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WMO meeting on Impacts 17 February 2014

Preparing for multi-hazard emergencies - the UN post-2015 agreements and disaster risk reduction

Professor Virginia Murray

Consultant in Global Disaster Risk Reduction, Public Health England

Vice-chair UNISDR Science and Technical Advisory Group



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Outline

- Examples of incidents
- UN disaster risk reduction framework 2005-2015 and the post-2015 agreements





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What are Extreme Events?

Natural Disasters and Extreme Weather Events

Primarily:

- Heat
- Cold
- Floods

But also:

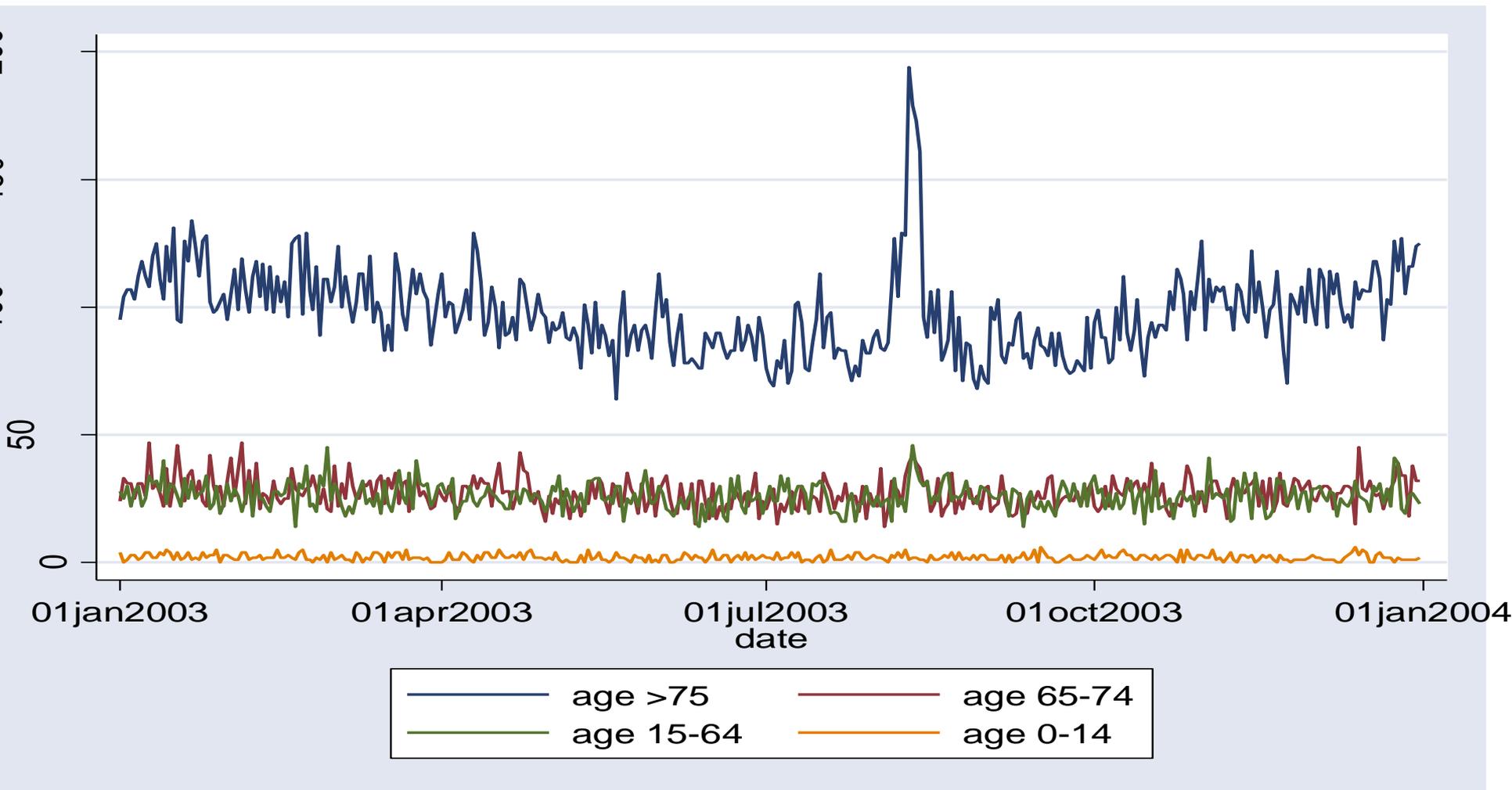
- Drought
- Wildfires
- Landslides
- Windstorms
- Earthquakes
- Tsunamis
- Space weather...





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Daily mortality in London, 2003





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Heatwave Plan for England 2013

<https://www.gov.uk/government/publications/heatwave-plan-for-england-2013>



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NHS
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Local
Government
Association

Met Office

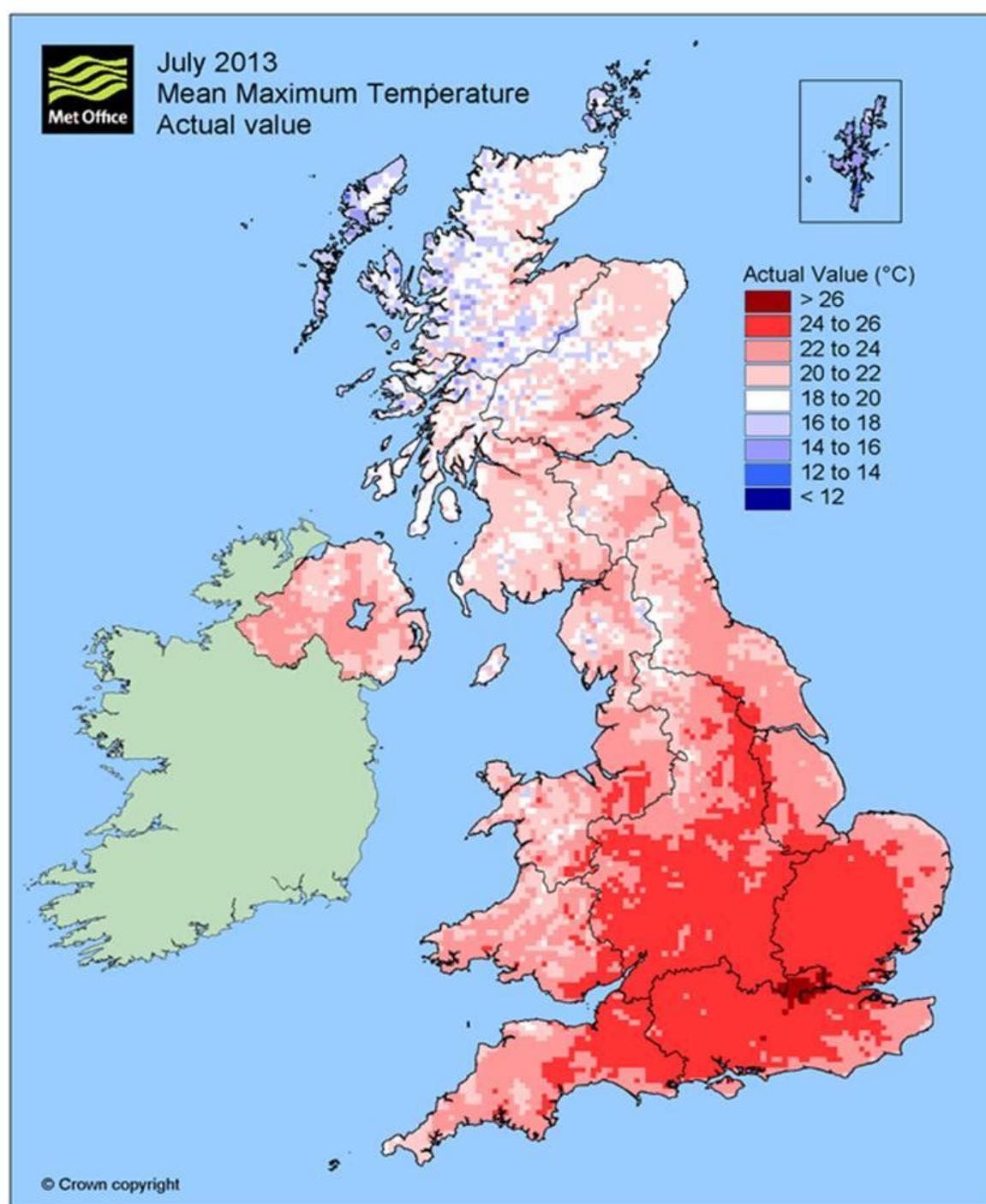


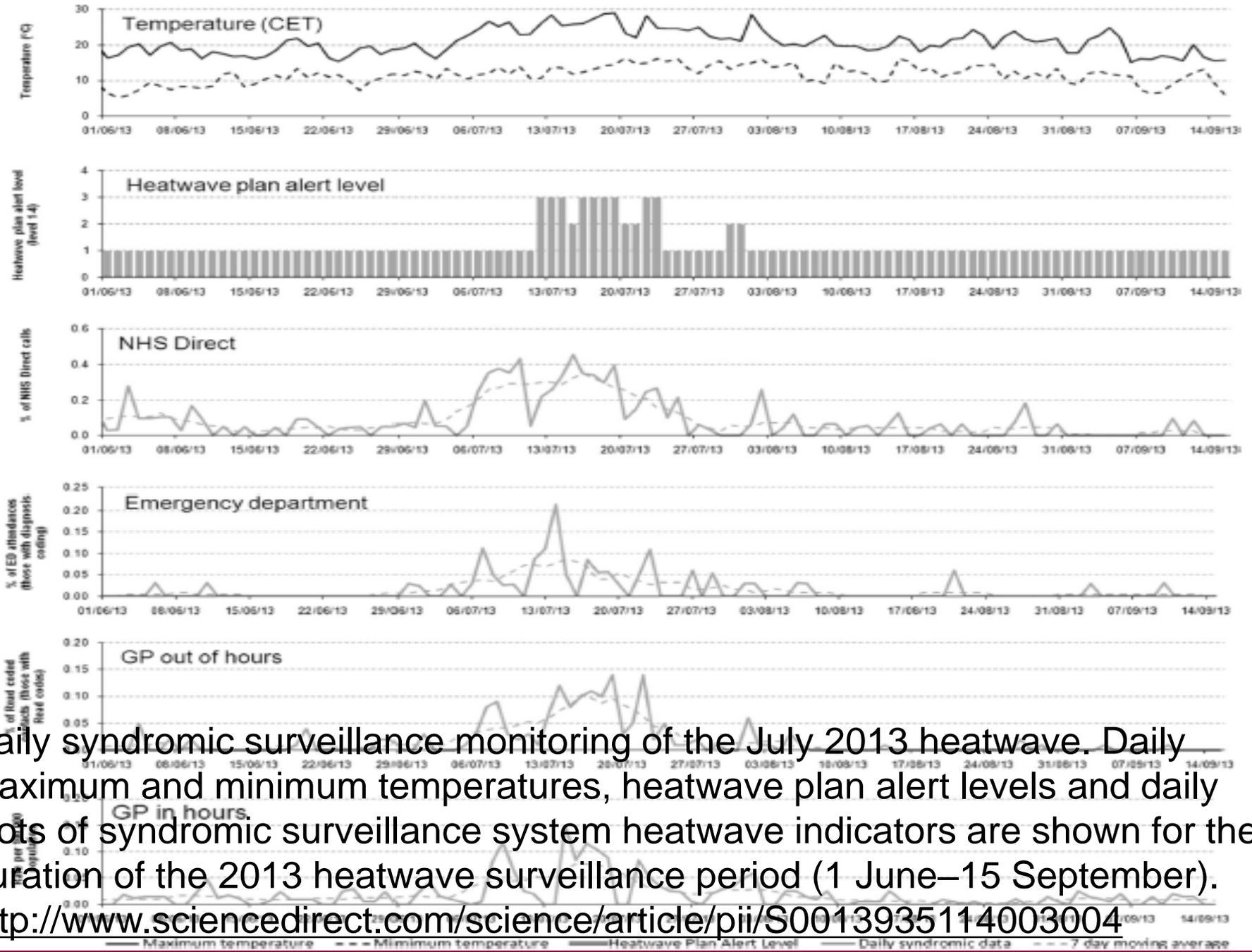
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Courtesy of the Met Office

July 2013 Mean Maximum Temperature

<http://www.metoffice.gov.uk/climate/uk/summaries/anomacts>





Daily syndromic surveillance monitoring of the July 2013 heatwave. Daily maximum and minimum temperatures, heatwave plan alert levels and daily plots of syndromic surveillance system heatwave indicators are shown for the duration of the 2013 heatwave surveillance period (1 June–15 September). <http://www.sciencedirect.com/science/article/pii/S0013935114003004>



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Development of intervention measures

- Weather based warning systems
- Heat advice
- Improve care of elderly and high risk individuals
- Housing design
- Reduce urban heat island

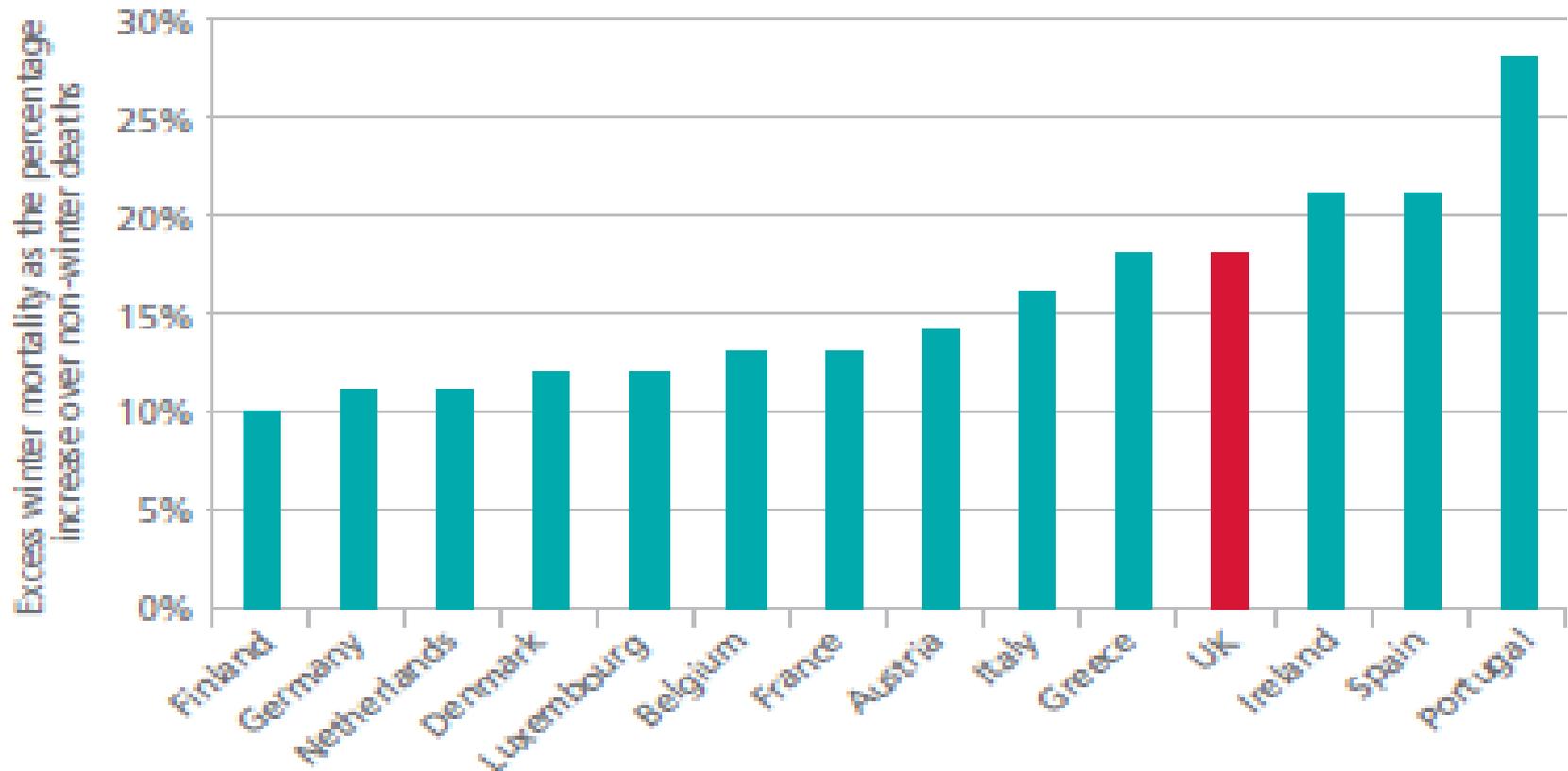






Excess Winter Mortality

Figure 2: Excess winter mortality by country



Source: Healy JD. Excess winter mortality in Europe: a cross country analysis identifying key risk factors. *Journal of Epidemiology and Community Health* 2003; 57(10): 784-9

Excess Winter Deaths in Europe: A multi-country descriptive analysis

Tom Fowler^{1,2*}, Rosamund J. Southgate^{3*}, Thomas Waite^{3*}, Ruth Harrell¹, Sari Kovats⁴, Angie Bone³, Yvonne Doyle^{5,6}, Virginia Murray^{3,7}

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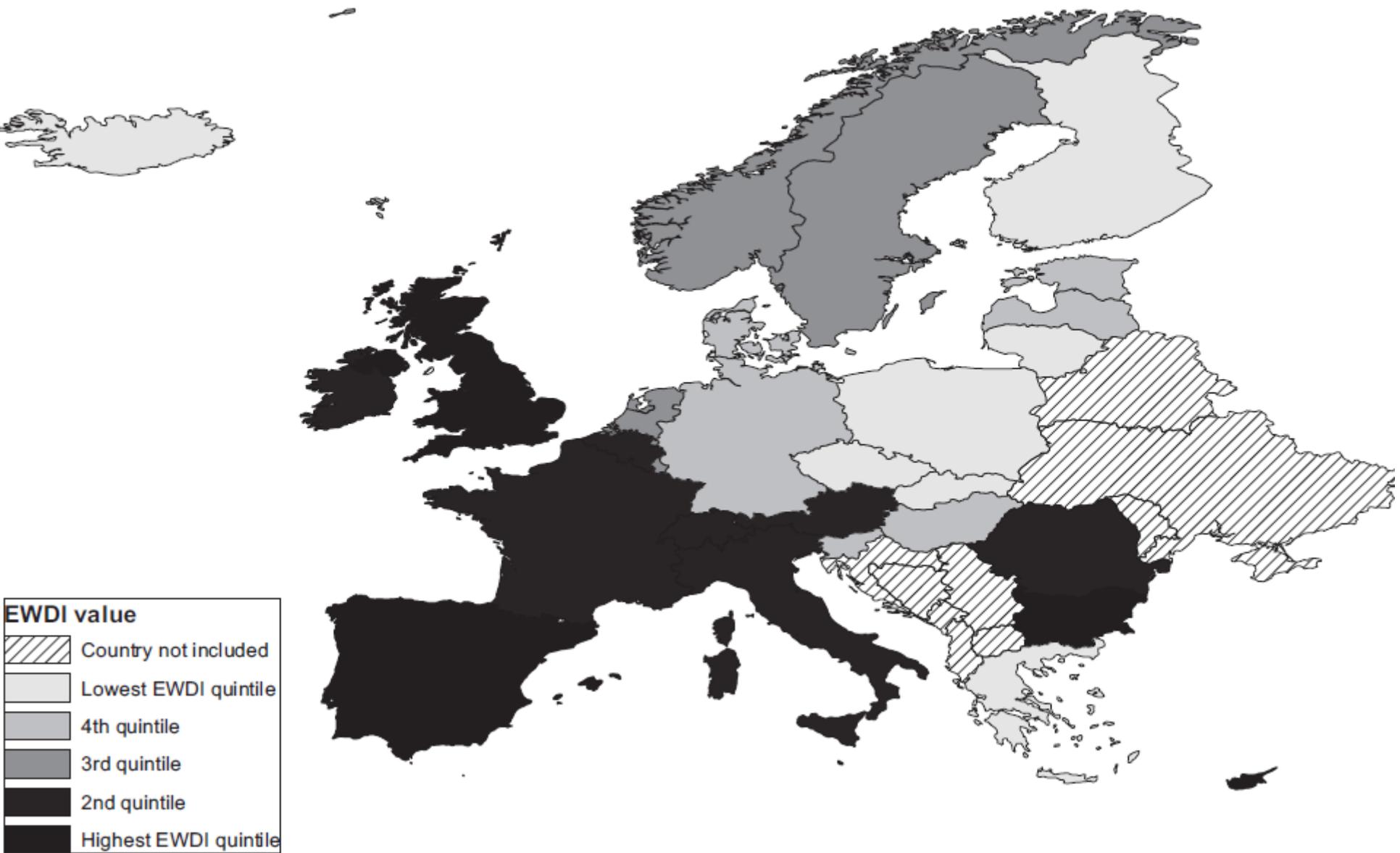
6 Faculty of Health Sciences, University of Surrey, Guildford, UK

7 MRC-HPA Centre for Environment and Health, Imperial College and King's College, London, UK

*These authors contributed equally to this work.

Correspondence: Tom Fowler, Field Epidemiology Services – West Midlands, Public Health England, 5 St Philips Place, Birmingham B3 2PW, UK, Tel: 0844 225 3560, Fax: 0121 236 2428, e-mail: tom.fowler@nhs.net

Background: Winter deaths are a known health and social care challenge for many countries. A previous international comparison showed significant differences in excess winter deaths across Europe in the 1990s with the



Map of 9-year country-level EWDI in 31 European countries, grouped by quintiles of equal count.

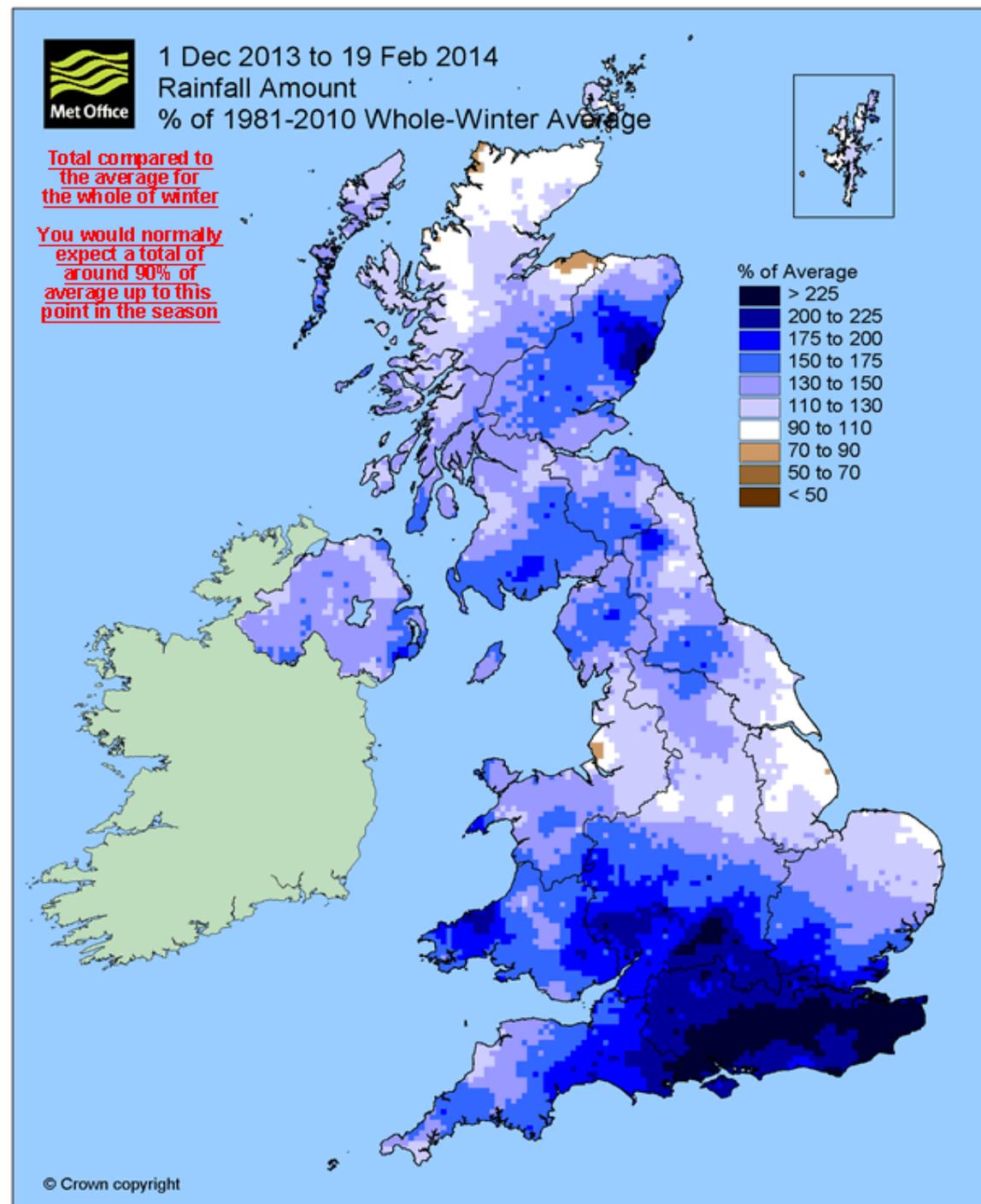




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Rainfall percentage average 1 December 2013 – 19 February 2014

Courtesy of the Met
Office





Properties flooded since the start of December 2013



Approximate numbers of properties flooded (Environment Agency figures)

Early December (Coastal): 2,600

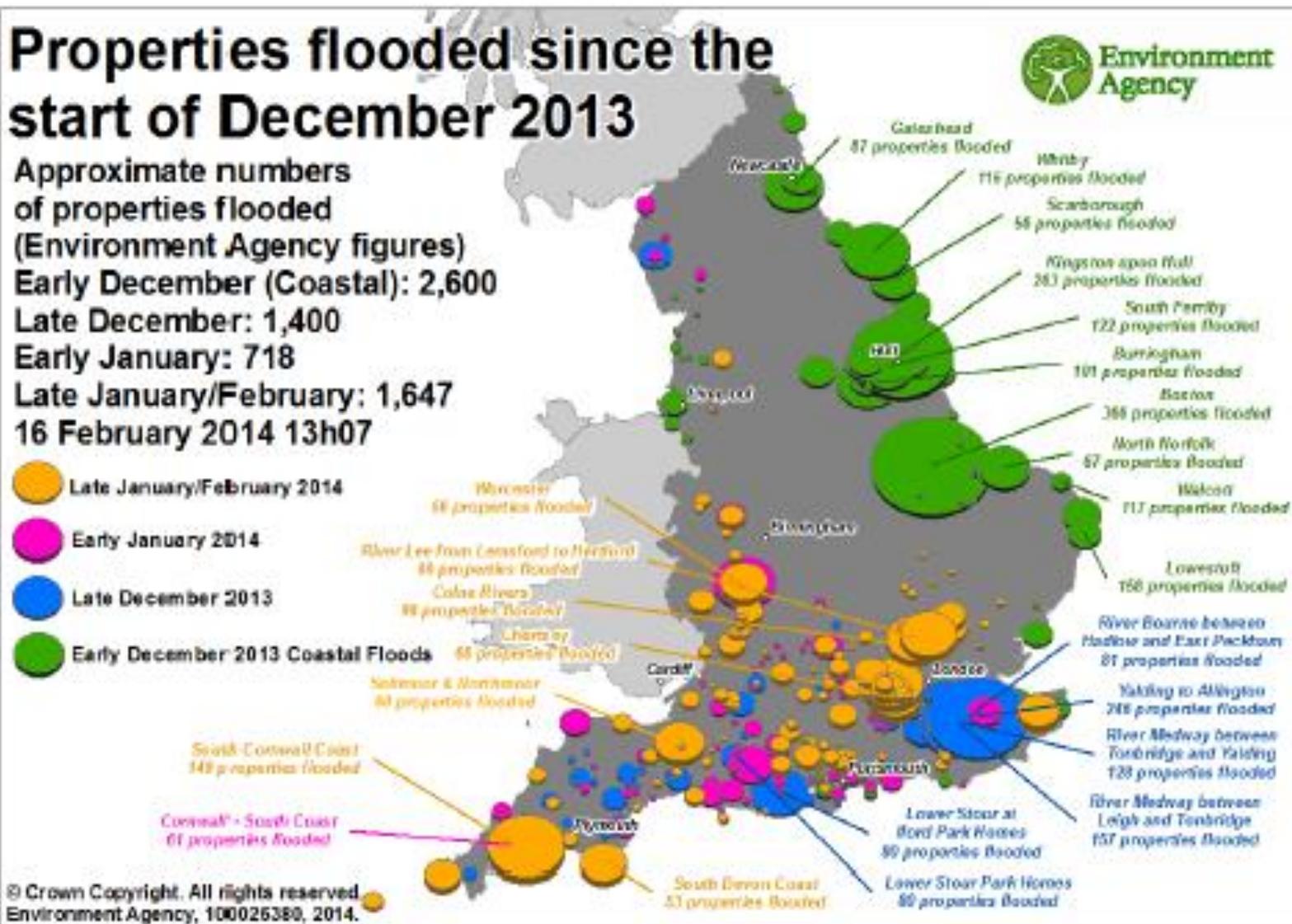
Late December: 1,400

Early January: 718

Late January/February: 1,647

16 February 2014 13h07

- Late January/February 2014
- Early January 2014
- Late December 2013
- Early December 2013 Coastal Floods





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WHO Europe / Public Health England

Floods: Health effects and prevention in the WHO European Region

May 2013

http://www.euro.who.int/_data/assets/pdf_file/0020/189020/e96853.pdf

FLOODS IN THE WHO EUROPEAN REGION: HEALTH EFFECTS AND THEIR PREVENTION







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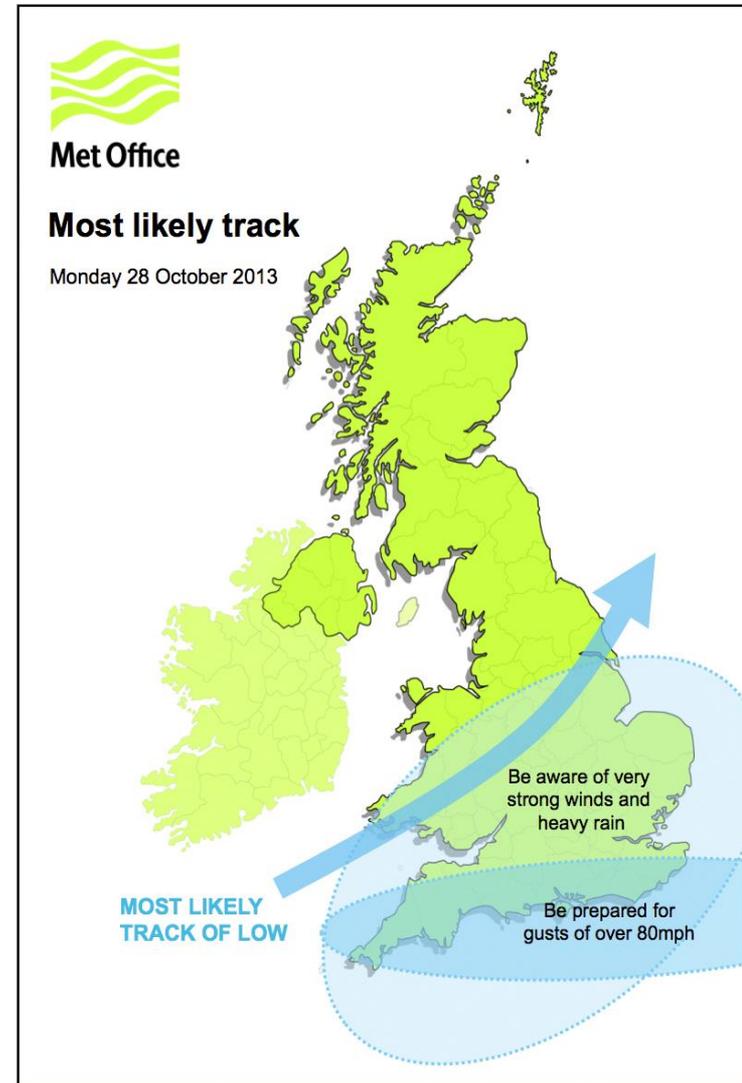
Windstorm “St Jude”

28 October 2013

- 6 day warning of windstorm
- Meteorological representation of storm location and intensity
- Wind gusts > 80mph.

Actions

- Multi-agency cross-governmental response
- Cabinet Office press releases warning public of dangers
- Data: PHE surveillance, NHP, Met Office, DECC





Review Paper

The health impacts of windstorms: a systematic literature review



A. Goldman^a, B. Eggen^b, B. Golding^c, V. Murray^{d,*}

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^b Toxicology Department – Air Pollution & Climate Change, Public Health England, UK^e

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ABSTRACT

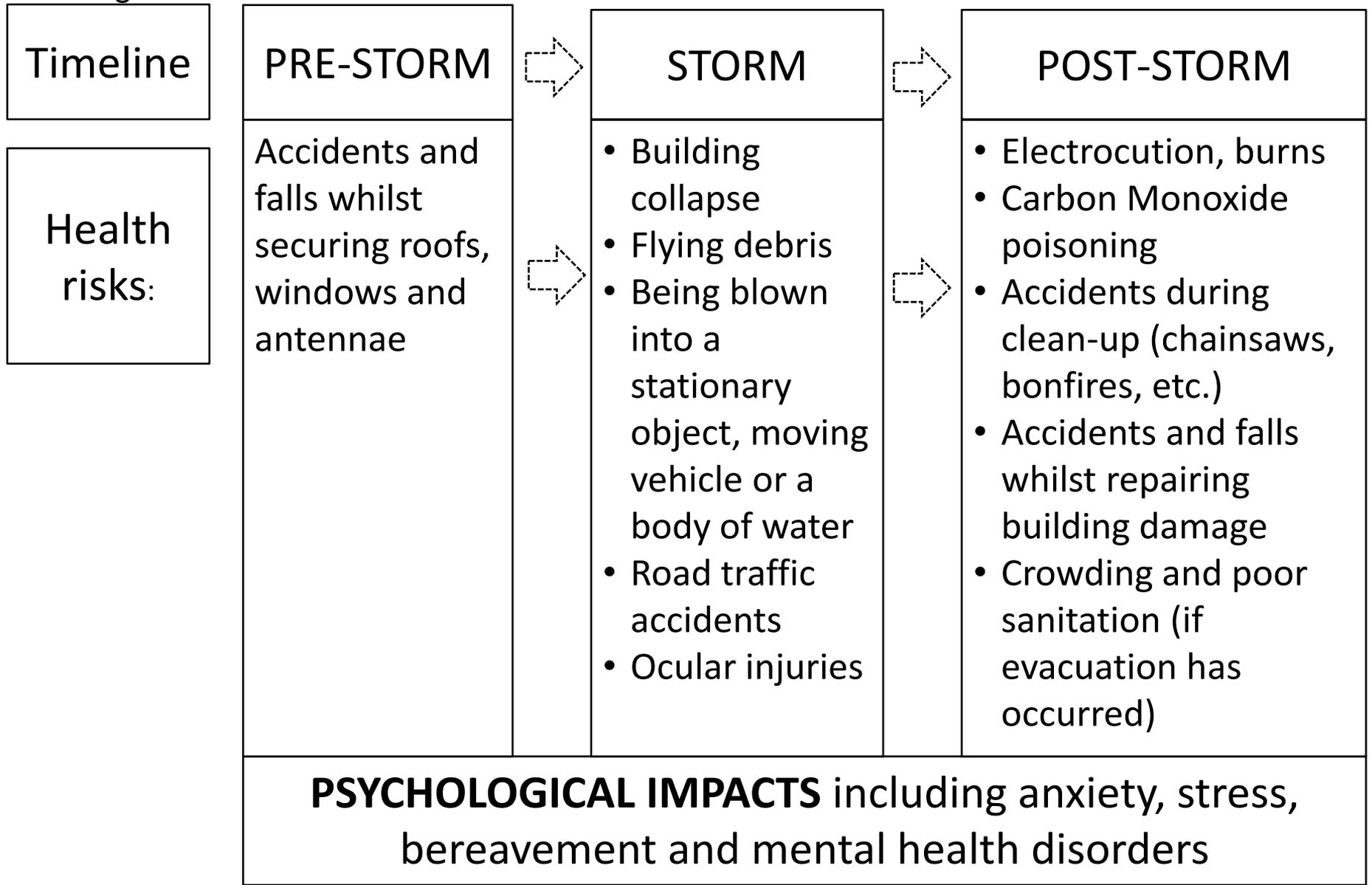
Introduction: This systematic literature review aims to identify documented impacts that windstorms have on human health. Windstorms occur frequently and some researchers have predicted an increase in severe gales in the future, resulting in an urgent need to understand the related patterns of morbidity and mortality.

Study design: Systematic literature review.

Methods: A systematic literature review of international evidence on the impacts of



Windstorm Health Impacts



Home IPCC

WG II

Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)

Organization and TSU

Assessment Reports

Fifth Assessment Report (AR5)

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Climate change

disaster risk, exposure, vulnerability, and resilience
human systems and ecosystems

Managing risks from climate extremes at
local level
national level
international level

Toward a sustainable and resilient future

Case studies

http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf



The IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation

A changing climate leads to changes in extreme weather and climate events



Impacts from weather and climate events depend on:



nature and severity of event

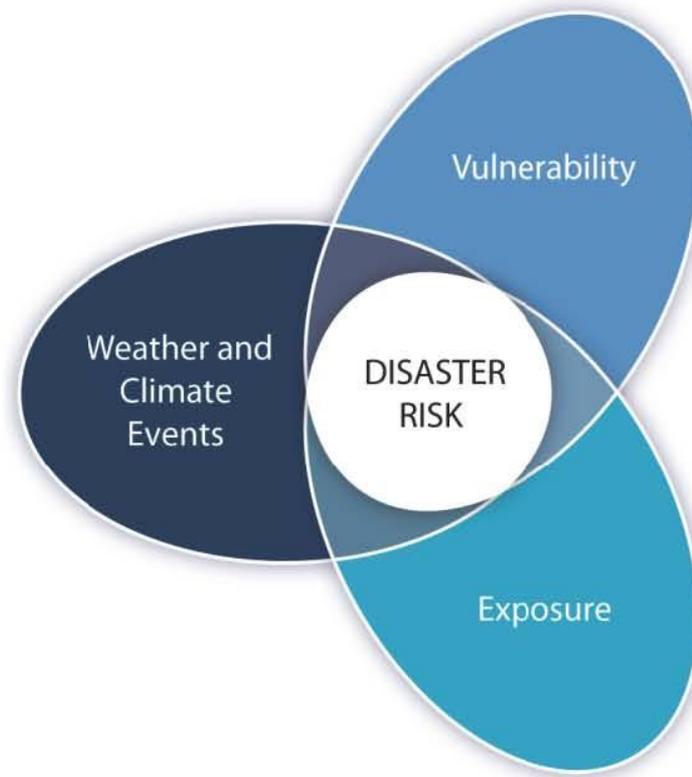


vulnerability

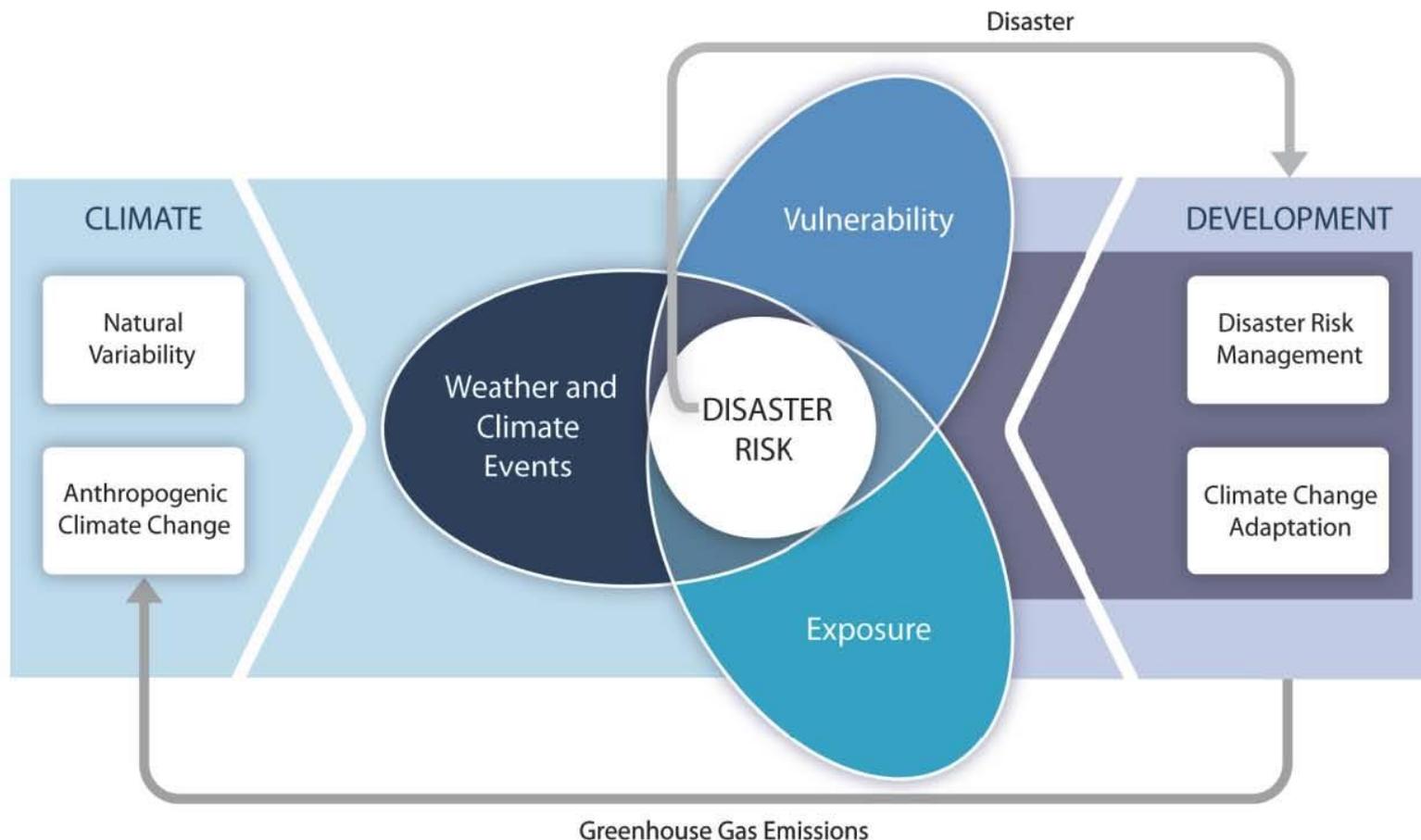


exposure

Socioeconomic development interacts with natural climate variations and human-caused climate change to influence disaster risk

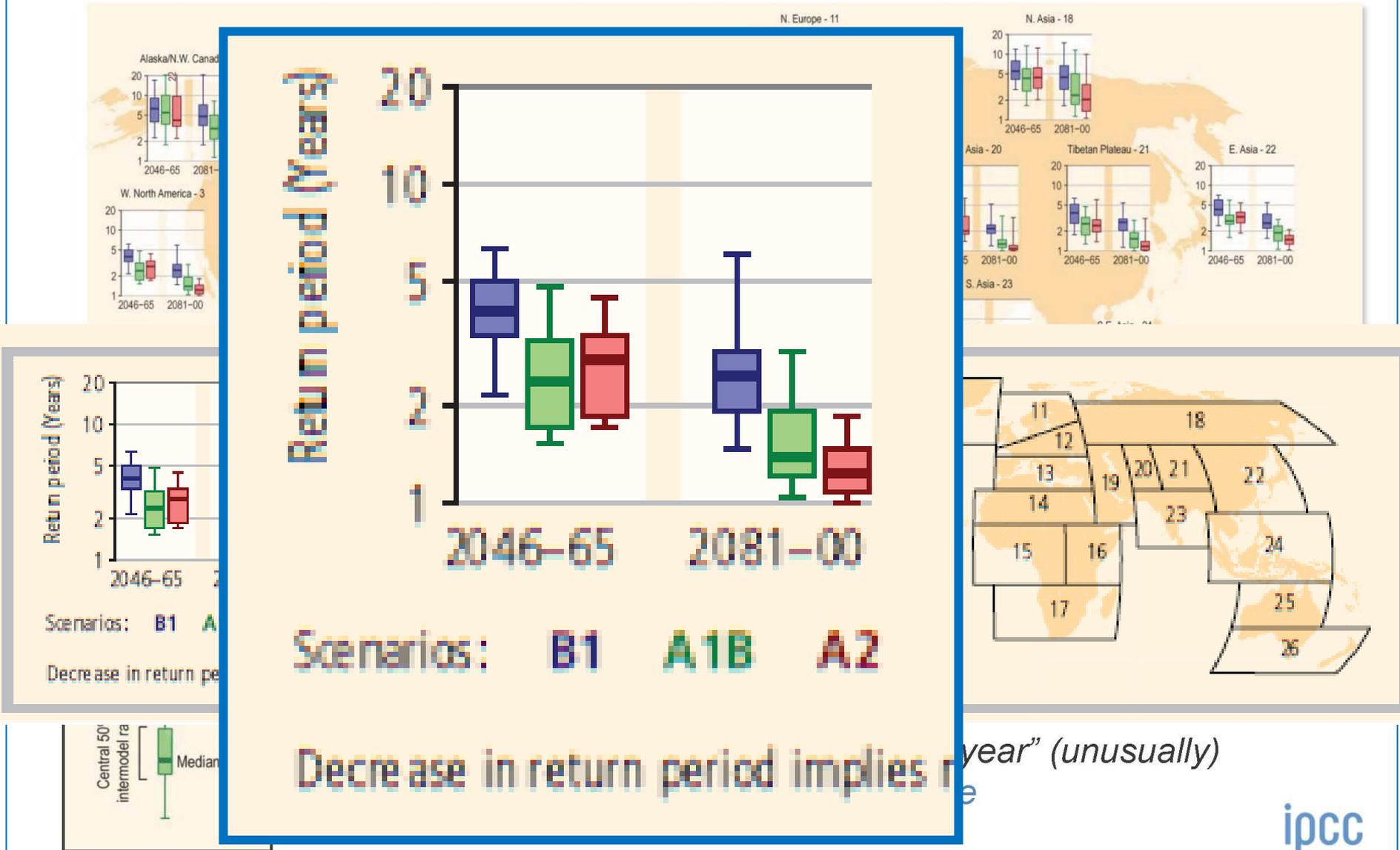


Increasing vulnerability, exposure, or severity and frequency of climate events increases **disaster risk**



*Disaster risk management and climate change adaptation can influence the degree to which **extreme events translate into impacts and disasters***

Climate models project more frequent hot days throughout the 21st century





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2015 opportunities



2015 opportunities

2015 will be marked by three landmark agreements

- **a post-2015 framework for disaster risk reduction** (March 2015)
- **Sustainable development goals** (September 2015)
- **Climate change agreements** through the UNFCCC (December 2015)



International Strategy for Disaster Reduction

HFA



Hyogo Framework for Action 2005 - 2015: Building the Resilience of Nations and Communities to Disasters

<http://www.unisdr.org/eng/hfa/docs/HFA-brochure-English.pdf>

Hyogo Framework for Action 2005-2015

Building the resilience of nations and Communities to Disasters

1. Governance: organizational, legal and policy frameworks - **Make Disaster Risk Reduction a Priority;**
2. Risk identification, assessment, monitoring and early warning - **Know the Risks and Take Action;**
3. Knowledge management and education - **Build Understanding and Awareness;**
4. Reducing underlying risk factors - **Reduce Risk;**
5. Preparedness for effective response and recovery - **Be Prepared and Ready to Act**

<http://www.unisdr.org/we/inform/publications/1037>



Dis





Global Platform for disaster risk reduction

Fourth session
Geneva, Switzerland
19-23 May 2013

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Global Platform in Action

PLAYLIST | 1 / 14 Highlights - 2013 Global Platform



GP 2013 in the news

Global Platform for Disaster Risk Reduction: Output Documents available



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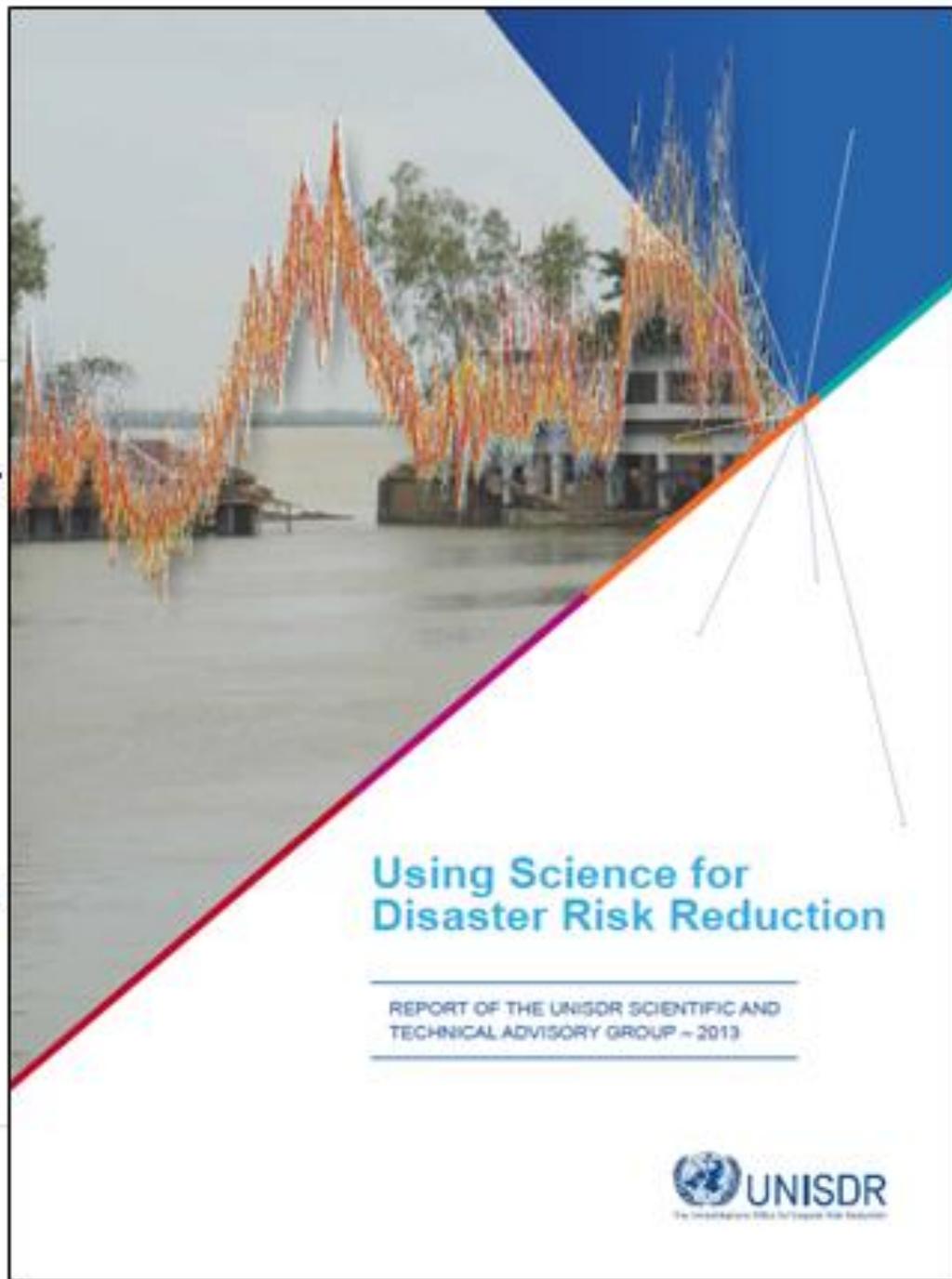
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**Report of the
UNISDR Scientific
and Technical
Advisory Group
2013**

**Using Science for
Disaster Risk
Reduction**

<http://www.unisdr.org/files/32609stagreport2013assemblybled.pdf>



**Using Science for
Disaster Risk Reduction**

REPORT OF THE UNISDR SCIENTIFIC AND
TECHNICAL ADVISORY GROUP - 2013



Case studies

The problem

The science

The impact on policy and practice

Did it make a difference?



CASE STUDY 6:

Flood Risk Reduction in the Netherlands: The "Room for the River" project

The problem

Four major European rivers run into the North Sea through the Dutch delta making almost 60% of the country vulnerable to large-scale flooding¹. Major flood defence work was undertaken throughout the previous centuries, including the construction of thousands of kilometres of dikes. However, as the Netherlands' population and assets have continued to grow, the land they inhabit beyond the protective dikes has subsided.

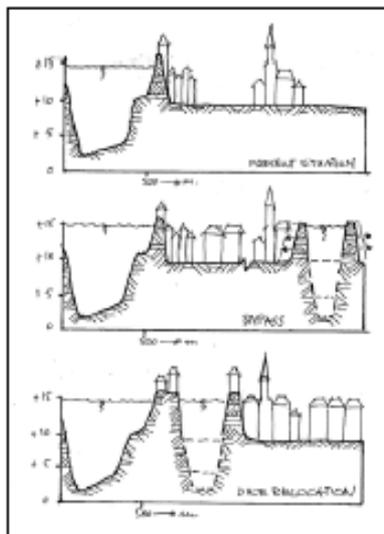


Figure 1: Options for increasing river flow at Nijmegen. The top drawing represents the current situation. The middle drawing shows a bypass channel with 5m-high dikes, excavated down or not, creating a "mini polder". The bottom drawing shows a 200m backward dike relocation creating a side channel in the river around an island of former dike, this channel may be excavated or not. Source: van Alphen, 2003².

January 1996: Europe has been savaged by rainstorms for days. The water level in the Dutch rivers begins to rise rapidly. The risk of dike breaches becomes greater and greater and could result in flooding for miles across the flat Netherlands. A total of 260,000 people are evacuated.³

Near floods such as the one in January 1996 highlighted the pressing need to re-think how the rivers could be contained now and in the future. In the Dutch city of Nijmegen, plans for a large riverside urban development, combined with expected river level rises, required a 'now or never' decision on flood prevention⁴.

The science

The Dutch Government used engineering science to undertake the 'Resilience Study', modelling the likely effect of flood risk reduction measures along the course of the Rhine and its branches⁵.

Experts considered extreme river discharges into the Rhine and how this might increase due to climate change. They factored in sedimentation rates on river beds and scientific understanding of how water flows through channels and around obstacles⁶. They could then create computer models to predict how different interventions might help protect against flooding, now and in the future. These included floodplain lowering, temporary storage of water, removal of obstacles like ferry ramps, channel deepening, backward dike relocations and creation of bypass channels at narrow points in the river⁷.

The application to policy and practice

The city of Nijmegen straddles the Waal River – the largest branch of the Rhine – at a point where the river makes a large bend and rapidly narrows, creating a bottleneck. The expected increase in extreme river discharge, due to climate change, could result in river levels rising by 80cm at Nijmegen in the coming decades. In addition, a proposal was recently made to build 12,000 new houses behind the protective dike on the north side of the river. If allowed, this development would reduce options for improving flood defences now and in the future.

The knowledge and principles employed in the 'Resilience Study' were therefore used to evaluate the specific options available that would protect Nijmegen from the predicted river level rises and the likely flood risk. The options included deepening the river bed in the bend itself, lowering downstream floodplains, digging a new bypass channel to carry water in times of flooding, and inland relocation of the current dike to widen the river channel (Figure 1)^{8,9}.

Local government officials and engineering experts assessed these options in consultation with communities, taking account of the social and economic needs of local communities and each option's potential for improving the environmental quality of the area¹⁰.

The decision was taken to relocate a stretch of the dike at the river bend, moving it 350 metres inland. Detaching the old stretch of dike from the new dike layout and flooding the area in between the two will create a new side channel in the river, providing extra river flow capacity. The one kilometre stretch of former dike will become an island in the river, to be developed with new housing and nature reserves and connected by a new bridge (Figure 2). The channel will be developed for water recreation, with urban waterfront development at points along the new dike.

Did it make a difference?

At Nijmegen, the threat of river flooding has been turned into an opportunity to create a whole new waterfront and an urban island in the River Waal. This was a difficult decision to make as relocation of the dike will result in the demolition of fifty houses and a number of businesses¹¹; however this was seen as the best, safest and most future-proof option to protect Nijmegen from floods now and in the future.

The plans have received international recognition for combining flood safety construction with close community involvement (International Waterfront Award, 2011) and for communication strategy (Red Dot Public Space Award, 2011)¹².



Figure 2: The 'Room for the River' plan at Nijmegen. The green line indicates the current line of the protective dike. The red line shows the position of the proposed relocated portion of dike. In the bottom image, the new river channel is shown in blue and the new island in yellow-green. The white arrows represent the bridge connections planned for the island. Source: Nijssen and Schouten, 2012¹³.

¹ Dutch Ministry of Infrastructure and the Environment, Delta Programme 2013, Working on the Delta, The Hague, 2013.

² van Alphen, J., Alberts, J., Kuis, A. (Eds.) Resilience of the Dutch River Rhine System in view of increased discharges: strategy, measures and first examples. IBCW 2003, Nagata, Japan, 7th-10th December 2003.

³ Nijssen, P., Schouten, M. Dutch national Room for the River project: integrated approach for river safety and urban development. 1st IS Rivers conference, 26-28 June 2012, Lyon, France.

⁴ van Alphen, J., Alberts, J., Kuis, A. (Eds.) Resilience of the Dutch River Rhine System in view of increased discharges: strategy, measures and first examples. IBCW 2003, Nagata, Japan, 7th-10th December 2003.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

⁹ van Alphen, J., Alberts, J., Kuis, A. How to eliminate a hydraulic bottleneck: Nijmegen: the first example in the Netherlands. Proceedings of the Second International Symposium on Flood Defence 2002, New York: Science Press, 2002, pp.1071-1076.

¹⁰ van Alphen, J., Alberts, J., Kuis, A. (Eds.) Resilience of the Dutch River Rhine System in view of increased discharges: strategy, measures and first examples. IBCW 2003, Nagata, Japan, 7th-10th December 2003.

¹¹ Nijssen, P., Schouten, M. Dutch national Room for the River project: integrated approach for river safety and urban development. 1st IS Rivers conference, 26-28 June 2012, Lyon, France.

¹² Ibid.

¹³ Ibid.



11,000 babies died and 20,000 babies were born with birth defects^{3,4}.

The science

In the first half of the twentieth century, the link between rubella and birth defects was not known. At that time, the fact that intrauterine infections could cause fetal damage, birth defects and fetal loss was largely unrecognized.

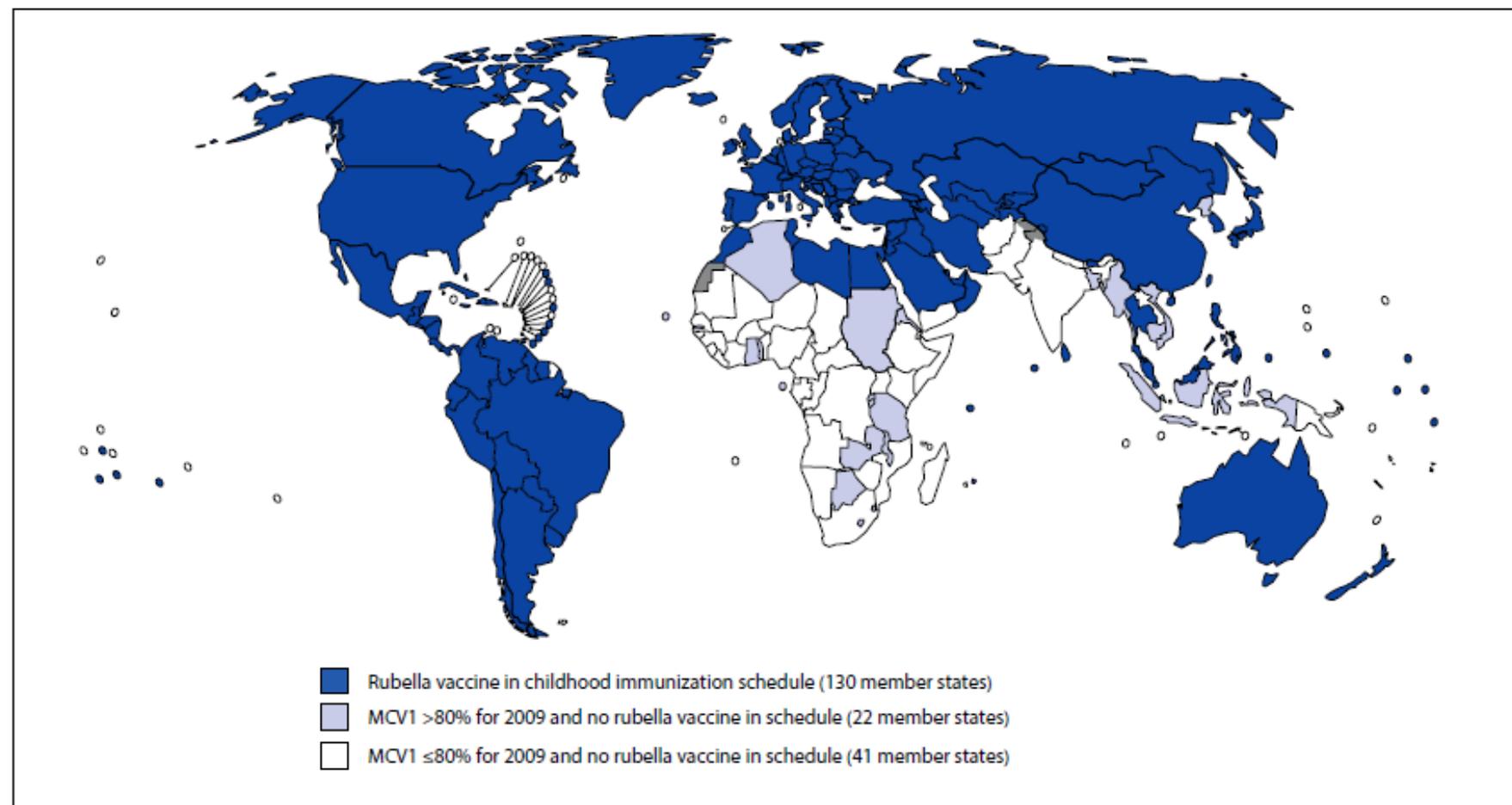
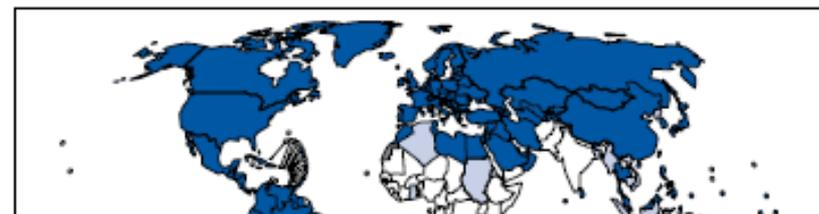


Figure 1: Countries using rubella vaccine and countries meeting WHO criteria for rubella vaccine introduction, 2009. *Source: CDC, 2010⁸.*



Recommendations

- 1. Encourage science to demonstrate that it can inform policy and practice*
- 2. Use a problem-solving approach to research that integrates all hazards and disciplines*
- 3. Promote knowledge into action*
- 4. Science should be key to the Post-2015 Hyogo Framework for Action*





Global Platform for Disaster Risk Reduction

Fourth session, Geneva, Switzerland
19-23 May 2013



Chair's Summary

Fourth Session of the Global Platform for Disaster Risk Reduction

Geneva, 21-23 May 2013

It is expected that the HFA2 will recognize the need to govern disaster risk reduction and resilience through clear responsibilities, strong coordination, enabled local action, appropriate financial instruments and **a clear recognition of a central role for science.**

Towards a post-2015 DRR Framework

- Requested by the UN General Assembly Resolution A/RES/66/199 - Modalities agreed in A/RES/68/211
- UNISDR is facilitating consultations that engage a full range of actors from Member States to civil society.
- Consultation events include the Global and Regional Platforms, national and local events, and targeted events of stakeholders, partners and networks.
- Builds on the *International Framework for the International Decade for Natural Disaster Reduction of 1989*, the *Yokohama Strategy and Plan of Action of 1994*, the *International Strategy for Disaster Reduction of 1999*, the *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (HFA)*, and the *Mid-Term Review of the HFA (2010-2011)*.
- Expected to be adopted at the 3rd World Conference on Disaster Risk Reduction and endorsed by the UN General Assembly in 2015.

2013 **2014** **2015**

Consultations started in March 2012 (with some 89 events up to the Global Platform) through 2013...

... and continues in 2014

MINISTERIAL CONFERENCES AND REGIONAL PLATFORMS ON DISASTER RISK REDUCTION

- Feb 13-15 : Africa (Arusha, Tanzania)
- Mar 19-21 : Arab States (Aqaba, Jordan)
- Sep 23-25 : Europe (Oslo, Norway)

MAY 19-23
Global Platform for Disaster Risk Reduction (Geneva, Switzerland)

SEP-NOV
UN Secretary-General's Report and UN General Assembly Resolution on the *International Strategy for Disaster Reduction*

MINISTERIAL CONFERENCES AND REGIONAL PLATFORMS ON DISASTER RISK REDUCTION

- April 1-2 : Central Asia (Al-Maty, Kazakhstan - Consultation Meeting)
- May 13-16 : Africa (Abuja, Nigeria)
- May 27-29 : Americas (Guayaquil, Ecuador)
- Jun 2-4 : Pacific (Suva, Fiji)
- Jun 10-12 : Arab States (Sharm El Sheikh, Egypt)
- Jun 23-26 : Asia (Bangkok, Thailand)
- Jul 10 : Europe (Milan, Italy / Ministerial Session)
- 6-8 Oct : Europe (Madrid, Spain / European Forum)

JUL 14-15
1st Preparatory Committee Meeting (Geneva, Switzerland)
Subject to an anticipated decision of the UN General Assembly in 2013

NOV 17-18
2nd Preparatory Committee Meeting (Geneva, Switzerland)
Subject to an anticipated decision of the UN General Assembly in 2013

SEP-NOV
UN Secretary-General's Report and UN General Assembly Resolution on the *International Strategy for Disaster Reduction*

MAR 14-18 / SENDAI, JAPAN
The 3rd World Conference on Disaster Risk Reduction will review the implementation of the Hyogo Framework for Action and is expected to adopt a successor framework for disaster risk reduction.

SEP-NOV
UN Secretary-General's Report and UN General Assembly Resolution on the *International Strategy for Disaster Reduction*. The UN General Assembly Session will also consider the post-2015 disaster risk reduction framework for endorsement.



UN World Conference on
Disaster Risk Reduction
2015 Sendai Japan



UNISDR
The United Nations Office for Disaster Risk Reduction

5TH AFRICA REGIONAL PLATFORM AND 3RD MINISTERIAL MEETING FOR DISASTER RISK REDUCTION

● ABUJA (NIGERIA) ● 13 – 16 MAY 2014 ●

SUMMARY STATEMENT

AFRICA'S CONTRIBUTION TO THE POST-2015 FRAMEWORK FOR DISASTER RISK REDUCTION

[Translated in French wherein English text is the original version]

<http://www.unisdr.org/we/inform/events/35308>

Over 900 participants f



Plataforma Regional para la Reducción del Riesgo de Desastres de las Américas

Invertir en RRD para proteger los avances del desarrollo

IV Sesión - Guayaquil, Ecuador del 27 al 29 de Mayo 2014



Secretaría de
Gestión de Riesgos



Ministerio de
Relaciones Exteriores
y Movilidad Humana



UNISDR
ESTRUCTURA REGIONAL PARA LA REDUCCIÓN
DEL RIESGO DE DESASTRES

Communiqué of Guayaquil, Ecuador

IV Session of the Regional Platform for Disaster Risk Reduction

Guayaquil, 29 May, 2014

1. We, participants at the Fourth Session of the Regional Platform for Disaster Risk Reduction in the Americas,¹ meeting in Guayaquil, Ecuador from 27 to 29 May 2014, thank the people and Government of the Republic of Ecuador, particularly the Risk Management Secretariat and the Ministry of Foreign Affairs and Human Mobility, for the hospitality and support provided for the successful carrying out of this Fourth Session of the Regional Platform:
2. Acknowledge the substantial contributions of the Hyogo Framework for Action (HFA) 2005-2015 to the formulation of strategies and policies for disaster risk management.² In order progress towards eradicating poverty, reducing inequality and achieving sustain <http://www.unisdr.org/we/inform/events/34366>

The 6th Asian Ministerial Conference on Disaster Risk Reduction
Bangkok, Kingdom of Thailand 22 – 26 June 2014



Unedited English Translation*

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Share

We, the Arab M
representatives of regi
participating in the Sec
14-16 September 2014
people for hosting the



6TH SESSION OF THE PACIFIC PLATFORM
FOR DISASTER RISK MANAGEMENT

The Way Forward: Climate and Disaster Resilient Development in the Pacific

Chair's Summary



5th EUROPEAN FORUM FOR DISASTER RISK REDUCTION

Madrid Outcomes

6-8 October 2014

Champion, reinforce and better connect existing and future initiatives for integrated research and the scientific assessment of disaster risk through an adequate international scientific advisory mechanism, in order to **strengthen the evidence base to inform decision-making under the post-2015 framework.**

and climate change adaptation, sustainable development and small-scale disasters.

FINAL VERSION

Joint UN Statement – 1st Preparatory Committee Meeting (PREPCOM) for the Third UN World Conference on Disaster

The Joint Statement by the UN System delivered at the First Preparatory Committee Meeting of the World Conference on Disaster Risk Reduction (WCDRR) was prepared under the aegis of the UN High Level Programmes Committee Senior Managers Group on Disaster Risk Reduction for Resilience (HLCP/SMG). The HLCP/SMG oversees the implementation of the *UN Plan of Action on Disaster Risk Reduction for Resilience*. Members are FAO, IAEA, IFAD, IFRC, ILO, IMO, IOM, ITU, UNAIDS, UNCCD, UNDP, UNEP, UNESCO, UNFPA, UNHABITAT, UNHCHR, UNICEF, UNISDR, UNOCHA, UNOPS, UNOOSA, UNWOMEN, UNWTO, UPU, WFP, WHO, WMO and the World Bank.

The UN System supports the proposed creation of an international science advisory mechanism to strengthen the evidence base for the implementation and monitoring of the new framework

SEE YOU IN JAPAN IN 2015!



Global Platform
for Disaster Risk Reduction
Fourth session, Geneva, Switzerland
19-23 May 2013



UNISDR

The United Nations Office for Disaster Risk Reduction



Global hazards weekly bulletin

Global Hazards Weekly Bulletin – 9th to 13th February 2015

Australia

[North Queensland hit by worst flooding in 30 years, with more rain forecast](#)

[Australia on heatwave alert as temperatures set to soar](#)

[Melbourne weather: Storms flood homes, delay flights](#)

[South Australians told to leave homes due to catastrophic bushfire danger](#)

Brazil

[Brazil scales back Carnival festivities as drought and weak economy persist](#)

Canada

[Weather prompts flooding, landslides, highway closures near Swansea Point](#)



Public Health England

Global hazards weekly bulletin

Global Hazards Weekly Bulletin – 9th to 13th February 2015

Sent on behalf of:

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