



AGROMETEOROLOGICAL BULLETIN

February 2015
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



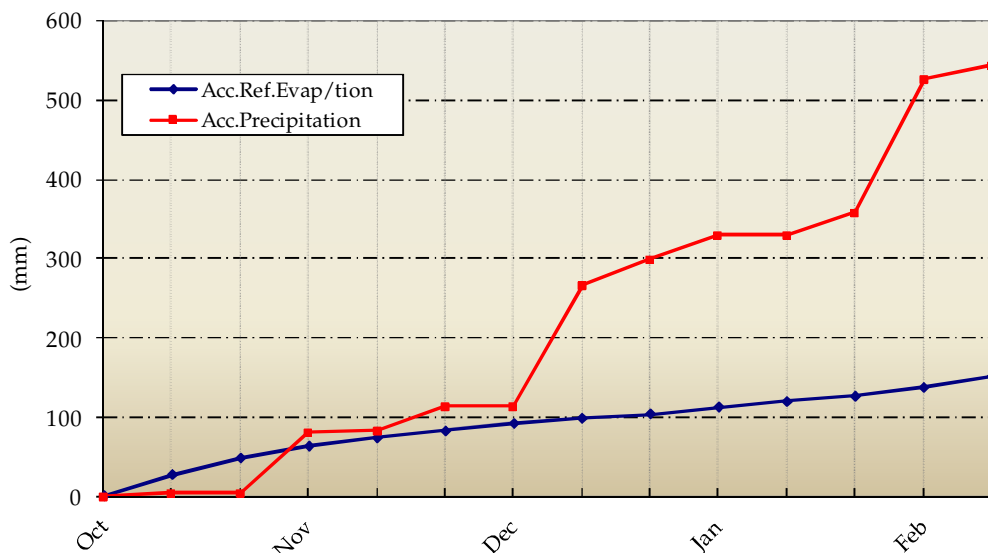
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

1st 10-day period (1-10/02/2015)		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	15.0	13.4	14.2	16.6	16.2	11.4	7.6	4.6	4.4	12.1	10.5	9.1
	Min	14.8	11.2	7.6	2.0	6.6	5.6	5.0	1.6	2.2	0.4	5.7	4.6	0.8
Relative Humidity	Max	83	87	89	90	92	94	88	94	79	65	86	85	-
	Min	65	58	44	63	61	52	56	63	60	32	55	63	-
Soil Temperature at 10 cm	06 UTC	12.2	11.2	9.0	6.8	7.6	8.0	8.0	5.4	5.4	3.2	7.7	6.4	5.3
	12 UTC	13.4	13.2	11.8	10.5	11.6	11.6	10.2	8.0	6.0	4.0	10.0	8.5	6.6
Sunshine Duration		0.0	5.6	8.4	5.8	8.5	0.0	7.6	0.2	0.0	3.5	4.0	4.3	3.9
Precipitation		0.1	0.9	0.1			13.2	0.1	3.8			18.2	0.1	19.4
Evaporation		3.6	1.7	2.7	1.0	0.9	1.9	1.1	1.5	0.0	0.0	14.4	11.0	11.6
Growing Degrees	5	11.4	8.1	5.5	3.1	6.6	5.9	3.2	0.0	0.0	0.0	43.8	29.0	14.1
	10	6.4	3.1	0.5	0.0	1.6	0.9	0.0	0.0	0.0	0.0	12.5	8.7	1.4

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.4	11.0	10.9
Precipitation - Reference Evapotranspiration	4.8	-10.9	8.5
Number of Rainy Days	6.0	1.0	2.5
Number of Dry Days	0.0	0.0	-

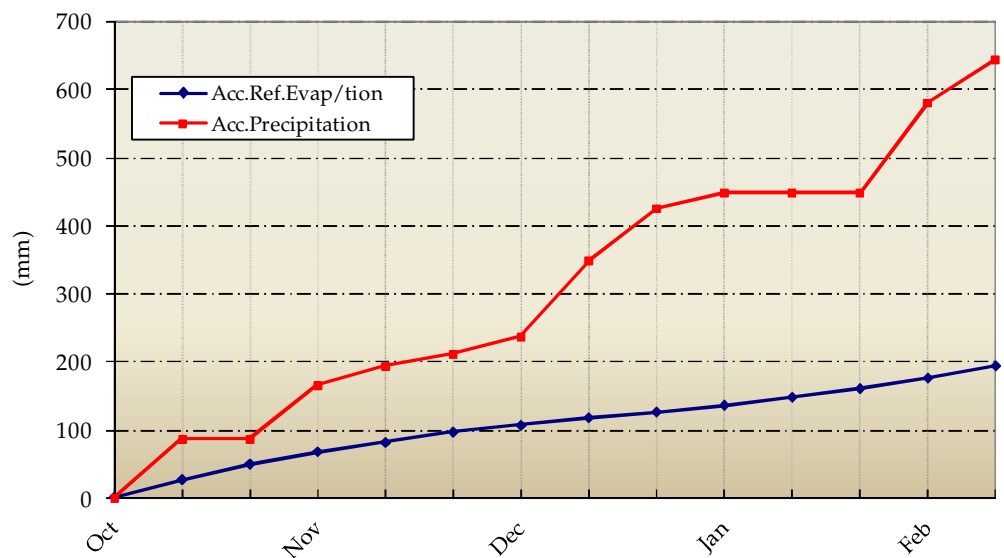
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/02/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.4	14.7	13.4	16.4	21.2	16.0	14.8	12.1	10.4	18.0	15.4	14.7	14.0
	Min	13.8	8.4	6.0	8.1	8.4	9.0	8.0	7.7	4.7	3.0	7.7	7.6	4.8
Relative Humidity	Max	82	84	86	82	78	88	88	90	90	59	83	90	-
	Min	54	50	46	48	34	48	51	62	50	31	47	60	-
Soil Temperature at 10 cm	06 UTC	13.8	12.0	10.4	10.0	10.8	11.0	10.2	10.4	9.4	7.6	10.6	10.8	9.2
	12 UTC	14.2	12.2	11.4	12.0	12.8	12.0	11.8	11.5	10.0	9.0	11.7	12.3	10.9
Sunshine Duration		4.1	2.6	6.6	4.7	8.6	5.1	1.9	3.1	0.0	5.2	4.2	3.6	5.2
Precipitation		2.7	5.4	3.6	2.5		11.7	5.8	9.7	23.2	0.2	64.8	73.1	28.0
Evaporation		1.1	0.9	2.5	2.8	5.4	2.2	2.5	3.7	4.8	1.0	26.9	-	19.1
Growing Degrees	5	10.6	6.6	4.7	7.3	9.8	7.5	6.4	4.9	2.6	5.5	65.8	61.8	44.7
	10	5.6	1.6	0.0	2.3	4.8	2.5	1.4	0.0	0.0	0.5	18.6	12.2	7.9

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.7	11.6	12.4
Precipitation - Reference Evapotranspiration	47.1	61.5	15.6
Number of Rainy Days	9.0	9.0	4.1
Number of Dry Days	0.0	2.0	-

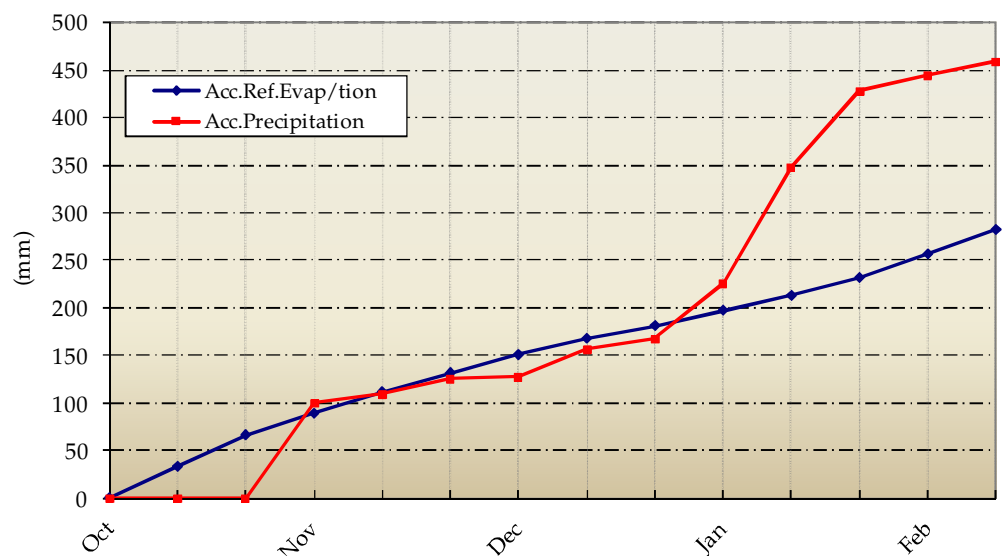
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/02/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.0	19.6	16.0	17.6	18.6	21.0	17.0	16.8	15.2	10.0	17.3	15.9	14.6
	Min	14.6	13.6	8.6	9.8	13.2	16.2	9.4	9.4	8.4	8.0	11.1	10.8	8.7
Relative Humidity	Max	69	81	82	78	67	68	75	74	91	86	77	90	-
	Min	40	48	48	49	33	52	52	50	45	55	47	69	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	4.8	5.5	7.2	8.0	5.8	8.1	4.9	5.0	0.0	4.9	3.9	4.3
Precipitation										1.4	13.3	14.7	29.9	22.4
Evaporation		3.3	0.8	1.0	3.3	3.8	4.1	1.5	1.6	1.1	6.3	26.8	10.3	29.3
Growing Degrees	5	12.8	11.6	7.3	8.7	10.9	13.6	8.2	8.1	6.8	4.0	92.0	83.8	66.4
	10	7.8	6.6	2.3	3.7	5.9	8.6	3.2	3.1	1.8	0.0	43.0	33.8	19.8

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.8	14.6	-
Precipitation - Reference Evapotranspiration	-11.1	15.3	22.4
Number of Rainy Days	2.0	6.0	4.2
Number of Dry Days	8.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

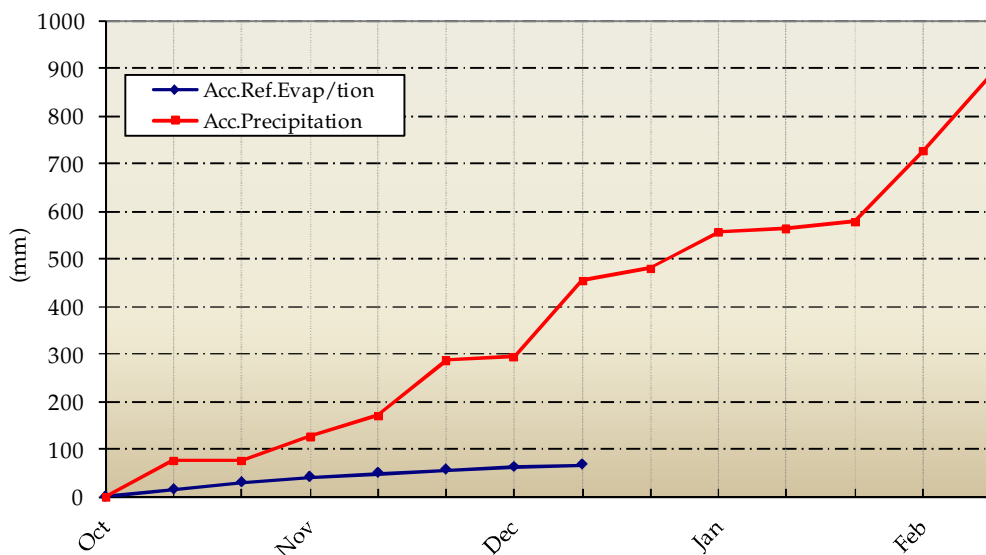


Ioannina

1st 10-day period (1-10/02/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.6	3.2	7.4	10.4	17.7	9.2	10.6	7.1	4.6	4.2	8.4	10.6	10.0
	Min	6.0	2.0	0.1	3.1	4.9	4.7	2.8	4.0	0.1	-1.8	2.6	3.7	0.6
Relative Humidity	Max	100	100	100	100	96	100	100	95	100	75	97	90	-
	Min	62	-	58	75	33	-	-	83	42	33	55	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.1
Sunshine Duration		-	-	-	-	-	-	-	0.1	0.0	7.7	2.6	2.1	3.6
Precipitation		53.6	17.9	16.1	30.0	0.0	18.8	3.2	9.3	10.3		159.2	28.1	35.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	5.0
Growing Degrees	5	2.8	0.0	0.0	1.8	6.3	2.0	1.7	0.6	0.0	0.0	15.1	21.6	13.4
	10	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.3

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	7.7	9.3
Precipitation - Reference Evapotranspiration	-	20.4	26.5
Number of Rainy Days	8.0	7.0	3.5
Number of Dry Days	0.0	2.0	-

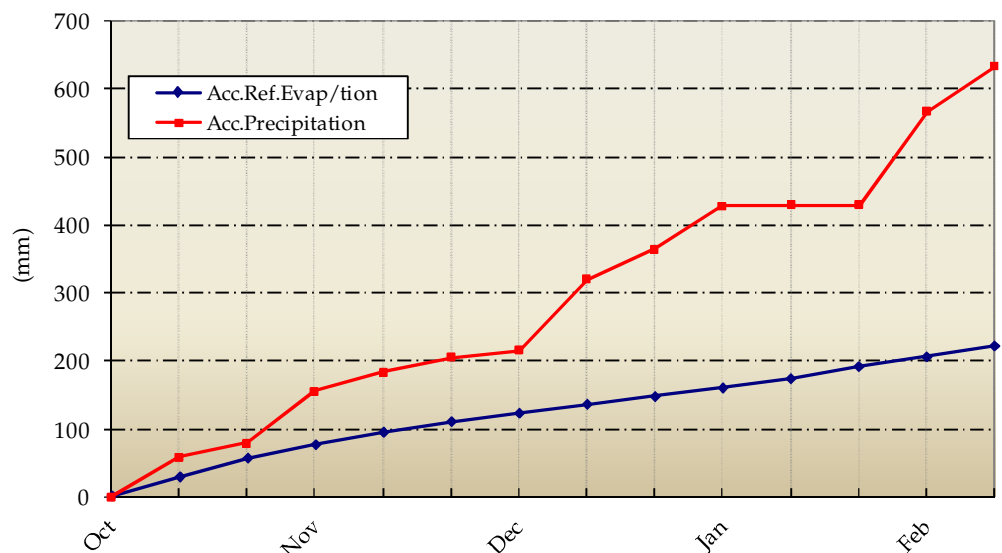
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/02/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.6	15.6	14.5	16.2	19.7	16.8	13.4	13.8	11.8	9.4	15.0	15.4	14.9
	Min	15.3	8.4	6.4	7.2	13.8	8.7	3.1	6.0	5.5	4.3	7.9	7.9	4.8
Relative Humidity	Max	86	92	89	95	83	93	95	95	95	64	89	90	-
	Min	57	56	56	35	48	41	68	58	52	32	50	59	-
Soil Temperature at 10 cm	06 UTC	12.6	13.0	11.4	11.2	12.0	12.0	11.0	11.0	10.6	10.0	11.5	10.9	9.7
	12 UTC	13.6	12.6	11.4	11.4	12.4	12.6	11.0	11.2	10.8	9.8	11.7	11.3	11.0
Sunshine Duration		0.0	2.4	4.9	6.4	8.3	4.1	3.6	3.9	0.0	3.6	3.7	3.2	5.1
Precipitation			10.2	6.9	4.2		6.3	1.0	9.5	27.5	0.8	66.4	46.1	28.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	24.5
Growing Degrees	5	12.0	7.0	5.5	6.7	11.8	7.8	3.3	4.9	3.7	1.9	64.3	66.2	48.9
	10	7.0	2.0	0.5	1.7	6.8	2.8	0.0	0.0	0.0	0.0	20.6	16.7	8.7

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.1	14.0	14.4
Precipitation - Reference Evapotranspiration	50.3	32.1	13.9
Number of Rainy Days	8.0	8.0	4.1
Number of Dry Days	1.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

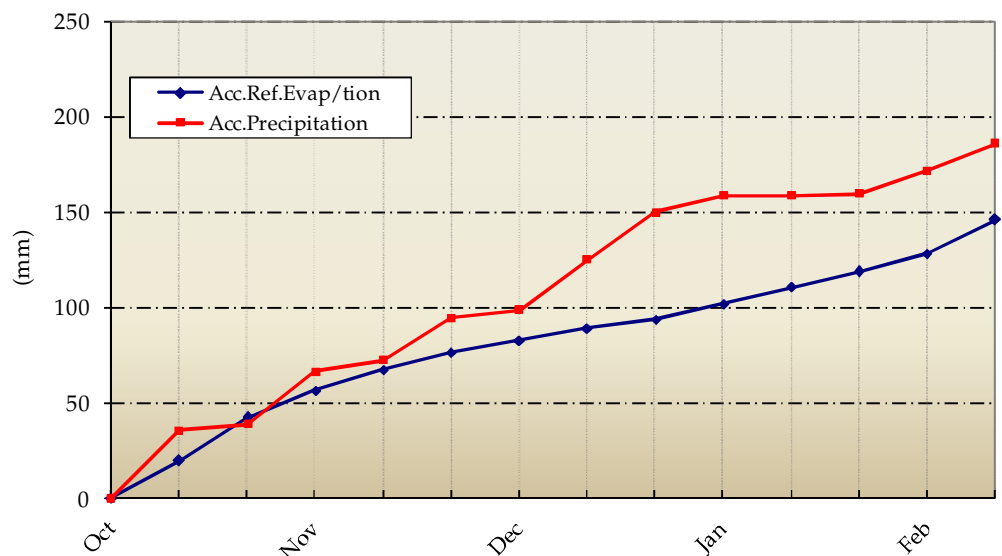


Larisa

1st 10-day period (1-10/02/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.6	13.6	13.4	15.6	16.6	15.4	16.2	13.6	7.4	5.4	13.5	11.7	11.2
	Min	9.0	5.2	1.0	0.8	1.1	6.0	0.6	7.0	2.1	0.1	3.3	4.9	0.4
Relative Humidity	Max	83	93	100	100	100	100	100	93	90	65	92	93	-
	Min	42	44	31	44	51	42	36	48	44	28	41	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.8
Sunshine Duration		7.1	3.6	7.9	5.3	6.0	4.1	7.0	5.0	0.0	7.1	5.3	2.1	4.3
Precipitation		2.2	0.4				8.9		2.7	0.0		14.2	8.0	9.7
Evaporation		4.8	0.3	2.5	3.0	2.6	0.3	2.0	3.7	0.0	0.0	19.2	11.0	6.9
Growing Degrees	5	8.3	4.4	2.2	3.2	3.9	5.7	3.4	5.3	0.0	0.0	36.4	33.1	16.7
	10	3.3	0.0	0.0	0.0	0.0	0.7	0.0	0.3	0.0	0.0	4.3	4.5	0.7

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.9	10.0	9.6
Precipitation - Reference Evapotranspiration	-3.7	-2.0	0.1
Number of Rainy Days	4.0	3.0	2.8
Number of Dry Days	0.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

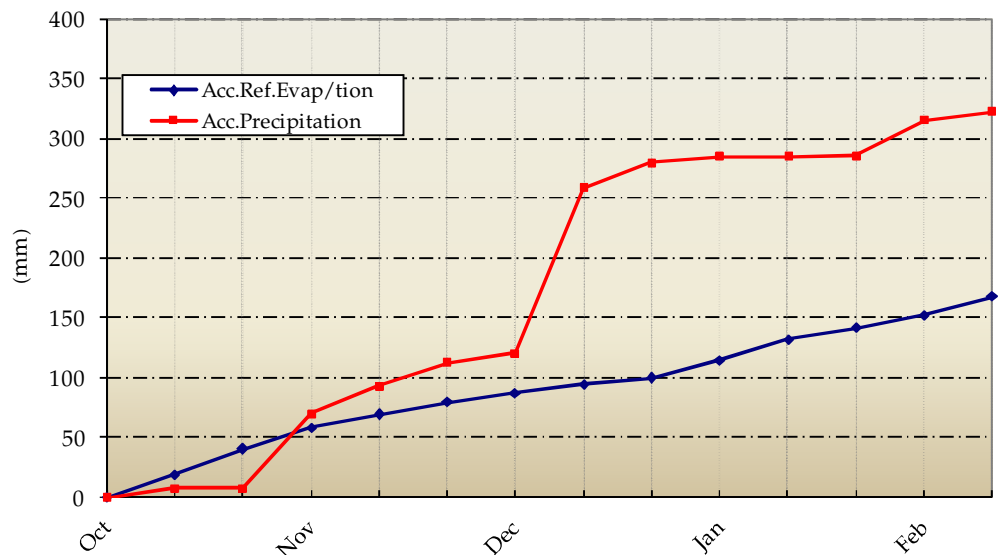


Mikra

1st 10-day period (1-10/02/2015)		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	13.6	12.2	11.0	13.6	15.9	13.4	9.3	6.8	6.2	11.9	10.5	10.3
	Min	7.6	5.6	1.2	3.6	1.9	8.0	2.4	6.4	1.2	-0.5	3.7	4.8	1.6
Relative Humidity	Max	94	88	90	91	95	84	91	92	92	57	87	87	-
	Min	45	44	37	65	72	63	57	53	54	27	52	59	-
Soil Temperature at 10 cm	06 UTC	9.0	8.6	7.0	6.6	6.2	10.6	7.2	8.8	6.0	3.0	7.3	7.3	5.6
	12 UTC	11.0	11.0	12.0	8.2	9.0	11.6	9.6	9.2	5.2	4.2	9.1	8.6	7.1
Sunshine Duration		6.3	4.9	7.6	2.3	5.5	1.6	8.6	1.5	0.0	10.2	4.8	2.9	4.3
Precipitation		0.4	0.2				2.8		3.4	0.6		7.4	8.9	10.5
Evaporation		1.6	4.4	1.2	1.6	0.5	0.4	0.5	2.2	0.0	0.0	12.4	6.9	12.4
Growing Degrees	5	7.3	4.6	1.7	2.3	2.8	7.0	2.9	2.9	0.0	0.0	31.4	27.2	17.2
	10	2.3	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	4.3	1.4	0.8

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.1	9.0	11.4
Precipitation - Reference Evapotranspiration	-7.7	-0.1	-0.9
Number of Rainy Days	5.0	4.0	2.6
Number of Dry Days	0.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

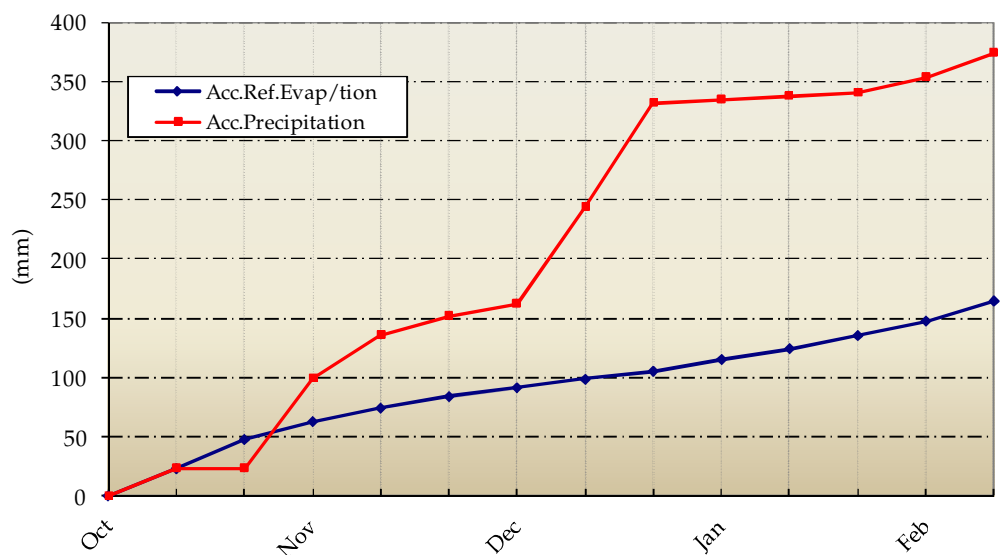


Tanagra

1st 10-day period (1-10/02/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.7	13.6	13.5	15.8	19.9	17.6	16.8	13.7	7.4	4.0	14.3	13.0	12.0
	Min	15.9	7.2	6.3	1.9	10.8	13.2	3.7	6.2	4.2	0.0	6.9	6.0	2.6
Relative Humidity	Max	63	80	83	100	78	88	99	99	100	100	89	89	-
	Min	31	50	31	47	33	30	40	38	59	59	42	59	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	6.7	7.7	5.8	7.0	3.6	6.7	6.9	0.0	0.6	4.5	-	-
Precipitation				0.2			7.5			7.9	5.2	20.8	9.7	16.3
Evaporation		7.0	3.0	3.5	1.3	5.0	4.5	2.5	4.0	1.6	0.5	32.9	-	-
Growing Degrees	5	13.3	5.4	4.9	3.9	10.4	10.4	5.3	5.0	0.8	0.0	59.2	-	-
	10	8.3	0.4	0.0	0.0	5.4	5.4	0.3	0.0	0.0	0.0	19.7	-	-

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.9	-	-
Precipitation - Reference Evapotranspiration	3.9	-	16.3
Number of Rainy Days	4.0	-	4.1
Number of Dry Days	4.0	-	-

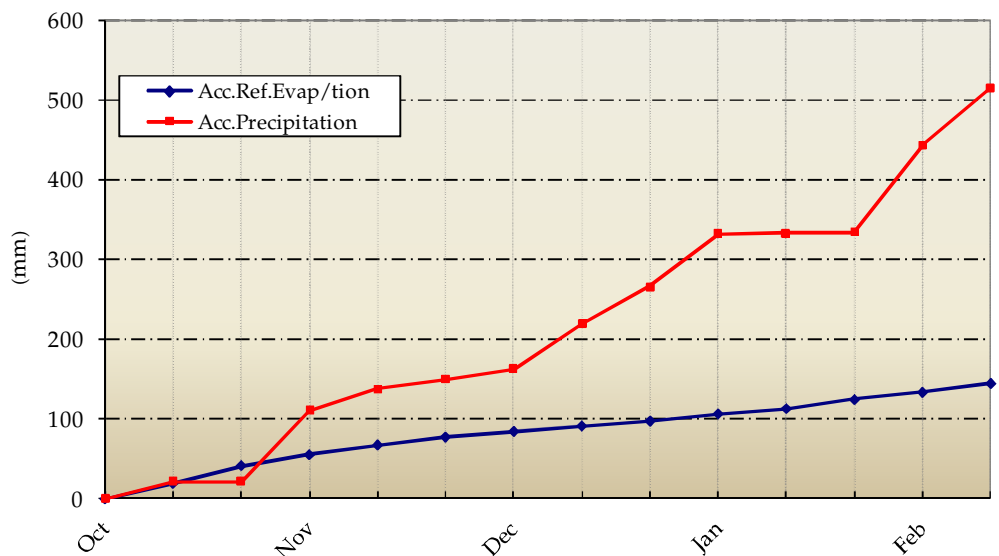
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/02/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.1	9.7	9.1	12.3	16.8	11.5	11.0	7.5	6.2	1.9	10.0	9.6	10.0
	Min	11.3	2.6	1.6	3.7	3.2	1.9	4.3	2.7	-0.3	-2.5	2.8	4.3	0.4
Relative Humidity	Max	96	100	100	100	100	100	100	100	100	100	100	88	-
	Min	55	72	52	47	33	53	50	65	75	58	56	66	-
Soil Temperature at 10 cm	06 UTC	9.2	7.4	4.6	5.8	5.6	6.2	5.6	6.0	4.6	3.6	5.9	6.4	5.0
	12 UTC	-	7.6	7.2	8.0	9.2	7.6	-	-	6.4	3.8	7.1	7.7	5.8
Sunshine Duration		0.0	0.9	5.9	5.7	7.9	4.2	4.2	4.5	0.6	1.7	3.6	2.2	4.9
Precipitation		9.8	25.6	10.3	0.3		7.1	1.0	5.4	8.8	2.9	71.2	33.3	26.5
Evaporation		-	-	0.5	2.8	0.8	0.1	0.6	1.9	0.0	0.0	-	8.3	8.6
Growing Degrees	5	7.7	1.2	0.4	3.0	5.0	1.7	2.7	0.1	0.0	0.0	21.7	21.1	13.4
	10	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.1	0.4

1st 10-day period (1-10/02/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.1	9.7	11.6
Precipitation - Reference Evapotranspiration	60.1	23.6	14.9
Number of Rainy Days	9.0	8.0	4.1
Number of Dry Days	0.0	2.0	-

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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