



AGROMETEOROLOGICAL BULLETIN

September 2014
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.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

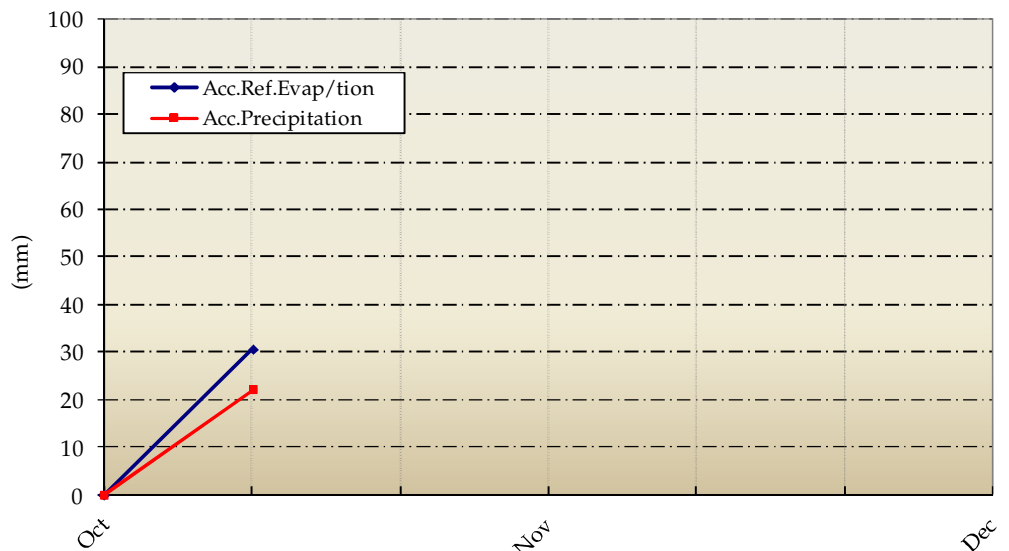
Agrinio

2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max													
	Min													
Relative Humidity	Max													
	Min													
Soil Temperature at 10 cm	06 UTC													
	12 UTC													
Sunshine Duration														
Precipitation														
Evaporation														
Growing Degrees	5													
	10													

2nd 10-day period (11-20/09/2014)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration		
Precipitation - Reference Evapotranspiration		
Number of Rainy Days		
Number of Dry Days		

This station is not operated

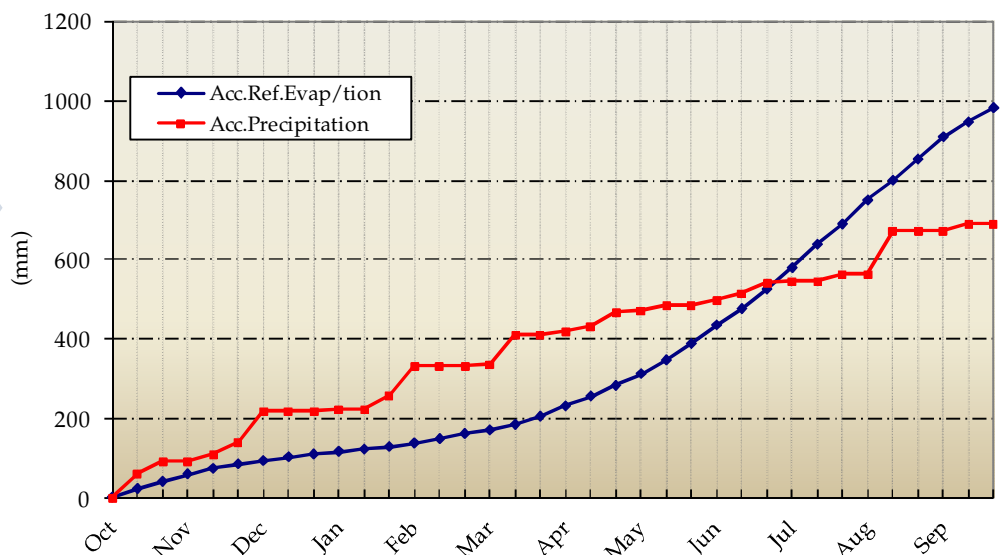
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	28.4	29.6	28.6	28.8	28.2	24.4	26.2	26.0	26.4	27.5	26.5	26.5
	Min	14.2	17.0	18.2	18.0	19.0	18.0	19.0	17.6	13.4	10.4	16.5	15.4	13.8
Relative Humidity	Max	89	90	91	84	89	84	81	84	79	85	86	89	-
	Min	35	33	35	32	35	33	42	34	25	36	34	42	-
Soil Temperature at 10 cm	06 UTC	22.8	23.4	24.0	23.8	24.4	24.4	24.6	22.6	22.0	21.0	23.3	23.4	19.9
	12 UTC	27.0	27.5	28.0	28.2	28.0	27.0	25.4	25.4	25.6	24.6	26.7	27.0	23.7
Sunshine Duration		11.2	11.2	10.3	11.3	8.9	0.0	1.9	7.1	10.1	9.5	8.2	9.6	8.5
Precipitation													21.1	5.2
Evaporation		7.4	4.1	7.9	15.6	2.5	11.4	4.2	4.1	8.2	4.5	69.9	50.0	66.6
Growing Degrees	5	16.4	17.7	18.9	18.3	18.9	18.1	16.7	16.9	14.7	13.4	170.0	159.5	151.3
	10	11.4	12.7	13.9	13.3	13.9	13.1	11.7	11.9	9.7	8.4	120.0	109.5	101.3

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.3	34.8	37.1
Precipitation - Reference Evapotranspiration	-36.3	-13.7	-31.9
Number of Rainy Days	0.0	3.0	0.9
Number of Dry Days	13.0	74.0	-

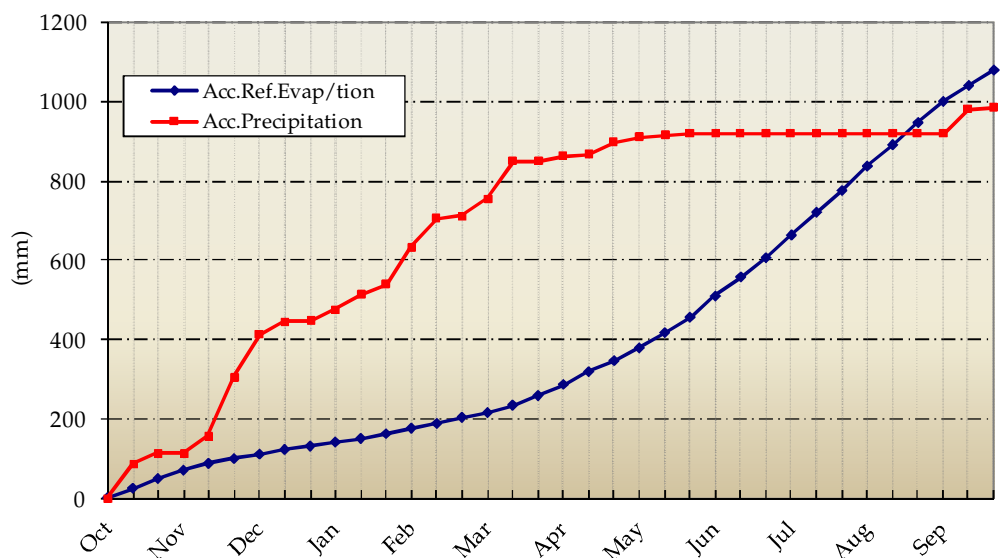
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	29.0	29.6	29.4	28.4	27.1	26.8	26.5	28.0	28.6	28.2	28.8	28.2
	Min	18.6	18.6	19.5	20.4	20.8	20.5	17.2	16.4	16.2	18.7	18.7	19.3	16.5
Relative Humidity	Max	88	90	89	90	87	79	85	87	87	87	87	83	-
	Min	39	44	46	53	44	46	42	44	45	40	44	41	-
Soil Temperature at 10 cm	06 UTC	25.0	24.4	25.0	25.6	26.0	25.0	24.4	24.2	24.0	24.4	24.8	25.5	23.4
	12 UTC	28.5	28.2	28.0	27.6	29.2	28.2	28.4	28.0	28.0	28.2	28.2	30.6	26.9
Sunshine Duration		8.3	10.4	11.0	10.0	10.4	10.0	10.3	10.7	10.3	9.0	10.0	8.4	9.1
Precipitation			2.4									2.4	1.7	7.0
Evaporation		-	-	-	-	-	-	-	-	-	-	-	57.7	56.3
Growing Degrees	5	18.6	18.8	19.6	19.9	19.6	18.8	17.0	16.5	17.1	18.7	184.5	190.3	173.6
	10	13.6	13.8	14.6	14.9	14.6	13.8	12.0	11.5	12.1	13.7	134.5	140.3	123.6

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.9	39.2	36.2
Precipitation - Reference Evapotranspiration	-36.5	-37.5	-29.2
Number of Rainy Days	1.0	1.0	1.1
Number of Dry Days	4.0	97.0	-

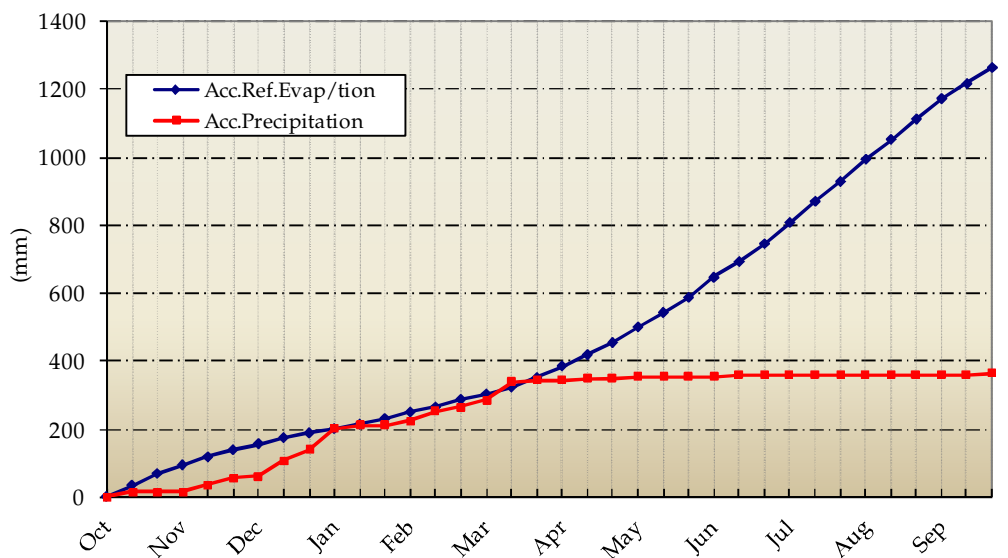
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.8	28.4	28.2	28.6	28.4	27.8	28.0	26.2	26.2	26.4	27.6	29.1	26.4
	Min	19.8	20.0	21.0	20.6	21.0	20.6	20.6	21.8	22.8	23.2	21.1	20.9	19.5
Relative Humidity	Max	81	88	93	85	89	89	82	80	69	80	84	81	-
	Min	67	64	69	69	66	62	61	58	54	54	62	50	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		9.5	9.6	9.7	9.7	8.5	9.8	9.9	8.8	8.9	9.2	9.4	9.4	9.4
Precipitation									2.8	1.6		4.4		6.0
Evaporation		4.0	3.7	5.1	2.3	4.3	4.2	6.4	4.0	8.3	5.9	48.2	49.0	64.4
Growing Degrees	5	18.8	19.2	19.6	19.6	19.7	19.2	19.3	19.0	19.5	19.8	193.7	199.8	179.8
	10	13.8	14.2	14.6	14.6	14.7	14.2	14.3	14.0	14.5	14.8	143.7	149.8	129.8

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.8	43.9	-
Precipitation - Reference Evapotranspiration	-36.4	-43.9	6.0
Number of Rainy Days	2.0	0.0	0.5
Number of Dry Days	104.0	125.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

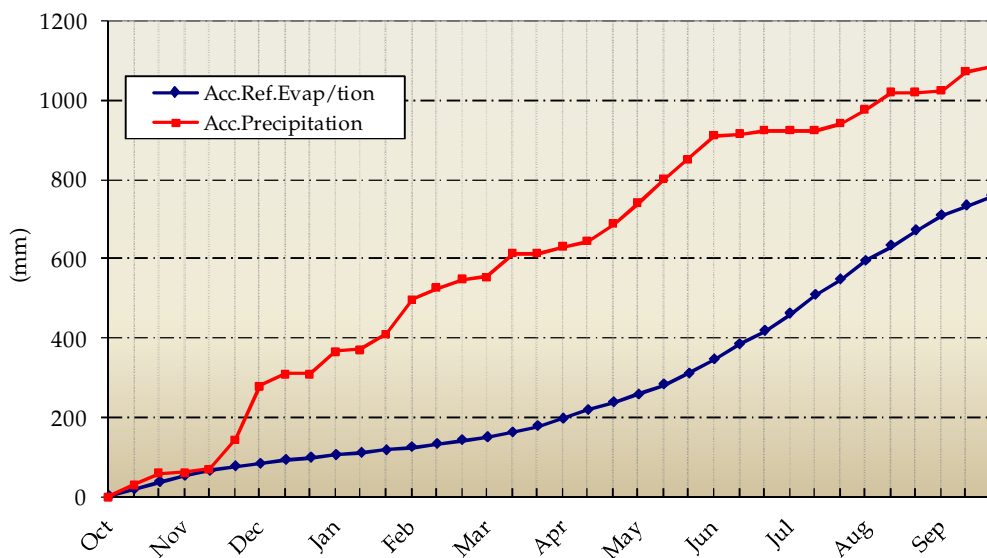


Ioannina

2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.6	26.2	26.8	25.4	24.8	25.6	24.5	25.2	27.3	28.4	26.1	25.4	26.5
	Min	15.6	15.8	11.8	14.0	15.7	8.5	9.7	13.7	10.2	11.2	12.6	12.1	12.2
Relative Humidity	Max	100	99	100	100	91	94	98	97	92	100	97	92	-
	Min	51	49	47	51	44	42	49	45	43	37	46	40	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	18.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	21.1
Sunshine Duration		4.0	7.3	5.8	5.4	7.3	8.4	9.0	7.9	8.4	6.8	7.0	6.2	6.9
Precipitation		10.5		0.7	1.7							12.9	38.9	16.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	43.6
Growing Degrees	5	16.1	16.0	14.3	14.7	15.3	12.1	12.1	14.5	13.8	14.8	143.5	137.6	143.6
	10	11.1	11.0	9.3	9.7	10.3	7.1	7.1	9.5	8.8	9.8	93.5	87.6	93.6

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.6	28.0	28.7
Precipitation - Reference Evapotranspiration	-11.7	10.9	-12.3
Number of Rainy Days	3.0	4.0	2.1
Number of Dry Days	3.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

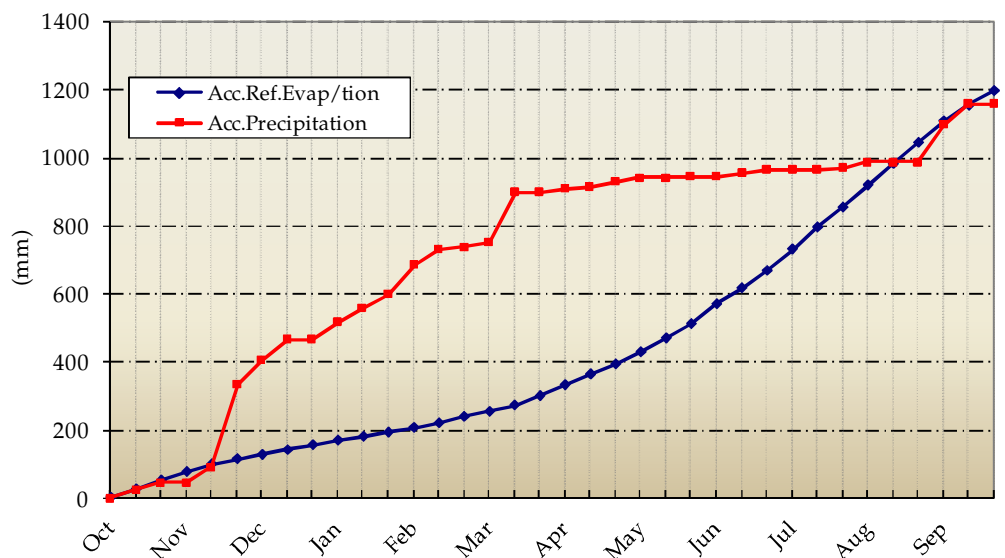


Kalamata

2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	30.0	29.4	29.4	29.4	30.8	30.3	27.9	27.2	27.2	29.0	30.6	28.6
	Min	17.1	18.1	20.8	17.8	18.0	16.9	16.0	15.8	15.8	17.5	17.4	17.4	15.9
Relative Humidity	Max	91	92	89	91	92	82	82	86	87	90	88	85	-
	Min	51	48	28	43	35	22	26	38	50	54	40	32	-
Soil Temperature at 10 cm	06 UTC	24.4	24.6	24.6	24.6	24.6	24.0	23.6	23.6	23.0	23.6	24.1	24.3	22.6
	12 UTC	25.4	25.6	25.4	25.8	26.0	25.0	24.8	24.4	24.4	24.8	25.2	26.9	25.8
Sunshine Duration		10.2	10.0	11.2	10.8	9.4	10.9	10.9	9.4	9.5	8.8	10.1	9.3	8.7
Precipitation			0.7									0.7	10.5	6.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	51.7	60.4
Growing Degrees	5	17.6	19.1	20.1	18.6	18.7	18.9	18.2	16.9	16.5	17.4	181.7	190.4	172.4
	10	12.6	14.1	15.1	13.6	13.7	13.9	13.2	11.9	11.5	12.4	131.7	140.4	122.4

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.0	43.9	38.1
Precipitation - Reference Evapotranspiration	-42.3	-33.4	-31.8
Number of Rainy Days	1.0	2.0	1.0
Number of Dry Days	8.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

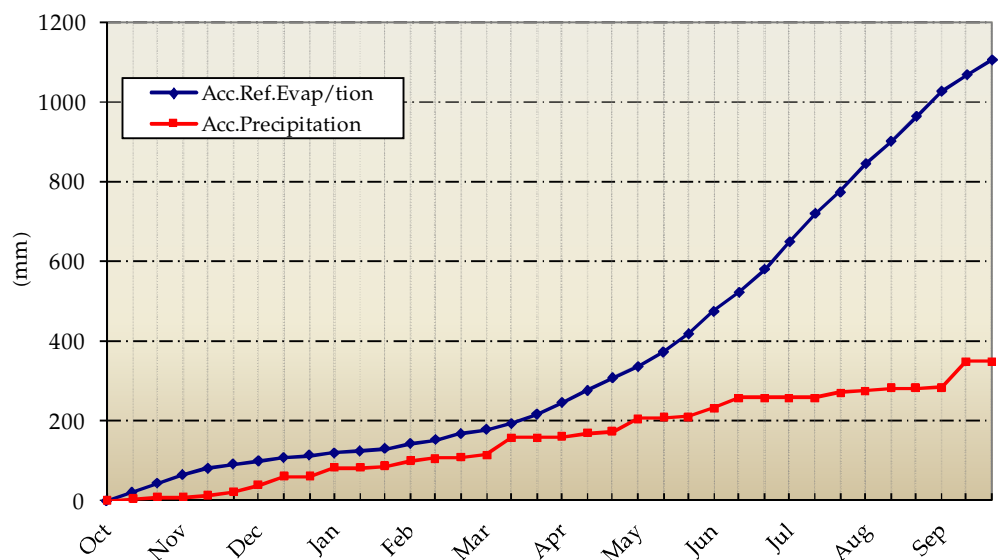


Larisa

2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.4	30.2	30.2	29.6	28.5	27.9	26.2	24.4	27.6	28.5	28.4	30.7	29.0
	Min	17.2	17.0	17.7	18.2	18.9	18.0	16.4	17.9	12.4	14.9	16.9	14.9	14.0
Relative Humidity	Max	96	96	96	100	100	100	98	96	100	96	98	85	-
	Min	22	31	41	38	45	39	42	49	32	38	38	24	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	22.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	24.1
Sunshine Duration		8.5	9.6	9.4	7.4	6.1	7.4	6.2	3.0	7.9	8.9	7.4	7.4	8.3
Precipitation					1.1							1.1	5.6	12.0
Evaporation		9.4	7.2	7.8	5.0	4.1	7.6	6.6	4.7	2.9	5.4	60.7	65.4	61.4
Growing Degrees	5	18.8	18.6	19.0	18.9	18.7	18.0	16.3	16.2	15.0	16.7	176.1	178.2	165.0
	10	13.8	13.6	14.0	13.9	13.7	13.0	11.3	11.2	10.0	11.7	126.1	128.2	115.0

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	36.9	40.1	38.0
Precipitation - Reference Evapotranspiration	-35.8	-34.5	-26.0
Number of Rainy Days	1.0	2.0	1.2
Number of Dry Days	4.0	52.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

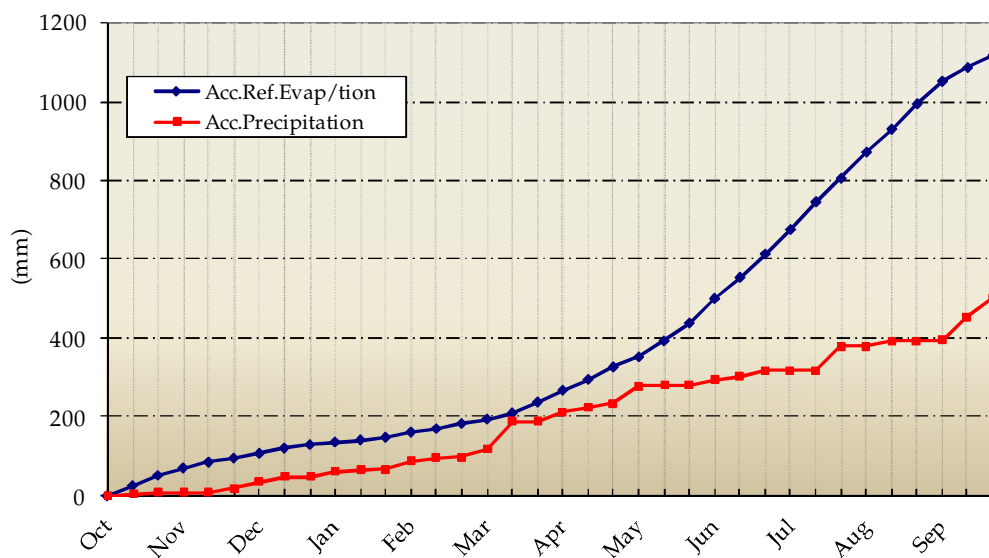


Mikra

2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	28.0	29.1	28.1	25.5	24.2	24.9	21.6	25.6	25.4	26.1	27.9	27.5
	Min	16.0	18.0	18.0	18.7	20.6	17.2	16.1	17.5	13.5	16.2	17.2	16.3	15.2
Relative Humidity	Max	84	90	90	89	92	94	94	93	92	90	91	80	-
	Min	40	45	40	49	58	61	49	62	46	52	50	31	-
Soil Temperature at 10 cm	06 UTC	22.4	23.2	23.2	24.0	24.4	22.4	22.0	23.2	19.8	20.8	22.5	22.9	21.4
	12 UTC	27.6	26.2	27.4	27.4	26.8	26.6	26.6	22.4	23.8	23.8	25.9	27.4	25.2
Sunshine Duration		9.8	8.4	10.7	8.1	5.0	5.3	4.9	0.6	10.6	6.3	7.0	8.6	8.1
Precipitation						0.6	20.2	25.8	1.5			48.1	10.5	7.6
Evaporation		6.0	6.1	0.0	10.0	0.7	3.8	1.3	12.1	4.6	5.8	50.4	65.9	62.1
Growing Degrees	5	17.3	18.0	18.6	18.4	18.1	15.7	15.5	14.6	14.6	15.8	166.4	171.4	163.4
	10	12.3	13.0	13.6	13.4	13.1	10.7	10.5	9.6	9.6	10.8	116.4	121.4	113.4

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.3	42.6	37.4
Precipitation - Reference Evapotranspiration	16.8	-32.1	-29.8
Number of Rainy Days	4.0	3.0	1.4
Number of Dry Days	5.0	9.0	-

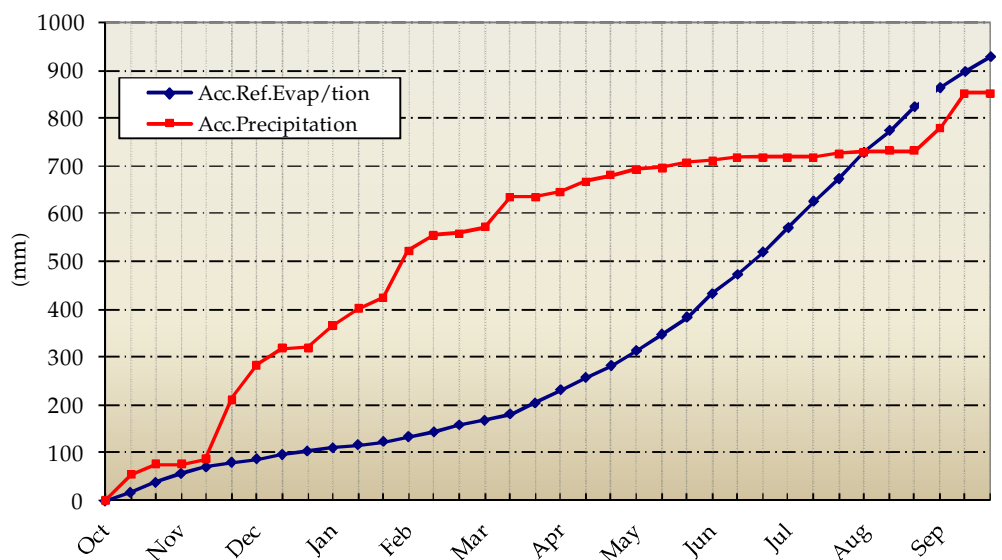
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2014)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.8	28.0	29.2	27.9	27.9	28.3	25.7	24.2	25.5	28.8	27.2	27.9	26.9
	Min	14.5	13.5	12.9	12.9	12.3	10.6	9.3	13.0	12.2	12.2	12.3	12.5	11.2
Relative Humidity	Max	98	96	96	97	96	95	92	96	98	96	96	76	-
	Min	33	32	26	28	28	23	28	38	38	31	30	32	-
Soil Temperature at 10 cm	06 UTC	20.6	20.4	20.4	20.6	20.8	20.4	19.8	20.4	19.6	20.0	20.3	20.7	20.2
	12 UTC	24.6	25.0	-	-	25.2	24.4	25.4	25.2	25.2	-	25.0	25.7	22.5
Sunshine Duration		6.7	9.1	8.9	10.0	8.5	9.9	7.6	5.3	7.3	-	8.1	9.2	8.5
Precipitation									0.8			0.8	1.6	5.9
Evaporation		3.8	4.1	4.3	5.7	3.3	4.9	3.5	2.3	3.7	-	-	46.4	40.3
Growing Degrees	5	15.7	15.8	16.1	15.4	15.1	14.5	12.5	13.6	13.9	15.5	147.9	152.2	140.2
	10	10.7	10.8	11.1	10.4	10.1	9.5	7.5	8.6	8.9	10.5	97.9	102.2	90.2

2nd 10-day period (11-20/09/2014)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	31.4	35.6	34.4
Precipitation - Reference Evapotranspiration	-30.6	-34.0	-28.5
Number of Rainy Days	1.0	1.0	1.0
Number of Dry Days	7.0	8.0	-

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