

# AGROMETEOROLOGICAL BULLETIN

*February 2012*  
*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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Division of Climatology-Applications  
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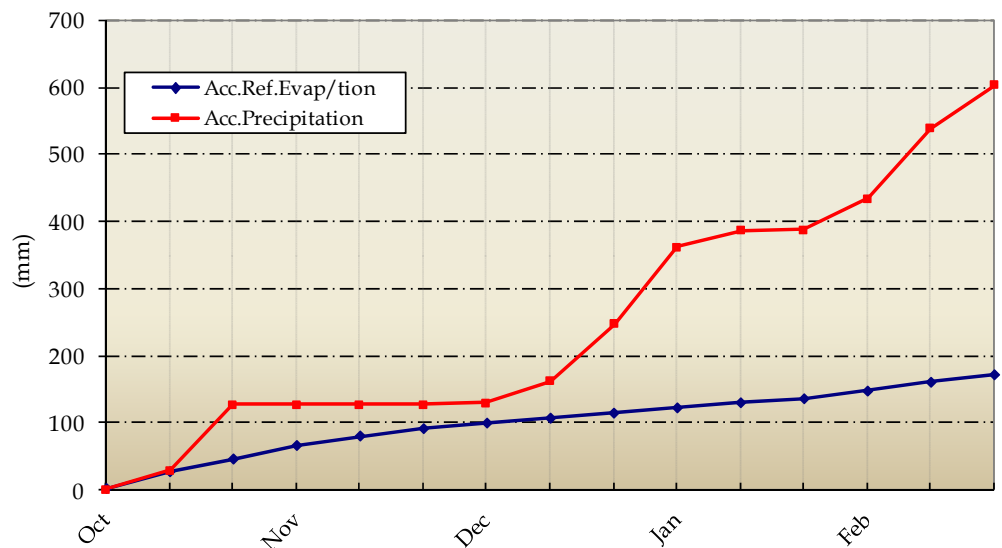
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Agrinio

2nd 10-day period (11-20/02/2012)		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	15.0	13.5	8.4	9.4	7.4	9.6	13.2	13.4	16.4	11.5	15.8	14.1
	Min	4.0	6.0	5.8	3.4	0.0	2.0	-2.0	-3.0	-4.0	5.0	1.7	5.4	4.4
Relative Humidity	Max	97	97	97	97	97	97	84	92	96	97	95	96	-
	Min	86	60	71	81	59	83	18	42	65	43	61	55	-
Soil Temperature at 10 cm	06 UTC	6.0	7.0	8.4	7.8	6.4	6.4	5.4	4.8	5.4	7.2	6.5	8.6	7.5
	12 UTC	6.2	8.2	9.2	8.2	6.8	7.0	6.2	6.2	6.6	8.6	7.3	10.2	9.9
Sunshine Duration		0.0	6.2	2.2	0.6	4.5	2.2	8.7	8.9	4.7	3.5	4.2	3.9	4.3
Precipitation		24.1	7.4	19.0	6.9	5.5	0.5			0.2		63.6	23.8	44.0
Evaporation		-	1.2	0.9	1.7	1.0	1.0	2.2	2.2	1.5	1.5	-	12.8	16.7
Growing Degrees	5	1.2	5.5	4.7	0.9	0.0	0.0	0.0	0.1	0.0	5.7	18.1	55.6	43.7
	10	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.2	10.5	9.0

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.2	13.4	13.8
Precipitation - Reference Evapotranspiration	52.4	10.4	30.2
Number of Rainy Days	7.0	3.0	5.0
Number of Dry Days	0.0	13.0	-

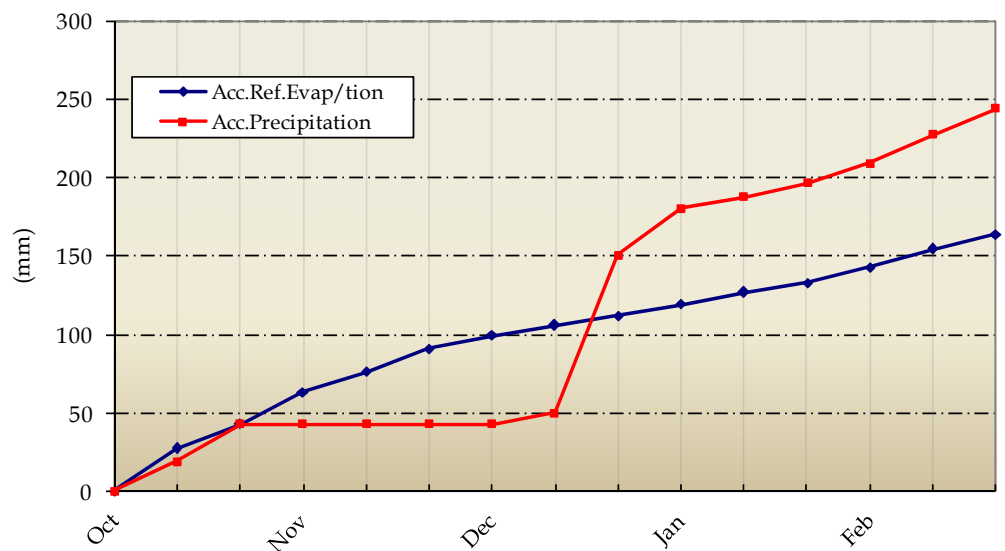
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	2.6	8.0	6.4	7.0	5.2	8.6	5.2	3.6	8.0	10.6	6.5	10.9	10.0
	Min	-2.0	0.6	3.4	0.4	0.4	1.2	0.0	-2.8	-4.0	0.0	-0.3	3.7	2.2
Relative Humidity	Max	88	82	100	93	97	96	92	96	92	89	92	87	-
	Min	60	66	80	57	73	53	39	58	57	56	60	57	-
Soil Temperature at 10 cm	06 UTC	1.4	2.0	4.0	3.2	3.6	4.0	3.4	2.6	2.2	3.0	2.9	6.0	4.8
	12 UTC	1.6	4.2	4.6	4.2	5.4	5.8	4.4	2.4	3.6	5.4	4.2	6.7	6.1
Sunshine Duration		2.8	5.2	0.0	0.0	6.7	5.3	8.1	0.0	7.9	5.7	4.2	3.8	3.7
Precipitation		0.0	0.0	6.3		4.2	6.1					16.6	5.0	18.4
Evaporation		0.0	0.0	0.8	0.2	0.4	0.0	0.0	0.0	0.0	2.5	3.9	16.5	10.5
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	24.5	23.6
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	4.0

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.6	12.5	12.3
Precipitation - Reference Evapotranspiration	7.0	-7.5	6.1
Number of Rainy Days	3.0	1.0	2.7
Number of Dry Days	5.0	25.0	-

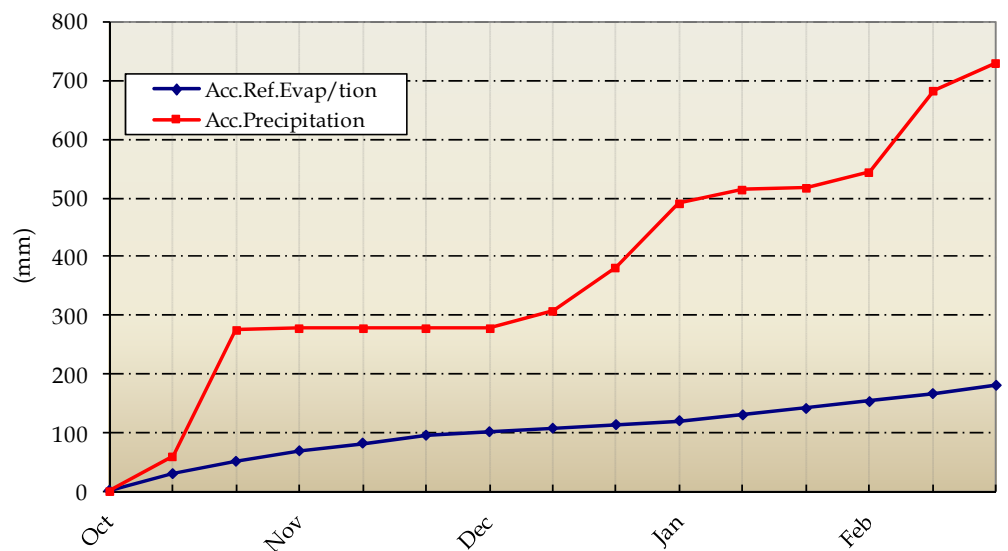
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.0	16.8	13.0	11.9	9.6	9.7	9.4	12.3	14.8	15.2	12.6	16.5	14.5
	Min	6.8	8.2	6.8	4.8	3.5	4.9	0.9	-2.0	4.4	6.8	4.5	8.0	6.2
Relative Humidity	Max	93	93	88	92	89	89	86	87	88	88	89	90	-
	Min	69	47	50	52	62	63	33	45	56	48	52	52	-
Soil Temperature at 10 cm	06 UTC	8.0	9.0	9.6	8.8	7.6	7.8	5.8	4.8	7.2	8.4	7.7	11.1	9.1
	12 UTC	9.2	11.2	11.4	9.8	9.0	9.2	8.2	8.6	9.4	11.2	9.7	12.9	11.0
Sunshine Duration		1.2	8.0	4.4	4.6	5.4	1.6	9.3	9.2	3.4	2.4	5.0	5.6	4.8
Precipitation		16.5	1.6	16.2	6.8	2.5	2.3			0.9		46.8	17.3	37.6
Evaporation		1.5	1.3	0.1	0.8	0.6	2.1	0.1	2.7	1.0	2.1	12.3	27.0	21.3
Growing Degrees	5	4.9	7.5	4.9	3.4	1.6	2.3	0.2	0.2	4.6	6.0	35.4	72.6	54.0
	10	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.5	22.7	13.3

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.2	16.6	14.2
Precipitation - Reference Evapotranspiration	32.6	0.7	23.4
Number of Rainy Days	7.0	4.0	5.1
Number of Dry Days	0.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

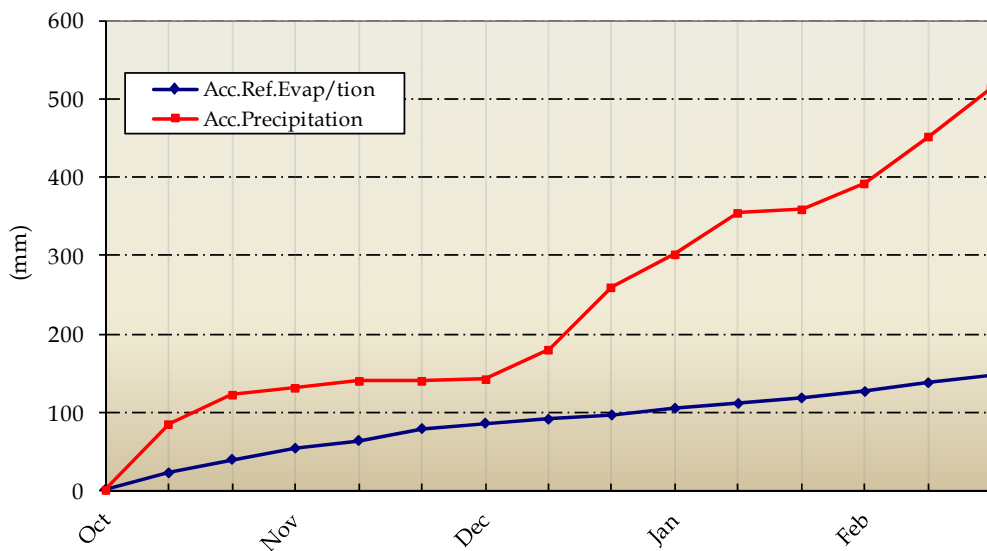


Ioannina

2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	5.6	11.4	6.0	3.6	4.8	4.2	5.2	9.0	9.0	11.0	7.0	-	10.3
	Min	0.5	3.4	2.0	0.0	0.0	-1.0	-4.2	-5.4	-5.0	4.6	-0.5	-	1.8
Relative Humidity	Max	93	93	97	96	96	96	91	85	96	94	94	-	-
	Min	78	56	79	83	71	49	23	33	38	52	56	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	4.4
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.4
Sunshine Duration		0.0	3.0	0.1	0.0	0.9	0.5	7.7	7.4	2.9	0.0	2.2	-	3.3
Precipitation		18.8	13.5	23.3	1.4	2.0	1.5			0.0	0.7	61.2	-	46.4
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	11.3
Growing Degrees	5	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	5.2	-	18.2
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	1.8

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.3	-	11.4
Precipitation - Reference Evapotranspiration	51.9	-	35.0
Number of Rainy Days	7.0	-	5.0
Number of Dry Days	0.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

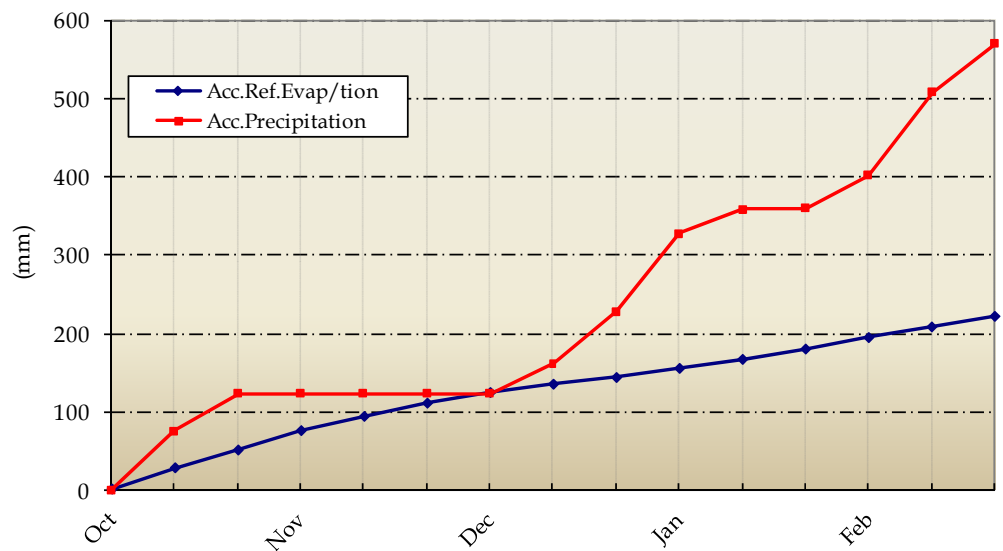


Kalamata

2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	11.8	17.0	13.8	10.8	9.4	10.0	10.8	13.6	15.0	13.2	12.5	16.8	15.1
	Min	5.8	5.0	7.0	5.4	2.8	2.4	-0.6	-1.0	0.8	3.8	3.1	6.4	5.9
Relative Humidity	Max	100	100	97	100	100	97	93	86	97	97	97	96	-
	Min	74	58	55	73	67	73	34	29	49	61	57	53	-
Soil Temperature at 10 cm	06 UTC	8.6	9.2	10.0	9.6	8.6	8.2	7.4	6.4	6.8	8.0	8.3	10.8	9.6
	12 UTC	9.6	10.4	11.0	9.8	9.4	9.2	8.2	8.6	8.4	9.0	9.4	11.7	10.9
Sunshine Duration		1.9	8.7	5.0	0.0	5.4	1.6	8.7	9.4	7.7	0.4	4.9	5.1	4.5
Precipitation		18.2	7.4	12.2	10.2	6.0	8.4				0.2	62.6	35.6	43.8
Evaporation		0.0	2.0	1.4	0.9	0.8	4.5	0.4	4.0	0.8	1.3	16.1	22.2	26.5
Growing Degrees	5	3.8	6.0	5.4	3.1	1.1	1.2	0.1	1.3	2.9	3.5	28.4	65.8	55.5
	10	0.0	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	16.0	12.8

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	13.6	17.4	15.6
Precipitation - Reference Evapotranspiration	49.0	18.2	28.2
Number of Rainy Days	7.0	3.0	5.2
Number of Dry Days	0.0	11.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

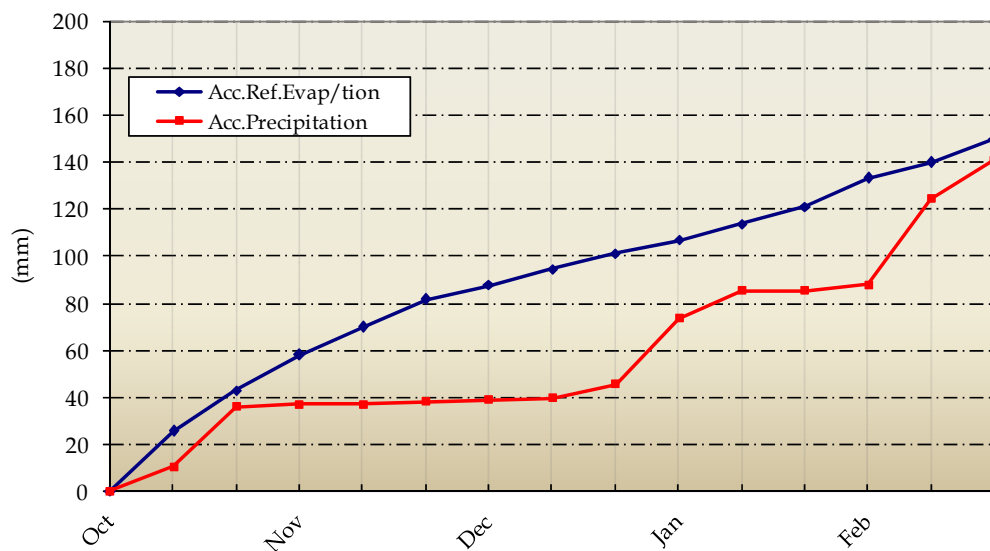


Larisa

2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	5.0	6.6	11.0	7.6	8.6	8.4	8.0	12.2	13.8	13.0	9.4	13.6	12.1
	Min	1.8	2.0	4.2	-0.4	0.6	1.0	-2.0	-4.0	-3.4	3.6	0.3	4.0	1.9
Relative Humidity	Max	97	97	97	96	96	82	83	87	87	87	91	94	-
	Min	87	88	61	53	53	55	24	38	31	52	54	60	-
Soil Temperature at 10 cm	06 UTC	5.4	4.6	5.2	3.6	3.0	4.4	3.0	2.0	2.6	5.4	3.9	7.3	6.7
	12 UTC	4.2	4.6	6.2	5.4	5.6	5.8	5.0	4.6	6.8	6.8	5.5	8.3	7.2
Sunshine Duration		0.0	0.0	4.6	1.1	5.5	1.0	8.0	8.2	8.7	3.0	4.0	3.4	4.0
Precipitation		11.7	2.6	1.2	1.4	0.0						16.9	6.4	12.7
Evaporation		3.0	2.0	2.9	1.7	0.7	0.7	0.0	5.1	1.5	2.6	20.2	10.2	10.0
Growing Degrees	5	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.2	3.3	6.1	38.3	25.9
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	3.3

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.2	12.5	12.0
Precipitation - Reference Evapotranspiration	6.7	-6.1	0.7
Number of Rainy Days	4.0	3.0	3.6
Number of Dry Days	0.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

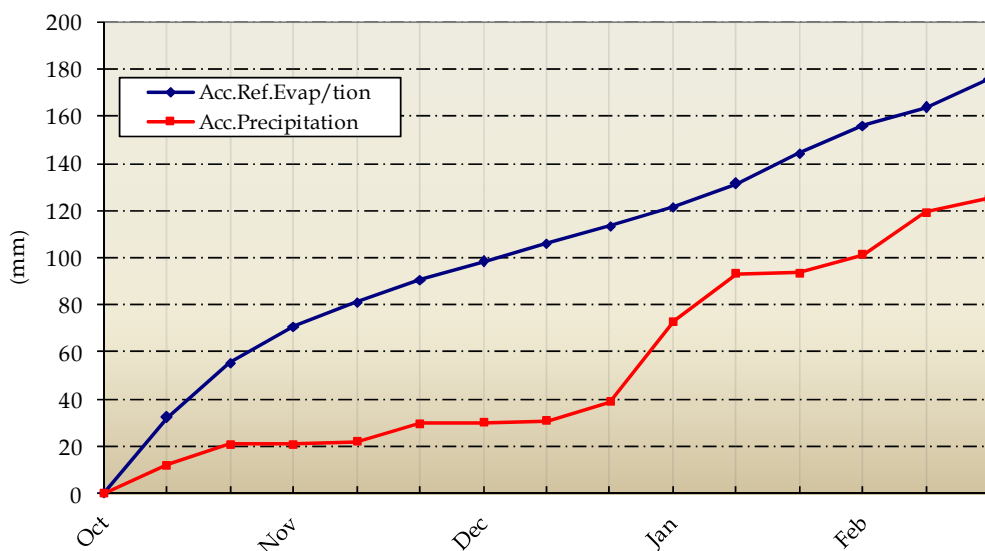


Mikra

2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	3.0	3.0	6.4	5.0	6.0	7.4	5.2	11.0	10.8	10.2	6.8	-	11.2
	Min	1.0	2.2	1.8	-3.8	-1.6	-0.2	2.0	-2.6	-1.4	2.0	-0.1	-	2.9
Relative Humidity	Max	93	97	100	96	86	85	61	79	85	84	87	-	-
	Min	83	86	81	56	53	44	36	34	39	71	58	-	-
Soil Temperature at 10 cm	06 UTC	3.4	4.0	3.6	3.4	3.4	3.8	3.0	2.6	1.8	5.6	3.5	-	5.9
	12 UTC	4.0	4.0	6.4	4.2	5.0	5.0	4.0	-	6.2	7.0	5.1	-	7.7
Sunshine Duration		0.0	0.0	2.9	1.7	9.9	3.0	7.4	8.0	9.3	1.1	4.3	-	3.8
Precipitation		0.9	2.1	2.9	0.0							5.9	-	15.0
Evaporation		0.3	3.2	0.0	0.0	0.0	0.0	2.4	6.4	4.2	1.2	17.7	-	14.7
Growing Degrees	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	-	26.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	3.8

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.1	-	13.1
Precipitation - Reference Evapotranspiration	-6.2	-	1.9
Number of Rainy Days	3.0	-	3.4
Number of Dry Days	0.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



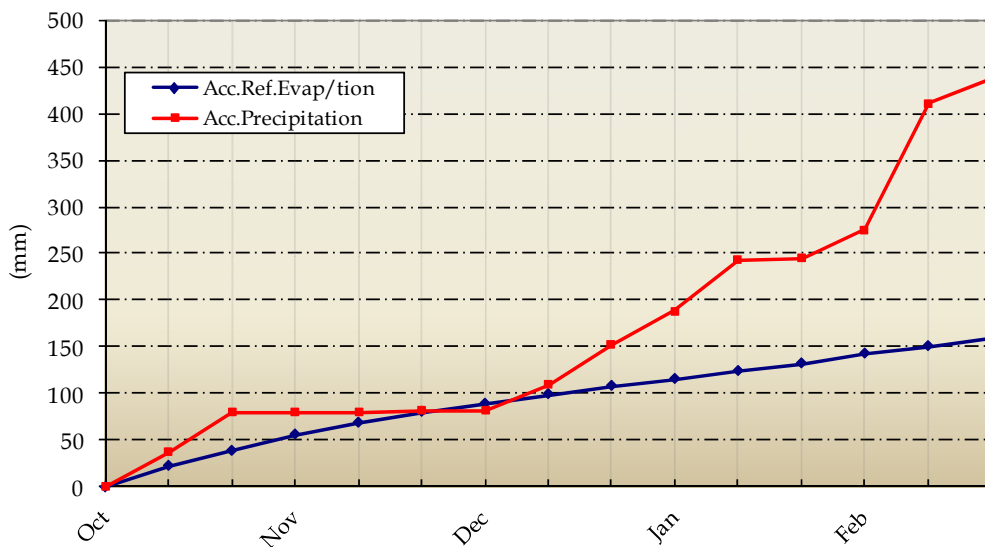


Tripoli

2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	5.4	9.9	9.3	6.5	5.4	6.3	5.2	9.1	11.0	8.2	7.6	12.7	10.2
	Min	-0.1	1.0	1.9	1.9	-0.2	0.9	-5.1	-6.8	-5.1	-1.9	-1.4	1.5	1.7
Relative Humidity	Max	96	96	95	90	90	89	86	91	90	96	92	96	-
	Min	95	88	80	80	81	71	43	52	79	76	74	57	-
Soil Temperature at 10 cm	06 UTC	1.4	2.6	4.2	4.2	2.4	3.0	2.0	1.4	1.8	3.0	2.6	5.5	4.8
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	8.3	5.7
Sunshine Duration		0.7	4.2	6.5	1.0	5.7	4.3	7.3	7.6	6.3	0.7	4.4	5.4	4.3
Precipitation		9.9	1.4	7.8	4.4	1.4	1.2				0.2	26.3	30.4	39.0
Evaporation		-	-	-	-	-	-	0.0	0.0	0.0	0.2	-	2.8	11.0
Growing Degrees	5	0.0	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	21.4	17.8
	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	1.6

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.3	12.4	12.8
Precipitation - Reference Evapotranspiration	17.0	18.0	26.2
Number of Rainy Days	7.0	3.0	4.9
Number of Dry Days	0.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

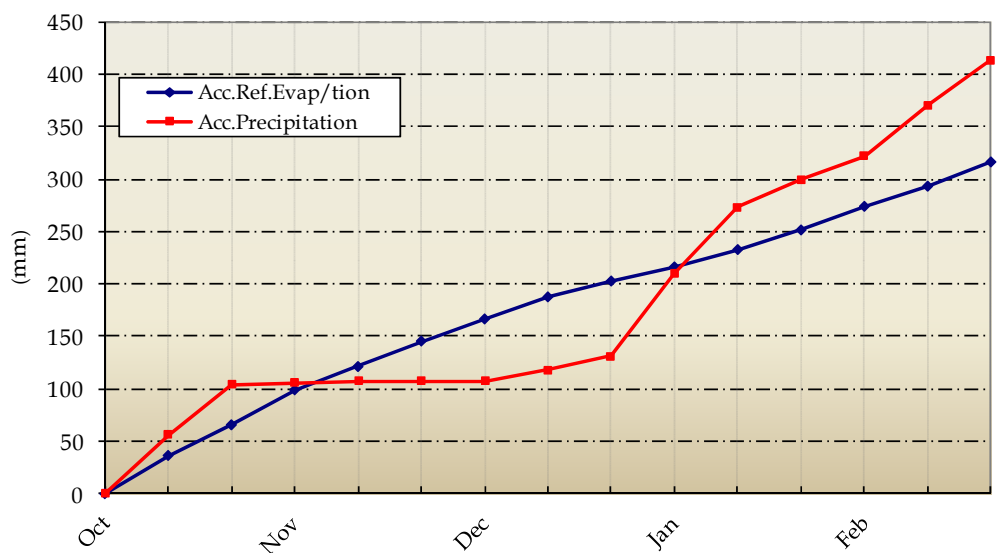


Tympaki

2nd 10-day period (11-20/02/2012)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.4	16.8	17.2	15.8	14.8	14.0	12.0	12.0	15.8	15.0	14.9	17.3	16.2
	Min	5.0	7.4	9.0	5.6	8.6	6.0	6.8	0.2	0.8	3.4	5.3	9.0	7.6
Relative Humidity	Max	92	98	99	97	90	95	94	94	93	93	94	91	-
	Min	15	20	51	44	42	37	26	26	19	37	32	45	-
Soil Temperature at 10 cm	06 UTC	9.0	10.6	11.2	10.2	11.0	10.2	9.2	7.0	6.6	8.0	9.3	12.2	11.1
	12 UTC	11.8	12.6	14.4	13.4	13.2	12.4	10.6	10.4	12.0	11.4	12.2	15.0	13.3
Sunshine Duration		8.1	1.2	11.2	6.3	9.3	5.6	9.6	9.7	9.3	5.0	7.5	6.4	5.5
Precipitation			6.5	11.2	9.0	9.4	5.4	1.5				43.0	41.3	28.6
Evaporation		1.7	1.5	3.8	3.2	5.0	2.2	1.3	1.3	1.8	2.2	24.0	30.8	30.1
Growing Degrees	5	5.2	7.1	8.1	5.7	6.7	5.0	4.4	1.1	3.3	4.2	50.8	81.5	69.2
	10	0.2	2.1	3.1	0.7	1.7	0.0	0.0	0.0	0.0	0.0	7.8	31.5	21.2

2nd 10-day period (11-20/02/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.1	21.4	17.9
Precipitation - Reference Evapotranspiration	19.9	19.9	10.7
Number of Rainy Days	6.0	4.0	3.8
Number of Dry Days	1.0	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<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.

**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

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