



AGROMETEOROLOGICAL BULLETIN

*October 2015
3rd 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



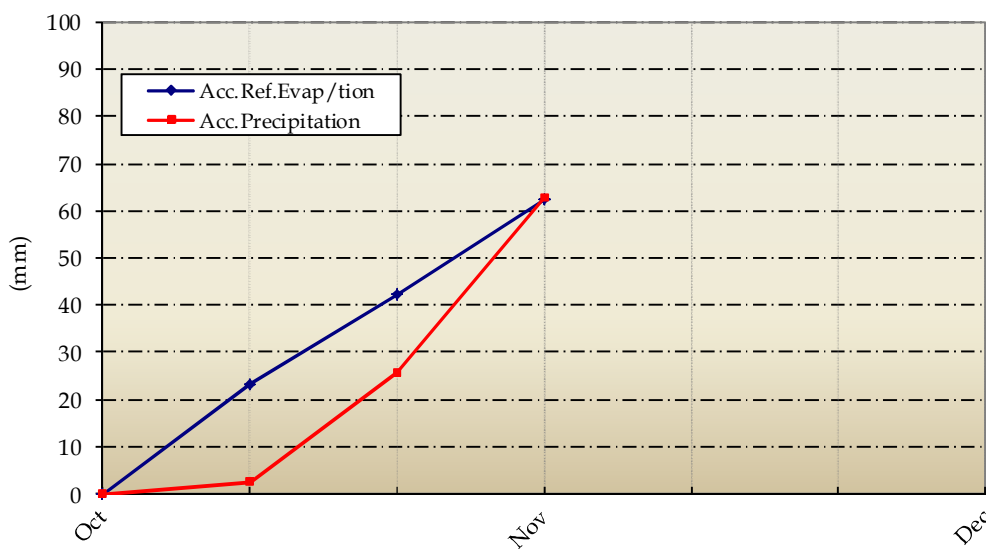
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.0	15.0	15.8	14.8	18.4	18.6	18.2	16.2	17.0	18.2	15.8	16.8	15.5	17.4
	Min	12.0	12.4	10.8	9.6	5.2	3.8	6.0	7.6	10.2	10.4	9.0	8.8	9.1	8.0
Relative Humidity	Max	98	95	83	95	96	96	94	77	74	74	70	87	90	-
	Min	73	68	64	54	34	38	49	41	37	51	45	50	65	-
Soil Temperature at 10 cm	06 UTC	16.6	14.8	15.2	12.4	10.4	10.6	11.2	11.6	11.9	12.6	12.4	12.7	13.3	12.7
	12 UTC	17.4	15.2	14.8	13.2	14.6	14.2	14.8	14.4	14.4	15.4	14.6	14.8	14.8	15.2
Sunshine Duration		0.0	0.0	0.0	0.0	9.3	9.1	7.2	9.5	5.7	7.9	6.4	5.0	1.6	5.2
Precipitation		2.2	15.3	10.2	9.5								37.2	78.4	22.3
Evaporation		0.9	1.0	0.1	1.5	8.7	1.6	2.9	3.7	3.7	2.3	4.3	30.7	35.8	41.1
Growing Degrees	5	9.5	8.7	8.3	7.2	6.8	6.2	7.1	6.9	8.6	9.3	7.4	86.0	80.0	85.3
	10	4.5	3.7	3.3	2.2	1.8	1.2	2.1	1.9	3.6	4.3	2.4	31.0	27.4	34.4

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.2	15.2	20.4
Precipitation - Reference Evapotranspiration	17.0	63.2	1.9
Number of Rainy Days	4.0	8.0	2.2
Number of Dry Days	7.0	14.0	-

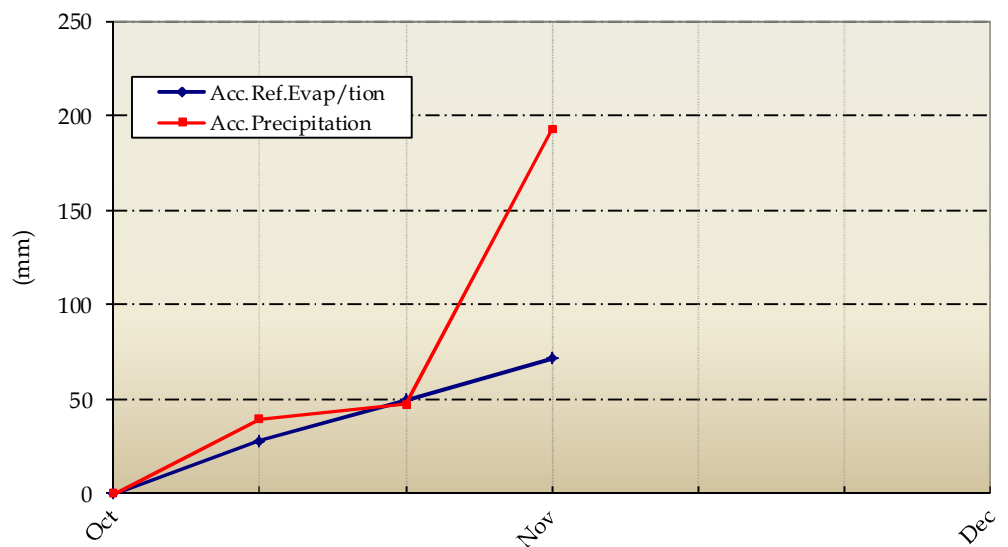
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.7	25.0	20.8	20.8	21.6	21.2	23.6	22.0	21.1	17.3	20.1	21.6	19.9	21.5
	Min	19.2	16.4	15.8	15.2	9.3	7.6	8.3	8.6	7.5	8.6	12.4	11.7	11.4	11.4
Relative Humidity	Max	92	93	92	86	86	90	91	89	89	85	85	89	90	-
	Min	59	64	55	42	41	40	30	37	35	63	44	46	56	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.7	16.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.9	18.7
Sunshine Duration		2.0	4.1	1.6	7.8	9.3	8.8	9.1	10.2	8.7	0.0	0.0	5.6	4.3	6.3
Precipitation		7.3	134.7	3.5									145.5	78.3	50.1
Evaporation		0.4	3.6	0.6	4.4	11.4	1.6	3.0	1.0	1.4	1.6	2.0	31.0	20.0	31.6
Growing Degrees	5	16.5	15.7	13.3	13.0	10.5	9.4	11.0	10.3	9.3	8.0	11.3	128.1	117.2	126.2
	10	11.5	10.7	8.3	8.0	5.5	4.4	6.0	5.3	4.3	3.0	6.3	73.1	62.2	71.3

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.1	18.0	18.7
Precipitation - Reference Evapotranspiration	123.4	60.3	31.4
Number of Rainy Days	3.0	7.0	3.7
Number of Dry Days	9.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

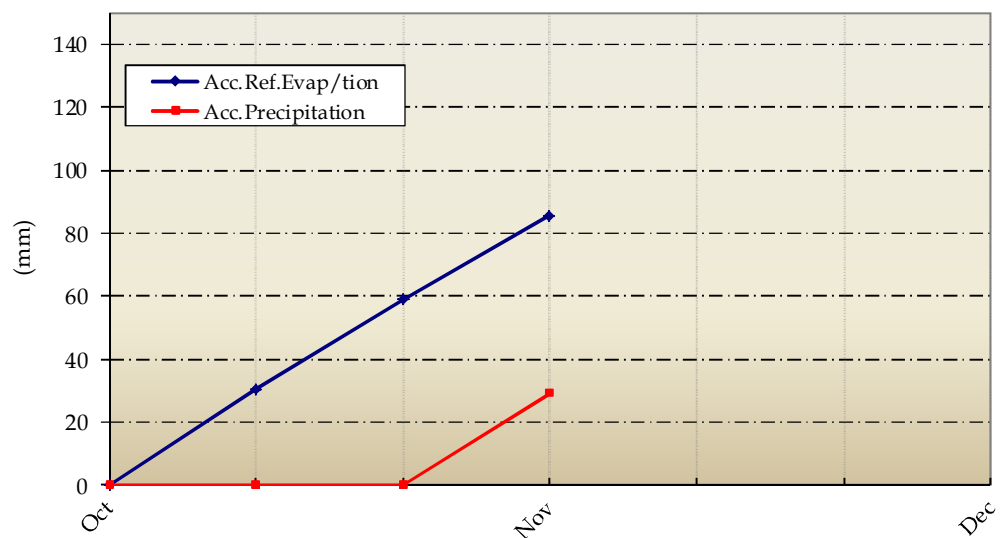


Iraklio

3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.8	28.0	21.0	20.6	19.0	20.4	21.0	19.6	20.0	19.6	19.4	21.3	21.8	21.6
	Min	20.6	19.6	18.0	16.0	18.0	18.2	18.2	18.2	16.6	17.6	14.4	17.8	15.2	15.6
Relative Humidity	Max	85	74	94	93	80	75	69	69	68	78	78	78	87	-
	Min	61	50	67	76	68	55	58	48	52	56	66	60	61	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.2	0.5	1.7	2.4	0.0	6.5	5.9	4.7	4.2	1.7	0.0	2.6	3.6	5.7
Precipitation				20.2	9.0	0.0	0.0					0.0	29.2	99.1	29.2
Evaporation		2.1	0.0	0.0	0.7	2.6	3.9	5.9	6.2	3.5	3.9	1.3	30.1	64.5	48.8
Growing Degrees	5	18.2	18.8	14.5	13.3	13.5	14.3	14.6	13.9	13.3	13.6	11.9	159.9	148.8	149.6
	10	13.2	13.8	9.5	8.3	8.5	9.3	9.6	8.9	8.3	8.6	6.9	104.9	93.8	94.6

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.8	22.5	-
Precipitation - Reference Evapotranspiration	2.4	76.6	29.2
Number of Rainy Days	2.0	9.0	3.0
Number of Dry Days	22.0	24.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

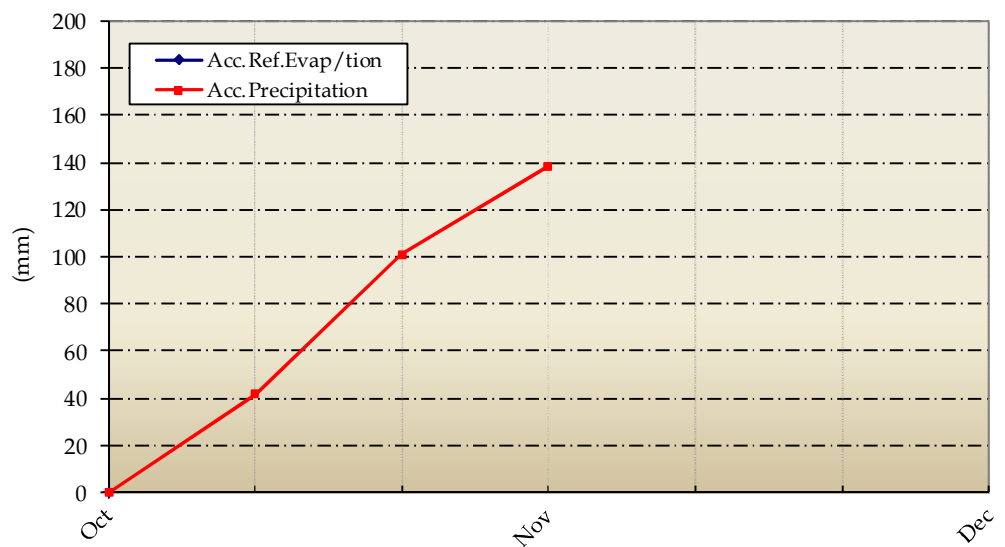


Ioannina

3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	17.0	20.5	16.6	20.0	20.4	22.6	19.8	18.0	16.8	13.9	18.6	16.7	17.6
	Min	12.8	14.1	11.1	11.0	3.9	-0.1	3.4	1.6	1.1	2.4	12.5	6.7	4.9	7.0
Relative Humidity	Max	100	100	100	-	100	100	100	100	100	100	58	96	96	-
	Min	81	97	48	46	39	44	34	43	37	43	38	50	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	11.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	13.8
Sunshine Duration		2.3	0.0	5.6	-	8.0	4.9	6.1	7.5	-	3.0	-	4.7	3.7	4.6
Precipitation		6.7	30.8	0.0									37.5	52.7	37.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	18.9
Growing Degrees	5	10.9	10.6	10.8	8.8	7.0	5.2	8.0	5.7	4.6	4.6	8.2	84.2	63.9	81.3
	10	5.9	5.6	5.8	3.8	2.0	0.2	3.0	0.7	0.0	0.0	3.2	30.1	14.7	30.0

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	11.3	14.7
Precipitation - Reference Evapotranspiration	-	41.4	22.9
Number of Rainy Days	2.0	4.0	3.8
Number of Dry Days	2.0	14.0	-

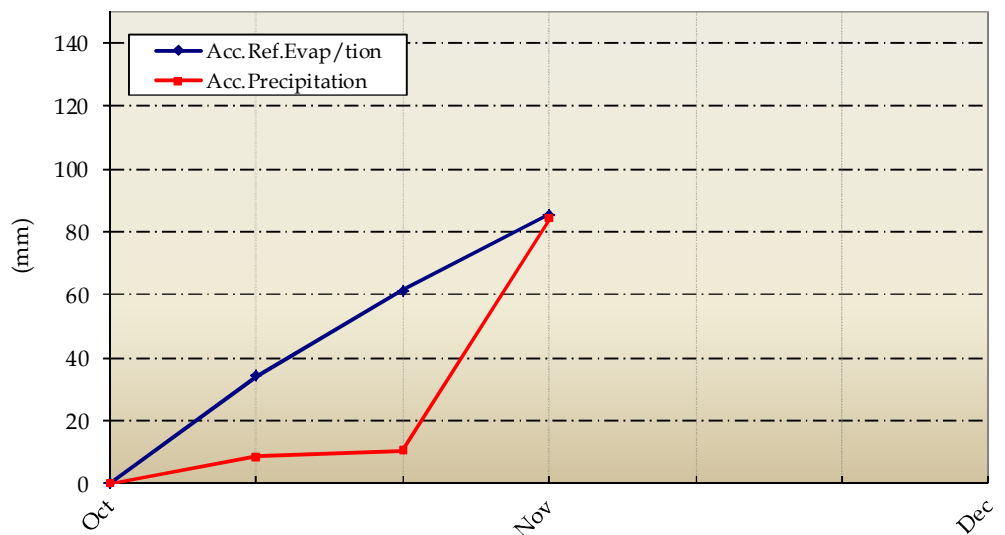
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.0	26.4	21.6	22.6	22.7	22.6	23.2	23.6	22.8	20.2	20.2	22.6	20.2	22.3
	Min	18.0	18.6	16.5	15.5	13.0	8.7	8.8	10.7	11.3	10.4	15.3	13.3	10.5	11.5
Relative Humidity	Max	94	94	94	86	71	91	89	84	84	66	75	84	94	-
	Min	73	60	65	40	37	31	36	34	32	45	42	45	55	-
Soil Temperature at 10 cm	06 UTC	21.4	21.2	21.2	20.4	19.2	19.2	18.0	18.0	17.2	17.4	17.6	19.2	17.6	16.7
	12 UTC	21.6	21.6	20.6	20.8	20.8	19.0	18.8	18.8	18.4	18.2	18.2	19.7	18.2	18.5
Sunshine Duration		0.6	4.8	0.7	0.3	9.7	8.5	9.3	9.5	12.1	0.0	0.0	5.0	4.2	5.9
Precipitation		13.9	48.3	9.7	1.3							0.6	73.8	76.9	43.6
Evaporation		3.4	-	-	1.0	1.8	0.8	2.2	4.8	1.6	4.3	3.4	-	-	36.3
Growing Degrees	5	15.5	17.5	14.1	14.1	12.9	10.7	11.0	12.2	12.1	10.3	12.8	142.9	114.3	130.7
	10	10.5	12.5	9.1	9.1	7.9	5.7	6.0	7.2	7.1	5.3	7.8	87.9	59.3	75.7

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.4	19.7	21.6
Precipitation - Reference Evapotranspiration	49.4	57.2	22.0
Number of Rainy Days	5.0	9.0	3.7
Number of Dry Days	9.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

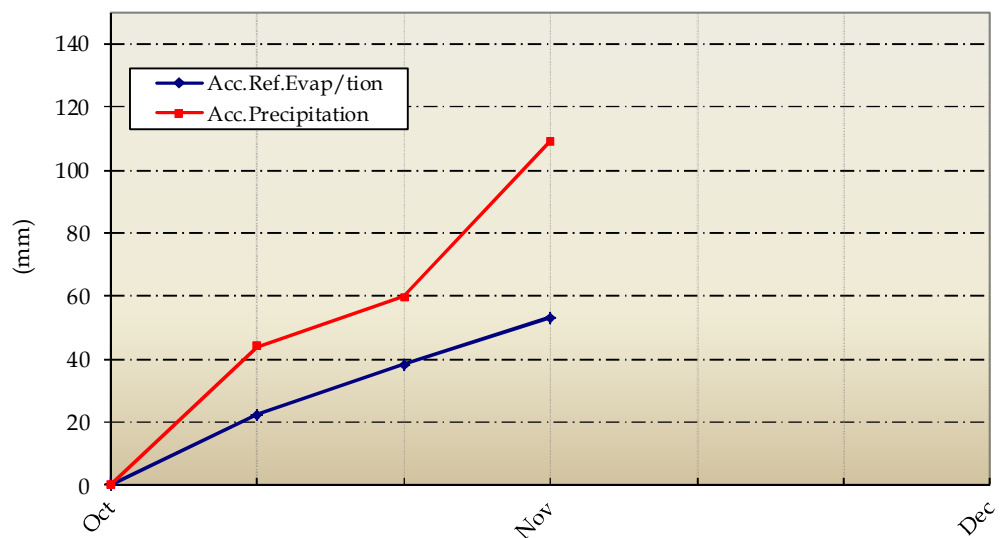


Larisa

3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.4	17.4	14.8	14.6	18.7	19.6	19.9	17.0	16.5	15.0	15.4	17.4	17.1	18.9
	Min	15.3	13.1	12.2	12.3	8.9	3.9	5.3	10.3	9.4	11.9	13.1	10.5	8.9	8.3
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	81	64	95	98	-
	Min	60	93	74	56	43	43	46	62	49	53	52	57	53	-
Soil Temperature at 10 cm	06 UTC	20.4	20.2	19.0	18.2	17.0	16.8	17.4	16.6	16.6	16.6	16.2	17.7	-	14.6
	12 UTC	20.5	19.6	19.0	17.6	17.2	16.4	17.2	16.4	16.4	16.2	16.2	17.5	-	15.6
Sunshine Duration		3.3	0.0	0.0	0.0	7.4	7.0	7.3	2.5	0.9	0.0	0.5	2.6	2.3	4.4
Precipitation		1.6	33.2	13.7	1.0								49.5	27.6	23.9
Evaporation		2.3	0.4	1.0	1.0	3.1	3.0	1.5	1.8	1.2	0.0	2.8	18.1	27.8	24.8
Growing Degrees	5	13.9	10.3	8.5	8.5	8.8	6.8	7.6	8.7	8.0	8.5	9.3	98.5	88.1	94.1
	10	8.9	5.3	3.5	3.5	3.8	1.8	2.6	3.7	3.0	3.5	4.3	43.5	33.1	41.5

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.9	14.4	16.4
Precipitation - Reference Evapotranspiration	34.6	13.2	7.5
Number of Rainy Days	4.0	4.0	3.5
Number of Dry Days	4.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

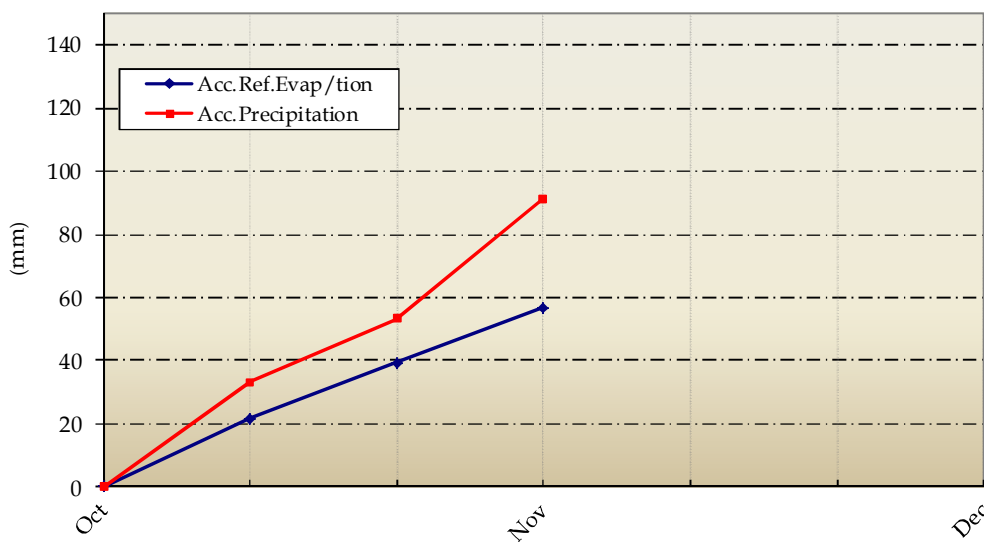


Mikra

3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.6	16.8	14.6	17.0	18.0	19.2	19.4	17.6	17.2	17.4	18.4	17.8	17.1	18.1
	Min	14.8	14.0	12.2	11.4	7.0	6.2	7.1	12.6	10.0	7.0	7.4	10.0	9.5	9.2
Relative Humidity	Max	96	96	91	89	92	94	92	86	83	91	92	91	86	-
	Min	67	85	68	52	48	46	65	59	41	52	28	56	54	-
Soil Temperature at 10 cm	06 UTC	18.4	17.4	15.5	14.0	12.8	12.8	13.4	15.5	14.4	12.7	12.6	14.5	14.3	13.8
	12 UTC	18.4	17.6	18.0	14.2	15.0	15.6	15.8	17.0	15.6	14.2	14.8	16.0	15.6	16.0
Sunshine Duration		1.5	0.0	0.0	1.4	8.8	8.7	8.5	5.0	3.0	2.1	6.9	4.2	2.9	4.6
Precipitation		12.4	13.5	7.4	4.8								38.1	62.8	21.1
Evaporation		0.9	5.6	5.0	2.6	1.5	3.1	1.9	7.2	4.8	0.4	3.6	36.6	46.6	29.7
Growing Degrees	5	12.7	10.4	8.4	9.2	7.5	7.7	8.3	10.1	8.6	7.2	7.9	98.0	91.2	95.5
	10	7.7	5.4	3.4	4.2	2.5	2.7	3.3	5.1	3.6	2.2	2.9	43.0	36.2	42.9

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.6	18.4	17.3
Precipitation - Reference Evapotranspiration	20.5	44.4	3.8
Number of Rainy Days	4.0	5.0	3.2
Number of Dry Days	4.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

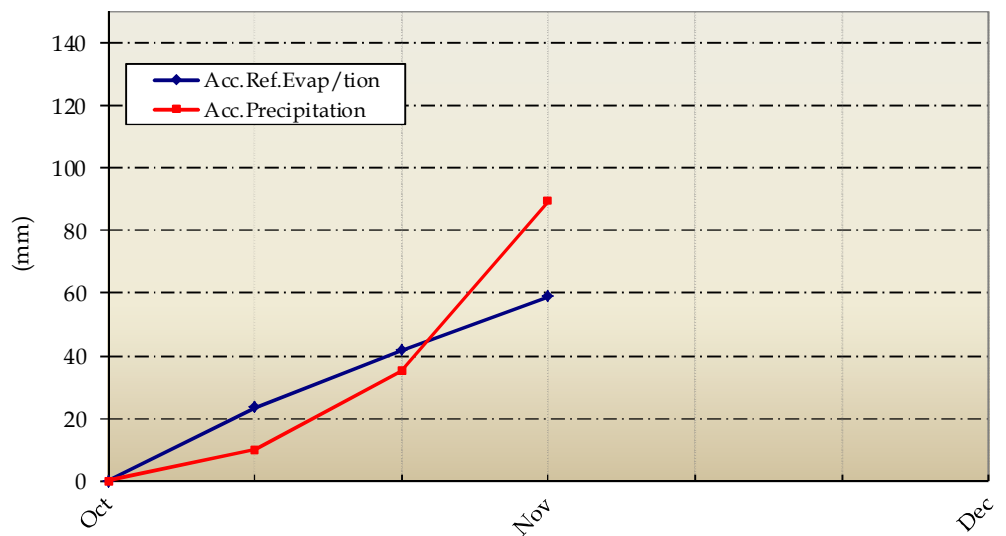


Tanagra

3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.1	21.3	16.9	15.5	17.6	19.0	18.4	16.6	15.4	15.4	15.2	17.8	17.3	19.8
	Min	14.9	17.4	15.4	13.5	12.4	10.3	9.4	10.5	9.5	13.4	13.4	12.7	10.5	10.1
Relative Humidity	Max	100	100	100	84	80	95	94	93	68	72	67	87	96	-
	Min	63	61	85	61	46	51	52	50	52	61	58	58	60	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		3.6	1.0	0.0	0.0	8.0	7.8	7.7	4.5	0.3	0.0	0.0	3.0	2.8	
Precipitation		0.2	24.6	23.3	6.2						0.0		54.3	75.9	27.5
Evaporation		1.0	1.0	1.0	2.7	3.8	3.5	3.0	4.5	3.0	4.5	3.5	31.5	-	
Growing Degrees	5	14.5	14.4	11.2	9.5	10.0	9.7	8.9	8.6	7.5	9.4	9.3	112.8	98.0	
	10	9.5	9.4	6.2	4.5	5.0	4.7	3.9	3.6	2.5	4.4	4.3	57.8	43.0	

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.4	15.1	
Precipitation - Reference Evapotranspiration	36.9	60.8	27.5
Number of Rainy Days	4.0	8.0	3.7
Number of Dry Days	9.0	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

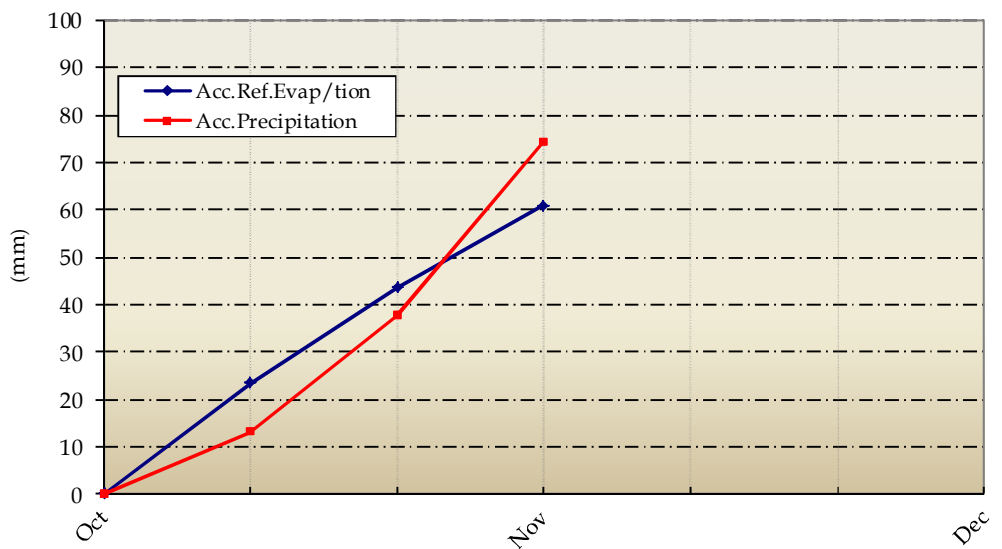


Tripoli

3rd 10-day period (21-31/10/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.1	20.2	16.8	16.4	15.5	19.7	18.7	17.0	15.5	14.1	12.4	16.9	15.4	17.6
	Min	12.5	15.1	11.5	11.1	8.3	0.6	1.2	4.1	2.8	2.8	9.7	7.2	6.3	6.5
Relative Humidity	Max	100	100	100	82	100	100	100	100	100	100	79	96	100	-
	Min	66	64	78	59	52	31	31	48	47	57	61	54	58	-
Soil Temperature at 10 cm	06 UTC	17.4	17.8	16.8	14.8	14.4	11.4	11.2	11.4	11.4	11.2	12.4	13.7	12.2	12.8
	12 UTC	19.2	19.0	17.2	-	-	14.8	14.5	-	14.6	13.4	-	16.1	14.5	14.2
Sunshine Duration		2.0	4.0	0.0	5.0	5.7	8.4	9.1	5.3	8.3	0.0	0.0	4.3	3.5	5.3
Precipitation		5.2	23.5	8.0	0.0							0.0	36.7	87.9	39.1
Evaporation		0.0	0.0	1.1	2.8	0.8	2.6	1.2	1.5	1.5	1.9	2.2	15.6	25.8	23.9
Growing Degrees	5	11.3	12.7	9.2	8.8	6.9	5.2	5.0	5.6	4.2	3.5	6.1	78.1	64.3	77.8
	10	6.3	7.7	4.2	3.8	1.9	0.2	0.0	0.6	0.0	0.0	1.1	25.5	11.0	27.7

3rd 10-day period (21-31/10/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.3	13.6	18.0
Precipitation - Reference Evapotranspiration	19.4	74.3	21.1
Number of Rainy Days	3.0	7.0	3.8
Number of Dry Days	3.0	14.0	-

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

© HELLENIC NATIONAL METEOROLOGICAL SERVICE
 Reproduction is prohibited without written permission
 El. Venizelou street 14, Zip Code 16777
 Helliniko, Athens