



AGROMETEOROLOGICAL BULLETIN

*July 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



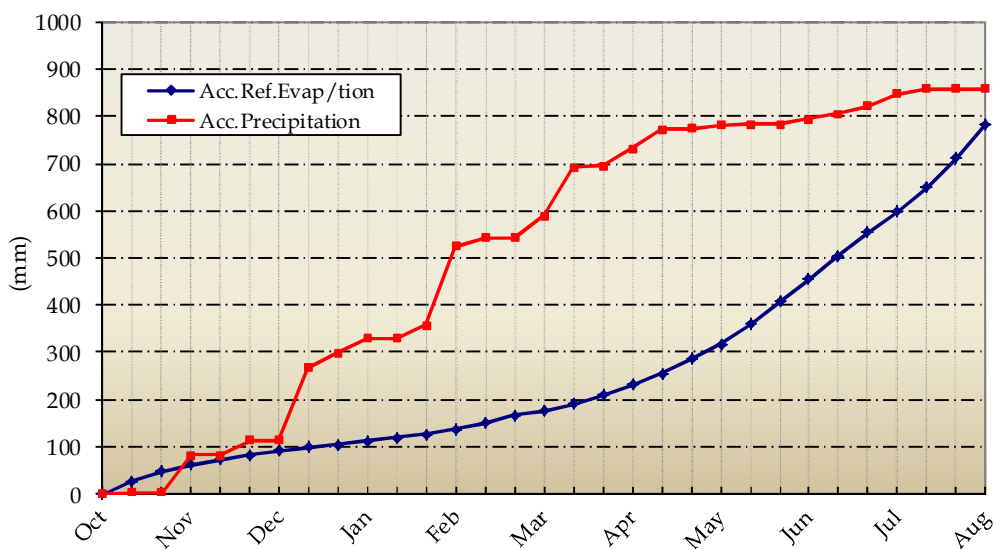
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3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.0	34.2	33.6	33.4	31.0	30.6	34.8	35.6	38.4	39.0	37.4	34.9	32.1	30.8
	Min	19.4	22.2	21.6	19.8	18.6	20.0	20.2	20.4	21.6	24.0	19.4	20.7	20.4	18.1
Relative Humidity	Max	73	65	73	91	91	91	79	84	82	82	88	82	87	-
	Min	30	29	26	38	50	52	34	29	24	21	26	33	40	-
Soil Temperature at 10 cm	06 UTC	27.2	28.4	27.6	27.4	27.8	28.0	28.2	28.5	29.3	29.2	29.6	28.3	27.5	24.5
	12 UTC	33.0	33.2	33.6	33.2	33.2	32.8	33.4	34.2	35.2	35.0	34.2	33.7	32.6	28.7
Sunshine Duration		12.8	13.4	13.3	13.2	13.0	12.8	12.9	12.4	12.6	12.8	12.8	12.9	11.3	10.3
Precipitation														1.5	5.5
Evaporation		11.3	15.8	10.7	10.2	10.0	7.7	12.7	13.6	5.2	19.3	14.5	131.0	88.4	104.4
Growing Degrees	5	22.7	23.2	22.6	21.6	19.8	20.3	22.5	23.0	25.0	26.5	23.4	250.6	233.4	213.8
	10	17.7	18.2	17.6	16.6	14.8	15.3	17.5	18.0	20.0	21.5	18.4	195.6	178.4	158.8

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	71.1	60.6	64.5
Precipitation - Reference Evapotranspiration	-71.1	-59.1	-59.0
Number of Rainy Days	0.0	1.0	1.1
Number of Dry Days	21.0	10.0	-

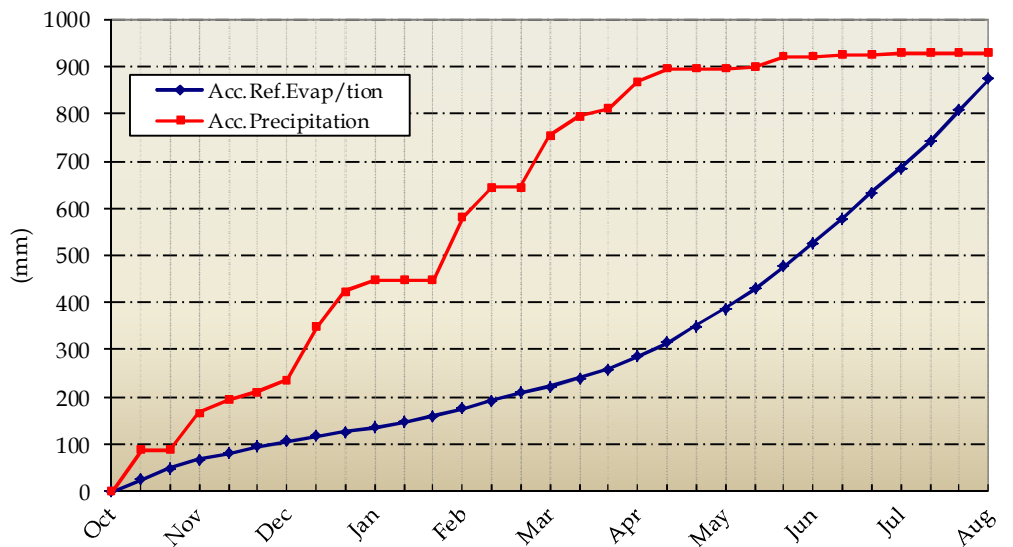
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.5	37.7	34.6	32.2	32.0	31.6	32.2	32.0	33.0	33.2	34.8	33.7	30.8	30.6
	Min	20.1	25.2	19.6	22.2	22.5	21.9	23.0	21.6	21.0	22.6	23.0	22.1	20.2	18.5
Relative Humidity	Max	79	63	86	85	85	86	87	89	89	88	87	84	85	-
	Min	22	19	22	16	41	50	46	51	45	45	35	36	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	28.5	27.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	33.7	31.9
Sunshine Duration		12.5	12.4	13.1	12.5	11.8	12.7	12.8	12.7	12.5	12.7	12.6	12.6	12.5	11.8
Precipitation														0.4	2.9
Evaporation		12.0	11.0	9.7	6.3	6.0	10.6	6.2	2.7	4.5	7.4	15.6	92.0	75.5	81.3
Growing Degrees	5	23.8	26.5	22.1	22.2	22.3	21.8	22.6	21.8	22.0	22.9	23.9	251.8	225.2	215.1
	10	18.8	21.5	17.1	17.2	17.3	16.8	17.6	16.8	17.0	17.9	18.9	196.8	170.2	160.1

3rd 10-day period (21-31/07/2015)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	66.4	61.7	59.5
Precipitation - Reference Evapotranspiration	-66.4	-61.3	-56.6
Number of Rainy Days	0.0	1.0	0.3
Number of Dry Days	34.0	8.0	-

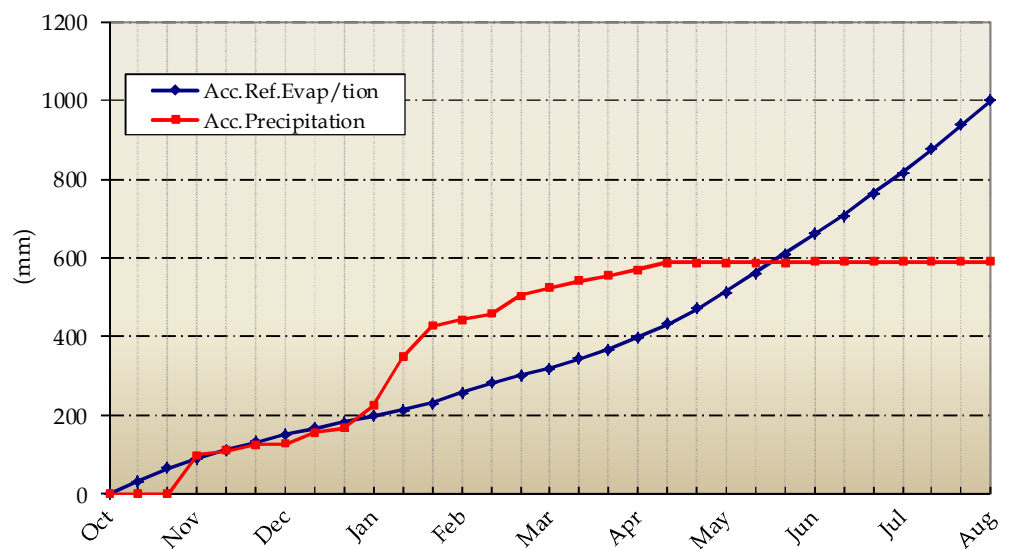
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	28.2	28.2	29.0	29.2	30.0	30.0	31.0	31.2	33.0	33.2	30.1	30.3	28.6
	Min	20.4	21.0	22.4	20.2	20.0	21.8	22.0	22.6	22.4	22.4	24.2	21.8	22.4	22.4
Relative Humidity	Max	76	73	87	85	88	89	91	89	88	78	87	85	84	-
	Min	46	58	64	62	49	55	59	48	55	40	38	52	56	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.7	12.4	12.5	12.3	12.5	12.0	12.7	12.5	12.4	12.7	12.5	12.5	12.8	11.6
Precipitation															0.4
Evaporation		7.5	6.3	6.8	6.2	3.4	3.8	6.0	7.1	2.7	7.4	6.7	63.9	69.1	102.1
Growing Degrees	5	19.5	19.6	20.3	19.6	19.6	20.9	21.0	21.8	21.8	22.7	23.7	230.5	234.8	225.3
	10	14.5	14.6	15.3	14.6	14.6	15.9	16.0	16.8	16.8	17.7	18.7	175.5	179.8	170.3

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.4	65.8	-
Precipitation - Reference Evapotranspiration	-61.4	-65.8	0.4
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	63.0	56.0	-

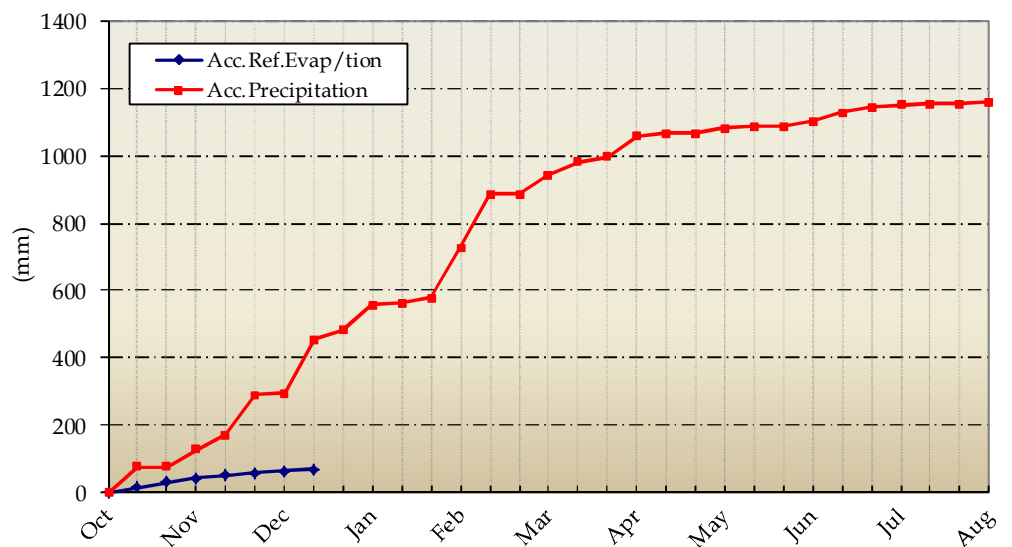
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.1	34.2	34.4	35.1	33.3	34.8	35.9	36.0	36.5	37.1	38.5	35.7	30.3	31.1
	Min	17.8	19.5	19.4	15.7	15.5	14.7	16.4	15.6	17.1	17.6	17.7	17.0	16.6	15.7
Relative Humidity	Max	92	87	87	97	99	100	100	100	95	98	91	95	86	-
	Min	22	25	16	17	26	27	18	18	23	23	11	21	34	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	23.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	27.8
Sunshine Duration		10.1	11.6	11.7	10.6	8.8	11.9	11.9	12.2	12.2	11.3	12.0	11.3	9.3	10.1
Precipitation					0.5	0.8	0.0	5.6					6.9	37.2	10.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	85.3
Growing Degrees	5	22.5	21.9	21.9	20.4	19.4	19.8	21.2	20.8	21.8	22.4	23.1	235.0	203.1	197.9
	10	17.5	16.9	16.9	15.4	14.4	14.8	16.2	15.8	16.8	17.4	18.1	180.0	148.1	144.4

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	47.3	55.8
Precipitation - Reference Evapotranspiration	-	-10.1	-45.5
Number of Rainy Days	3.0	2.0	1.5
Number of Dry Days	13.0	4.0	-

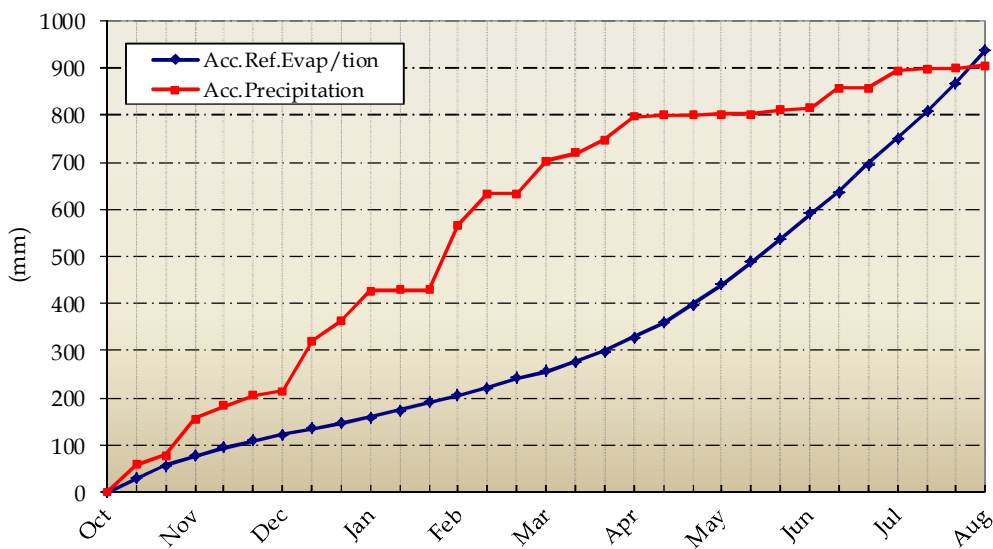
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	39.0	38.5	31.6	30.9	31.2	33.3	33.7	34.0	33.0	35.1	37.3	34.3	31.9	31.5
	Min	17.5	24.2	20.2	20.2	18.9	21.2	22.3	22.0	21.6	22.0	23.7	21.3	19.2	18.2
Relative Humidity	Max	93	97	93	92	92	90	88	91	88	87	86	91	90	-
	Min	15	15	49	47	49	41	26	34	32	32	26	33	38	-
Soil Temperature at 10 cm	06 UTC	25.0	25.6	25.8	25.6	26.0	26.4	26.4	26.4	26.6	26.8	25.8	26.0	25.8	26.0
	12 UTC	25.6	26.0	27.4	26.8	26.8	27.6	27.8	27.8	28.0	28.2	28.2	27.3	28.2	30.3
Sunshine Duration		12.7	12.6	12.1	12.3	12.0	9.4	12.6	12.6	12.6	12.5	12.2	12.1	11.6	11.2
Precipitation							5.6						5.6	17.2	0.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	90.1
Growing Degrees	5	23.3	26.4	20.9	20.6	20.1	22.3	23.0	23.0	22.3	23.6	25.5	250.7	225.8	218.3
	10	18.3	21.4	15.9	15.6	15.1	17.3	18.0	18.0	17.3	18.6	20.5	195.7	170.8	163.3

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	69.6	65.4	62.2
Precipitation - Reference Evapotranspiration	-64.0	-48.2	-61.3
Number of Rainy Days	1.0	1.0	0.4
Number of Dry Days	14.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

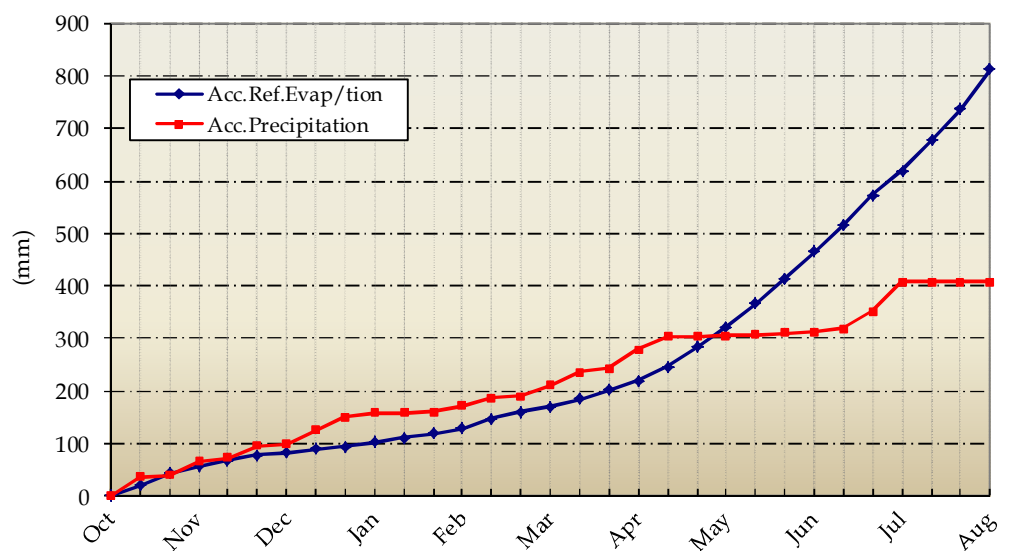


Larisa

3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	37.4	34.2	33.2	34.8	36.8	37.1	38.0	38.7	38.6	39.6	37.3	36.9	34.8	33.2
	Min	20.0	24.6	19.0	17.2	18.9	18.8	21.6	20.7	22.7	21.4	23.6	20.8	20.2	18.1
Relative Humidity	Max	74	60	67	70	82	74	80	74	84	71	98	76	79	-
	Min	19	19	18	24	19	21	19	22	24	18	23	21	26	-
Soil Temperature at 10 cm	06 UTC	28.6	29.6	28.8	28.6	28.8	29.2	29.4	29.8	30.0	30.2	30.6	29.4	-	26.9
	12 UTC	28.6	29.4	28.6	28.6	28.8	29.0	29.6	29.6	30.0	30.4	31.6	29.5	-	29.2
Sunshine Duration		12.0	11.2	12.2	12.3	10.5	10.7	11.4	12.0	11.7	11.4	9.9	11.4	10.6	10.7
Precipitation														2.5	4.4
Evaporation		15.2	16.6	8.2	10.0	15.1	10.4	15.0	11.1	12.1	14.3	10.4	138.4	133.2	104.1
Growing Degrees	5	23.7	24.4	21.1	21.0	22.9	23.0	24.8	24.7	25.7	25.5	25.5	262.1	247.2	227.1
	10	18.7	19.4	16.1	16.0	17.9	18.0	19.8	19.7	20.7	20.5	20.5	207.1	192.2	172.1

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	75.8	71.2	66.2
Precipitation - Reference Evapotranspiration	-75.8	-68.7	-61.8
Number of Rainy Days	0.0	1.0	1.1
Number of Dry Days	31.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

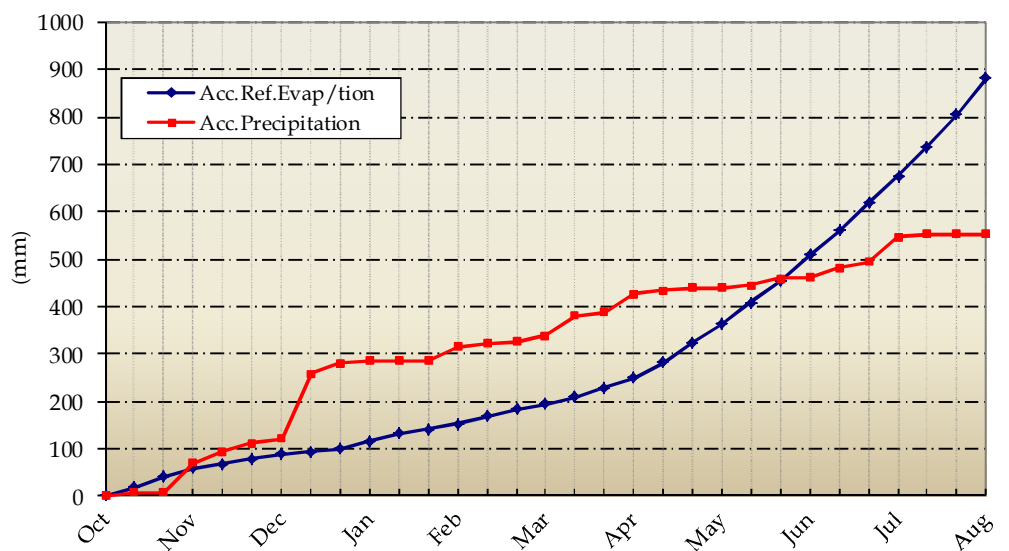


Mikra

3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	38.4	35.0	33.0	32.5	33.7	35.4	37.2	37.0	37.6	38.6	37.2	36.0	32.4	31.8
	Min	22.2	27.0	22.8	19.3	20.6	21.0	22.0	22.4	22.2	23.0	23.3	22.3	21.0	19.4
Relative Humidity	Max	74	57	57	78	81	70	79	72	67	65	67	70	85	-
	Min	20	24	23	33	26	26	22	24	19	19	14	23	36	-
Soil Temperature at 10 cm	06 UTC	30.0	31.3	29.8	29.0	29.2	29.0	30.0	30.3	30.4	31.0	31.2	30.1	27.8	26.8
	12 UTC	34.4	34.3	34.2	33.4	32.4	33.4	34.1	34.6	34.6	34.8	34.4	34.1	32.4	31.6
Sunshine Duration		12.8	10.9	13.2	13.0	10.1	13.3	12.2	12.7	12.7	11.6	8.0	11.9	11.1	10.5
Precipitation												0.0	0.0	0.7	9.4
Evaporation		16.0	10.1	11.7	9.1	9.2	9.9	10.8	10.0	7.5	14.5	11.2	120.0	97.4	101.0
Growing Degrees	5	25.3	26.0	22.9	20.9	22.2	23.2	24.6	24.7	24.9	25.8	25.3	265.7	238.5	226.2
	10	20.3	21.0	17.9	15.9	17.2	18.2	19.6	19.7	19.9	20.8	20.3	210.7	183.5	171.2

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	76.6	66.2	65.4
Precipitation - Reference Evapotranspiration	-76.6	-65.5	-56.0
Number of Rainy Days	0.0	2.0	1.5
Number of Dry Days	21.0	5.0	-

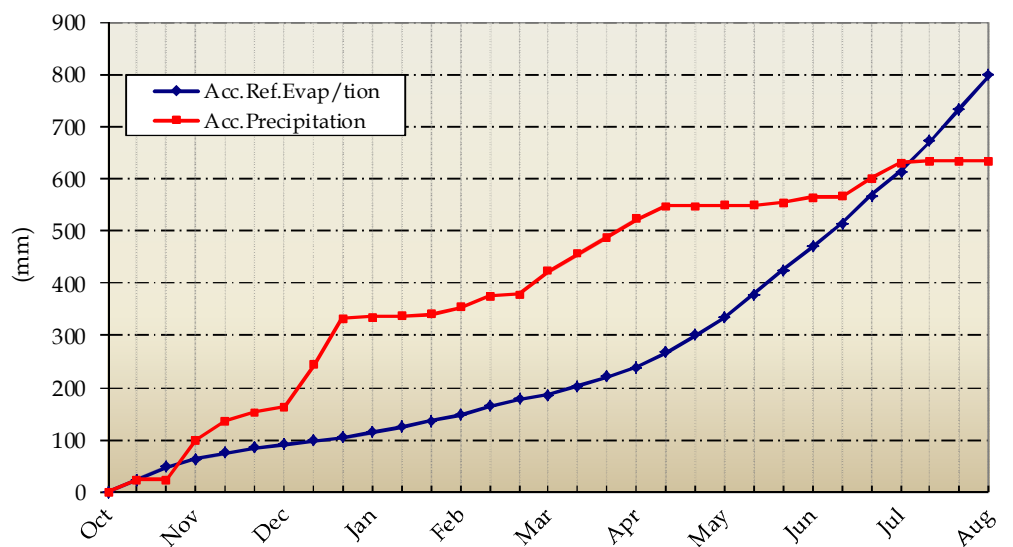
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.8	31.4	30.7	33.1	34.4	35.0	36.4	36.8	37.5	37.7	36.5	34.9	34.0	32.0
	Min	19.0	26.0	19.8	18.6	18.8	21.4	22.0	23.8	23.8	23.1	23.4	21.8	20.4	18.6
Relative Humidity	Max	53	64	66	65	73	72	75	67	64	62	66	66	71	-
	Min	24	24	26	28	17	27	25	23	20	19	23	23	26	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.0	13.1	13.3	12.8	12.4	12.3	12.5	12.4	12.3	12.7	12.0	12.6	-	-
Precipitation														-	1.3
Evaporation		13.5	10.8	8.2	15.0	11.0	1.0	9.0	11.5	11.0	11.5	9.5	112.0	-	-
Growing Degrees	5	21.9	23.7	20.3	20.9	21.6	23.2	24.2	25.3	25.7	25.4	25.0	257.0	-	-
	10	16.9	18.7	15.3	15.9	16.6	18.2	19.2	20.3	20.7	20.4	20.0	202.0	-	-

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.1	-	-
Precipitation - Reference Evapotranspiration	-66.1	-	0.0
Number of Rainy Days	0.0	-	-
Number of Dry Days	30.0	-	-

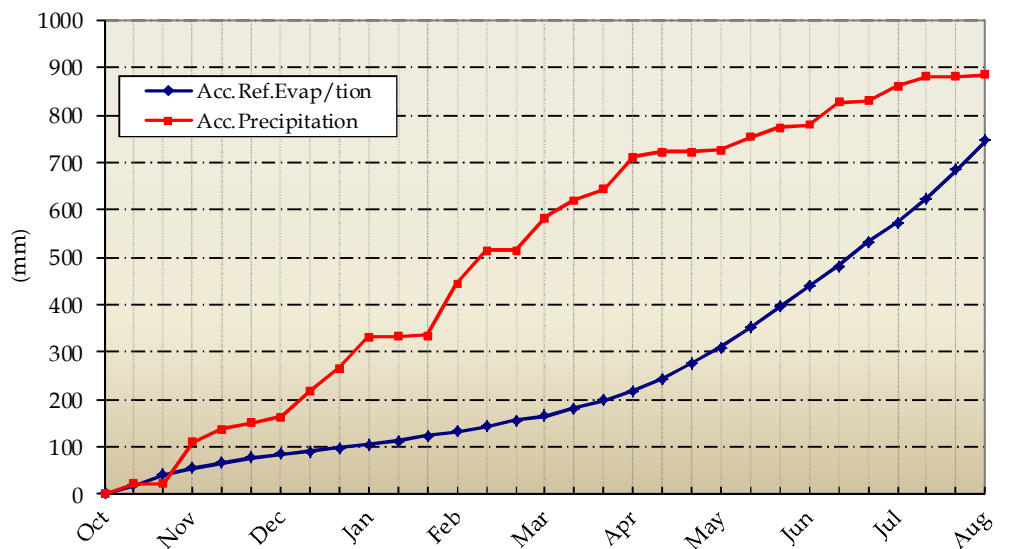
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/07/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.1	33.6	31.8	32.6	32.1	32.8	33.2	35.7	36.4	36.5	35.7	34.0	30.7	30.5
	Min	16.6	24.4	13.9	14.8	16.1	15.2	16.3	16.0	18.5	18.3	18.4	17.1	15.1	14.6
Relative Humidity	Max	73	58	75	87	95	91	98	99	93	86	100	87	93	-
	Min	22	20	23	22	14	24	24	20	21	22	26	22	23	-
Soil Temperature at 10 cm	06 UTC	26.8	28.0	26.4	26.8	26.8	27.2	26.8	27.4	28.6	28.8	29.0	27.5	24.9	25.8
	12 UTC	31.6	32.4	32.0	32.6	28.8	28.8	36.4	29.0	-	34.4	33.2	31.9	31.8	28.5
Sunshine Duration		13.2	13.0	12.7	10.0	13.0	8.7	11.8	12.5	11.9	11.7	6.8	11.4	10.5	10.6
Precipitation												4.7	4.7	4.2	4.2
Evaporation		13.6	10.7	8.5	6.0	8.9	7.4	8.4	9.3	7.1	8.6	8.8	97.3	81.6	71.9
Growing Degrees	5	20.4	24.0	17.9	18.7	19.1	19.0	19.8	20.9	22.5	22.4	22.1	226.5	-	192.7
	10	15.4	19.0	12.9	13.7	14.1	14.0	14.8	15.9	17.5	17.4	17.1	171.5	-	137.7

3rd 10-day period (21-31/07/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.2	54.9	58.9
Precipitation - Reference Evapotranspiration	-57.5	-50.7	-54.7
Number of Rainy Days	1.0	1.0	1.2
Number of Dry Days	29.0	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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