



AGROMETEOROLOGICAL BULLETIN

July 2014
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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Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

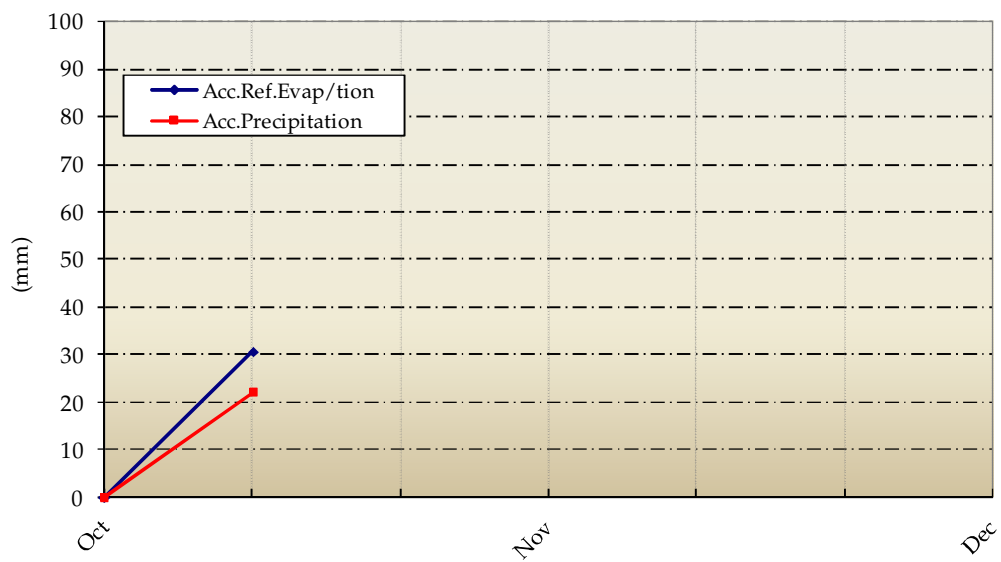
Agrinio

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max														
	Min														
Relative Humidity	Max														
	Min														
Soil Temperature at 10 cm	06 UTC														
	12 UTC														
Sunshine Duration															
Precipitation															
Evaporation															
Growing Degrees	5														
	10														

3rd 10-day period (21-31/07/2014)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration		
Precipitation - Reference Evapotranspiration		
Number of Rainy Days		
Number of Dry Days		

This station is not operated

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

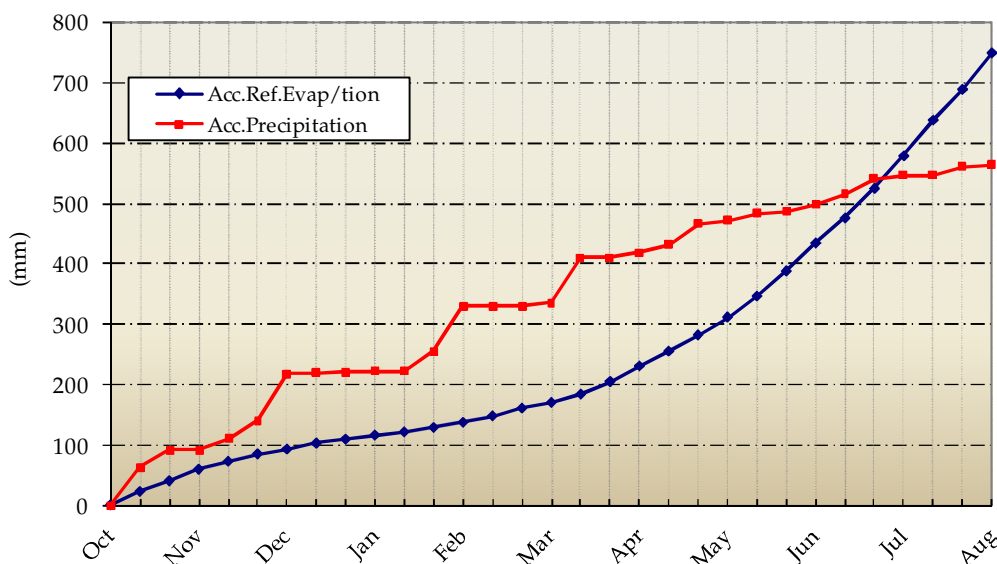


Alexandroupoli

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	33.0	30.6	28.0	32.2	33.2	33.2	33.0	32.4	33.2	33.6	32.1	32.5	30.8
	Min	18.0	19.0	18.8	21.4	19.6	20.0	19.8	22.4	22.4	21.6	21.0	20.4	19.2	18.1
Relative Humidity	Max	84	96	83	86	87	83	91	80	91	91	85	87	70	-
	Min	44	30	44	56	36	33	40	40	49	35	35	40	32	-
Soil Temperature at 10 cm	06 UTC	25.6	26.8	27.2	27.8	26.6	27.4	28.2	28.6	29.0	27.4	28.4	27.5	27.8	24.5
	12 UTC	31.8	32.6	32.2	31.0	31.8	32.6	33.8	33.2	34.2	33.0	32.2	32.6	31.5	28.7
Sunshine Duration		12.9	12.6	12.2	6.4	12.1	11.6	11.6	12.3	9.8	11.8	10.8	11.3	11.7	10.3
Precipitation					0.0					1.5			1.5		5.5
Evaporation		7.8	11.0	8.3	4.1	7.6	10.2	8.5	8.1	7.3	7.9	7.6	88.4	101.4	104.4
Growing Degrees	5	19.2	21.0	19.7	19.7	20.9	21.6	21.5	22.7	22.4	22.4	22.3	233.4	229.8	213.8
	10	14.2	16.0	14.7	14.7	15.9	16.6	16.5	17.7	17.4	17.4	17.3	178.4	174.8	158.8

3rd 10-day period (21-31/07/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.6	63.7	64.5
Precipitation - Reference Evapotranspiration	-59.1	-63.7	-59.0
Number of Rainy Days	1.0	0.0	1.1
Number of Dry Days	10.0	30.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

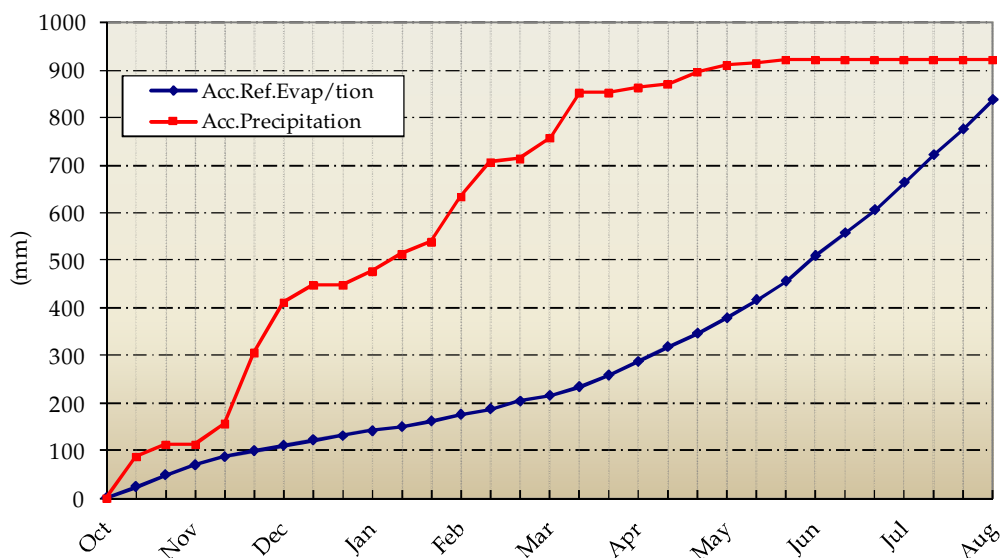


Andravida

3rd 10-day period (21-31/07/2014)		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	29.8	29.8	29.0	30.0	30.0	32.4	31.2	30.0	32.8	30.8	30.8	32.0	30.6
	Min	19.5	21.0	21.6	19.4	22.0	21.0	20.2	19.3	20.0	18.6	19.4	20.2	19.9	18.5
Relative Humidity	Max	85	87	86	85	85	88	86	87	87	88	75	85	87	-
	Min	37	48	43	48	48	49	29	44	49	33	44	43	37	-
Soil Temperature at 10 cm	06 UTC	28.6	29.0	29.5	27.6	28.4	28.2	28.6	28.4	28.6	28.4	28.2	28.5	28.9	27.4
	12 UTC	34.4	34.2	32.0	32.0	33.2	33.0	34.6	34.8	35.0	33.8	34.0	33.7	35.1	31.9
Sunshine Duration		13.1	12.8	10.0	13.2	12.9	13.3	12.5	13.0	13.0	11.0	12.8	12.5	12.4	11.8
Precipitation					0.4								0.4		2.9
Evaporation		8.1	6.6	5.3	3.0	4.0	8.6	7.4	7.2	6.2	9.7	9.4	75.5	97.0	81.3
Growing Degrees	5	21.1	20.4	20.7	19.2	21.0	20.5	21.3	20.3	20.0	20.7	20.1	225.2	230.2	215.1
	10	16.1	15.4	15.7	14.2	16.0	15.5	16.3	15.3	15.0	15.7	15.1	170.2	175.2	160.1

3rd 10-day period (21-31/07/2014)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	61.7	63.2	59.5
Precipitation - Reference Evapotranspiration	-61.3	-63.2	-56.6
Number of Rainy Days	1.0	0.0	0.3
Number of Dry Days	8.0	51.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

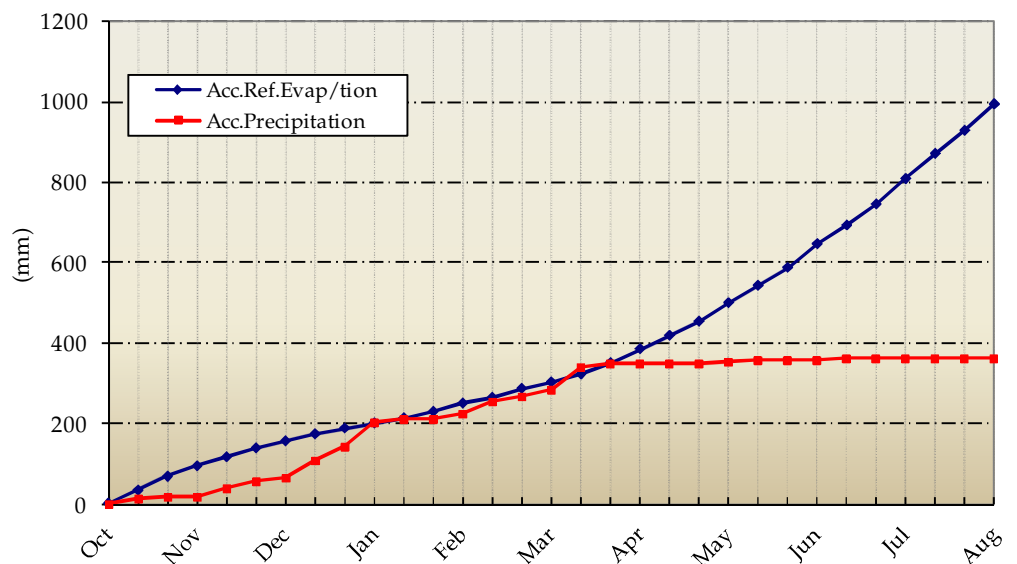


Iraklio

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.5	31.8	28.6	29.0	28.6	30.0	32.0	32.0	29.0	30.8	32.0	30.3	29.5	28.6
	Min	25.2	21.0	22.4	21.0	21.0	25.0	23.5	22.4	20.2	21.2	23.4	22.4	23.4	22.4
Relative Humidity	Max	75	82	83	87	91	78	74	83	91	91	86	84	70	-
	Min	59	53	64	54	63	59	53	48	59	54	46	56	47	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.5	12.6	13.0	13.3	12.9	13.0	12.6	12.6	12.8	12.6	12.5	12.8	12.6	11.6
Precipitation															0.4
Evaporation		9.4	5.3	4.8	7.2	7.1	1.1	11.7	6.6	4.9	5.0	6.0	69.1	85.6	102.1
Growing Degrees	5	22.4	21.4	20.5	20.0	19.8	22.5	22.8	22.2	19.6	21.0	22.7	234.8	236.2	225.3
	10	17.4	16.4	15.5	15.0	14.8	17.5	17.8	17.2	14.6	16.0	17.7	179.8	181.2	170.3

3rd 10-day period (21-31/07/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	65.8	73.5	-
Precipitation - Reference Evapotranspiration	-65.8	-73.5	0.4
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	56.0	74.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

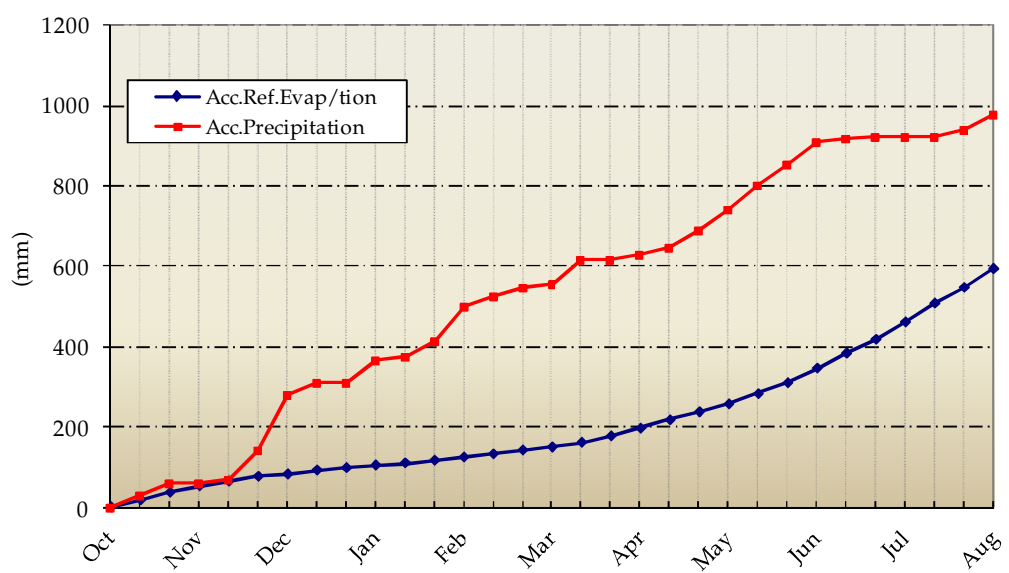


Ioannina

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.5	31.3	25.8	29.9	29.1	32.7	31.0	28.8	31.4	31.8	27.8	30.3	34.2	31.1
	Min	15.0	18.8	17.0	15.0	16.0	15.3	16.2	22.0	17.0	14.0	16.8	16.6	15.5	15.7
Relative Humidity	Max	100	71	100	100	95	100	80	64	90	77	65	86	82	-
	Min	20	31	47	34	47	32	31	43	34	23	36	34	22	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	23.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	27.8
Sunshine Duration		12.3	11.1	2.9	9.8	7.7	10.6	10.7	9.8	12.0	7.9	7.2	9.3	10.5	10.1
Precipitation				15.4		21.8			0.0				37.2	4.9	10.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	85.3
Growing Degrees	5	19.3	20.1	16.4	17.5	17.6	19.0	18.6	20.4	19.2	17.9	17.3	203.1	218.1	197.9
	10	14.3	15.1	11.4	12.5	12.6	14.0	13.6	15.4	14.2	12.9	12.3	148.1	163.1	144.4

3rd 10-day period (21-31/07/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.3	57.5	55.8
Precipitation - Reference Evapotranspiration	-10.1	-52.6	-45.5
Number of Rainy Days	2.0	4.0	1.5
Number of Dry Days	4.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

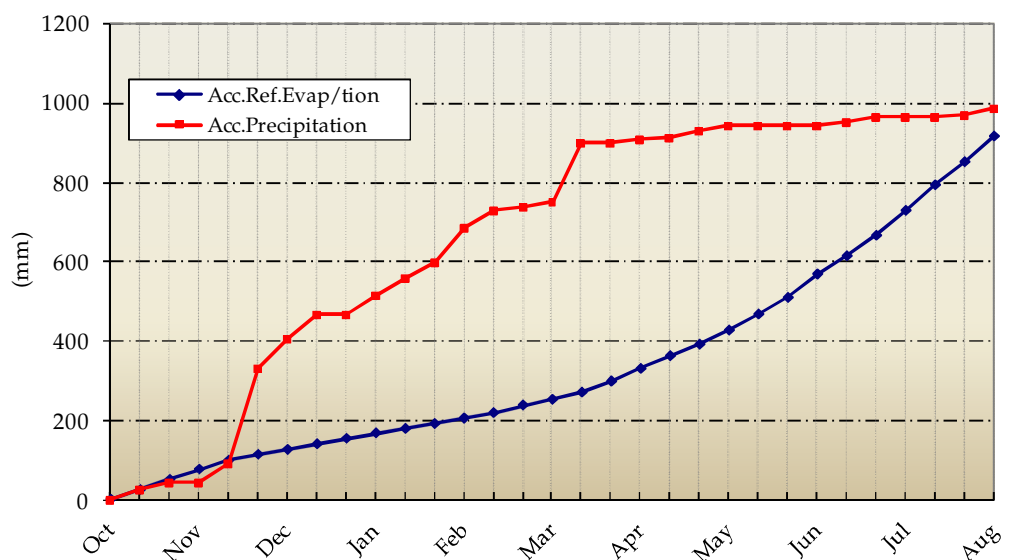


Kalamata

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.4	32.8	31.1	31.1	31.9	31.0	31.7	30.6	33.1	33.7	31.4	31.9	33.6	31.5
	Min	18.7	19.4	18.5	18.1	20.5	20.6	19.1	17.6	20.4	19.9	18.0	19.2	19.5	18.2
Relative Humidity	Max	91	92	94	90	88	87	91	88	91	87	90	90	85	-
	Min	40	31	33	43	42	44	38	45	32	37	32	38	27	-
Soil Temperature at 10 cm	06 UTC	25.6	26.0	26.0	25.8	26.4	25.4	25.4	25.8	25.4	26.2	26.2	25.8	25.7	26.0
	12 UTC	28.0	28.0	28.2	27.8	28.8	27.6	28.0	28.0	29.6	28.4	28.0	28.2	28.7	30.3
Sunshine Duration		12.4	12.1	10.5	10.6	10.5	12.4	11.8	12.4	12.3	11.7	11.3	11.6	11.1	11.2
Precipitation						17.2							17.2	0.0	0.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	97.0	90.1
Growing Degrees	5	20.6	21.1	19.8	19.6	21.2	20.8	20.4	19.1	21.8	21.8	19.7	225.8	236.8	218.3
	10	15.6	16.1	14.8	14.6	16.2	15.8	15.4	14.1	16.8	16.8	14.7	170.8	181.8	163.3

3rd 10-day period (21-31/07/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	65.4	68.2	62.2
Precipitation - Reference Evapotranspiration	-48.2	-68.2	-61.3
Number of Rainy Days	1.0	0.0	0.4
Number of Dry Days	4.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

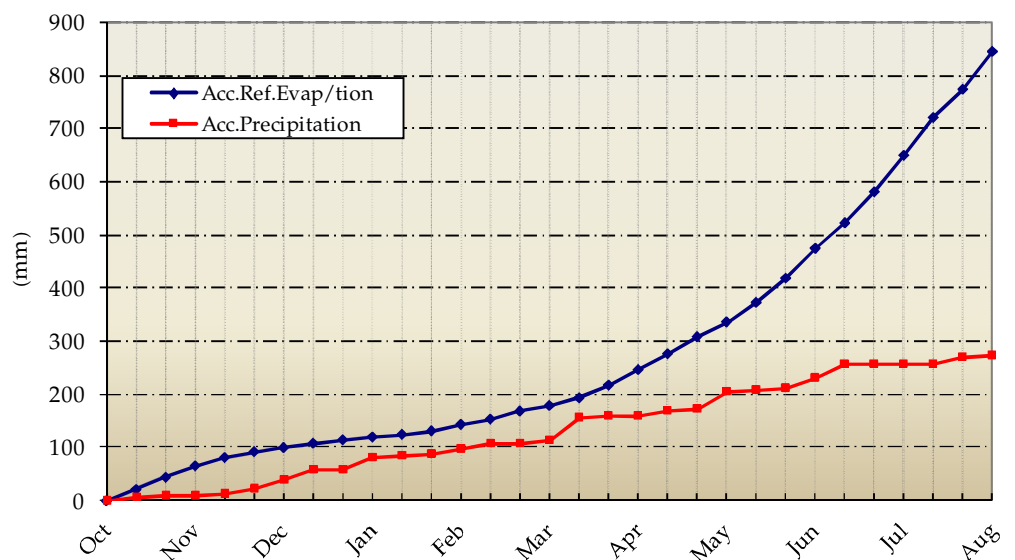


Larisa

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.3	34.8	32.7	33.8	33.0	34.0	34.9	36.6	36.1	35.2	35.1	34.8	34.7	33.2
	Min	19.4	20.9	19.2	17.5	20.4	18.7	20.6	19.9	20.2	21.4	23.6	20.2	18.5	18.1
Relative Humidity	Max	79	76	83	89	73	81	74	85	66	78	83	79	80	-
	Min	20	29	28	26	31	29	26	14	21	34	32	26	25	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	26.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	29.2
Sunshine Duration		12.2	11.1	7.7	11.4	7.2	10.5	11.6	12.1	12.1	10.7	10.3	10.6	11.1	10.7
Precipitation		2.5											2.5	10.9	4.4
Evaporation		17.0	15.4	7.7	6.9	12.0	11.6	12.9	12.0	14.1	12.5	11.1	133.2	112.3	104.1
Growing Degrees	5	22.9	22.9	21.0	20.7	21.7	21.4	22.8	23.3	23.2	23.3	24.4	247.2	237.5	227.1
	10	17.9	17.9	16.0	15.7	16.7	16.4	17.8	18.3	18.2	18.3	19.4	192.2	182.5	172.1

3rd 10-day period (21-31/07/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	71.2	66.1	66.2
Precipitation - Reference Evapotranspiration	-68.7	-55.2	-61.8
Number of Rainy Days	1.0	1.0	1.1
Number of Dry Days	5.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

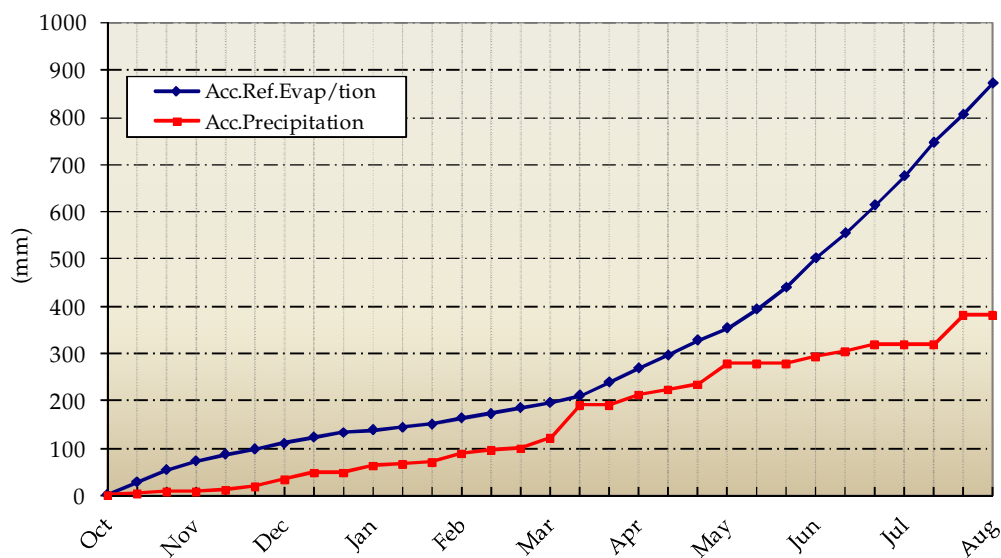


Mikra

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.0	30.3	29.8	31.6	32.3	32.6	33.6	32.4	33.6	32.8	34.3	32.4	33.4	31.8
	Min	20.9	21.0	19.7	18.6	20.4	20.9	21.2	20.7	21.8	22.0	23.4	21.0	20.4	19.4
Relative Humidity	Max	79	86	91	91	79	87	78	85	88	84	87	85	71	-
	Min	30	42	46	40	34	33	30	43	31	44	26	36	27	-
Soil Temperature at 10 cm	06 UTC	27.6	27.8	27.2	26.0	26.8	28.0	28.2	28.2	28.2	29.0	29.2	27.8	28.1	26.8
	12 UTC	32.0	32.0	31.8	30.8	32.4	32.4	32.4	32.4	33.4	33.4	33.4	32.4	33.1	31.6
Sunshine Duration		13.7	8.6	5.8	13.1	10.5	12.9	12.5	11.4	12.1	10.4	10.8	11.1	11.1	10.5
Precipitation			0.3	0.4									0.7	16.4	9.4
Evaporation		6.6	10.6	11.0	8.2	10.8	4.0	16.4	7.2	4.0	5.4	13.2	97.4	98.0	101.0
Growing Degrees	5	22.0	20.7	19.8	20.1	21.4	21.8	22.4	21.6	22.7	22.4	23.9	238.5	241.1	226.2
	10	17.0	15.7	14.8	15.1	16.4	16.8	17.4	16.6	17.7	17.4	18.9	183.5	186.1	171.2

3rd 10-day period (21-31/07/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	66.2	76.8	65.4
Precipitation - Reference Evapotranspiration	-65.5	-60.4	-56.0
Number of Rainy Days	2.0	1.0	1.5
Number of Dry Days	5.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

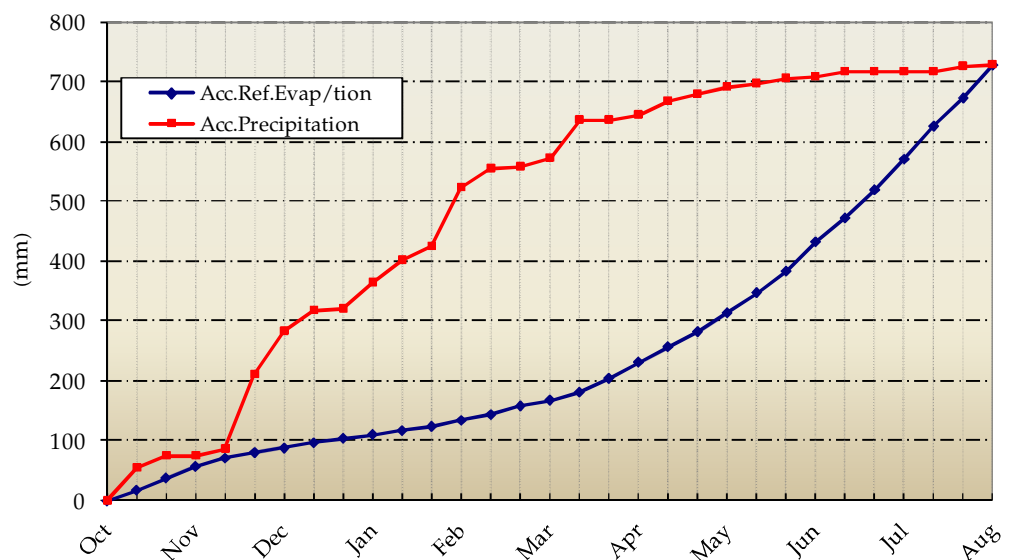


Tripoli

3rd 10-day period (21-31/07/2014)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.7	30.7	28.2	28.7	31.7	-	25.2	31.7	32.2	34.8	31.9	30.7	32.9	30.5
	Min	14.4	15.4	17.4	14.9	15.2	14.1	15.3	13.8	13.9	15.0	16.2	15.1	14.0	14.6
Relative Humidity	Max	97	95	81	93	99	99	96	93	93	94	83	93	65	-
	Min	26	17	31	29	26	30	19	18	21	21	13	23	21	-
Soil Temperature at 10 cm	06 UTC	22.6	24.4	25.4	25.4	25.4	22.8	23.4	24.8	25.6	26.6	27.4	24.9	25.3	25.8
	12 UTC	30.0	31.6	-	32.2	31.6	-	-	32.2	-	33.4	-	31.8	31.9	28.5
Sunshine Duration		8.6	12.0	12.2	8.5	6.6	6.7	11.5	12.5	12.5	11.6	12.3	10.5	10.2	10.6
Precipitation						4.2							4.2	0.5	4.2
Evaporation		5.5	10.7	2.5	13.0	4.2	4.5	9.4	8.7	6.6	7.0	9.5	81.6	78.3	71.9
Growing Degrees	5	18.1	18.1	17.8	16.8	18.5	-	15.3	17.8	18.1	19.9	19.1	-	203.3	192.7
	10	13.1	13.1	12.8	11.8	13.5	-	10.3	12.8	13.1	14.9	14.1	-	148.3	137.7

3rd 10-day period (21-31/07/2014)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.9	56.1
Precipitation - Reference Evapotranspiration	-50.7	-55.6
Number of Rainy Days	1.0	1.0
Number of Dry Days	5.0	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.

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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