



AGROMETEOROLOGICAL BULLETIN

February 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



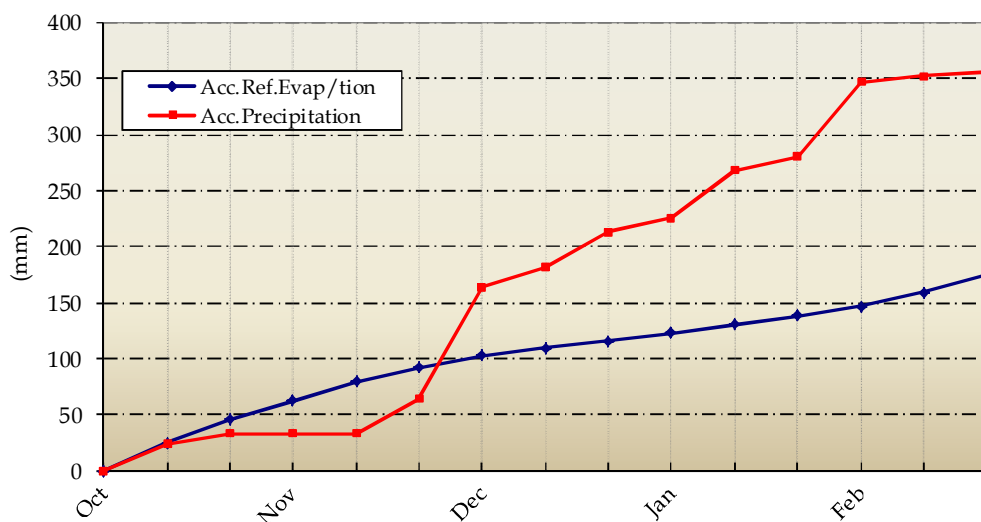
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2nd 10-day period (11-20/02/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.6	13.4	7.4	10.4	7.2	9.8	11.6	14.6	16.4	13.6	11.9	10.2	10.0
	Min	5.4	7.4	3.6	4.0	3.2	2.6	-2.4	-1.2	0.0	-0.4	2.2	3.6	2.2
Relative Humidity	Max	90	87	73	44	90	75	88	88	85	93	81	93	-
	Min	65	75	42	20	51	33	46	41	33	52	46	58	-
Soil Temperature at 10 cm	06 UTC	7.2	10.2	6.8	5.0	6.0	5.0	3.6	4.0	5.4	6.0	5.9	6.4	4.8
	12 UTC	9.4	10.0	6.8	7.6	6.4	8.0	7.8	7.8	9.0	10.2	8.3	8.1	6.1
Sunshine Duration		4.4	0.0	0.0	9.3	0.0	4.9	8.3	8.5	8.9	8.7	5.3	4.0	3.7
Precipitation			0.0	0.0		2.9						2.9	23.5	18.4
Evaporation		1.7	1.8	1.8	3.4	2.1	0.0	0.0	0.0	3.7	2.1	16.6	12.6	10.5
Growing Degrees	5	5.0	5.4	0.5	2.2	0.2	1.2	0.0	1.7	3.2	1.6	21.0	19.6	23.6
	10	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	4.0

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.3	12.6	12.3
Precipitation - Reference Evapotranspiration	-12.4	10.9	6.1
Number of Rainy Days	1.0	4.0	2.7
Number of Dry Days	8.0	0.0	-

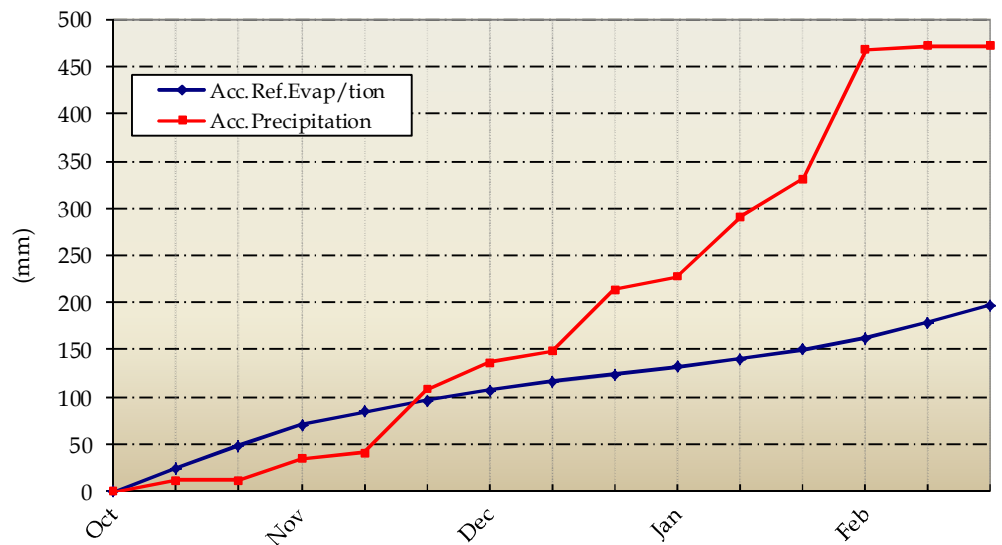
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/02/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	14.6	11.2	13.1	13.4	13.2	14.0	15.8	16.2	15.8	14.4	14.2	14.5
	Min	4.8	8.6	2.1	6.4	2.6	0.8	-0.2	1.5	6.3	7.0	4.0	7.4	6.2
Relative Humidity	Max	84	87	89	55	77	80	87	87	89	98	83	87	-
	Min	42	42	40	31	27	36	29	45	59	52	40	56	-
Soil Temperature at 10 cm	06 UTC	10.6	11.6	10.4	9.0	5.8	8.2	7.8	8.4	9.8	10.6	9.2	10.6	9.1
	12 UTC	13.2	13.2	10.6	10.0	9.3	9.0	9.0	9.6	10.6	11.8	10.6	11.5	11.0
Sunshine Duration		3.0	3.0	0.1	7.2	10.4	10.2	9.7	9.4	6.9	8.0	6.8	4.1	4.8
Precipitation			0.5									0.5	72.9	37.6
Evaporation		3.7	2.6	4.0	3.5	4.0	4.0	5.6	0.0	5.0	0.0	32.4	13.4	21.3
Growing Degrees	5	5.6	6.6	1.7	4.8	3.0	2.0	1.9	3.7	6.3	6.4	41.8	57.9	54.0
	10	0.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.4	4.9	9.1	13.3

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.4	15.7	14.2
Precipitation - Reference Evapotranspiration	-17.9	57.2	23.4
Number of Rainy Days	1.0	6.0	5.1
Number of Dry Days	5.0	0.0	-

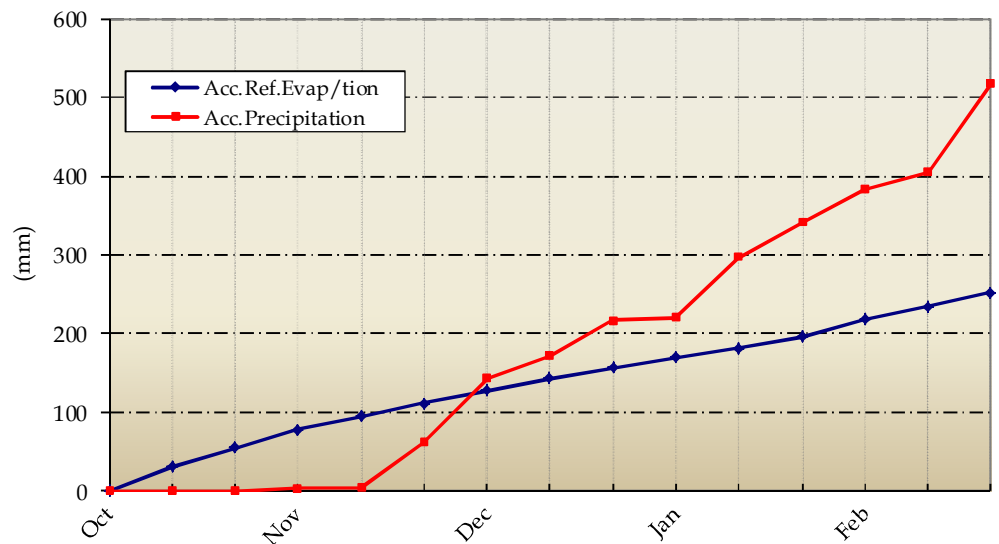
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/02/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.0	18.4	13.2	12.2	12.0	11.4	12.0	13.6	14.8	15.8	14.0	16.1	15.9
	Min	7.6	11.4	10.0	9.0	10.0	7.6	8.8	10.6	8.0	7.6	9.1	10.3	9.3
Relative Humidity	Max	85	92	94	92	85	94	94	79	86	94	90	87	-
	Min	53	47	73	65	48	75	71	59	57	57	60	60	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.1	8.2	0.0	0.0	5.0	0.0	0.0	2.0	5.3	3.5	3.3	4.6	4.8
Precipitation				16.9	22.3	1.4	24.4	47.2				112.2	19.6	20.7
Evaporation		4.2	1.5	0.5	2.0	2.9	17.0	2.1	1.2	0.8	1.9	34.1	18.0	30.3
Growing Degrees	5	7.3	9.9	6.6	5.6	6.0	4.5	5.4	7.1	6.4	6.7	65.5	81.6	75.8
	10	2.3	4.9	1.6	0.6	1.0	0.0	0.4	2.1	1.4	1.7	16.0	31.6	27.6

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.3	18.5	-
Precipitation - Reference Evapotranspiration	94.9	1.1	20.7
Number of Rainy Days	5.0	6.0	4.0
Number of Dry Days	3.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

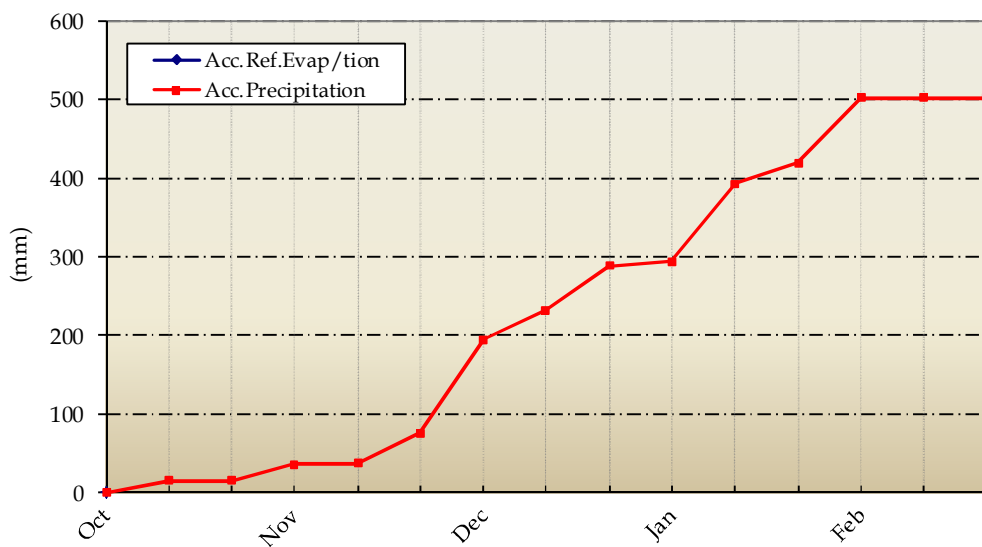


Ioannina

2nd 10-day period (11-20/02/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.6	10.0	6.4	10.2	7.8	9.4	11.4	15.2	12.6	11.4	10.6	11.5	10.3
	Min	4.8	4.0	3.0	3.2	4.0	3.4	-2.6	-2.2	-3.4	-3.0	1.1	2.7	1.8
Relative Humidity	Max	100	93	60	64	54	44	97	92	96	100	80	95	-
	Min	71	56	33	24	27	33	21	34	37	70	41	59	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.4
Sunshine Duration		3.3	3.3	4.8	7.5	5.3	7.7	7.3	7.3	7.4	3.6	5.8	2.8	3.3
Precipitation		0.0	0.0									0.0	38.4	46.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	11.3
Growing Degrees	5	3.2	2.0	0.0	1.7	0.9	1.4	0.0	1.5	0.0	0.0	10.7	22.3	18.2
	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	1.8

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	11.4
Precipitation - Reference Evapotranspiration	-	-	35.0
Number of Rainy Days	0.0	5.0	5.0
Number of Dry Days	19.0	0.0	-

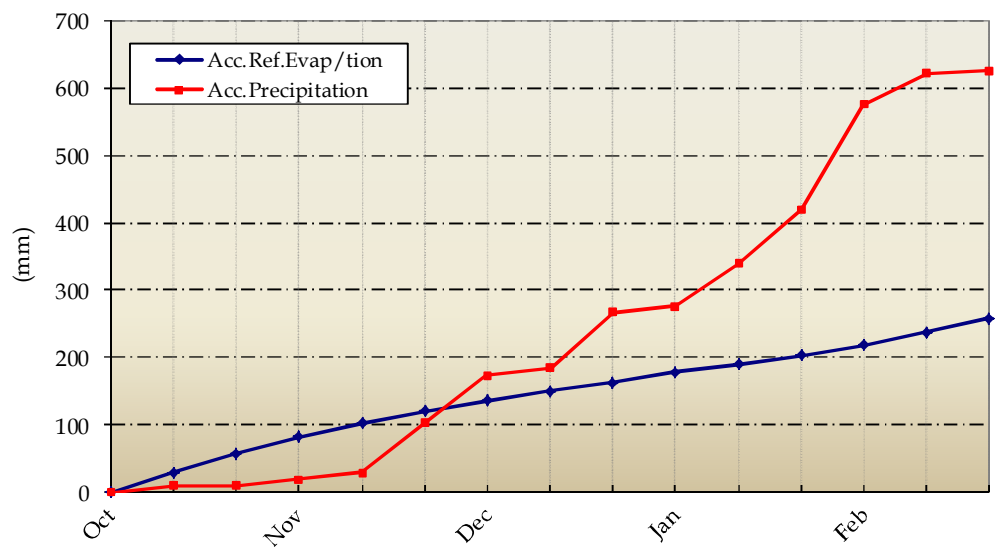
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/02/2019)		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	14.5	10.8	15.8	14.3	13.0	14.0	15.2	17.1	17.6	14.8	14.8	15.1
	Min	6.2	7.8	6.0	9.0	5.8	7.5	4.9	0.0	3.1	5.6	5.6	6.4	5.9
Relative Humidity	Max	90	90	83	47	58	63	77	90	94	91	78	91	-
	Min	55	51	40	23	26	35	34	45	50	46	40	56	-
Soil Temperature at 10 cm	06 UTC	-	-	10.6	9.0	6.6	8.7	8.4	8.6	8.0	10.0	8.7	-	9.6
	12 UTC	-	-	10.6	9.6	9.6	9.4	9.6	9.6	10.0	10.6	9.9	-	10.9
Sunshine Duration		4.0	0.7	0.0	6.3	7.2	7.1	9.3	8.9	8.8	9.1	6.1	4.2	4.5
Precipitation			3.5	0.0								3.5	51.9	43.8
Evaporation		0.0	1.8	3.6	3.1	3.9	3.2	2.9	2.1	3.2	1.6	25.4	11.3	26.5
Growing Degrees	5	6.2	6.2	3.4	7.4	5.1	5.3	4.5	2.6	5.1	6.6	52.2	56.1	55.5
	10	1.2	1.2	0.0	2.4	0.1	0.3	0.0	0.0	0.1	1.6	6.8	9.0	12.8

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.5	14.5	15.6
Precipitation - Reference Evapotranspiration	-18.0	37.4	28.2
Number of Rainy Days	1.0	6.0	5.2
Number of Dry Days	5.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

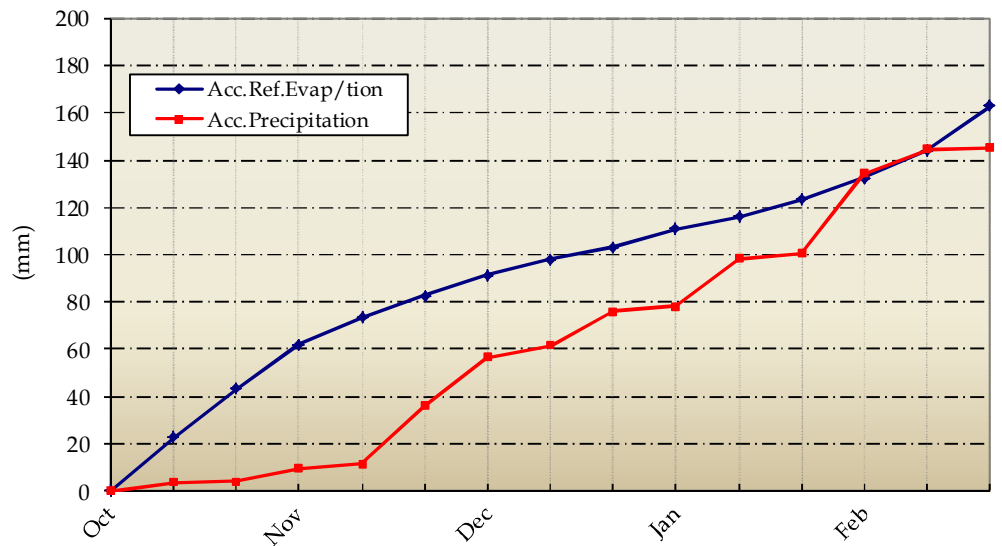


Larisa

2nd 10-day period (11-20/02/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.4	14.6	9.0	12.2	12.2	11.8	13.4	16.6	17.3	17.6	14.2	11.2	12.1
	Min	-0.4	4.8	4.5	5.5	0.6	3.8	-4.6	-2.0	-1.2	-0.7	1.0	3.6	1.9
Relative Humidity	Max	99	78	51	62	87	91	94	94	95	98	85	96	-
	Min	46	36	32	26	37	38	39	36	34	40	36	62	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.2
Sunshine Duration		5.2	3.4	1.3	7.6	3.1	4.6	8.0	8.4	7.8	8.4	5.8	2.7	4.0
Precipitation						0.5	0.1					0.6	17.8	12.7
Evaporation		2.2	5.7	4.4	0.0	0.0	0.0	0.0	1.4	4.2	2.2	20.1	17.2	10.0
Growing Degrees	5	3.5	4.7	1.8	3.9	1.4	2.8	0.0	2.3	3.1	3.5	26.8	24.2	25.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.3

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.8	11.5	12.0
Precipitation - Reference Evapotranspiration	-18.2	6.3	0.7
Number of Rainy Days	2.0	6.0	3.6
Number of Dry Days	8.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

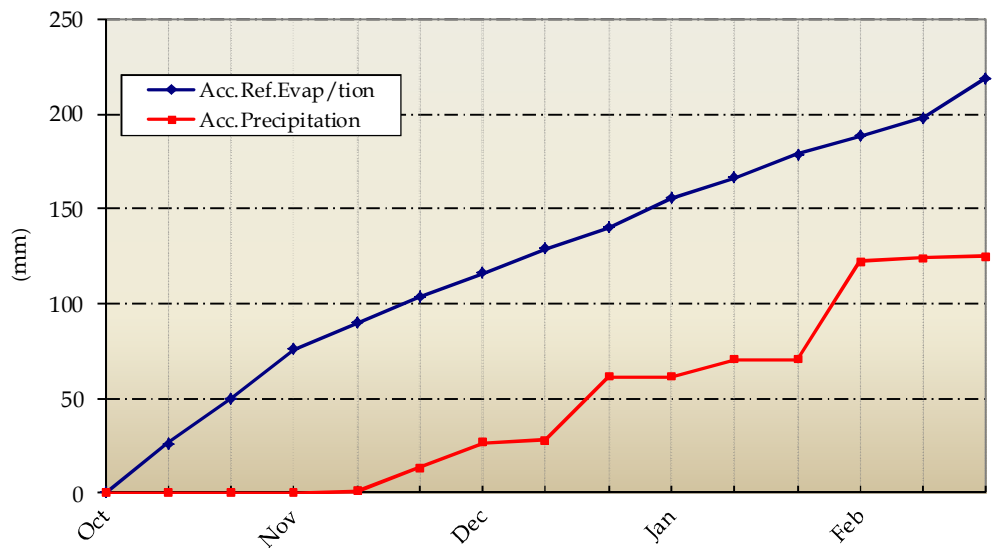


Mikra

2nd 10-day period (11-20/02/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.2	14.6	8.8	11.6	10.6	11.0	13.2	16.0	14.4	16.8	13.2	11.6	11.2
	Min	4.2	7.6	4.3	3.4	4.4	3.0	-0.6	1.0	2.0	2.8	3.2	4.8	2.9
Relative Humidity	Max	97	90	56	60	65	79	89	85	89	90	80	85	-
	Min	50	35	30	34	43	34	47	33	55	39	40	51	-
Soil Temperature at 10 cm	06 UTC	7.0	8.8	6.0	5.6	6.0	6.2	5.5	6.0	6.8	7.2	6.5	7.9	5.9
	12 UTC	9.4	9.5	7.0	7.0	7.6	9.0	8.0	9.2	9.4	9.8	8.6	8.4	7.7
Sunshine Duration		3.4	7.1	1.5	8.2	1.1	9.0	8.6	8.8	9.3	8.7	6.6	2.7	3.8
Precipitation			1.0									1.0	21.6	15.0
Evaporation		2.8	2.6	2.2	5.8	2.2	2.8	3.6	4.0	2.9	4.5	33.4	16.6	14.7
Growing Degrees	5	4.7	6.1	1.6	2.5	2.5	2.0	1.3	3.5	3.2	4.8	32.2	31.8	26.4
	10	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.9	3.8

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.4	13.9	13.1
Precipitation - Reference Evapotranspiration	-20.4	7.7	1.9
Number of Rainy Days	1.0	3.0	3.4
Number of Dry Days	3.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

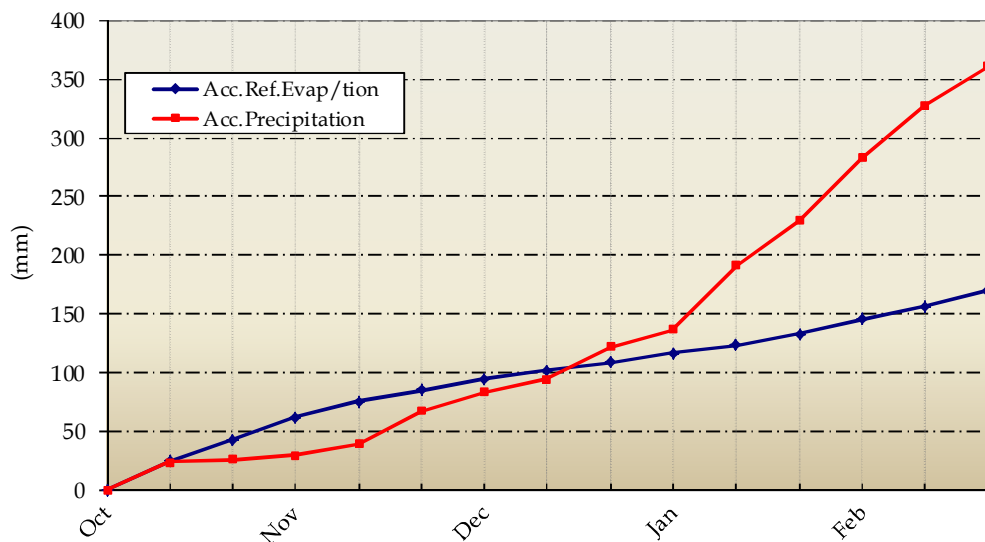


Tanagra

2nd 10-day period (11-20/02/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	13.4	5.0	9.2	8.2	7.0	10.8	15.9	16.2	17.0	11.9	12.5	13.2
	Min	2.5	10.7	4.5	4.8	4.1	4.4	5.2	0.0	0.5	1.8	3.8	5.1	4.1
Relative Humidity	Max	98	80	93	84	93	83	89	99	96	100	92	95	-
	Min	45	46	55	43	39	59	53	35	41	41	46	57	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		6.1	1.2	0.0	3.3	2.7	0.1	4.2	8.6	7.4	7.2	4.1	3.5	
Precipitation				8.7	6.0	8.9	9.6					33.2	31.0	15.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	4.5	7.1	0.0	2.0	1.2	0.7	3.0	3.0	3.4	4.4	29.1	37.7	
	10	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.9	

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.9	12.3	
Precipitation - Reference Evapotranspiration	19.3	18.7	15.6
Number of Rainy Days	4.0	6.0	4.8
Number of Dry Days	4.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

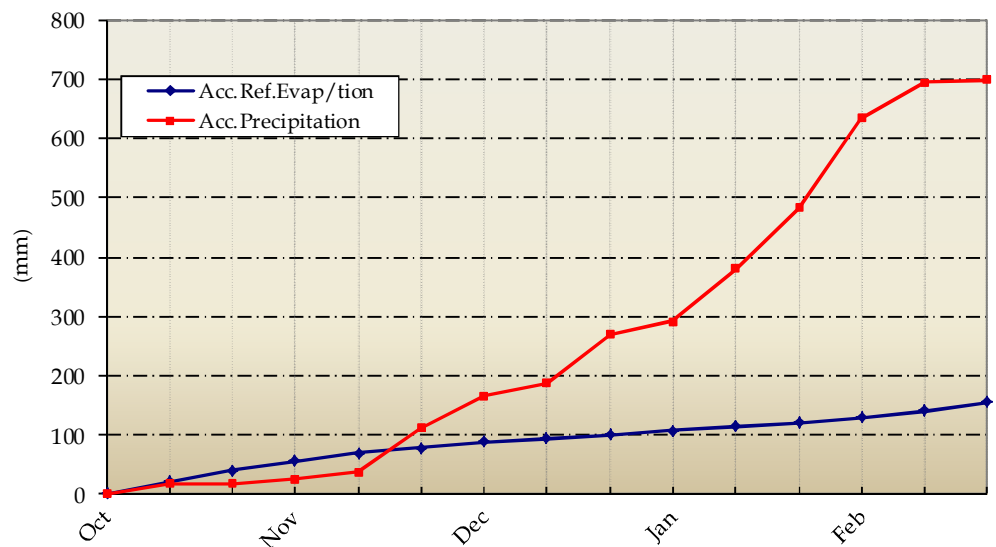


Tripoli

2nd 10-day period (11-20/02/2019)		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	10.2	6.1	7.1	7.0	4.1	9.7	14.9	15.9	15.8	10.4	9.3	10.2
	Min	1.0	4.5	1.4	1.2	0.3	0.2	0.2	-4.3	-3.1	-2.1	-0.1	2.4	1.7
Relative Humidity	Max	89	92	91	88	97	99	98	99	100	100	95	99	-
	Min	55	43	64	38	41	65	39	28	26	26	42	58	-
Soil Temperature at 10 cm	06 UTC	4.2	6.8	5.8	3.6	3.2	3.4	2.4	1.8	2.4	5.2	3.9	6.2	4.8
	12 UTC	7.8	9.2	5.8	-	-	-	-	-	7.8	8.6	7.8	7.5	5.7
Sunshine Duration		5.6	4.6	0.0	5.5	8.9	0.8	9.1	8.3	8.0	-	5.6	4.4	4.3
Precipitation			1.2	0.0	0.4	0.6	1.2					3.4	82.3	39.0
Evaporation		1.4	1.4	0.7	1.7	1.2	0.4	-	0.0	1.3	-	-	-	11.0
Growing Degrees	5	2.0	2.4	0.0	0.0	0.0	0.0	0.0	0.3	1.4	1.9	7.9	-	17.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	1.6

2nd 10-day period (11-20/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.9	11.2	12.8
Precipitation - Reference Evapotranspiration	-11.5	71.1	26.2
Number of Rainy Days	4.0	6.0	4.9
Number of Dry Days	4.0	0.0	-

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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