Met Office

Early Warning Systems

Advanced warning of severe weather to protect life, support wellbeing, and encourage prosperity and growth

Weather and climate related hazards including flooding, typhoons, landslides, lightning and droughts can cause considerable loss of life and damage to property. Early warning of severe weather is vital as disasters occur when communities face natural hazards but are not prepared for the impacts.

We work in partnership to implement Early Warning Systems that strengthen nations' preparedness and reduce their vulnerability to social, economic and environmental losses.

Helping to reduce the vulnerability of communities to the effects of severe weather

We draw on our scientific and operational strengths to offer practical advice and specialist consultancy. We work in partnership with national meteorological and hydrological services, local governments and other stakeholders to develop and introduce early warning systems. These early warning systems enable nations to prepare for weather and climate related hazards, reducing their vulnerability to social, economic and environmental losses.

Our services are built around the four main elements of effective early warning systems, as defined by the UN-International Strategy for Disaster Relief (UN-ISDR), shown in Figure 1.

Following international best practice, we carry out an initial situational assessment using the UN-ISDR framework. The assessment gives us a comprehensive picture of project requirements and stakeholder community, and leads to a road map for implementation.

We work with all stakeholders to support:

- consultations with affected communities;
- development of relevant products;
- development and implementation of standard operating procedures, institutional structure and preliminary thresholds;
- the training of staff in using the new knowledge and skills;
- improvement of forecaster tools and capability; and
- dissemination and communication of early warnings, and advice on appropriate responses.

Warning outputs are tailored to local requirements and typically include dissemination methods such as websites, TV, email, phone, SMS and verbal communication. Examples are shown opposite.

Figure 1: Four elements of effective early warning systems. Source: http://www.unisdr.org/2006/ppew/whats-ew/basics-ew.htm

Benefits

- A complete and effective early warning system ensures: understanding of risk, hazard and vulnerability; a monitoring and warning service based on sound science; effective communication of risk; and the capability to respond accordingly. We work with stakeholders to ensure all four elements of the process are addressed and linked.
- Effective weather and climate information services provide stakeholders, such as disaster managers and the public in areas prone to extreme impacts, with warnings to ensure they are better prepared.
- We support a 'people centred' approach to early warning. Programmes result in enhanced capabilities to identify situations with the potential for environmental and humanitarian impacts.
- Improved warnings and preparedness ultimately reduce vulnerability and loss of lives and livelihoods.
- Significant socio-economic benefits including the reduction in loss of life and property during extreme weather events and improved industry decision-making.

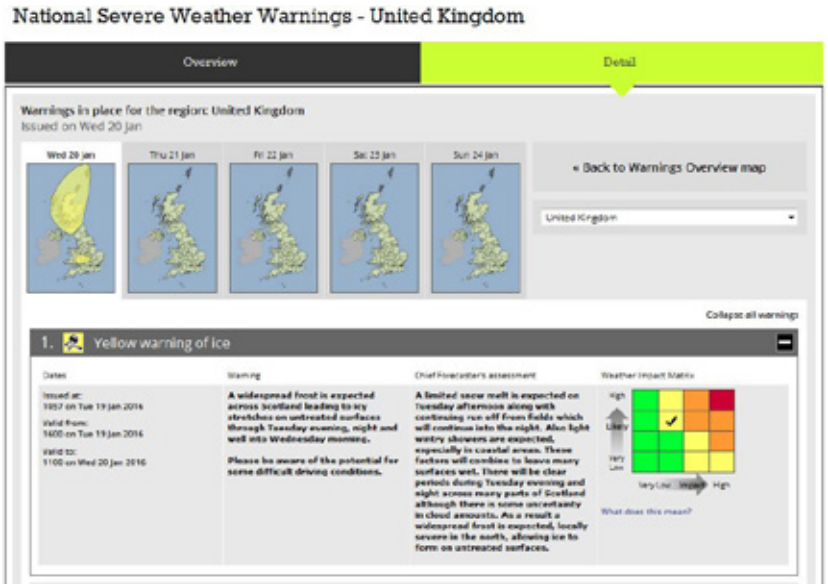

Figure 2: Met Office National Severe Weather Warning Service in the UK, based on a matrix system and four colours to indicate impact and likelihood of event.

ALERT STATE:	GREEN	YELLOW	ORANGE	RED
Mean Wind	0 – 5 KT	6 – 10 KT	11 – 20 KT	Over 20 KT
Wind gusts	5 – 10 KT	11 – 20 KT	21 – 30 KT	Over 30 KT
Thunder-storms	Light	Moderate	Strong	Severe
Visibility	> 1Km	500 – 1000m	100 – 500m	< 50m
Hazard threshold:	Very Low	Low	Moderate	High
Advice	Nil	Be Aware	Be Prepared	Take Action

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Courtesy: Paul Davies, Met Office

Figure 3: Example of a Mobile Weather Alert System for Lake Victoria in Africa.

Figure 4: Example of SMS alert system

Who we are

The Met Office is a global centre of excellence in weather and climate science, and the UK's national weather service. Founded in 1854, the Met Office pioneered weather forecasting. Ever since then we have been at the forefront of developments in weather and climate science.

Our international development work

We draw on our scientific and operational strengths to offer practical advice and specialist consultancies. Our wide range of skills and expertise enables us to support countries around the globe in developing and enhancing their weather and climate services.

What makes us different?

As an international organisation, we are exposed to many challenges and have a reputation of meeting and exceeding expectations. Our strong track record includes:

- experience of working in over 150 countries;
- a pool of internationally-experienced specialist staff;
- World Meteorological Organization (WMO) accredited training;
- a thorough understanding of how weather and climate are linked to development goals and policies;
- design of impact-based forecasting for WMO policy;
- supercomputing capacity for sophisticated modelling;
- developing one of the most accurate regional meteorological models in the world, now adopted by Australia, South Africa and South Korea.

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