



AGROMETEOROLOGICAL BULLETIN

*January 2015
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



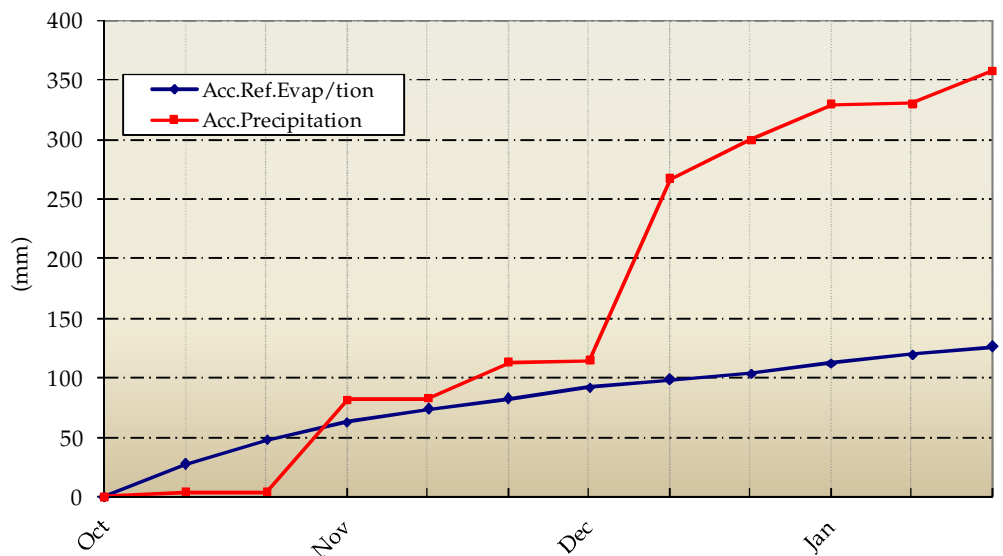
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Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
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2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	14.0	9.2	8.4	8.0	10.4	8.2	12.6	15.8	16.4	12.0	14.3	8.0
	Min	3.0	2.6	-0.8	-2.0	-3.4	-2.0	-2.6	-0.8	5.4	11.2	1.1	5.4	0.2
Relative Humidity	Max	89	95	82	96	96	96	96	100	97	93	94	97	-
	Min	69	82	44	65	72	46	79	71	73	79	68	70	-
Soil Temperature at 10 cm	06 UTC	2.2	8.2	2.6	2.2	2.0	2.2	2.0	3.2	6.4	8.8	4.0	8.2	4.2
	12 UTC	6.4	6.0	5.2	4.4	4.0	4.6	4.5	6.2	8.0	11.5	6.1	10.0	5.1
Sunshine Duration		7.4	0.0	8.6	7.0	6.1	7.5	6.7	2.4	5.3	5.5	5.6	3.8	3.1
Precipitation			27.4									27.4	34.0	11.4
Evaporation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0	1.1	2.6	7.0	6.6
Growing Degrees	5	4.9	3.3	0.0	0.0	0.0	0.0	0.0	0.9	5.6	8.8	23.5	48.5	9.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.8	4.4	9.3	0.9

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	6.6	7.0	8.8
Precipitation - Reference Evapotranspiration	20.8	27.0	2.6
Number of Rainy Days	1.0	3.0	2.2
Number of Dry Days	7.0	17.0	-

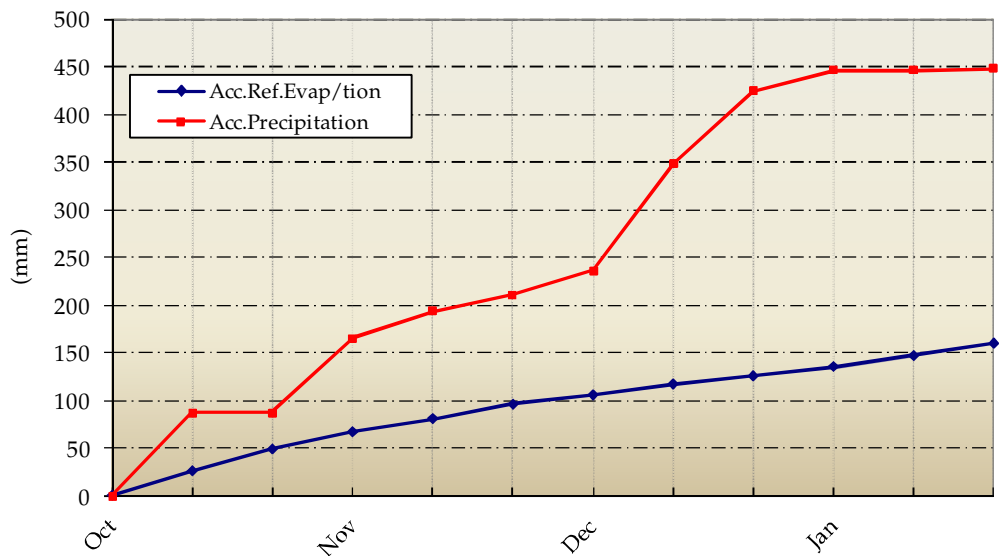
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.9	15.5	13.5	16.2	15.2	16.2	17.0	15.3	18.1	18.4	16.2	17.2	13.6
	Min	3.7	9.2	2.0	0.3	1.4	1.6	6.4	8.8	10.4	5.0	4.9	10.4	4.8
Relative Humidity	Max	91	87	64	75	88	85	85	85	83	87	83	88	-
	Min	54	26	27	28	61	49	50	59	64	51	47	61	-
Soil Temperature at 10 cm	06 UTC	8.0	11.6	7.8	5.8	7.8	8.0	8.6	9.8	10.2	10.4	8.8	11.7	8.3
	12 UTC	10.2	11.6	12.0	9.6	10.4	11.0	12.2	10.8	12.0	12.4	11.2	13.4	9.8
Sunshine Duration		7.1	5.8	8.4	7.8	8.1	9.2	8.5	0.2	4.1	3.1	6.2	3.8	4.4
Precipitation			0.4							0.6		1.0	25.6	33.0
Evaporation		0.6	3.6	2.2	1.4	0.8	0.6	3.4	0.4	1.8	1.2	16.0	11.2	18.1
Growing Degrees	5	5.3	7.4	2.8	3.3	3.3	3.9	6.7	7.1	9.3	6.7	55.6	88.2	42.4
	10	0.3	2.4	0.0	0.0	0.0	0.0	1.7	2.1	4.3	1.7	12.4	38.2	7.2

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	12.9	11.9	9.4
Precipitation - Reference Evapotranspiration	-11.9	13.7	23.6
Number of Rainy Days	2.0	3.0	3.7
Number of Dry Days	12.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

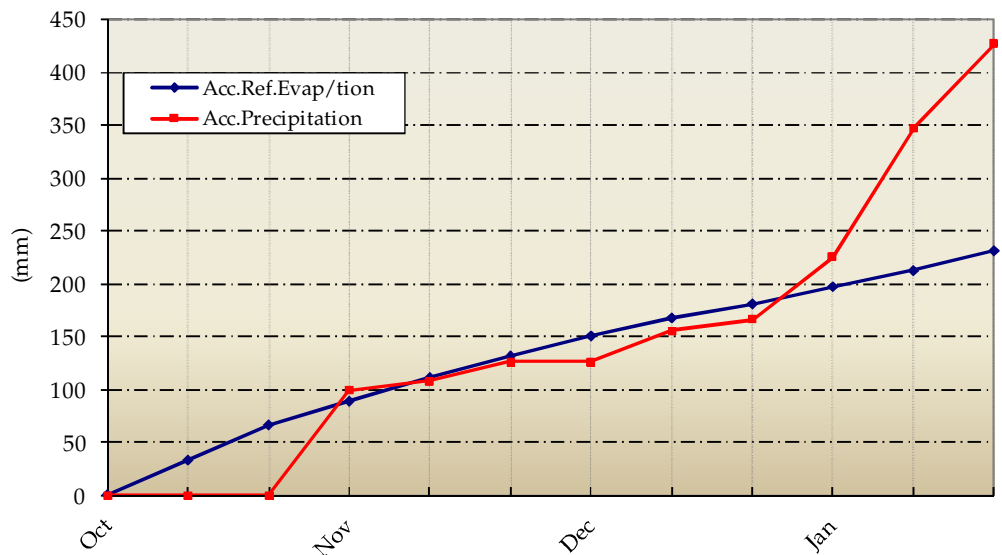


Iraklio

2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	21.0	20.0	11.2	14.0	15.8	15.4	15.4	17.2	19.6	18.6	16.8	18.6	14.7
	Min	8.6	12.6	8.4	9.8	8.0	10.2	9.2	6.6	11.8	13.6	9.9	11.5	9.1
Relative Humidity	Max	79	88	90	93	89	88	85	88	75	80	86	87	-
	Min	44	61	70	72	66	57	65	52	46	55	59	62	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.1	5.8	0.0	0.0	7.2	7.1	6.5	5.9	7.5	7.4	5.6	4.8	3.7
Precipitation			1.0	57.0	21.6							79.6	0.4	28.7
Evaporation		1.1	1.5	1.5	3.0	3.8	1.8	3.2	0.3	1.4	4.6	22.2	15.1	24.1
Growing Degrees	5	9.8	11.3	4.8	6.9	6.9	7.8	7.3	6.9	10.7	11.1	83.5	100.6	68.9
	10	4.8	6.3	0.0	1.9	1.9	2.8	2.3	1.9	5.7	6.1	33.7	50.6	21.0

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.8	16.4	-
Precipitation - Reference Evapotranspiration	60.8	-16.0	28.7
Number of Rainy Days	3.0	2.0	4.2
Number of Dry Days	1.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

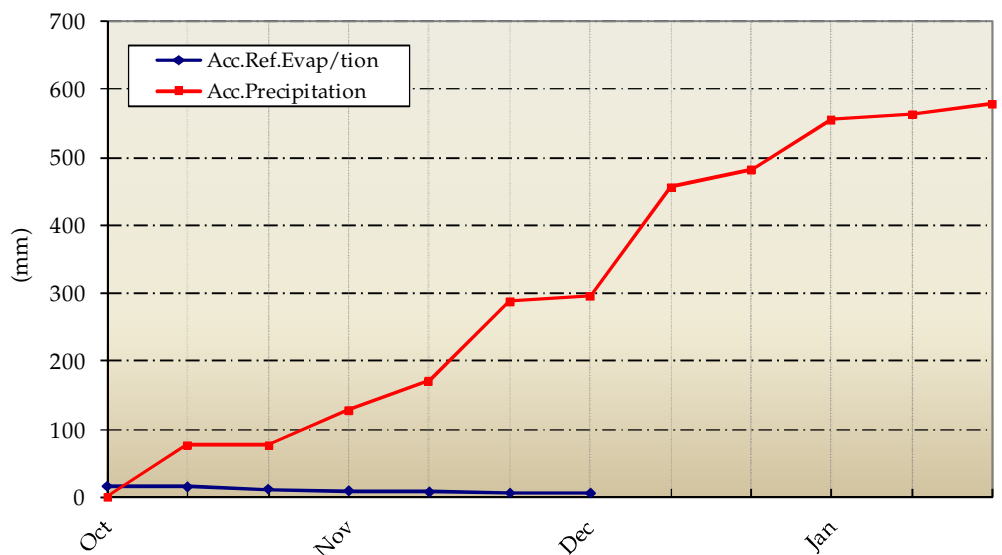


Ioannina

2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.8	8.4	14.3	14.0	14.0	13.3	14.2	10.1	12.0	14.0	12.8	11.7	8.7
	Min	-3.6	3.3	-3.7	-4.2	-6.0	-5.3	-6.0	-0.2	7.7	8.3	-1.0	4.1	-0.4
Relative Humidity	Max	100	100	-	100	100	90	100	98	100	100	99	97	-
	Min	55	21	17	26	28	37	36	90	78	59	45	70	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.2
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	3.8
Sunshine Duration		-	-	-	-	-	5.7	-	0.0	0.1	1.8	1.9	1.7	3.0
Precipitation		0.0	0.8						3.7	4.5	6.7	15.7	38.6	26.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	4.4
Growing Degrees	5	0.1	0.9	0.3	0.0	0.0	0.0	0.0	0.0	4.9	6.2	12.3	29.0	9.3
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	2.6	0.3

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	6.6	6.6
Precipitation - Reference Evapotranspiration	-	32.0	20.3
Number of Rainy Days	4.0	4.0	2.9
Number of Dry Days	7.0	8.0	-

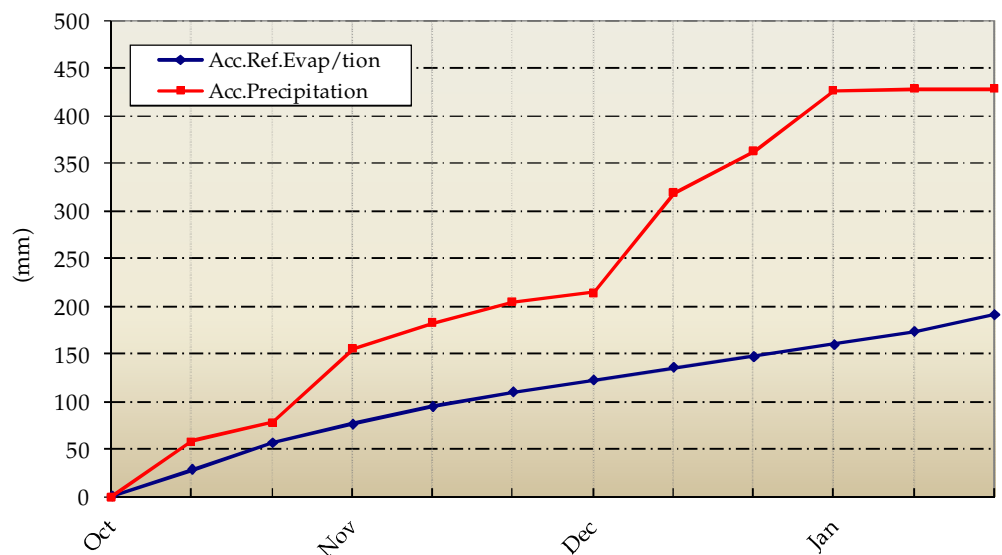
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	17.8	16.6	14.6	17.0	17.6	17.0	18.4	15.8	17.8	19.0	17.2	17.6	14.6
	Min	4.8	6.8	0.7	2.9	2.7	3.2	4.6	7.7	13.8	7.8	5.5	8.2	4.9
Relative Humidity	Max	93	92	61	82	93	93	93	90	79	92	87	92	-
	Min	44	27	23	32	39	42	46	62	60	53	43	61	-
Soil Temperature at 10 cm	06 UTC	8.8	10.6	9.0	8.4	8.2	8.8	9.4	10.2	11.4	10.5	9.5	11.0	9.0
	12 UTC	9.4	11.4	9.0	8.8	9.2	9.4	10.0	10.6	12.8	11.8	10.2	11.5	10.1
Sunshine Duration		7.8	5.3	8.3	8.3	8.0	10.6	7.6	1.2	7.3	5.2	7.0	4.2	4.2
Precipitation			0.3						0.1			0.4	39.7	33.9
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	23.4
Growing Degrees	5	6.3	6.7	2.7	5.0	5.2	5.1	6.5	6.8	10.8	8.4	63.3	79.2	47.5
	10	1.3	1.7	0.0	0.0	0.2	0.1	1.5	1.8	5.8	3.4	15.7	29.2	8.1

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	17.7	12.5	11.1
Precipitation - Reference Evapotranspiration	-17.3	27.2	22.8
Number of Rainy Days	2.0	3.0	3.8
Number of Dry Days	6.0	6.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

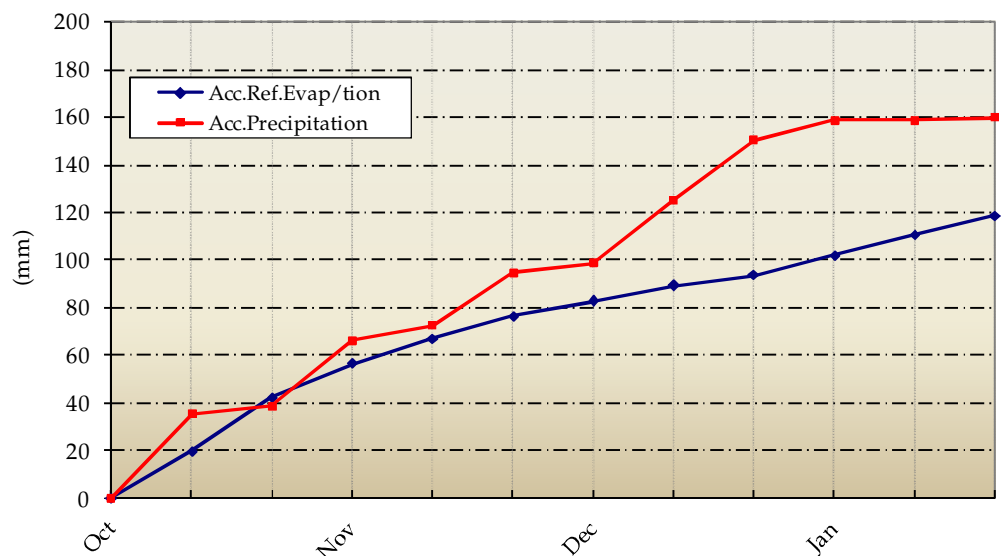


Larisa

2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	10.0	11.6	11.2	14.0	13.8	12.6	9.4	14.2	16.4	13.2	13.3	9.3
	Min	-0.7	4.0	1.2	-5.8	-6.8	-3.6	-4.0	-1.2	3.0	3.6	-1.0	3.2	0.0
Relative Humidity	Max	100	97	86	91	90	100	100	100	100	100	96	100	-
	Min	38	32	24	35	38	40	51	69	67	53	45	69	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	5.5
Sunshine Duration		5.8	1.1	7.5	7.5	7.0	7.5	6.8	0.2	2.5	1.6	4.8	2.6	3.6
Precipitation			0.8						0.0	0.2		1.0	3.2	8.6
Evaporation		0.4	2.3	0.0	0.0	0.0	0.0	0.0	0.7	0.4	0.4	4.2	8.3	5.9
Growing Degrees	5	4.2	2.0	1.4	0.0	0.0	0.1	0.0	0.0	3.6	5.0	16.3	33.1	9.7
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.4

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	8.0	6.6	6.4
Precipitation - Reference Evapotranspiration	-7.0	-3.4	2.2
Number of Rainy Days	2.0	3.0	2.6
Number of Dry Days	7.0	7.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

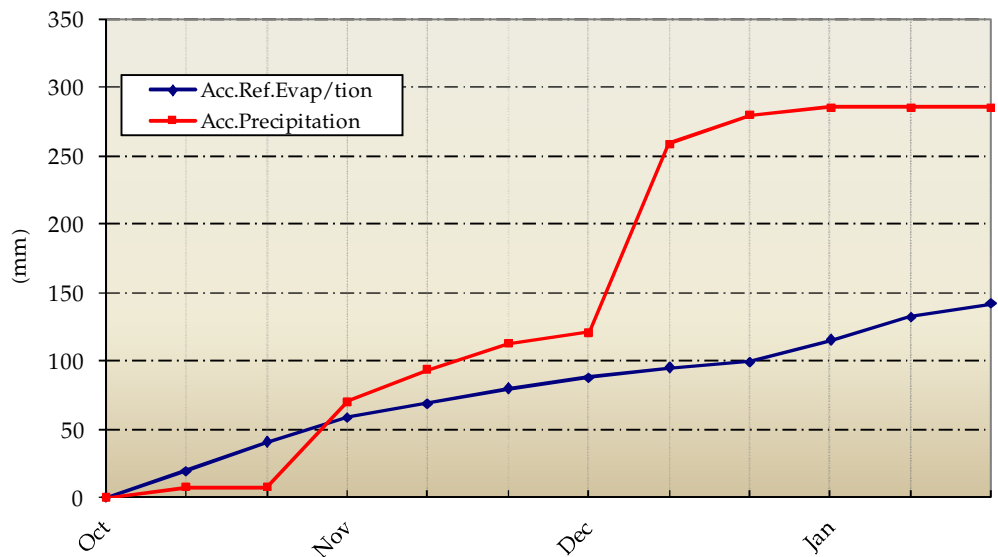


Mikra

2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.2	9.9	11.3	10.8	14.0	11.8	11.4	9.0	12.3	12.2	11.7	13.3	8.8
	Min	0.8	2.9	-1.4	-1.7	-2.8	-0.4	0.9	4.3	7.8	7.7	1.8	5.7	1.1
Relative Humidity	Max	92	88	73	81	86	84	91	92	93	94	87	94	-
	Min	58	32	35	45	36	54	61	77	82	87	57	71	-
Soil Temperature at 10 cm	06 UTC	3.4	5.0	3.6	3.0	2.6	3.8	4.2	6.6	7.4	8.3	4.8	8.9	4.3
	12 UTC	5.8	5.8	5.2	5.2	4.4	6.0	6.4	7.6	9.2	10.0	6.6	10.5	5.7
Sunshine Duration		7.2	6.0	8.5	7.9	7.3	8.2	6.3	0.0	1.9	0.4	5.4	3.8	3.6
Precipitation			0.1						0.2	0.2		0.5	3.5	6.6
Evaporation		0.2	6.7	0.0	0.0	1.2	0.6	0.4	1.0	2.8	0.2	13.1	8.7	10.5
Growing Degrees	5	2.5	1.4	0.0	0.0	0.6	0.7	1.2	1.7	5.1	5.0	18.0	45.1	11.4
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	6.9	0.9

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	9.9	6.5	8.8
Precipitation - Reference Evapotranspiration	-9.4	-3.0	-2.2
Number of Rainy Days	3.0	3.0	2.2
Number of Dry Days	13.0	12.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

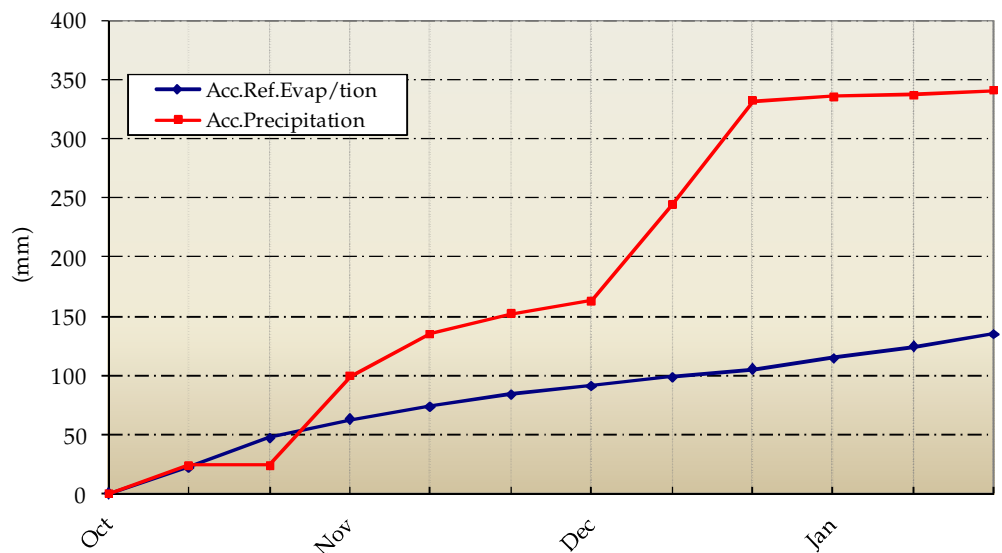


Tanagra

2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.0	15.8	9.6	14.0	14.1	13.1	13.2	14.5	16.4	16.5	14.6	16.3	11.4
	Min	3.1	9.0	3.5	1.1	-1.4	0.3	-1.2	1.0	9.8	4.5	3.0	7.9	3.0
Relative Humidity	Max	100	94	68	87	100	98	100	100	97	100	94	95	-
	Min	45	55	39	24	30	51	47	61	63	49	46	61	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		7.1	0.0	7.2	7.9	7.5	8.0	7.5	0.6	3.8	5.1	5.5	-	-
Precipitation			2.1	1.4					0.0			3.5	8.4	26.0
Evaporation		2.0	3.5	0.0	0.5	2.5	1.0	0.1	1.0	1.0	0.0	11.6	-	-
Growing Degrees	5	6.1	7.4	1.6	2.6	1.4	1.7	1.0	2.8	8.1	5.5	38.0	-	-
	10	1.1	2.4	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.5	7.1	-	-

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.1	-	
Precipitation - Reference Evapotranspiration	-7.6	-	26.0
Number of Rainy Days	2.0	-	4.7
Number of Dry Days	4.0	-	-

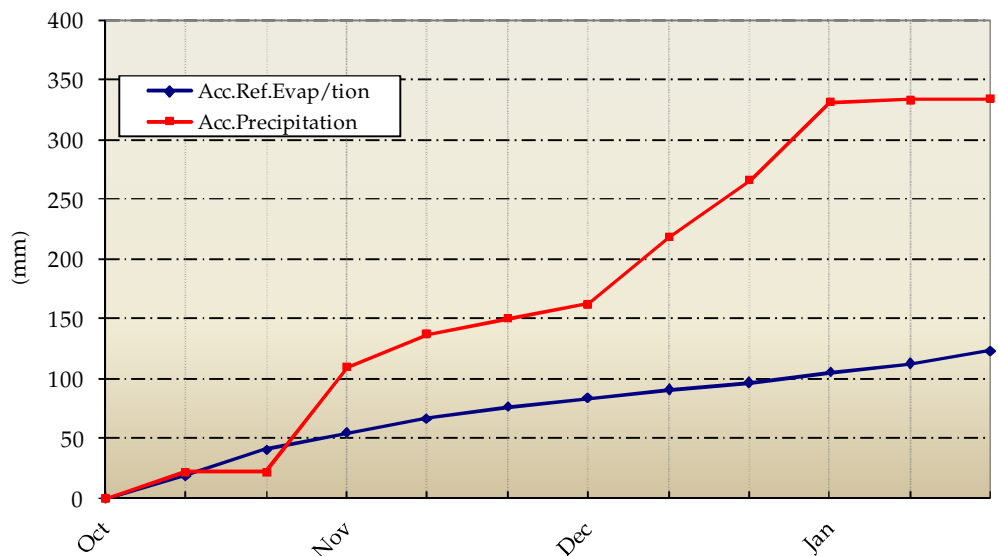
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



2nd 10-day period (11-20/01/2015)		11	12	13	14	15	16	17	18	19	20	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	19.5	12.4	9.5	14.5	15.2	12.4	14.2	11.6	14.6	14.7	13.9	13.4	9.4
	Min	-2.4	1.4	-0.3	-2.6	-3.6	-4.4	-4.7	-1.9	5.3	4.6	-0.9	3.0	0.1
Relative Humidity	Max	100	94	62	99	100	100	100	100	100	100	96	99	-
	Min	30	40	15	34	27	38	46	59	47	58	39	69	-
Soil Temperature at 10 cm	06 UTC	1.6	6.6	3.2	2.6	2.4	2.2	2.2	3.0	5.4	5.6	3.5	6.1	4.3
	12 UTC	-	7.6	4.6	5.2	5.2	4.6	-	-	7.8	8.2	6.2	8.1	5.0
Sunshine Duration		7.5	6.6	6.7	7.7	7.4	6.6	6.7	1.8	5.3	4.4	6.1	3.8	4.1
Precipitation			0.7						0.0	0.0		0.7	23.5	31.6
Evaporation		2.7	0.4	2.3	0.0	0.0	0.0	-	0.1	0.2	2.8	-	6.8	5.6
Growing Degrees	5	3.6	1.9	0.0	1.0	0.8	0.0	0.0	0.0	5.0	4.7	16.8	32.0	10.8
	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.5

2nd 10-day period (11-20/01/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	11.2	7.2	8.5
Precipitation - Reference Evapotranspiration	-10.5	16.3	23.1
Number of Rainy Days	1.0	3.0	3.7
Number of Dry Days	6.0	5.0	-

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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