



# AGROMETEOROLOGICAL BULLETIN

*August 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



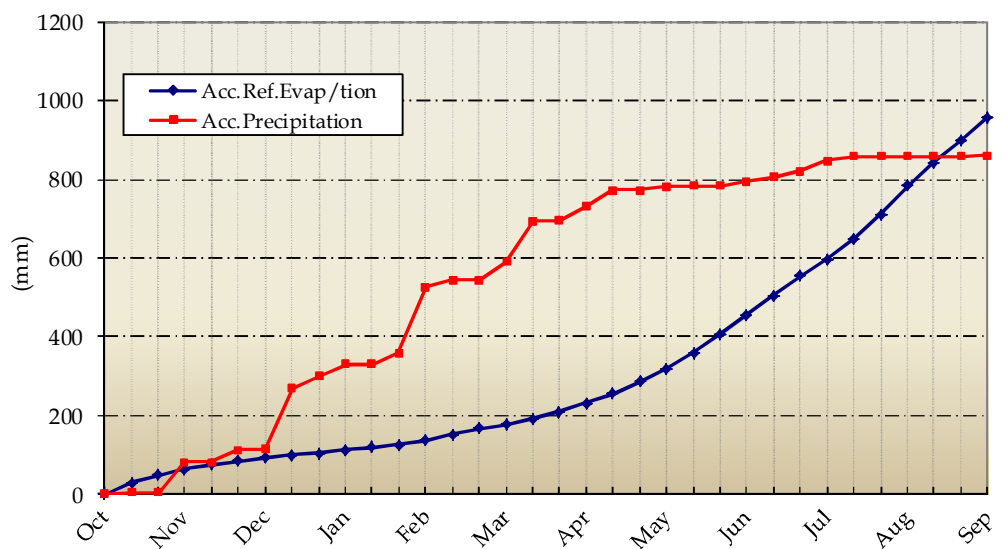
Hellenic National Meteorological Service  
Division of Climatology-Applications  
El. Venizelou Street 14, 16777  
Helliniko, Athens

*Web addresses of HNMS*  
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3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	29.2	29.6	30.8	32.2	32.0	31.6	33.4	34.0	35.6	35.0	32.1	30.9	29.1
	Min	22.6	22.0	20.4	18.0	16.8	13.8	17.0	15.0	14.6	19.2	20.4	18.2	20.4	16.6
Relative Humidity	Max	90	91	70	88	84	91	92	72	80	81	91	85	82	-
	Min	49	53	47	43	40	34	32	15	17	20	26	34	37	-
Soil Temperature at 10 cm	06 UTC	28.8	28.4	26.8	26.2	26.0	25.6	26.0	25.6	24.6	26.2	27.8	26.5	26.6	23.0
	12 UTC	33.2	32.6	31.8	31.0	31.6	31.6	31.2	31.4	31.6	31.0	32.6	31.8	31.1	27.1
Sunshine Duration		11.6	9.4	10.5	12.4	12.4	12.4	12.4	12.4	12.1	11.7	11.9	11.7	11.1	9.8
Precipitation			0.2	0.2									0.4		4.5
Evaporation		8.4	10.6	5.2	12.4	9.8	6.9	12.5	10.8	9.0	8.7	17.7	112.0	88.4	93.1
Growing Degrees	5	21.1	20.6	20.0	19.4	19.5	17.9	19.3	19.2	19.3	22.4	22.7	221.4	227.6	196.4
	10	16.1	15.6	15.0	14.4	14.5	12.9	14.3	14.2	14.3	17.4	17.7	166.4	172.6	141.4

3rd 10-day period (21-31/08/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.6	56.3
Precipitation - Reference Evapotranspiration	-59.2	-56.3
Number of Rainy Days	2.0	0.0
Number of Dry Days	14.0	14.0

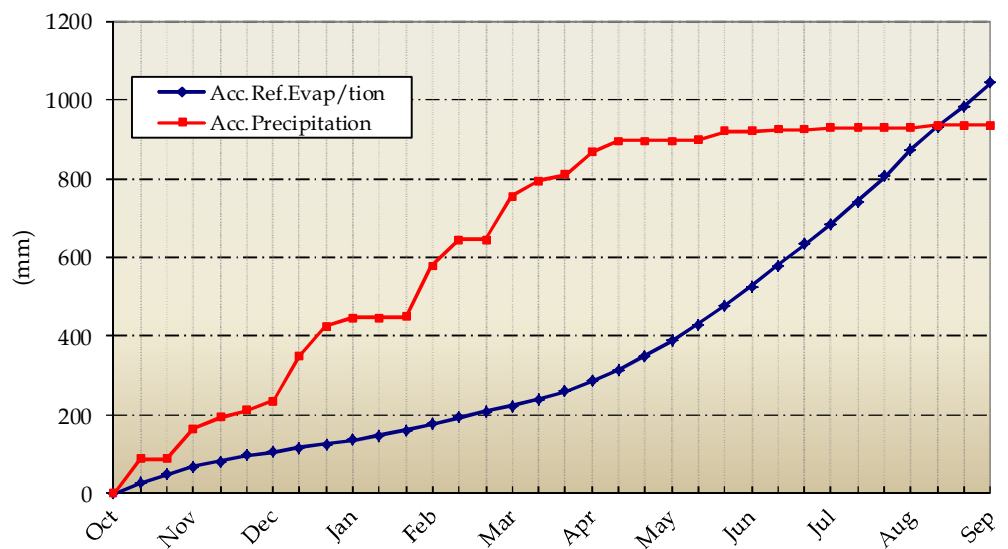
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.6	29.8	29.4	30.5	32.0	35.2	32.5	33.1	33.1	37.3	37.1	32.8	31.9	30.0
	Min	19.6	21.9	19.9	19.2	19.2	19.3	18.7	15.0	15.4	16.2	17.6	18.4	19.1	18.5
Relative Humidity	Max	85	76	81	83	86	87	78	82	82	79	78	82	87	-
	Min	37	48	43	33	30	21	25	19	20	14	19	28	34	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	28.2	26.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	33.3	30.8
Sunshine Duration		11.6	11.7	12.2	12.6	11.1	11.1	11.1	12.2	11.2	11.3	11.1	11.6	10.9	10.6
Precipitation															3.8
Evaporation		1.5	14.5	13.0	9.0	6.6	9.4	9.0	10.0	11.8	8.2	11.0	104.0	-	74.7
Growing Degrees	5	20.1	20.9	19.7	19.9	20.6	22.3	20.6	19.1	19.3	21.8	22.4	226.3	225.4	211.8
	10	15.1	15.9	14.7	14.9	15.6	17.3	15.6	14.1	14.3	16.8	17.4	171.3	170.4	156.8

3rd 10-day period (21-31/08/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.4	53.1
Precipitation - Reference Evapotranspiration	-61.4	-53.1
Number of Rainy Days	0.0	0.0
Number of Dry Days	25.0	38.0

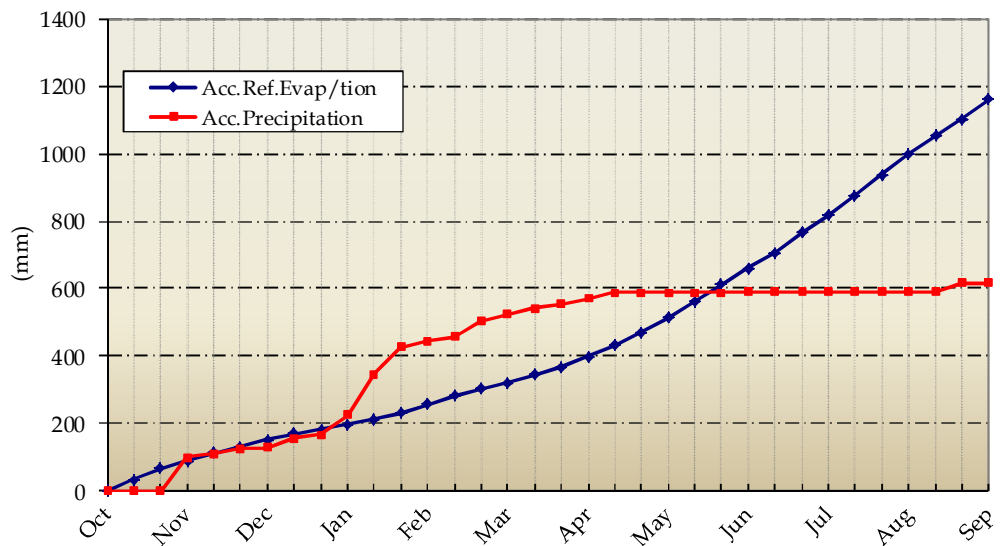
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.4	29.2	29.0	28.6	28.2	28.2	28.0	28.0	28.0	28.4	28.2	28.5	30.2	27.8
	Min	23.0	24.4	25.0	24.8	25.0	25.0	24.8	22.0	20.8	21.2	20.4	23.3	22.9	21.3
Relative Humidity	Max	84	83	83	77	70	69	78	80	76	70	82	77	80	-
	Min	59	67	58	51	54	56	56	62	57	51	54	57	47	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		11.7	11.5	11.6	11.8	10.7	11.4	11.5	11.2	11.4	11.1	11.0	11.4	11.5	10.8
Precipitation															0.6
Evaporation		1.1	8.6	8.2	17.4	6.2	13.0	4.0	7.8	5.4	6.2	2.3	80.2	64.5	88.9
Growing Degrees	5	21.2	21.8	22.0	21.7	21.6	21.6	21.4	20.0	19.4	19.8	19.3	229.8	237.0	215.1
	10	16.2	16.8	17.0	16.7	16.6	16.6	16.4	15.0	14.4	14.8	14.3	174.8	182.0	160.1

3rd 10-day period (21-31/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.6	60.5	-
Precipitation - Reference Evapotranspiration	-58.6	-60.5	0.6
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	16.0	87.0	-

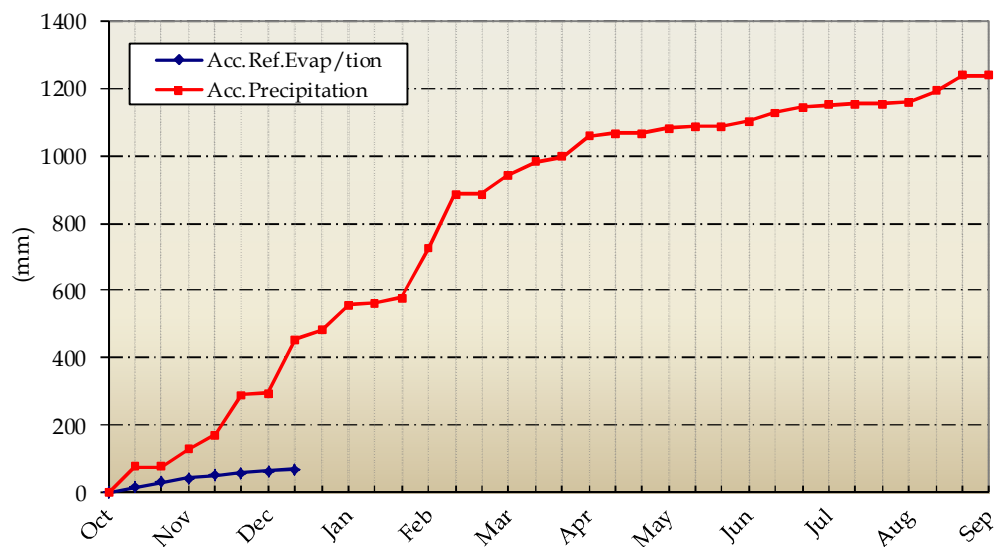
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	29.3	29.8	28.7	30.6	31.2	32.0	34.8	32.5	32.2	33.4	31.1	33.0	29.2
	Min	13.0	13.0	12.6	12.8	12.4	14.4	19.4	13.3	12.5	19.8	26.3	15.4	13.8	14.3
Relative Humidity	Max	97	100	100	100	96	99	96	97	78	39	81	89	85	-
	Min	32	32	19	15	25	34	23	14	20	19	24	23	25	-
Soil Temperature at 10 cm	06 UTC	31.5	31.4	31.2	31.5	31.4	31.2	31.4	31.5	31.4	31.6	31.6	31.4	-	21.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	25.5
Sunshine Duration		11.0	10.8	10.5	10.7	10.5	8.8	10.4	10.1	10.4	9.6	10.2	10.3	9.4	8.9
Precipitation														3.9	15.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	70.8
Growing Degrees	5	15.5	16.2	16.2	15.8	16.5	17.8	20.7	19.1	17.5	21.0	24.9	201.0	202.3	178.0
	10	10.5	11.2	11.2	10.8	11.5	12.8	15.7	14.1	12.5	16.0	19.9	146.0	147.3	124.8

3rd 10-day period (21-31/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	38.2	44.4
Precipitation - Reference Evapotranspiration	-	-34.3	-28.5
Number of Rainy Days	0.0	1.0	2.1
Number of Dry Days	14.0	20.0	-

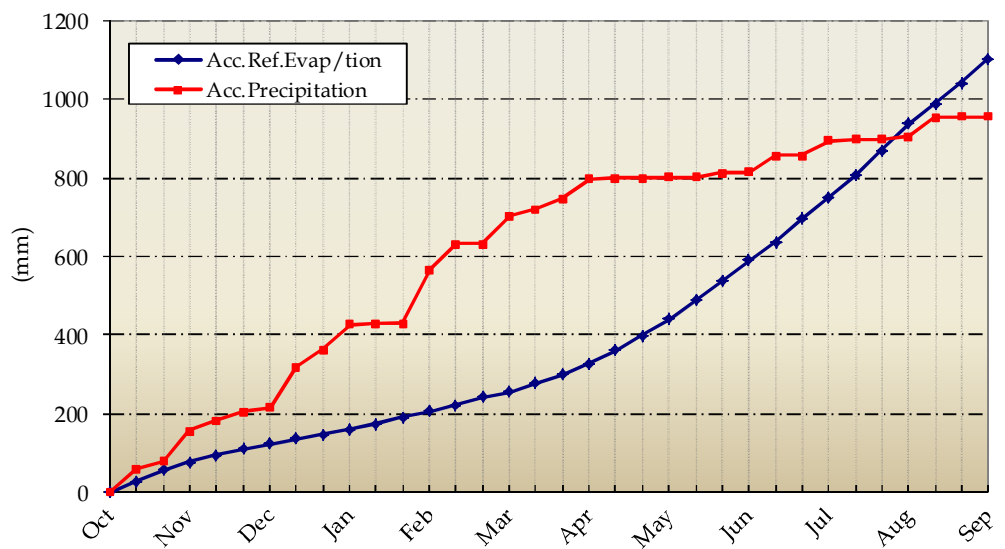
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.7	33.4	31.5	29.2	33.5	33.2	31.6	32.0	31.7	34.9	35.0	32.6	33.9	30.5
	Min	20.0	20.3	19.2	18.4	20.1	17.5	18.1	15.6	13.2	16.1	17.8	17.8	19.1	17.7
Relative Humidity	Max	91	81	79	80	81	79	84	82	89	79	76	82	83	-
	Min	35	26	26	47	22	28	21	23	22	22	21	27	30	-
Soil Temperature at 10 cm	06 UTC	25.8	26.0	26.6	25.6	25.4	25.6	25.2	25.0	24.8	24.6	24.8	25.4	26.0	25.4
	12 UTC	28.0	27.2	28.2	27.6	28.2	28.4	27.6	28.0	28.0	28.4	28.0	28.0	27.7	29.0
Sunshine Duration		11.8	11.8	11.8	11.7	11.8	11.6	11.7	10.7	11.8	11.6	11.6	11.6	11.5	10.0
Precipitation														111.1	3.6
Evaporation		-	-	-	-	8.0	11.6	6.8	13.0	2.0	4.4	7.8	-	-	81.7
Growing Degrees	5	21.4	21.9	20.4	18.8	21.8	20.4	19.9	18.8	17.5	20.5	21.4	222.5	236.3	210.0
	10	16.4	16.9	15.4	13.8	16.8	15.4	14.9	13.8	12.5	15.5	16.4	167.5	181.3	155.0

3rd 10-day period (21-31/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.1	62.7	52.5
Precipitation - Reference Evapotranspiration	-63.1	48.4	-48.9
Number of Rainy Days	0.0	2.0	0.9
Number of Dry Days	17.0	35.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

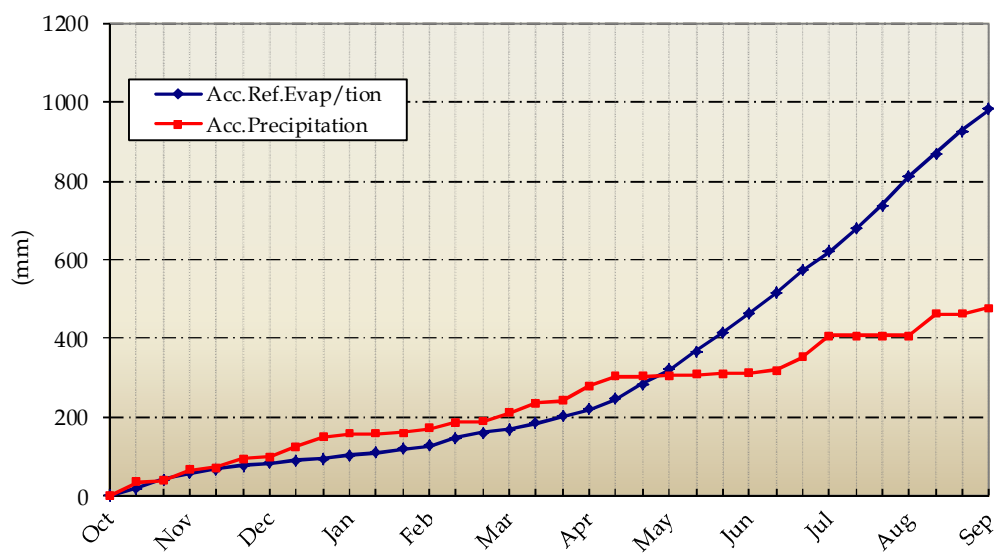


Larisa

3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.6	29.8	28.8	30.5	31.8	31.6	31.5	33.4	33.6	35.6	34.2	31.9	34.1	31.3
	Min	22.7	19.0	18.0	19.0	17.7	16.8	15.1	13.8	13.7	14.8	17.8	17.1	19.6	16.4
Relative Humidity	Max	78	100	100	100	98	88	77	79	80	72	71	86	82	-
	Min	38	30	41	37	29	20	25	19	14	18	26	27	27	-
Soil Temperature at 10 cm	06 UTC	28.4	28.4	27.2	27.0	26.8	26.6	26.4	26.2	26.4	26.4	26.8	27.0	-	25.5
	12 UTC	28.4	28.5	27.4	26.8	26.8	26.4	26.0	26.2	26.0	26.2	26.8	26.9	-	27.7
Sunshine Duration		9.1	7.6	9.5	11.0	10.2	10.4	10.9	10.8	11.0	10.8	10.6	10.2	9.6	9.7
Precipitation			15.0	0.6									15.6	0.3	8.3
Evaporation		7.8	21.2	2.4	7.2	9.0	8.4	2.6	9.6	8.8	9.9	8.4	95.3	116.7	85.2
Growing Degrees	5	21.7	19.4	18.4	19.8	19.8	19.2	18.3	18.6	18.7	20.2	21.0	214.9	240.4	207.5
	10	16.7	14.4	13.4	14.8	14.8	14.2	13.3	13.6	13.7	15.2	16.0	159.9	185.4	152.5

3rd 10-day period (21-31/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.4	62.9	54.4
Precipitation - Reference Evapotranspiration	-39.8	-62.6	-46.1
Number of Rainy Days	2.0	1.0	1.6
Number of Dry Days	13.0	21.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

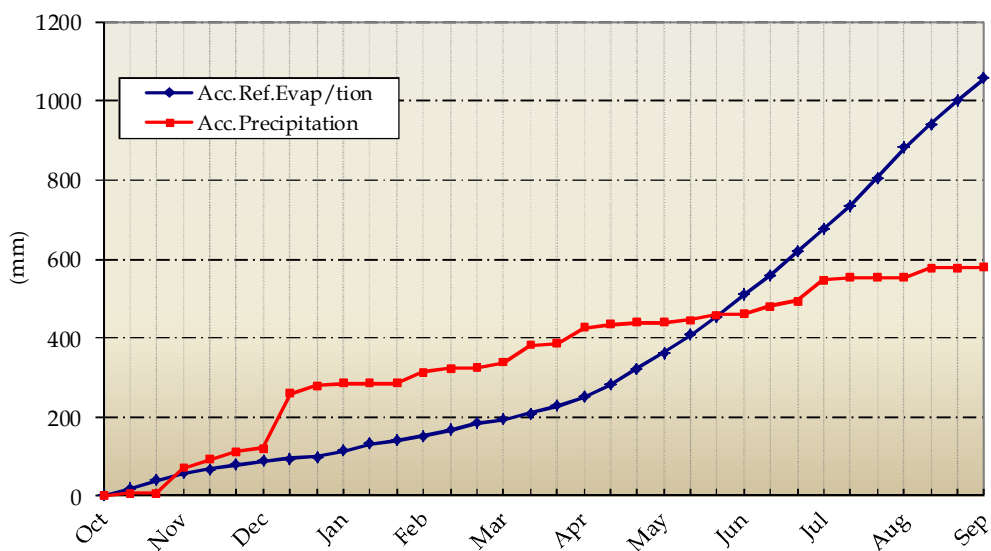


Mikra

3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	27.0	29.2	29.6	31.1	31.9	31.6	32.0	33.6	34.2	34.0	31.2	32.4	29.9
	Min	20.8	20.0	17.0	18.8	19.3	20.0	18.2	17.4	17.0	16.7	20.0	18.7	20.6	17.9
Relative Humidity	Max	91	88	91	87	80	68	67	65	71	65	66	76	80	-
	Min	53	51	32	39	30	21	28	25	19	30	27	32	34	-
Soil Temperature at 10 cm	06 UTC	28.4	26.4	25.1	26.4	27.4	27.4	26.8	26.6	26.8	26.6	27.6	26.9	28.0	25.1
	12 UTC	29.4	29.2	29.2	30.6	31.3	31.0	30.8	30.8	31.2	31.2	31.8	30.6	32.4	29.4
Sunshine Duration		5.8	7.3	11.7	11.5	11.6	9.6	11.8	11.7	11.7	11.3	11.4	10.5	10.4	9.2
Precipitation		1.4	0.7										2.1	0.9	10.5
Evaporation		5.4	4.4	8.2	7.3	8.0	7.3	11.4	7.6	10.0	8.3	9.8	87.7	119.4	84.9
Growing Degrees	5	19.7	18.5	18.1	19.2	20.2	21.0	19.9	19.7	20.3	20.5	22.0	219.0	236.2	208.0
	10	14.7	13.5	13.1	14.2	15.2	16.0	14.9	14.7	15.3	15.5	17.0	164.0	181.2	153.0

3rd 10-day period (21-31/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.1	57.2	53.4
Precipitation - Reference Evapotranspiration	-55.0	-56.3	-42.9
Number of Rainy Days	2.0	1.0	1.6
Number of Dry Days	13.0	21.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

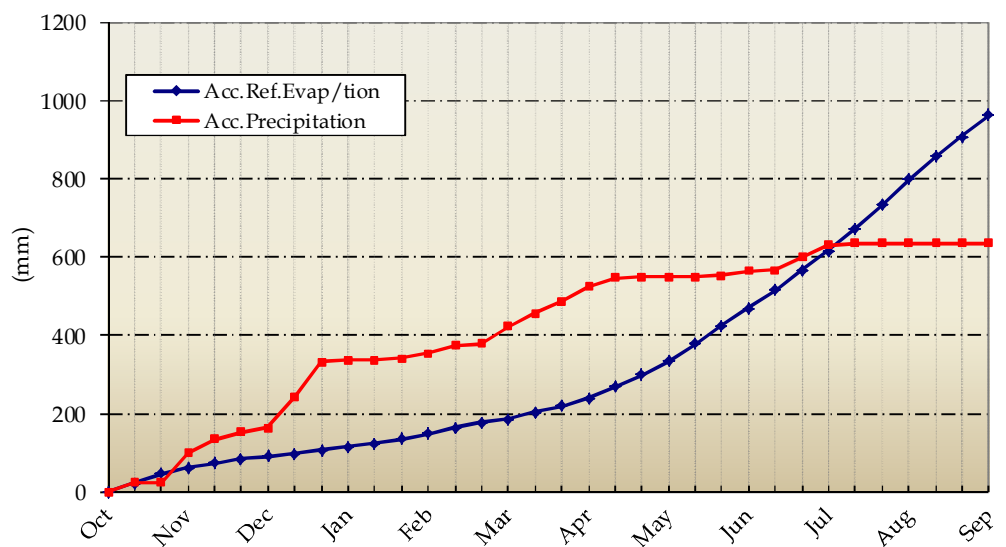




3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.3	29.2	28.4	28.8	29.2	29.6	28.6	30.7	31.5	32.4	32.2	30.2	33.4	30.9
	Min	20.8	20.6	20.8	17.8	18.1	18.6	19.8	18.2	17.8	20.4	22.4	19.6	18.4	17.4
Relative Humidity	Max	78	82	91	82	74	55	61	60	51	47	60	67	69	-
	Min	36	43	43	37	27	22	21	17	16	25	19	28	28	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.1	9.6	6.9	12.0	12.0	11.9	13.0	12.3	12.0	11.8	11.8	11.1	-	-
Precipitation			0.1	1.1									1.2	-	5.9
Evaporation		6.0	5.5	3.0	21.5	8.0	11.0	9.5	11.0	12.0	10.0	11.0	108.5	-	-
Growing Degrees	5	21.1	19.9	19.6	18.3	18.7	19.1	19.2	19.5	19.7	21.4	22.3	218.6	-	-
	10	16.1	14.9	14.6	13.3	13.7	14.1	14.2	14.5	14.7	16.4	17.3	163.6	-	-

3rd 10-day period (21-31/08/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.1	-
Precipitation - Reference Evapotranspiration	-53.9	0.0
Number of Rainy Days	2.0	-
Number of Dry Days	51.0	-

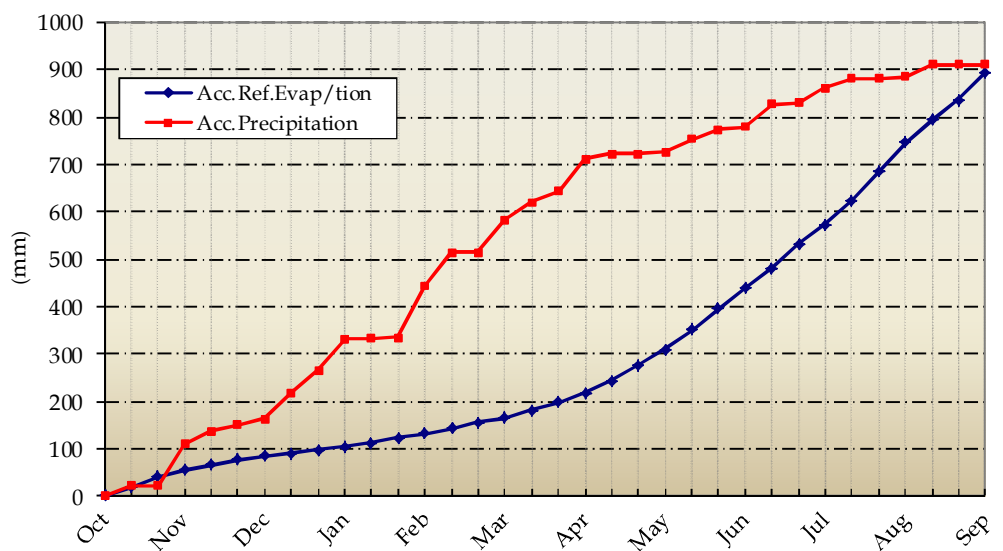
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.7	29.8	27.9	28.5	31.1	31.1	31.2	31.8	33.4	33.4	32.8	31.2	33.8	29.3
	Min	14.6	15.1	14.1	13.3	13.8	14.8	17.5	14.5	10.2	21.4	21.2	15.5	14.6	13.3
Relative Humidity	Max	96	92	100	97	86	79	51	67	67	45	81	78	77	-
	Min	23	30	29	31	25	23	15	12	12	20	19	22	20	-
Soil Temperature at 10 cm	06 UTC	25.0	-	-	24.0	23.6	24.4	24.6	24.0	-	25.2	25.6	24.6	26.8	23.4
	12 UTC	-	-	-	28.6	28.8	28.8	28.6	29.0	-	-	29.6	28.9	32.4	26.2
Sunshine Duration		-	-	11.6	8.0	11.7	11.6	11.7	11.7	11.7	11.5	11.5	11.2	9.3	9.5
Precipitation														47.6	5.3
Evaporation		7.4	-	-	5.4	6.6	9.5	9.0	-	-	13.3	8.9	-	-	54.7
Growing Degrees	5	18.2	17.5	16.0	15.9	17.5	18.0	19.4	18.2	16.8	22.4	22.0	201.6	211.2	179.5
	10	13.2	12.5	11.0	10.9	12.5	13.0	14.4	13.2	11.8	17.4	17.0	146.6	156.2	124.5

3rd 10-day period (21-31/08/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.7	-	47.4
Precipitation - Reference Evapotranspiration	-58.7	-	-42.1
Number of Rainy Days	0.0	1.0	1.2
Number of Dry Days	16.0	23.0	-

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<sub>n</sub> 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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Issue Editors :

Papakrivou Anastasia

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