

AGROMETEOROLOGICAL BULLETIN

March 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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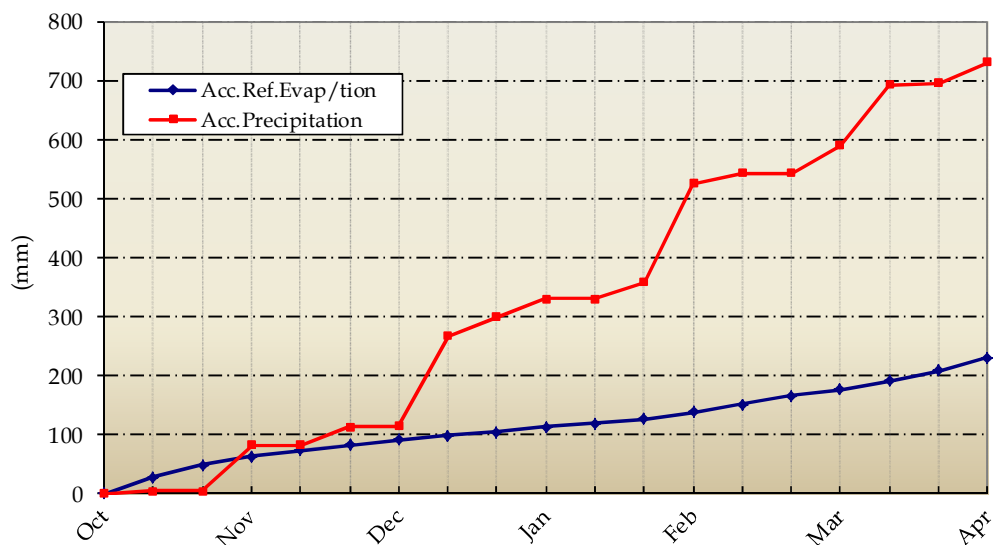
Web addresses of HNMS
www.hnms.gr
www.emy.gov.gr
www.meteo.gov.gr
www.meteohellas.gr

Alexandroupoli

3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	14.2	12.0	13.4	15.0	16.4	16.6	16.8	17.4	16.4	16.6	15.3	16.9	14.1
	Min	3.2	2.0	8.4	5.0	2.6	9.2	11.6	11.4	10.4	10.2	11.0	7.7	5.9	4.9
Relative Humidity	Max	83	94	92	84	90	93	95	86	93	95	93	91	93	-
	Min	30	47	75	47	39	55	81	64	53	56	65	56	49	-
Soil Temperature at 10 cm	06 UTC	6.6	6.6	10.2	8.2	8.1	10.7	11.8	12.4	12.6	12.6	13.5	10.3	11.6	8.3
	12 UTC	11.0	12.6	11.0	13.2	12.0	13.6	13.4	14.8	14.8	17.6	15.4	13.6	14.8	11.0
Sunshine Duration		8.9	7.6	1.2	9.9	3.0	0.6	0.0	6.8	1.5	8.0	5.7	4.8	7.5	5.5
Precipitation				0.9		0.2	2.6	20.0	8.9	0.8	0.6	1.5	35.5	8.7	15.2
Evaporation		5.3	1.8	1.9	3.7	1.7	0.4	1.1	3.6	3.1	2.8	1.6	27.0	32.5	32.3
Growing Degrees	5	3.3	3.1	5.2	4.2	3.8	7.8	9.1	9.1	8.9	8.3	8.8	71.6	70.8	51.2
	10	0.0	0.0	0.2	0.0	0.0	2.8	4.1	4.1	3.9	3.3	3.8	22.2	20.8	11.3

3rd 10-day period (21-31/03/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.7	25.8	23.3
Precipitation - Reference Evapotranspiration	13.8	-17.1	-8.1
Number of Rainy Days	8.0	3.0	2.7
Number of Dry Days	2.0	13.0	-

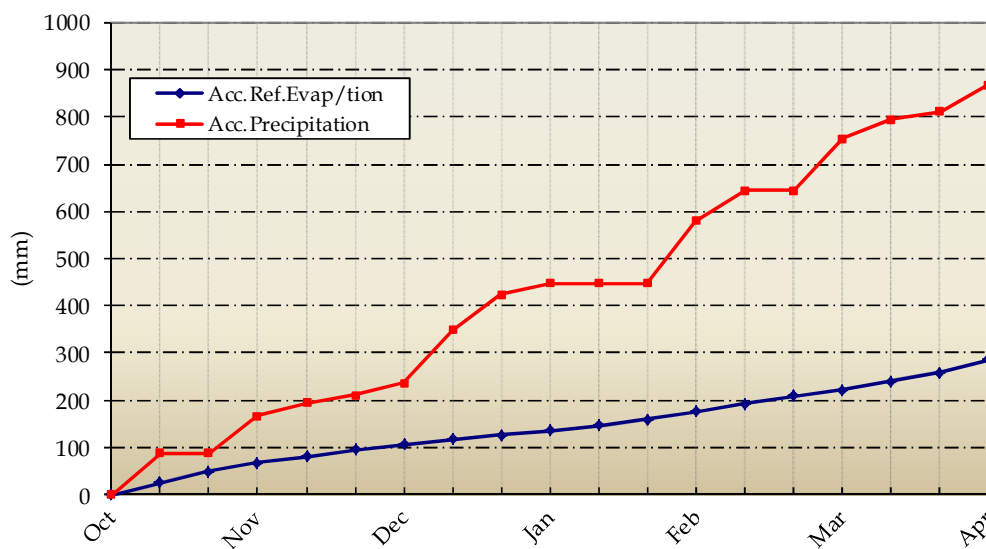
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.4	13.4	20.0	20.2	17.2	21.6	19.0	17.8	17.0	17.2	18.8	18.0	18.8	17.4
	Min	1.0	5.6	8.0	12.0	12.8	11.0	12.9	9.3	11.1	7.6	9.3	9.1	8.3	7.7
Relative Humidity	Max	80	84	87	88	87	90	92	88	89	88	91	88	89	-
	Min	31	63	60	52	60	48	55	52	56	48	41	51	50	-
Soil Temperature at 10 cm	06 UTC	10.0	10.8	11.0	14.4	15.0	13.4	14.2	13.4	15.0	13.5	14.6	13.2	14.3	11.5
	12 UTC	13.2	12.0	12.4	15.6	14.6	15.4	16.6	15.0	16.8	16.0	17.2	15.0	17.7	14.2
Sunshine Duration		10.6	1.7	7.4	8.6	0.0	1.1	5.9	10.0	5.5	9.2	10.5	6.4	7.2	6.8
Precipitation			1.5			4.6	6.8	24.4	18.9	0.2		1.0	57.4	14.1	19.5
Evaporation		2.0	0.6	2.0	2.7	9.9	0.2	0.9	2.7	1.5	2.0	8.0	32.5	-	33.3
Growing Degrees	5	3.2	4.5	9.0	11.1	10.0	11.3	11.0	8.6	9.1	7.4	9.1	94.1	94.1	83.1
	10	0.0	0.0	4.0	6.1	5.0	6.3	6.0	3.6	4.1	2.4	4.1	41.4	39.1	30.3

3rd 10-day period (21-31/03/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	26.7	28.5	27.1
Precipitation - Reference Evapotranspiration	30.7	-14.4	-7.6
Number of Rainy Days	7.0	3.0	3.2
Number of Dry Days	1.0	15.0	-

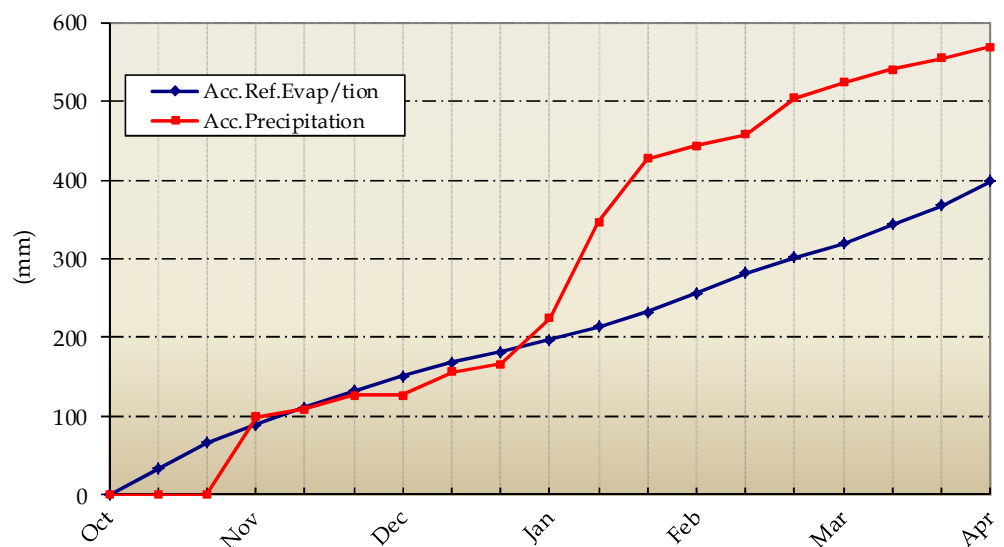
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	15.0	19.8	18.4	18.0	17.8	23.4	19.8	17.8	18.0	16.2	18.0	18.5	17.7
	Min	10.2	6.2	11.2	12.0	13.8	14.6	13.0	13.6	12.0	10.4	13.4	11.9	11.5	10.5
Relative Humidity	Max	73	77	88	92	90	88	89	75	87	87	93	85	82	-
	Min	47	46	55	76	51	46	52	52	52	59	61	54	55	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		8.5	8.4	4.5	6.9	0.1	0.0	0.0	5.4	6.5	8.6	1.6	4.6	8.6	6.6
Precipitation				1.3		1.2	9.1	0.1	0.7			1.6	14.0		15.8
Evaporation		2.2	1.8	1.4	2.1	2.8	1.8	4.0	1.7	1.8	7.8	5.6	33.0	36.4	48.5
Growing Degrees	5	6.8	5.6	10.5	10.2	10.9	11.2	13.2	11.7	9.9	9.2	9.8	109.0	110.3	100.1
	10	1.8	0.6	5.5	5.2	5.9	6.2	8.2	6.7	4.9	4.2	4.8	54.0	55.3	45.5

3rd 10-day period (21-31/03/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	30.2	35.0	-
Precipitation - Reference Evapotranspiration	-16.2	-35.0	15.8
Number of Rainy Days	6.0	0.0	3.0
Number of Dry Days	9.0	14.0	-

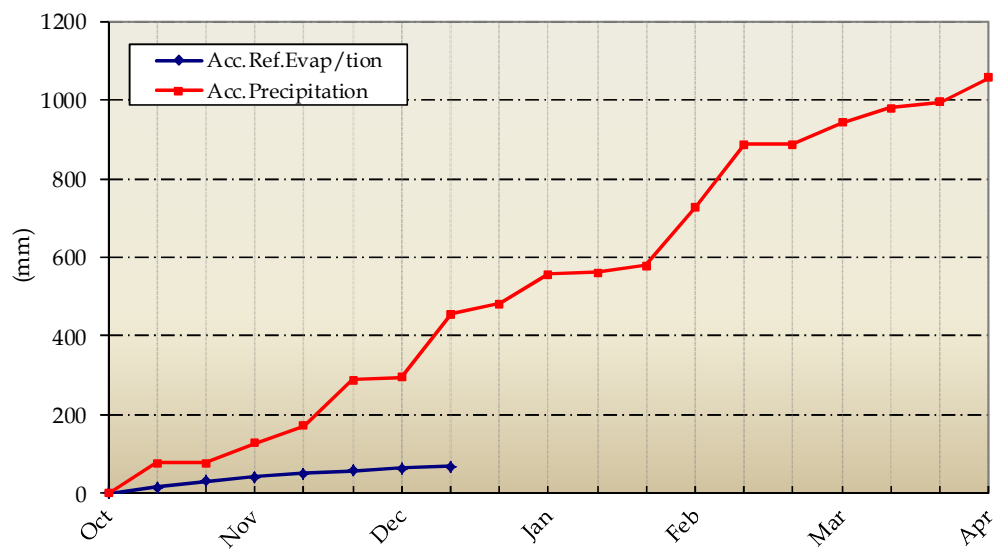
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	15.3	7.6	13.7	16.8	13.1	16.4	11.5	13.6	16.8	13.0	19.2	14.3	16.5	15.1
	Min	-3.2	-1.9	5.9	5.7	7.7	5.6	8.7	8.4	3.9	6.5	1.5	4.4	3.1	4.4
Relative Humidity	Max	-	94	100	100	99	100	100	100	100	100	100	99	95	-
	Min	14	77	78	49	57	-	92	68	38	48	33	55	38	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	7.9
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	10.5
Sunshine Duration		-	0.5	0.1	5.2	0.0	-	0.0	0.4	6.6	3.5	7.6	2.7	5.4	4.7
Precipitation			2.5	13.9	2.3	6.1	8.6	25.5	0.4		1.0	1.3	61.6	16.1	32.3
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	28.9
Growing Degrees	5	1.1	0.0	4.8	6.3	5.4	6.0	5.1	6.0	5.4	4.8	5.4	50.1	52.9	50.7
	10	0.0	0.0	0.0	1.3	0.4	1.0	0.1	1.0	0.4	0.0	0.4	4.5	4.1	11.1

3rd 10-day period (21-31/03/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	-	18.9	22.4
Precipitation - Reference Evapotranspiration	-	-2.8	9.9
Number of Rainy Days	9.0	6.0	3.9
Number of Dry Days	2.0	18.0	-

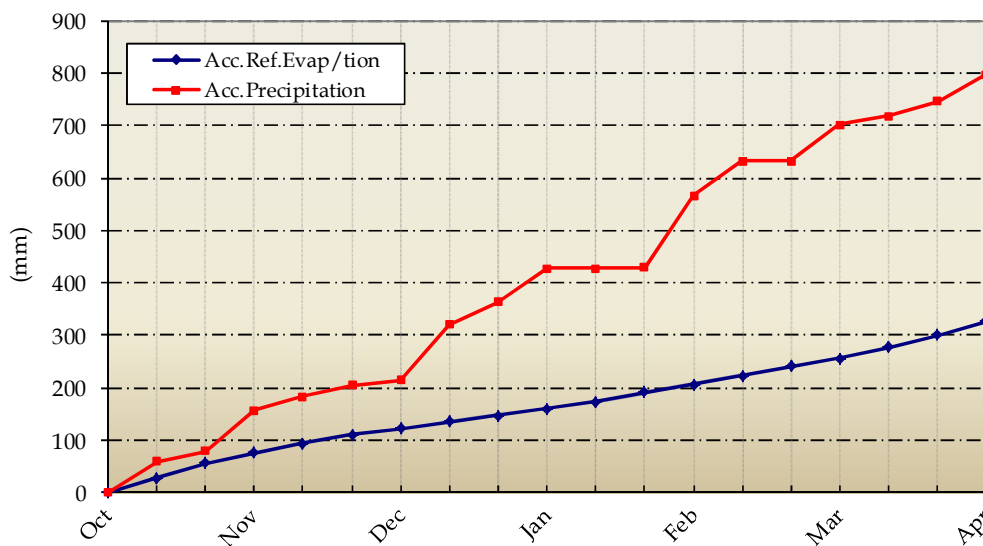
Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration



3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	16.8	15.6	18.8	22.3	17.3	24.1	18.3	17.5	20.0	17.7	21.6	19.1	19.9	17.8
	Min	5.3	3.5	9.6	9.6	12.4	12.0	13.9	9.3	11.8	8.5	11.0	9.7	7.4	6.9
Relative Humidity	Max	91	90	93	94	94	95	95	95	95	94	93	94	91	-
	Min	37	52	67	41	71	51	69	63	53	50	43	54	45	-
Soil Temperature at 10 cm	06 UTC	10.6	11.4	12.0	13.2	14.6	13.6	14.4	14.2	14.6	14.0	14.6	13.4	14.0	11.8
	12 UTC	12.4	12.0	12.6	14.4	14.0	15.0	15.0	14.6	15.0	14.8	15.0	14.1	15.0	14.2
Sunshine Duration		8.6	8.6	6.6	8.9	1.5	2.8	3.8	6.7	2.0	6.8	10.9	6.1	8.2	6.5
Precipitation			1.1	3.1		7.2	14.4	1.8	18.4	5.2	0.0	0.1	51.3	9.8	20.1
Evaporation		-	-	-	-	-	-	-	-	-	-	-	-	-	37.4
Growing Degrees	5	6.1	4.6	9.2	11.0	9.9	13.1	11.1	8.4	10.9	8.1	11.3	103.5	95.3	81.3
	10	1.1	0.0	4.2	6.0	4.9	8.1	6.1	3.4	5.9	3.1	6.3	48.9	40.3	28.3

3rd 10-day period (21-31/03/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	27.7	32.2	27.8
Precipitation - Reference Evapotranspiration	23.6	-22.4	-7.7
Number of Rainy Days	8.0	3.0	3.3
Number of Dry Days	1.0	17.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

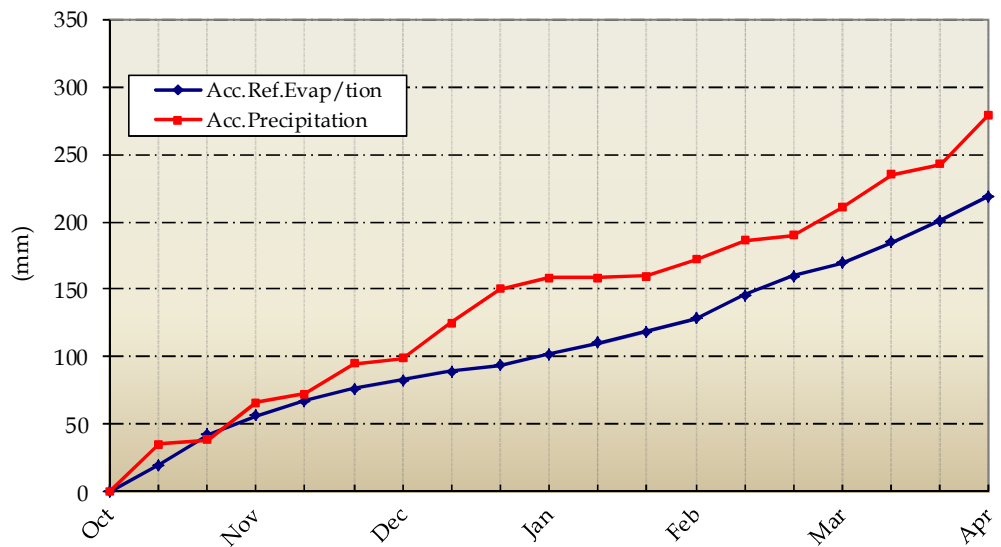


Larisa

3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.7	13.2	11.2	12.0	10.3	11.8	13.6	16.5	17.2	19.4	20.6	14.6	19.4	16.9
	Min	-4.3	-2.0	6.8	8.4	7.2	9.5	10.4	7.6	7.2	5.5	7.6	5.8	4.8	4.2
Relative Humidity	Max	100	100	100	100	100	100	100	100	100	100	100	100	94	-
	Min	24	43	84	79	98	99	99	63	46	34	35	64	37	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	11.4
Sunshine Duration		9.4	1.3	0.0	0.0	0.0	0.0	0.0	0.9	4.2	5.8	9.7	2.8	6.5	6.0
Precipitation			1.5	9.3	3.0	7.4	4.1	8.5	0.2		0.4	2.3	36.7	2.7	11.3
Evaporation		0.0	0.9	0.1	1.8	0.1	1.1	0.3	0.9	5.4	3.2	5.6	19.4	51.6	32.5
Growing Degrees	5	0.2	0.6	4.0	5.2	3.8	5.7	7.0	7.1	7.2	7.5	9.1	57.2	77.9	61.7
	10	0.0	0.0	0.0	0.2	0.0	0.7	2.0	2.1	2.2	2.5	4.1	13.7	23.0	16.3

3rd 10-day period (21-31/03/2015)	Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	18.0	29.3
Precipitation - Reference Evapotranspiration	18.7	-26.6
Number of Rainy Days	9.0	4.0
Number of Dry Days	1.0	14.0

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

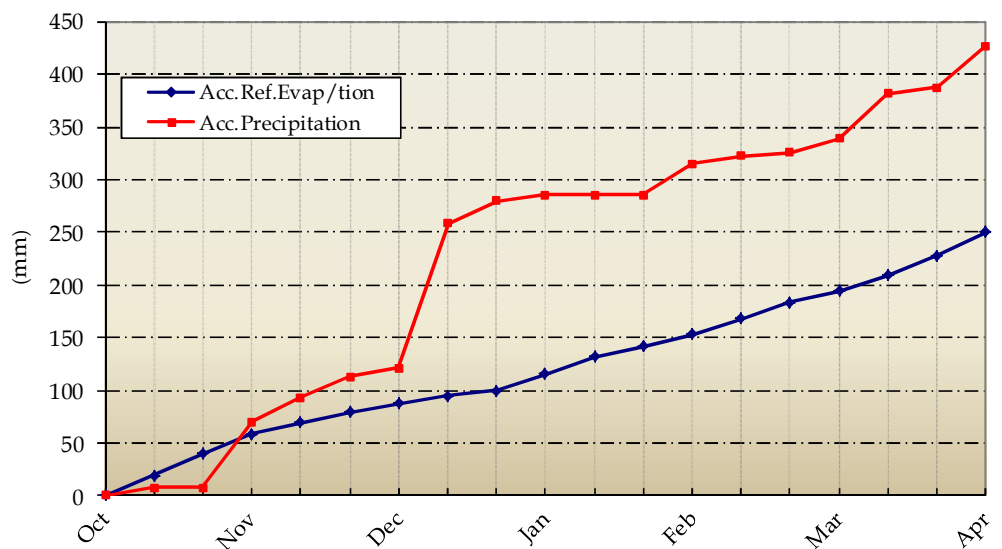


Mikra

3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	14.8	14.9	12.2	11.8	11.0	10.8	12.1	14.6	16.0	18.0	20.4	14.2	18.5	16.0
	Min	-1.6	1.1	7.5	9.0	6.0	9.5	10.8	10.4	9.8	5.0	10.2	7.1	7.8	5.7
Relative Humidity	Max	86	83	91	93	94	95	96	95	70	93	94	90	85	-
	Min	17	40	72	73	81	94	95	60	48	41	23	59	42	-
Soil Temperature at 10 cm	06 UTC	5.6	7.1	9.8	10.4	9.4	10.5	11.0	11.2	10.0	10.2	13.4	9.9	12.9	9.6
	12 UTC	10.5	11.0	11.2	11.6	10.8	10.8	11.8	14.0	12.8	14.7	15.5	12.2	14.6	12.9
Sunshine Duration		10.8	4.9	0.0	0.0	0.0	0.0	0.0	1.6	9.3	7.5	9.1	3.9	6.7	5.4
Precipitation			0.0	5.4	0.4	4.3	10.5	14.5	2.4	0.0	0.7	0.9	39.1	23.6	11.2
Evaporation		5.1	0.6	0.2	0.1	1.5	4.5	0.4	3.3	4.3	3.0	5.0	28.0	36.0	35.2
Growing Degrees	5	1.6	3.0	4.9	5.4	3.5	5.2	6.5	7.5	7.9	6.5	10.3	62.2	90.1	64.3
	10	0.0	0.0	0.0	0.4	0.0	0.2	1.5	2.5	2.9	1.5	5.3	14.2	35.1	17.2

3rd 10-day period (21-31/03/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	21.4	29.8	25.7
Precipitation - Reference Evapotranspiration	17.7	-6.2	-14.5
Number of Rainy Days	8.0	4.0	2.7
Number of Dry Days	2.0	14.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

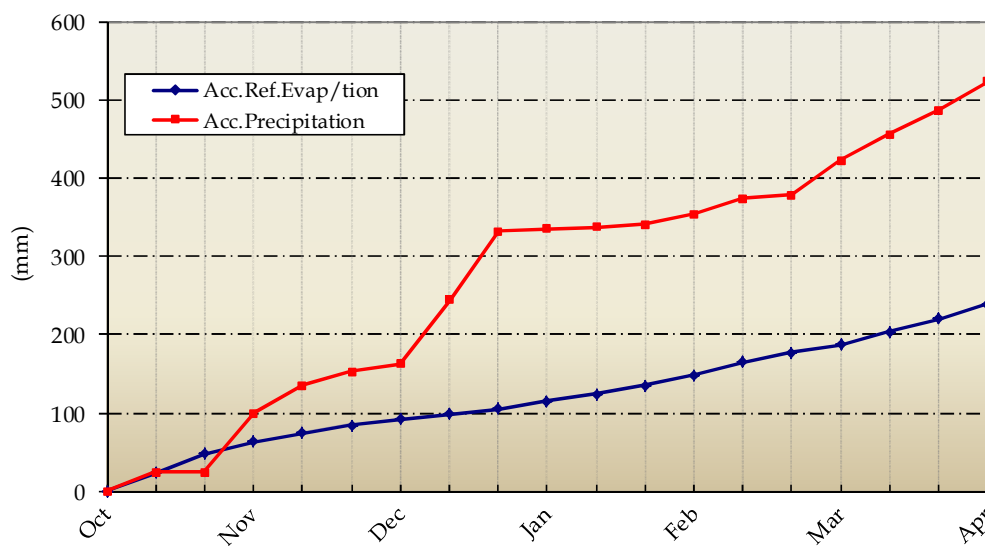


Tanagra

3rd 10-day period (21-31/03/2015)		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	14.7	12.5	14.0	11.2	14.0	18.7	15.6	17.0	18.2	19.0	15.4	18.4	16.7
	Min	-0.2	-0.6	6.8	9.8	6.6	9.2	11.4	8.6	9.8	5.0	9.9	6.9	6.7	5.4
Relative Humidity	Max	96	98	100	100	100	100	100	100	100	100	100	99	-	-
	Min	23	38	74	69	96	95	62	67	46	31	41	58	-	-
Soil Temperature at 10 cm	06 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12 UTC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sunshine Duration		11.4	4.0	0.0	0.4	0.0	0.0	1.6	2.8	1.7	8.5	8.8	3.6	-	-
Precipitation			1.3	1.5		8.7	10.8	3.2	7.0	2.1		1.6	36.2	8.4	12.3
Evaporation		3.3	2.5	0.5	1.2	0.5	0.2	0.6	0.8	1.2	4.1	4.0	18.9	-	-
Growing Degrees	5	1.9	2.1	4.7	6.9	3.9	6.6	10.1	7.1	8.4	6.6	9.5	67.6	-	-
	10	0.0	0.0	0.0	1.9	0.0	1.6	5.1	2.1	3.4	1.6	4.5	20.1	-	-

3rd 10-day period (21-31/03/2015)		Previous Year Value	Past Years Mean Value
Reference Evapotranspiration	19.1	-	
Precipitation - Reference Evapotranspiration	17.1	-	
Number of Rainy Days	8.0	-	
Number of Dry Days	1.0	-	

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration

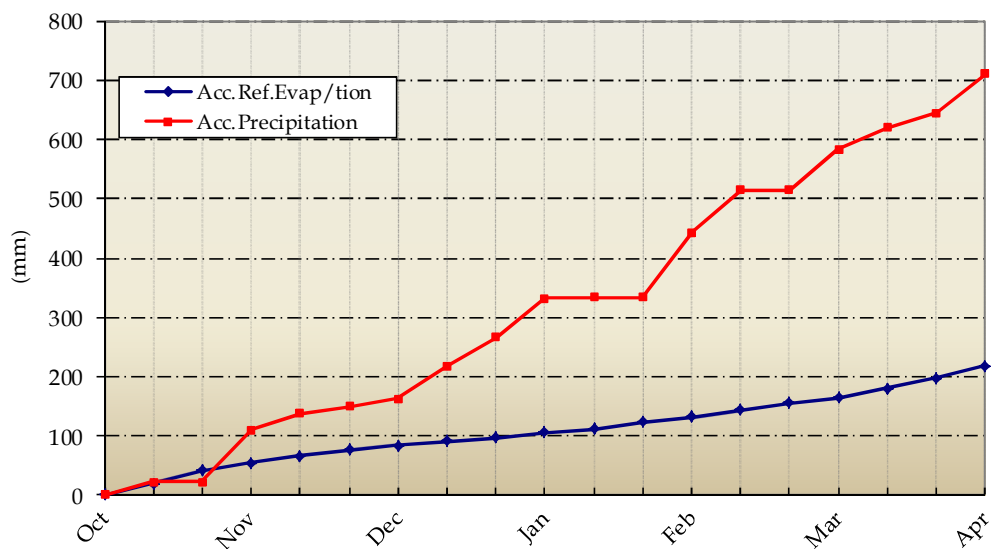


Tripoli

3rd 10-day period (21-31/03/2015)		21	22	23	24	25	26	27	28	29	20	31	Mean Value or Sum	Previous Year Value	Past Years Mean Value
Temperature	Max	13.4	11.6	17.2	13.0	9.8	11.8	15.9	14.3	13.4	14.1	16.8	13.8	16.4	14.8
	Min	-1.4	-2.1	4.4	9.1	7.6	9.5	9.5	5.1	8.1	4.8	5.3	5.4	3.1	3.1
Relative Humidity	Max	-	100	100	100	100	100	100	100	100	100	100	100	86	-
	Min	28	41	55	72	86	93	60	54	64	44	39	58	48	-
Soil Temperature at 10 cm	06 UTC	6.4	-	7.8	11.0	11.0	10.4	10.4	10.0	11.2	9.8	10.4	9.8	10.1	7.9
	12 UTC	-	-	12.4	13.4	-	10.8	13.4	-	-	13.4	14.6	13.0	14.2	9.5
Sunshine Duration		10.7	4.7	7.8	2.8	0.0	0.0	1.3	5.1	1.1	7.9	9.6	4.6	8.0	6.3
Precipitation			0.6	0.9		18.8	19.5	5.6	4.7	8.4	1.5	6.3	66.3	10.7	22.9
Evaporation		-	-	2.6	1.3	0.2	0.0	0.1	1.7	0.7	3.0	2.3	-	31.6	26.8
Growing Degrees	5	1.0	0.0	5.8	6.1	3.7	5.7	7.7	4.7	5.8	4.5	6.1	50.9	52.2	45.6
	10	0.0	0.0	0.8	1.1	0.0	0.7	2.7	0.0	0.8	0.0	1.1	7.0	3.3	7.9

3rd 10-day period (21-31/03/2015)	Previous Year Value	Past Years Mean Value	
Reference Evapotranspiration	20.9	27.3	25.6
Precipitation - Reference Evapotranspiration	45.4	-16.6	-2.7
Number of Rainy Days	9.0	3.0	3.9
Number of Dry Days	8.0	13.0	-

Diagram of Accumulated Precipitation and Accumulated Reference Evapotranspiration





◆ List of Symbols and Abbreviations

Reference Evapotranspiration ET_0 (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.

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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