



AGROMETEOROLOGICAL BULLETIN

January 2015
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



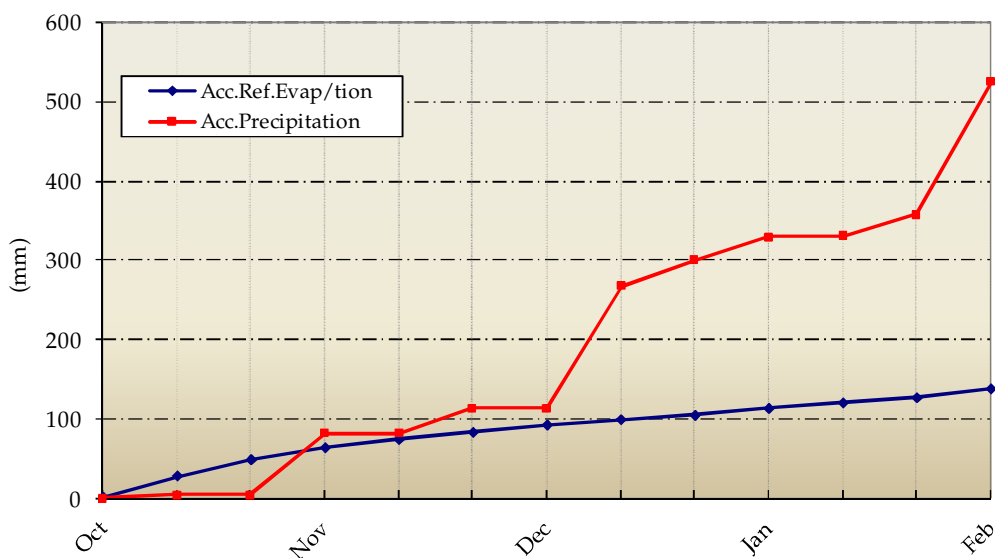
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www.hnms.gr
www.emy.gov.gr
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3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.0	17.4	18.4	14.2	11.2	10.4	8.8	11.0	8.0	15.0	16.2	13.2	10.0	8.8
	Min	10.4	11.0	8.4	9.2	9.4	7.4	5.8	6.0	3.0	7.0	12.2	8.2	4.2	1.4
Relative Humidity	Max	95	93	89	95	92	92	97	97	94	92	95	94	94	-
	Min	72	66	41	75	82	83	87	64	75	70	68	71	75	-
Soil Temperature at 10 cm	06 UTC	9.4	10.4	9.0	10.0	10.1	9.6	7.4	7.7	6.4	7.6	10.8	8.9	7.4	4.6
	12 UTC	11.0	12.4	11.8	11.0	10.2	10.0	8.6	10.2	8.0	10.4	11.4	10.5	8.8	5.8
Sunshine Duration		0.2	2.9	7.6	2.2	0.0	0.0	0.0	3.1	0.0	3.3	0.0	1.8	2.2	3.3
Precipitation		7.4	35.9		16.3	64.3	2.6	6.5	14.0		2.2	18.0	167.2	73.6	16.6
Evaporation		0.4	1.4	2.4	0.9	2.5	0.5	0.6	1.2	1.0	3.1	5.0	19.0	14.2	10.0
Growing Degrees	5	7.7	9.2	8.4	6.7	5.3	3.9	2.3	3.5	0.5	6.0	9.2	62.7	36.2	16.7
	10	2.7	4.2	3.4	1.7	0.3	0.0	0.0	0.0	0.0	1.0	4.2	17.5	9.1	2.2

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.2	8.6	10.8
Precipitation - Reference Evapotranspiration	156.0	65.0	5.8
Number of Rainy Days	9.0	8.0	2.7
Number of Dry Days	8.0	1.0	-

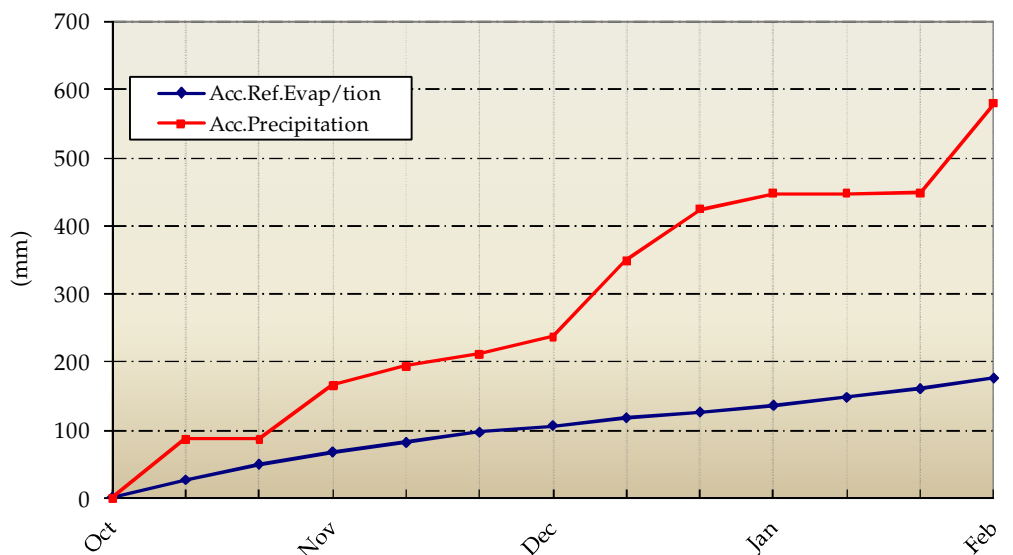
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	18.1	21.2	19.2	12.0	15.2	14.4	11.8	13.8	13.8	14.6	16.2	15.5	15.0	14.0
	Min	8.5	6.6	9.6	8.4	7.8	8.6	8.0	6.0	8.5	8.0	12.0	8.4	8.3	5.3
Relative Humidity	Max	91	88	89	90	88	88	88	88	88	88	86	88	88	-
	Min	55	26	58	75	59	66	64	51	58	53	70	58	54	-
Soil Temperature at 10 cm	06 UTC	10.8	10.2	11.6	9.8	10.2	10.4	10.2	9.6	10.8	10.8	10.6	10.5	10.8	8.6
	12 UTC	10.8	12.2	10.8	10.4	12.4	11.8	11.2	11.4	12.0	11.6	13.4	11.6	12.0	10.2
Sunshine Duration		5.4	6.1	1.4	0.0	4.9	1.2	1.4	2.8	1.9	0.8	0.0	2.4	2.7	4.8
Precipitation		18.6		17.3	32.3	3.0	10.5	18.3	3.0	9.3	6.2	12.5	131.0	93.3	33.1
Evaporation		5.6	5.6	3.5	0.0	0.5	9.0	0.9	0.2	1.3	1.0	1.0	28.6	13.6	18.6
Growing Degrees	5	8.3	8.9	9.4	5.2	6.5	6.5	4.9	4.9	6.2	6.3	9.1	76.2	73.1	51.2
	10	3.3	3.9	4.4	0.2	1.5	1.5	0.0	0.0	1.2	1.3	4.1	21.4	18.1	9.9

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	15.6	13.9	11.9
Precipitation - Reference Evapotranspiration	115.4	79.4	21.2
Number of Rainy Days	10.0	8.0	4.6
Number of Dry Days	1.0	4.0	-

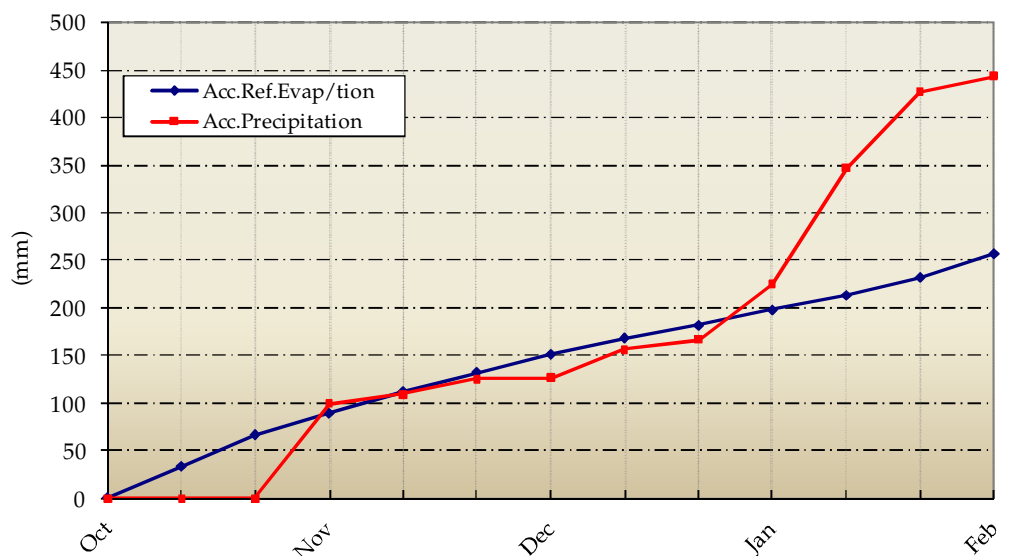
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	22.6	21.8	20.2	18.4	16.0	17.2	16.0	15.6	16.6	17.0	18.6	18.2	17.6	15.0
	Min	15.4	11.4	15.8	11.8	12.0	10.0	9.8	6.6	10.2	6.2	12.6	11.1	10.5	8.9
Relative Humidity	Max	86	73	72	65	85	85	90	85	90	88	70	81	85	-
	Min	51	29	45	48	58	58	47	57	47	52	41	48	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.0	3.7	6.3	6.4	1.0	8.1	4.9	7.2	4.9	6.9	3.3	5.4	4.2	4.0
Precipitation					0.5	3.3		4.1	0.8	7.1	0.1	0.6	16.5	12.9	25.2
Evaporation		0.8	4.6	3.7	3.7	2.6	2.2	0.6	0.5	0.0	1.3	3.4	23.4	16.0	29.5
Growing Degrees	5	14.0	11.6	13.0	10.1	9.0	8.6	7.9	6.1	8.4	6.6	10.6	105.9	99.5	76.7
	10	9.0	6.6	8.0	5.1	4.0	3.6	2.9	1.1	3.4	1.6	5.6	50.9	44.5	23.4

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	24.8	20.0	-
Precipitation - Reference Evapotranspiration	-8.3	-7.1	25.2
Number of Rainy Days	7.0	4.0	4.4
Number of Dry Days	9.0	8.0	-

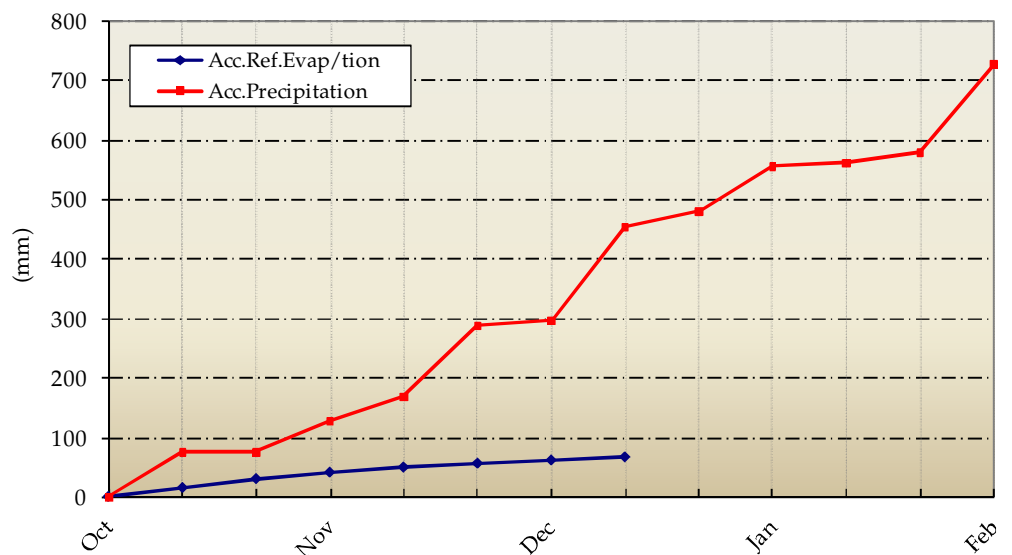
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.9	15.6	7.9	7.5	11.0	9.6	8.8	8.9	11.8	8.8	12.9	10.7	9.5	9.3
	Min	4.1	4.2	6.6	3.7	4.7	0.4	4.9	3.5	3.5	5.0	6.5	4.3	3.3	0.7
Relative Humidity	Max	100	100	100	100	100	100	100	100	96	100	100	100	96	-
	Min	57	31	85	85	-	75	-	70	49	79	82	68	59	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6
Sunshine Duration		4.0	-	0.0	-	-	-	-	-	-	-	-	2.0	2.5	3.1
Precipitation		0.4	0.7	25.5	7.6	2.7	7.8	6.2	0.6	0.0	28.7	69.7	149.9	87.6	37.2
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	8.0
Growing Degrees	5	4.5	4.9	2.3	0.6	2.9	0.0	1.9	1.2	2.7	1.9	4.7	27.4	18.4	13.3
	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	0.0	0.4

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	8.1	8.6
Precipitation - Reference Evapotranspiration	-	79.5	28.6
Number of Rainy Days	10.0	7.0	4.3
Number of Dry Days	0.0	0.0	-

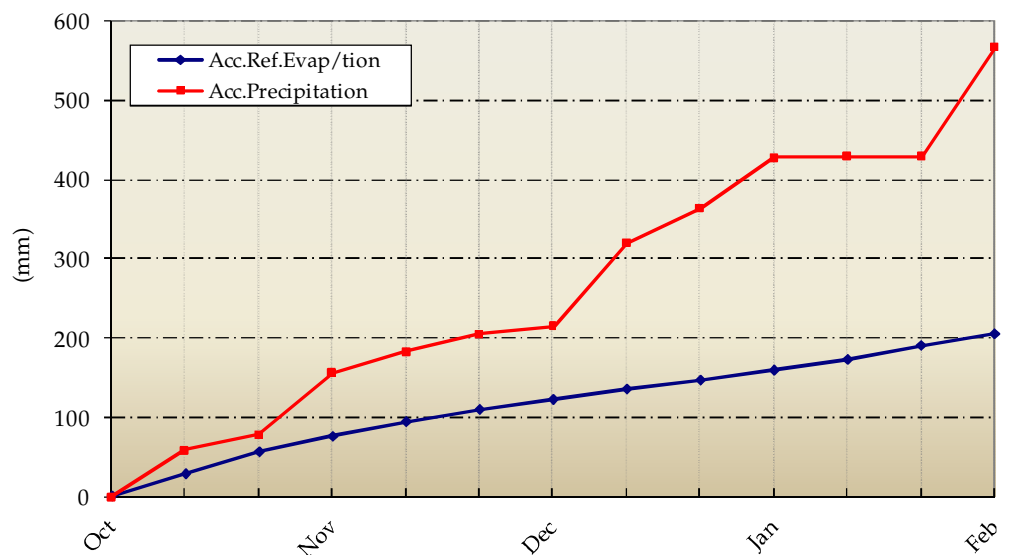
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.1	21.9	20.4	11.8	15.0	14.4	13.6	13.4	13.6	15.1	16.7	15.9	16.2	14.8
	Min	9.6	5.8	8.2	7.9	7.0	5.6	6.5	5.5	8.0	7.0	11.4	7.5	6.8	5.3
Relative Humidity	Max	94	95	94	95	95	95	96	96	95	95	85	94	94	-
	Min	69	28	53	79	67	70	59	62	66	62	70	62	56	-
Soil Temperature at 10 cm	06 UTC	11.8	11.0	12.4	11.0	11.0	10.6	10.4	10.4	10.6	10.8	11.4	11.0	10.9	9.0
	12 UTC	12.6	11.6	12.8	11.0	11.2	10.6	10.6	10.4	10.6	10.8	11.6	11.3	11.3	10.3
Sunshine Duration		7.6	4.8	4.6	0.2	2.6	0.0	2.1	1.9	0.4	2.0	0.1	2.4	3.1	4.4
Precipitation				11.9	53.8	10.3	10.3	7.1	9.0	20.9	4.0	10.2	137.5	88.1	36.5
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	21.4
Growing Degrees	5	9.4	8.9	9.3	4.9	6.0	5.0	5.1	4.5	5.8	6.1	9.1	73.8	71.3	55.6
	10	4.4	3.9	4.3	0.0	1.0	0.0	0.1	0.0	0.8	1.1	4.1	19.5	17.9	9.3

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	14.7	13.7	13.4
Precipitation - Reference Evapotranspiration	122.8	74.4	23.1
Number of Rainy Days	9.0	8.0	4.7
Number of Dry Days	4.0	4.0	-

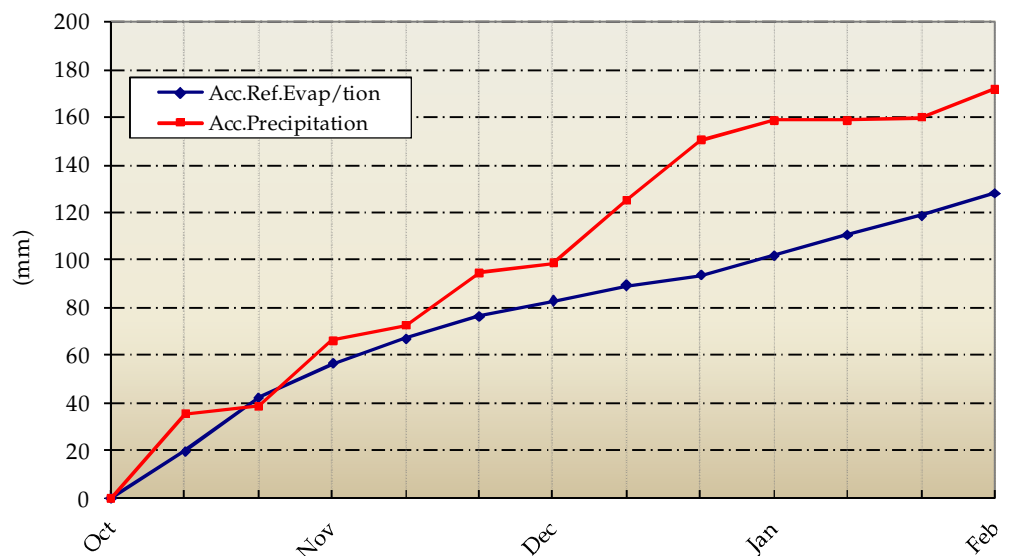
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.7	16.4	17.4	13.6	15.7	9.8	11.4	10.6	11.4	22.0	12.0	14.3	12.2	10.7
	Min	7.8	1.8	10.0	3.2	2.6	3.6	5.8	0.6	6.1	2.8	7.6	4.7	3.6	1.2
Relative Humidity	Max	100	100	100	100	100	100	100	100	95	100	100	100	96	-
	Min	65	64	52	64	49	65	71	67	80	61	95	67	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	6.2
Sunshine Duration		4.6	5.1	1.9	2.8	6.2	0.0	1.0	0.2	1.6	0.7	0.0	2.2	2.6	3.5
Precipitation				0.3	0.2	0.0	0.2	0.0	0.5	0.9	0.0	10.0	12.1	11.7	10.7
Evaporation		0.1	0.5	8.7	0.5	0.7	0.0	1.1	0.0	0.8	0.0	0.0	12.4	11.8	7.0
Growing Degrees	5	7.3	4.1	8.7	3.4	4.2	1.7	3.6	0.6	3.8	7.4	4.8	49.5	33.5	18.5
	10	2.3	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	8.4	2.7	1.5

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.5	12.1	8.6
Precipitation - Reference Evapotranspiration	2.6	-0.4	2.1
Number of Rainy Days	6.0	4.0	3.0
Number of Dry Days	3.0	4.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

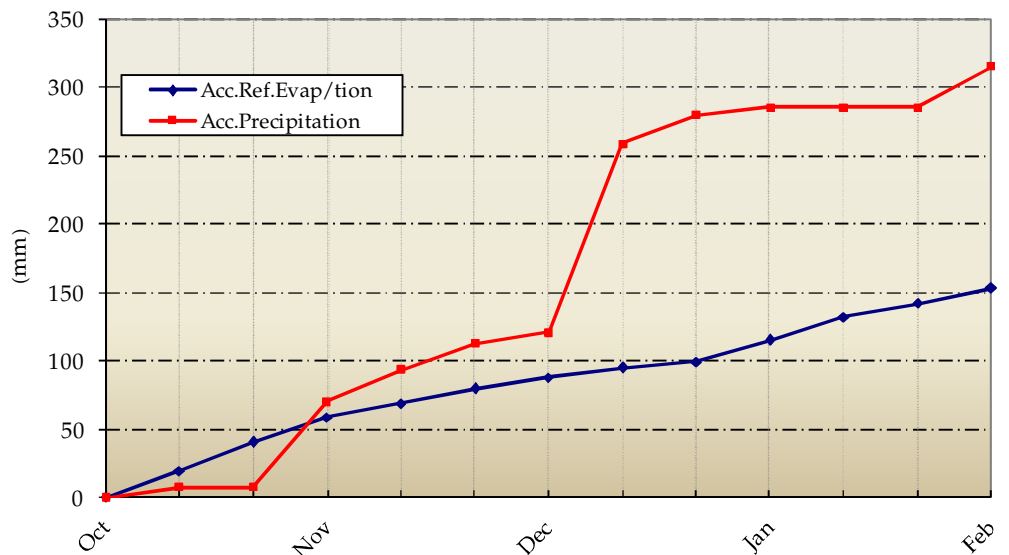


Mikra

3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.1	13.4	18.6	13.2	13.5	10.0	9.2	10.4	9.7	14.2	14.8	12.8	12.1	9.8
	Min	8.3	6.3	10.1	6.9	8.7	5.8	6.5	4.6	6.4	5.4	9.2	7.1	4.1	1.9
Relative Humidity	Max	95	95	85	91	94	93	94	95	92	93	93	93	88	-
	Min	78	66	59	69	64	70	84	67	69	51	66	68	55	-
Soil Temperature at 10 cm	06 UTC	9.0	8.8	11.0	9.6	10.2	8.6	9.0	7.6	8.2	7.8	9.8	9.1	7.7	5.1
	12 UTC	10.0	10.6	12.6	10.8	11.0	9.4	9.2	9.4	8.8	9.2	10.2	10.1	9.2	6.5
Sunshine Duration		3.8	4.0	4.1	4.4	7.3	0.3	0.4	2.0	0.0	0.9	0.1	2.5	3.1	3.5
Precipitation				10.3	1.1	2.7	2.0	2.9	0.6	1.2		8.7	29.5	18.9	11.8
Evaporation		1.0	1.0	1.0	0.0	0.7	0.3	0.1	2.0	0.0	2.0	0.1	8.2	15.8	12.6
Growing Degrees	5	6.2	4.9	9.4	5.1	6.1	2.9	2.9	2.5	3.1	4.8	7.0	54.7	38.7	18.0
	10	1.2	0.0	4.4	0.1	1.1	0.0	0.0	0.0	0.0	0.0	2.0	8.7	6.4	1.5

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	10.9	13.3	9.9
Precipitation - Reference Evapotranspiration	18.6	5.6	1.9
Number of Rainy Days	8.0	5.0	3.3
Number of Dry Days	3.0	4.0	-

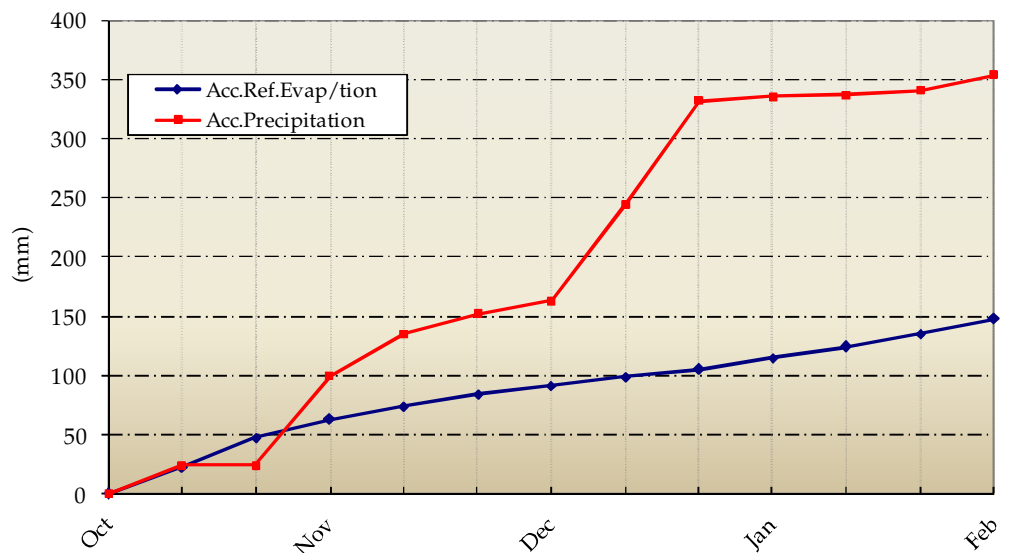
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	30	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	16.0	18.2	12.0	16.0	13.4	11.0	12.5	12.0	14.8	18.5	14.9	13.1	11.7
	Min	8.0	4.0	9.2	4.0	5.0	2.6	2.5	2.0	2.7	2.1	13.3	5.0	5.4	3.1
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	64	97	92	-
	Min	47	73	43	39	50	47	70	60	75	50	45	54	60	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		5.0	3.9	7.1	0.0	5.0	3.9	0.6	5.4	0.6	2.1	2.2	3.3	-	-
Precipitation				0.1	0.0		4.8			8.0	0.0		12.9	29.0	24.3
Evaporation		1.0	2.0	0.5	1.1	2.0	1.0	0.2	0.8	1.0	2.2	5.0	16.8	-	-
Growing Degrees	5	8.5	5.0	8.7	3.0	5.5	3.0	1.8	2.3	2.4	3.5	10.9	54.4	-	-
	10	3.5	0.0	3.7	0.0	0.5	0.0	0.0	0.0	0.0	0.0	5.9	13.6	-	-

3rd 10-day period (21-31/01/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.3	-
Precipitation - Reference Evapotranspiration	0.6	24.3
Number of Rainy Days	3.0	5.1
Number of Dry Days	9.0	-

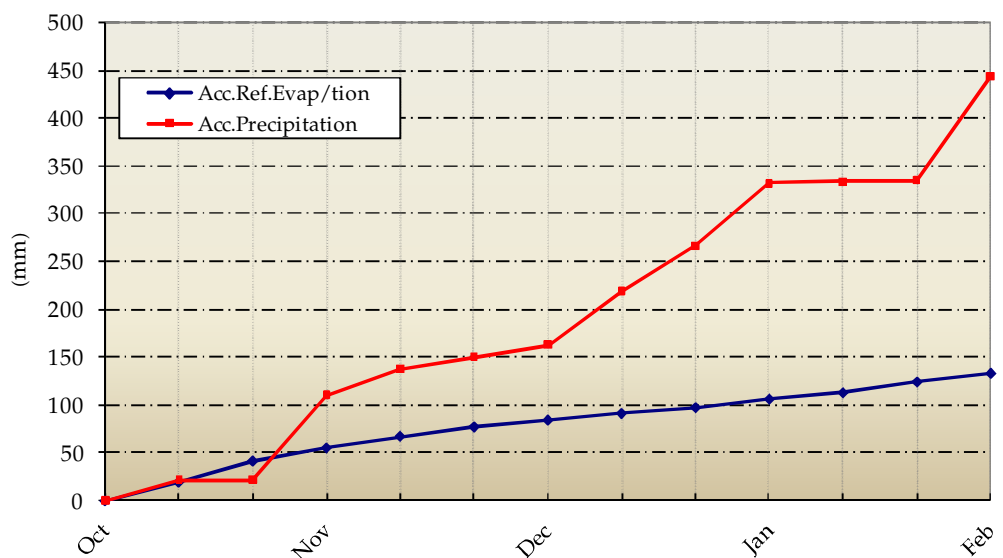
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/01/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.0	14.0	13.7	5.4	11.2	10.9	8.0	10.0	8.0	10.3	12.8	10.8	10.4	9.8
	Min	2.2	-1.8	4.9	2.7	3.5	-1.3	2.3	1.1	4.6	1.0	6.9	2.4	3.0	0.9
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	98	100	92	-
	Min	65	50	44	99	65	63	72	51	82	67	69	66	60	-
Soil Temperature at 10 cm	06 UTC	6.6	5.0	6.6	6.2	5.6	4.6	5.2	5.0	6.4	5.8	7.6	5.9	5.9	4.6
	12 UTC	8.4	7.0	8.6	-	-	7.2	6.4	7.4	7.4	7.6	-	7.5	7.6	5.4
Sunshine Duration		3.1	4.9	5.0	0.0	2.8	2.6	1.2	2.7	0.0	2.1	0.4	2.3	3.5	4.0
Precipitation		1.8		5.2	46.3	10.5	5.8	1.3	0.2	10.4	1.5	26.6	109.6	98.0	32.5
Evaporation		0.0	0.5	0.7	-	0.8	0.4	0.1	0.2	0.0	-	-	-	6.5	8.6
Growing Degrees	5	3.1	1.1	4.3	0.0	2.4	0.0	0.2	0.6	1.3	0.7	4.9	18.4	21.6	14.3
	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	0.0	0.9

3rd 10-day period (21-31/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.0	9.9	11.0
Precipitation - Reference Evapotranspiration	100.6	88.1	21.5
Number of Rainy Days	10.0	7.0	4.6
Number of Dry Days	8.0	4.0	-

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

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