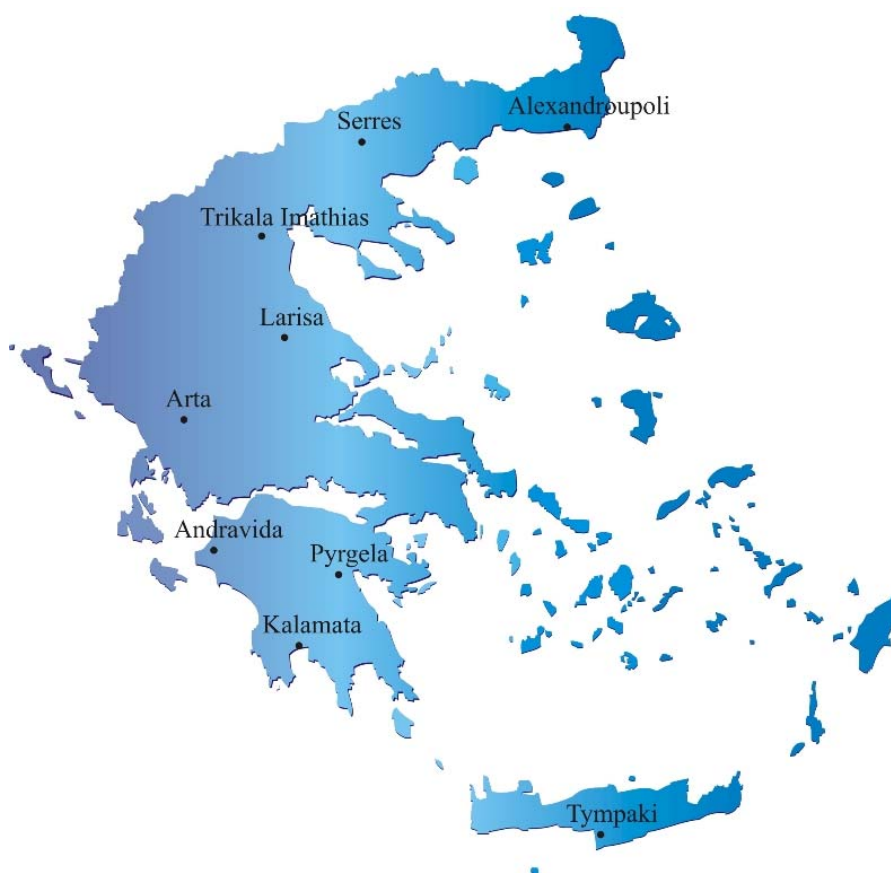




AGROMETEOROLOGICAL BULLETIN

March 2010
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



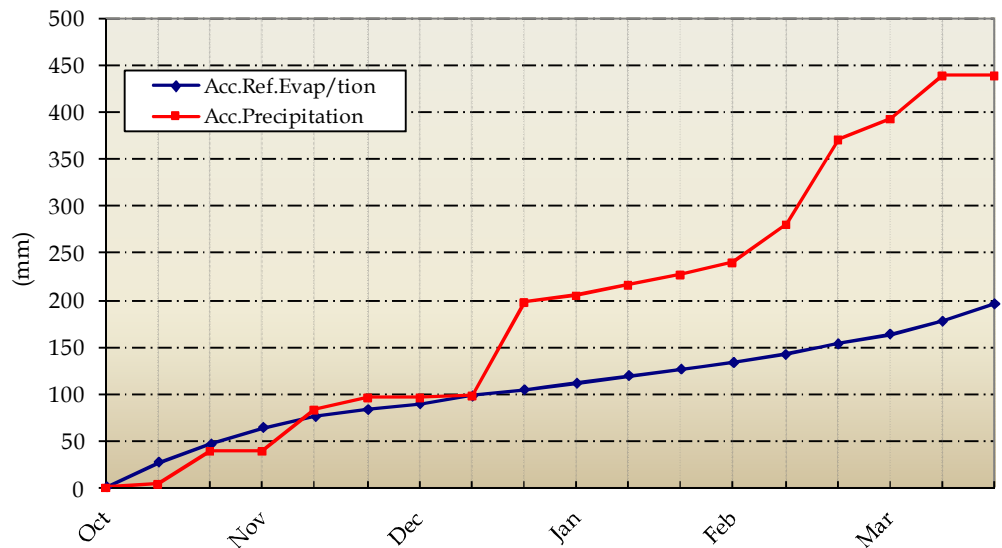
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Helliniko, Athens

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

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	8.4	14.4	12.6	11.8	11.4	10.6	12.0	9.0	14.0	13.8	11.8	10.4	11.6
	Min	4.4	5.0	2.4	1.8	1.6	1.6	3.4	-2.6	1.0	0.6	1.9	1.7	2.9
Relative Humidity	Max	88	97	89	82	91	93	93	84	89	92	90	93	-
	Min	76	67	43	34	50	29	41	30	40	64	47	56	-
Soil Temperature at 10 cm	06 UTC	4.5	5.4	6.0	6.4	6.2	6.6	6.6	5.0	5.6	6.6	5.9	6.4	6.6
	12 UTC	5.6	7.6	8.5	9.0	8.8	8.6	9.0	7.4	8.6	9.2	8.2	9.1	8.9
Sunshine Duration		1.5	7.2	9.7	9.6	7.4	11.1	4.9	7.5	10.1	10.4	7.9	3.9	4.9
Precipitation		0.0	0.4									0.4	11.5	14.4
Evaporation		1.2	0.7	4.5	2.0	3.2	3.1	0.0	0.0	2.6	-	-	10.8	21.8
Growing Degrees	5	1.4	4.7	2.5	1.8	1.5	1.1	2.7	0.0	2.5	2.2	20.4	11.6	27.0
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4

2nd 10-day period (11-20/03/2010)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	18.7	13.0	18.1
Precipitation - Reference Evapotranspiration	-18.3	-1.5	-3.7
Number of Rainy Days	1.0	4.0	2.2
Number of Dry Days	2.0	1.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

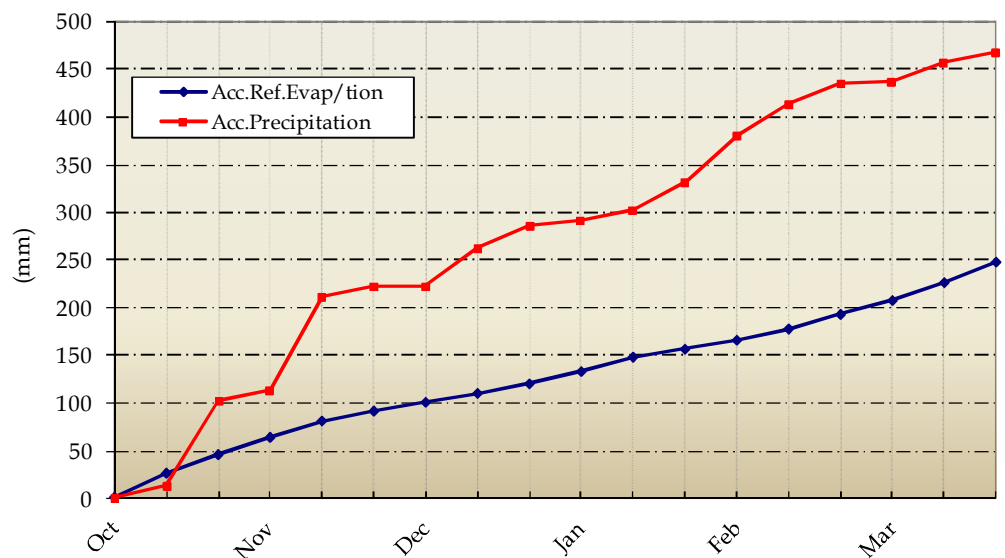


Andravida

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.0	15.8	13.6	13.0	13.4	15.2	15.2	15.8	16.4	17.0	15.0	14.7	15.7
	Min	7.8	7.0	8.8	9.0	7.2	4.0	5.8	3.0	4.6	5.2	6.2	4.2	6.3
Relative Humidity	Max	100	94	95	97	94	97	97	93	91	94	95	91	-
	Min	52	50	54	72	45	41	38	37	46	58	49	50	-
Soil Temperature at 10 cm	06 UTC	12.2	12.0	13.0	12.8	11.6	11.2	11.8	11.4	11.8	12.2	12.0	10.2	10.6
	12 UTC	14.8	14.6	14.4	14.4	13.8	15.8	16.0	15.6	16.4	16.2	15.2	13.9	12.8
Sunshine Duration		8.3	6.7	0.0	3.5	10.3	9.8	9.1	9.6	9.6	10.6	7.8	8.3	6.4
Precipitation		4.8			1.9			5.1				11.8		25.8
Evaporation		1.8	0.6	4.1	0.2	0.6	2.2	4.9	2.4	3.9	3.3	24.0	-	26.9
Growing Degrees	5	6.4	6.4	6.2	6.0	5.3	4.6	5.5	4.4	5.5	6.1	56.4	-	60.4
	10	1.4	1.4	1.2	1.0	0.3	0.0	0.5	0.0	0.5	1.1	7.4	-	15.6

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.6	22.3	21.0
Precipitation - Reference Evapotranspiration	-9.8	-22.3	4.8
Number of Rainy Days	3.0	0.0	3.7
Number of Dry Days	0.0	10.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

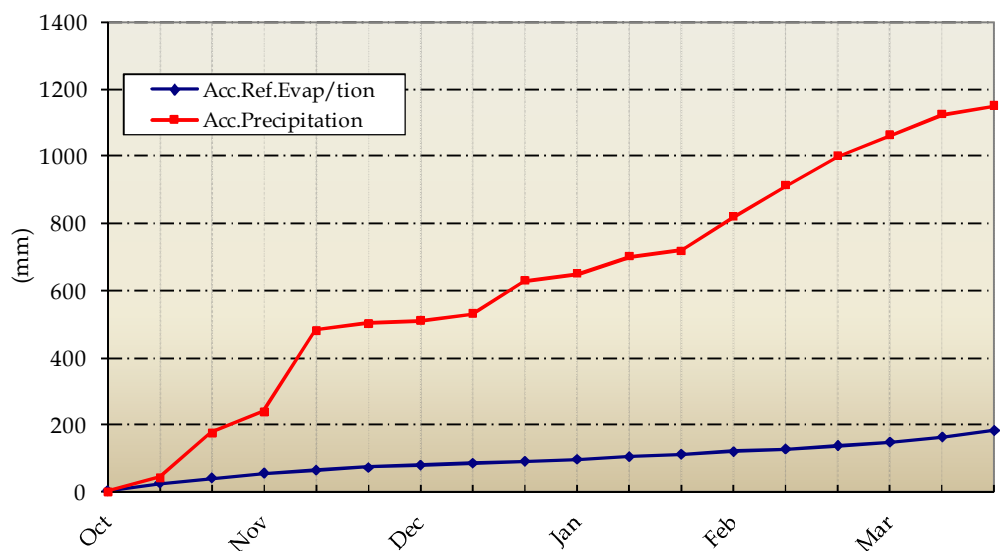


Arta

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	16.2	14.6	12.6	16.2	17.0	18.0	18.2	19.2	19.0	16.8	16.5	16.4
	Min	-	6.6	5.0	7.4	1.4	1.2	1.0	1.0	2.4	2.4	3.2	2.5	5.3
Relative Humidity	Max	96	94	95	98	96	89	93	84	100	85	93	98	-
	Min	45	42	28	40	28	28	30	40	24	35	34	23	-
Soil Temperature at 10 cm	06 UTC	-	10.4	10.2	10.6	9.2	9.0	9.0	8.8	9.0	9.4	9.5	9.2	9.6
	12 UTC	-	11.4	11.2	11.0	10.4	10.2	10.8	10.6	11.0	11.2	10.9	10.5	12.1
Sunshine Duration		5.4	8.0	0.6	0.0	10.1	10.2	9.3	9.8	10.2	10.2	7.4	6.5	5.8
Precipitation		20.4	3.6		3.2							27.2	33.4	25.8
Evaporation		2.0	2.0	1.0	5.7	2.7	3.1	2.9	3.2	3.0	3.2	28.8	-	-
Growing Degrees	5	-	6.4	4.8	5.0	3.8	4.1	4.5	4.6	5.8	5.7	-	-	58.5
	10	-	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.7	-	-	14.9

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.7	19.2	18.9
Precipitation - Reference Evapotranspiration	7.5	14.2	6.9
Number of Rainy Days	3.0	4.0	3.4
Number of Dry Days	0.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

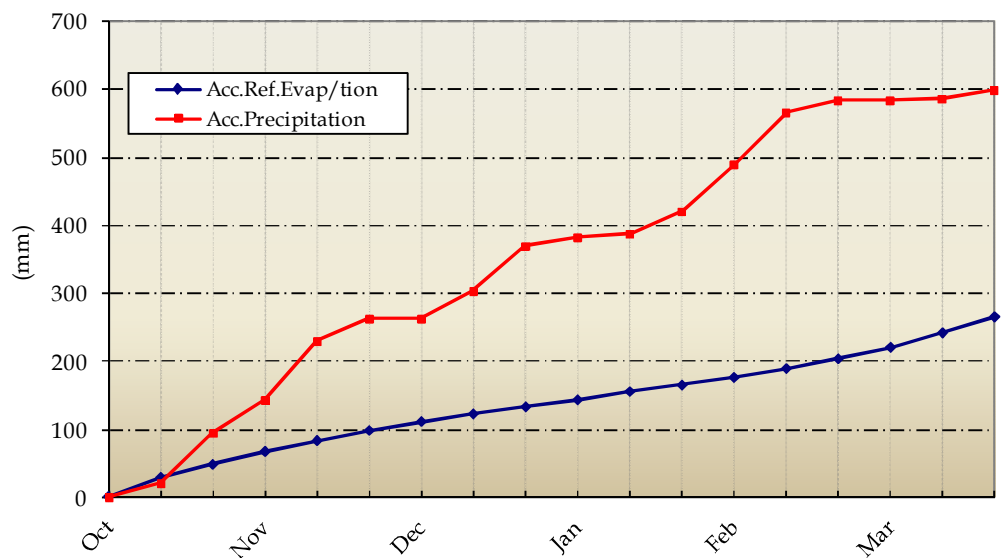


Kalamata

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.6	16.8	15.4	14.0	15.2	15.6	17.6	18.0	18.0	17.6	16.6	15.9	16.3
	Min	10.6	5.2	7.4	9.6	4.4	3.2	4.0	3.2	5.4	3.0	5.6	4.3	5.8
Relative Humidity	Max	97	97	97	97	93	93	91	90	94	97	95	94	-
	Min	46	39	47	85	44	46	33	31	31	45	45	41	-
Soil Temperature at 10 cm	06 UTC	13.0	12.0	12.2	12.4	12.6	11.0	11.4	11.4	11.4	11.6	11.9	11.0	10.9
	12 UTC	13.4	13.4	12.8	13.0	12.8	12.6	12.6	12.8	13.2	13.2	13.0	12.2	13.0
Sunshine Duration		7.8	8.3	2.8	0.0	8.4	7.6	7.0	10.4	10.5	10.4	7.3	8.8	6.1
Precipitation		1.9		3.1	6.9			0.2				12.1	13.3	22.7
Evaporation		4.2	4.6	0.5	0.6	2.8	2.9	3.9	4.2	2.7	4.8	31.2	42.0	33.5
Growing Degrees	5	9.1	6.0	6.4	6.8	4.8	4.4	5.8	5.6	6.7	5.3	60.9	51.3	60.5
	10	4.1	1.0	1.4	1.8	0.0	0.0	0.8	0.6	1.7	0.3	11.7	5.5	15.1

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.7	23.7	21.7
Precipitation - Reference Evapotranspiration	-11.6	-10.4	1.0
Number of Rainy Days	4.0	1.0	3.8
Number of Dry Days	0.0	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

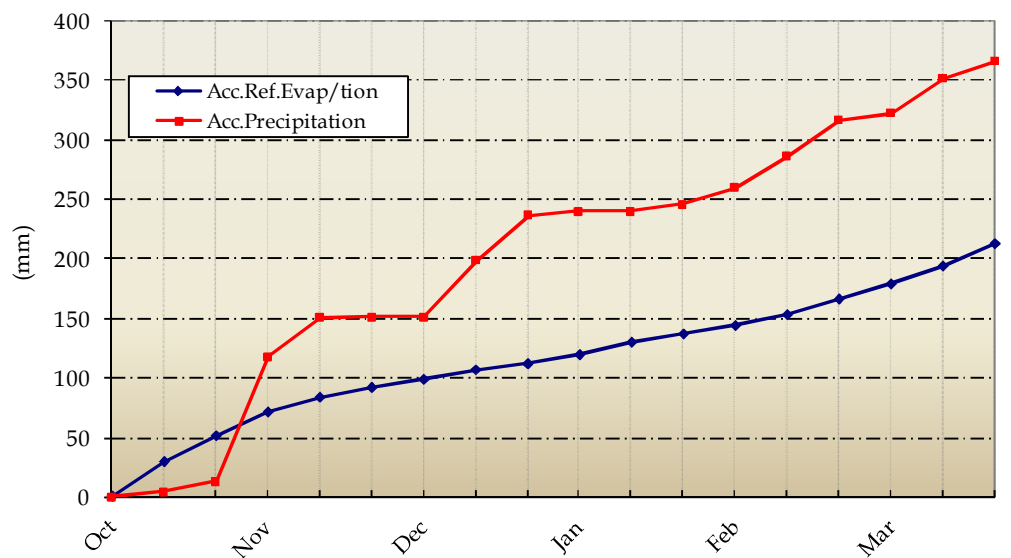


Larisa

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	10.2	15.0	13.0	9.4	13.0	15.2	15.4	15.4	17.8	19.2	14.4	13.2	14.0
	Min	4.8	2.4	1.2	5.2	4.0	-1.4	-1.0	0.8	0.8	1.4	1.8	2.1	2.8
Relative Humidity	Max	97	97	89	94	93	92	93	89	94	97	94	93	-
	Min	74	41	40	53	38	30	28	37	40	43	42	47	-
Soil Temperature at 10 cm	06 UTC	8.2	8.2	8.4	9.2	8.0	8.4	8.6	8.2	8.2	9.4	8.5	8.4	8.4
	12 UTC	9.0	9.6	9.4	9.2	10.0	9.4	9.6	9.6	10.2	10.8	9.7	9.3	9.5
Sunshine Duration		0.3	8.3	2.5	0.0	7.4	8.8	6.5	9.2	9.0	9.3	6.1	4.6	5.1
Precipitation		12.5			1.5							14.0	22.3	13.9
Evaporation		3.3	3.0	1.9	1.5	1.1	5.1	2.4	2.6	0.6	7.4	28.9	15.5	20.7
Growing Degrees	5	2.5	3.7	2.1	2.3	3.5	1.9	2.2	3.1	4.3	5.3	30.9	26.4	36.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.1	5.5

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.8	17.7	18.5
Precipitation - Reference Evapotranspiration	-4.8	4.6	-4.6
Number of Rainy Days	2.0	3.0	3.1
Number of Dry Days	0.0	0.0	-

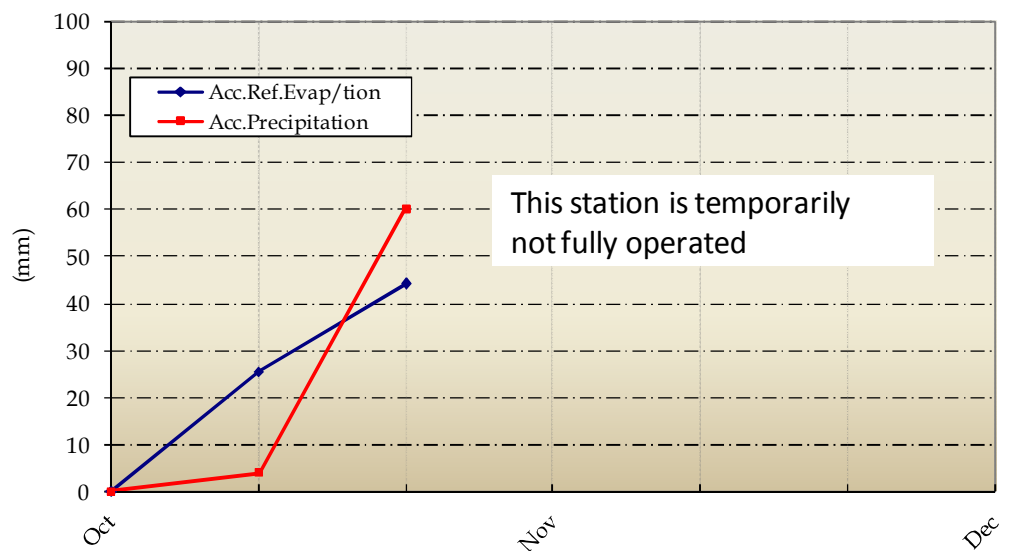
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	-	-	-	-	-	-	-	-	-	-	-	16.3	16.1
	Min	9.8	3.4	6.0	9.0	8.0	2.8	1.8	0.2	0.2	1.0	4.2	2.4	3.8
Relative Humidity	Max	92	91	76	92	75	90	90	90	-	90	87	92	-
	Min	56	31	41	92	46	26	29	30	30	34	42	46	-
Soil Temperature at 10 cm	06 UTC	11.2	11.4	10.8	10.8	9.6	9.8	9.2	8.4	8.8	9.4	9.9	8.4	8.5
	12 UTC	16.2	15.0	13.2	11.2	12.4	14.4	-	17.4	15.0	15.2	14.4	13.4	13.8
Sunshine Duration		8.7	8.6	0.0	0.0	3.6	8.0	8.9	10.1	10.0	9.9	6.8	7.4	5.3
Precipitation		1.3		0.1	11.1							12.5	7.8	19.4
Evaporation		2.4	3.0	0.0	0.0	1.8	2.4	3.4	3.6	2.0	3.0	21.6	23.6	22.9
Growing Degrees	5	-	-	-	-	-	-	-	-	-	-	-	43.1	49.6
	10	-	-	-	-	-	-	-	-	-	-	-	2.6	9.8

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	19.5	19.0
Precipitation - Reference Evapotranspiration	-	-11.7	0.4
Number of Rainy Days	-	4.0	3.5
Number of Dry Days	-	3.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

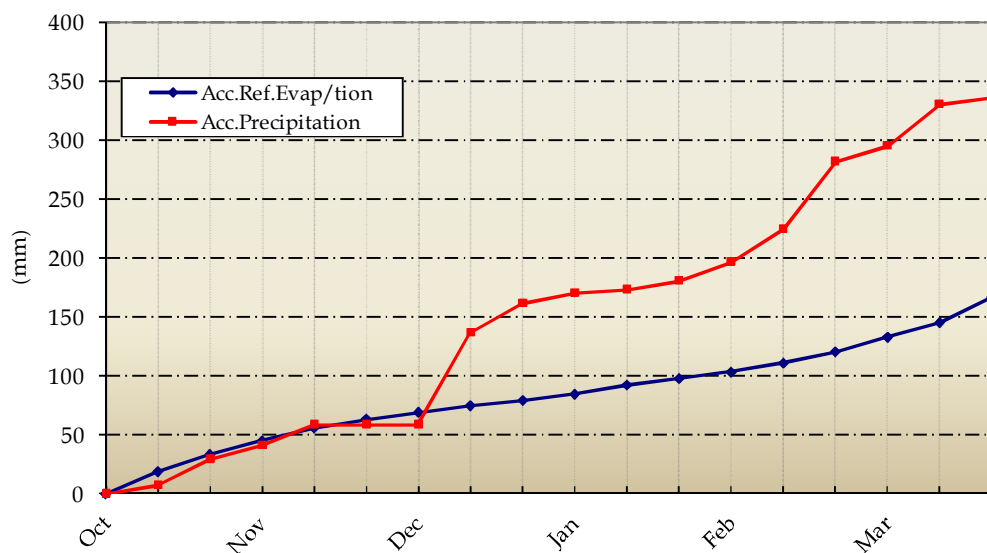


Series

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	12.4	16.0	15.4	13.2	14.2	16.4	15.4	15.4	16.8	18.2	15.3	13.5	14.0
	Min	0.4	3.6	1.0	3.4	0.0	6.8	0.4	-0.4	0.2	5.0	2.0	2.7	3.4
Relative Humidity	Max	93	93	84	62	81	62	76	81	92	94	82	68	-
	Min	50	45	30	27	28	22	23	35	44	44	35	35	-
Soil Temperature at 10 cm	06 UTC	6.6	7.0	5.6	7.4	7.2	7.2	7.2	6.8	7.2	8.4	7.1	8.6	7.7
	12 UTC	6.6	9.2	8.6	8.8	8.6	8.8	8.6	8.6	9.0	10.0	8.7	9.2	9.6
Sunshine Duration		2.6	6.2	9.3	8.4	10.1	10.3	9.6	8.6	9.8	9.3	8.4	6.3	4.7
Precipitation		6.2	0.0									6.2	11.1	10.9
Evaporation		1.2	1.8	2.6	1.6	4.1	4.3	4.4	3.0	1.9	1.9	26.8	8.5	16.6
Growing Degrees	5	1.4	4.8	3.2	3.3	2.1	6.6	2.9	2.5	3.5	6.6	36.9	32.5	38.5
	10	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	1.6	3.2	0.0	7.3

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.5	22.9	16.0
Precipitation - Reference Evapotranspiration	-15.3	-11.8	-5.1
Number of Rainy Days	1.0	1.0	2.7
Number of Dry Days	0.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

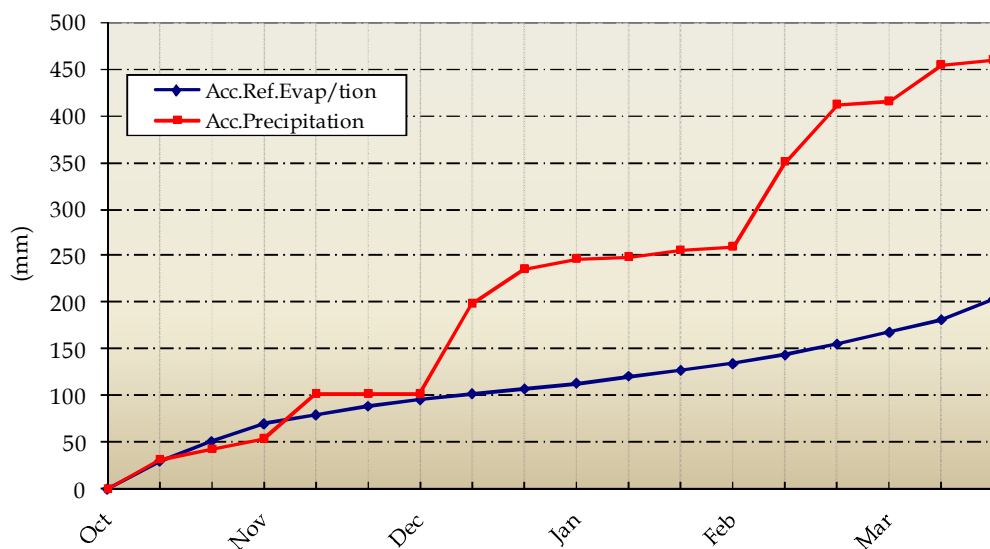


Trikala Imathias

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.2	17.8	15.8	13.0	15.0	18.0	15.8	15.2	17.6	18.6	15.8	14.0	13.8
	Min	1.2	3.6	2.8	6.2	1.0	0.8	2.0	0.8	1.0	7.0	2.6	2.2	3.6
Relative Humidity	Max	99	97	66	42	75	80	87	90	95	98	83	81	-
	Min	54	20	23	25	25	25	20	30	34	46	30	30	-
Soil Temperature at 10 cm	06 UTC	6.0	6.2	7.6	8.4	7.0	7.4	8.0	7.4	8.0	9.6	7.6	8.7	8.6
	12 UTC	7.4	10.4	9.4	9.0	9.2	10.0	10.2	9.6	10.0	9.8	9.5	10.8	9.1
Sunshine Duration		1.9	8.8	11.4	6.8	10.9	10.1	9.6	7.5	10.4	8.4	8.6	6.0	4.9
Precipitation		5.7										5.7	8.0	19.5
Evaporation		0.4	2.4	2.4	4.2	2.2	2.2	2.1	2.7	1.4	1.6	21.6	24.7	17.7
Growing Degrees	5	1.2	5.7	4.3	4.6	3.0	4.4	3.9	3.0	4.3	7.8	42.2	33.6	39.3
	10	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	3.5	2.0	7.6

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	22.0	23.6	17.3
Precipitation - Reference Evapotranspiration	-16.3	-15.6	2.2
Number of Rainy Days	1.0	2.0	2.8
Number of Dry Days	0.0	5.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

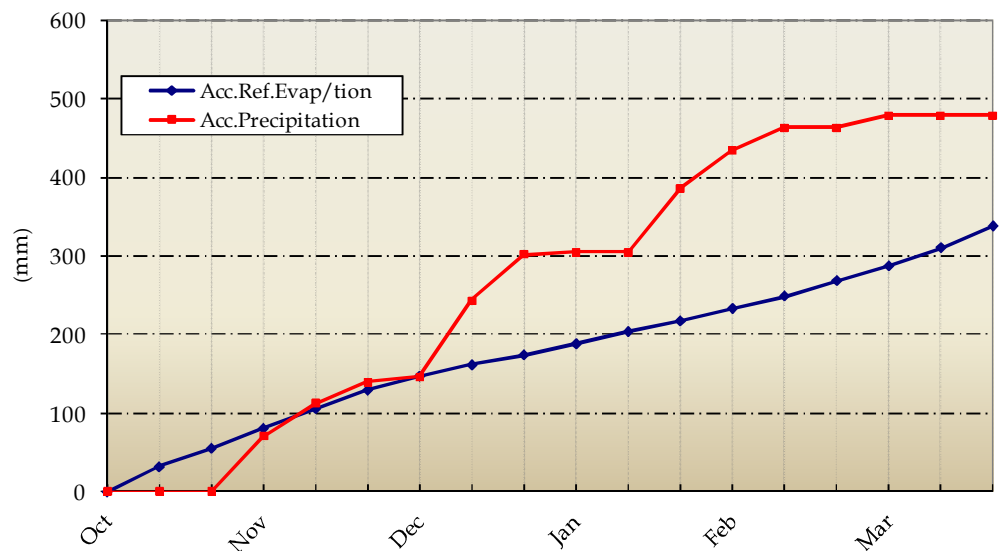


Tympaki

2nd 10-day period (11-20/03/2010)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.6	18.0	17.8	20.8	16.8	17.6	18.0	15.4	19.0	17.8	18.2	16.6	16.9
	Min	15.0	12.2	9.2	9.4	11.6	7.4	5.6	8.4	5.4	5.6	9.0	6.9	7.8
Relative Humidity	Max	97	99	92	97	96	96	89	84	90	99	94	91	-
	Min	26	26	42	44	42	24	33	42	25	36	34	42	-
Soil Temperature at 10 cm	06 UTC	17.4	15.8	15.6	15.6	16.2	14.0	13.6	14.0	13.0	13.4	14.9	12.1	13.4
	12 UTC	20.6	19.6	20.0	19.6	19.0	19.2	19.2	18.6	18.8	19.6	19.4	16.6	16.0
Sunshine Duration		0.0	7.1	0.9	2.7	5.9	8.8	7.2	9.1	9.9	9.2	6.1	7.5	6.6
Precipitation					0.0	0.1						0.1	13.2	17.4
Evaporation		3.3	6.1	3.5	2.4	5.4	5.1	5.7	5.3	5.7	4.8	47.3	37.2	40.0
Growing Degrees	5	12.8	10.1	8.5	10.1	9.2	7.5	6.8	6.9	7.2	6.7	85.8	67.7	73.3
	10	7.8	5.1	3.5	5.1	4.2	2.5	1.8	1.9	2.2	1.7	35.8	17.7	25.5

2nd 10-day period (11-20/03/2010)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.5	25.4	24.5
Precipitation - Reference Evapotranspiration	-27.4	-12.2	-7.1
Number of Rainy Days	1.0	2.0	2.8
Number of Dry Days	14.0	3.0	-

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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