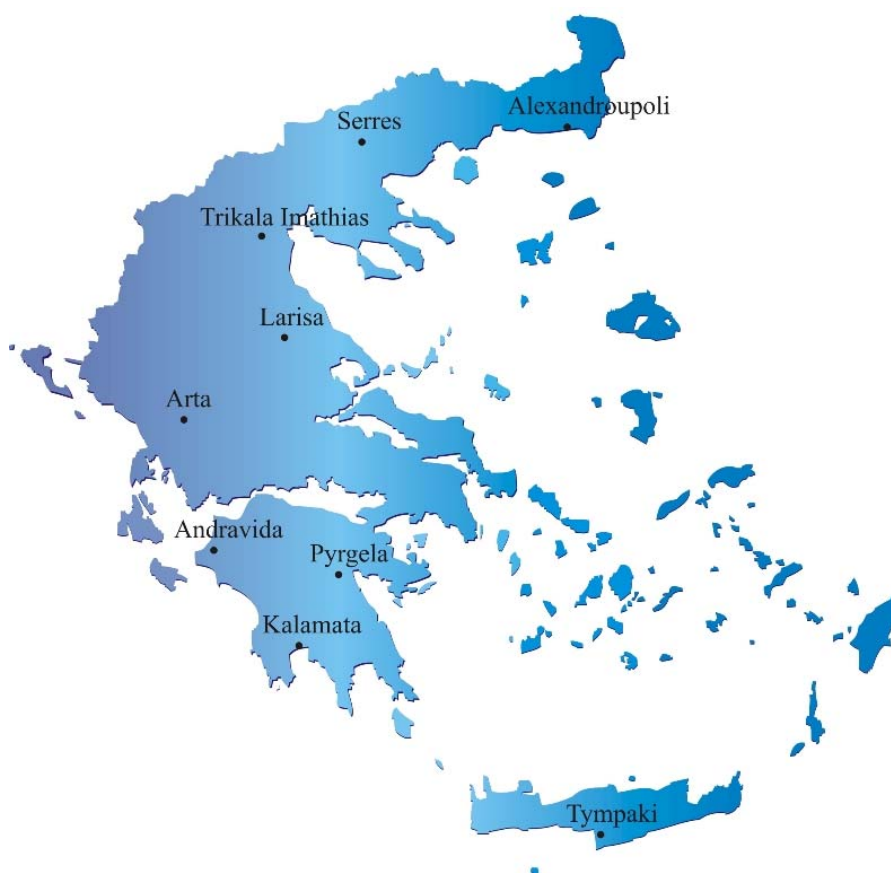


AGROMETEOROLOGICAL BULLETIN

July 2009
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



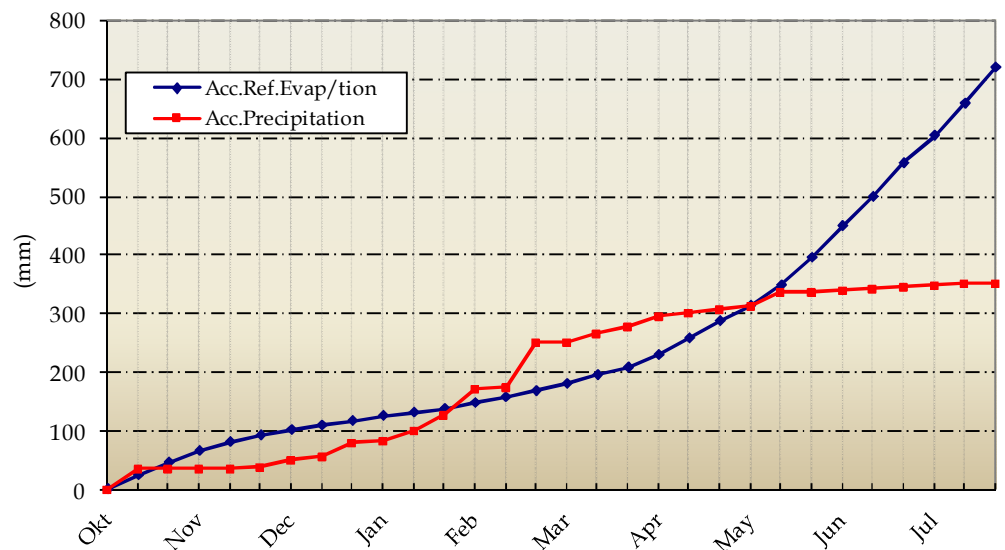
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	27.2	29.0	32.0	33.4	34.8	35.4	33.6	32.2	32.4	32.3	-	30.5
	Min	20.4	16.0	20.2	20.8	18.6	22.8	23.4	21.2	22.0	22.4	20.8	-	17.5
Relative Humidity	Max	77	87	66	72	79	68	65	69	73	68	72	-	-
	Min	40	44	30	26	29	27	29	37	42	29	33	-	-
Soil Temperature at 10 cm	06 UTC	27.6	27.0	27.4	27.0	27.2	28.5	29.5	29.2	29.6	29.6	28.3	-	24.2
	12 UTC	31.5	31.2	31.4	33.2	31.4	32.0	32.8	33.0	32.8	33.0	32.2	-	28.8
Sunshine Duration		11.6	12.0	9.9	13.5	13.4	12.8	12.4	12.5	12.9	11.2	12.2	-	11.2
Precipitation													-	5.1
Evaporation		7.5	9.7	9.8	9.7	10.6	17.6	9.9	9.1	9.9	10.1	103.9	-	98.7
Growing Degrees	5	21.5	16.6	19.6	21.4	21.0	23.8	24.4	22.4	22.1	22.4	215.2	-	190.1
	10	16.5	11.6	14.6	16.4	16.0	18.8	19.4	17.4	17.1	17.4	165.2	-	140.1

2nd 10-day period (11-20/07/2009)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.0	60.3
Precipitation - Reference Evapotranspiration	-62.0	-55.2
Number of Rainy Days	0.0	0.9
Number of Dry Days	10.0	-

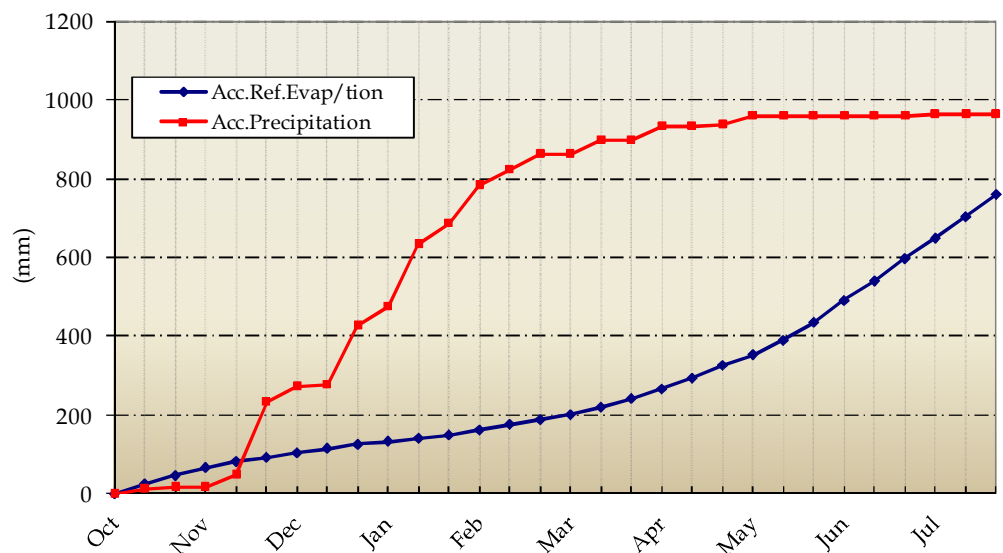
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.8	26.8	28.0	31.4	30.8	32.6	34.4	32.8	29.6	29.4	30.5	-	30.4
	Min	19.6	22.0	16.6	17.0	17.8	18.6	20.8	22.6	21.0	19.4	19.5	-	18.1
Relative Humidity	Max	98	83	90	90	96	96	97	95	96	91	93	-	-
	Min	51	51	41	28	38	39	36	46	52	49	43	-	-
Soil Temperature at 10 cm	06 UTC	27.8	28.0	26.6	26.8	27.6	28.4	29.4	30.6	30.0	28.4	28.4	-	27.1
	12 UTC	35.2	35.0	34.0	34.2	35.0	35.8	36.6	36.8	35.6	34.4	35.3	-	31.8
Sunshine Duration		13.4	13.0	13.4	13.4	13.4	13.1	12.5	11.2	13.1	12.5	12.9	-	12.3
Precipitation													-	0.8
Evaporation		9.9	11.0	19.6	8.6	3.1	10.6	8.1	7.9	9.8	6.0	94.6	-	77.4
Growing Degrees	5	19.2	19.4	17.3	19.2	19.3	20.6	22.6	22.7	20.3	19.4	200.0	-	192.4
	10	14.2	14.4	12.3	14.2	14.3	15.6	17.6	17.7	15.3	14.4	150.0	-	142.4

2nd 10-day period (11-20/07/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	56.6	-	55.3
Precipitation - Reference Evapotranspiration	-56.6	-	-54.5
Number of Rainy Days	0.0	-	0.1
Number of Dry Days	26.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

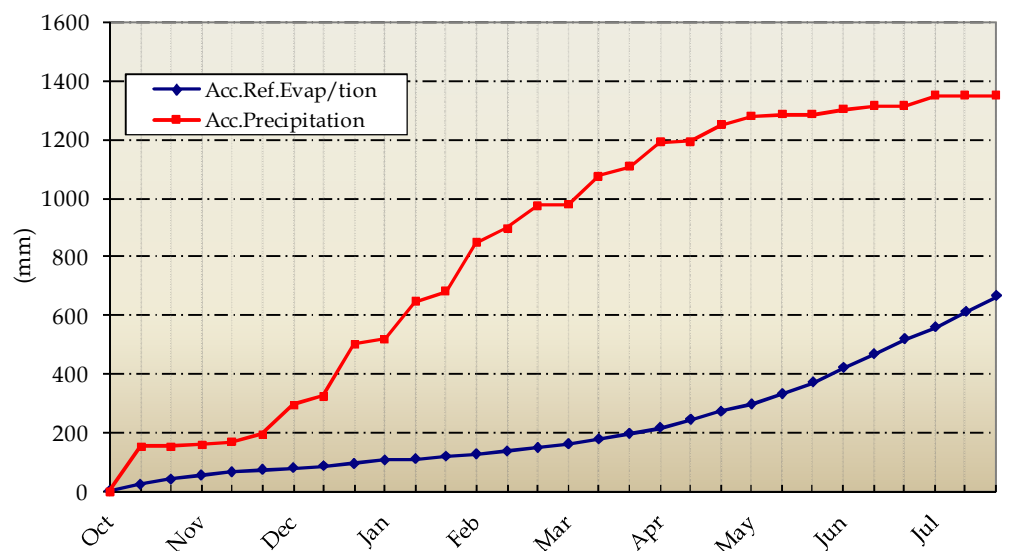


Arta

2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.2	31.0	30.4	33.0	32.6	34.2	35.2	36.2	33.6	33.6	33.0	-	31.4
	Min	15.6	15.6	15.4	15.4	17.0	19.6	19.6	21.6	19.0	18.6	17.7	-	17.4
Relative Humidity	Max	80	64	73	81	81	88	85	85	88	74	80	-	-
	Min	51	40	40	34	39	45	35	35	40	40	40	-	-
Soil Temperature at 10 cm	06 UTC	26.4	26.4	26.6	26.6	27.0	27.8	28.4	29.0	29.0	28.6	27.6	-	26.7
	12 UTC	29.0	28.4	28.8	29.0	29.2	30.4	30.6	31.0	30.8	30.8	29.8	-	31.9
Sunshine Duration		12.7	12.7	12.6	12.6	12.4	12.8	12.1	12.7	11.9	12.6	12.5	-	11.1
Precipitation													-	3.7
Evaporation		6.0	7.9	6.6	6.7	6.9	7.8	8.0	6.2	7.6	7.1	70.8	-	-
Growing Degrees	5	17.9	18.3	17.9	19.2	19.8	21.9	22.4	23.9	21.3	21.1	203.7	-	193.9
	10	12.9	13.3	12.9	14.2	14.8	16.9	17.4	18.9	16.3	16.1	153.7	-	143.9

2nd 10-day period (11-20/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	54.0	-	50.7
Precipitation - Reference Evapotranspiration	-54.0	-	-47.0
Number of Rainy Days	0.0	-	0.6
Number of Dry Days	15.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

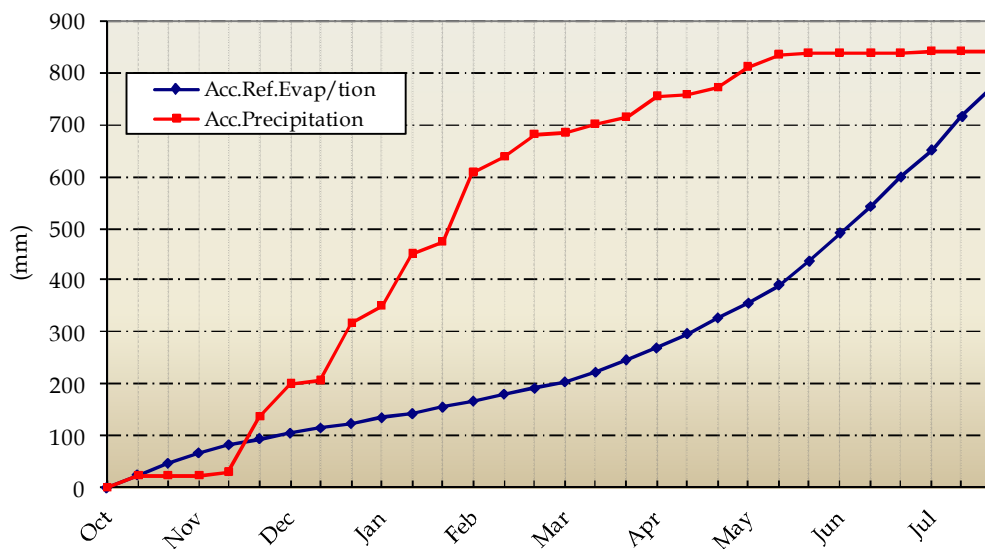


Kalamata

2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.6	30.4	28.2	30.0	31.0	31.6	33.2	32.6	35.0	31.8	31.6	-	31.2
	Min	21.0	20.6	17.0	15.0	15.4	16.4	19.0	19.4	20.6	22.6	18.7	-	17.8
Relative Humidity	Max	79	70	80	89	94	92	92	87	91	75	85	-	-
	Min	29	31	40	38	32	36	35	43	40	41	36	-	-
Soil Temperature at 10 cm	06 UTC	25.4	25.2	24.8	24.4	24.0	24.4	24.8	24.4	25.6	26.2	24.9	-	25.6
	12 UTC	26.0	26.8	26.8	26.8	26.4	26.6	26.8	27.4	28.0	27.8	26.9	-	30.0
Sunshine Duration		11.0	12.1	12.7	12.5	12.6	12.6	12.6	12.7	12.4	12.5	12.4	-	11.5
Precipitation													-	3.4
Evaporation		9.0	7.0	9.0	9.0	9.0	11.0	7.0	11.0	9.0	10.0	91.0	-	87.7
Growing Degrees	5	21.8	20.5	17.6	17.5	18.2	19.0	21.1	21.0	22.8	22.2	201.7	-	195.0
	10	16.8	15.5	12.6	12.5	13.2	14.0	16.1	16.0	17.8	17.2	151.7	-	145.0

2nd 10-day period (11-20/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	57.8	-	57.1
Precipitation - Reference Evapotranspiration	-57.8	-	-53.7
Number of Rainy Days	0.0	-	0.4
Number of Dry Days	25.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

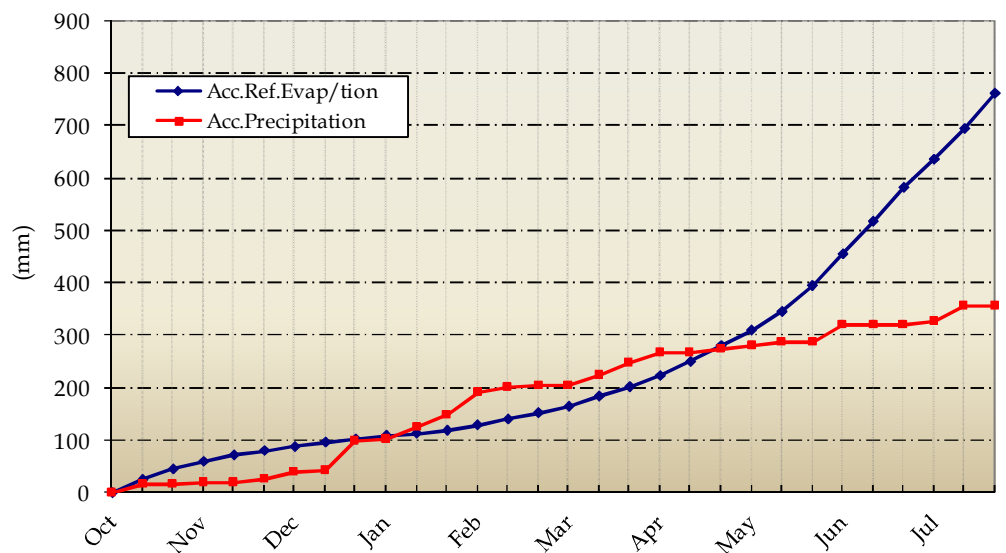


Larisa

2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.8	29.0	31.8	32.4	35.2	36.8	36.8	39.6	38.0	33.6	34.8	-	33.3
	Min	22.0	18.8	15.8	16.6	17.2	19.4	20.8	20.8	19.4	24.2	19.5	-	17.9
Relative Humidity	Max	89	75	75	65	76	69	72	70	70	61	72	-	-
	Min	16	30	23	24	22	26	26	18	16	24	22	-	-
Soil Temperature at 10 cm	06 UTC	27.2	26.4	25.6	25.6	26.0	27.0	27.4	28.0	28.0	27.8	26.9	-	26.6
	12 UTC	29.4	27.4	27.2	27.4	29.2	29.8	30.4	30.8	30.8	30.6	29.3	-	29.2
Sunshine Duration		11.2	13.2	13.1	12.6	13.1	12.7	12.5	12.5	12.6	12.4	12.6	-	11.0
Precipitation													-	9.9
Evaporation		10.5	9.1	9.2	6.3	14.3	7.3	16.1	12.1	13.1	9.4	107.4	-	96.3
Growing Degrees	5	23.4	18.9	18.8	19.5	21.2	23.1	23.8	25.2	23.7	23.9	221.5	-	205.9
	10	18.4	13.9	13.8	14.5	16.2	18.1	18.8	20.2	18.7	18.9	171.5	-	155.9

2nd 10-day period (11-20/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	67.8	-	62.2
Precipitation - Reference Evapotranspiration	-67.8	-	-52.3
Number of Rainy Days	0.0	-	1.2
Number of Dry Days	13.0	-	-

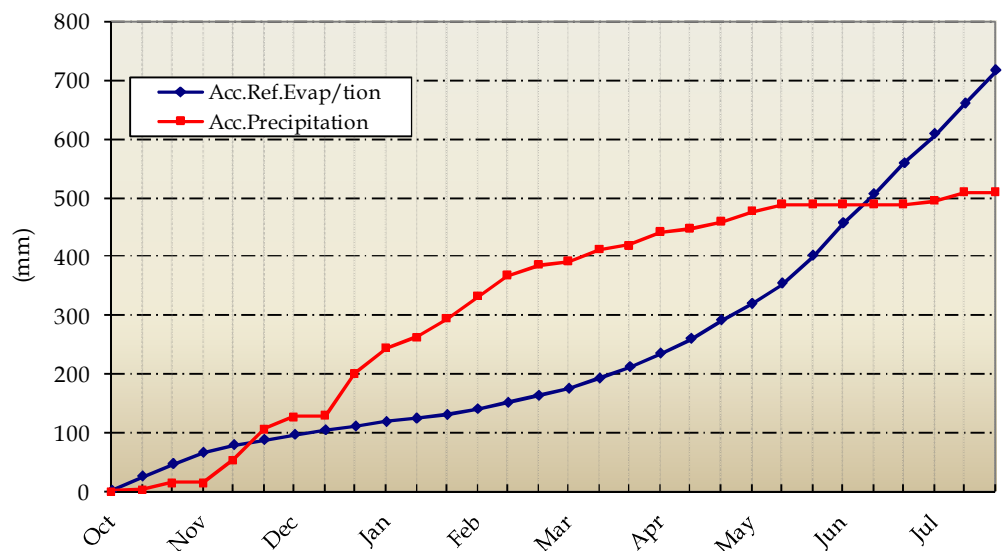
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.2	33.0	32.6	35.0	35.8	36.8	38.8	37.4	38.4	39.0	36.3	-	33.6
	Min	15.4	14.6	18.8	16.8	16.0	16.6	17.2	18.2	16.6	19.8	17.0	-	16.4
Relative Humidity	Max	57	74	61	56	67	76	65	70	56	78	66	-	-
	Min	21	24	36	24	29	-	24	22	24	31	26	-	-
Soil Temperature at 10 cm	06 UTC	26.2	25.2	27.6	26.8	26.8	27.4	27.0	28.0	27.6	29.4	27.2	-	26.5
	12 UTC	35.8	35.4	36.0	35.2	35.8	36.2	36.6	37.2	37.6	37.4	36.3	-	35.2
Sunshine Duration		12.8	12.6	12.5	12.7	12.6	12.2	12.6	11.7	12.1	11.0	12.3	-	10.9
Precipitation													-	2.1
Evaporation		8.1	7.2	8.5	8.0	8.6	8.4	8.4	0.7	8.1	9.7	75.7	-	75.2
Growing Degrees	5	20.8	18.8	20.7	20.9	20.9	21.7	23.0	22.8	22.5	24.4	216.5	-	200.1
	10	15.8	13.8	15.7	15.9	15.9	16.7	18.0	17.8	17.5	19.4	166.5	-	150.1

2nd 10-day period (11-20/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.7	-	53.6
Precipitation - Reference Evapotranspiration	-56.7	-	-51.5
Number of Rainy Days	0.0	-	0.7
Number of Dry Days	14.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

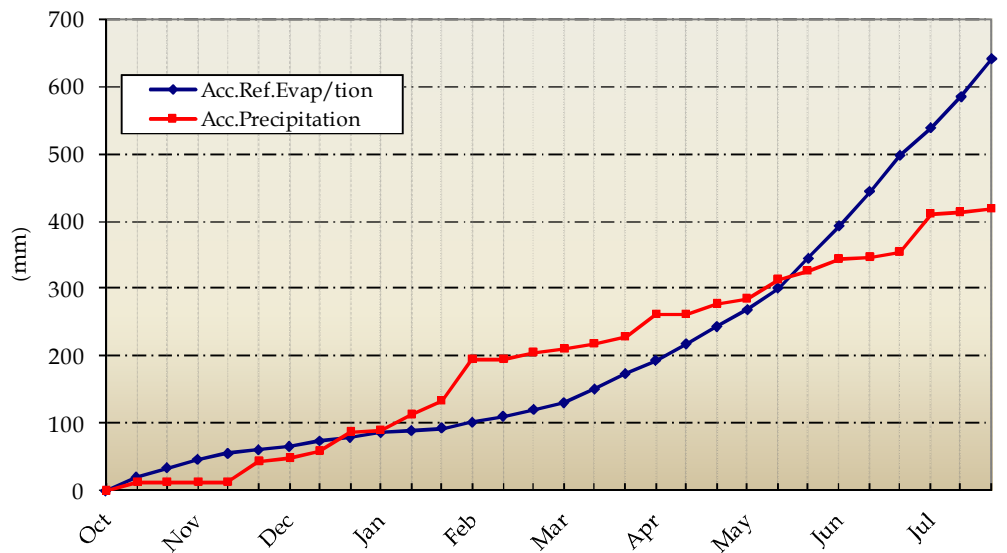


Series

2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.0	29.4	32.0	32.6	34.4	35.0	37.0	37.4	38.2	33.4	33.8	-	32.6
	Min	21.0	18.8	18.4	17.0	23.6	20.0	19.8	22.0	22.6	21.0	20.4	-	18.6
Relative Humidity	Max	91	50	41	73	73	70	73	69	69	56	66	-	-
	Min	55	28	23	40	33	33	34	36	34	26	34	-	-
Soil Temperature at 10 cm	06 UTC	25.6	23.0	22.6	23.6	24.4	25.6	26.4	27.2	27.6	27.8	25.4	-	25.7
	12 UTC	26.8	27.2	28.6	26.2	26.6	28.0	28.6	29.2	29.4	29.0	28.0	-	29.2
Sunshine Duration		5.9	8.7	12.9	12.7	12.5	11.5	10.8	11.4	11.5	10.8	10.9	-	10.5
Precipitation		5.1										5.1	-	5.2
Evaporation		0.2	5.6	4.5	5.0	6.5	7.5	7.5	6.5	9.0	7.0	59.3	-	73.2
Growing Degrees	5	20.0	19.1	20.2	19.8	24.0	22.5	23.4	24.7	25.4	22.2	221.3	-	197.9
	10	15.0	14.1	15.2	14.8	19.0	17.5	18.4	19.7	20.4	17.2	171.3	-	149.8

2nd 10-day period (11-20/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	56.4	-	50.4
Precipitation - Reference Evapotranspiration	-51.3	-	-45.2
Number of Rainy Days	1.0	-	1.6
Number of Dry Days	0.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

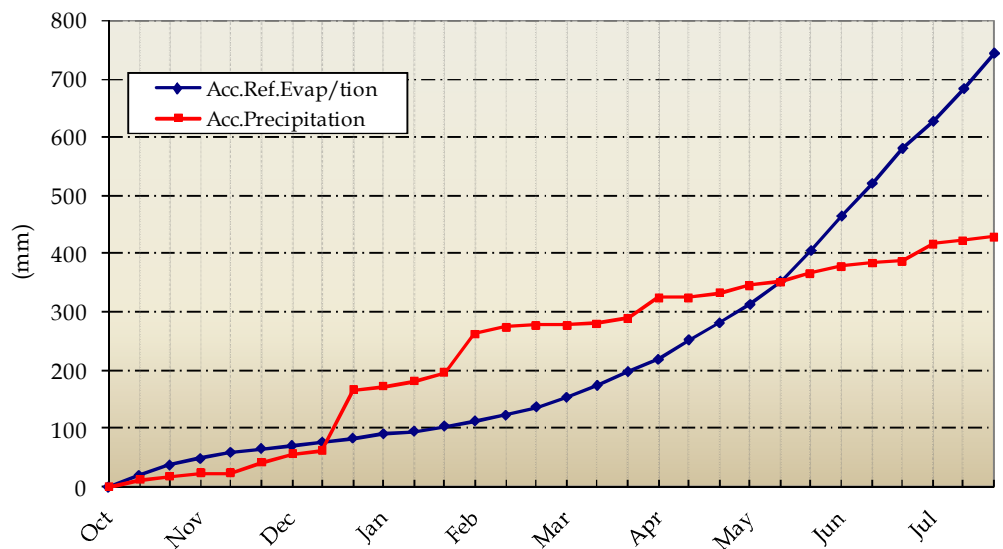


Trikala Imathias

2nd 10-day period (11-20/07/2009)		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	28.0	31.0	33.0	35.2	35.2	37.2	34.2	36.2	32.8	33.3	-	31.4
	Min	21.0	15.6	22.0	18.6	18.0	20.4	21.6	22.0	21.2	20.4	20.1	-	17.9
Relative Humidity	Max	73	76	58	95	72	93	95	93	74	81	81	-	-
	Min	49	32	31	34	34	40	37	40	34	29	36	-	-
Soil Temperature at 10 cm	06 UTC	28.4	25.2	24.8	25.6	27.0	27.8	29.0	29.2	29.2	29.4	27.6	-	25.5
	12 UTC	32.4	29.2	30.0	30.4	32.0	32.2	32.8	33.4	34.0	32.0	31.8	-	27.1
Sunshine Duration		8.6	12.5	12.3	12.9	12.3	12.2	11.6	10.8	11.3	12.5	11.7	-	10.3
Precipitation		6.3										6.3	-	2.1
Evaporation		4.0	7.7	7.8	5.6	5.6	5.8	3.8	4.6	9.0	8.2	62.1	-	67.1
Growing Degrees	5	20.7	16.8	21.5	20.8	21.6	22.8	24.4	23.1	23.7	21.6	217.0	-	196.2
	10	15.7	11.8	16.5	15.8	16.6	17.8	19.4	18.1	18.7	16.6	167.0	-	146.2

2nd 10-day period (11-20/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	60.9	-	50.9
Precipitation - Reference Evapotranspiration	-54.6	-	-48.8
Number of Rainy Days	1.0	-	0.9
Number of Dry Days	4.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

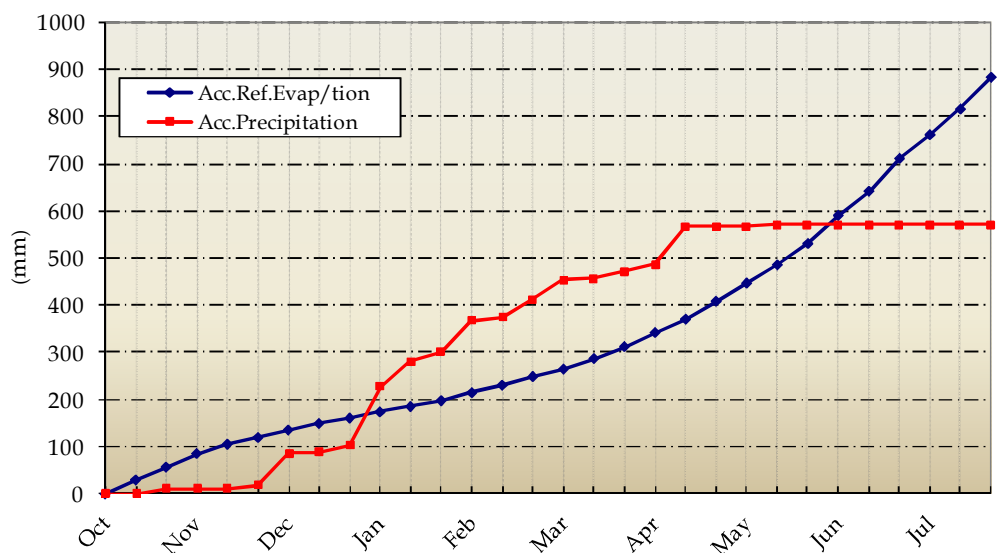


Tympaki

2nd 10-day period (11-20/07/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	32.0	31.6	33.0	32.8	32.8	35.6	37.8	32.4	34.8	33.3	-	32.0
	Min	20.0	20.2	21.0	18.0	18.6	21.6	22.8	21.4	21.4	18.8	20.4	-	20.5
Relative Humidity	Max	88	88	73	50	44	50	68	62	93	84	70	-	-
	Min	48	24	23	23	22	34	24	20	42	30	29	-	-
Soil Temperature at 10 cm	06 UTC	31.6	30.8	30.6	29.6	29.8	30.0	31.0	31.0	32.8	31.2	30.8	-	31.2
	12 UTC	38.4	36.6	36.2	36.0	36.6	35.8	36.6	38.0	37.6	37.4	36.9	-	35.7
Sunshine Duration		12.2	11.9	12.0	11.8	12.9	12.3	12.2	12.6	12.1	11.9	12.2	-	12.4
Precipitation													-	
Evaporation		9.2	11.5	13.6	12.9	11.3	13.3	15.3	14.5	7.8	10.1	119.5	-	121.3
Growing Degrees	5	20.0	21.1	21.3	20.5	20.7	22.2	24.2	24.6	21.9	21.8	218.3	-	211.0
	10	15.0	16.1	16.3	15.5	15.7	17.2	19.2	19.6	16.9	16.8	168.3	-	161.4

2nd 10-day period (11-20/07/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	67.1	-	67.8
Precipitation - Reference Evapotranspiration	-67.1	-	-67.8
Number of Rainy Days	0.0	-	0.0
Number of Dry Days	77.0	-	-

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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El. Venizelou street 14, Zip Code 16777

Helliniko, Athens



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ΜΕΤΕΩΡΟΛΟΓΙΚΗ
ΥΠΗΡΕΣΙΑ

HELLENIC NATIONAL METEOROLOGICAL SERVICE

Division of Climatology-Applications

Issue Editors :

Charalabopoulos Christos

Filiou Anna

The present bulletin was designed and implemented under the support of Water Resources Management Division of Agriculture University of Athens (Professor A. Liakatas)