

The Weather Warning System in Weather Analysis and Forecasting Department of the National Meteorological and Hydrological Service

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DHMZ

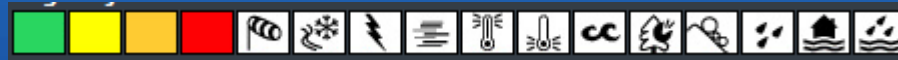
Zagreb, November 2020.

Državni hidrometeorološki zavod (DHMZ) Croatian Meteorological and Hydrological Service

- Governmental body (State administration laws, NN 66/19, NN 85/20)
- Official body of scientific research
- Carries out expert activities of monitoring hydrological and meteorological processes (Meteorological and hydrological activities law, NN 66/19)



Article 6: ... early warnings on dangerous meteorological, oceanographic and hydrological events ...



Structure of the national warning system

Forecasting Department (Zagreb, Split, Rijeka)



Forecasts and warnings



Ministry of the Interior
National Civil Protection

&

NATIONAL HEADQUARTER FOR SEARCH AND RESCUE AT SEA
(MRCC)



Local authorities, Civil protection, Fire brigades, ...

Long history of warnings...

Warnings in Croatia have long history, warnings for sea traffic are issued by the Maritime Forecast Department since 1947. via radio (WMO standards) and today also via internet in several languages (Croatian, English, Italian, German).

Example of WARNING issued on 17th March 2018.

“LOCAL GUSTS OF SE WINDS 35-50, IN THE SOUTH ADRIATIC UP TO 60, EASING GRADUALLY, AND IN THE NORTH ADRIATIC GUSTS OF NE WINDS 35-55 KNOTS. SEA LOCALLY 5, IN THE SOUTH ADRIATIC 6. ISOLATED THUNDERSTORMS. ”

“Örtliche Südostböen, 35-50 kn, auf der Südadria bis 60, aber nachlassend. Auf der Nordadria Nordostböen, 35-55 kn. Das Meer stellenweise 5, auf der Südadria 6. Einzelne Gewitter.”

“I COLPI DI VENTO DA SE 35-50, SULL'ADRIATICO MERIDIONALE FINO A 60, IN GRADUALE ATTENUAZIONE, E SULL'ADRIATICO SETTENTRIONALE I COLPI DI VENTO DI BORA 35-55 NODI. IL MARE LOCALMENTE 5, SULL'ADRIATICO MERIDIONALE FINO A 6. TEMPORALI SPARSI.”

- Forecasts are also issued to:

NATIONAL HEADQUARTER FOR SEARCH AND RESCUE AT SEA

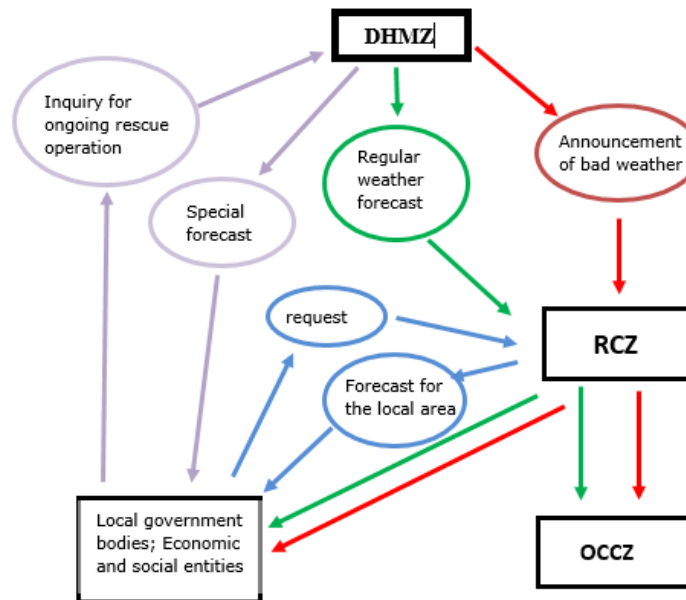
Standard operating procedure

STANDARD OPERATING PROCEDURE

DHMZ – MUP (RCZ – OCCZ)



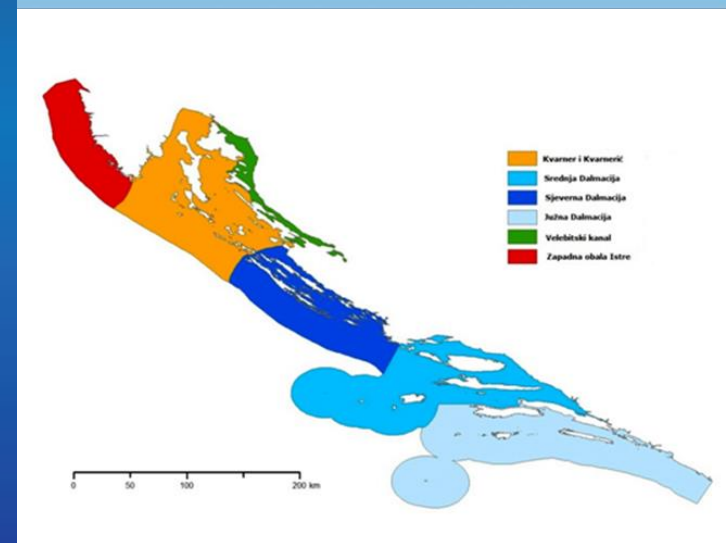
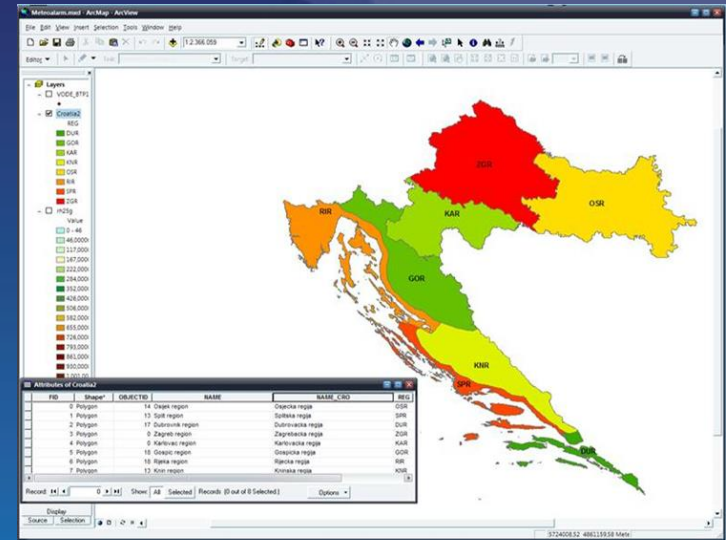
REPUBLIKA HRVATSKA
Ministarstvo unutarnjih poslova
Ravnateljstvo civilne zaštite



We issue warnings on:

- Wind
- Rain
- Snow/Ice
- Thunderstorms
- Extreme low temperature
- Extreme high temperature
- Fog

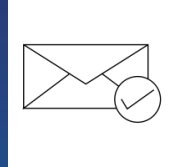
We issue warnings for:



For an issued warning to be effective, it requires a chain of events:

The user must:

1. receive the warning



2. understand the warning



3. know what to do with the warning information



4. believe the warning is relevant to him/her



5. take effective action based on the warning



More reading: *Severe convective storms in the European societal context* by Charles A. Doswell III

To receive the warning -> dissemination – fast and efficient:



DHMZ & www.meteoalarm.eu
since 24.7.2017. warnings are in CAP format



To understand the warning and know what to do with the warning information:



since 29.12.2017. we provide generic impact advisories agreed with Civil protection

Weather warnings: Karlovac regija



valid from 26.02.2018 00:00 CET **Until** 26.02.2018 23:59 CET
Extreme low temperature

Awareness Level: **Orange**

hrvatski:

Iznadprosječno niska temperatura zraka. minimalna temperatura od -14 do -10 °C BUDITE SPREMNI na hladnoću i izrazito niske temperature. Zdravstveni rizik moguć je kod osjetljive populacije, ponajprije kod starijih, male djece i beskućnika. Slušajte i postupajte prema savjetima danima od nadležnih službi.

english:

Extremely low air temperature. minimum temperature between -14 and -10 °C BE PREPARED for cold and extreme low temperatures. Health risks are possible in the vulnerable population, in particular senior citizens, small children and homeless persons. Keep informed and follow the advice provided by the relevant authorities.



valid from 26.02.2018 10:00 CET **Until** 26.02.2018 23:59 CET
Wind

Awareness Level: **Yellow**

hrvatski:

Jaki i olujni udari sjeveroistočnog vjetrova. najjači udar vjetrova > 55 km/h BUDITE NA OPREZU zbog krhotina koje lete nošene jakim vjetrom. Mogući su lokalizirani prekidi u aktivnostima na otvorenom.

english:

Strong and stormy gusts of NE wind. maximum gust speed > 55 km/h STAY ALERT for debris carried by strong winds. Debris and tree branches carried by the wind may cause localised interruptions in outdoor activities.



New Web and warning platform – July 2018

Croatian Meteorological and Hydrological Service

Home | Data and Observations | Forecasts | Climate | Infrastructure | Research and Cooperation | Products and Services

Warnings | OPEN

Forecast | Current Weather | Warnings | Radar images | Hydrology | Air Quality

Wed, Sep 26

Weather warnings

Today | Tomorrow

- Green No warnings
- Yellow The weather is potentially dangerous
- Orange The weather is dangerous
- Red The weather is very dangerous

Awareness Reports - You can find detailed information about the warnings in the awareness reports issued for each area. Select the relevant area.

Show Today Tomorrow

Region	Awareness type	Hours	00	03	06	09	12	15	18	21	24	More
Osijek region			Green	Green	Green	Green	Green	Green	Green	Green	Green	
Zagreb region			Green	Green	Green	Green	Green	Green	Green	Green	Green	
Karlovac region			Green	Green	Green	Green	Green	Green	Green	Green	Green	
Gospić region			Green	Green	Green	Green	Green	Green	Green	Green	Green	
Knin region			Green	Green	Green	Green	Green	Green	Green	Green	Green	
Rijeka region ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	↓
Split region ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	↓
Dubrovnik region ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	↓
West Istrian coast ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	↓
Kvarner i Kvarnerić ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	↓
Velebit channel ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	↓
North Dalmatia region ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	↓
Middle Dalmatia region ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	↓
South Dalmatia region ↓	Yellow		Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	↓

● Green No warnings
 ● Yellow The weather is potentially dangerous
 ● Orange The weather is dangerous
 ● Red The weather is very dangerous

Succesfull cross-sectoral cooperation of several state bodies: Heat and Cold Waves warnings



Upozorenje na toplinske valove koji mogu djelovati na zdravlje

	Nedjelja, 06. 08. 2017.	Ponedjeljak, 07. 08. 2017.	Utorak, 08. 08. 2017.	Srijeda, 09. 08. 2017.
Osijek	Red	Green	Green	Yellow
Zagreb	Orange	Green	Green	Yellow
Karlovac	Yellow	Green	Green	Yellow
Gospić	Yellow	Green	Green	Yellow
Knin	Red	Green	Green	Orange
Rijeka	Red	Green	Green	Orange
Split	Red	Orange	Yellow	Orange
Dubrovnik	Red	Orange	Orange	Orange

	Utorak 27.02.2018.	Srijeda 28.02.2018.	Četvrtak 01.03.2018.	Petak 02.03.2018.
Osijek	Light Blue	Blue	Blue	Light Blue
Zagreb	Light Blue	Blue	Dark Blue	Light Blue
Karlovac	Light Blue	Blue	Dark Blue	Blue
Gospić	Light Blue	Blue	Dark Blue	Light Blue
Knin	Light Blue	Light Blue	Dark Blue	Light Blue
Rijeka	Blue	Dark Blue	Dark Blue	Light Blue
Split	Blue	Dark Blue	Dark Blue	Light Blue
Dubrovnik	Light Blue	Blue	Blue	Light Blue

nema opasnosti
 umjerena opasnost
 velika opasnost
 vrlo velika opasnost

Forest Fires ->



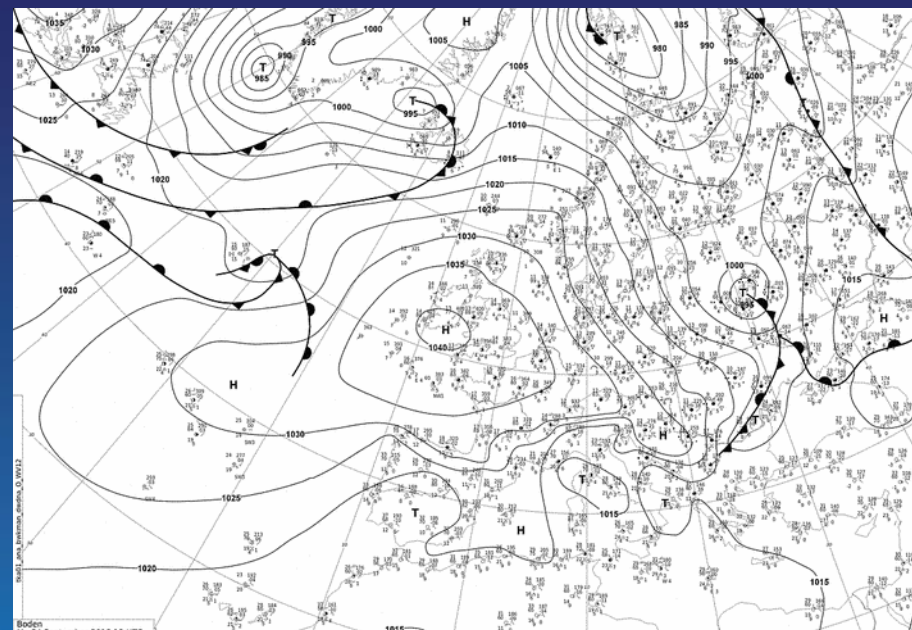
- Daily forecast – Fire Weather Index (FWI) - in 2014 special warnings included

More complex criteria – two criteria:

1. high FWI & 2. passage of 'dry front' (with negligible or no rain, followed by strong wind – Bora) *OR* high value of Haines index (6) over large area (instability in the dry air), high TKE

- WEEKLY REPORT ON FOREST FIRES – VIDEO CONFERENCE WITH *ERCC* (Emergency Response Coordinate Centre)
- Spain, Portugal, Greece, France, Italy, Croatia and JOINT RESEARCH CENTRE
- **Long-term Fire Weather & Fire Danger Forecast**

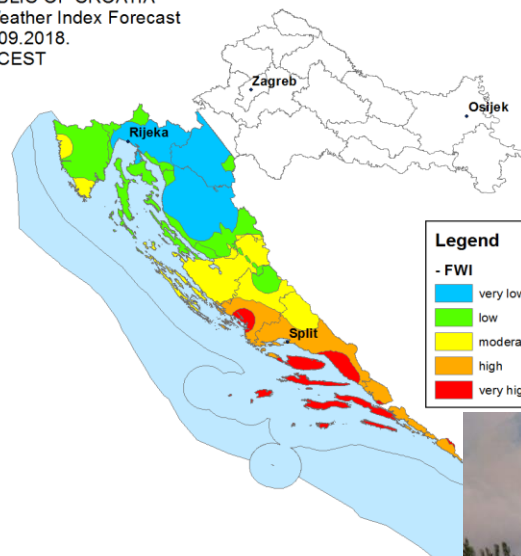
Responding to high impact events



Montag, 24-09-2018 12 UTC (C) 2018 Deutscher Wetter

24.09.2018 Mon 15:04

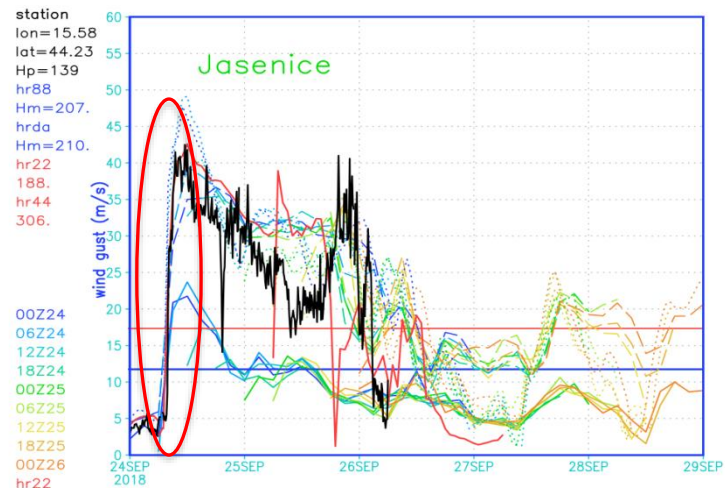
REPUBLIC OF CROATIA
Fire Weather Index Forecast
for 25.09.2018.
14:00 CEST



Legend
- FWI
very low
low
moderate
high
very high

DHMZ

ID: #246680 Page



DRŽAVNI HIDROMETEOROLOŠKI ZAVOD RH, Zagreb, Grič 3
Služba za vremenske analize i prognoze
U Zagrebu, nadnevka 24.09.2018.

POSEBNO UPOZORENJE ZA POŽARE RASLINJA

Za razdoblje - danas do kraja dana, sutra i prekosutra
Danas do kraja dana i sutra

Područje Republike Hrvatske na koje se odnosi upozorenje
Otoci srednje Dalmacije i južna Dalmacija.

Opis sinoptičke situacije
Postupno jačanje grebena sa zapada, prizemno anticiklone.

Vremenska prognoza

Iako je danas do kraja dana mjestimice moguće malo kiše ili tek poneki pljusk zbog jake i olujne bure te velikih i vrlo velikih klasa opasnosti na otocima srednje Dalmacije i na jugu Hrvatske, ukoliko izbije požar, moguće su poteškoće pri gašenju.



Božo Radić/Cropix/Jutarnji



TERRA/MODIS

Special interfaces for different customers

Example – Civil Protection

Interface - login and pass protected



DOBRO DOŠLI NA STRANICE
DRŽAVNOG HIDROMETEOROLOŠKOG ZAVODA



© Državni hidrometeorološki zavod

This screenshot shows the main content area of the DHMZ website. It includes the same banner and navigation menu as the previous screenshot. Below the navigation menu, there is a section titled "Sadržaj stranice" (Content of the page). This section contains three columns of links:


- Aktualni podaci:**
 - Temperatura zraka
 - Oborina
 - Brzina i smjer vjetra
 - Radiosondažni podaci
 - Opasnost od šumskog požara
- Prognoze vremena:**
 - Upozorenja
 - Posebno upozorenje za požare
 - Prognoze
 - Prognoze za Jadran (PMC)
 - Opasnost od šumskog požara
 - Polutjedne prognoze
 - Tjedne prognoze
 - Mjesečne prognoze
 - Sezonska prognoza
 - Sezonska prognoza - požari
- Prognostički materijal:**
 - Prognostičke karte ALADIN/HR
 - 3-dnevne prognoza ALADIN/HR
 - 10-dnevne prognoze ECMWF

Below these columns is a section titled "Arhiva analiza:" (Archive of analyses) with the link "Analize po mjesecima i godinama". A blue oval highlights the "Prognoze vremena:" column.

© Državni hidrometeorološki zavod

Special interfaces for different customers

Example – Road authorities


 Državni hidrometeorološki zavod
 Sektor za vremenske i pomorske analize i prognoze
 Služba za vremenske analize i prognoze
 Zagreb, Grič 3

HRVATSKE CESTE TEHNIČKE ISPOSTAVE

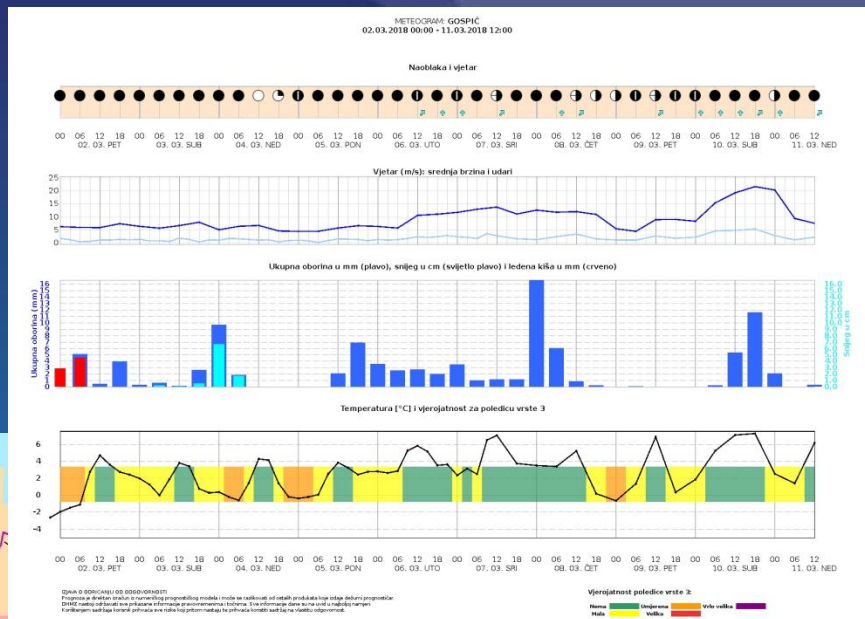
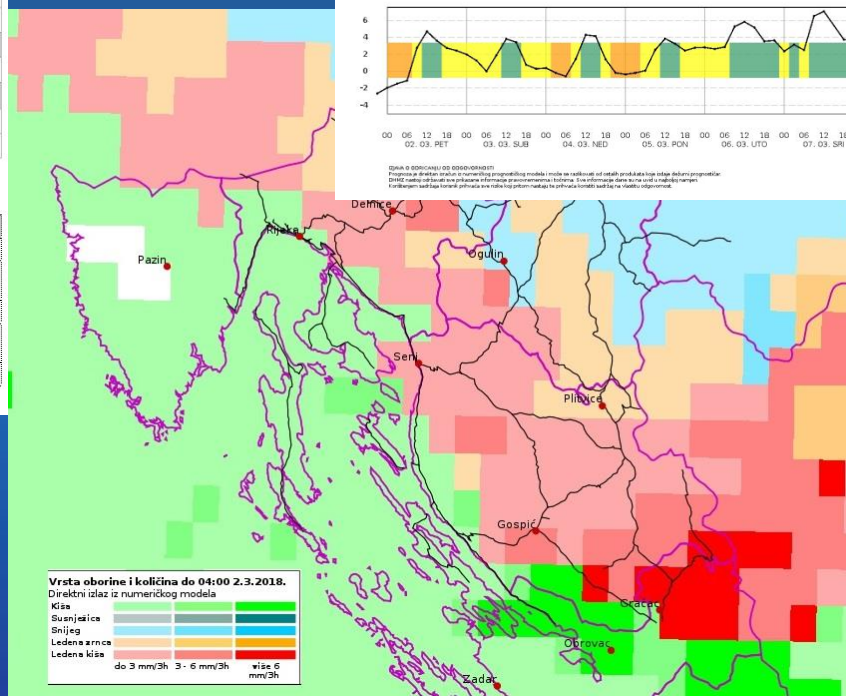
Vremenska prognoza za sjevernu Hrvatsku za danas, 31. ožujka 2020. od 8 do 20 sati

Djelomice sunčano s promjenljivom naolakom iz koje sredinom dana i popodne može biti vrlo slabe sunježice. Vjetar većinom umjeren sjeveristočni.

Tablica s prognozom meteoroloških pojava

Vjerojatnost za pojavu	
OBORINE	A
SNIJEG	A
SNJEŽNI POKRIVAČ	NE
NOVI SNIJEG > 5 CM	NE
Poledica	
VJEROJATNOST / VRSTA	B 3
Temperatura	
NAJNIŽA (OD/DO)	-2 / 1
NAJVIŠA (OD/DO)	6 / 8

Vjerojatnost za pojavu	Poledica, vrsta
NE Nema pojave	1 Pothladena kiša ili rosulja koja se smrzava u dodiru s tlom.
A Mala vjerojatnost za pojavu	2 „Topla kiša“ ili rosulja koja se smrzava u dodiru s tlom čija je temperatura niža od 0° C.
B Umjeren vjerojatnost za pojavu	3 Zaledivanje mokrog tla zbog pada temperature ispod 0°C.
C Velika vjerojatnost za pojavu	4 Poledica nastala ponovnim smrzavanjem ugaženog ili otopljenog snijega.
D Vrlo velika vjerojatnost za pojavu	5 Poledica nastala pri padanju snijega ili sunježice.



Special interfaces for different customers possibilities – tailored forecasts based on shape files

