



AGROMETEOROLOGICAL BULLETIN

March 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



Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

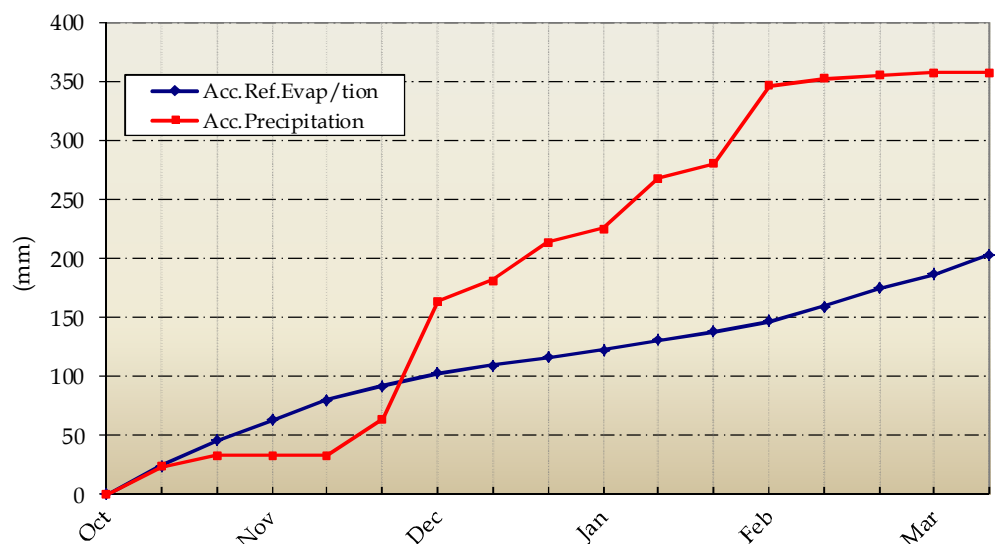
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Alexandroupoli

1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.2	14.4	13.0	12.4	14.8	17.4	16.6	18.6	17.0	15.4	15.5	13.6	10.6
	Min	5.2	5.0	3.6	1.8	6.0	6.8	4.4	6.2	10.2	5.8	5.5	5.8	2.2
Relative Humidity	Max	92	94	77	91	98	97	94	98	98	98	94	90	-
	Min	60	74	41	57	60	58	49	68	66	65	60	63	-
Soil Temperature at 10 cm	06 UTC	6.8	7.8	7.8	7.4	7.4	10.2	10.0	10.4	12.6	11.6	9.2	8.3	5.9
	12 UTC	14.0	10.6	11.6	11.4	12.4	14.6	14.2	15.0	15.0	15.6	13.4	10.5	8.0
Sunshine Duration		8.8	0.5	7.0	9.4	9.2	9.3	8.8	6.6	5.1	8.4	7.3	5.8	4.8
Precipitation			0.0									0.0	28.6	16.7
Evaporation		2.7	1.8	2.4	2.4	3.0	1.7	2.0	2.6	3.5	2.6	24.7	21.2	18.5
Growing Degrees	5	5.2	4.7	3.3	2.1	5.4	7.1	5.5	7.4	8.6	5.6	54.9	52.6	22.8
	10	0.2	0.0	0.0	0.0	0.4	2.1	0.5	2.4	3.6	0.6	9.8	13.5	2.2

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.4	16.4	16.2
Precipitation - Reference Evapotranspiration	-16.4	12.2	0.5
Number of Rainy Days	0.0	6.0	2.2
Number of Dry Days	15.0	1.0	-

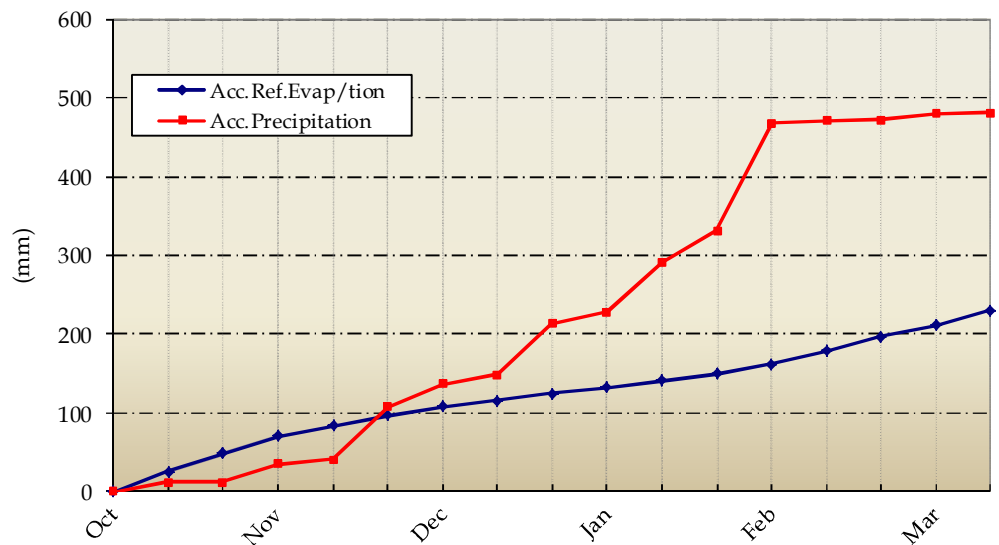
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.6	16.4	18.4	17.4	17.8	17.9	19.2	19.7	19.4	20.0	18.3	18.6	15.2
	Min	4.4	8.1	4.4	5.4	5.8	9.0	7.3	4.7	6.2	9.2	6.4	9.5	5.8
Relative Humidity	Max	87	100	100	100	100	100	100	96	100	100	98	88	-
	Min	46	59	35	45	56	59	56	45	34	48	48	44	-
Soil Temperature at 10 cm	06 UTC	9.0	11.2	10.6	11.2	11.4	12.0	12.6	12.6	12.2	13.2	11.6	12.8	10.0
	12 UTC	14.2	12.2	13.2	13.6	13.0	16.0	14.6	15.6	14.2	14.8	14.1	14.5	12.2
Sunshine Duration		8.9	2.3	8.8	8.8	8.9	9.3	9.3	9.3	7.3	9.8	8.3	5.3	6.1
Precipitation			0.9									0.9	7.1	26.8
Evaporation		4.0	-	4.3	3.0	3.0	5.0	3.4	3.0	3.0	6.0	-	27.5	25.2
Growing Degrees	5	5.5	7.3	6.4	6.4	6.8	8.5	8.3	7.2	7.8	9.6	73.7	90.3	55.6
	10	0.5	2.3	1.4	1.4	1.8	3.5	3.3	2.2	2.8	4.6	23.7	40.8	13.0

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.9	22.9	18.0
Precipitation - Reference Evapotranspiration	-18.0	-15.8	8.8
Number of Rainy Days	1.0	4.0	3.2
Number of Dry Days	5.0	1.0	-

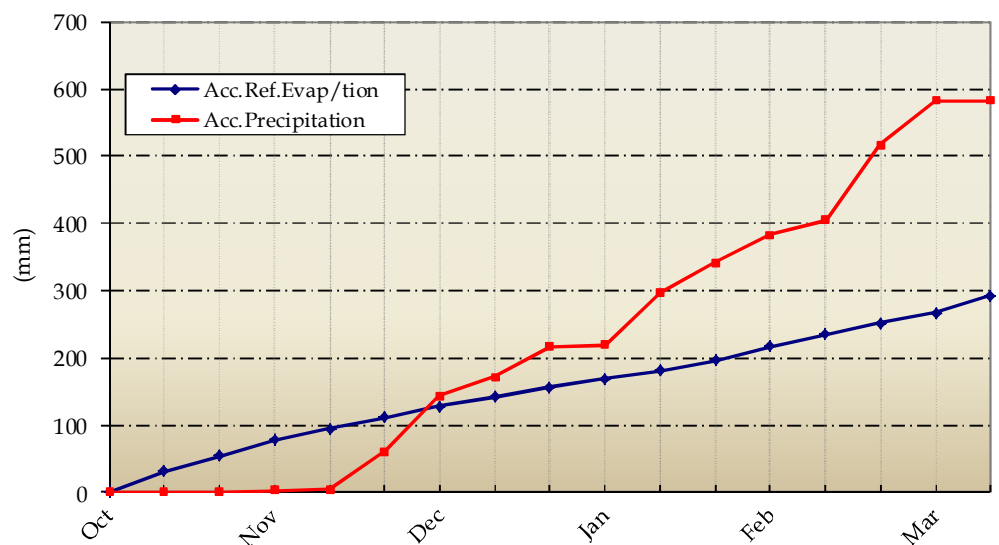
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.2	16.4	16.4	15.6	17.0	18.0	17.2	18.4	20.0	21.6	17.7	21.1	15.6
	Min	7.2	9.0	11.2	11.6	7.0	10.4	9.4	9.2	9.0	12.6	9.7	12.9	8.9
Relative Humidity	Max	87	87	87	85	89	87	88	89	79	69	85	84	-
	Min	52	61	63	55	59	63	71	53	37	29	54	48	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.1	7.7	6.9	8.4	9.6	9.5	10.2	10.2	10.5	10.3	9.2	5.7	5.3
Precipitation				0.5								0.5		20.8
Evaporation		3.1	1.0	2.3	0.5	0.7	1.6	1.8	1.5	2.4	3.6	18.5	37.3	33.2
Growing Degrees	5	6.7	7.7	8.8	8.6	7.0	9.2	8.3	8.8	9.5	12.1	86.7	120.1	72.7
	10	1.7	2.7	3.8	3.6	2.0	4.2	3.3	3.8	4.5	7.1	36.7	70.1	25.3

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.9	28.6	-
Precipitation - Reference Evapotranspiration	-25.4	-28.6	20.8
Number of Rainy Days	1.0	0.0	3.3
Number of Dry Days	3.0	12.0	-

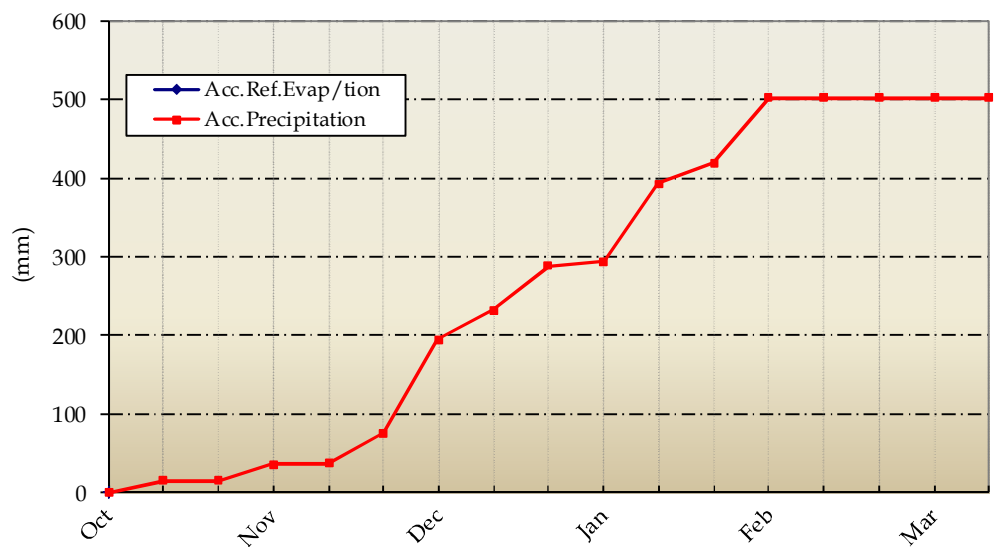
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.4	14.0	16.4	15.4	16.6	17.0	18.8	19.2	17.4	19.6	17.0	13.9	12.2
	Min	-3.8	0.0	0.0	-1.0	0.0	2.0	4.0	0.4	1.8	0.8	0.4	4.9	1.7
Relative Humidity	Max	92	100	66	100	100	100	100	100	100	100	96	97	-
	Min	26	44	22	30	34	46	32	29	26	25	31	54	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.3
Sunshine Duration		8.8	6.0	8.6	8.5	6.6	7.8	6.9	8.2	8.2	6.9	7.6	4.5	4.6
Precipitation													47.3	27.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	14.8
Growing Degrees	5	0.8	2.0	3.2	2.2	3.3	4.5	6.4	4.8	4.6	5.2	37.0	48.2	25.1
	10	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.2	1.6	9.3	2.0

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	15.2
Precipitation - Reference Evapotranspiration	-	-	12.1
Number of Rainy Days	0.0	7.0	3.5
Number of Dry Days	37.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

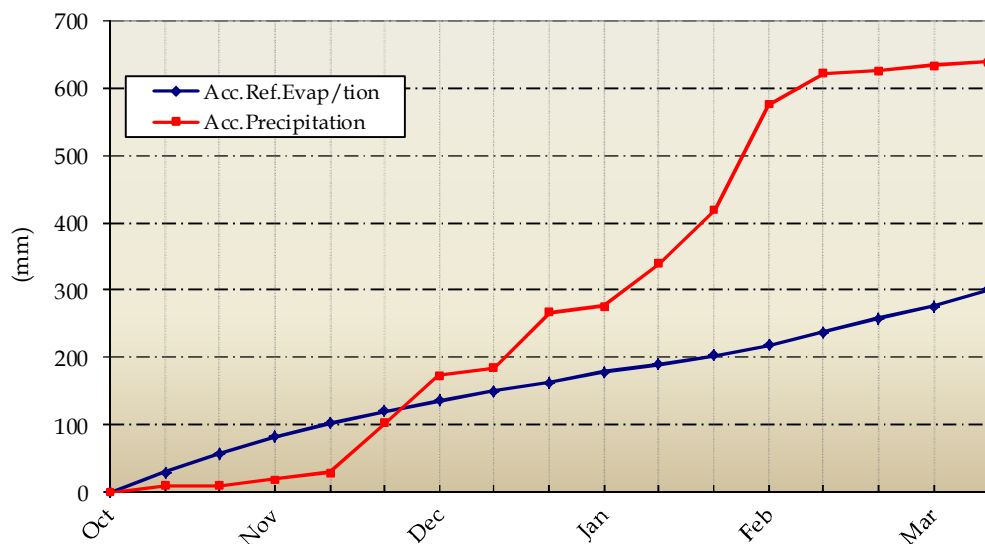


Kalamata

1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	16.2	17.8	16.4	20.0	17.2	18.0	20.9	22.4	23.1	19.0	20.1	16.0
	Min	3.4	0.0	6.1	7.5	0.0	5.4	5.0	4.1	4.2	4.7	4.0	9.1	5.6
Relative Humidity	Max	91	92	90	92	94	93	94	92	87	90	92	88	-
	Min	40	63	43	52	36	58	56	26	26	29	43	42	-
Soil Temperature at 10 cm	06 UTC	9.2	10.0	10.2	11.0	10.4	11.5	11.2	11.2	11.5	13.0	10.9	-	10.3
	12 UTC	10.6	11.0	11.6	11.6	12.2	12.5	12.8	13.0	12.6	13.0	12.1	-	12.1
Sunshine Duration		9.5	1.1	9.3	8.0	9.7	7.6	7.6	10.3	7.1	9.7	8.0	6.8	5.8
Precipitation			0.8	4.4								5.2	6.5	26.1
Evaporation		3.0	0.2	1.9	1.9	4.3	2.8	3.7	2.9	1.5	6.2	28.4	32.5	29.9
Growing Degrees	5	5.6	3.1	7.0	7.0	5.0	6.3	6.5	7.5	8.3	8.9	65.1	96.2	58.2
	10	0.6	0.0	2.0	2.0	0.0	1.3	1.5	2.5	3.3	3.9	17.0	46.3	14.6

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.5	25.8	18.8
Precipitation - Reference Evapotranspiration	-19.3	-19.3	7.3
Number of Rainy Days	2.0	3.0	3.2
Number of Dry Days	2.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

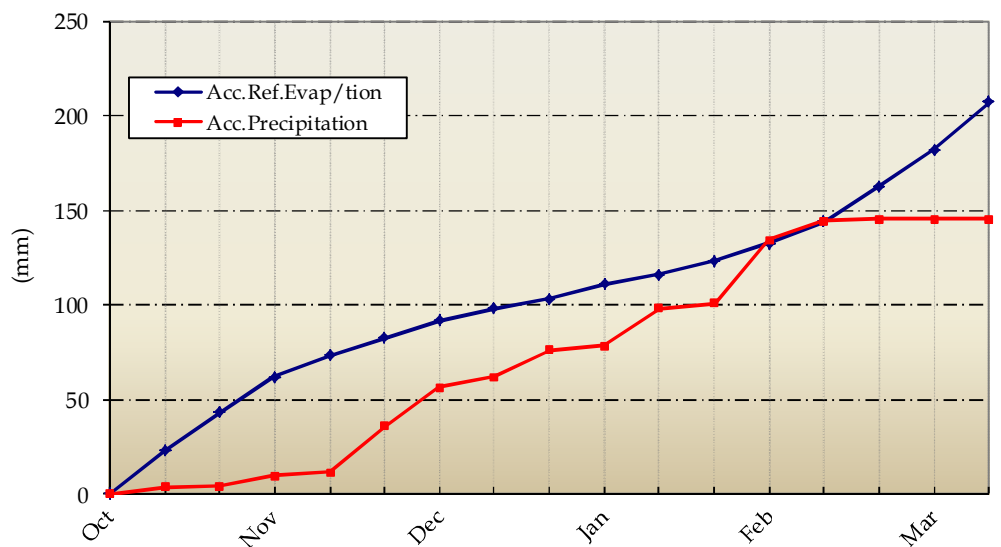


Larisa

1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.0	18.2	15.7	16.4	21.2	22.5	21.6	22.0	23.6	24.4	20.7	17.0	13.6
	Min	-2.2	2.8	6.2	-1.2	-0.6	4.6	2.0	2.3	2.5	8.0	2.4	4.3	2.4
Relative Humidity	Max	86	88	89	94	93	86	96	99	99	66	90	92	-
	Min	25	32	31	35	30	30	33	31	24	23	29	43	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	7.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	8.9
Sunshine Duration		9.3	5.9	6.7	9.7	8.7	9.4	8.8	7.2	7.2	9.6	8.2	5.5	4.9
Precipitation													9.2	10.9
Evaporation		3.2	5.3	9.5	2.8	5.9	5.4	4.0	3.7	4.8	0.3	44.9	29.3	18.9
Growing Degrees	5	4.4	5.5	6.0	2.6	5.3	8.6	6.8	7.2	8.1	11.2	65.5	59.3	34.4
	10	0.0	0.5	1.0	0.0	0.3	3.6	1.8	2.2	3.1	6.2	18.5	17.4	4.1

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.3	20.6	17.1
Precipitation - Reference Evapotranspiration	-25.3	-11.4	-6.2
Number of Rainy Days	0.0	3.0	3.2
Number of Dry Days	15.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

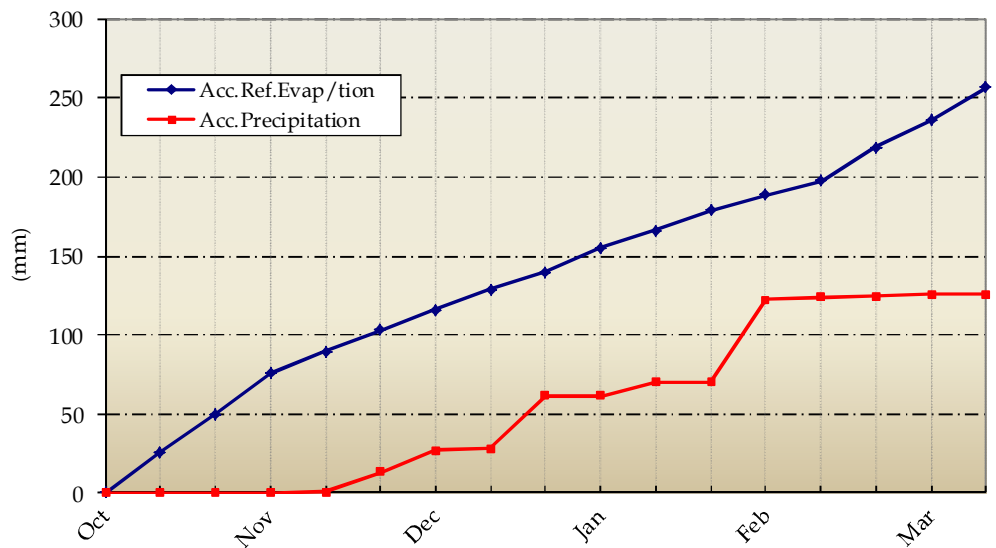


Mikra

1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.8	18.6	15.4	15.0	14.4	21.4	18.0	14.8	15.6	23.2	17.6	16.3	12.6
	Min	1.2	6.0	7.6	4.2	3.2	5.6	6.8	8.4	9.2	6.4	5.9	6.6	3.4
Relative Humidity	Max	81	76	90	90	89	94	97	97	95	91	90	83	-
	Min	29	32	28	39	59	33	56	72	79	24	45	44	-
Soil Temperature at 10 cm	06 UTC	6.5	8.0	8.6	8.2	8.0	9.4	10.2	11.4	12.0	10.8	9.3	9.5	7.2
	12 UTC	10.0	10.6	11.4	11.0	12.0	12.8	13.4	13.0	13.6	14.8	12.3	10.9	9.8
Sunshine Duration		9.4	5.0	6.7	8.6	8.9	9.5	8.7	5.5	6.7	9.2	7.8	5.6	4.9
Precipitation													13.2	13.0
Evaporation		2.0	2.6	2.8	2.4	3.1	2.1	2.4	1.9	1.7	2.7	23.7	23.0	22.1
Growing Degrees	5	5.5	7.3	6.5	4.6	3.8	8.5	7.4	6.6	7.4	9.8	67.4	68.5	33.9
	10	0.5	2.3	1.5	0.0	0.0	3.5	2.4	1.6	2.4	4.8	19.0	27.2	4.3

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.2	18.4	17.6
Precipitation - Reference Evapotranspiration	-21.2	-5.2	-4.6
Number of Rainy Days	0.0	3.0	3.2
Number of Dry Days	15.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

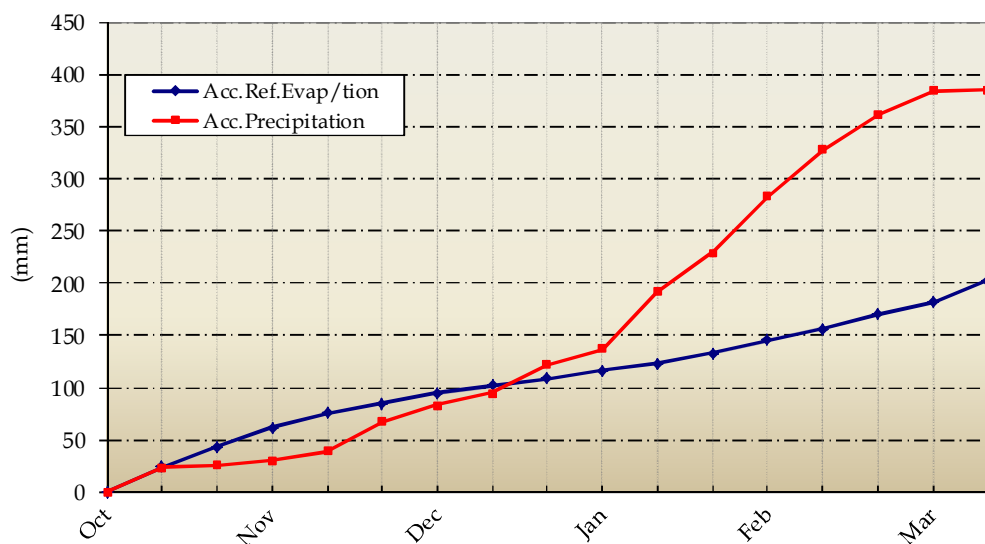


Tanagra

1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	17.6	12.2	15.4	20.1	21.7	20.1	19.7	21.0	23.5	19.0	18.0	13.1
	Min	0.7	5.6	8.2	0.8	1.4	9.1	7.2	6.2	7.8	9.0	5.6	8.3	3.8
Relative Humidity	Max	99	92	100	100	100	79	99	96	80	81	93	82	-
	Min	27	38	55	38	25	28	44	43	25	24	35	40	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.9	7.5	4.1	9.6	9.8	9.5	9.8	8.7	6.5	10.0	8.4	6.2	
Precipitation				0.7								0.7	1.8	19.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	4.9	6.6	5.2	3.1	5.8	10.4	8.7	8.0	9.4	11.3	73.2	81.5	
	10	0.0	1.6	0.2	0.0	0.8	5.4	3.7	3.0	4.4	6.3	25.2	36.2	

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.8	23.2	
Precipitation - Reference Evapotranspiration	-20.1	-21.4	19.5
Number of Rainy Days	1.0	2.0	4.7
Number of Dry Days	2.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

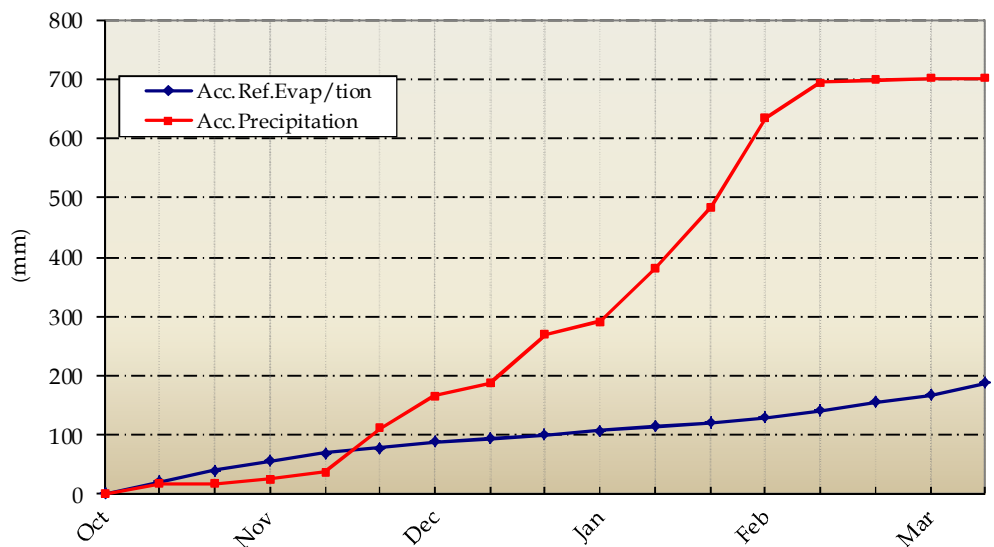


Tripoli

1st 10-day period (1-10/03/2019)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.1	13.4	13.0	13.7	19.0	19.0	20.4	20.3	18.2	20.4	17.4	16.1	11.8
	Min	-3.4	0.6	3.3	4.6	0.1	2.7	0.2	-0.1	0.0	2.0	1.0	5.5	1.3
Relative Humidity	Max	95	95	93	94	91	88	93	85	77	81	89	91	-
	Min	34	54	46	39	28	30	22	12	22	15	30	34	-
Soil Temperature at 10 cm	06 UTC	2.8	5.2	-	6.8	5.2	6.8	6.4	6.4	6.6	-	5.8	9.0	6.2
	12 UTC	-	-	-	10.8	11.4	12.6	-	-	-	-	11.6	11.3	7.4
Sunshine Duration		9.1	1.6	7.5	6.8	9.8	9.0	9.6	10.0	10.2	10.2	8.4	7.0	5.4
Precipitation			0.4	0.0							0.0	0.4	11.0	26.7
Evaporation		-	-	-	1.1	3.4	3.1	2.9	3.3	-	-	-	-	15.8
Growing Degrees	5	1.4	2.0	3.2	4.2	4.6	5.9	5.3	5.1	4.1	6.2	41.8	58.2	22.7
	10	0.0	0.0	0.0	0.0	0.0	0.9	0.3	0.1	0.0	1.2	2.5	15.5	1.9

1st 10-day period (1-10/03/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.5	22.0	17.7
Precipitation - Reference Evapotranspiration	-20.1	-11.0	9.0
Number of Rainy Days	1.0	5.0	3.4
Number of Dry Days	6.0	1.0	-

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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Issue Editors :

Papakrivou Anastasia

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