



# AGROMETEOROLOGICAL BULLETIN

*March 2018*  
*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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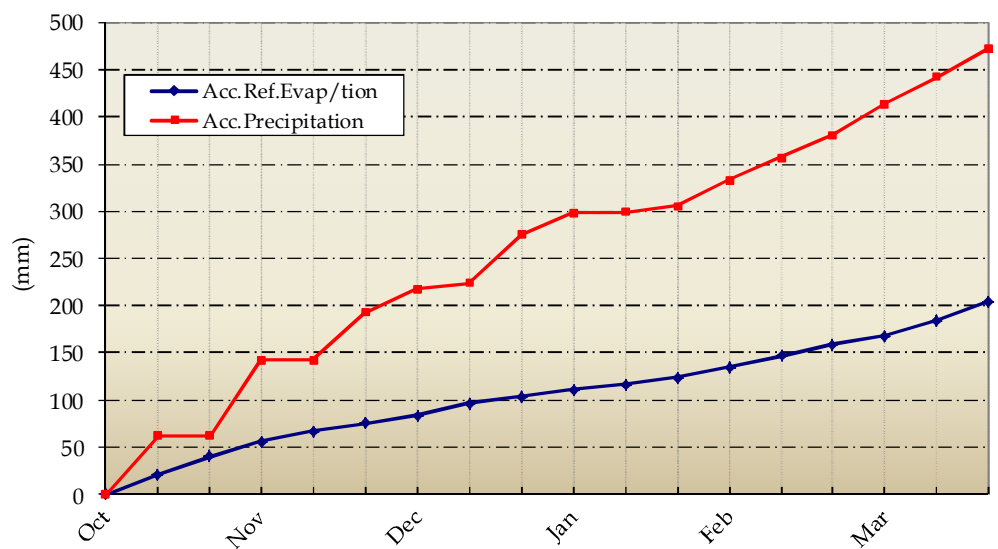
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Alexandroupoli

2nd 10-day period (11-20/03/2018)		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	17.6	17.6	16.2	14.8	16.0	18.2	18.2	14.4	16.6	16.7	13.2	11.6
	Min	4.2	6.6	13.6	6.2	6.6	1.0	9.2	11.0	10.0	9.0	7.7	6.3	2.9
Relative Humidity	Max	94	97	97	97	94	97	97	93	95	93	95	90	-
	Min	61	64	60	49	60	69	53	59	78	58	61	53	-
Soil Temperature at 10 cm	06 UTC	9.2	10.0	13.0	11.4	11.4	9.8	11.0	13.2	12.8	11.2	11.3	8.9	6.6
	12 UTC	13.6	14.2	14.4	15.6	12.4	12.0	14.2	13.6	13.0	15.2	13.8	11.7	8.9
Sunshine Duration		10.4	8.1	9.7	9.0	6.0	0.0	4.4	0.0	0.2	10.0	5.8	2.6	4.9
Precipitation				1.1		1.0			4.8	0.0	23.0	29.9	3.6	14.4
Evaporation		0.8	3.0	2.5	4.7	3.5	2.4	3.8	1.6	2.0	2.0	26.3	18.2	21.8
Growing Degrees	5	5.8	7.1	10.6	6.2	5.7	3.5	8.7	9.6	7.2	7.8	72.2	47.5	27.0
	10	0.8	2.1	5.6	1.2	0.7	0.0	3.7	4.6	2.2	2.8	23.7	8.1	3.4

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.8	15.2	18.1
Precipitation - Reference Evapotranspiration	10.1	-11.6	-3.7
Number of Rainy Days	4.0	5.0	2.2
Number of Dry Days	3.0	1.0	-

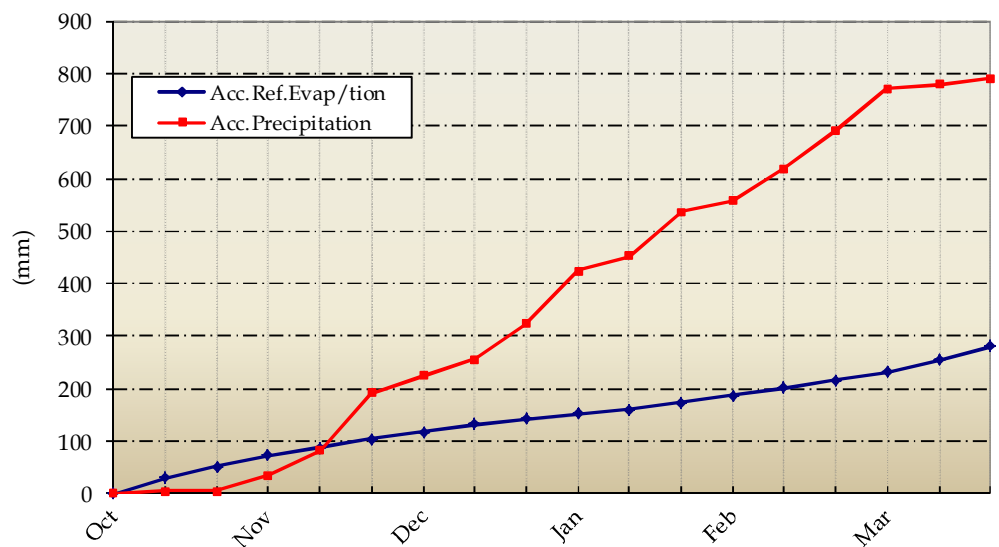
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2018)		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	21.6	18.0	17.6	18.2	19.0	23.6	22.8	17.7	17.7	19.4	16.8	15.7
	Min	8.2	8.7	10.3	9.3	7.5	10.0	11.5	12.7	10.5	8.7	9.7	6.3	6.3
Relative Humidity	Max	90	91	86	85	89	83	74	85	88	85	86	87	-
	Min	65	51	57	39	38	40	25	41	61	46	46	45	-
Soil Temperature at 10 cm	06 UTC	13.8	14.4	15.0	14.6	14.2	15.0	14.6	15.5	15.2	13.8	14.6	11.0	10.6
	12 UTC	15.5	15.6	15.4	16.1	16.4	16.0	15.2	16.4	16.0	15.6	15.8	15.0	12.8
Sunshine Duration		8.7	6.1	9.8	7.8	9.5	4.3	0.0	6.1	0.0	9.7	6.2	8.2	6.4
Precipitation				0.3					4.5	6.8	0.7	12.3		25.8
Evaporation		3.0	3.3	3.0	4.0	3.0	3.0	0.6	2.9	0.2	4.0	27.0	37.0	26.9
Growing Degrees	5	8.0	10.2	9.2	8.5	7.9	9.5	12.6	12.8	9.1	8.2	95.7	65.4	60.4
	10	3.0	5.2	4.2	3.5	2.9	4.5	7.6	7.8	4.1	3.2	45.7	15.9	15.6

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.2	23.4	21.0
Precipitation - Reference Evapotranspiration	-14.9	-23.4	4.8
Number of Rainy Days	4.0	0.0	3.7
Number of Dry Days	4.0	10.0	-

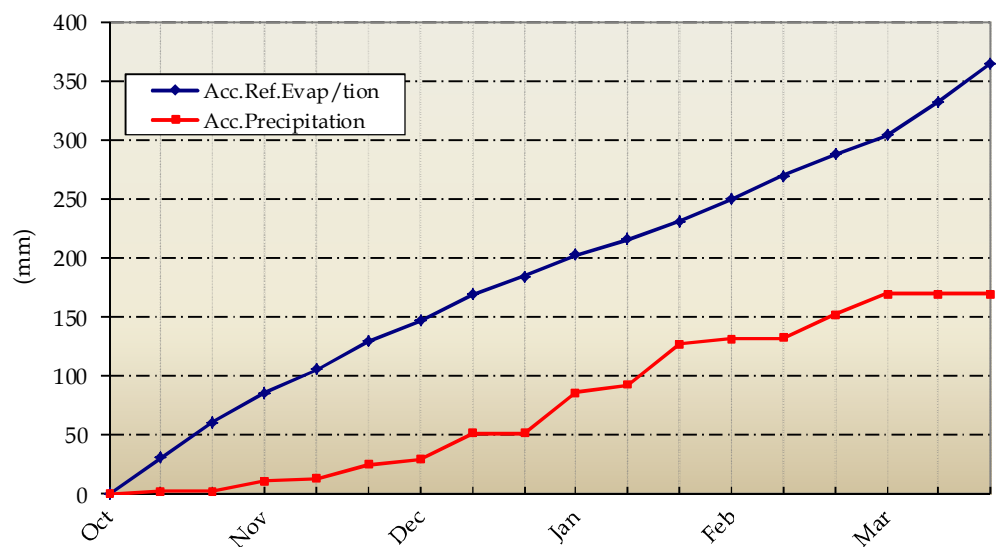
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2018)		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	20.2	18.6	19.2	18.2	18.2	25.8	21.2	20.0	18.4	19.8	15.7	15.9
	Min	7.2	11.2	14.6	10.4	11.2	9.2	13.8	19.0	13.6	15.2	12.5	9.5	9.4
Relative Humidity	Max	88	90	83	80	83	93	68	84	89	87	84	92	-
	Min	56	46	56	49	55	53	32	43	37	37	46	71	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.4	9.3	7.4	8.4	9.0	7.7	6.0	0.8	9.0	9.4	7.6	5.8	5.5
Precipitation													46.0	23.2
Evaporation		2.5	3.8	4.1	2.0	5.9	1.7	9.4	3.9	3.5	5.6	42.4	39.2	33.8
Growing Degrees	5	7.5	10.7	11.6	9.8	9.7	8.7	14.8	15.1	11.8	11.8	111.5	75.9	76.5
	10	2.5	5.7	6.6	4.8	4.7	3.7	9.8	10.1	6.8	6.8	61.5	25.9	28.0

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.7	21.0	-
Precipitation - Reference Evapotranspiration	-32.7	25.0	23.2
Number of Rainy Days	0.0	4.0	3.5
Number of Dry Days	22.0	0.0	-

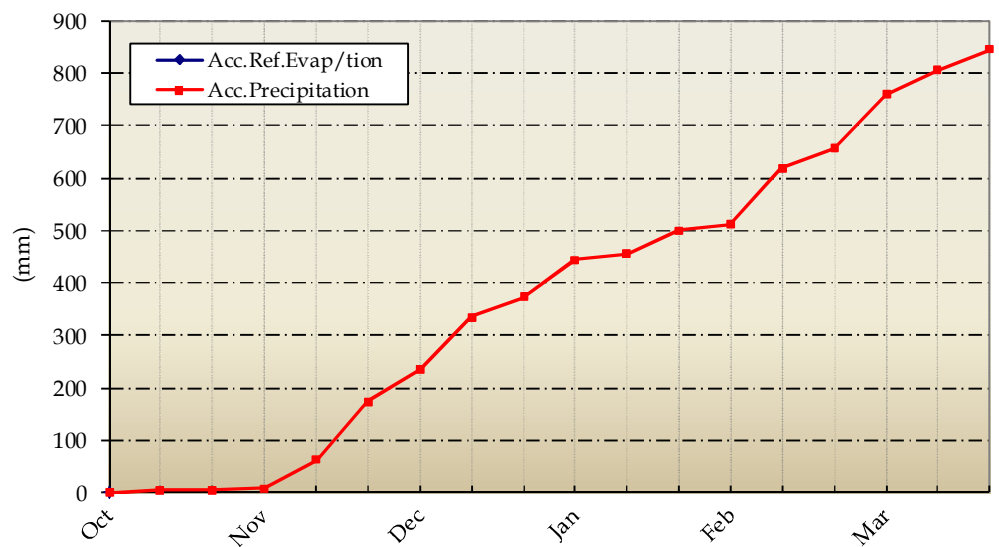
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.2	19.6	13.8	15.4	15.4	14.0	18.8	18.0	11.4	15.8	16.1	16.1	12.6
	Min	2.4	5.0	8.0	6.6	1.5	5.0	10.2	10.2	8.0	5.4	6.2	2.0	2.7
Relative Humidity	Max	97	100	97	100	100	97	100	97	100	100	99	95	-
	Min	42	51	75	44	41	67	38	28	80	46	51	35	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	6.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.8
Sunshine Duration		7.9	4.2	0.2	5.4	7.1	0.0	0.3	4.9	0.0	6.3	3.6	4.0	4.5
Precipitation			0.0	9.4	1.9		2.3	0.0	2.7	18.1	4.4	38.8	0.0	29.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	18.6
Growing Degrees	5	5.8	7.3	5.9	6.0	3.5	4.5	9.5	9.1	4.7	5.6	61.9	-	28.8
	10	0.8	2.3	0.9	1.0	0.0	0.0	4.5	4.1	0.0	0.6	14.2	-	3.0

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	16.8
Precipitation - Reference Evapotranspiration	-	-	12.7
Number of Rainy Days	6.0	0.0	3.4
Number of Dry Days	4.0	12.0	-

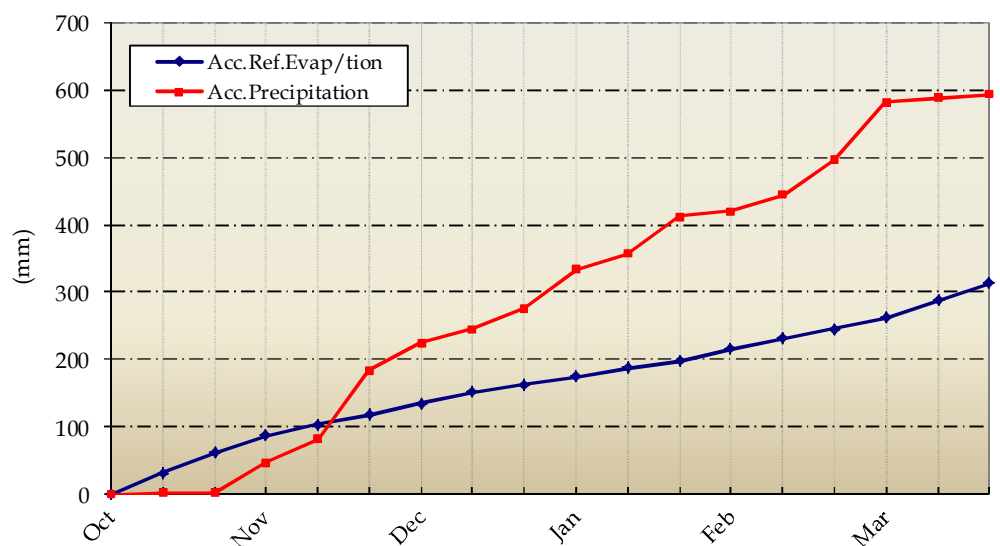
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.9	17.8	19.9	20.3	19.4	18.4	21.2	21.4	18.6	19.1	19.8	18.1	16.3
	Min	6.2	7.1	7.2	5.1	4.6	5.9	6.9	17.4	6.7	5.2	7.2	5.6	5.8
Relative Humidity	Max	90	92	91	93	92	89	91	89	93	93	91	90	-
	Min	44	71	40	30	35	49	44	55	51	38	46	42	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	13.0
Sunshine Duration		10.2	8.6	8.0	10.0	9.3	7.1	2.1	5.0	2.0	10.2	7.2	8.1	6.1
Precipitation						0.0			1.0	3.8	0.1	4.9	3.0	22.7
Evaporation		3.0	4.0	2.9	2.8	2.2	2.8	3.0	2.8	1.2	2.8	27.5	36.4	33.5
Growing Degrees	5	9.1	7.5	8.6	7.7	7.0	7.2	9.1	14.4	7.7	7.2	85.2	68.5	60.5
	10	4.1	2.5	3.6	2.7	2.0	2.2	4.1	9.4	2.7	2.2	35.2	18.7	15.1

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.2	26.6	21.7
Precipitation - Reference Evapotranspiration	-21.3	-23.6	1.0
Number of Rainy Days	3.0	3.0	3.8
Number of Dry Days	11.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

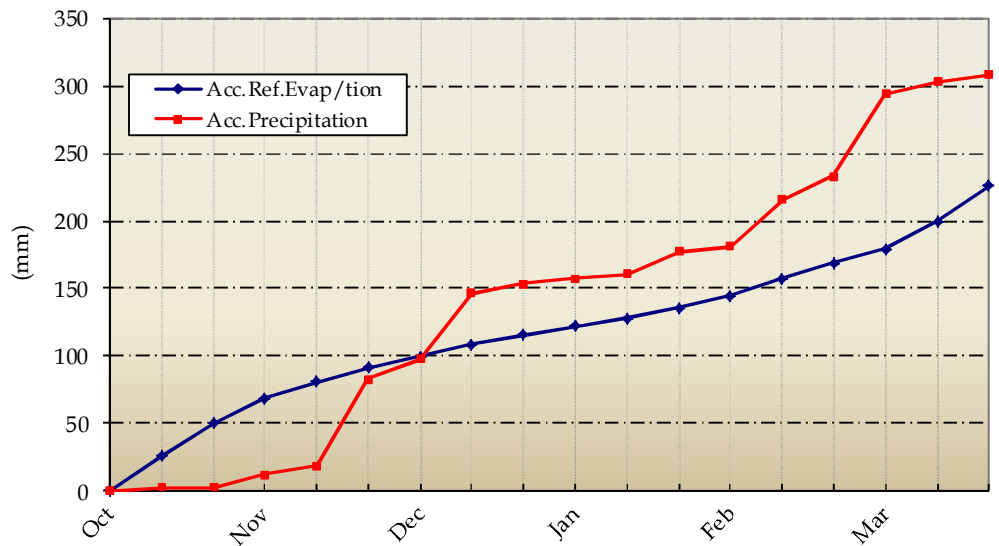


Larisa

2nd 10-day period (11-20/03/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.4	20.0	19.4	19.0	20.0	19.0	25.0	21.6	15.4	18.6	19.9	16.9	14.0
	Min	2.6	5.4	7.3	3.6	3.2	6.0	7.2	13.8	4.6	4.4	5.8	4.3	2.8
Relative Humidity	Max	92	96	95	92	89	88	91	78	93	90	90	96	-
	Min	40	54	38	32	27	40	35	33	52	28	38	40	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	9.5
Sunshine Duration		8.5	7.2	8.6	8.9	10.2	0.0	7.2	4.3	1.2	10.3	6.6	5.3	5.1
Precipitation				0.3	0.0				0.2	4.7	0.0	5.2	1.6	13.9
Evaporation		3.1	2.5	4.8	6.2	4.8	2.5	5.0	3.0	1.1	5.3	38.3	26.5	20.7
Growing Degrees	5	7.0	7.7	8.4	6.3	6.6	7.5	11.1	12.7	5.0	6.5	78.8	56.0	36.4
	10	2.0	2.7	3.4	1.3	1.6	2.5	6.1	7.7	0.0	1.5	28.8	12.6	5.5

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.4	20.3	18.5
Precipitation - Reference Evapotranspiration	-21.2	-18.7	-4.6
Number of Rainy Days	3.0	2.0	3.1
Number of Dry Days	4.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

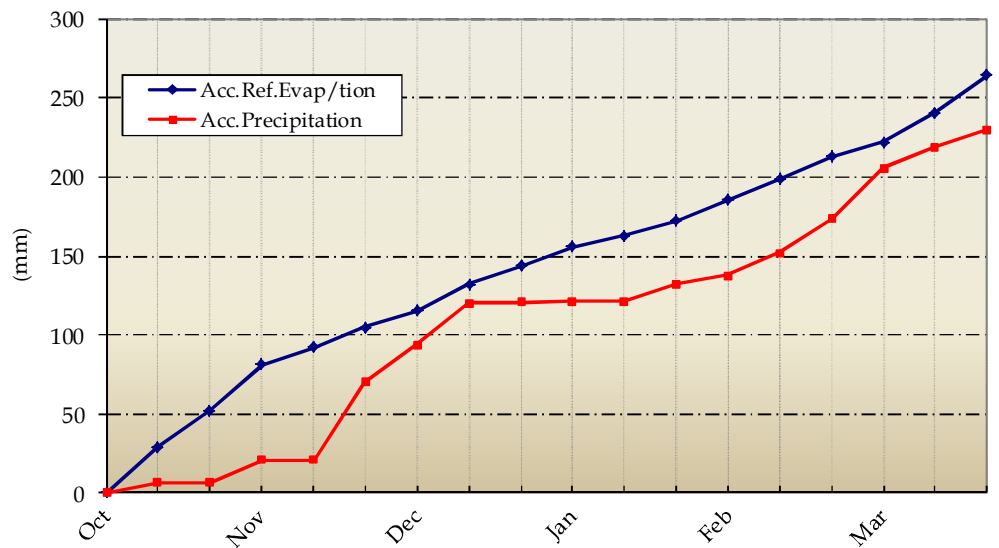


Mikra

2nd 10-day period (11-20/03/2018)		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	17.0	19.8	19.4	18.8	16.8	23.7	20.0	17.1	19.0	18.9	16.6	13.4
	Min	3.7	7.6	8.3	5.8	4.7	6.6	6.0	14.7	10.4	6.7	7.4	5.9	4.2
Relative Humidity	Max	93	93	93	78	82	84	90	81	88	92	87	87	-
	Min	48	72	34	24	24	41	32	46	45	26	39	38	-
Soil Temperature at 10 cm	06 UTC	10.2	11.4	12.1	11.2	11.4	11.7	11.1	13.5	13.0	11.4	11.7	9.6	8.1
	12 UTC	12.4	13.3	14.8	13.0	13.0	12.5	12.4	8.6	8.8	14.0	12.3	12.0	10.7
Sunshine Duration		9.6	6.4	8.6	9.6	10.3	0.0	5.7	3.2	1.1	10.5	6.5	6.6	4.9
Precipitation				5.6					3.3	0.8	1.0	10.7	11.9	13.5
Evaporation		4.9	1.1	5.2	3.0	1.2	1.0	5.2	1.3	0.1	2.0	25.0	29.9	27.0
Growing Degrees	5	5.8	7.3	9.1	7.6	6.8	6.7	9.9	12.4	8.8	7.9	82.0	62.4	38.9
	10	0.8	2.3	4.1	2.6	1.8	1.7	4.9	7.4	3.8	2.9	32.0	12.5	5.9

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.8	25.3	20.0
Precipitation - Reference Evapotranspiration	-13.1	-13.4	-6.5
Number of Rainy Days	4.0	2.0	3.0
Number of Dry Days	6.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



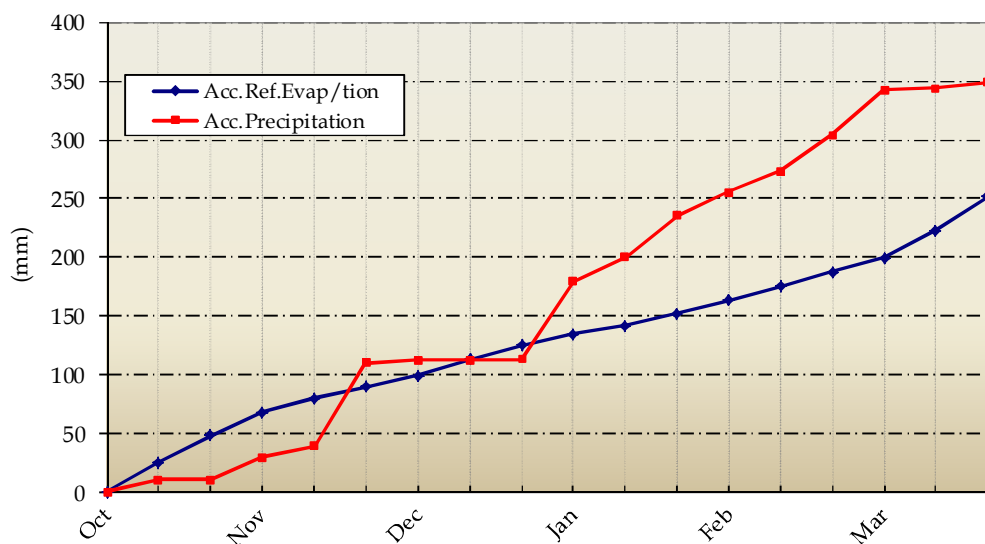


Tanagra

2nd 10-day period (11-20/03/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.0	21.8	19.4	18.5	19.3	20.3	23.0	20.7	20.5	18.4	20.2	15.8	14.3
	Min	7.1	6.6	9.6	9.2	6.6	7.6	11.0	15.2	11.6	10.9	9.5	5.5	4.4
Relative Humidity	Max	97	100	68	68	77	76	74	71	95	79	80	96	-
	Min	42	45	33	30	29	34	28	32	30	30	33	45	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.5	9.2	9.7	10.7	10.6	2.2	3.7	3.0	6.6	9.6	7.5	5.8	
Precipitation									0.7	2.1	2.1	4.9	29.0	16.7
Evaporation		2.6	3.8	6.4	6.8	2.4	4.2	6.0	4.1	4.5	4.6	45.4	30.1	
Growing Degrees	5	8.6	9.2	9.5	8.9	8.0	9.0	12.0	13.0	11.1	9.7	98.7	56.5	
	10	3.6	4.2	4.5	3.9	3.0	4.0	7.0	8.0	6.1	4.7	48.7	11.7	

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	29.0	20.1	
Precipitation - Reference Evapotranspiration	-24.1	8.9	16.7
Number of Rainy Days	3.0	4.0	3.8
Number of Dry Days	9.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

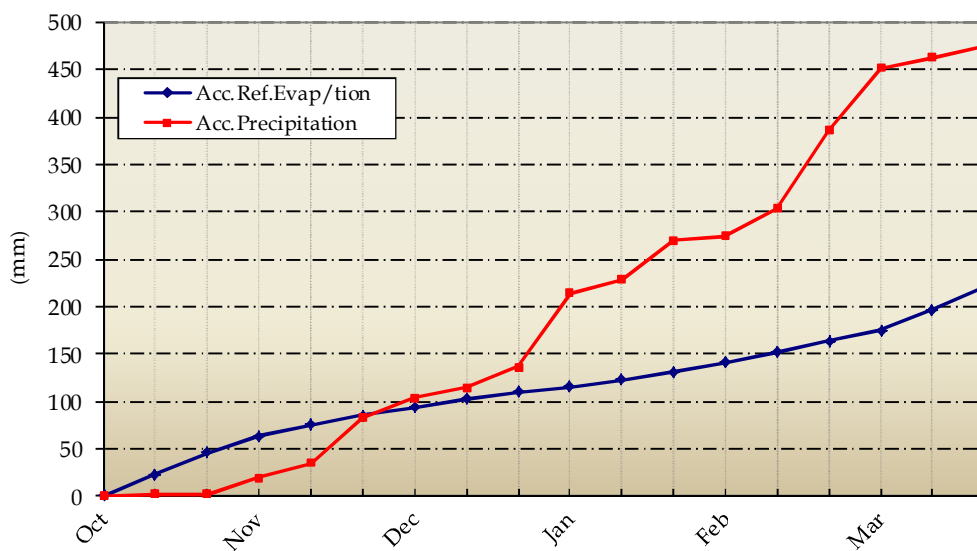


Tripoli

2nd 10-day period (11-20/03/2018)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.2	21.9	21.9	13.8	15.1	17.8	20.2	16.8	16.0	14.0	17.8	14.4	12.2
	Min	0.8	3.4	5.4	7.7	5.5	2.9	4.0	11.0	6.9	5.1	5.3	0.7	1.7
Relative Humidity	Max	99	100	74	88	88	89	88	89	89	82	89	98	-
	Min	33	33	39	38	30	36	33	41	35	32	35	40	-
Soil Temperature at 10 cm	06 UTC	-	10.0	11.0	10.8	10.4	9.8	10.0	12.4	10.4	9.8	10.5	6.7	6.6
	12 UTC	-	13.2	12.8	12.2	13.6	13.6	-	-	13.0	11.4	12.8	11.7	8.1
Sunshine Duration		9.2	6.8	8.5	7.5	10.4	4.2	4.2	5.4	5.7	7.9	7.0	6.2	5.7
Precipitation					0.8	1.0			2.3	7.4	1.6	13.1	15.2	22.3
Evaporation		-	2.1	3.5	2.4	3.2	2.2	2.8	1.4	3.2	1.7	-	19.9	20.1
Growing Degrees	5	5.5	7.7	8.7	5.8	5.3	5.4	7.1	8.9	6.5	4.6	65.2	26.0	24.1
	10	0.5	2.7	3.7	0.8	0.3	0.4	2.1	3.9	1.5	0.0	15.7	2.6	2.5

2nd 10-day period (11-20/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.3	19.5	19.5
Precipitation - Reference Evapotranspiration	-11.2	-4.3	2.8
Number of Rainy Days	5.0	2.0	4.1
Number of Dry Days	5.0	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<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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