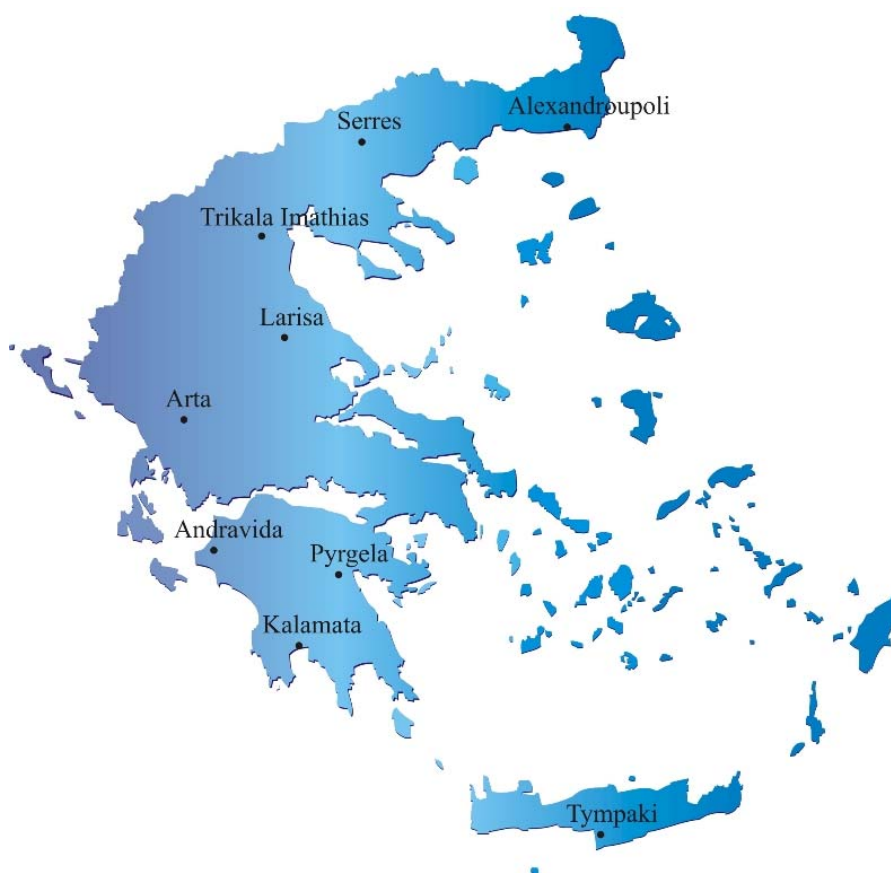




AGROMETEOROLOGICAL BULLETIN

February 2010
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



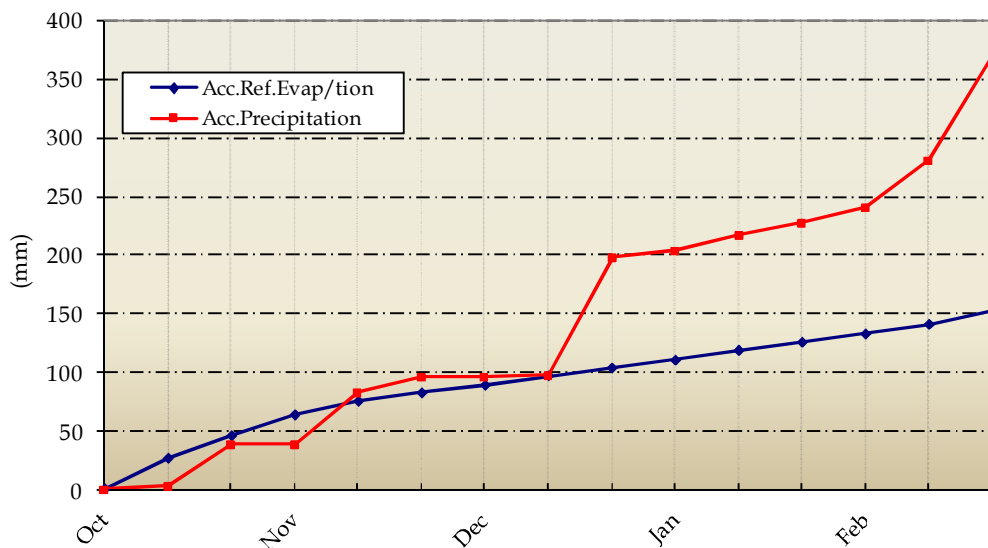
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.0	14.4	14.0	11.8	12.6	10.8	13.0	17.0	16.4	17.4	14.1	8.8	10.0
	Min	6.2	4.0	10.0	3.4	5.8	2.2	5.6	9.4	6.0	9.0	6.2	2.4	2.2
Relative Humidity	Max	100	100	93	95	97	90	97	95	95	89	95	93	-
	Min	81	75	50	71	72	66	66	74	71	72	70	62	-
Soil Temperature at 10 cm	06 UTC	5.5	5.4	7.6	5.4	7.2	5.4	6.4	8.0	8.4	9.2	6.8	6.3	4.8
	12 UTC	6.6	7.0	8.2	7.2	8.4	6.8	7.6	9.6	9.8	11.0	8.2	7.6	6.1
Sunshine Duration		2.3	7.7	6.1	0.0	5.4	6.8	1.4	5.3	7.8	1.4	4.4	3.0	3.7
Precipitation		22.3	14.7	27.9	0.9	23.1		0.8				89.7	78.6	18.4
Evaporation		8.2	2.4	4.5	1.8	2.0	1.0	3.2	3.4	0.1	3.5	30.1	9.1	10.5
Growing Degrees	5	5.1	4.2	7.0	2.6	4.2	1.5	4.3	8.2	6.2	8.2	51.5	13.6	23.6
	10	0.1	0.0	2.0	0.0	0.0	0.0	0.0	3.2	1.2	3.2	9.7	0.2	4.0

2nd 10-day period (11-20/02/2010)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.5	10.2
Precipitation - Reference Evapotranspiration	78.2	68.4
Number of Rainy Days	6.0	6.0
Number of Dry Days	0.0	1.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

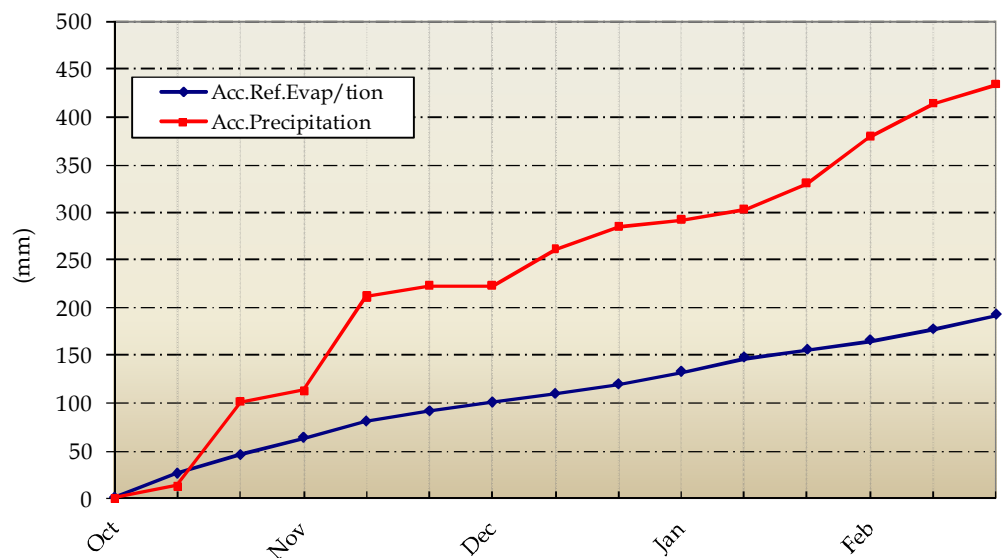


Andravida

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.2	17.4	13.4	10.4	14.8	15.2	18.6	19.4	21.8	22.0	16.7	10.5	14.5
	Min	8.6	8.2	7.2	5.4	8.6	7.6	8.6	11.0	8.4	15.2	8.9	4.9	6.2
Relative Humidity	Max	95	95	91	95	94	94	95	100	100	95	95	92	-
	Min	57	56	45	77	52	60	61	66	32	68	57	58	-
Soil Temperature at 10 cm	06 UTC	10.6	10.4	10.2	9.8	10.6	10.6	11.2	12.4	12.2	14.2	11.2	9.7	9.1
	12 UTC	11.4	11.8	11.4	10.4	12.4	11.6	13.2	14.4	13.8	14.0	12.4	10.8	11.0
Sunshine Duration		3.1	4.4	7.5	0.0	6.9	1.1	6.3	2.2	3.6	0.0	3.5	4.0	4.8
Precipitation		7.1	7.6	0.2	4.2	1.0			0.2			20.3	40.5	37.6
Evaporation		1.8	2.9	1.3	0.4	2.1	2.8	0.4	2.0	3.2	4.1	21.0	-	21.3
Growing Degrees	5	6.4	7.8	5.3	2.9	6.7	6.4	8.6	10.2	10.1	13.6	78.0	-	54.0
	10	1.4	2.8	0.3	0.0	1.7	1.4	3.6	5.2	5.1	8.6	30.1	-	13.3

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.3	11.8	14.2
Precipitation - Reference Evapotranspiration	5.0	28.7	23.4
Number of Rainy Days	6.0	8.0	5.1
Number of Dry Days	0.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

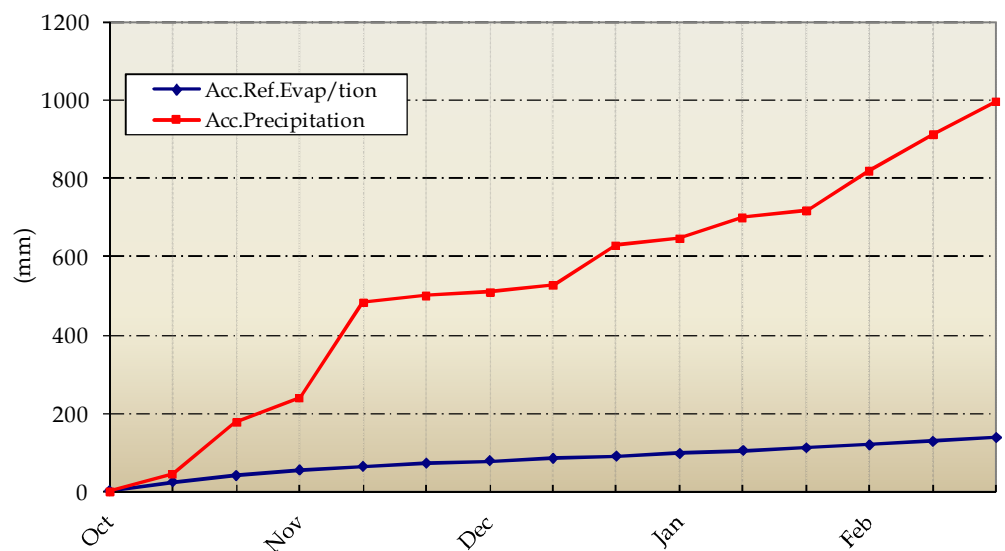




2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.6	14.8	13.0	9.4	15.0	15.0	16.4	19.6	20.2	19.2	15.4	10.9	14.3
	Min	7.6	6.2	3.0	1.8	7.8	8.0	9.8	9.6	6.6	13.6	7.4	2.4	4.7
Relative Humidity	Max	97	100	97	94	92	92	93	98	95	95	95	92	-
	Min	80	81	42	73	45	60	68	65	45	55	61	44	-
Soil Temperature at 10 cm	06 UTC	9.2	8.6	8.0	7.8	8.4	9.2	10.0	10.6	10.2	11.6	9.4	8.2	7.5
	12 UTC	9.2	9.0	8.4	8.0	9.0	10.2	10.6	11.4	11.4	12.4	10.0	8.5	9.4
Sunshine Duration		0.0	0.4	7.1	0.0	7.0	0.8	0.0	2.1	2.0	0.0	1.9	4.2	4.5
Precipitation		39.2	19.3	4.3	8.2	10.8	1.2	1.0	1.3		0.5	85.8	77.1	47.4
Evaporation		1.5	2.9	1.2	1.4	0.6	0.4	1.4	0.5	1.2	0.7	11.8	-	-
Growing Degrees	5	4.6	5.5	3.0	0.6	6.4	6.5	8.1	9.6	8.4	11.4	64.1	-	45.6
	10	0.0	0.5	0.0	0.0	1.4	1.5	3.1	4.6	3.4	6.4	20.9	-	9.7

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.2	11.8	12.2
Precipitation - Reference Evapotranspiration	75.6	65.3	35.2
Number of Rainy Days	9.0	5.0	4.6
Number of Dry Days	0.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

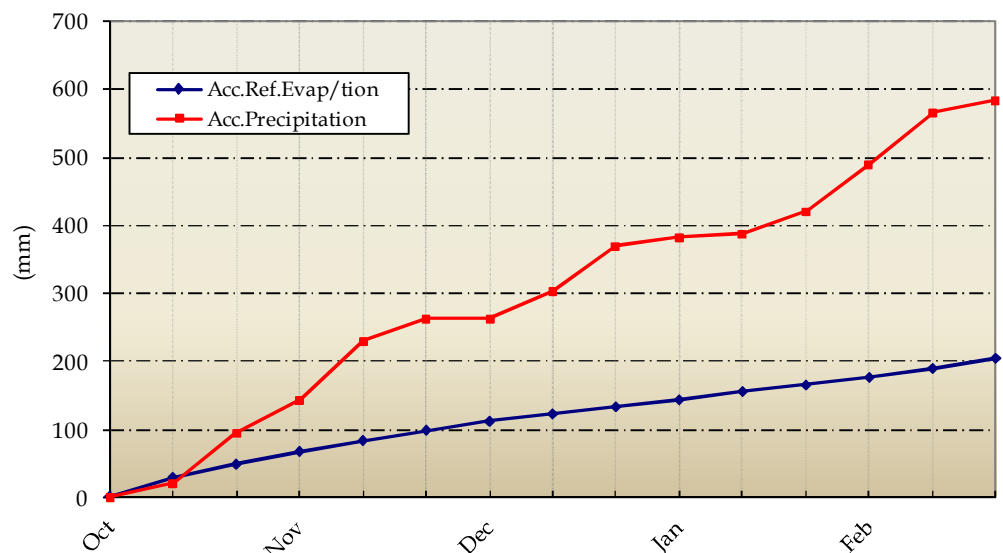


Kalamata

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.0	17.4	15.0	12.0	15.8	15.4	20.2	18.8	19.2	18.6	16.7	12.6	15.1
	Min	9.2	7.2	5.8	3.6	8.8	6.0	9.2	7.2	7.6	13.4	7.8	4.1	5.9
Relative Humidity	Max	97	97	94	91	94	97	97	98	98	88	95	96	-
	Min	67	65	47	77	52	57	56	68	61	69	62	54	-
Soil Temperature at 10 cm	06 UTC	11.0	11.0	11.0	10.0	10.8	10.4	11.4	11.4	12.2	13.2	11.2	9.6	9.6
	12 UTC	11.2	11.4	11.4	10.4	11.4	11.4	12.4	12.6	13.0	14.0	11.9	10.2	10.9
Sunshine Duration		1.8	2.5	6.7	0.0	5.9	1.7	6.1	6.3	3.9	0.0	3.5	2.1	4.5
Precipitation		10.6	3.9	0.8	1.0	1.8			0.3		0.1	18.5	45.9	43.8
Evaporation		1.1	0.4	2.8	0.4	1.0	1.0	2.5	1.8	2.7	1.8	15.5	9.0	26.5
Growing Degrees	5	7.1	7.3	5.4	2.8	7.3	5.7	9.7	8.0	8.4	11.0	72.7	33.5	55.5
	10	2.1	2.3	0.4	0.0	2.3	0.7	4.7	3.0	3.4	6.0	24.9	2.2	12.8

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.7	11.5	15.6
Precipitation - Reference Evapotranspiration	3.8	34.4	28.2
Number of Rainy Days	7.0	7.0	5.2
Number of Dry Days	0.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

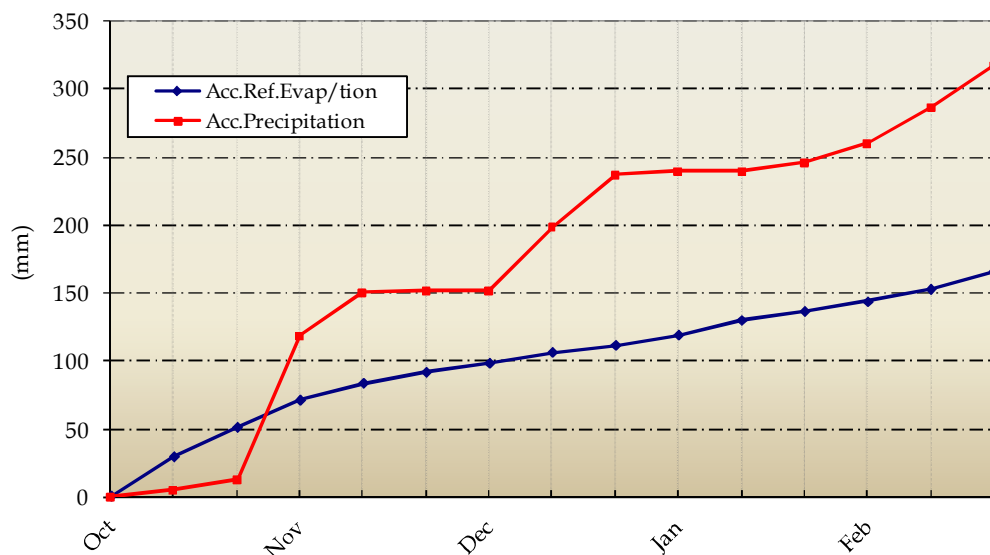


Larisa

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.2	16.2	11.6	8.0	15.2	14.2	15.4	20.6	17.4	21.6	15.2	9.9	12.1
	Min	5.2	3.6	4.4	1.8	1.2	4.2	8.0	4.6	5.2	7.4	4.6	0.6	1.9
Relative Humidity	Max	100	94	95	97	100	95	97	100	94	94	97	91	-
	Min	68	58	47	74	44	59	60	49	50	47	56	47	-
Soil Temperature at 10 cm	06 UTC	7.4	7.2	7.4	7.0	6.4	7.6	9.0	9.4	9.4	10.2	8.1	6.7	6.7
	12 UTC	8.2	13.6	8.0	7.2	7.6	8.8	10.4	10.4	10.4	11.6	9.6	7.7	7.2
Sunshine Duration		2.9	3.4	7.7	0.0	9.2	3.0	3.0	5.1	4.8	0.0	3.9	4.2	4.0
Precipitation		6.8	4.8		5.4	9.7	0.0	3.8		0.0		30.5	5.8	12.7
Evaporation		0.9	1.1	1.9	0.0	1.6	3.0	1.3	1.5	1.4	1.6	14.3	3.8	10.0
Growing Degrees	5	3.7	4.9	3.0	0.0	3.2	4.2	6.7	7.6	6.3	9.5	49.1	9.6	25.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.6	1.3	4.5	10.1	0.1	3.3

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.2	11.8	12.0
Precipitation - Reference Evapotranspiration	17.3	-6.0	0.7
Number of Rainy Days	5.0	3.0	3.6
Number of Dry Days	0.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

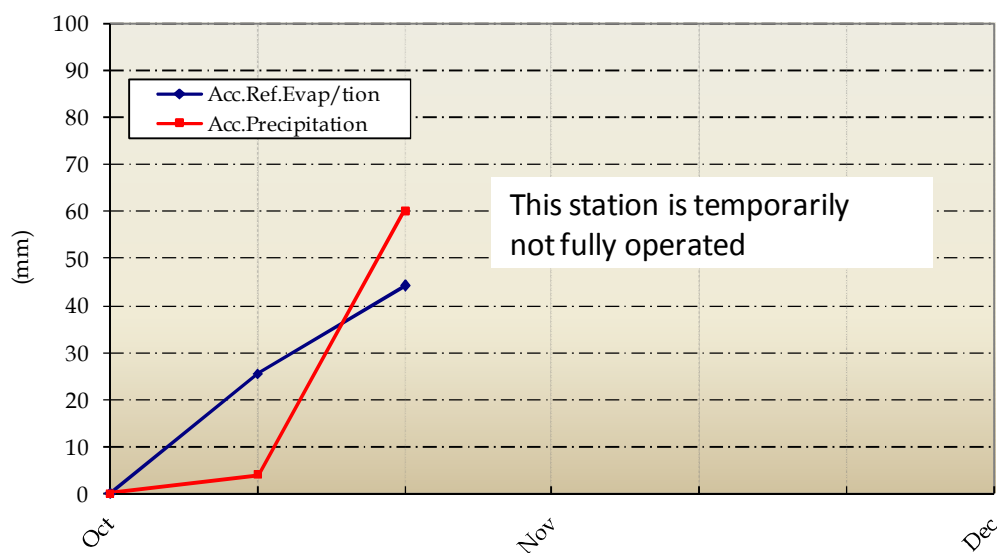


Pyrgela

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	13.2	14.7
	Min	7.2	7.2	6.4	-	8.4	4.6	8.0	7.0	5.8	11.6	7.4	0.9	3.4
Relative Humidity	Max	70	91	-	93	67	93	91	91	91	93	87	93	-
	Min	42	59	-	45	35	45	56	45	44	23	44	45	-
Soil Temperature at 10 cm	06 UTC	9.2	9.0	9.0	-	9.2	9.0	10.6	10.4	10.4	13.4	10.0	6.8	6.9
	12 UTC	11.4	12.0	10.2	-	13.0	12.4	14.6	15.0	14.4	16.0	13.2	9.9	11.1
Sunshine Duration		4.5	3.4	-	0.8	8.8	4.1	7.8	6.9	2.0	0.0	4.3	6.0	4.5
Precipitation		2.2	0.0	0.0	-	4.0		0.0				-	16.0	24.8
Evaporation		0.0	0.4	-	0.3	2.2	0.0	2.4	2.2	1.6	3.0	-	-	15.1
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	-	40.8
	10	-	-	-	-	-	-	-	-	-	-	-	-	7.3

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	11.9	12.4
Precipitation - Reference Evapotranspiration	-	4.1	12.4
Number of Rainy Days	-	5.0	4.1
Number of Dry Days	-	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

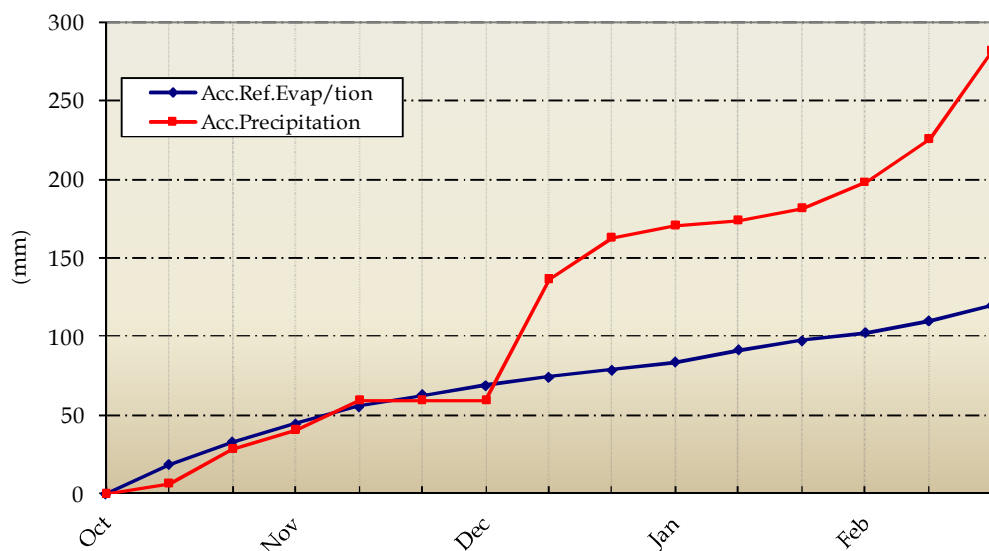


Series

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.2	14.4	12.4	7.8	11.0	11.0	10.0	14.0	18.0	19.0	13.3	8.0	10.9
	Min	3.4	3.4	4.0	0.0	1.0	0.4	4.4	4.0	3.6	7.0	3.1	-0.2	1.9
Relative Humidity	Max	97	93	73	93	93	90	94	97	97	91	92	82	-
	Min	63	59	40	59	54	62	91	78	59	56	62	45	-
Soil Temperature at 10 cm	06 UTC	6.4	6.2	6.8	5.0	5.4	4.2	6.8	7.2	7.2	8.0	6.3	6.2	5.4
	12 UTC	7.6	7.8	8.2	5.4	6.8	5.6	7.2	7.2	9.4	8.8	7.4	6.6	6.5
Sunshine Duration		2.5	2.4	2.6	0.0	3.0	1.2	0.0	1.9	5.1	1.0	2.0	2.4	3.6
Precipitation		12.0	1.3	11.8	10.4	10.8		10.1				56.4	10.9	18.8
Evaporation		1.6	0.3	1.2	1.2	1.5	0.2	0.0	0.8	1.9	1.6	10.3	2.1	8.8
Growing Degrees	5	4.3	3.9	3.2	0.0	1.0	0.7	2.2	4.0	5.8	8.0	33.1	6.9	23.5
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	3.0	3.8	0.0	3.3

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.6	10.2	9.5
Precipitation - Reference Evapotranspiration	46.8	0.7	9.3
Number of Rainy Days	6.0	5.0	3.5
Number of Dry Days	0.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

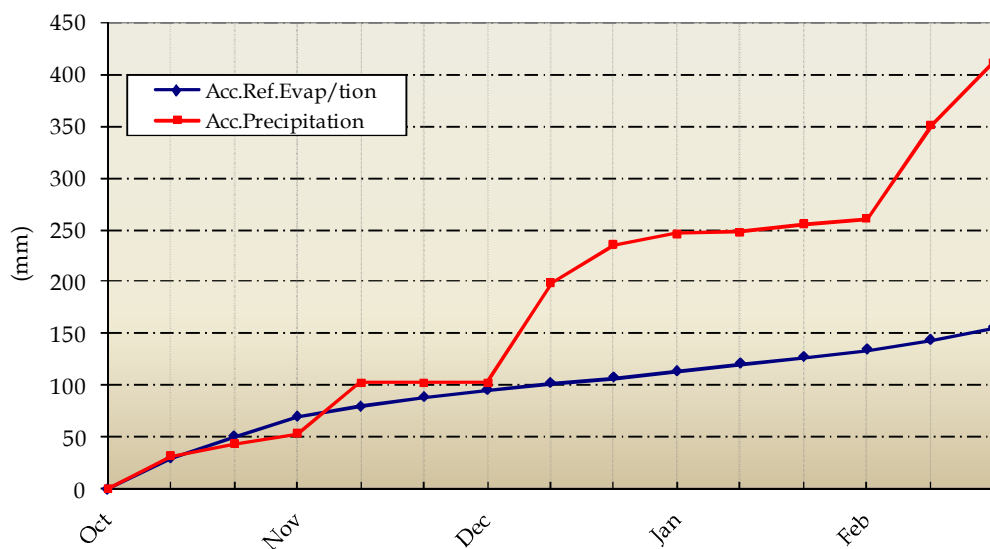


Trikala Imathias

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.2	12.6	15.0	9.0	11.6	11.8	10.6	19.0	19.4	21.6	14.3	8.9	10.6
	Min	4.4	3.2	5.4	1.4	2.4	2.2	7.0	6.2	5.2	7.4	4.5	0.6	1.4
Relative Humidity	Max	99	95	95	93	98	94	99	99	94	95	96	86	-
	Min	80	40	32	67	45	52	94	43	34	30	52	42	-
Soil Temperature at 10 cm	06 UTC	5.4	5.6	6.8	6.6	6.0	5.4	8.0	7.6	8.2	9.2	6.9	6.0	6.4
	12 UTC	7.0	7.4	7.2	6.6	7.0	7.2	8.0	8.8	9.8	10.2	7.9	6.9	6.5
Sunshine Duration		1.3	3.8	6.9	0.2	8.9	3.8	0.0	5.2	5.5	0.3	3.6	3.8	4.1
Precipitation		25.7	6.0		11.7	9.2		8.4				61.0	3.0	15.6
Evaporation		0.5	1.2	0.8	1.1	1.2	1.6	0.3	1.1	1.9	2.0	11.7	-	7.2
Growing Degrees	5	3.3	2.9	5.2	0.2	2.0	2.0	3.8	7.6	7.3	9.5	43.8	-	21.6
	10	0.0	0.0	0.2	0.0	0.0	0.0	0.0	2.6	2.3	4.5	9.6	-	2.6

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.0	14.5	10.8
Precipitation - Reference Evapotranspiration	49.0	-11.5	4.8
Number of Rainy Days	5.0	3.0	3.6
Number of Dry Days	0.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

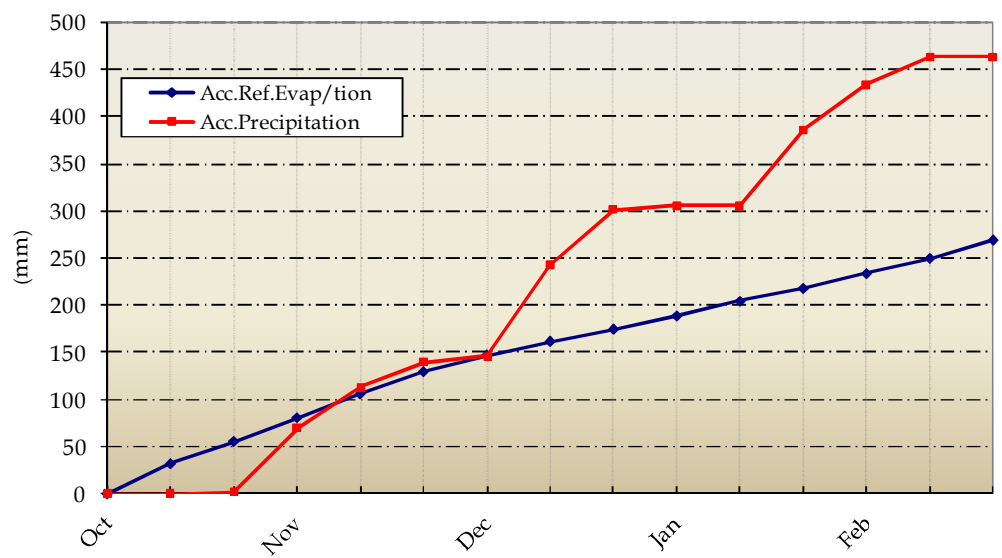


Tympaki

2nd 10-day period (11-20/02/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.2	20.4	17.8	21.0	20.4	17.8	22.0	21.6	21.8	25.0	20.7	14.5	16.2
	Min	13.4	11.0	11.4	6.4	12.4	7.6	9.4	10.0	11.0	13.6	10.6	7.3	7.6
Relative Humidity	Max	96	94	97	97	96	97	97	97	97	95	96	93	-
	Min	46	36	52	37	45	37	40	48	48	34	42	49	-
Soil Temperature at 10 cm	06 UTC	13.2	13.2	14.0	11.6	13.6	12.0	13.0	13.6	14.2	15.4	13.4	10.7	11.1
	12 UTC	15.4	16.4	16.4	14.6	16.4	16.0	16.0	17.2	18.4	19.4	16.6	12.9	13.3
Sunshine Duration		4.7	3.2	6.1	0.3	4.7	4.2	0.0	1.6	4.8	0.5	3.0	4.7	5.5
Precipitation													38.2	28.6
Evaporation		2.6	3.2	3.9	1.5	3.1	2.9	1.0	2.1	3.4	4.4	28.1	31.6	30.1
Growing Degrees	5	11.3	10.7	9.6	8.7	11.4	7.7	10.7	10.8	11.4	14.3	106.6	59.4	69.2
	10	6.3	5.7	4.6	3.7	6.4	2.7	5.7	5.8	6.4	9.3	56.6	13.6	21.2

2nd 10-day period (11-20/02/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.5	18.4	17.9
Precipitation - Reference Evapotranspiration	-19.5	19.8	10.7
Number of Rainy Days	0.0	7.0	3.8
Number of Dry Days	11.0	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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