Tackling hazardous Earth: a personal perspective

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Outline

- Hazards and disasters: where are we now?
- Some key issues
- Preparing for disasters
- How can science help?
- Looking ahead: reducing disaster risk in 2030 and beyond
- Where do we go from here?
Where are we now?
a year on hazardous Earth

- 50 or so volcanoes erupt
- Around 150 potentially destructive quakes
- 40-50 tropical cyclones
- Numerous floods, landslides, tornadoes and extra-tropical storms
- In 2000, 1 in 30 people were affected by natural hazards

Bam, Iran (2003)
From hazard to disaster

2008
220,000 dead
USD200 billion
No reason: no excuse

Parts of the problem

- Focus still skewed towards response
- Inadequate awareness of the hazard
- Poor understanding of risk
- Ineffective engagement between practitioners and the scientific community
- Insufficient belief in scientific forecasts
- Lack of political will, monetary support or technical expertise

Kashmir, Pakistan (2005)
Preparedness is everything

• Disaster response alone inadequate
  – does little to limit damage or save lives syn-event
• Purely re-active
  – does not tackle the heart of the disaster reduction problem
• Improving preparedness is THE key to reducing impact of natural disasters
  – reduces required level of response materially and financially
  – reduces recovery time
  – decreases impact of disasters on society & economy
• Is thus a KEY element in improving response

Cyclone Nargis, Myanmar (2008)
What to prepare for?

- Natural disasters require natural hazards
- Hazard and risk recognition and characterisation requires scientific research
- Effective preparedness must look to & embrace such research
- Tectonic hazard numbers are constant
- Climate hazards are rising
  - Windstorms
  - Floods and drought
  - Landslides & avalanches
  - Cold & heat waves
  - Wildfires
- Hazard & risk science can help forecast where and when and much more
Bringing science on board

- Effective preparedness requires hazard & risk….
  - Recognition and assessment
  - Process & mechanism research
  - Monitoring
  - Forecasting & prediction
  - Mitigation & avoidance
  - Education
  - Communication

- The hazard & risk science community has a major role to play in all of these

Gujarat, India (2001)
Monitoring and prediction

GPS Mount Etna, Sicily

InSAR, Abruzzo, Italy

Vajont landslide, Italy (1963)

Soufriere Hills, Montserrat, November 1995

Model
Identifying future threats
Forecasting: days to years ahead
Mitigation and avoidance

- Nature and parameters of hazard needs to be known in advance
  - Likely event
  - Maximum event
- Long-term
  - Land-use planning
  - Construction codes
- Short-term
  - Temporary barriers (flood; lava)
- Issues
  - Cost/expertise
  - Prioritisation
  - Political will
  - Enforcement
- Links to education

Quake-proof homes (Gujarat)
Education & Communication

- **PROJECT CARIB: Communications during Volcanic Crises**
  - DFID-funded project
  - Designed to improve working between scientists, authorities and media

- **ESWAVE (Education for Self-warning and Voluntary Evacuation)**
  - TVE tsunami awareness film proposal

**inTERRAgate**

**Developing global hazard preparedness**

INTRODUCTION

The inTERRAgate system is a web-based system designed to improve the communication of volcanic disaster information from scientists to the media and to public officials in order to improve preparedness and to facilitate effective communication to the public.

Although volcanic hazards receive global attention and generate volumes of post-disaster data, there is a need to ensure that the information is used effectively and efficiently.

The system is designed to support the development of online information services and to provide a platform for the exchange of information between scientists, authorities, and the public.

**PARTNERSHIPS AND SERVICES**

The inTERRAgate system is designed to support the development of online information services and to provide a platform for the exchange of information between scientists, authorities, and the public.

- **A hazard profile for every volcano**
- **Forecast and early warning of volcanic events**
- **Field observatories and their outputs**
- **Public awareness and outreach**

**Work with us...**

**PROJECT SPONSORS**

- **Benfield Hazard Research Centre**
- **UCL**

[www.interragate.info](http://www.interragate.info)
Looking ahead: bleak prospects?

- Increasing concentration of people and wealth
- Growing occupation of marginal and high risk locations
- Climate change and environmental degradation
- Resource singularity
By 2020 PEAK OIL
- Production ceased to grow between 2005 and 2008

By 2030 PEAK ALL
- Global society will need resources of 2 planets to supply needs
  - 50% more food; 50% more energy; 30% more water

Peak oil and Peak All critical
- Massive impact on global economy
- Affect ability of nations to prepare for and respond to disasters
- Multipliers in relation to impact of disasters on society and economy
A role for DRR in 2050 and beyond?

- Himalayan glaciers that supply water for 40% of world’s population gone by 2050?
- 160 water wars flashpoints
- 2050 global food production could be 25% down
- Half the world predicted to face serious food shortages by 2100
Climate catastrophe?

Medium emissions scenario (A1B)

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Where do we go from here? Three questions

- How do we shift the focus of disaster risk reduction further from response towards preparedness?
- How can we more effectively embed hazard and risk science within DRR?
- How can DRR best operate in a chaotic world?