



AGROMETEOROLOGICAL BULLETIN

January 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



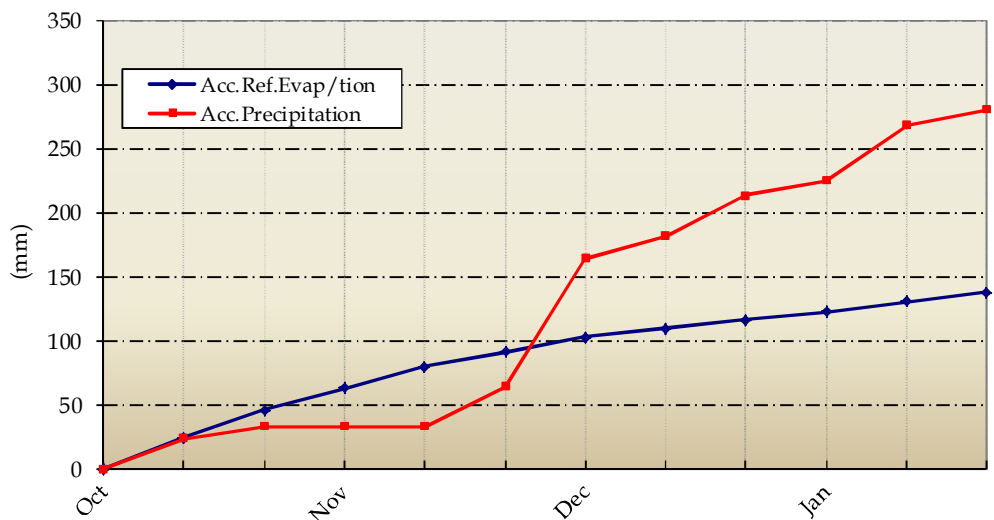
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2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	5.4	6.2	9.8	7.6	9.4	12.6	13.0	14.0	12.0	10.3	10.9	8.0
	Min	4.0	3.0	-1.2	-1.0	1.6	-4.4	-1.0	0.2	5.0	6.6	1.3	3.2	0.2
Relative Humidity	Max	90	90	76	90	83	79	92	97	99	99	90	95	-
	Min	75	63	39	57	24	29	72	72	72	73	58	68	-
Soil Temperature at 10 cm	06 UTC	8.6	5.0	3.6	3.2	4.4	2.0	2.4	4.6	5.2	7.2	4.6	6.3	4.2
	12 UTC	7.6	5.2	4.6	6.2	5.0	5.0	5.6	6.8	7.6	9.0	6.3	7.6	5.1
Sunshine Duration		0.0	0.0	6.5	6.5	3.8	8.5	6.7	3.6	3.9	1.7	4.1	3.6	3.1
Precipitation		3.6	0.6		0.3					1.9	5.9	12.3	5.9	11.4
Evaporation		2.9	0.0	0.0	1.2	0.0	0.0	0.0	0.7	0.5	0.8	6.1	12.6	6.6
Growing Degrees	5	3.5	0.0	0.0	0.0	0.0	0.0	0.8	1.6	4.5	4.3	14.7	24.4	9.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.4	7.8	8.8
Precipitation - Reference Evapotranspiration	4.9	-1.9	2.6
Number of Rainy Days	5.0	3.0	2.2
Number of Dry Days	0.0	12.0	-

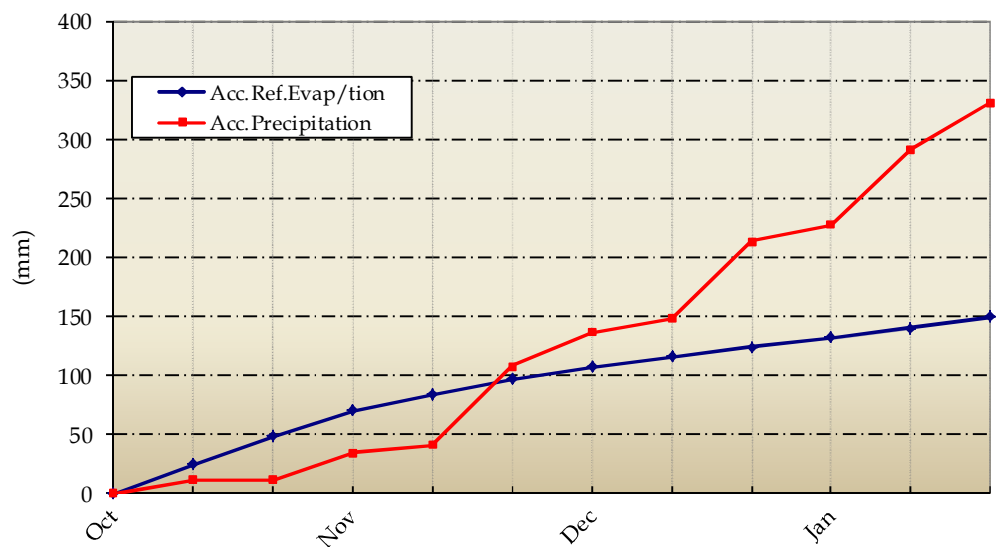
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.9	8.8	13.2	12.4	11.4	11.8	14.4	14.9	12.8	15.8	12.8	15.2	13.6
	Min	8.2	7.3	3.0	5.6	6.8	-0.8	2.0	6.2	8.0	7.0	5.3	8.2	4.8
Relative Humidity	Max	100	100	93	98	90	72	84	84	100	99	92	87	-
	Min	73	65	51	61	16	39	46	52	65	48	52	55	-
Soil Temperature at 10 cm	06 UTC	9.2	9.0	8.0	7.4	7.6	7.2	7.0	7.2	9.2	6.4	7.8	11.1	8.3
	12 UTC	9.6	9.0	8.8	10.0	10.6	7.8	7.8	11.4	10.0	9.8	9.5	12.2	9.8
Sunshine Duration		0.0	0.0	4.8	1.5	7.1	8.1	7.3	1.7	0.0	3.7	3.4	3.2	4.4
Precipitation		12.3	8.4	0.3	3.9	1.9				4.4	8.7	39.9	83.3	33.0
Evaporation		0.5	0.5	0.4	6.6	2.1	2.0	2.0	3.0	1.7	0.6	19.4	14.1	18.1
Growing Degrees	5	5.6	3.1	3.1	4.0	4.1	0.5	3.2	5.6	5.4	6.4	40.9	66.9	42.4
	10	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	1.4	2.9	18.0	7.2

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.8	13.4	9.4
Precipitation - Reference Evapotranspiration	30.1	69.9	23.6
Number of Rainy Days	7.0	7.0	3.7
Number of Dry Days	0.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

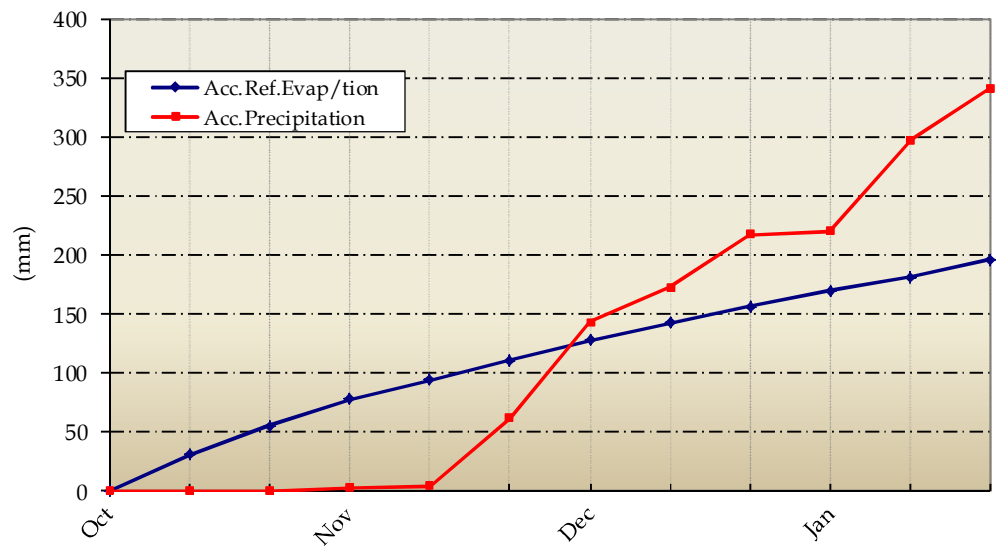


Iraklio

2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.2	17.8	13.0	14.6	13.0	10.0	14.8	15.2	16.4	15.4	14.6	16.4	14.7
	Min	14.0	11.2	9.2	9.0	10.2	5.0	4.0	8.0	9.4	11.4	9.1	10.8	9.1
Relative Humidity	Max	78	92	94	92	92	87	95	88	85	97	90	88	-
	Min	62	61	74	67	65	61	62	74	65	65	66	64	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.1	7.4	0.7	5.4	0.0	2.9	8.3	6.9	3.4	0.0	3.5	5.2	3.7
Precipitation			0.0	18.4	0.0	13.1	12.0				0.5	44.0	34.3	28.7
Evaporation		1.0	0.5	3.0	1.1	0.6	2.3	1.0	3.5	0.4	0.2	13.6	25.5	24.1
Growing Degrees	5	10.1	9.5	6.1	6.8	6.6	2.5	4.4	6.6	7.9	8.4	68.9	85.8	68.9
	10	5.1	4.5	1.1	1.8	1.6	0.0	0.0	1.6	2.9	3.4	22.0	35.8	21.0

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.6	15.7	-
Precipitation - Reference Evapotranspiration	29.4	18.6	28.7
Number of Rainy Days	4.0	3.0	4.2
Number of Dry Days	2.0	5.0	-

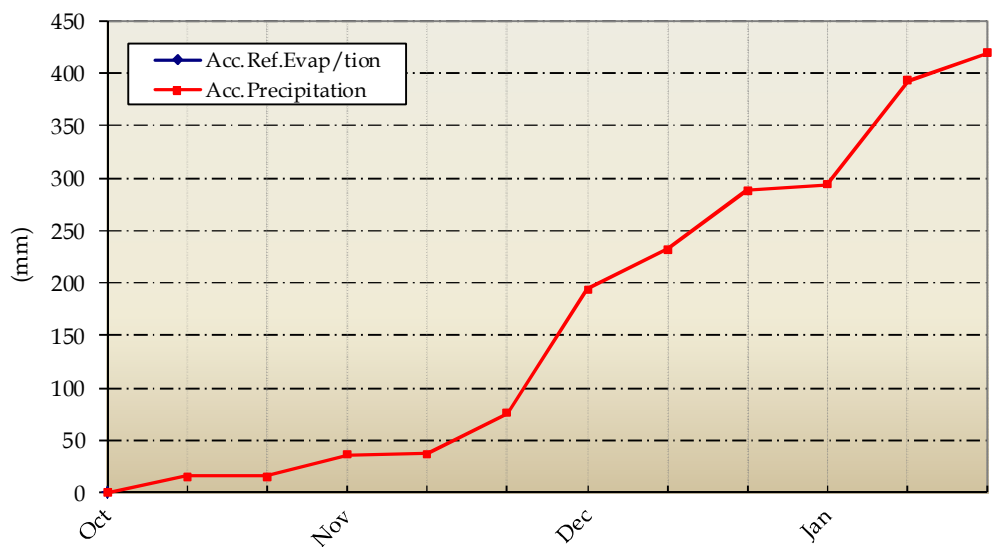
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.0	7.0	7.0	3.4	6.4	5.8	6.8	6.4	8.0	8.4	6.5	9.8	8.7
	Min	-0.2	-2.0	-5.0	-2.2	-1.0	-7.8	-6.0	-1.0	4.0	5.0	-1.6	3.4	-0.4
Relative Humidity	Max	100	100	100	100	43	100	90	100	100	100	93	95	-
	Min	79	60	53	66	13	30	35	84	88	78	59	71	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.8
Sunshine Duration		3.4	5.3	5.1	0.0	6.1	6.4	5.9	0.0	0.0	0.2	3.2	1.0	3.0
Precipitation		8.5			0.0				1.7	10.8	5.2	26.2	44.4	26.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	4.4
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.7	2.7	19.9	9.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	6.6
Precipitation - Reference Evapotranspiration	-	-	20.3
Number of Rainy Days	4.0	8.0	2.9
Number of Dry Days	0.0	6.0	-

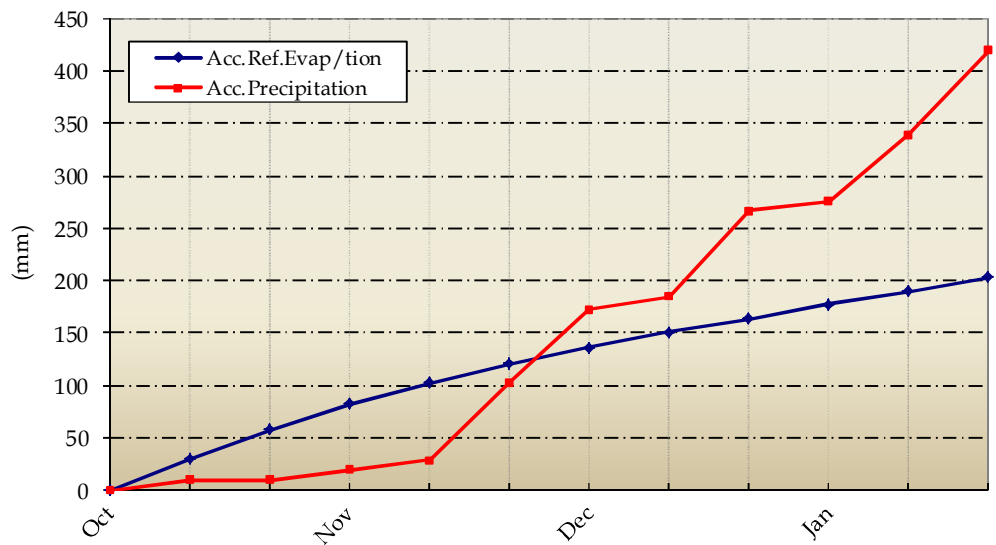
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.5	9.2	13.6	12.9	12.5	12.4	16.2	15.8	12.4	12.4	13.2	15.2	14.6
	Min	8.6	7.0	5.0	4.2	6.4	-1.9	0.6	5.4	4.6	7.6	4.8	6.9	4.9
Relative Humidity	Max	89	92	90	92	80	63	84	87	92	94	86	90	-
	Min	57	70	46	53	31	18	21	43	67	87	49	56	-
Soil Temperature at 10 cm	06 UTC	10.0	10.0	9.0	8.8	9.4	7.4	6.6	8.0	8.4	9.6	8.7	-	9.0
	12 UTC	10.6	10.0	9.4	9.2	9.6	7.2	6.6	8.8	9.0	9.6	9.0	-	10.1
Sunshine Duration		0.7	0.4	6.7	3.0	5.4	8.2	8.2	5.6	0.0	0.0	3.8	2.8	4.2
Precipitation		18.4	18.2	0.2	0.6	10.8				1.7	29.8	79.7	55.1	33.9
Evaporation		0.4	0.8	1.1	0.1	0.0	3.4	2.4	1.9	0.0	0.3	10.4	9.4	23.4
Growing Degrees	5	6.6	3.1	4.3	3.6	4.5	0.3	3.4	5.6	3.5	5.0	39.7	60.7	47.5
	10	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	2.2	12.3	8.1

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.1	11.1	11.1
Precipitation - Reference Evapotranspiration	66.6	44.0	22.8
Number of Rainy Days	7.0	7.0	3.8
Number of Dry Days	0.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

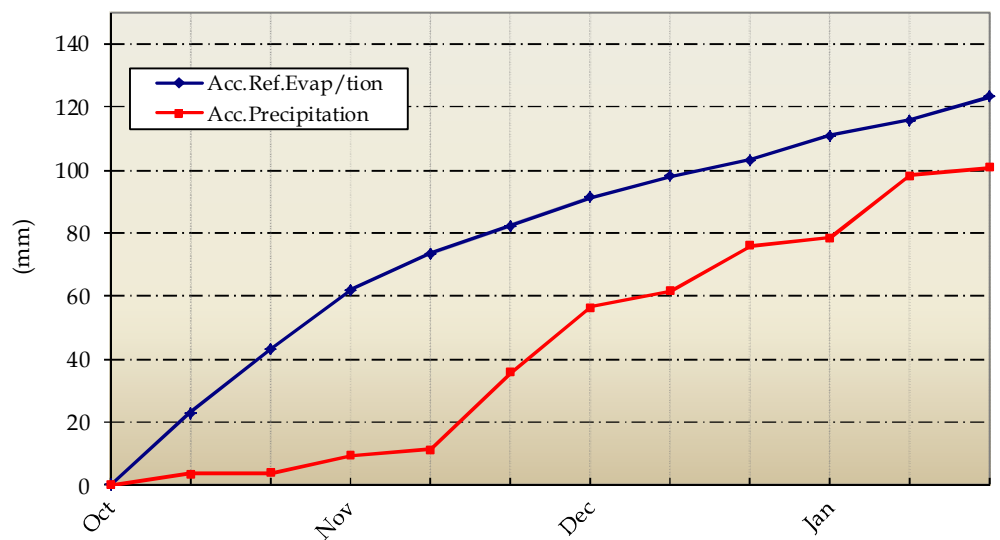


Larisa

2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.2	5.8	5.2	3.8	8.9	9.8	11.8	11.6	14.2	15.0	9.5	12.2	9.3
	Min	-1.1	1.5	-3.4	-5.0	-0.2	-1.3	-4.7	-4.6	0.7	2.0	-1.6	3.4	0.0
Relative Humidity	Max	99	95	96	100	94	87	96	96	96	99	96	98	-
	Min	67	59	57	71	15	37	39	48	50	50	49	70	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.5
Sunshine Duration		3.2	0.0	6.6	0.1	7.1	7.4	6.9	4.8	5.8	5.8	4.8	3.0	3.6
Precipitation		0.9	1.5								0.0	2.4	17.1	8.6
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.6	1.5	18.4	5.9
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	3.5	6.0	27.9	9.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	7.5	7.6	6.4
Precipitation - Reference Evapotranspiration	-5.1	9.5	2.2
Number of Rainy Days	2.0	3.0	2.6
Number of Dry Days	0.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

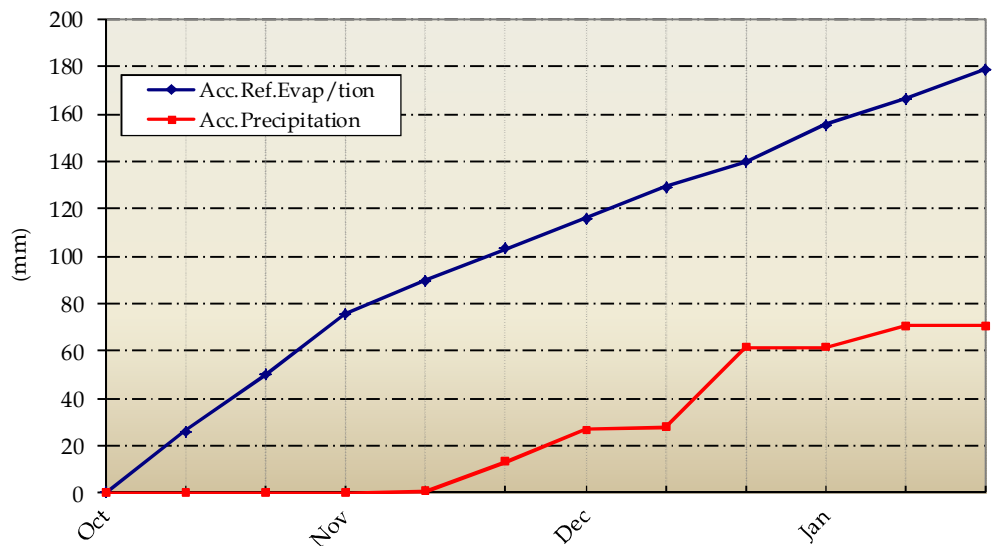


Mikra

2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	7.4	6.2	5.2	5.2	6.2	9.1	10.0	8.0	10.9	11.2	7.9	10.3	8.8
	Min	-0.2	2.7	-3.4	-3.0	2.0	-1.3	-2.4	-2.6	2.3	3.5	-0.2	3.9	1.1
Relative Humidity	Max	96	59	80	79	59	66	82	92	90	93	80	87	-
	Min	46	48	49	58	39	36	48	62	69	74	53	54	-
Soil Temperature at 10 cm	06 UTC	2.0	4.0	3.0	1.8	3.0	2.0	2.4	2.9	4.0	5.6	3.1	7.4	4.3
	12 UTC	3.0	5.0	4.4	3.0	4.2	2.6	5.0	4.5	5.6	6.8	4.4	8.0	5.7
Sunshine Duration		4.9	3.3	7.9	3.5	7.2	7.7	8.5	1.4	3.6	4.6	5.3	2.9	3.6
Precipitation										0.0		0.0	10.7	6.6
Evaporation		0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.2	2.2	7.4	15.0	10.5
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	2.4	4.0	21.4	11.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.4	9.5	8.8
Precipitation - Reference Evapotranspiration	-12.4	1.2	-2.2
Number of Rainy Days	0.0	5.0	2.2
Number of Dry Days	10.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

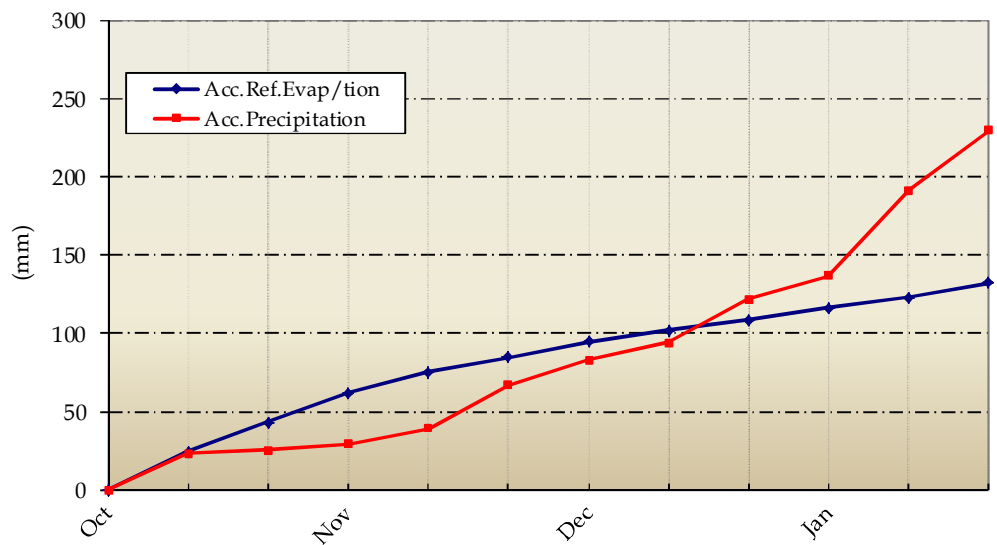


Tanagra

2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.5	4.0	8.7	10.6	7.6	10.2	15.0	14.7	16.0	15.8	11.5	13.1	11.4
	Min	5.8	3.8	3.6	-0.3	5.0	1.0	-1.5	0.1	0.3	4.6	2.2	4.6	3.0
Relative Humidity	Max	99	100	97	100	100	80	86	98	100	99	96	91	-
	Min	56	79	50	50	36	28	30	39	43	50	46	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		1.9	0.0	6.3	3.7	2.0	7.9	6.5	6.2	4.0	4.3	4.3	3.8	
Precipitation		2.4	28.2			6.0					1.4	38.0	36.0	26.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	4.2	0.0	1.2	0.2	1.3	0.6	1.8	2.4	3.2	5.2	19.9	38.9	
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	5.2	

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.4	10.2	
Precipitation - Reference Evapotranspiration	28.6	25.8	26.0
Number of Rainy Days	4.0	4.0	4.7
Number of Dry Days	2.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

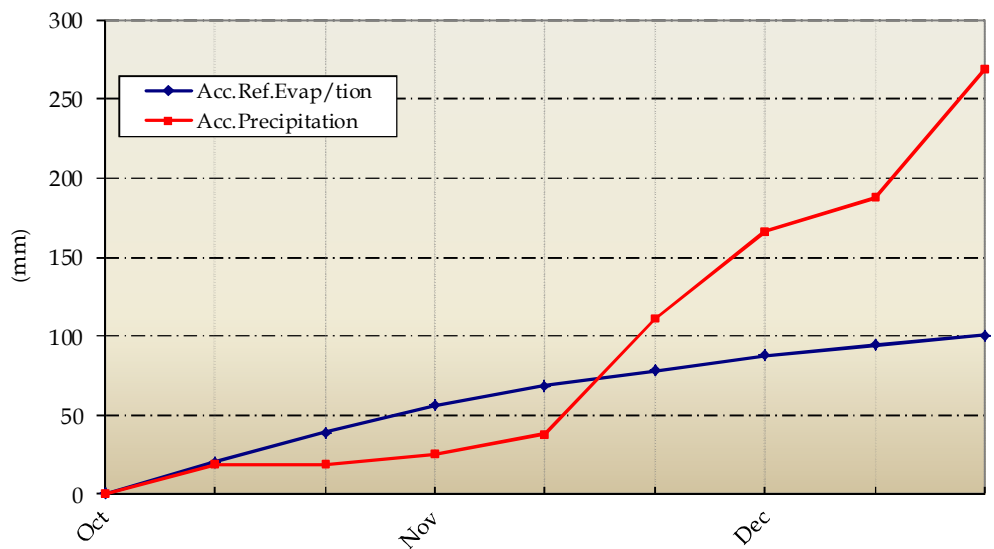


Tripoli

2nd 10-day period (11-20/01/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.9	4.6	6.6	7.7	7.7	7.9	12.2	9.5	7.4	9.0	8.2	10.0	9.4
	Min	3.4	0.0	-2.7	0.7	1.9	-4.8	-5.3	-2.1	-1.7	3.9	-0.7	3.4	0.1
Relative Humidity	Max	100	100	100	100	97	94	98	100	100	100	99	97	-
	Min	66	89	65	58	25	24	33	56	81	75	57	60	-
Soil Temperature at 10 cm	06 UTC	4.8	4.6	1.8	1.8	3.4	1.2	0.8	1.2	1.6	3.8	2.5	6.4	4.3
	12 UTC	6.2	-	-	3.8	5.2	2.2	-	-	-	-	4.4	7.3	5.0
Sunshine Duration		2.0	0.0	6.1	2.2	4.8	8.0	7.8	1.7	0.0	0.0	3.3	2.7	4.1
Precipitation		23.4	43.9		0.3	7.7				0.3	26.4	102.0	40.9	31.6
Evaporation		-	0.0	-	1.2	0.0	0.0	0.0	0.0	0.0	1.1	-	8.1	5.6
Growing Degrees	5	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	3.1	18.6	10.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5

2nd 10-day period (11-20/01/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.7	8.2	8.5
Precipitation - Reference Evapotranspiration	95.3	32.7	23.1
Number of Rainy Days	6.0	8.0	3.7
Number of Dry Days	0.0	6.0	-

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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The present bulletin was designed and implemented under the support of Water Resources Management Division of Agriculture University of Athens