



AGROMETEOROLOGICAL BULLETIN

*August 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



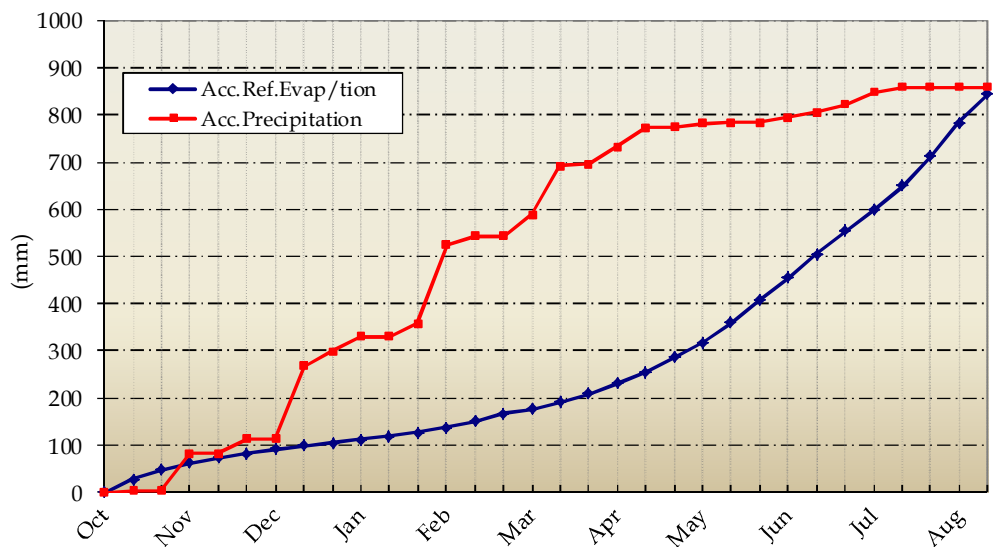
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Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
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1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.0	33.4	33.6	35.4	35.8	35.6	32.4	31.4	34.6	32.0	33.8	31.3	31.3
	Min	24.4	22.6	23.6	19.6	19.6	20.4	23.6	24.2	23.2	19.2	22.0	19.4	17.9
Relative Humidity	Max	88	76	78	84	89	91	85	62	70	90	81	91	-
	Min	36	14	40	24	36	24	39	36	32	31	31	42	-
Soil Temperature at 10 cm	06 UTC	30.6	29.5	34.4	28.6	27.8	28.6	29.6	27.8	27.6	27.4	29.2	25.1	24.7
	12 UTC	35.0	33.4	34.0	33.4	34.2	33.2	32.4	31.2	33.0	32.8	33.3	29.4	29.0
Sunshine Duration		10.8	12.4	12.8	12.5	9.6	12.1	5.5	8.5	12.5	12.4	10.9	9.9	10.7
Precipitation								0.2				0.2	107.8	4.0
Evaporation		14.6	11.4	10.1	15.5	10.0	11.0	8.7	13.0	8.0	16.0	118.3	90.1	96.8
Growing Degrees	5	24.2	23.0	23.6	22.5	22.7	23.0	23.0	22.8	23.9	20.6	229.3	203.2	195.9
	10	19.2	18.0	18.6	17.5	17.7	18.0	18.0	17.8	18.9	15.6	179.3	153.2	145.9

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.8	49.6	58.5
Precipitation - Reference Evapotranspiration	-60.6	58.2	-54.5
Number of Rainy Days	1.0	2.0	0.7
Number of Dry Days	27.0	3.0	-

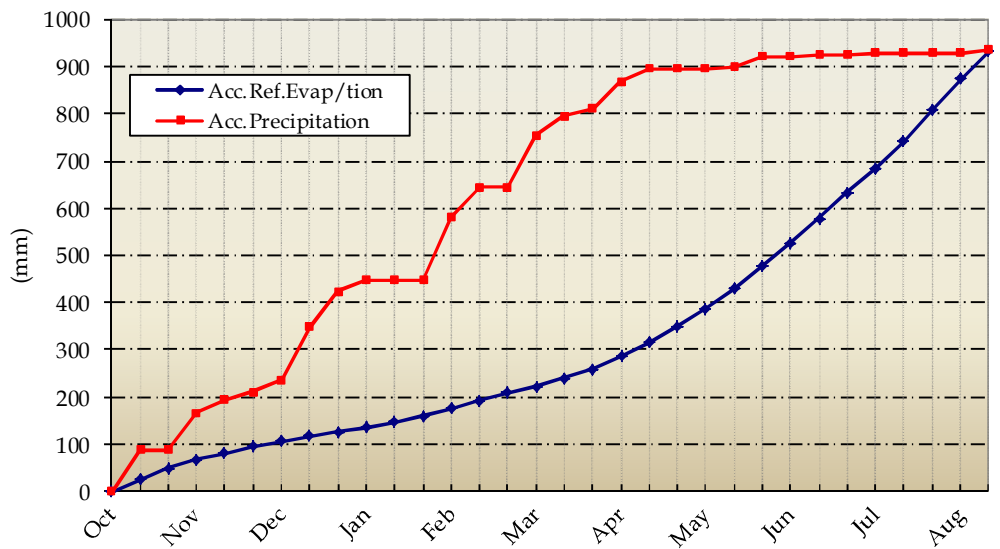
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.4	35.7	34.6	33.6	33.2	33.8	34.6	34.8	32.0	31.8	34.2	30.0	31.3
	Min	23.0	24.3	22.8	23.7	21.4	21.8	21.5	20.1	20.0	21.6	22.0	20.3	18.8
Relative Humidity	Max	86	75	80	85	80	85	80	81	87	78	82	86	-
	Min	26	29	32	35	27	34	27	21	29	35	30	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	28.8	27.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	34.0	32.1
Sunshine Duration		12.6	12.6	12.2	8.3	11.0	12.2	12.6	11.4	11.3	12.0	11.6	12.2	11.6
Precipitation						5.8	0.7					6.5		0.2
Evaporation		11.0	14.0	4.0	6.4	7.3	9.0	14.2	6.2	10.4	10.2	92.7	67.1	74.9
Growing Degrees	5	25.2	25.0	23.7	23.7	22.3	22.8	23.1	22.5	21.0	21.7	230.9	201.4	200.3
	10	20.2	20.0	18.7	18.7	17.3	17.8	18.1	17.5	16.0	16.7	180.9	151.4	150.3

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.9	54.0	52.3
Precipitation - Reference Evapotranspiration	-52.4	-54.0	-52.1
Number of Rainy Days	2.0	0.0	0.1
Number of Dry Days	38.0	17.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

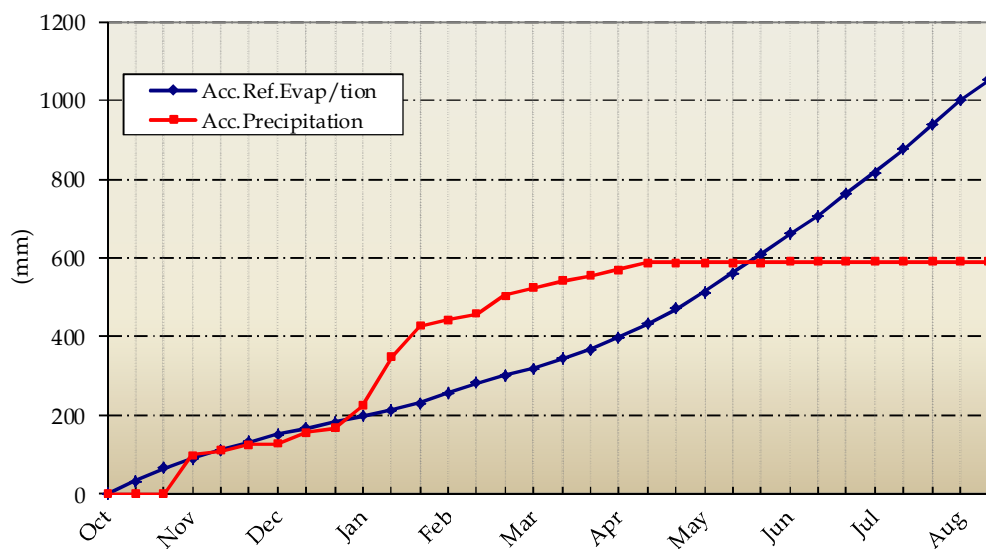


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1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.4	29.0	29.0	29.2	30.0	29.4	29.2	28.6	28.8	29.6	29.4	30.5	28.6
	Min	24.4	25.0	26.0	25.4	22.0	23.6	22.8	23.0	22.4	23.0	23.8	23.0	22.4
Relative Humidity	Max	85	77	81	86	85	86	88	84	86	82	84	82	-
	Min	55	65	66	63	62	69	60	67	65	56	63	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.3	11.2	12.1	11.6	12.0	10.7	10.4	6.8	9.3	11.8	10.8	12.2	11.6
Precipitation														0.0
Evaporation		9.0	4.4	5.2	7.7	3.3	5.9	5.2	4.2	6.0	5.4	56.3	65.7	88.8
Growing Degrees	5	22.9	22.0	22.5	22.3	21.0	21.5	21.0	20.8	20.6	21.3	215.9	217.3	205.0
	10	17.9	17.0	17.5	17.3	16.0	16.5	16.0	15.8	15.6	16.3	165.9	167.3	155.0

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.1	58.6	-
Precipitation - Reference Evapotranspiration	-52.1	-58.6	0.0
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	73.0	66.0	-

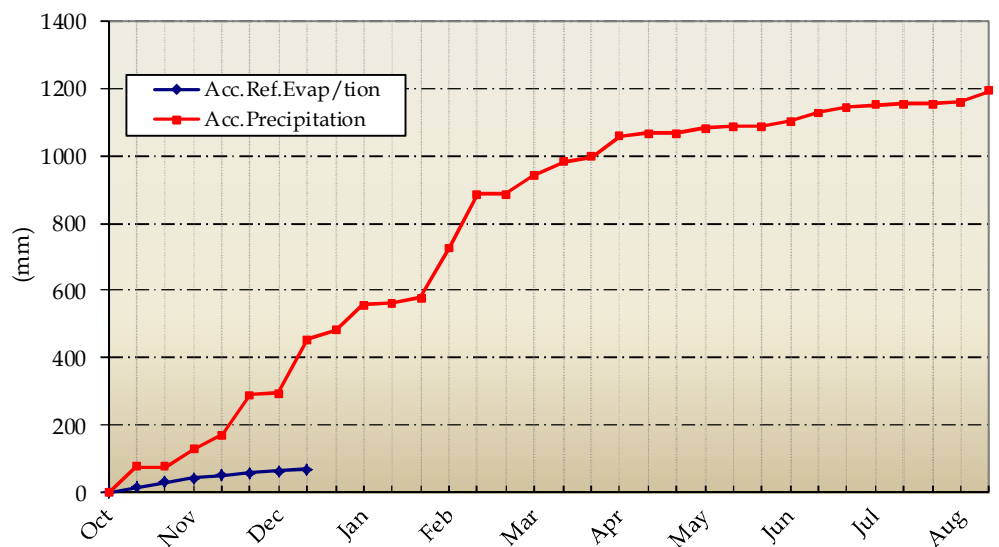
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.7	37.0	35.6	27.0	33.3	31.7	30.4	30.8	32.5	30.9	32.5	30.6	31.8
	Min	18.0	16.6	17.3	15.7	14.8	16.8	22.9	24.4	16.5	15.3	17.8	15.1	15.9
Relative Humidity	Max	99	95	100	90	100	93	55	88	89	92	90	87	-
	Min	17	35	27	57	27	27	30	21	24	28	29	38	-
Soil Temperature at 10 cm	06 UTC	24.5	24.0	23.8	31.2	31.0	31.2	31.5	31.4	31.2	31.5	29.1	-	24.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	28.0
Sunshine Duration		8.7	9.0	7.7	3.6	6.0	8.6	8.6	7.4	11.4	6.5	7.8	9.0	10.1
Precipitation		0.0	0.2	31.2	1.4	0.0	0.0	0.0	0.1		0.1	33.0	42.4	5.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	79.9
Growing Degrees	5	21.9	21.8	21.5	16.4	19.1	19.3	21.7	22.6	19.5	18.1	201.6	178.9	183.5
	10	16.9	16.8	16.5	11.4	14.1	14.3	16.7	17.6	14.5	13.1	151.6	128.9	134.7

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	38.0	50.7
Precipitation - Reference Evapotranspiration	-	4.4	-44.9
Number of Rainy Days	5.0	3.0	1.3
Number of Dry Days	5.0	11.0	-

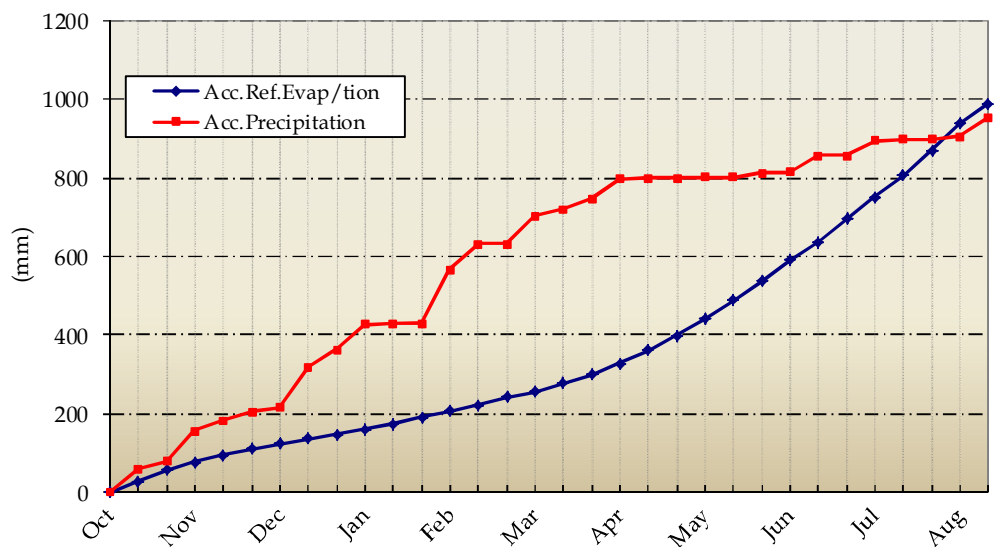
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.9	34.7	33.1	31.9	32.4	34.4	33.3	32.1	31.1	31.6	33.0	32.7	31.8
	Min	22.7	20.6	20.2	20.3	19.6	19.1	20.0	19.1	19.5	18.8	20.0	20.5	18.3
Relative Humidity	Max	81	92	93	96	91	89	89	89	93	92	90	84	-
	Min	33	35	34	48	31	29	31	44	57	42	38	34	-
Soil Temperature at 10 cm	06 UTC	27.0	27.0	26.8	27.0	24.6	25.6	25.6	25.6	25.0	25.2	25.9	26.6	26.3
	12 UTC	28.4	28.4	27.8	26.4	27.0	26.8	27.6	26.4	26.4	26.8	27.2	28.5	30.4
Sunshine Duration		10.9	9.6	10.8	4.3	8.6	8.0	9.2	6.2	8.1	9.6	8.5	12.1	11.0
Precipitation			5.7		35.7	2.0	0.0	2.8	0.2	3.7	0.0	50.1		3.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	84.1
Growing Degrees	5	24.3	22.7	21.7	21.1	21.0	21.8	21.7	20.6	20.3	20.2	215.2	216.4	200.7
	10	19.3	17.7	16.7	16.1	16.0	16.8	16.7	15.6	15.3	15.2	165.2	166.4	150.7

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.8	63.6	56.0
Precipitation - Reference Evapotranspiration	0.3	-63.6	-52.1
Number of Rainy Days	6.0	0.0	0.5
Number of Dry Days	6.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

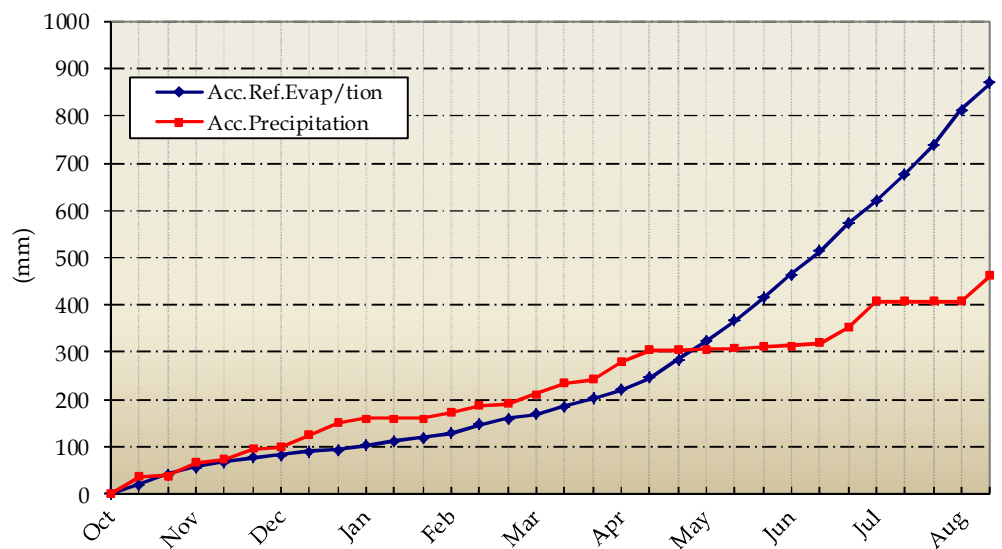


Larisa

1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.5	34.3	34.0	34.8	35.9	33.4	31.9	30.6	32.6	34.0	33.6	34.0	33.2
	Min	20.5	22.2	21.4	20.1	19.6	20.0	20.1	19.8	17.8	18.0	20.0	19.0	18.0
Relative Humidity	Max	99	83	86	87	100	100	100	100	89	86	93	87	-
	Min	32	36	28	17	22	24	32	29	22	25	27	26	-
Soil Temperature at 10 cm	06 UTC	31.2	29.4	29.4	29.6	29.2	29.2	28.4	26.8	26.6	27.0	28.7	-	27.1
	12 UTC	30.0	29.4	29.6	29.5	29.2	29.0	28.0	26.8	27.8	27.0	28.6	-	29.4
Sunshine Duration		11.6	10.8	9.7	9.5	10.4	10.2	4.9	10.2	11.4	9.0	9.8	9.8	10.5
Precipitation		6.5					14.9		32.8			54.2	7.8	4.2
Evaporation		11.4	10.2	9.8	12.0	10.5	7.4	2.8	12.2	8.5	4.7	89.5	96.6	91.8
Growing Degrees	5	22.5	23.3	22.7	22.5	22.8	21.7	21.0	20.2	20.2	21.0	217.8	214.8	206.1
	10	17.5	18.3	17.7	17.5	17.8	16.7	16.0	15.2	15.2	16.0	167.8	164.8	156.1

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.4	56.0	58.6
Precipitation - Reference Evapotranspiration	-2.2	-48.2	-54.4
Number of Rainy Days	3.0	5.0	1.1
Number of Dry Days	31.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

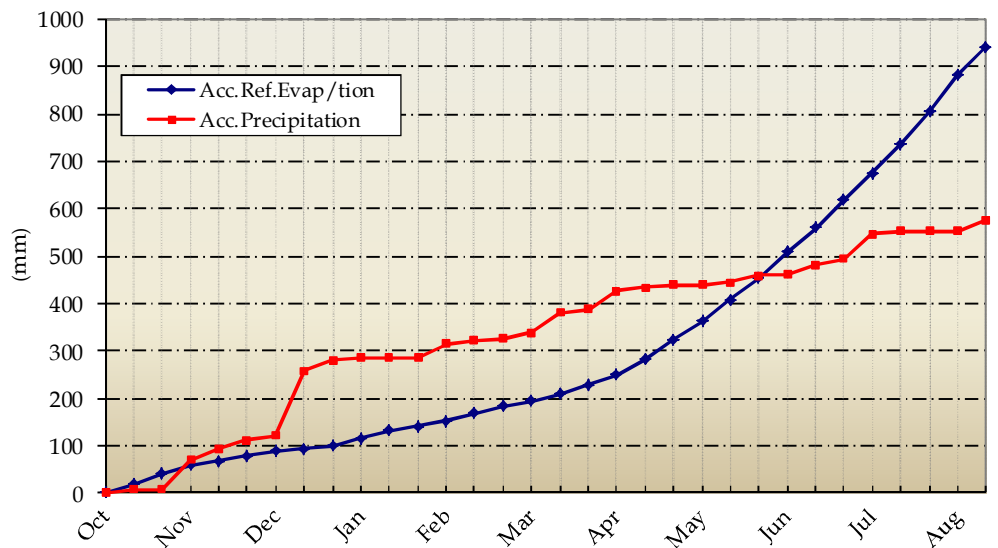


Mikra

1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.4	33.0	33.5	34.2	35.6	32.8	34.0	32.2	32.8	33.7	33.6	31.8	31.9
	Min	25.2	23.0	22.8	20.6	21.6	20.4	21.8	22.7	18.8	20.4	21.7	21.3	19.4
Relative Humidity	Max	76	78	81	80	69	92	80	77	79	70	78	80	-
	Min	32	45	35	28	28	36	30	23	23	26	31	34	-
Soil Temperature at 10 cm	06 UTC	31.0	31.0	30.8	30.2	30.5	30.5	27.1	27.2	26.8	27.4	29.2	27.1	26.9
	12 UTC	34.8	34.8	34.6	34.3	34.9	31.7	30.1	31.4	31.2	32.0	33.0	31.8	31.6
Sunshine Duration		12.3	11.8	9.8	12.2	11.7	5.9	8.0	10.8	12.5	12.4	10.7	10.1	10.2
Precipitation							19.6	4.1				23.7	12.8	5.3
Evaporation		11.0	9.1	10.7	7.4	10.3	5.8	1.7	13.9	10.2	9.5	89.6	96.0	88.0
Growing Degrees	5	24.8	23.0	23.2	22.4	23.6	21.6	22.9	22.5	20.8	22.1	226.8	215.7	206.4
	10	19.8	18.0	18.2	17.4	18.6	16.6	17.9	17.5	15.8	17.1	176.8	165.7	156.4

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.0	58.0	56.6
Precipitation - Reference Evapotranspiration	-37.3	-45.2	-51.3
Number of Rainy Days	2.0	3.0	1.3
Number of Dry Days	26.0	8.0	-

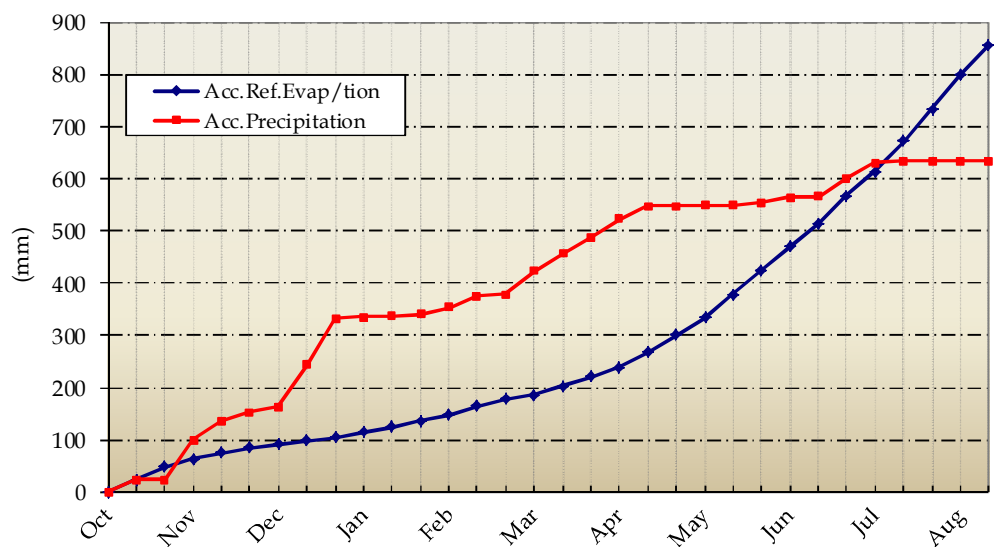
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.8	31.2	32.5	32.5	34.0	32.9	30.2	29.8	31.4	32.9	32.1	32.5	32.1
	Min	22.9	22.9	23.0	21.5	21.2	24.8	24.8	24.6	21.5	21.0	22.8	20.1	18.7
Relative Humidity	Max	74	70	71	72	66	65	65	65	68	52	67	76	-
	Min	28	39	33	22	27	29	41	38	27	22	31	27	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.0	12.7	12.6	10.3	12.1	12.3	7.9	12.4	11.1	7.6	11.2	-	-
Precipitation													31.1	0.7
Evaporation		9.5	7.0	8.5	9.0	10.5	10.5	11.0	19.0	11.0	6.5	102.5	-	-
Growing Degrees	5	23.4	22.1	22.8	22.0	22.6	23.9	22.5	22.2	21.5	22.0	224.7	-	-
	10	18.4	17.1	17.8	17.0	17.6	18.9	17.5	17.2	16.5	17.0	174.7	-	-

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.5	-	-
Precipitation - Reference Evapotranspiration	-57.5	-	0.0
Number of Rainy Days	0.0	-	-
Number of Dry Days	40.0	-	-

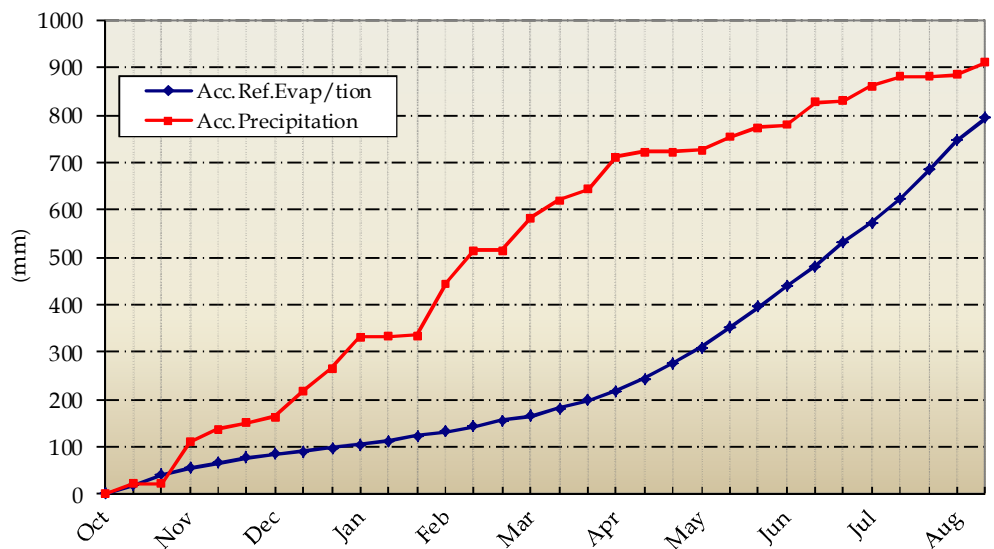
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/08/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.3	33.9	34.5	32.0	32.9	33.3	31.7	31.8	30.2	30.1	32.5	31.1	30.8
	Min	17.0	17.8	16.8	16.7	14.0	15.3	20.3	18.8	14.3	16.4	16.7	14.8	14.8
Relative Humidity	Max	100	95	96	98	100	98	74	78	100	100	94	91	-
	Min	26	28	23	30	27	27	30	27	31	35	28	27	-
Soil Temperature at 10 cm	06 UTC	-	24.4	26.2	26.8	24.4	23.2	25.2	25.2	25.0	23.2	24.8	25.2	25.8
	12 UTC	-	-	31.4	32.0	28.8	29.0	30.6	-	-	26.2	29.7	31.0	28.5
Sunshine Duration		9.6	10.3	11.5	7.1	7.0	11.4	8.0	9.5	7.5	4.6	8.6	9.3	10.5
Precipitation					0.9	3.5				14.7	5.6	24.7	1.3	6.7
Evaporation		8.4	8.4	7.6	4.8	5.0	7.9	7.1	7.1	5.4	2.6	64.3	59.4	66.4
Growing Degrees	5	20.7	20.9	20.7	19.4	18.5	19.3	21.0	20.3	17.3	18.3	196.1	179.3	178.4
	10	15.7	15.9	15.7	14.4	13.5	14.3	16.0	15.3	12.3	13.3	146.1	129.3	128.4

1st 10-day period (1-10/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.1	46.0	53.5
Precipitation - Reference Evapotranspiration	-22.4	-44.7	-46.8
Number of Rainy Days	4.0	2.0	1.1
Number of Dry Days	3.0	11.0	-

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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