



HELLENIC NATIONAL  
**METEOROLOGICAL**  
SERVICE  
ΕΘΝΙΚΗ ΜΕΤΕΩΡΟΛΟΓΙΚΗ ΥΠΗΡΕΣΙΑ

# Agrometeorological services in Greece

Eleftheria Tsiniari  
Hellenic National Meteorological Service  
Operational Forecaster  
MSc in Meteorology  
MSc in Prevention and Management of Natural Disasters  
Email: [elefth.tsiniari@gmail.com](mailto:elefth.tsiniari@gmail.com)

1

# Agrometeorological services in Greece

**Past (last 40 years)**

**Agrometeorological services = limited demand & attention**

**Present**

**Agrometeorological services = of great importance**

# Agrometeorological services in Greece

## Those involved

- ✓ **The Ministry of Rural Development and Food**
- ✓ **HNMS- Hellenic National Meteorological Service**
- ✓ **Universities, Institutions**
- ✓ **Private parties**

# Agrometeorological services in Greece



**HELLENIC REPUBLIC**  
Ministry of Rural Development and Food

## Regional Centers for Plant Protection (7)

- local agro met stations networks
- plant protection guidelines



## ELGA - Hellenic Agricultural Insurance Organization

- Protection against Frost
- Protection against Hail

# Agrometeorological services in Greece

## Universities - Institutions



AGRICULTURAL UNIVERSITY OF ATHENS  
 ΓΕΩΠΟΝΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ



## AGROMETEOROLOGY

An Applied Agrometeorological System for the Protection of the Environmental Resources and Farming Optimisation

The Project is co-funded by the European Union and by National Funds of Greece & Albania under the IPA Cross-Border PROGRAMME "Greece - Albania 2007-2013"



The IPA Cross-Border Programme  
**Greece - Albania**  
 2007-2013  
 FROM NEIGHBOURHOOD TO PARTNERSHIP

## Efficient Irrigation Management Tools for Agricultural Cultivations and Urban Landscapes (IRMA)



Total budget: 1.398.874,50€

Duration: 2,5 years; Launched: 1/4/2013; Completion date: 30/9/2015

Financing:

European Territorial Cooperation Programmes (ETCP) GREECE-ITALY 2007-2013

[www.greece-italy.eu](http://www.greece-italy.eu)

75% EU (ERDF) and 25% national funds of Greece and Italy

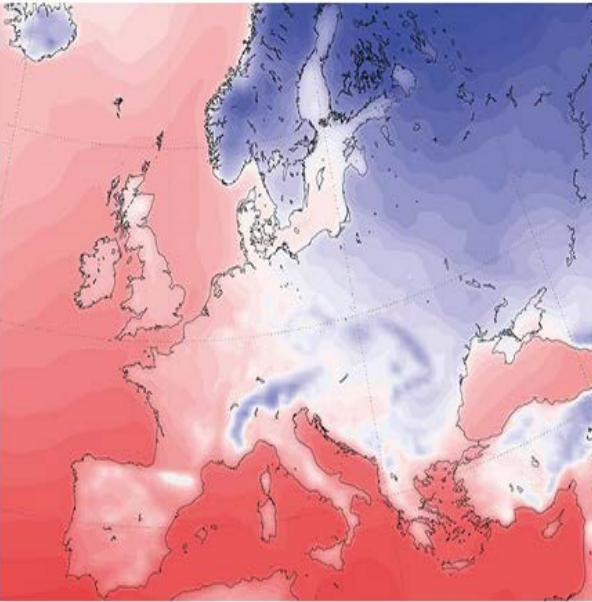
IRMA Subsidy Contract No: I3.11.06

## HNMS- Hellenic National Meteorological Service • NWP models

ECMWF

[About](#) [Forecasts](#) [Computing](#) [Research](#) [Learning](#) [Log In](#)

Forty years of advancing global NWP through co-operation



**ECMWF unveils preview of new global climate monitoring tool**

One year after the Paris Agreement on climate change, ECMWF launches its most powerful global climate monitoring tool to date, ERA5.

Forecasters

Researchers

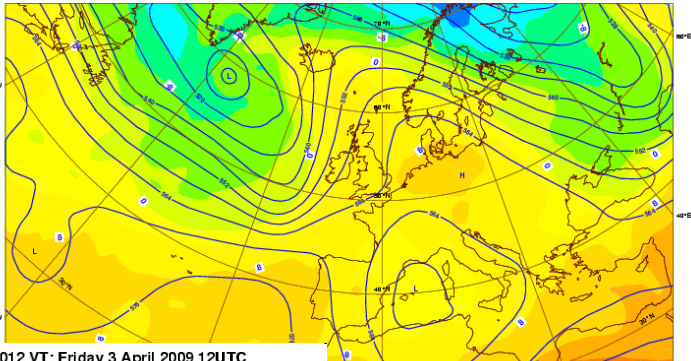
Commercial users


Suppliers

Public


Press

Friday 3 April 2009 00UTC ©ECMWF Forecast t+012 VT: Friday 3 April 2009 12UTC  
 850 hPa Temperature / 500 hPa Geopotential

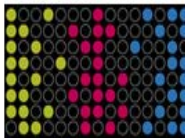





Media centre



Publications

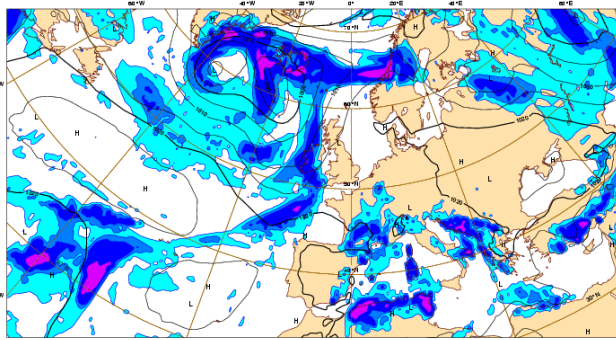


Scalability

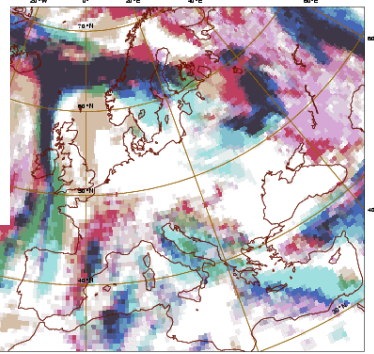


Environmental services

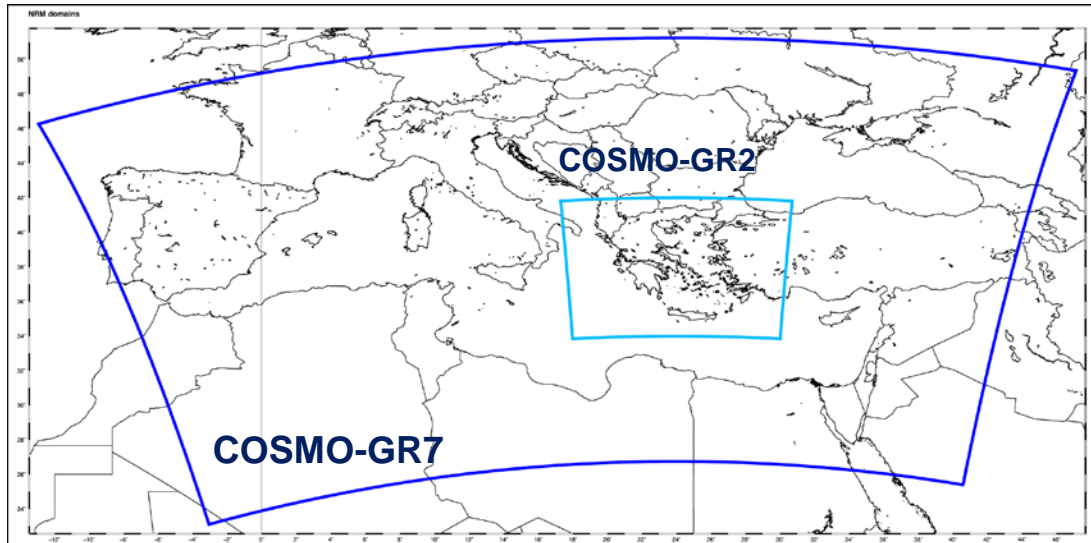
Friday 3 April 2009 00UTC ©ECMWF Forecast t+012 VT: Friday 3 April 2009 12UTC  
 Surface: Mean sea level pressure / 12hr Accumulated precipitation (VT-6h/VT+6h)



Forecast t+012 VT: Friday 3 April 2009 12UTC  
 H+M+L clouds



## HNMS- Hellenic National Meteorological Service • NWP models

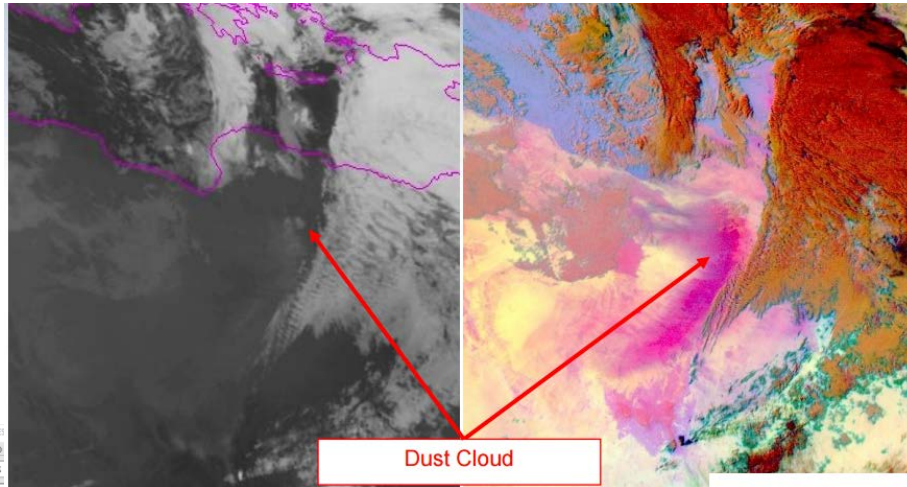


COSMO model runs exclusively at ECMWF (version 5.03,  $\approx 7\text{km}$  resolution over Mediterranean (+72hr) and  $\approx 2.2\text{km}$  resolution over Greece (+48hr), twice a day (00h/12h)).

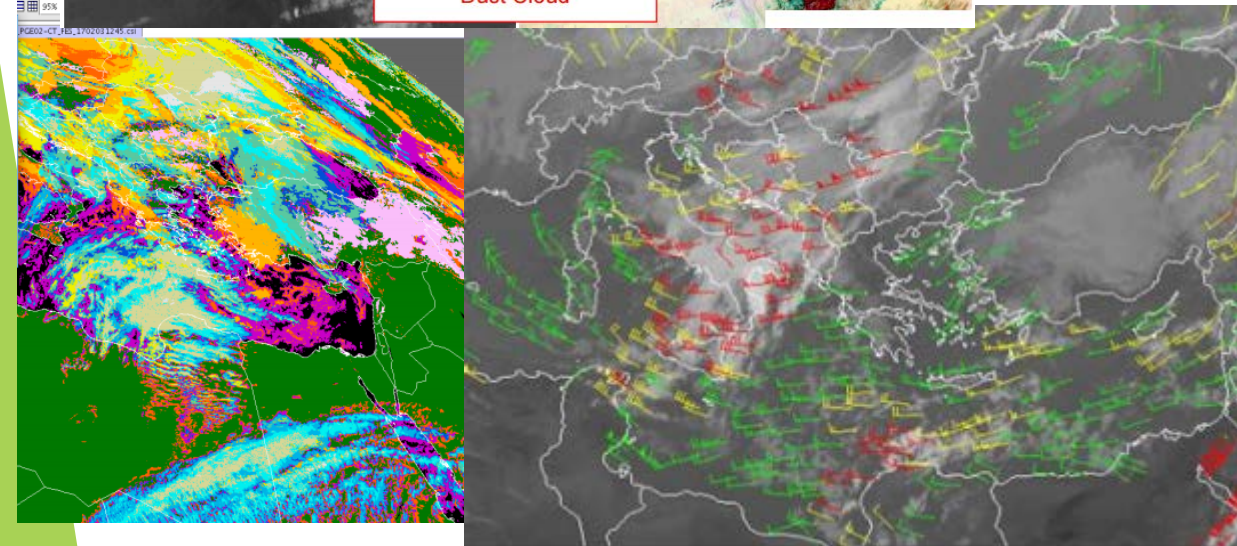
New COSMO model runs at ECMWF 4Km resolution over Mediterranean and 1Km resolution over Greece, twice a day (00h/12h). **Testing phase – operational summer 2017**

## HNMS- Hellenic National Meteorological Service

- Remote Sensing products



A lot of products generated from **EUMETSAT**, but not applicable in agrometeorology





## HNMS- Hellenic National Meteorological Service

- met stations network – agro met stations

These met stations may not completely meet the WMO requirements to be characterized as agrometeorological but they give us some useful relative information

### Agrometeorological Data

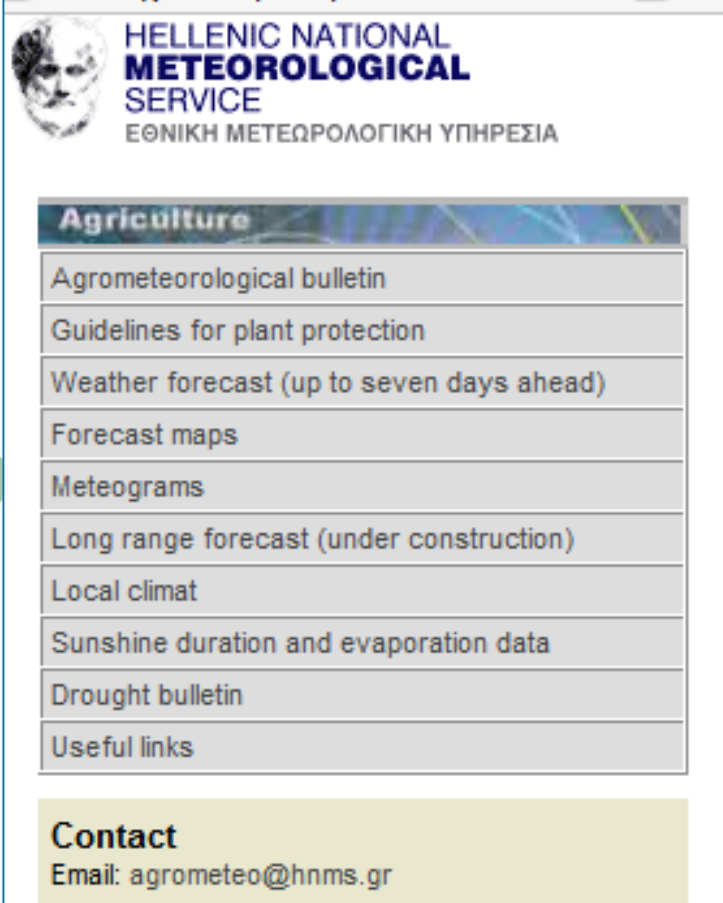
- Temperature
- Relative Humidity
- Soil Temperature
- Sunshine Duration
- Precipitation
- Evaporation



## HNMS- Hellenic National Meteorological Service • Products

Delivering of basic agrometeorological information as a specific unity through the website

Information and interpretation according to the instructions of the WMO's "Guide to Agricultural Meteorological Practices (GAMP)"



HELLENIC NATIONAL  
**METEOROLOGICAL**  
SERVICE  
ΕΘΝΙΚΗ ΜΕΤΕΩΡΟΛΟΓΙΚΗ ΥΠΗΡΕΣΙΑ

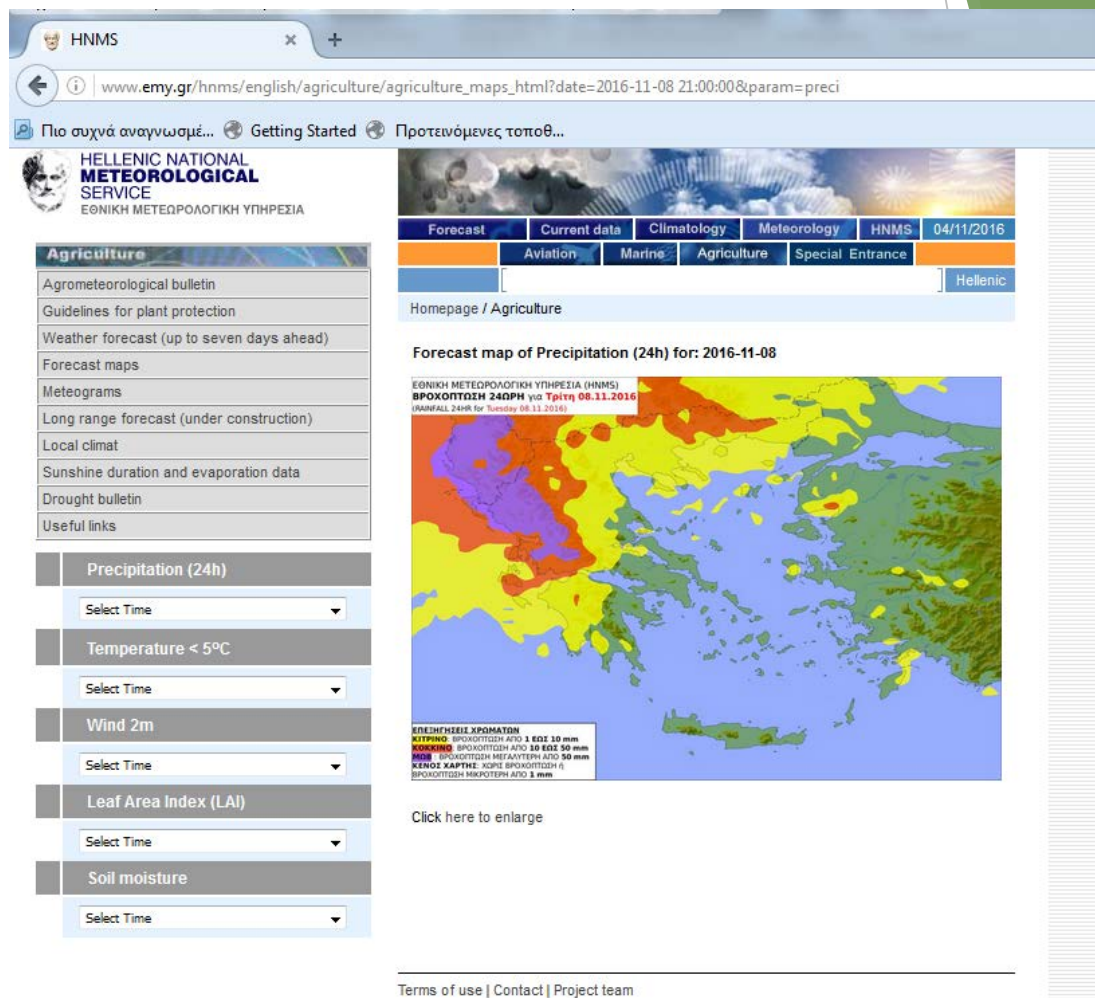
**Agriculture**

- Agrometeorological bulletin
- Guidelines for plant protection
- Weather forecast (up to seven days ahead)
- Forecast maps
- Meteograms
- Long range forecast (under construction)
- Local climat
- Sunshine duration and evaporation data
- Drought bulletin
- Useful links

**Contact**  
Email: [agrometeo@hnms.gr](mailto:agrometeo@hnms.gr)

## HNMS- Hellenic National Meteorological Service • Products

For example :  
The user can find **forecast maps** with the 24hours precipitation, or forecast maps with low temperatures  $< 5$ ,  $< 0$ ,  $< -5^{\circ}\text{C}$  that could cause damages to the crops



The screenshot shows the HNMS website interface. The top navigation bar includes links for Forecast, Current data, Climatology, Meteorology, HNMS, and the date 04/11/2016. Below this, there are sub-sections for Aviation, Marine, Agriculture, and Special Entrance. The main content area is titled 'Agriculture' and lists several services: Agrometeorological bulletin, Guidelines for plant protection, Weather forecast (up to seven days ahead), Forecast maps, Meteograms, Long range forecast (under construction), Local climat, Sunshine duration and evaporation data, Drought bulletin, and Useful links. A sidebar on the left contains several filterable sections: Precipitation (24h), Temperature  $< 5^{\circ}\text{C}$ , Wind 2m, Leaf Area Index (LAI), and Soil moisture, each with a 'Select Time' dropdown menu. The main content area displays a 'Forecast map of Precipitation (24h) for: 2016-11-08' over a map of Greece. The map uses a color scale to indicate precipitation levels, with a legend below it defining the categories: ΚΙΤΡΙΝΟ (Yellow) for 1-30 mm, ΚΟΚΚΙΝΟ (Red) for 30-50 mm, ΜΟΒ (Purple) for 50-100 mm, and ΚΕΝΟΣ ΧΑΡΤΗΣ (White) for less than 1 mm. A 'Click here to enlarge' link is provided below the map. At the bottom of the page, there are links for 'Terms of use', 'Contact', and 'Project team'.

## HNMS- Hellenic National Meteorological Service • Products

### The Agrometeorological Bulletin

with relative information for the aforementioned network of “agro Met Stations”

**AGROMETEOROLOGICAL BULLETIN**

September 2016  
3rd 10-day period

- Temperature
- Relative Humidity
- Soil Temperature
- Sunshine Duration
- Precipitation
- Evaporation
- Growing Degree
- Reference Evapotranspiration
- Accumulated Rainfall from the beginning of wet period
- Accumulated Reference Evapotranspiration
- Number of dry days

Hellenic National Meteorological Service  
Division of Climatology Applications  
El. Venizelou Street 14, 16777  
Hellas, Athens

Web address of HNMS  
www.hnms.gr  
www.esr.gov.gr  
www.metsrv.gov.gr  
www.mctechcenter.gr

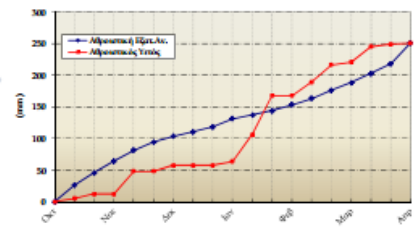
### Αγρομετεωρολογικά Δεδομένα Μάρτιος 2017

3ο Δεκαήμερο (21-31/03/2017)		21	22	23	24	25	26	27	28	29	30	31	Μέσος Όρος β. Αθηνών	Μέσος Όρος Π. Αθηνών	Μέσος Όρος Π. Πελοπονν. Γ.	Μέσος Όρος Π. Μακεδ. Εσπερ.
Θερμοκρασία	Μάγιστη	19,4	20,6	21,4	21,0	21,6	18,0	15,2	17,8	21,8	21,0	19,0	19,7	15,3	14,1	
	Ελάχιστη	6,0	8,0	8,2	7,4	5,6	5,4	5,4	-0,6	2,8	5,6	12,4	5,7	6,1	4,9	
Σχετική Υγρασία	Μάγιστη	97	86	69	89	90	88	85	89	85	77	97	86	92	-	
	Ελάχιστη	52	33	28	37	39	46	34	33	25	37	38	37	37	-	
Θερμοκρασία Εδάφους 10 cm	06 UTC	10,6	12,0	11,4	11,4	11,0	12,0	11,6	9,0	10,4	11,4	14,2	11,4	10,4	8,3	
	12 UTC	17,4	18,0	16,8	17,0	16,8	17,2	14,4	15,4	17,0	18,4	17,8	16,9	14,5	11,0	
Παροφάνεια		8,4	10,9	11,4	11,0	10,2	9,5	7,1	11,4	10,9	9,6	10,2	5,8	5,5		
Υετός								1,6					1,6	8,3	13,2	
Εξάτμιση		5,4	5,4	8,2	5,0	2,6	3,7	0,0	0,0	3,9	6,2	6,7	43,1	27,6	52,3	
	5	7,7	9,3	9,8	9,2	7,6	6,7	5,3	5,6	7,3	7,3	10,7	84,5	64,5	51,2	
Βαθμοί Αναπόψυξης																
	10	2,7	4,3	4,8	4,2	2,6	1,7	0,3	0,0	2,5	2,5	5,7	30,9	19,9	11,5	

Διεύθυνση Αγρομετεωρολογίας

3ο Δεκαήμερο (21-31/03/2017)	Τιμή Εξάτμισης	Μέσος Όρος Εξάτμισης	Εξάτμιση
Εξαιρουσμένη Αναφοράς	33,6	23,6	23,3
Διαφορά Υετού - Εξαιρουσμένης Αναφοράς	-32,0	-15,3	-8,1
Αριθμός Βροχάρων Ημερών	1,0	4,0	2,7
Αριθμός Ημερών χωρίς Υετό	10,0	8,0	-

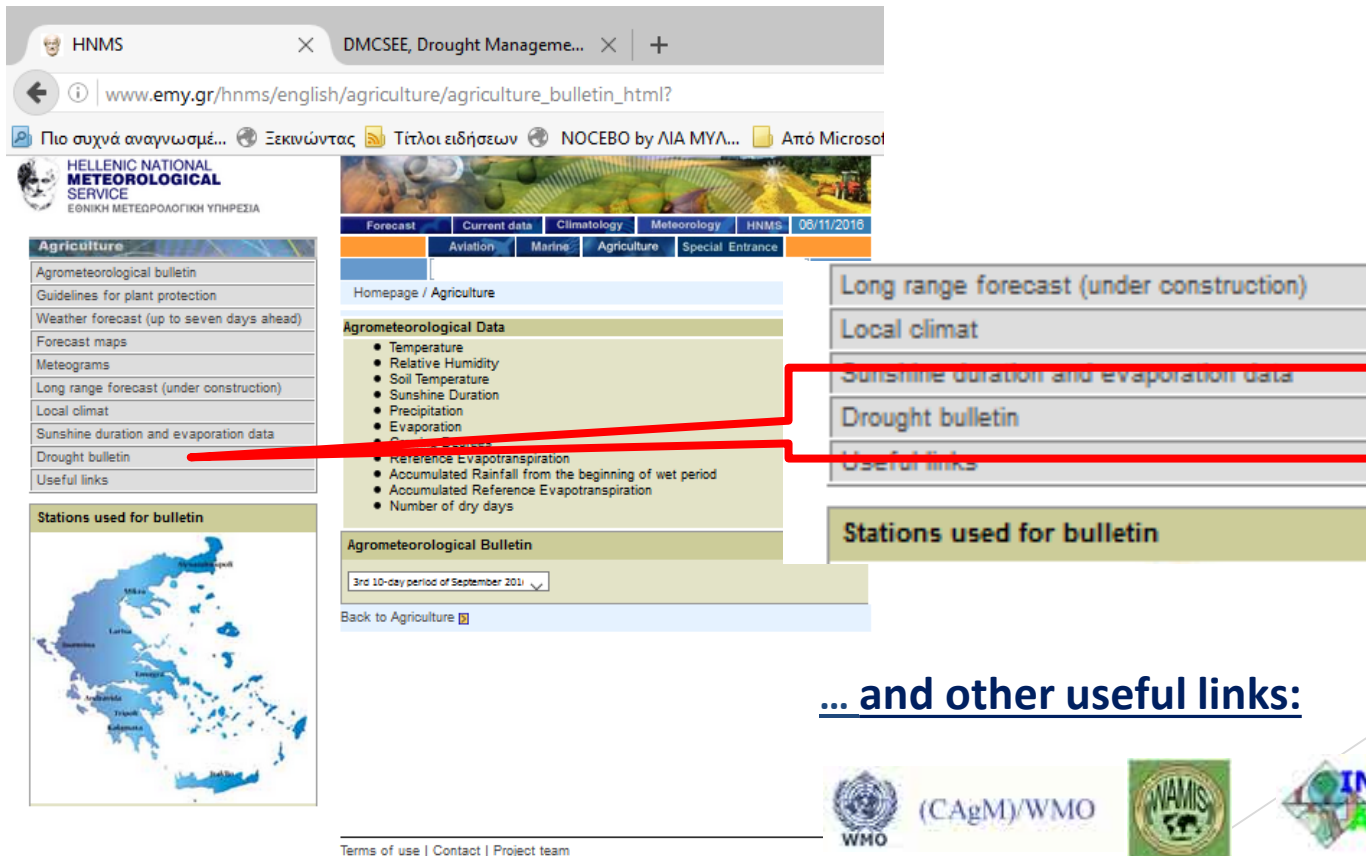
Διαγράμμα Αθροιστικού Υετού και Αθροιστικής Εξαιρουσμένης Αναφοράς



## HNMS- Hellenic National Meteorological Service • Products

### “The DMCSEE drought bulletin”

*Drought Management Centre for Southeastern Europe*



The screenshot shows the HNMS website interface. The browser address bar displays 'www.emy.gr/hnms/english/agriculture/agriculture\_bulletin\_html?'. The main navigation menu includes 'Forecast', 'Current data', 'Climatology', 'Meteorology', 'HNMS', and '08/11/2018'. The 'Agriculture' section is active, showing a sidebar with links to 'Agrometeorological bulletin', 'Guidelines for plant protection', 'Weather forecast (up to seven days ahead)', 'Forecast maps', 'Meteograms', 'Long range forecast (under construction)', 'Local climat', 'Sunshine duration and evaporation data', 'Drought bulletin', and 'Useful links'. The main content area features a 'Homepage / Agriculture' header, 'Agrometeorological Data' with a list of parameters (Temperature, Relative Humidity, Soil Temperature, Sunshine Duration, Precipitation, Evaporation, Reference Evapotranspiration, Accumulated Rainfall, Accumulated Reference Evapotranspiration, Number of dry days), and an 'Agrometeorological Bulletin' section with a dropdown menu set to '3rd 10-day period of September 2011'. A red box highlights the 'Sunshine duration and evaporation data' and 'Drought bulletin' links in the sidebar. To the right of the screenshot, a list of links is shown: 'Long range forecast (under construction)', 'Local climat', 'Sunshine duration and evaporation data', 'Drought bulletin', 'Useful links', and 'Stations used for bulletin'.

... and other useful links:



(CAgM)/WMO



Terms of use | Contact | Project team

## HNMS- Hellenic National Meteorological Service

### Future Plans

- Meteorological products - services to meet the farmers' essential requirements
- Weather forecasts - warnings tailored to the farmers' needs

### Strategic goal

#### National framework for Agrometeorological services provision

Recording of competent bodies, delineation of responsibilities- distinct roles, avoidance of overlaps, promotion of cooperations

### Needs

- Usage of both models and remote sensing products for agrometeorological purposes



HELLENIC NATIONAL  
**METEOROLOGICAL**  
SERVICE  
ΕΘΝΙΚΗ ΜΕΤΕΩΡΟΛΟΓΙΚΗ ΥΠΗΡΕΣΙΑ

# Thank you for your attention

---