

WORLD METEOROLOGICAL ORGANIZATION

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COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

INTER-PROGRAMME EXPERT TEAM ON SATELLITE UTILIZATION AND
PRODUCTS

ITEM: 10.3

FIRST SESSION

Original: ENGLISH

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Disaster risk reduction: Northern Hemisphere extra-tropical examples of high impact weather events

(Submitted by Stephen English)

Summary and Purpose of Document

There have been a number of high impact extra-tropical weather events in recent years for which the provision of accurate satellite observations was critical to the success of early warnings in minimizing loss of life and property, for example extra-tropical storm Sandy in October 2012, the Central European floods in June 2013 and recently the NE USA snow storm in January 2015. ECMWF maintain a severe weather event register that notes some of the more extreme events, and what studies have been undertaken at ECMWF to characterize the event, the skill of prediction for the event, and aspects such as sensitivity to observations. This register is a useful resource for case studies for extra-tropical disaster risk management.

ACTION PROPOSED

The session is invited to note the existence of the ECMWF severe weather events register, and to use this as a resource in assessing disaster risk management;

DISCUSSION

There have been a number of high impact extra-tropical weather events in recent years for which the provision of accurate satellite observations was critical to the success of early warnings in minimizing loss of life and property, for example ex-tropical storm Sandy in October 2012, the Central European floods in June 2013 and recently the NE USA snow storm in January 2015. ECMWF maintain a severe weather event register that notes some of the more extreme events, and what studies have been undertaken at ECMWF to characterize the event, the skill of prediction for the event, and aspects such as sensitivity to observations. This register is a useful resource for case studies for extra-tropical disaster risk management.

To give a flavour these are the events listed since the beginning of 2014. Most are northern hemisphere extra-tropical events.

201501 - Windstorm Gunter + waves - Norway
 201501 - Windstorm - N.W Europe
 201501 - snowfall - US east coast
 201412 - Snowfall - Greece, Italy, Algeria
 201412 - Rainfall - Malaysia
 201411 - Snowfall - U.S.
 201411 - Rainfall - Morocco
 201411 - Rainfall - France, Italy, Austria, Slovenia
 201410 - Tropical cyclone - Hurricane Gonzalo
 201410 - Snowfall/Floods - Bulgaria
 201410 - Snowfall - Nepal
 201410 - Rainfall - S.W France
 201410 - Rainfall - Norway
 201409 - Rainfall - S.W France
 201409 - Floods - Pakistan
 201408 - Rainfall - Sweden, Denmark
 201406 - Rainfall - Bulgaria
 201406 - Convection - Germany, The Netherlands, Belgium, France
 201405 - Rainfall + flood - South-eastern Europe
 201404 - Convection - Arkansas U.S
 201403 - Windstorm - Norway, Sweden
 201402 - Windstorm - British Isles (Valentine's day)
 201402 - Windstorm - British Isles (12 Feb)
 201402 - Snowstorm - US east-coast
 201402 - Floods – England

Understandably there is a bias towards Europe, as many events were noted following dialogue between ECMWF and the National Met Services in its member states. However there are events in other regions, e.g. US, Pakistan, Malaysia, Nepal.

In each case the ECMWF severe events register provides a short summary of the event, for example these three examples.

201501 - Windstorm - N.W Europe

On 9-10 January 3 severe cyclones hit north-western Europe. The first (named Elon -DE, Dagmar - DK)

hit Scotland early on Friday 9 January with mean wind of 46 m/s and wind gusts up to 63 m/s in Cairngorm and later hit Denmark and Germany. The second one (named Nina - NO and Felix -DE) hit the Norwegian west coast on Saturday 10 January with hurricane force on 5 stations and a maximum mean wind of 38 m/s on Eigerøya (gusts of 46 m/s). A third cyclone formed south of Nina in lee southern Norway (named Egon in Sweden) and caused hurricane wind gusts in southern Sweden and heavy snowfall further north. The wind also led to elevated sea-levels along the Norwegian, Danish and Swedish coasts. In Limfjorden, Denmark the sea level reached 195 cm, breaking the old record of 181 cm.

201410 - Rainfall - Norway

In the end of October 2014 heavy rainfall affected south-western Norway and caused the worst flooding in the area for more than hundred years. The worst affected area was inland Bergen and around Voss. In the valley around Flåm many houses fell down in the stream as the river eroded its banks.

201410 - Snowfall - Nepal

A blizzard hit the region Annapurna in Nepal around the 14 October, killing at least 39 hikers.

The register then gives an assessment of the performance of the forecast system, including links to any studies (e.g. satellite impact studies) that have been performed. Therefore this register provides a very useful source of information to anyone wishing to study high impact weather events.
