



AGROMETEOROLOGICAL BULLETIN

*January 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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Helliniko, Athens

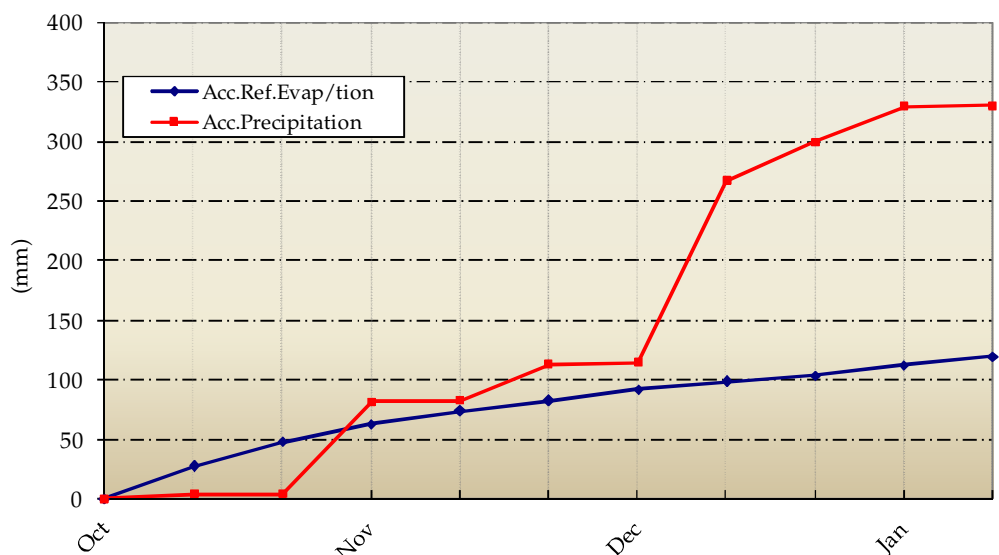
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Alexandroupoli

1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	1.2	4.0	6.6	11.4	7.4	4.0	0.4	-0.8	4.2	11.6	5.0	10.6	8.9
	Min	-2.8	-8.6	-5.6	-0.6	-2.0	0.4	-4.8	-9.0	-10.2	1.6	-4.2	4.0	1.5
Relative Humidity	Max	53	77	92	96	88	69	80	76	89	91	81	94	-
	Min	34	41	65	46	31	44	41	24	56	52	43	73	-
Soil Temperature at 10 cm	06 UTC	1.0	0.8	0.8	1.6	3.0	2.0	1.4	0.2	0.0	0.4	1.1	7.1	5.6
	12 UTC	1.6	1.0	0.8	4.6	5.0	3.0	1.4	0.4	-0.8	2.4	1.9	8.6	6.6
Sunshine Duration		0.1	8.0	2.6	1.2	7.1	5.1	7.9	8.3	4.3	2.6	4.7	3.0	2.7
Precipitation					1.0							1.0		17.5
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.5	8.4
Growing Degrees	5	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.6	2.0	23.7	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	1.1	2.8

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.0	5.4	7.7
Precipitation - Reference Evapotranspiration	-6.0	-5.4	9.8
Number of Rainy Days	1.0	0.0	2.8
Number of Dry Days	5.0	13.0	-

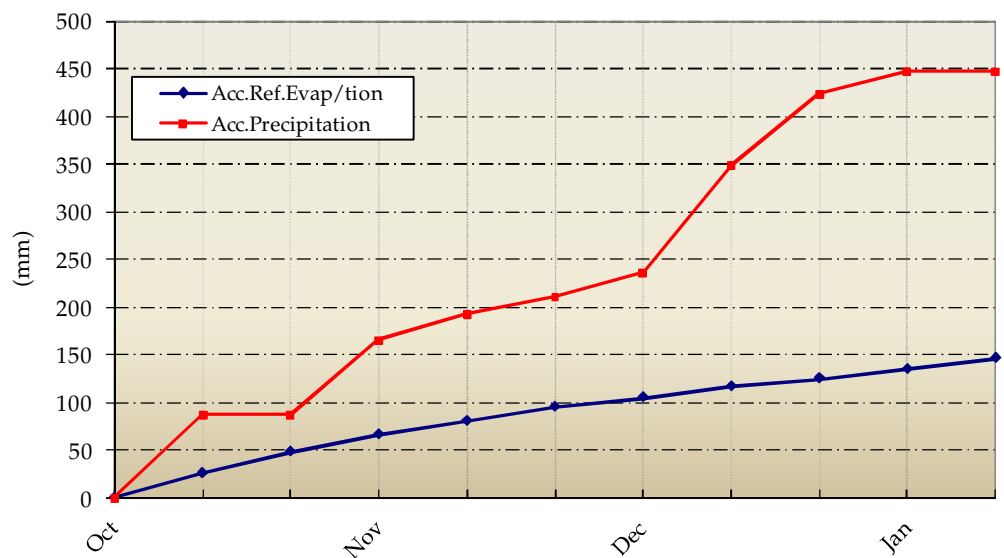
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.3	11.4	13.3	16.4	14.4	23.0	7.2	10.6	13.0	16.0	13.7	15.9	13.8
	Min	3.8	4.4	0.5	4.1	3.0	1.0	-2.6	-3.4	-1.6	6.0	1.5	6.5	5.4
Relative Humidity	Max	78	82	86	88	80	56	71	80	86	91	80	90	-
	Min	38	45	38	65	33	26	28	22	44	58	40	60	-
Soil Temperature at 10 cm	06 UTC	8.0	9.4	7.4	8.6	8.6	6.2	5.4	4.0	5.4	8.2	7.1	9.8	8.9
	12 UTC	10.2	10.8	9.0	10.8	9.0	8.0	7.0	7.4	8.4	9.8	9.0	11.7	10.3
Sunshine Duration		7.0	6.1	4.9	2.9	5.8	7.2	8.2	7.5	7.7	5.3	6.3	5.0	4.5
Precipitation													37.6	38.0
Evaporation		1.1	1.4	8.4	2.2	2.6	0.0	0.0	0.0	6.0	0.8	22.5	24.4	17.8
Growing Degrees	5	2.6	2.9	1.9	5.3	3.7	7.0	0.0	0.0	0.7	6.0	30.0	62.0	46.8
	10	0.0	0.0	0.0	0.3	0.0	2.0	0.0	0.0	0.0	1.0	3.3	13.1	10.2

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.6	9.0	9.2
Precipitation - Reference Evapotranspiration	-11.6	28.6	28.8
Number of Rainy Days	0.0	3.0	4.0
Number of Dry Days	11.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

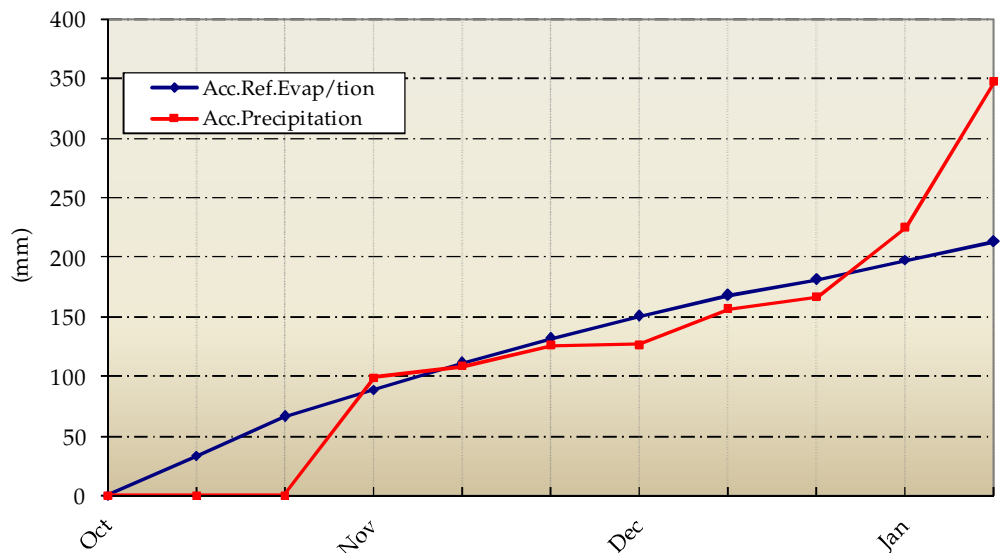


Iraklio

1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.6	11.2	12.2	18.6	12.4	7.2	7.8	7.8	10.0	16.2	11.4	16.5	15.3
	Min	8.2	9.2	8.8	5.8	12.4	4.4	5.0	5.4	7.4	3.6	7.0	10.8	9.3
Relative Humidity	Max	85	89	87	87	92	94	81	70	81	83	85	88	-
	Min	70	70	54	53	59	57	62	51	52	48	58	62	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	0.0	7.5	7.0	0.0	0.7	1.6	1.0	6.4	0.9	2.5	2.8	4.0
Precipitation		41.5	4.7			43.4	27.0	4.9	0.7		0.1	122.3	10.6	27.8
Evaporation		8.8	1.5	2.3	1.5	1.8	7.1	2.8	1.2	1.7	3.0	31.7	11.6	23.8
Growing Degrees	5	4.4	5.2	5.5	7.2	7.4	0.8	1.4	1.6	3.7	4.9	42.1	86.3	73.0
	10	0.0	0.2	0.5	2.2	2.4	0.0	0.0	0.0	0.0	0.0	5.3	36.3	25.4

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.5	12.8	-
Precipitation - Reference Evapotranspiration	106.8	-2.2	27.8
Number of Rainy Days	7.0	5.0	4.3
Number of Dry Days	0.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

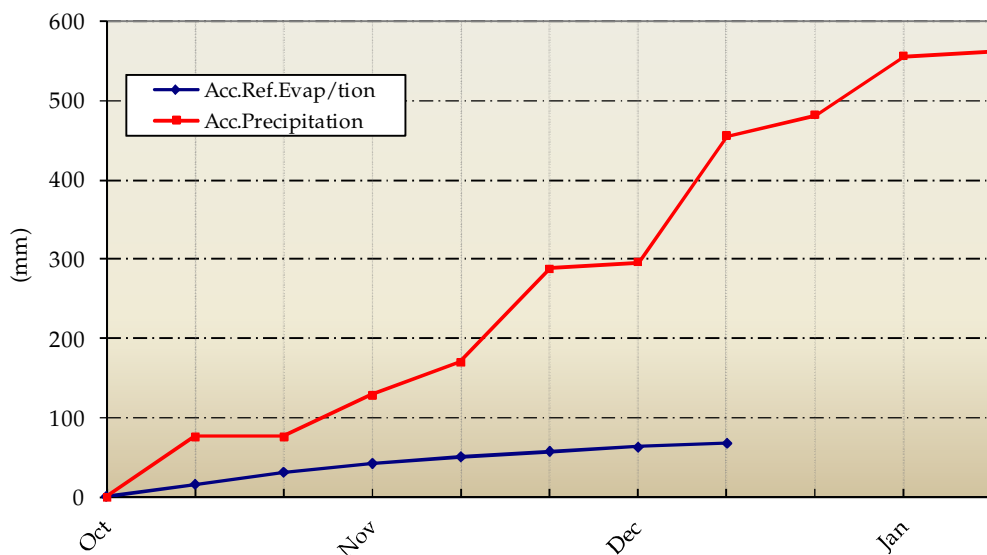


Ioannina

1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	9.4	11.3	5.8	4.7	4.7	5.4	7.3	9.7	12.7	7.9	9.8	8.6
	Min	-	-	-5.0	-3.0	0.0	-	-8.6	-9.8	-7.3	0.5	-4.7	-0.1	0.3
Relative Humidity	Max	-	90	100	100	-	-	-	100	100	100	98	97	-
	Min	-	12	42	-	-	17	18	30	42	-	27	63	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.3
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	2.1	2.9
Precipitation		-	-	-	6.1	-	-	-	-	-	0.0	6.1	4.5	36.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	0.6
Growing Degrees	5	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	1.6	-	6.6	11.8
	10	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.3

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	5.2	6.1
Precipitation - Reference Evapotranspiration	-	-0.7	30.1
Number of Rainy Days	1.0	1.0	4.0
Number of Dry Days	5.0	9.0	-

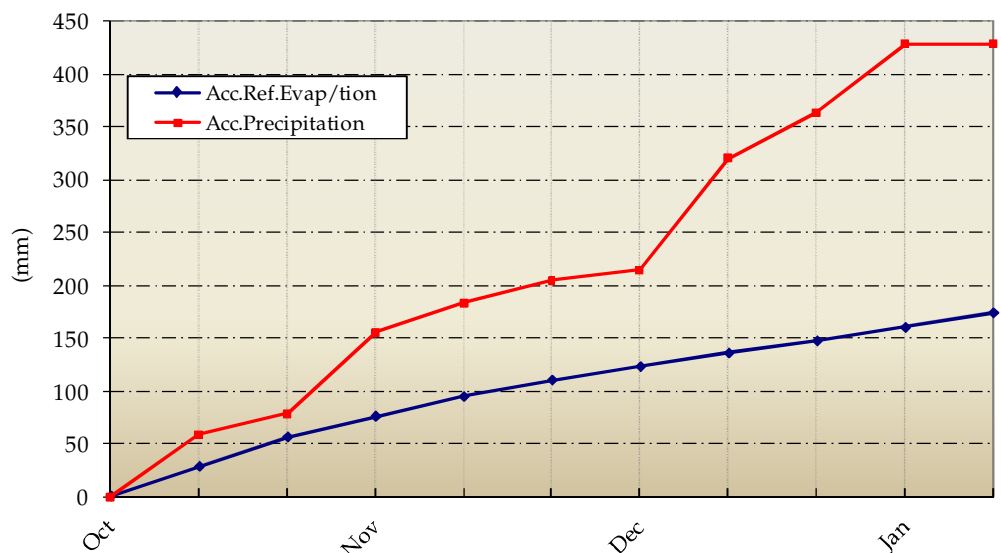
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.7	12.6	15.3	14.5	10.8	10.2	9.2	11.9	14.9	16.4	12.6	16.8	14.7
	Min	6.1	4.5	0.5	1.5	4.2	-2.3	-2.2	-0.3	0.0	6.0	1.8	6.4	5.3
Relative Humidity	Max	70	64	83	95	95	70	72	78	84	82	79	93	-
	Min	43	45	22	65	43	24	19	33	24	52	37	55	-
Soil Temperature at 10 cm	06 UTC	8.6	8.6	8.2	8.2	9.2	7.4	6.2	6.2	6.8	8.0	7.7	10.1	9.3
	12 UTC	9.6	9.0	8.6	9.0	9.4	7.4	6.8	6.6	7.4	8.6	8.2	10.6	10.4
Sunshine Duration		0.0	4.6	8.3	1.2	3.4	8.1	8.3	7.3	8.3	8.8	5.8	5.5	4.5
Precipitation					0.2	0.5						0.7	41.1	30.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	22.0
Growing Degrees	5	2.9	3.6	2.9	3.0	2.5	0.0	0.0	0.8	2.5	6.2	24.3	65.6	49.2
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	15.6	10.6

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.8	11.2	11.0
Precipitation - Reference Evapotranspiration	-13.1	29.9	19.6
Number of Rainy Days	2.0	3.0	4.0
Number of Dry Days	3.0	3.0	-

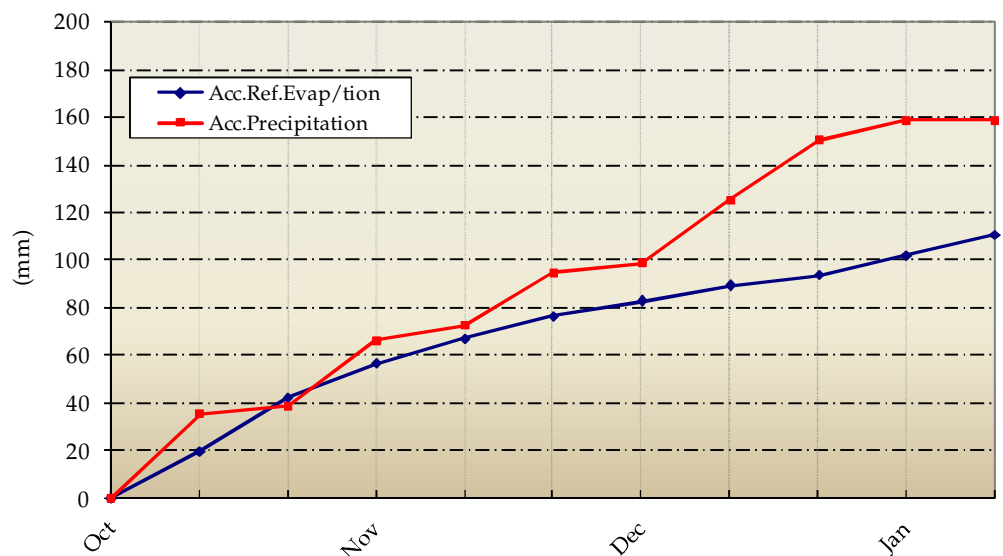
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	2.8	4.8	7.5	14.7	8.9	6.6	5.0	5.6	7.2	17.6	8.1	12.4	9.7
	Min	0.6	-7.1	-5.6	-2.6	-0.4	-6.8	-8.0	-9.5	-8.0	-3.8	-5.1	2.5	0.5
Relative Humidity	Max	70	94	100	100	62	76	83	86	95	90	86	100	-
	Min	29	26	48	32	25	25	25	22	29	30	29	72	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.9
Sunshine Duration		0.0	7.0	3.4	5.3	7.0	4.1	6.8	5.8	7.1	7.0	5.4	3.5	3.9
Precipitation					0.1							0.1	1.8	11.6
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.2
Growing Degrees	5	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	1.9	3.0	24.6	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	1.7	1.0

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.6	5.2	6.2
Precipitation - Reference Evapotranspiration	-8.5	-3.4	5.4
Number of Rainy Days	1.0	3.0	2.5
Number of Dry Days	4.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

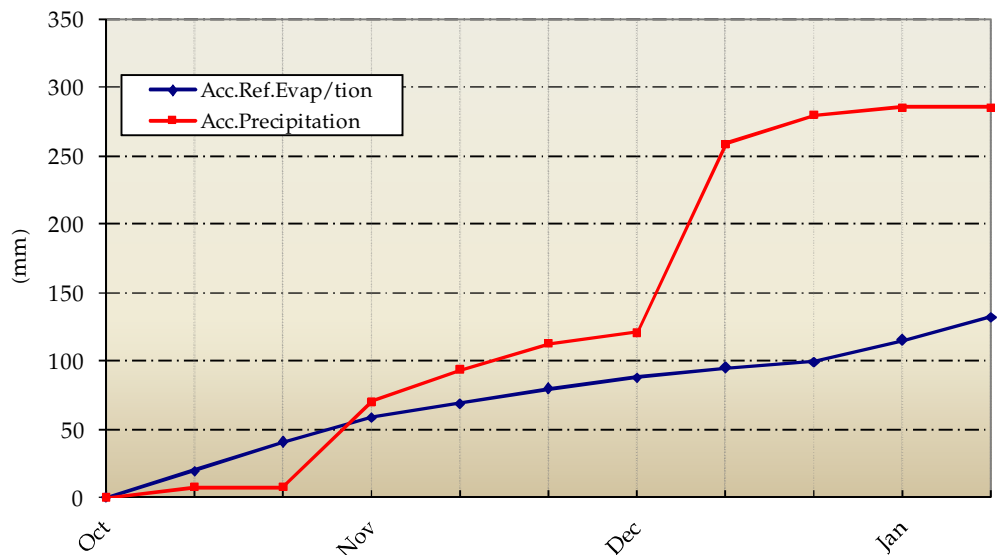


Mikra

1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	2.1	4.9	12.2	12.0	9.0	5.8	3.6	3.8	5.8	10.5	7.0	11.8	9.2
	Min	-0.4	-7.1	1.0	2.6	3.7	1.4	0.8	-7.2	-5.5	-2.4	-1.3	4.8	1.5
Relative Humidity	Max	51	74	65	76	58	58	65	73	80	82	68	93	-
	Min	31	30	33	39	29	32	28	29	38	49	34	67	-
Soil Temperature at 10 cm	06 UTC	2.0	1.0	1.4	3.8	4.2	2.8	2.2	1.2	1.0	1.4	2.1	8.3	4.9
	12 UTC	2.2	1.0	4.1	6.0	5.0	3.6	2.6	1.2	2.0	3.8	3.2	9.8	6.2
Sunshine Duration		0.0	7.8	7.8	6.9	7.3	7.2	7.8	2.7	7.4	4.6	6.0	3.5	3.7
Precipitation													2.5	14.1
Evaporation		0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	6.4	10.2	7.0	8.7
Growing Degrees	5	0.0	0.0	1.6	2.3	1.4	0.0	0.0	0.0	0.0	0.0	5.3	33.5	16.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.6

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.9	5.1	8.8
Precipitation - Reference Evapotranspiration	-16.9	-2.6	5.3
Number of Rainy Days	0.0	2.0	2.6
Number of Dry Days	12.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

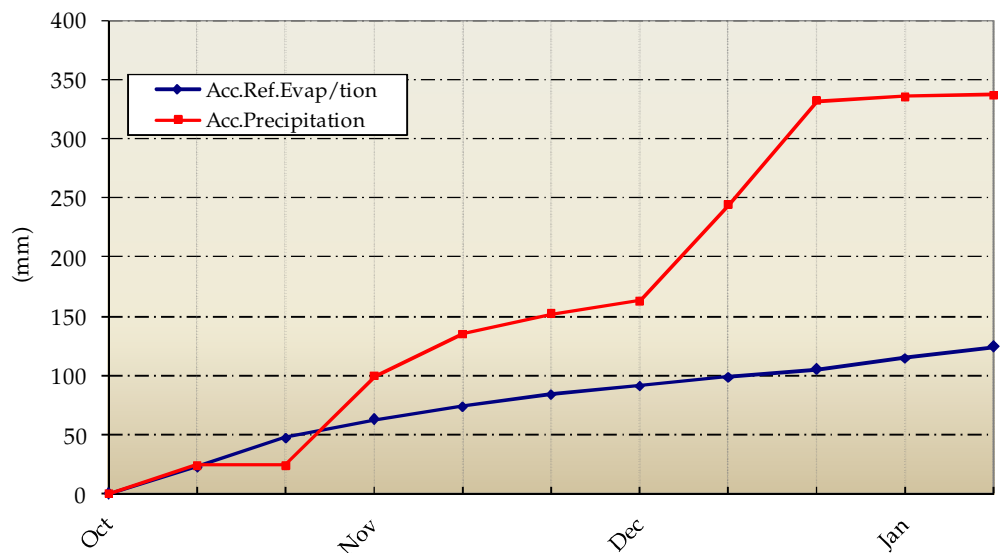


Tanagra

1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	3.9	4.3	9.9	15.6	6.2	5.6	3.4	3.2	9.6	14.7	7.6	13.7	12.2
	Min	1.9	1.2	-3.7	-1.0	4.0	-1.0	-1.5	-0.4	-1.4	-1.2	-0.3	4.7	3.9
Relative Humidity	Max	99	79	93	97	100	100	82	100	100	97	95	99	-
	Min	66	55	45	46	47	42	16	54	45	40	46	68	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	0.8	5.4	3.3	0.0	0.0	3.1	2.2	4.5	4.9	2.4	-	-
Precipitation		1.2				0.2	0.2	0.3	0.0			1.9	5.5	18.0
Evaporation		2.0	2.0	2.0	3.5	0.3	0.3	2.2	1.6	0.9	2.0	16.8	-	-
Growing Degrees	5	0.0	0.0	0.0	2.3	0.1	0.0	0.0	0.0	0.0	1.8	4.2	-	-
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.2	-	
Precipitation - Reference Evapotranspiration	-7.3	-	18.0
Number of Rainy Days	4.0	-	4.4
Number of Dry Days	0.0	-	-

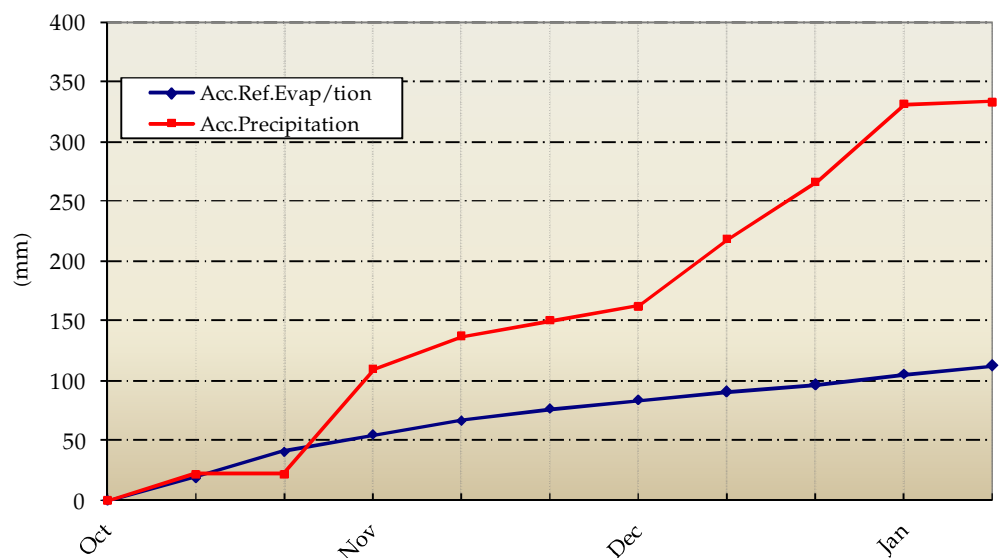
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	1.8	3.6	8.1	10.0	7.8	3.2	2.8	5.6	9.9	13.8	6.7	12.6	12.2
	Min	-0.4	-1.6	-7.7	-4.1	-1.9	-10.0	-9.8	-9.9	-6.9	-0.3	-5.3	0.7	3.9
Relative Humidity	Max	91	100	100	100	100	94	89	99	100	100	97	98	-
	Min	72	60	43	76	68	36	35	28	32	32	48	61	-
Soil Temperature at 10 cm	06 UTC	2.8	2.4	1.4	1.6	3.0	1.4	1.0	0.4	0.4	1.0	1.5	5.1	
	12 UTC	-	-	-	-	-	-	1.0	0.6	0.8	-	0.8	7.2	
Sunshine Duration		1.3	3.0	5.6	0.0	0.0	5.4	8.3	7.2	6.9	6.7	4.4	3.8	
Precipitation		0.0			0.1	1.8						1.9	35.4	18.0
Evaporation		0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.8	
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.8	16.7	
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

1st 10-day period (1-10/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.6	6.2	
Precipitation - Reference Evapotranspiration	-4.7	29.2	18.0
Number of Rainy Days	2.0	4.0	4.4
Number of Dry Days	3.0	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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