



AGROMETEOROLOGY IN CROATIA

Diana Kuraži

kurazi@cirus.dhz.hr

Agrometeorological Department
Meteorological and Hydrological Service



Weather

Forecasts

Climate

Hydrology

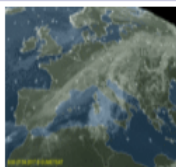
Croatian

radar images



latest image
animation

satellite images



latest image
animation

► Adriatic sea-synopsis:

A low over the Gulf of Genoa is deepening and it is expected to shift gradually toward the Adriatic.

» More...

► 7-day forecast:

Sibenik		T _{mn}	T _{mx}	w
27.04.2017.		15	19	↙↘
28.04.2017.		13	17	↙↘
29.04.2017.		10	18	→
30.04.2017.		8	17	⇓
01.05.2017.		7	18	↑



► Events

International scientific congress



11th EUMETNET Data Management Workshop
Placing climate data to social service:
From observations to archives

18-20 October 2017, Zagreb (Croatia)



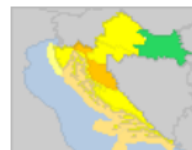
International scientific congress

9th European Conference on Severe Storms – ECSS 2017

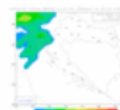
18-22 September 2017, Dubrovnik (Croatia)



meteoalarm
alerting europe for extreme weather



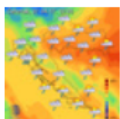
ALADIN/HR



forecast
charts

3-day fcs.

ECMWF



forecast
charts

7-day fcs.

Drought monitoring



precipitation
anomalies

Project
DMCSEE

66 years of agrometeorology in Croatia



Meteorological Research and Development Division

Modelling
Dept.

Climatol.
Dept.

Agrometeo.
Dept.

5 meteorologists
1 agronomist
1 meteo-technician

Weather and Climate Observation Division

Data Controlling
Dept.

Observation
Dept.

1 phenologist
1 meteo-technician
60 pheno-stations
60 stations with soil temperature



Main tasks in the Agrometeorological Department



- ❖ **Scientific research:** agrometeorological, phenological and wildfire research
International project - EUMETNET PEP 725: *“The pan European phenological database”*
- ❖ **Operational tasks:** agrometeorological forecast (agricultural journals, TV and radio), agrometeorological bulletin (website), annual analysis of fire season, reports of actual extreme weather events that caused different damage on agricultural crops, vineyards, orchards, olive orchards...
- ❖ **Popularization of agrometeorology** through Croatian Agrometeorology Society and cooperation with agronomists, foresters and firefighters

Agrometeorological forecast



- ❖ Radio, agricultural journal since 1990
- ❖ TV since 2004
- ❖ SMS to bank clients (2008-2010)



Agrometeorological bulletin



Državni hidrometeorološki zavod



Aktualni podaci Prognoze Klima Kvaliteta zraka Biometeorologija Hidrologija Agrometeorologija

> Naslovnica > Agrometeorologija

► Agrometeorološki tjedni bilten

AGROMETEOROLOŠKI TJEDNI BILTEN

SEKTOR ZA METEOROLOŠKA ISTRAŽIVANJA I RAZVOJ
Služba za agrometeorologiju
Grič 3 - Zagreb

Agrometeorološke informacije
tel: 01/4565 766



Izgleđi za Hrvatsku za 28.04.2017-30.04.2017

U kontinentalnim predjelima očekuje se pretežno oblačno vrijeme uz moguću malu do umjerenu količinu kiše u prvoj polovici razdoblja. Moguć je pad temperature zraka ispod 0°C na visini 5 cm od tla, posebice u prvoj polovici razdoblja. Maksimalne vrijednosti temperature zraka uglavnom od 15°C do 20°C. Minimalne vrijednosti temperature zraka u granicama od 8°C do 3°C, u gorju od 4°C do 0°C. Duž Jadrana se očekuje pretežno oblačno uz moguću malu količinu kiše u prvoj polovici razdoblja. Maksimalne vrijednosti temperature zraka od 13°C do 18°C. Minimalne vrijednosti duž jadranske obale od 8°C do 12°C, a na otocima od 9°C do 14°C. Temperature sume u većem dijelu zemlje osjetno ispod višegodišnjeg prosjeka za ovo doba godine. Očekuju se relativno nepovoljni vremenski uvjeti za obavljanje radova na otvorenom zbog kiše, posebice u prvoj polovici razdoblja. Prognozirano 24.04.2017

Sadržaj

Agrometeorološki bilten

Met. podaci u proteklih 7 dana

Karta min. i max. temperatura

Karta ukupne oborine

Karta ukupnog sisanja sunca

Istočna Hrvatska

Sjeverozapadna Hrvatska

Lika i Gorski kotar

Istra i Primorje

Dalmacija

Izgleđi

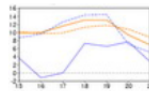
Agro bilten



Temperature tla

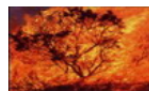


7-dnevne temp.



Agro karte

Šumski požar



Agro zanimljivosti

http://klima.hr/agro.php?id=agro_bilten

Agrometeorological prognostic material



ECMWF run 00 UTC

Prizemna polja Hrvatske

HRES

Polja Europe

300hPa & 500hPa

850hPa & mslp, RT, RH

Prizemna polja Hrvatske

temperatura, vjetar i tlak

naoblaka i oborina

relativna vlažnost i vidljivost

naoblaka, vidljivost i vjetar

vrsta oborine

Hainesov index

Tablice za Hrvatsku

maksimalna temperatura

minimalna temperatura

količina oborina

visine snijeg

arhiva tablica »

Meteogrami

Hrvatska

* more, lsm=0

Model multi-run

zadnjih 10 dana

zadnja 3 dana

HRES - SAW

Polja valova

ukupni valovi

valovi mrtvog mora

valovi Jadran

sjevni Jadran

srednji Jadran

južni Jadran

max. visina i period

Serija za print

ukupni valovi

valovi mrtvog mora

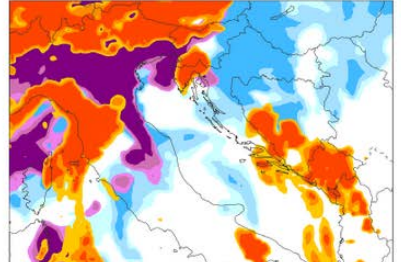
vjetrovni valovi

Meteogrami valova

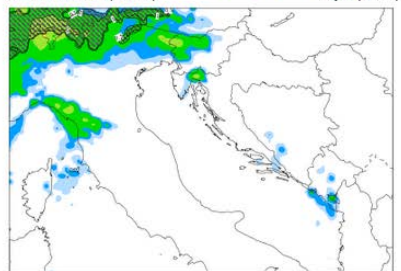
plovni put

26 Tra (Sri) 03 UTC

NAOBLAKA (> 40%) POGLED S TLA VISOKA / SREDNJA / NISKA



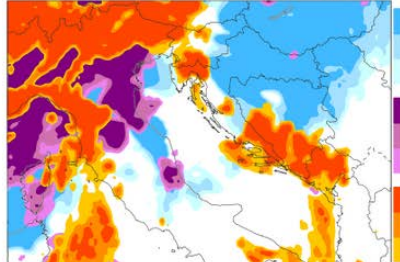
UKUPNA OBORINA (mm/3h) SNIJEG (cm/3h)



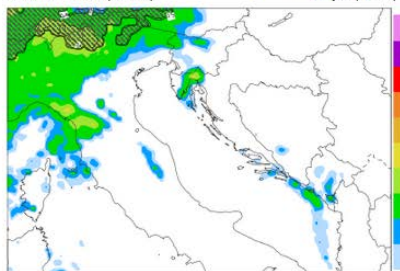
ECMWF RUN_00

26 Tra (Sri) 06 UTC

NAOBLAKA (> 40%) POGLED S TLA VISOKA / SREDNJA / NISKA



UKUPNA OBORINA (mm/3h) SNIJEG (cm/3h)



start modela: Srijeda 26.04.2017. 00 UTC

<< >>

meteoalarm

Tekstualne prognoze

Upozorenja

Danas

Sutra

PMC prognoze

Biometeorologija

WMO prognoze

ALADIN i HRID

RUN 00/06/12/18 UTC

Trodnevne prognoze

Dnevni hod osjeta

ugode

PIO dijagnoza

ECMWF produkti

RUN 12 UTC

RUN 00 UTC

Meteogrami

Sedmodnevne

prognoze

Mjesečne prognoze

Sezonske prognoze

Sezonske prognoze

novе

Dokumentacija

DWD produkti

Prognozička polja

UV indeks

FAXE slike

MOS Tmin Tmax

Verifikacija
prognozičkih modela

Dokumenti, žlanci...

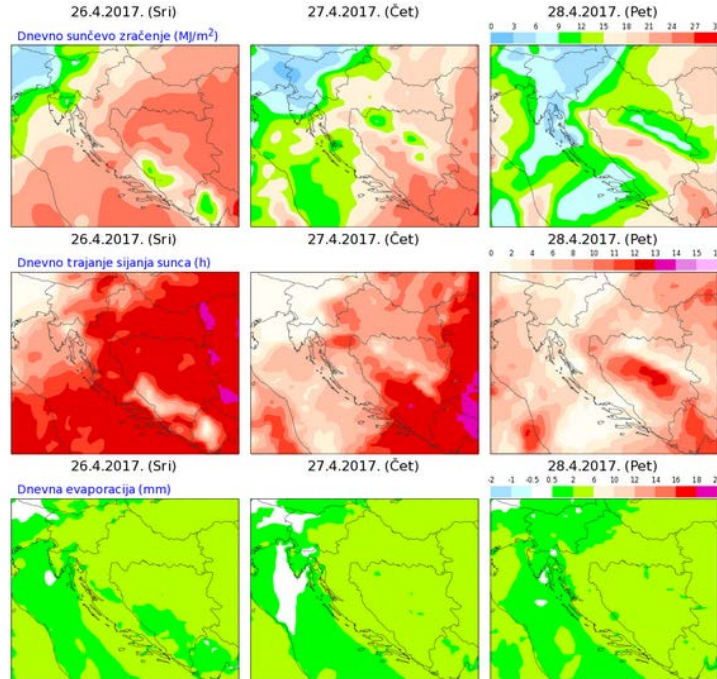
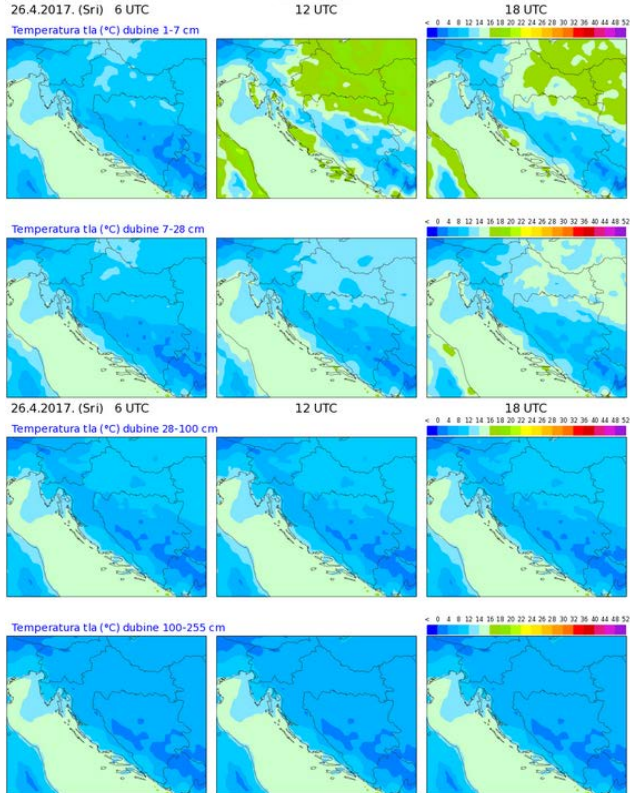
Korisni linkovi

❖ ECMWF 9 days ahead

Agrometeorological prognostic material



Soil temperature and verification of it



Insolation

Sunshine duration

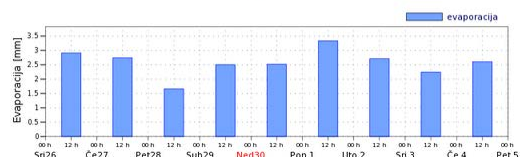
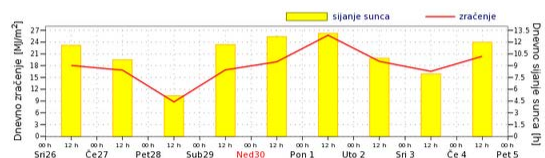
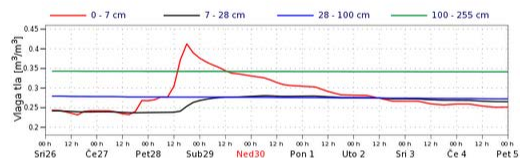
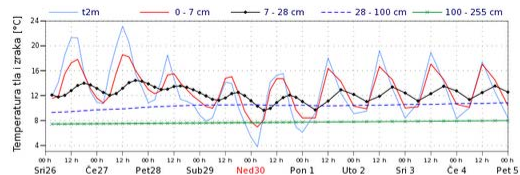
Evaporation

Agrometeorological prognostic material

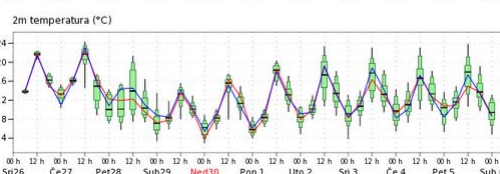
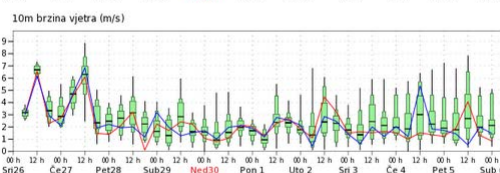
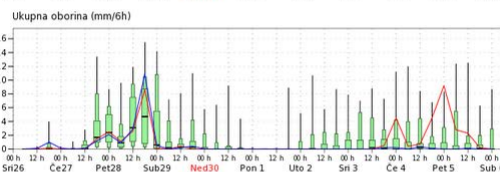
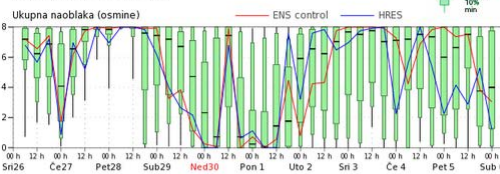


What to use?

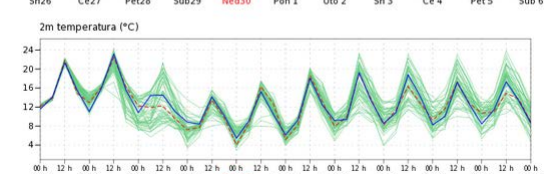
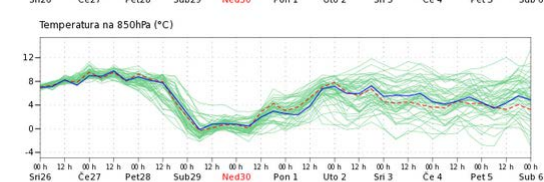
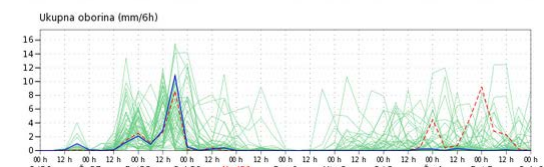
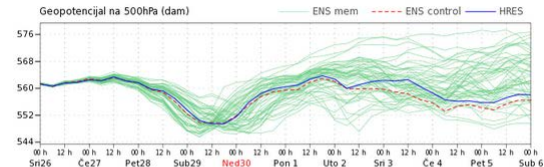
ECMWF Meteogram - Zagreb (45°49' N 16°02' E)
start 26.04.2017. 00UTC



ENS Meteogram - Zagreb 45°49' N 16°02' E 123m
model 45.75°N 16°E 167m
start modela 26.04.2017. 00UTC

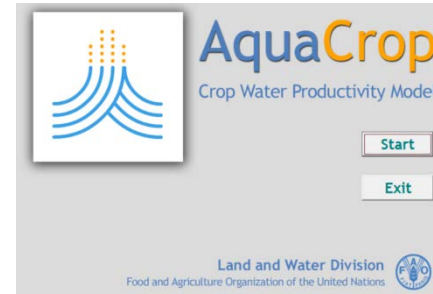


ENS Meteogram - Zagreb 45°49' N 16°02' E 123m
model 45.75°N 16°E 167m
start modela 26.04.2017. 00UTC



Scientific research

- ❖ Wildfire research (presented yesterday)
 - improving with remote sensing
- ❖ Crop weather modeling
 - ❖ before: DSSAT model
 - ❖ now: AQUACROP model
- ❖ Plan – using crop weather models for maize and cereals:
 - ❖ impact of climate changes on agricultural production using the climate change scenarios
 - ❖ prediction of irrigation, agricultural water stress, phenological phases, biomass and yield using monthly and seasonal forecasts
- ❖ Phenological research
 - ❖ phenological phases are good indicators of climatic changes (linear trends -> GDD of wild plants and agricultural crops)



Serbia for Excell



European
Commission

Horizon 2020
European Union funding
for Research & Innovation



CROATIAN AGROMETEOROLOGICAL SOCIETY



HOME

ABOUT US ▶

PROJECTS ▶

MEDIA

EVENTS ▶

CURIOSITIES ▶

GALLERY

**Do you
have
news?**

Rijeka, November 10, 2016

Little School "The fire is not a joke"

In the frame of Little school a short animated film by Croatian agrometeorological society under the heading: "The fire is not a joke" was presented to the second grade students of Elementary School Vladimir Gortan in Rijeka. The goal of this educational "cartoon" was of course, to awake



**Popularization of
agrometeorology**

cooperation with
agronomists, foresters
and firefighters

<http://www.en.hagmd.hr/>

Needs and plans



- ❖ Lack of human resources. It is difficult to execute projects without prior realistic manpower
- ❖ Training of young scientists and PhD study
- ❖ Modernization of network of agrometeorological measurements
- ❖ Using remote sensing in forecast and analysis of different weather situations
- ❖ Crop database

