



# AGROMETEOROLOGICAL BULLETIN

*June 2019*  
*1st 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



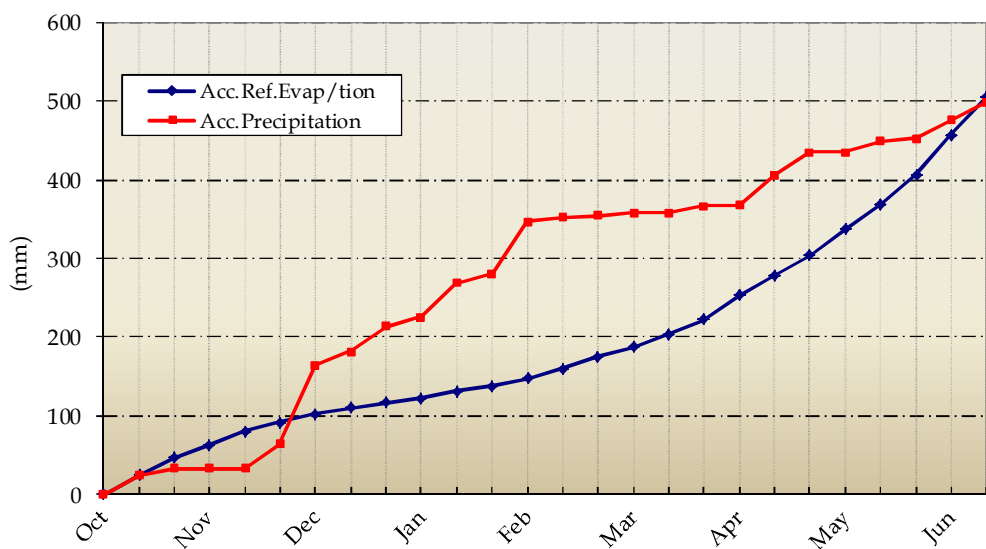
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1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.4	27.0	24.0	23.6	24.4	25.2	29.0	32.0	28.4	29.6	27.2	30.5	25.8
	Min	13.6	19.0	17.0	15.0	14.4	15.2	15.2	17.0	21.4	19.0	16.7	17.6	14.0
Relative Humidity	Max	87	91	94	97	89	93	89	94	77	92	90	79	-
	Min	45	50	57	59	45	54	40	42	39	44	48	39	-
Soil Temperature at 10 cm	06 UTC	22.8	24.0	23.0	20.0	20.2	21.4	22.0	23.2	25.6	23.0	22.5	24.7	20.6
	12 UTC	27.4	27.0	24.0	23.6	24.2	25.6	26.8	28.6	28.8	26.6	26.3	28.8	25.3
Sunshine Duration		12.5	3.2	11.4	9.6	12.6	10.8	13.5	13.4	9.9	12.3	10.9	10.4	9.7
Precipitation			0.3	9.7	3.1					3.2	6.8	23.1		10.6
Evaporation		7.0	10.1	2.0	6.8	5.4	6.6	4.5	11.9	6.8	9.0	70.1	86.8	72.8
Growing Degrees	5	16.0	18.0	15.5	14.3	14.4	15.2	17.1	19.5	19.9	19.3	169.2	190.8	148.7
	10	11.0	13.0	10.5	9.3	9.4	10.2	12.1	14.5	14.9	14.3	119.2	140.8	98.7

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.0	54.3	48.0
Precipitation - Reference Evapotranspiration	-25.9	-54.3	-37.4
Number of Rainy Days	5.0	0.0	2.2
Number of Dry Days	8.0	15.0	-

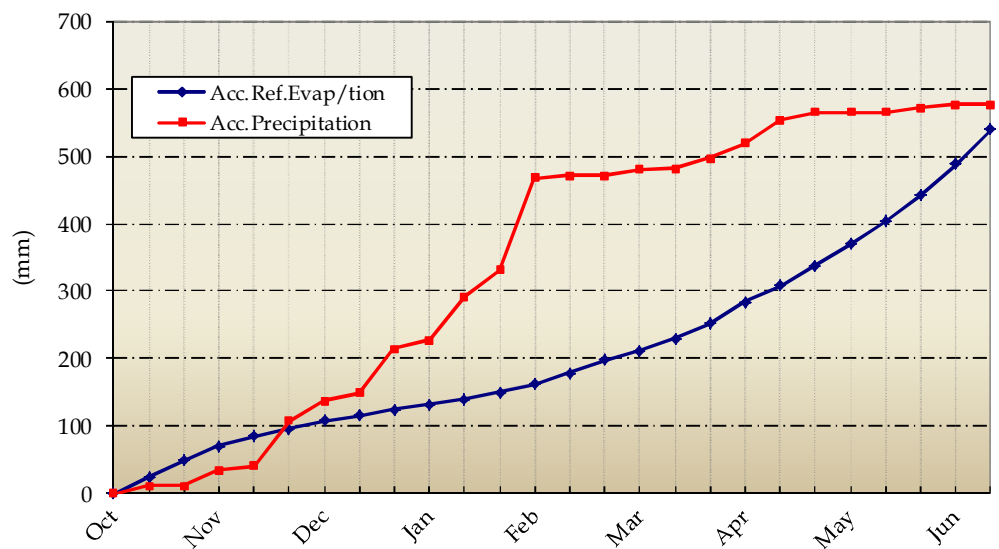
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.0	23.8	23.6	25.0	26.5	26.8	28.3	31.0	35.1	33.9	27.7	30.7	26.9
	Min	12.8	13.6	13.6	14.2	15.3	15.3	13.4	15.2	18.2	18.1	15.0	18.5	15.3
Relative Humidity	Max	93	92	92	93	94	94	100	88	86	83	92	92	-
	Min	53	46	47	49	50	35	29	32	27	26	39	33	-
Soil Temperature at 10 cm	06 UTC	21.2	20.2	21.2	20.4	22.0	22.4	22.8	23.4	24.2	25.0	22.3	27.4	23.0
	12 UTC	22.6	21.8	23.2	23.0	25.4	24.6	26.4	27.4	25.6	26.4	24.6	29.8	27.7
Sunshine Duration		12.9	13.4	7.9	11.1	11.7	13.3	13.2	13.1	13.0	12.8	12.2	12.0	11.1
Precipitation														2.3
Evaporation		7.0	4.0	5.0	7.0	8.0	8.0	9.6	7.5	8.0	6.8	70.9	78.0	67.5
Growing Degrees	5	12.9	13.7	13.6	14.6	15.9	16.1	15.9	18.1	21.7	21.0	163.4	196.1	160.7
	10	7.9	8.7	8.6	9.6	10.9	11.1	10.9	13.1	16.7	16.0	113.4	146.1	110.7

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.4	56.8	48.5
Precipitation - Reference Evapotranspiration	-51.4	-56.8	-46.2
Number of Rainy Days	0.0	0.0	0.7
Number of Dry Days	14.0	24.0	-

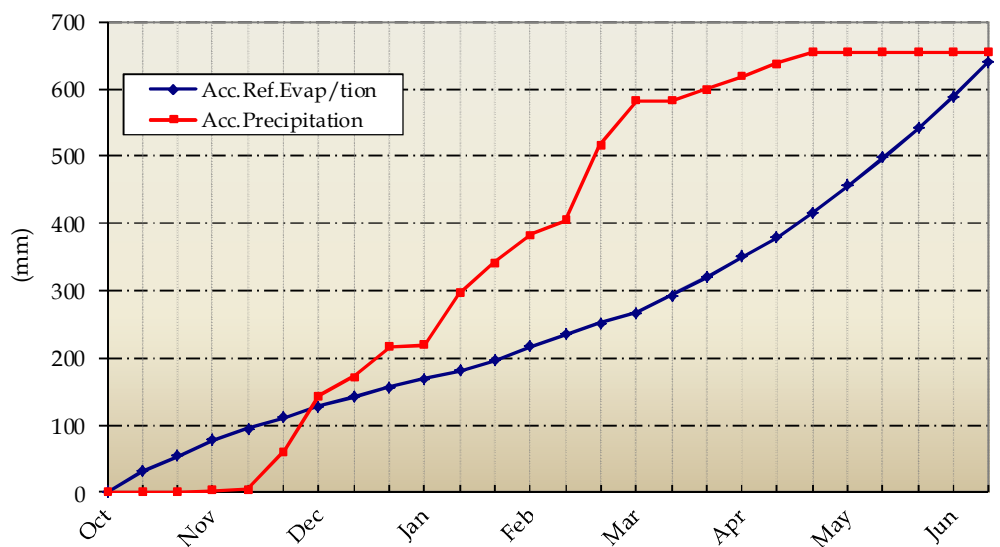
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.2	23.2	23.4	23.4	24.2	24.0	26.4	28.4	28.6	25.6	25.2	28.5	25.7
	Min	19.2	17.6	17.0	15.0	15.4	16.4	15.8	21.0	24.2	23.0	18.5	20.9	17.9
Relative Humidity	Max	84	89	89	89	85	86	81	75	76	83	84	83	-
	Min	54	68	59	60	62	64	55	45	52	66	58	48	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.4	11.8	12.0	12.8	12.8	12.5	12.7	12.9	12.9	11.0	12.1	12.4	11.2
Precipitation														3.5
Evaporation		5.2	2.7	2.5	3.2	5.6	6.4	3.5	6.9	10.5	8.1	54.6	69.4	76.6
Growing Degrees	5	17.2	15.4	15.2	14.2	14.8	15.2	16.1	19.7	21.4	19.3	168.5	197.0	167.8
	10	12.2	10.4	10.2	9.2	9.8	10.2	11.1	14.7	16.4	14.3	118.5	147.0	117.8

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.8	59.2	-
Precipitation - Reference Evapotranspiration	-51.8	-59.2	3.5
Number of Rainy Days	0.0	0.0	0.5
Number of Dry Days	26.0	33.0	-

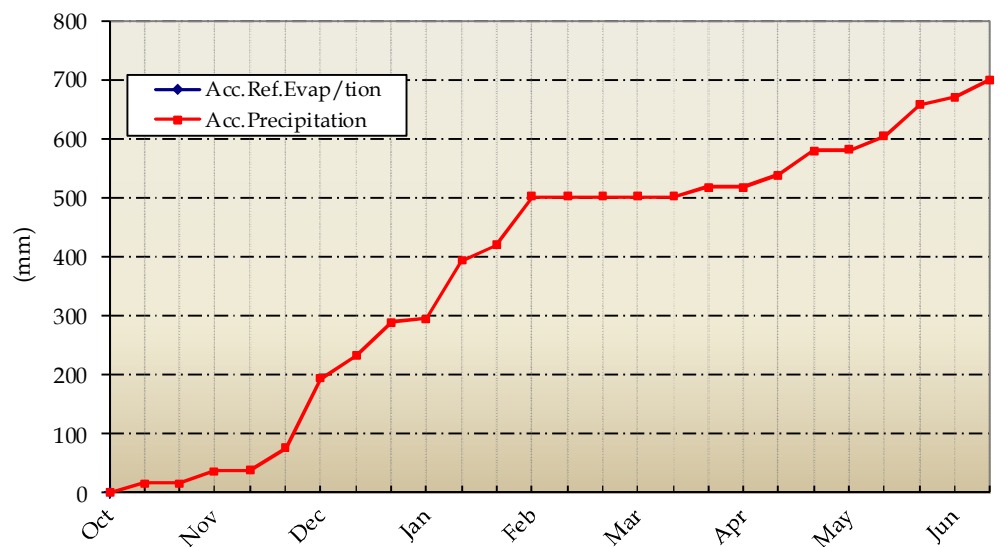
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.2	22.4	16.6	18.2	22.2	26.8	30.0	33.8	33.6	32.0	25.9	29.4	26.3
	Min	8.0	8.4	11.4	11.4	13.8	12.0	11.8	16.0	16.2	20.4	12.9	14.8	12.0
Relative Humidity	Max	100	95	100	100	100	100	100	86	75	66	92	96	-
	Min	47	50	75	73	65	52	35	32	30	29	49	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.9
Sunshine Duration		8.1	6.1	0.9	0.0	4.2	10.1	11.4	12.4	12.4	11.4	7.7	10.3	9.1
Precipitation		0.0	2.0	8.7	12.8	5.2					0.0	28.7	17.2	14.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	46.7
Growing Degrees	5	10.6	10.4	9.0	9.8	13.0	14.4	15.9	19.9	19.9	21.2	144.1	171.2	141.5
	10	5.6	5.4	4.0	4.8	8.0	9.4	10.9	14.9	14.9	16.2	94.1	121.2	91.5

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	43.4
Precipitation - Reference Evapotranspiration	-	-	-29.0
Number of Rainy Days	4.0	2.0	2.5
Number of Dry Days	1.0	5.0	-

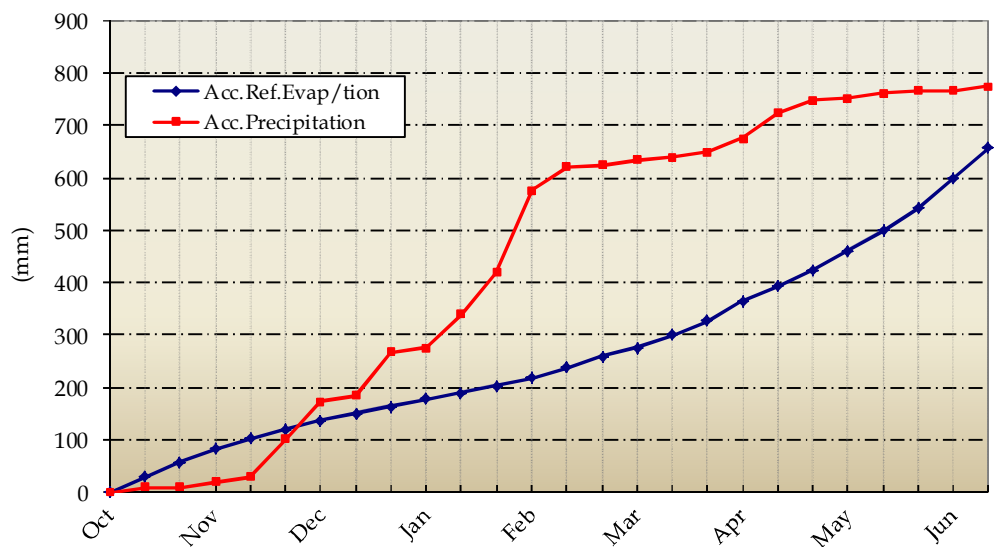
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.9	25.4	23.2	25.1	25.2	27.0	31.0	29.7	37.2	33.2	28.4	32.1	27.6
	Min	11.9	14.5	11.6	12.1	13.0	13.9	16.7	19.4	16.9	18.4	14.8	17.0	14.5
Relative Humidity	Max	89	88	91	91	89	88	77	72	78	91	85	83	-
	Min	27	33	45	45	44	43	23	34	21	25	34	28	-
Soil Temperature at 10 cm	06 UTC	21.4	22.2	21.4	19.6	20.6	21.4	22.8	24.0	24.4	24.8	22.3	25.5	21.6
	12 UTC	25.4	25.0	22.4	23.8	24.6	25.6	27.4	27.6	28.6	25.2	25.6	28.8	25.8
Sunshine Duration		11.5	11.0	7.4	8.8	11.9	12.6	12.7	12.5	12.0	9.7	11.0	12.3	10.5
Precipitation				7.7							0.6	8.3		2.7
Evaporation		9.3	7.4	3.9	4.6	7.6	8.9	11.8	11.2	7.8	4.6	77.1	92.6	75.1
Growing Degrees	5	14.4	15.0	12.4	13.6	14.1	15.5	18.9	19.6	22.1	20.8	166.2	195.3	160.6
	10	9.4	10.0	7.4	8.6	9.1	10.5	13.9	14.6	17.1	15.8	116.2	145.3	110.6

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.2	63.7	50.2
Precipitation - Reference Evapotranspiration	-48.9	-63.7	-47.5
Number of Rainy Days	2.0	0.0	0.9
Number of Dry Days	6.0	10.0	-

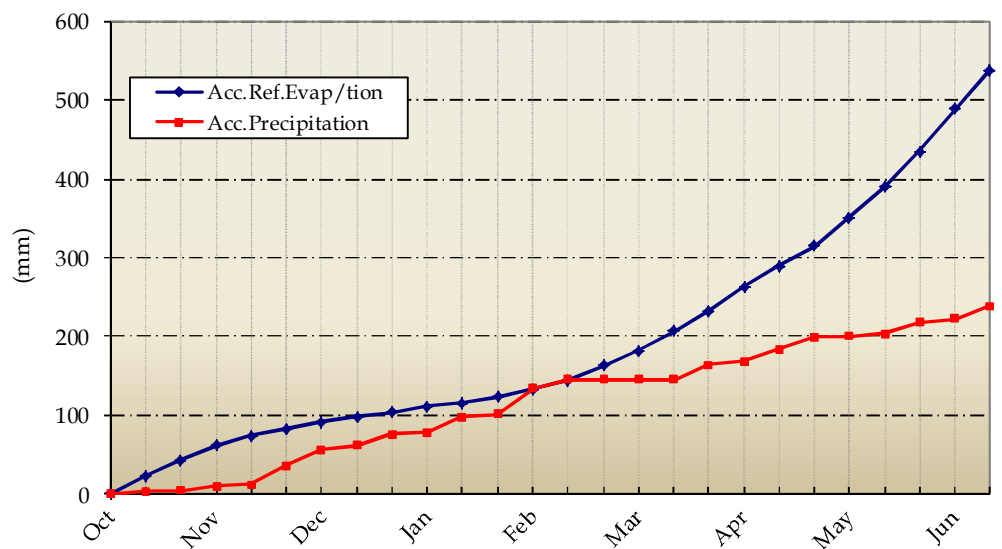
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.4	27.2	26.2	28.4	27.8	30.4	34.4	36.2	34.6	31.6	30.5	33.4	29.7
	Min	12.0	13.3	10.2	12.0	16.2	13.2	15.5	16.0	19.2	20.2	14.8	17.0	14.1
Relative Humidity	Max	87	94	96	91	98	99	95	90	78	81	91	82	-
	Min	30	40	29	31	44	37	25	26	26	30	32	24	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	24.3
Sunshine Duration		9.2	5.6	5.7	8.9	3.5	11.2	11.1	11.5	11.5	9.0	8.7	10.1	10.4
Precipitation			2.4	0.3	0.9	12.7						16.3	1.0	9.2
Evaporation		7.0	5.8	2.2	5.3	2.7	8.9	8.9	7.4	10.1	10.5	68.8	95.4	79.0
Growing Degrees	5	15.2	15.3	13.2	15.2	17.0	16.8	20.0	21.1	21.9	20.9	176.5	202.0	169.0
	10	10.2	10.3	8.2	10.2	12.0	11.8	15.0	16.1	16.9	15.9	126.5	152.0	119.0

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.3	61.0	54.0
Precipitation - Reference Evapotranspiration	-33.0	-60.0	-44.8
Number of Rainy Days	4.0	1.0	2.3
Number of Dry Days	5.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

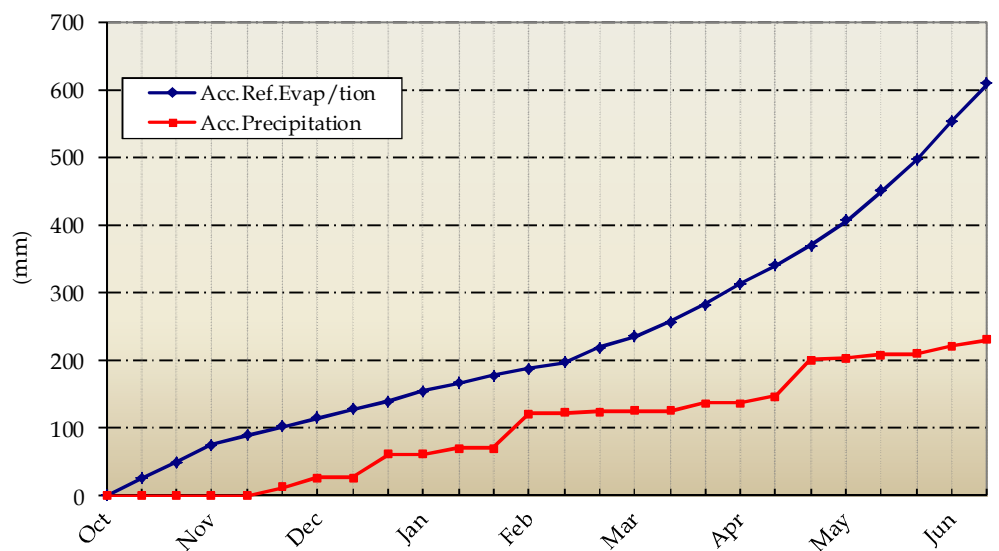


Mikra

1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	25.4	25.2	25.8	25.4	28.0	32.0	35.4	33.8	29.4	28.7	31.3	27.9
	Min	16.4	16.8	16.0	17.0	18.0	16.4	18.8	19.2	20.4	21.0	18.0	19.1	15.4
Relative Humidity	Max	78	78	81	81	82	82	87	82	91	91	83	76	-
	Min	32	45	40	37	52	41	34	27	27	46	38	29	-
Soil Temperature at 10 cm	06 UTC	20.0	21.6	21.2	21.8	23.0	23.2	24.4	25.0	23.0	25.0	22.8	25.4	22.3
	12 UTC	25.0	25.0	26.0	26.5	27.0	28.0	29.0	30.0	30.0	29.6	27.6	29.7	27.3
Sunshine Duration		13.3	8.8	10.1	10.9	7.4	12.5	13.1	12.9	11.1	10.3	11.0	10.9	10.0
Precipitation		0.0	0.6							4.5	4.1	9.2	1.8	11.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	89.4	74.4
Growing Degrees	5	16.7	16.1	15.6	16.4	16.7	17.2	20.4	22.3	22.1	20.2	183.7	201.9	166.4
	10	11.7	11.1	10.6	11.4	11.7	12.2	15.4	17.3	17.1	15.2	133.7	151.9	116.4

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	55.0	59.8	52.1
Precipitation - Reference Evapotranspiration	-45.8	-58.0	-40.9
Number of Rainy Days	3.0	2.0	2.7
Number of Dry Days	1.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



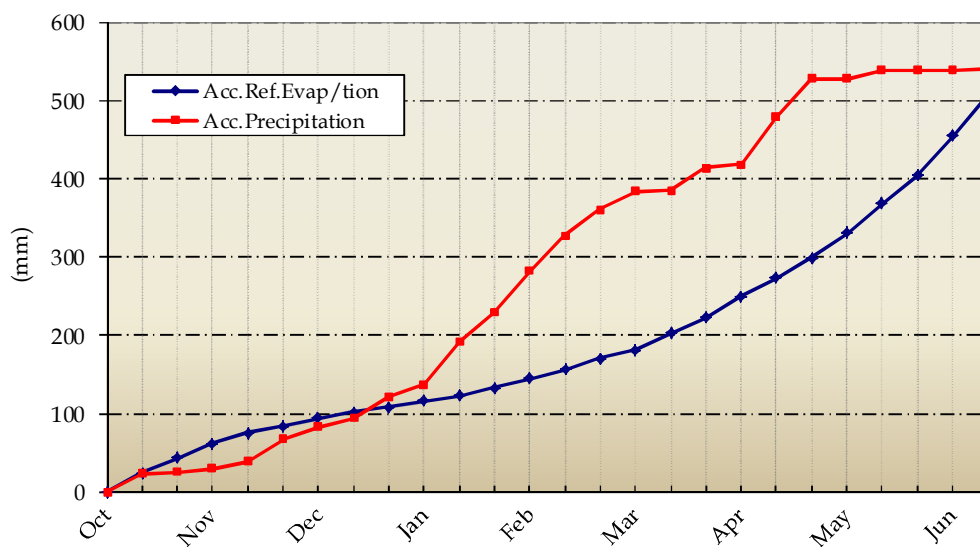


Tanagra

1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.4	27.0	25.9	25.6	26.1	29.7	32.1	33.8	32.2	27.9	28.8	32.6	28.3
	Min	12.1	14.0	13.2	13.0	15.2	15.4	16.1	16.4	17.9	21.4	15.5	17.0	14.2
Relative Humidity	Max	83	79	70	79	83	94	81	76	63	72	78	68	-
	Min	32	32	24	34	39	27	25	20	29	38	30	20	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		10.9	11.5	12.0	7.7	8.2	13.2	13.1	13.0	13.3	12.9	11.6	11.9	
Precipitation						0.5						0.5		6.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	14.8	15.5	14.6	14.3	15.7	17.6	19.1	20.1	20.1	19.7	171.2	197.7	
	10	9.8	10.5	9.6	9.3	10.7	12.6	14.1	15.1	15.1	14.7	121.2	147.7	

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.0	58.0	
Precipitation - Reference Evapotranspiration	-52.5	-58.0	6.3
Number of Rainy Days	1.0	0.0	2.0
Number of Dry Days	28.0	18.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

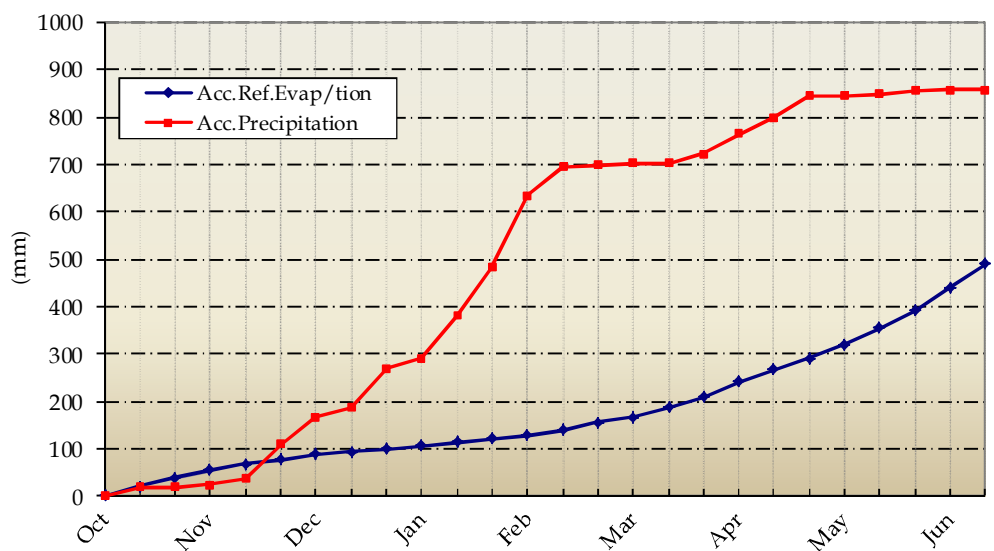


Tripoli

1st 10-day period (1-10/06/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.3	22.6	21.4	22.0	25.1	27.8	31.1	32.7	32.4	28.0	26.7	29.0	26.4
	Min	5.7	6.7	7.3	7.9	7.4	8.0	10.6	11.6	13.6	18.8	9.8	12.1	10.7
Relative Humidity	Max	93	94	95	95	96	95	94	87	84	81	91	93	-
	Min	19	27	36	42	32	29	21	16	23	31	28	24	-
Soil Temperature at 10 cm	06 UTC	18.2	-	19.8	19.8	18.0	19.2	20.8	-	-	24.8	20.1	21.6	20.3
	12 UTC	28.4	-	25.8	24.6	25.6	29.2	31.0	-	-	31.8	28.1	28.0	23.4
Sunshine Duration		13.1	13.3	11.2	6.9	11.8	12.1	13.1	13.1	12.4	11.8	11.9	11.0	10.2
Precipitation			0.0	0.0	0.1							0.1	6.8	6.1
Evaporation		-	-	-	3.9	5.0	7.6	-	-	-	15.2	-	68.8	55.4
Growing Degrees	5	10.0	9.7	9.4	10.0	11.3	12.9	15.9	17.2	18.0	18.4	132.5	155.1	135.3
	10	5.0	4.7	4.4	5.0	6.3	7.9	10.9	12.2	13.0	13.4	82.5	105.1	85.3

1st 10-day period (1-10/06/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.2	49.2	48.9
Precipitation - Reference Evapotranspiration	-49.1	-42.4	-42.8
Number of Rainy Days	1.0	2.0	1.6
Number of Dry Days	7.0	2.0	-

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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