

AGROMETEOROLOGICAL BULLETIN

September 2011
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
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Helliniko, Athens

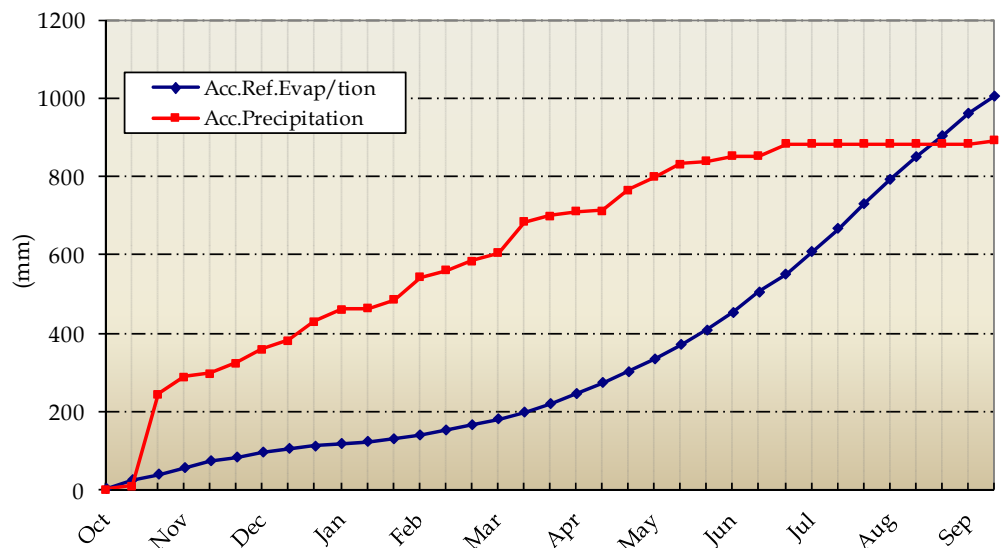
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Agrinio

1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.5	34.6	36.4	35.4	36.0	35.4	32.0	33.4	32.9	35.4	34.6	-	30.5
	Min	17.5	17.8	18.0	18.2	18.6	18.0	19.4	17.2	18.0	18.0	18.1	-	15.4
Relative Humidity	Max	90	90	87	89	83	86	91	96	94	94	90	-	-
	Min	32	23	26	24	29	33	37	35	39	29	31	-	-
Soil Temperature at 10 cm	06 UTC	29.4	29.4	29.8	29.8	30.0	30.0	30.0	25.6	25.6	26.0	28.6	-	23.6
	12 UTC	34.0	33.8	34.0	34.4	34.6	33.8	33.4	-	29.6	29.6	33.0	-	28.8
Sunshine Duration		11.6	11.6	11.0	11.2	11.0	10.6	8.4	9.9	11.1	10.4	10.7	-	9.3
Precipitation								8.8				8.8	-	11.4
Evaporation		8.5	6.8	1.0	8.0	7.8	8.5	2.7	6.2	6.0	6.6	62.1	-	59.7
Growing Degrees	5	21.0	21.2	22.2	21.8	22.3	21.7	20.7	20.3	20.5	21.7	213.4	-	179.7
	10	16.0	16.2	17.2	16.8	17.3	16.7	15.7	15.3	15.5	16.7	163.4	-	129.7

1st 10-day period (1-10/09/2011)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.2	- 39.5
Precipitation - Reference Evapotranspiration	-35.4	- -28.1
Number of Rainy Days	1.0	- 1.2
Number of Dry Days	81.0	- -

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

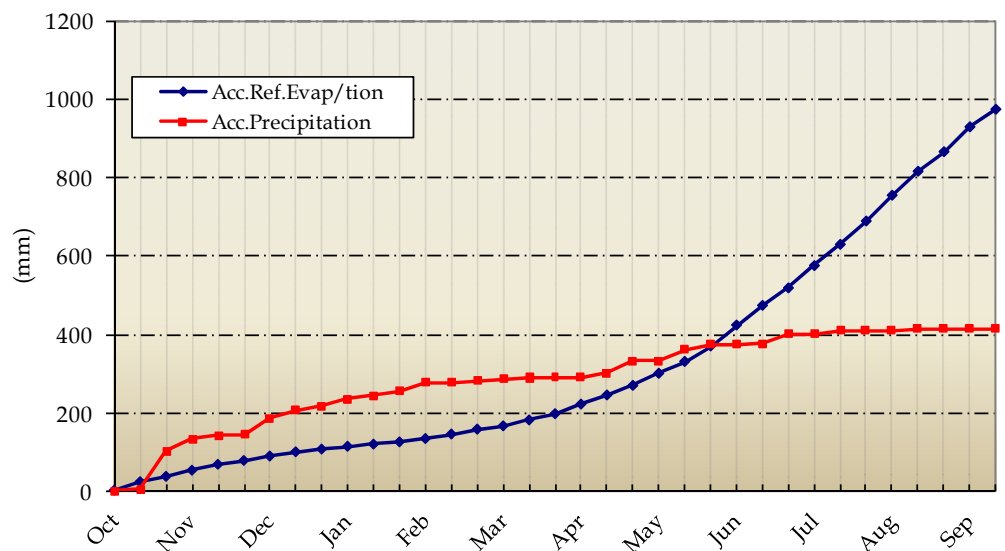


Alexandroupoli

1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	32.2	32.2	31.6	31.4	31.2	30.6	29.6	30.0	30.6	31.2	28.1	27.3
	Min	16.8	19.0	20.4	19.4	14.4	16.0	19.2	18.0	18.6	21.4	18.3	16.6	15.0
Relative Humidity	Max	88	77	81	85	77	78	79	87	90	74	82	79	-
	Min	33	31	34	31	29	36	34	36	44	23	33	39	-
Soil Temperature at 10 cm	06 UTC	24.8	26.2	26.6	25.8	24.6	25.6	25.4	24.6	25.4	25.4	25.4	23.4	21.2
	12 UTC	28.5	29.0	28.2	29.6	27.4	26.6	29.2	28.4	28.0	29.6	28.4	25.9	24.9
Sunshine Duration		10.5	8.7	5.1	11.7	11.5	11.2	10.9	10.4	9.0	12.4	10.1	10.1	8.8
Precipitation													21.0	6.6
Evaporation		8.4	8.4	16.2	8.0	6.6	9.1	9.1	10.0	5.0	2.6	83.4	66.2	73.7
Growing Degrees	5	19.7	20.6	21.3	20.5	17.9	18.6	19.9	18.8	19.3	21.0	197.6	173.6	161.8
	10	14.7	15.6	16.3	15.5	12.9	13.6	14.9	13.8	14.3	16.0	147.6	123.6	111.8

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.1	43.2	42.4
Precipitation - Reference Evapotranspiration	-45.1	-22.2	-35.8
Number of Rainy Days	0.0	1.0	1.1
Number of Dry Days	30.0	34.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

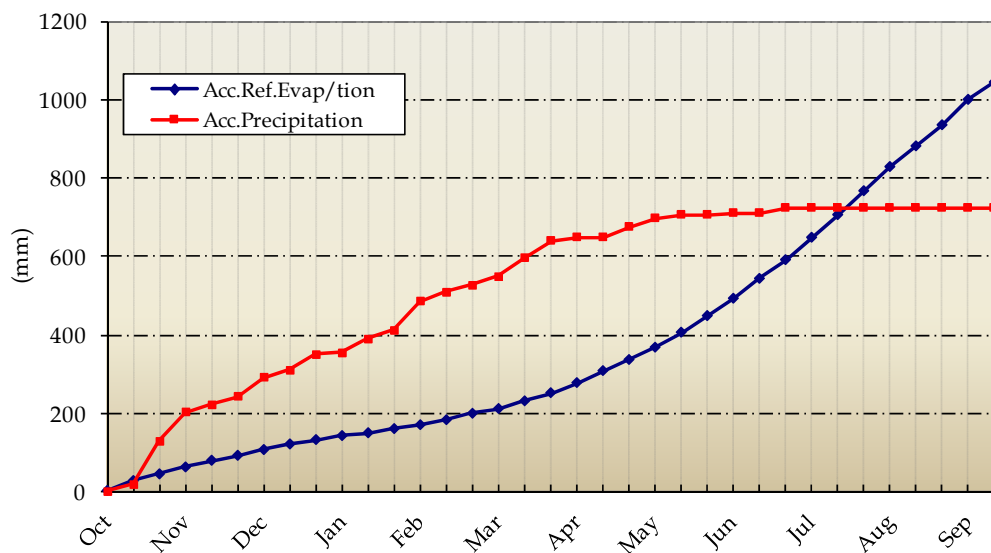


Andravida

1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.6	32.4	32.0	33.6	33.4	31.4	31.2	29.6	30.8	33.0	31.8	28.3	28.8
	Min	18.8	19.4	19.4	18.6	19.6	20.8	21.2	18.8	20.0	18.8	19.5	18.3	17.3
Relative Humidity	Max	90	87	88	84	89	88	89	91	91	88	88	88	-
	Min	38	38	39	26	30	49	40	45	45	30	38	42	-
Soil Temperature at 10 cm	06 UTC	26.6	26.8	27.4	27.0	28.0	28.0	28.2	27.0	27.2	26.4	27.3	25.1	24.8
	12 UTC	33.2	33.0	34.4	34.8	34.0	34.6	34.6	33.6	33.8	34.0	34.0	30.6	28.9
Sunshine Duration		11.2	11.5	10.8	10.8	10.6	9.7	7.5	10.4	10.5	9.5	10.2	9.2	9.7
Precipitation													4.7	5.8
Evaporation		5.0	8.8	5.0	2.7	13.0	11.5	8.2	7.6	15.3	7.2	84.3	60.8	62.5
Growing Degrees	5	19.7	20.9	20.7	21.1	21.5	21.1	21.2	19.2	20.4	20.9	206.7	183.1	180.3
	10	14.7	15.9	15.7	16.1	16.5	16.1	16.2	14.2	15.4	15.9	156.7	133.1	130.3

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.5	40.6	40.4
Precipitation - Reference Evapotranspiration	-44.5	-35.9	-34.6
Number of Rainy Days	0.0	2.0	1.2
Number of Dry Days	87.0	72.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

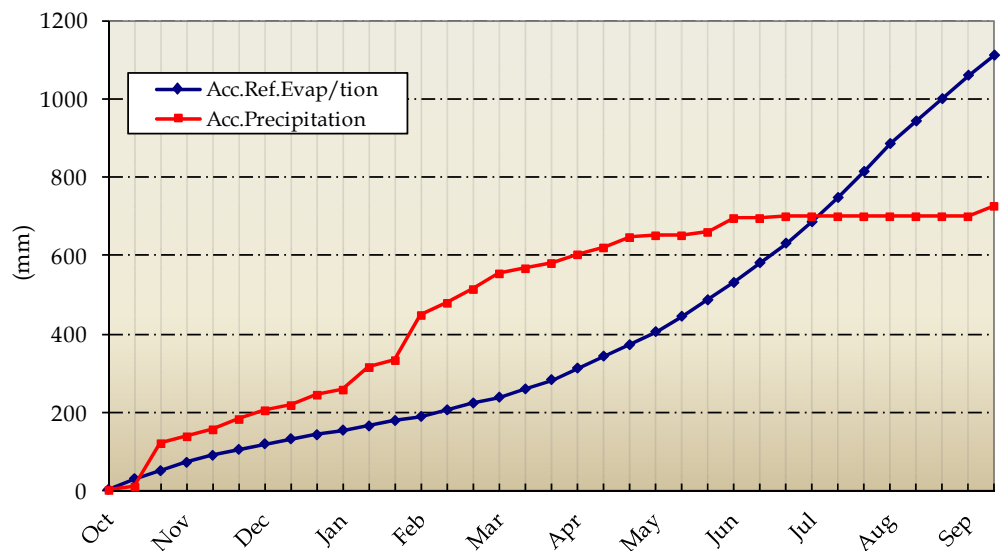


Kalamata

1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.8	33.6	32.6	32.0	30.4	30.6	30.4	30.0	33.6	30.6	31.6	29.3	29.3
	Min	19.0	19.0	20.4	20.0	16.8	18.6	18.0	17.4	18.4	19.0	18.7	16.9	16.6
Relative Humidity	Max	91	90	78	80	89	90	96	90	91	91	89	88	-
	Min	38	33	29	32	41	43	49	36	27	48	38	40	-
Soil Temperature at 10 cm	06 UTC	26.0	26.0	26.2	26.0	25.6	26.0	26.0	23.6	24.0	25.0	25.4	24.5	23.8
	12 UTC	28.4	28.4	28.6	28.6	28.2	28.4	27.6	27.6	27.6	27.0	28.0	26.3	27.2
Sunshine Duration		11.6	12.5	11.0	11.3	11.6	10.3	10.4	11.1	11.0	9.7	11.0	10.4	9.3
Precipitation								25.8				25.8		7.7
Evaporation		2.1	4.7	12.8	5.2	4.9	15.1	2.7	9.2	5.9	7.1	69.7	56.4	67.1
Growing Degrees	5	20.4	21.3	21.5	21.0	18.6	19.6	19.2	18.7	21.0	19.8	201.1	181.0	179.8
	10	15.4	16.3	16.5	16.0	13.6	14.6	14.2	13.7	16.0	14.8	151.1	131.0	129.8

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	51.3	46.6	43.1
Precipitation - Reference Evapotranspiration	-25.5	-46.6	-35.4
Number of Rainy Days	1.0	0.0	1.1
Number of Dry Days	9.0	79.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

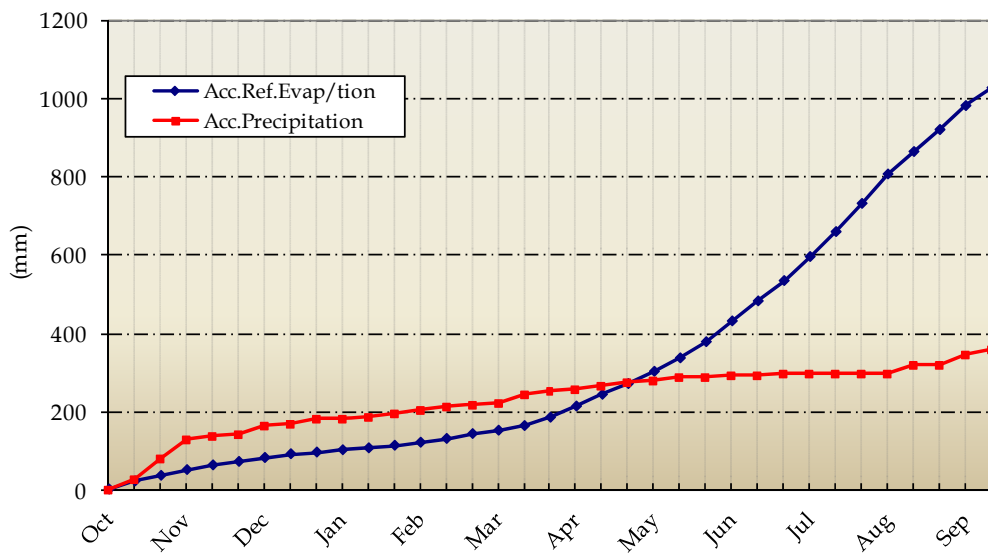


Larisa

1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.4	34.6	32.8	31.6	33.4	32.6	28.0	32.6	34.2	31.4	32.5	29.0	29.4
	Min	16.8	17.6	20.0	20.2	17.4	18.8	18.2	17.0	18.0	-	18.2	17.0	14.9
Relative Humidity	Max	92	90	85	81	88	91	94	96	-	83	89	78	-
	Min	30	29	32	36	30	32	49	29	-	38	34	35	-
Soil Temperature at 10 cm	06 UTC	24.6	25.2	26.0	25.6	25.4	25.4	25.2	24.8	25.2	-	25.3	25.6	23.3
	12 UTC	27.0	28.2	27.8	27.4	27.4	27.8	26.6	26.8	28.4	27.0	27.4	27.6	25.4
Sunshine Duration		10.4	11.1	9.4	10.1	10.8	9.3	6.2	9.7	-	10.1	9.7	8.1	8.7
Precipitation								15.4				15.4	1.6	5.6
Evaporation		8.5	9.5	6.5	7.8	8.8	12.7	4.4	5.8	7.5	7.4	78.9	69.8	63.7
Growing Degrees	5	20.1	21.1	21.4	20.9	20.4	20.7	18.1	19.8	21.1	-	-	180.0	171.4
	10	15.1	16.1	16.4	15.9	15.4	15.7	13.1	14.8	16.1	-	-	130.0	121.4

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.8	43.8	42.5
Precipitation - Reference Evapotranspiration	-30.4	-42.2	-36.9
Number of Rainy Days	1.0	2.0	1.4
Number of Dry Days	6.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

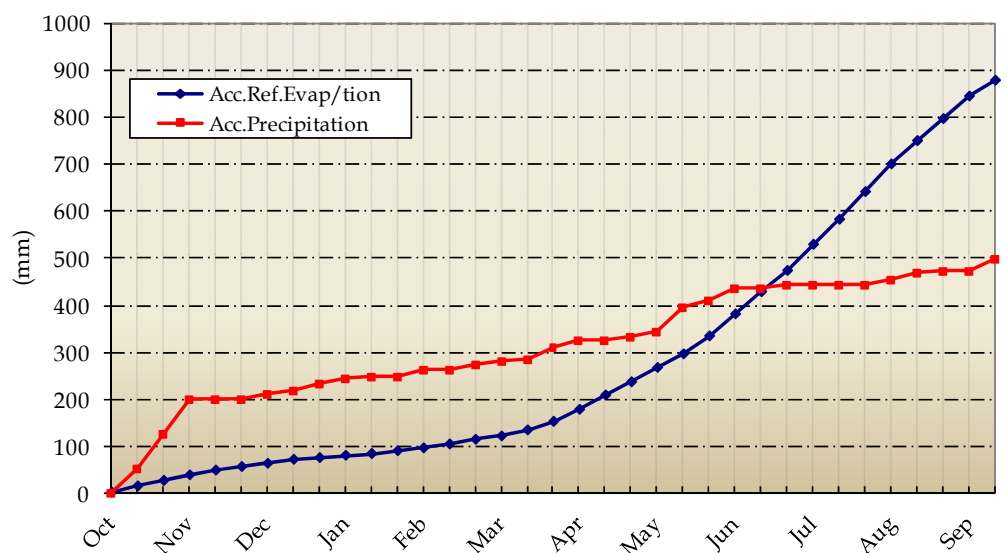


1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.8	36.9	35.8	34.4	35.2	34.0	24.5	33.9	35.3	33.5	34.0	29.6	29.0
	Min	16.6	18.0	17.2	18.4	18.0	17.0	19.2	17.0	18.0	18.8	17.8	15.5	15.4
Relative Humidity	Max	88	82	-	80	77	92	95	95	93	-	88	63	-
	Min	18	16	-	25	23	27	69	27	23	-	28	30	-
Soil Temperature at 10 cm	06 UTC	27.0	27.2	27.2	-	27.4	27.2	26.8	23.8	24.4	25.0	26.2	25.9	22.0
	12 UTC	29.2	29.0	28.6	-	28.8	30.2	25.2	25.8	26.2	26.2	27.7	27.4	25.6
Sunshine Duration		9.2	8.5	-	0.0	10.4	6.5	3.2	9.1	10.4	-	7.2	8.3	8.4
Precipitation								25.1				25.1	0.3	5.9
Evaporation		4.0	7.3	-	6.1	6.7	5.9	0.9	3.7	6.0	-	-	50.0	55.4
Growing Degrees	5	21.7	22.5	21.5	21.4	21.6	20.5	16.9	20.5	21.7	21.2	209.3	175.6	171.4
	10	16.7	17.5	16.5	16.4	16.6	15.5	11.9	15.5	16.7	16.2	159.3	125.6	121.6

Series

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	33.7	35.1	33.8
Precipitation - Reference Evapotranspiration	-8.6	-34.8	-27.9
Number of Rainy Days	1.0	1.0	1.3
Number of Dry Days	26.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



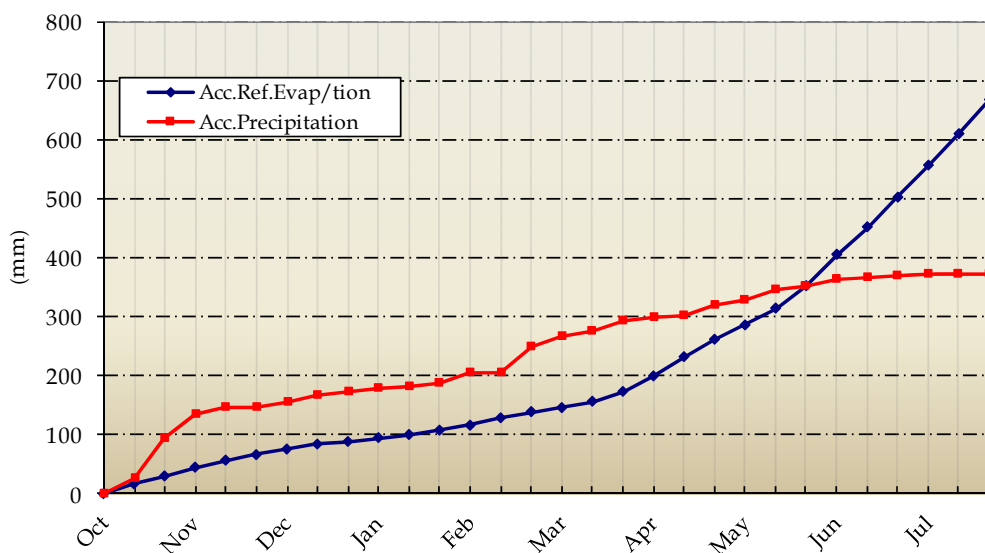
Trikala Imathias

1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.4	33.6	-	-	-	-	-	-	-	-	33.5	28.3	28.2
	Min	13.2	15.0	-	-	-	-	-	-	-	-	14.1	15.0	14.8
Relative Humidity	Max	100	-	-	-	-	-	-	-	-	-	100	95	-
	Min	33	-	-	-	-	-	-	-	-	-	33	44	-
Soil Temperature at 10 cm	06 UTC	23.2	23.8	-	-	-	-	-	-	-	-	23.5	22.9	22.7
	12 UTC	26.6	26.6	-	-	-	-	-	-	-	-	26.6	25.0	23.9
Sunshine Duration		11.2	-	-	-	-	-	-	-	-	-	11.2	8.6	8.2
Precipitation			-	-	-	-	-	-	-	-	-	-	21.7	5.1
Evaporation		4.6	-	-	-	-	-	-	-	-	-	-	31.3	45.0
Growing Degrees	5	18.3	19.3	-	-	-	-	-	-	-	-	-	166.3	164.8
	10	13.3	14.3	-	-	-	-	-	-	-	-	-	116.3	114.8

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	34.6	34.4
Precipitation - Reference Evapotranspiration	-	-12.9	-29.3
Number of Rainy Days	-	1.0	1.4
Number of Dry Days	-	3.0	-

The station is temporarily closed

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

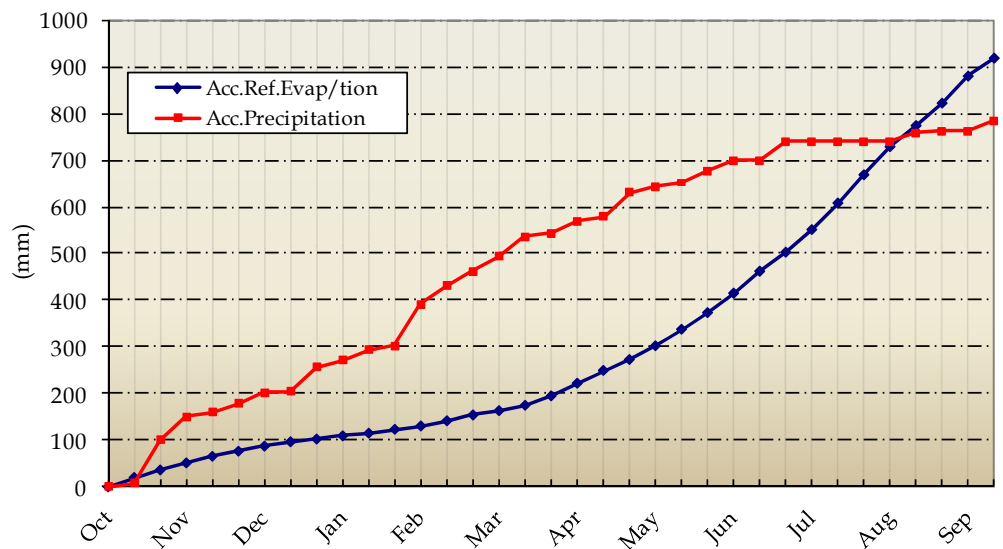


Tripoli

1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	33.0	31.8	28.4	31.2	33.6	28.0	29.2	32.6	30.6	31.0	-	27.4
	Min	11.8	13.6	13.0	14.4	13.4	15.4	16.0	13.4	14.6	15.2	14.1	-	12.2
Relative Humidity	Max	46	85	98	96	95	91	92	98	95	96	89	-	-
	Min	19	18	24	35	28	27	33	35	24	36	28	-	-
Soil Temperature at 10 cm	06 UTC	22.2	23.2	23.8	21.4	20.6	22.0	23.0	20.2	21.0	22.4	22.0	-	21.7
	12 UTC	28.8	29.6	29.6	26.2	26.8	28.4	27.6	25.8	27.2	28.0	27.8	-	24.2
Sunshine Duration		10.5	9.1	8.8	10.4	11.0	9.8	4.5	7.6	10.6	12.3	9.5	-	9.3
Precipitation				18.8				2.6				21.4	-	5.8
Evaporation		10.5	6.1	8.8	4.2	6.5	6.0	2.1	2.7	6.3	6.8	60.0	-	47.2
Growing Degrees	5	16.5	18.3	17.4	16.4	17.3	19.5	17.0	16.3	18.6	17.9	175.2	-	148.0
	10	11.5	13.3	12.4	11.4	12.3	14.5	12.0	11.3	13.6	12.9	125.2	-	98.0

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.7	-	39.2
Precipitation - Reference Evapotranspiration	-17.3	-	-33.4
Number of Rainy Days	2.0	-	1.6
Number of Dry Days	2.0	-	-

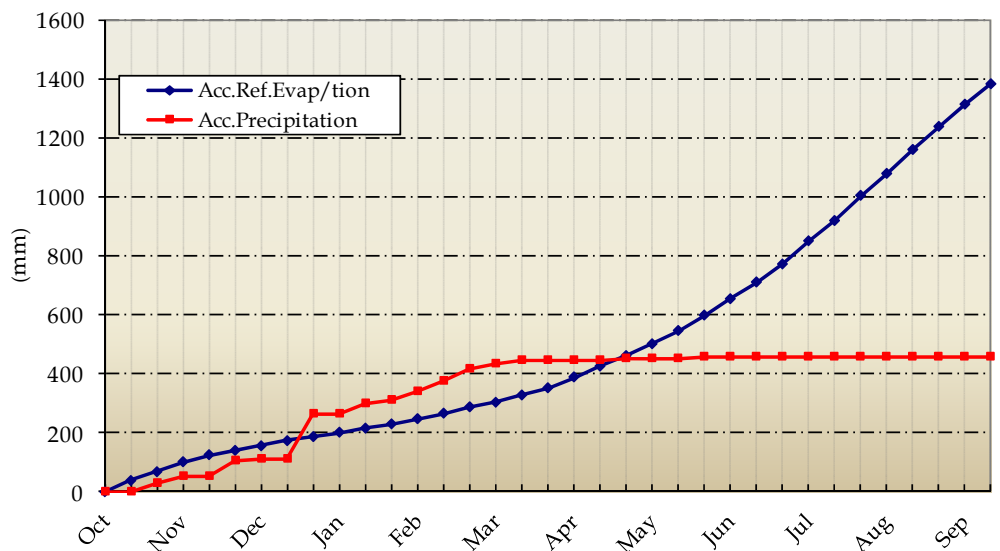
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



1st 10-day period (1-10/09/2011)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.8	35.6	36.0	32.4	32.0	34.6	32.4	30.4	28.8	31.4	32.7	30.2	29.6
	Min	20.6	18.4	20.8	22.4	18.0	20.6	21.8	21.8	18.6	20.0	20.3	19.3	19.0
Relative Humidity	Max	67	37	64	67	52	49	75	81	97	75	66	86	-
	Min	18	14	15	27	23	16	26	33	37	29	24	36	-
Soil Temperature at 10 cm	06 UTC	29.6	28.6	29.4	30.6	28.6	28.0	29.0	29.2	27.8	28.4	28.9	28.3	28.3
	12 UTC	34.2	34.0	34.8	34.2	32.4	32.8	33.4	32.6	32.8	33.2	33.4	33.3	32.2
Sunshine Duration		11.5	11.8	11.7	11.4	12.2	11.6	10.8	11.3	10.9	11.4	11.5	10.2	10.4
Precipitation														1.5
Evaporation		12.2	13.5	16.3	11.9	13.7	12.7	11.1	12.0	8.4	8.1	119.9	92.1	88.0
Growing Degrees	5	22.2	22.0	23.4	22.4	20.0	22.6	22.1	21.1	18.7	20.7	215.2	197.7	193.1
	10	17.2	17.0	18.4	17.4	15.0	17.6	17.1	16.1	13.7	15.7	165.2	147.7	143.1

1st 10-day period (1-10/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	69.0	53.2	51.1
Precipitation - Reference Evapotranspiration	-69.0	-53.2	-49.6
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	105.0	97.0	-

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

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ΕΘΝΙΚΗ
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