15.5	12.8

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.5	16.4	16.2
Precipitation - Reference Evapotranspiration	46.0	82.6	11.3
Number of Rainy Days	7.0	4.0	3.1
Number of Dry Days	4.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

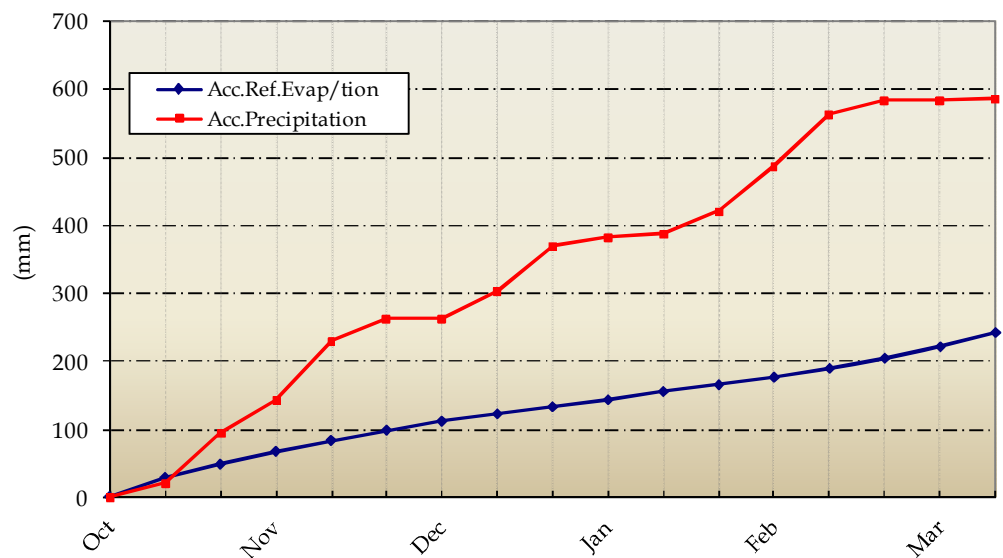


Kalamata

1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.8	22.0	17.8	18.4	16.8	19.4	12.4	22.0	17.6	15.6	18.2	16.2	16.0
	Min	4.8	7.2	8.2	9.4	11.6	7.4	7.6	11.4	11.0	8.2	8.7	7.1	5.6
Relative Humidity	Max	97	83	95	93	91	97	93	89	90	94	92	94	-
	Min	40	35	47	63	63	45	65	52	46	68	52	54	-
Soil Temperature at 10 cm	06 UTC	12.0	12.2	12.2	12.0	13.0	13.0	12.4	12.2	13.4	13.0	12.5	10.9	10.3
	12 UTC	13.2	13.4	13.2	12.8	13.2	13.2	12.4	12.4	13.8	13.4	13.1	11.6	12.1
Sunshine Duration		8.2	12.1	5.0	0.0	3.7	3.9	0.0	3.1	10.9	0.0	4.7	6.1	5.8
Precipitation							0.0	1.7	0.3	0.1	0.1	2.2	16.0	26.1
Evaporation		3.1	6.4	1.3	1.2	0.9	1.8	1.2	2.8	2.0	4.2	24.9	23.2	29.9
Growing Degrees	5	7.3	9.6	8.0	8.9	9.2	8.4	5.0	11.7	9.3	6.9	84.3	-	58.2
	10	2.3	4.6	3.0	3.9	4.2	3.4	0.0	6.7	4.3	1.9	34.3	-	14.6

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.3	18.5	18.8
Precipitation - Reference Evapotranspiration	-19.1	-2.5	7.3
Number of Rainy Days	4.0	4.0	3.2
Number of Dry Days	9.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

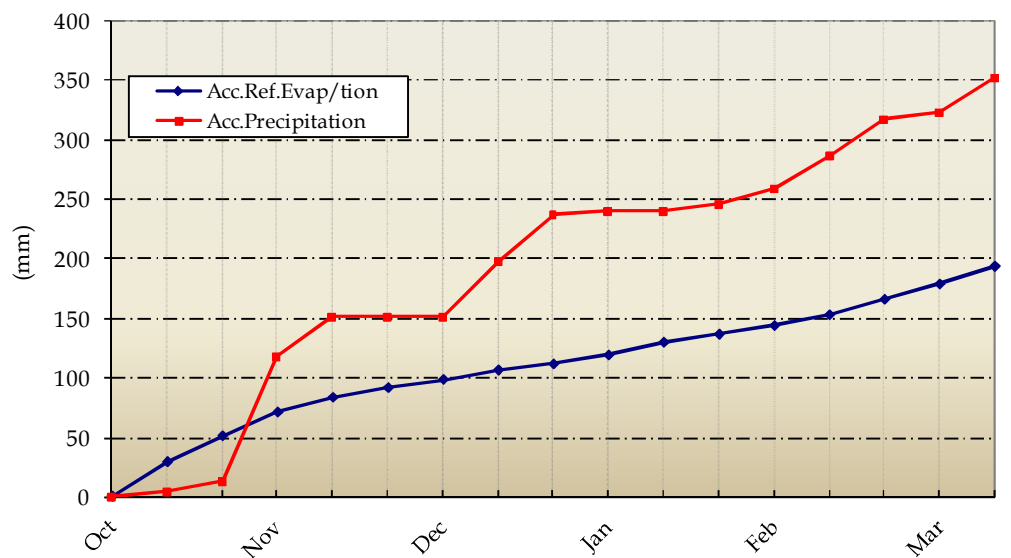


Larisa

1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.6	22.2	16.4	14.8	18.8	14.4	5.6	4.4	7.6	7.6	12.8	16.7	13.6
	Min	6.0	3.6	5.6	7.0	6.4	3.6	2.0	0.4	0.8	5.4	4.1	3.7	2.4
Relative Humidity	Max	94	97	83	94	94	91	96	96	96	97	94	92	-
	Min	55	28	47	60	33	39	54	74	77	80	55	46	-
Soil Temperature at 10 cm	06 UTC	10.2	10.0	10.4	11.0	11.0	10.8	9.0	7.4	7.2	8.6	9.6	9.0	7.8
	12 UTC	11.0	11.2	11.6	11.8	12.0	10.6	8.2	7.8	8.0	8.6	10.1	9.6	8.9
Sunshine Duration		2.1	8.7	4.6	1.7	6.8	3.4	0.0	0.0	0.1	0.0	2.7	5.2	4.9
Precipitation						0.0		6.8	9.0	6.2	7.7	29.7	19.8	10.9
Evaporation		1.4	5.0	3.0	1.0	2.2	3.9	0.1	0.3	1.7	0.1	18.7	33.5	18.9
Growing Degrees	5	6.3	7.9	6.0	5.9	7.6	4.0	0.0	0.0	0.0	1.5	39.2	52.3	34.4
	10	1.3	2.9	1.0	0.9	2.6	0.0	0.0	0.0	0.0	0.0	8.7	9.5	4.1

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.0	19.9	17.1
Precipitation - Reference Evapotranspiration	14.7	-0.1	-6.2
Number of Rainy Days	4.0	5.0	3.2
Number of Dry Days	7.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



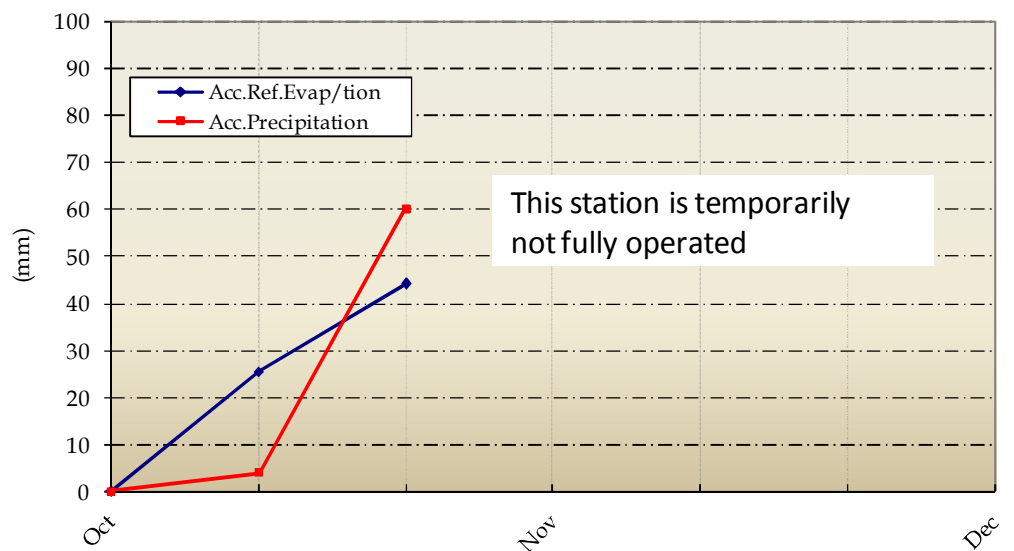


Pyrgela

1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	18.8	15.8
	Min	6.0	1.6	0.2	7.0	11.6	-	-	6.8	7.4	10.0	6.3	4.5	3.4
Relative Humidity	Max	94	93	93	94	-	-	92	91	86	92	92	90	-
	Min	35	40	30	71	-	-	87	87	50	92	62	43	-
Soil Temperature at 10 cm	06 UTC	10.6	9.6	9.4	11.0	12.2	-	-	10.0	9.0	12.0	10.5	8.3	8.0
	12 UTC	15.6	16.4	15.2	14.0	16.6	-	-	9.6	14.4	12.4	14.3	13.1	12.9
Sunshine Duration		4.1	9.0	3.8	2.6	-	-	-	0.0	8.3	0.0	4.0	6.0	5.1
Precipitation									2.2	1.2	3.9	-	19.4	17.8
Evaporation		3.0	2.0	2.2	2.0	-	-	-	0.0	2.3	0.5	-	23.7	20.9
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	66.8	47.5
	10	-	-	-	-	-	-	-	-	-	-	-	19.3	8.2

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	17.3	16.8
Precipitation - Reference Evapotranspiration	-	2.1	1.0
Number of Rainy Days	-	4.0	3.1
Number of Dry Days	-	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

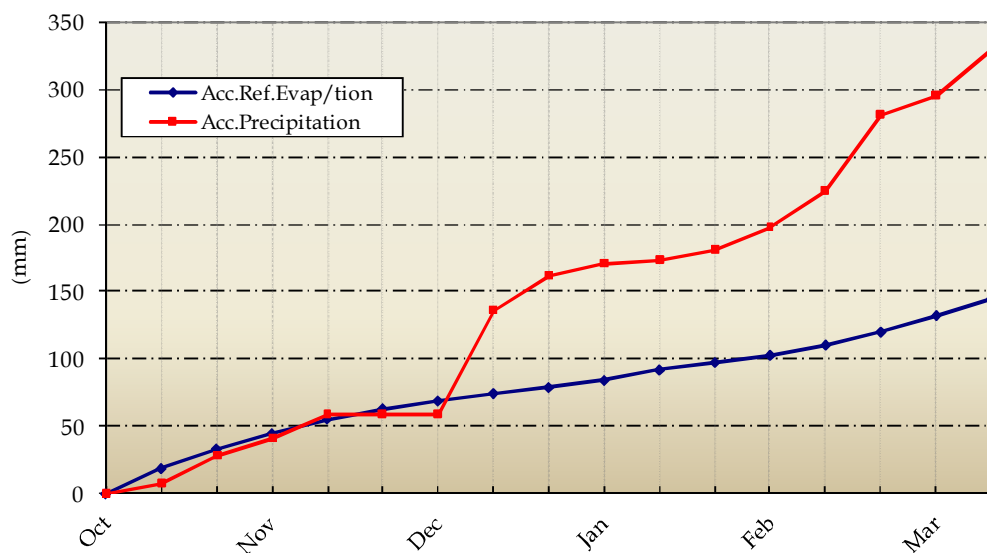


1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.4	20.0	-	13.0	15.2	10.0	8.4	4.4	9.2	8.0	11.4	16.5	13.1
	Min	5.0	6.0	7.6	6.2	7.0	3.6	-1.8	-2.4	0.2	3.6	3.5	5.9	2.6
Relative Humidity	Max	89	91	78	92	97	76	75	96	96	83	87	82	-
	Min	60	40	40	57	63	39	44	92	63	62	56	45	-
Soil Temperature at 10 cm	06 UTC	9.0	8.4	9.8	10.6	9.6	9.0	6.2	6.4	5.0	6.8	8.1	9.3	6.6
	12 UTC	11.2	11.2	12.0	11.4	11.0	8.8	7.0	6.2	5.6	6.0	9.0	9.5	8.2
Sunshine Duration		0.0	7.6	7.5	0.0	1.6	3.9	1.7	0.0	3.6	0.0	2.6	5.9	4.9
Precipitation					1.8	10.2	0.0		11.0	11.6	0.5	35.1	7.3	8.6
Evaporation		1.2	4.2	1.8	0.5	0.2	0.0	0.0	0.0	0.0	3.0	10.9	2.2	12.9
Growing Degrees	5	4.7	8.0	-	4.6	6.1	1.8	0.0	0.0	0.0	0.8	-	62.0	33.1
	10	0.0	3.0	-	0.0	1.1	0.0	0.0	0.0	0.0	0.0	-	13.5	4.4

Series

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.4	20.3	14.1
Precipitation - Reference Evapotranspiration	22.7	-13.0	-5.5
Number of Rainy Days	5.0	2.0	2.7
Number of Dry Days	4.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



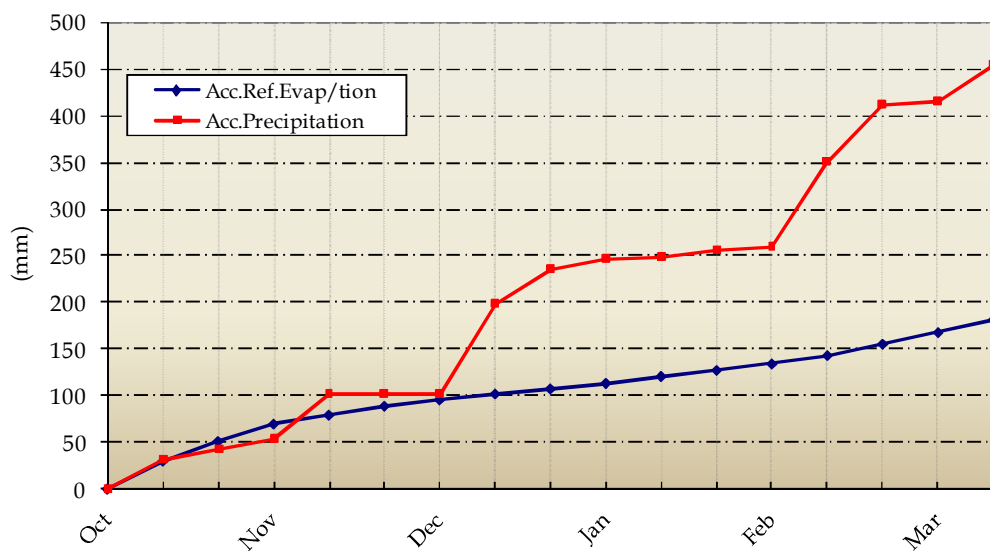


Trikala Imathias

1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.0	22.0	16.6	12.0	16.6	7.4	7.6	3.6	8.0	6.0	11.6	17.0	13.2
	Min	7.8	4.4	6.4	8.2	7.0	2.0	-2.0	0.0	0.0	2.6	3.6	6.4	3.0
Relative Humidity	Max	99	93	95	95	95	80	99	96	100	97	95	92	-
	Min	52	26	41	85	60	40	33	92	51	93	57	44	-
Soil Temperature at 10 cm	06 UTC	9.8	8.8	10.0	10.4	10.0	8.6	6.6	6.2	5.0	6.2	8.2	9.2	7.7
	12 UTC	10.2	11.2	11.2	10.4	11.8	11.0	7.8	6.2	5.4	6.4	9.2	11.2	8.2
Sunshine Duration		1.6	9.9	4.6	0.0	6.2	5.5	4.2	0.0	3.0	0.0	3.5	6.0	4.7
Precipitation					1.5	1.7	0.2	0.4	17.1	6.0	11.9	38.8	4.7	18.0
Evaporation		1.2	2.8	1.3	0.4	1.9	0.0	0.0	0.0	0.0	1.0	8.6	-	14.5
Growing Degrees	5	6.9	8.2	6.5	5.1	6.8	0.0	0.0	0.0	0.0	0.0	33.5	-	36.2
	10	1.9	3.2	1.5	0.1	1.8	0.0	0.0	0.0	0.0	0.0	8.5	-	5.5

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.6	20.6	15.4
Precipitation - Reference Evapotranspiration	25.2	-15.9	2.6
Number of Rainy Days	7.0	2.0	3.0
Number of Dry Days	4.0	13.0	-

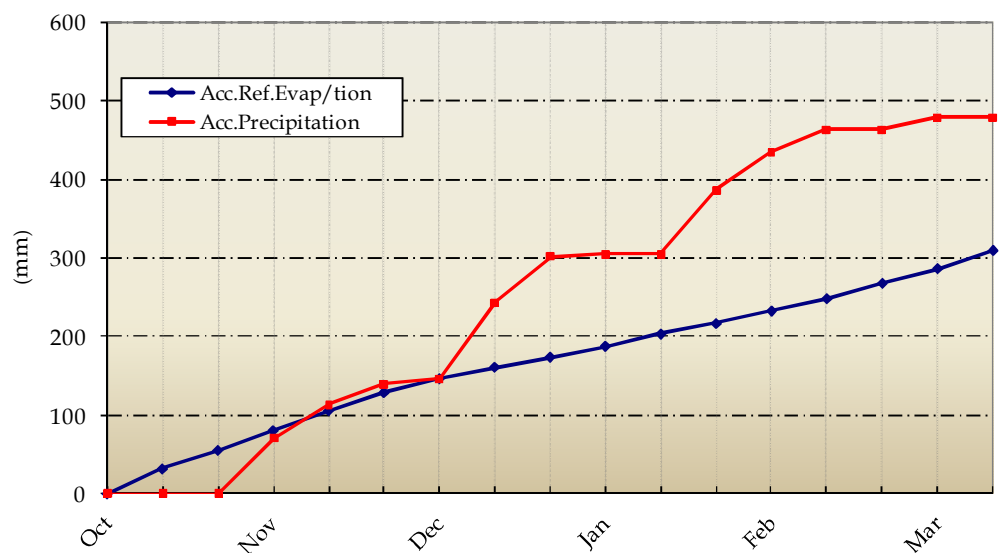
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/03/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.0	19.6	20.8	21.2	18.0	17.2	20.6	22.6	16.8	21.6	19.6	18.1	16.5
	Min	7.0	8.4	11.4	9.6	11.8	14.6	10.0	16.4	12.8	11.6	11.4	8.9	7.4
Relative Humidity	Max	100	100	98	98	99	96	97	96	96	96	98	92	-
	Min	68	22	32	43	73	72	30	36	61	33	47	43	-
Soil Temperature at 10 cm	06 UTC	12.6	13.6	15.4	14.4	17.0	16.4	15.0	18.0	16.6	15.6	15.5	12.4	12.5
	12 UTC	17.4	19.0	18.8	20.0	20.6	19.0	18.0	19.0	20.0	18.8	19.1	15.7	15.2
Sunshine Duration		7.0	8.6	6.6	4.6	6.4	5.6	0.5	0.0	5.8	1.0	4.6	5.0	6.1
Precipitation													3.8	16.7
Evaporation		2.2	3.1	5.6	4.4	5.3	4.3	5.8	1.2	5.9	4.5	42.3	31.8	35.1
Growing Degrees	5	7.5	9.0	11.1	10.4	9.9	10.9	10.3	14.5	9.8	11.6	105.0	85.3	69.0
	10	2.5	4.0	6.1	5.4	4.9	5.9	5.3	9.5	4.8	6.6	55.0	35.3	21.8

1st 10-day period (1-10/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.2	22.4	21.5
Precipitation - Reference Evapotranspiration	-23.2	-18.6	-4.8
Number of Rainy Days	0.0	2.0	2.7
Number of Dry Days	10.0	9.0	-

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.

**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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HELLENIC NATIONAL METEOROLOGICAL SERVICE

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