

Meteoalarm 2.0

The new Meteoalarm System

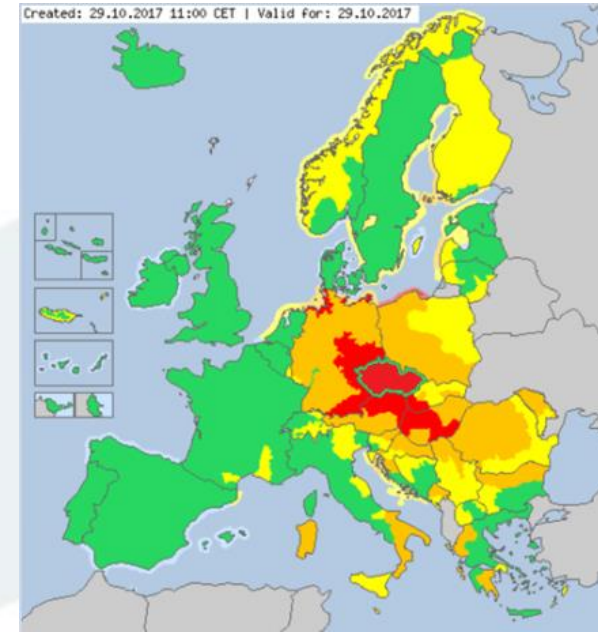
Andreas Schaffhauser
on behalf of the Meteoalarm Team



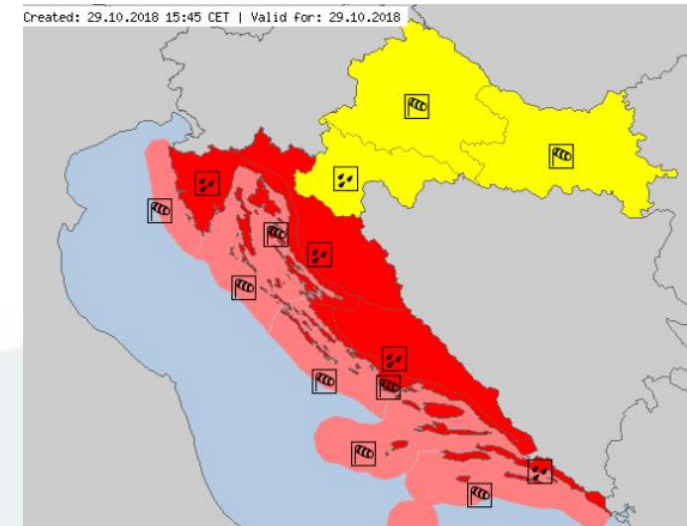
EUMETNET
EUROPEAN METEOROLOGICAL
SERVICES NETWORK

Content

- About EUMETNET
- Meteoalarm - an integrated regional warning system
- Meteoalarm CAP
- The new Meteoalarm System – Meteoalarm 2.0
- Release Information



Meteoalarm Partner Group Meeting, Zagreb 2019



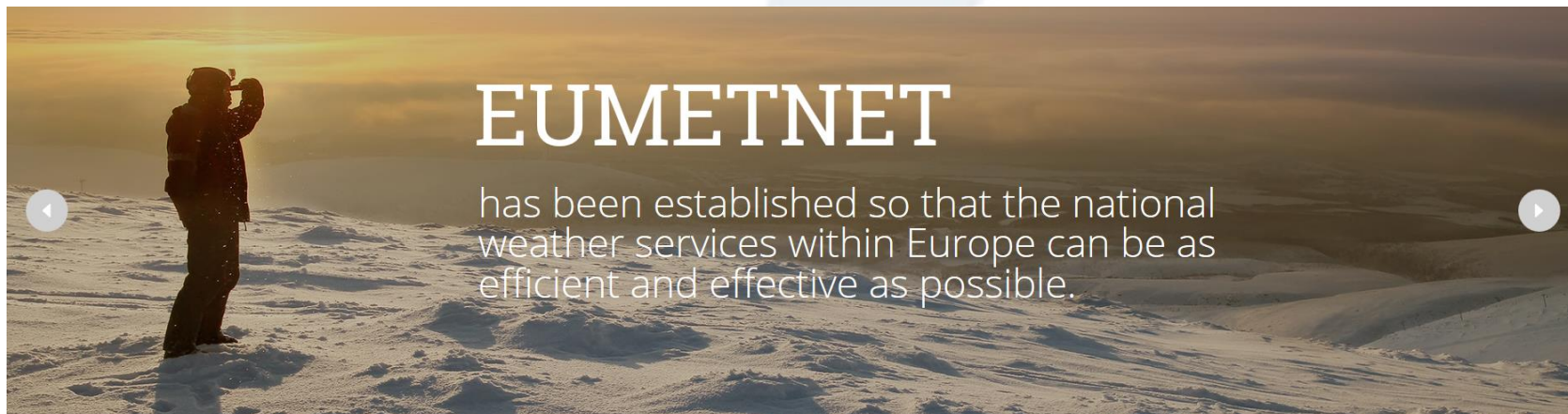
EUMETNET

EUMETNET is a grouping of **31 European National Meteorological Services**

EUMETNET provides a **framework to organize co-operative programs between its members** in the various fields of basic meteorological activities.

These activities include observing systems, data processing, forecasting, research and development and training.

EMMA (European Multi service Meteorological Awareness) and the **Meteoalarm web page** represent one of the **most successful and visible achievements** of EUMETNET.



What is EMMA ? EUMETNET Mandate

- An impact-oriented, common framework to **aggregate and display warnings** of EUMETNET members
- **multi-hazard programme** making warnings available and visible in an easy and understandable way to the general public and to European (re)users
- Provision of Meteorological and hydrological warnings including coastal events
- Source of warnings are NMHSs and national partners
- **Harmonize** warnings systems across Europe through impact and climatology
- Integrate additional partners (currently 37 member-countries)
- **Dissemination** of warnings to (re)users via feeds (RSS, CAP) and the alert hub

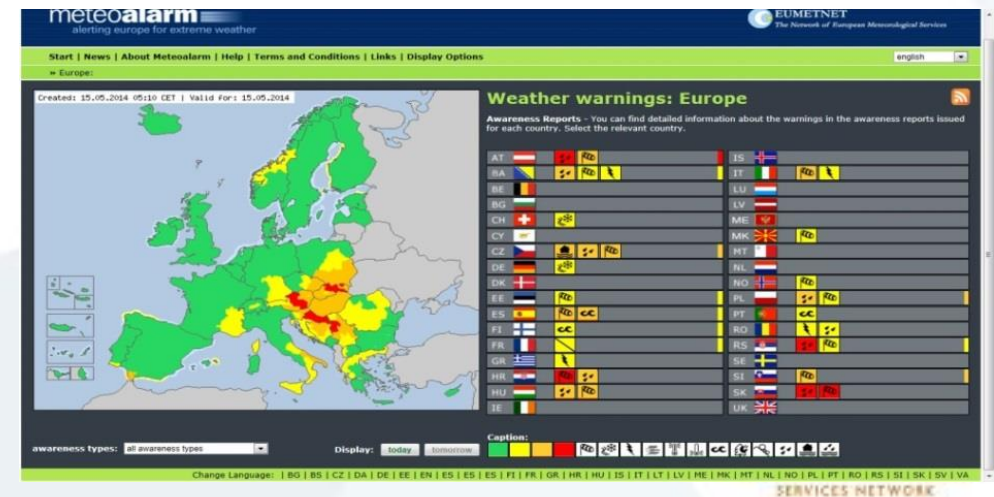
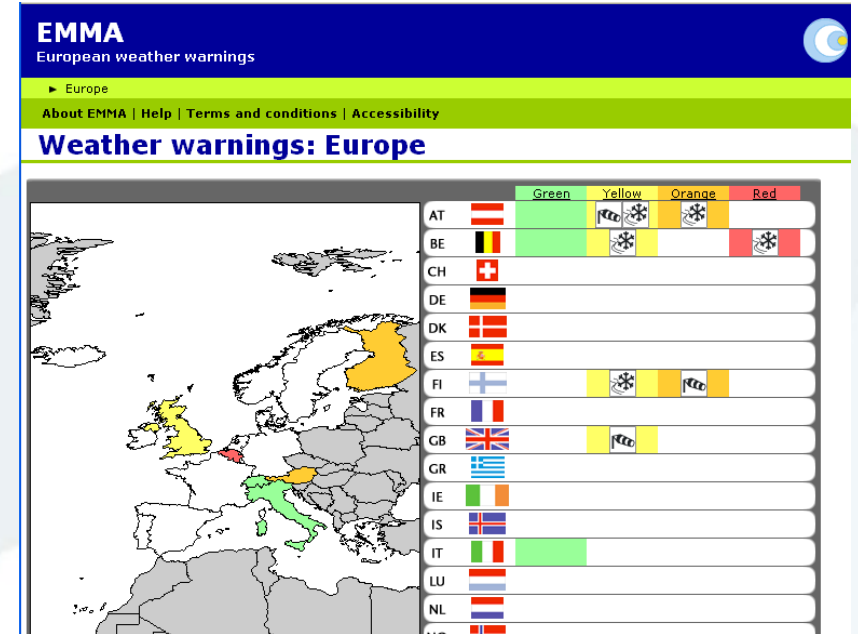
EUMETNET EMMA History

Created in the early 2000s

EMMA V is running since January 2019

Programme Management ZAMG

- 2003 Definition of general objectives
- 2006 Operational system - <http://meteoalarm.eu>
- 2010 Europe of regions
- 2019 37 NMHSs and national partners are participating
- 2020 Redesign of Meteoalarm – Meteoalarm 2.0

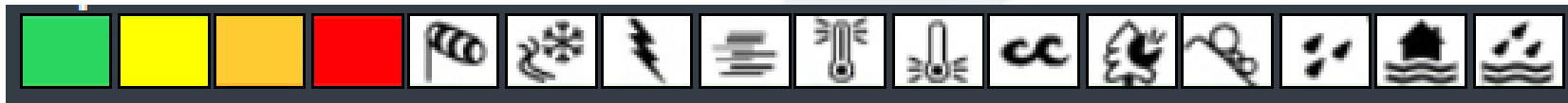


Meteoalarm 3 C's

Content (warning information, impact)

Communication: reach out to as many as possible users

Co-operation with other services and civil protection



AT		IT	
BA		LT	
BE		LU	
BG		LV	
CH		MD	
CY		ME	
CZ		MK	
DE		MT	
DK		NL	
EE		NO	
ES		PL	
FI		PT	
FR		RO	
GR		RS	
HR		SE	
HU		SI	
IE		SK	
IL		UK	
IS			

Meteoalarm

37 NMHSs and national partners provide regular warnings

Warnings are provided in 33 languages

30 - 40 people in Partner Group Meetings

31 Partners deliver warnings in CAP, 4 countries in the test phase

Meteoalarm is seen as best practice by WMO

Large information providers are re- users of the Meteoalarm

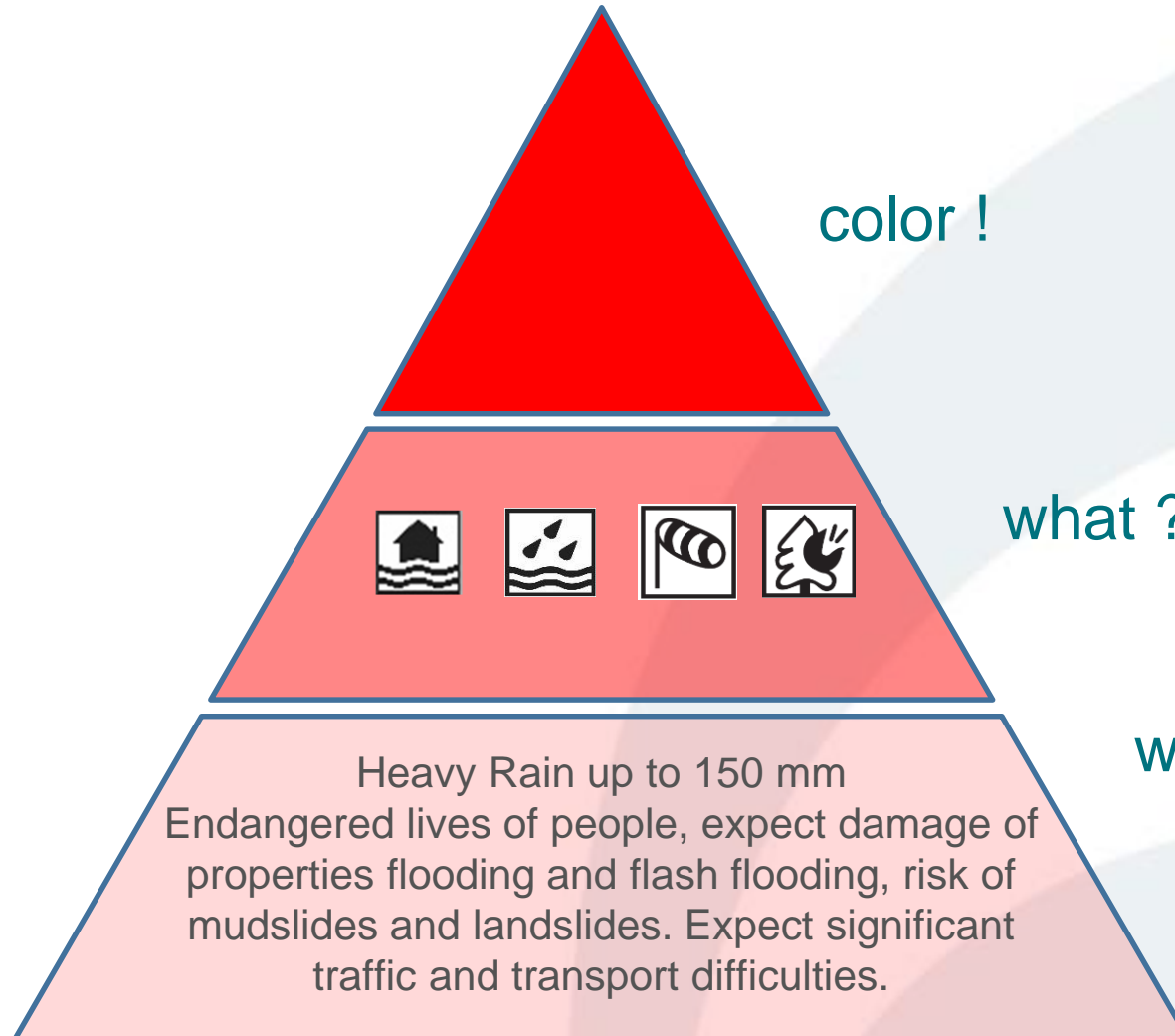
Meteoalarm – awareness types and color codes

Caption:



- A straightforward **4-level color coded** table is used to define and connect potential impact to meteorological criteria
- The colors Green, Yellow, Orange and Red are used to classify levels of danger, a general advice “what to do” and typical meteorological conditions for these level.
- Whereas the two first elements (danger and behavioral advice) are generalized across Europe, meteorological conditions change from one climate region to the next.
- Each color has a specific meaning which can be understood by all European citizens independent from their mother language.

Information pyramid – put most important message first!

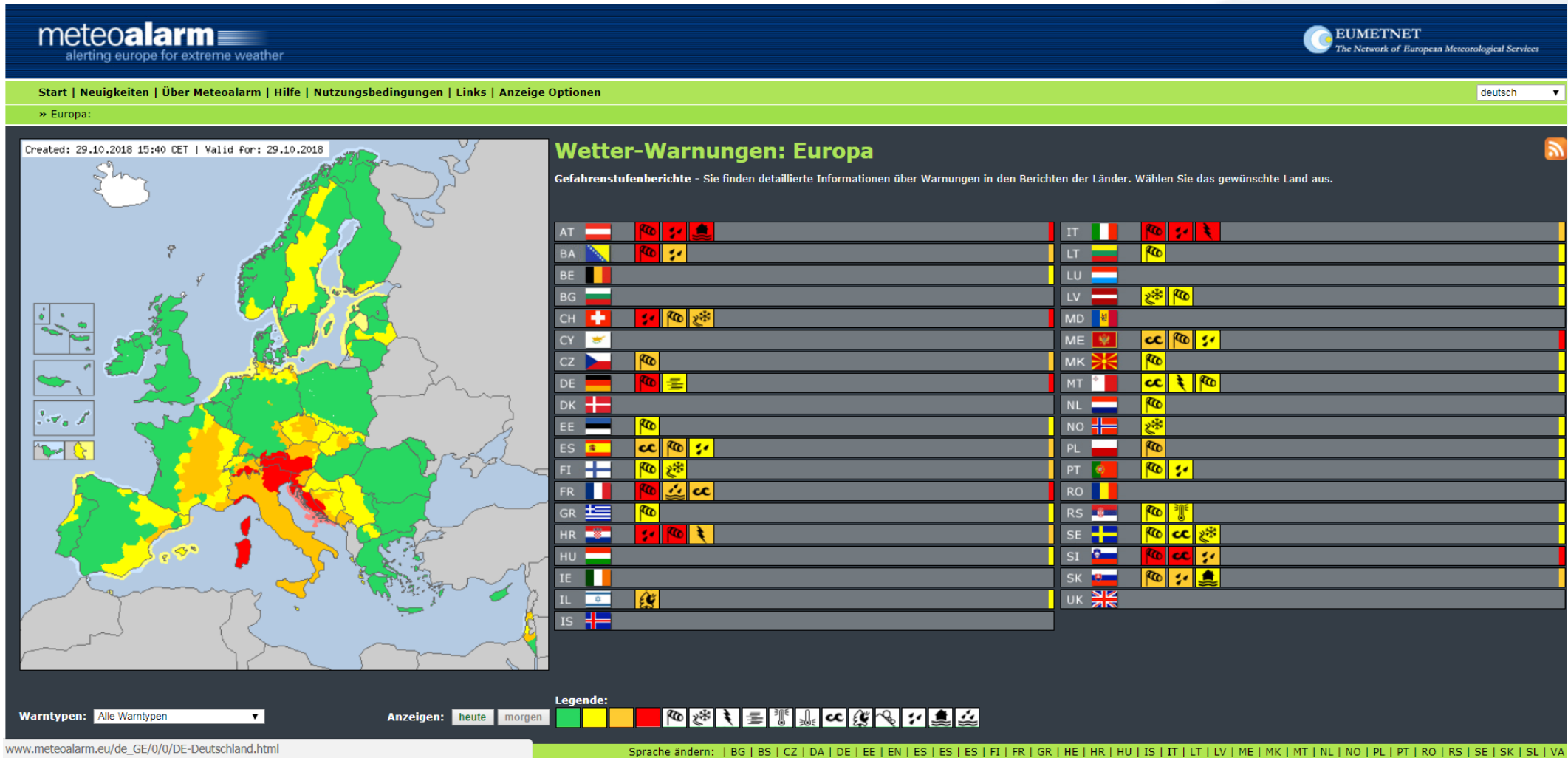


what happens exactly ?

szenarios, impacts and
advisories
updates

where, when ?

Storm/Rain October 29, 2018 – European level



Storm/Rain October 29, 2018 - Country level

meteoalarm
alerting europe for extreme weather

EUMETNET
The Network of European Meteorological Services

Start | Neuigkeiten | Über Meteoalarm | Hilfe | Nutzungsbedingungen | Links | Anzeige Optionen

deutsch

» Europa » Kroatien:

Created: 29.10.2018 15:45 CET | Valid for: 29.10.2018

Wetter-Warnungen: Kroatien

Gefahrenstufenberichte - Detaillierte Informationen über die Warnungen finden sich in den Berichten der einzelnen Länder. Bitte die entsprechenden Gebiete auswählen.

Dubrovnik regija				Gospic regija			
Knin regija				Osijek regija			
Split regija				Zagreb regija			

Küsten:

Kvarner and Kvarneric region		Middle Dalmatia region		North Dalmatia region	
South Dalmatia region		Velebit channel region		West Istrian coast region	

Legende:

Warntypen: Alle Warntypen

Anzeigen: heute morgen

Maps of the state territory and borders of the Republic of Croatia were only prepared for and serve the purpose of this document.

Mehr Information:

Storm/Rain October 29, 2018 - Regional level

Wetter-Warnungen: Gospic region



Gültig von 29.10.2018 00:00 CET **bis** 29.10.2018 23:59 CET
Regen

Gefahrenstufe: **Rot**

hrvatski:

Mjestimice vrlo obilna kiša. količina oborine 80-140 mm PPODUZMITE MJERE kako bi se zaštitili. Djelujte prema savjetima danim od strane nadležnih službi. Očekuju se izraženije poplave koje će zahvatiti veće područje te poplaviti imovinu uz značajan rizik za živote te mogućnost evakuacija. Vjerojatni su veći prekid u prometovanju te prekid i gubitak energije, komunikacije i opskrbe vodom. Opasni uvjeti za vožnju zbog smanjene vidljivosti te proklizavanja na mokrim kolnicima.

english:

Heavy rain locally. rainfall 80-140 mm TAKE PRECAUTIONS to protect yourself. Follow advice provided by relevant authorities. Strong flooding is expected in a large area. Properties will be flooded, lives will be at considerable risk, and evacuations are possible. Major traffic interruptions are likely, along with power outages, communication network failures and water supply interruptions. Difficult driving conditions caused by reduced visibility and wet and slippery roads.



Gültig von 29.10.2018 00:00 CET **bis** 29.10.2018 23:59 CET
Wind

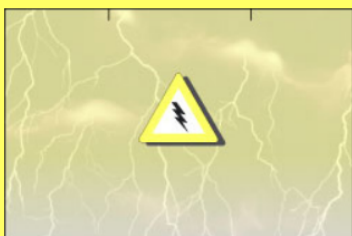
Gefahrenstufe: **Orange**

hrvatski:

Jak i na udare olujan jugoistočni i južni vjetar. srednja brzina vjetra 40-75 km/h; najjači udar vjetra 65-110 km/h BUDITE SPREMNI na poremećaje, oštećenja konstrukcija i rizik od ozljeda zbog iščupanih stabala, polomljenih grana te letećih krotina. Moguć je prekid prometa i prekid opskrbe električnom energijom.

english:

Strong SE and S wind with stormy gusts. average wind speed 40-75 km/h; maximum gust speed 65-110 km/h BE PREPARED for disruptions, building damage and risk of injury caused by uprooted trees, broken branches and flying debris. Traffic interruptions and power outages are possible.



Gültig von 29.10.2018 15:00 CET **bis** 29.10.2018 23:59 CET
Gewitter

Gefahrenstufe: **Gelb**

hrvatski:

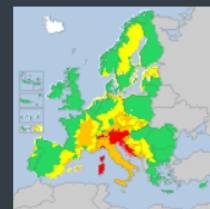
Mjestimice izraženiji pljuskovi i grmljavina, osobito krajem dana i u noći. vjerojatnost grmljavine 40-70 % BUDITE NA OPREZU zbog mogućih jačih grmljavinskih nevremena. Posebno pripazite u izloženim područjima kao što su planine, šume i livade odnosno otvoreni tereni. Mogući su prekid i aktivnostima na otvorenom.

english:

Thundershowers locally, especially in the night. lightning risk 40-70 % STAY ALERT for possible heavy thunderstorms. Be especially careful in high-exposure areas such as mountains, forests, meadows and open grounds. Interruptions in outdoor activities are possible.



Zurück zu Europa:



Zurück zu Kroatien:



Mehr Information:

Anzeigen: **heute** morgen

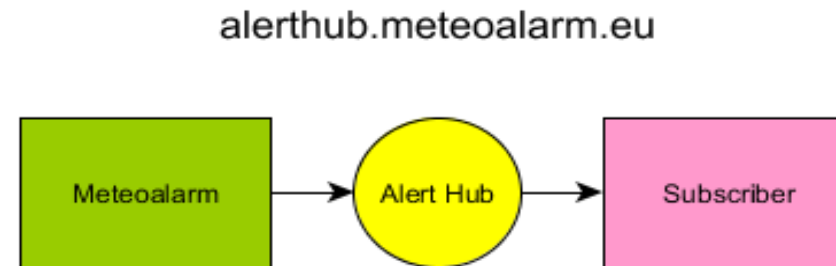
Challenges

- Number of warnings, warning regions have dramatically increased
- Number of accesses to the system have also increased
- High temporal update rate due do (semi)- automatic generated warnings from nowcasting systems (e.g. thunderstorms)
- Specific user needs: still tailored solutions for specific users operationally in use (import and provision of warnings)
- Drawbacks of the present CAP implementation (IoW), therefore TT preparing the next iteration of CAP in Meteoalarm
- Urgent need to provide easily usable solutions for the CAP generation, transfer to and import in Meteoalarm (NHMS's in less developed countries), Paint and Alert tool.

Where are we now ?

Meteoalarm – operational implementation

- Warnings sent by NMHSs/partners via Common Alerting Protocol (CAP), which is a XML-based message format as the standard exchange format for warnings
- Generation of warnings and transfer of CAP files using the Meteoalarm Cap-PHP-Library (including Cap creator, Cap validator and Paint and Alert tool)
- the Meteoalarm paint and alert tool
- dissemination of alerts in real-time via CAP feeds to (re)users of the data (e.g. apps or services by private sector, WMO GMAS,
- Visualization on meteoalarm.eu
- Meteoalarm alert hub
- Repository for shape files / polygons



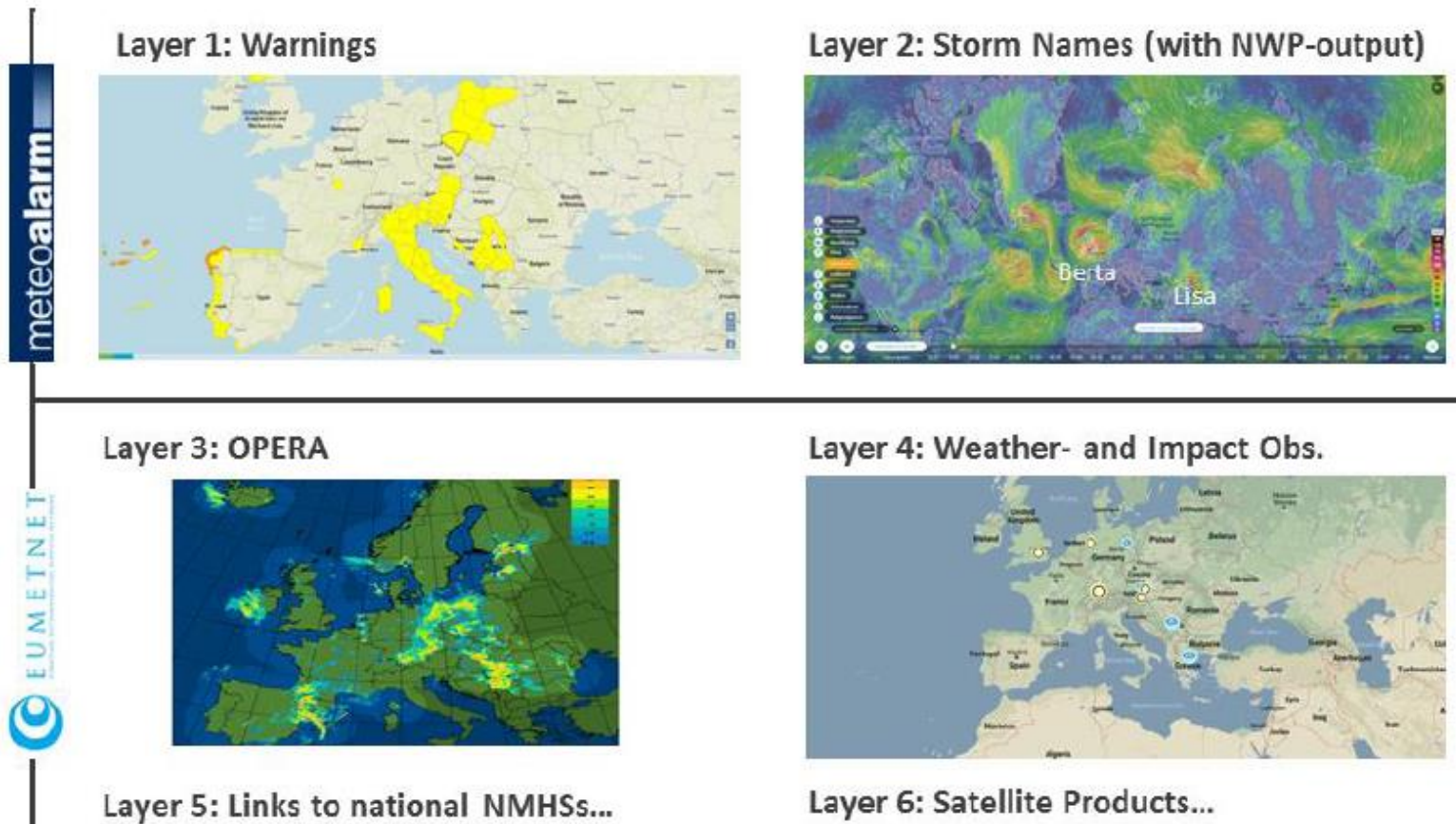
Where we want to be in future - Meteoalarm 2.0

Comprehensive relaunch, upgrade and redesign of the complete Meteoalarm system.

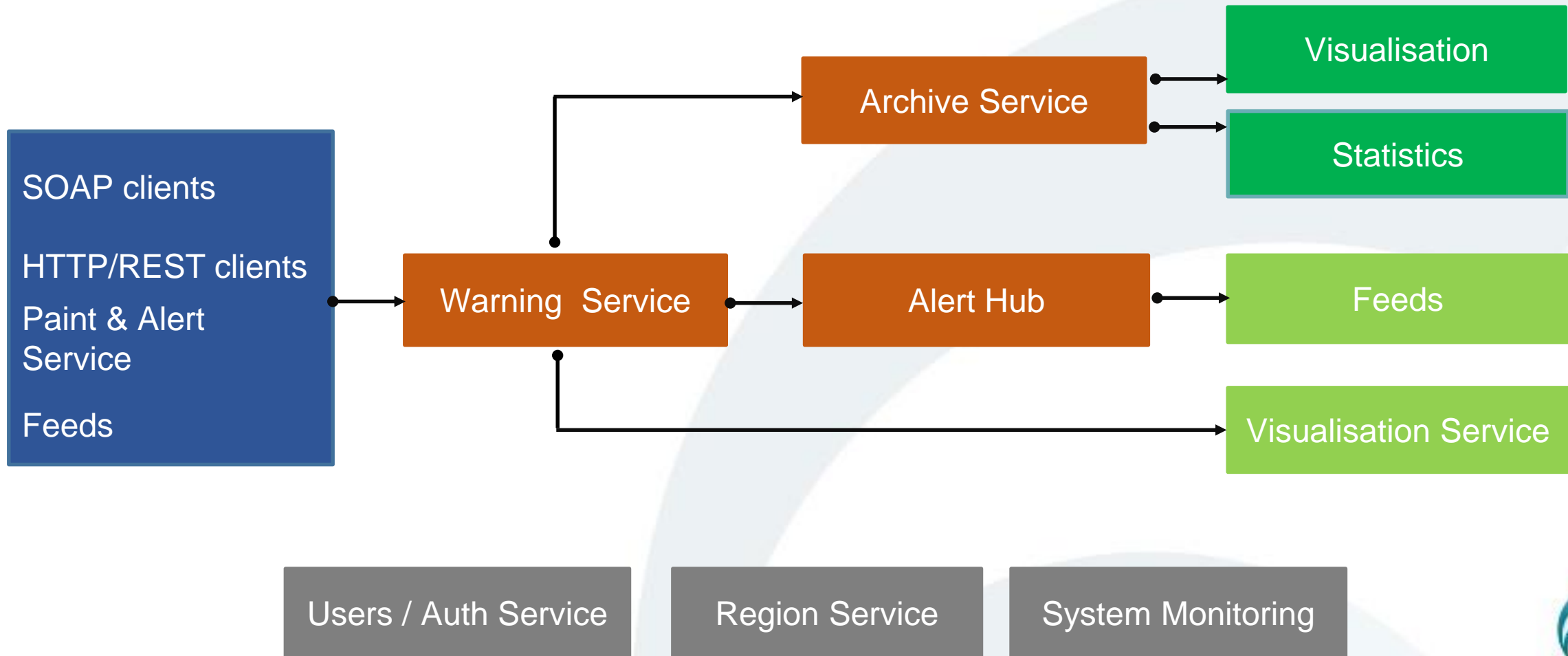
The **key features of Meteoalarm 2.0** will include:

- modular design (warning service, alert hub/feeds, visualization service)
- responsive, as far as possible barrier-free web design
- user friendly functional interfaces
- use of state-of-the-art web technologies
- web GIS functionalities
- new statistics module
- layer for storm names and social media elements
- ready for layers with additional future content
- real time quality control of incoming CAP files

- introduce **additional layers** in Meteoalarm 2.0 for possible future content, e.g. storm names, OPERA composite, weather- and impact-observations.



Overview Meteoalarm 2.0 System Architecture



User Stories

As a user (**general public**)

I would like to **see warnings** on a Map

Because I'd like to be **well prepared** for my private/business trip.

As a user (**general public**)

I would like to see warnings appear on a Map in **real time**

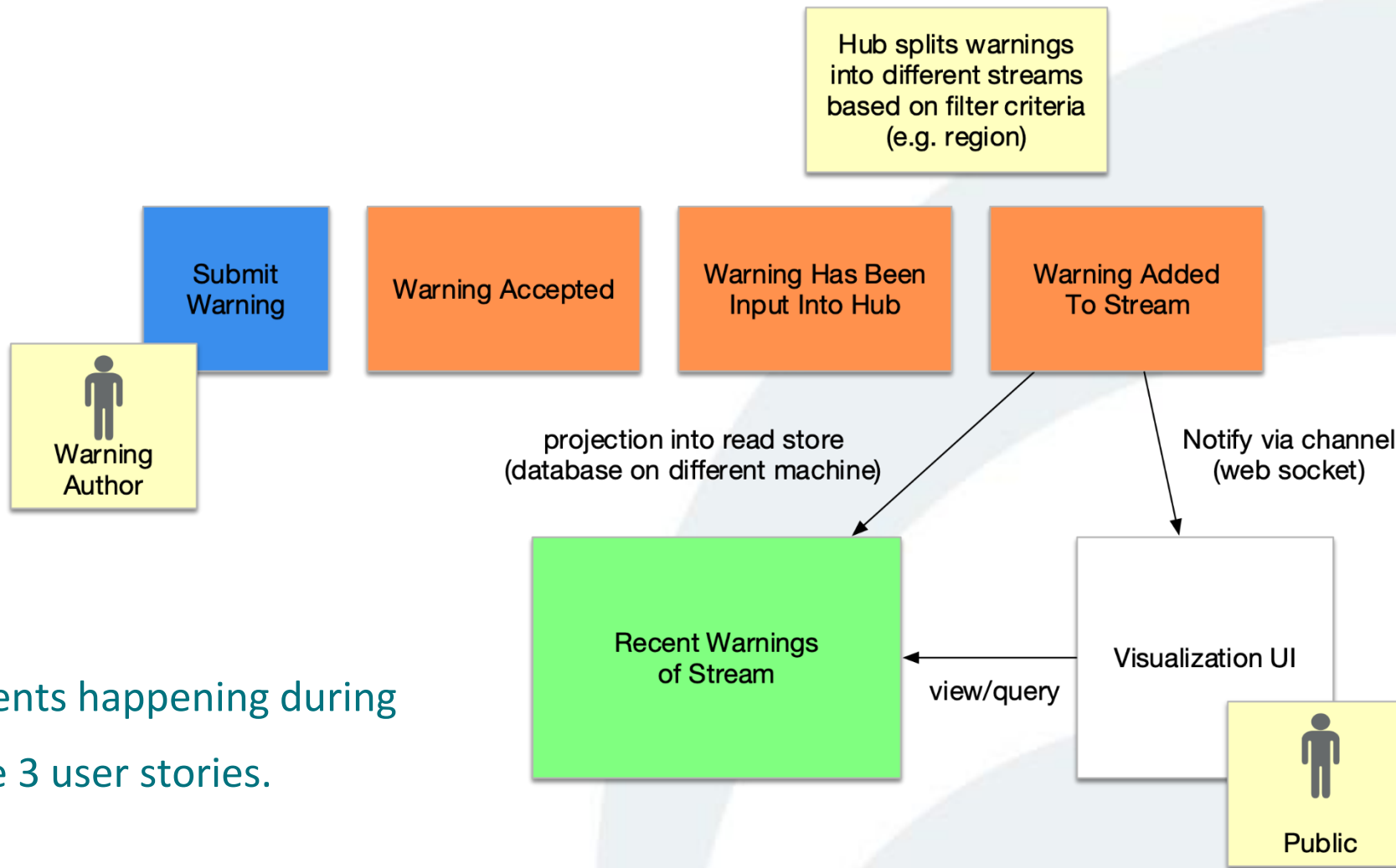
Because I'd like to be prepared for severe weather conditions in a **timely manner**.

As a **forecaster**

I would like to **submit warnings** in an effective way

Because I would like **to give advice** to civil protection and other agencies

Domain Events



Events happening during the 3 user stories.

Technology Stack - Backend

- BaseX XML database to store/archive CAP warnings
- Elixir programming language and Phoenix Web Framework
- ExUnit for automated tests
- Phoenix Channels (Web Sockets) for real time communication
- Commanded CQRS/ES library (event-based architecture)
- PostgreSQL database for read store and write store (event store)
- PostGIS geographic information system (GIS) extension for PostgreSQL

Technology Stack – Frontend

- HTML/CSS/JavaScript
- Bulma CSS Framework
- Vue JavaScript Framework for building Web components and Apps
- OpenLayers library for GIS functionality in the browser
- Channels (Web Sockets) for real time communication
- Jest, Wallaby, and Cypress for automated Tests

Meteoalarm CAP Working Group



Members

AEMET, Met Eireann, Met Norway, Meteoswiss, DWD, Meteo France, UK Met Office and ZAMG

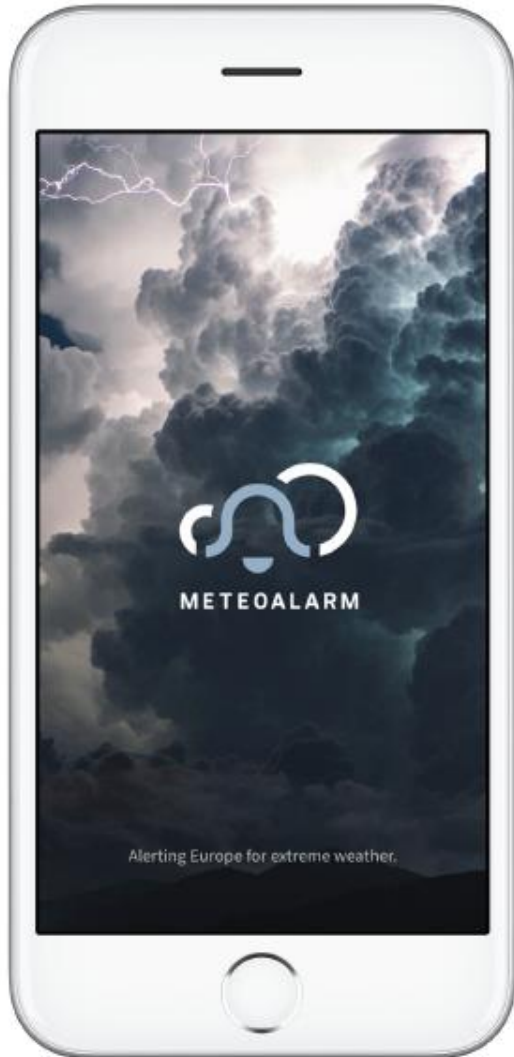
Key principles

- It must allow preservation of the content of each NMHS warnings
- CAP should not impose undue constraints on how each NMHS wishes to warn its citizens
- Proposal should not incur undue cost or significant additional resources on NMHSs to implement.

Meteoalarm CAP Working Group - Tasks

- **Further development** of the Meteoalarm CAP profile together with the Meteoalarm partners.
- **Review and refinement** of the use of specific CAP components, e.g. for the integration of additional information to take into account different IBF / IoW approaches.
- Meteoalarm 2.0 is technically designed to accommodate **free polygons**, elaborate detailed specifications about using polygons in CAP for the Meteoalarm CAP implementation
- **Sharing best practices** for CAP implementations, develop and share **user guidelines**
- Communication and coordination with OASIS CAP committees
- Starting point are the key principles and outcomes of the Meteoalarm TT in 2018

Timeline for implementation



Start of **test phase** in week October 12th to 18th

Test phase of about 1 month

Release is scheduled for the week November 9th to 15th

Retirement of Meteoalarm 1.0 at the end of 2020

Detailed information will be published on

<https://www.meteoalarm.eu>

For further information please contact

meteoalarm@zamg.ac.at

EUMETNET Meteoalarm - www.meteoalarm.eu

- Meteoalarm will be an **efficient one-stop shop** and a repository for multi-hazard warnings originating from the participating NHMSs and their partner organizations.
- **Harmonized** as far as possible
- Will provide the most relevant information needed to prepare for extreme weather, expected to occur somewhere over Europe
- Understandable by all actors from the private and public sector
- 4 – level colour code seen as understandable „language“
- The information is presented consistently to **ensure coherent interpretation** as widely as possible throughout Europe.
- **Meteoalarm 2.0** provides a comprehensive relaunch, upgrade and redesign of the complete Meteoalarm system

Any Questions ?



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CONTACT DETAILS

Andreas Schaffhauser

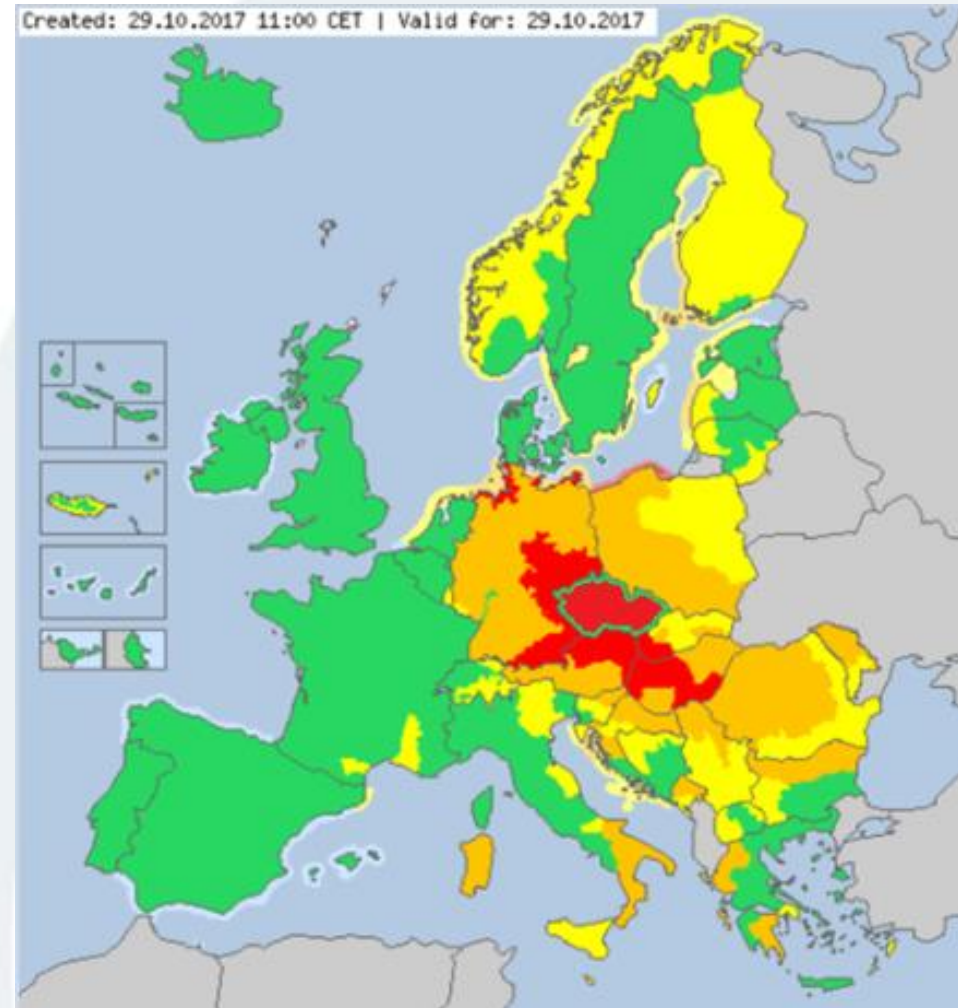
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