BritishRedCross

Natural disasters: Earthquakes

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Introduction

Natural disasters: earthquakes is a curriculum-led geography teaching package designed for use with students aged 11 to 19.

Resources have been differentiated for KS3, GCSE and A level and will help students:

- learn about the physical geography, hazards and risks which can cause a natural disaster such as an earthquake
- explain and analyse the varied impacts an earthquake may have on individuals and communities, with a particular focus on their humanitarian impacts
- gain insight into the role of the Red Cross in disaster preparedness, response and recovery
- explore the concept of resilience and what might make a community more able to cope in a crisis.

Natural disasters: earthquakes was commissioned by the British Red Cross, authored by award-winning Geography teacher Alan Parkinson and developed with the support of the Geographical Association.

The Nepal earthquake of 2015 is used as a case study throughout to support geographical and humanitarian learning.

Case study introduction: Nepal earthquake

On **Saturday 25 April 2015**, the streets of the Nepalese capital: Kathmandu were busy with residents and tourists meeting friends, selling their produce in the markets or preparing for lunch.

Traffic flowed along the streets into and out of the city, bustling with motorised and horse-drawn vehicles and bicycles.

In the villages further up and down the valley, farmers tended their crops, and the sun shone on stupas and temples.

A crowd of people started to climb the stairs up the famous Dharhara tower, a World Heritage site.

At **11:56 am** everything changed. The earth started to shake as a magnitude **7.8** earthquake struck the Kathmandu Valley. It was the biggest earthquake in Nepal for over 80 years, since a large earthquake in 1934.

The **epicentre** of the quake was Barpak village, around 75 km north-west of Kathmandu in the Gorkha region.

The seismic focus lay at a depth of 10 km, close to the surface. The million-strong population of Kathmandu had their lives thrown into chaos, along with the residents of the many villages within a 100km radius of the quake.

The devastated city of Bhaktapur, Nepal.
April 2015

Contents

The resource is divided into four sessions, which you can tackle as a whole or by taking elements from one or two and combining them.

The resource is designed to be worked through in order, as it builds a narrative which is one way of investigating events of this nature.

Session 1: Natural disasters

This session sets the scene by introducing the topic of natural disasters alongside general ideas of risk and hazard.

This first session provides a useful set of activities for those wanting to explore the nature of risk associated with any type of natural disaster.

Session 2: Earthquakes

After a general introduction to natural disasters, session 2 moves on to look more specifically at earthquakes, with a focus on tectonic hazards.

The Nepal earthquake of April 2015 is used in examples and activities throughout to contextualize the learning for students.

A collapsed house in Mashiki town, Kumamoto prefecture, Japan.
April 2016

Session 3: The impact of a natural disaster

Session 3 focuses on the immediate aftermath of an earthquake and the work of local and international Red Cross teams to support people affected by natural disasters.

It features eye-witness accounts from the Nepal earthquake and utilises a range of engaging multimedia resources.

Session 4: Recovery and resilience

After a natural disaster the Red Cross supports affected individuals as they start to recover and rebuild their lives.

By reflecting upon and applying learning from past experiences, communities can increase their resilience and ability to cope with disasters.

This final session focusses on themes of recovery and resilience and concludes by bringing the learning back to a local context for students.

Curriculum-led contextual learning

A curriculum mapping document is provided to support educators with aligning resource content to the UK curricula in England, Scotland, Wales and Northern Ireland.

Case studies, maps, graphs and eyewitness accounts from the Nepal earthquake bring the geography curricular to life.

Common themes and pathways through the resources are provided. These ensure the resource can be adapted for use when teaching about more recent earthquakes or a whole range of other natural disasters.

A humanitarian perspective

After a natural disaster, the humanitarian response is varied in scale and timing, and includes a number of aspects, which this resource explores in detail.

Drawing on Red Cross knowledge, experience and perspectives, activities support learners to consider the humanitarian impact of an earthquake on individuals and communities.

Supporting resources include eyewitness accounts from people who were in Nepal during the 2015 earthquake and those who helped in the immediate aftermath. These resources help learners appreciate the impact of the event and the scale of the humanitarian response.

Kathmandu, Nepal
April 2015

Photo © Carl Whetham/IFRC.

Author's acknowledgements

My main thanks go to Rachel Hay for sharing her experiences on the day of the Nepal earthquake and the days that followed. She was very generous in her help, with ideas of activities and links that I followed up further. This resource has been shaped by her experiences.

Thanks to colleagues, particularly Claire Kyndt for some of the ideas that fed into the resource.

Thanks to Tony Cassidy for inspiration for the emotion line resource idea that was adapted for one of the sessions.

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Thanks to Helen Davis and Lucy Tutton from the British Red Cross for support and feedback on drafts.

Finally my thanks to Geographical Association colleagues for involving me in the project and for their support in reviewing draft chapters.

Curriculum Mapping

This section explores links between the activities in the resource, and relevant curriculum documents.

Natural disasters are featured in a range of locations and at different scales. This document suggests some opportunities to use the activities in this resource to align with these documents.

KS3

The new National Curriculum from 2013 is now familiar to schools. As many schools are released from the requirement to follow the National Curriculum, there may also be more freedom to teach the topics covered in this resource.

Links with natural hazards and other important themes are ***emboldened***.

England

Purpose of Study
Teaching should equip pupils with knowledge about diverse places, people, resources and ***natural and human environments***, together with a deep understanding of the Earth's ***key physical and human processes***.

Aims
Interpret ***a range of sources*** of geographical information, including maps, diagrams, globes, aerial photographs and Geographical Information Systems (GIS)

Human and Physical Geography
Understand, through the use of detailed place-based exemplars at a variety of scales, the key processes in physical geography relating to: geological timescales and ***plate tectonics; rocks, weathering and soils; weather and climate***, including the change in climate from the Ice Age to the present; and glaciation, hydrology and coasts

Understand how ***human and physical processes*** interact to influence, and change landscapes, environments and the climate

Source: DfE, September 2013
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239087/SECONDARY_national_curriculum_-_Geography.pdf

Wales

Skills
Pupils should be given opportunities to:

1. ***describe and explain physical and human features***, e.g. the features of a river
2. ***explain the causes and effects of physical and human processes*** and how the processes interrelate, e.g. ***causes and consequences of tectonic activity***
3. explain ***how and why places and environments change*** and identify trends and future implications

Pupils should be given opportunities to study:
the hazardous world: global distribution, causes, and impacts of extreme tectonic and other hazardous events – threatened environments

Welsh Government, 2008
http://learning.gov.wales/docs/learningwales/publications/130424-geography-in-the-national-curriculum-en.pdf

Consultation is ongoing for a new curriculum in Wales.

Scotland

Curriculum for Excellence
There was no specific reference to earthquakes or other natural hazards in the document, but the following sections could be used as opportunities to explore the use of the resource.

Social Studies Experiences and Outcomes: People, Place and Environment
(please note that this relates to second and fourth year students)

I can describe the physical processes of a natural disaster and discuss its impact on people and the landscape. **SOC 2-07b**	I can explain how the interaction of physical systems shaped and continue to shape the Earth's surface by assessing their impact on contrasting landscape types. **SOC 4-07a**
I can use specialised maps and geographical information systems to identify patterns of human activity and physical processes. **SOC 4-14a**	

Source: Social Studies Experiences and Outcomes:
https://education.gov.scot/Documents/social-studies-eo.pdf

Northern Ireland

Geography comes into an area of learning called Environment and Society, and has thematic units.

Developing pupils' Knowledge, Understanding and Skills	Developing pupils as Individuals	Developing pupils as Contributors to Society	Developing pupils as Contributors to the Economy and Environment
Young people should have opportunities, through the contexts opposite, to: - develop geographical skills to interpret spatial patterns including atlas and map-work skills; - develop enquiry and fieldwork skills: questioning, planning, collecting, recording, presenting, analysing, interpreting information and drawing conclusions relating to a range of primary and secondary sources in order to develop an understanding of: - physical processes of landscape development - the interrelationships between physical and human environments.	Investigate the physical and human factors that result in people having to make life-changing decisions.	Investigate the causes and consequences of an environmental event making the news and evaluate how it is reported in the media. Create a video/news-bulletin to inform about an earthquake, volcano etc.	Investigate how physical processes operate to create distinct and diverse environments.

Source: CCEA
http://ccea.org.uk/curriculum/key_stage_3/areas_learning/environment_and_society
http://ccea.org.uk/sites/default/files/docs/curriculum/area_of_learning/environement_society/ks3_geography.pdf

GCSE

Specifications are changing from September 2016.

At the time of writing, these are the curriculum references in the available documents.

Specification	Reference	Content
AQA	3.1.1.1	**Natural Hazards** Definition of a natural hazard. Types of natural hazard. Factors affecting hazard risk.
	3.1.1.2	**Tectonic Hazards** Plate tectonics theory. Global distribution of earthquakes and volcanic eruptions and their relationship to plate margins. Physical processes taking place at different types of plate margin (constructive, destructive and conservative) that lead to earthquakes and volcanic activity. Primary and secondary effects of a tectonic hazard. Immediate and long-term responses to a tectonic hazard. Use named examples to show how the effects and responses to a tectonic hazard vary between two areas of contrasting levels of wealth. Use **named examples** to show how the effects and responses to a tectonic hazard vary between two areas of contrasting levels of wealth. Reasons why people continue to live in areas at risk from a tectonic hazard. How monitoring, prediction, protection and planning can reduce the risks from a tectonic hazard
	3.1.1.3	**Weather Hazards** Primary and secondary effects of tropical storms. Immediate and long-term responses to tropical storms. Use a **named example** of a tropical storm to show its effects and responses. How monitoring, prediction, protection and planning can reduce the effects of tropical storms. An overview of types of weather hazard experienced in the UK. An example of a recent extreme weather event in the UK to illustrate: - causes - social, economic and environmental impacts - how management strategies can reduce risk. Evidence that weather is becoming more extreme in the UK.
Edexcel	Spec A Topic 2 2.5	**Weather Hazards and Climate Change** Tropical cyclones are extreme weather events that develop under specific conditions and in certain locations. Reasons why tropical cyclones are natural weather hazards (high winds, intense rainfall, storm surges, coastal flooding and landslides). Different responses to tropical cyclones of individuals, organisations and governments in a named developed and a named emerging or developing country.

	2.6	There are various impacts of and responses to natural hazards caused by tropical cyclones depending on a country's level of development.
	2.8	**Drought** Reasons why droughts are hazardous. How the impacts of drought on people and ecosystems can vary for a named developed and emerging or developing country. Different responses to drought from individuals, organisations and governments in a named developed and an emerging or developing country.
	Spec B Topic 1	**Hazardous Earth** **Enquiry question: How are extreme weather events increasingly hazardous for people?**
	1.5	Tropical cyclones present major natural hazards to people and places. Physical hazards of tropical cyclones (high winds, intense rainfall, storm surges, coastal flooding, landslides) and their impact on people and environments. Why some countries are more vulnerable (physically, socially and economically) than others to the impacts of tropical cyclones.
	1.6	The impacts of tropical cyclones are linked to a country's ability to prepare and respond to them. How countries can prepare for, and respond to, tropical cyclones: weather forecasting, satellite technology, warning and evacuation strategies, storm-surge defences. b. The effectiveness of these methods of preparation and response in one developed country and in one developing or emerging country
		Enquiry question: Why do the causes and impacts of tectonic activity and management of tectonic hazards vary with location?
	1.8	There are different plate boundaries, each with characteristic volcanic and earthquake hazards. Distribution and characteristics of the three plate boundary types (conservative, convergent and divergent) and hotspots. Causes of contrasting volcanic (volcano type, magma type/lava flows and explosivity) and earthquake hazards, including tsunami (shallow/deep, magnitude).
	1.9	Tectonic hazards affect people, and are managed, differently at contrasting locations Primary and secondary impacts of earthquakes or volcanoes on property and people in a developed and emerging or developing country. Management of volcanic or earthquake hazards, in a developed and emerging or developing country including short-term relief (shelter and supplies) and long-term planning (trained and funded emergency services), preparation (warning and evacuation; building design) and prediction.
	Integrated Skills	Use and interpretation of world map showing distribution of plate boundaries and plates Use of Richter Scale to compare magnitude of earthquake events ***Use of social media sources, satellite images and socio-economic data to assess impact.***

Eduqas A	Theme 3	Tectonic Landscapes and Hazards
	Key Idea 3.2: Vulnerability and hazard reduction	Impacts of earthquakes, tsunami and volcanic activity on health, infrastructure, and economy. Physical and human factors that increase vulnerability to tectonic hazards: Physical factors to include the magnitude of volcanic eruptions and earthquakes. The characteristics and scale of pyroclastic flows, lava flows, lahars and ash clouds. Social and economic factors that can increase vulnerability of communities in tectonic zones in countries at different levels of economic development. Coverage must include one located example of a volcanic hazard and one located earthquake event. How monitoring, hazard mapping, new building technology and improved emergency planning may be used to reduce the risks associated with earthquakes, tsunamis and volcanic eruptions.
	Key Idea 4.2: Managing coastal hazards	The reasons for increased vulnerability of some coastal communities in the future and why some coastlines are at greater risk than others. The specific challenges faced by Small Island States as sea levels rise. How and why sea level rise may lead to environmental refugees in the future. How governments in countries at different levels of economic development are facing this issue.
	Key Idea 5.2: Weather patterns and process	An overview of global circulation of the atmosphere. How global circulation creates areas of low and high pressure. How these different pressure systems each lead to weather hazards. Detailed study of a least one located low pressure hazard to include its causes and consequences for people, environment and economy and responses to this hazard (for example, early warning systems/emergency aid). Detailed study of a least one located high pressure hazard to include its causes and consequences for people, environment and economy and responses to this hazard (for example, improved water security).
Eduqas B	Theme 2 How are weather hazards distributed at a global scale and how does this pattern change over time?	Typical weather patterns and extreme weather hazards associated with high and low pressure systems. Coverage should include the use of weather charts. Temporal and spatial changes in extreme weather to include seasonal and longer term changes in the tropics which result in drought.
		Describe and interpret geo-spatial data presented in a GIS framework.
OCR A	1.3 UK Environmental Challenges	Extreme flood hazard events are becoming more commonplace in the UK Case study of one UK flood event caused by extreme weather conditions including: causes of the flood event, including the extreme weather conditions which led to the event effects of the flood event on people and the environment the management of the flood event at a variety of scales.

	2.3 Environmental Threats to the Planet	Extreme weather conditions cause different natural weather hazards. - Outline the causes of the extreme weather conditions that are associated with the hazards of tropical storms and drought. - The distribution and frequency of tropical storms and drought, and whether these have changed over time. Drought can be devastating for people and the environment. Case study of one drought event caused by El Niño/La Niña: how the extreme weather conditions of El Niño/La Niña develop and can lead to drought effects of the drought event on people and the environment ways in which people have adapted to drought in the case study area.
OCR B	Topic 1 – Global Hazards 1.1. How can weather be hazardous?	The distribution and frequency of tropical storms and drought, and whether these have changed over time. - Outline the causes of the extreme weather conditions associated with tropical storms. - Outline the causes of the extreme weather conditions of El Niño/La Niña leading to drought. When does extreme weather become a hazard? Case studies of two contrasting natural weather hazard events arising from extreme weather conditions. The case studies must include a natural weather hazard from each bullet point below: flash flooding or tropical storms heat wave or drought. There must be one UK based and one non-UK based natural weather hazard event. - For each chosen hazard event, study the place specific causes (including the extreme weather conditions which led to the event), consequences of and responses to the hazard.
	1.2. How do plate tectonics shape our world?	What processes occur at plate boundaries? The structure of the Earth and how it is linked to the processes of plate tectonics including convection currents. - The processes that take place at constructive, destructive, conservative and collision plate boundaries as well as hotspots. - How the movement of tectonic plates causes earthquakes, including shallow and deep focus, and volcanoes, including shield and composite. How can tectonic movement be hazardous? ***A case study of a tectonic event that has been hazardous for people, including specific causes, consequences of and responses to the event.*** How does technology have the potential to save lives in hazard zones? How technological developments can have a positive impact on mitigation (such as building design, prediction, early warning systems) in areas prone to a tectonic hazard of your choice.

'A' level

Specifications are changing from September 2016.

At the time of writing, these are the curriculum references in the available documents.

Specification	Reference	Content
AQA	Section 3.1.5 Hazards	
	3.1.5.1 The concept of hazard in geographical contexts	Nature, forms and potential impacts of natural hazards (geophysical, atmospheric and hydrological). Hazard perception and its economic and cultural determinants. Characteristic human responses – fatalism, prediction, adjustment/ adaptation, mitigation, management, risk sharing – and their relationship to hazard incidence, intensity, magnitude, distribution and level of development. The Park model of human response to hazards. The Hazard Management Cycle.
	3.1.5.4 Seismic Hazards	The nature of seismicity and its relation to plate tectonics: forms of seismic hazard: earthquakes, shockwaves, tsunamis, liquefaction, landslides. Spatial distribution, randomness, magnitude, frequency, regularity, predictability of hazard events. Impacts: primary/secondary; environmental, social, economic, political. Short and long-term responses; risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation. Impacts and human responses as evidenced by a recent seismic event.
	3.1.5.5 Storm Hazards	The nature of tropical storms and their underlying causes. Forms of storm hazard: high winds, storm surges, coastal flooding, river flooding and landslides. Spatial distribution, magnitude, frequency, regularity, predictability of hazard events. Impacts: primary/secondary, environmental, social, economic, political. Short and long-term responses: risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation. Impacts and human responses as evidenced by two recent tropical storms in contrasting areas of the world.
Edexcel	Topic 1: Tectonic Processes and Hazards Enquiry question 1: ***Why are some locations more at risk from tectonic hazards?***	The global distribution of tectonic hazards can be explained by plate boundary and other tectonic processes. a. The global distribution and causes of earthquakes, volcanic eruptions and tsunamis. b. The distribution of plate boundaries resulting from divergent, convergent and conservative plate movements (oceanic, continental and combined situations). c. The causes of intra-plate earthquakes, and volcanoes associated with hot spots from mantle plumes.

	Enquiry question 2: **Why do some tectonic hazards develop into disasters?**	Disaster occurrence can be explained by the relationship between hazards, vulnerability, resilience and disaster. Tectonic hazard profiles are important to an understanding of contrasting hazard impacts, vulnerability and resilience. ***Profiles of earthquake, volcano and tsunami events showing the severity of social and economic impact in developed, emerging and developing countries.*** Development and governance are important in understanding disaster impact and vulnerability and resilience Inequality of access to education, housing, healthcare and income opportunities can influence vulnerability and resilience. Governance (Local and national government) and geographical factors (population density, isolation and accessibility, degree of urbanisation) influence vulnerability and a community's resilience. Contrasting hazard events in developed, emerging and developing countries to show the interaction of physical factors and the significance of context in influencing the scale of disaster.
	Enquiry question 3: **How successful is the management of tectonic hazards and disasters?**	Understanding the complex trends and patterns for tectonic disasters helps explain differential impacts. ***The concept of a multiple-hazard zone and how linked hydrometeorological hazards sometimes contribute to a tectonic disaster.*** Theoretical frameworks can be used to understand the predication, impact and management of tectonic hazards. Prediction and forecasting (Role of scientists) accuracy depend on the type and location of the tectonic hazard. The importance of different stages in the hazard management cycle (response, recovery, mitigation, preparedness). (Role of emergency planners) ***Use of Park's Model to compare the response curve of hazard events, comparing areas at different stages of development.*** Tectonic hazard impacts can be managed by a variety of mitigation and adaptation strategies, which vary in their effectiveness. ***Strategies to modify loss include emergency, short and longer term aid and insurance (Role of NGOs and insurers) and the actions of affected communities themselves.***
Eduqas	SECTION B – Tectonic Hazards	1.3.4 Volcanoes and their impacts - Environmental, demographic, economic and social impacts of volcanic hazards on people and the built environment including primary and secondary effects - Local scale, regional scale and global scale impacts of volcanic activity - Use examples of at least two contrasting contexts to demonstrate the varied degree of risk and impacts of volcanic activity 1.3.5 Earthquakes, processes and hazards - Earthquake characteristics to include P and S waves, focus, depth and epicentre - Earthquake processes and the production of associated hazards including ground shaking, liquefaction, landslides and tsunami
		1.3.6 Earthquakes and tsunamis and their impacts - Environmental, demographic, economic and social impacts of earthquake and tsunami activity on people and the built environment including primary and secondary effects - Local scale, regional scale and global scale impacts of earthquake and tsunami activity - Use examples of at least two contrasting contexts to demonstrate the varied degree of risk and impacts of earthquake activity - Use examples of at least two contrasting contexts to demonstrate the varied degree of risk and impacts of tsunami activity 1.3.7 Human factors affecting risk and vulnerability - Economic factors including level of development and level of technology - Social factors including the population density, population profile (age, gender) and levels of education - Political factors including the quality of governance - Geographical factors including rural / urban location, time of day and degree of isolation

		1.3.8 Responses to volcanic hazards - Monitoring, predicting and warnings of volcanic eruptions, and - Mitigating volcanic hazards and modifying the event, vulnerability, and loss - Short-term and long-term responses to the effects of volcanic hazards (the hazard management cycle) 1.3.9 Responses to earthquakes and tsunamis - Monitoring, predicting and warnings of volcanic eruptions, earthquakes and tsunami - Mitigating earthquake and tsunami hazards and modifying the event, vulnerability, and loss - Short-term and long-term responses to the effects of earthquake and tsunami hazards (the hazard management cycle)
OCR	Topic 3.2 – Disease Dilemmas	Natural hazards can influence the outbreak and spread of disease Case study of one country which has experienced a natural hazard, such as an earthquake, drought or monsoon rains, and the implications this has on a named disease, such as cholera or typhoid; geographical area covered by the hazard and its influence on the risk and outbreak of disease; environmental factors affecting the spread of disease such as climate, sanitation, water supply and food; human factors affecting the spread of the disease such as population density, access to clean water, immunisation programmes; impacts of the disease on resident populations; strategies used to minimise the impacts of the disease at national and international scales.
	Topic 3.3 Exploring Oceans	Oceans present hazardous obstacles to human activities.
	Topic 3.5: Hazardous Earth What are the main hazards generated by volcanic activity?	There is a variety of volcanic activity and resultant landforms and landscapes. Volcanic eruptions generate distinctive hazards.
	What are the main hazards generated by seismic activity?	Earthquake characteristics to investigate their causes and features including: shallow-focus earthquakes; deep-focus earthquakes; the different measures of assessing earthquake magnitude (Richter, moment magnitude scale, modified Mercalli intensity scale); the effects earthquakes have on landforms and landscapes including the development of escarpments and rift valleys. Earthquakes generate distinctive hazards. Hazards generated by earthquakes, including: ground shaking and ground displacement; liquefaction; landslides and avalanches; tsunamis associated with sea-bed uplift and underwater landslides; flooding.
	What are the implications of living in tectonically active locations?	There are a range of impacts people experience as a result of volcanic eruptions. Case studies of two countries at contrasting levels of economic development to illustrate: reasons why people choose to live in tectonically active locations; the impacts people experience as a result of volcanic eruptions; economic, environmental and political impacts on the country. There are a range of impacts people experience as a result of earthquake activity ***Case studies of two countries at contrasting levels of economic development to illustrate: reasons why people choose to live in tectonically active locations; the impacts people experience as a result of earthquake activity; economic, environmental and political impacts on the country.***

	There are various strategies to manage hazards from earthquakes.	Case studies of two countries at contrasting levels of economic development to illustrate strategies used to cope with hazards from earthquakes including: attempts to mitigate against the event such as land-use zoning; attempts to mitigate against vulnerability such as building design; attempts to mitigate against losses such as insurance.
OCR	The exposure of people to risks and their ability to cope with tectonic hazards changes over time.	How and why have the risks from tectonic hazards changed over time including: changes in the frequency and impacts of tectonic hazards over time; the degree of risk posed by a hazard and the probability of the hazard event occurring (the disaster risk equation); possible future strategies to cope with risks from tectonic hazards. The relationship between disaster and response including the Park model.

The **specification documents** can be downloaded in full from the following locations:

AQA: **http://www.aqa.org.uk/**

Edexcel: **http://qualifications.pearson.com/**

Eduqas: **http://www.eduqas.co.uk/**

OCR: **http://www.ocr.org.uk/**

A note on case studies

The **case study** is a unit of study in many exam specifications. Some specification documents distinguish between the case study and the located example.

The location that is being mentioned is a starting point, but will need to have some level of detail, explanation, a suitable map or diagram, some context within the unit that is being studied, and ideally a reference to something that happened at that location which makes it worthy of further study or focus.

We have a strong focus on the Nepal earthquake in this unit and also refer to the work of the Red Cross.

Session 1: Natural disasters

Session 1 is an introduction to the *Natural disasters: earthquakes resource*. It sets the scene by introducing the topic of natural disasters alongside general ideas of risk and hazard. Students should be made aware of the differences between hazard events and those which are classed as natural disasters.

While the resource as a whole uses the 2015 Nepal earthquake to contextualize learning this first session provides a useful set of activities for those wanting to explore the nature of risk associated with any type of natural disaster.

Contents

Introductory activities (all ages)

1. Silent starter
2. Think-Pair-Share
3. Hazard or disaster?
4. Locating hazards and disasters

Activities for Key Stages 3-5

KS3: Natural disasters washing line
KS4: Hazard classification
KS5: Defining disaster hotspots

Learning objectives

Young people are able to:

- Locate and contextualize specific places in regional and wider scales.
- Recognise the interconnections between processes which operate in specific places, to produce a hazard risk or natural disaster.
- Start to identify the humanitarian impacts of natural hazards and disasters.

Key questions

- What do we mean by natural hazards and disasters and how can they be classified?
- Which natural hazards are the most common?
- What impacts will different natural disasters have on individuals and communities?

Key vocabulary

Hazard: a natural phenomenon which has the *potential* to cause loss of life, injury or damage to property and infrastructure.

Event: the occurrence of a hazard.

Disaster: a major event that causes widespread disruption on a significant scale.

Minamisanriku, Miyagi Prefecture, Japan
March 2011

Introductory activities

You will need:

- Natural hazard silent starter (PDF)
- Hazard classification guide (PPT)
- Hazard or disaster? (PPT)
- Let's ask Nathan teacher guidance sheet (PDF)
- Let's ask Nathan student introduction (PDF)
- Blank world maps (PDF)

1. Silent starter

Before students arrive, place printed copies of the Natural hazard silent starter (PDF) *face down in the middle of each desk, along with marker pens and sticky notes.*

Once all students have arrived, ask them to turn the piece of paper over and to spend a few minutes writing down words which they associate with this phrase in silence.

They can write their words around the outside of the central image or by adding sticky notes to the desk.

2. Think-Pair-Share

After a few minutes ask them to pair with a neighbour, and identify the words which they have in common. Ask them to underline these and then share them with the group, or with another pair.

Try to collate words which crop up lots of times, and highlight those in a separate colour.

Classification activity

Students should spend a little time classifying the resulting word list into words which are:

- adjectives describing natural hazards
- actual examples of natural hazards
- impacts of natural hazards
- places which are prone to natural hazards
- connected with the humanitarian response to disasters.

The actual examples of natural hazards can then be classified into the following categories:

- meteorological
- hydrological
- climatological
- geophysical (tectonic).

You can display the Hazard classification guide (PPT) *on the screen to help students categorise their examples.*

3. Hazard or disaster?

A discussion can be had on the differences between natural hazards and disasters.

The discussion should focus on the scale, nature and severity, and length of time over which the impacts of the hazard event last. These factors will make the difference when it comes to defining the event.

Students should be asked to use the word lists which they have produced to come up with their own **definitions** of a natural hazard and a natural disaster.

The definitions on the Hazard or disaster? (PPT) *can support with this.*

Discussion questions

- What are the key differences between a hazard and disaster?
- Which events might be hazardous but not be classified as natural disasters?
- At what point does a hazard event become a natural disaster?

Explain that having thought about the **what**, students are going to move on to the **where** of natural hazards and disasters.

In terms of natural disasters, where the dangerous places are in the world and how dangerous is the place where your school is located?

4. Locating hazards and disasters

The **'Let's ask Nathan' teacher guidance sheet (PDF)** *will help you prepare the activity.*

The **'Let's ask Nathan' student introduction sheet (PDF)** *also supports this activity.*

To locate hazard events, including natural disasters, requires a map. This activity uses Munich Re's interactive mapping "Ask Nathan" resource: **http://nathanlight.munichre.com/**.

Nathan stands for the National Hazards Assessment Network. Munich Re is one of the world's leading reinsurers, and therefore need to know a lot about risk if their insurance is going to be effective and their policies set appropriately. They employ geographers to help them keep track of natural hazard trends.

In this activity you will demonstrate the mapping tool, encourage students to explore the resource and complete a number of tasks to develop their competence in locating hazards.

Demonstrating the 'Ask Nathan' resource

You may demonstrate this tool at the front of the class but students would also benefit from access to an ICT room, or perhaps a class set of tablets to explore it themselves.

There are also opportunities to ask students who are confident in the use of this technology to model its use with others within the group as a way to develop confidence in these skills, which are of increasing importance.

You could also use an **atlas** if required (or preferred) to work with students to revisit some basic geographical locations, e.g. continents and oceans, and countries involved if necessary as they work through this unit.

Identifying countries at risk of hazards

Ask students to identify countries which are currently experiencing, or have recently experienced hazards or natural disasters. Students could identify countries using print or digital news stories from the last few weeks or months.

The International Federation of the Red Cross and Red Crescent Societies website may also be a good source of information for students: **http://www.ifrc.org/**.

Alternatively, you could place recent hazard stories into an app such as Flipboard to curate these events for students to view digitally during the lesson.

Hand out the **'Let's Ask Nathan' student task sheet (PDF)**.

Provide around 30 minutes for students to complete the task, which could also be continued as homework. An extension activity is also provided within the task sheet.

While using the tool and noting their responses encourage students to mark and identify countries which have significant vulnerability to natural hazards using one of the **blank world maps (PDF)** *provided.*

There may be a focus just on earthquakes at this stage, or students could take the opportunity to look at other natural hazards as well.

Explain that there are many factors which can interconnect to create other hazards or indeed a natural disaster. At the end of this task students should have a good idea of where vulnerable places are if they have multiple vulnerabilities.

The **Events** tool in NATHAN allows students to plot significant events around the world dating from 1980 to the present day, and identify these according to the categories as well.

Activities for key stages 3-5

Students should now be asked to complete an age-appropriate activity from the following list.

NB: Elements of younger (or older) age group activities may still be used with particular age groups. Don't feel confined to the age bracket. You are welcome to adopt or adapt these ideas.

KS3: Natural disasters washing line

In this activity: students will consider the nature of hazardous events and the relative importance of earthquakes in a hierarchy of such events.

You will need:

- Natural hazard silent starter (PDF)
- Washing line questions (PPT)
- Rachel Hay - account of the days after the earthquake (PDF)

Print out examples of some of the significant events from the last three years from the Natural hazards cards (PDF) *in advance of the lesson or provide them in another format.*

Teachers could also add further examples to these cards based on previous case studies taught at the school, or by adding in more recent events that have happened since this resource was created.

1. The impacts of a natural disaster

First, ask students to discuss or write down some of the potential impacts of a natural disaster on the people affected.

Examples might include:

- loss of life or limb
- need for shelter
- lack of food or water
- need for medical care
- loss of income
- disruption to education.

Encourage students to share their ideas with the wider group.

2. Washing line activity

Ask students to organise the events from the cards into a sequence or continuum of which they feel would have had the greatest impact on people.

Ask students to pin, peg or tie labels onto an actual washing line (or piece of string) stretched across the classroom to show the relative positions of events.

Alternatively, the software accompanying most interactive whiteboards also provides the option to create labels, which can be dragged and dropped into place or classified into groups.

3. Discuss and debate

During the activity, encourage students to discuss the placement of labels with at least one other person as they put them on the line.

- What are their main reasons for choosing a placement on the line?
- How important is the impact on people in influencing the event's position on the line?

Questions to assist with this are available on the Washing line questions (PPT).

Discussion could be had about any alterations to the placement of particular events.

Teachers could also encourage consideration of man-made hazards, with some initial discussion about the nature of hazards and how far people are involved in 'creating' them.

Have earthquakes ever been triggered by human activity, for example?

4. Extension: an account of the Nepal earthquake

Rachel Hay is a geographer who was in Nepal when the 2015 earthquake struck. We shall come back to learn more about Rachel's experience in Nepal in later sessions.

Rachel wrote an article about the first few days after the earthquake had struck. She was fortunate to survive, but we will discover more about that later too.

Hand out, or display and read the resource: **Account of the days after the earthquake (PDF)**.

Discussion questions

- If you were in a place that was at risk of earthquakes, how might the need to be constantly alert affect you?
- Think about how you might feel if you were caught up in a natural disaster – how might you have been affected? How might you want to help others?

Remember that everyone reacts differently to stressful situations. In later sessions we will look at how a humanitarian organisation like the Red Cross supports people before, during and after natural disasters – helping them to cope with the practical and emotional impact of the event.

> "I was on edge all the time! A quick rinse in the shower and clothes nearby to grab, and get dressed quickly, all the time saying in your head, 'please don't start shaking now…'"

Photo © Mirva Helenius/Finnish Red Cross.

KS4: Hazard classification

In this activity: students will begin to locate and classify some recent hazards.

You will need:

- Natural hazards cards (PDF)
- Natural hazards list (PDF)
- Hazard classification Venn (PDF)
- Blank world map (PDF)

Print out examples of some of the significant events from the last three years from the Natural hazards cards (PDF) in advance of the lesson (or provide them in another format).

Ask students to classify these events into three main types of natural hazards:

1. hydro-meteorological,
2. climatological
3. geophysical.

Definitions

- Hydro-meteorological refers to short-term weather hazards, particularly those relating to water.
- Climatological hazards are longer term, such as drought.
- Geophysical refers to natural process involving the earth's surface.

Hand out the list of hazards shown on the Natural hazards list (PDF).

Students could be asked to enter these hazards onto an A3 copy of the Hazard classification Venn (PDF) to check that they are aware of the main categories of natural hazard that can affect places around the world.

Ask students to research some of the different impacts of the events and then organise the events on the cards into a sequence of significance. They can also plot them onto a blank world map to reinforce the location aspect of the work.

The sequence of significance could be based on the:

- scale of the event (geographical area)
- nature of disruption
- severity of the disruption
- number of people involved
- amount of property and infrastructure affected
- scale of assistance required by humanitarian agencies and others.

Let students know that the British Red Cross was involved in providing humanitarian aid following some of these events, and that they can find out more about their work by visiting http://www.redcross.org.uk/Where-we-work/Overseas

A Red Cross volunteer talks with firefighters taking a break from battling the Harris Fire, which covered approximately 75,000 acres. San Diego County.
July 2008

KS5: Defining disaster hotspots

In this activity: students will explore the idea of places as 'disaster hotspots' and will have the chance to research one of these in some detail.

You will need:

- Benjamin Hennig's earthquake risk map (PDF)
- Disaster hotspots (PDF)
- Multiple hazards ID card (PDF)
- Nepal factsheet (PDF)

1. Introduction to disaster hotspots

Some places in the world can be described as a **'disaster hotspot'**.

Introduce students to Benjamin Hennig's earthquake risk map (PDF) by displaying it on screen or handing out a printed copy.

What can students identify from this map with respect to the factors leading to risk in particular areas of the world?

These are places, which may be regions, states or entire countries, which have a vulnerability to two or more types of natural hazard. They may also be referred to as **multiple hazard zones** (MHZs).

The hazards they are exposed to may include **a combination** of hydro-meteorological, climatic and geomorphic events. The combination of these events provides additional problems for local residents, meaning they may require additional support from humanitarian agencies.

This idea is included in many of the new specifications for first teaching from September 2016.

Identification of these hotspot areas or MHZs involves looking at data on previous events, combined with an assessment of vulnerability based on population size and also the level of economic development.

2. Exploring disaster hotspots

Explore disaster hotspots with students using the Disaster hotspots (PPT), which could be a basis for discussion, and a resource for the tasks that follow.

The following **three** places are amongst those that have been suggested as possible **disaster hotspots**:

- Nepal
- California, USA
- The Philippines

Using appropriate research, can students suggest which particular **combinations** of natural hazards may be present in these locations?

As part of this activity, encourage students to consider some of the possible connections that could exist between hazards. Examples might be that:

- earthquakes weaken the structure of slopes, leading to landslides
- earthquakes can dislodge large volumes of snow leading to avalanches
- volcanic eruptions can cause nearby ice caps to melt, causing floods
- drought can lead to dry vegetation, which increases the risk of wildfires
- tropical cyclones can bring strong winds, but also storm surges which cause coastal flooding.

Work with students to identify other possible connections.

Discuss the challenges and impacts combining events might present for local residents and humanitarian agencies.

3. Multiple hazards ID cards

Ask students to fill in a copy of the **Multiple hazards ID card (PDF)** *for one disaster hotspot, using appropriate information from the available resources.*

Students should provide text and images of at least three hazards which may interact in these areas. This could be completed with respect to the Nepal earthquake in the first instance. The Nepal ID card can be completed using information from the **Nepal factsheet (PDF)**.

A good ID card will include:

- three related hazards for the chosen area
- suggestions for connections between the hazards
- some data to quantify the scale or nature of the hazard
- a link to a striking image or useful video clip sourced online.

Discussion questions

- What might the impact on the people who live in there hotspots be?
- Are humanitarian agencies particularly active in these hotspot zones?
- Could an awareness of the vulnerability of these areas mean that more resources are focused on them?

The town of Chautara was hit by the first earthquake on 25th April. It was then devastated by the May 12th earthquake as the epicentre was very close by.
Sindhupalchok province, Nepal
May 2015

Photo © Mithila Jariwala/IFRC.

Supporting resources for Session 1

Natural hazards

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Hazard classification guide

Meteorological Events	Hydrological Events	Climatological Events	Geophysical (Tectonic) Events
Storms, including tropical storms, mid latitude depressions	Flooding, including flash floods, river flooding and storm surge	Drought	Earthquake
Tornado	Mass movement, including landslide and avalanche	Extreme heat	Volcanic eruption
Lightning strike, or local hailstorm associated with convection	Subsidence	Wildfire, triggered by lightning	Mass movement e.g. landslide or rockfall
			Tsunami

Download PPT here

< Back to activity

Hazard or disaster?

- **Event:** the occurrence of a hazard.
- **Hazard:** a natural phenomenon which has the potential to cause loss of life, injury or damage to property and infrastructure.
- **Disaster:** a major event that causes widespread disruption on a significant scale.

Download PPT here

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"Let's ask Nathan" – teacher guidance sheet

NATHAN stands for National Hazards Assessment Network.

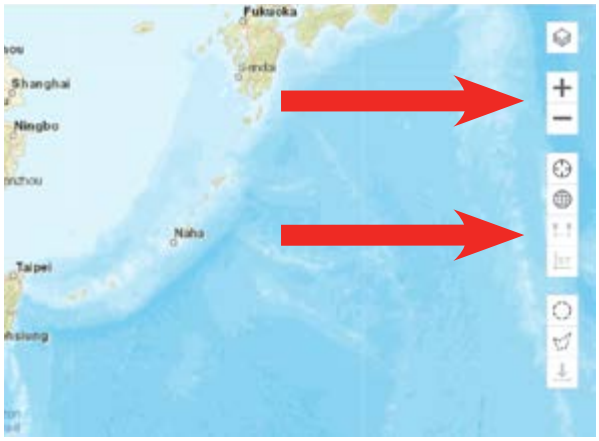
You can access this demonstration version of a full suite of tools on the Munich Re website here: http://nathanlight.munichre.com/

Munich Re need to be aware of global risks, so that they can set their policies appropriately for different businesses around the world. This tool is used to assess the vulnerability of areas to particular hazards.

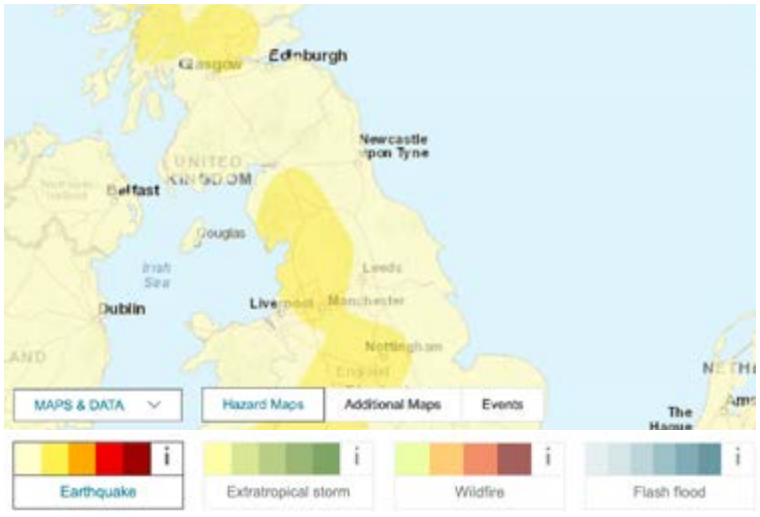
This tool will display the risk of particular hazards around the world, using interactive mapping.

Direct students to _. They will need to accept the terms and conditions to gain access.

A world map is displayed.



Use the Zoom + / - in the top right (or the mouse scroll wheel), and the 'zoom to full extent' icon to navigate. You may want to direct students to find particular countries to check that they are comfortable with the tools.



There are **four options** displayed along the bottom of the map (from a wider choice in the full version) of **hazard maps** available to display. You can select from:

- Earthquake
- Extratropical storm
- Wildfire
- Flash flood

Clicking on a location also generates a simplified version of the reports that are available in the full version.

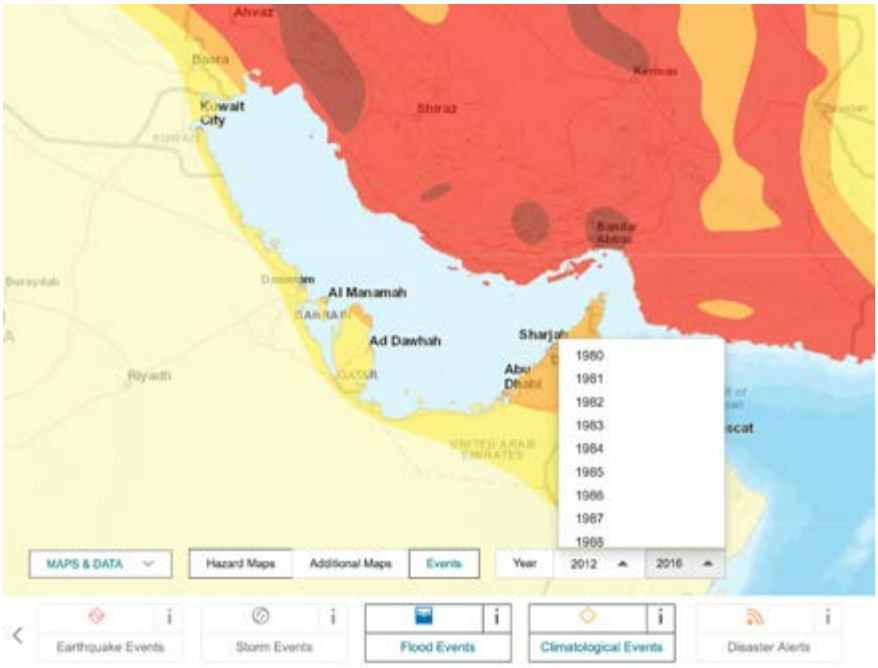
Here is the report for the UK for example: low risk of earthquakes you'll be glad to know.

Explore the level of risk for these different hazards in locations around the world.

- Which locations have a high risk of more than one hazard?
- Which countries or regions have the highest earthquake risk (can students compare this to work they may have done on the location of tectonic plate margins?)

Extension

You may want to ask students to investigate the potential risks of those natural hazards which are not included in this demo version, such as tropical cyclones, volcanoes or tornadoes.



You can also choose to display a number of events:

> Earthquake events

> Climatological events

> Flood events

> Hazard alerts

These date from 1980 to the present day.

Use the maps and events to explore the hazard risk faced by a number of countries.

- Investigate whether some places appear to be subject to more risks than they were in 1980, or 2000?

You may want to allocate countries to individuals or pairs of students, but ensure that Nepal is included on the list (along with other locations of recent earthquakes or other hazards – see the KS3 disaster line activity for some suggestions).

As a final activity, you may want to ask students to suggest four strategic locations around the globe where humanitarian aid agencies could position warehouses of aid so that supplies can be sent to 'at risk' areas quickly. Should one of them be in the UK?

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"Let's ask Nathan" – student introduction

NATHAN stands for National Hazards Assessment Network.

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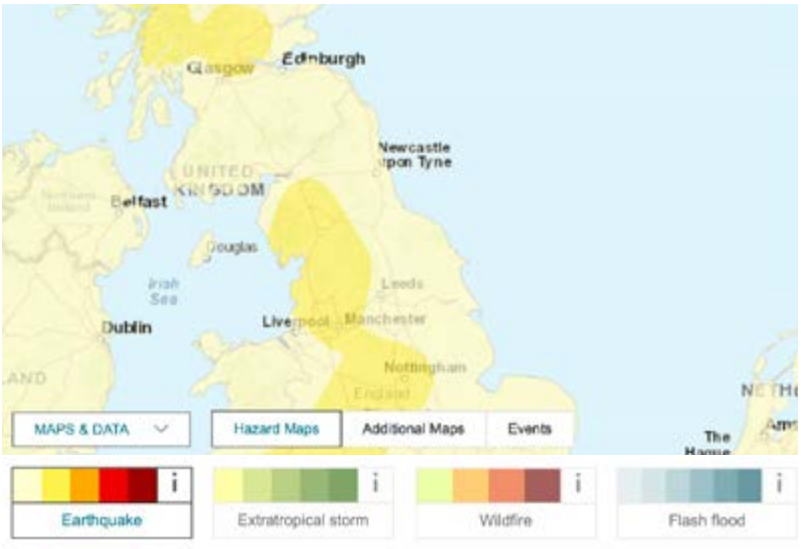
Munich Re need to be aware of global risks, so that they can set their policies appropriately for different businesses around the world. This tool is used to assess the vulnerability of areas to particular hazards.

This tool will display the risk of particular hazards around the world, using interactive mapping.

Go to the website above, and accept the terms and conditions.

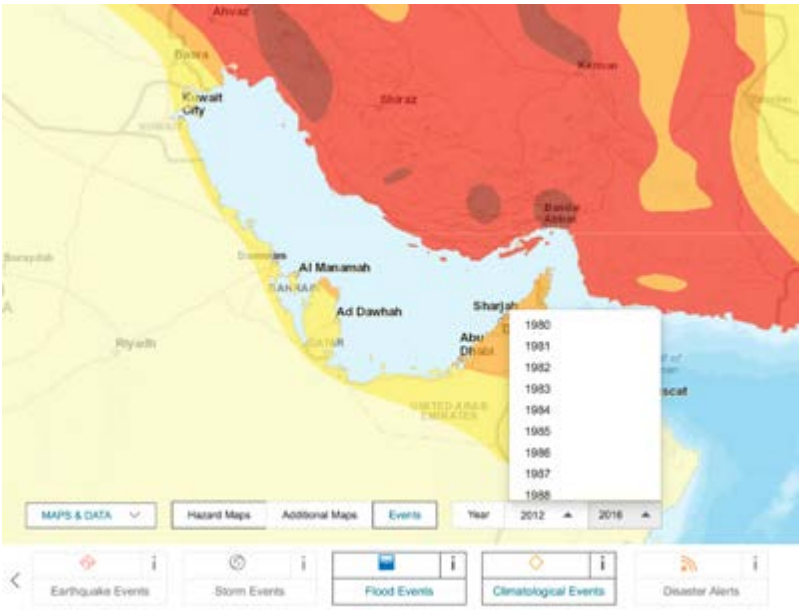


A world map is displayed. There are **four options** of **hazard maps** to display. Select from:

- Earthquake
- Extratropical storm
- Wildfire
- Flash flood

Explore the level of risk for these different hazards in different locations around the world.

Which locations have a high risk of more than one hazard?



You can also choose to display a number of **events**:

- Earthquake events
- Climatological events
- Flood events
- Hazard alerts

These date from 1980 to the present day.

Record your findings and the responses to the tasks that you are set in the spaces overleaf.

Which locations have a high risk of more than one hazard?

Which countries or regions have the highest earthquake risk *(can you compare this to work you may have done on the location of tectonic plate margins?)*

Investigate whether some places appear to be subject to more risks than they were in 1980, or 2000?

Extension

Suggest the other potential risks of those natural hazards which are not included in this demo version, such as tropical cyclones, volcanoes or tornadoes.

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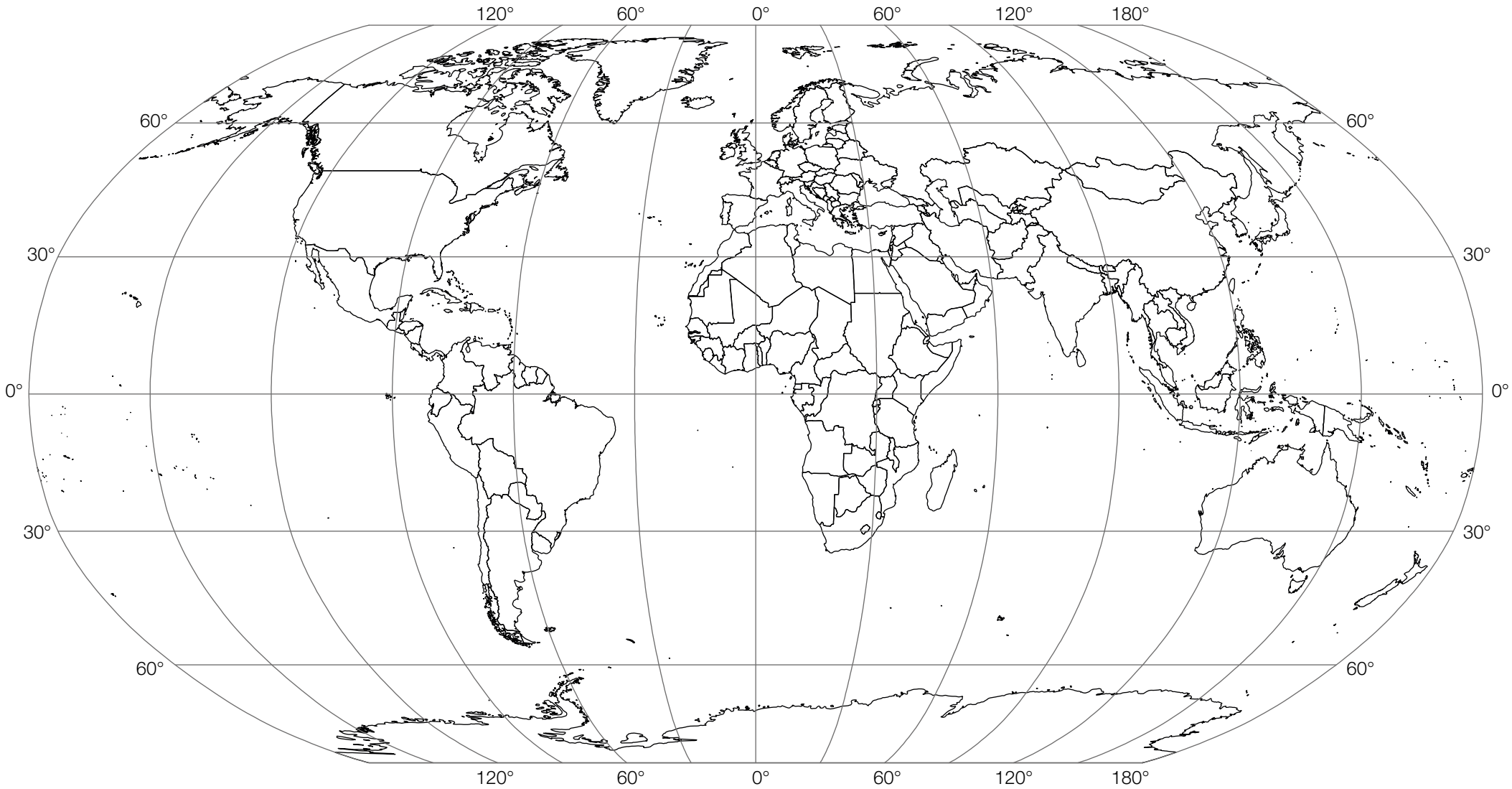

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April 2015

Nepal earthquake

A major earthquake causes damage in a region near the capital. Buildings collapse, over 8,000 people are killed and more than 22,000 are injured.

2014-16

California drought

Record breaking drought causes problems with water supply, and wildfires break out.

October 2015

Drought in Ethiopia

Crop failures are the result of below average rainfall, and over 8 million people need food assistance. Children suffer severe malnutrition.

January 2015

North American blizzard

Snow emergency declared in six states and thousands of cancelled flights, also known as winter storm Juno.

November 2013

Typhoon Haiyan

Over 6,000 people were killed, and more than 4 million people were made homeless by a strong storm which hit the Philippines. Recovery is still ongoing.

May 2015

Heatwave in India

Record breaking temperatures of almost 120 degrees Fahrenheit affect the city of Hyderabad. 2,000 people die as a result of problems caused by heat.

April 2014

Chile earthquake

A huge earthquake of 8.2 magnitude hits Chile, triggering a tsunami, but only a handful of fatalities are recorded.

May 2014

Afghanistan landslide

A huge landslide hits the village of Abi Barik in NE Afghanistan, killing hundreds of people.

September 2014

Iceland volcano

The Bardarbunga volcano starts erupting in Iceland. Unlike the Eyjafjallajokull volcano in 2010, there is no disruption to flights. The eruption lasts several months.

October 2014

Eruption in Japan

A sudden eruption of Mount Ontake in central Japan occurs as a group of walkers are near the summit. 54 people were confirmed as being killed by the localised eruption.

November 2015

Indian rainfall

The 'rains of the century' flood the city of Chennai in India. Around 400 people are killed, and crops are damaged. Humanitarian aid is provided in large quantities.

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Washing line questions

Some questions to consider on the placement of events

- How much did the scale of the event influence your decision?
- How important was the impact on people on your decision?
- Did you think about whether events were short or long term?
- Did you think about how difficult it might be for communities to recover from the event?
- Which events do you think might mean people need more urgent humanitarian aid, or longer term support?
- How difficult might it be for humanitarian aid to reach the area affected?
- Which events could potentially affect you during your life?

Download PPT here

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We slept in our clothes for several nights after the earthquake. I was wary when taking a shower or going to the loo! I was on edge all the time! A quick rinse in the shower and clothes nearby to grab, and get dressed quickly, all the time saying in your head, 'please don't start shaking now…' and then a sense of utter relief when you're dressed again and feeling ready to run! Utterly exhausting, and I quickly went down with a cold.

In the days following the earthquake it was hard to know what to do with ourselves. We felt pretty useless, and the growing pile of plastic water bottles and rubbish in our room became a visible reminder of this, and the fact that we were draining resources. I had a bad cold, and as much as I wanted to help load rice and lentils on to trucks to take into Gorkha and neighbouring districts with Paddle Nepal and co. I wasn't strong enough to lift most of the sacks, and I didn't want to pass the cold on to those who were going to be heading out to do physically and emotionally demanding emergency relief work. My way of helping became writing blogs, and answering questions from a few teachers back home.

It made me fully appreciate how trained personnel are so valuable in managing relief response, and how everyone involved needs to 'bring something to the table. I could imagine that many people might flock to Nepal to help in the aid operation, and, although well-meaning, may actually start to be a drain on resources rather than being an asset. It's a tricky one to explain, given that local businesses were crying out for tourists now that most of Pokhara had cleared out!

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Earthquake, Volcanic eruption, Rock fall, Landslide, Subsidence (including sink-holes), Tropical storm,Extratropical storm, Tornado, River flood, Flash flood, Storm surge, Avalanche, Heatwave, Freeze, Ice storm, Drought, Wildfire, Hailstorm

Natural hazards

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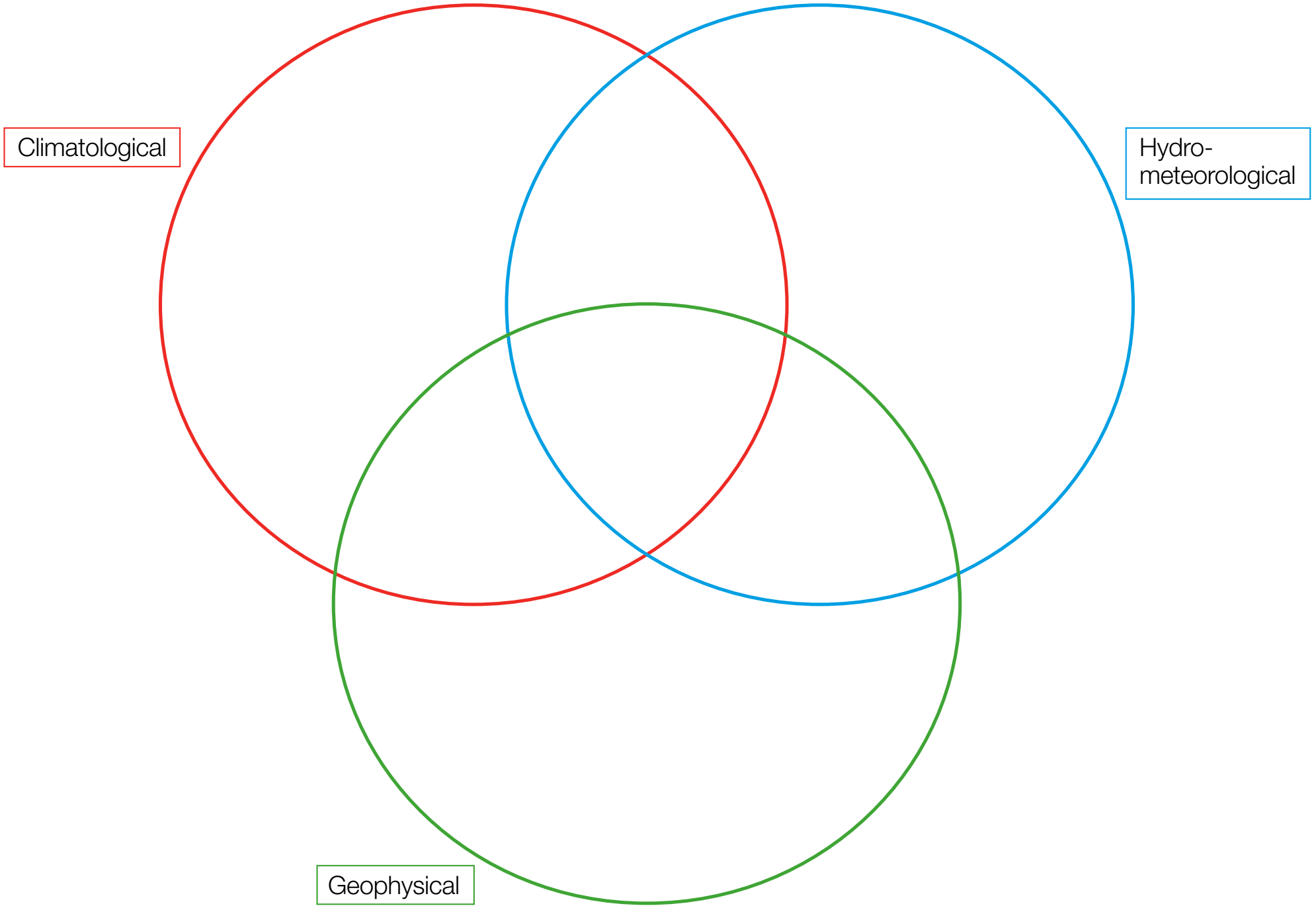

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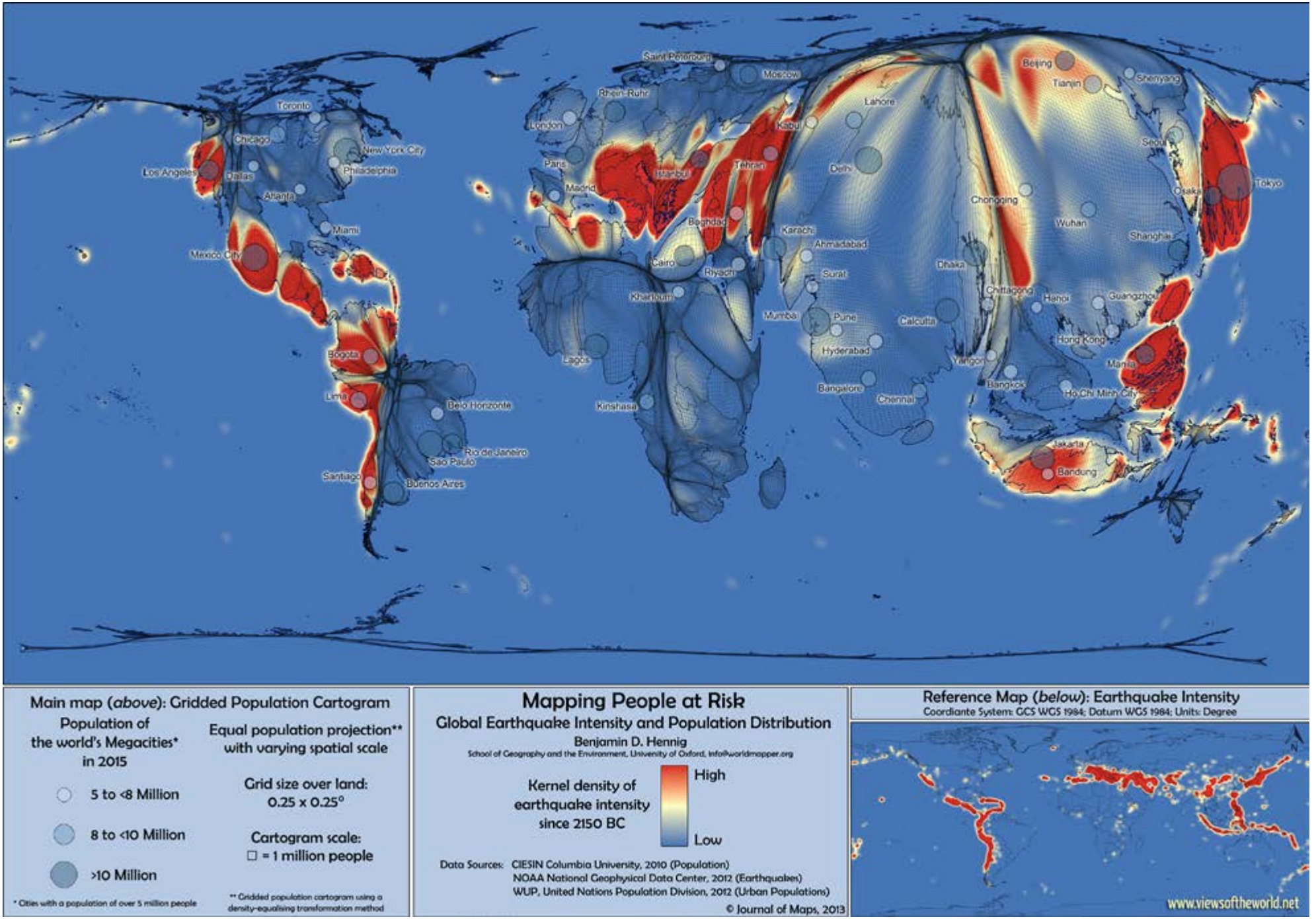

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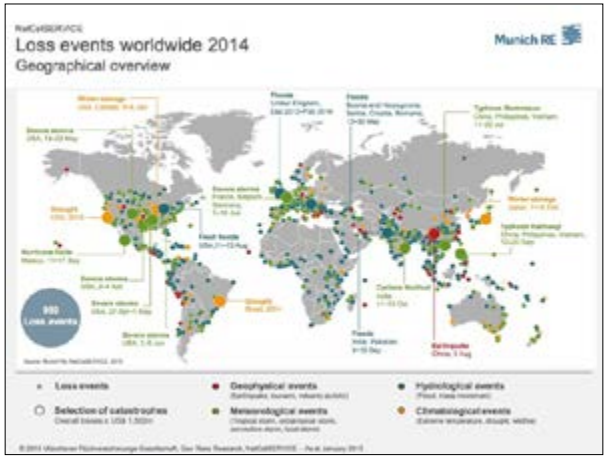
Disaster hotspots



Defining disaster hotspots

Nepal is becoming a disaster hotspot, with natural hazards increasing over the past two decades, according to aid agencies.
Floods, landslides, fire, cyclonic winds, hailstorms, drought and famine are among the disasters gripping the Himalayan nation with increasing ferocity.
In addition, there is a serious threat of an earthquake, particularly in the capital, Kathmandu. Records show that a quake occurs every 75 years in the city, with the last one in 1934 when 3,400 people died.

IRIN Report, 2008

Defining disaster hotspots

Nepal is becoming a disaster hotspot, with natural hazards increasing over the past two decades, according to aid agencies.
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In addition, there is a serious threat of an earthquake, particularly in the capital, Kathmandu. Records show that a quake occurs every 75 years in the city, with the last one in 1934 when 3,400 people died.

IRIN Report, 2008

Why do you think this is a disaster hotspot?

Disaster hotspots are places (which may be regions, states or entire countries) which have a vulnerability to two or more types of natural hazard. They may also be referred to as **multiple hazard zones** (MHZs). The hazards they are exposed to may include **a combination** of hydro-meteorological, climatic and geomorphic.

Identification involves looking at data on previous events, combined with **an assessment of vulnerability** based on population size and also the level of economic development.

Following a disaster, there is a need for humanitarian aid, which is where the International Red Cross and Red Crescent movement would act to support individuals and communities affected.

Download PPT here

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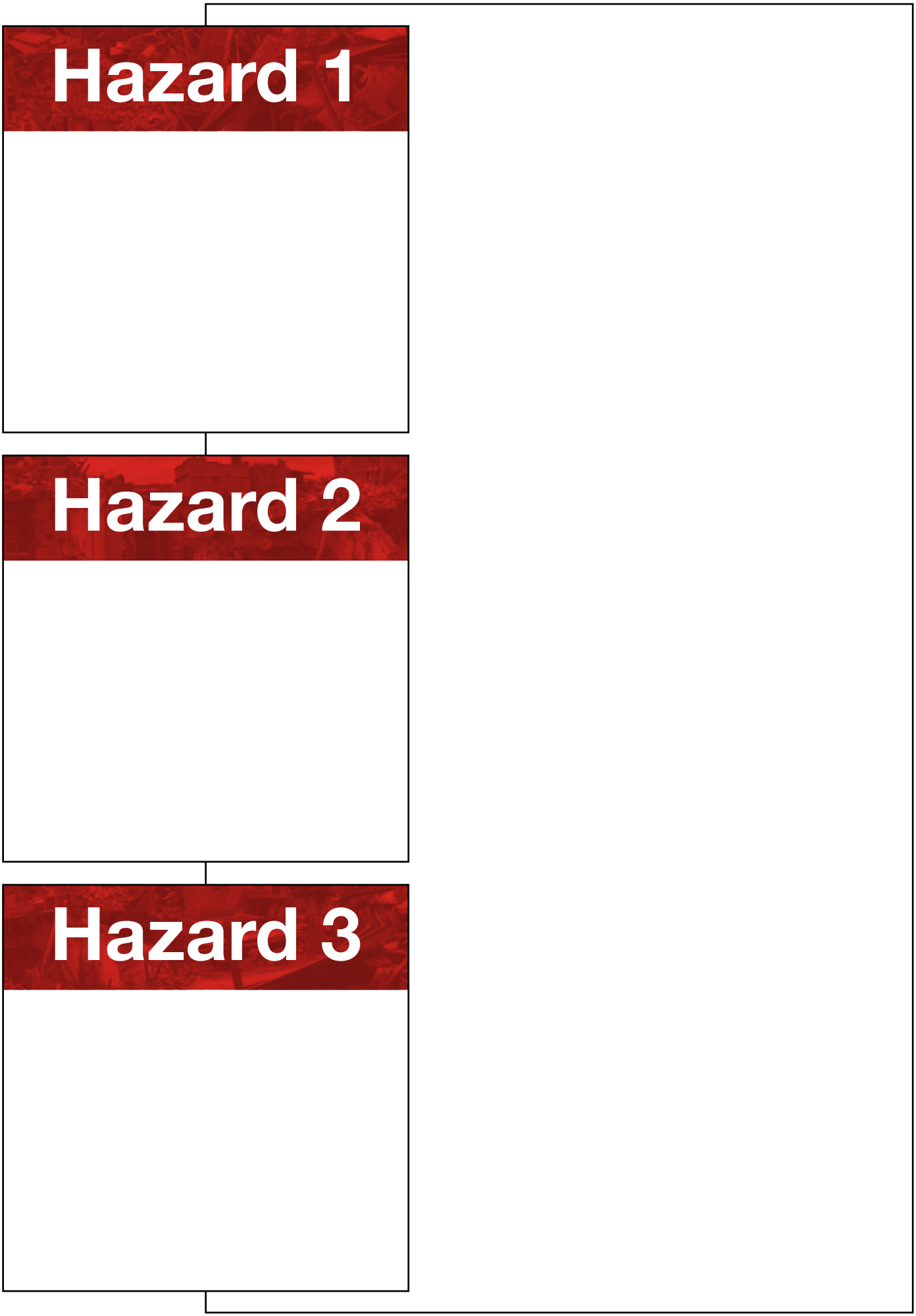

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Session 2: Earthquakes

After a general introduction to natural hazards and disasters, this session moves on to look more specifically at earthquakes, with a focus on **tectonic** hazards.

The Nepal earthquake of April 2015 is used in activities to contextualize learning for students.

Some of the activities could be adapted to other natural hazards. This is a useful session for those teaching new GCSE and 'A' level specifications from September 2016, and who require a case study of an event of this kind.

Contents

Introductory activities (all ages)

1. Tectonic background
2. Earthquake introduction
3. An introduction to the role of the Red Cross in earthquake preparedness
4. A grab bag

Activities for Key Stages 3-5

KS3: Exploring the tectonic situation in Nepal
KS4: The Nepal earthquake – why did it happen where it did?
KS5: Earthquake prediction – is it possible?

Learning objectives

Young people are able to:

- Understand the physical geography behind a **specific** natural disaster. *The Nepal earthquake is the one used in exemplars but schools could select their own.*
- Appreciate that there are a range of factors influencing the impact that an earthquake has on communities.
- Begin to compare and contrast the impacts of hazards in different locations and the nature of the humanitarian response to them.
- Start to communicate those impacts in the short and long term and understand the role of the Red Cross within this.

Key questions

- Where do earthquakes happen, and why?
- What were the **causes** of the Nepal earthquake?
- How can people who live in areas prone to natural hazards prepare themselves for future events?
- Could the Nepal earthquake have been predicted?

Chitra Kumari Khatri, 75, sits on the ruins of her house in the city of Singati in Dolakha area, Nepal. The house collapsed during the earthquake in May 2015.

Introductory activities

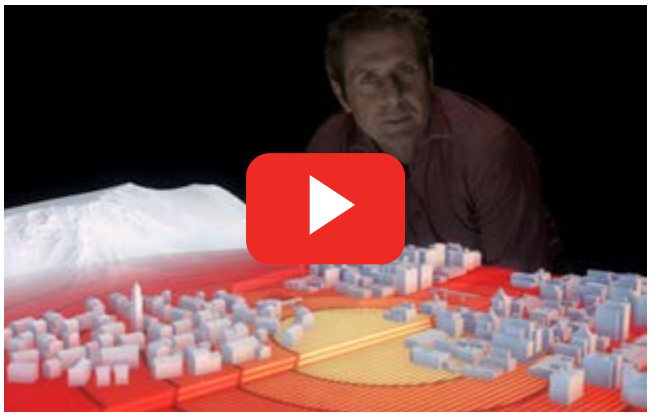
You will need:

- ***Access to YouTube to show a short NERC film and video from the British Red Cross.***

1. Tectonic background

The session starts with an exploration of the background to earthquakes.

*Show a short film (around 6 minutes long) made by **Professor Iain Stewart**, Director of the Sustainable Earth Institute at Plymouth University.*



This is a Natural Environment Research Council (NERC) film exploring the anatomy of an earthquake. It explores what happens when a seismic hazard deep beneath the Earth's surface meets a vulnerable population above.

As people around the world continue to flock towards urban centres such as Tokyo, Istanbul and San Francisco, how can they prepare for the looming threat of a direct seismic strike?

Discussion questions

- What are the reasons why the settlement shown is at risk?
- What is happening deep beneath the ground below the settlement?
- What happens when the fault line slips?
- How are the buildings on the surface affected?
- Why were different buildings affected differently?
- What factors influence the number of casualties?
- What might the short and long term impact be on people affected by the earthquake?
- How might we prepare our cities and communities against earthquakes for the future?

Discuss this comment: "Earthquakes don't kill people, buildings do…"

Suggested extension for KS5 students

Following a viewing of this video, KS5 pupils may want to investigate aspects of seismology further:

- How are the magnitudes of earthquakes measured?
- How do the different seismic waves travel through the earth?
- How are they shown on a seismometer trace?

Rescue operation at Kolache-2, following the earthquake.
Bhaktapur district, Nepal
April 2015

Photo © Sailendra Kharel/IFRC.

2. Earthquake introduction

The session starts with an exploration of the background to earthquakes.

Explain that you are going to be looking at the Nepal earthquake as a case study. Read out the text below which describes what happened when the earthquake struck.

On Saturday 25 April 2015, the streets of the Nepalese capital: Kathmandu were busy with residents and tourists meeting friends, selling their produce in the markets or preparing for lunch.

Traffic flowed along the streets into and out of the city, bustling with motorised and horse-drawn vehicles and bicycles.

In the villages further up and down the valley, farmers tended their crops, and the sun shone on stupas and temples.

A crowd of people started to climb the stairs up the famous Dharhara tower, a World Heritage site.

At 11:56 am everything changed. The earth started to shake as a magnitude 7.8 earthquake struck the Kathmandu Valley. It was the biggest earthquake in Nepal for over 80 years, since a large earthquake in 1934.

The epicentre of the quake was Barpak village, around 75 km north-west of Kathmandu in the Gorkha region.

The seismic focus lay at a depth of 10 km, close to the surface. The million-strong population of Kathmandu had their lives thrown into chaos, along with the residents of the many villages within a 100km radius of the quake.

3. An introduction to the role of the Red Cross in earthquake preparedness

The International Red Cross and Red Crescent Movement helps communities prepare for disasters all over the world.

Show students the **American Red Cross video** (2:21 mins) which explains how the Red Cross Movement supports disaster preparedness in countries most affected by earthquakes.

You may also show students the British Red Cross **emergency preparedness app** which is free to download and aims to help people deal with emergencies if disaster strikes. For example, with emergency alerts for an area, such as severe weather warnings; a personal alarm and location finder.

Encourage young people to reflect on the difference this preparedness work may have made in reducing the humanitarian impact of the 2015 earthquake.

In session 3 we will hear from a Red Cross volunteer who responded to the earthquake and learn more about the difference this work made.

Ask young people to discuss the preparations they might make if they lived in a disaster prone area. Ask them to make a plan of what they would need to do to protect themselves and their community.

4. A grab bag

Before starting the main activity, ask students to imagine that they are going to be visiting an area that is at risk of earthquakes.

For people living in, and visiting, earthquake prone countries it's a good idea to have an emergency bag that you can grab and take with you in the event of an earthquake.

Ask students: What would you pack in your grab bag if you lived in an earthquake-prone area?

Why not draw this bag, and add in some of the most important equipment that would be of use to you?

You could also pack a bag containing some of the items that you think might be useful and bring it in to school to show students.

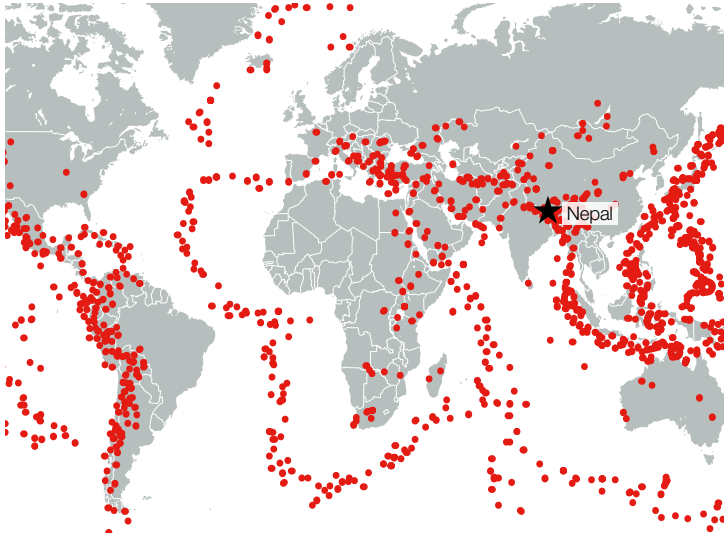
A member of the Village Disaster Protection Unit announces evacuation warnings during a simulation. Khammouane Province, Laos
2015

Photo © Bart Verweij/IFRC.

Activities for key stages 3-5

Students should now be asked to complete an age-appropriate activity from the following list.

NB: Elements of younger (or older) age group activities may still be used with particular age groups. Don't feel confined to the age bracket. You are welcome to adopt or adapt these ideas.



KS3: Exploring the tectonic situation in Nepal

In this activity: students will identify the earth's tectonic plates and discuss the reasons for earthquakes. They will also identify the impacts of the movement that occurs when an earthquake happens.

You will need:

- Nepal population with shake intensity map (PDF)
- Traffic camera questions sheet (PDF)
- Modified Mercalli Scale intensity sheet (PDF)

Introduce the context of this activity: investigating the reason for earthquakes in certain parts of the world.

Explain that what causes earthquakes has been known for some time, and we will explore it in this activity.

1. Background

Read the following statement to the class.
Every day, there are thousands of earthquakes that happen somewhere in the world, about fifty of which are significant enough to be noted by the National Earthquake Information Centre (NEIC) of the **United States Geological Survey (USGS) - http://earthquake.usgs.gov/**

The earth's crust is split into large pieces called plates, some of which are thousands of kilometres across.

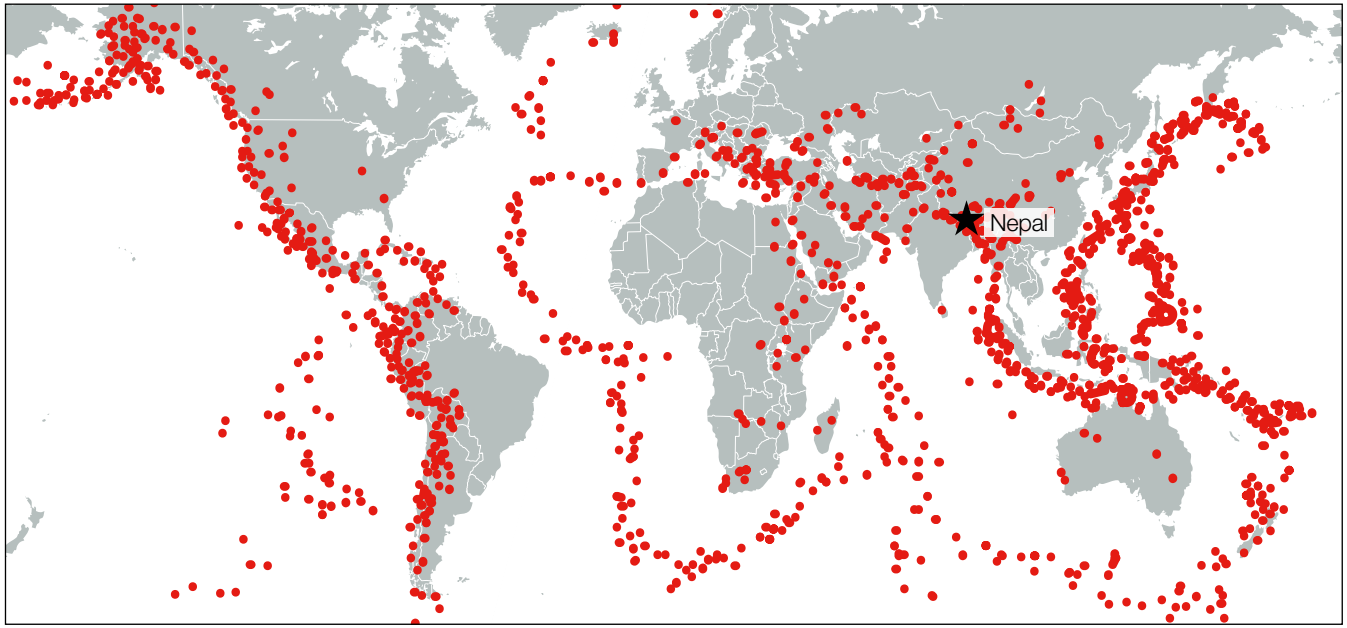
Some plates are mostly **continental**, and others are more **oceanic**. The boundaries between the plates are where the activity mostly happens.

The plates are slowly moving (usually this is described as the same rate that your fingernails grow – so quite slow) and the tension and pressure this creates builds up beneath the ground until it gives way, rock fractures and shock waves are released.

Depending on the area of rock that breaks apart, and the depth at which this happens, the shock waves result in more movements, whether vertical or side-to-side or both. The shock waves are sent out from **the focus** or hypocentre. The point on the surface immediately above the focus is called the **epicentre**.

The energy in these shock waves cause the ground to move in particular ways, and start to impact people and property on the surface. The nature of geology and surface materials can influence how severely the waves are felt.

If we were to plot earthquake locations over a reasonable period of time (perhaps a few weeks), we would see a good match between the lines along the boundaries between plates and where earthquakes happen.



Photos on page 48, top to bottom © Gianluca Fortunato/Italian Red Cross, © Emil Helotie/IFRC,© Japanese Red Cross, © Emil Helotie/IFRC.

2. Where do earthquakes occur?

Ask students to write a short description of where earthquakes occur and add an explanation of why there are found there.

Students could also be asked to mark recent earthquakes on a paper copy of a world map which has the tectonic plates marked on it.

Different groups could be asked to share information about one particular tectonic plate, and discuss which countries have been most affected by movement of that plate.

3. Mapping activity

If you have Google Earth installed on your computer, you can use the USGS's Google Earth files to visualise recent earthquakes to see how they fit into this pattern.

Click this link to go to the page, where you can download an Automatic Feed file, and then open it in Google Earth. **http://earthquake.usgs.gov/earthquakes/feed/v1.0/kml.php**

Of course, there is rarely just one earthquake in isolation. Small quakes will often occur either side of the main earthquake, and this is what happened with the Nepal earthquake.

There are similar impacts with other hazards: the main event is often not the only event that affects people.

You may want to share copies of the **Nepal population with shake intensity map (PDF)**, *which shows the affected population within earthquake intensity contours. We will look at this in more detail in session 3.*

4. Traffic camera

Show students a **short video** which was captured by a traffic camera, which was filming a street in Kathmandu when the 2015 earthquake happened.

Ask students to note down the hazards that they see as they watch the video. Pause after each minute of the video and discuss what you've seen and suggested as hazards.

Students can enter the impacts that they have noted on the **Traffic camera question sheet (PDF)**

Students may also be issued with a copy of the **Modified Mercalli scale intensity sheet (PDF)** *to help them identify / estimate the level of shaking at this location.*

Once students have filled out the worksheets, they can discuss:

- What were the main hazards they noted?
- How might the people shown in the video have felt?
- What might have been going through their minds as the ground started moving?
- What do people do to make themselves more safe?

5. Extension: compare and contrast

Earthquakes are not all the same, and even two earthquakes of a similar size can have very different effects.

The Red Cross was active following earthquakes in Haiti in 2010 and Nepal in 2015.

What do young people know about these two earthquakes?

Encourage them to investigate more about the two events including how different the impacts were and some of the reasons for these differences.

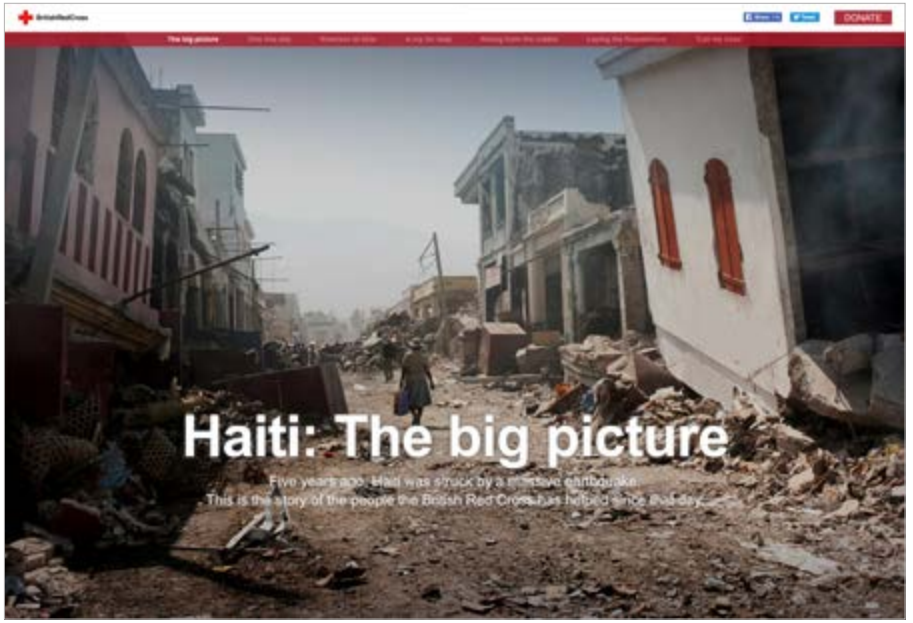
The following two links detail the varied response of the Red Cross to the earthquakes in Haiti and Nepal. Students will find useful information and powerful imagery to support their research here.

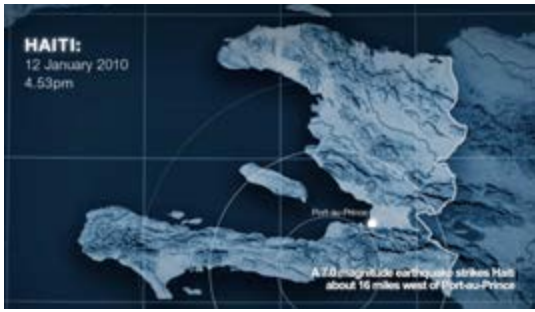
- Haiti – the big picture
- Nepal rebuild and restore

Haiti and Nepal

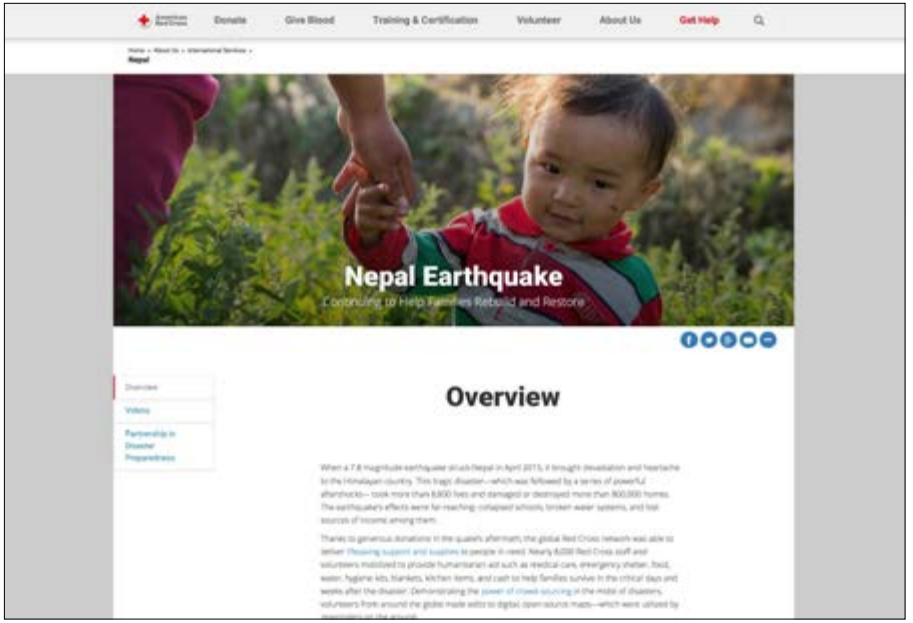
- Discuss the events, what happened, what was the scale, where were they?
- What was similar or different about the two events?
- Discuss the impact on people, how were individuals and communities affected in each case?
- What were some of the short and longer term impacts?
- What support did the Red Cross give in each case? What was their role?

Students could create two mind maps or tables to compare and contrast the two events.





Haiti – the big picture



Nepal rebuild and restore

KS4: The Nepal earthquake – why did it happen where it did?

In this activity: students will investigate the causes of the Nepal earthquake and start to explore the humanitarian response to the disaster.

You will need:

- Nepal factsheet (PDF)
- Nepal earthquake factsheet (PDF)
- Explaining the earthquake answer sheet (PDF)
- 'What's in a name' worksheet (PDF)

Hand out copies of the factsheets that have been produced for the resource: Nepal factsheet (PDF) *and* Nepal earthquake factsheet (PDF).

1. One week in: the Nepal earthquake video

A week on from the earthquake, **Professor Iain Stewart**, Director of the Sustainable Earth Institute at Plymouth University, produced a short video exploring what was known about the earthquake at that stage, and the unfolding impact it was having in Nepal.

Professor Stewart is well known from a number of BBC series on the "power of the planet", and the forces that shape it. He works in the area of communicating geosciences, and has a good understanding of the interaction between natural disasters and people.

NB: the video is 17 minutes in full but just showing the first five minutes will help develop young people's understanding around the Nepal earthquake.

It may be possible to show the video to the whole class, but it would be preferable to have a computer room, or tablets with headphones so that students could look through this at their own pace.

Encourage students to pause as required and replay certain sections – the whole video lasts for 17'36" so requires some concentration.

After watching the video, students should be able to explain why Nepal is prone to earthquakes, and the names of the particular plates involved.

Encourage them to complete print copies of the Explaining the earthquake answer sheet (PDF) *to record their responses to the video.*

Key question

What was it about the location and intensity of the Nepal earthquake that meant the humanitarian impact, in terms of people killed, injured and displaced from their homes, was so significant?

It may also be possible to set this as a homework task, and students could come back and discuss what they have found in the following lesson.

2 . The Red Cross' global response to the Nepal earthquakes

Show students the Nepal earthquake appeal: The Red Cross' global response video.

This video draws attention to the severity of the situation in Nepal after a secondary 7.3 magnitude earthquake hit just weeks after a 7.8 magnitude earthquake.

Regions already struggling to cope with the initial impact were hit hard by the second quake. It shows how the power of the International Red Cross and Red Crescent Movement was mobilised to support the Nepal Red Cross with provision of emergency medical assistance, first aid, shelter, clean water and search and rescue operations.

Discussion questions

- What were the impacts of the earthquakes on survivors and how did the Red Cross act to get help to those who most needed it?
- When was the Nepal Red Cross able to start helping people after the disaster?
- What images and phrases stand out in the video and show the humanitarian impact of this natural disaster?

Supporting resources:

*A **Pinterest** board of relevant images has been provided for your assistance with this activity (and others) and can be viewed following this link:* **https://uk.pinterest.com/geoblogs/natural-disasters-earthquakes/**

Teachers may find it helpful to make some of these available for students to refer to.

- Article by Andrew Revkin referred to in the article: **http://dotearth.blogs.nytimes.com/2015/04/29/dire-prospects-seen-when-the-full-nepal-earthquake-death-toll-is-tallied/?_r=1**
- Earthquakes without Frontiers organisation: **http://ewf.nerc.ac.uk/**
- David Petley's Landslide blog: **http://blogs.agu.org/landslideblog/** (particularly helpful for KS5 students)
- Short 16" animation showing the creation of the Himalayas: **http://www.tectonics.caltech.edu/outreach/animations/himalayas_small.html**
- Detailed information on the earthquake: **https://www.youtube.com/watch?v=jfwhatz12Uk**

You may also note that there are lots of acronyms in this resource. These relate to organisations involved in supporting people after hazard events.

If students are finding that there are too many of these to remember, you could hand them a copy of the **'What's in a name' sheet (PDF)** *to keep track of them.*

Nepalese Red Cross Voluntaries help unload a shipment of canned food.
Kathmandu, Nepal
May 2015

Photo © Palani Mohan/IFRC.

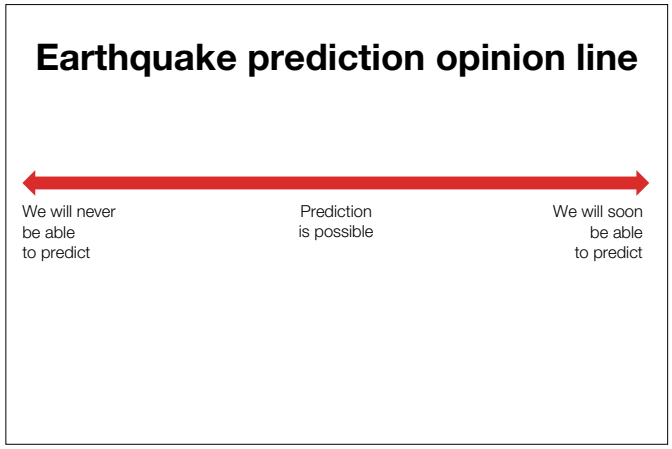
KS5: Earthquake prediction – is it possible?

In this activity: students will consider the possibility of earthquake prediction in the future. They will also discuss the advice given to people living in earthquake prone areas and whether this could be improved.

KS5 students could start their activity by watching the **video** used in the KS4 resource.

You will need:

- **Earthquake prediction opinion line (PPT)**



1. Earthquake prediction opinion line

"There is as yet no reliable way of predicting in the short term (days to weeks or months) when an earthquake of a given size will occur in a specific location"
European Geosciences Union

Every day, we can access several **weather forecasts** from various agencies, including the Met Office. Computer models predict what the weather is likely to do for the next few hours, based on wind directions, temperature readings and satellite pictures. The atmosphere is very complex, but the forecasts are reasonably accurate. Unfortunately, predicting earthquakes is not as easy. It is the ultimate goal of seismologists, as it could result in the saving of many thousands of lives, and would also ensure that humanitarian agencies could prepare and target their response more effectively.

Ask students to add their opinions onto the **Earthquake prediction opinion line (PPT)**

Where would they place themselves with regards to the statements?

Discuss the factors which influence their decision.

2. Flipboard magazine

Students should be given access to a tablet or computer which has access to the Flipboard app or website. **Flipboard** allows students to collect materials from a range of websites and insert it into a 'magazine' which can be flipped through and read on the screen.

Students will need to login to an account, which could be provided for them in advance.

Question: What would be your advice for those living in an earthquake prone area?

Task: Produce a Flipboard magazine of relevant articles to refer to for those living in earthquake prone areas. The magazine should include details on the steps that can be taken to prepare for an earthquake. It should include advice from humanitarian organisations, who are involved in this mitigation activity.

Students may also choose to include information about early warning signs and precursors in their magazine.

Supporting information: There are some signs which people may notice just before an earthquake, but these may offer at best a few seconds warning. Volcanoes are more helpful in providing signs that an eruption is imminent, and many volcanoes have an array of sensors installed on them for this purpose.

There have also been many reports of unusual behaviour by animals and birds in advance of earthquakes. These warnings are called **precursors**.

Some suggested indications that an earthquake might be imminent include:

- **Foreshocks:** Earthquakes don't usually act alone. They work in clusters as the rock below the ground starts to give way under the strain of pressures built up by plate movement. The main shock is the largest tremor, but it may be accompanied by dozens of a similar size, and these may carry on as aftershocks. Until the sequence is over, there is no way to tell which quake is the big one. If you are shaken by a small quake, should you assume a bigger one is on its way?
- **Radon gas emissions:** this has been noted by some scientists, but is not always connected with tremors.
- **Changes in levels of groundwater:** pressures placed on rocks may affect the flow of phreatic water (water stored in the saturated area below the water table).
- **Animal behaviour:** there have been lots of reports, going back centuries of animals leaving an area, but this could be anecdotal, and wouldn't be enough to base a prediction on.

Considerations

A major issue with prediction is that of public confidence in the warnings.

Evacuating an area would be a massive upheaval, possibly result in other deaths in the process, and may leave areas open to looting and criminal activity.

Any 'false alarm' is likely to mean that future warnings go unheeded: the very ones that may be the most dangerous events.

This was not helped by a famous case involved an earthquake in Italy, where scientists had failed to predict an earthquake in 2009, and were initially convicted of manslaughter. They had been accused of providing "approximate, generic and ineffective" advice about whether small tremors in the area in the weeks prior to the 6.3-magnitude quake should have alerted them to the probability of a major seismic event. However, as we have explored, the connections are not definite, and the scientists were eventually acquitted.

3. Risk mapping and earthquake prediction

One strategy to reduce the impact of earthquakes is to carefully map the route of faults and ensure that buildings are not placed directly on them.

These earthquake risk maps are an important part of current thinking about earthquake preparation.

Ask young people to research:

- Were risk maps prepared for Nepal?
- Are they being prepared for vulnerable cities in places like Japan and the USA?
- How would these risk maps be helpful to aid agencies both before and after a hazard event? Ask students to consider how they would influence the position of storage depots, schools and medical facilities for example.

4. Conclusion

To conclude, ask students: How might more precise prediction of earthquakes change the nature of the work of humanitarian organisations like the Red Cross?

Encourage them to consider the impact better prediction might have on disaster preparedness, response and recovery activities. Prompt them to also think about the potential impact reduction in terms of the numbers of people affected and the ways in which they might be affected.

A Philippine National Red Cross volunteer with a hazard map in a village near the town of Roxas. Hazard mapping, using everything from the latest global positioning system technology to lengths of string, is a key part of disaster risk reduction in the Philippines. Palawan island, Philippines

Final written task

Research and write an answer to one of the following 'A' level style questions:

Assess the reasons why earthquakes are so difficult to predict, and discuss how more accurate predictions might reduce the impact of such events? (15 marks)

"If we could predict earthquakes with any certainty, they would stop being a hazard". Discuss this statement, with reference to current hazard management methods. (15 marks)

Students should include material from the following British Red Cross webpages: **https://www.redcross.org.uk/about-us/what-we-do/international/emergencies** and **https://www.redcross.org.uk/get-help/prepare-for-emergencies/five-tips-to-plan-for-emergencies**

They should also refer to earthquake risk mapping, and the work of mapping agencies.

5. Extension activities

One additional extension activity would be for teachers or older students to create an account for **Pinterest** and start to curate their own collection of images during the completion of the activities in this resource.

Once students have completed all the activities in this session ask them to review the position of their opinions on the **Earthquake prediction opinion line (PPT)**. Has their position changed as a result of what they have learned?

This village near the mountainous epicentre of the Nepal earthquakes was almost completely destroyed. Of the 200 houses, hardly any walls were left standing.
Sathi Ghar, Kavre province, Nepal
April 2015

Supporting resources for Session 2

Nepal Red Cross Society

International Federation of Red Cross and Red Crescent Societies

Nepal population density with shake contours (intensity) for 7.8M earthquake

Population within each intensity zone

4	2,177,458	6.5	1,275,719
4.5	2,701,526	7	1,075,368
5	4,163,767	7.5	575,729
5.5	6,170,681	8	522,785
6	1,368,021	8.5	513,545

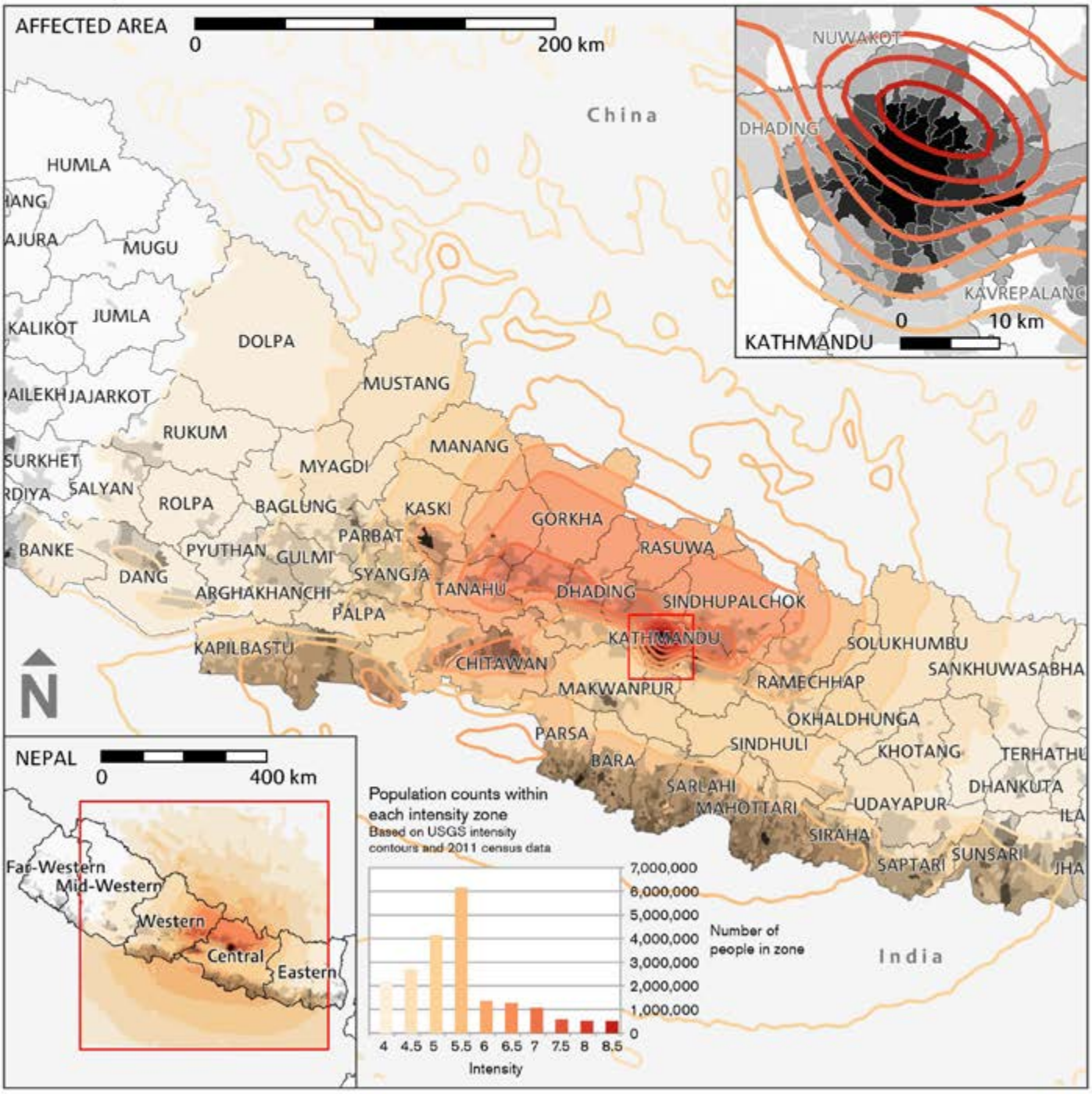
Population density (people per km²)

0 - 213	1,267 - 2,057
213 - 475	2,057 - 3,504
475 - 819	3,504 - 7,473
819 - 1,267	7,473 - 23,053

Data from WFP, USGS, GADM
27 April 2015

Produced by SIMS supported by the American Red Cross and the British Red Cross

The maps used do not imply the expression of any opinion on the part of the International Federation of Red Cross and Red Crescent Societies or National Societies concerning the legal status of a territory or of its authorities.



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Traffic camera questions sheet

Watch the traffic camera video, and answer the questions below:

Timing	Hazards	How do people act/react to the hazards?
0.00 -1'00"	The traffic is quite busy.	Most people seem to be driving appropriately.
1'00"-2'00"		
2'00"-3'00"		
3'00"-4'00"		

Use the ***Modified Mercalli Intensity sheet*** to estimate the level of shaking that you can see during the video.

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Modified Mercalli Scale Intensity

After Wood and Neumann

Level	Degree of shaking	Description / exemplification
I	Not felt - instrumental	Only felt by a very few people under very favourable conditions.
II	Weak	Only felt by a few people, perhaps on the upper flood of buildings, and if sat down or in bed.
III		Starts to be felt noticeably indoors, especially on upper floors, but may not be recognised as an earthquake. Cars may rock slightly. Feels like a passing truck vibrating the windows etc.
IV	Light	Felt indoors by many, and outdoors by a few people. May awaken some if sleeping. Dishes and doors shaken. Sensation of vehicles striking building. Parked cars rock more obviously.
V	Moderate	Felt by nearly everyone, and most awakened if at night. Loose objects will fall to the floor, and windows may break. Unstable objects will fall or overturn.
VI	Strong	Felt by all and starts to create fear or panic. Heavy furniture moved from its position, and plaster may fall. Some slight damage to buildings.
VII	Very strong	Damage will vary depending on the quality of construction of buildings. Considerable damage in poorly built structures, with some minor collapses.
VIII	Severe	Damage slight in well built buildings, but partial or full collapse of those built less well. Partial collapse of substantial buildings. Chimneys fall and columns and monuments damaged. Walls collapse and heavy furniture thrown around the room.
IX	Violent	Considerable damage, even in well built structures. Frame structures will be thrown out of shape. Buildings may be shifted off foundations. Major collapses, blocking infrastructure.
X	Extreme	Most masonry and wood frame buildings destroyed, along with their foundations. Train tracks bent.
XI		Few structures remain standing. Bridges destroyed and fissures open up in the ground, which means underground pipelines are fractured. Slumps and land slips on slopes. Train tracks bent considerably.
XII		Damage is total and few buildings remain standing. Ground moves in waves, which are visible on the surface. Lines of sight distorted, and objects such as vehicles may be thrown up into the air.

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Nepal factsheet

Name: Federal Democratic Republic of Nepal

Population: 31.3 million (estimate 2015)

Birth rate: 20.64/1000

Death Rate: 6.56/1000

Area: 147 000 square kilometres

Bordering: China and India

Landlocked

Major cities: Kathmandu (capital, with a population of around 1.2 million)

Geography: Mountainous, with a mean elevation of 2565m, and with its highest point taking in Mount Everest at 8850m. Contains 8 of the world's 10 highest peaks.

Time difference: 5 hours and 45 minutes ahead of GMT

Economy: Amongst the poorest and least developed countries in the world, with about a quarter of its population living below the poverty line.

Climate: Variable, with cool summers and severe winters in the north, which changes to warmer summers and milder winters further south. Variable with altitude.

Natural resources: Water, timber, hydro-electric power, tourism due to scenic beauty, a few deposits of minerals.

Main land uses: agriculture (29%) and forest (25%).

Hazards: severe thunderstorms, flooding, landslides, drought, monsoon rains, earthquakes

Majority religion: Hindu (81%), Buddhist (9%)

Internet users: around 12% of the population

Source: CIA World Factbook, Collins Longman World Atlas

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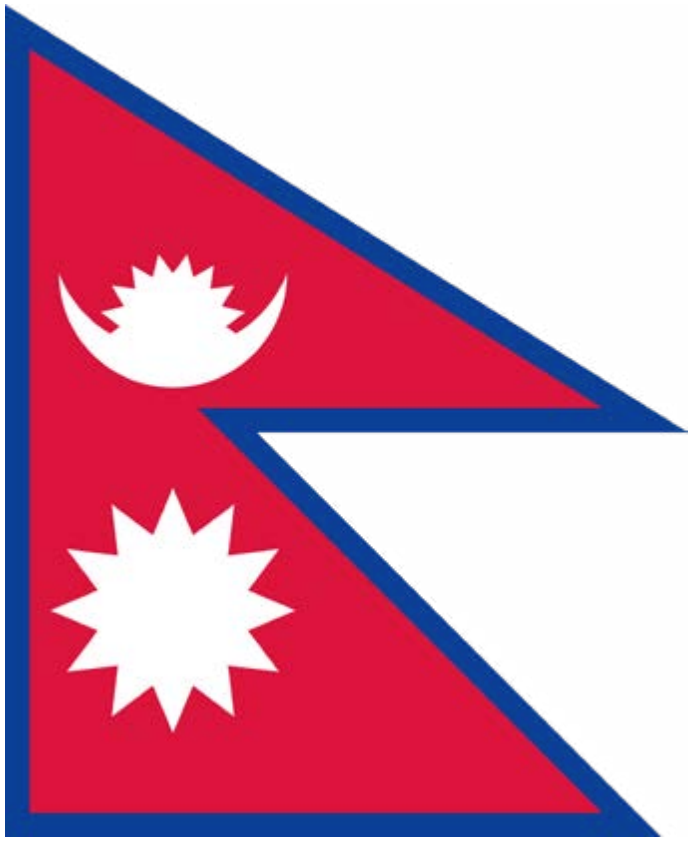
Nepal
Kathmandu



Nepal earthquake factsheet

Date: 25th April 2015

Time: 11.56am local time

Magnitude: 7.8

Location

- The earthquake occurred in the **Gorkha** district of **Nepal** near the village of Barpak, which was destroyed by the earthquake as it was the closest settlement to the epicentre.
- Lat: 28.147N 85.708E
- The ground moved by up to 3m in the area close to the epicentre.
- There were over 100 aftershocks with a magnitude greater than 4
- A second earthquake with 7.3 magnitude struck on 12 May 2015, just two weeks after the initial quake.

People affected

- 8,856 people killed.
- 22,309 people injured.
- 5.6 million people affected.

Damage to buildings and infrastructure

- Famous buildings and temples destroyed, including buildings in Durbar Square such as the Dharhara tower: a World Heritage site.
- Over 600 000 homes destroyed and over 285,000 damaged.
- Over 30,000 classrooms destroyed or damaged.
- Many health care facilities outside major cities were unable to operate.
- Extensive damage to infrastructure including transport, energy and utilities.
- A major avalanche triggered on Mount Everest, which hit the base camp.

Response

- The Nepal Red Cross responded immediately to disaster taking part in search and rescue and first aid activities as well as distributing temporary shelter and essential items to people who had been displaced from their homes.
- Emergency appeal launched immediately and had an immediate international response with many countries offering some sort of support or aid.

Economic cost

- Estimated to be around $7 billion, and rebuilding could cost a similar amount.

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Explaining the Nepal earthquake – answer sheet

A week on from the earthquake, Professor Iain Stewart, Director of the Sustainable Earth Institute at Plymouth University, produced a video exploring what was known about the earthquake at that stage, and the unfolding impact it was having in Nepal. Professor Stewart is well known from a number of BBC series on the power of the planet, and the forces that shape it. He works in the area of communicating geosciences, and has a good understanding of the interaction between natural disasters and people.

Watch the video here: **https://www.youtube.com/watch?v=rfJ7WEmUX1s**

Pause and replay certain sections as required – the whole video lasts for around 17 minutes.

1. Why does Nepal experience earthquakes?
Describe, and then start to explain the tectonic situation in the region

2. Draw a diagram here to represent the tectonic situation
(you may need to do a little more research on this area) – make it as complex as you can

3. Why are earthquakes strong in this part of the world?

4. What are the recent earthquakes in the region?
Use the *USGS Earthquake Finder* to explore this: http://earthquake.usgs.gov/

Date	Strength	Notes

5. How did the Kathmandu area move as a result of the earthquake, and what was the result of this movement?

6. Which areas suffered the most casualties as a result of the earthquake – explain the reasons for these casualties?

7. What were the implications of the fact that visiting tourists were caught up in the earthquake?

8. Why are early casualty forecasts usually much smaller than the later figures?

9. Why was the shaking not the strongest at the epicentre of the earthquake?

10. How did the construction of the buildings in places like Kathmandu affect the casualty rates? What work is done by humanitarian agencies to promote appropriate preparations by residents of vulnerable places?

11. What is Professor Iain Stewart able to interpret from the video footage and images that he looks at?

What additional sources could Professor Stewart have referred to?

How could humanitarian agencies such as the British Red Cross use the analysis in this resource to assist their work?

What extra question would you like to ask Professor Stewart if you had the chance?

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What's in a name?

There are lots of acronyms that students may encounter during this unit of work. You may want them to note them down as they come across them, and provide an explanation of what they mean.

Acronym	Meaning – and further information

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Earthquake prediction opinion line

We will never be able to predict

Prediction is possible

We will soon be able to predict

Download PPT here

< Back to activity

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Session 3: The impact of a natural disaster

Session 3 focuses on the immediate aftermath of a natural disaster, like an earthquake and the work of local and international Red Cross teams to support people affected.

It features eyewitness accounts from the Nepal earthquake and utilises a range of engaging resources to help students better understand the humanitarian impact of a natural disaster.

NB: The Nepal earthquake was just one example of a major natural disaster that happened. You can use more recent natural disasters to supplement learning and encourage young people to compare and contrast the unique impacts, response, recovery and resilience to different natural disasters when teaching about this topic.

Contents

Learning objectives

Young people are able to:

- Explain and analyse the impact a natural disaster might have on individuals and local communities.
- Explore the role of volunteers in the preparation for, and recovery after, a natural disaster.
- Develop an understanding of the role of the Red Cross in responding to humanitarian needs after an earthquake.

Key questions

- What was the immediate impact of the Nepal earthquake?
- What was the immediate humanitarian response to the earthquake?
- How were local and international communities involved in this response?

Kathmandu, Nepal. 25 April 2015.

Photo © Carl Whetham / IFRC.

Introductory activities

You will need:

- Access to YouTube to show a short interview film from the Red Cross
- Vimeo question sheet (PDF)
- Vimeo answer sheet (PDF)
- Nepal earthquake infographic (PDF)
- Person outline (PDF)

1. How did Red Cross volunteers support people affected by the Nepal earthquake?

When creating this resource an interview was filmed with a Nepal Red Cross volunteer Sameer Bajracharya.

Sameer was one of many volunteers who worked in Nepal before, during and after the 2015 earthquake. He was based in one of the areas affected by the earthquake.

"before the earthquake ...[people] didn't talk to each other, but after the earthquake, they were there to help: neighbours and community members were actively participating in rescuing people…"
Sameer Bajracharya

Get the interview ready to show on the screen and issue students with a copy of the resource Vimeo question sheet (PDF).

Show the film, and pause and 'rewind' as necessary to allow students time to identify the answers to the questions below.

- How did the Nepal Red Cross help people to prepare for the disaster?
- How did they help people cope when the earthquake struck?
- How did they help people to recover after the earthquake?
- How are people recovering?

Use the Vimeo answer sheet (PDF) to suggest potential answers to the task.

Discuss answers given by students.

Further questions

- Why do students think it is important that the Red Cross has local volunteers working at the community level across the world?
- What difference might volunteers make when a disaster happens?
- How do they change the speed of the response?
- What role does language, local knowledge and community cohesion play in response and recovery?

Encourage students' responses to the film and explain that local Red Cross volunteers are ready to help communities during and after a disaster – wherever and whenever they happen, including the UK.

Hand out the Nepal earthquake infographic (PDF) to help students understand the scale of the event and the humanitarian response. Encourage students to discuss the 'disaster' and 'emergency response' sections.

In the case of the Nepal earthquake, local volunteers played a vital part in the emergency response operations. Having first aid and emergency response trained volunteers with local knowledge made a huge difference when local infrastructure and transportation was disrupted and other response organisations such as the army weren't able to immediately reach people in need.

2. Build a picture of a volunteer

Ask students to use the **Person outline (PDF)** to start to build a picture of a volunteer who is trained to help after a disaster.

You will also find cardboard outlines of people in many discount stores if you prefer students to have a physical shape to draw on instead. These figures could form part of a useful display as part of the process of working through this unit.

Encourage students to add in the skills and other characteristics they think a volunteer might need to help people before, during and after a disaster.

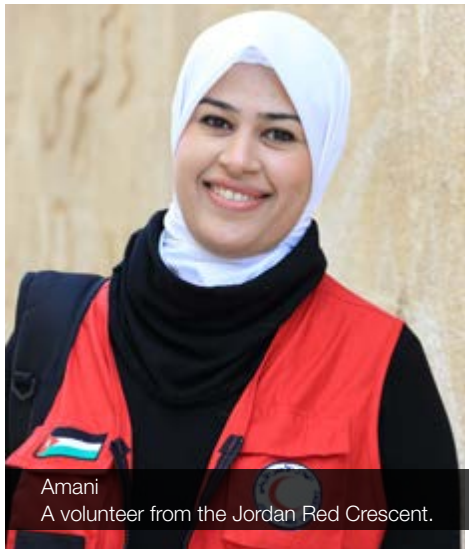
For example, Sameer who is shown in the video:

- can support people practically and emotionally to help them prepare for and cope with an emergency situation
- has first aid skills
- can communicate well and prioritise activities
- can deal with stressful situations
- knows what to do to keep himself and others safe in an emergency
- has compassion and wants to help people recover from a disaster.

Consider the training and support that the volunteers will also need.

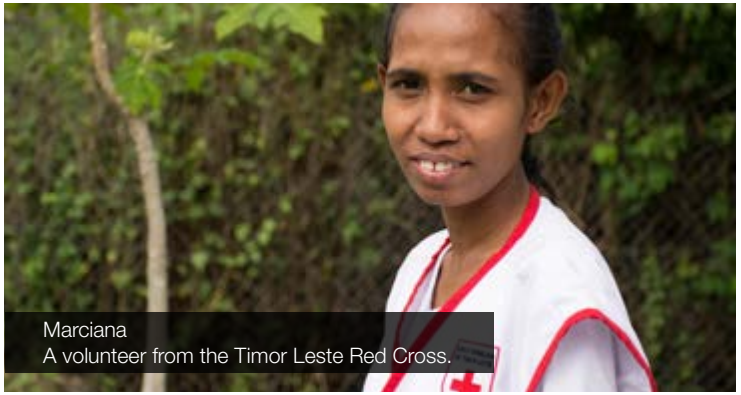
Once students have completed their volunteer profile outlines, encourage them to think about the skills and characteristics they have that would help them be able to better cope with and respond to an emergency situation.

Sainte
A volunteer from the Central African Red Cross.



Amani
A volunteer from the Jordan Red Crescent.

Narayan
A volunteer from the Nepal Red Cross.



Marciana
A volunteer from the Timor Leste Red Cross.

Nazia
A volunteer from the British Red Cross.

Activities for key stages 3-5

Students should now be asked to complete an age-appropriate activity from the following list.

NB: Elements of younger (or older) age group activities may still be used with particular age groups. Don't feel confined to the age bracket. You are welcome to adopt or adapt these ideas.

KS3: Reporting the impacts of the Nepal earthquake

In this activity: students will create their own media report about a natural disaster.

You will need:

- Reporters cards (PDF)
- Script guidance sheet (PDF)
- Photos of the aftermath (PDF)

Lay out the resources for this task, which will involve students playing the role of reporters on the ground after an earthquake has happened.

Resources include the Reporters cards resource (PDF) *and* Script guidance sheet (PDF)*, along with some* photographs *of the aftermath of the earthquake printed out, some blank paper, sticky notes and marker pens.*

Read the context of the activity once students have arrived and sat down:

You are a news journalist. You are on the scene in a local community near to the epicentre of the 2015 Nepal earthquake.

You had been working on another news story, but you have now been caught up in the events and decide to tell the story of those people affected by the natural disaster.

You have your portable recording equipment with you, which allows you to make video and editing equipment and software with you, which means that you can work on some visuals to match the sound recording.

You also have your trusty notebook to write down notes, or scribble thoughts, and a plastic folder in which you can place relevant documents.

Using the script guidance sheet, students are asked to use the contents of the reporter's cards to put together the running order for a **four minute long news broadcast**. This will be shown on the news back in the UK to report the immediate effects of the earthquake on a local community in Nepal.

Their broadcast should cover:

- The immediate impact of the earthquake – who has been affected and in what way?
- What the survivors might need in the short term.

It could also include details about:

- How local Red Cross volunteers are engaging in search and rescue, first aid, emotional support and logistics operations to help people who have been trapped, injured or who have lost their homes in the disaster.

Students could draw on their learning from watching Sameer's interview.

This could take students anything from one to two hours to produce properly.

Additional resources

It may also be worth showing a few short news clips from after the earthquake to remind students of the format of this sort of reporting.

If you want to know some of the other terms involved in making videos, check out the very useful list here: https://vimeo.com/blog/post/glossary-of-common-video-terms

KS4: Actions and emotions

In this activity: students will review a first-hand account of the Nepal earthquake, consider the sequence of events and plot reactions and emotions over time.

You will need:

- Description of the earthquake (PDF)
- Actions and emotions worksheet (PDF)
- Nepal emotion line (PPT)
- Twitter template (PPT)
- Tweet activity (PDF)

This could build on the KS3 task, or the resources here could be used with KS3 students too.

Rachel Hay, who was in Pokhara with her partner Pete Buckley at the time of the earthquake, wrote an account of the first few hours after the earthquake. She was having her lunch when the restaurant she was sitting in started to shake. As a former geography teacher, working for the Royal Scottish Geographical Society at the time, she understood what was happening straight away and left the building.

Print off copies of the Description of the earthquake (PDF) in advance of the lesson. Cut out each paragraph and place in an envelope so that the order of the account of the earthquake is mixed up and not in any sort of order. Issue students with the envelopes containing the segments of Rachel's account of what happened in during the earthquake.

1. Sequencing task

In pairs or small groups, students start by sequencing the paragraphs to tell the story of the earthquake, as Rachel experienced it in the correct order. You may wish to print out a couple of copies of the description in its original form, so that students can compare their answers.

Ask them to explain the clues that they used to identify the relative position of each paragraph in the response.

2. Identifying actions and emotions

Once students have sequenced the events, ask them to identify the parts of the story where an action or emotion happens.

Ask them to record their observations in a table, using the template in the Actions and emotions worksheet (PDF).

Stage of the story	Actions	Emotions
Realisation: "It's an earthquake. Run!"	E.g. communicate what's happening	E.g. fear, confusion
Initial response: "We grabbed our bags and ran into the street."	E.g. get to safety	E.g. relief, fear
During the earthquake: "The whole structure was unstable."	E.g. assess situation	E.g. concern for others
After the earthquake: "What to do next."	E.g. talking to others	E.g. worry about family, friends and others, shock, concern.

3. Plotting emotions over time

*Use the **Nepal emotion line (PPT)** to draw together student's ideas and plot the ways Rachel's emotions changed over time.*

4. Extension: communicating the impacts

Many tweets were sent by people who were caught up in the activity, including a few sent by Rachel Hay. Humanitarian agencies also sent tweets as part of their work.

Think for a moment: what sort of tweets do you think were sent following the event and why?

Reasons for sending tweets might include:

a) Information – updates on what is happening.

b) Advice for people – where to find help, which roads are closed, what the weather forecast is going to be etc.

c) Requests for help – charitable details, phone numbers etc.

d) **RTs** (retweeting) other messages from related accounts

e) Sharing media (images / short videos etc.) so that people could see the impacts.

f) People letting others know that they are safe.

Students could create their own example tweets informing people of a hazard situation as it develops.

*A **twitter template** has been provided to support with this.*

*Ask students to complete the **Tweet activity** to introduce this idea of information about a hazard event being provided by a short social media communication.*

- What do the tweets tell us about how people were feeling?
- What do they tell us about the impact of the earthquake?
- What particular support do you think they would need, judging by the things they are mentioning?

Once these have been discussed and explored, ask students to consider how might the messages change over time, as the response developed?

We'll explore longer term recovery in Session 4.

Further information

Third party publishing, Tweets and other social media can be collated during an event and used to analyse the situation from various points of view. Here is an interesting article on the recovery after Nepal, published by Medium: **https://medium.com/@BritishRedCross/nepal-on-the-road-to-recovery-22e78f08dd3a**

The next time a major event of this kind happens, why not use Storify yourself, or task students with the job of collating a number of tweets and other social media information.

This could then act as a resource for students to interact with. Another way to do this would be to use an app called Flipboard, which works on tablets and other mobile devices as well as computers and was used in an earlier session. This similarly allows news stories to be collated.

Image © Carl Whetham/IFRC.

KS5: The role of mapping

In this activity: students will explore some of the maps which were produced following the Nepal earthquake. They will consider how maps are used to help co-ordinate humanitarian response operations. We also introduce the importance of logistics in emergency response situations.

You will need:

- Sit rep map (PDF)
- IDP camps map (PDF)
- Logistics map (PDF)
- Logistical challenge (PDF)

1. Introduction

Following a disaster such as the one in Nepal, a major priority is access to spatial information. It is vital that humanitarian aid agencies, like the Red Cross have access to accurate maps so that they can organise, and co-ordinate their response.

Often infrastructure and key facilities are heavily affected by a disaster, which is challenging for the transportation of aid. There is a need to coordinate personnel in a fast-paced and confusing situation. If an area is remote and maps are not available, which is often the case in countries in which the Red Cross works, this can cause problems for this coordination. One option to make good quality maps available is to use OpenStreetMap, which can be described as the 'Wikipedia of maps'.

"OpenStreetMap is key to our work, and we engage with the data produced through Missing Maps (http://www.missingmaps.org/) for crises preparedness and emergency response."
Paul Knight, British Red Cross

2. Nepal earthquake maps

The British Red Cross has a Geographic Information Systems (GIS) team who create a range of maps which can be used to support humanitarian response work.

Students can access some of the maps that were used by the Red Cross after the Nepal earthquake to gain insight into how data and maps were used to support the humanitarian response.

- A SitRep map was kept updated throughout the earthquake response to show the numbers of dead, injured and missing people; damage to homes and displacement of families; items distributed and teams deployed to different areas. Maps are layered so that users can quickly find the information that is most relevant to them.

A number of acronyms appear in this map. Definitions appear below:	
FA	First aid
CADRE	Community Action for Disaster Response
NDRT	National Disaster Response Team
PSS	Psycho-Social Support
WASH	Water, Sanitation and Hygiene
RFL/ DBM	Restoring Family Links/ Dead Body Management
DDRT	District Disaster Response Teams

- An IDP camps map was produced when the OpenStreetMap community traced around tarpaulins immediately after the earthquake. This shows the areas in Kathmandu where internally displaced people (IDP) were no longer living in their homes and needed Red Cross support.
- A logistics map was used by the Red Cross teams to identify obstacles which might exist in getting items both into, and around the country. It also shows the locations of warehouses.

3. Why is mapping important?

Using the maps as reference sources, ask students to research and present answers to the following questions:

- What help do people need immediately after a disaster?
- What types of information do humanitarian agencies need in order to be able to provide assistance to those who need it?
- Why is it important that maps are kept updated during the response to a natural disaster?

4. The importance of logistics in emergency response

Logistics can be defined as follows:

Logistics is the management of the flow of things between the point of origin and the point of consumption. Logistics requires careful planning while transportation is the mechanism for moving things.

Supply students with a copy of the **Logistical challenge (PDF)**.

Ask students to choose one of the situations in the logistical challenge table, each of which requires logistical support. Encourage them to assess the nature of the need.

Identify an appropriate map, which would be used to help in the chosen situation, and explain why this map would be of particular use.

Think carefully about the following things:

- How difficult might it be to get things to people when roads or transport links are damaged.
- Why did the Red Cross map the particular data that they did, e.g. casualties, deaths, injured, number of people displaced from homes, areas where buildings fully collapsed, partially collapsed?

Present to the group a brief report on your chosen scenario and map.

5. Further reading

https://reliefweb.int/report/nepal/map-team-joins-race-reach-earthquake-survivors

Learn more about the team creating maps that bring vital help to earthquake-hit families.

http://www.wired.co.uk/article/mapping-nepal-after-the-earthquake

This shows the tremendous speed at which this sort of community mapping can take shape, which is vital for the speedy distribution of humanitarian aid to those most in need of it.

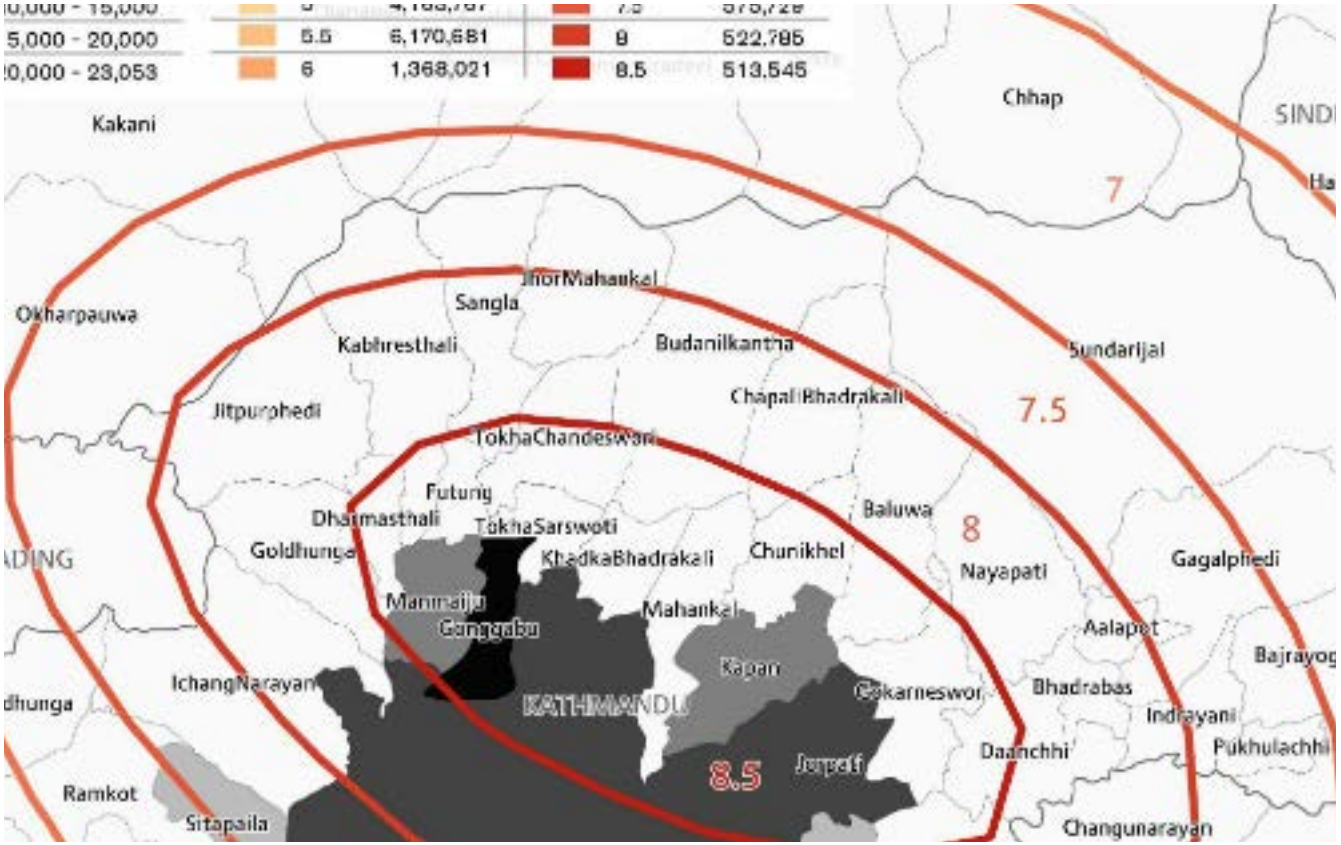
6. Get involved

The MapSwipe app is an easy way for students to participate in mapping on their smartphone and help the work of Missing Maps.

It is available to download from different app stores, and was produced by Médecins Sans Frontières (MSF)

Students could be set a challenge to map a particular area of land each week to support the work of aid agencies.

See **http://mapswipe.org/** and **@TheMissingMaps** for more details.



Supporting resources for Session 3

How did Red Cross volunteers support people affected by the Nepal earthquake?

Watch the video which was specially filmed for this resource.

https://vimeo.com/162543449/c5030159ea

We interviewed Nepal Red Cross volunteer Sameer Bajracharya, one of many who worked in Nepal before, during and after the earthquake.

“before the earthquake ...[people] didn’t talk to each other, but after the earthquake, they were there to help: neighbours and community members were actively participating in rescuing people…”

Watch the film and pause and ‘rewind’ as necessary to identify the answers to the following questions:

How did the Nepal Red Cross help people to prepare for the disaster?

How did they help people cope when the earthquake struck?

How did they help people to recover after the earthquake?

How are people recovering?

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How did Red Cross volunteers support people affected by the Nepal earthquake?

Suggested answer sheet

How did the Nepal Red Cross help people to prepare for the disaster?

- Simulations.
- Ran courses.
- Fire extinguishers placed in locations.
- Cupboards removed from walls.
- Demonstrations.
- Drills – Drop, Cover and Hold training.

How did they help people cope when the earthquake struck?

- Identified dangerous buildings and assessed the damage.
- Calming people down by listening to their fears.
- Evacuated people to open areas, e.g. a field where they were safe.
- Local volunteers thought about where to find food safely, and coordinated food supply from local shops.
- Search and rescue started on the day of the earthquake and carried on for two days after.
- Providing first aid treatment for survivors.
- Co-ordinated with the police, and Nepalese army to rescue other victims.

How did they help people to recover after the earthquake?

- Fourth day after the earthquake, focused on WASH: Water, Sanitation and Hygiene
- Distributing tarpaulins for shelter
- Giving cash to help people buy the things they needed immediately

How are people recovering?

- Some people are still recovering from the shock of the event.
- Some are still without proper sanitation.
- There are still lots of places where assistance is needed.

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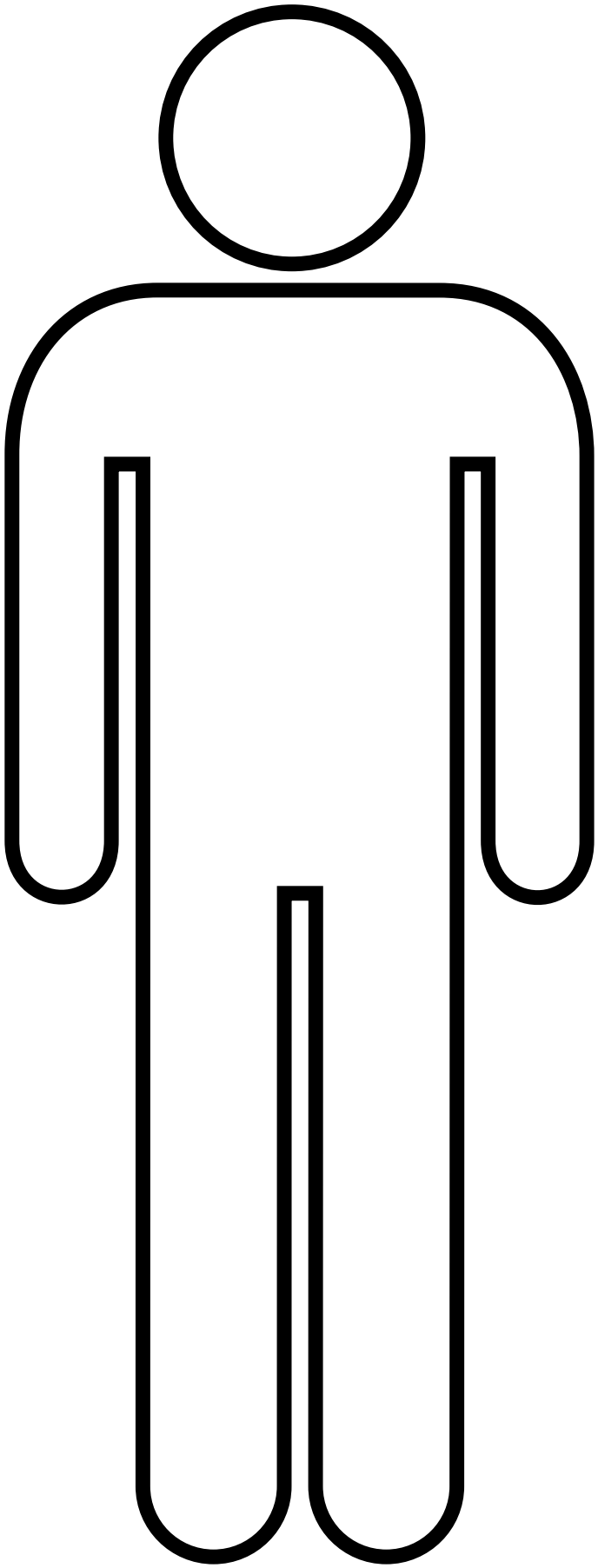

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Nepal Red Cross Society

International Federation of Red Cross and Red Crescent Societies

NEPAL EARTHQUAKE RESPONSE

The International Red Cross and Red Crescent Movement continues to support communities affected by the 25 April and 12 May 2015 earthquakes in Nepal.

THE DISASTER

- **8,856** people killed
- **22,309** people injured
- **5.6 million** people affected
- **602,257** homes destroyed
- **285,099** homes damaged
- **30,754** classrooms destroyed or damaged

EMERGENCY RESPONSE

- **7,977** volunteers deployed
- **56,250** people received healthcare
- **247,839** people received safe water
- **496,724** families (about 2.5 million people) received food
- **650,000** people received emergency shelter materials or tools
- **41,707** families (200,000 people) received cash to help with immediate needs

EARLY RECOVERY

49,996

(250,000 people)

families received cash transfers to assist in preparations for winter

RECOVERY PRIORITIES

Health
Protect community health, build resilience

Livelihoods
Restore people's ability to earn a living

Construction
Support people to build back more safely, and rebuild or rehabilitate schools and health posts

Water, sanitation and hygiene promotion
Sustainably reconnect water and sewerage, improve hygiene

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Reporter's cards

Here are some of the sights, sounds and items that you have captured in your role as reporter.

Vt = Footage of events (along with the length in minutes and seconds e.g. 1'15")

Au = Audio (along with the length)

N = Notes (hand-written)

Ar = Artefact – something physical which you have picked up and could have an image of, or be handling while talking to the camera (a piece to camera as it's called)

Vt: Collapsed buildings – a pan across a street which has rubble strewn across it, making it very difficult for any vehicles to get through without it being cleared. (30")	Vt: Child's shoe in the rubble. (5")	Au: Whistles of rescuers calling for silence, so that they can listen for signs that someone is trapped under the building they are working on. (8")
Vt & Au: Interview with a Red Cross volunteer from the village, who has been helping to coordinate the local response. (1'30")	Au: Sounds of people in despair as they wait for news of their relatives. (15")	N: A list of questions which you will ask a survivor, a local rescue worker, and a local politician if you get the chance to meet them.
Ar: A postcard to show what a building looked like before it was destroyed in the earthquake.	Ar: A hand-written list of people who are thought to be missing from a school that was demolished by the earthquake.	Vt: Short clip of people taking selfies with damaged buildings behind them.
Au: The sound of a building collapsing with a warning shout seconds before. (10")	Ar: A picture of a child handed to you by a parent. They are missing.	Ar: A mobile phone with a smashed screen.
Vt & Au: Finding a mobile phone in the rubble, showing a text message asking someone called Ravi to get in touch.	N: A list of timings of events that have happened since the earthquake.	Ar: A plastic water bottle full of water – your only water that you have left.

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Script guidance document

This activity asks students to imagine themselves as news reporters, and to produce a report on the Nepal earthquake. It should last about **four minutes.**

There are opportunities for students to produce a podcast, or some other format of report. This could involve the use of an appropriate app on a tablet, or a piece of software such as Audacity.

Guidance on the format of news items

You will need an **'anchor intro'**. An anchor intro quickly sets up the story you are going to tell, and puts it in context, without giving away too much. It should also introduce you as the reporter, and perhaps provide a short description of where you are standing, the time of day etc. and what has just happened.

Think of the 'narrative' or story you want to tell.

As you write your narration, try to tell a story with a beginning, middle, and end. Draw listeners into the story by setting the scene, introducing some questions, some of which you will go on to answer. Use narrative elements and change location at least once. Use sound effectively e.g. the wailing of a siren – or perhaps it is the absence of the noises that are usually there that tells the story.

Have some different 'voices' other than yours

This could be a brief interview with someone.

The focus for your broadcast should be on

1. The immediate impact of the earthquake – who has been affected and in what way?
2. What the survivors might need in the short term.
3. How local Red Cross volunteers are engaging in search and rescue, first aid, emotional support and logistics operations to help people who have been trapped, injured, or who have lost their homes in the disaster.

Simple tips

- Be conversational in your style.
- Don't use too many difficult words.
- If you are using initials of organisations, you need to explain them first.

Additional resource

The BBC School Report page has a series of useful resources for students and teachers.
http://www.bbc.co.uk/schoolreport/teacher_resources

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Photo © Carl Whetam/IFRC.

Photo © Carl Whetam/IFRC.

Photo © Palani Mohan/IFRC.

Photo © Palani Mohan/IFRC.

Photo © Sailendra Kharel/IFRC.

Photo © Palani Mohan/IFRC.

Photo © Carl Whetham/IFRC.

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Sequencing activity

Rachel Hay, who was in Pokhara with her partner Pete Buckley at the time of the earthquake, wrote this account of the first few hours after the earthquake.

Print off and cut each paragraph into strips. As an initial activity, students can then be asked to sort events into their correct sequence.

Description of the earthquake

There was the beep of a horn and a futile look down the street for the truck that was causing the vibration. We searched for the answer on each other's faces, but we already knew. The flower pots next to us were wobbling uncontrollably, signs on the street were shaking… the tremors were intensifying.

We jumped to our feet and momentarily glanced around at the other people who, moments before, had been calmly drinking tea and eating cinnamon rolls or masala omelettes. Pete voiced the reality: "It's an earthquake. Run!" There was the sudden sound of chairs scraping the floor, and the continuing low rumble of the tremors. We grabbed our bags and ran out into the street, relieved that we were on the ground floor.

Once outside, I looked up to my right and saw bricks falling from a construction site further along the street. The whole structure was unstable and it seemed certain that it would crumble. I stared aghast at a lone construction worker who stood transfixed at the top of the building, near where the bricks were dislodging themselves, clinging to the rudimentary bamboo scaffolding. Why wasn't he running to save himself? I knew the answer: up there, the shaking would make movement almost impossible.

A frightened solo traveller, Franziska, followed us out of The Black & White café, still clinging to her half-full glass of lassi, and asked, "I'm travelling on my own. Can I stay with you guys?" The three of us ran across the road to get away from the buildings, and waited for the seemingly endless tremors to stop. It was as if we were standing on water and we felt dizzy and terrified.

It took over one minute for the shaking to subside, then we attempted to chat to Franziska (while the geographer in me contemplated epicenter, magnitude, impacts and aid). I thought of Kathmandu and our friends there, and of all the small villages and ramshackle buildings that we had passed on our eight-hour bus journey to Pokhara from Kathmandu the previous day. Had the people we had seen and met along the way survived? When would we be able to let our friends and family know that we were safe, and stop them from worrying?

It was difficult to ascertain when the tremors actually stopped, as our legs kept shaking for a while longer. A few people, including the waiters from The Black & White Café, crossed the road and went back indoors soon after the tremors stopped, but the majority remained on the lake side of the street for a while longer. It felt quite absurd when we eventually returned to the café and requested our bill! Like us, the waiters were of course in shock, and said that while there had been very small tremors for the previous two weeks, this was the biggest and longest earthquake they had ever experienced. They were remarkably matter-of-fact about it and remained professional, even though they must have been incredibly concerned about family members and friends.

I felt scared as Franziska and I climbed the stairs to her room on the second floor, while everyone else waited outside. The nervous tension was palpable and I was keen to spend as little time as possible on the second floor of the hotel. While Franziska quickly collected a few of her belongings, and picked up the two large bottles of water that had fallen from the chest of drawers during the quake, I used the bathroom (praying that an aftershock wouldn't strike!). I waited outside the room for Franziska, and anxiously looked across at the red-brick building, and also at the hotel directly across from me, wondering if the large crack was new, or had existed before the earthquake. I nervously looked down at the street two floors below, and saw Pete waiting anxiously for us. At that moment, everything began to shake intensely again. I felt torn: wait for Franziska or run for it? I chose the latter, while screaming Franziska's name. The stairs seemed to jerk and shift as I ran, and I felt sure that the ceiling would cave in on top of me. How would Pete explain to my parents that after surviving the main shock, and against my better judgement, I was killed on the second floor of someone else's hotel, just because I needed the loo!? Pete was yelling my name and the hotel owner was yelling for Franziska. I ran to Pete then, along with the hotel owner, ran past the red-brick building. Fortunately, Franziska was not far behind us. I was suddenly terrified that the two earthquakes we had experienced so far had actually been foreshocks in the build up to an even bigger event.

We waited for a while in the street with a group of locals who were frantically trying to get hold of their relatives and friends in other parts of Nepal, and with other tourists who were trying to access wi-fi to reassure their loved ones back home. Mahima, a friend in Kathmandu, phoned us to ask if we were safe. We asked her to contact a mutual friend, currently living in Honduras, to ask her to post a message on Facebook on our behalf to let our friends and family know that we were safe. After a love-hate relationship with Facebook, its huge value during a natural disaster was immediately apparent. It was such a relief to get a message out and reduce the stress and worry that our families back in the UK would certainly feel when they woke up to the headlines.

Unbelievably, The Snow Leopard Hotel's wi-fi was still working and when we ventured close enough to use it, it was amazing to see that the earthquake already featured on the BBC News website. Twitter seemed to load more effectively than any other websites, so we relied on it for updates. Twitter has been invaluable for keeping in touch with the outside world, and for accessing useful information about the on-going crisis. One of my contacts joked that I was in 'one helluva [sic] Geography lesson!'

Surprisingly quickly, mobile phones and social media were bringing us snippets of information from the capital, Kathmandu. We heard that the Dharahara Tower, which we had seen only the week before, and had considered climbing, had collapsed. I felt sick thinking of all the people who would have been trapped on it as it fell. I later read that one man lost six family members, including his daughter, in the collapse. How can one person cope with the immense stress of that? We then heard that Kathmandu and Patan Durbar Squares had been severely damaged. With Saturday being the holy day in Nepal, there were sure to be many Hindus and Buddhists worshipping in the old temples. Did they all get to safety? I dread to think what the impact would have been had the earthquake struck either on a school-day, or at night, when more people would have been at risk of being indoors when buildings collapsed. Another sickening realisation was that if the earthquake had struck at exactly the same time the previous Saturday, Pete and I would have been in amongst the temples of Kathmandu Durbar Square, in the wrong place at the wrong time, and our families might still be waiting for news on our whereabouts. Trekking in the Langtang area was also on the cards for Saturday 25th April…

Now, five days after the M7.8 earthquake, we have experienced numerous aftershocks, ranging from barely perceptible to M6.7, and have been ready to run at any moment, with a bag of supplies always to hand. The fear and uncertainty, combined with the unending flow of images and soundbites from Kathmandu, are exhausting, even though we are in a relatively safe area, and do not have family or property here. We can only imagine the stress and suffering of those in the worst hit areas in Kathmandu who are living in make-shift camps, with very limited supplies of water, food and medicine. I wonder whether the media have communicated the current situation across the country accurately, including the geographical variations of the impacts. The footage of the death and destruction in Kathmandu is a complete contrast to conditions here in Pokhara, where no buildings collapsed and where shops, cafes and restaurants have operated as normal (probably more through economic necessity and the need for routine than anything else) since the day after the earthquake. When we tell our friends and family about what it is like here in Pokhara, they can barely believe it, given the depressing images they are constantly seeing on their screens.

We are incredibly fortunate that, all being well, we can board a plane to Edinburgh within the next few days and leave this terrible and uncertain situation behind. But what will happen to Nepal and its people when the media's lens moves on, as it inevitably will? Nepal was already one of the poorest countries in the world, ranked 145th out of 187 countries on the United Nation's 2013 Human Development Index. What will the international community do to help to alleviate the suffering here? Will there be a coordinated plan to ensure that rigorous building codes are enforced, and will other crucial lessons be learned from this disaster that can increase Nepal's resilience to earthquakes in the future? One thing is certain: Saturday's earthquake and the aftershocks lasted just minutes, but the people of Nepal will need support from other nations for a long time to come.

Originally published at: **http://rsgs.org/first-hand-account-of-the-nepal-earthquake-rachel-hay-rsgs-education-officer/**

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Actions and emotions worksheet

Identify the key points in the account of the earthquake where an emotion, or an action linked to an emotion is identified. Note these down in the table below.

Stage of the story	Actions	Emotions
Realisation: "It's an earthquake. Run!"	**E.g. communicate what's happening**	**E.g. fear, confusion**
Initial response: "We grabbed our bags and ran into the street"		
During the earthquake: "The whole structure was unstable"		
After the earthquake: "What to do next"		

Description of the earthquake – Rachel Hay

There was the beep of a horn and a futile look down the street for the truck that was causing the vibration. We searched for the answer on each other's faces, but we already knew. The flower pots next to us were wobbling uncontrollably, signs on the street were shaking…the tremors were intensifying.

We jumped to our feet and momentarily glanced around at the other people who, moments before, had been calmly drinking tea and eating cinnamon rolls or masala omelettes. Pete voiced the reality: "It's an earthquake. Run!" There was the sudden sound of chairs scraping the floor, and the continuing low rumble of the tremors. We grabbed our bags and ran out into the street, relieved that we were on the ground floor.

Once outside, I looked up to my right and saw bricks falling from a construction site further along the street. The whole structure was unstable and it seemed certain that it would crumble. I stared aghast at a lone construction worker who stood transfixed at the top of the building, near where the bricks were dislodging themselves, clinging to the rudimentary bamboo scaffolding. Why wasn't he running to save himself? I knew the answer: up there, the shaking would make movement almost impossible.

A frightened solo traveller, Franziska, followed us out of The Black & White café, still clinging to her half-full glass of lassi, and asked, "I'm travelling on my own. Can I stay with you guys?" The three of us ran across the road to get away from the buildings, and waited for the seemingly endless tremors to stop. It was as if we were standing on water and we felt dizzy and terrified.

It took over one minute for the shaking to subside, then we attempted to chat to Franziska (while the geographer in me contemplated epicenter, magnitude, impacts and aid). I thought of Kathmandu and our friends there, and of all the small villages and ramshackle buildings that we had passed on our eight-hour bus journey to Pokhara from Kathmandu the previous day. Had the people we had seen and met along the way survived?When would we be able to let our friends and family know that we were safe, and stop them from worrying?

It was difficult to ascertain when the tremors actually stopped, as our legs kept shaking for a while longer. A few people, including the waiters from The Black & White Café, crossed the road and went back indoors soon after the tremors stopped, but the majority remained on the lake side of the street for a while longer. It felt quite absurd when we eventually returned to the café and requested our bill! Like us, the waiters were of course in shock, and said that while there had been very small tremors for the previous two weeks, this was the biggest and longest earthquake they had ever experienced. They were remarkably matter-of-fact about it and remained professional, even though they must have been incredibly concerned about family members and friends.

I felt scared as Franziska and I climbed the stairs to her room on the second floor, while everyone else waited outside. The nervous tension was palpable and I was keen to spend as little time as possible on the second floor of the hotel. While Franziska quickly collected a few of her belongings, and picked up the two large bottles of water that had fallen from the chest of drawers during the quake, I used the bathroom (praying that an aftershock wouldn't strike!). I waited outside the room for Franziska, and anxiously looked across at the red-brick building, and also at the hotel directly across from me, wondering if the large crack was new, or had existed before the earthquake. I nervously looked down at the street two floors below, and saw Pete waiting anxiously for us. At that moment, everything began to shake intensely again. I felt torn: wait for Franziska or run for it? I chose the latter, while screaming Franziska's name. The stairs seemed to jerk and shift as I ran, and I felt sure that the ceiling would cave in on top of me. How would Pete explain to my parents that after surviving the main shock, and against my better judgement, I was killed on the second floor of someone else's hotel, just because I needed the loo!? Pete was yelling my name and the hotel owner was yelling for Franziska. I ran to Pete then, along with the hotel owner, ran past the red-brick building. Fortunately, Franziska was not far behind us. I was suddenly terrified that the two earthquakes we had experienced so far had actually been foreshocks in the build up to an even bigger event.

We waited for a while in the street with a group of locals who were frantically trying to get hold of their relatives and friends in other parts of Nepal, and with other tourists who were trying to access wi-fi to reassure their loved ones back home. Mahima, a friend in Kathmandu, phoned us to ask if we were safe. We asked her to contact a mutual friend, currently living in Honduras, to ask her to post a message on Facebook on our behalf to let our friends and family know that we were safe. After a love-hate relationship with Facebook, its huge value during a natural disaster

was immediately apparent. It was such a relief to get a message out and reduce the stress and worry that our families back in the UK would certainly feel when they woke up to the headlines.

Unbelievably, The Snow Leopard Hotel's wi-fi was still working and when we ventured close enough to use it, it was amazing to see that the earthquake already featured on the BBC News website. Twitter seemed to load more effectively than any other websites, so we relied on it for updates. Twitter has been invaluable for keeping in touch with the outside world, and for accessing useful information about the on-going crisis. One of my contacts joked that I was in 'one helluva [sic] Geography lesson!'

Surprisingly quickly, mobile phones and social media were bringing us snippets of information from the capital, Kathmandu. We heard that the Dharahara Tower, which we had seen only the week before, and had considered climbing, had collapsed. I felt sick thinking of all the people who would have been trapped on it as it fell. I later read that one man lost six family members, including his daughter, in the collapse. How can one person cope with the immense stress of that? We then heard that Kathmandu and Patan Durbar Squares had been severely damaged. With Saturday being the holy day in Nepal, there were sure to be many Hindus and Buddhists worshipping in the old temples. Did they all get to safety? I dread to think what the impact would have been had the earthquake struck either on a school-day, or at night, when more people would have been at risk of being indoors when buildings collapsed. Another sickening realisation was that if the earthquake had struck at exactly the same time the previous Saturday, Pete and I would have been in amongst the temples of Kathmandu Durbar Square, in the wrong place at the wrong time, and our families might still be waiting for news on our whereabouts. Trekking in the Langtang area was also on the cards for Saturday 25th April…

Now, five days after the M7.8 earthquake, we have experienced numerous aftershocks, ranging from barely perceptible to M6.7, and have been ready to run at any moment, with a bag of supplies always to hand. The fear and uncertainty, combined with the unending flow of images and soundbites from Kathmandu, are exhausting, even though we are in a relatively safe area, and do not have family or property here. We can only imagine the stress and suffering of those in the worst hit areas in Kathmandu who are living in make-shift camps, with very limited supplies of water, food and medicine. I wonder whether the media have communicated the current situation across the country accurately, including the geographical variations of the impacts. The footage of the death and destruction in Kathmandu is a complete contrast to conditions here in Pokhara, where no buildings collapsed and where shops, cafes and restaurants have operated as normal (probably more through economic necessity and the need for routine than anything else) since the day after the earthquake. When we tell our friends and family about what it is like here in Pokhara, they can barely believe it, given the depressing images they are constantly seeing on their screens.

We are incredibly fortunate that, all being well, we can board a plane to Edinburgh within the next few days and leave this terrible and uncertain situation behind. But what will happen to Nepal and its people when the media's lens moves on, as it inevitably will? Nepal was already one of the poorest countries in the world, ranked 145th out of 187 countries on the United Nation's 2013 Human Development Index. What will the international community do to help to alleviate the suffering here? Will there be a coordinated plan to ensure that rigorous building codes are enforced, and will other crucial lessons be learned from this disaster that can increase Nepal's resilience to earthquakes in the future? One thing is certain: Saturday's earthquake and the aftershocks lasted just minutes, but the people of Nepal will need support from other nations for a long time to come.

Originally published at: **http://rsgs.org/first-hand-account-of-the-nepal-earthquake-rachel-hay-rsgs-education-officer/**

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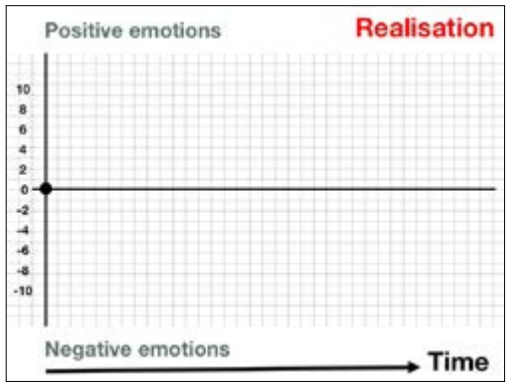

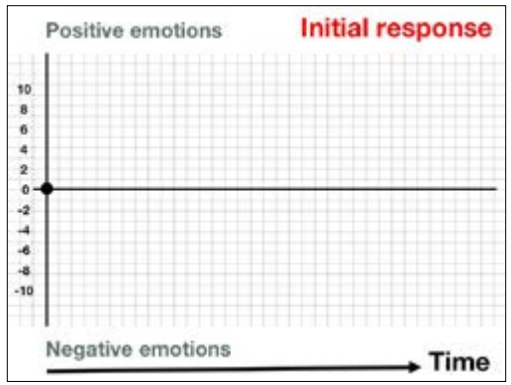

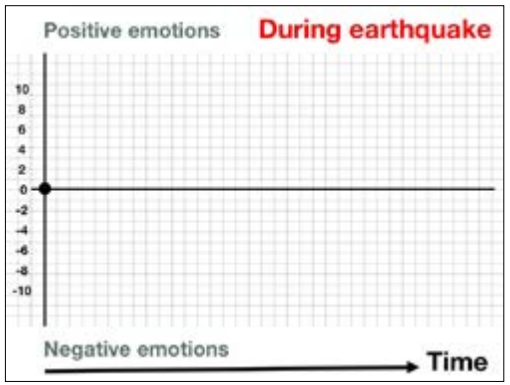

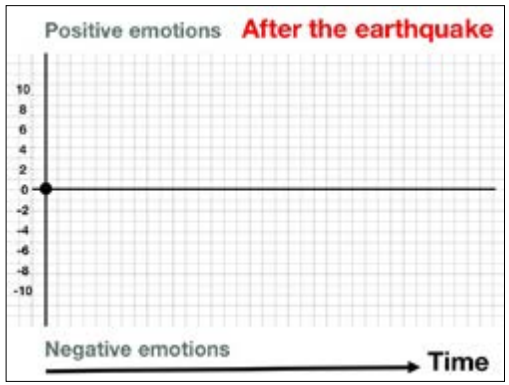

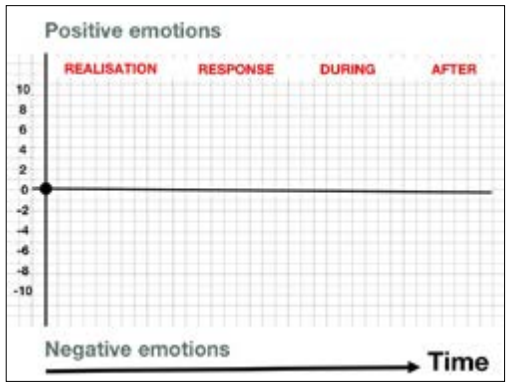

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Tweet activity

What information can you gain from this tweet?

What additional questions does it lead to?

Where would / could you go to find the answers to these questions?

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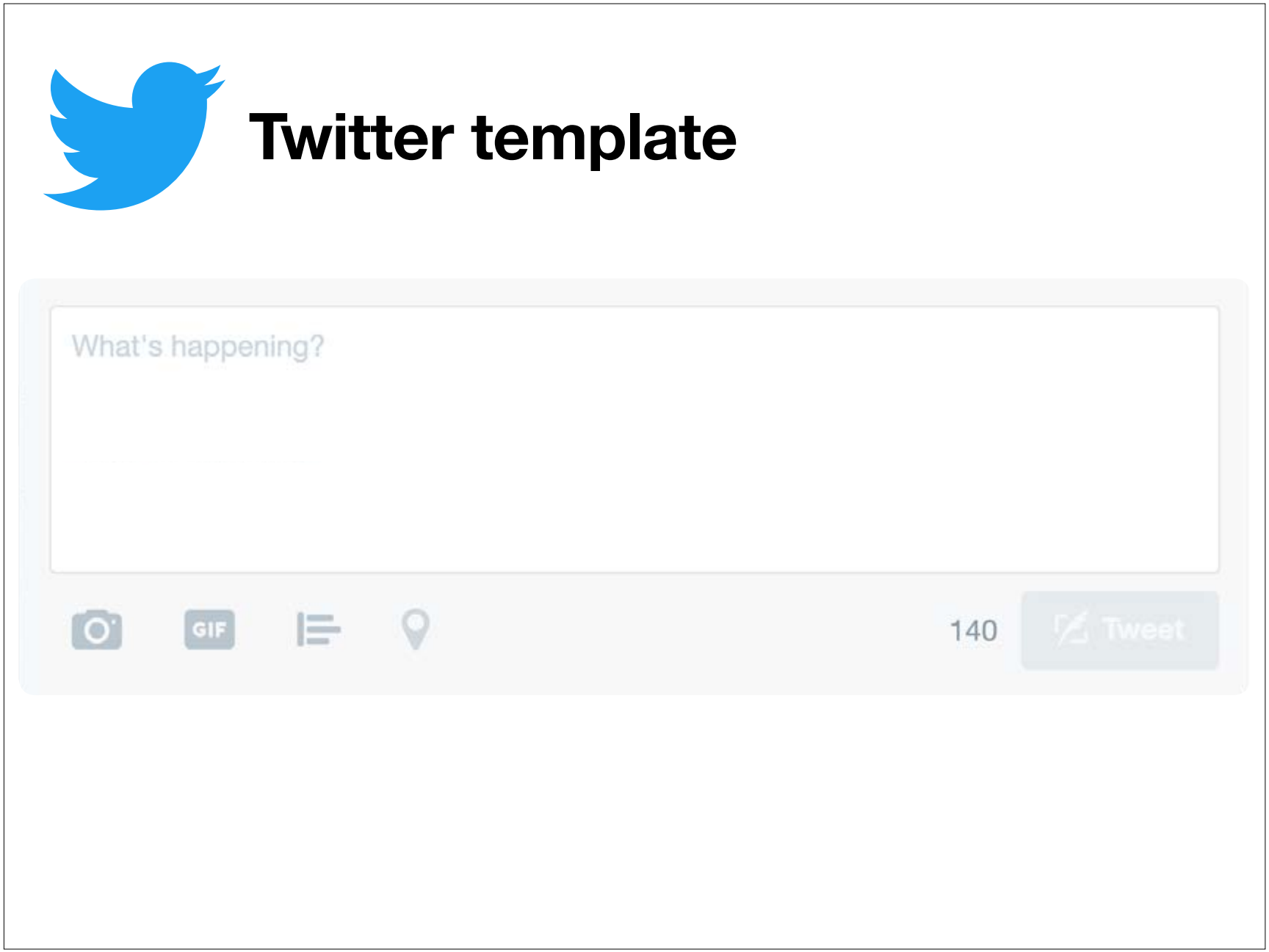

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NRCS - SitRep

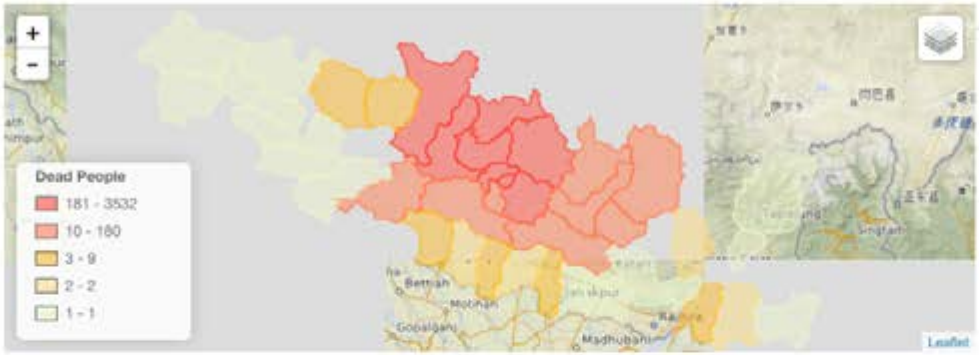
Earthquake 2015 - Situation Report

Nepal Red Cross Society | International Federation of Red Cross and Red Crescent Societies

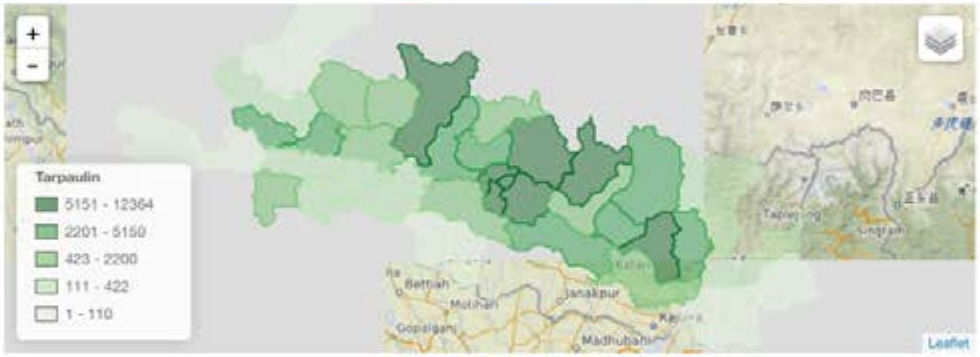
Report published the 20th of August 2015

Source: Nepal Red Cross Society
Produced by SIMS supported by ARC and BRC
For feedback email: braimbault@redcross.org.uk

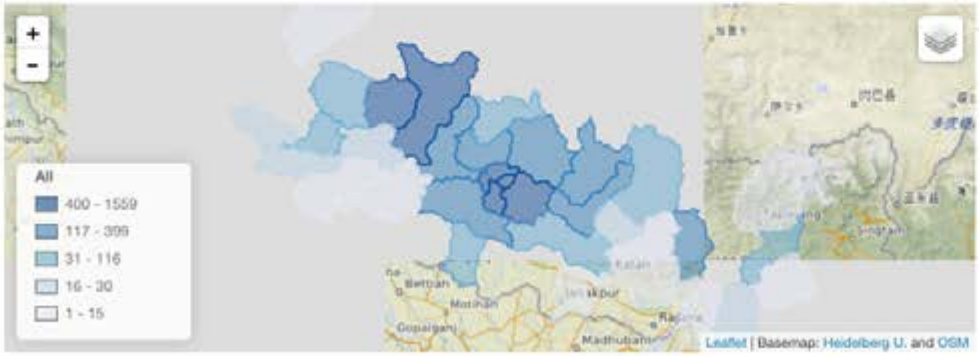
Choose layers to show using the button on the top right of the maps. Hover the maps with the house to display figures at District level.



District	Total	Damage Type
-	8857	Dead People
-	275	Missing People
-	17932	Injured People
-	1160516	Affected Families
-	649815	Displaced Families
-	638979	Fully Dest. Houses
-	300639	Partially Dest. Houses



District	Total	Distributed Item
-	11332	NFRI-Full-set
-	111150	Tarpaulin
-	28322	Blankets
-	133314	ORS
-	51526	Hygiene-kits
-	602448	Aqua-Tab
-	79186	Soap



District	Total	Responders
-	4482	FA
-	678	CADRE/Rescue
-	76	NDRT
-	36	PSS
-	140	RFL/DBM
-	214	WASH
-	170	DDRT
-	2151	Other
-	23	Intnl. Deleg./Vol.
-	7970	All

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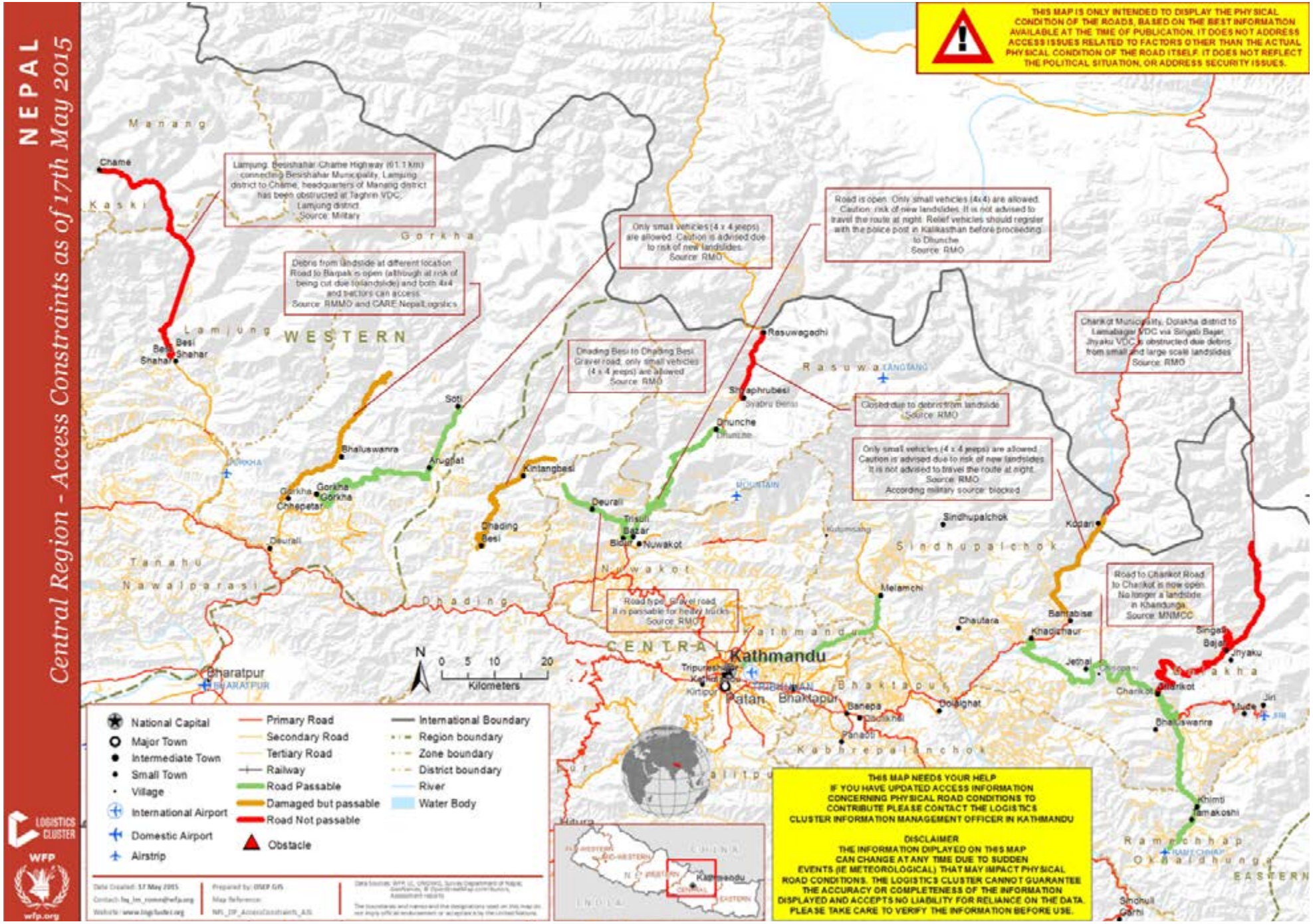

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Assess where you should send emergency tarpaulins which can be used to provide temporary shelter for those whose houses have been damaged.	Identify which roads have been damaged as a large shipment of medical aid needs to be sent by road.
Identify suitable landing areas for a helicopter carrying trained rescue personnel to badly affected areas.	Suggest the best locations for a mobile communications unit, which offers free calls for people to let their relatives know they are safe.
Identify a safe evacuation route for a group of school children who are going to be travelling in a school bus.	Work out which roads might be at risk of being closed by landslides if heavy rain falls soon after the earthquake.

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Session 4: Recovery and resilience

After a natural disaster the Red Cross supports the people affected as they start to recover and rebuild their lives.

By reflecting upon and applying learning from past experiences, communities can increase their resilience and ability to cope with disasters.

This final session focusses on themes of recovery and resilience and concludes by bringing the learning back to a local context for students encouraging them to reflect on how they could apply this learning to their own lives.

Contents

Introductory activities (all ages)

1. Introducing resilience
2. The role of the Red Cross in recovery

Activities for Key Stages 3-5

KS3: School disaster plan
KS4: Modelling responses to disasters
KS5: Resilient behaviour after an earthquake

Learning objectives

Young people are able to:

- Develop their use of geography specific language in written and verbal work, and develop the capacity to 'think like a geographer'.
- Develop their understanding of the role of the Red Cross in supporting people to recover after a natural disaster.
- Understand the concept of **resilience**, and how it applies to a specific context.
- Consider how they might apply this learning to their own lives.

Key questions

- What are the longer term impacts of a natural disaster and how do people recover?
- How did individuals and communities in Nepal build their resilience before the earthquake?
- How can communities increase their resilience – what about the school community? What might make a community more or less resilient?
- What lessons can be learned from each event so people are better prepared for them in future?

People from Jyamdi Mandan village development committee in Nepal. After doing a vulnerability and capacity assessment (VCA) and mapping the village, the groups will establish a community disaster management committee with responsibilities for hazard mitigation, preparedness, response and prevention, livelihoods, water, sanitation and hygiene promotion (WASH) and health.

Introductory activities

You will need:

- ***Access to YouTube to show films from the Red Cross***
- Nepal infographic (PDF)

1. Introducing resilience

A key element of the response to any natural disaster is the way that communities and the people in them are able to recover, and to learn from the experience if possible so that they are better prepared for the next time something happens.

This can be part of all of our lives but the changes that the Nepal earthquake brought about were on a huge scale. Many people would have been trying to cope with the loss of family members, friends and the destruction of their homes and livelihoods.

The ability to cope in challenging circumstances can be called **resilience**. This is a term that all geographers should be aware of and be able to explore. It has also been introduced into a lot of schools as a characteristic for students to develop.

Humanitarian agencies try to build resilience in the communities they work with both before, during and after hazard events. The work that the Red Cross carries out across the world with the help of their staff and volunteers on the ground, supports communities to be more resilient, as we saw during Sameer's interview in Session 3.

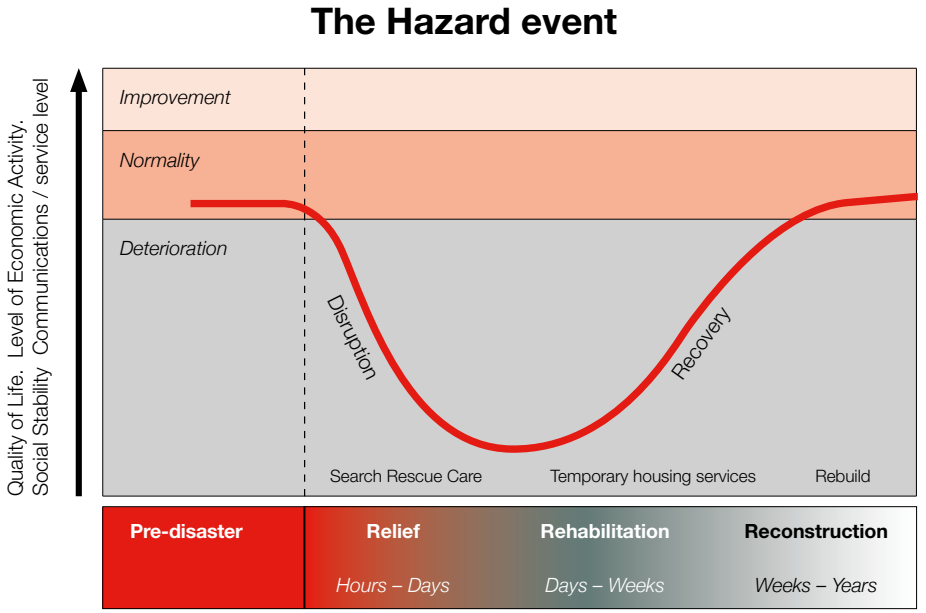
Ask students to suggest what they understand by the term resilience.

Resilience could be defined as:
"Having the ability, skills, behaviours and coping strategies, to support yourself and others during times of change or a sudden shift in circumstances, such as a crisis caused by a disaster or emergency."

Or more simply:
"Having the capacity to recover quickly from difficulties."

The resilience of an area following a disaster can be explored using the **Park Model**.

After Park, 1991



Relief and rehabilitation often with the help of outside agencies

This illustrates the reaction of a community to an event which causes disruption, and how long it takes to "bounce back" or recover.

There are various options for exploring this aspect of disaster recovery. KS4 activities will focus on the Park Model, while KS5 activities will introduce students to the Degg Model.

2. The role of the Red Cross in recovery

Three short videos supplemented with questions help students learn more about how the Red Cross was involved in helping people recover and rebuild stronger after the earthquake.

The Nepal earthquake infographic can also support with students' understanding of the changing needs of communities as they move from the response to recovery phase.

VIDEO 1: Nepal three months on

This video shows the numbers affected by the earthquake, and how in the days, weeks and months following the disaster, the Red Cross was there to support those affected.

Efforts were focussed on providing relief, shelter, medical care and safe water to communities in the worst affected districts.

Questions

1. What were the five areas of priority for the Red Cross response?
2. What was the impact of a second earthquake on people in Nepal?
3. How did the Red Cross support survivors of the earthquake?

VIDEO 2: Water: communities help water flow again after Nepal earthquake

Water supplies and sanitation systems for thousands of communities in Nepal were disrupted by earthquakes, leaving people at risk of water-borne diseases.

Water, sanitation and hygiene promotion (WASH) is one of the main elements of the Red Cross' earthquake response plan.

As well as installing water tanks for cooking and washing, the Red Cross trains communities to maintain the pipes, and promotes hygiene through radio shows, community meetings and training for school children.

Questions

1. How was access to clean water affected by the earthquake?
2. What risks does lack of clean water pose for a community?
3. What everyday activities is water needed for?
4. How did the Red Cross support with bringing clean water to communities after the earthquake?

VIDEO 3: Shelter: Nepal communities learn earthquake resistant building

The earthquakes damaged or destroyed more than 900,000 homes leaving people without shelter against monsoon rains, summer heat and winter cold.

Questions:

1. What are the consequences for communities when we talk about "lack of shelter"?
   What have people lost?
   What support might they need?
2. How is the Red Cross supporting people to be better prepared for future hazard events like earthquakes?
3. What might this mean for the potential impact of such events on people in the future?

Nepal infographic

Hand out the **Nepal earthquake infographic (PDF)**.

Encourage students to discuss the progress from 'disaster' and 'emergency response' stages through to 'early recovery' and 'recovery priorities'.

Discussion questions:

- What are the differences between the response and recovery phases?
- How does the support given to communities change over time?
- How does the recovery phase incorporate activities that will build communities' resilience to future events?

Families together with their neighbours are helping each other to rebuild their homes after the earthquake in 2015. Singati, Dolakha, Nepal.
2016

Photo © Emil Helotie/Finnish Red Cross.

Activities for key stages 3-5

Students should now be asked to complete an age-appropriate activity from the following list.

NB: Elements of younger (or older) age group activities may still be used with particular age groups. Don't feel confined to the age bracket. You are welcome to adopt or adapt these ideas.






KS3: School disaster plan

In this activity: students will investigate the school site for possible risks. There will be some internal and possibly external fieldwork.

You will need:

- School disaster frame (PPT)
- School disaster plan template (PDF)

1. Background information

Explain that even in some areas where earthquakes are common, people need help to learn how to keep themselves safe and react quickly.

Regular practice drills for the 'Drop, Cover and Hold' routine are held along with the usual fire drills, so that everyone knows what to do in case of an earthquake.

People living in areas prone to natural hazards like earthquakes can plan for what to do. They may also look for opportunities to retro-fit their buildings, making modifications to improve them, or ensuring that the contents can be secured.

The Red Cross offers support to vulnerable communities in this task, through education and other events for residents.

2. Student briefing

Ask students to imagine that their school is sitting in a disaster zone.

A fault line runs directly beneath the school building. This could be 'pointed out' to them through the window if you want them to suspend disbelief. The fault moves from time to time, triggering shaking and seismic movement.

Explain that the students' job is to inspect the school for potential problems that might occur if an earthquake was to happen.

This is something that needs doing from time to time to assess risks and reduce the impact so that the school can recover more quickly if a disaster strikes.

They will be looking out for how the building, people and contents could be affected by an earthquake.

There are five main areas which students need to investigate during this activity:

1. Furniture

2. Equipment

3. Walls and windows

4. Building structure

5. Other items

Children crouch beneath their desks as part of an earthquake training programme.
Palawan, Philippines. February 2009.

3. Before leaving the room

Ask students to imagine what would happen if the room that you are teaching this lesson in was to be hit by an earthquake.

- What items would move around?
- Where are the danger spots?
- Where would be the safest places in the classroom?
- What should the students do in this situation? (some students may mention the idea of Drop, Cover and Hold - https://www.youtube.com/watch?v=nANnUNauD1c)

There are a few videos of shaking during the Nepal (and other) earthquake(s), which can be sourced online and could be shown at this point. Some of these videos show the impact on school classrooms e.g. suspended ceilings collapsing, or filing cabinets tipping over.

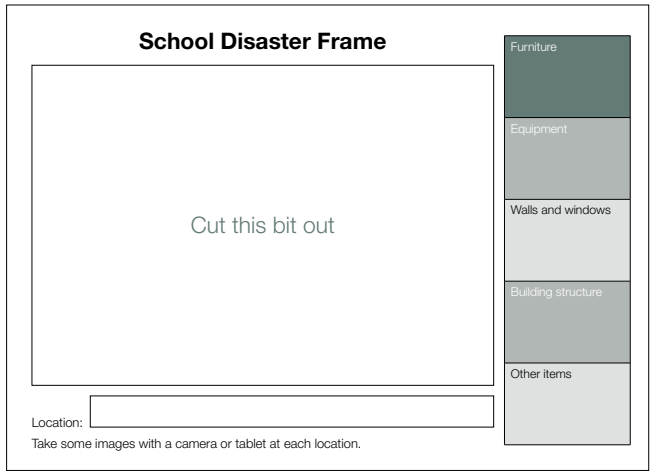
Children crouch beneath their desks as part of an earthquake training programme.
Palawan, Philippines. February 2009.

Photo © Rob Few / IFRC.

4. School disaster frame

Explain to students that they are going to use the School Disaster Frame (PDF) to identify some potential problems by holding it up at locations around the school site. Model this for the classroom.

***Print duplicate copies of the frame out on card**, and then **cut out the central section** so that it forms a frame for students to hold up and see through.*



5. Visualising the impact

Support students to identify locations at risk on the school site.

You may want students to visit certain parts of the school building, or direct them yourself on a guided walk visiting certain locations.

Each student needs a copy of the disaster frame for each location that they visit.

At each location, ask students to visualise the impact of shaking and write down the possible results in the boxes down the right hand side.

Students could also take an image of each location using a tablet, and annotate the place with an app such as Skitch to show the issues that they have spotted. This could also be used to create a video simulating an earthquake if time permits.

Share and report back when the students return, before moving onto the critical questions.

6. Critical questions

- How could this activity help people prepare for an emergency?
- How resilient do you think the school would be if an earthquake was to happen?
- How long do you think it might take for the school to recover?
- How would you feel if you lived if an earthquake zone?
- How might it change the way you prepared for school, and moved around the site?
- What training or equipment might the school staff need to be better prepared to help themselves and students during an earthquake?

7. School disaster plan

Produce a school disaster plan, which takes into account what would happen in the case of an earthquake, and how you need to prepare, based on what was observed during the field visits.

Use the **School Disaster plan template** *as a framework for your final plan. This could be set as a literacy task, or as a homework task.*

Pupils learn how to take shelter from earthquake, how to mitigate the effects of landslides and how to give first aid.
Bhanu Higher Secondary School Danda Bazar, Dhankuta, Nepal
November 2014

Photo © Jarkko Mikkonen / Finnish Red Cross.

8. Extension: creating a local plan

Think about what risks your school might be affected by. This could include events like winter storms or flooding.

Start by doing some research into how likely these events are within your home area.

Create a disaster plan for one of those events and share the results with your family, if you also live within the same area as the school.

Consider how you could improve your individual or community resilience.

- Is creating a local plan sufficient?
- Would opportunities to practise be of benefit?
- What qualities do you have that might make you better able to cope with a local hazard event?
- What skills would you like to develop?

Photos clockwise from top left © iStock, © Howie Laws/BRC, © Jason Bye/UNP

KS4: Modelling responses to disasters

In this activity: students will consider the longer term impacts of an earthquake, using the Park Model to structure their thinking.

You will need:

- Park Model (PPT)
- Living graph (PPT)
- Living graph recording sheet (PDF)
- Steve in Nepal tweet ordering sheet (PDF)
- Steve in Nepal tweets (PDF)

Look at the details on the **Park Model** *of disaster response using the* Park Model (PPT)*. Talk through how the model works with students (see info below).*

The ***line*** on the model shows how people respond following a hazard event. This response changes over time as the recovery starts, and life starts to return to normal.

The more resilient a country is, the faster this will take place, but it will still be many years, even in the case of a rich country for this to happen in full.

Even then, the psychological trauma may still mean that some people require ongoing support.

1. Impact mapping

Consider what the impacts of an earthquake might be in the area under the four headings in the table below. Discuss, and note down student ideas, perhaps on sticky notes so that they can be re-arranged as required.

Immediately after the earthquake	A few days after the earthquake	In the weeks following the earthquake	In the following months and years

This would be a good opportunity for educators to draw in elements for young people to compare and contrast the impact, response and recovery to earthquakes that have happened in different countries.

Students could research earthquakes that have happened for example in Ecuador, Japan, Haiti, Italy or New Zealand and plot the different impacts over time.

2. Living graph activity

Explain to students that they will now look at some tweets that were sent by someone who was caught up in the earthquake: a person called Steve.

He has a Twitter account called **@SteveinNepal** which he set up before he set off, so that he could keep people up to date with his travels.

Unfortunately he was caught out in the earthquake, but survived and was able to send ten tweets, partly to let people know that he was safe.

NB: @SteveinNepal is a fictional account which was created for this resource.

Following any natural disaster, Twitter becomes active with thousands of tweets reporting the situation. Students should be ready to watch twitter for the next time there is a major event that they are studying.

It is up to the teacher to choose a time to talk through this information.

This is a **living graph activity**. It is so called, as the comments are added to a graph to bring it to life, by adding the context for the changes that are shown on the graph.

Hand out the following resources:

- **Tweets from Steve in Nepal (PDF) – *10 tweets in total***
- **Steve in Nepal tweet ordering sheet (PDF)**
- **Living graph recording sheet (PDF)**

Use the **Living graph presentation (PPT)** *to lead the session. It includes some starter tweets from Rachel Hay to get students thinking about the timeline of events. The PowerPoint provides the structure for the activities that students should complete. This will take a reasonable amount of time to do.*

Students should read the tweets, and start by sequencing them in order. As they do this, they need to place the relevant number of the tweet onto the graph, to show which stage of the Park Model is being described, and where it fits in the event timeline.

Answers for Tweet sequencing order:
5, 1, 2, 10, 7, 3, 4, 6, 8, 9.

Conclusion

How did Steve seem to cope with the earthquake? What did he do? What might have contributed to his resilience?

Now think about your own resilience, what skills and qualities do you have that could help you cope in an unexpected event? What might you need to develop?

Consider how the longer term recovery will be reflected in people's comments on social media. At what stage will the earthquake have less priority in what they are discussing?

Kathmandu, Nepal
April 2015

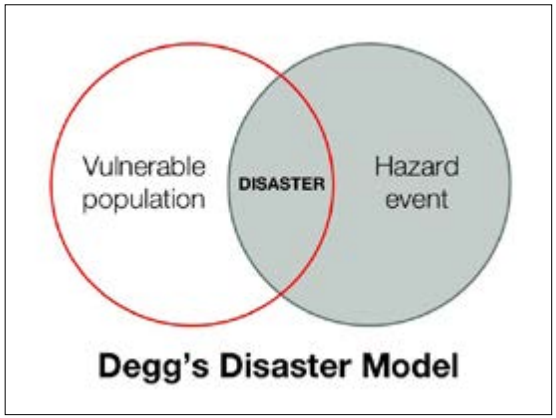
KS5: Resilient behaviour after an earthquake

In this activity: students will consider the Degg Disaster Model and reflect on how they could apply learning from the unit to their own lives.

You will need:

- Degg Disaster Model (PPT)
- Final prompt questions (PPT)

The Degg model was developed by Martin Degg of the University of Chester. Like the Park model, this is used at 'A' level to explore the response of communities to hazardous events.



Degg's Disaster Model

Hand students a printout of the two slides on the Degg Disaster Model (PPT) which show the Degg Model and some possible responses of people following a natural disaster.

Talk through the model and its Venn diagram structure.

The second slide shows some possible responses that vulnerable populations might have to the hazards. Ask students to consider what their reaction to living in a dangerous place would be.

Ask: How did people in Nepal prepare, respond and recover? Reflect on learning from earlier sessions.

One of the impacts of the earthquake was the destruction of many houses. Efforts are now being made to design and rebuild homes in different designs.

How is their learning from the earthquake ensuring the people of Nepal are better prepared for future hazard events?

Think about daily activities that we take for granted, and how they might be carried out differently in different circumstances. How many of these activities are actually luxuries rather than essentials?

Students could write their ideas on sticky notes and then organise them into 'needs' and 'wants', discussing what is essential and what is not.

A resilient UK

Students are now ready to tackle the final activity in the unit.

Pose the question: **How can you apply the learning you have gained about how people prepare for, respond to and recover from disasters to improve your personal resilience?**

Display or hand out a copy of the Final prompt questions and encourage a discussion that brings students' learning back to situations that are relevant to their lives.

- What risks do we have here in the UK?
- How do we prepare for them?
- How could we become more resilient?

Supporting resources for Session 4

School Disaster Frame

Cut this bit out

Furniture

Equipment

Walls and windows

Building structure

Other items

Location:

Take some images with a camera or tablet at each location.

Download PPT here

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School disaster plan

School name and address	
Headteacher's name	
Name of inspector(s) carrying out inspection	
Date of inspection	

Area of school inspected	
Furniture e.g. furniture on castors, tall cupboards not fastened to walls, crowded corridors, plastic stacking boxes	
Safety equipment e.g. first aid kits and defibrillator, water, fire extinguishers or blankets, science equipment	
Walls and windows e.g. glazing, window closures, plaster, fixings	
Building structure e.g. age of the building, areas under construction	
Other items e.g. temporary fittings, staff, hot liquids	

Recommendations for making the school safer

Signed: _____ Safety Inspector

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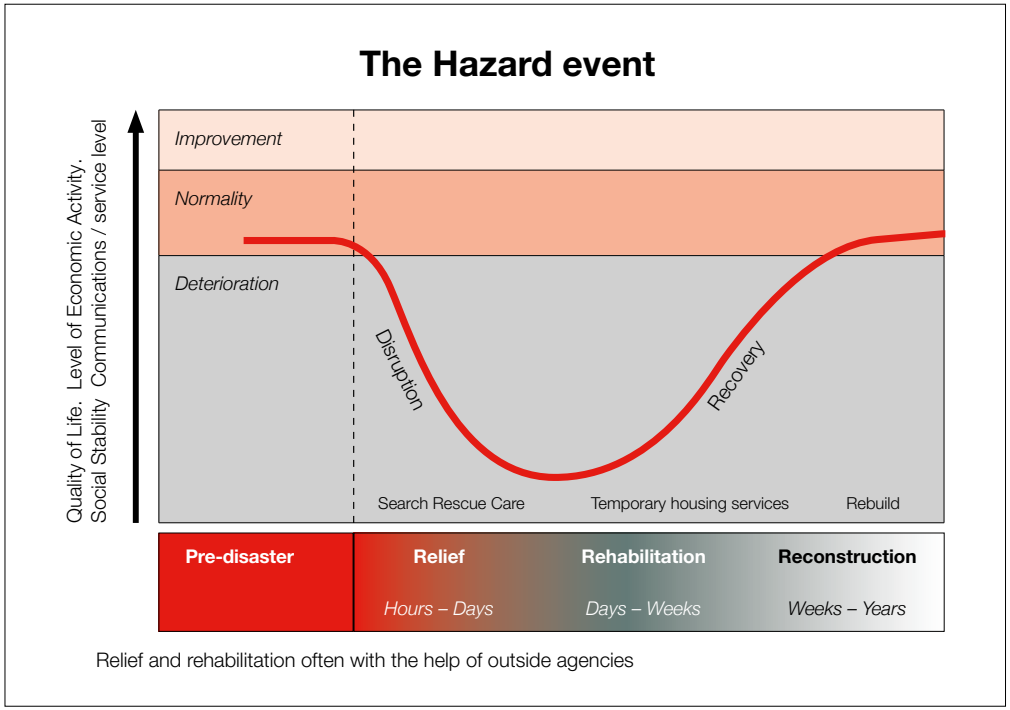
Park model

A model for exploring disaster response and recovery



[Download PPT here]

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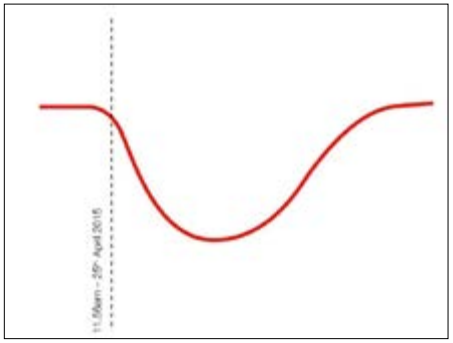
Session 4
Living Graph tweets

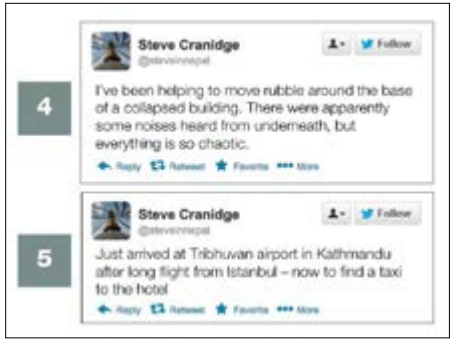
You are going to be shown a number of tweets from a visitor to Nepal, and need to add them to a timeline matching the Park Model...

What is the Park model?



Sequence the 10 tweets that are being sent by Steve Cranidge, who arrived in Nepal just before the earthquake...

@SteveinNepal



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@SteveinNepal tweets – in chronological order…

1

2

3

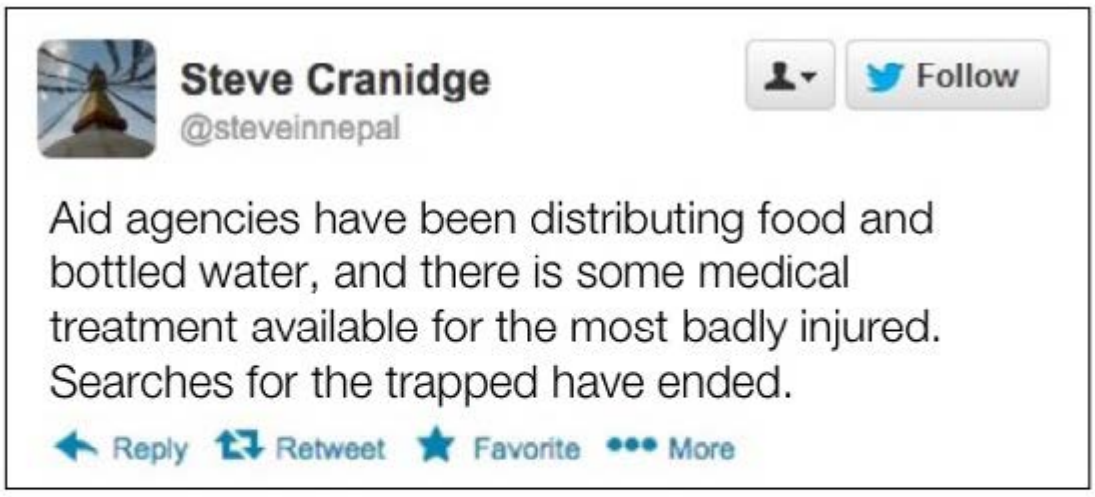
4


Steve Cranidge
@steveinnepal
Follow
I've been helping to move rubble around the base of a collapsed building. There were apparently some noises heard from underneath, but everything is so chaotic.
Reply
Retweet
Favorite
More

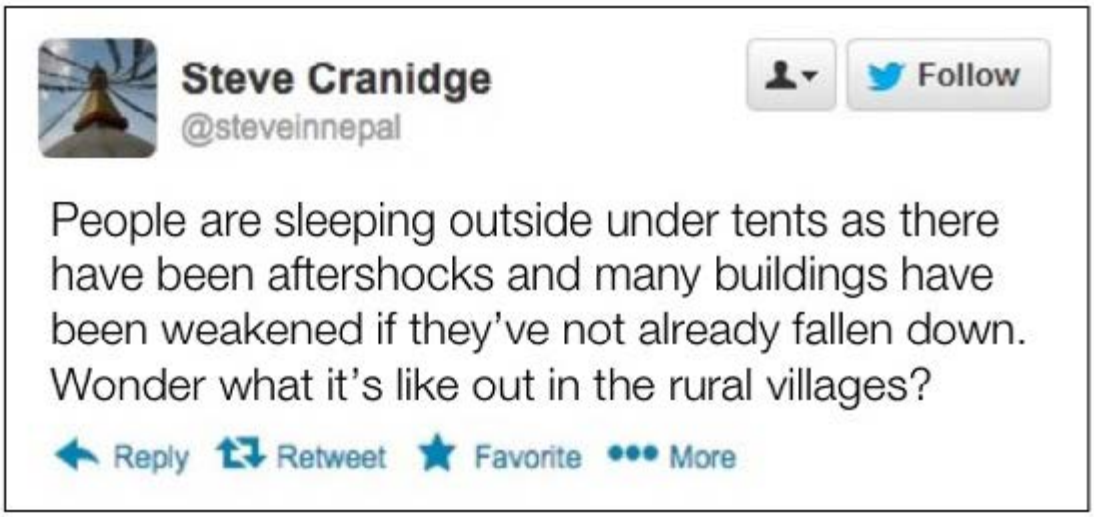
5


Steve Cranidge
@steveinnepal
Follow
Just arrived at Tribhuvan airport in Kathmandu after long flight from Istanbul – now to find a taxi to the hotel
Reply
Retweet
Favorite
More

6


Steve Cranidge
@steveinnepal
Follow
Aid agencies have been distributing food and bottled water, and there is some medical treatment available for the most badly injured. Searches for the trapped have ended.
Reply
Retweet
Favorite
More

7



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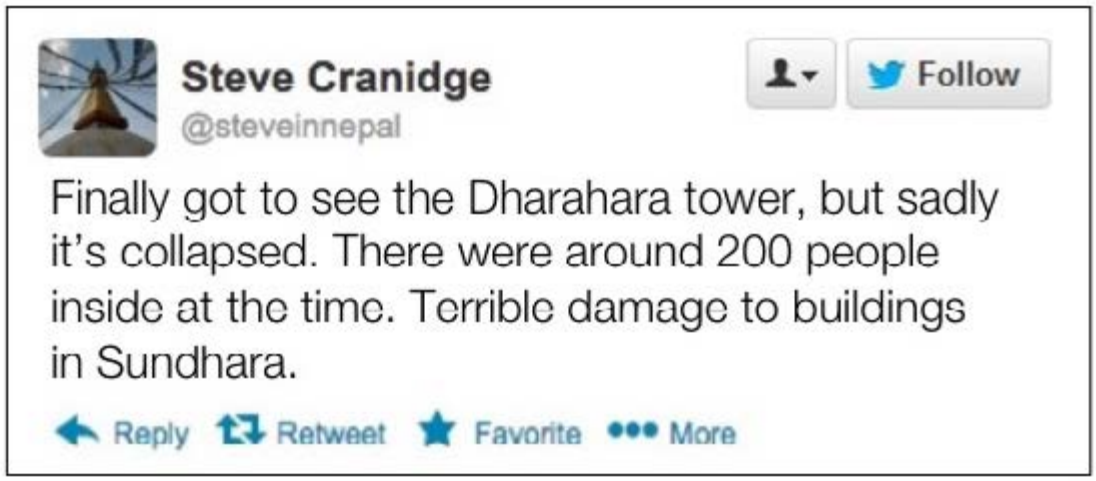

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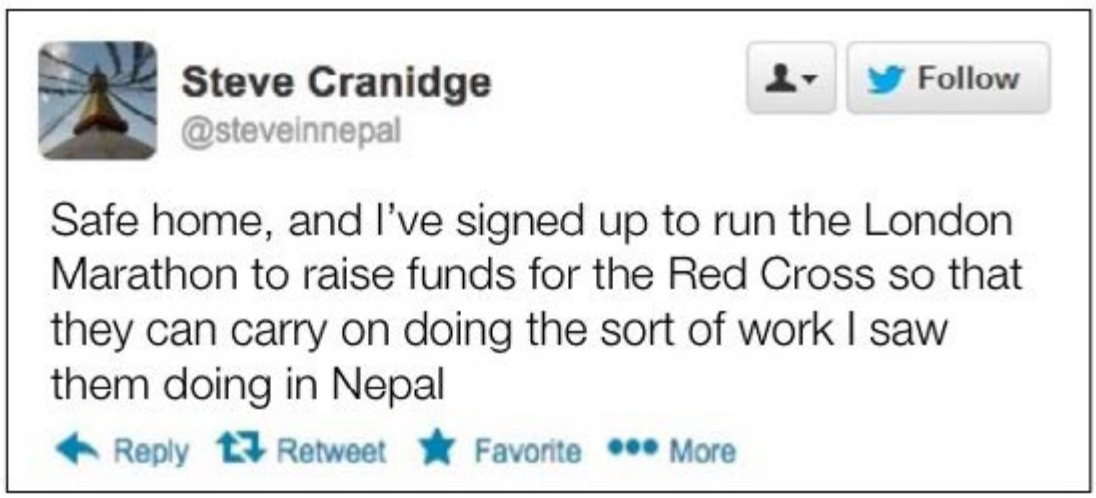

10

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Steve in Nepal tweet ordering sheet

Tweet number	Why did you place this tweet here?

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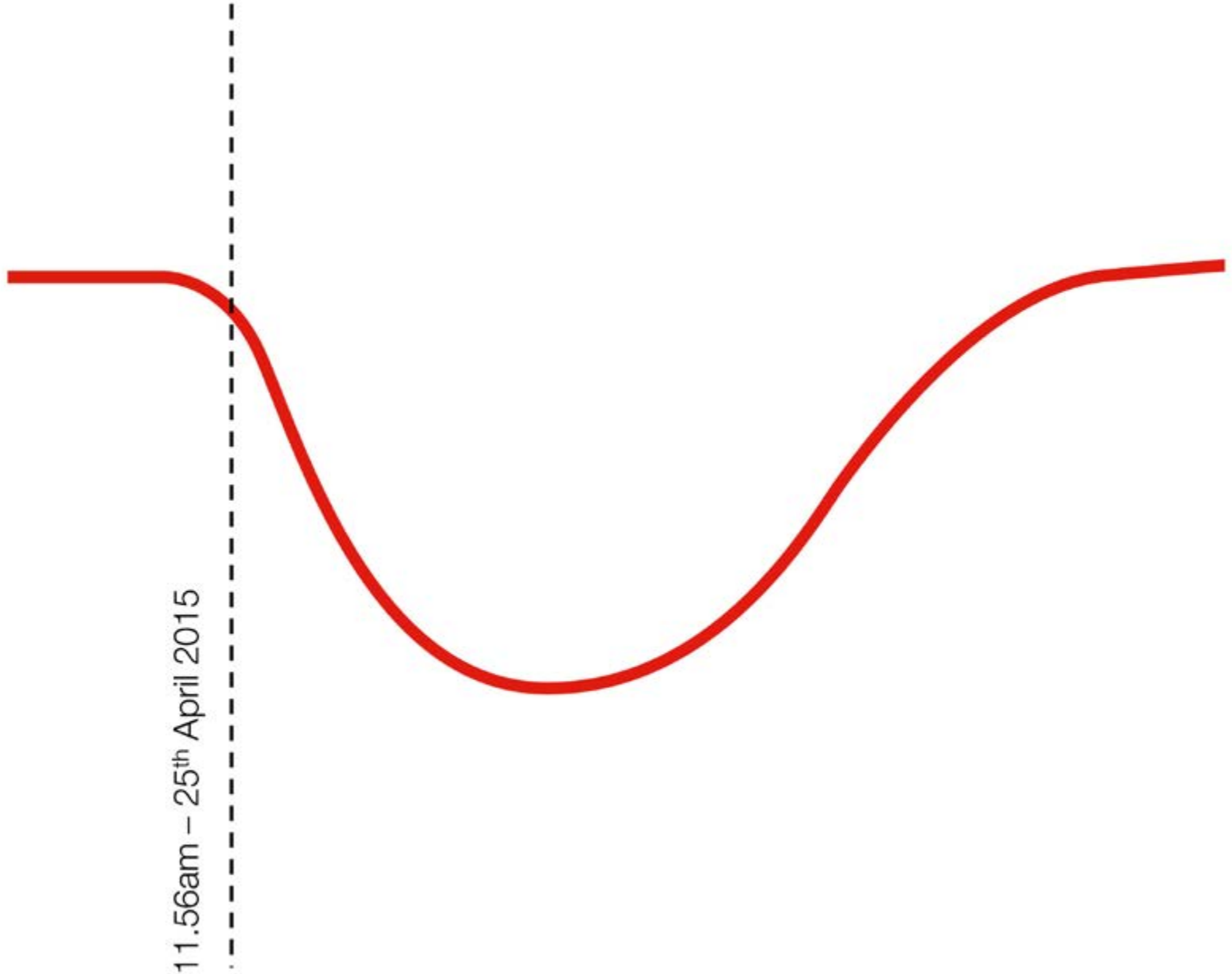
After Park, 1991

MARK THE NUMBERS 1 to 10 on the GRAPH to match the timing of the tweets



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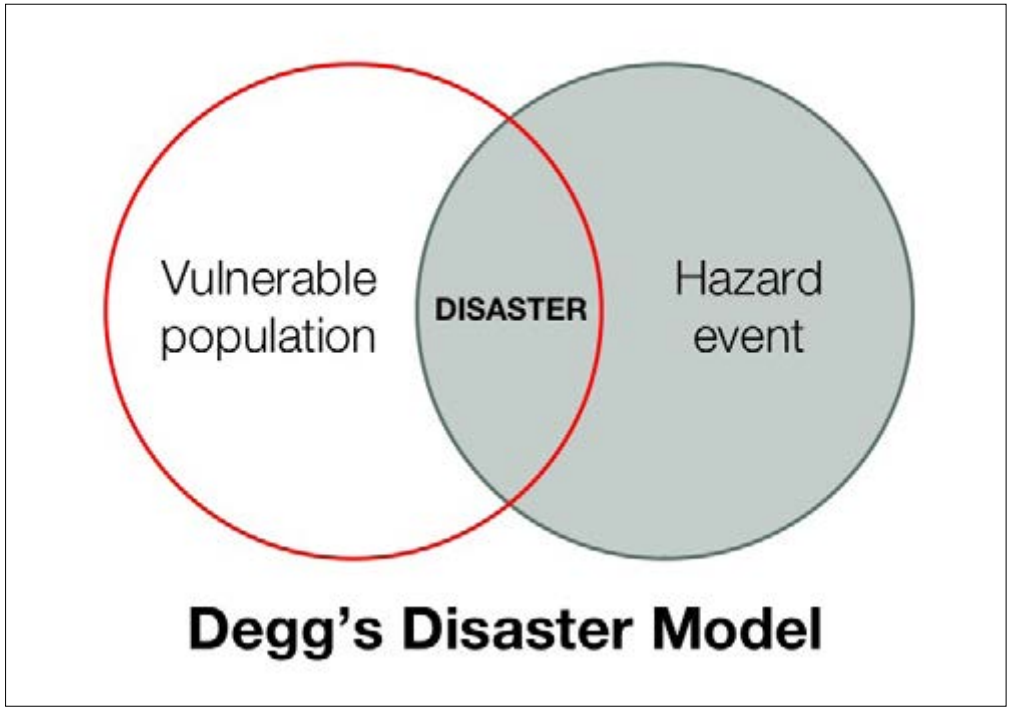

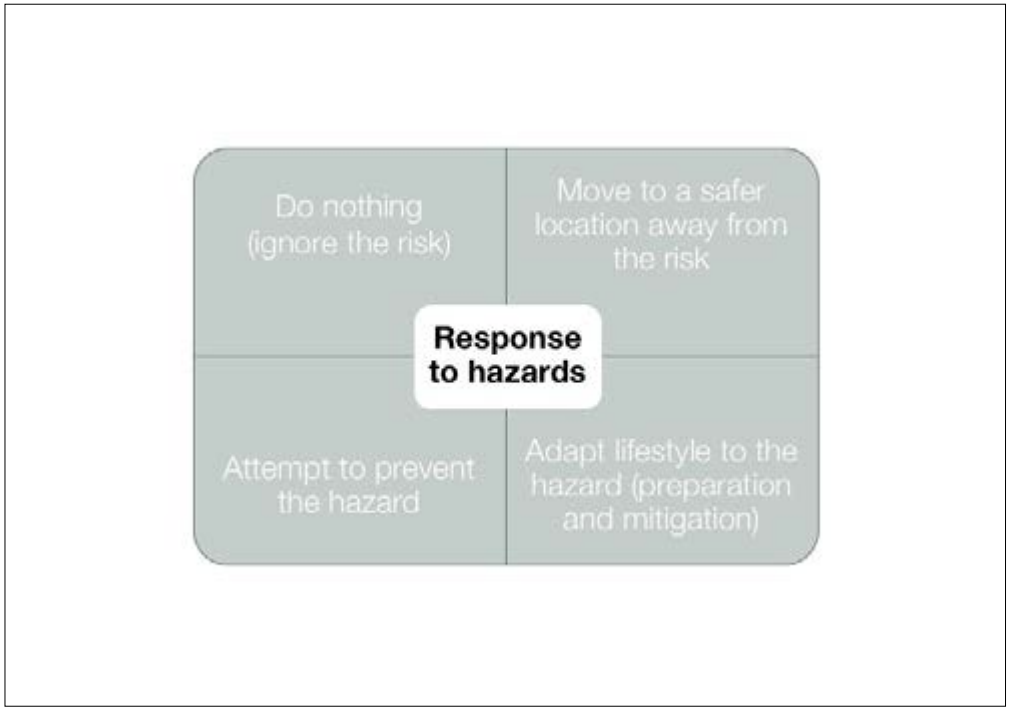

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What risks do we have here in the UK?

How do we prepare for them?

How could we become more resilient?

Download PPT here

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Video resource list

Session 2: Earthquakes

Introductory activities: 1. Tectonic background - p48

Anatomy of an earthquake - Professor Iain Stewart
https://www.youtube.com/watch?v=8QNigxTN384

Introductory activities: 3. An introduction to the role of the Red Cross in earthquake preparedness - p49

3 Easy Steps To Prepare For An Emergency | American Red Cross
https://youtu.be/MzaGbHkndts

KS3: Exploring the tectonic situation in the Nepal: 4. Traffic camera - p52

Nepal Earthquake Disaster 2015 Hindi Documentary
https://www.youtube-nocookie.com/embed/btc020siGBo

KS4: The Nepal Earthquake – why did it happen where it did? 1. One week in: the Nepal earthquake video - p54

Nepal earthquake
https://www.youtube.com/watch?v=rfJ7WEmUX1s

KS4: The Nepal Earthquake – why did it happen where it did? 2. The Red Cross' global response to the Nepal earthquakes - p55

Nepal Earthquake appeal | The Red Cross' Global Response
https://www.youtube.com/watch?v=WXVwy8vyuTc

Session 3: The impact of a natural disaster

Introductory activities: 1. How did Red Cross volunteers support people affected by the Nepal earthquake? - p74

Nepal Red Cross Volunteer Sameer Bajracharya
https://vimeo.com/162543449/c5030159ea

KS3: Reporting the impacts of the Nepal earthquake: Additional resources - p77

Glossary of Common Video Terms
https://vimeo.com/blog/post/glossary-of-common-video-terms

Session 4: Recovery and resilience

Introductory activities: 2. The role of the Red Cross in recovery - p108/109

Nepal earthquake: Three months on
https://www.youtube.com/watch?v=D1v1KCt-H6M

Water: Communities help water flow again after Nepal earthquake
https://www.youtube.com/watch?v=Nn801SrkMMA&list=UUZ8xf9ZrTOv7SeYK7U5eKVg&index=159

Shelter: Nepal communities learn earth-quake resistant building
https://www.youtube.com/watch?v=ClxT_2vjF0c&index=160&list=UUZ8xf9ZrTOv7SeYK7U5eKVg