



AGROMETEOROLOGICAL BULLETIN

March 2018
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



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

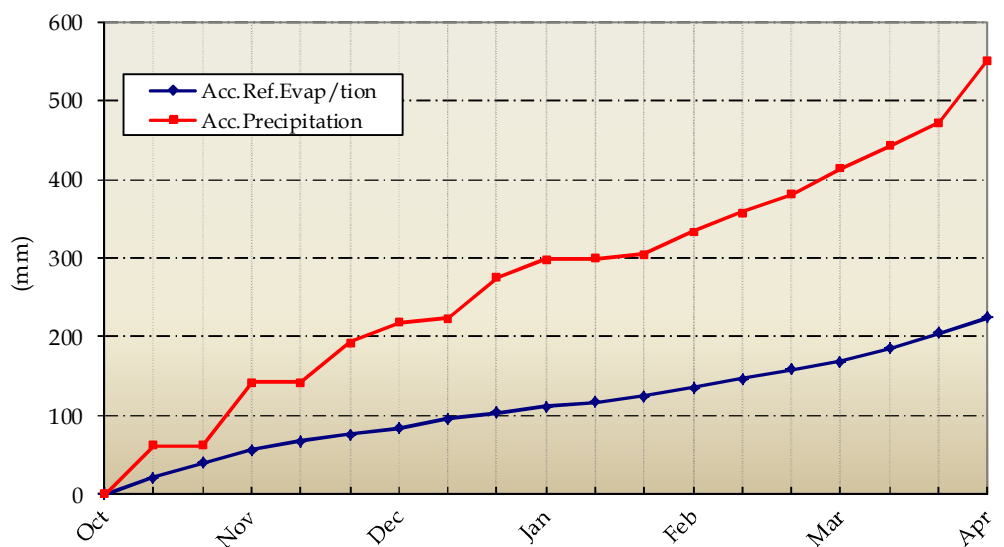
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Alexandroupoli

3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	14.8	13.0	10.0	8.2	15.0	17.4	13.6	13.6	16.2	18.8	14.3	19.7	14.1
	Min	10.6	4.2	4.2	4.0	3.8	6.6	8.2	7.4	2.0	4.2	4.6	5.4	5.7	4.9
Relative Humidity	Max	95	97	91	94	97	97	97	97	93	94	94	95	86	-
	Min	72	71	59	78	66	79	58	79	48	62	49	66	37	-
Soil Temperature at 10 cm	06 UTC	11.0	11.0	8.0	8.2	7.0	8.4	10.2	10.6	7.4	8.4	9.6	9.1	11.4	8.3
	12 UTC	13.0	10.4	10.8	8.8	8.4	9.8	14.0	11.0	12.0	13.2	13.6	11.4	16.9	11.0
Sunshine Duration		0.5	0.2	5.4	0.0	0.0	0.0	9.8	0.0	10.0	10.6	8.2	4.1	10.2	5.5
Precipitation		0.0	0.6	0.0	23.0	0.0	34.3	2.8	18.2				78.9	1.6	15.2
Evaporation		2.6	2.0	2.2	3.8	1.0	0.1	4.3	1.4	2.0	4.6	3.4	27.4	45.1	32.3
Growing Degrees	5	8.5	4.5	3.6	2.0	1.0	5.8	7.8	5.5	2.8	5.2	6.7	53.4	84.5	51.2
	10	3.5	0.0	0.0	0.0	0.0	0.8	2.8	0.5	0.0	0.2	1.7	9.5	30.9	11.3

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.1	33.6	23.3
Precipitation - Reference Evapotranspiration	58.8	-32.0	-8.1
Number of Rainy Days	5.0	1.0	2.7
Number of Dry Days	1.0	10.0	-

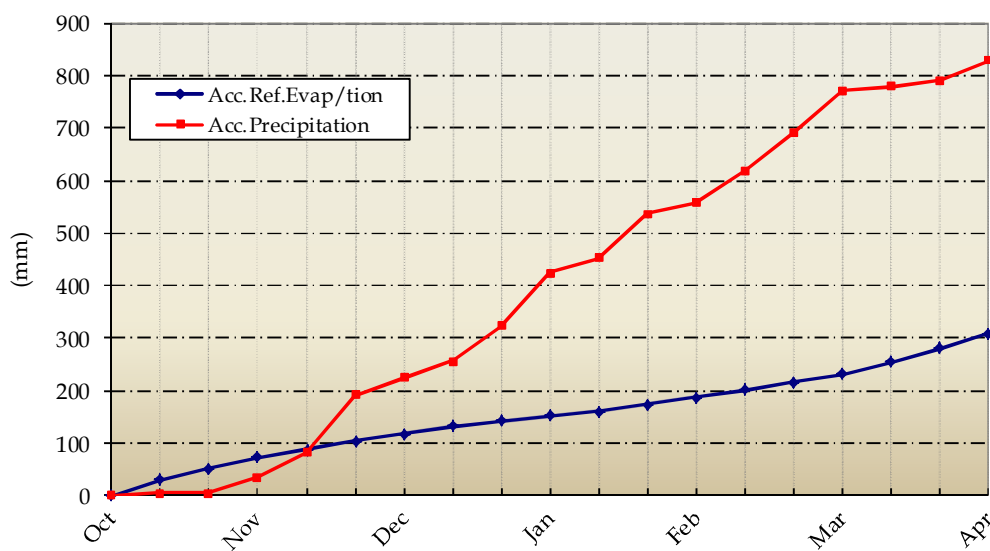
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.6	23.0	15.0	15.8	17.4	18.8	16.6	16.0	17.7	18.8	20.9	18.1	20.4	17.4
	Min	9.3	12.1	9.1	7.5	6.9	11.6	8.7	10.1	5.4	8.0	9.5	8.9	7.8	7.7
Relative Humidity	Max	84	80	86	87	86	88	90	90	88	88	87	87	89	-
	Min	49	40	59	42	46	49	59	49	37	56	38	48	42	-
Soil Temperature at 10 cm	06 UTC	13.8	15.0	14.5	13.5	12.4	12.8	13.6	14.4	14.0	14.2	15.4	14.0	14.3	11.5
	12 UTC	15.0	16.2	15.3	15.0	13.4	13.9	15.0	16.2	16.2	15.8	16.0	15.3	17.9	14.2
Sunshine Duration		4.3	0.0	3.7	4.6	0.0	6.0	4.9	8.2	10.8	11.5	3.7	5.2	8.5	6.8
Precipitation		0.0		7.1	4.2	9.0	1.7	7.8	8.8				38.6		19.5
Evaporation		4.0	3.4	2.2	3.4	1.6	3.7	2.4	4.0	2.0	3.5	2.5	32.7	43.0	33.3
Growing Degrees	5	9.0	12.6	7.1	6.7	7.2	10.2	7.7	8.1	6.6	8.4	10.2	93.4	99.9	83.1
	10	4.0	7.6	2.1	1.7	2.2	5.2	2.7	3.1	1.6	3.4	5.2	38.4	44.9	30.3

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.2	30.3	27.1
Precipitation - Reference Evapotranspiration	11.4	-30.3	-7.6
Number of Rainy Days	6.0	0.0	3.2
Number of Dry Days	2.0	21.0	-

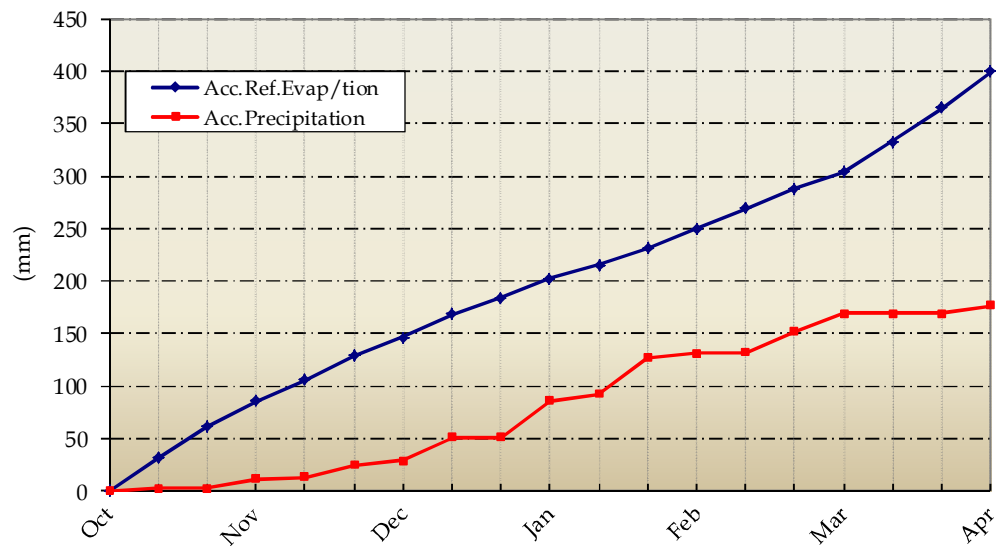
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.0	26.8	18.6	17.0	21.6	22.6	18.6	17.2	16.4	18.4	19.2	20.0	17.3	17.7
	Min	9.0	17.0	14.6	10.4	11.8	16.6	11.0	12.2	12.4	9.0	10.0	12.2	11.1	10.5
Relative Humidity	Max	81	83	86	87	78	66	88	92	88	92	92	85	94	-
	Min	28	27	48	50	33	40	51	66	54	61	60	47	76	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.1	0.0	4.7	6.6	3.9	4.9	3.2	0.5	7.0	10.0	6.4	5.1	5.3	6.6
Precipitation					0.4				1.8	5.3			7.5	32.5	15.8
Evaporation		5.7	7.6	3.1	3.8	2.4	4.4	1.0	3.8	2.4	4.0	3.7	41.9	26.1	48.5
Growing Degrees	5	11.5	16.9	11.6	8.7	11.7	14.6	9.8	9.7	9.4	8.7	9.6	122.2	101.2	100.1
	10	6.5	11.9	6.6	3.7	6.7	9.6	4.8	4.7	4.4	3.7	4.6	67.2	46.2	45.5

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	34.6	24.2	-
Precipitation - Reference Evapotranspiration	-27.1	8.3	15.8
Number of Rainy Days	3.0	5.0	3.0
Number of Dry Days	25.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

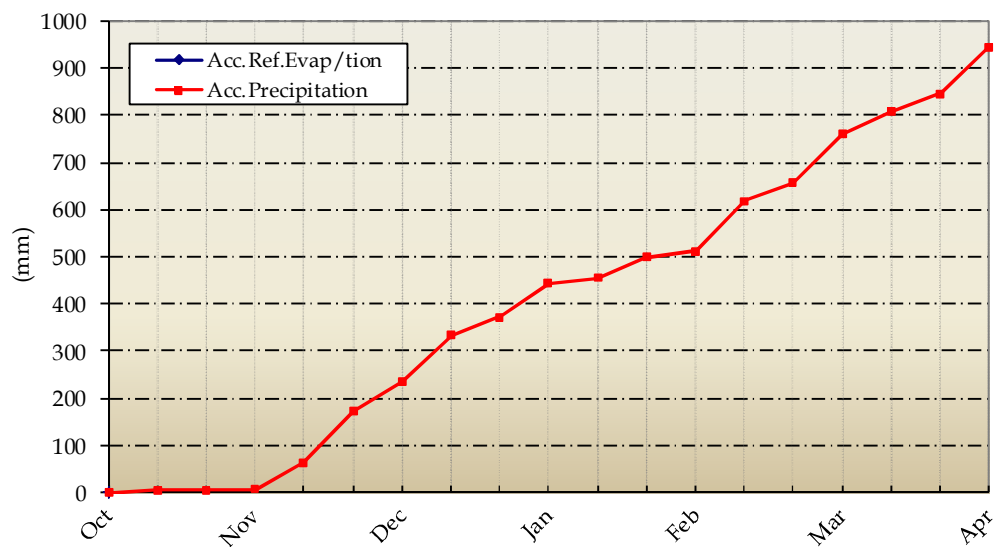


Ioannina

3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	18.8	11.6	9.2	10.0	9.2	13.0	15.8	17.4	20.0	21.0	14.5	21.7	15.1
	Min	7.4	5.6	5.4	4.0	4.2	7.0	7.0	3.2	0.2	3.0	10.6	5.2	5.2	4.4
Relative Humidity	Max	100	100	100	100	97	100	100	100	100	93	100	99	92	-
	Min	88	44	77	65	76	89	62	28	28	40	37	58	27	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	10.5
Sunshine Duration		0.0	0.0	1.7	1.2	0.0	0.0	1.3	7.0	8.3	8.2	6.9	3.1	7.3	4.7
Precipitation		27.2	4.2	21.7	1.9	8.1	28.8	8.0					99.9	4.8	32.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	28.9
Growing Degrees	5	5.2	7.2	3.5	1.6	2.1	3.1	5.0	4.5	3.8	6.5	10.8	53.3	-	50.7
	10	0.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	5.8	9.7	-	11.1

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	22.4
Precipitation - Reference Evapotranspiration	-	-	9.9
Number of Rainy Days	7.0	1.0	3.9
Number of Dry Days	0.0	18.0	-

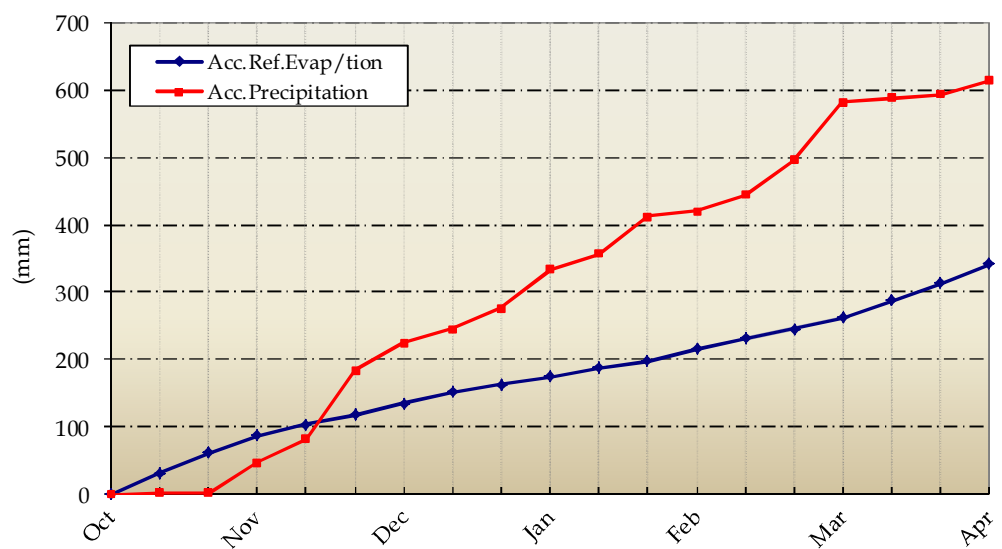
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	21.8	16.2	13.8	17.7	20.1	17.6	19.2	20.2	20.4	19.6	18.6	20.2	17.8
	Min	4.2	12.0	8.7	6.6	4.4	12.5	10.7	9.6	5.3	6.1	7.6	8.0	8.1	6.9
Relative Humidity	Max	93	82	92	93	94	91	92	92	89	93	93	91	89	-
	Min	62	37	53	59	49	31	55	46	28	37	52	46	42	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	14.2
Sunshine Duration		4.2	0.0	5.3	2.3	0.0	5.0	3.6	8.7	9.8	10.9	3.7	4.9	8.0	6.5
Precipitation		0.0		7.6	9.4	0.0		4.3	0.1				21.4	1.9	20.1
Evaporation		2.0	1.1	0.0	3.1	1.7	2.1	0.1	5.1	4.8	4.4	3.0	27.4	36.5	37.4
Growing Degrees	5	6.0	11.9	7.5	5.2	6.1	11.3	9.2	9.4	7.8	8.3	8.6	91.1	100.7	81.3
	10	1.0	6.9	2.5	0.2	1.1	6.3	4.2	4.4	2.8	3.3	3.6	36.1	45.7	28.3

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.8	33.6	27.8
Precipitation - Reference Evapotranspiration	-6.4	-31.7	-7.7
Number of Rainy Days	4.0	1.0	3.3
Number of Dry Days	2.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

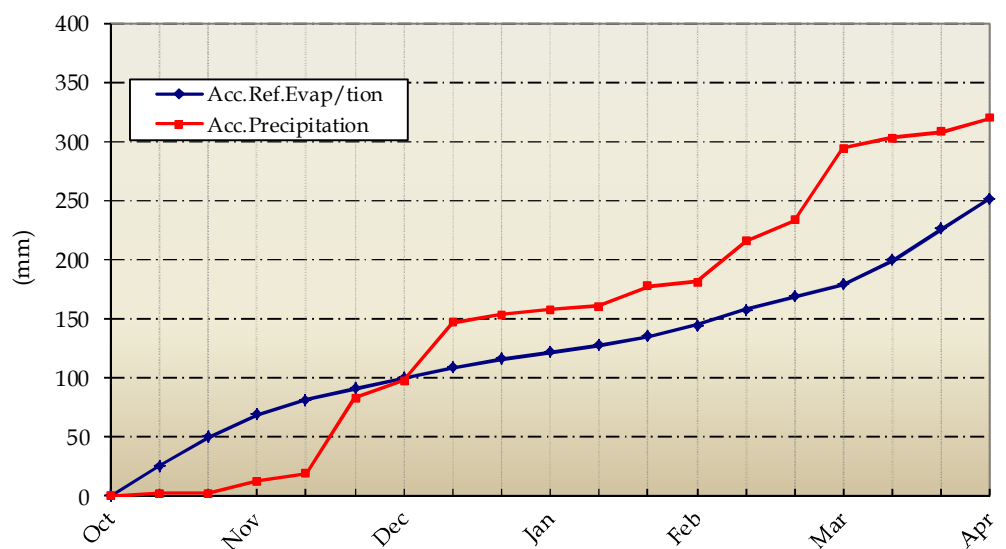


Larisa

3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.6	12.5	14.6	15.6	12.6	18.0	19.0	16.6	18.6	21.4	20.6	17.1	21.4	16.9
	Min	4.0	8.5	7.6	3.9	8.0	4.6	3.4	6.7	4.4	3.2	7.4	5.6	5.0	4.2
Relative Humidity	Max	93	94	93	97	96	98	95	91	93	94	90	94	97	-
	Min	37	74	59	40	72	50	42	42	30	33	52	48	33	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	11.4
Sunshine Duration		3.5	0.0	4.4	9.3	0.0	2.8	7.9	7.5	10.0	9.0	4.8	5.4	8.8	6.0
Precipitation			0.0	7.5	0.1	1.0	2.5						11.1	0.1	11.3
Evaporation		3.0	0.2	0.1	4.4	0.9	3.2	3.0	5.4	1.5	6.9	2.7	31.3	50.8	32.5
Growing Degrees	5	6.3	5.5	6.1	4.8	5.3	6.3	6.2	6.7	6.5	7.3	9.0	69.9	90.1	61.7
	10	1.3	0.5	1.1	0.0	0.3	1.3	1.2	1.7	1.5	2.3	4.0	15.2	35.1	16.3

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.7	33.8	25.6
Precipitation - Reference Evapotranspiration	-14.6	-33.7	-14.3
Number of Rainy Days	4.0	1.0	3.1
Number of Dry Days	3.0	17.0	-

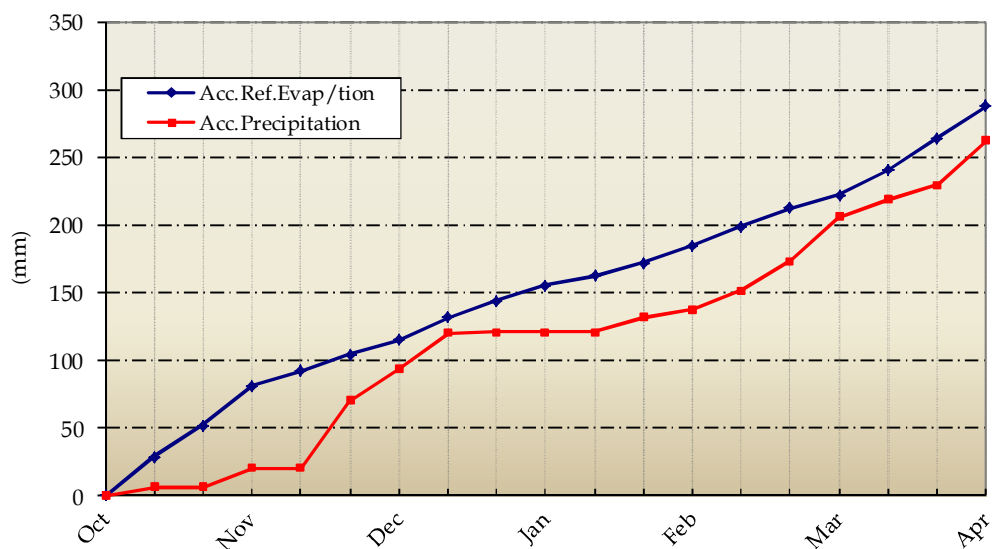
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	12.0	11.1	13.1	13.1	14.4	16.0	16.2	17.8	18.2	16.2	15.2	20.6	16.0
	Min	10.2	8.6	5.8	5.7	7.7	6.6	5.2	11.2	3.0	4.8	7.7	7.0	6.9	5.7
Relative Humidity	Max	82	91	90	83	89	92	92	82	88	80	92	87	88	-
	Min	40	65	68	46	65	65	51	36	25	52	68	53	34	-
Soil Temperature at 10 cm	06 UTC	12.2	11.8	10.4	10.0	11.1	10.6	10.8	11.8	10.8	11.2	12.0	11.2	12.9	9.6
	12 UTC	12.8	12.0	11.4	11.2	11.4	11.8	13.6	14.8	15.0	13.0	12.2	12.7	15.5	12.9
Sunshine Duration		1.1	0.0	2.2	9.2	0.2	0.8	6.9	7.0	9.1	11.9	4.4	4.8	9.0	5.4
Precipitation		0.4	0.7	16.7	0.1	4.4	9.9	0.6					32.8	6.9	11.2
Evaporation		0.3	6.3	0.5	1.5	0.2	2.0	3.5	4.6	5.3	3.3	0.4	27.9	45.0	35.2
Growing Degrees	5	9.6	5.3	3.5	4.4	5.4	5.5	5.6	8.7	5.4	6.5	7.0	66.8	96.7	64.3
	10	4.6	0.3	0.0	0.0	0.4	0.5	0.6	3.7	0.4	1.5	2.0	14.0	41.9	17.2

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.2	32.4	25.7
Precipitation - Reference Evapotranspiration	9.6	-25.5	-14.5
Number of Rainy Days	7.0	2.0	2.7
Number of Dry Days	0.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

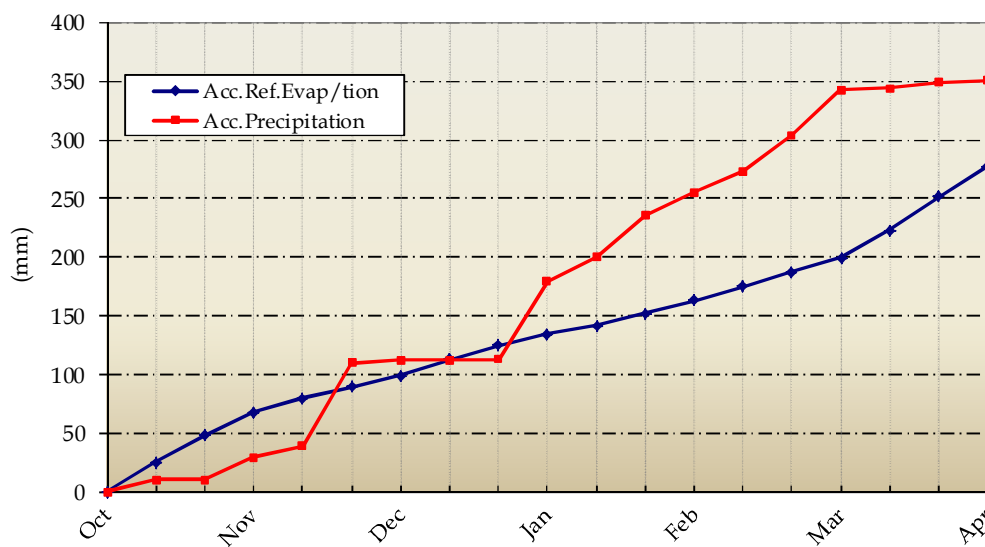


Tanagra

3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.0	16.1	17.6	16.2	14.5	20.9	19.8	15.7	17.3	19.6	18.0	17.8	19.3	16.7
	Min	5.0	10.0	7.3	7.2	4.3	13.2	7.3	9.3	5.5	2.6	6.0	7.1	7.0	5.4
Relative Humidity	Max	95	96	97	98	100	66	81	92	98	98	98	93	83	-
	Min	29	67	36	33	54	28	32	49	26	45	54	41	32	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.2	0.0	8.1	5.2	1.1	4.5	8.4	1.0	10.6	11.0	1.6	5.4	7.9	
Precipitation				0.3	1.0		0.1		0.4				1.8	0.6	12.3
Evaporation		3.1	1.3	3.6	3.2	3.5	4.2	4.6	2.2	3.7	3.2	2.7	35.3	55.2	
Growing Degrees	5	7.5	8.1	7.5	6.7	4.4	12.1	8.6	7.5	6.4	6.1	7.0	81.7	89.4	
	10	2.5	3.1	2.5	1.7	0.0	7.1	3.6	2.5	1.4	1.1	2.0	27.3	35.7	

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.9	30.5	
Precipitation - Reference Evapotranspiration	-24.1	-29.9	12.3
Number of Rainy Days	4.0	1.0	3.6
Number of Dry Days	2.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

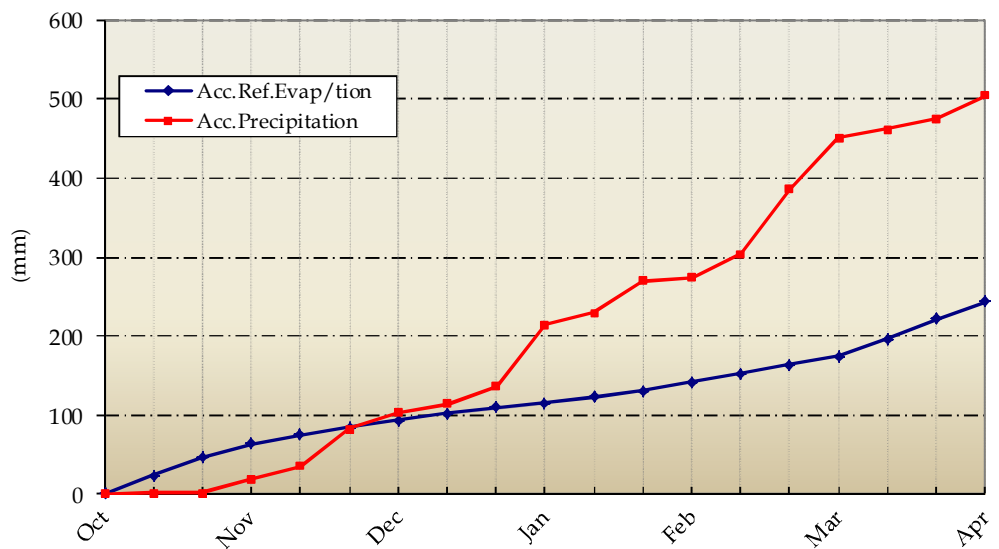


Tripoli

3rd 10-day period (21-31/03/2018)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.1	16.2	12.7	10.4	11.5	15.4	14.3	12.2	16.8	20.5	18.4	15.0	18.7	14.8
	Min	1.3	9.9	6.1	3.5	1.8	6.8	8.3	6.5	-0.3	0.1	5.0	4.5	2.8	3.1
Relative Humidity	Max	94	86	93	95	99	99	93	100	100	100	98	96	96	-
	Min	47	50	63	47	62	36	50	60	24	24	38	46	31	-
Soil Temperature at 10 cm	06 UTC	8.8	11.4	11.0	-	9.0	9.8	10.4	11.0	9.2	9.6	11.0	10.1	10.0	7.9
	12 UTC	12.2	12.8	11.6	-	-	12.6	12.6	12.6	12.4	13.6	-	12.6	15.1	9.5
Sunshine Duration		6.7	0.0	6.9	0.0	1.0	5.7	5.1	1.7	10.3	10.6	3.1	4.6	6.7	6.3
Precipitation				5.4	8.6	4.2	5.8	0.3	5.4				29.7	0.0	22.9
Evaporation		2.1	1.5	1.9	-	4.8	2.8	2.5	0.5	2.7	3.2	1.6	-	-	26.8
Growing Degrees	5	3.7	8.1	4.4	2.0	1.7	6.1	6.3	4.4	3.3	5.3	6.7	51.8	63.7	45.6
	10	0.0	3.1	0.0	0.0	0.0	1.1	1.3	0.0	0.0	0.3	1.7	7.5	12.3	7.9

3rd 10-day period (21-31/03/2018)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.0	29.1	25.6
Precipitation - Reference Evapotranspiration	7.7	-29.1	-2.7
Number of Rainy Days	6.0	0.0	3.9
Number of Dry Days	2.0	15.0	-

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

© HELLENIC NATIONAL METEOROLOGICAL SERVICE
 Reproduction is prohibited without written permission
 El. Venizelou street 14, Zip Code 16777
 Helliniko, Athens