



# AGROMETEOROLOGICAL BULLETIN

*February 2019*  
*3rd 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



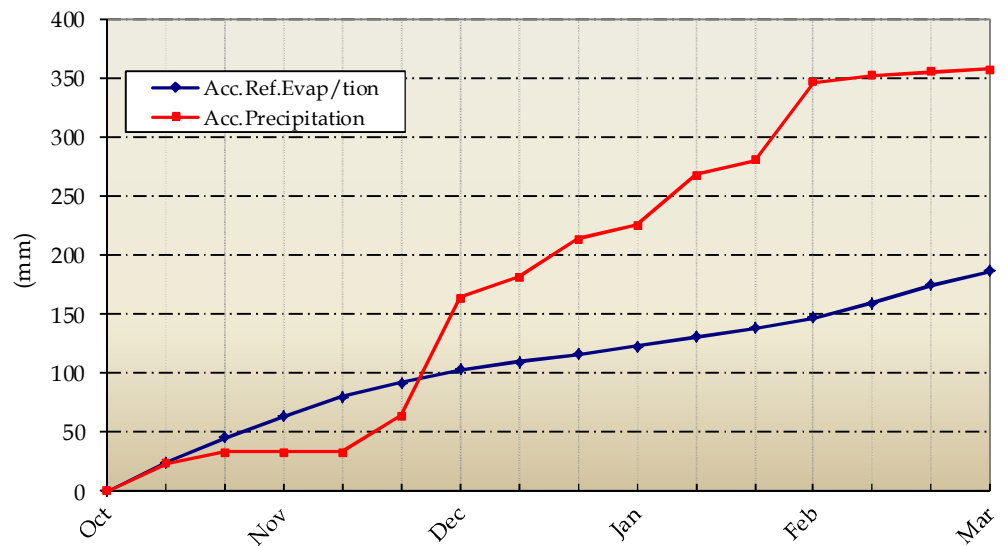
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*Web addresses of HNMS*  
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3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	12.6	9.4	0.2	6.0	10.2	10.4	11.6	9.6	7.4	9.7
	Min	1.0	0.6	-3.0	-3.6	-1.8	-5.0	2.0	-0.4	-1.3	3.3	1.6
Relative Humidity	Max	91	93	82	65	90	92	75	82	84	91	-
	Min	25	69	47	41	49	44	33	43	44	66	-
Soil Temperature at 10 cm	06 UTC	7.0	6.0	6.0	2.2	2.0	2.0	4.6	5.0	4.4	6.0	5.7
	12 UTC	10.4	10.0	4.4	2.4	3.6	6.0	7.6	9.4	6.7	6.8	7.3
Sunshine Duration		7.9	4.2	0.0	0.0	3.1	8.0	5.3	9.7	4.8	2.0	4.8
Precipitation				2.4	0.0	0.0				2.4	33.0	14.4
Evaporation		2.6	0.0	0.0	0.0	0.0	0.0	2.4	1.7	6.7	7.4	9.4
Growing Degrees	5	3.7	1.6	0.0	0.0	0.0	0.0	1.2	0.6	7.1	10.6	17.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.3	9.2	12.0
Precipitation - Reference Evapotranspiration	-9.9	23.8	2.4
Number of Rainy Days	1.0	5.0	1.9
Number of Dry Days	7.0	6.0	-

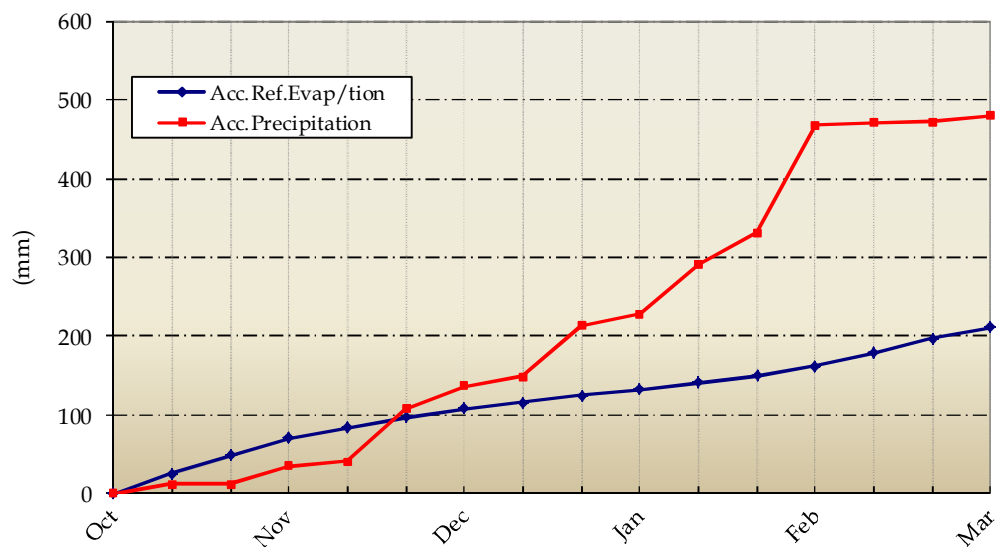
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.2	16.2	13.4	11.4	13.8	15.0	15.0	15.4	14.6	15.4	14.1
	Min	3.8	6.2	7.0	4.8	-0.4	6.4	6.8	-0.3	4.3	8.2	5.3
Relative Humidity	Max	98	90	93	83	91	86	88	85	89	87	-
	Min	56	59	54	50	37	44	27	33	45	53	-
Soil Temperature at 10 cm	06 UTC	10.2	10.2	9.8	7.4	6.8	9.2	10.6	9.4	9.2	11.6	9.0
	12 UTC	11.4	11.8	11.4	10.4	10.8	10.4	11.0	10.6	11.0	12.5	11.2
Sunshine Duration		8.9	5.5	0.5	0.6	10.3	9.5	11.9	8.0	6.9	4.3	5.7
Precipitation				5.0	3.6					8.6	79.9	22.1
Evaporation		7.0	6.9	10.6	4.4	1.6	5.0	0.0	4.0	39.5	19.9	19.2
Growing Degrees	5	5.0	6.2	5.2	3.1	1.7	5.7	5.9	2.6	35.4	54.3	39.2
	10	0.0	1.2	0.2	0.0	0.0	0.7	0.9	0.0	3.0	14.3	8.3

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.3	13.9	12.9
Precipitation - Reference Evapotranspiration	-5.7	66.0	9.2
Number of Rainy Days	2.0	7.0	3.2
Number of Dry Days	10.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

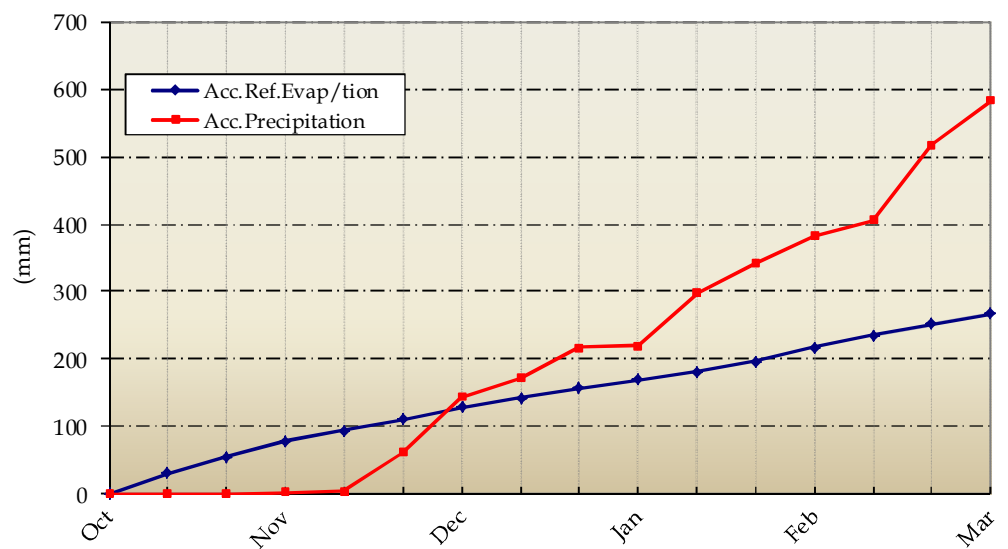


Iraklio

3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.0	16.2	16.8	14.0	13.0	12.4	13.0	12.6	14.2	16.5	14.9
	Min	8.0	10.0	9.4	8.8	10.4	9.8	7.0	10.0	9.2	10.8	8.9
Relative Humidity	Max	94	84	89	87	94	87	88	70	87	87	-
	Min	68	59	50	67	80	69	49	37	60	64	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.3	9.1	6.1	2.4	0.0	0.0	1.0	7.2	4.4	5.6	4.7
Precipitation				1.3	0.5	45.7	10.8	7.0		65.3	18.0	19.7
Evaporation		0.3	2.5	0.9	1.0	3.0	2.2	3.1	4.0	17.0	14.5	26.4
Growing Degrees	5	7.0	8.1	8.1	6.4	6.7	6.1	5.0	6.3	53.7	69.1	57.1
	10	2.0	3.1	3.1	1.4	1.7	1.1	0.0	1.3	13.7	29.1	18.9

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.6	16.0	-
Precipitation - Reference Evapotranspiration	49.7	2.0	19.7
Number of Rainy Days	5.0	3.0	3.4
Number of Dry Days	5.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

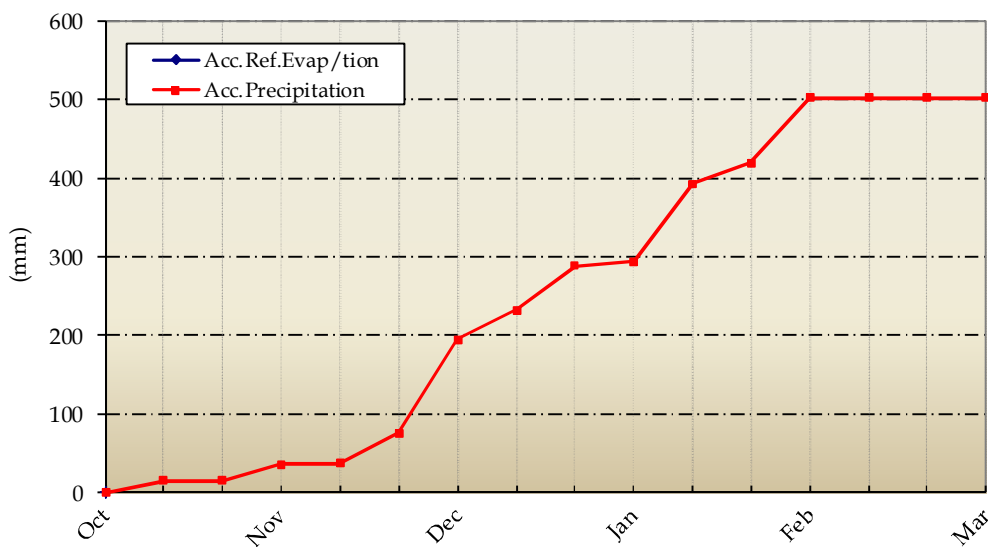


Ioannina

3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.8	12.8	7.0	6.2	7.4	17.4	10.6	12.4	10.8	10.4	10.4
	Min	1.0	-2.2	2.0	1.0	-2.0	3.0	6.4	-3.2	0.8	3.0	1.4
Relative Humidity	Max	100	97	56	56	54	76	40	79	70	98	-
	Min	48	47	31	29	35	24	21	27	33	65	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	4.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	5.7
Sunshine Duration		4.4	3.9	0.1	2.7	7.7	8.4	6.7	8.9	5.4	2.7	4.3
Precipitation			0.0							0.0	101.8	21.1
Evaporation		-	-	-	-	-	-	-	-	-	-	6.7
Growing Degrees	5	1.9	0.3	0.0	0.0	0.0	5.2	3.5	0.0	10.9	16.4	14.5
	10	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	1.1

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	10.3
Precipitation - Reference Evapotranspiration	-	-	10.8
Number of Rainy Days	0.0	7.0	2.9
Number of Dry Days	27.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

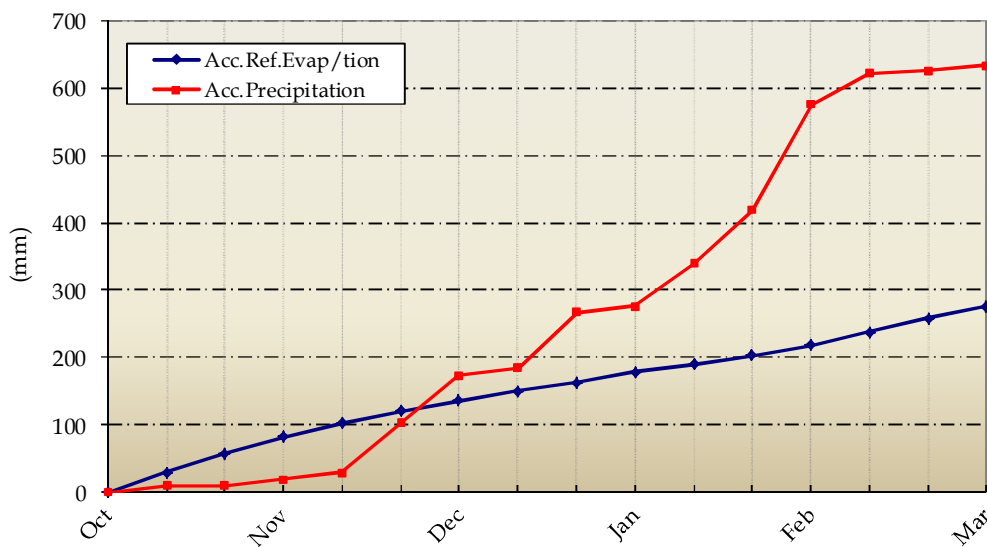


Kalamata

3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.6	16.0	14.6	11.9	14.2	15.6	14.6	15.2	14.8	16.4	14.8
	Min	0.0	3.4	7.6	6.6	6.6	5.8	6.2	1.7	4.7	7.8	5.1
Relative Humidity	Max	89	93	94	64	56	84	85	90	82	91	-
	Min	44	56	54	45	36	46	32	30	43	53	-
Soil Temperature at 10 cm	06 UTC	10.0	9.8	10.6	9.4	8.6	9.0	9.8	9.0	9.5	-	9.6
	12 UTC	11.0	10.8	11.4	9.8	9.2	10.4	10.8	10.0	10.4	-	11.1
Sunshine Duration		9.2	4.6	0.2	0.0	7.7	9.6	2.7	9.3	5.4	6.4	5.3
Precipitation			2.0	5.4	0.9			0.1		8.4	85.4	28.6
Evaporation		3.1	1.7	0.0	2.7	4.4	2.4	2.9	2.4	19.6	12.4	20.1
Growing Degrees	5	3.3	4.7	6.1	4.3	5.4	5.7	5.4	3.5	38.3	57.0	40.8
	10	0.0	0.0	1.1	0.0	0.4	0.7	0.4	0.0	2.6	17.0	8.0

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.6	15.8	13.5
Precipitation - Reference Evapotranspiration	-9.2	69.6	15.1
Number of Rainy Days	4.0	7.0	3.3
Number of Dry Days	9.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

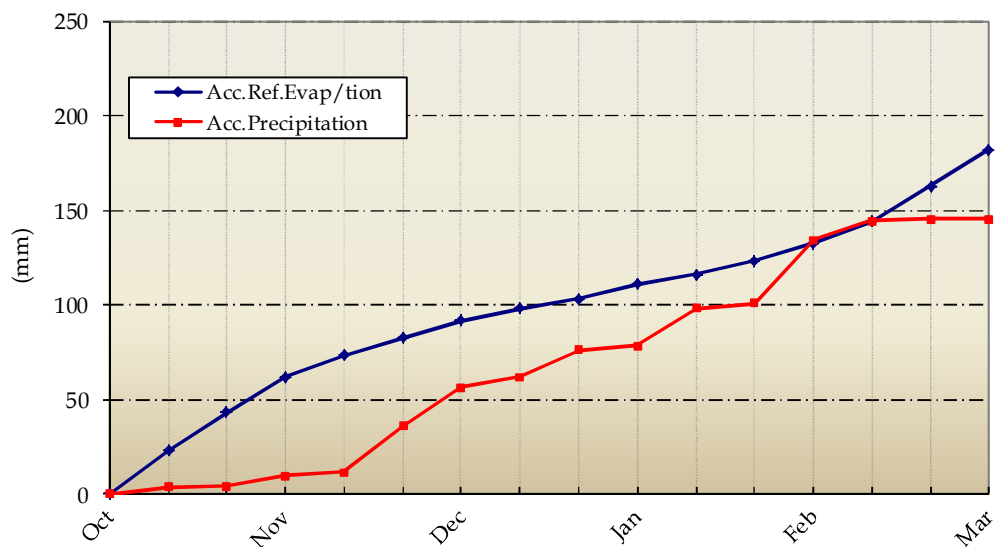


Larisa

3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.0	15.4	10.8	3.0	3.0	14.2	12.8	15.2	11.6	10.2	11.9
	Min	0.4	-1.3	1.4	-0.2	1.2	-4.5	3.2	-1.6	-0.2	5.2	1.7
Relative Humidity	Max	93	91	88	76	72	92	84	92	86	97	-
	Min	27	37	59	51	45	38	33	31	40	65	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	7.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	7.7
Sunshine Duration		8.2	3.7	0.0	0.0	0.0	8.2	5.4	9.4	4.4	2.3	4.6
Precipitation				0.1						0.1	60.8	13.4
Evaporation		3.0	2.8	0.0	0.0	0.0	0.0	4.6	1.0	11.4	15.3	9.6
Growing Degrees	5	4.2	2.1	1.1	0.0	0.0	0.0	3.0	1.8	12.2	23.3	20.2
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.5

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.0	10.1	11.5
Precipitation - Reference Evapotranspiration	-18.9	50.7	1.9
Number of Rainy Days	1.0	8.0	2.6
Number of Dry Days	6.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

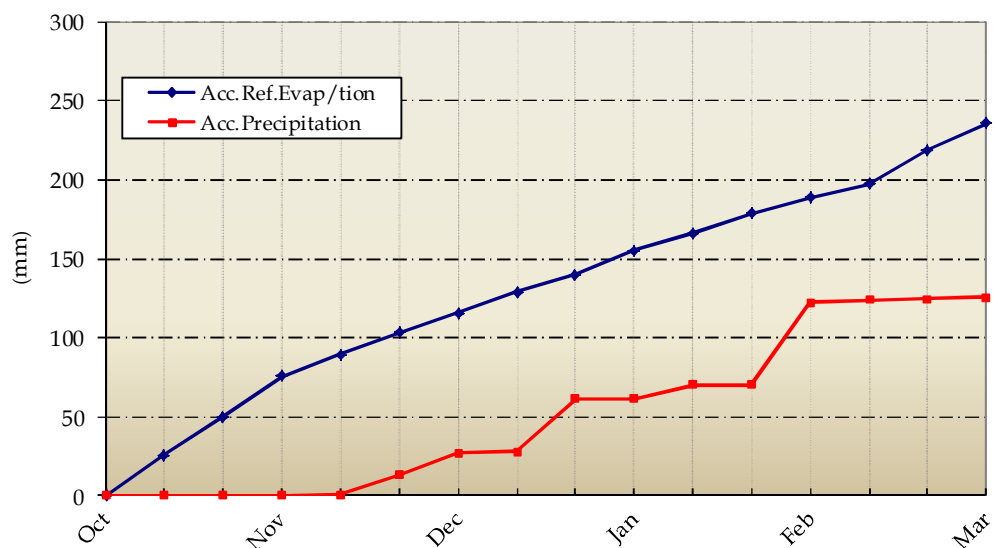


Mikra

3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	14.6	11.0	2.6	4.6	13.4	13.2	15.0	11.4	9.6	11.1
	Min	4.0	1.8	-0.2	-0.2	0.4	2.2	6.6	0.4	1.9	5.7	2.8
Relative Humidity	Max	78	79	100	96	82	61	81	92	84	89	-
	Min	30	39	69	64	41	21	27	35	41	62	-
Soil Temperature at 10 cm	06 UTC	7.4	7.0	6.4	4.4	4.0	3.6	6.2	5.8	5.6	8.3	6.7
	12 UTC	10.0	10.0	5.0	4.8	4.5	7.4	8.8	9.0	7.4	8.5	9.0
Sunshine Duration		9.0	4.5	0.0	0.0	0.0	7.9	5.6	9.2	4.5	2.0	4.4
Precipitation				1.1	0.0					1.1	32.4	13.2
Evaporation		5.2	1.6	0.0	0.0	0.0	5.8	2.8	1.4	16.8	10.2	13.2
Growing Degrees	5	5.4	3.2	0.4	0.0	0.0	2.8	4.9	2.7	19.4	22.6	21.0
	10	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	2.4

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.6	9.7	11.8
Precipitation - Reference Evapotranspiration	-15.5	22.7	1.4
Number of Rainy Days	1.0	8.0	2.4
Number of Dry Days	10.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



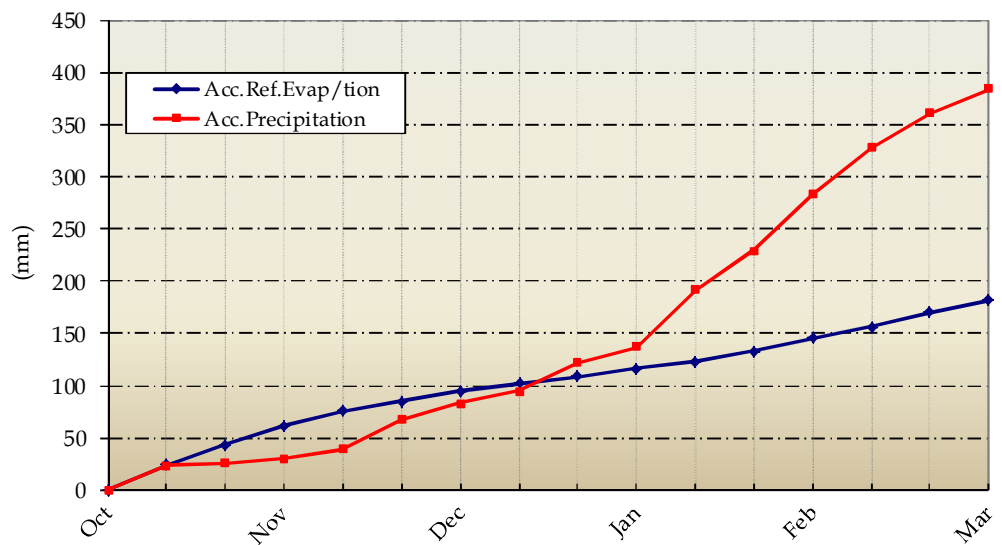


Tanagra

3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.6	15.3	7.4	4.0	5.4	12.4	10.3	13.4	10.5	13.9	12.6
	Min	0.6	2.5	7.1	1.9	3.0	3.0	3.8	4.5	3.3	7.1	3.5
Relative Humidity	Max	100	96	100	81	80	84	99	99	92	98	-
	Min	38	41	75	67	68	41	45	37	52	57	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.3	7.9	0.0	0.0	0.0	8.5	4.2	8.9	4.7	5.1	-
Precipitation		-	-	12.8	0.5	-	-	6.7	3.3	23.3	38.4	17.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	3.1	3.9	2.3	0.0	0.0	2.7	2.1	4.0	18.0	44.2	-
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	-

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.5	11.8	-
Precipitation - Reference Evapotranspiration	11.8	26.6	17.9
Number of Rainy Days	4.0	7.0	3.5
Number of Dry Days	6.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

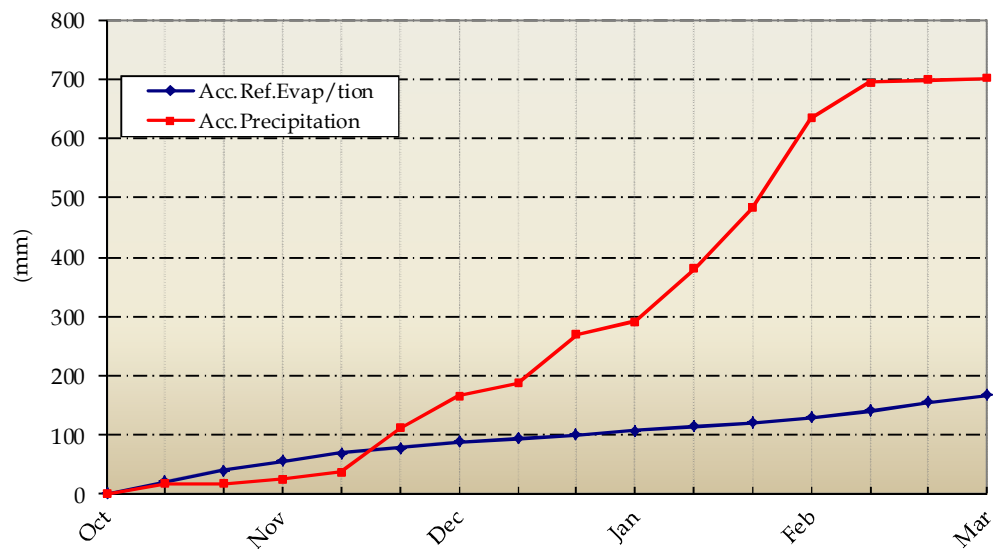


Tripoli

3rd 10-day period (21-28/02/2019)		21	22	23	24	25	26	27	28	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.8	14.0	6.9	1.9	4.0	14.4	9.2	11.5	9.6	11.2	10.1
	Min	-2.6	-1.0	5.7	-0.3	-0.2	0.3	3.2	-4.5	0.1	3.7	1.0
Relative Humidity	Max	100	100	92	84	83	86	88	93	91	100	-
	Min	26	32	75	69	65	35	41	30	47	55	-
Soil Temperature at 10 cm	06 UTC	-	4.2	-	-	2.6	2.4	5.0	2.4	3.3	7.4	5.0
	12 UTC	-	9.2	-	-	4.2	8.2	7.8	-	7.4	9.1	6.2
Sunshine Duration		6.0	-	-	0.0	1.7	9.4	6.9	9.2	5.5	5.9	5.1
Precipitation		0.0		3.1	0.0					3.1	65.3	27.0
Evaporation		-	-	-	-	0.9	1.3	-	-	-	12.4	9.7
Growing Degrees	5	1.1	1.5	1.3	0.0	0.0	2.4	1.2	0.0	7.5	19.6	14.5
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4

3rd 10-day period (21-28/02/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.1	11.6	12.6
Precipitation - Reference Evapotranspiration	-9.0	53.7	14.4
Number of Rainy Days	1.0	7.0	3.2
Number of Dry Days	6.0	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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