



AGROMETEOROLOGICAL BULLETIN

April 2019
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



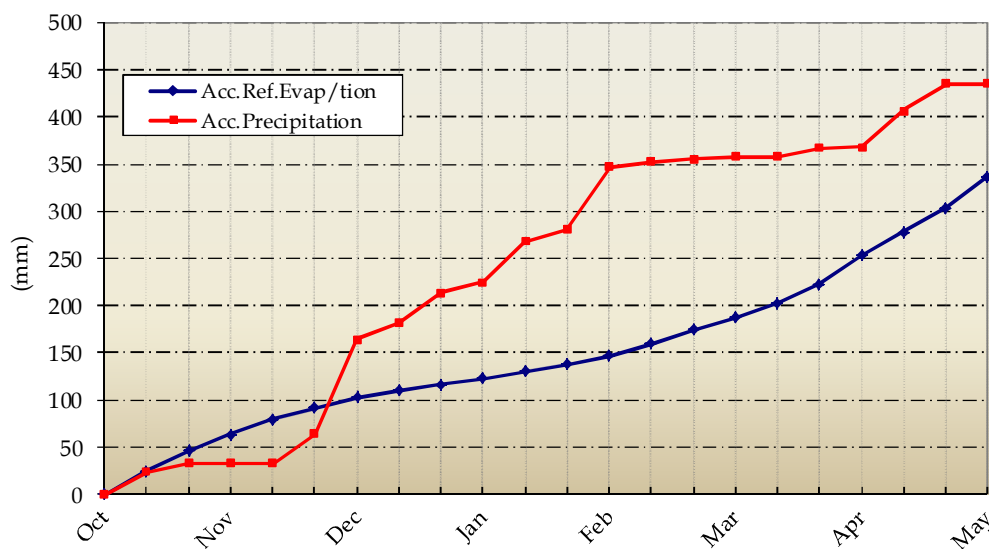
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Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
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www.meteohellas.gr

3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	16.8	16.8	20.2	22.0	22.0	22.6	21.8	21.0	19.8	19.9	25.3	18.4
	Min	1.0	3.0	7.6	9.0	8.2	10.8	9.6	10.6	8.4	16.2	8.4	10.6	7.8
Relative Humidity	Max	90	86	87	87	95	83	96	93	90	82	89	88	-
	Min	38	50	45	45	40	34	46	61	58	69	49	40	-
Soil Temperature at 10 cm	06 UTC	9.0	10.0	11.6	12.0	13.0	15.0	15.8	16.6	16.4	17.4	13.7	17.7	12.7
	12 UTC	14.4	15.2	14.0	16.8	18.4	20.0	20.4	21.6	21.6	20.6	18.3	22.8	16.6
Sunshine Duration		10.8	10.5	0.4	6.7	8.7	8.8	10.0	11.3	10.8	12.2	9.0	11.5	7.4
Precipitation				0.0								0.0		11.6
Evaporation		3.4	4.4	1.6	2.7	5.9	4.6	3.2	5.0	5.0	3.6	39.4	66.8	46.0
Growing Degrees	5	3.7	4.9	7.2	9.6	10.1	11.4	11.1	11.2	9.7	13.0	91.9	129.6	80.8
	10	0.0	0.0	2.2	4.6	5.1	6.4	6.1	6.2	4.7	8.0	43.3	79.6	32.3

3rd 10-day period (21-30/04/2019)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	33.2	41.8
Precipitation - Reference Evapotranspiration	-33.2	-41.8
Number of Rainy Days	0.0	2.2
Number of Dry Days	10.0	-

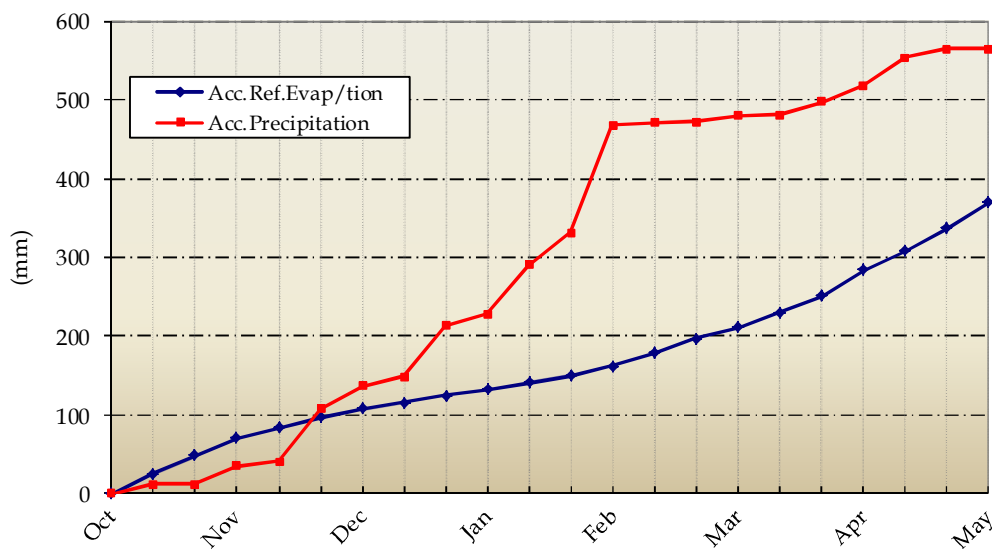
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	20.0	22.6	27.6	27.8	27.1	27.0	23.2	21.4	20.6	23.5	25.4	20.2
	Min	11.7	11.4	10.4	11.5	10.4	10.0	9.8	11.3	8.3	11.8	10.7	12.3	9.8
Relative Humidity	Max	90	96	92	92	96	98	100	99	96	95	95	90	-
	Min	58	47	27	28	63	37	40	26	39	48	41	40	-
Soil Temperature at 10 cm	06 UTC	17.0	15.6	16.4	16.4	16.8	15.6	17.4	18.0	17.6	16.0	16.7	19.2	15.0
	12 UTC	19.4	18.6	17.8	20.2	17.8	19.0	20.2	20.0	19.8	20.2	19.3	22.3	18.4
Sunshine Duration		6.2	0.9	1.4	6.7	0.0	10.9	10.9	12.0	11.5	9.3	7.0	10.2	8.8
Precipitation			0.0									0.0	1.2	8.8
Evaporation		7.0	4.0	6.7	0.0	3.2	2.0	7.0	8.2	7.0	8.0	53.1	51.2	43.9
Growing Degrees	5	9.8	10.7	11.5	14.6	14.1	13.6	13.4	12.3	9.9	11.2	120.9	138.5	100.1
	10	4.8	5.7	6.5	9.6	9.1	8.6	8.4	7.3	4.9	6.2	70.9	88.5	50.1

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.5	39.6	33.2
Precipitation - Reference Evapotranspiration	-32.5	-38.4	-24.4
Number of Rainy Days	0.0	1.0	1.8
Number of Dry Days	15.0	32.0	-

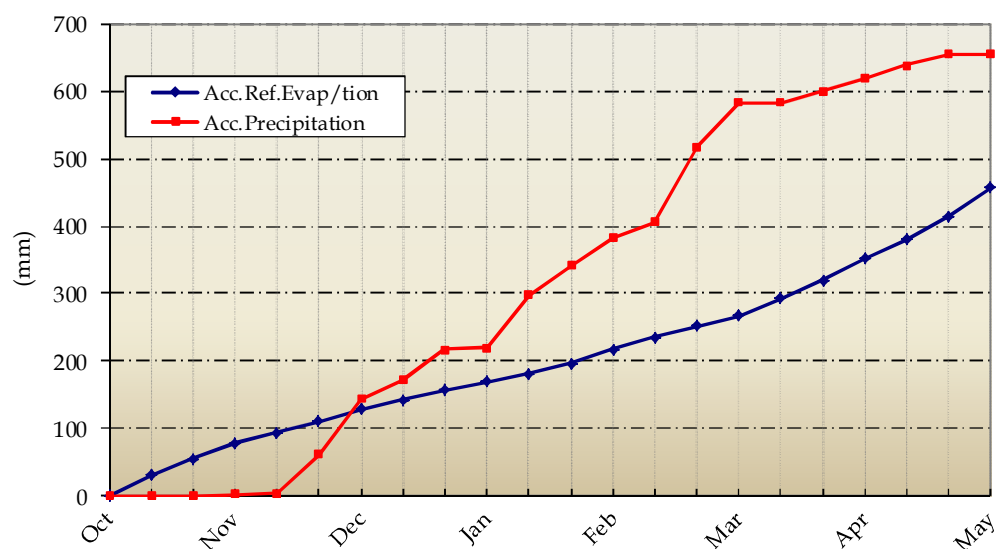
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	18.2	23.2	23.6	26.0	23.4	22.2	22.6	22.4	20.6	21.9	22.8	20.6
	Min	12.2	10.4	9.4	19.2	20.0	16.6	12.4	16.0	14.6	13.0	14.4	14.6	12.6
Relative Humidity	Max	74	74	81	38	85	89	90	88	86	91	80	89	-
	Min	44	50	14	10	16	58	55	62	50	60	42	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.4	8.9	6.0	3.4	7.0	8.8	11.1	10.0	12.5	12.0	8.9	10.5	8.9
Precipitation														5.6
Evaporation		3.5	2.5	10.3	10.4	4.6	3.0	3.0	3.5	6.1	3.2	50.1	34.6	52.8
Growing Degrees	5	9.3	9.3	11.3	16.4	18.0	15.0	12.3	14.3	13.5	11.8	131.2	137.2	115.8
	10	4.3	4.3	6.3	11.4	13.0	10.0	7.3	9.3	8.5	6.8	81.2	87.2	65.8

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	41.9	41.7	-
Precipitation - Reference Evapotranspiration	-41.9	-41.7	5.6
Number of Rainy Days	0.0	0.0	1.3
Number of Dry Days	14.0	23.0	-

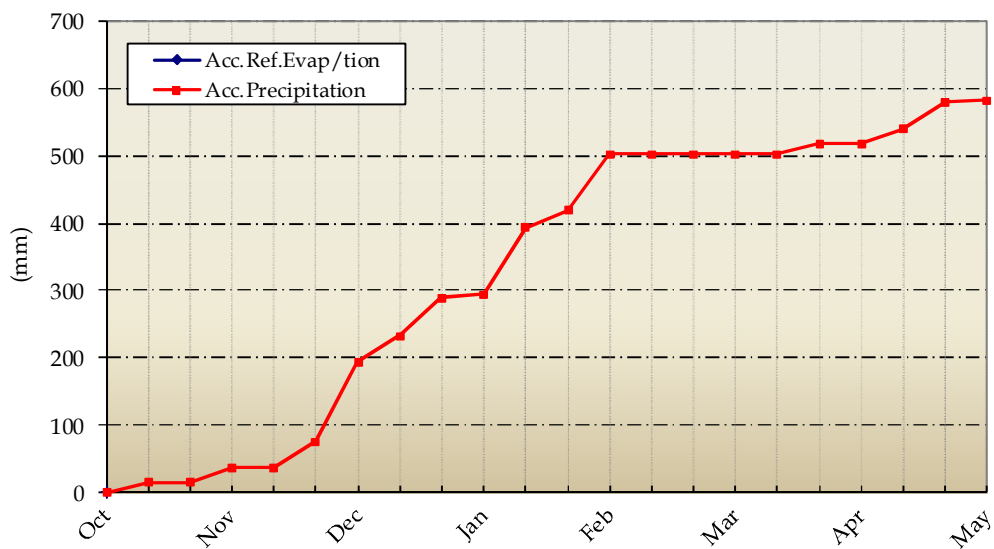
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.6	18.4	20.4	24.6	20.6	26.8	24.4	23.4	21.0	18.0	21.7	27.4	18.6
	Min	7.0	7.0	10.0	6.8	9.5	6.6	9.4	9.6	4.5	10.4	8.1	10.4	6.5
Relative Humidity	Max	100	100	90	100	95	100	90	100	100	93	97	95	-
	Min	43	45	38	25	68	26	40	31	43	38	40	31	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	14.9
Sunshine Duration		7.9	0.8	0.9	5.9	0.2	8.7	9.2	11.1	9.7	6.8	6.1	8.8	6.6
Precipitation			0.0	0.6		1.7	0.1					2.4		15.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	36.5
Growing Degrees	5	8.3	7.7	10.2	10.7	10.1	11.7	11.9	11.5	7.8	9.2	99.0	-	75.1
	10	3.3	2.7	5.2	5.7	5.1	6.7	6.9	6.5	2.8	4.2	49.0	-	27.7

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	29.4
Precipitation - Reference Evapotranspiration	-	-	-14.2
Number of Rainy Days	3.0	0.0	3.6
Number of Dry Days	4.0	24.0	-

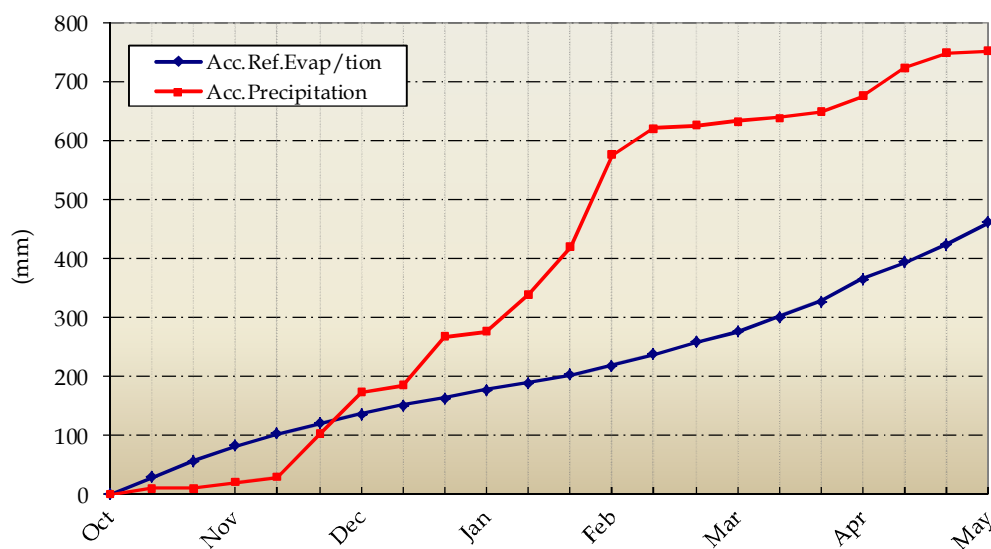
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.4	19.6	18.9	21.0	23.8	26.8	27.2	27.5	23.8	20.7	22.8	26.2	20.8
	Min	8.0	10.0	10.6	13.1	10.5	11.4	11.0	11.6	8.7	8.0	10.3	11.8	9.1
Relative Humidity	Max	90	90	74	78	83	88	90	88	91	92	86	84	-
	Min	49	38	47	46	47	33	34	20	31	52	40	31	-
Soil Temperature at 10 cm	06 UTC	14.6	15.6	14.6	15.0	14.4	15.6	17.0	17.8	17.2	17.5	15.9	20.5	15.1
	12 UTC	19.0	18.0	16.0	16.2	17.0	20.0	21.5	21.5	21.5	21.2	19.2	22.8	18.5
Sunshine Duration		9.0	2.3	0.3	0.0	0.0	11.4	11.5	10.9	12.5	8.3	6.6	11.0	8.3
Precipitation		2.9		0.7	0.1	0.0						3.7	1.2	12.2
Evaporation		3.9	3.1	1.4	1.8	1.4	5.1	6.5	6.0	3.8	5.0	38.0	60.1	46.5
Growing Degrees	5	8.2	9.8	9.8	12.1	12.2	14.1	14.1	14.6	11.3	9.4	115.3	140.3	99.4
	10	3.2	4.8	4.8	7.1	7.2	9.1	9.1	9.6	6.3	4.4	65.3	90.3	49.4

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.0	48.4	34.1
Precipitation - Reference Evapotranspiration	-32.3	-47.2	-21.9
Number of Rainy Days	3.0	2.0	2.6
Number of Dry Days	4.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

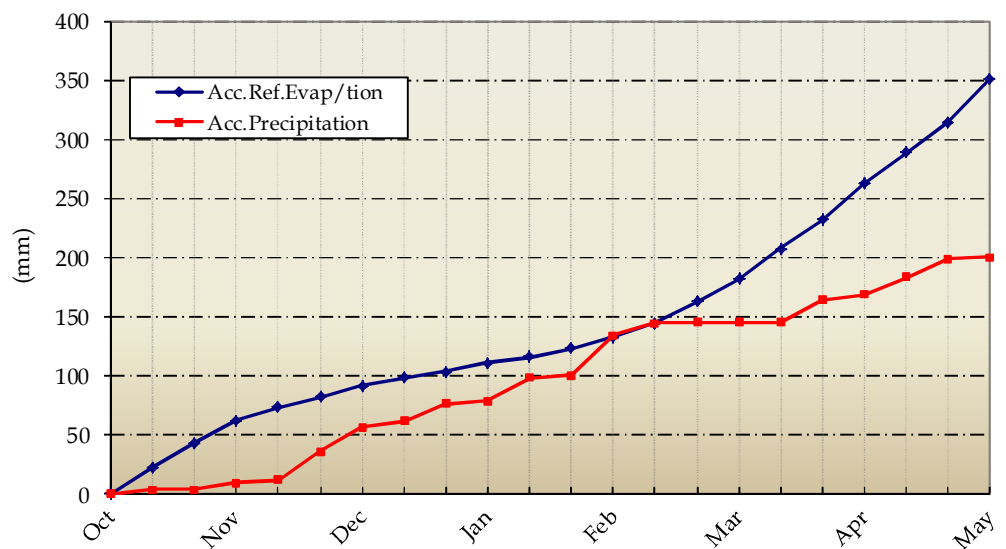


Larisa

3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.8	19.8	17.0	21.2	19.4	27.0	27.6	25.5	26.6	24.4	22.7	27.9	21.1
	Min	4.6	4.7	10.2	7.2	7.8	8.2	9.6	10.0	5.4	6.7	7.4	9.0	7.3
Relative Humidity	Max	96	93	94	97	99	99	96	97	93	87	95	90	-
	Min	36	35	61	50	59	40	43	24	24	26	40	30	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	14.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	16.2
Sunshine Duration		10.7	6.2	1.5	6.2	0.7	7.2	9.1	11.5	11.4	10.6	7.5	9.6	7.9
Precipitation				0.4		0.4		0.5	0.5			1.8	1.4	10.7
Evaporation		6.0	4.2	7.2	5.2	1.3	4.8	6.2	7.0	9.5	7.8	59.2	69.4	43.9
Growing Degrees	5	6.7	7.3	8.6	9.2	8.6	12.6	13.6	12.8	11.0	10.6	100.9	134.6	91.9
	10	1.7	2.3	3.6	4.2	3.6	7.6	8.6	7.8	6.0	5.6	50.9	84.6	42.7

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.2	43.8	34.0
Precipitation - Reference Evapotranspiration	-34.4	-42.4	-23.3
Number of Rainy Days	4.0	2.0	2.7
Number of Dry Days	4.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

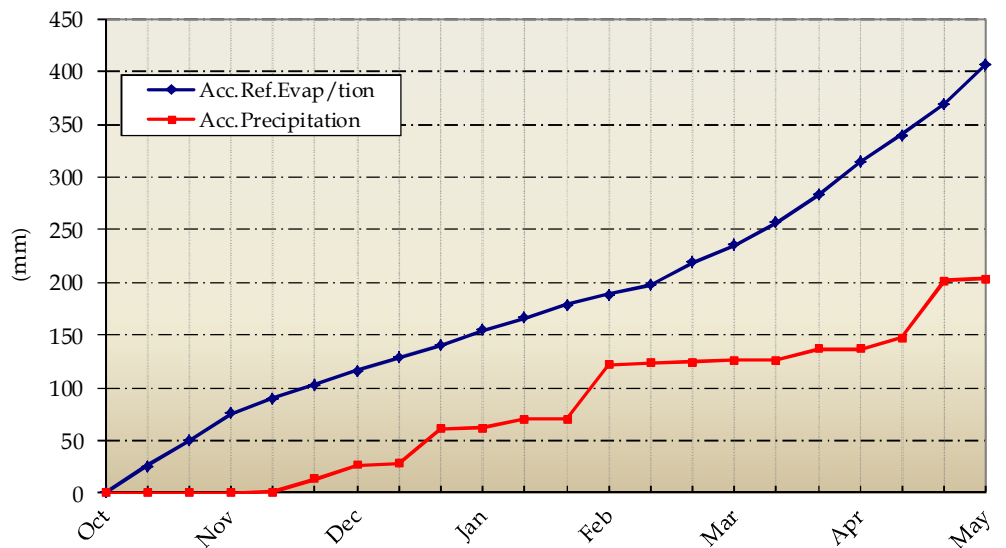


Mikra

3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.2	21.2	19.2	18.2	19.8	25.6	24.4	23.6	25.0	24.6	21.9	27.2	20.2
	Min	8.0	7.0	12.6	10.0	10.4	12.0	13.2	10.0	11.0	11.0	10.5	11.8	8.4
Relative Humidity	Max	89	78	84	88	92	90	95	93	78	75	86	76	-
	Min	43	30	41	56	55	38	51	25	27	25	39	25	-
Soil Temperature at 10 cm	06 UTC	12.8	13.0	14.6	14.0	14.6	15.2	16.6	16.0	16.0	16.4	14.9	18.2	14.2
	12 UTC	16.0	16.2	16.0	16.4	17.4	18.4	19.5	19.0	19.5	19.8	17.8	22.8	18.8
Sunshine Duration		10.8	9.4	0.8	6.8	5.9	9.7	6.8	12.0	11.6	11.5	8.5	10.8	7.6
Precipitation				0.3				1.4				1.7	2.5	11.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	66.1	45.8
Growing Degrees	5	7.6	9.1	10.9	9.1	10.1	13.8	13.8	11.8	13.0	12.8	112.0	145.1	93.3
	10	2.6	4.1	5.9	4.1	5.1	8.8	8.8	6.8	8.0	7.8	62.0	95.1	43.8

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	37.4	44.6	33.7
Precipitation - Reference Evapotranspiration	-35.7	-42.1	-22.5
Number of Rainy Days	2.0	2.0	3.0
Number of Dry Days	2.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

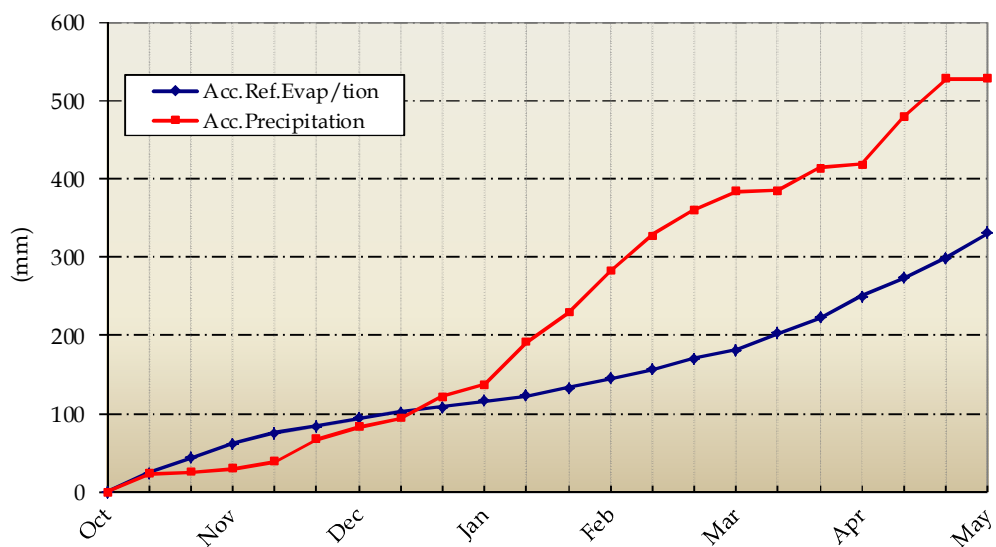


Tanagra

3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.2	18.7	18.6	19.4	21.2	25.6	25.8	24.4	26.2	23.6	22.1	26.6	20.7
	Min	3.1	3.4	7.3	10.8	8.6	9.9	10.3	10.6	8.6	9.5	8.2	11.1	7.9
Relative Humidity	Max	97	97	93	99	100	99	99	97	95	82	96	79	-
	Min	34	30	34	54	51	43	31	43	19	32	37	24	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.9	5.7	1.5	0.8	3.0	10.6	10.3	10.5	11.6	12.0	7.7	10.2	
Precipitation						0.2						0.2	1.1	7.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	5.2	6.1	8.0	10.1	9.9	12.8	13.1	12.5	12.4	11.6	101.4	138.7	
	10	0.2	1.1	3.0	5.1	4.9	7.8	8.1	7.5	7.4	6.6	51.4	88.7	

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.2	39.7	
Precipitation - Reference Evapotranspiration	-32.0	-38.6	7.9
Number of Rainy Days	1.0	2.0	2.8
Number of Dry Days	4.0	23.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

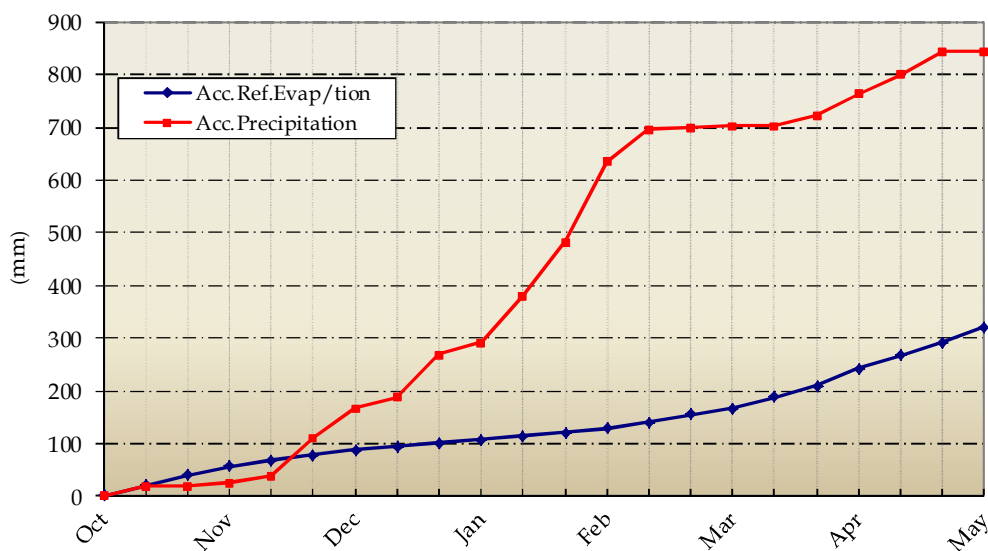


Tripoli

3rd 10-day period (21-30/04/2019)		21	22	23	24	25	26	27	28	29	30	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.1	14.3	15.0	19.2	20.8	24.0	25.9	23.5	21.5	18.7	19.9	24.2	18.7
	Min	3.3	5.2	5.5	6.2	6.4	6.2	6.6	7.6	2.9	3.7	5.4	6.6	5.4
Relative Humidity	Max	93	93	98	98	91	96	98	97	87	87	94	92	-
	Min	41	27	37	31	36	34	21	20	22	37	31	23	-
Soil Temperature at 10 cm	06 UTC	10.6	12.0	11.6	11.8	12.2	12.6	-	15.2	13.8	13.8	12.6	18.4	12.1
	12 UTC	-	14.0	-	-	-	17.8	19.2	-	18.4	21.8	18.2	22.8	14.3
Sunshine Duration		9.3	2.0	1.6	1.2	0.7	-	11.4	11.6	12.7	-	6.3	9.9	8.0
Precipitation			0.0	0.2							0.0	0.2	3.9	14.5
Evaporation		2.9	3.2	2.6	1.0	2.6	-	4.9	7.8	7.4	-	-	-	35.0
Growing Degrees	5	4.7	4.8	5.3	7.7	8.6	10.1	11.3	10.6	7.2	6.2	76.3	104.1	70.7
	10	0.0	0.0	0.3	2.7	3.6	5.1	6.3	5.6	2.2	1.2	26.9	54.1	24.2

3rd 10-day period (21-30/04/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.2	36.7	32.9
Precipitation - Reference Evapotranspiration	-29.0	-32.8	-18.4
Number of Rainy Days	1.0	3.0	2.7
Number of Dry Days	2.0	4.0	-

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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