

# AGROMETEOROLOGICAL BULLETIN

*May 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



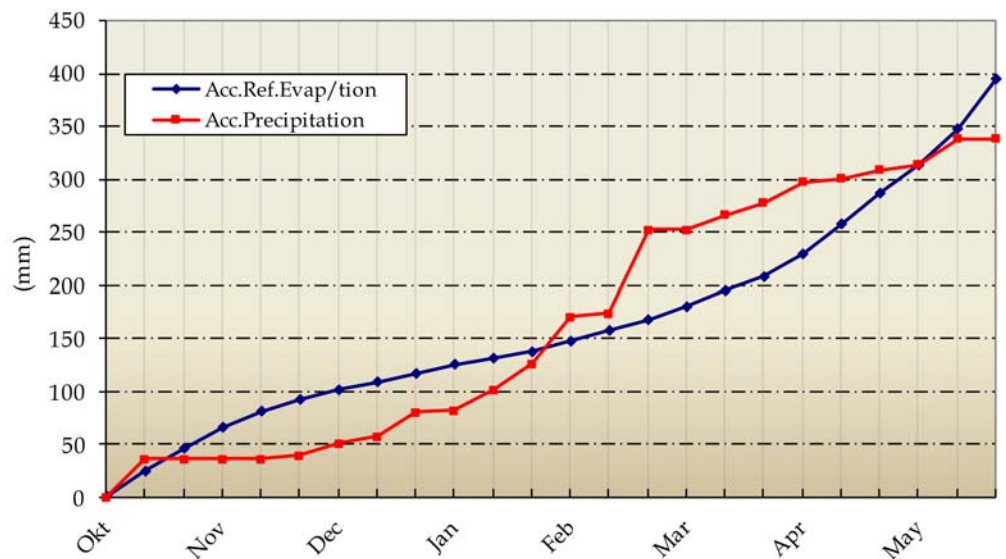
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2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.8	23.4	24.2	24.4	26.6	-	32.0	27.8	27.4	26.0	26.2	-	22.5
	Min	10.2	11.0	13.0	15.0	13.8	12.6	12.6	20.0	20.2	15.0	14.3	-	11.3
Relative Humidity	Max	88	95	95	85	90	89	81	78	68	71	84	-	-
	Min	34	47	44	53	47	44	34	36	35	38	41	-	-
Soil Temperature at 10 cm	06 UTC	18.0	18.8	19.5	20.2	20.6	20.8	20.6	23.0	21.8	21.6	20.5	-	17.0
	12 UTC	22.6	23.0	23.2	24.2	25.4	25.6	26.2	25.4	24.6	25.0	24.5	-	21.2
Sunshine Duration		13.1	11.4	10.4	10.9	12.6	8.8	10.1	6.0	11.7	12.3	10.7	-	8.2
Precipitation				0.1					0.0			0.1	-	10.7
Evaporation		4.7	7.3	3.5	5.6	7.2	6.2	8.6	10.0	10.5	9.5	73.1	-	57.1
Growing Degrees	5	12.0	12.2	13.6	14.7	15.2	-	17.3	18.9	18.8	15.5	-	-	118.8
	10	7.0	7.2	8.6	9.7	10.2	-	12.3	13.9	13.8	10.5	-	-	68.8

2nd 10-day period (11-20/05/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	47.3	-	40.4
Precipitation - Reference Evapotranspiration	-47.2	-	-29.7
Number of Rainy Days	1.0	-	2.3
Number of Dry Days	10.0	-	-

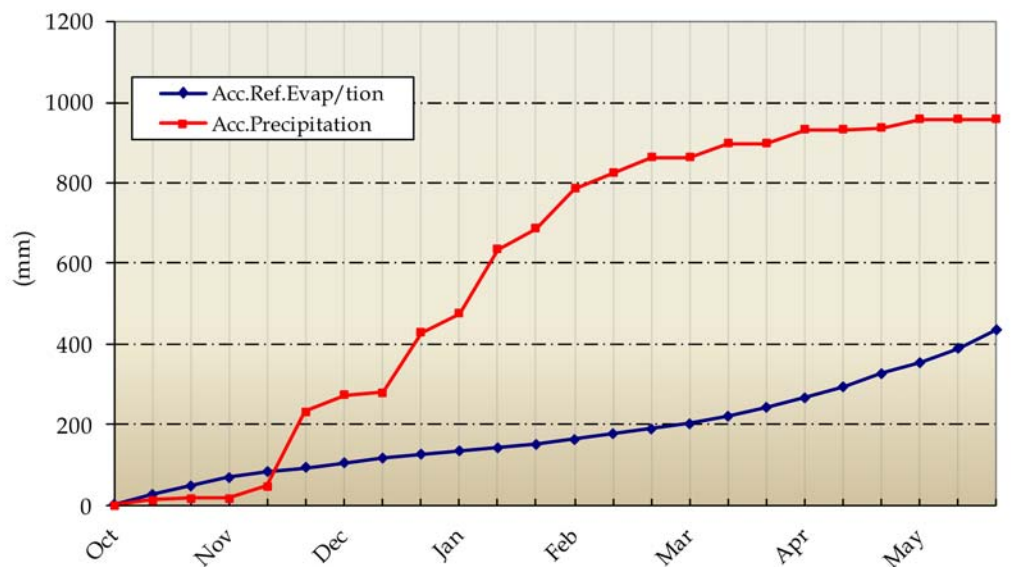
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.8	24.0	24.4	25.6	28.4	29.0	27.2	28.2	29.4	29.4	27.0	-	23.9
	Min	12.0	13.0	11.2	13.4	12.6	14.6	17.0	15.0	14.4	14.8	13.8	-	12.7
Relative Humidity	Max	98	95	98	96	95	83	90	93	93	93	93	-	-
	Min	49	48	42	41	23	35	41	37	35	40	39	-	-
Soil Temperature at 10 cm	06 UTC	19.4	20.0	19.6	20.0	20.4	21.0	22.0	21.2	21.8	22.4	20.8	-	19.3
	12 UTC	27.6	27.8	28.8	29.0	29.2	28.4	28.8	28.8	29.6	29.8	28.8	-	23.6
Sunshine Duration		11.5	12.8	12.6	12.7	7.9	7.6	5.6	10.9	12.3	12.4	10.6	-	9.4
Precipitation													-	8.3
Evaporation		3.4	6.3	1.4	10.9	18.8	1.8	12.6	4.4	5.2	10.0	74.8	-	54.3
Growing Degrees	5	13.4	13.5	12.8	14.5	15.5	16.8	17.1	16.6	16.9	17.1	154.2	-	133.2
	10	8.4	8.5	7.8	9.5	10.5	11.8	12.1	11.6	11.9	12.1	104.2	-	83.2

2nd 10-day period (11-20/05/2009)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	46.0	-	39.7
Precipitation - Reference Evapotranspiration	-46.0	-	-31.4
Number of Rainy Days	0.0	-	1.6
Number of Dry Days	22.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

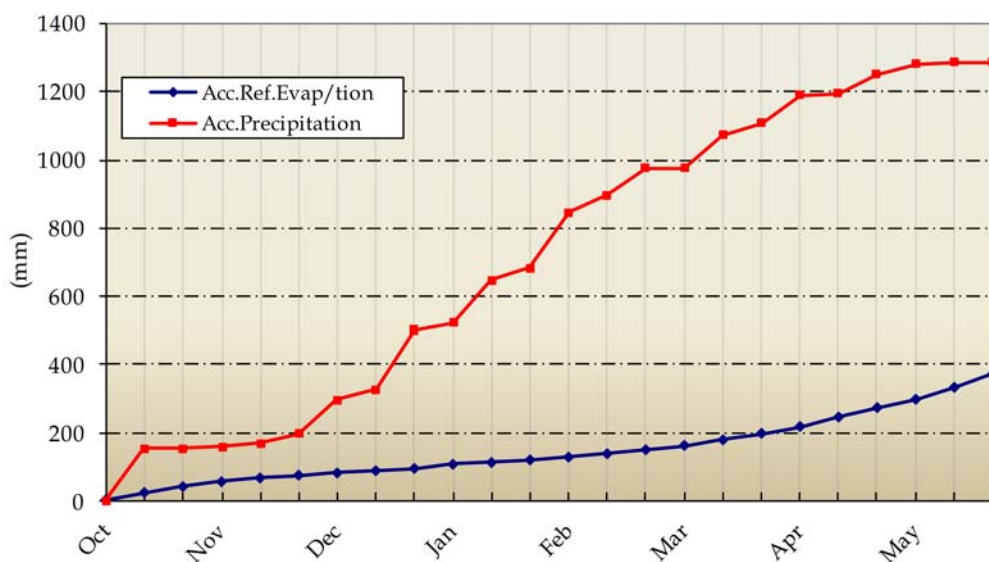


Arta

2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.6	26.4	26.4	27.0	29.0	30.4	27.0	32.2	32.2	31.6	28.8	-	25.1
	Min	14.8	13.4	12.2	13.6	12.0	13.0	18.2	19.0	18.0	15.0	14.9	-	12.7
Relative Humidity	Max	97	97	95	93	92	83	71	79	85	97	89	-	-
	Min	50	42	27	25	19	18	17	13	23	24	26	-	-
Soil Temperature at 10 cm	06 UTC	19.2	19.0	19.4	19.8	20.6	21.0	22.4	21.8	22.4	23.0	20.9	-	19.2
	12 UTC	21.6	21.4	22.8	23.2	24.0	24.0	23.4	23.6	25.2	25.6	23.5	-	24.2
Sunshine Duration		6.5	11.9	12.3	11.9	7.6	8.9	2.9	8.2	11.7	8.5	9.0	-	8.3
Precipitation													-	16.5
Evaporation		3.8	5.7	4.5	4.8	5.4	5.9	2.0	6.3	5.5	16.4	60.3	-	-
Growing Degrees	5	15.2	14.9	14.3	15.3	15.5	16.7	17.6	20.6	20.1	18.3	168.5	-	138.8
	10	10.2	9.9	9.3	10.3	10.5	11.7	12.6	15.6	15.1	13.3	118.5	-	88.8

2nd 10-day period (11-20/05/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	40.1	-	39.0
Precipitation - Reference Evapotranspiration	-40.1	-	-22.5
Number of Rainy Days	0.0	-	2.4
Number of Dry Days	16.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

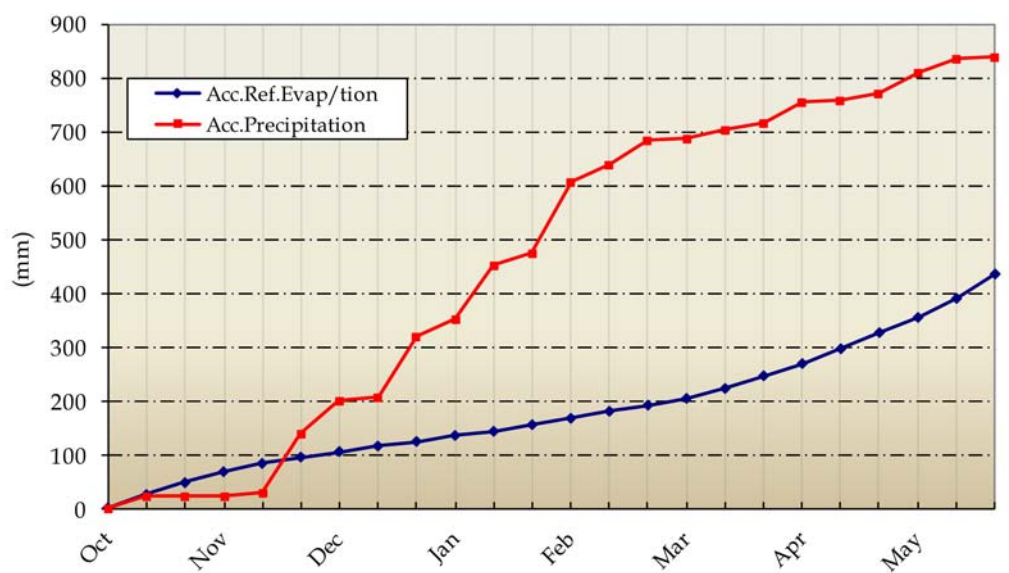


Kalamata

2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.6	24.4	-	24.0	26.6	28.0	27.0	26.2	29.0	27.2	26.4	-	24.3
	Min	13.0	13.8	13.4	11.0	10.4	13.2	20.0	13.6	15.4	13.4	13.7	-	12.1
Relative Humidity	Max	93	91	91	93	95	86	89	93	91	96	92	-	-
	Min	38	46	40	51	34	33	36	47	40	43	41	-	-
Soil Temperature at 10 cm	06 UTC	18.0	18.4	18.2	18.6	18.6	17.2	19.6	19.4	19.4	19.6	18.7	-	18.7
	12 UTC	19.4	20.2	20.6	21.0	20.4	19.0	21.6	21.2	21.6	20.0	20.5	-	22.5
Sunshine Duration		11.5	13.2	12.9	12.7	10.8	9.5	10.4	8.5	11.0	10.2	11.1	-	9.1
Precipitation									2.7			2.7	-	9.5
Evaporation		7.0	6.0	4.0	6.0	6.0	8.0	7.0	4.7	4.0	6.0	58.7	-	57.5
Growing Degrees	5	14.3	14.1	-	12.5	13.5	15.6	18.5	14.9	17.2	15.3	-	-	132.1
	10	9.3	9.1	-	7.5	8.5	10.6	13.5	9.9	12.2	10.3	-	-	82.1

2nd 10-day period (11-20/05/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.7	-	39.6
Precipitation - Reference Evapotranspiration	-43.0	-	-30.1
Number of Rainy Days	1.0	-	1.8
Number of Dry Days	11.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



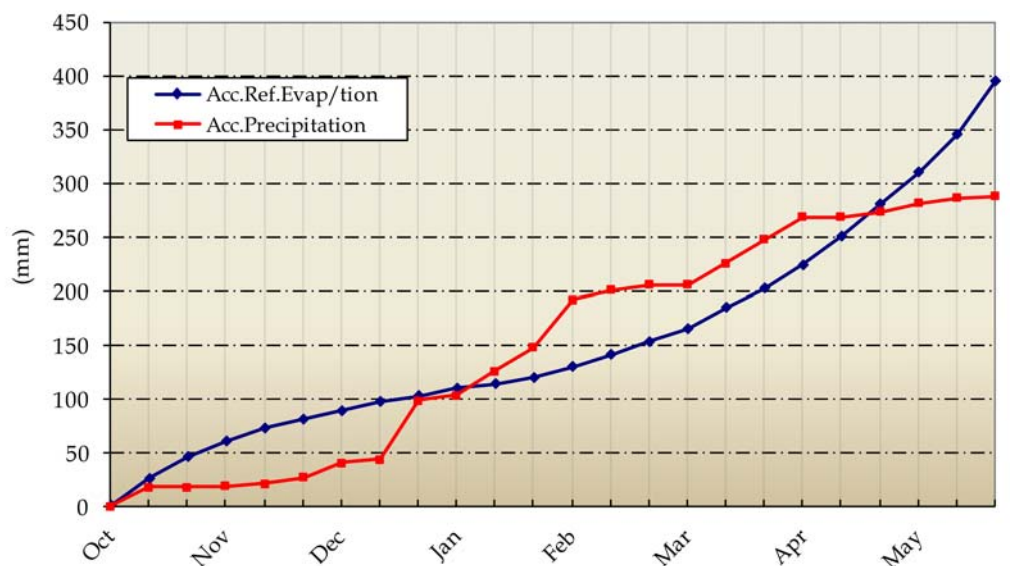


Larisa

2nd 10-day period (11-20/05/2009)		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	30.4	31.6	31.0	29.4	28.6	26.8	29.0	29.4	29.4	29.5	-	25.6
	Min	9.0	10.0	12.0	15.6	15.0	15.6	15.2	17.8	15.0	14.6	14.0	-	11.0
Relative Humidity	Max	90	86	88	87	93	94	80	87	83	87	88	-	-
	Min	32	29	23	31	42	37	36	32	30	20	31	-	-
Soil Temperature at 10 cm	06 UTC	18.0	18.6	19.6	21.2	21.4	21.6	21.2	21.0	20.6	21.2	20.4	-	18.1
	12 UTC	21.8	22.0	23.2	24.2	24.4	23.8	23.0	22.6	23.4	23.8	23.2	-	20.4
Sunshine Duration		10.1	12.0	12.9	11.4	10.4	7.6	1.8	6.2	11.2	11.9	9.6	-	8.3
Precipitation									1.8			1.8	-	11.8
Evaporation		6.2	7.0	4.8	8.8	7.6	7.8	4.0	3.5	9.7	10.4	69.8	-	55.6
Growing Degrees	5	14.0	15.2	16.8	18.3	17.2	17.1	16.0	18.4	17.2	17.0	167.2	-	133.1
	10	9.0	10.2	11.8	13.3	12.2	12.1	11.0	13.4	12.2	12.0	117.2	-	83.1

2nd 10-day period (11-20/05/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	49.8	-	42.0
Precipitation - Reference Evapotranspiration	-48.0	-	-30.2
Number of Rainy Days	1.0	-	2.4
Number of Dry Days	11.0	-	-

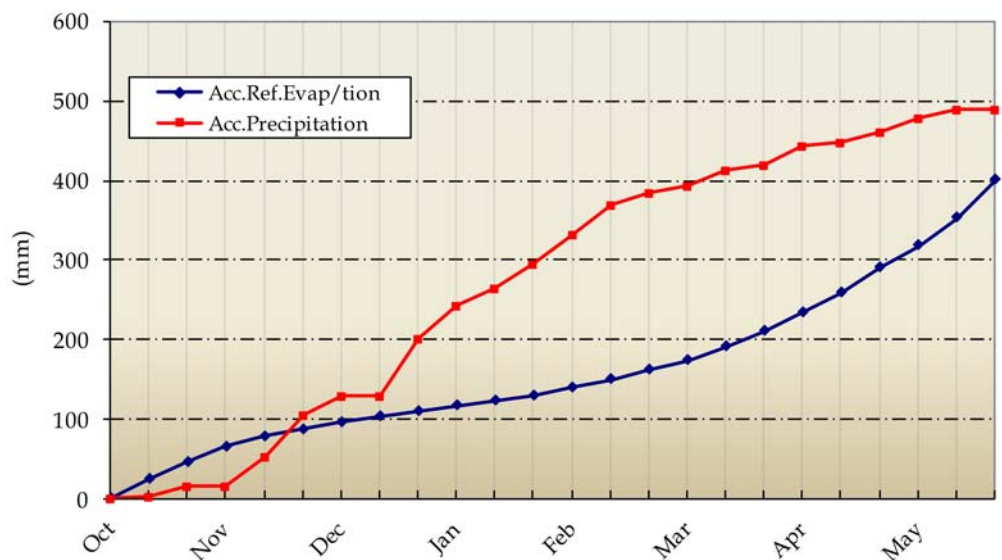
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.0	28.6	28.0	26.8	27.6	29.4	30.2	30.0	30.6	30.0	28.9	-	26.4
	Min	9.8	10.2	10.8	11.2	10.8	10.4	14.4	12.8	11.8	11.8	11.4	-	10.7
Relative Humidity	Max	76	69	80	78	69	76	74	49	46	44	66	-	-
	Min	23	34	33	43	40	23	32	30	32	23	31	-	-
Soil Temperature at 10 cm	06 UTC	18.2	18.4	19.4	20.4	20.4	21.2	21.8	21.4	22.6	22.8	20.7	-	18.7
	12 UTC	26.6	27.4	27.6	28.0	28.8	28.4	27.4	26.4	26.8	27.4	27.5	-	26.9
Sunshine Duration		11.8	11.8	11.3	11.6	10.7	8.1	8.0	9.9	7.8	10.6	10.2	-	8.6
Precipitation													-	7.7
Evaporation		6.3	6.3	6.7	7.9	6.4	7.3	6.6	8.7	7.6	8.0	71.8	-	53.0
Growing Degrees	5	13.9	14.4	14.4	14.0	14.2	14.9	17.3	16.4	16.2	15.9	151.6	-	135.3
	10	8.9	9.4	9.4	9.0	9.2	9.9	12.3	11.4	11.2	10.9	101.6	-	85.3

2nd 10-day period (11-20/05/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	47.6	-	39.8
Precipitation - Reference Evapotranspiration	-47.6	-	-32.1
Number of Rainy Days	0.0	-	1.9
Number of Dry Days	14.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

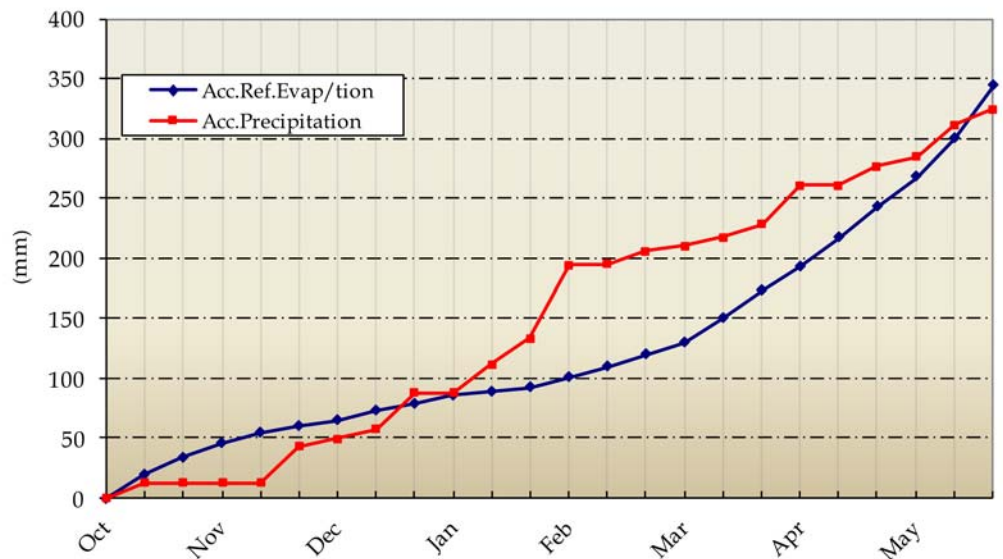


Series

2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.2	31.0	30.4	30.4	30.6	30.0	32.2	32.0	32.6	31.0	30.8	-	25.2
	Min	12.0	13.2	13.4	15.2	15.2	16.4	17.0	16.6	16.6	15.4	15.1	-	12.7
Relative Humidity	Max	70	71	73	92	80	75	73	85	61	92	77	-	-
	Min	28	28	31	42	31	35	32	40	29	32	33	-	-
Soil Temperature at 10 cm	06 UTC	18.8	19.6	20.0	20.6	20.8	21.4	-	22.4	21.8	21.8	20.8	-	18.0
	12 UTC	22.2	22.4	23.0	23.0	23.0	23.2	24.0	24.0	-	23.8	23.2	-	21.8
Sunshine Duration		10.3	12.3	9.0	11.8	9.7	8.3	8.4	8.4	9.3	12.3	10.0	-	7.4
Precipitation					3.4				9.0			12.4	-	16.8
Evaporation		5.2	4.8	4.0	5.0	7.0	5.2	2.8	4.0	4.5	4.5	47.0	-	43.2
Growing Degrees	5	15.1	17.1	16.9	17.8	17.9	18.2	19.6	19.3	19.6	18.2	179.7	-	139.0
	10	10.1	12.1	11.9	12.8	12.9	13.2	14.6	14.3	14.6	13.2	129.7	-	89.0

2nd 10-day period (11-20/05/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	44.1	-	35.7
Precipitation - Reference Evapotranspiration	-31.7	-	-18.9
Number of Rainy Days	2.0	-	3.8
Number of Dry Days	8.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



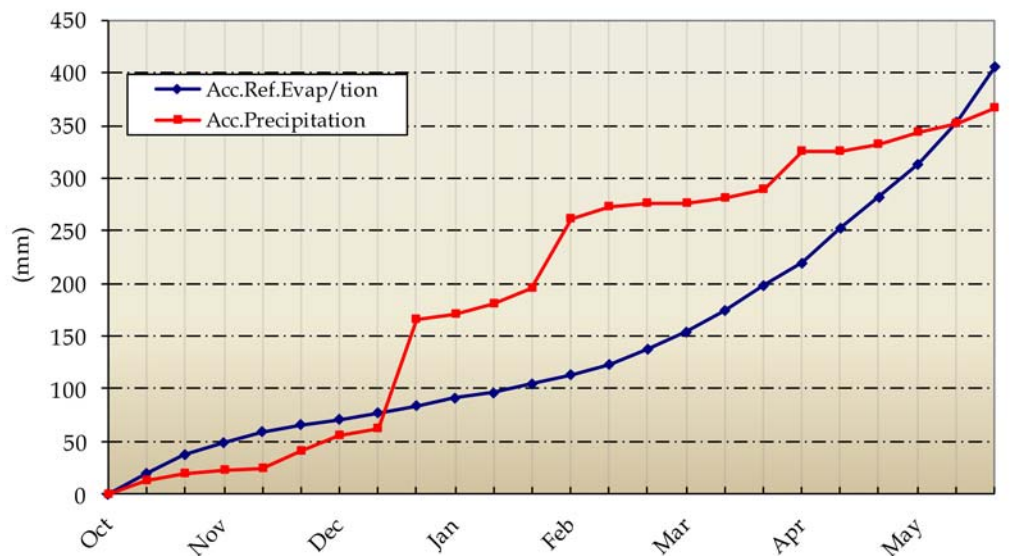


Trikala Imathias

2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	28.6	28.8	30.6	29.2	28.8	30.6	31.0	30.0	30.8	29.8	29.8	-	25.7
	Min	11.4	13.0	13.8	11.0	18.8	16.4	16.8	16.2	-	16.4	14.9	-	13.3
Relative Humidity	Max	81	75	92	83	94	91	85	-	91	97	88	-	-
	Min	28	28	25	45	35	38	29	-	28	43	33	-	-
Soil Temperature at 10 cm	06 UTC	19.2	19.6	20.6	21.4	20.4	21.6	22.2	22.0	-	21.4	20.9	-	18.6
	12 UTC	24.0	24.4	25.0	25.2	24.8	25.4	25.8	23.0	24.4	25.2	24.7	-	20.3
Sunshine Duration		10.4	11.8	11.3	6.6	10.5	9.6	5.2	-	11.9	12.0	9.9	-	7.9
Precipitation					2.7				4.7	8.0		15.4	-	11.2
Evaporation		4.4	4.8	5.0	3.2	4.2	4.8	6.0	-	4.6	3.6	-	-	45.1
Growing Degrees	5	15.0	15.9	17.2	15.1	18.8	18.5	18.9	18.1	-	18.1	-	-	145.1
	10	10.0	10.9	12.2	10.1	13.8	13.5	13.9	13.1	-	13.1	-	-	95.1

2nd 10-day period (11-20/05/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	52.6	-	39.8
Precipitation - Reference Evapotranspiration	-37.2	-	-28.6
Number of Rainy Days	3.0	-	2.5
Number of Dry Days	10.0	-	-

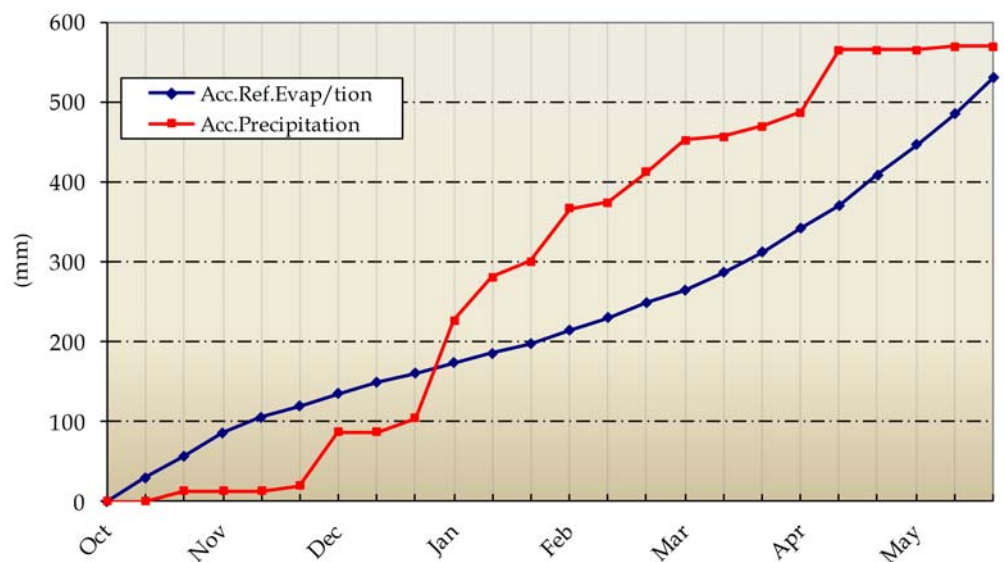
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/05/2009)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.0	23.8	21.2	22.4	25.0	26.6	31.0	22.6	24.4	25.6	24.8	-	24.2
	Min	11.8	15.6	11.4	11.6	14.4	14.6	14.6	-	15.6	21.0	14.5	-	13.9
Relative Humidity	Max	67	85	97	96	80	79	-	96	93	79	86	-	-
	Min	21	27	49	56	34	21	-	67	45	44	40	-	-
Soil Temperature at 10 cm	06 UTC	21.2	21.8	22.0	23.6	23.0	23.4	24.0	-	23.6	23.0	22.8	-	23.3
	12 UTC	29.0	29.2	29.2	29.0	30.0	30.0	28.4	30.0	26.4	28.0	28.9	-	28.5
Sunshine Duration		11.1	11.6	11.0	11.8	7.5	10.2	-	8.6	2.3	10.0	9.3	-	9.8
Precipitation													-	3.2
Evaporation		8.0	6.0	6.0	6.0	6.0	8.0	-	7.0	6.0	11.0	-	-	70.3
Growing Degrees	5	13.4	14.7	11.3	12.0	14.7	15.6	17.8	-	15.0	18.3	-	-	140.1
	10	8.4	9.7	6.3	7.0	9.7	10.6	12.8	-	10.0	13.3	-	-	90.3

2nd 10-day period (11-20/05/2009)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	45.2	-	42.8
Precipitation - Reference Evapotranspiration	-45.2	-	-39.6
Number of Rainy Days	0.0	-	0.5
Number of Dry Days	16.0	-	-

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<sub>n</sub> 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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