



# AGROMETEOROLOGICAL BULLETIN

*March 2019*  
*2nd 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



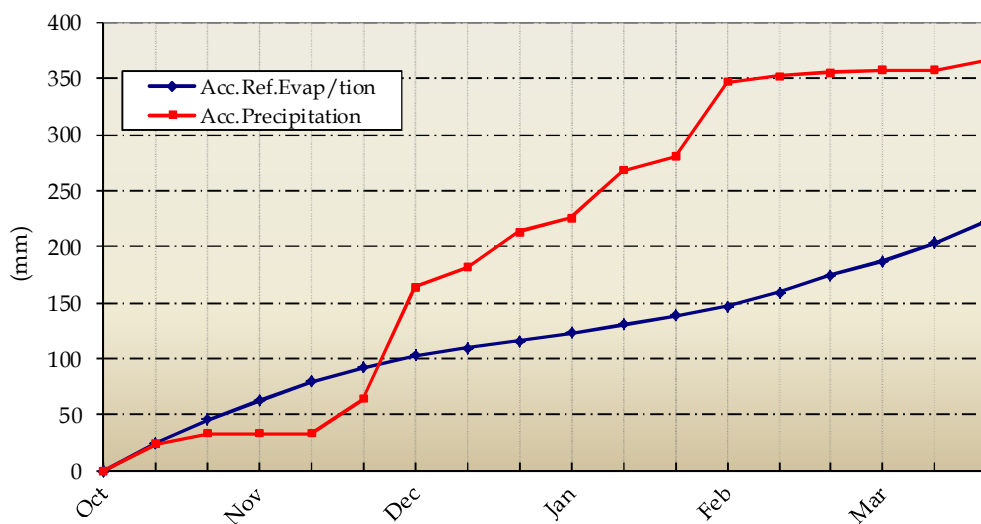
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2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	14.2	10.6	12.0	12.4	14.6	17.6	18.0	18.0	21.2	15.6	16.7	11.6
	Min	6.0	4.2	3.8	2.4	1.8	0.0	4.4	5.6	10.0	6.6	4.5	7.7	2.9
Relative Humidity	Max	89	93	84	89	93	96	98	92	95	92	92	95	-
	Min	67	58	52	47	50	59	55	61	64	41	55	61	-
Soil Temperature at 10 cm	06 UTC	11.0	12.8	7.6	6.6	8.0	6.8	9.2	10.6	11.8	11.0	9.5	11.3	6.6
	12 UTC	15.6	13.2	9.0	11.8	10.0	12.4	14.8	14.6	16.0	16.6	13.4	13.8	8.9
Sunshine Duration		9.1	0.0	0.5	6.4	2.8	8.7	10.1	10.7	8.9	9.9	6.7	5.8	4.9
Precipitation			7.9	1.6								9.5	29.9	14.4
Evaporation		2.0	1.2	1.1	2.8	0.6	2.5	3.2	2.5	1.3	8.1	25.3	26.3	21.8
Growing Degrees	5	6.9	4.2	2.2	2.2	2.1	2.3	6.0	6.8	9.0	8.9	50.6	72.2	27.0
	10	1.9	0.0	0.0	0.0	0.0	0.0	1.0	1.8	4.0	3.9	12.6	23.7	3.4

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.5	19.8	18.1
Precipitation - Reference Evapotranspiration	-10.0	10.1	-3.7
Number of Rainy Days	2.0	4.0	2.2
Number of Dry Days	16.0	3.0	-

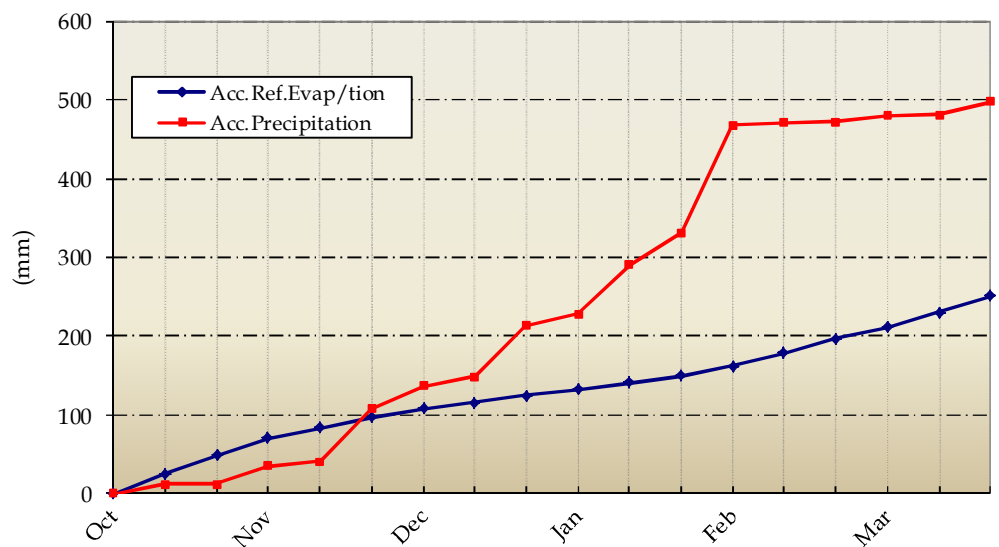
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.5	17.2	15.5	15.0	15.2	18.0	17.8	17.4	18.8	18.2	17.1	19.4	15.7
	Min	8.7	8.0	6.6	4.5	6.7	5.2	5.7	10.4	6.9	8.1	7.1	9.7	6.3
Relative Humidity	Max	100	89	86	100	100	90	91	91	96	100	94	86	-
	Min	63	50	39	48	52	46	61	51	57	59	53	46	-
Soil Temperature at 10 cm	06 UTC	13.4	12.0	11.2	11.2	11.8	11.6	12.2	13.8	13.0	13.6	12.4	14.6	10.6
	12 UTC	15.0	15.0	13.0	13.0	12.4	14.4	14.0	14.6	14.8	14.2	14.0	15.8	12.8
Sunshine Duration		5.1	2.2	9.9	4.1	6.2	10.3	9.7	2.8	10.8	0.0	6.1	6.2	6.4
Precipitation			2.0		8.5	5.8						16.3	12.3	25.8
Evaporation		3.2	3.8	2.8	0.2	13.8	7.0	2.0	4.0	3.4	3.0	43.2	27.0	26.9
Growing Degrees	5	8.1	7.6	6.1	4.8	6.0	6.6	6.8	8.9	7.9	8.2	70.7	95.7	60.4
	10	3.1	2.6	1.1	0.0	1.0	1.6	1.8	3.9	2.9	3.2	21.0	45.7	15.6

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.7	27.2	21.0
Precipitation - Reference Evapotranspiration	-4.4	-14.9	4.8
Number of Rainy Days	3.0	4.0	3.7
Number of Dry Days	9.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

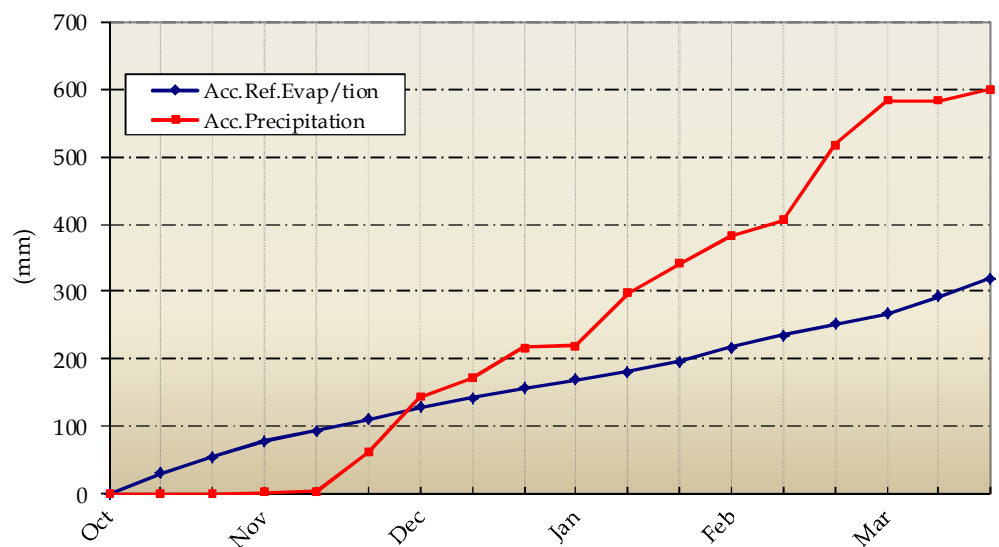


Iraklio

2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.6	19.2	14.8	15.0	15.8	16.8	18.6	17.4	18.0	17.8	17.6	19.8	15.9
	Min	12.6	14.4	8.6	12.0	10.8	9.2	9.0	10.6	10.6	11.0	10.9	12.5	9.4
Relative Humidity	Max	78	87	92	85	92	82	88	87	90	92	87	84	-
	Min	38	41	61	67	55	49	51	68	65	74	57	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.4	0.0	7.2	3.1	5.2	10.0	10.9	9.8	9.9	4.5	6.8	7.6	5.5
Precipitation				4.8	0.1	5.2	6.4					16.5		23.2
Evaporation		4.0	2.7	0.7	0.9	2.5	1.9	3.7	1.9	1.7	1.0	21.0	42.4	33.8
Growing Degrees	5	12.6	11.8	6.7	8.5	8.3	8.0	8.8	9.0	9.3	9.4	92.4	111.5	76.5
	10	7.6	6.8	1.7	3.5	3.3	3.0	3.8	4.0	4.3	4.4	42.4	61.5	28.0

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.3	32.7	-
Precipitation - Reference Evapotranspiration	-9.8	-32.7	23.2
Number of Rainy Days	4.0	0.0	3.5
Number of Dry Days	9.0	22.0	-

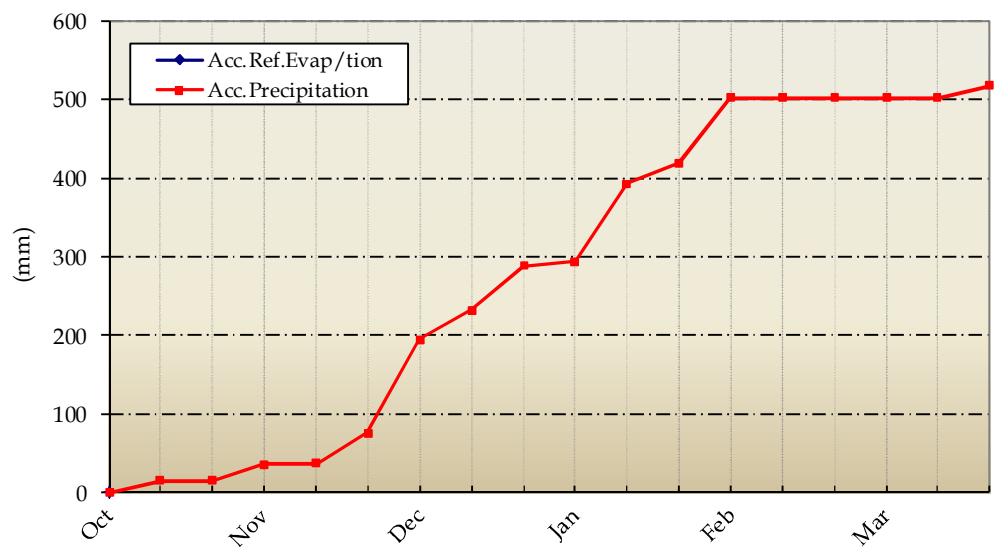
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.6	12.0	14.8	11.0	13.4	16.4	19.2	15.8	17.6	20.8	15.8	16.1	12.6
	Min	1.0	4.2	4.0	5.4	4.4	1.0	0.8	8.0	1.0	2.0	3.2	6.2	2.7
Relative Humidity	Max	97	90	71	93	93	92	93	100	97	94	92	99	-
	Min	47	66	33	56	32	31	31	52	46	34	43	51	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.8
Sunshine Duration		5.1	1.3	8.7	2.6	6.4	9.1	7.6	3.0	6.8	5.9	5.6	3.6	4.5
Precipitation			10.0		5.0	0.6						15.6	38.8	29.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	18.6
Growing Degrees	5	3.8	3.1	4.4	3.2	3.9	3.7	5.0	6.9	4.3	6.4	44.7	61.9	28.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	1.4	3.3	14.2	3.0

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	16.8
Precipitation - Reference Evapotranspiration	-	-	12.7
Number of Rainy Days	3.0	6.0	3.4
Number of Dry Days	38.0	4.0	-

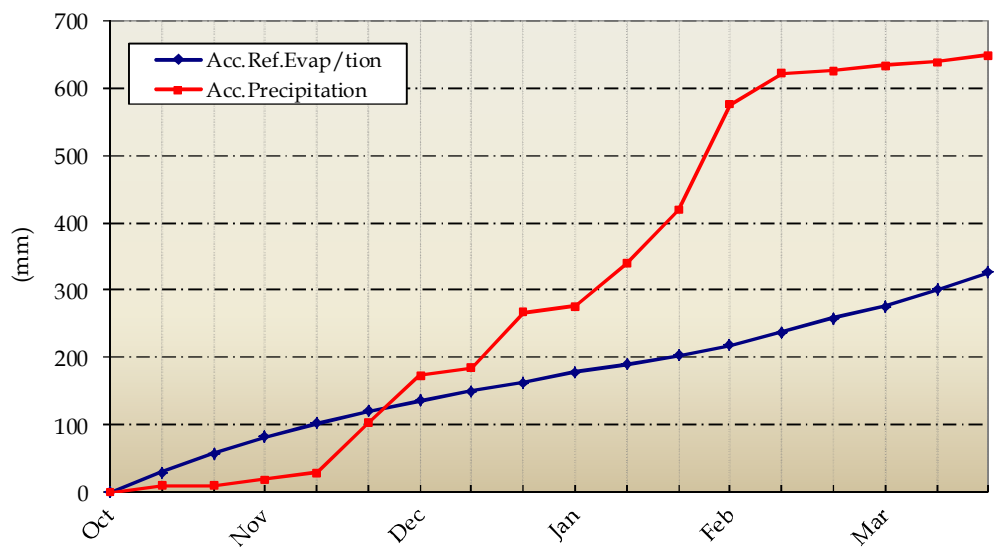
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.8	17.9	18.0	16.1	15.9	19.8	20.4	18.4	20.2	18.6	18.4	19.8	16.3
	Min	4.9	10.0	5.9	4.6	7.2	4.3	7.7	6.2	5.1	8.2	6.4	7.2	5.8
Relative Humidity	Max	91	91	84	92	93	91	92	93	93	92	91	91	-
	Min	50	59	34	45	44	27	38	47	41	62	45	46	-
Soil Temperature at 10 cm	06 UTC	12.4	13.4	12.0	11.6	12.0	11.0	12.0	12.4	12.4	12.6	12.2	-	10.9
	12 UTC	13.5	14.0	12.4	12.8	12.5	12.5	13.4	13.6	14.0	14.0	13.3	-	13.0
Sunshine Duration		8.0	1.9	8.8	6.2	3.9	10.5	10.5	9.6	10.1	1.2	7.1	7.2	6.1
Precipitation			1.2	1.4	6.8	1.2						10.6	4.9	22.7
Evaporation		1.0	0.0	4.6	0.2	0.8	5.2	3.6	2.2	3.8	3.2	24.6	27.5	33.5
Growing Degrees	5	6.9	9.0	7.0	5.4	6.6	7.1	9.1	7.3	7.7	8.4	74.1	85.2	60.5
	10	1.9	4.0	2.0	0.4	1.6	2.1	4.1	2.3	2.7	3.4	24.1	35.2	15.1

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.3	26.2	21.7
Precipitation - Reference Evapotranspiration	-15.7	-21.3	1.0
Number of Rainy Days	4.0	3.0	3.8
Number of Dry Days	8.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

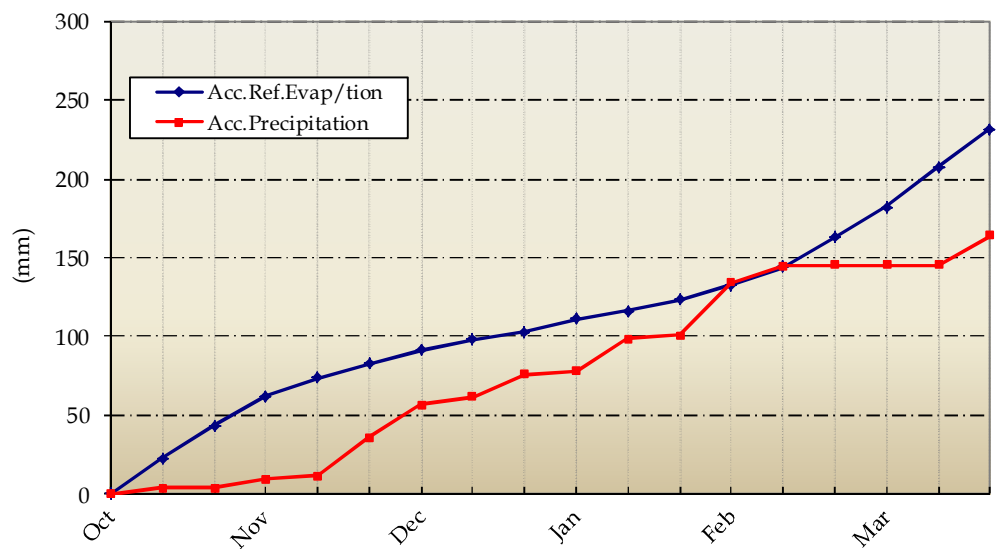


Larisa

2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.4	18.0	11.6	12.5	13.2	20.6	23.8	23.1	21.0	19.0	18.6	19.9	14.0
	Min	6.4	6.0	6.0	0.6	7.3	-0.2	4.6	4.6	3.6	6.1	4.5	5.8	2.8
Relative Humidity	Max	67	93	96	97	96	97	90	98	99	96	93	90	-
	Min	30	49	45	54	50	34	34	32	45	55	43	38	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	9.5
Sunshine Duration		9.4	1.2	0.6	4.1	3.8	9.6	10.4	10.2	8.7	4.5	6.2	6.6	5.1
Precipitation			14.1	0.5	0.0	4.0						18.6	5.2	13.9
Evaporation		8.2	2.1	5.3	1.3	0.9	3.8	5.5	4.3	2.5	4.5	38.4	38.3	20.7
Growing Degrees	5	9.9	7.0	3.8	1.6	5.3	5.2	9.2	8.9	7.3	7.6	65.6	78.8	36.4
	10	4.9	2.0	0.0	0.0	0.3	0.2	4.2	3.9	2.3	2.6	20.3	28.8	5.5

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.4	26.4	18.5
Precipitation - Reference Evapotranspiration	-5.8	-21.2	-4.6
Number of Rainy Days	3.0	3.0	3.1
Number of Dry Days	16.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



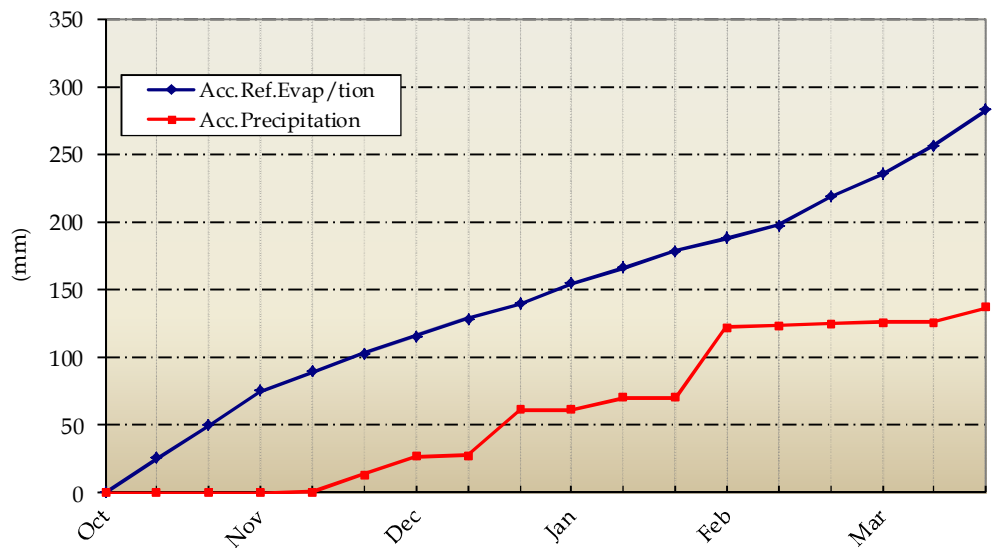


Mikra

2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.4	18.0	12.2	11.0	16.0	19.8	23.0	20.6	20.4	20.4	18.4	18.9	13.4
	Min	8.0	5.2	5.2	4.8	8.2	3.2	6.4	7.0	10.8	9.6	6.8	7.4	4.2
Relative Humidity	Max	75	97	88	87	92	83	89	95	93	97	90	87	-
	Min	28	48	40	60	34	23	25	52	51	44	40	39	-
Soil Temperature at 10 cm	06 UTC	11.8	12.6	9.0	8.8	9.6	8.4	9.5	10.8	13.0	13.0	10.6	11.7	8.1
	12 UTC	16.0	12.5	10.4	10.0	12.0	12.0	14.8	12.2	16.0	16.0	13.2	12.3	10.7
Sunshine Duration		9.1	0.0	4.9	0.2	6.7	10.1	10.5	10.4	9.9	6.9	6.9	6.5	4.9
Precipitation			9.7	1.5	0.0	0.0					0.0	11.2	10.7	13.5
Evaporation		5.3	11.1	1.8	1.1	-	-	-	-	-	-	-	25.0	27.0
Growing Degrees	5	10.2	6.6	3.7	2.9	7.1	6.5	9.7	8.8	10.6	10.0	76.1	82.0	38.9
	10	5.2	1.6	0.0	0.0	2.1	1.5	4.7	3.8	5.6	5.0	29.5	32.0	5.9

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.1	23.8	20.0
Precipitation - Reference Evapotranspiration	-14.9	-13.1	-6.5
Number of Rainy Days	2.0	4.0	3.0
Number of Dry Days	16.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



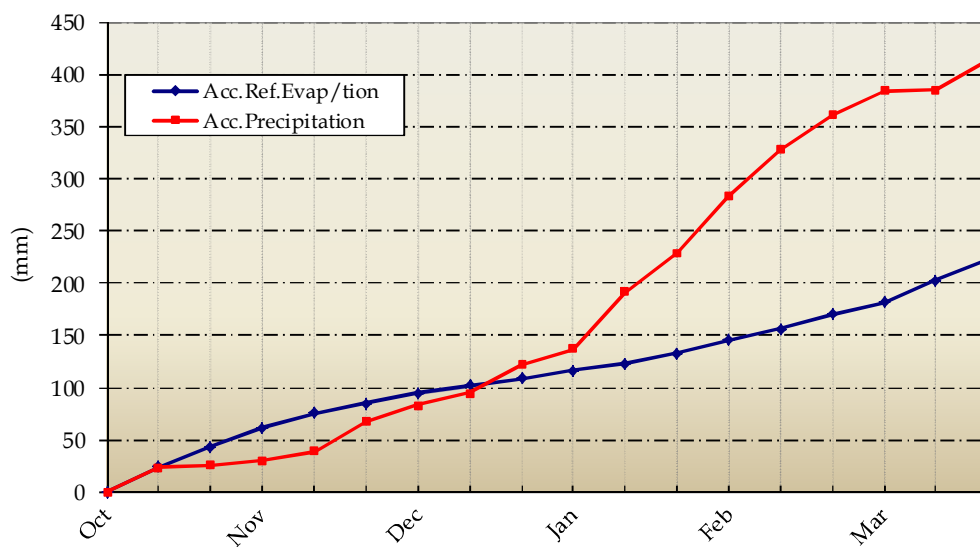


Tanagra

2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.0	17.6	9.2	14.2	9.9	19.1	22.4	21.6	19.8	17.0	17.3	20.2	14.3
	Min	6.9	11.2	6.6	2.7	7.2	0.8	5.9	6.7	4.6	5.1	5.8	9.5	4.4
Relative Humidity	Max	68	100	84	97	100	100	83	96	99	99	93	80	-
	Min	32	45	65	53	82	28	24	41	46	60	48	33	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.7	0.3	0.9	4.9	0.0	10.5	10.4	10.1	11.3	0.3	5.8	7.5	
Precipitation			0.3	13.9	0.6	14.2						29.0	4.9	16.7
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	9.5	9.4	2.9	3.5	3.6	5.0	9.2	9.2	7.2	6.1	65.3	98.7	
	10	4.5	4.4	0.0	0.0	0.0	0.0	4.2	4.2	2.2	1.1	20.4	48.7	

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.2	29.0	
Precipitation - Reference Evapotranspiration	8.8	-24.1	16.7
Number of Rainy Days	4.0	3.0	3.8
Number of Dry Days	8.0	9.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

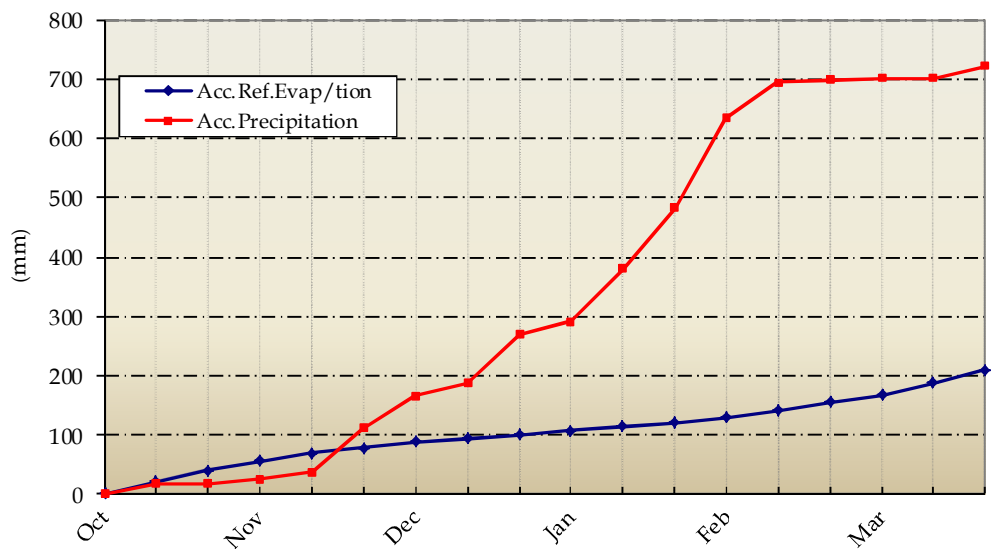


Tripoli

2nd 10-day period (11-20/03/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.4	14.5	10.8	12.6	9.8	16.7	20.6	17.0	19.3	15.6	15.5	17.8	12.2
	Min	7.2	5.8	0.6	-0.9	3.1	-1.8	0.5	0.4	-0.2	3.7	1.8	5.3	1.7
Relative Humidity	Max	84	93	96	98	99	99	91	97	99	98	95	89	-
	Min	36	51	50	38	89	30	20	38	28	44	42	35	-
Soil Temperature at 10 cm	06 UTC	-	10.4	7.0	5.8	7.4	5.2	6.4	7.4	7.6	9.0	7.4	10.5	6.6
	12 UTC	-	13.8	9.8	10.8	-	-	-	-	-	-	11.5	12.8	8.1
Sunshine Duration		10.2	3.1	7.1	7.4	1.6	9.6	10.7	10.6	10.3	0.8	7.1	7.0	5.7
Precipitation		0.0	3.2	3.8	7.7	5.3						20.0	13.1	22.3
Evaporation		-	2.6	1.6	1.6	-	-	3.4	2.7	3.0	3.0	-	-	20.1
Growing Degrees	5	7.8	5.2	0.7	0.9	1.5	2.5	5.6	3.7	4.6	4.7	36.9	65.2	24.1
	10	2.8	0.2	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	3.5	15.7	2.5

2nd 10-day period (11-20/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.1	24.3	19.5
Precipitation - Reference Evapotranspiration	-2.1	-11.2	2.8
Number of Rainy Days	4.0	5.0	4.1
Number of Dry Days	9.0	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<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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