Overview of EUMETNET Meteoalarm and the CAP Implementation

Alerting Europe for Extreme Weather

Andreas Schaffhauser, ZAMG

ZAMG

meteoalarm
alerting europe for extreme weather

EUMETNET
EUROPEAN METEOROLOGICAL SERVICES NETWORK

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.

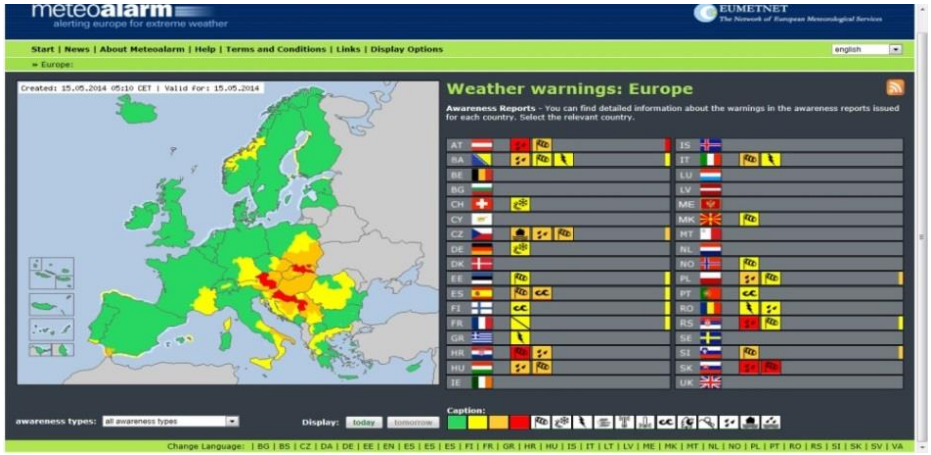
these **activities** include observing systems, data processing, forecasting, research and development and training.

http://www.eumetnet.eu

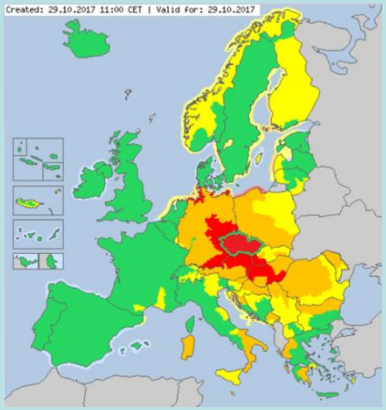
What is Meteoalarm?

- an **impact-oriented, common framework** to aggregate and display meteorological and hydrological warnings of EUMETNET members
- making available warnings in an **easy and understandable way** to the general public and to European (re)users
- multi-hazard programme created in the mid 2000s
- currently **37 NMHSs and national partners** in Europe are participating, programme lead by ZAMG, Austria

http://www.meteoalarm.eu

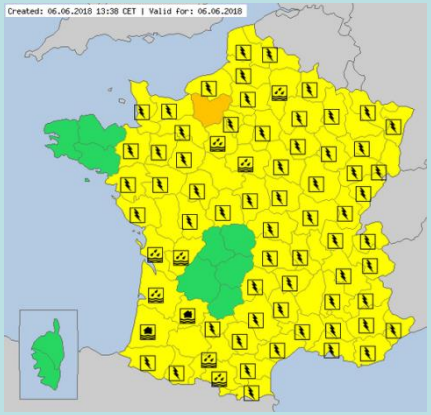


meteoalarm.eu (EUMETNET mandate)



a consistent common warning picture

Cyclone “Hewart“ 2017/10/29



integrated regional warning system in 33 languages

reach out to European users

Ops Center of ERCC, Brussels

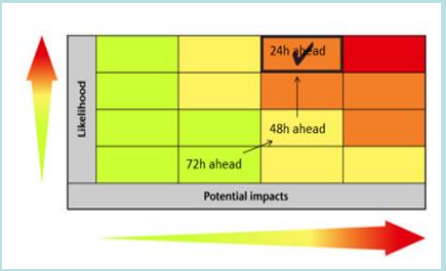
Dissemination of warnings to (re)users via RSS, CAP

Cascading Effect

Meteoalarm Network

yearly partner group meetings

Lisbon 2018



joint development of guidelines and warning concepts

Concept of uncertainty

integration of new partners

Moldova 2017

worldwide knowledge transfer

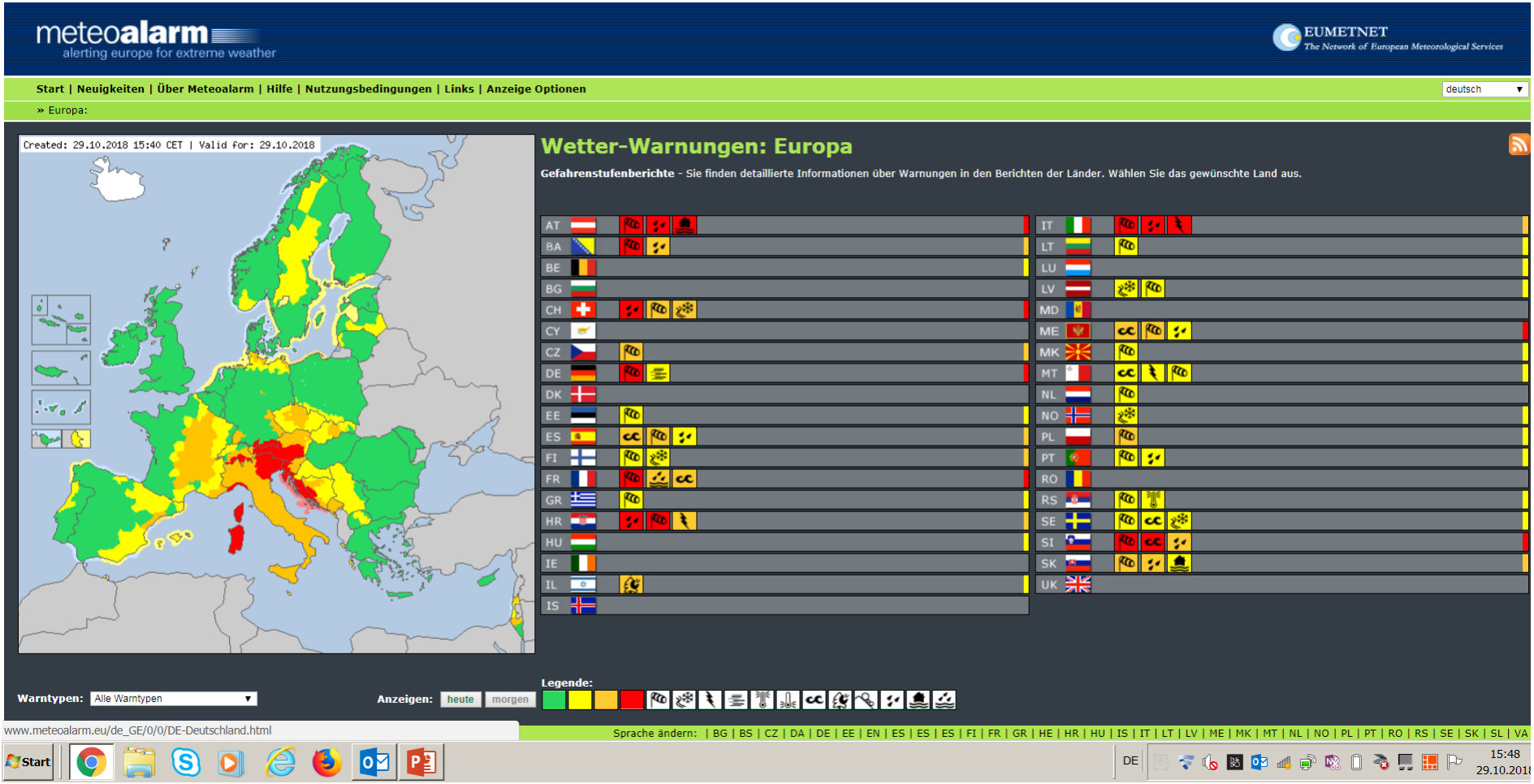
AT BA BE BG CH CY CZ DE DK EE ES FI FR GR HR HU IE IL IS IT LT LU LV MD ME MK MT NL NO PL PT RO RS SE SI SK UK

Main Concepts

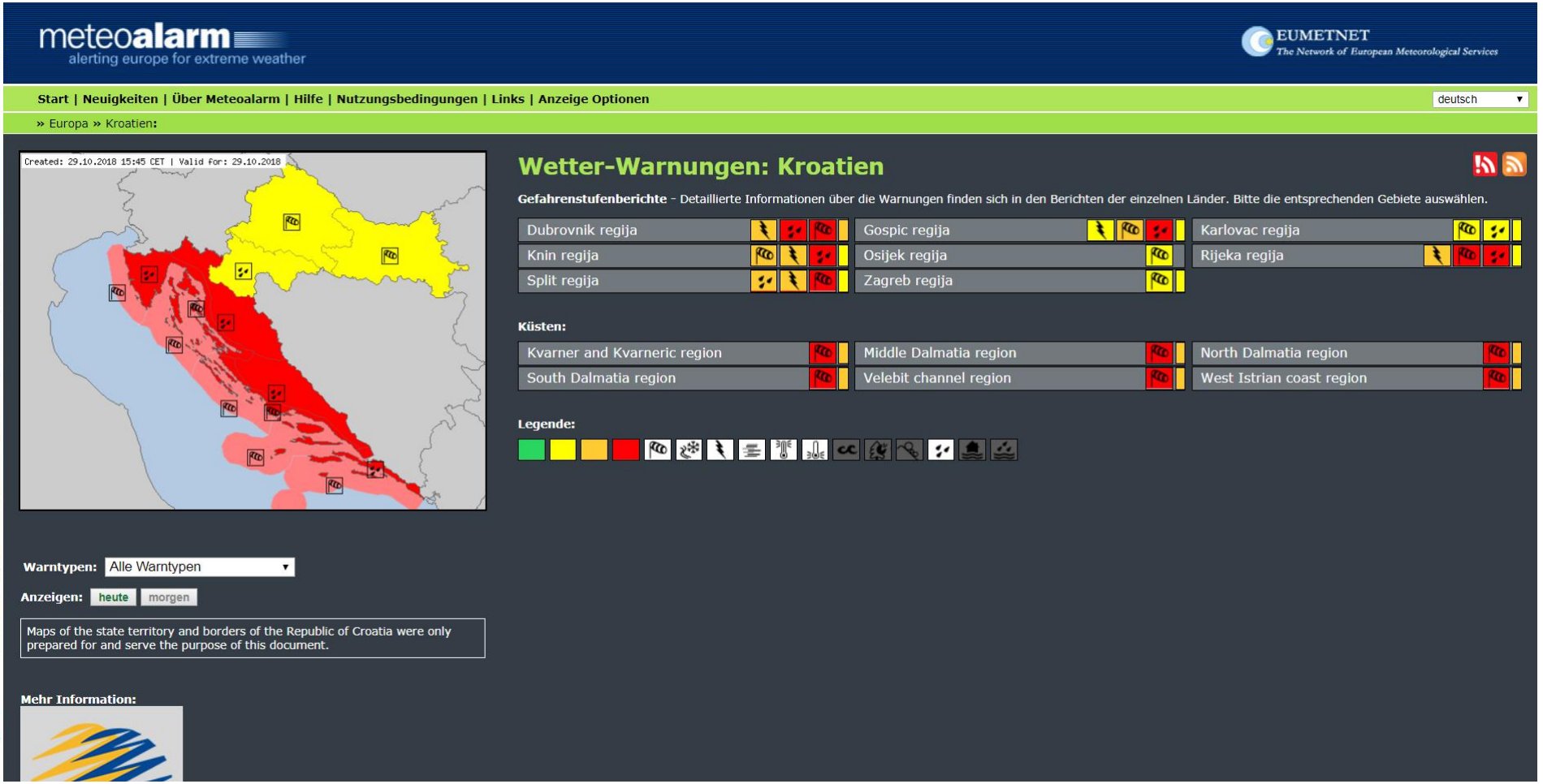
- added common value through **consistent warning philosophy**, easy and understandable four level color code
- warning: **tangible and understandable** description of an expected damage scenario (*information on impacts*) and a clear advice what to do (*instructions*)
- Meteoalarm 3 C's:
  - **C**ontent
  - **C**ommunication
  - **C**o-operation

Colour	One word	What to do?	Damage / Impact
Green	**Weather report**	usual phenomena	- - -
yellow	**Be aware!**	caution with exposed activities	exposed objects (avoidable)
orange	**Be prepared!**	keep informed in detail, follow advice of authorities	general damages (not avoidable)
red	**Take action!**	**follow order of authorities under all circumstances!** **be prepared for extraordinary measures!**	extreme damage and / or casualties extreme damage (mostly) on large areas, threatening life and properties (not avoidable, even in otherwise safe places)

Storm/Rain October 29, 2018 - Overview



Storm/Rain October 29, 2018 - Country level



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**

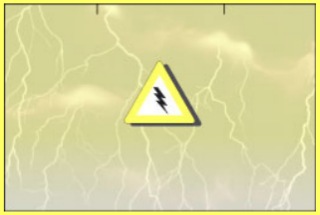
hrvatski:
Mjestimice vrlo obilna kiša. količina oborine 80-140 mm PPODUZMITE MJERE kako bi se zaštitili. Djelujte prema savjetima danim od strane nadležnih službi. Očekuju se izraženije poplave koje će zahvatiti veće područje te poplaviti imovinu uz značajan rizik za živote te mogućnost evakuacija. Vjerojatni su veći prekidi 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 krhotina. 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.

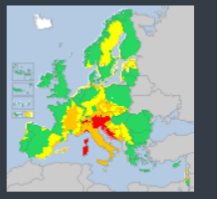


Gültig von 29.10.2018 15:00 CET **bis** 29.10.2018 23:59 CET
Gewitter
Gefahrenstufe: **Gelb**

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 prekidi u 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:

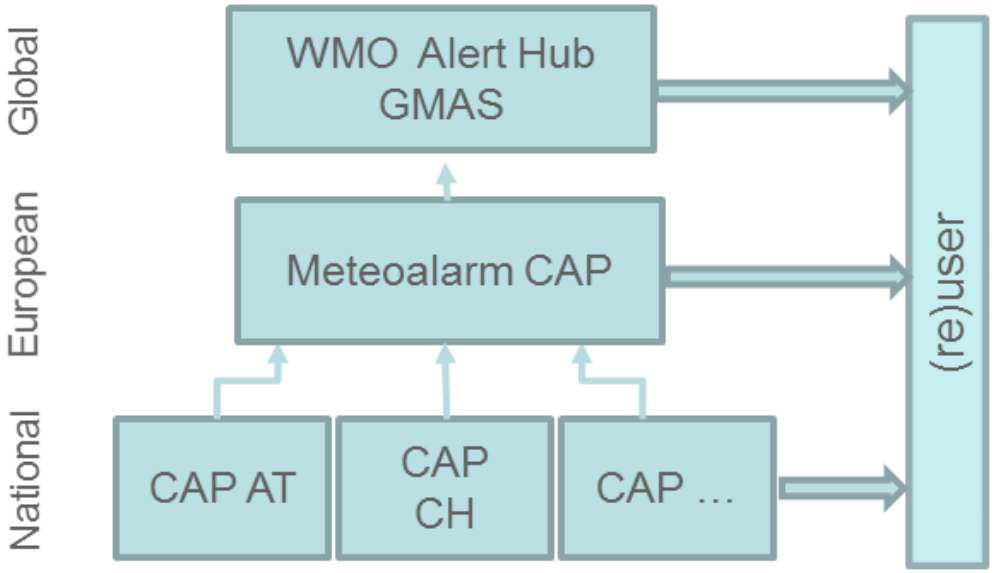
Anzeigen: heute morgen

Community Building

- Yearly partner group meetings, topics e.g.:
  - communication with Civil Protection
  - integration of national partners (hydro-services,…)
  - impact-oriented warnings (damage description and instructions)
  - exchange of case studies and best-practices
  - verification
- Led to
  - harmonized format of warnings, best practices
  - enhanced cross-border collaboration
  - communication tools between NMHSs for transboundary high-impact events

Data Collection and Dissemination

- alerts sent by NMHSs via Common Alerting Protocol (CAP), which is a XML-based message format as the standard exchange format for warnings (SOAP Interface)
- aggregation and 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, …)



Sendai Framework for Disaster Risk Reduction 2015-2030

paradigm shift in national or local agencies (NMHS) in

- advancing from providers of forecasts and warnings to producers of

  impact-based forecasts* and *risk-informed warnings

- assuming **active roles** in all aspects of disaster risk management cycle

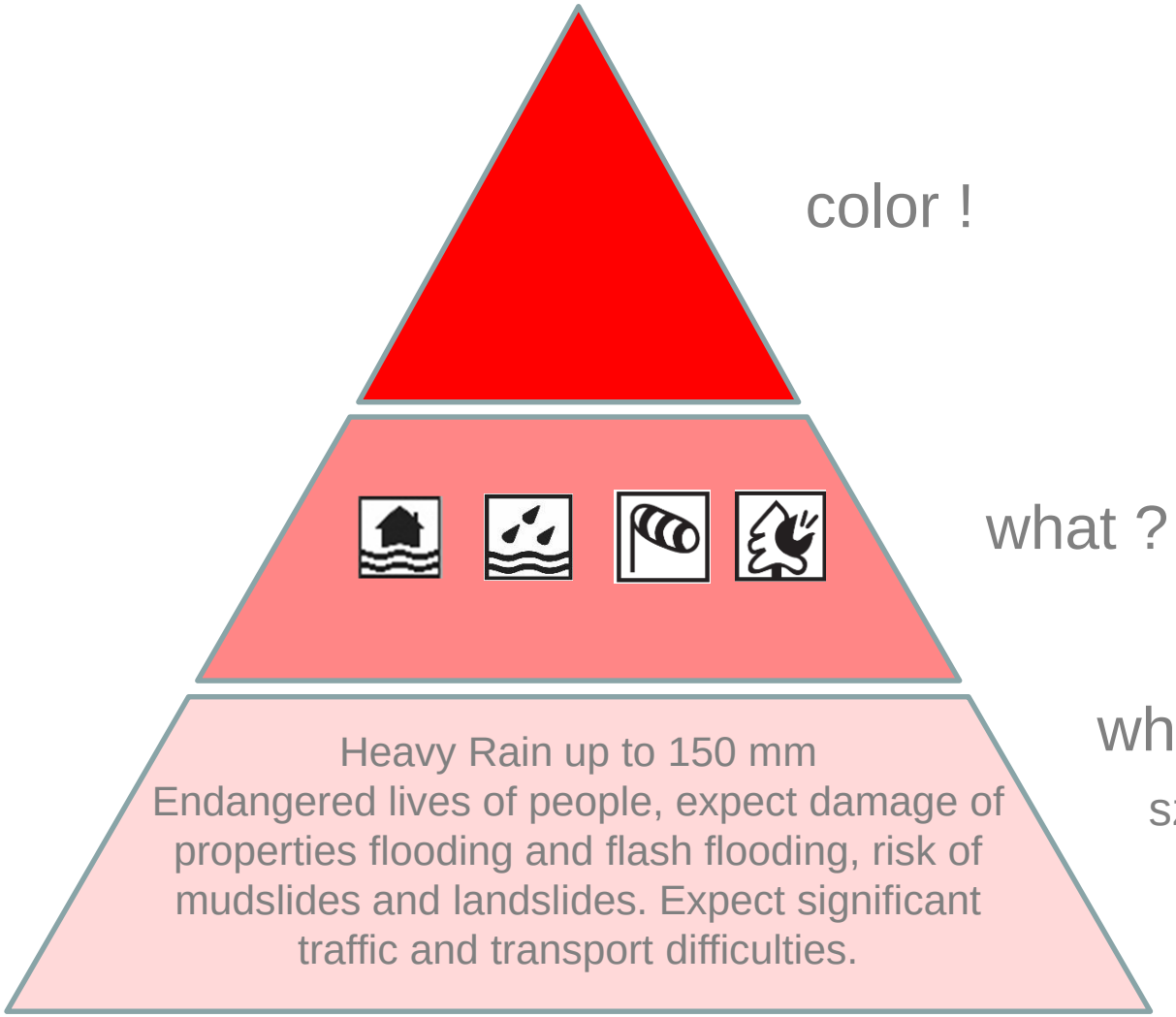
- providing better **risk-based** decision support services.

Sendai Framework for Disaster Risk Reduction 2015-2030

to develop and strengthen:

- **people-centred** multi-hazard forecasting and early warning systems,
- tailor them to the **needs of users**, including social and cultural requirements
- and broaden **release channels** for disaster early warning information

Information Pyramid – put first things first !



color !

what ?

what happens exactly ?

szenarios, impacts and advisories
updates

where, when ?

Results from Meteoalarm Task Team*

To review and propose a version of CAP that meets the needs of the Meteoalarm members. 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, and
- must align to event type definitions proposed by WMO-led task team on cataloguing and recording extreme events

*TT members from UK Met Office, DWD, Meteo France, KNMI, FMI, ARSO, MeteoSwiss, AEMET, ZAMG

NHMS requirements – identification of core components

- TT members were asked to identify ‘core’ requirements
- some members expressed their requirements in terms of existing CAP elements, others in more general terms.
- thus the components of the core table (next slide) should not necessarily be identified with current CAP elements or terminology.
- the core table records prioritisation, where contributors expressed a preference, of components as (M=Must, S=Should, C=Could).
- all components with at least one ‘M’ are shown, and shading reflects degree of consensus (green=unanimous or near unanimous agreement).

Identification of core components

	Slovenia	Germany	Austria	UK	France	Spain	Switzerland
Issue Time	M	M	S	C		M	M
Start Time	M	M	M	M	M	M	M
End Time	M	M	M	M	M	M	M
Event Type	M	M	M	M	M	M	M
Colour	M		M	M	M	M	M
Severity	M	M	M	(M)	M	M	M
Certainty/Likelihood	M		C	(M)		M	M
Urgency	M					M	C
Matrix Position	S		C	M			
Headline Text	M	M	M	M	M	M	M
Impact Text		M	C	M			C
Likelihood Text			C	M			C
'What to do'			S	S		M	C
Areas (fixed)	M	M	M			M	M
Area (polygons)		C	M	M			M
Identifier	M		M	M	M	M	M
Language	M		M			M	M
Web Link	M		M	C		M	M
Scope						M	C

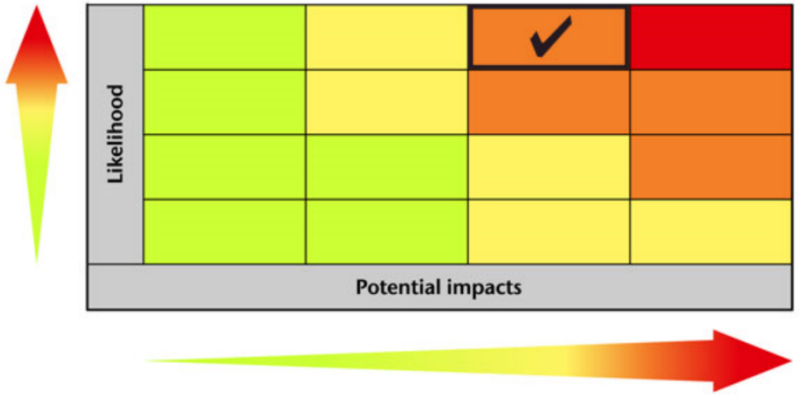
M=Must, S=Should, C=Could

Core components of Meteoalarm CAP

Agreed position on what the constitutes the core mandatory components for the next CAP iteration in Meteoalarm

Issue time, start time, end time, event type, headline / description, *color*, area, identifier, sender, message type, status

Further work is required to review and refine the ‘optional’ CAP components and integrate additional information (e.g. risk matrix)



Core components of Meteoalarm CAP

CAP

CAP CORE COMPONENTS	Description
Issue time Start time End time	Date and Time
Event Type	Meteoalarm event catalogue
Headline	Headline brief text
Description	Open description text
Colour	Use eventCode element (Yellow, Orange, Red, Purple)
Area	Recognised spatial datatype (optional: area, circle, geocode, polygon)
Identifier	Identifies specific warning – assigned by sender
Sender	Originator (WMO register of Alerting Authorities)
Message Type	Message Type – indicate the nature of the message (Alert, Update, Cancel, Ack, Error)
Status	Handling of warning message (eg Actual, Exercise, System, Test, Draft)

Event Type definitions

Key principles (WMO Task Team)

- keeping it simple and feasible
- Considering the costs, resource and time to implement
- Preserving the right of each country to state how they choose to record and warn for hazards
- Initially restricting to hydro-meteorological hazards
- NOT quantifying and qualifying hazard definition or express its severity (e.g. extreme, heavy, high)
- Aligning to emerging CAP for warnings to avoid duplication, confusion and misinterpretation

The Event Type categorisations, at least for now, should be based on the **primary hazards** and the **weather systems** driving these hazards according to WMO definitions.

Event type Catalogue

The proposal below represents the core, mandatory components for recording events

Event Record - Proposal

MANDATORY COMPONENTS	Description
UUID	Universally Unique Identifier
Record Creation	Record started Date / Time
Start time	Start time of event
End Time	End time of event
Event Type	Record of event type – either System or Primary – based on catalogue list
Area	Recognised spatial datatype (optional: area, circle, geocode, polygon)
Sender	Originator (WMO register of Alerting Authorities)

Event Type proposed by Meteoalarm

Event Type	
Primary Hazards	**Weather System**
Rain Snow High Temperature Low Temperature Hail Fog Wind Frost Ice Haze Dust Sand Lightning Tornado Drought Floods Marine Waves Avalanche Thunderstorms Coastal Events	Cyclonic (e.g. Tropical, Extra-tropical cyclone, mid-latitude cyclone) Anti-cyclonic Convective (thunderstorms)

Event Types proposed by Meteoalarm

- comprise **primary hazards and** their **originating weather systems**
- event types could be used in the CAP implementation
- originator of warnings can **warn for** either the **primary hazards** or the **weather system responsible**.

In summary core mandatory **profiles for issuing warnings and** the **recording of events are broadly similar**. The difference between the two profiles relates to the purpose of the message.

The future of Meteoalarm

- alert hub and repository (shaps, polygons, ID’s)
- major redesign of the system – transition to meteoalarm2.0
- further support EUMETNET members to deliver easy understandable impact-oriented, multi-lingual warnings
- additional warning parameters
- implementation of free (dynamic) polygons
- incorporation of crowdsourced impact observations
- worldwide knowledge transfer for regional warning platforms / warning community building
- support of GMAS (Global Multi Hazard Alert System) concept of WMO

Contacts

Michael Staudinger
Meteoalarm Programme Manager
michael.staudinger@zamg.ac.at

Andreas Schaffhauser
andreas.schaffhauser@zamg.ac.at

Meteoalarm Programme Management
ZAMG
Hohe Warte 38
1190 Vienna, Austria

Tel: + 43 1 36026 2003
Email: *meteoalarm@zamg.ac.at*
Web: www.meteoalarm.eu

GIE EUMETNET Secretariat
c/o L'Institut Royal Météorologique de Belgique
Avenue Circulaire 3
1180 Bruxelles, Belgique

Tel: +32 (0)2 373 05 18
Email: *info@eumetnet.eu*
Web: www.eumetnet.eu