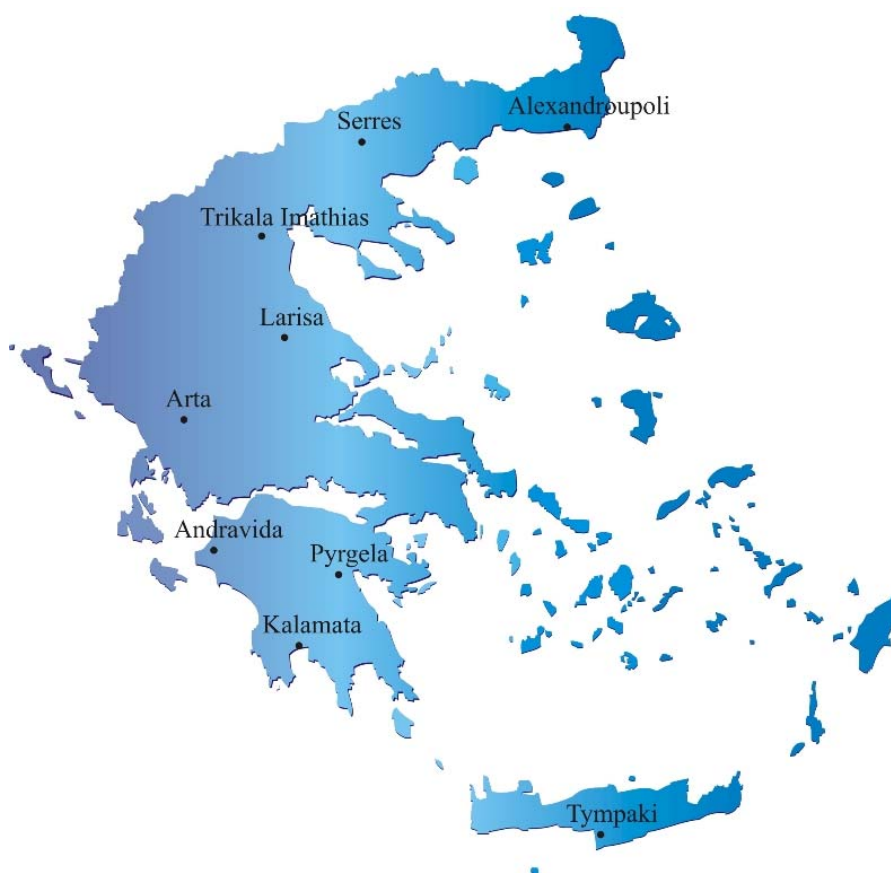




AGROMETEOROLOGICAL BULLETIN

September 2010
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



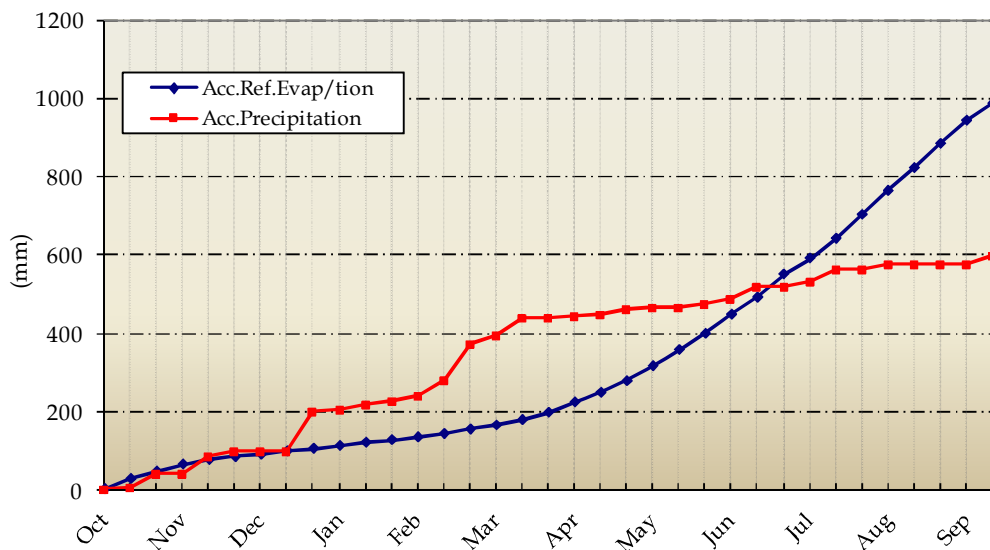
Hellenic National Meteorological Service
Division of Climatology-Applications
El. Venizelou Street 14, 16777
Helliniko, Athens

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

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.8	24.8	28.2	28.6	27.0	28.4	28.0	28.6	32.0	28.8	28.1	27.1	27.3
	Min	14.0	12.2	15.0	19.0	20.4	17.0	17.6	15.6	14.2	21.0	16.6	16.8	15.0
Relative Humidity	Max	98	80	77	73	80	76	74	83	79	73	79	87	-
	Min	44	43	28	37	50	37	45	32	28	50	39	43	-
Soil Temperature at 10 cm	06 UTC	25.0	21.6	21.4	23.4	24.4	23.2	23.0	23.6	23.4	24.6	23.4	23.4	21.2
	12 UTC	26.0	24.6	25.4	26.0	25.8	26.2	26.4	26.4	26.0	25.8	25.9	25.8	24.9
Sunshine Duration		9.7	12.3	11.2	9.4	5.6	11.1	11.1	11.4	10.6	8.7	10.1	7.3	8.8
Precipitation		21.0										21.0	32.8	6.6
Evaporation		5.0	5.5	7.3	5.5	5.7	7.0	7.0	6.5	8.9	7.8	66.2	58.0	73.7
Growing Degrees	5	15.4	13.5	16.6	18.8	18.7	17.7	17.8	17.1	18.1	19.9	173.6	169.6	161.8
	10	10.4	8.5	11.6	13.8	13.7	12.7	12.8	12.1	13.1	14.9	123.6	119.6	111.8

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.2	38.9	42.4
Precipitation - Reference Evapotranspiration	-22.2	-6.1	-35.8
Number of Rainy Days	1.0	2.0	1.1
Number of Dry Days	34.0	58.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

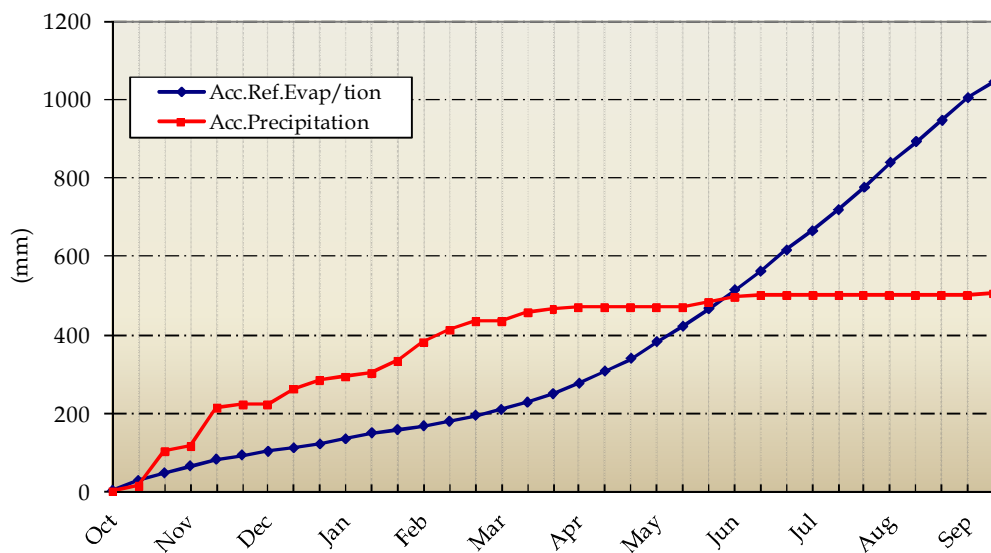


Andravida

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.2	26.8	28.4	29.0	29.2	28.0	28.6	29.4	29.2	28.2	28.3	29.7	28.8
	Min	21.4	17.6	14.6	20.0	19.4	19.4	17.8	18.0	16.6	18.4	18.3	19.7	17.3
Relative Humidity	Max	74	82	85	81	87	94	96	96	96	93	88	92	-
	Min	36	28	32	42	47	53	47	43	40	51	42	46	-
Soil Temperature at 10 cm	06 UTC	26.8	25.4	24.2	26.2	25.6	26.2	23.2	23.8	23.8	25.4	25.1	27.8	24.8
	12 UTC	33.0	32.8	32.6	20.4	33.2	30.0	30.4	30.6	30.8	31.8	30.6	33.8	28.9
Sunshine Duration		11.6	11.5	8.8	2.9	10.4	5.6	10.6	10.6	10.5	9.8	9.2	9.0	9.7
Precipitation					0.3		4.4					4.7		5.8
Evaporation		6.8	10.1	1.9	8.5	3.2	5.2	2.1	7.0	5.5	10.5	60.8	64.6	62.5
Growing Degrees	5	18.8	17.2	16.5	19.5	19.3	18.7	18.2	18.7	17.9	18.3	183.1	196.8	180.3
	10	13.8	12.2	11.5	14.5	14.3	13.7	13.2	13.7	12.9	13.3	133.1	146.8	130.3

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.6	38.4	40.4
Precipitation - Reference Evapotranspiration	-35.9	-38.4	-34.6
Number of Rainy Days	2.0	0.0	1.2
Number of Dry Days	72.0	78.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

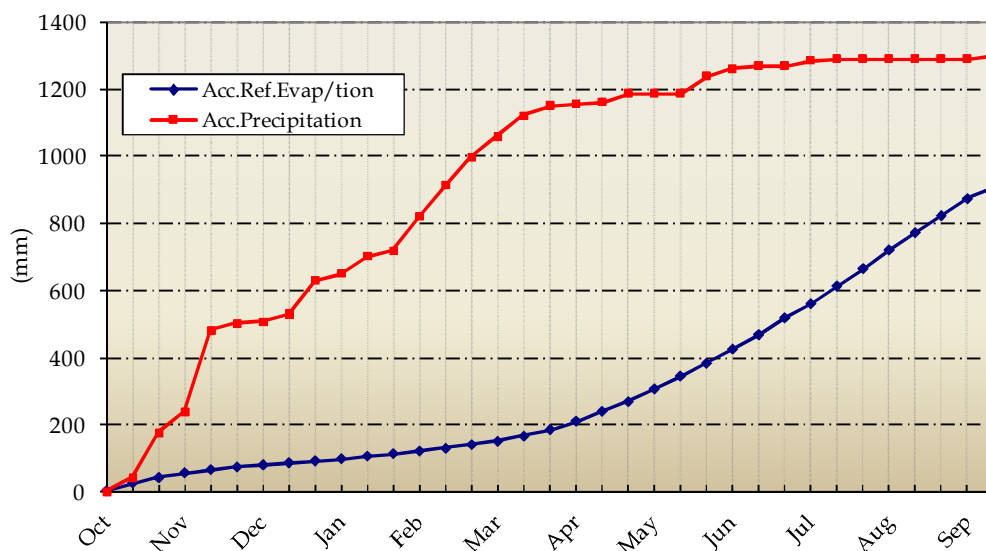


Arta

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	30.0	29.0	28.2	21.4	30.0	30.4	30.4	31.4	31.4	29.0	29.1	30.8	29.2
	Min	16.6	10.4	12.4	17.0	17.2	17.0	16.4	15.0	15.0	17.0	15.4	18.5	15.6
Relative Humidity	Max	60	73	96	96	95	88	95	95	95	95	89	92	-
	Min	20	28	31	89	33	38	36	21	27	35	36	39	-
Soil Temperature at 10 cm	06 UTC	27.2	26.0	25.6	25.6	24.4	24.8	24.4	24.2	24.2	25.2	25.2	26.2	22.9
	12 UTC	28.6	27.4	27.0	25.6	26.6	26.8	26.8	26.2	26.2	27.0	26.8	27.9	26.9
Sunshine Duration		11.8	11.9	3.6	0.0	10.1	7.9	10.4	10.4	9.7	5.8	8.2	9.2	9.0
Precipitation					5.5	4.6						10.1	0.2	14.4
Evaporation		7.3	7.2	10.3	-	6.1	3.6	5.2	6.0	5.1	3.8	-	51.7	-
Growing Degrees	5	18.3	14.7	15.3	14.2	18.6	18.7	18.4	18.2	18.2	18.0	172.6	196.4	174.0
	10	13.3	9.7	10.3	9.2	13.6	13.7	13.4	13.2	13.2	13.0	122.6	146.4	124.0

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	32.7	39.4	35.9
Precipitation - Reference Evapotranspiration	-22.6	-39.2	-21.5
Number of Rainy Days	2.0	1.0	1.3
Number of Dry Days	43.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

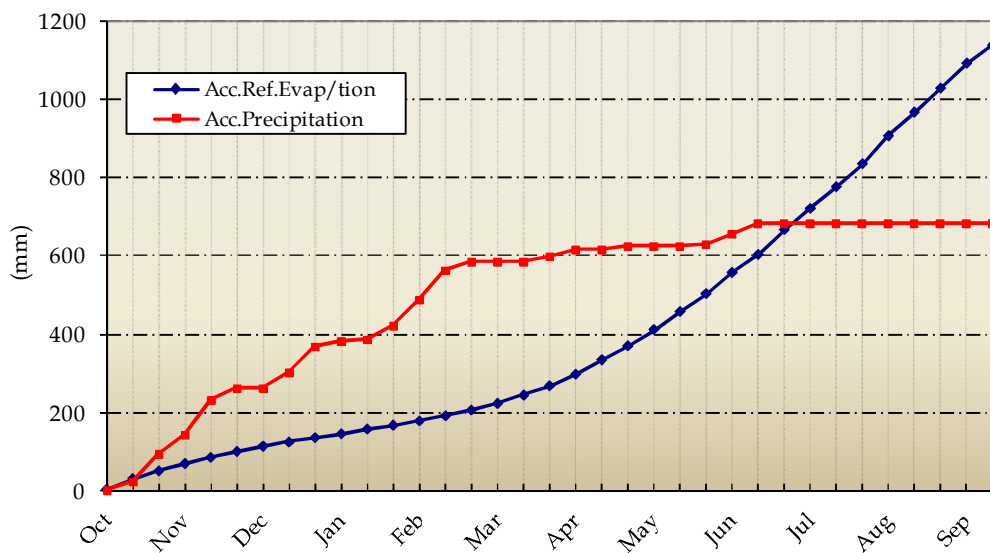


Kalamata

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	29.2	29.6	28.0	29.2	29.4	28.8	28.0	30.0	31.8	29.2	29.3	29.4	29.3
	Min	18.6	14.2	14.0	17.8	17.2	18.2	17.2	17.6	18.0	16.0	16.9	18.7	16.6
Relative Humidity	Max	75	80	82	88	91	92	96	94	90	93	88	96	-
	Min	28	25	38	40	48	47	55	45	31	42	40	55	-
Soil Temperature at 10 cm	06 UTC	25.4	24.0	24.2	24.4	24.4	24.6	24.4	24.4	24.4	24.4	24.5	24.8	23.8
	12 UTC	26.6	26.4	25.8	26.0	26.6	26.0	26.2	26.6	26.6	26.4	26.3	26.0	27.2
Sunshine Duration		12.9	11.8	11.5	6.4	11.3	5.5	10.5	11.2	11.2	11.3	10.4	8.4	9.3
Precipitation													38.7	7.7
Evaporation		9.0	6.0	7.8	5.2	7.0	2.0	5.6	7.9	5.5	0.4	56.4	46.7	67.1
Growing Degrees	5	18.9	16.9	16.0	18.5	18.3	18.5	17.6	18.8	19.9	17.6	181.0	190.1	179.8
	10	13.9	11.9	11.0	13.5	13.3	13.5	12.6	13.8	14.9	12.6	131.0	140.1	129.8

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	46.6	37.9	43.1
Precipitation - Reference Evapotranspiration	-46.6	0.8	-35.4
Number of Rainy Days	0.0	3.0	1.1
Number of Dry Days	79.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

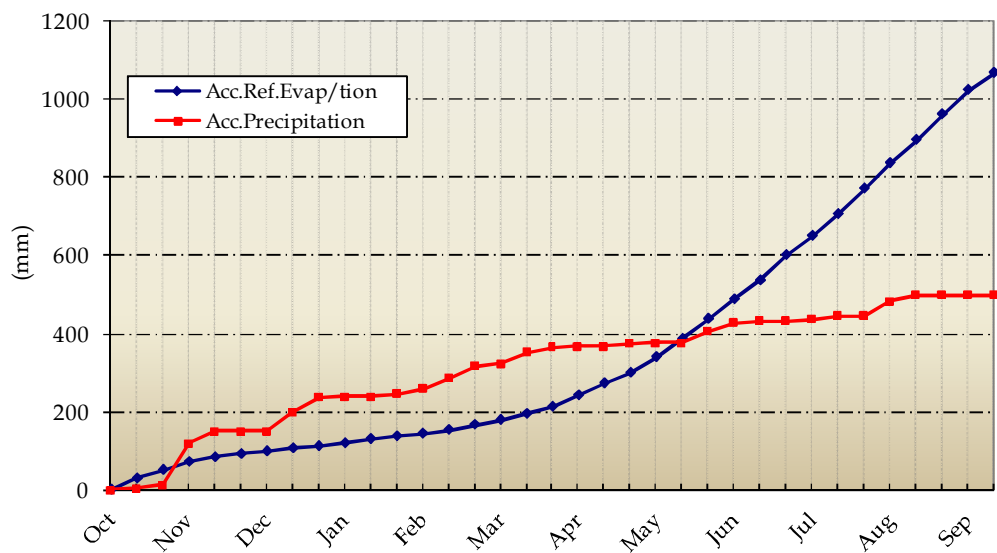


Larisa

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	30.0	28.0	23.4	25.8	28.6	31.0	32.8	33.0	28.8	29.0	29.8	29.4
	Min	17.2	15.6	13.0	20.6	19.0	19.6	14.6	16.4	16.0	18.0	17.0	17.1	14.9
Relative Humidity	Max	61	64	73	78	83	82	87	87	90	79	78	84	-
	Min	25	21	37	50	50	38	32	26	26	41	35	36	-
Soil Temperature at 10 cm	06 UTC	27.2	27.6	25.4	25.6	24.8	25.0	24.4	25.0	25.6	25.2	25.6	25.5	23.3
	12 UTC	29.8	28.2	28.0	26.0	25.6	26.8	27.2	28.0	28.0	28.0	27.6	27.9	25.4
Sunshine Duration		12.0	10.9	8.5	0.3	2.0	7.7	10.6	10.8	9.8	8.8	8.1	7.4	8.7
Precipitation					1.1	0.5						1.6	13.3	5.6
Evaporation		5.9	12.6	4.9	4.4	5.5	5.0	6.3	6.7	10.1	8.4	69.8	75.8	63.7
Growing Degrees	5	17.9	17.8	15.5	17.0	17.4	19.1	17.8	19.6	19.5	18.4	180.0	184.9	171.4
	10	12.9	12.8	10.5	12.0	12.4	14.1	12.8	14.6	14.5	13.4	130.0	134.9	121.4

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	43.8	42.8	42.5
Precipitation - Reference Evapotranspiration	-42.2	-29.5	-36.9
Number of Rainy Days	2.0	2.0	1.4
Number of Dry Days	12.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

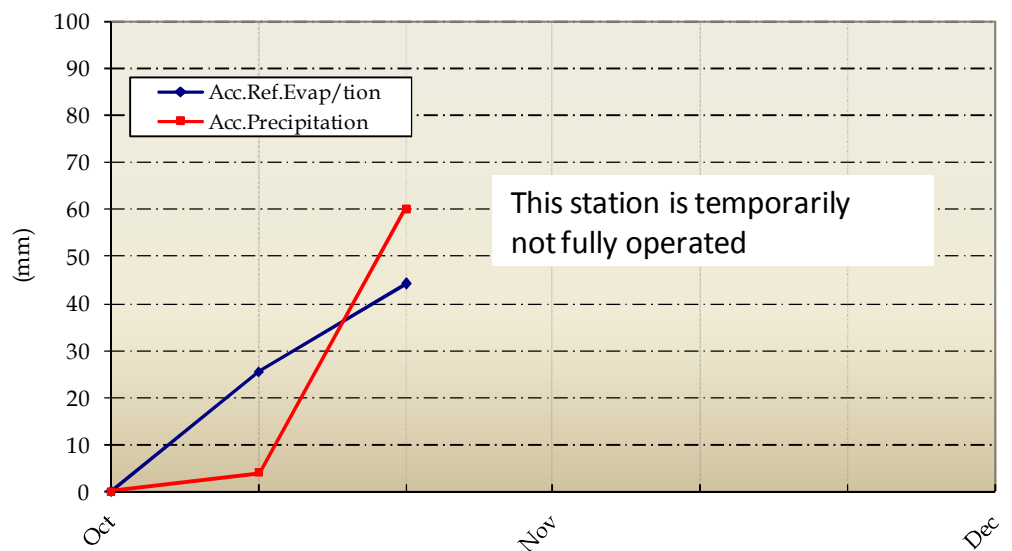


Pyrgela

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	31.1	30.9
	Min	18.0	17.0	16.0	17.0	-	20.0	16.8	17.0	16.2	-	17.2	17.1	14.7
Relative Humidity	Max	41	59	66	-	91	91	73	73	-	-	71	83	-
	Min	14	35	40	-	38	42	30	32	-	-	33	38	-
Soil Temperature at 10 cm	06 UTC	27.4	27.4	27.0	27.4	-	23.0	22.4	22.2	22.2	-	24.9	25.0	23.0
	12 UTC	35.2	35.0	34.4	34.6	-	26.2	28.0	28.6	28.4	-	31.3	31.6	30.4
Sunshine Duration		10.5	9.7	9.7	-	-	5.1	10.3	10.3	-	-	9.3	7.3	9.0
Precipitation							30.7					-	14.9	5.5
Evaporation		4.0	4.0	4.2	-	-	4.6	4.4	4.4	-	-	-	55.0	51.4
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	190.7	177.9
	10	-	-	-	-	-	-	-	-	-	-	-	140.7	127.9

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	35.8	39.4
Precipitation - Reference Evapotranspiration	-	-20.9	-33.9
Number of Rainy Days	-	2.0	1.3
Number of Dry Days	-	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

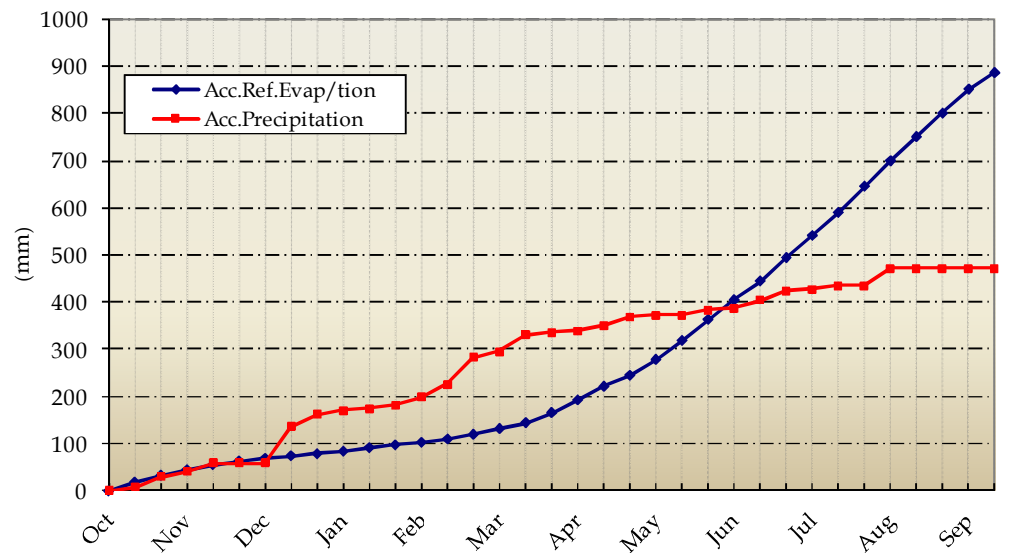


Series

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.4	28.4	30.0	24.2	27.0	28.6	31.8	33.0	33.2	32.4	29.6	29.4	29.0
	Min	18.0	13.2	11.4	19.0	15.0	13.8	15.2	16.2	16.4	17.0	15.5	18.0	15.4
Relative Humidity	Max	40	46	48	66	67	78	81	73	75	58	63	85	-
	Min	21	18	20	45	45	33	31	30	30	26	30	45	-
Soil Temperature at 10 cm	06 UTC	27.4	26.2	25.8	26.6	25.0	25.2	25.4	25.4	26.2	26.2	25.9	23.5	22.0
	12 UTC	28.4	28.6	28.6	28.0	27.0	26.2	26.0	26.8	27.0	27.2	27.4	24.6	25.6
Sunshine Duration		10.9	10.1	8.5	0.0	7.8	7.6	9.1	9.7	9.6	9.6	8.3	5.7	8.4
Precipitation								0.3				0.3	39.0	5.9
Evaporation		8.0	8.3	3.4	3.3	3.0	3.5	4.5	4.3	5.8	5.9	50.0	32.6	55.4
Growing Degrees	5	17.7	15.8	15.7	16.6	16.0	16.2	18.5	19.6	19.8	19.7	175.6	186.9	171.4
	10	12.7	10.8	10.7	11.6	11.0	11.2	13.5	14.6	14.8	14.7	125.6	136.9	121.6

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	35.1	28.9	33.8
Precipitation - Reference Evapotranspiration	-34.8	10.1	-27.9
Number of Rainy Days	1.0	4.0	1.3
Number of Dry Days	6.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

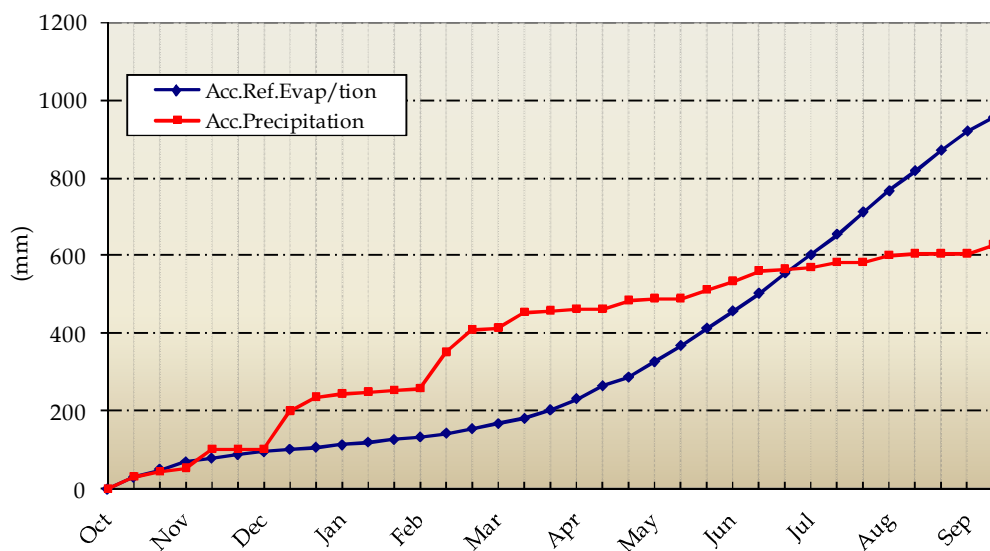


Trikala Imathias

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	27.0	29.0	28.2	22.0	27.8	28.6	28.8	29.2	32.0	30.0	28.3	29.2	28.2
	Min	12.4	10.4	11.2	18.8	16.0	15.0	15.6	17.0	16.6	17.0	15.0	17.4	14.8
Relative Humidity	Max	83	95	90	100	96	100	96	100	94	97	95	90	-
	Min	25	25	40	88	36	45	56	54	36	39	44	43	-
Soil Temperature at 10 cm	06 UTC	24.2	23.0	23.0	24.4	22.4	22.0	21.6	22.8	22.8	23.2	22.9	24.8	22.7
	12 UTC	26.2	25.6	25.8	23.0	24.0	24.0	24.6	25.2	25.4	26.0	25.0	27.7	23.9
Sunshine Duration		10.5	12.0	7.9	0.0	6.9	10.4	10.3	9.8	8.8	9.2	8.6	6.3	8.2
Precipitation					21.7							21.7	4.7	5.1
Evaporation		3.2	4.0	2.9	0.4	4.6	2.7	3.7	3.2	3.2	3.4	31.3	34.9	45.0
Growing Degrees	5	14.7	14.7	14.7	15.4	16.9	16.8	17.2	18.1	19.3	18.5	166.3	183.0	164.8
	10	9.7	9.7	9.7	10.4	11.9	11.8	12.2	13.1	14.3	13.5	116.3	133.0	114.8

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	34.6	37.6	34.4
Precipitation - Reference Evapotranspiration	-12.9	-32.9	-29.3
Number of Rainy Days	1.0	2.0	1.4
Number of Dry Days	3.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

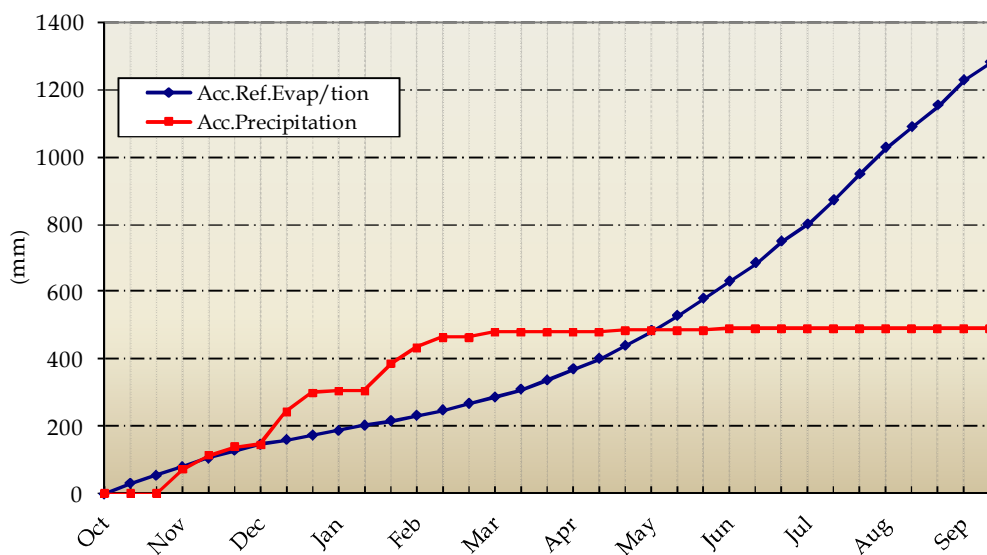


Tympaki

1st 10-day period (1-10/09/2010)		1	2	3	4	5	6	7	8	9	10	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	31.6	29.2	29.0	29.8	30.0	31.4	31.6	30.2	30.2	29.2	30.2	29.9	29.6
	Min	20.6	18.6	18.8	19.6	19.8	19.6	20.0	18.4	19.4	18.4	19.3	20.2	19.0
Relative Humidity	Max	93	96	89	90	85	87	91	72	69	84	86	81	-
	Min	22	44	45	40	37	39	37	34	31	30	36	33	-
Soil Temperature at 10 cm	06 UTC	29.6	28.4	28.4	28.2	28.6	28.6	28.6	27.8	27.6	27.4	28.3	27.6	28.3
	12 UTC	34.2	33.8	33.8	33.0	33.6	34.0	33.4	33.2	33.2	31.0	33.3	32.6	32.2
Sunshine Duration		11.0	10.1	9.9	9.2	8.7	9.3	10.6	10.6	11.6	11.3	10.2	9.5	10.4
Precipitation													0.0	1.5
Evaporation		9.9	8.0	10.1	7.8	8.5	8.3	10.0	12.9	6.8	9.8	92.1	94.8	88.0
Growing Degrees	5	21.1	18.9	18.9	19.7	19.9	20.5	20.8	19.3	19.8	18.8	197.7	200.9	193.1
	10	16.1	13.9	13.9	14.7	14.9	15.5	15.8	14.3	14.8	13.8	147.7	150.9	143.1

1st 10-day period (1-10/09/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	53.2	47.5	51.1
Precipitation - Reference Evapotranspiration	-53.2	-47.5	-49.6
Number of Rainy Days	0.0	0.0	0.1
Number of Dry Days	97.0	129.0	-

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



ΕΘΝΙΚΗ
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)