



AGROMETEOROLOGICAL BULLETIN

May 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



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

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

2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.4	24.0	23.0	18.8	23.2	25.8	23.4	23.6	26.2	24.0	23.2	25.5	22.5
	Min	10.2	10.4	12.6	15.0	14.4	14.4	11.6	13.6	12.8	13.6	12.9	14.7	11.3
Relative Humidity	Max	90	95	69	83	93	89	90	91	98	85	88	91	-
	Min	61	33	50	61	57	46	52	54	41	57	51	42	-
Soil Temperature at 10 cm	06 UTC	15.6	16.2	17.6	17.2	16.4	17.4	18.2	20.0	19.8	20.2	17.9	19.8	17.0
	12 UTC	20.0	21.6	20.4	17.2	19.2	22.4	23.6	24.4	24.8	24.0	21.8	23.6	21.2
Sunshine Duration		12.0	12.7	3.3	0.5	3.2	12.4	12.1	12.7	8.1	7.6	8.5	10.1	8.2
Precipitation		0.8			1.4	0.7	0.9					3.8	1.0	10.7
Evaporation		4.6	7.4	5.0	1.3	2.0	6.1	6.7	2.6	8.6	2.6	46.9	65.2	57.1
Growing Degrees	5	10.3	12.2	12.8	11.9	13.8	15.1	12.5	13.6	14.5	13.8	130.5	151.1	118.8
	10	5.3	7.2	7.8	6.9	8.8	10.1	7.5	8.6	9.5	8.8	80.5	101.1	68.8

2nd 10-day period (11-20/05/2019)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.4	44.4
Precipitation - Reference Evapotranspiration	-34.6	-43.4
Number of Rainy Days	4.0	1.0
Number of Dry Days	0.0	8.0

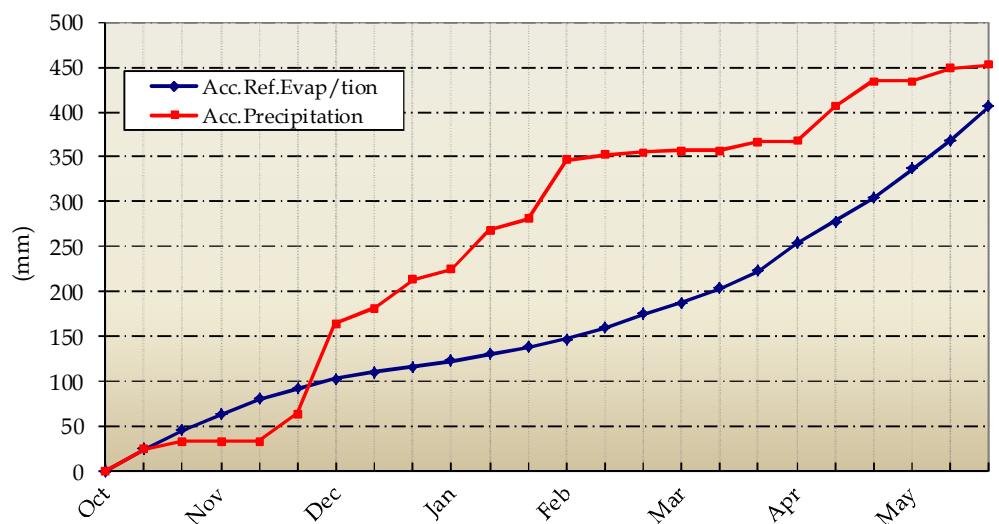
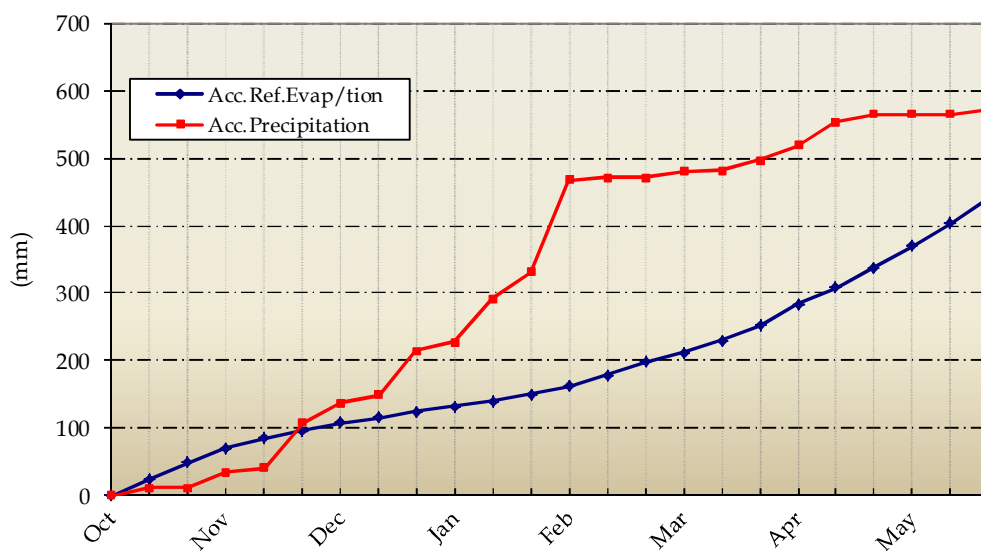


Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.7	24.2	23.0	21.6	22.0	21.8	21.9	23.6	27.8	24.9	23.4	26.5	23.9
	Min	9.6	10.9	14.5	13.4	10.6	11.9	13.2	11.7	12.3	14.4	12.2	15.7	12.7
Relative Humidity	Max	100	100	99	100	92	95	100	93	88	100	97	90	-
	Min	38	33	34	47	48	52	43	43	22	45	40	41	-
Soil Temperature at 10 cm	06 UTC	17.6	17.8	19.2	18.0	18.0	18.2	17.4	18.8	18.6	19.4	18.3	21.7	19.3
	12 UTC	20.2	21.4	20.0	20.0	20.6	21.0	21.4	21.0	21.0	22.2	20.9	24.4	23.6
Sunshine Duration		12.4	9.1	0.7	9.2	11.2	9.9	9.8	8.7	5.8	5.5	8.2	6.7	9.4
Precipitation				4.4				2.5				6.9	0.6	8.3
Evaporation		8.0	5.2	6.3	2.0	4.0	8.5	6.8	3.0	5.0	6.0	54.8	42.6	54.3
Growing Degrees	5	11.7	12.6	13.8	12.5	11.3	11.9	12.6	12.7	15.1	14.7	128.5	161.3	133.2
	10	6.7	7.6	8.8	7.5	6.3	6.9	7.6	7.7	10.1	9.7	78.5	111.3	83.2

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.3	39.1	39.7
Precipitation - Reference Evapotranspiration	-31.4	-38.5	-31.4
Number of Rainy Days	2.0	1.0	1.6
Number of Dry Days	8.0	6.0	-

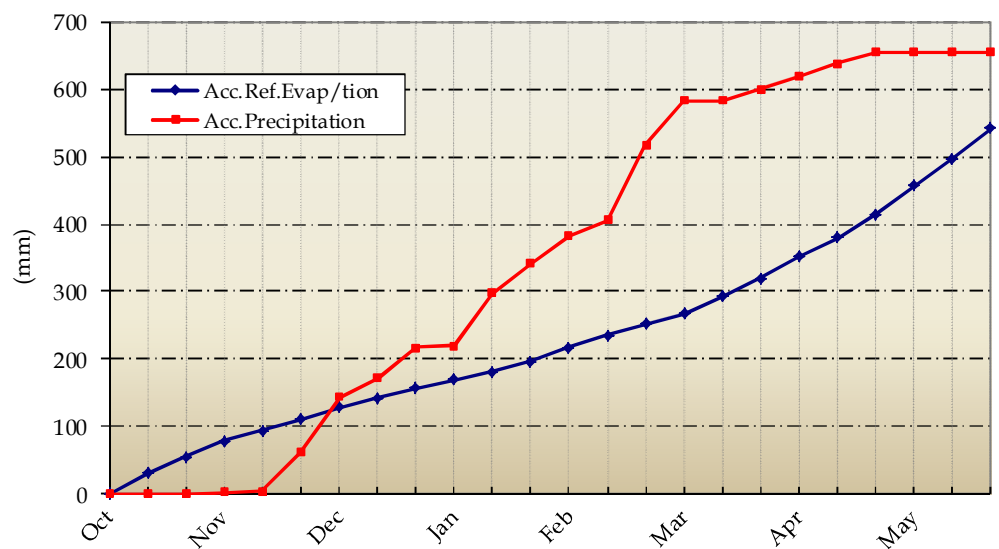
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.0	21.8	26.0	29.8	20.8	21.4	21.0	23.4	30.4	24.2	24.0	26.3	23.1
	Min	13.0	13.2	13.4	21.0	17.0	15.0	12.0	12.6	16.2	21.0	15.4	18.5	15.3
Relative Humidity	Max	97	97	93	90	93	95	92	90	79	94	92	89	-
	Min	75	71	24	29	69	62	61	63	22	31	51	61	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.4	12.0	11.7	8.0	3.5	11.6	9.6	12.8	10.7	4.8	9.7	9.9	9.7
Precipitation						0.1						0.1		3.5
Evaporation		5.0	3.6	8.9	3.2	4.0	3.6	3.5	5.7	6.4	5.5	49.4	50.2	61.2
Growing Degrees	5	12.0	12.5	14.7	20.4	13.9	13.2	11.5	13.0	18.3	17.6	147.1	173.6	142.0
	10	7.0	7.5	9.7	15.4	8.9	8.2	6.5	8.0	13.3	12.6	97.1	123.6	92.0

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.4	46.5	-
Precipitation - Reference Evapotranspiration	-44.3	-46.5	3.5
Number of Rainy Days	1.0	0.0	0.9
Number of Dry Days	8.0	12.0	-

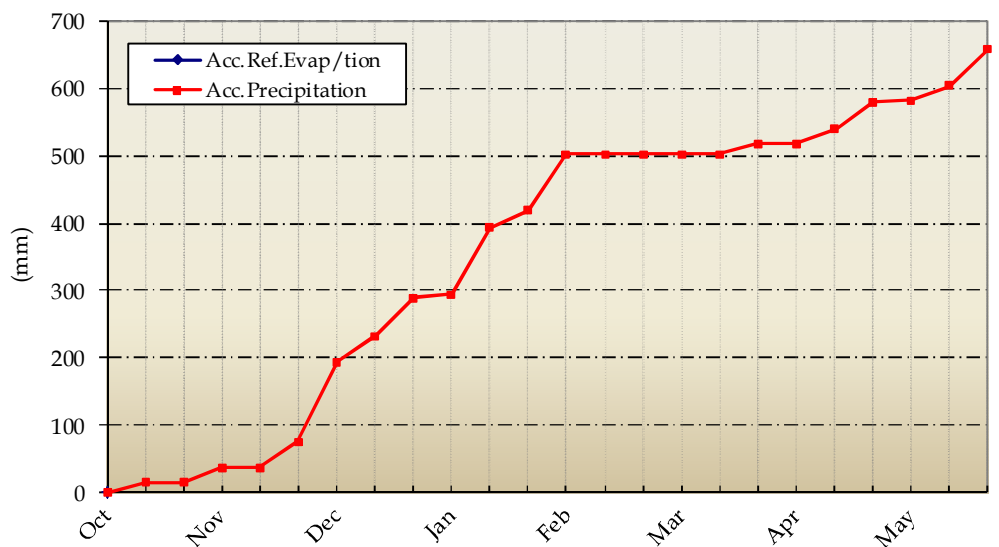
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.0	23.0	17.0	18.6	21.0	18.4	21.0	26.4	25.2	22.4	21.7	24.7	22.8
	Min	5.4	10.8	11.0	10.8	9.6	9.6	7.8	9.0	10.2	13.0	9.7	13.1	10.0
Relative Humidity	Max	100	93	100	93	100	98	100	100	93	100	98	98	-
	Min	32	38	70	65	62	53	42	36	27	52	48	49	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	15.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	19.5
Sunshine Duration		11.5	5.2	0.5	5.1	2.1	3.2	7.3	6.3	7.6	5.3	5.4	6.8	7.2
Precipitation			0.7	28.4	16.9	1.9	4.5	1.6				54.0	55.8	19.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	40.9
Growing Degrees	5	9.7	11.9	9.0	9.7	10.3	9.0	9.4	12.7	12.7	12.7	107.1	139.3	113.3
	10	4.7	6.9	4.0	4.7	5.3	4.0	4.4	7.7	7.7	7.7	57.1	89.3	63.4

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	34.9
Precipitation - Reference Evapotranspiration	-	-	-15.3
Number of Rainy Days	6.0	5.0	3.4
Number of Dry Days	1.0	0.0	-

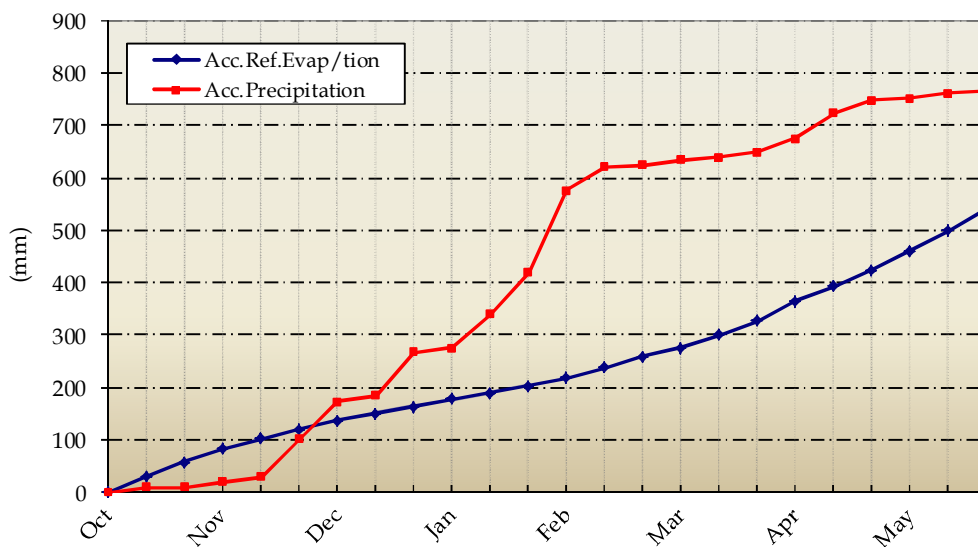
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.1	23.8	21.5	21.8	21.7	22.9	22.2	23.8	24.2	25.4	22.9	27.1	24.3
	Min	12.0	11.1	13.4	12.4	8.2	9.6	10.6	10.2	10.2	12.8	11.0	14.3	12.1
Relative Humidity	Max	91	91	88	90	91	92	91	90	89	91	90	89	-
	Min	51	39	49	46	41	45	44	42	35	44	44	38	-
Soil Temperature at 10 cm	06 UTC	18.2	17.5	19.0	18.2	18.0	18.4	18.2	18.2	18.4	18.6	18.3	21.5	18.7
	12 UTC	21.4	21.8	22.0	20.6	21.0	21.5	21.6	21.0	20.4	20.2	21.2	23.7	22.5
Sunshine Duration		11.3	12.3	3.9	9.3	11.0	11.6	11.6	9.2	3.6	4.9	8.9	7.7	9.1
Precipitation				0.2				5.0				5.2	2.3	9.5
Evaporation		5.8	4.9	2.3	6.9	7.8	0.0	11.0	4.4	5.4	4.6	53.1	49.3	57.5
Growing Degrees	5	12.1	12.5	12.5	12.1	10.0	11.3	11.4	12.0	12.2	14.1	120.0	157.3	132.1
	10	7.1	7.5	7.5	7.1	5.0	6.3	6.4	7.0	7.2	9.1	70.0	107.3	82.1

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	41.7	43.8	39.6
Precipitation - Reference Evapotranspiration	-36.5	-41.5	-30.1
Number of Rainy Days	2.0	3.0	1.8
Number of Dry Days	5.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

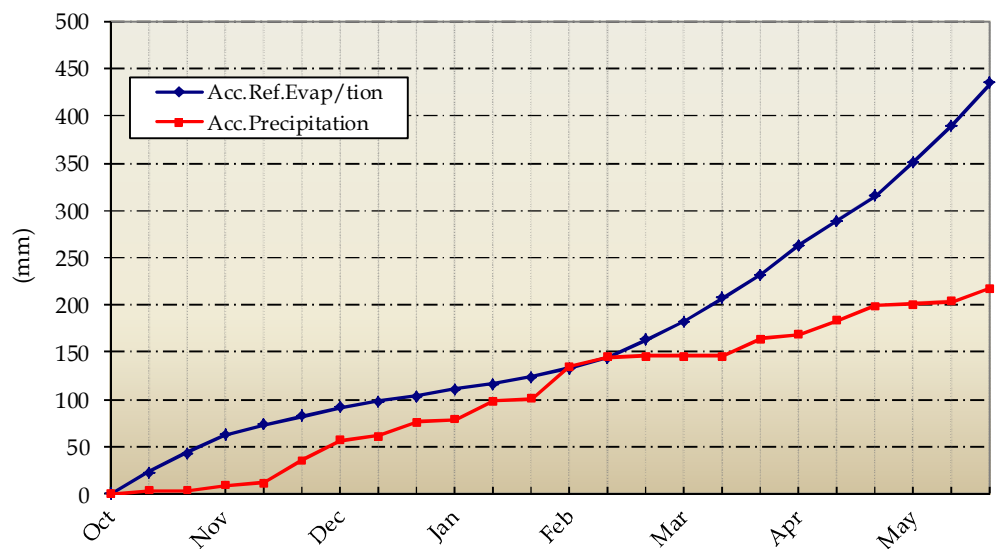


Larisa

2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.7	26.0	22.0	22.6	25.2	22.7	25.2	29.0	28.4	29.2	25.7	28.4	25.6
	Min	9.2	9.3	13.8	15.6	8.6	14.0	11.4	10.4	13.2	12.6	11.8	14.1	11.0
Relative Humidity	Max	89	95	97	96	95	96	98	96	91	87	94	89	-
	Min	28	38	54	57	32	46	36	30	31	25	38	34	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.1
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	20.4
Sunshine Duration		12.0	9.6	4.9	5.4	11.0	5.6	10.1	10.4	6.9	9.7	8.6	7.5	8.3
Precipitation				5.3	3.5		2.8	2.6				14.2	1.0	11.8
Evaporation		9.0	8.6	2.4	7.1	6.4	2.9	7.4	7.8	8.1	7.4	67.1	66.6	55.6
Growing Degrees	5	13.0	12.7	12.9	14.1	11.9	13.4	13.3	14.7	15.8	15.9	137.6	162.6	133.1
	10	8.0	7.7	7.9	9.1	6.9	8.4	8.3	9.7	10.8	10.9	87.6	112.6	83.1

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.4	45.4	42.0
Precipitation - Reference Evapotranspiration	-31.2	-44.4	-30.2
Number of Rainy Days	4.0	5.0	2.4
Number of Dry Days	7.0	0.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

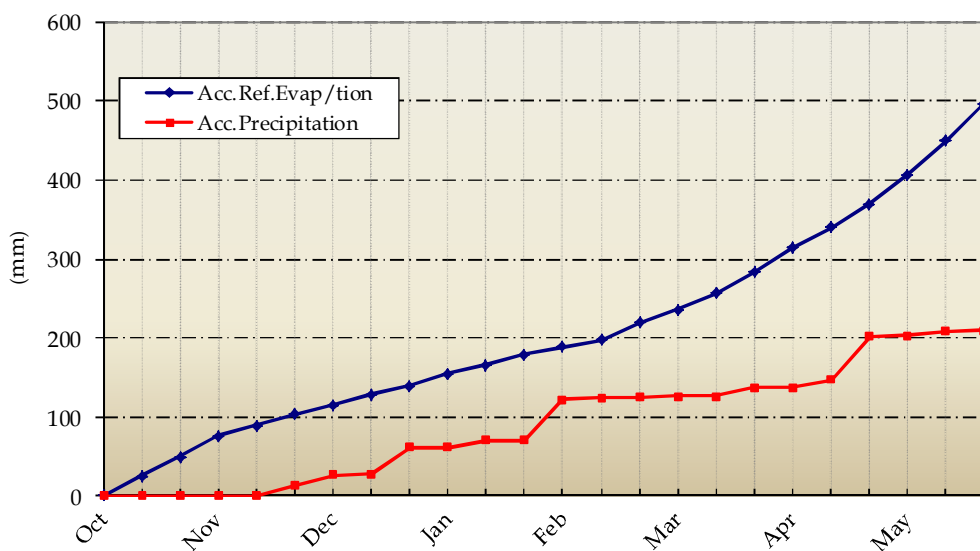


Mikra

2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.2	25.4	20.8	22.0	24.8	22.4	24.4	27.0	26.0	28.2	24.7	26.2	24.3
	Min	11.6	13.0	16.0	16.0	16.0	13.4	14.0	14.4	15.4	14.4	14.4	15.4	12.4
Relative Humidity	Max	77	86	85	90	89	86	79	80	82	89	84	84	-
	Min	25	23	47	57	29	51	47	28	35	25	37	40	-
Soil Temperature at 10 cm	06 UTC	17.0	18.0	19.0	18.4	18.4	19.0	19.0	19.4	20.6	20.0	18.9	20.4	18.8
	12 UTC	21.2	22.0	20.0	20.5	22.4	22.0	23.2	24.2	22.6	23.5	22.2	24.5	23.5
Sunshine Duration		11.7	11.8	1.7	3.7	10.9	9.4	12.4	12.5	4.2	10.6	8.9	9.7	8.1
Precipitation				0.0	1.1							1.1	4.7	11.8
Evaporation		-	-	-	-	-	-	-	-	-	-	-	61.4	56.4
Growing Degrees	5	13.9	14.2	13.4	14.0	15.4	12.9	14.2	15.7	15.7	16.3	145.7	157.6	133.6
	10	8.9	9.2	8.4	9.0	10.4	7.9	9.2	10.7	10.7	11.3	95.7	107.6	83.6

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.8	46.5	40.9
Precipitation - Reference Evapotranspiration	-45.7	-41.8	-29.1
Number of Rainy Days	1.0	4.0	3.0
Number of Dry Days	6.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

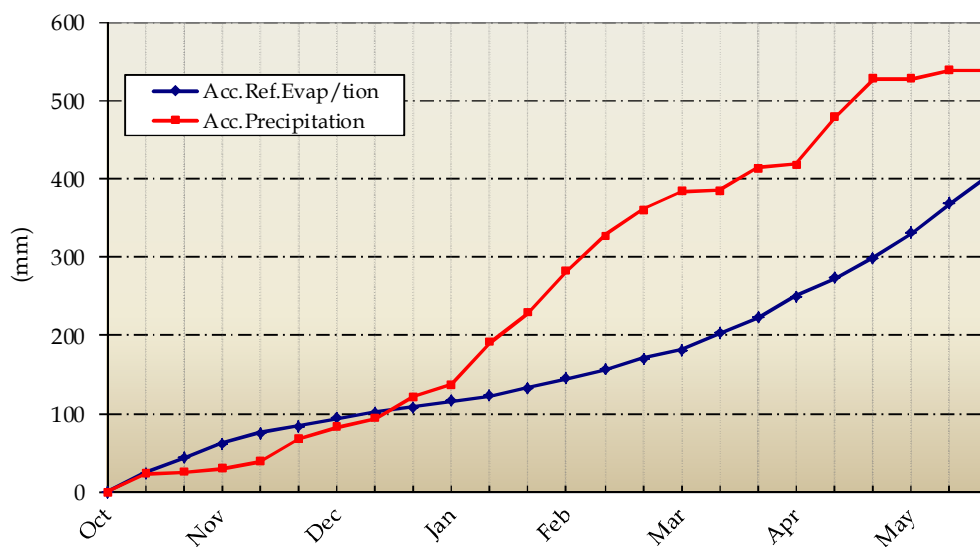


Tanagra

2nd 10-day period (11-20/05/2019)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.0	26.4	22.0	22.7	23.0	24.0	23.9	27.2	25.7	27.8	24.8	27.7	24.8
	Min	11.7	9.0	12.9	11.7	11.0	8.3	8.8	10.4	12.9	11.6	10.8	14.5	11.2
Relative Humidity	Max	98	99	97	95	95	97	98	96	92	83	95	87	-
	Min	27	33	39	49	42	45	42	32	25	28	36	31	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		12.5	10.3	5.1	5.5	5.9	10.3	8.3	10.8	1.9	2.0	7.3	7.8	
Precipitation						0.0		0.0				0.0	4.1	8.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	13.4	12.7	12.5	12.2	12.0	11.2	11.4	13.8	14.3	14.7	128.0	160.7	
	10	8.4	7.7	7.5	7.2	7.0	6.2	6.4	8.8	9.3	9.7	78.0	110.7	

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.9	42.8	
Precipitation - Reference Evapotranspiration	-35.9	-38.7	8.2
Number of Rainy Days	0.0	2.0	2.2
Number of Dry Days	13.0	7.0	-

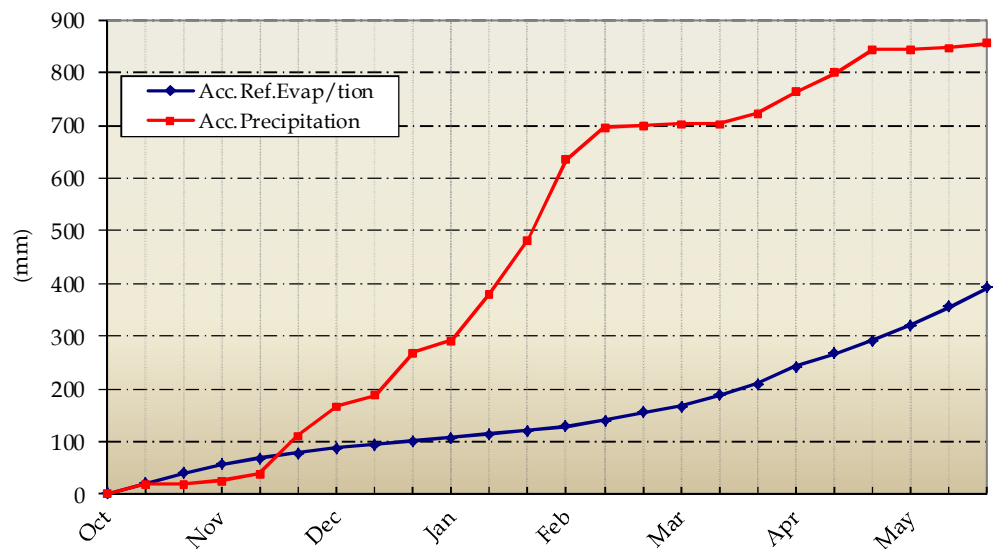
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/05/2019)		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	22.6	17.9	20.3	20.9	20.0	20.1	24.1	25.3	23.5	21.7	24.2	22.9
	Min	5.6	6.9	10.0	6.9	3.7	4.7	6.9	5.8	7.8	7.5	6.6	9.9	8.3
Relative Humidity	Max	-	100	96	96	97	98	99	100	95	87	96	96	-
	Min	37	32	51	35	31	39	37	25	14	30	33	34	-
Soil Temperature at 10 cm	06 UTC	-	-	16.6	14.2	13.8	15.4	15.6	15.2	16.4	16.2	15.4	17.9	16.7
	12 UTC	-	-	19.2	20.4	24.2	25.0	22.6	24.6	-	22.0	22.6	22.5	19.4
Sunshine Duration		8.1	9.4	2.2	8.6	11.7	12.7	8.4	11.7	5.5	5.8	8.4	8.2	8.4
Precipitation		0.2	0.2	1.2	0.0			6.2				7.8	10.7	15.5
Evaporation		-	0.0	1.4	4.2	5.9	5.2	4.6	5.4	5.4	3.8	-	-	41.0
Growing Degrees	5	8.8	9.8	9.0	8.6	7.3	7.4	8.5	10.0	11.6	10.5	91.2	121.0	106.0
	10	3.8	4.8	4.0	3.6	2.3	2.4	3.5	5.0	6.6	5.5	41.2	71.0	56.0

2nd 10-day period (11-20/05/2019)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.3	37.4	39.8
Precipitation - Reference Evapotranspiration	-28.5	-26.7	-24.3
Number of Rainy Days	4.0	4.0	2.8
Number of Dry Days	3.0	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

© HELLENIC NATIONAL METEOROLOGICAL SERVICE

Reproduction is prohibited without written permission

El. Venizelou street 14, Zip Code 16777

Helliniko, Athens



ΕΘΝΙΚΗ
ΜΕΤΕΩΡΟΛΟΓΙΚΗ
ΥΠΗΡΕΣΙΑ

HELLENIC NATIONAL METEOROLOGICAL SERVICE

Division of Climatology-Applications

Issue Editors :

Papakrivou Anastasia

The present bulletin was designed and implemented under the support of Water Resources Management Division of Agriculture University of Athens