



AGROMETEOROLOGICAL BULLETIN

*January 2014
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

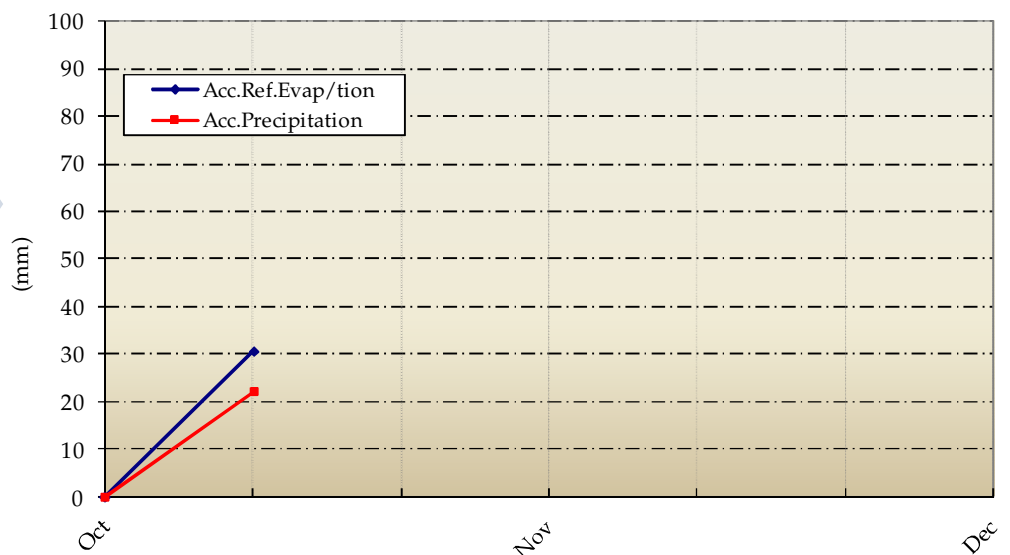
*Web addresses of HNMS
www.emy.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr*

Agrinio

1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	14.0	15.4	-	-	-	14.0	15.0	16.6	16.6	15.3		13.3
	Min	-	2.0	4.8	-	-	-	5.6	4.8	4.0	4.0	4.2	-1.1	3.1
Relative Humidity	Max	91	89	84	-	-	91	76	81	90	90	86	91	-
	Min	36	39	52	-	-	36	28	21	65	58	42	46	-
Soil Temperature at 10 cm	06 UTC	-	2.4	8.0	-	-	-	7.0	6.0	5.0	4.0	5.4	5.7	7.4
	12 UTC	-	12.0	12.0	-	-	-	13.0	13.0	12.0	11.0	12.2	6.8	9.1
Sunshine Duration		2.1	7.5	-	-	-	4.3	6.8	7.8	7.2	-	6.0	5.6	3.9
Precipitation														32.5
Evaporation		0.7	0.8	-	-	-	0.7	0.8	1.0	0.8	-	-	-	13.9
Growing Degrees	5	-	3.0	5.1	-	-	-	4.8	4.9	5.3	5.3	-	-	34.7
	10	-	0.0	0.1	-	-	-	0.0	0.0	0.3	0.3	-	-	5.2

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.6	-	8.0
Precipitation - Reference Evapotranspiration	-5.6	-	24.5
Number of Rainy Days	0.0	0.0	3.8
Number of Dry Days	39.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

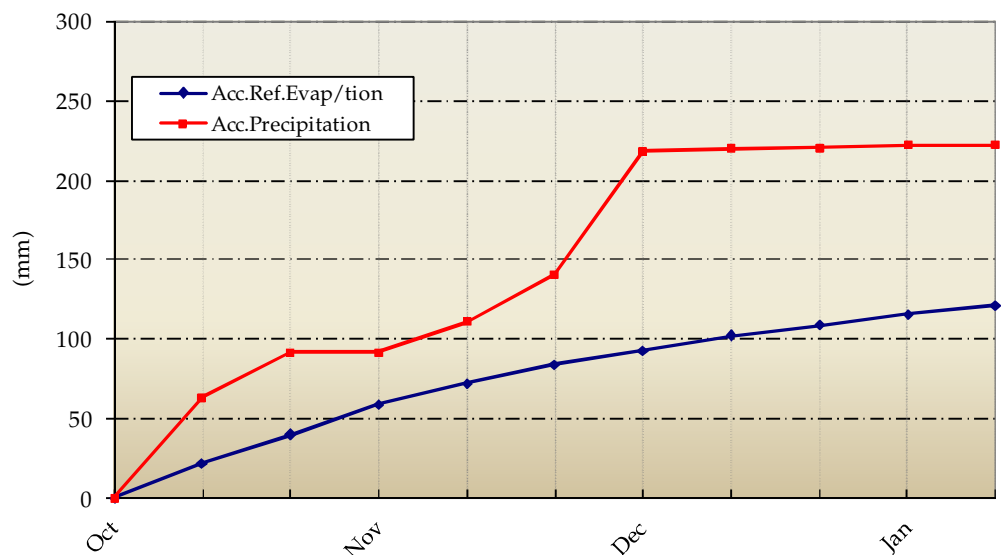


This station is not fully operated

1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.4	8.6	12.0	11.0	10.4	14.2	13.6	9.6	10.2	10.4	10.6	7.4	8.9
	Min	4.0	5.0	6.6	4.6	4.4	8.0	5.0	1.0	2.8	-1.4	4.0	-0.5	1.5
Relative Humidity	Max	84	91	87	94	94	95	94	100	100	100	94	91	-
	Min	70	77	65	71	77	69	66	78	76	82	73	56	-
Soil Temperature at 10 cm	06 UTC	5.8	6.4	7.4	6.6	8.2	8.2	8.6	6.6	7.4	5.8	7.1	4.6	5.6
	12 UTC	6.8	7.6	9.0	8.2	9.2	10.6	10.0	8.6	8.4	7.2	8.6	5.8	6.6
Sunshine Duration		0.0	0.0	3.9	4.2	0.2	2.5	6.9	7.6	5.1	0.0	3.0	3.5	2.7
Precipitation													0.0	17.5
Evaporation		1.7	3.6	0.3	0.4	0.1	2.7	0.8	0.4	0.9	0.6	11.5	5.2	8.4
Growing Degrees	5	0.2	1.8	4.3	2.8	2.4	6.1	4.3	0.3	1.5	0.0	23.7	6.4	17.3
	10	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	1.1	0.0	2.8

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.4	5.4	7.7
Precipitation - Reference Evapotranspiration	-5.4	-5.4	9.8
Number of Rainy Days	0.0	0.0	2.8
Number of Dry Days	13.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

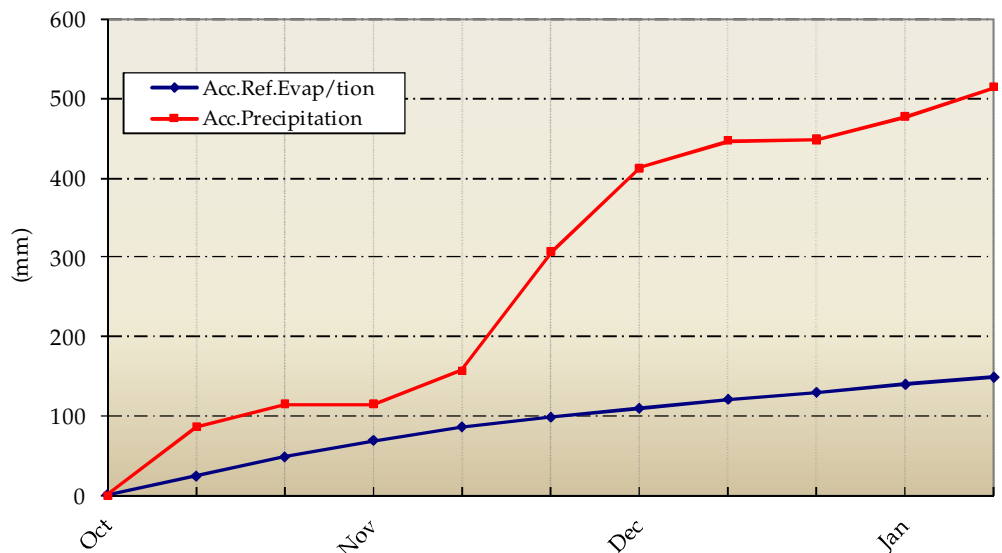


Andravida

1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.5	14.7	16.4	16.2	16.7	13.7	17.8	16.6	17.5	16.6	15.9	13.4	13.8
	Min	8.8	3.2	7.0	4.3	7.2	10.7	6.7	5.9	4.3	7.2	6.5	2.5	5.4
Relative Humidity	Max	91	91	91	91	86	93	92	90	88	88	90	90	-
	Min	68	60	64	61	62	68	52	48	49	65	60	44	-
Soil Temperature at 10 cm	06 UTC	10.6	9.4	9.4	9.4	9.5	11.6	10.4	9.6	9.0	9.4	9.8	8.2	8.9
	12 UTC	11.6	10.8	11.4	12.0	11.2	11.8	12.4	11.6	12.0	12.4	11.7	10.1	10.3
Sunshine Duration		0.8	2.6	3.1	7.8	7.7	0.0	6.0	8.0	8.5	5.1	5.0	6.0	4.5
Precipitation		9.3		0.4			27.9					37.6	11.0	38.0
Evaporation		7.3	4.0	1.4	0.9	0.0	0.0	7.0	1.6	1.2	1.0	24.4	-	17.8
Growing Degrees	5	5.7	4.0	6.7	5.3	7.0	7.2	7.3	6.3	5.9	6.9	62.0	30.9	46.8
	10	0.7	0.0	1.7	0.3	2.0	2.2	2.3	1.3	0.9	1.9	13.1	1.6	10.2

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.0	9.0	9.2
Precipitation - Reference Evapotranspiration	28.6	2.0	28.8
Number of Rainy Days	3.0	3.0	4.0
Number of Dry Days	3.0	2.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

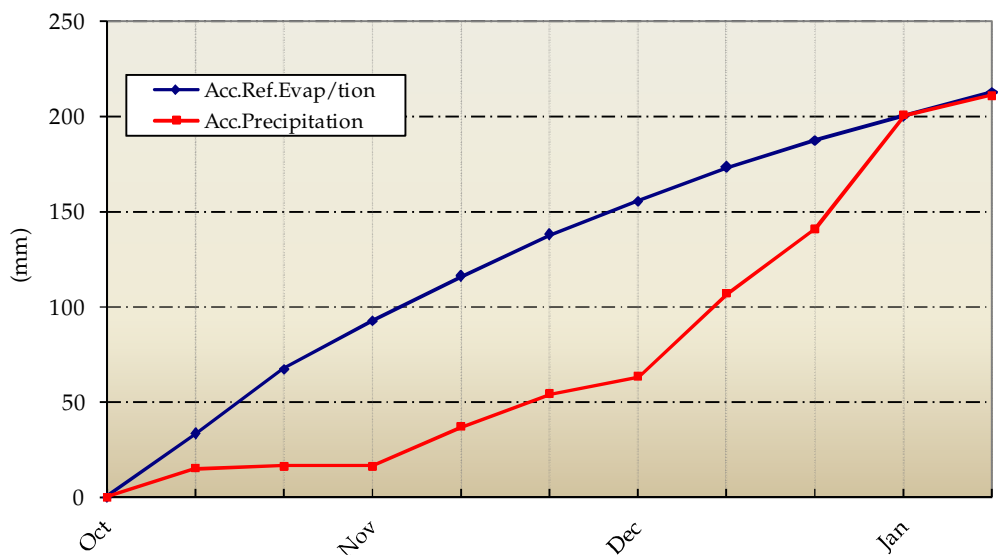


Iraklio

1st 10-day period (1-10/01/2014)		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	17.5	16.2	14.8	16.6	18.0	15.8	15.4	16.0	18.2	16.5	12.7	15.3
	Min	10.0	11.0	10.8	10.5	9.8	9.0	12.2	11.6	13.0	10.0	10.8	8.3	9.3
Relative Humidity	Max	88	93	95	81	92	84	93	85	86	85	88	90	-
	Min	67	68	69	64	61	52	65	65	61	53	62	66	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		0.0	2.5	3.2	0.3	7.7	2.6	0.2	0.0	4.1	7.6	2.8	2.9	4.0
Precipitation		0.1	5.7	3.4	0.1			1.3	0.0			10.6	50.6	27.8
Evaporation		0.3	0.8	0.2	1.4	1.6	0.3	3.6	1.9	1.0	0.5	11.6	-	23.8
Growing Degrees	5	8.1	9.3	8.5	7.7	8.2	8.5	9.0	8.5	9.5	9.1	86.3	55.1	73.0
	10	3.1	4.3	3.5	2.7	3.2	3.5	4.0	3.5	4.5	4.1	36.3	13.6	25.4

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.8	13.0	-
Precipitation - Reference Evapotranspiration	-2.2	37.6	27.8
Number of Rainy Days	5.0	7.0	4.3
Number of Dry Days	1.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

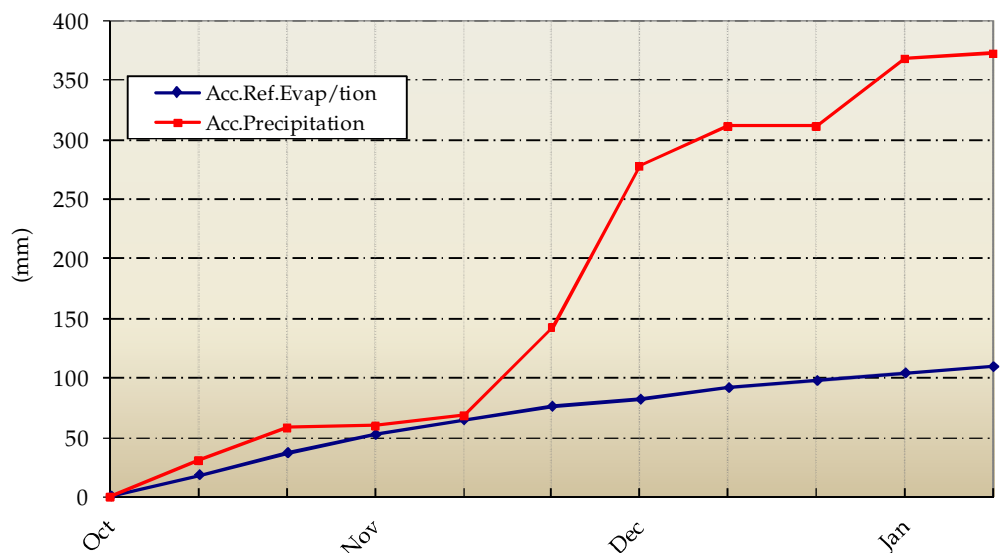


Ioannina

1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.6	6.0	4.9	8.9	9.6	10.5	12.4	11.8	10.8	14.0	9.8	8.9	8.6
	Min	1.3	-0.3	-0.4	0.1	-1.5	7.9	1.5	-2.2	-3.2	-4.1	-0.1	-1.2	0.3
Relative Humidity	Max	98	99	99	99	99	84	92	99	99	99	97	86	-
	Min	57	85	85	87	83	63	32	55	43	41	63	53	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.3
Sunshine Duration		0.0	0.8	1.2	1.6	0.0	1.4	5.0	2.6	3.3	5.1	2.1	3.4	2.9
Precipitation		0.0	0.0	0.0	0.0	0.0	4.5		0.0			4.5	0.2	36.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	0.6
Growing Degrees	5	0.5	0.0	0.0	0.0	0.0	4.2	2.0	0.0	0.0	0.0	6.6	5.6	11.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.2	6.9	6.1
Precipitation - Reference Evapotranspiration	-0.7	-6.7	30.1
Number of Rainy Days	1.0	1.0	4.0
Number of Dry Days	9.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

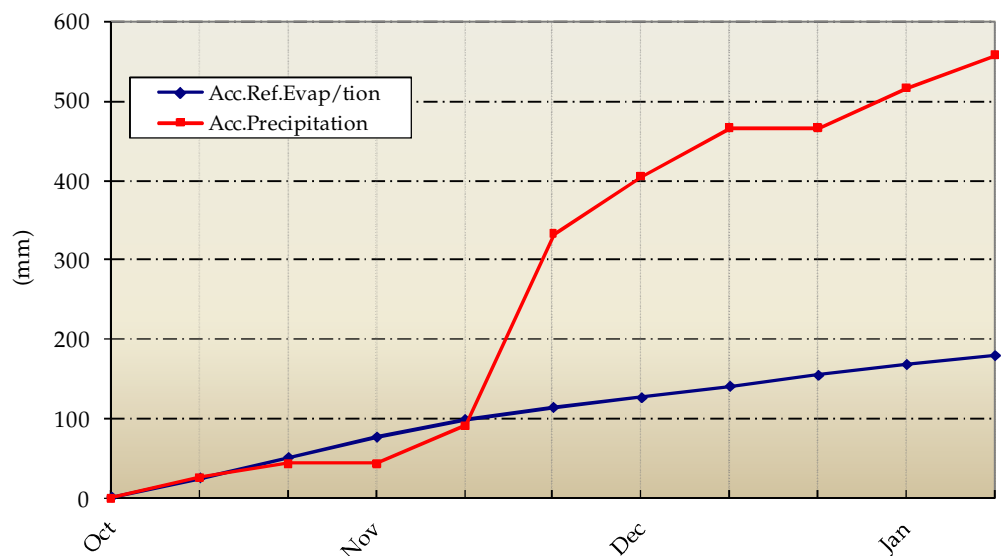


Kalamata

1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.5	16.6	19.0	17.1	16.8	14.8	17.6	17.4	17.7	18.2	16.8	14.9	14.7
	Min	8.5	7.4	5.0	5.1	4.4	9.6	9.0	7.1	2.9	4.5	6.4	2.9	5.3
Relative Humidity	Max	94	92	93	93	94	94	90	94	93	94	93	87	-
	Min	73	51	46	45	58	79	50	46	47	57	55	38	-
Soil Temperature at 10 cm	06 UTC	10.4	10.0	10.0	10.2	9.6	10.6	10.6	10.4	9.8	9.6	10.1	9.6	9.3
	12 UTC	10.6	10.8	10.6	10.4	10.8	11.0	11.0	10.8	10.2	10.2	10.6	10.4	10.4
Sunshine Duration		0.1	5.4	9.0	8.4	6.8	0.0	1.3	8.1	8.2	8.0	5.5	6.3	4.5
Precipitation		16.4					23.8	0.9				41.1		30.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	30.1	22.0
Growing Degrees	5	5.5	7.0	7.0	6.1	5.6	7.2	8.3	7.3	5.3	6.4	65.6	39.1	49.2
	10	0.5	2.0	2.0	1.1	0.6	2.2	3.3	2.3	0.3	1.4	15.6	4.4	10.6

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.2	13.5	11.0
Precipitation - Reference Evapotranspiration	29.9	-13.5	19.6
Number of Rainy Days	3.0	0.0	4.0
Number of Dry Days	3.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

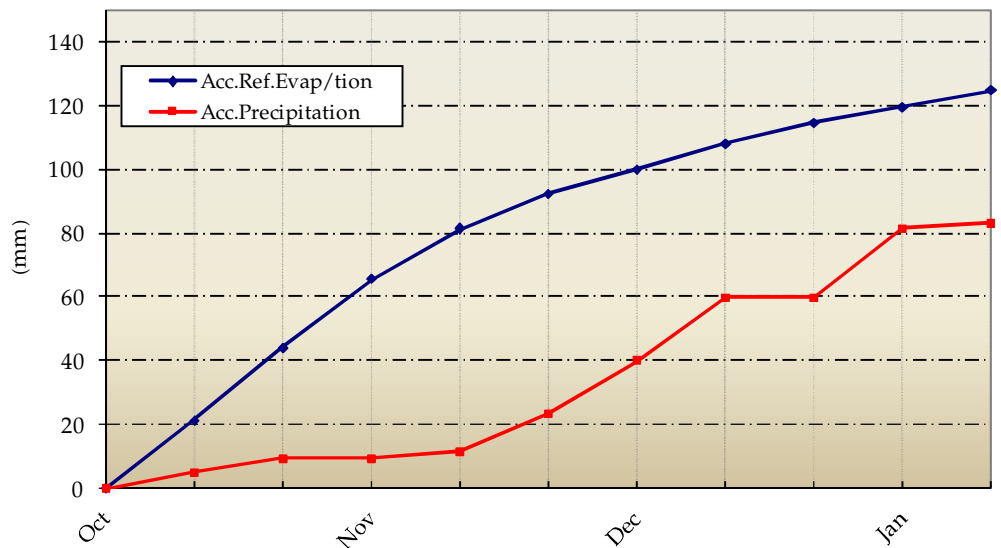


Larisa

1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.4	10.0	13.0	11.2	9.6	10.8	16.6	13.6	15.8	14.8	12.4	9.4	9.7
	Min	6.8	6.3	0.7	-1.0	0.0	5.0	6.8	2.1	-0.7	-1.0	2.5	-1.0	0.5
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	92	-
	Min	95	75	54	72	86	92	61	73	53	55	72	45	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	6.3	5.3
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	6.7	5.9
Sunshine Duration		0.0	0.0	6.6	4.3	0.0	0.1	4.4	4.6	8.3	6.7	3.5	4.8	3.9
Precipitation		0.5					0.4	0.9				1.8		11.6
Evaporation		0.0	0.3	0.7	1.7	0.0	1.3	0.2	0.0	0.3	1.0	5.5	8.1	5.2
Growing Degrees	5	2.6	3.2	1.9	0.1	0.0	2.9	6.7	2.9	2.6	1.9	24.6	7.7	13.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.7	0.0	1.0

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.2	7.1	6.2
Precipitation - Reference Evapotranspiration	-3.4	-7.1	5.4
Number of Rainy Days	3.0	0.0	2.5
Number of Dry Days	0.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

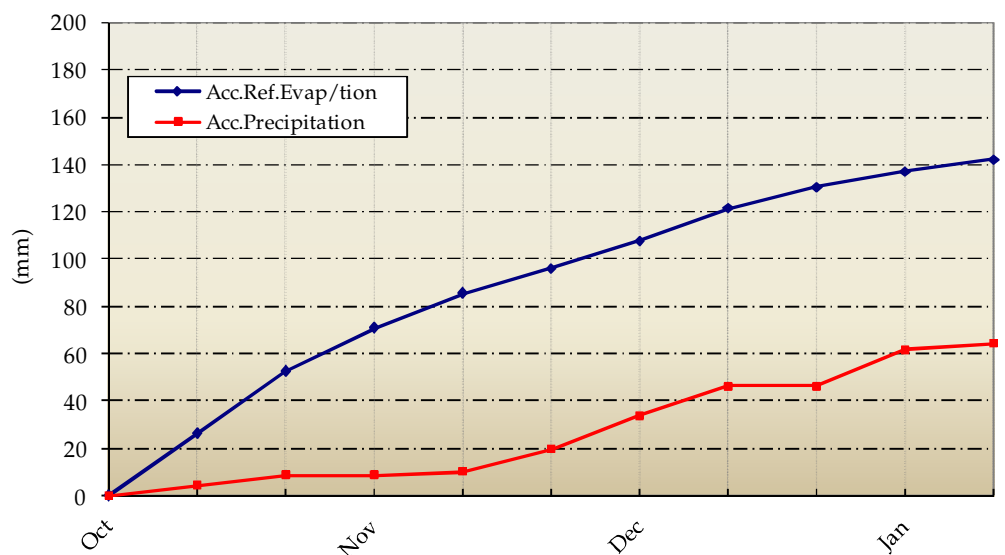


Mikra

1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	9.6	9.7	11.0	11.5	9.6	12.6	14.8	15.0	13.1	11.6	11.8	9.6	9.2
	Min	7.2	6.5	5.3	1.0	4.0	8.7	8.2	3.0	0.9	3.6	4.8	1.7	1.5
Relative Humidity	Max	93	93	92	94	91	92	94	95	95	92	93	77	-
	Min	65	66	60	61	81	82	68	58	55	76	67	47	-
Soil Temperature at 10 cm	06 UTC	8.8	8.4	8.8	6.4	7.6	9.2	10.0	8.2	7.2	8.0	8.3	6.2	4.9
	12 UTC	9.6	9.8	10.0	8.4	8.8	10.8	11.0	10.0	9.6	10.0	9.8	6.9	6.2
Sunshine Duration		0.0	0.0	7.5	7.0	0.0	1.5	4.5	5.6	7.5	1.4	3.5	5.2	3.7
Precipitation		0.2	2.3									2.5		14.1
Evaporation		0.2	1.2	0.2	1.8	0.2	0.6	1.2	0.4	0.4	0.8	7.0	13.6	8.7
Growing Degrees	5	3.4	3.1	3.2	1.3	1.8	5.7	6.5	4.0	2.0	2.6	33.5	20.1	16.0
	10	0.0	0.0	0.0	0.0	0.0	0.7	1.5	0.0	0.0	0.0	2.2	0.6	1.6

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	5.1	14.4	8.8
Precipitation - Reference Evapotranspiration	-2.6	-14.4	5.3
Number of Rainy Days	2.0	0.0	2.6
Number of Dry Days	3.0	12.0	-

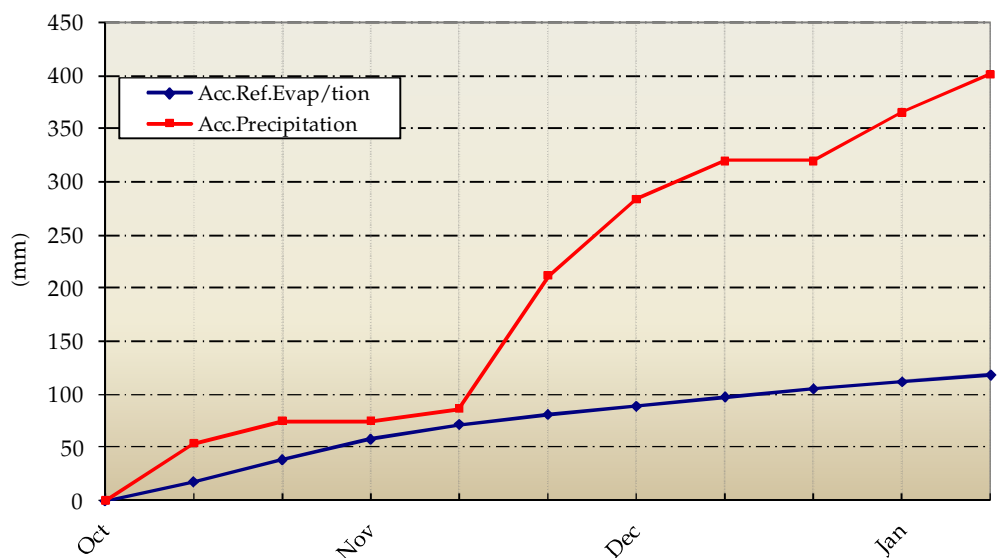
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/01/2014)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	6.8	11.3	12.9	14.2	13.5	8.4	10.3	14.5	16.9	17.6	12.6	9.7	9.6
	Min	3.7	2.8	-1.3	-1.2	-2.2	4.6	6.6	-1.4	-2.6	-2.1	0.7	-3.4	0.7
Relative Humidity	Max	100	100	100	100	100	100	87	100	100	98	98	90	-
	Min	93	61	55	50	82	79	75	41	34	40	61	61	-
Soil Temperature at 10 cm	06 UTC	6.0	5.6	4.6	4.8	4.2	6.4	7.2	5.0	3.6	3.6	5.1	3.2	4.9
	12 UTC	-	7.8	6.8	6.8	-	-	8.0	7.8	6.6	6.6	7.2	2.3	5.6
Sunshine Duration		0.0	3.1	4.2	5.9	3.7	0.0	0.0	6.8	7.3	7.3	3.8	5.5	4.3
Precipitation		17.6	5.1				10.3	2.4				35.4	0.0	34.2
Evaporation		0.0	0.8	0.2	0.0	0.1	0.3	0.3	0.2	0.8	0.1	2.8	-	7.0
Growing Degrees	5	0.3	2.1	0.8	1.5	0.7	1.5	3.5	1.6	2.2	2.8	16.7	2.8	14.2
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7

1st 10-day period (1-10/01/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.2	6.3	8.3
Precipitation - Reference Evapotranspiration	29.2	-6.3	25.9
Number of Rainy Days	4.0	0.0	3.6
Number of Dry Days	2.0	10.0	-

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