



AGROMETEOROLOGICAL BULLETIN

November 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



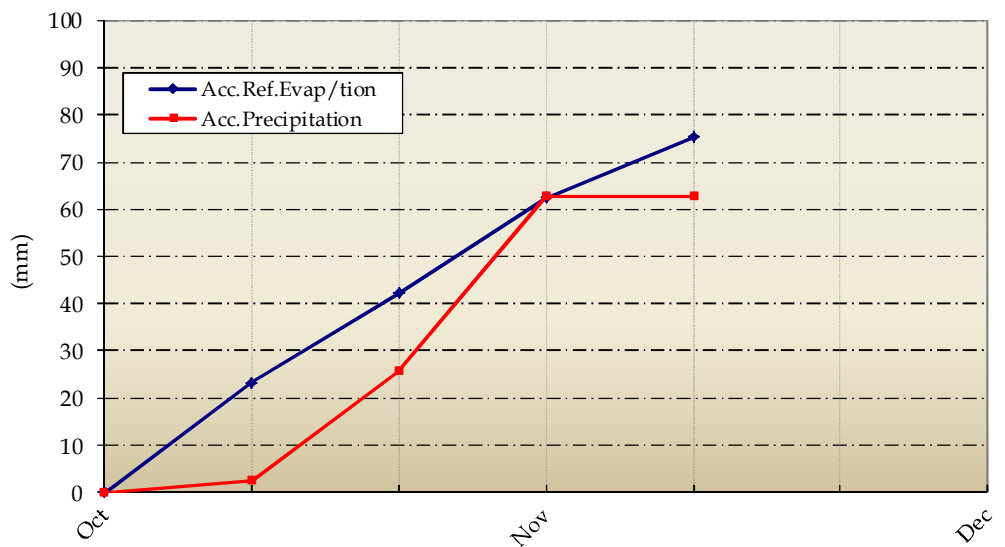
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.8	16.6	19.2	19.8	18.6	17.4	17.0	17.2	18.6	19.4	18.0	16.5	15.8
	Min	10.6	9.0	4.0	1.8	3.4	5.4	5.6	3.8	4.6	9.8	5.8	7.2	7.1
Relative Humidity	Max	64	96	83	89	96	96	94	93	94	96	90	91	-
	Min	41	41	43	28	49	49	50	49	56	59	46	60	-
Soil Temperature at 10 cm	06 UTC	12.4	11.4	10.6	9.6	10.0	10.2	10.4	9.8	10.4	12.4	10.7	10.3	11.0
	12 UTC	14.0	14.4	14.0	13.2	12.8	13.2	14.6	13.8	13.6	14.8	13.8	13.3	12.9
Sunshine Duration		7.6	9.3	8.4	8.9	8.5	8.8	8.3	6.8	8.4	4.1	7.9	4.9	4.1
Precipitation													0.1	19.0
Evaporation		2.2	4.0	4.6	1.7	1.3	2.4	3.9	1.0	1.4	0.8	23.3	17.3	25.4
Growing Degrees	5	8.2	7.8	6.6	5.8	6.0	6.4	6.3	5.5	6.6	9.6	68.8	68.3	64.9
	10	3.2	2.8	1.6	0.8	1.0	1.4	1.3	0.5	1.6	4.6	18.8	24.7	23.3

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.0	10.5	14.9
Precipitation - Reference Evapotranspiration	-13.0	-10.4	4.1
Number of Rainy Days	0.0	1.0	1.9
Number of Dry Days	17.0	8.0	-

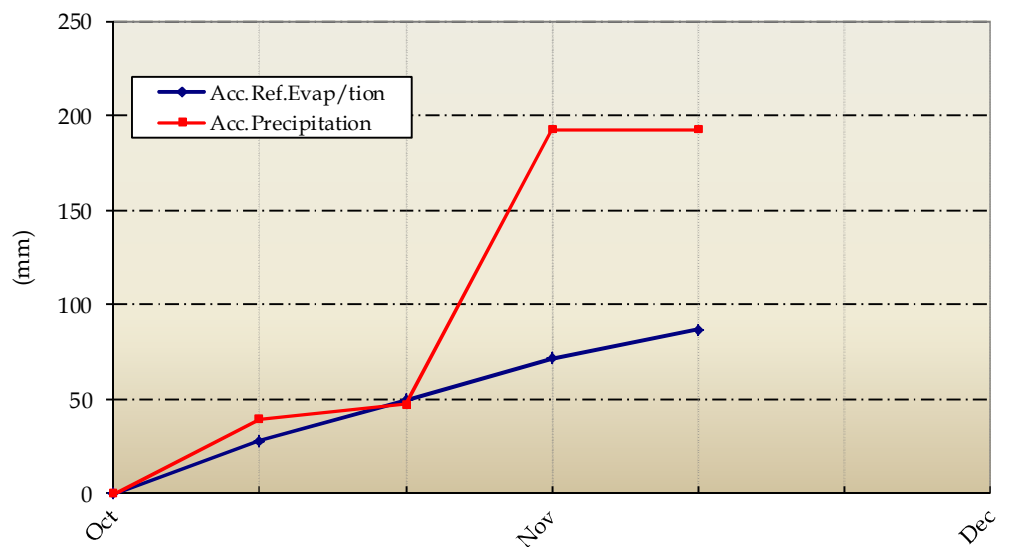
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.9	21.0	21.2	22.4	21.1	20.8	22.6	21.0	22.0	22.6	21.3	21.1	20.0
	Min	12.2	8.0	6.2	3.9	6.8	6.8	6.7	6.5	7.2	7.4	7.2	9.5	10.4
Relative Humidity	Max	89	89	87	87	90	91	91	90	88	92	89	90	-
	Min	52	34	29	32	39	43	37	41	38	49	39	47	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	14.7	14.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	17.4	16.6
Sunshine Duration		0.0	8.7	7.5	8.9	9.0	8.3	8.3	8.2	8.6	7.9	7.5	6.0	6.0
Precipitation													27.7	45.1
Evaporation		1.0	1.2	1.2	3.6	1.0	1.0	1.5	1.3	3.2	3.0	18.0	15.3	25.9
Growing Degrees	5	10.1	9.5	8.7	8.2	9.0	8.8	9.7	8.8	9.6	10.0	92.2	103.0	101.6
	10	5.1	4.5	3.7	3.2	4.0	3.8	4.7	3.8	4.6	5.0	42.2	53.0	52.1

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.8	13.9	14.3
Precipitation - Reference Evapotranspiration	-14.8	13.8	30.8
Number of Rainy Days	0.0	3.0	3.2
Number of Dry Days	18.0	4.0	-

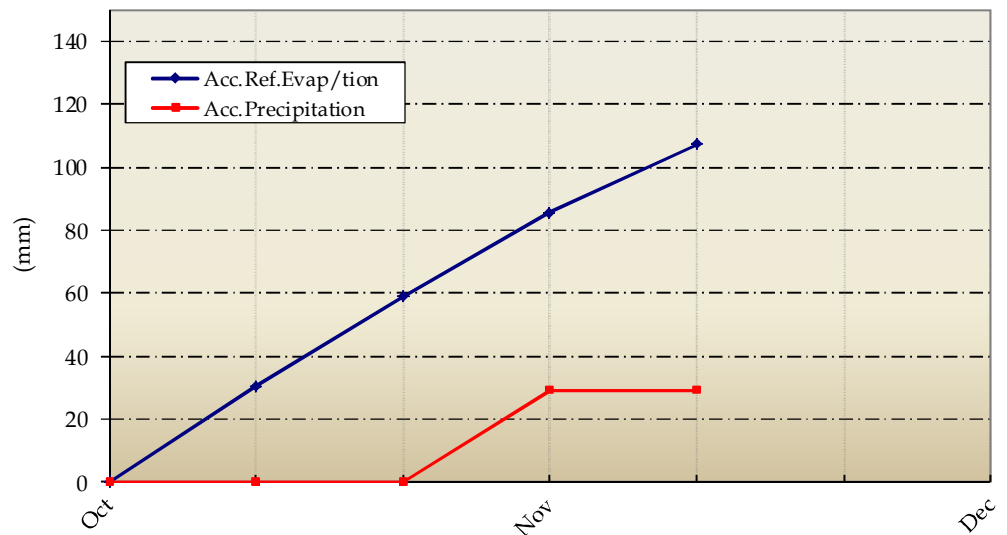
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	18.8	19.8	19.8	20.4	20.0	19.4	18.6	20.6	22.0	19.8	21.6	20.4
	Min	17.8	17.6	16.6	16.6	12.6	12.4	13.6	16.0	17.4	13.0	15.4	15.6	14.3
Relative Humidity	Max	74	73	73	82	85	85	86	79	77	81	80	84	-
	Min	61	64	60	60	57	64	63	61	54	57	60	59	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.2	1.7	5.1	7.1	7.8	7.4	4.2	6.2	8.1	8.2	5.7	4.8	5.0
Precipitation													9.6	20.0
Evaporation		1.6	5.5	2.1	1.5	2.7	2.7	0.8	2.8	4.0	2.8	26.5	23.8	39.9
Growing Degrees	5	13.4	13.2	13.2	13.2	11.5	11.2	11.5	12.3	14.0	12.5	126.0	136.2	123.4
	10	8.4	8.2	8.2	8.2	6.5	6.2	6.5	7.3	9.0	7.5	76.0	86.2	73.4

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.7	22.7	-
Precipitation - Reference Evapotranspiration	-21.7	-13.1	20.0
Number of Rainy Days	0.0	4.0	2.6
Number of Dry Days	17.0	0.0	-

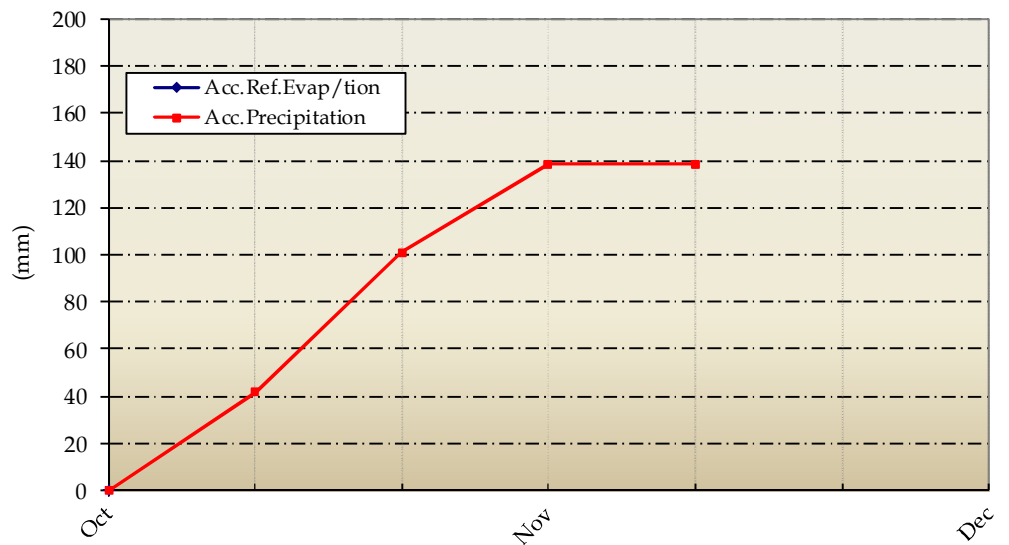
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	21.7	20.4	20.6	19.7	20.2	20.4	18.8	20.1	22.1	19.7	18.4	16.0
	Min	10.6	1.8	-2.2	-2.6	-0.2	-1.9	-2.2	-1.4	-0.3	1.2	0.3	5.0	5.4
Relative Humidity	Max	57	79	86	100	100	100	100	100	100	100	92	97	-
	Min	33	24	32	18	25	25	-	35	47	50	32	49	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.8
Sunshine Duration		6.8	7.6	7.1	6.9	-	5.7	-	1.5	6.2	5.3	5.9	3.8	4.1
Precipitation											0.0	0.0	42.1	40.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	16.8
Growing Degrees	5	7.0	6.8	4.1	4.0	4.8	4.2	4.1	3.7	4.9	6.7	50.1	66.6	57.3
	10	2.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	5.4	21.4	16.4

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	8.5	10.7
Precipitation - Reference Evapotranspiration	-	33.6	29.4
Number of Rainy Days	0.0	3.0	3.4
Number of Dry Days	19.0	11.0	-

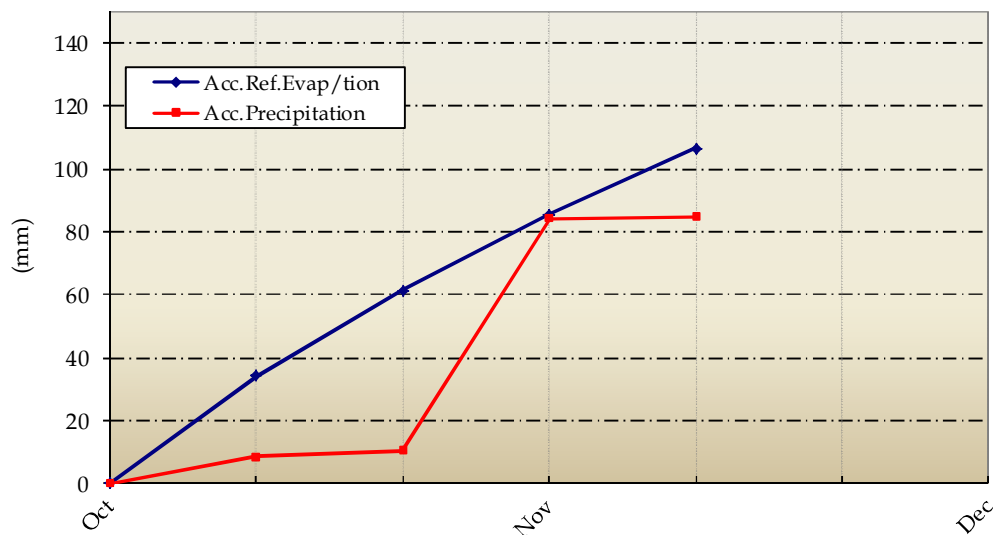
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.8	23.0	22.4	22.0	22.2	22.5	23.6	23.0	23.8	25.1	22.6	21.8	21.0
	Min	14.4	10.6	4.6	2.7	7.3	8.3	8.4	8.9	8.0	7.2	8.0	10.2	10.2
Relative Humidity	Max	71	74	83	89	90	91	91	89	89	88	86	90	-
	Min	44	28	32	25	33	42	39	47	27	32	35	46	-
Soil Temperature at 10 cm	06 UTC	17.4	16.4	16.0	15.4	15.6	16.0	16.0	16.2	16.0	16.0	16.1	15.9	15.1
	12 UTC	17.4	18.0	16.6	16.2	16.2	16.6	16.6	16.8	17.0	16.8	16.8	16.8	16.9
Sunshine Duration		0.0	9.2	6.0	9.2	9.1	8.7	8.6	8.6	8.9	8.5	7.7	6.5	5.6
Precipitation		0.7										0.7	27.5	35.3
Evaporation		8.4	3.0	3.8	0.8	3.6	1.8	3.2	2.6	1.2	1.2	29.6	-	30.4
Growing Degrees	5	11.6	11.8	8.5	7.4	9.8	10.4	11.0	11.0	10.9	11.2	103.4	110.3	105.8
	10	6.6	6.8	3.5	2.4	4.8	5.4	6.0	6.0	5.9	6.2	53.4	60.3	55.9

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.9	18.7	16.4
Precipitation - Reference Evapotranspiration	-20.2	8.8	18.9
Number of Rainy Days	1.0	3.0	3.1
Number of Dry Days	0.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

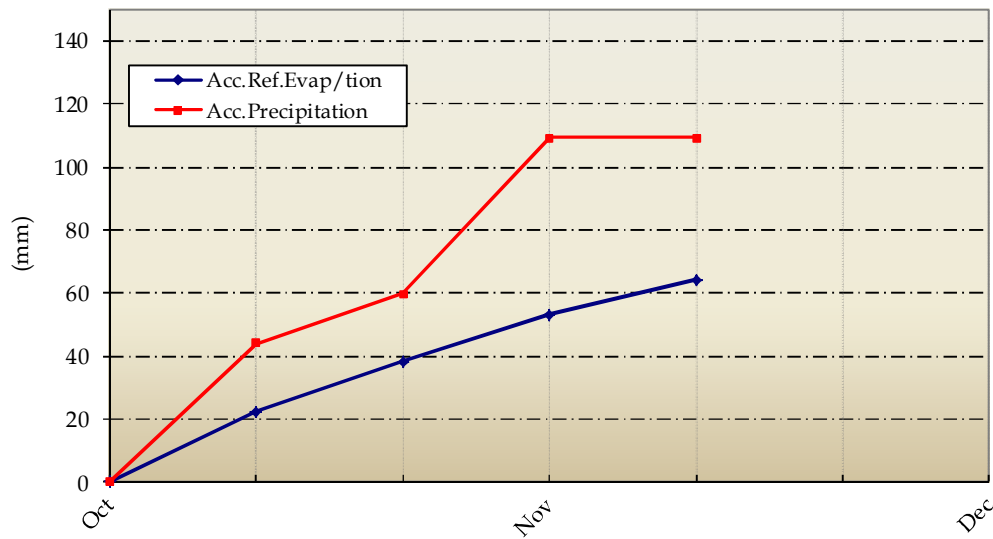


Larisa

1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.5	18.0	18.7	20.0	21.0	22.2	19.8	20.0	22.3	26.2	20.2	17.7	17.2
	Min	9.3	3.0	2.3	1.3	1.9	1.6	1.4	1.4	3.8	5.3	3.1	8.9	6.7
Relative Humidity	Max	90	99	100	100	100	100	100	100	100	97	99	100	-
	Min	54	33	33	26	27	34	36	39	41	29	35	61	-
Soil Temperature at 10 cm	06 UTC	16.0	15.2	14.4	13.4	13.6	13.4	13.2	13.2	11.6	13.4	13.7	-	12.3
	12 UTC	16.0	15.2	15.4	14.0	13.4	13.2	13.2	13.0	11.6	13.4	13.8	-	13.2
Sunshine Duration		0.5	6.8	9.9	6.9	6.8	6.6	6.4	7.1	6.4	5.3	6.3	3.3	4.1
Precipitation													6.2	20.6
Evaporation		2.0	1.2	3.2	2.2	1.4	1.2	1.0	0.7	3.6	2.3	18.8	21.4	17.6
Growing Degrees	5	6.4	5.5	5.5	5.7	6.5	6.9	5.6	5.7	8.1	10.8	66.5	83.1	69.6
	10	1.4	0.5	0.5	0.7	1.5	1.9	0.6	0.7	3.1	5.8	16.5	33.2	25.7

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.1	10.6	11.7
Precipitation - Reference Evapotranspiration	-11.1	-4.4	8.9
Number of Rainy Days	0.0	1.0	2.7
Number of Dry Days	17.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

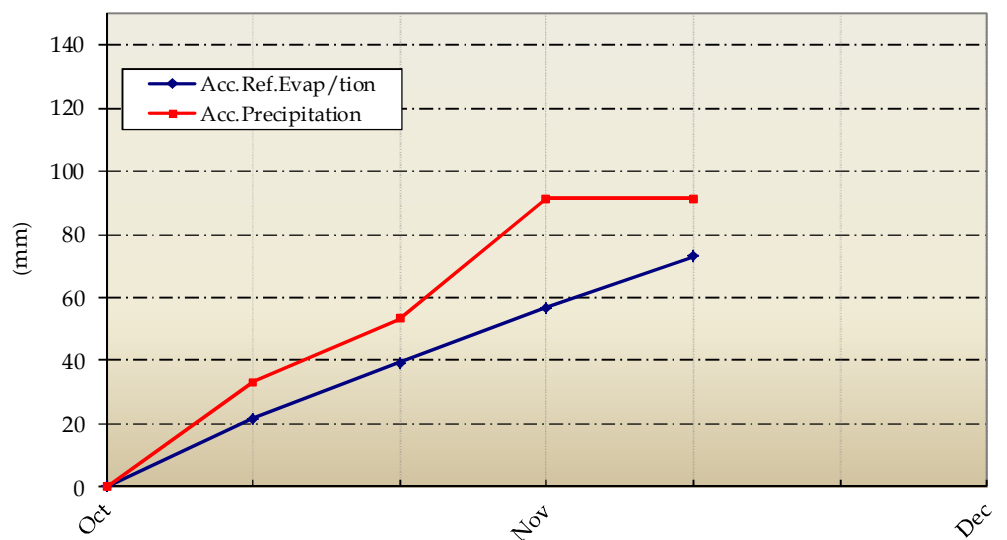


Mikra

1st 10-day period (1-10/11/2015)		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	17.6	18.8	18.6	18.4	20.0	19.4	18.8	23.2	22.6	19.4	16.8	16.5
	Min	6.0	4.0	4.4	2.9	3.8	5.0	4.6	4.0	8.2	12.6	5.6	10.3	7.9
Relative Humidity	Max	85	93	84	90	90	90	92	90	89	67	87	91	-
	Min	39	16	43	41	52	45	41	46	44	48	42	62	-
Soil Temperature at 10 cm	06 UTC	12.2	11.2	10.6	10.6	10.8	10.6	11.0	10.8	11.8	14.4	11.4	13.8	11.5
	12 UTC	14.2	13.2	12.8	13.0	13.0	12.6	13.4	13.0	14.4	16.2	13.6	15.4	13.8
Sunshine Duration		8.5	8.9	7.2	9.1	10.0	8.8	7.9	7.4	8.8	5.3	8.2	3.3	4.0
Precipitation													23.3	18.1
Evaporation		2.3	1.9	1.9	2.9	0.2	2.0	2.2	2.4	1.3	4.3	21.4	12.7	22.5
Growing Degrees	5	6.3	5.8	6.6	5.8	6.1	7.5	7.0	6.4	10.7	12.6	74.8	85.8	72.4
	10	1.3	0.8	1.6	0.8	1.1	2.5	2.0	1.4	5.7	7.6	24.8	36.2	27.9

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.3	10.4	13.6
Precipitation - Reference Evapotranspiration	-16.3	12.9	4.5
Number of Rainy Days	0.0	3.0	2.5
Number of Dry Days	17.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

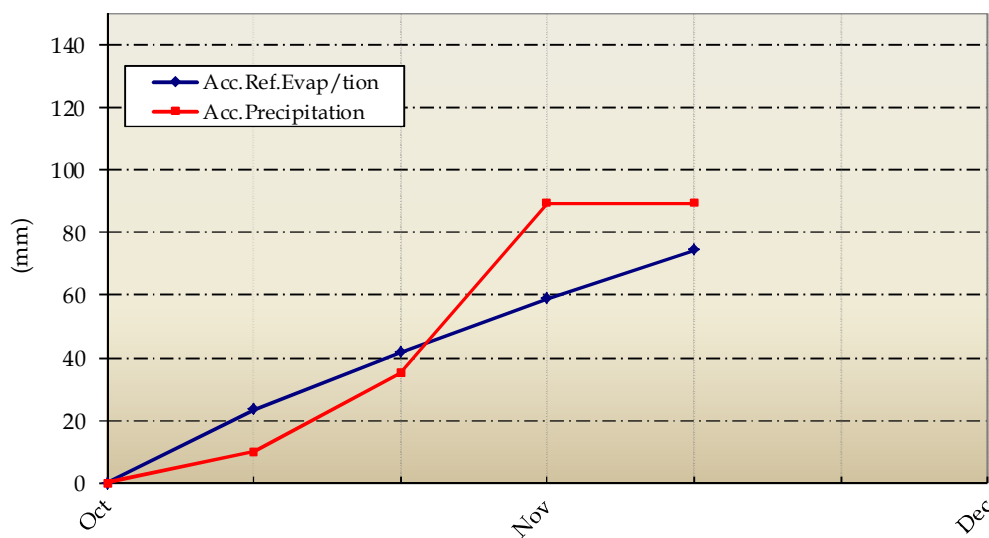


Tanagra

1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.2	15.6	19.5	19.6	20.4	19.5	18.8	18.5	23.0	23.8	19.3	17.5	19.0
	Min	12.9	11.0	5.5	4.2	5.4	5.8	7.7	7.7	5.3	10.0	7.6	9.8	9.1
Relative Humidity	Max	69	80	82	77	94	87	97	98	86	82	85	97	-
	Min	55	51	26	31	35	44	46	38	34	32	39	63	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	6.0	6.6	8.3	8.2	8.1	8.0	7.6	8.5	8.2	7.0	4.9	
Precipitation													35.6	19.6
Evaporation		2.5	3.5	4.5	3.8	3.7	3.0	2.0	2.2	3.8	4.5	33.5	16.7	
Growing Degrees	5	8.6	8.3	7.5	6.9	7.9	7.7	8.3	8.1	9.2	11.9	84.2	86.5	
	10	3.6	3.3	2.5	1.9	2.9	2.7	3.3	3.1	4.2	6.9	34.2	36.5	

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.5	11.4	
Precipitation - Reference Evapotranspiration	-15.5	24.2	19.6
Number of Rainy Days	0.0	1.0	3.1
Number of Dry Days	17.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

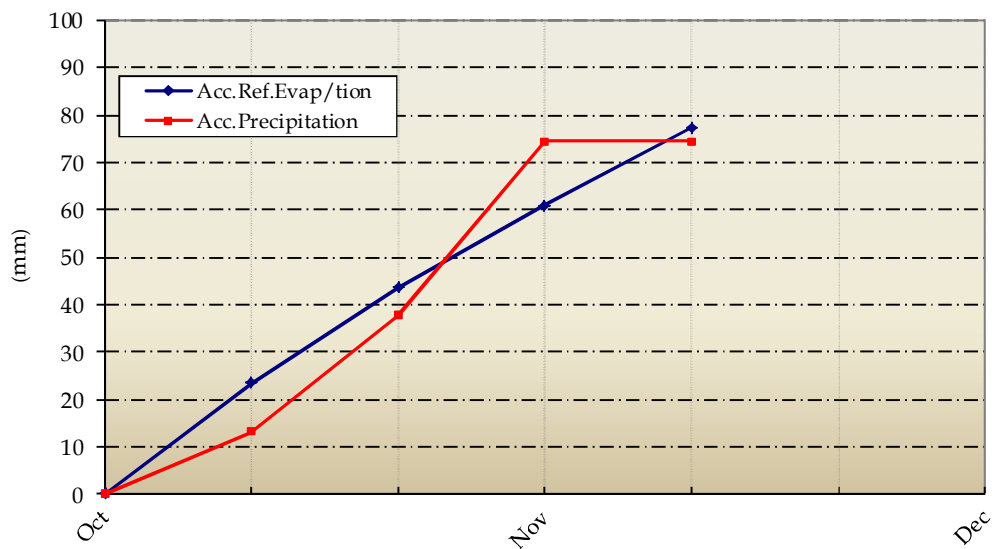


Tripoli

1st 10-day period (1-10/11/2015)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.2	16.8	20.0	19.9	20.6	19.9	19.9	19.0	21.5	24.1	19.3	16.7	16.5
	Min	9.3	6.8	-1.8	-1.7	-1.6	-0.7	-	-1.0	-0.5	-0.3	0.9	5.3	5.2
Relative Humidity	Max	79	100	100	87	100	100	100	100	100	100	97	98	-
	Min	67	36	13	12	18	18	-	27	31	27	28	53	-
Soil Temperature at 10 cm	06 UTC	11.6	10.6	8.8	8.6	8.4	8.4	-	-	8.4	8.4	9.2	10.8	11.0
	12 UTC	-	13.2	11.8	12.2	11.6	11.8	-	-	11.8	12.0	12.1	13.6	12.3
Sunshine Duration		0.0	9.2	7.8	9.3	8.9	9.2	8.8	8.0	8.9	8.2	7.8	4.5	5.1
Precipitation									0.0			0.0	27.8	28.3
Evaporation		1.9	2.2	2.6	2.2	1.8	-	-	-	1.2	1.4	-	-	18.0
Growing Degrees	5	5.3	6.8	4.1	4.1	4.5	4.6	-	4.0	5.5	6.9	-	60.3	58.6
	10	0.3	1.8	0.0	0.0	0.0	0.0	-	0.0	0.5	1.9	-	13.5	17.0

1st 10-day period (1-10/11/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.4	12.1	13.6
Precipitation - Reference Evapotranspiration	-16.4	15.7	14.7
Number of Rainy Days	0.0	3.0	2.6
Number of Dry Days	18.0	5.0	-

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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