



# AGROMETEOROLOGICAL BULLETIN

*June 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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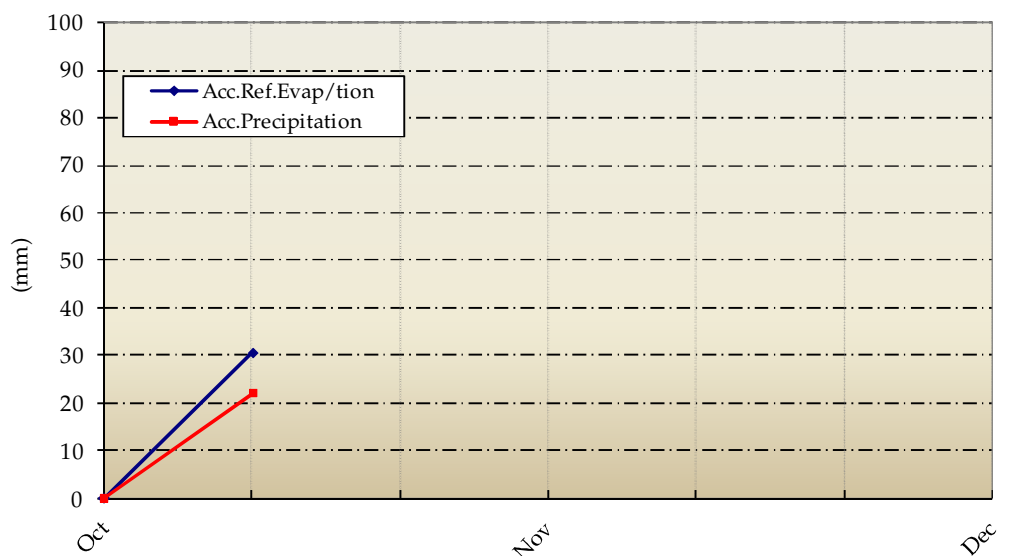
Agrinio

3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	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 (21-30/06/2014)	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

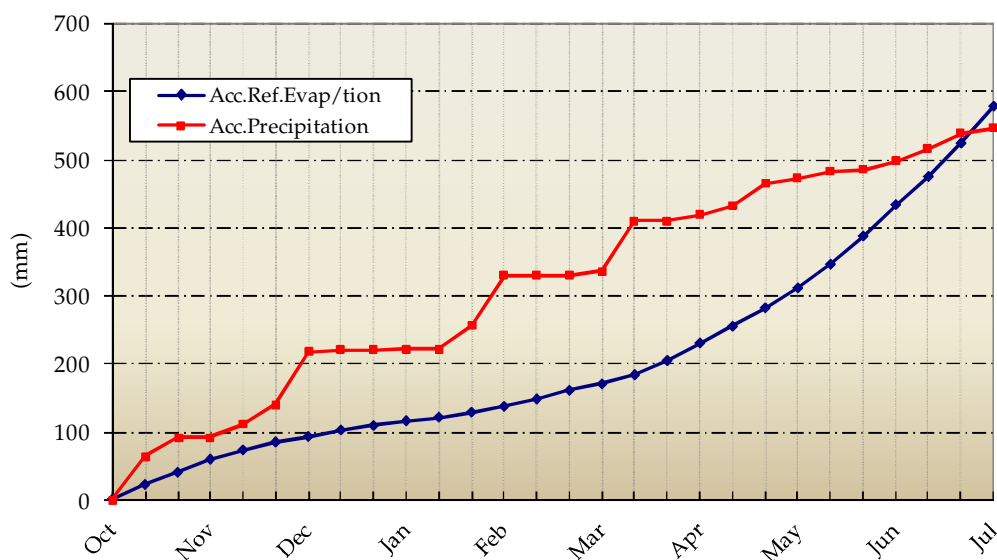
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.0	27.4	28.6	29.2	27.6	29.8	32.0	29.4	29.0	29.4	28.8	31.9	28.7
	Min	15.4	12.6	13.8	14.6	17.6	19.8	22.2	19.8	16.0	17.4	16.9	20.1	16.0
Relative Humidity	Max	93	93	85	85	90	93	86	67	71	80	84	74	-
	Min	57	33	32	30	56	56	43	36	33	33	41	34	-
Soil Temperature at 10 cm	06 UTC	21.6	20.2	21.8	23.4	23.8	25.0	26.2	25.4	24.4	24.6	23.6	26.2	23.1
	12 UTC	25.6	25.6	28.4	29.4	28.8	30.4	29.6	30.0	29.6	30.5	28.8	29.7	27.7
Sunshine Duration		8.2	13.1	13.3	12.6	11.6	10.0	9.4	11.6	13.3	12.9	11.6	12.6	10.9
Precipitation		5.0				1.7						6.7	3.2	4.4
Evaporation		3.2	9.1	7.1	10.1	10.0	9.6	11.2	8.0	11.0	10.1	89.4	89.2	85.9
Growing Degrees	5	15.7	15.0	16.2	16.9	17.6	19.8	22.1	19.6	17.5	18.4	178.8	209.9	173.3
	10	10.7	10.0	11.2	11.9	12.6	14.8	17.1	14.6	12.5	13.4	128.8	159.9	123.3

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.1	61.9	55.0
Precipitation - Reference Evapotranspiration	-47.4	-58.7	-50.6
Number of Rainy Days	2.0	1.0	1.3
Number of Dry Days	0.0	14.0	-

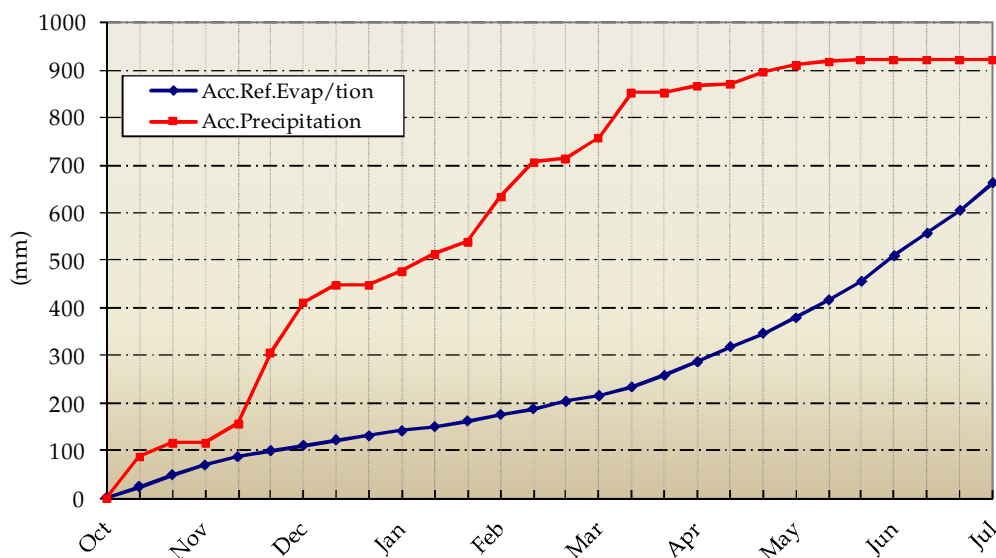
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.6	27.6	29.4	30.3	30.8	33.2	34.2	29.6	30.2	32.0	30.5	28.8	28.9
	Min	17.2	16.4	16.6	16.8	17.0	18.4	18.0	20.3	20.0	19.2	18.0	18.5	17.0
Relative Humidity	Max	87	83	87	85	89	69	86	87	87	86	85	85	-
	Min	37	44	38	35	32	15	21	50	47	24	34	44	-
Soil Temperature at 10 cm	06 UTC	26.0	25.0	24.6	25.8	26.2	27.0	26.8	27.4	27.8	27.8	26.4	27.6	25.9
	12 UTC	31.0	32.0	32.0	32.6	32.8	33.0	33.2	33.6	33.6	33.6	32.7	33.3	30.7
Sunshine Duration		13.2	13.1	13.5	13.5	12.4	12.2	11.5	12.9	13.0	12.3	12.8	13.0	12.3
Precipitation														1.3
Evaporation		8.0	5.5	10.5	8.4	2.4	7.0	7.0	4.5	7.9	6.6	67.8	85.8	74.3
Growing Degrees	5	17.4	17.0	18.0	18.6	18.9	20.8	21.1	20.0	20.1	20.6	192.4	186.8	179.7
	10	12.4	12.0	13.0	13.6	13.9	15.8	16.1	15.0	15.1	15.6	142.4	136.8	129.7

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.7	57.9	53.3
Precipitation - Reference Evapotranspiration	-57.7	-57.9	-52.0
Number of Rainy Days	0.0	0.0	0.2
Number of Dry Days	21.0	20.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

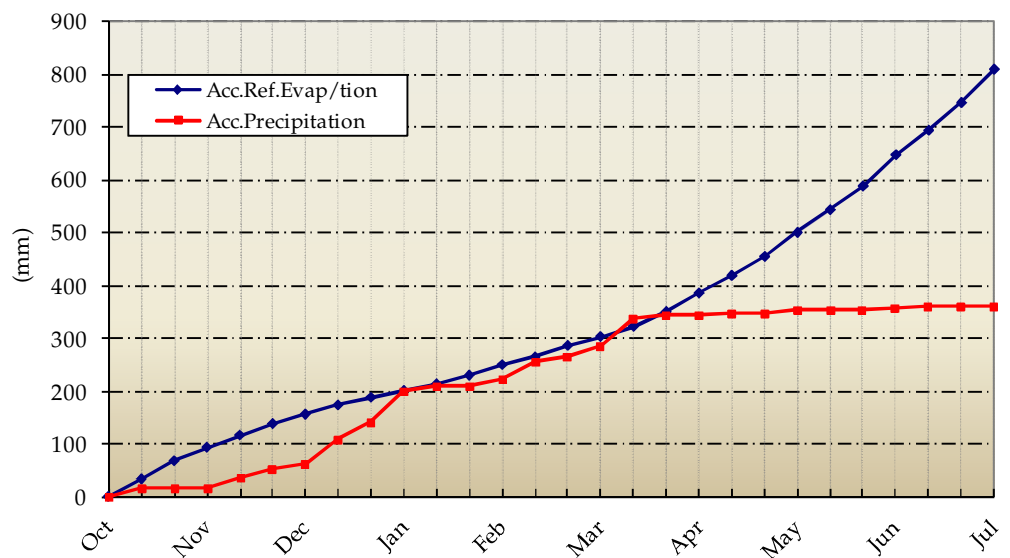


Iraklio

3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.0	27.0	27.0	28.2	32.0	36.6	36.5	28.4	27.2	27.0	29.6	28.0	28.2
	Min	20.0	18.4	18.8	19.5	21.0	22.0	26.6	24.4	23.4	22.8	21.7	20.6	20.4
Relative Humidity	Max	87	91	84	68	72	72	67	77	78	87	78	82	-
	Min	58	53	48	49	38	26	18	44	50	60	44	58	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		13.2	13.2	13.2	13.2	12.5	11.8	12.0	12.3	13.0	13.0	12.7	12.8	12.3
Precipitation														0.0
Evaporation		5.8	4.5	7.0	6.8	9.2	7.2	10.2	6.9	6.8	2.8	67.2	61.3	89.0
Growing Degrees	5	18.0	17.7	17.9	18.9	21.5	24.3	26.6	21.4	20.3	19.9	206.4	192.8	193.1
	10	13.0	12.7	12.9	13.9	16.5	19.3	21.6	16.4	15.3	14.9	156.4	142.8	143.1

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.2	58.3	-
Precipitation - Reference Evapotranspiration	-63.2	-58.3	0.0
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	25.0	43.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

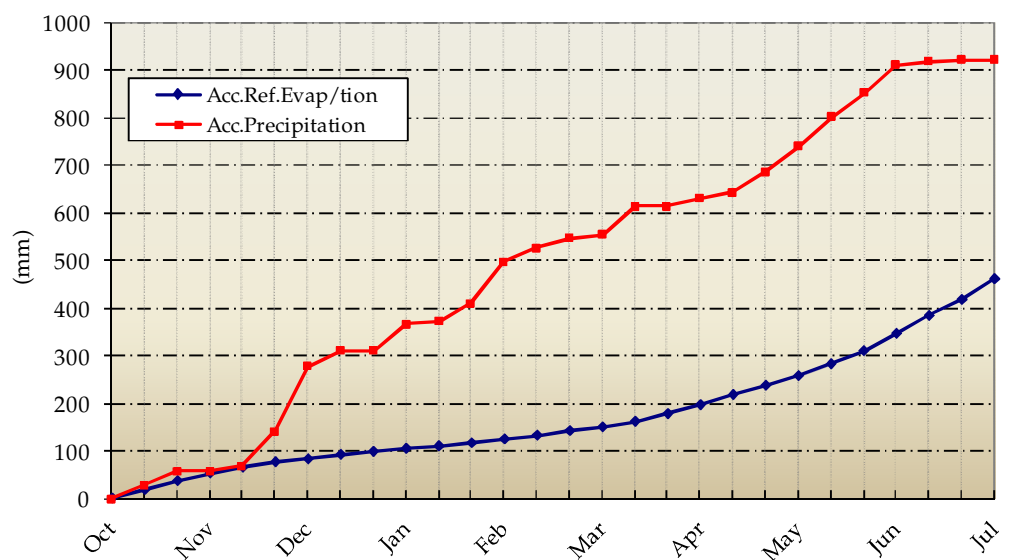


Ioannina

3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	28.4	31.1	33.0	31.6	31.2	29.6	32.4	29.4	32.2	30.6	30.2	29.4
	Min	12.8	9.7	12.0	19.0	16.6	16.8	13.8	13.6	13.8	20.8	14.9	13.8	13.7
Relative Humidity	Max	100	73	81	75	78	54	61	63	76	77	74	73	-
	Min	28	26	31	30	24	24	32	28	42	27	29	27	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.9
Sunshine Duration		12.0	12.6	12.8	12.4	9.2	3.4	11.1	11.4	10.1	12.4	10.7	10.7	10.8
Precipitation							0.0					0.0	3.6	6.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	67.3
Growing Degrees	5	14.9	14.1	16.6	21.0	19.1	19.0	16.7	18.0	16.6	21.5	177.4	169.9	166.2
	10	9.9	9.1	11.6	16.0	14.1	14.0	11.7	13.0	11.6	16.5	127.4	119.9	116.2

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.5	51.8	50.2
Precipitation - Reference Evapotranspiration	-43.5	-48.2	-43.7
Number of Rainy Days	0.0	1.0	1.3
Number of Dry Days	10.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

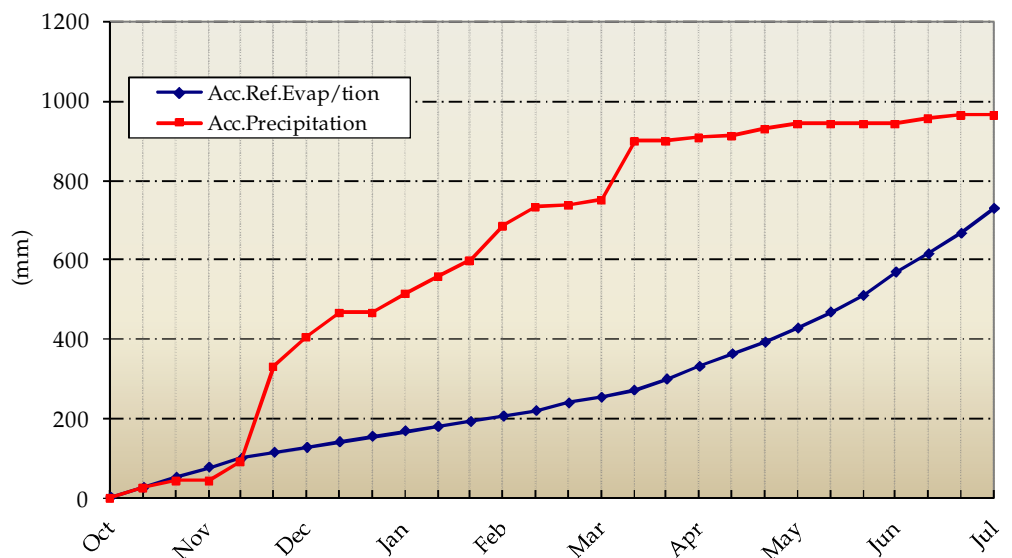


Kalamata

3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.1	30.1	29.4	29.9	36.2	37.5	35.4	29.4	28.8	30.1	31.8	31.8	30.4
	Min	16.5	17.3	16.4	15.6	19.2	17.4	17.4	22.4	18.2	18.4	17.9	18.5	16.7
Relative Humidity	Max	91	83	90	87	81	78	81	90	93	93	87	83	-
	Min	26	29	33	40	11	10	17	49	52	52	32	30	-
Soil Temperature at 10 cm	06 UTC	22.6	23.0	23.0	24.0	24.4	24.4	24.6	25.4	25.4	25.6	24.2	24.7	24.2
	12 UTC	25.4	26.0	26.0	26.0	26.4	26.8	27.4	27.8	27.4	28.0	26.7	28.3	28.7
Sunshine Duration		12.5	12.7	12.5	-	-	-	-	12.0	11.8	12.0	12.2	12.7	11.8
Precipitation														0.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	100.9	88.4
Growing Degrees	5	18.8	18.7	17.9	17.8	22.7	22.5	21.4	20.9	18.5	19.3	198.4	201.9	185.7
	10	13.8	13.7	12.9	12.8	17.7	17.5	16.4	15.9	13.5	14.3	148.4	151.9	135.7

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.7	70.3	58.1
Precipitation - Reference Evapotranspiration	-62.7	-70.3	-57.7
Number of Rainy Days	0.0	0.0	0.3
Number of Dry Days	10.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

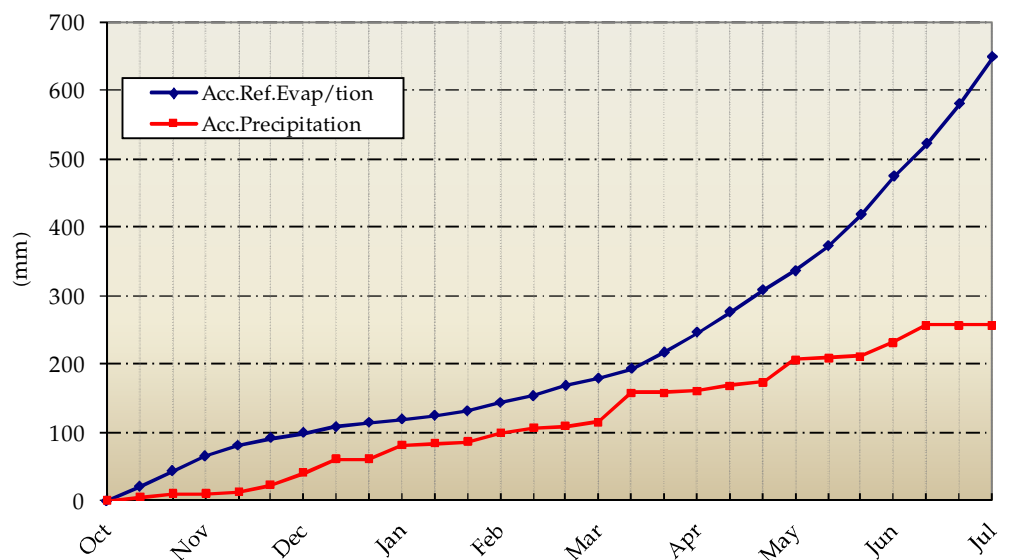


Larisa

3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	31.2	34.4	36.3	39.0	40.2	37.8	30.8	31.6	34.8	34.6	33.3	32.8
	Min	14.8	17.6	15.2	16.0	20.4	20.3	20.3	22.6	18.6	17.8	18.4	19.7	16.5
Relative Humidity	Max	71	68	78	78	82	60	47	60	69	80	69	77	-
	Min	18	21	15	19	14	9	12	31	27	20	19	26	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	25.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	27.7
Sunshine Duration		11.0	12.8	12.7	12.5	10.2	10.1	9.6	11.6	12.3	12.4	11.5	10.7	11.1
Precipitation													10.2	6.4
Evaporation		9.4	12.2	13.1	11.0	11.2	13.3	13.2	12.2	14.2	11.2	121.0	107.2	93.9
Growing Degrees	5	17.4	19.4	19.8	21.2	24.7	25.3	24.1	21.7	20.1	21.3	214.9	215.1	196.6
	10	12.4	14.4	14.8	16.2	19.7	20.3	19.1	16.7	15.1	16.3	164.9	165.1	146.6

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	68.6	63.0	61.9
Precipitation - Reference Evapotranspiration	-68.6	-52.8	-55.5
Number of Rainy Days	0.0	1.0	0.9
Number of Dry Days	16.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



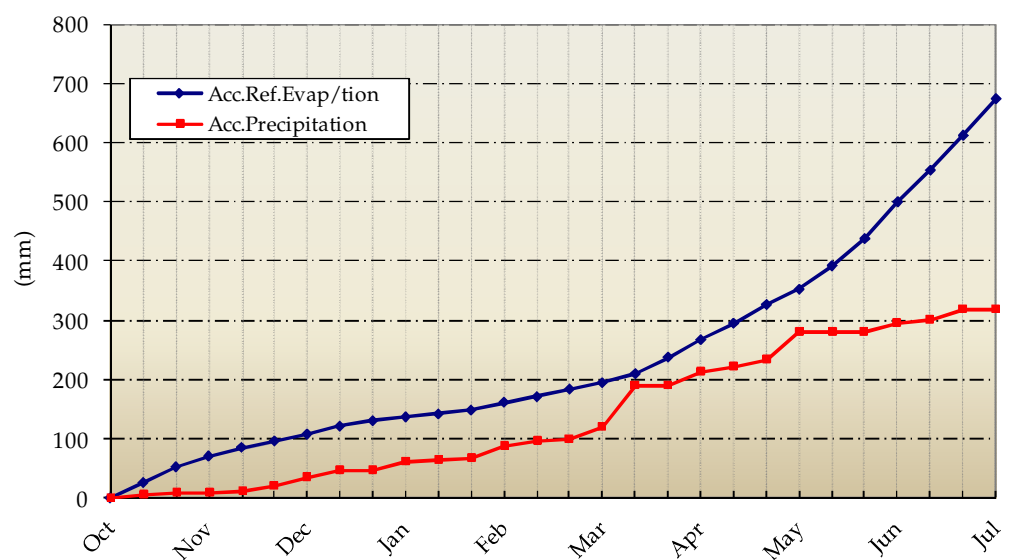


Mikra

3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	29.2	31.6	31.2	30.0	36.7	33.0	29.3	30.0	29.8	30.9	31.2	30.8
	Min	19.0	19.0	15.8	17.6	19.2	21.2	23.0	20.4	19.7	17.0	19.2	21.1	17.9
Relative Humidity	Max	52	76	77	66	66	76	80	72	74	78	72	70	-
	Min	30	28	21	29	38	16	33	35	32	36	30	33	-
Soil Temperature at 10 cm	06 UTC	23.2	25.3	25.0	26.0	26.4	26.4	27.6	27.0	27.0	26.4	26.0	28.3	25.3
	12 UTC	28.8	30.6	30.6	32.0	29.8	32.6	33.0	32.6	32.4	32.6	31.5	33.4	30.2
Sunshine Duration		11.4	12.8	13.6	13.1	7.5	8.1	9.5	12.2	12.4	11.3	11.2	11.0	11.0
Precipitation									1.4			1.4	1.0	4.8
Evaporation		2.0	12.4	19.1	9.1	7.2	9.4	9.6	10.0	3.2	9.8	91.8	107.0	93.3
Growing Degrees	5	18.5	19.1	18.7	19.4	19.6	24.0	23.0	19.9	19.9	18.4	200.4	211.3	193.2
	10	13.5	14.1	13.7	14.4	14.6	19.0	18.0	14.9	14.9	13.4	150.4	161.3	143.2

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	61.9	72.5	61.4
Precipitation - Reference Evapotranspiration	-60.5	-71.5	-56.6
Number of Rainy Days	1.0	2.0	1.1
Number of Dry Days	8.0	15.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

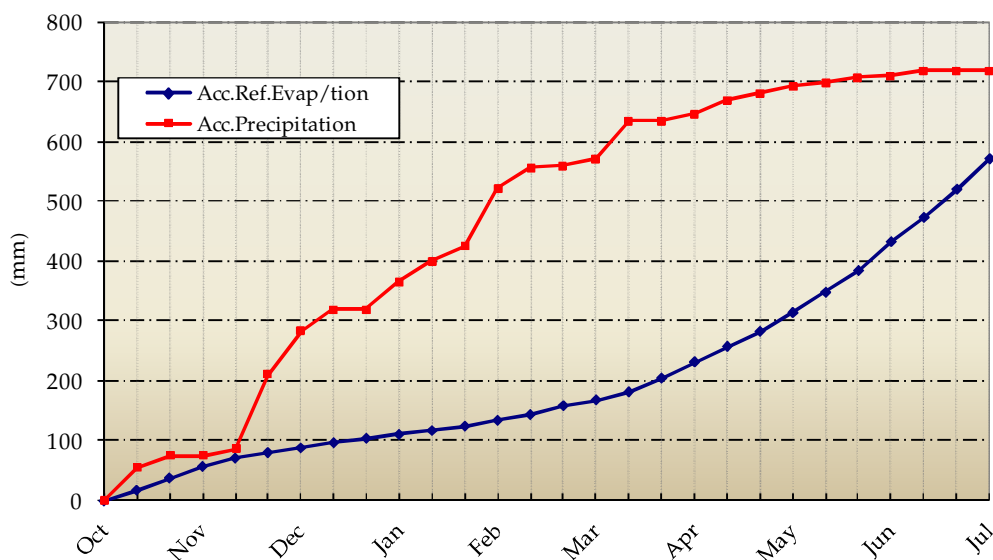


Tripoli

3rd 10-day period (21-30/06/2014)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.7	28.3	29.9	32.1	37.2	34.8	33.0	29.8	29.7	32.1	31.4	31.2	29.8
	Min	10.2	10.3	10.8	11.8	13.5	15.6	15.5	14.3	14.2	13.2	12.9	13.8	12.5
Relative Humidity	Max	95	84	94	93	83	68	80	94	96	84	87	71	-
	Min	27	27	26	26	13	9	14	31	27	26	23	20	-
Soil Temperature at 10 cm	06 UTC	22.6	23.0	23.2	23.8	25.6	26.6	27.0	27.0	25.8	-	25.0	26.6	24.0
	12 UTC	-	-	29.8	32.0	33.2	33.8	33.6	-	-	-	32.5	33.8	27.2
Sunshine Duration		10.6	7.5	9.9	11.7	10.5	11.1	11.7	7.0	-	11.1	10.1	11.6	11.1
Precipitation													0.4	5.4
Evaporation		5.6	6.2	6.1	7.7	7.8	11.6	9.9	4.7	-	-	-	76.6	65.6
Growing Degrees	5	13.5	14.3	15.4	17.0	20.4	20.2	19.3	17.1	17.0	17.7	171.5	175.0	161.5
	10	8.5	9.3	10.4	12.0	15.4	15.2	14.3	12.1	12.0	12.7	121.5	125.0	111.5

3rd 10-day period (21-30/06/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.0	55.1	53.9
Precipitation - Reference Evapotranspiration	-51.0	-54.7	-48.5
Number of Rainy Days	0.0	1.0	0.7
Number of Dry Days	21.0	9.0	-

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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ΕΘΝΙΚΗ  
ΜΕΤΕΩΡΟΛΟΓΙΚΗ  
ΥΠΗΡΕΣΙΑ

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