



AGROMETEOROLOGICAL BULLETIN

September 2011
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
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Helliniko, Athens

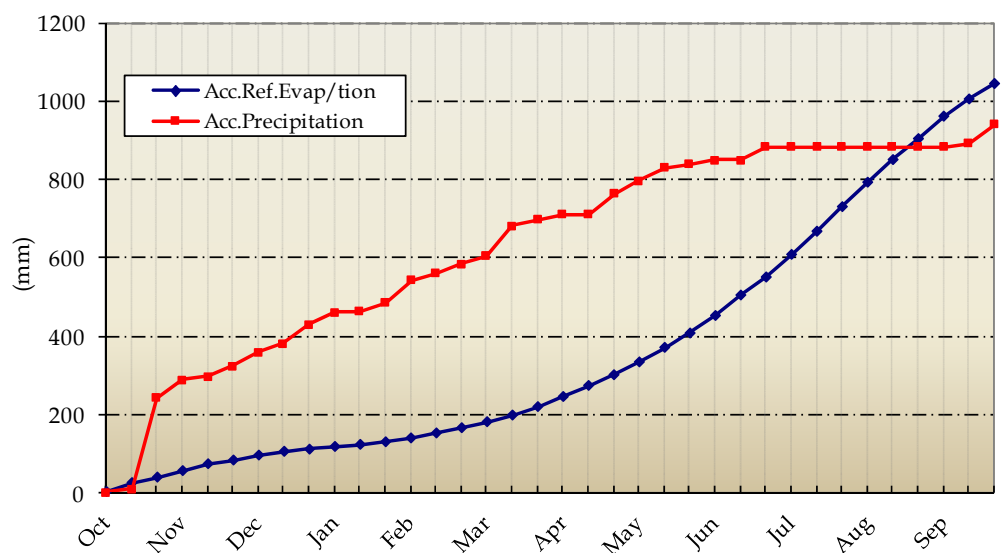
Web addresses of HNMS
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Agrinio

2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.6	35.4	36.0	36.0	36.0	36.6	36.5	35.4	32.8	26.4	34.6	-	30.1
	Min	18.4	19.0	18.6	15.4	15.2	16.8	14.8	15.0	15.4	16.2	16.5	-	14.7
Relative Humidity	Max	94	88	92	78	84	90	79	85	84	96	87	-	-
	Min	39	29	26	14	18	20	18	24	30	52	27	-	-
Soil Temperature at 10 cm	06 UTC	26.6	27.0	27.2	26.4	26.2	26.4	26.0	26.2	26.2	25.4	26.4	-	22.0
	12 UTC	30.8	32.4	31.4	30.8	30.2	31.0	30.6	30.2	30.0	24.8	30.2	-	27.0
Sunshine Duration		10.4	9.4	10.8	11.2	10.8	10.4	10.7	9.6	10.0	0.9	9.4	-	8.7
Precipitation											50.0	50.0	-	12.0
Evaporation		6.2	7.4	-	-	5.2	8.0	7.2	5.0	9.3	4.0	-	-	53.3
Growing Degrees	5	21.5	22.2	22.3	20.7	20.6	21.7	20.7	20.2	19.1	16.3	205.3	-	174.1
	10	16.5	17.2	17.3	15.7	15.6	16.7	15.7	15.2	14.1	11.3	155.3	-	124.1

2nd 10-day period (11-20/09/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	39.6	-	35.5
Precipitation - Reference Evapotranspiration	10.4	-	-23.5
Number of Rainy Days	1.0	-	1.7
Number of Dry Days	12.0	-	-

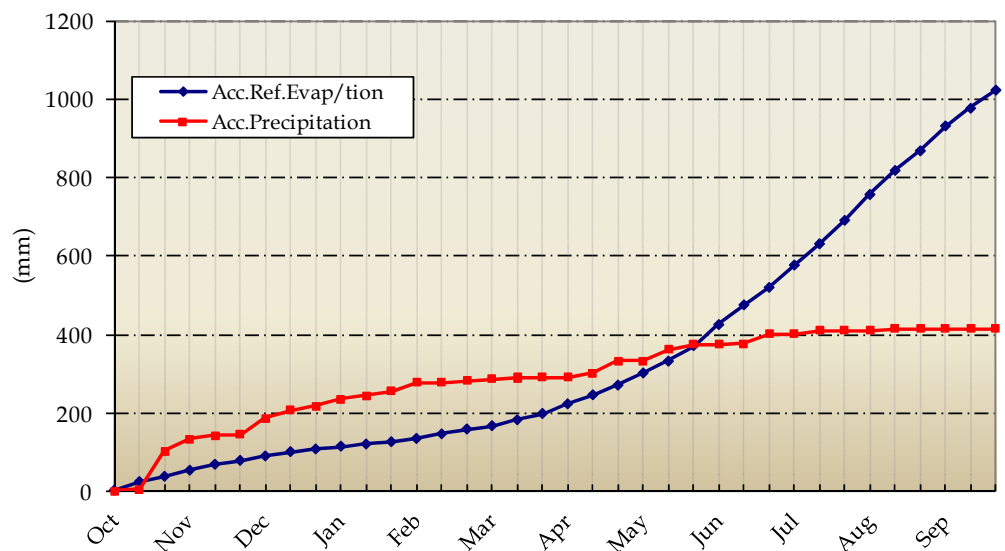
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.2	32.0	34.6	35.0	31.6	33.6	33.8	32.0	29.0	29.6	32.2	27.7	26.5
	Min	15.4	15.0	19.0	13.6	13.8	18.6	20.8	21.2	18.0	18.4	17.4	15.5	13.8
Relative Humidity	Max	78	75	72	71	73	72	76	64	69	85	74	80	-
	Min	32	26	15	19	26	23	26	24	39	39	27	42	-
Soil Temperature at 10 cm	06 UTC	26.4	24.0	24.0	23.4	26.0	24.0	24.6	25.0	25.5	24.2	24.7	23.0	19.9
	12 UTC	26.8	27.4	29.0	29.0	28.0	26.0	28.0	28.0	26.4	26.6	27.5	25.3	23.7
Sunshine Duration		11.5	11.3	11.6	11.6	11.0	11.1	10.4	10.8	10.8	7.2	10.7	8.3	8.5
Precipitation														5.2
Evaporation		11.2	12.0	7.2	7.2	8.1	11.2	15.6	6.8	6.8	4.7	90.8	60.1	66.6
Growing Degrees	5	18.3	18.5	21.8	19.3	17.7	21.1	22.3	21.6	18.5	19.0	198.1	166.0	151.3
	10	13.3	13.5	16.8	14.3	12.7	16.1	17.3	16.6	13.5	14.0	148.1	116.0	101.3

2nd 10-day period (11-20/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.4	34.5	37.1
Precipitation - Reference Evapotranspiration	-46.4	-34.5	-31.9
Number of Rainy Days	0.0	0.0	0.9
Number of Dry Days	40.0	19.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

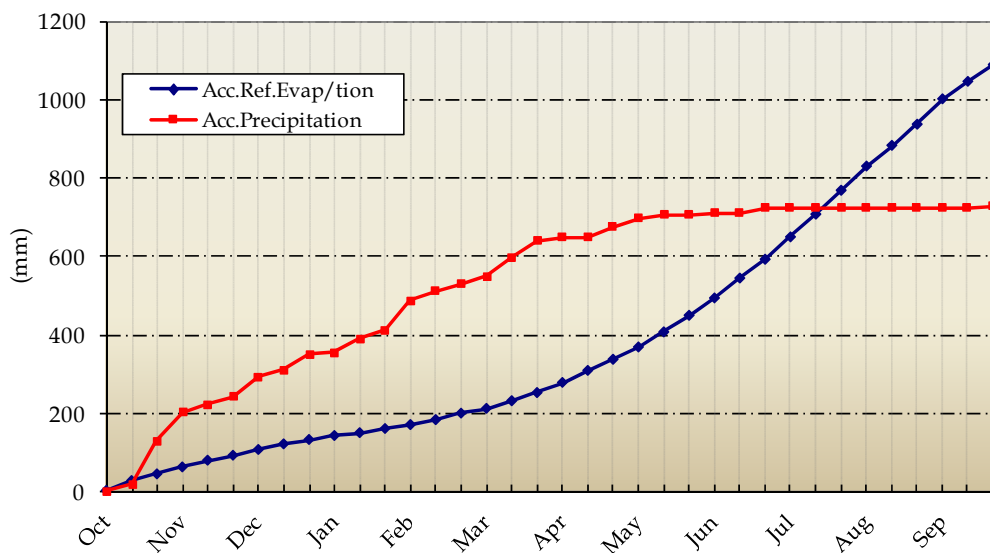


Andravida

2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.6	31.0	32.0	33.2	30.6	32.8	33.4	33.6	31.0	26.0	31.4	27.6	28.2
	Min	20.0	20.0	21.0	17.8	19.2	19.2	16.2	15.6	19.2	19.8	18.8	17.3	16.5
Relative Humidity	Max	86	93	89	90	87	91	79	84	85	96	88	95	-
	Min	49	53	39	21	47	32	30	24	39	43	38	48	-
Soil Temperature at 10 cm	06 UTC	27.2	27.6	27.6	26.4	27.0	27.0	25.4	25.0	26.0	26.6	26.6	23.0	23.4
	12 UTC	33.8	33.6	34.0	33.6	33.4	32.8	32.0	32.8	33.0	25.0	32.4	30.1	26.9
Sunshine Duration		10.5	10.0	10.0	10.5	9.8	9.5	10.3	10.0	9.5	2.1	9.2	9.8	9.1
Precipitation											3.4	3.4	7.7	7.0
Evaporation		6.5	5.3	5.0	9.2	5.3	4.5	8.1	5.8	5.7	1.5	56.9	46.4	56.3
Growing Degrees	5	20.3	20.5	21.5	20.5	19.9	21.0	19.8	19.6	20.1	17.9	201.1	174.5	173.6
	10	15.3	15.5	16.5	15.5	14.9	16.0	14.8	14.6	15.1	12.9	151.1	124.5	123.6

2nd 10-day period (11-20/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	42.7	36.0	36.2
Precipitation - Reference Evapotranspiration	-39.3	-28.3	-29.2
Number of Rainy Days	1.0	2.0	1.1
Number of Dry Days	96.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

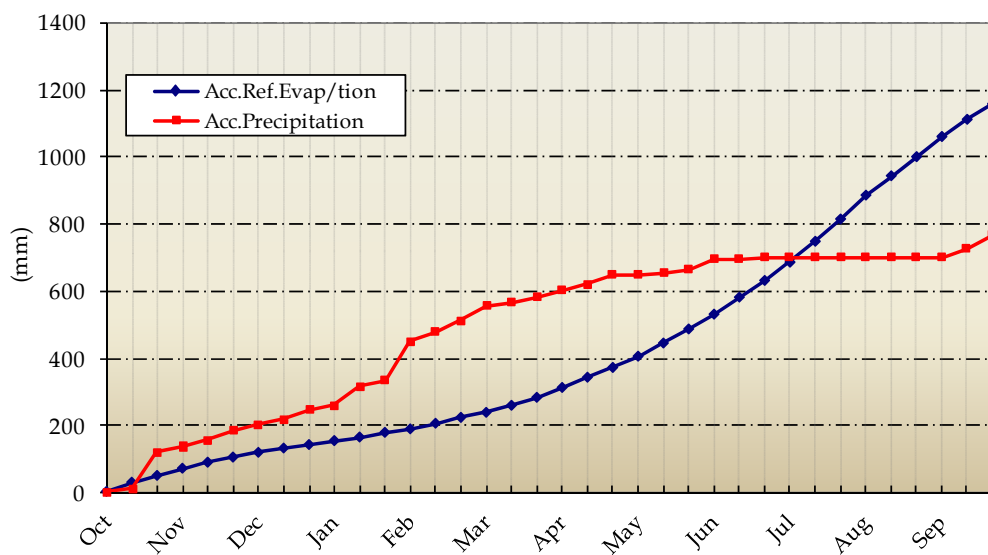


Kalamata

2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.6	30.0	30.4	30.0	31.4	34.4	30.2	33.0	30.0	28.2	30.7	29.1	28.6
	Min	19.4	19.6	18.6	15.4	17.8	20.0	17.8	16.8	16.6	16.8	17.9	16.9	15.9
Relative Humidity	Max	87	91	93	96	91	91	85	83	86	100	90	92	-
	Min	50	52	41	47	32	16	41	30	33	33	38	41	-
Soil Temperature at 10 cm	06 UTC	25.0	25.0	25.4	24.6	24.6	24.6	24.0	23.6	23.6	23.8	24.4	23.6	22.6
	12 UTC	27.2	27.2	26.2	26.6	26.6	26.8	26.2	26.4	25.4	25.2	26.4	25.5	25.8
Sunshine Duration		10.6	11.3	10.9	10.8	11.0	10.9	11.2	10.2	12.5	2.8	10.2	9.9	8.7
Precipitation											40.8	40.8	0.1	6.3
Evaporation		5.8	6.9	8.3	3.7	5.6	8.7	4.4	1.8	6.0	4.3	55.5	59.9	60.4
Growing Degrees	5	19.5	19.8	19.5	17.7	19.6	22.2	19.0	19.9	18.3	17.5	193.0	179.7	172.4
	10	14.5	14.8	14.5	12.7	14.6	17.2	14.0	14.9	13.3	12.5	143.0	129.7	122.4

2nd 10-day period (11-20/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.2	45.1	38.1
Precipitation - Reference Evapotranspiration	-5.4	-45.0	-31.8
Number of Rainy Days	1.0	1.0	1.0
Number of Dry Days	12.0	82.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

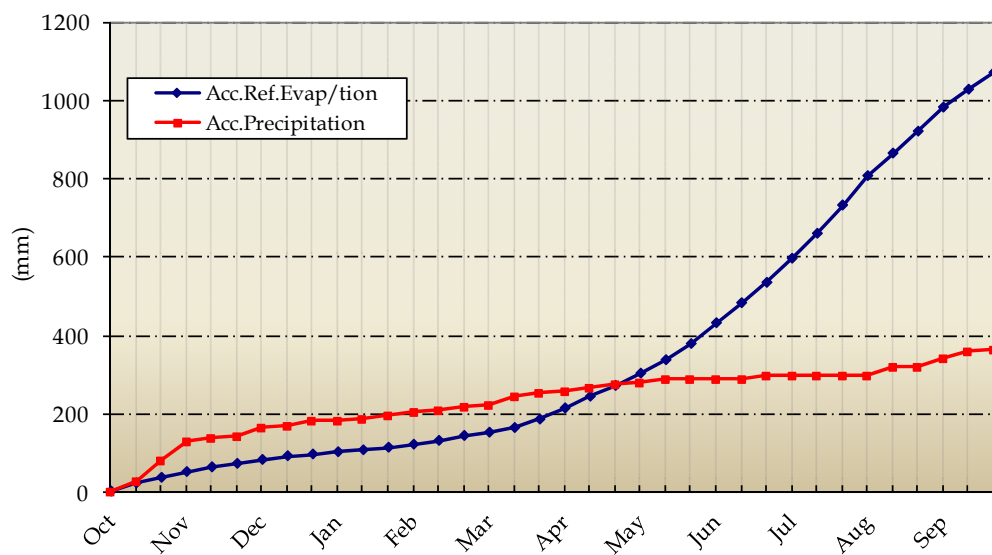


Larisa

2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.8	32.6	33.6	34.8	36.2	33.2	34.0	32.4	31.4	25.6	32.7	29.2	29.0
	Min	17.6	17.0	18.2	15.2	15.8	17.2	15.4	15.6	16.0	18.8	16.7	15.4	14.0
Relative Humidity	Max	90	90	84	77	73	78	77	75	85	92	82	93	-
	Min	35	30	30	19	18	21	21	34	32	66	31	38	-
Soil Temperature at 10 cm	06 UTC	25.0	25.2	25.0	24.0	24.0	24.8	24.0	24.4	24.4	26.1	24.7	22.4	22.0
	12 UTC	27.2	27.0	27.0	28.4	26.6	26.0	26.4	26.8	26.2	25.0	26.7	25.4	24.1
Sunshine Duration		10.1	10.0	9.9	9.8	9.7	10.5	9.3	10.3	9.2	1.0	9.0	7.3	8.3
Precipitation											5.0	5.0	42.7	12.0
Evaporation		6.6	9.2	8.9	12.1	7.1	6.8	9.0	7.9	7.6	11.2	86.4	46.1	61.4
Growing Degrees	5	20.2	19.8	20.9	20.0	21.0	20.2	19.7	19.0	18.7	17.2	196.7	173.3	165.0
	10	15.2	14.8	15.9	15.0	16.0	15.2	14.7	14.0	13.7	12.2	146.7	123.3	115.0

2nd 10-day period (11-20/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.1	34.1	38.0
Precipitation - Reference Evapotranspiration	-38.1	8.6	-26.0
Number of Rainy Days	1.0	3.0	1.2
Number of Dry Days	12.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

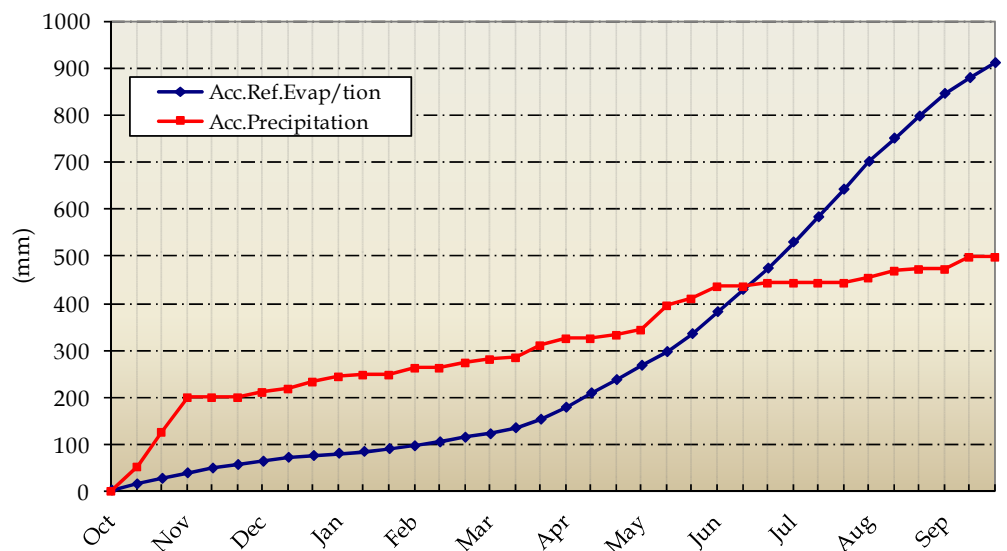


2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.4	33.2	36.1	37.1	36.7	35.6	35.5	33.5	31.3	27.3	34.1	31.1	28.4
	Min	16.5	17.5	17.0	16.8	16.0	15.8	16.6	19.1	18.2	17.0	17.0	15.5	14.3
Relative Humidity	Max	-	89	84	80	81	85	-	78	82	83	83	75	-
	Min	-	31	17	16	16	17	-	20	29	35	23	28	-
Soil Temperature at 10 cm	06 UTC	-	-	24.8	24.8	24.8	24.8	24.6	-	25.2	25.0	24.9	25.0	20.6
	12 UTC	-	-	27.0	27.0	27.4	26.4	26.6	-	26.2	25.4	26.6	26.3	24.0
Sunshine Duration		-	0.0	10.5	10.5	10.2	10.1	-	0.0	8.0	1.8	6.4	8.0	8.1
Precipitation									0.0		0.0	0.0	0.2	7.9
Evaporation		-	5.8	4.2	5.9	5.5	5.2	-	5.1	4.0	4.3	-	48.6	47.8
Growing Degrees	5	20.5	20.4	21.6	22.0	21.4	20.7	21.1	21.3	19.8	17.2	205.6	182.9	162.6
	10	15.5	15.4	16.6	17.0	16.4	15.7	16.1	16.3	14.8	12.2	155.6	132.9	112.8

Series

2nd 10-day period (11-20/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.0	30.5	29.3
Precipitation - Reference Evapotranspiration	-32.0	-30.3	-21.4
Number of Rainy Days	0.0	1.0	1.4
Number of Dry Days	13.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



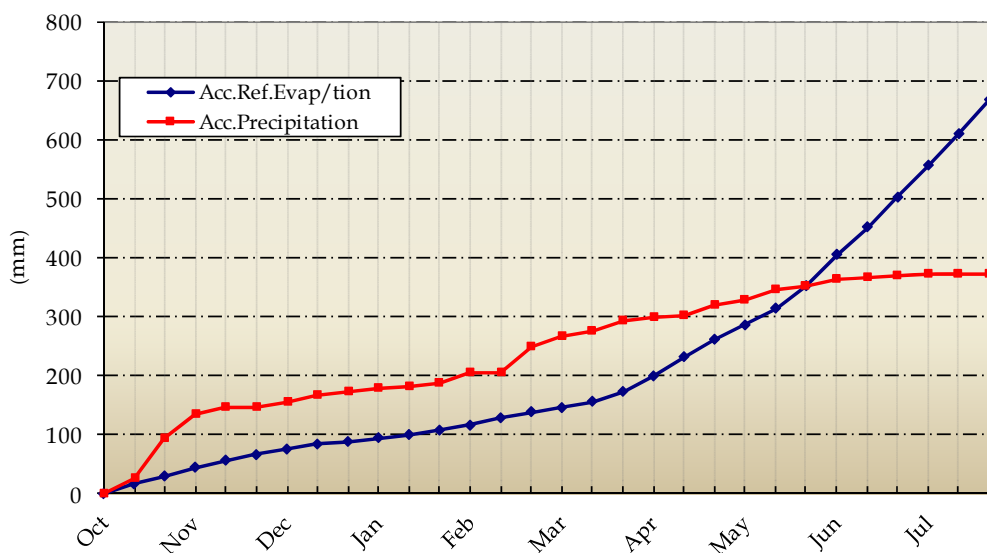
Trikala Imathias

2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	29.3	28.3
	Min	-	-	-	-	-	-	-	-	-	-	-	16.0	14.2
Relative Humidity	Max	-	-	-	-	-	-	-	-	-	-	-	95	-
	Min	-	-	-	-	-	-	-	-	-	-	-	38	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	22.5	21.6
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	24.3	22.8
Sunshine Duration		-	-	-	-	-	-	-	-	-	-	-	8.0	7.7
Precipitation		-	-	-	-	-	-	-	-	-	-	-		4.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	31.2	39.1
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	176.5	162.6
	10	-	-	-	-	-	-	-	-	-	-	-	126.5	112.6

2nd 10-day period (11-20/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	32.4	30.4
Precipitation - Reference Evapotranspiration	-	-32.4	-25.8
Number of Rainy Days	-	0.0	1.2
Number of Dry Days	-	16.0	-

The station is temporarily closed

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

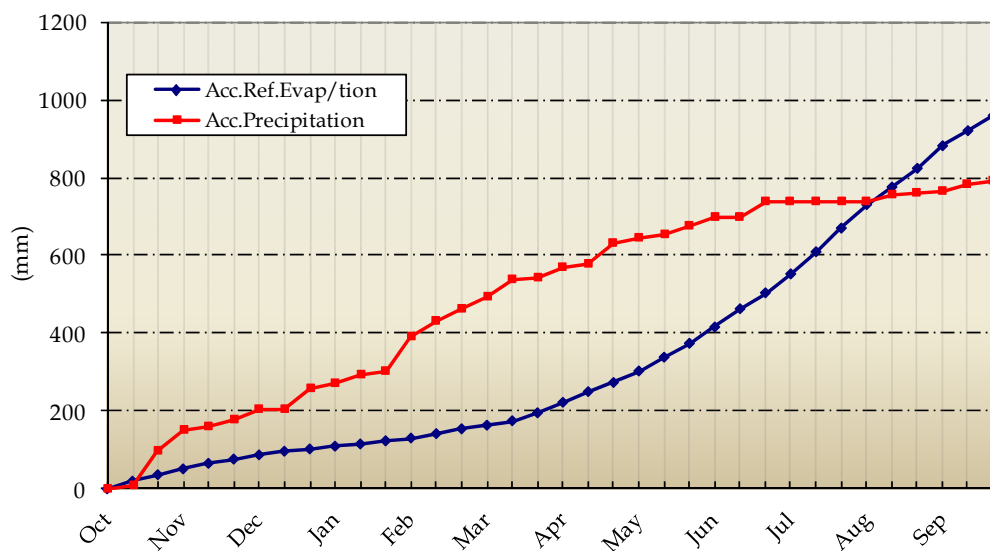


Tripoli

2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.0	31.0	30.8	31.8	31.4	29.6	30.4	29.8	31.8	25.6	30.3	-	26.9
	Min	14.8	13.0	13.8	10.4	10.8	12.4	21.6	12.0	11.6	13.4	13.4	-	11.2
Relative Humidity	Max	93	93	91	88	88	88	32	76	90	96	84	-	-
	Min	28	23	21	17	21	20	20	25	18	37	23	-	-
Soil Temperature at 10 cm	06 UTC	22.6	22.2	22.4	21.6	21.8	22.2	22.6	22.0	21.8	21.8	22.1	-	20.2
	12 UTC	28.4	28.0	28.0	27.4	27.6	27.0	27.8	27.0	27.0	24.0	27.2	-	22.5
Sunshine Duration		10.7	9.5	10.7	11.3	10.9	10.4	11.0	8.8	10.8	6.0	10.0	-	8.5
Precipitation											7.2	7.2	-	5.9
Evaporation		4.6	4.5	6.6	5.2	6.6	8.0	8.1	6.0	7.9	0.9	58.4	-	40.3
Growing Degrees	5	17.9	17.0	17.3	16.1	16.1	16.0	21.0	15.9	16.7	14.5	168.5	-	140.2
	10	12.9	12.0	12.3	11.1	11.1	11.0	16.0	10.9	11.7	9.5	118.5	-	90.2

2nd 10-day period (11-20/09/2011)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	38.9	-	34.4
Precipitation - Reference Evapotranspiration	-31.7	-	-28.5
Number of Rainy Days	1.0	-	1.0
Number of Dry Days	12.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

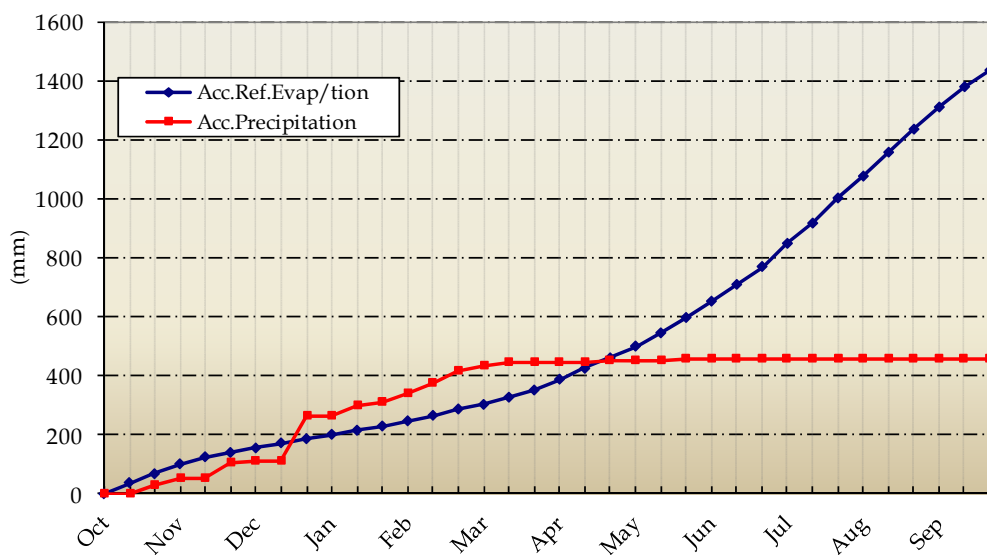


Tympanki

2nd 10-day period (11-20/09/2011)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	33.6	32.0	32.2	30.0	33.6	32.4	29.2	29.2	30.2	28.6	31.1	29.8	28.9
	Min	21.0	19.4	20.4	17.4	18.6	17.4	17.2	18.4	18.4	17.0	18.5	18.0	18.0
Relative Humidity	Max	82	75	77	90	82	97	98	99	99	98	90	90	-
	Min	22	24	22	33	18	19	31	32	31	32	26	37	-
Soil Temperature at 10 cm	06 UTC	29.2	28.6	28.6	27.6	28.0	28.0	26.6	28.0	27.4	27.4	27.9	26.3	27.0
	12 UTC	34.4	33.6	32.6	32.8	33.0	33.0	32.2	32.6	32.4	32.0	32.9	31.2	30.9
Sunshine Duration		11.3	11.8	11.7	11.5	11.4	11.5	11.2	10.7	11.0	9.8	11.2	10.5	9.8
Precipitation													0.1	2.3
Evaporation		11.6	8.4	11.6	4.8	14.2	8.6	7.6	8.2	7.0	5.5	87.5	86.2	80.7
Growing Degrees	5	22.3	20.7	21.3	18.7	21.1	19.9	18.2	18.8	19.3	17.8	198.1	188.8	184.3
	10	17.3	15.7	16.3	13.7	16.1	14.9	13.2	13.8	14.3	12.8	148.1	138.8	134.3

2nd 10-day period (11-20/09/2011)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	56.0	51.2	45.0
Precipitation - Reference Evapotranspiration	-56.0	-51.1	-42.7
Number of Rainy Days	0.0	1.0	0.2
Number of Dry Days	115.0	98.0	-

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.

Mesurements 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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ΥΠΗΡΕΣΙΑ

HELLENIC NATIONAL METEOROLOGICAL SERVICE

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