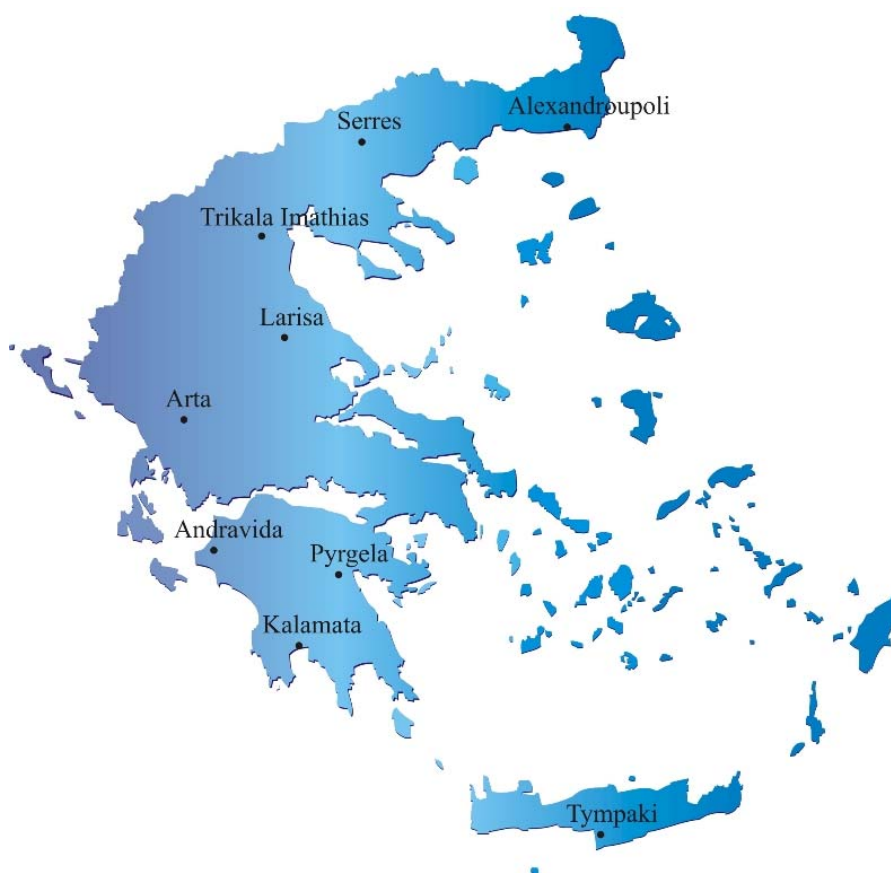




AGROMETEOROLOGICAL BULLETIN

*August 2010
3rd 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



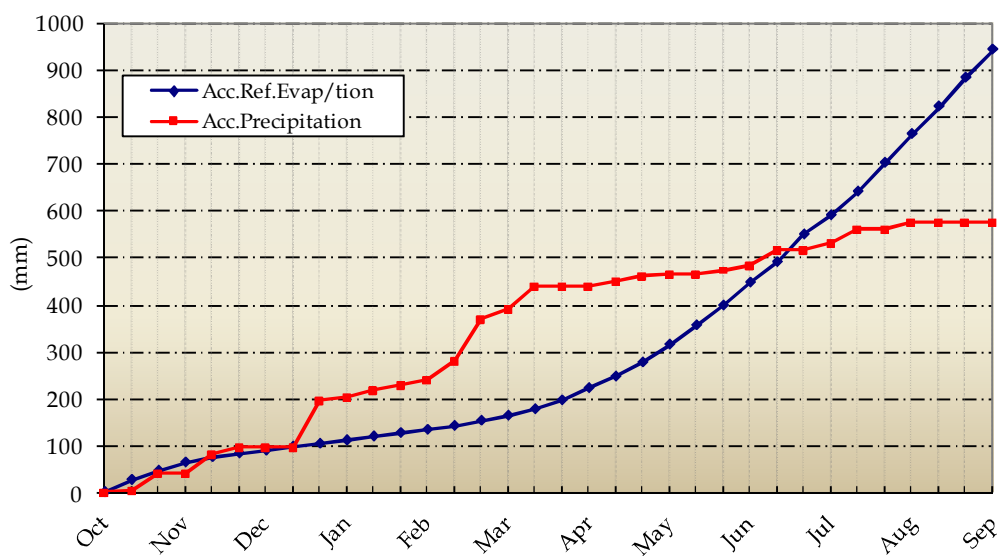
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	32.0	31.0	30.8	32.4	32.0	34.6	35.0	30.6	30.6	31.2	28.6	31.7	31.4	29.1
	Min	24.0	21.8	21.4	19.4	18.2	20.0	23.0	18.6	20.0	22.6	22.2	21.0	19.4	16.6
Relative Humidity	Max	62	61	73	80	81	77	78	82	78	75	90	76	73	-
	Min	26	34	42	34	43	31	29	50	50	48	61	41	32	-
Soil Temperature at 10 cm	06 UTC	29.6	28.4	27.8	27.4	27.8	28.2	28.6	28.4	28.0	28.8	28.4	28.3	26.2	23.0
	12 UTC	31.0	30.8	29.8	29.6	29.6	30.0	30.2	29.4	29.2	29.4	30.0	29.9	29.8	27.1
Sunshine Duration		10.8	12.3	11.3	12.6	12.4	11.8	12.4	12.3	12.1	10.7	9.4	11.6	11.3	9.8
Precipitation															4.5
Evaporation		11.6	10.2	8.7	8.1	7.4	10.8	7.2	9.3	9.5	16.9	9.0	108.7	102.7	93.1
Growing Degrees	5	23.0	21.4	21.1	20.9	20.1	22.3	24.0	19.6	20.3	21.9	20.4	235.0	224.4	196.4
	10	18.0	16.4	16.1	15.9	15.1	17.3	19.0	14.6	15.3	16.9	15.4	180.0	169.4	141.4

3rd 10-day period (21-31/08/2010)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	59.7	60.5
Precipitation - Reference Evapotranspiration	-59.7	-60.5
Number of Rainy Days	0.0	1.0
Number of Dry Days	34.0	52.0

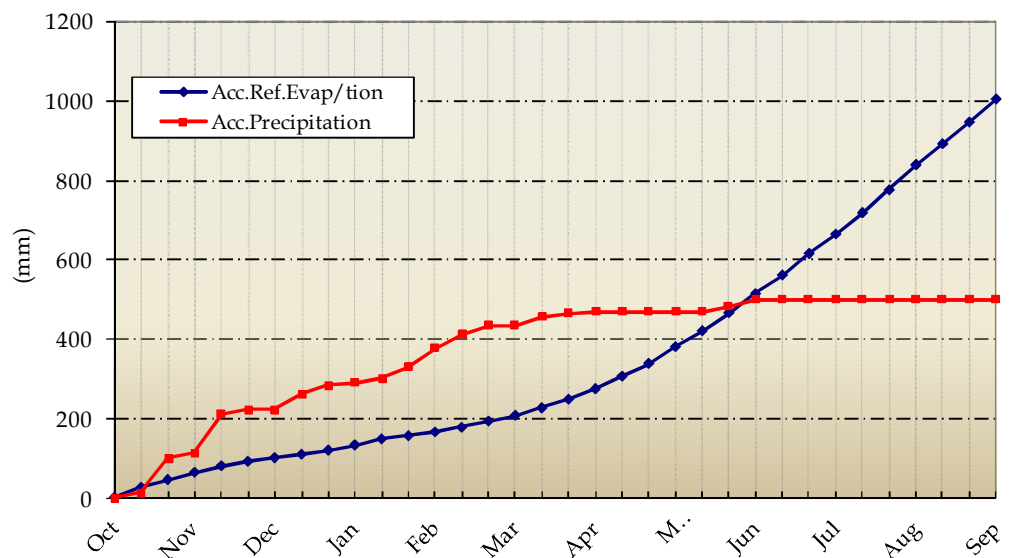
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.2	34.0	31.0	32.0	31.4	34.2	34.0	33.2	31.8	29.8	29.8	32.5	31.9	30.0
	Min	21.8	23.0	19.2	17.2	19.8	19.4	20.4	20.6	20.4	21.0	18.8	20.1	18.7	18.5
Relative Humidity	Max	86	68	91	93	94	89	84	91	95	93	90	89	87	-
	Min	30	27	32	29	46	27	41	35	51	52	37	37	36	-
Soil Temperature at 10 cm	06 UTC	29.4	29.4	27.6	27.2	28.0	28.0	28.4	28.4	28.6	28.6	28.0	28.3	27.5	26.8
	12 UTC	36.4	36.0	35.4	36.0	35.8	36.0	36.6	36.8	36.6	36.6	35.2	36.1	34.4	30.8
Sunshine Duration		10.9	11.9	11.7	11.7	11.2	11.5	11.1	11.6	11.1	11.0	10.2	11.3	10.9	10.6
Precipitation															3.8
Evaporation		12.9	9.8	9.2	7.6	8.2	6.4	10.3	3.6	10.1	6.8	11.4	96.3	76.1	74.7
Growing Degrees	5	24.0	23.5	20.1	19.6	20.6	21.8	22.2	21.9	21.1	20.4	19.3	234.5	223.2	211.8
	10	19.0	18.5	15.1	14.6	15.6	16.8	17.2	16.9	16.1	15.4	14.3	179.5	168.2	156.8

3rd 10-day period (21-31/08/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	58.2	52.2	49.7
Precipitation - Reference Evapotranspiration	-58.2	-52.2	-45.9
Number of Rainy Days	0.0	0.0	0.7
Number of Dry Days	69.0	68.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

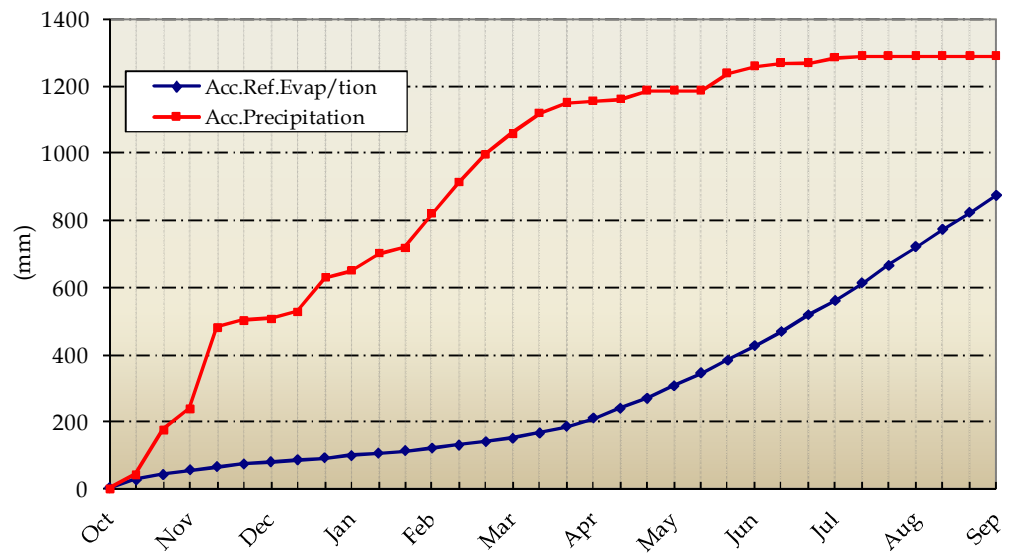


Arta

3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.4	36.4	33.2	32.8	33.4	38.2	36.6	36.4	32.4	29.4	30.0	34.1	32.8	30.8
	Min	19.6	21.6	21.0	-	18.4	19.0	20.0	20.2	18.6	22.0	17.6	19.8	18.1	17.2
Relative Humidity	Max	80	90	85	92	91	89	85	85	79	87	81	86	89	-
	Min	35	33	35	38	43	24	33	38	50	56	49	39	28	-
Soil Temperature at 10 cm	06 UTC	28.6	28.8	28.8	28.4	28.6	28.8	29.0	29.2	28.6	29.2	28.4	28.8	27.4	25.3
	12 UTC	31.2	31.4	30.6	30.4	30.6	30.6	31.0	31.2	30.4	30.8	29.8	30.7	29.5	29.6
Sunshine Duration		11.2	12.2	12.0	11.8	10.7	10.6	11.1	11.7	11.5	9.0	9.1	11.0	10.3	9.8
Precipitation														36.2	10.1
Evaporation		4.4	8.0	6.9	5.7	6.0	7.2	6.9	7.9	6.4	6.4	5.7	71.5	61.5	-
Growing Degrees	5	23.0	24.0	22.1	-	20.9	23.6	23.3	23.3	20.5	20.7	18.8	-	224.6	208.9
	10	18.0	19.0	17.1	-	15.9	18.6	18.3	18.3	15.5	15.7	13.8	-	169.6	153.9

3rd 10-day period (21-31/08/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.6	47.8	44.8
Precipitation - Reference Evapotranspiration	-50.6	-11.6	-34.7
Number of Rainy Days	0.0	4.0	1.2
Number of Dry Days	40.0	8.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

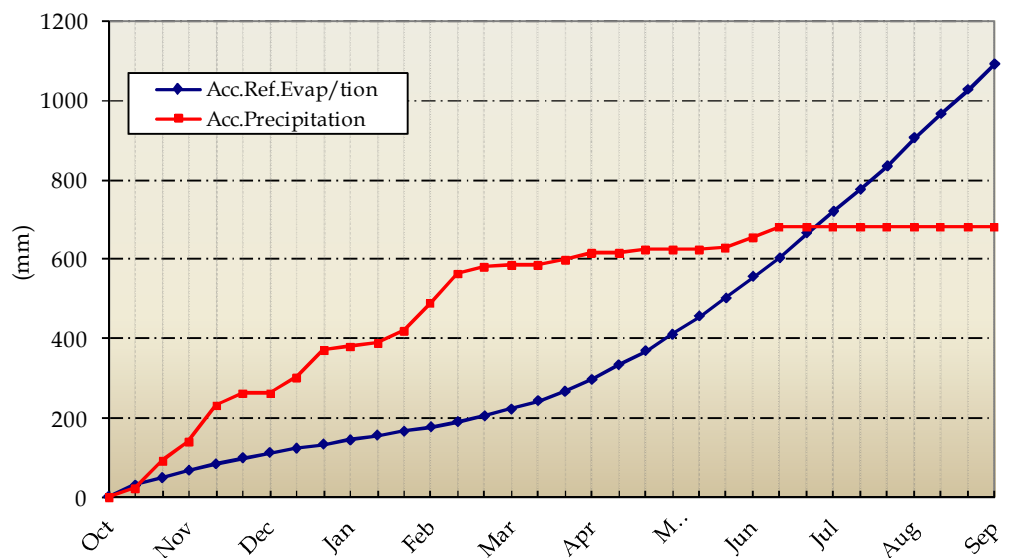


Kalamata

3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.0	33.6	33.0	30.2	31.8	33.8	35.8	32.6	33.4	34.0	32.0	33.2	30.9	30.5
	Min	20.6	23.0	19.2	17.2	20.0	21.2	22.0	19.8	17.6	19.8	19.4	20.0	18.7	17.7
Relative Humidity	Max	82	70	78	93	93	81	73	83	91	89	88	84	88	-
	Min	36	32	30	41	39	35	29	35	36	23	38	34	42	-
Soil Temperature at 10 cm	06 UTC	26.6	26.6	26.2	25.6	26.0	26.2	26.0	26.4	25.6	26.2	26.0	26.1	24.8	25.4
	12 UTC	29.0	29.0	28.4	28.2	28.0	28.4	28.4	28.2	27.8	28.4	28.0	28.3	26.4	29.0
Sunshine Duration		10.6	10.5	12.2	12.2	12.0	12.9	11.4	11.8	11.8	13.0	9.9	11.7	10.8	10.0
Precipitation														10.8	3.6
Evaporation		8.0	2.5	5.9	8.6	7.0	10.6	7.4	9.0	8.2	8.2	6.0	81.4	67.8	81.7
Growing Degrees	5	22.8	23.3	21.1	18.7	20.9	22.5	23.9	21.2	20.5	21.9	20.7	237.5	218.2	210.0
	10	17.8	18.3	16.1	13.7	15.9	17.5	18.9	16.2	15.5	16.9	15.7	182.5	163.2	155.0

3rd 10-day period (21-31/08/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	63.8	50.8	52.5
Precipitation - Reference Evapotranspiration	-63.8	-40.0	-48.9
Number of Rainy Days	0.0	1.0	0.9
Number of Dry Days	69.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

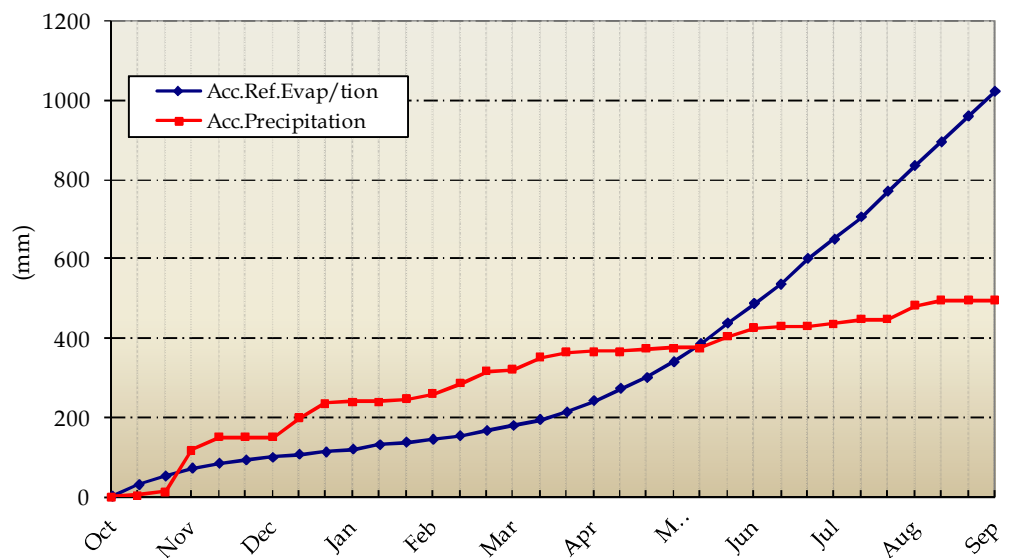


Larisa

3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.6	29.6	31.0	34.0	36.2	37.0	34.6	38.6	37.6	30.2	33.8	34.0	32.2	31.3
	Min	25.6	21.0	20.0	15.6	18.8	19.0	22.0	19.2	20.0	23.6	18.4	20.3	18.4	16.4
Relative Humidity	Max	75	89	76	77	81	75	74	76	76	81	90	79	77	-
	Min	40	38	26	27	26	23	36	26	21	51	26	31	30	-
Soil Temperature at 10 cm	06 UTC	29.6	28.4	27.0	21.4	27.4	27.2	28.2	28.0	28.2	28.2	27.8	27.4	26.9	25.5
	12 UTC	31.4	29.0	34.2	28.2	29.0	30.4	38.8	39.2	31.0	30.2	30.4	32.0	29.5	27.7
Sunshine Duration		8.4	7.2	10.1	12.3	12.2	11.8	11.7	11.9	12.0	7.5	10.7	10.5	9.9	9.7
Precipitation			0.4										0.4	0.1	8.3
Evaporation		5.9	8.4	8.1	5.8	7.8	15.6	11.1	7.9	10.2	12.3	7.5	100.6	98.4	85.2
Growing Degrees	5	23.6	20.3	20.5	19.8	22.5	23.0	23.3	23.9	23.8	21.9	21.1	243.7	223.0	207.5
	10	18.6	15.3	15.5	14.8	17.5	18.0	18.3	18.9	18.8	16.9	16.1	188.7	168.0	152.5

3rd 10-day period (21-31/08/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	62.2	59.3	54.4
Precipitation - Reference Evapotranspiration	-61.8	-59.2	-46.1
Number of Rainy Days	1.0	1.0	1.6
Number of Dry Days	15.0	12.0	-

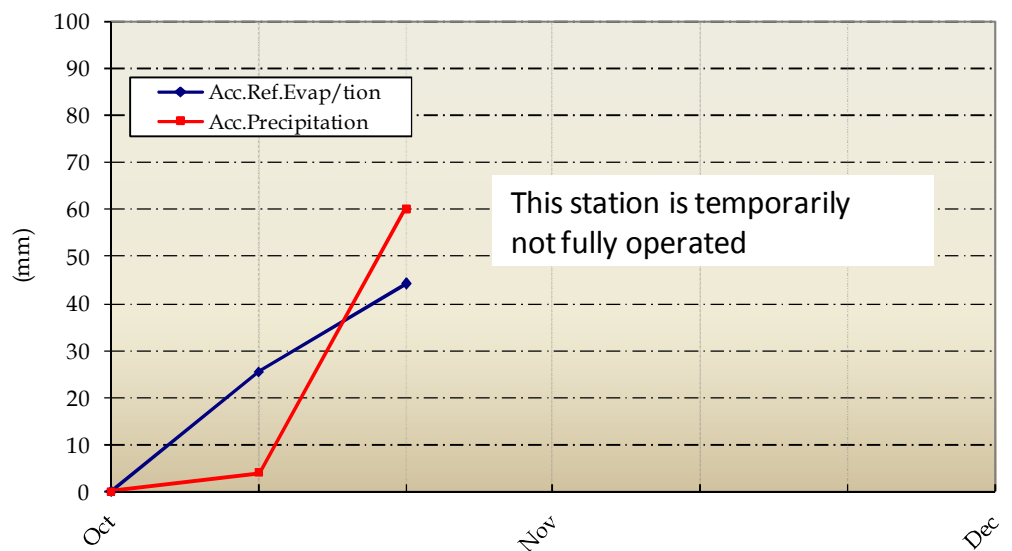
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	-	33.3	32.6
	Min	-	-	20.0	16.0	17.4	16.8	20.6	19.0	19.0	17.8	16.6	18.1	16.7	15.9
Relative Humidity	Max	-	55	42	60	69	54	50	75	83	60	74	62	65	-
	Min	-	24	26	22	18	21	30	32	29	27	20	25	31	-
Soil Temperature at 10 cm	06 UTC	-	-	29.0	28.4	29.0	28.4	30.2	29.0	29.0	30.0	29.8	29.2	26.2	24.7
	12 UTC	-	-	35.4	36.4	37.4	37.0	37.4	37.4	37.4	37.0	36.4	36.9	33.8	32.6
Sunshine Duration		-	-	11.3	11.3	11.2	10.9	10.0	10.8	10.9	10.4	10.8	10.8	10.4	9.6
Precipitation		-	-	-	-	-	-	-	-	-	-	-	-	0.3	6.4
Evaporation		-	-	5.6	5.7	9.6	7.4	8.6	6.4	7.6	5.4	5.6	-	81.9	63.2
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	-	220.0	211.1
	10	-	-	-	-	-	-	-	-	-	-	-	-	165.0	156.4

3rd 10-day period (21-31/08/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	50.6	47.4
Precipitation - Reference Evapotranspiration	-	-50.3	-41.0
Number of Rainy Days	-	1.0	1.0
Number of Dry Days	-	55.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

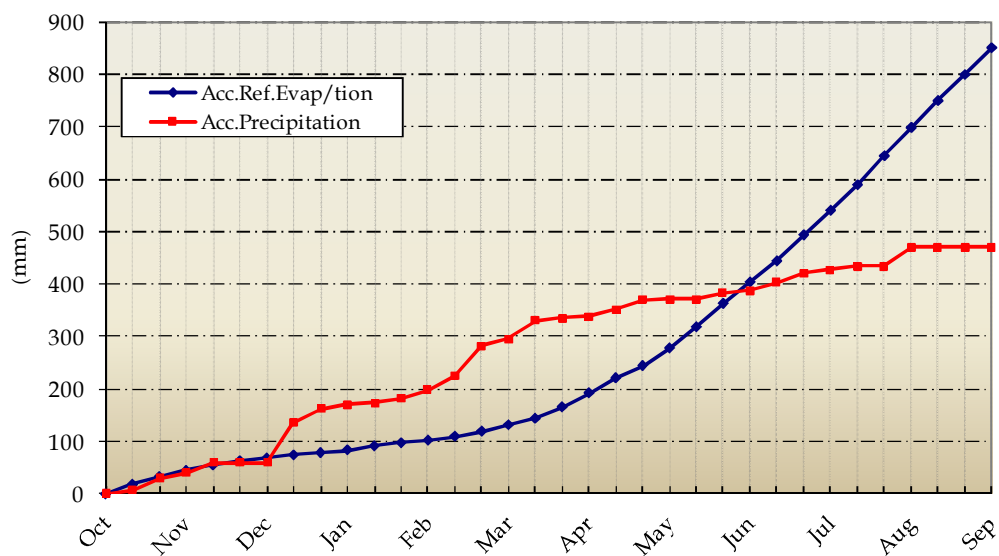


3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	35.4	35.4	33.2	35.2	37.6	39.0	36.0	38.0	37.4	31.6	35.0	35.8	32.7	30.6
	Min	21.8	23.0	17.6	17.2	17.8	20.6	22.2	20.6	20.8	21.0	20.8	20.3	19.0	16.8
Relative Humidity	Max	64	44	69	69	71	74	71	68	67	70	81	68	75	-
	Min	32	23	19	27	23	18	26	30	23	38	29	26	35	-
Soil Temperature at 10 cm	06 UTC	30.0	30.2	29.0	28.4	28.8	29.4	29.8	29.4	30.0	29.8	28.4	29.4	25.2	24.4
	12 UTC	31.4	30.8	30.8	29.8	30.0	31.2	31.2	31.6	31.6	29.6	30.0	30.7	28.3	27.5
Sunshine Duration		11.1	10.8	12.0	11.4	11.9	11.7	11.2	11.2	10.1	3.8	8.2	10.3	9.8	9.1
Precipitation												0.7	0.7	20.3	10.2
Evaporation		5.5	4.8	5.9	5.8	5.4	8.9	6.7	5.5	6.8	4.2	4.1	63.6	44.4	65.5
Growing Degrees	5	23.6	24.2	20.4	21.2	22.7	24.8	24.1	24.3	24.1	21.3	22.9	253.6	229.8	205.9
	10	18.6	19.2	15.4	16.2	17.7	19.8	19.1	19.3	19.1	16.3	17.9	198.6	174.8	150.9

Series

3rd 10-day period (21-31/08/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	50.8	43.7	43.4
Precipitation - Reference Evapotranspiration	-50.1	-23.4	-33.2
Number of Rainy Days	1.0	2.0	2.1
Number of Dry Days	35.0	5.0	-

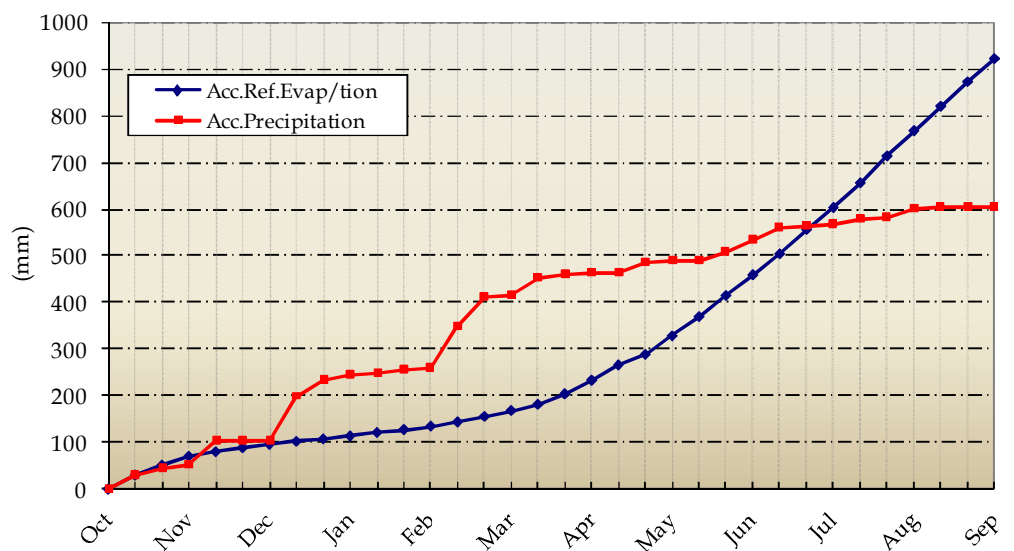
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	36.2	31.6	32.2	31.2	36.0	38.0	34.2	33.4	32.2	29.4	31.8	33.3	31.7	30.0
	Min	21.8	21.0	19.6	17.6	19.0	20.4	21.0	19.4	20.0	20.4	18.6	19.9	18.8	16.3
Relative Humidity	Max	87	99	99	94	98	93	100	94	93	98	93	95	95	-
	Min	36	51	44	54	34	22	40	52	36	49	45	42	42	-
Soil Temperature at 10 cm	06 UTC	28.4	28.0	27.4	26.4	26.8	27.2	27.6	27.2	27.2	27.0	26.0	27.2	26.7	24.6
	12 UTC	30.4	30.0	29.8	29.6	29.8	29.8	30.0	29.8	29.2	27.6	28.6	29.5	30.1	26.0
Sunshine Duration		9.9	8.7	10.3	11.9	11.3	11.1	11.4	11.2	11.0	3.0	8.6	9.9	9.2	9.1
Precipitation												1.2	1.2	6.2	9.5
Evaporation		5.3	3.7	6.1	5.7	3.2	6.4	3.5	5.4	7.2	3.1	5.2	54.8	42.2	55.8
Growing Degrees	5	24.0	21.3	20.9	19.4	22.5	24.2	22.6	21.4	21.1	19.9	20.2	237.5	222.7	199.7
	10	19.0	16.3	15.9	14.4	17.5	19.2	17.6	16.4	16.1	14.9	15.2	182.5	167.7	144.7

3rd 10-day period (21-31/08/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.8	51.7	44.2
Precipitation - Reference Evapotranspiration	-48.6	-45.5	-34.7
Number of Rainy Days	1.0	1.0	1.4
Number of Dry Days	25.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

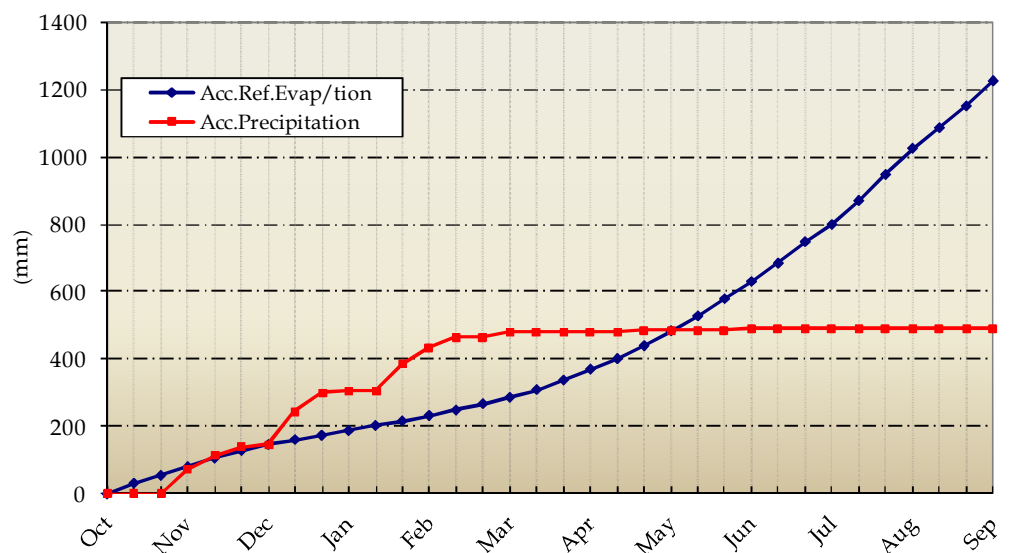


Tympaki

3rd 10-day period (21-31/08/2010)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	34.8	30.6	30.8	32.8	35.0	36.0	35.4	32.0	30.0	30.0	29.8	32.5	31.6	30.8
	Min	24.6	26.6	23.4	22.4	21.0	21.4	22.0	22.4	21.4	22.6	21.4	22.7	19.0	19.9
Relative Humidity	Max	70	63	83	86	75	60	72	92	100	100	99	82	66	-
	Min	36	43	43	39	27	18	34	38	63	70	65	43	28	-
Soil Temperature at 10 cm	06 UTC	32.6	31.6	30.6	30.0	29.4	29.4	30.4	30.0	31.0	31.4	30.6	30.6	27.7	29.7
	12 UTC	36.0	34.4	34.0	34.0	35.0	35.0	35.0	35.4	35.8	35.8	35.0	35.0	32.9	33.5
Sunshine Duration		11.4	11.6	11.1	11.4	11.5	11.4	11.4	11.1	10.1	10.5	9.6	11.0	11.2	11.2
Precipitation															
Evaporation		19.3	17.5	16.2	10.8	12.7	15.2	15.2	8.0	6.2	7.5	8.1	136.7	133.5	108.9
Growing Degrees	5	24.7	23.6	22.1	22.6	23.0	23.7	23.7	22.2	20.7	21.3	20.6	248.2	223.7	224.3
	10	19.7	18.6	17.1	17.6	18.0	18.7	18.7	17.2	15.7	16.3	15.6	193.2	168.7	169.3

3rd 10-day period (21-31/08/2010)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	74.2	68.4	61.2
Precipitation - Reference Evapotranspiration	-74.2	-68.4	-61.2
Number of Rainy Days	0.0	0.0	0.0
Number of Dry Days	87.0	119.0	-

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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Issue Editors :

Charalabopoulos Christos

Filiou Anna

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