



# AGROMETEOROLOGICAL BULLETIN

*October 2012*  
*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



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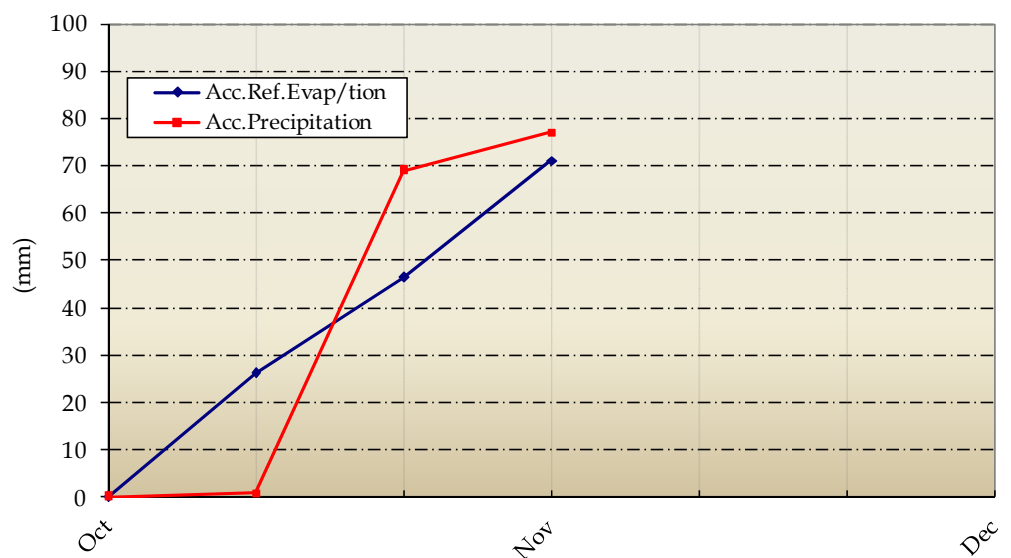
*Web addresses of HNMS*  
[www.hnms.gr](http://www.hnms.gr)  
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[www.meteo.gov.gr](http://www.meteo.gov.gr)  
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Agrinio

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	26.8	26.0	25.6	24.2	24.6	24.6	24.4	25.6	24.4	19.4	22.4	24.4	21.5	21.8
	Min	11.2	10.0	11.4	12.2	8.8	8.6	12.4	20.0	16.2	10.4	7.0	11.7	7.5	9.7
Relative Humidity	Max	93	92	93	87	85	95	98	68	90	95	94	90	85	-
	Min	41	38	38	46	44	45	78	60	52	49	48	49	42	-
Soil Temperature at 10 cm	06 UTC	19.2	18.6	19.0	18.6	17.6	17.2	18.0	20.0	20.8	18.2	16.2	18.5	15.0	14.8
	12 UTC	21.2	20.2	20.6	21.2	19.4	19.0	18.8	20.6	21.2	19.0	17.6	19.9	16.8	17.8
Sunshine Duration		9.2	9.0	6.2	6.8	9.3	9.0	1.5	0.0	6.2	8.3	6.6	6.6	8.0	5.7
Precipitation								1.5	1.7	2.0	2.9		8.1		42.6
Evaporation		2.7	3.0	2.4	2.2	2.1	3.1	0.3	3.4	3.4	2.2	1.3	26.1	38.0	29.5
Growing Degrees	5	14.0	13.0	13.5	13.2	11.7	11.6	13.4	17.8	15.3	9.9	9.7	143.1	104.5	118.3
	10	9.0	8.0	8.5	8.2	6.7	6.6	8.4	12.8	10.3	4.9	4.7	88.1	49.5	63.4

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.7	20.2	18.5
Precipitation - Reference Evapotranspiration	-16.6	-20.2	24.1
Number of Rainy Days	4.0	0.0	3.7
Number of Dry Days	10.0	15.0	-

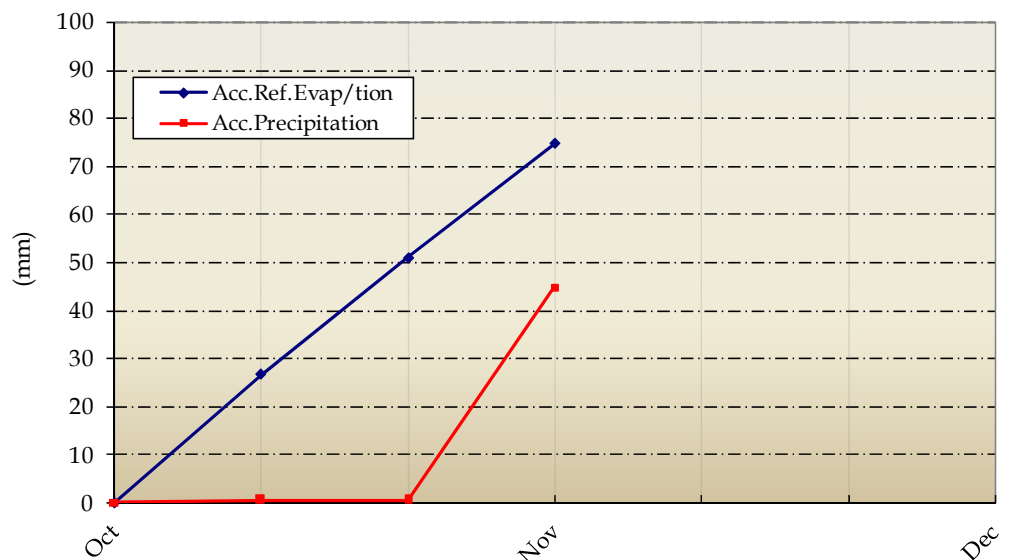
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	20.4	20.0	20.0	18.6	20.6	21.6	22.0	23.4	22.4	20.8	19.6	20.9	16.5	17.4
	Min	15.2	15.6	14.2	14.0	7.6	7.4	10.6	17.8	18.0	13.0	7.8	12.8	9.6	8.0
Relative Humidity	Max	71	91	93	83	87	95	95	92	96	85	88	89	80	-
	Min	48	56	56	51	42	67	65	68	81	44	44	57	49	-
Soil Temperature at 10 cm	06 UTC	19.8	19.2	18.2	17.4	15.2	15.4	16.2	19.4	20.4	18.0	14.4	17.6	13.4	12.7
	12 UTC	21.0	19.6	18.6	18.2	18.0	20.8	18.0	20.6	19.6	18.6	16.0	19.0	14.9	15.2
Sunshine Duration		5.9	0.9	0.2	5.6	9.1	8.9	3.9	0.5	0.0	7.9	6.5	4.5	6.0	5.2
Precipitation			1.5	3.7				0.0	0.0	33.8	5.4		44.4		22.3
Evaporation		3.9	6.2	2.5	4.9	0.1	0.6	5.6	3.8	7.4	5.2	0.9	41.1	34.4	41.1
Growing Degrees	5	12.8	12.8	12.1	11.3	9.1	9.5	11.3	15.6	15.2	11.9	8.7	130.3	88.4	85.3
	10	7.8	7.8	7.1	6.3	4.1	4.5	6.3	10.6	10.2	6.9	3.7	75.3	33.4	34.4

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	23.6	20.4	20.4
Precipitation - Reference Evapotranspiration	20.8	-20.4	1.9
Number of Rainy Days	4.0	0.0	2.2
Number of Dry Days	13.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

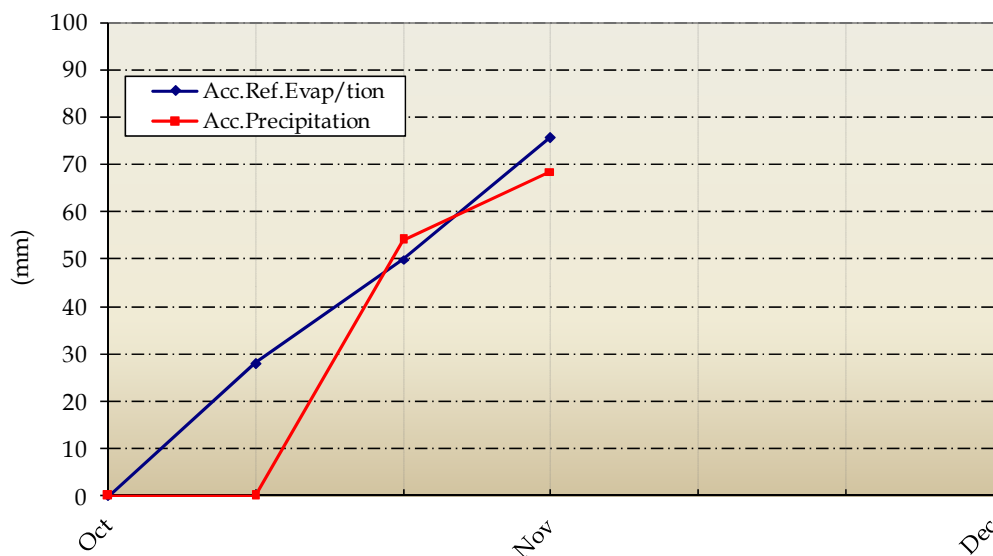


Andravida

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.3	23.8	24.2	24.6	23.4	23.7	24.0	25.4	24.8	19.7	22.3	23.7	21.5	21.5
	Min	13.2	10.0	11.5	13.2	10.8	13.3	16.0	22.4	16.8	13.8	11.0	13.8	9.5	11.4
Relative Humidity	Max	89	89	89	85	88	85	81	71	92	82	84	85	92	-
	Min	48	38	40	39	45	47	65	58	48	45	43	47	43	-
Soil Temperature at 10 cm	06 UTC	19.4	18.2	18.4	18.4	17.6	18.0	19.0	20.6	20.6	18.2	17.4	18.7	14.2	16.1
	12 UTC	23.8	22.4	22.4	22.8	22.0	22.2	20.4	21.2	22.6	21.0	20.6	21.9	19.1	18.7
Sunshine Duration		8.9	9.0	8.7	8.3	9.5	9.2	2.0	0.5	6.1	7.2	6.0	6.9	6.8	6.3
Precipitation								4.3	0.1	10.1			14.5	2.3	50.1
Evaporation		2.7	2.1	3.5	3.2	2.9	1.9	2.6	3.4	0.5	3.7	2.2	28.7	22.3	31.6
Growing Degrees	5	14.3	11.9	12.9	13.9	12.1	13.5	15.0	18.9	15.8	11.8	11.7	151.6	115.4	126.2
	10	9.3	6.9	7.9	8.9	7.1	8.5	10.0	13.9	10.8	6.8	6.7	96.6	60.4	71.3

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	25.8	17.9	18.7
Precipitation - Reference Evapotranspiration	-11.3	-15.6	31.4
Number of Rainy Days	3.0	1.0	3.7
Number of Dry Days	11.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

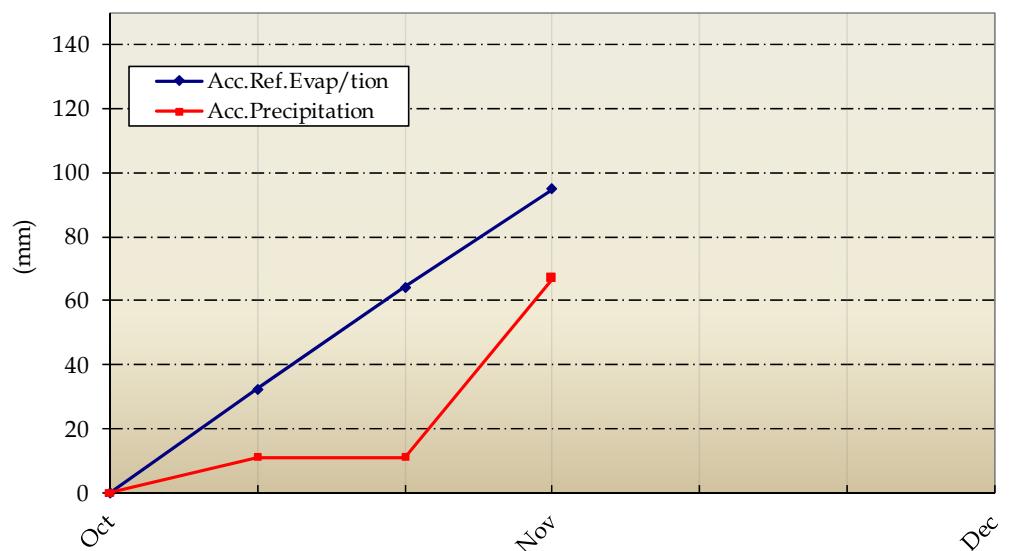


Iraklio

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.4	21.8	22.0	21.0	21.4	22.8	26.4	28.4	27.2	24.2	23.2	23.8	-	21.6
	Min	21.0	18.4	16.2	15.8	16.4	15.0	16.0	20.8	22.6	18.4	17.0	18.0	-	15.6
Relative Humidity	Max	73	98	94	93	92	96	84	77	85	84	83	87	-	-
	Min	52	66	66	65	73	65	51	42	43	57	58	58	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		6.3	4.1	3.4	5.1	1.1	8.6	8.5	8.5	1.2	8.4	5.9	5.6	-	5.7
Precipitation		0.2	7.7	24.5	5.0	18.1					0.3		55.8	-	29.2
Evaporation		4.1	-	6.1	4.3	6.9	2.8	3.5	6.8	-	1.8	3.3	-	-	48.8
Growing Degrees	5	17.2	15.1	14.1	13.4	13.9	13.9	16.2	19.6	19.9	16.3	15.1	174.7	-	149.6
	10	12.2	10.1	9.1	8.4	8.9	8.9	11.2	14.6	14.9	11.3	10.1	119.7	-	94.6

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.7	-	-
Precipitation - Reference Evapotranspiration	25.1	-	29.2
Number of Rainy Days	6.0	-	3.0
Number of Dry Days	10.0	-	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

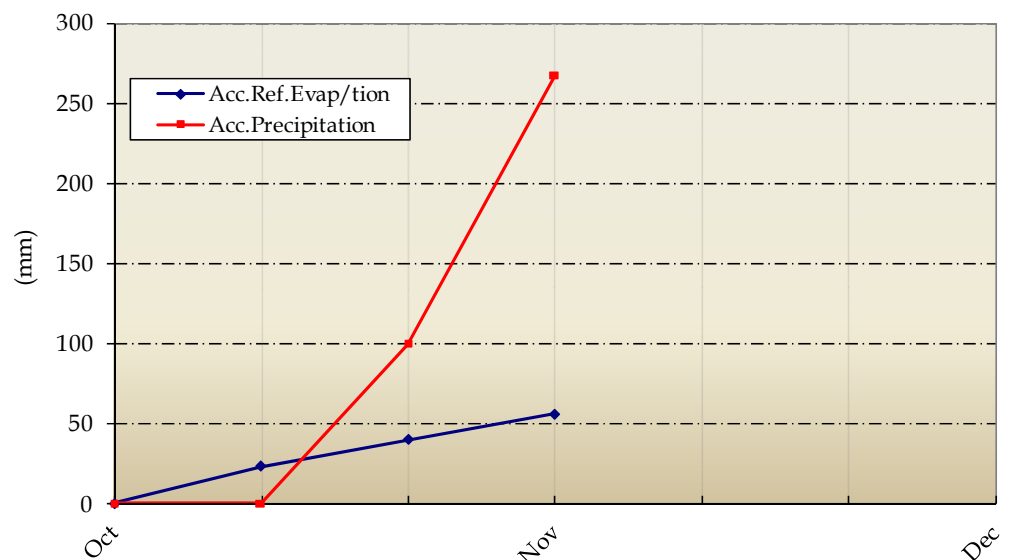


Ioannina

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.4	22.8	22.2	22.6	21.6	20.6	17.6	19.4	18.6	15.4	17.0	20.2	17.2	17.6
	Min	6.0	3.0	6.2	9.2	5.0	5.2	10.5	16.0	11.0	7.5	4.0	7.6	4.4	7.0
Relative Humidity	Max	97	97	97	94	91	100	94	98	96	94	93	96	94	-
	Min	42	32	40	41	40	42	83	87	73	50	45	52	48	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	11.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	13.8
Sunshine Duration		6.5	7.3	6.4	7.4	6.0	6.0	0.0	0.0	1.8	3.6	5.2	4.6	5.1	4.6
Precipitation								20.4	126.7	16.5	4.4		168.0	8.4	37.6
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	18.9
Growing Degrees	5	10.2	7.9	9.2	10.9	8.3	7.9	9.1	12.7	9.8	6.5	5.5	97.9	63.9	81.3
	10	5.2	2.9	4.2	5.9	3.3	2.9	4.1	7.7	4.8	1.5	0.5	42.9	16.3	30.0

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	16.3	14.4	14.7
Precipitation - Reference Evapotranspiration	151.7	-6.0	22.9
Number of Rainy Days	4.0	2.0	3.8
Number of Dry Days	10.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

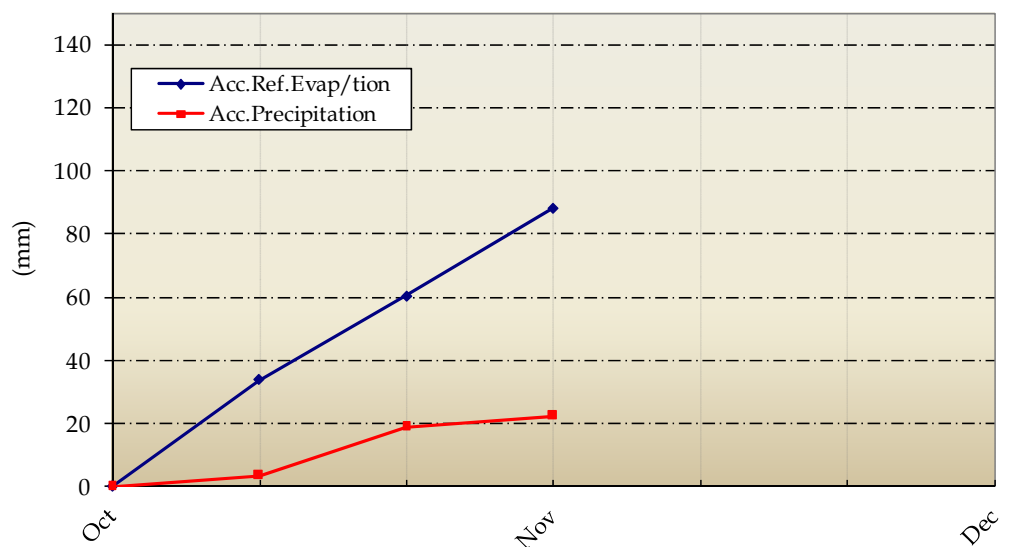


Kalamata

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	25.5	25.2	25.3	24.2	24.2	24.5	24.0	25.3	26.4	21.6	22.8	24.5	22.1	22.3
	Min	13.6	11.5	12.8	12.4	11.1	12.1	12.0	22.8	16.1	12.8	9.0	13.3	10.6	11.5
Relative Humidity	Max	92	90	93	90	92	94	94	76	85	89	86	89	85	-
	Min	50	33	38	46	47	47	62	61	55	38	33	46	44	-
Soil Temperature at 10 cm	06 UTC	20.4	20.2	19.6	19.2	18.6	18.6	18.8	20.6	21.2	19.6	18.0	19.5	16.4	16.7
	12 UTC	21.6	21.0	22.0	20.4	20.2	20.2	19.8	21.0	22.0	20.0	19.0	20.7	17.4	18.5
Sunshine Duration		8.0	9.7	8.1	6.1	7.0	7.5	5.2	0.1	3.9	8.1	9.2	6.6	8.0	5.9
Precipitation				2.4				0.0	0.2	0.8	0.1		3.5	0.1	43.6
Evaporation		2.4	4.4	0.7	4.6	1.2	4.0	1.3	1.6	4.0	2.8	3.1	30.1	30.4	36.3
Growing Degrees	5	14.6	13.4	14.1	13.3	12.7	13.3	13.0	19.1	16.3	12.2	10.9	152.6	125.0	130.7
	10	9.6	8.4	9.1	8.3	7.7	8.3	8.0	14.1	11.3	7.2	5.9	97.6	70.0	75.7

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.8	25.0	21.6
Precipitation - Reference Evapotranspiration	-24.3	-24.9	22.0
Number of Rainy Days	4.0	1.0	3.7
Number of Dry Days	7.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



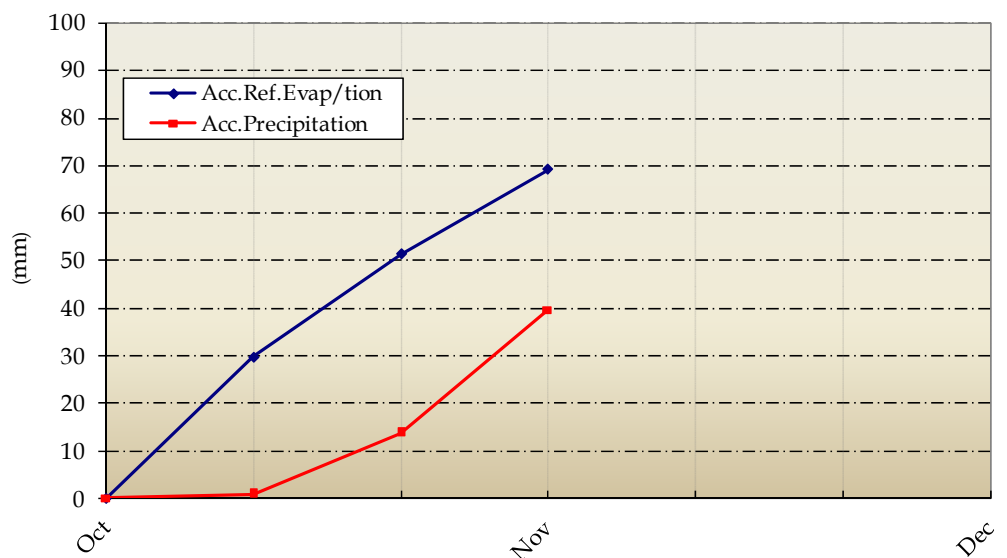


Larisa

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	24.8	24.0	22.6	21.2	22.8	24.6	16.2	25.5	24.2	20.4	20.3	22.4	16.9	18.9
	Min	13.6	8.4	12.0	13.6	7.0	6.2	7.5	12.8	16.1	11.0	5.8	10.4	7.4	8.3
Relative Humidity	Max	98	90	93	98	99	98	99	100	100	83	93	96	92	-
	Min	31	30	36	48	33	33	85	-	46	33	31	41	54	-
Soil Temperature at 10 cm	06 UTC	19.8	18.4	18.8	18.6	17.2	16.8	16.8	17.2	18.2	17.6	15.2	17.7	13.7	14.6
	12 UTC	20.8	20.0	19.2	19.0	18.2	18.2	17.2	18.2	19.2	18.2	16.8	18.6	14.9	15.6
Sunshine Duration		7.3	5.3	1.7	3.9	6.7	7.5	0.0	1.0	5.3	7.2	4.9	4.6	3.3	4.4
Precipitation					2.9			5.1	2.2	15.2	0.5		25.9	1.0	23.9
Evaporation		3.7	3.2	2.5	1.5	1.9	2.0	4.6	0.1	3.0	2.0	3.6	28.1	20.4	24.8
Growing Degrees	5	14.2	11.2	12.3	12.4	9.9	10.4	6.9	14.2	15.2	10.7	8.1	125.3	78.8	94.1
	10	9.2	6.2	7.3	7.4	4.9	5.4	1.9	9.2	10.2	5.7	3.1	70.3	25.5	41.5

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.8	15.1	16.4
Precipitation - Reference Evapotranspiration	8.1	-14.1	7.5
Number of Rainy Days	5.0	1.0	3.5
Number of Dry Days	6.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



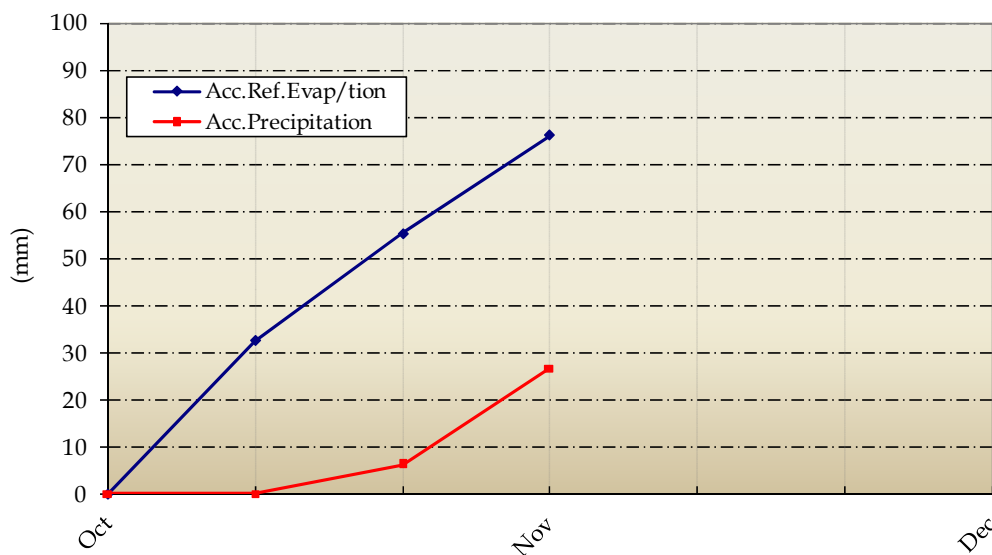


Mikra

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	23.8	23.7	23.0	22.0	21.0	21.8	18.6	22.4	24.0	20.8	19.6	21.9	16.4	18.1
	Min	14.4	11.2	14.2	13.4	12.4	11.4	11.8	16.5	18.0	14.0	8.0	13.2	8.4	9.2
Relative Humidity	Max	84	85	81	81	84	87	90	90	91	80	88	86	86	-
	Min	44	31	39	45	53	55	50	69	45	29	50	46	55	-
Soil Temperature at 10 cm	06 UTC	19.2	18.0	19.4	17.2	17.0	17.8	17.8	18.6	19.0	17.4	15.2	17.9	13.7	13.8
	12 UTC	22.2	25.6	20.8	20.8	21.4	22.2	22.6	20.6	24.6	24.4	18.0	22.1	15.8	16.0
Sunshine Duration		8.7	6.8	3.5	8.5	7.2	7.5	0.5	0.2	6.3	9.1	5.9	5.8	5.0	4.6
Precipitation								4.0	12.8	3.5	0.2		20.5		21.1
Evaporation		2.0	3.8	3.5	3.3	1.6	3.6	0.4	1.3	6.6	2.3	1.3	29.7	24.8	29.7
Growing Degrees	5	14.1	12.5	13.6	12.7	11.7	11.6	10.2	14.5	16.0	12.4	8.8	138.0	81.5	95.5
	10	9.1	7.5	8.6	7.7	6.7	6.6	5.2	9.5	11.0	7.4	3.8	83.0	26.5	42.9

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	20.8	15.3	17.3
Precipitation - Reference Evapotranspiration	-0.3	-15.3	3.8
Number of Rainy Days	4.0	0.0	3.2
Number of Dry Days	10.0	16.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

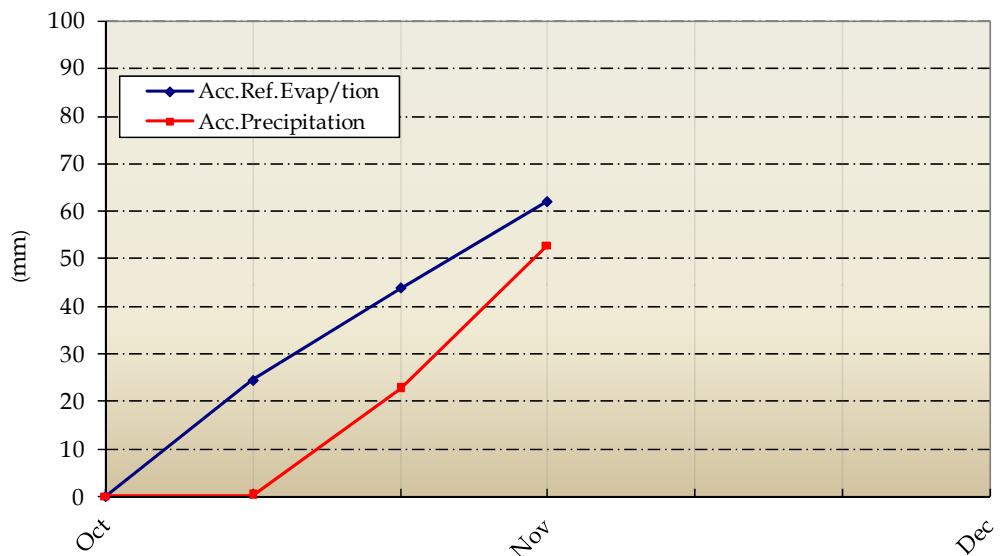


Tripoli

3rd 10-day period (21-31/10/2012)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.9	20.9	20.3	19.3	20.5	21.7	19.3	22.9	20.9	16.8	20.2	20.4	16.5	17.6
	Min	4.9	4.7	6.4	11.6	6.7	4.8	6.2	15.6	12.5	10.2	4.3	8.0	4.7	6.5
Relative Humidity	Max	90	93	94	73	94	95	93	89	96	69	90	89	91	-
	Min	41	36	46	57	41	38	57	61	53	36	38	46	47	-
Soil Temperature at 10 cm	06 UTC	14.0	13.4	13.8	15.4	13.4	13.4	13.6	15.6	16.2	13.4	11.8	14.0	10.3	12.8
	12 UTC	18.8	18.0	-	17.4	17.4	17.8	16.4	17.6	16.6	16.4	15.4	17.2	14.2	14.2
Sunshine Duration		7.7	7.3	3.7	5.7	7.1	9.1	2.1	2.9	5.2	8.1	7.3	6.0	5.7	5.3
Precipitation				0.0				2.0		28.2			30.2		39.1
Evaporation		2.0	2.0	1.1	2.8	1.9	3.8	1.0	0.5	0.0	2.2	2.2	19.5	20.4	23.9
Growing Degrees	5	8.4	7.8	8.4	10.5	8.6	8.3	7.8	14.3	11.7	8.5	7.3	101.3	61.3	77.8
	10	3.4	2.8	3.4	5.5	3.6	3.3	2.8	9.3	6.7	3.5	2.3	46.3	11.2	27.7

3rd 10-day period (21-31/10/2012)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.3	17.5	18.0
Precipitation - Reference Evapotranspiration	11.9	-17.5	21.1
Number of Rainy Days	2.0	0.0	3.8
Number of Dry Days	11.0	14.0	-

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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ΥΠΗΡΕΣΙΑ

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