



AGROMETEOROLOGICAL BULLETIN

*November 2020
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



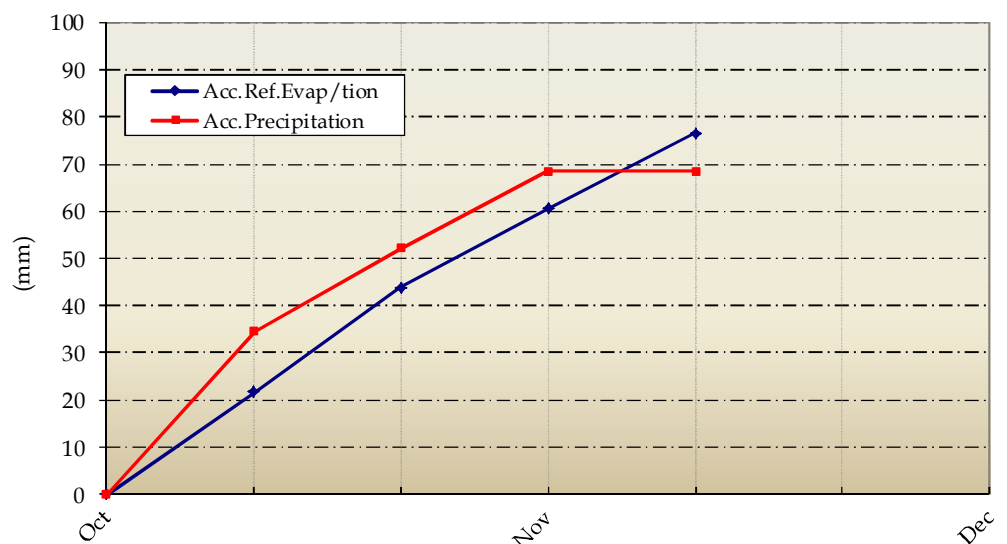
Hellenic National Meteorological Service
 Division of Climatology-Applications
 El. Venizelou Street 14, 16777
 Helliniko, Athens

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

1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.4	18.6	18.2	19.6	19.2	17.0	18.2	17.6	19.6	17.0	18.1	20.7	15.8
	Min	8.2	3.6	8.4	11.8	8.6	11.6	5.8	11.4	14.2	13.6	9.7	13.6	7.1
Relative Humidity	Max	93	93	91	91	79	88	83	85	85	87	88	91	-
	Min	41	56	62	41	52	61	64	72	56	67	57	65	-
Soil Temperature at 10 cm	06 UTC	14.0	12.0	14.2	15.0	13.4	14.0	12.4	13.6	14.6	14.6	13.8	16.0	11.0
	12 UTC	15.8	14.6	15.8	16.2	15.4	14.2	14.8	14.6	15.0	15.4	15.2	18.3	12.9
Sunshine Duration		9.3	8.4	0.2	8.2	6.3	6.5	8.6	1.4	4.7	0.1	5.4	5.4	4.1
Precipitation													17.3	19.0
Evaporation		3.2	0.8	2.3	3.5	5.4	3.4	2.1	3.1	4.0	2.8	30.6	27.1	25.4
Growing Degrees	5	7.3	6.1	8.3	10.7	8.9	9.3	7.0	9.5	11.9	10.3	89.3	121.3	64.9
	10	2.3	1.1	3.3	5.7	3.9	4.3	2.0	4.5	6.9	5.3	39.3	71.3	23.3

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.0	14.8	14.9
Precipitation - Reference Evapotranspiration	-16.0	2.5	4.1
Number of Rainy Days	0.0	2.0	1.9
Number of Dry Days	11.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

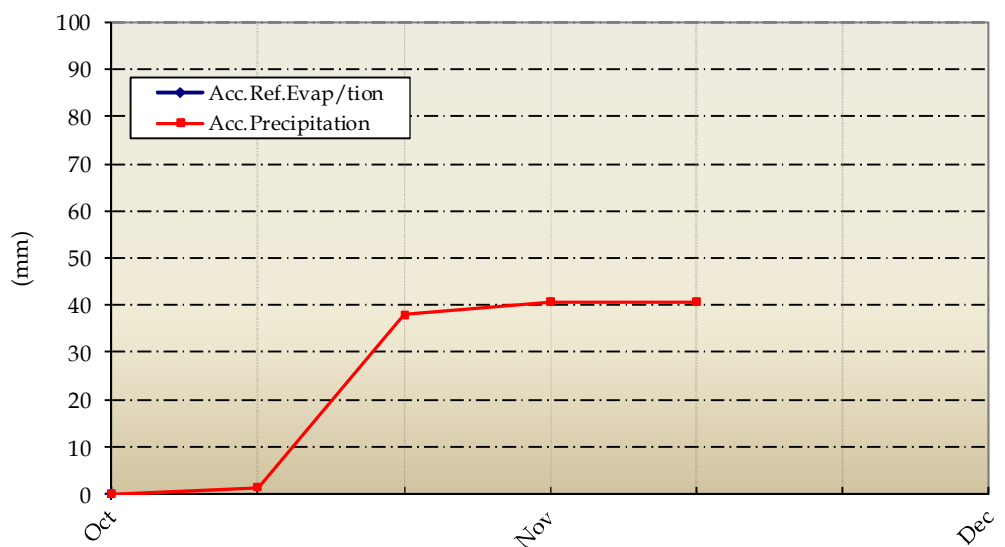


1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.2	21.9	21.2	22.7	23.7	22.7	22.8	22.3	21.6	23.4	22.4	23.6	20.0
	Min	10.1	9.2	12.0	12.5	13.2	9.9	8.2	5.2	6.7	7.0	9.4	13.6	10.4
Relative Humidity	Max	90	97	95	95	96	89	90	92	94	96	93	99	-
	Min	46	57	65	61	48	38	32	41	43	37	47	58	-
Soil Temperature at 10 cm	06 UTC	17.4	17.6	17.6	17.6	18.0	17.6	16.6	15.8	14.0	13.6	16.6	18.3	14.3
	12 UTC	21.0	21.2	18.2	19.4	19.8	18.4	18.2	17.2	17.8	17.8	18.9	20.2	16.6
Sunshine Duration		7.9	3.4	2.8	8.1	5.6	8.1	7.8	8.1	7.5	8.1	6.7	6.3	6.0
Precipitation													74.4	45.1
Evaporation		0.8	2.8	0.8	0.6	2.6	3.2	3.8	2.2	2.0	2.4	21.2	15.3	25.9
Growing Degrees	5	11.2	10.6	11.6	12.6	13.5	11.3	10.5	8.8	9.2	10.2	109.3	135.9	101.6
	10	6.2	5.6	6.6	7.6	8.5	6.3	5.5	3.8	4.2	5.2	59.3	85.9	52.1

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	14.3
Precipitation - Reference Evapotranspiration	-	-	30.8
Number of Rainy Days	0.0	3.0	3.2
Number of Dry Days	13.0	3.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

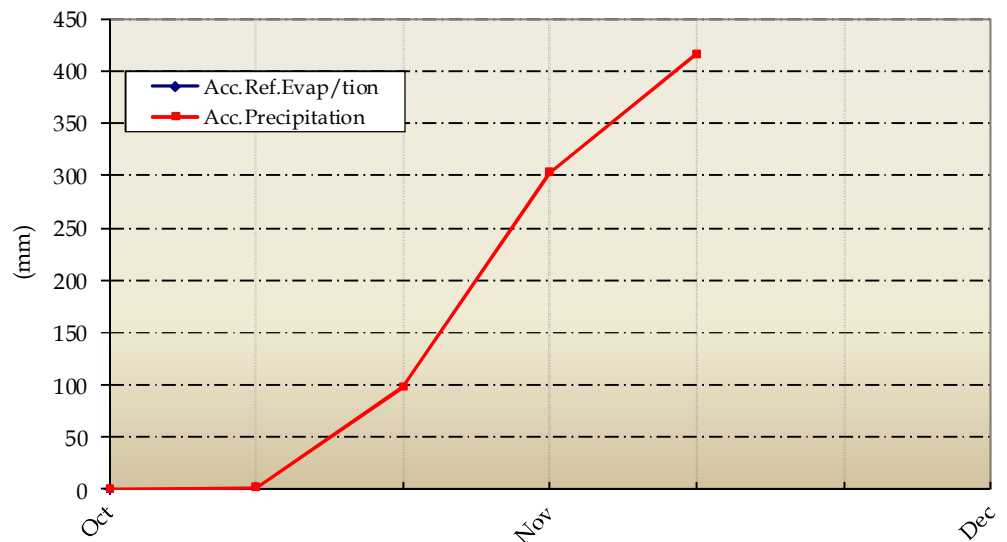


1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.4	22.0	22.0	22.0	20.4	19.4	20.4	19.4	19.2	18.8	20.5	25.5	20.4
	Min	15.6	18.4	15.4	16.0	18.6	18.6	18.0	18.2	14.4	17.0	17.0	18.3	14.3
Relative Humidity	Max	81	81	92	85	88	92	92	87	90	98	89	87	-
	Min	62	51	64	66	64	74	66	70	79	86	68	52	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		2.6	8.3	5.4	5.3	7.0	0.0	2.5	2.4	0.0	0.0	3.4	6.8	5.0
Precipitation			0.4	4.6			13.6	0.2		17.1	77.8	113.7	5.1	20.0
Evaporation		3.2	4.8	1.9	4.8	4.2	0.0	0.8	2.1	0.4	0.2	22.4	30.1	39.9
Growing Degrees	5	13.5	15.2	13.7	14.0	14.5	14.0	14.2	13.8	11.8	12.9	137.6	168.9	123.4
	10	8.5	10.2	8.7	9.0	9.5	9.0	9.2	8.8	6.8	7.9	87.6	118.9	73.4

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	-
Precipitation - Reference Evapotranspiration	-	-	20.0
Number of Rainy Days	6.0	2.0	2.6
Number of Dry Days	3.0	0.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



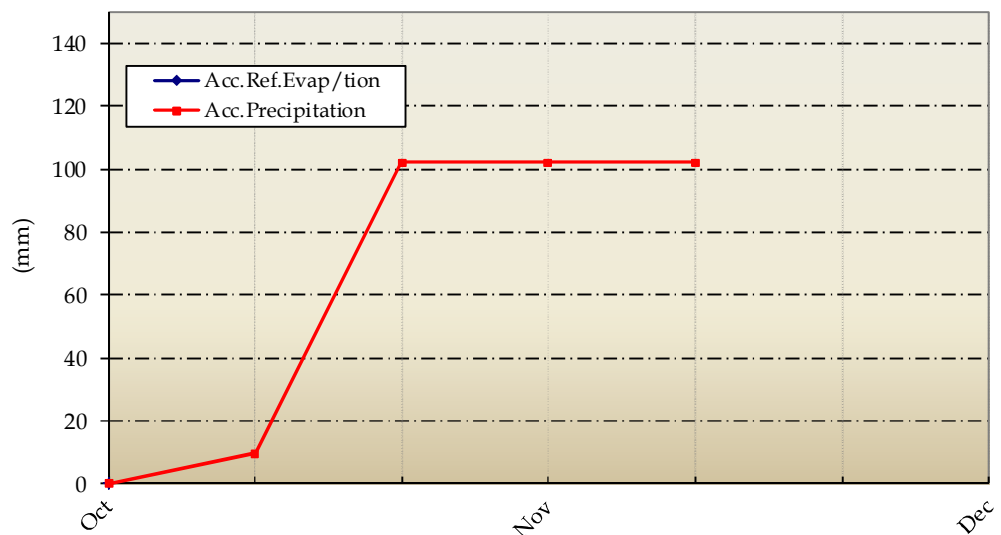
Ioannina

1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.1	20.2	17.1	22.0	19.4	18.8	19.6	20.7	18.6	19.2	19.7	17.9	16.0
	Min	2.1	2.1	3.8	6.3	8.8	13.4	5.4	1.2	-0.9	0.8	4.3	10.4	5.4
Relative Humidity	Max	100	100	100	100	100	100	85	99	99	100	98	100	-
	Min	42	60	70	52	44	40	31	35	43	34	45	73	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	10.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	11.8
Sunshine Duration		8.6	6.1	0.7	5.1	0.3	8.4	8.8	8.7	7.8	8.4	6.3	1.8	4.1
Precipitation													177.1	40.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	16.8
Growing Degrees	5	6.6	6.2	5.5	9.2	9.1	11.1	7.5	6.0	3.9	5.0	69.9	91.6	57.3
	10	1.6	1.2	0.5	4.2	4.1	6.1	2.5	1.0	0.0	0.0	21.0	41.6	16.4

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	10.7
Precipitation - Reference Evapotranspiration	-	-	29.4
Number of Rainy Days	0.0	8.0	3.4
Number of Dry Days	25.0	0.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

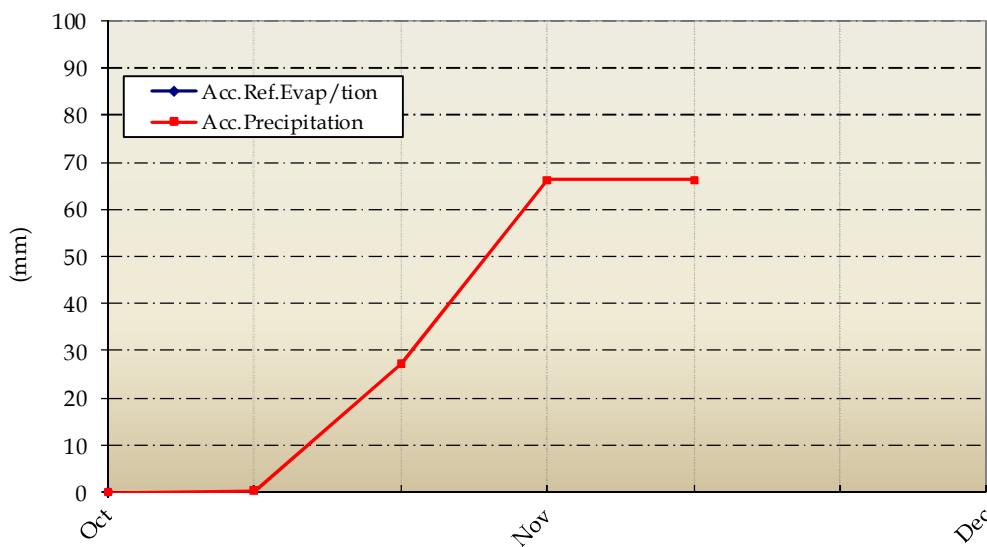


1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.5	18.5	22.1	23.6	24.6	25.5	23.6	22.8	23.7	23.8	23.3	23.9	21.0
	Min	9.1	10.0	11.6	11.4	12.7	14.3	13.0	8.5	10.6	10.5	11.2	13.0	10.2
Relative Humidity	Max	91	95	92	97	100	63	70	81	84	83	86	91	-
	Min	30	46	57	46	42	37	27	27	33	43	39	49	-
Soil Temperature at 10 cm	06 UTC	16.4	16.2	16.8	17.0	17.2	17.0	16.4	15.4	16.0	15.2	16.4	18.4	15.1
	12 UTC	17.6	18.0	17.8	18.2	18.4	17.8	17.0	16.8	17.0	17.8	17.6	19.9	16.9
Sunshine Duration		9.1	6.1	4.4	8.8	5.1	10.3	8.2	8.6	9.0	8.8	7.8	6.6	5.6
Precipitation													57.6	35.3
Evaporation		2.2	2.2	2.0	2.8	2.4	3.4	5.2	3.4	2.4	2.6	28.6	22.5	30.4
Growing Degrees	5	11.8	9.3	11.9	12.5	13.7	14.9	13.3	10.7	12.2	12.2	122.2	134.4	105.8
	10	6.8	4.3	6.9	7.5	8.7	9.9	8.3	5.7	7.2	7.2	72.2	84.4	55.9

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	21.6	16.4
Precipitation - Reference Evapotranspiration	-	36.0	18.9
Number of Rainy Days	0.0	5.0	3.1
Number of Dry Days	12.0	2.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



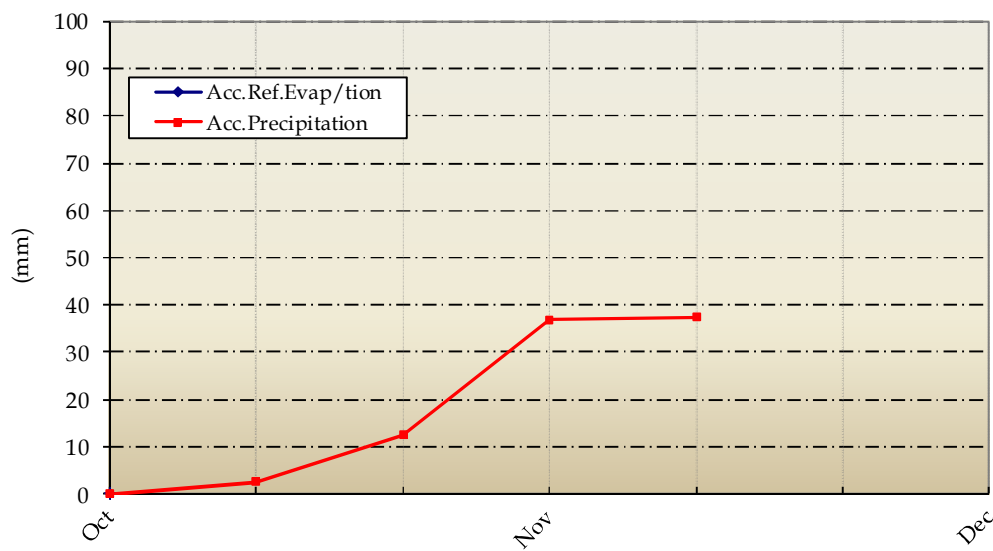
Larisa

1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.4	20.4	19.0	20.3	17.4	20.0	18.6	18.4	17.7	15.6	18.9	21.3	17.2
	Min	6.8	6.4	9.7	10.4	14.4	8.8	9.0	8.0	4.1	8.8	8.6	10.4	6.7
Relative Humidity	Max	97	98	98	98	97	97	88	89	96	89	95	97	-
	Min	45	53	69	65	68	45	43	50	57	69	56	50	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	12.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	13.2
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	3.7	4.1
Precipitation				0.6		0.0						0.6	16.1	20.6
Evaporation		3.3	2.0	0.3	2.7	0.8	2.9	1.4	3.5	1.1	1.3	19.3	12.0	17.6
Growing Degrees	5	9.1	8.4	9.4	10.4	10.9	9.4	8.8	8.2	5.9	7.2	87.6	108.2	69.6
	10	4.1	3.4	4.4	5.4	5.9	4.4	3.8	3.2	0.9	2.2	37.6	58.2	25.7

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	13.2	11.7
Precipitation - Reference Evapotranspiration	-	2.9	8.9
Number of Rainy Days	1.0	4.0	2.7
Number of Dry Days	5.0	23.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



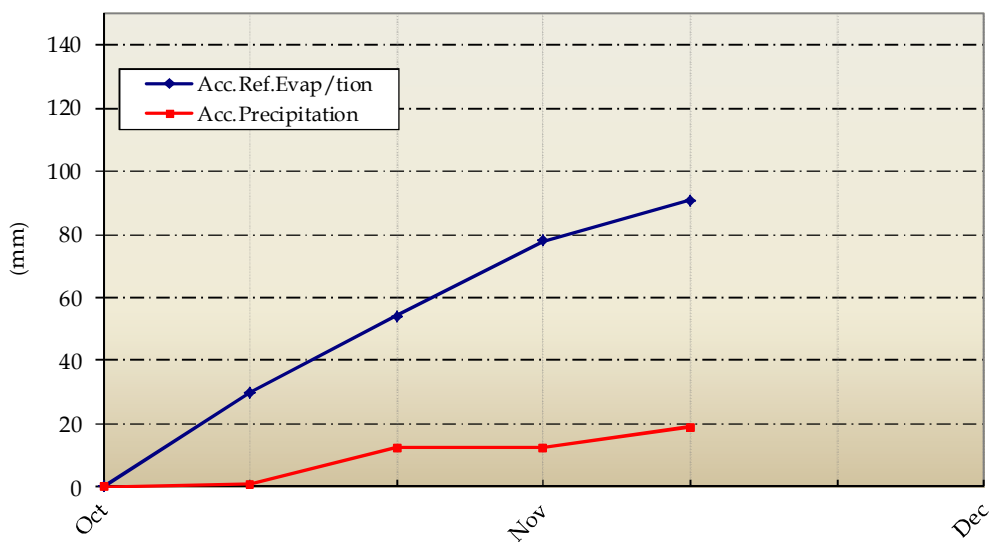
Mikra

1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.3	19.3	19.1	20.6	17.6	19.5	19.0	18.2	18.3	18.7	19.3	20.8	16.5
	Min	14.8	10.1	12.6	13.1	11.2	9.0	7.3	6.3	6.0	8.5	9.9	12.9	7.9
Relative Humidity	Max	89	91	96	94	96	96	94	94	94	93	94	94	-
	Min	26	53	64	69	63	45	44	47	54	49	51	65	-
Soil Temperature at 10 cm	06 UTC	17.4	16.8	17.0	17.2	17.2	15.2	14.0	13.8	13.4	14.0	15.6	16.6	11.5
	12 UTC	18.4	18.4	17.8	18.8	17.4	16.8	16.4	16.0	17.0	17.2	17.4	18.7	13.8
Sunshine Duration		9.3	5.8	1.7	3.7	0.1	8.8	9.0	8.1	7.4	0.1	5.4	4.0	4.0
Precipitation				2.6		3.8						6.4	21.4	18.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	22.5
Growing Degrees	5	13.6	9.7	10.9	11.9	9.4	9.3	8.2	7.3	7.2	8.6	95.8	118.2	72.4
	10	8.6	4.7	5.9	6.9	4.4	4.3	3.2	2.3	2.2	3.6	45.8	68.2	27.9

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.9	12.4	13.6
Precipitation - Reference Evapotranspiration	-6.5	9.0	4.5
Number of Rainy Days	2.0	4.0	2.5
Number of Dry Days	4.0	0.0	-

The missing info in the tables are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



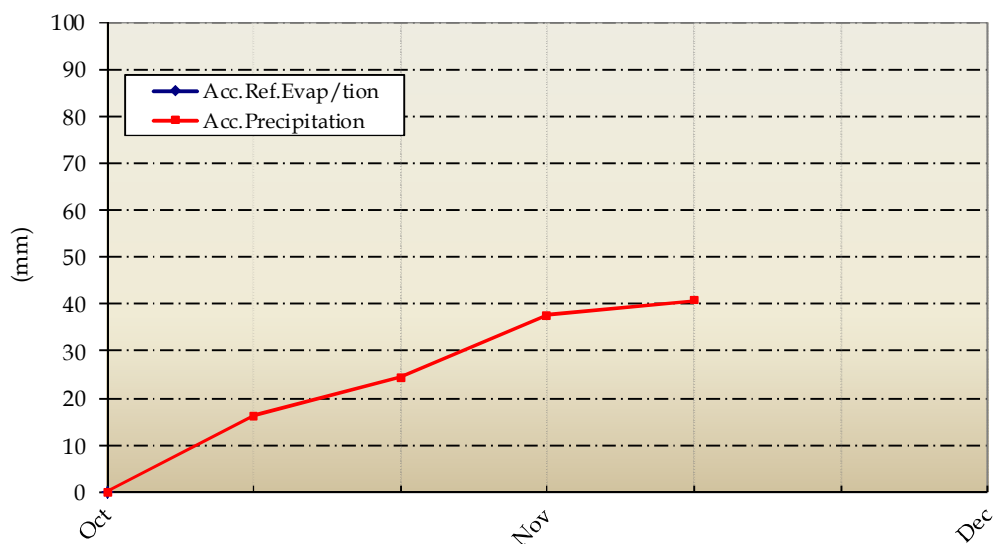
Tanagra

1st 10-day period (1-10/11/2020)		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	21.0	19.0	20.4	19.0	15.7	17.8	18.2	17.6	19.7	18.9	22.9	19.0
	Min	9.6	6.1	8.6	11.8	14.0	13.2	13.8	13.8	14.0	14.7	12.0	11.9	9.1
Relative Humidity	Max	98	98	100	96	96	97	63	69	71	73	86	96	-
	Min	49	48	63	58	40	54	44	54	62	51	52	46	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		5.8	4.9	0.0	1.9	5.0	0.0	6.3	3.3	0.4	2.8	3.0	5.8	
Precipitation							3.1					3.1	18.9	19.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-
Growing Degrees	5	10.3	8.6	8.8	11.1	11.5	9.5	10.8	11.0	10.8	12.2	104.5	124.4	
	10	5.3	3.6	3.8	6.1	6.5	4.5	5.8	6.0	5.8	7.2	54.5	74.4	

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	
Precipitation - Reference Evapotranspiration	-	-	19.6
Number of Rainy Days	1.0	4.0	3.1
Number of Dry Days	7.0	0.0	-

The missing info in the tables and the graph are due to the absence of data.

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

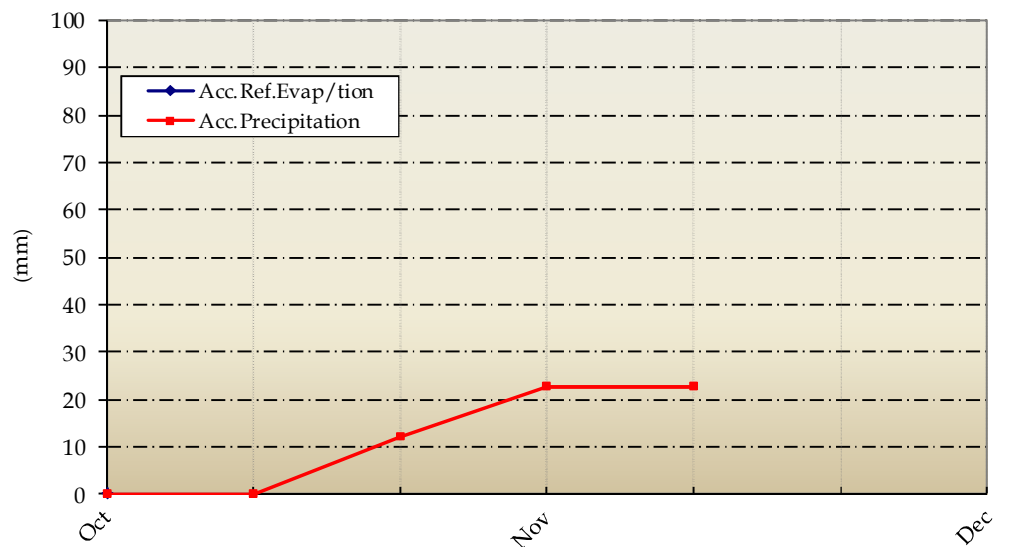


1st 10-day period (1-10/11/2020)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.2	19.9	18.2	20.9	17.7	13.6	16.0	16.1	16.6	17.0	17.6	19.2	16.5
	Min	3.4	4.8	4.4	5.6	11.5	9.1	10.6	6.5	2.9	6.9	6.6	7.9	5.2
Relative Humidity	Max	98	99	98	100	96	81	71	96	97	94	93	98	-
	Min	38	39	50	46	56	61	42	47	50	50	48	50	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	13.6	11.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	16.5	12.3
Sunshine Duration		5.9	4.5	0.7	5.5	5.1	5.0	8.7	7.4	5.0	8.3	5.6	6.2	5.1
Precipitation							0.0					0.0	55.1	28.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	18.0
Growing Degrees	5	6.8	7.4	6.3	8.3	9.6	6.4	8.3	6.3	4.8	7.0	71.0	85.8	58.6
	10	1.8	2.4	1.3	3.3	4.6	1.4	3.3	1.3	0.0	2.0	21.2	35.8	17.0

1st 10-day period (1-10/11/2020)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	-	13.6
Precipitation - Reference Evapotranspiration	-	-	14.7
Number of Rainy Days	0.0	5.0	2.6
Number of Dry Days	13.0	1.0	-

The missing info in the tables and the graph are due to the absence of data.

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