Agroclimate atlas

The first agroclimate atlas of Croatia for the periods 1981–2010 and 1991–2020
Tables and maps of agroclimate parameters and indices, organised in chapters

Agroclimate indices

- Negative and positive temperature sums for a defined temperature threshold
- Huglin index
- Cold night index
- Maximum warm and cold period duration in the air
- Earliest and latest dates with air temperature below 0 °C

Soil temperature

- Soil temperature at different depths (2, 5, 10, and 20 cm)
- Maximum warm and cold period duration in the soil
- Maximum frost depth

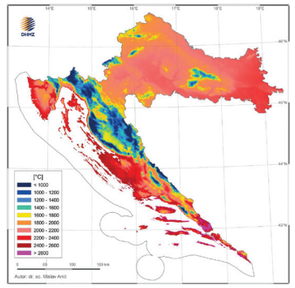
Water balance components

- Water balance components based on the Palmer model (potential and actual evapotranspiration, soil water content, soil water loss, percolation, and runoff)
- Maximum duration of wet and dry periods above or below three precipitation thresholds: 1, 5, and 10 mm

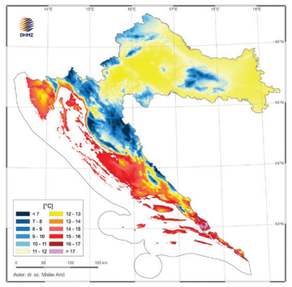
Meteorological wildfire risk indices

Based on the Canadian Fire Weather Index (FWI) model:

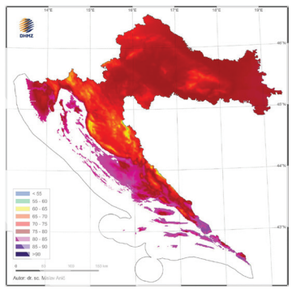
- Fine fuel moisture code, duff moisture code and drought code
- Initial spread index
- Buildup index
- Fire Weather Index (FWI) – overall meteorological fire danger index
- Mean monthly and seasonal fire severity



Mean values of the Huglin Index [HI, °C] during the vegetation period (April–September) 1991–2020



Mean monthly soil temperature [°C] at 2 cm depth for October in the period 1991–2020



Mean Fine Fuel Moisture Code (FFMC) during the fire season (June–September) for the period 1991–2020

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AGROMETEOROLOGY

REPUBLIKA HRVATSKA
REPUBLIC OF CROATIA

DRŽAVNI HIDROMETEOROLOŠKI ZAVOD
CROATIAN METEOROLOGICAL AND HYDROLOGICAL SERVICE

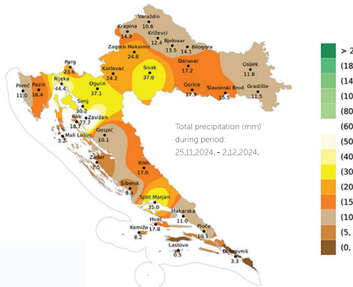
AGROMETEOROLOGY

Agrometeorology is an interdisciplinary science field combining meteorology, agronomy and forestry to study the effects of weather and climate on crops and agricultural production, plant and animal development stages, fisheries, forestry, and wildfire risk.

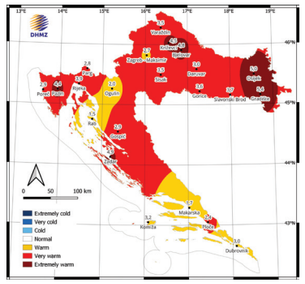
Agrometeorological information

Forecasts

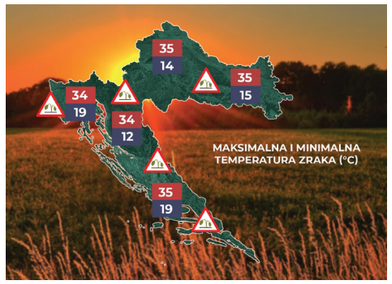
- Short-term agrometeorological forecasts and three-day outlooks available in the Agrometeorological Bulletin on the DHMZ website
- Medium-range weekly forecast featured on *Plodovi zemlje*, an agriculture TV program
- Warnings of extreme weather in agriculture



Total precipitation (mm) for the seven-day period



Deviation of the average monthly soil temperature (°C) at 10 cm depth compared to 1991–2020, August 2024



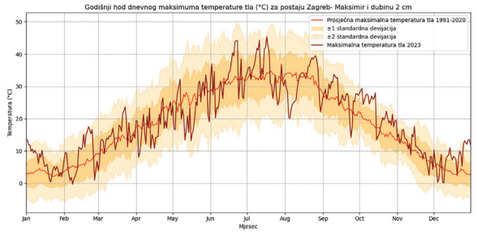
Agrometeorological forecast featured continuously in *Plodovi zemlje* since 2004.

Products

- Meteorological data from the past seven days
- Tables and graphics showing soil and air temperatures
- Agrometeorological maps:
  - Total precipitation
  - Total sunshine duration
  - Maximum and minimum air temperature
  - Minimum air temperature at 5 cm height
  - Maximum and minimum soil temperature at 10 cm depth
- Monthly agrometeorological bulletin
- Tables and graphics showing the Forest Fire Danger Index
- Regional maps showing 7-day observed temperature sums and 7- and 4/3-day observed and forecasted temperature sums
- Annual and monthly distribution of temperature sums
- Annual average, maximum, and minimum soil temperature cycle at 2, 5, 10, 20, 30, and 50 cm depth
- Monthly agrometeorological conditions in the DHMZ Meteorological and Hydrological Bulletin
- Annual wildfire danger assessment

kolovoz 2023	ISTOČNA HRVATSKA	SREDIŠNJA I SZ HRV	LIKA I G. KOTAR	ISTRA I PRIMORJE	DALMACIJA obala i otoci	DALMACIJA unutrašnjost
TEMPERATURA ZRAKA (°C)						
Maksimalna	39.2	36.7	35.5	38.1	39.0	38.5
Srednja mj. maks.	29.6	28.0	27.6	30.5	30.9	31.3
Srednja mjesečna	22.9	21.8	20.1	25.6	26.4	24.8
Srednja mj. min.	16.7	16.3	13.5	21.2	22.3	18.8
Minimalna	9.8	9.3	5.2	14.1	13.0	10.5
TRAJANJE SIJANJA SUNCA (h)						
Maks. mjesečno	299.3	294.8	315.9	362.6	357.3	331.4
Srednje mjesečno	293.7	280.2	299.4	319.4	342.7	264.1
Min. mjesečno	286.8	252.6	282.9	278.1	325.9	196.7
NAOBLAKA (desetina)						
Srednja naoblaka	3.9	4.4	3.8	3.7	2.2	3.2
Sr. br. vedrih dana	10	9	10	14	19	17
Sr. br. oblačnih dana	3	6	4	5	0	2
OBORINA (mm)						
Maks. mjesečna	79	142	155	288	163	156
Srednja mjesečna	58	103	132	199	94	140
Min. mjesečna	35	62	105	151	34	117
Maks. dnevna	38.0	55.9	59.5	96.1	63.3	80.0
Sr. br. dana s ob.	9	9	8	7	6	8

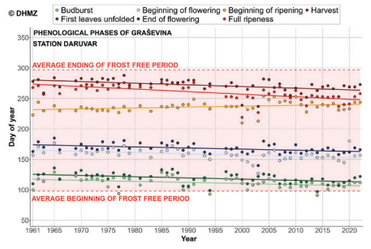
Monthly Agrometeorological Bulletin for August 2023



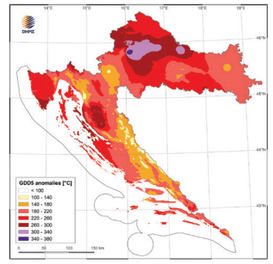
Annual course of maximum soil temperature at 2 cm depth at the Zagreb-Maksimir station

Agrometeorological research

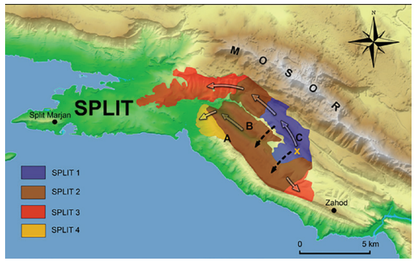
- Impact of climate change on agricultural production
- Impact of extreme weather in agriculture
- Changes in soil temperature regimes
- Changes in the water balance, with special emphasis on evaporation and soil water reserves
- Agroclimate baselines and maps of average conditions and natural limitations in agriculture
- Agrometeorological modelling for agricultural production
- Wildfire modelling and dynamic atmospheric processes during fires
- Impact of meteorological conditions and climate change on plant phenological stages
- Modelling of agroclimate parameters based on climate projections
- Analysis of extreme events and supporting datasets



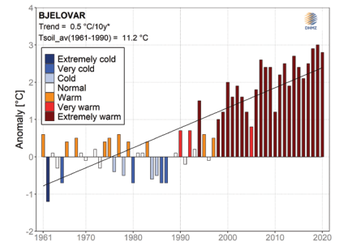
Trends of phenological phases of Graševina grapevine at the Daruvar station for the period 1961–2023



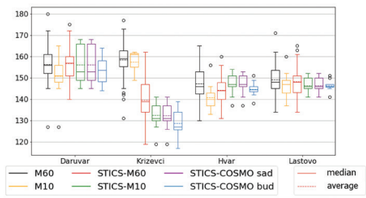
Temperature sum anomaly for the 5 °C threshold, shown as the difference between 1991–2020 and 1961–1990 averages



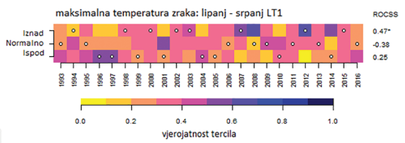
2017 Split fire spread dynamics based on WRF-SFIRE model



Deviation of average annual soil temperatures at 10 cm depth relative to 1961–1990



Onset of grapevine flowering based on the STICS phenological model



Predicted probability of the upper, middle, and lower terciles for maximum air temperature in seasonal forecasts for Slavonia from June to July, initialized in May

Clim4Cast

Interreg project aimed at increasing Central Europe's resilience to the effects of droughts, heatwaves, and wildfires, as well as their combined impacts

DEODE

Destination Earth On-Demand Extremes – development of an early warning system for hazardous meteorological events (drought, frost, wildfires), to be activated upon forecast detection

ADRIAirBURN

Research on open fires in the Adriatic coastal region and their impact on air quality, human health, and marine systems

Acute oak decline

Research project looking into the relationship between disease transmission risk and climatic elements

Projects

NAEZ

National Agro-ecological Zoning – suitability maps for the top crops in Croatia

PEP725

Pan European Phenology Database – maintenance and continuous updating of the European phenological database for scientific, research, and educational purposes

COST CA22164

European Network on Extreme Fire Behaviour (NERO) – a network of scientists sharing knowledge, products, and tools to improve wildfire management

COST CA23108

MEDUSEE – Seasonal to decadal climate predictability in the Mediterranean: understanding processes and providing services