



AGROMETEOROLOGICAL BULLETIN

July 2012
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



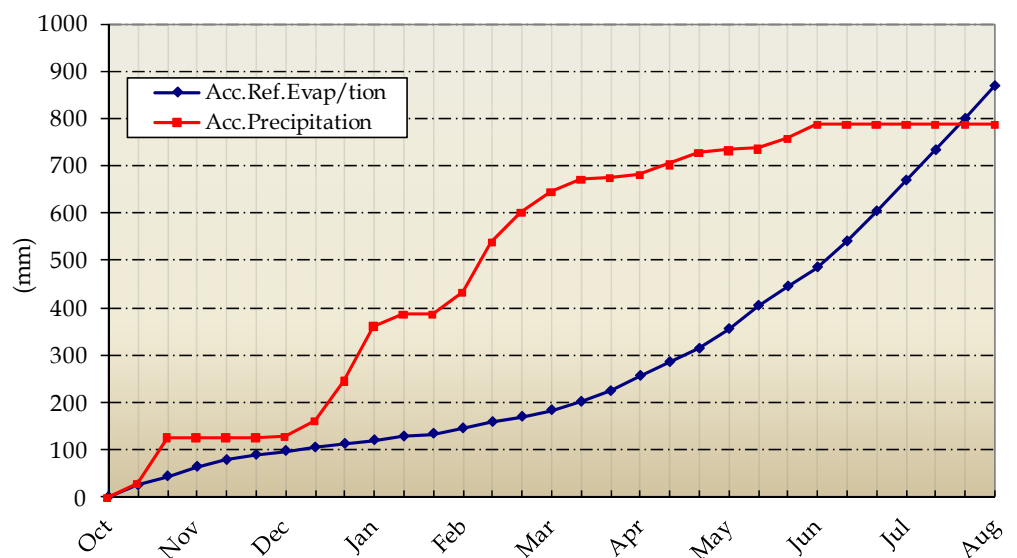
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3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	38.0	38.0	37.4	35.0	32.6	34.0	37.0	38.0	39.2	38.6	38.8	37.0	33.0	33.5
	Min	20.0	19.5	18.4	20.2	20.6	20.0	20.0	22.0	22.2	21.2	22.6	20.6	17.9	17.4
Relative Humidity	Max	65	70	56	67	77	73	74	70	68	65	64	68	91	-
	Min	27	31	23	33	38	38	41	27	28	28	22	31	32	-
Soil Temperature at 10 cm	06 UTC	33.0	32.0	32.8	33.0	33.0	32.6	32.8	33.4	33.6	33.6	34.0	33.1	30.6	28.0
	12 UTC	38.2	38.0	37.0	37.4	37.4	37.2	36.2	37.6	38.6	38.0	38.6	37.7	35.4	34.0
Sunshine Duration		13.4	13.3	13.0	11.4	13.2	13.5	12.6	12.5	12.7	12.4	8.9	12.4	12.7	11.6
Precipitation															3.2
Evaporation		11.6	8.8	12.6	10.0	9.2	10.1	8.9	9.6	10.7	11.3	11.4	114.2	102.5	91.3
Growing Degrees	5	24.0	23.8	22.9	22.6	21.6	22.0	23.5	25.0	25.7	24.9	25.7	261.7	224.9	224.3
	10	19.0	18.8	17.9	17.6	16.6	17.0	18.5	20.0	20.7	19.9	20.7	206.7	169.9	169.4

3rd 10-day period (21-31/07/2012)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	69.2	62.7	61.1
Precipitation - Reference Evapotranspiration	-69.2	-62.7	-57.9
Number of Rainy Days	0.0	0.0	0.7
Number of Dry Days	62.0	44.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

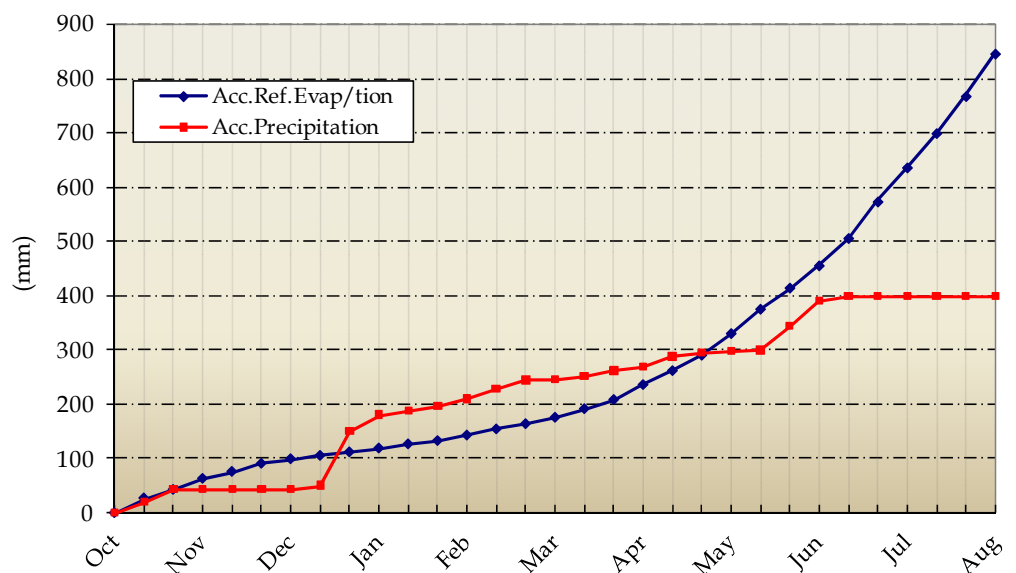


Alexandroupoli

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.0	36.4	35.0	36.8	36.4	37.2	37.6	37.8	38.8	35.0	35.0	36.5	33.1	30.8
	Min	20.8	19.2	23.0	26.0	23.0	24.0	24.0	24.8	24.0	21.2	27.0	23.4	21.6	18.1
Relative Humidity	Max	73	67	60	53	76	76	65	51	59	56	67	64	77	-
	Min	29	19	32	34	40	35	14	19	15	27	24	26	36	-
Soil Temperature at 10 cm	06 UTC	30.0	30.0	30.4	31.0	31.4	31.4	30.6	31.4	31.0	31.0	30.8	30.8	28.5	24.5
	12 UTC	33.4	33.0	33.2	34.0	34.0	34.2	34.2	34.2	34.6	34.2	34.2	33.9	30.8	28.7
Sunshine Duration		12.6	12.8	12.5	12.2	11.7	11.8	12.7	11.7	12.5	11.3	10.7	12.0	12.4	10.3
Precipitation															5.5
Evaporation		10.9	9.0	16.9	5.6	14.0	10.0	15.6	11.7	13.7	6.0	11.0	124.4	99.0	104.4
Growing Degrees	5	23.4	22.8	24.0	26.4	24.7	25.6	25.8	26.3	26.4	23.1	26.0	274.5	246.1	213.8
	10	18.4	17.8	19.0	21.4	19.7	20.6	20.8	21.3	21.4	18.1	21.0	219.5	191.1	158.8

3rd 10-day period (21-31/07/2012)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	78.3	66.0
Precipitation - Reference Evapotranspiration	-78.3	-66.0
Number of Rainy Days	0.0	1.1
Number of Dry Days	55.0	27.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

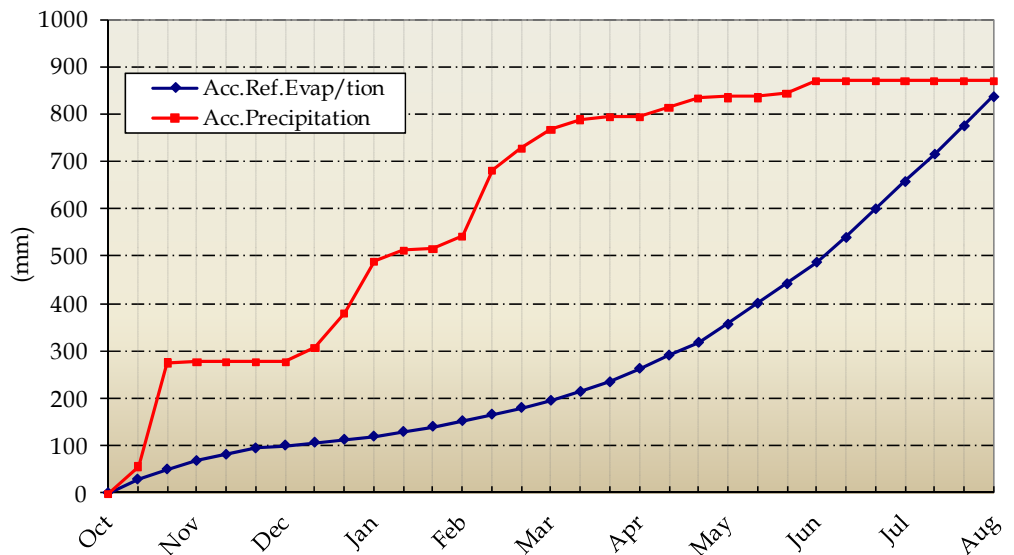


Andravida

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	35.1	33.5	31.4	28.8	29.5	30.8	33.8	34.0	34.8	35.8	32.7	29.9	30.6
	Min	19.9	20.8	20.1	21.4	20.5	21.6	19.9	22.0	21.8	21.3	21.8	21.0	19.5	18.5
Relative Humidity	Max	88	86	84	86	86	86	87	87	81	80	89	85	87	-
	Min	37	29	30	50	47	49	48	35	35	29	27	38	41	-
Soil Temperature at 10 cm	06 UTC	29.8	29.4	29.6	29.8	29.6	29.7	29.2	30.4	30.6	30.4	31.0	30.0	27.5	27.4
	12 UTC	37.4	37.6	37.4	37.2	37.4	36.4	36.6	37.8	37.8	38.4	37.8	37.4	33.7	31.9
Sunshine Duration		12.1	12.3	12.1	12.1	11.7	12.5	11.8	11.8	11.8	12.5	11.3	12.0	12.0	11.8
Precipitation															2.9
Evaporation		9.7	7.3	8.0	6.4	7.8	9.1	7.5	8.5	11.8	7.5	6.8	90.4	94.4	81.3
Growing Degrees	5	21.3	23.0	21.8	21.4	19.7	20.6	20.4	22.9	22.9	23.1	23.8	240.6	216.7	215.1
	10	16.3	18.0	16.8	16.4	14.7	15.6	15.4	17.9	17.9	18.1	18.8	185.6	161.7	160.1

3rd 10-day period (21-31/07/2012)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.6	61.9
Precipitation - Reference Evapotranspiration	-61.6	-61.9
Number of Rainy Days	0.0	0.0
Number of Dry Days	63.0	46.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

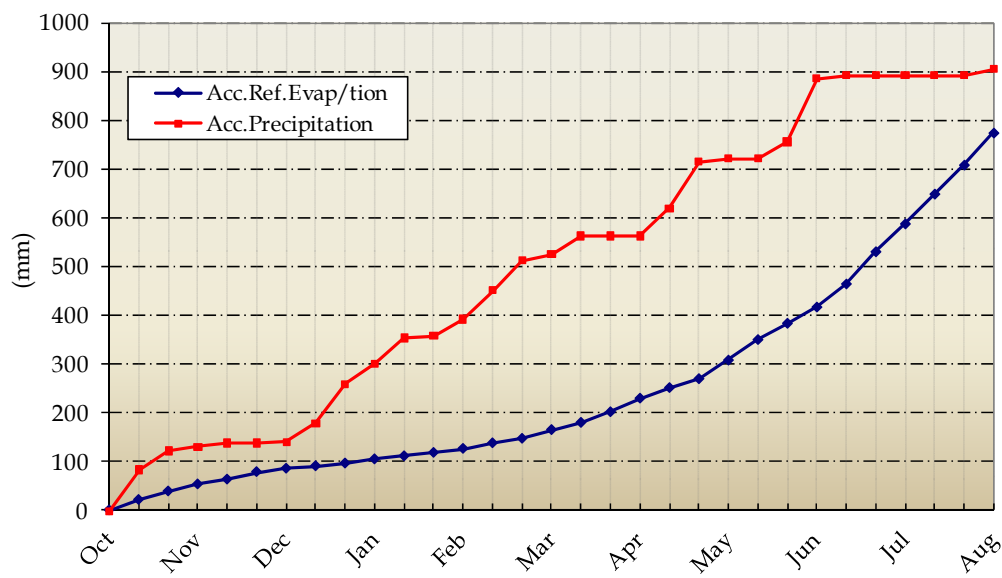


Ioannina

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.4	37.0	35.0	33.4	31.0	33.4	35.0	35.2	37.2	38.0	35.6	35.2	-	31.1
	Min	16.0	18.0	20.5	26.6	20.5	17.4	19.0	21.0	19.0	18.5	22.0	19.9	-	15.7
Relative Humidity	Max	76	73	39	58	85	70	85	75	53	74	89	71	-	-
	Min	29	19	20	26	32	26	33	34	22	21	26	26	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	23.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	27.8
Sunshine Duration		13.0	12.0	13.0	9.9	13.5	10.0	12.0	9.0	11.9	11.4	6.1	11.1	-	10.1
Precipitation												11.5	11.5	-	10.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	85.3
Growing Degrees	5	21.2	22.5	22.8	25.0	20.8	20.4	22.0	23.1	23.1	23.3	23.8	247.9	-	197.9
	10	16.2	17.5	17.8	20.0	15.8	15.4	17.0	18.1	18.1	18.3	18.8	192.9	-	144.4

3rd 10-day period (21-31/07/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.0	-	55.8
Precipitation - Reference Evapotranspiration	-54.5	-	-45.5
Number of Rainy Days	1.0	-	1.5
Number of Dry Days	55.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

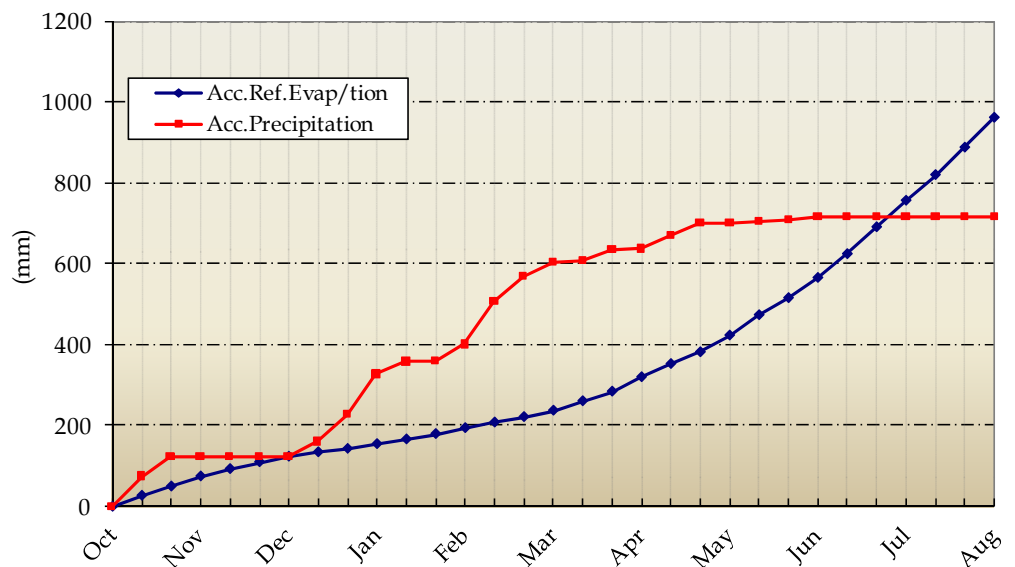


Kalamata

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.4	32.8	31.4	33.0	32.9	33.7	33.2	34.5	37.9	36.4	37.5	34.2	32.1	31.5
	Min	21.2	21.0	18.6	18.9	20.4	22.2	23.9	20.1	22.8	21.6	21.2	21.1	19.1	18.2
Relative Humidity	Max	84	89	89	92	87	69	86	89	71	87	76	84	86	-
	Min	32	36	43	39	31	33	38	32	22	29	25	33	33	-
Soil Temperature at 10 cm	06 UTC	27.4	27.4	27.6	28.0	28.0	27.4	27.6	28.0	28.0	28.2	28.2	27.8	25.9	26.0
	12 UTC	29.6	29.8	30.0	29.6	29.4	29.2	29.8	30.0	30.4	30.4	30.4	29.9	28.7	30.3
Sunshine Duration		11.9	12.1	11.7	11.8	12.4	12.4	11.5	12.0	12.2	11.7	11.4	11.9	12.5	11.2
Precipitation															0.9
Evaporation		5.8	7.2	3.6	4.9	10.5	12.2	5.4	8.6	11.0	5.4	14.0	88.6	84.1	90.1
Growing Degrees	5	22.3	21.9	20.0	21.0	21.7	23.0	23.6	22.3	25.4	24.0	24.4	249.3	226.7	218.3
	10	17.3	16.9	15.0	16.0	16.7	18.0	18.6	17.3	20.4	19.0	19.4	194.3	171.7	163.3

3rd 10-day period (21-31/07/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	73.8	71.3	62.2
Precipitation - Reference Evapotranspiration	-73.8	-71.3	-61.3
Number of Rainy Days	0.0	0.0	0.4
Number of Dry Days	68.0	46.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

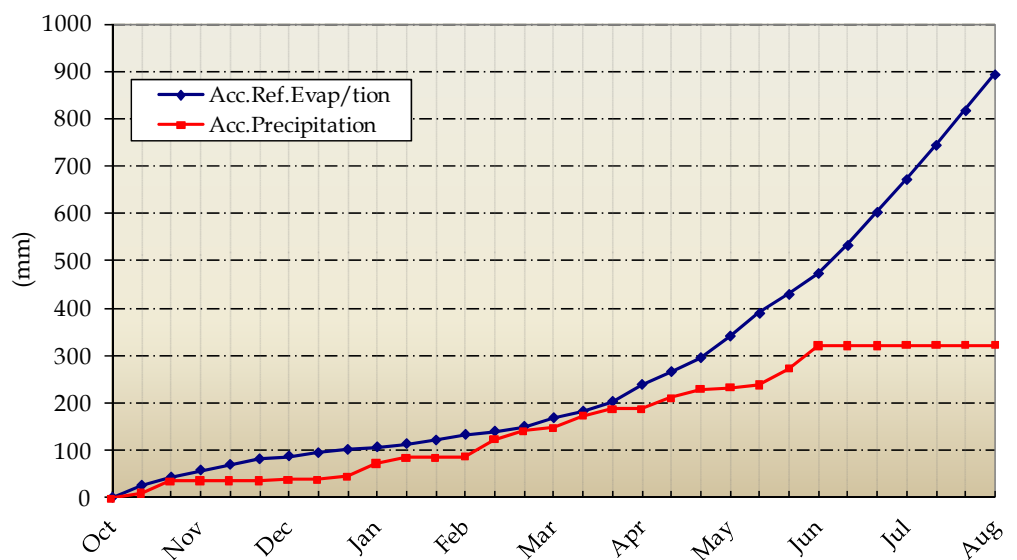


Larisa

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.8	35.6	35.0	33.6	36.6	37.2	37.0	37.4	38.8	38.4	38.0	36.9	34.6	33.2
	Min	18.6	17.2	20.0	24.0	22.6	21.8	26.6	22.0	22.0	22.4	24.2	21.9	19.8	18.1
Relative Humidity	Max	65	63	63	78	79	67	67	78	61	59	52	67	65	-
	Min	13	20	20	33	25	26	23	22	20	20	16	22	21	-
Soil Temperature at 10 cm	06 UTC	28.6	28.8	29.0	29.6	30.0	30.0	30.4	30.2	30.2	30.2	30.4	29.8	28.4	26.9
	12 UTC	30.8	31.4	31.6	31.2	33.0	31.6	31.8	32.0	32.0	32.0	32.0	31.8	32.6	29.2
Sunshine Duration		12.7	12.5	12.7	12.0	12.2	12.1	9.0	11.7	11.9	12.0	10.7	11.8	12.0	10.7
Precipitation															4.4
Evaporation		13.0	11.9	13.0	7.1	13.5	9.9	9.4	10.3	10.0	10.0	14.5	122.6	119.4	104.1
Growing Degrees	5	23.2	21.4	22.5	23.8	24.6	24.5	26.8	24.7	25.4	25.4	26.1	268.4	244.6	227.1
	10	18.2	16.4	17.5	18.8	19.6	19.5	21.8	19.7	20.4	20.4	21.1	213.4	189.6	172.1

3rd 10-day period (21-31/07/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	76.1	75.4	66.2
Precipitation - Reference Evapotranspiration	-76.1	-75.4	-61.8
Number of Rainy Days	0.0	0.0	1.1
Number of Dry Days	36.0	45.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

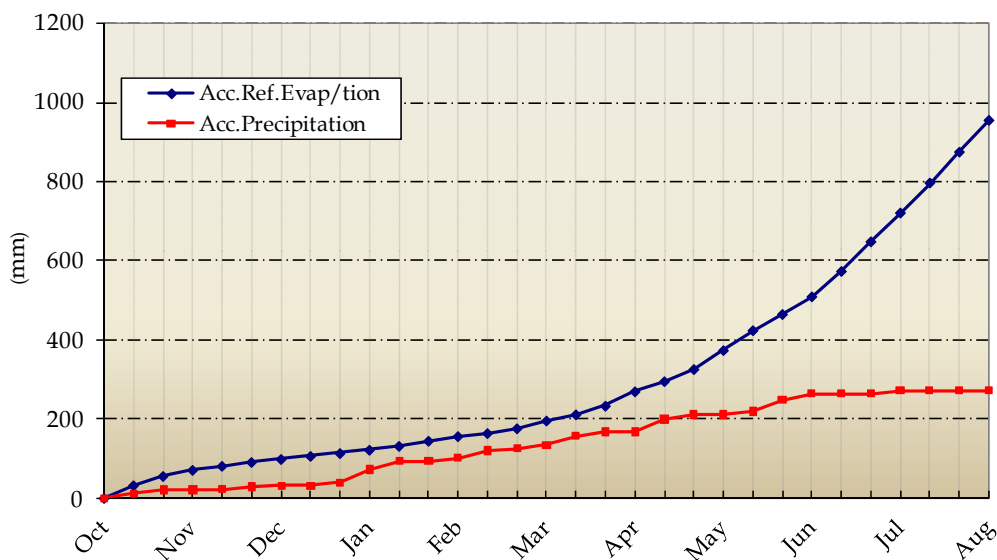


Mikra

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.5	33.0	35.0	32.2	34.0	35.5	35.6	34.6	37.0	36.6	35.2	34.9	-	31.8
	Min	20.8	20.8	24.0	21.6	24.4	24.8	27.8	24.6	23.4	26.0	24.0	23.8	-	19.4
Relative Humidity	Max	65	66	63	72	75	80	60	65	59	63	70	67	-	-
	Min	24	36	22	38	40	33	29	33	25	20	28	30	-	-
Soil Temperature at 10 cm	06 UTC	30.6	30.6	31.2	31.0	31.6	32.0	33.0	33.0	32.0	32.8	32.2	31.8	-	26.8
	12 UTC	35.0	35.0	35.0	34.4	34.8	35.0	35.4	35.4	35.8	36.8	35.4	35.3	-	31.6
Sunshine Duration		13.1	12.4	12.9	10.7	12.0	12.0	9.8	12.6	12.0	11.9	12.3	12.0	-	10.5
Precipitation												0.0	0.0	-	9.4
Evaporation		9.8	10.1	11.8	13.0	8.8	12.4	14.2	15.8	14.9	17.0	12.9	140.7	-	101.0
Growing Degrees	5	23.2	21.9	24.5	21.9	24.2	25.2	26.7	24.6	25.2	26.3	24.6	268.2	-	226.2
	10	18.2	16.9	19.5	16.9	19.2	20.2	21.7	19.6	20.2	21.3	19.6	213.2	-	171.2

3rd 10-day period (21-31/07/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	80.0	-	65.4
Precipitation - Reference Evapotranspiration	-80.0	-	-56.0
Number of Rainy Days	0.0	-	1.5
Number of Dry Days	36.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

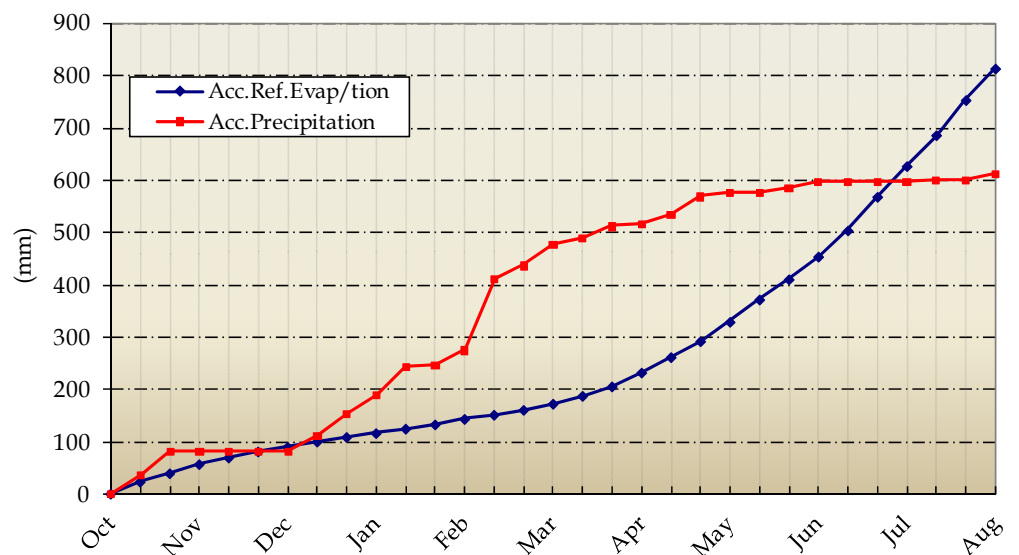


Tripoli

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.5	37.3	34.0	33.4	31.7	34.2	34.1	33.8	37.0	36.5	35.5	34.9	32.3	30.5
	Min	13.2	17.8	15.9	17.2	15.2	13.5	17.2	16.7	17.1	17.5	16.4	16.2	13.8	14.6
Relative Humidity	Max	87	66	45	70	72	79	64	88	75	66	89	73	79	-
	Min	24	9	18	17	22	18	25	21	20	16	29	20	23	-
Soil Temperature at 10 cm	06 UTC	27.6	29.0	28.2	28.4	28.4	27.8	29.0	28.2	27.8	28.8	28.4	28.3	27.9	25.8
	12 UTC	35.0	-	34.6	35.2	35.2	35.0	34.4	34.2	34.4	35.0	34.8	34.8	34.2	28.5
Sunshine Duration		13.1	11.6	13.2	13.0	13.1	13.1	7.8	7.9	12.2	10.5	9.2	11.3	12.7	10.6
Precipitation			0.0									12.0	12.0		4.2
Evaporation		8.0	-	9.8	7.9	8.0	8.0	9.8	5.4	9.4	8.2	6.0	-	91.0	71.9
Growing Degrees	5	19.9	22.6	20.0	20.3	18.5	18.9	20.7	20.3	22.1	22.0	21.0	225.9	198.6	192.7
	10	14.9	17.6	15.0	15.3	13.5	13.9	15.7	15.3	17.1	17.0	16.0	170.9	143.6	137.7

3rd 10-day period (21-31/07/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.3	60.3	58.9
Precipitation - Reference Evapotranspiration	-48.3	-60.3	-54.7
Number of Rainy Days	1.0	0.0	1.2
Number of Dry Days	20.0	45.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

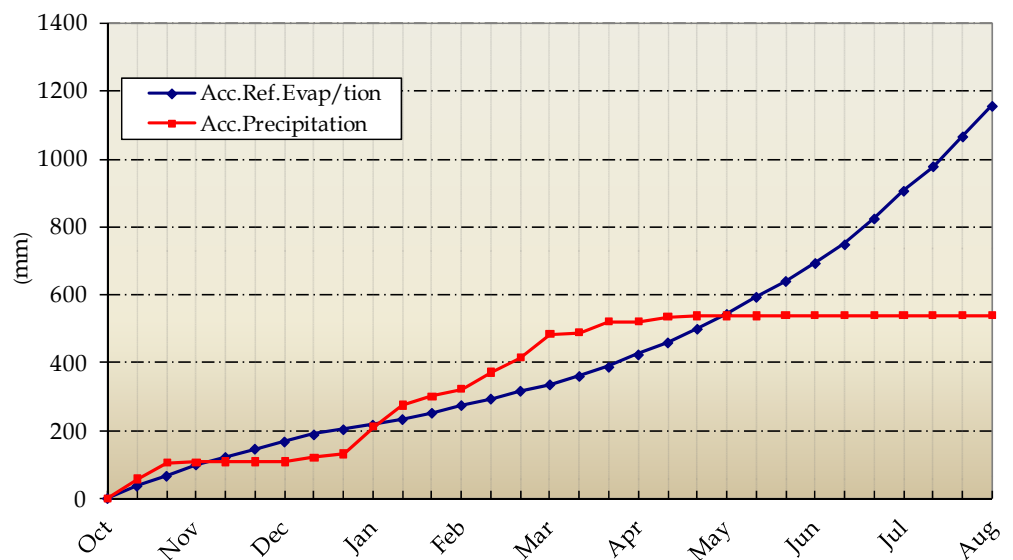


Tympaki

3rd 10-day period (21-31/07/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.0	37.8	35.0	30.8	36.6	29.6	31.4	36.6	37.8	38.8	37.2	35.1	30.7	31.8
	Min	20.8	20.6	22.6	22.0	22.6	19.2	20.6	23.4	23.0	24.4	23.6	22.1	20.9	20.7
Relative Humidity	Max	75	61	99	99	100	100	88	82	61	39	59	78	82	-
	Min	30	11	29	52	12	48	41	13	11	9	14	25	27	-
Soil Temperature at 10 cm	06 UTC	30.2	31.0	30.8	31.2	31.8	30.4	31.2	32.2	32.6	33.0	33.0	31.6	31.5	30.9
	12 UTC	35.0	36.4	36.6	37.6	37.0	36.8	37.4	37.4	38.0	37.6	37.4	37.0	36.5	35.3
Sunshine Duration		13.4	13.1	13.1	12.6	13.0	13.0	12.9	13.0	12.7	12.8	13.2	13.0	12.5	12.1
Precipitation															0.1
Evaporation		17.0	15.0	14.1	9.1	12.6	14.7	4.4	12.3	19.0	19.7	15.6	153.5	106.4	132.3
Growing Degrees	5	22.9	24.2	23.8	21.4	24.6	19.4	21.0	25.0	25.4	26.6	25.4	259.7	228.8	233.6
	10	17.9	19.2	18.8	16.4	19.6	14.4	16.0	20.0	20.4	21.6	20.4	204.7	173.8	178.6

3rd 10-day period (21-31/07/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	90.2	74.1	74.6
Precipitation - Reference Evapotranspiration	-90.2	-74.1	-74.5
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	75.0	64.0	-

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.

Mesurements 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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**ΕΘΝΙΚΗ
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HELLENIC NATIONAL METEOROLOGICAL SERVICE

Division of Climatology-Applications

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