Izdavanje prognoza i meteoroloških upozorenja i njihova uloga u svakodnevnom životu

dr. sc. Nataša Strelec Mahović
DHMZ
Odjel za vremenske analize i prognoze
Outline

- Forecasts, users and customers
- Severe weather warnings
- meteoalarm
- Cooperation with civil protection authorities
Weather forecast

Daily products and users:

- **Nowcasting (half-day forecasts)**
  - TV, radio, internet, road maintenance, civil protection...
- **Short-range weather forecasts**
  - Radio, tv, newspapers, internet, road maintenance, fire department, airport, railways, telephone services, governmental institutions, civil protection...
- **Medium-range weather forecasting**
  - Road maintenance, military services, water management, mine disposal, general public..
- **Monthly forecasts (twice per month, on Friday)**
  - Agriculture, water and power management, gas companies..
- **Seasonal forecasts (once per month, between 15th and 20th)**
  - Water management
- **Severe weather warnings**
**Severe weather warnings**

- Warnings in Croatia have a long history, warnings for sea traffic are issued by the Marine 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 September 2010.

"IN THE NORTH ADRIATIC A RISK OF LIGHT ISOLATED THUNDERSTORMS AND OF GUSTS OF SW WIND 30-40 KNOTS."

"Auf der Nordadria ist Gewitter möglich, wie auch Südwestböen, 30-40 kn."

"SULL’ADRIATICO SETTENTRIONALE IL RISCHIO DI TEMPORALI SPARSI E DI COPI DI VENTO DA SW 30-40 NODI."

Forecasts are also issued to:

NATIONAL HEADQUARTER FOR SEARCH AND RESCUE AT SEA
Hazard list

• Tornado (rotational high winds)
• Strong winds
• Storm surge
• River flooding
• Coastal flooding
• Flash floods
• Thunderstorm or lightning
• Heavy snow
• Hailstorm
• Freezing rain
• Dense fog
• Heat wave
• Cold wave
• Drought
• Marine hazards (storm, sea ice, icebergs, etc.)
• Landslide or mudslide
• Airborne hazardous substances (i.e., nuclear, biological, chemical, etc.)
• Waterborne hazards (i.e., nuclear, biological, chemical, oil spills, etc.)
• Hydrometeorological hazards to aviation (i.e., turbulence, icing)
• Forest or wild land fire
• Smoke, Dust or Haze
• Earthquakes
Natural disasters 1980 – 2008 (global)
Geophysical, meteorological and hydrological events

Number


- Geophysical events (Earthquake, tsunami, volcanic eruption)
- Meteorological events (Storm)
- Hydrological events (Flood, mass movement)
- Trend line
Economic losses (%) caused by natural hazards in Croatia, 1980 - 2002

- Drought: 38%
- Storm, Hail: 20%
- Earthquake: 12%
- Frost: 8%
- Fire: 7%
- Flood: 7%
- Several causes: 6%
- Other: 2%
- Drought: 38%
- Storm, Hail: 20%
- Earthquake: 12%
- Frost: 8%
- Fire: 7%
- Flood: 7%
- Several causes: 6%
- Other: 2%
• On daily basis warnings are included in radio, TV & some newspapers

• Radio – about 7 live reports daily given by DHMZ forecaster on duty in which he/she gives information about weather as well as possibility of bad weather and warnings

• TV – announcement of bad weather and warnings are given in reports, mainly at the end of shows
Državni hidrometeorološki zavod

Aktualni podaci
Klimatologija
Kvaliteta zraka
Biometeorologija
Hidrologija
Agrometeorologija

Upozorenje na opasne vremenske pojavu:
Sutra je pogledivo na sjevernom Jadranu i u gorskoj Hrvatskoj mjjestima moguća obilnja kiša (više od 30mm, a ...

Hrvatska danas:
Prevladavat će sunčano. U najzapadnijim područjima navečer i u noći porast naoblak i rijetko uz mogućnost za kišu. Vjetar u početku slabi ...

Zagreb danas:
Većinom sunčano. Vjetar u početku slab, u drugome dijelu dana umjeren jugoistočni. Najviša dnevna temperatura između 28 ...

Promoci-situacija:
Dolina s hladnom frontom premijetila se sa sjeverozapada prema Jadranu.

Biometeorološka prognoza danas:
Biometeorološko će se prilikom pogoršavanja bježem dana. Kod meteopota će se javiti glavobolja, razdražljivost i ...

U proteklim sedam dana minimalne vrijednosti temperature zraka u kontinentalnoj Hrvatskoj spustila se su da je 5,6°C koliko je izmjereno u Gospić (Zavičen 4,7°C). Uzduž Jadran te ...

Novo na stranicama:
Godišnje izvješće o praćenju kakovosti zraka na postajama državne mreže za trajno praćenje kakovosti zraka za 2010. godinu
Preminulima ocjena kakovosti zraka u Slavonskom Brodu u 2011.

---

DHMZ

www.meteo.hr

Meteorological and Hydrological Service of Croatia
http://meteo.hr
Croatia since 17th July 2009.
Croatian list of parameters that are warned about on www.meteoalarm.eu

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

Climatological areas!
White:
Missing, insufficient, outdated or suspicious data.

Green:
No particular awareness of the weather is required.

Yellow:
The weather is potentially dangerous. The weather phenomena that have been forecast are not unusual, but be attentive if you intend to practice activities exposed to meteorological risks. Keep informed about the expected meteorological conditions and do not take any avoidable risk.

Orange:
The weather is dangerous. Unusual meteorological phenomena have been forecast. Damage and casualties are likely to happen. Be very vigilant and keep regularly informed about the detailed expected meteorological conditions. Be aware of the risks that might be unavoidable. Follow any advice given by your authorities.

Red:
The weather is very dangerous. Exceptionally intense meteorological phenomena have been forecast. Major damage and accidents are likely, in many cases with threat to life and limb, over a wide area. Keep frequently informed about detailed expected meteorological conditions and risks. Follow orders and any advice given by your authorities under all circumstances, be prepared for extraordinary measures.
Some examples of successful warnings.

Flood event in Slovenia and Croatia 17-19 Sep 2010

...flash floods in Istria and in Gorski kotar

<table>
<thead>
<tr>
<th>Location</th>
<th>Rain (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risnjak</td>
<td>324</td>
</tr>
<tr>
<td>Parg</td>
<td>224</td>
</tr>
<tr>
<td>Kukuljanovo</td>
<td>211</td>
</tr>
<tr>
<td>Delnice</td>
<td>208</td>
</tr>
<tr>
<td>Rijeka</td>
<td>193</td>
</tr>
<tr>
<td>Poreč</td>
<td>124</td>
</tr>
<tr>
<td>Sljeme</td>
<td>141</td>
</tr>
<tr>
<td>Krapina</td>
<td>122</td>
</tr>
<tr>
<td>Zagreb Grič</td>
<td>89</td>
</tr>
<tr>
<td>Zagreb Maksimir</td>
<td>87</td>
</tr>
<tr>
<td>Sisak</td>
<td>80</td>
</tr>
<tr>
<td>Karlovac</td>
<td>69</td>
</tr>
</tbody>
</table>
Some examples of successful warnings. 1 - 2 Sep 2011

Automatic weather stations
Povile and Krk, mean wind speed (m/s)
Some examples of successful warnings.  18-19 Sep 2011
Risk of forest fires – fire weather index
Alert chart for forest fire danger 25.07.2009.

Legenda:
- VRLO VELEKA OPASNOST
- VELEKA OPASNOST
- UMJERENA OPASNOST
- MALA OPASNOST
- VRLO MALA OPASNOST

KARTA OPASNOSTI OD NASTANKA POŽARA NA OTVORENOM PROSTORU ZA 25.07.2009. KORIŠTENI PODACI IZ DHMZ-a

IZRADIO VOS
Operative department of National Protection and Rescue Directorate (112 Centre) recognized the METEOALARM information as beneficial for their activities and as valuable supplement to regular cooperation:

Forecasts and warnings

Local authorities, Civil protection, Fire brigades
All operative activities are governed by SOP (flow diagram)
Summary and conclusions

- Large number of forecast products
- Very different user groups
- Warning procedure from meteorological point of view already advanced
- Communication to target population should be done by National Protection and Rescue Directorate
- Response to warnings and taking appropriate actions is still a problem