

# NEPAL: EARTHQUAKES 2015

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## Dharhara – a nine story tower in Kathmandu before and after 25 April 2015 earthquake

Sources:

### Before the earthquake

[http://en.wikipedia.org/wiki/April\\_2015\\_Nepal\\_earthquake#/media/File:KATHMANDU\\_NEPAL\\_FEB\\_2013\\_%288581665041%29.jpg](http://en.wikipedia.org/wiki/April_2015_Nepal_earthquake#/media/File:KATHMANDU_NEPAL_FEB_2013_%288581665041%29.jpg);

### After the earthquake volunteers remove debris

<http://www.thehindu.com/news/international/nepal-earthquake-hundred-of-bodies-retrieved-from-debris-of-dharhara-tower/article7141448.ece>

An earthquake is the shaking of the Earth caused by the release of energy. The National Earthquake Information Centre (NEIC) records about 20,000 earthquakes every year or 50 a day, around the world. However, millions of earthquakes occur yearly but are too weak to be recorded.

Nepal is one of the most geologically hazardous countries on Earth. The country is located on a **fault** line where the Indian plate collided with the Eurasian plate 40-50 million years ago. As a consequence of Nepal's dangerous location on the edge of the plate (**interplate**) a powerful and devastating earthquake struck the country on 25 April 2015 and another quake (or major aftershock) on 12 May 2015.

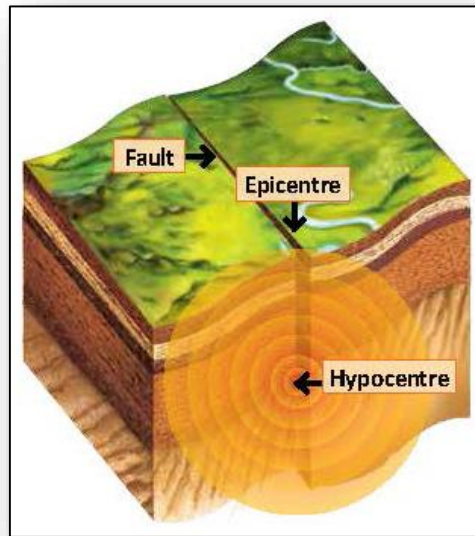
## First earthquake: 25 April 2015

- The first quake on the 25 April measured a magnitude of 7.8 on the **Richter scale**.
- As the **epicentre** of the earthquake was located in the Gorkha district (about 80km **northwest** of Kathmandu), it was officially named the **Gorkha earthquake**. (The effects of an earthquake are strongest surrounding the epicentre.)
- Its **hypocentre** was at a depth of 15km.
- The shaking triggered **avalanches** on Mt Everest and **landslides** in the Langtang Valley.
- On the following day **aftershocks** occurred, one measuring 6.7.
- The tremors were felt in the northern Indian states of Bihar and southern states of Karnataka and Kerala. The intensity of the quake was felt in countries such as Bangladesh, China, Tibet, Pakistan and Bhutan.
- Entire villages were flattened near the epicentre, and parts of World Heritage Sites destroyed such as in Kathmandu Dhar Square

(\***Seismometers** are used to measure the magnitude of earthquakes)

### Cross section showing fault, epicentre and hypocentre

Source: [http://www.myteamexplore.com/scgtest/team-explore/uploads/images/Weather\\_Tsunami\\_Page\\_1.jpg](http://www.myteamexplore.com/scgtest/team-explore/uploads/images/Weather_Tsunami_Page_1.jpg)



**A damaged village lies near the epicentre of 25 April earthquake in Nepal's Gorkha District. Aid reached the hilly district for the first time April 29, 2015.**

Source: <http://news.nationalgeographic.com/2015/05/150501-nepal-crisis-mapping-disaster-relief-earthquake/?sf8933117=1>



### Second earthquake or aftershock: 12 May 2015

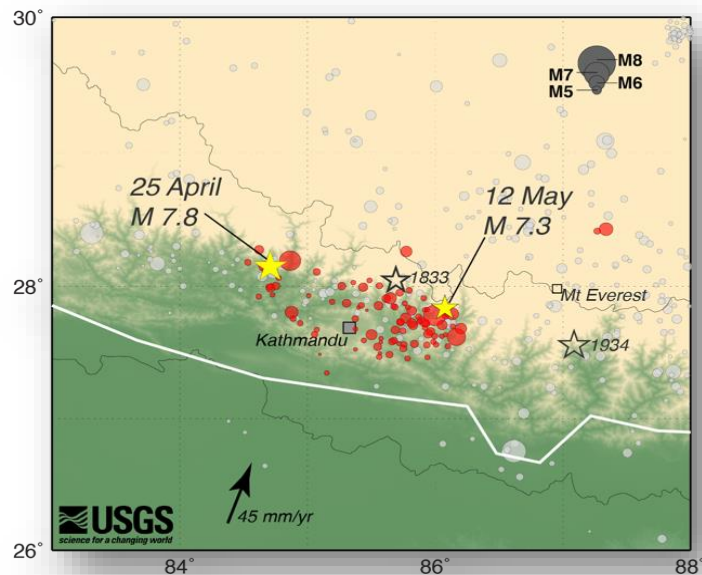
- A second earthquake or **major aftershock** occurred on 12 May.
- It measured a magnitude of 7.3 on the **Richter scale**. The size of an earthquake is referred to as its magnitude on a scale from 1 – 10. Magnitudes of 1 are low and 10 are high.
- The **epicentre** was about 65km northeast of Kathmandu, near the Chinese border.
- Its **hypocentre** was at a depth of 10km.
- Tremors were felt in the northern Indian states such as Bihar.

### Common factors in the two earthquakes:

- Depth or **hypocentre** of both earthquakes (15km and 10km) were **shallow**. Shallow hypocentres cause more aftershocks and damage, than earthquakes that originate deeper in the ground. This is because there are fewer layers of rock and soil to absorb the shock waves.
- Both earthquakes were followed by many **aftershocks** causing **landslides** and further damage to properties and infrastructure.

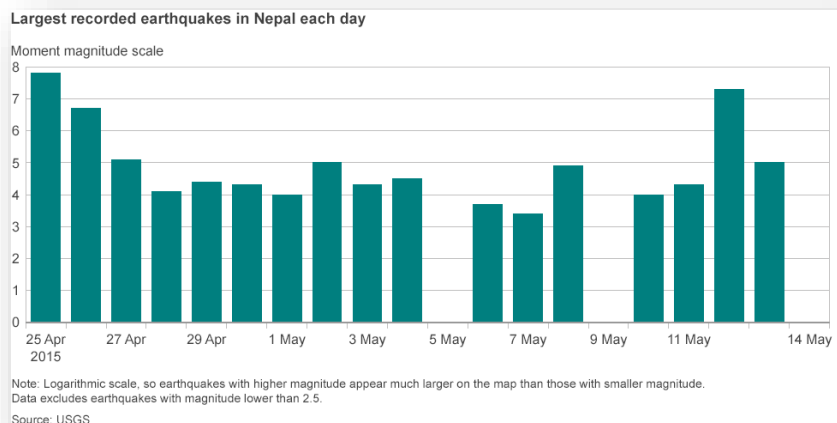
### Map of the two earthquakes (yellow stars) and aftershocks (red circles) in relation to Kathmandu and Mt Everest

Source: [http://en.wikipedia.org/wiki/April\\_2015\\_Nepal\\_earthquake#/media/File:NepalAftershockMap.png](http://en.wikipedia.org/wiki/April_2015_Nepal_earthquake#/media/File:NepalAftershockMap.png)



### Aftershocks: largest recorded earthquakes in Nepal each day from 25 April -14 May 2015

Source: <http://www.bbc.com/news/world-asia-32479909>



### Activities:

- Research the following words: Richter scale, epicentre, hypocentre, earthquake, aftershock, World Heritage Site, avalanche and landslide.
- Draw a two column table showing the similarities and differences between the two earthquakes.
- Explain why aftershocks are dangerous.
- Geologists advocate that as a result of the recent earthquakes, Kathmandu is taller (one metre) and Mt Everest a little shorter (2.5cm). Research whether this statement is true. How do they know? Is the source reliable? Source: <http://www.livescience.com/50677-nepal-earthquake-radar-satellite-view.html>



## Nightmare waiting to happen

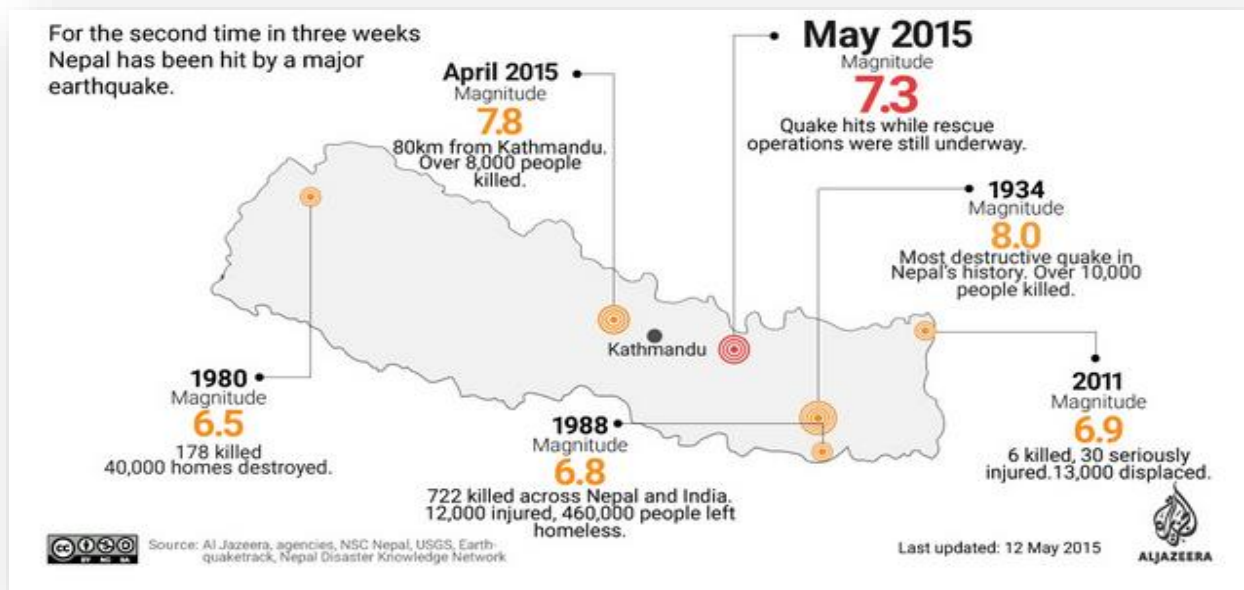
As the earth's crust moved it unleashed **shock waves** through the ground. Only in 2013, seismologist Vinod Kumar Gaur, stated that *'calculations show that there is sufficient accumulated energy to produce an 8 magnitude earthquake. I cannot say when.'* (The Hindu)

In 2015, energy released from the earth's crust resulted in the worst earthquake in Nepal for 81 years (since 1934). The Nepal quake was a *'nightmare waiting to happen'* in a developing country with high population densities, lax building regulations and poor construction of infrastructure.

Earthquakes have always occurred in Nepal and the US Geological Survey (USGS) warned of possible and even larger earthquakes in the future. In fact geologists state that a large earthquake occurs every 740-140 years on the **Main Frontal Thrust** (southern part of the Himalayan collision zone) and 870-350 years in **east Nepal**.

### Map locating main earthquakes since 1934 in Nepal

Source: <http://www.aljazeera.com/news/2015/05/150512071622053.html>



### Why did it occur?

- **Plate tectonic forces**

As the **tectonic force** pushed up the high Himalayan Mountains it set off devastating earthquakes, referred to as a **Geohazard**.

*'Among the most dramatic and visible creations of **plate-tectonic forces** are the lofty Himalayas, which stretch 2,900km along the border between India and Tibet. This immense mountain range began to form between 40 and 50 million years ago, when two large landmasses, India and Eurasia, driven by plate movement, collided. The pressure of the impinging plates could only be relieved by thrusting skyward, contorting the collision zone, and forming the jagged Himalayan peaks'* (USG <http://pubs.usgs.gov/gip/dynamic/himalaya.html>)

- **Fault line or collision zone**

Nepal lies on the **fault line** between the Indian and the Eurasian plates. The Indian plate is moving north at a rate of 5cm a year that is twice the speed at which fingernails grow. On the 25 April the plate actually moved just over 6 metres. Geologically- this is very fast!

- **Thrust fault**

Normal faults create space when the ground cracks and separates. Nepal lies on a **thrust fault**, where one tectonic plate forces itself on top of another.

The collision of the two landmasses and the resulting earthquakes has not ended. *'The Himalayas continue to rise more than 1cm a year -- a growth rate of 10 km in a million years!'* (USG)

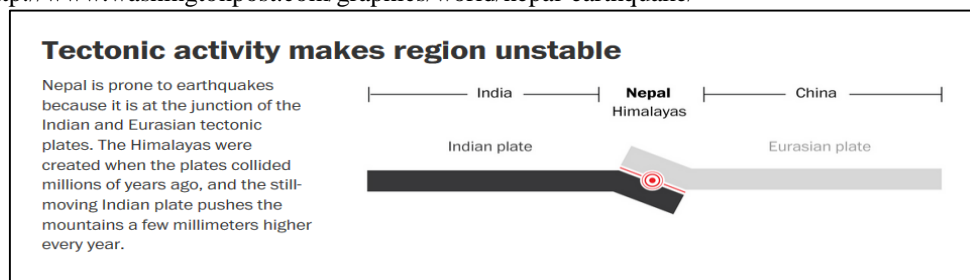
## Formation of the Himalayas caused by the movement of Indian plate into Eurasian plate

Source: <http://pubs.usgs.gov/gip/dynamic/himalaya.html>



## Tectonic activity makes region unstable –thrust fault

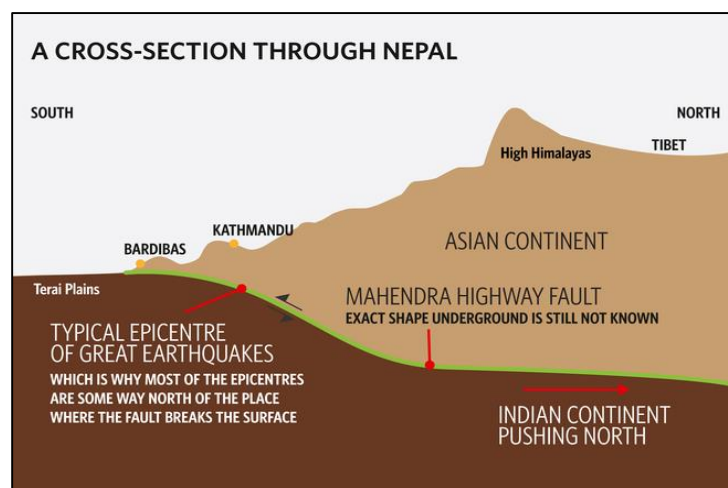
Source: <http://www.washingtonpost.com/graphics/world/nepal-earthquake/>



## Cross section through Nepal

The dark brown is the northward moving Indian plate moving under (under thrusting) the light brown Eurasian plate (on top)

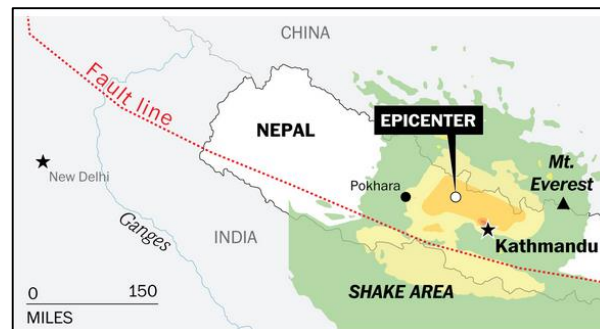
Source: <https://cosmosmagazine.com/earth-sciences/kathmandus-earthquake-nightmare>



### Location of fault line and epicentre of 25 April earthquake

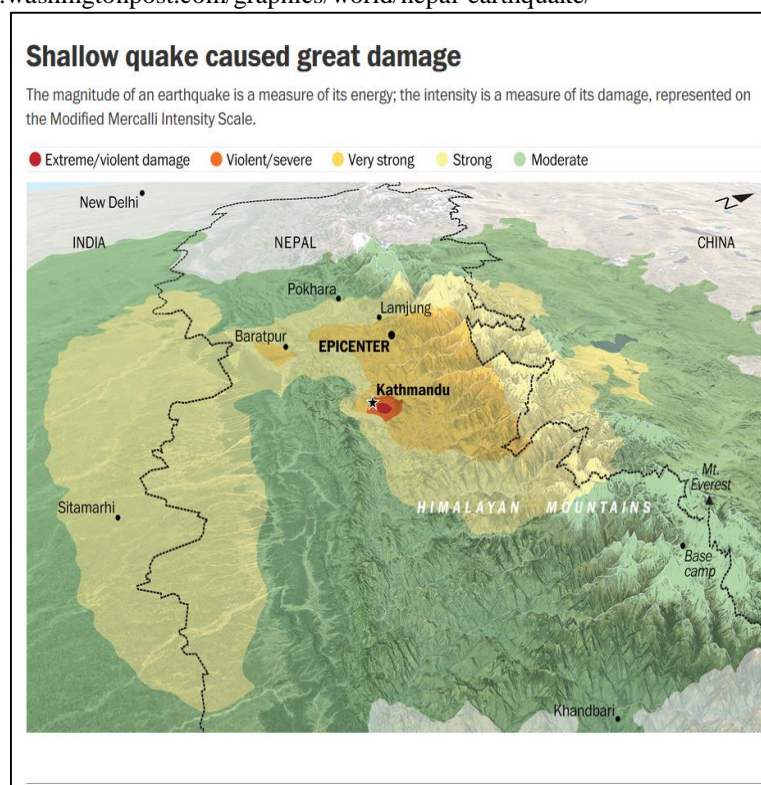
**\*See key on map below for damage**

Source: <http://www.washingtonpost.com/graphics/world/nepal-earthquake/>



### Shallow quake caused widespread damage 25 April

Source: <http://www.washingtonpost.com/graphics/world/nepal-earthquake/>



### Kathmandu's geology magnifies the shaking

Kathmandu, the capital of Nepal, is located in the bowl shaped **Kathmandu valley**. The valley is the most populated and developed place in Nepal. However many of its buildings, accorded the status of a UNESCO World Heritage Site in 1979 (e.g. Bhaktapur, Patan and Kathmandu Durbar Squares), were damaged during the earthquake.

Unfortunately the effects of earthquakes are amplified in **Kathmandu**, as the city is located on an **ancient sedimentary lake basin**. Over time the **Paleo Kathmandu Lake** was infilled with sediments. Unlike hard rock, sedimentary basins tend to amplify the earthquake's movements in the ground and as a result cause greater damage. Lok Bijaya Adhikari, a seismologist at the National Seismological Centre in Kathmandu stated that sedimentary layers '*magnify the shaking of an earthquake as much as eight times*'. Adhikari points out that the thick layer of sand, silt and mud underneath downtown Kathmandu is the wobbliest place.

**Kathmandu** with a population of over one million people, is the centre of the country's industrial and commercial economy and an important gateway to tourism in the country. However, the epicentre of the massive quake on 25 April was located close to the populated Kathmandu –where a majority of deaths took place.

### Kathmandu's Durbar Square UNESCO World Heritage Site before and after 25 April 2015

Nepal's Durbar Squares are the historical heart of the country's cities. They contain palaces, temples and public places.

Source: <http://news.nationalgeographic.com/2015/04/150427-nepal-earthquake-damage-temples-buddhism-hinduism-world-heritage-monuments-unesco/>



### Thamel district, in Kathmandu

*'Thamel, a district at the heart of tourism in Kathmandu, is made up of a network of courtyards connected by passages only as wide as a person's outstretched arms. Throngs of people surge through these narrow channels, bikes and scooters brushing past them as looping electric phone and internet cables dangle precariously overhead. The density of humanity in this place is astounding – 60,000 people to each square kilometre. Houses, businesses and shops tower up on either side of the passageways – eight, nine, ten storeys high, cantilevering inwards as they go up, so that the sky above is just a thin blue line.'* (<https://cosmosmagazine.com/earth-sciences/kathmandu-earthquake-nightmare>)

The density of the population, tiny passageways and poor constructed buildings contributed to deaths from falling buildings on 25 April 2015. For over 40 years, Thamel has been the centre of Kathmandu's tourist industry. However the earthquake caused extensive damage to tourist accommodation and restaurants. Will it recover?

### Bhaktapur, city in the Kathmandu Valley

The ancient city of Bhaktapur lies 13km east of Kathmandu and about 50km from the epicentre of the earthquake. The city contains the country's best preserved palace courtyards, and the old city centre is listed as a World Heritage Site. Reports claim half of all buildings were destroyed and 80% of temples damaged during the earthquake. Further up the hill from the city whole villages were flattened and landslides were common. This old urban area contained structures that were not built to withstand intense shaking. Water and gas lines were broken. Loss of life was generally from falling buildings and objects. In the future, earthquake proof engineering practices could reduce buildings collapsing under the stress of large earthquakes. In order to combat the growing risks posed by a devastating earthquake in Nepal in the near future, National Society for Earthquake Technology - Nepal (NSET) seeks to make builders and citizens aware of affordable construction techniques that can significantly reduce seismic risk



### Baktapur Dubar Square before the earthquake 1989

Source: John Bliss



### Bhaktapur Dubar Square after the earthquake 2015. Residents are taking refuge

Source: [http://ichef.bbci.co.uk/news/624/media/images/82590000/jpg/\\_82590533\\_471208372-1.jpg](http://ichef.bbci.co.uk/news/624/media/images/82590000/jpg/_82590533_471208372-1.jpg)



#### Activities

- Describe the terms: tectonic force, fault line, thrust fault and Geohazard
- Explain why the Nepal quake was a '*nightmare waiting to happen*'
- Refer to map on locating main earthquakes since 1934 in Nepal: a. Rank in order from highest to lowest the magnitude of earthquakes from 1934. b. Why do you think the number of people killed was high in April 2015?
- Refer the maps showing the formation of the Himalayan Mountains. What occurred between 70 million years ago and today?
- What tectonic plate is on top: Indian or Asian?
- Explain how the Himalayan Mountains are continuing to move skywards.
- Refer to map on the shallow quake caused great damage 25 April. a. Where was the extreme and violent damage? b. Name a place where the quake was very strong and one place where it was strong.
- Ancient lake sediments made the Kathmandu Valley a desirable place to settle but it also made Kathmandu vulnerable to earthquakes. Explain this statement.
- Describe how the earthquake affected the Thamel district in Kathmandu.
- Refer to the Oxfam websites or other websites for photographs of the Nepal earthquake:  
<http://wordsandpictures.oxfam.org.uk/pages/search.php?search=!collection18452&k=fc57dc5b9a;>  
<http://wordsandpictures.oxfam.org.uk/pages/search.php?search=!collection18536&k=27d0f213de>. Design an annotated collage of the photographs.



## Avalanches

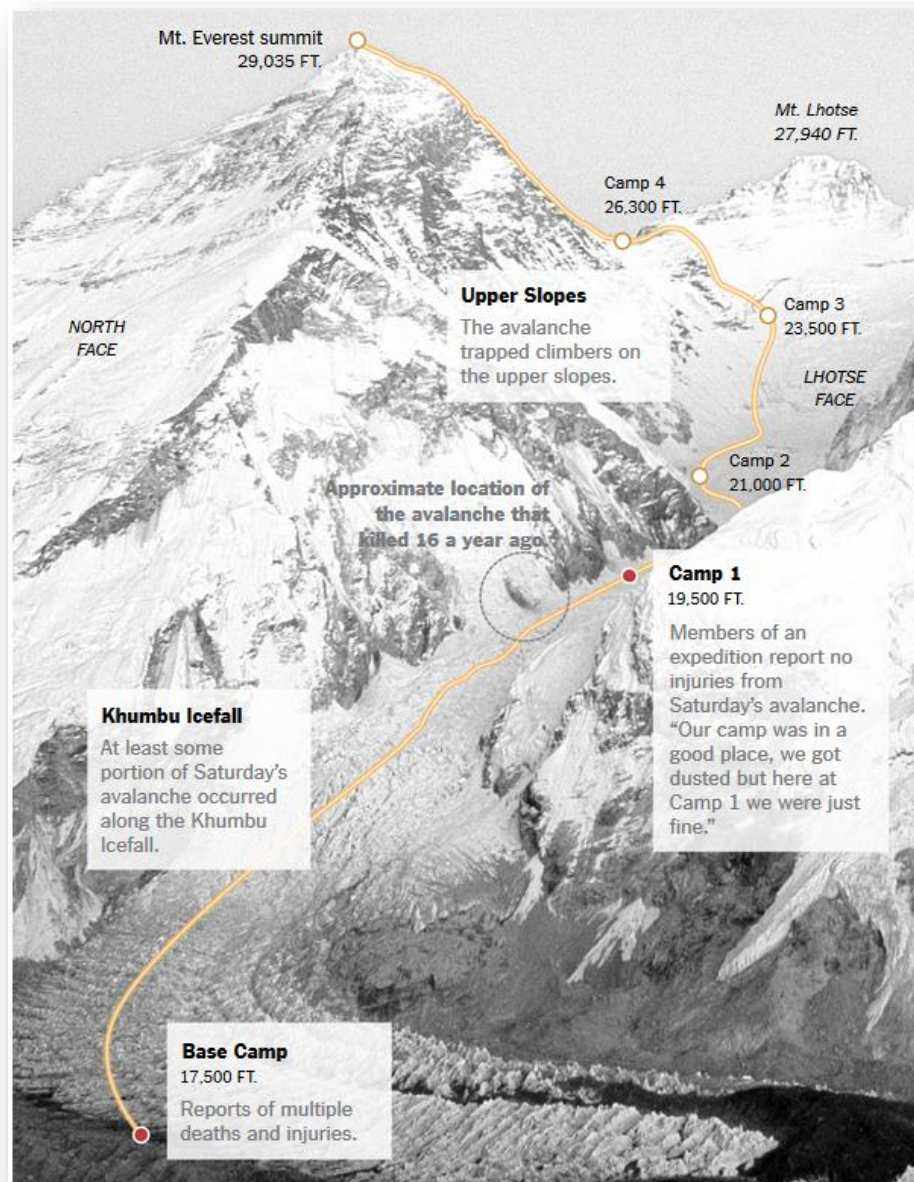
Multiple avalanches on Mt Everest were triggered by Nepal's shaking earthquake on 25 April and its aftershocks. At least 22 people were killed of which 10 were Nepalese Sherpas who work as guides, cooks and porters. About 60 people were injured. As it was the prime climbing season, between 700 and 1000 people were climbing Mt Everest or staying at Everest Base Camp when the earthquake struck.

At Base Camp *"Everything is destroyed ... No tents remain erect. They are shredded, poles broken, climbing gear and cooking supplies scattered across the frozen landscape."*

(<http://news.nationalgeographic.com/2015/04/150428-everest-earthquake-base-camp-nepal-himalaya-climbing-sherpa/>)

### Avalanches on Mt Everest

Source: [http://www.nytimes.com/2015/04/26/world/asia/everest-climbers-killed-as-nepal-quake-sets-off-avalanche.html?\\_r=0](http://www.nytimes.com/2015/04/26/world/asia/everest-climbers-killed-as-nepal-quake-sets-off-avalanche.html?_r=0)



### Devastation at Base Camp, Mt Everest

Source: <http://news.nationalgeographic.com/2015/04/150428-everest-earthquake-base-camp-nepal-himalaya-climbing-sherpa/>



### Landslide in Langtang Valley, Nepal

Langtang is a small village located along Nepal's third most popular trekking area. It is visited by 20,000 foreign tourists every year.

On 4 May 2015, a post seismic landslide obliterated the village causing about 300 people to be buried under metres of snow, ice and rock. Gone were most of the trekkers, and international search teams that had been working their way through the earthquake debris.

According to glaciologist Dorothea Stumm, *'a massive hanging glacier cracked when the earthquake struck at 11.56am. The ice formed a cloud that gathered snow and rocks and then funnelled down the mountain, burying the village, and creating an enormous pressurised blast'* (<http://i.guim.co.uk/static/w-620/h--/q-95/sys->)

### Langtang village before the second earthquake hit on 12 May 2015

Photograph: REX/Shutterstockimages/Guardian/Pix/pictures/2015/5/16/1431793192918/453677a9-b5c2-4b34-be79-04d6ee9370d3-620x372.jpeg





### Langtang Valley before and after the landslide

Source: <http://www.abc.net.au/news/2015-04-27/nepal-earthquake-before-after-photos/6424570>



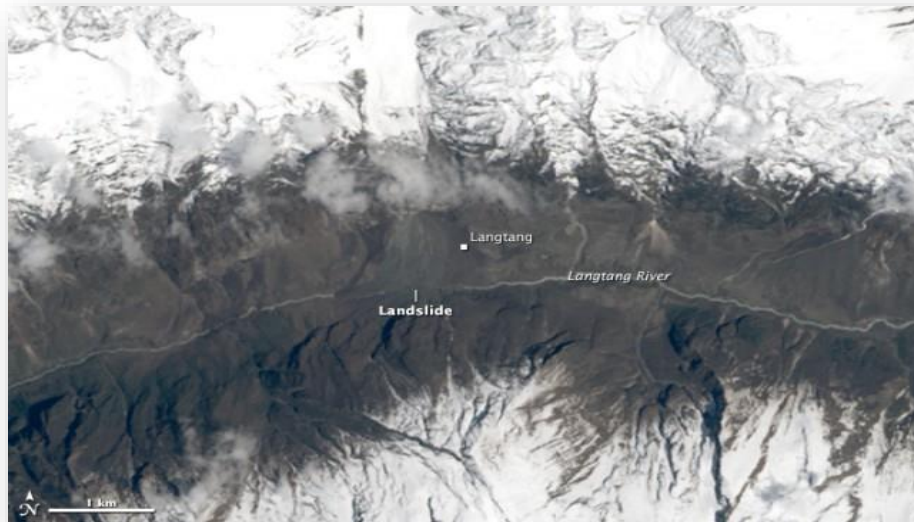
Langtang Valley before avalanche



Langtang Valley after avalanche

### Location of Langtang and the landslide

Source: [http://blogs.agu.org/landslideblog/files/2015/05/15\\_05-Langtang-1-e1430807148885.jpg](http://blogs.agu.org/landslideblog/files/2015/05/15_05-Langtang-1-e1430807148885.jpg)



### Activities

- Explain the links between earthquakes, and avalanches or landslides as a flow diagram
- Although the avalanche damaged the ladders at the Khumbu Icefall a handful of mountaineers, were granted government permission to again climb on 29 April 2015. What are your thoughts on this statement?
- How was the village of Langtang wiped off the map in a few terrifying seconds?

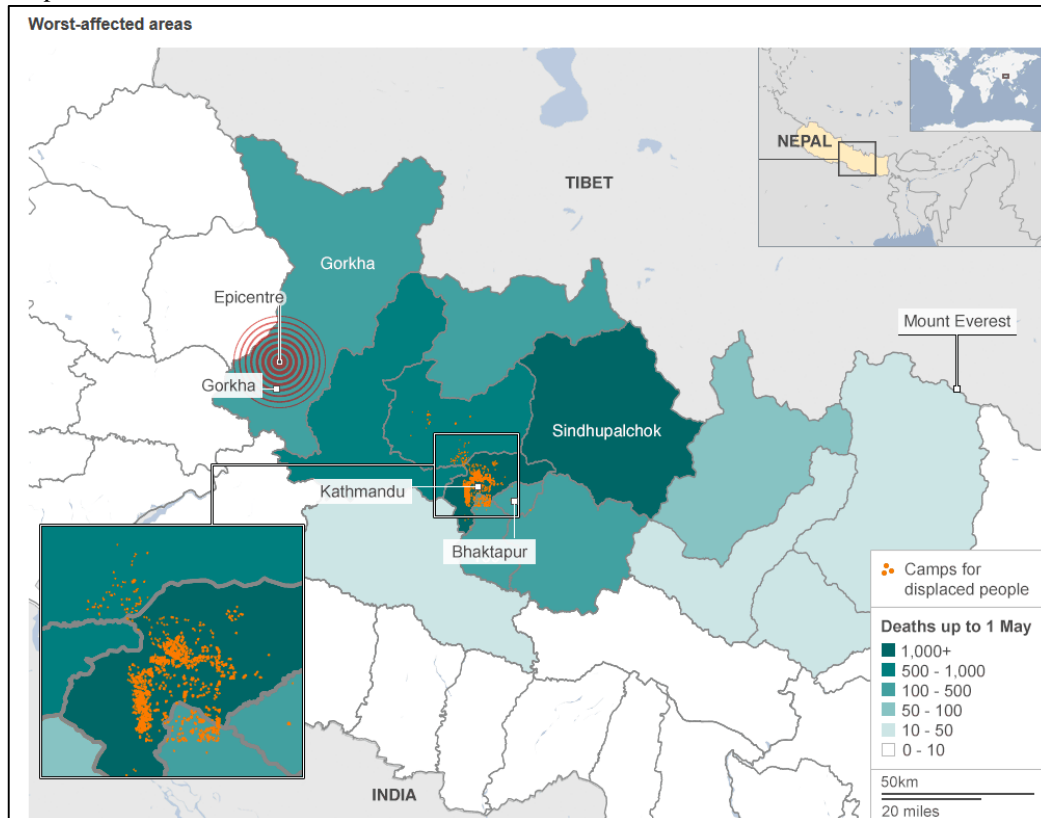


## Spread of earthquake damage

The effects of the earthquakes was widespread with the destruction of 80% of houses in rural areas. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) stated that it was difficult to reach remote areas by road or helicopter. Access in June 2015 still remains a critical issue, especially as aftershocks continue to generate landslides. There were other difficulties, as 90% of remote health facilities were destroyed and aid agencies caught in the rubble took longer to reach remote communities.

## Extent of worst affected areas

Source: <http://www.bbc.com/news/world-asia-32479909>



## Death toll

The first earthquake on 25 April, located near heavily populated cities (e.g. Kathmandu), caused more deaths and contributed to the greatest damage to homes and infrastructure, than the earthquake on 12 May. Nearly 3 million people were displaced and more than 4 million people affected. Many more people are feared trapped under buildings.

*'As of 15 May 2015, the National Emergency Operations Centre (NEOC) reported a total of 8,462 deaths and another 20,000 people injured (cumulative from 25 April earthquake). Nearly 489,000 homes were destroyed and another 260,000 damaged. Around 7300-7800 of the deaths were due to shaking and collapse of buildings, with around 500-1000 through landslide and other secondary effects'.* <http://earthquake-report.com/2015/04/25/massive-earthquake-nepal-on-april-25-2015/>

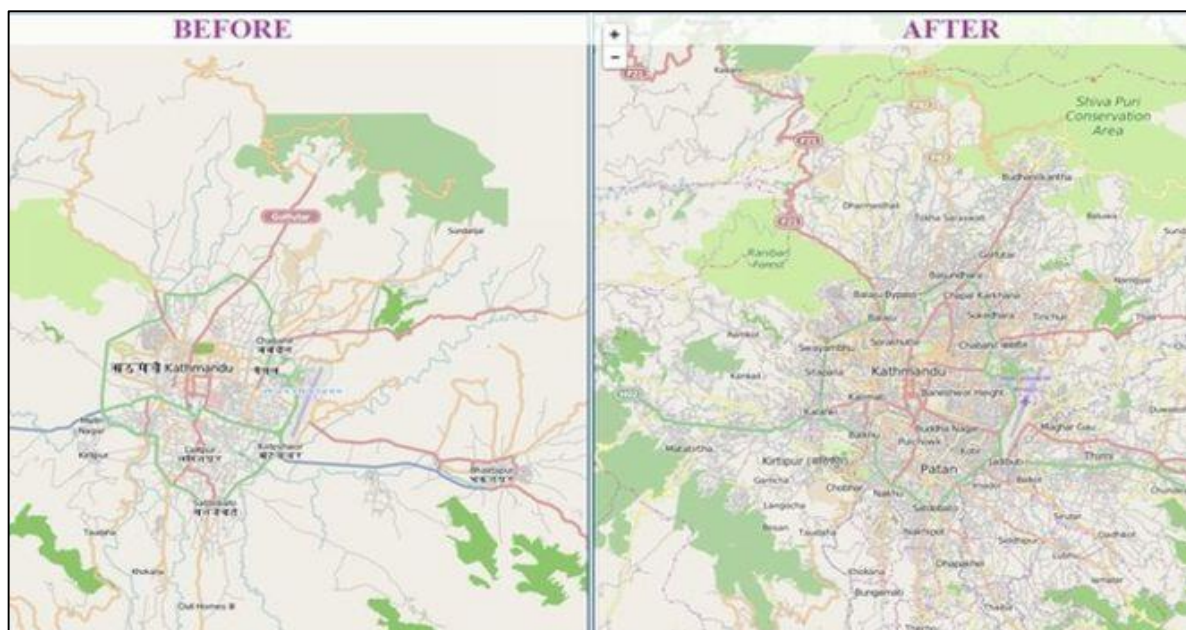
**Statistics are often out of date. Reliefweb provides current information** <http://reliefweb.int/organization/un-rhc-nepal>

## Technology supports aid organisations

- **Satellite imagery:** Satellite imagery from the Sentinel-1A satellite has been used to support emergency aid organisations.  
*‘By combining Sentinel-1A imagery acquired before and after the quake, changes on the ground that occurred between the two acquisition dates lead to rainbow-coloured interference patterns in the combined image, known as an ‘interferogram’, enabling scientists to quantify the ground movement.’*  
([http://www.esa.int/Our\\_Activities/Observing\\_the\\_Earth/Copernicus/Sentinel-1/Nepal\\_earthquake\\_on\\_the\\_radar](http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Sentinel-1/Nepal_earthquake_on_the_radar))
- **Crises mapping:** Thousands of people in remote parts of Nepal are still in need of medical help and basic supplies. However with roads damaged and buildings collapsed, knowing what aid is needed and where, is a challenge. One group of Nepalis, backed by a global community, is trying to change that by ‘crisis mapping’ Nepal.

## Crises mapping in Nepal

Source: [http://www.bbc.com/news/world-asia-32603870?ocid=socialflow\\_facebook](http://www.bbc.com/news/world-asia-32603870?ocid=socialflow_facebook)



## Active citizenship

Unfortunately a large proportion of the population live in houses vulnerable to earthquake shaking as they are made of unreinforced brick. The **National Society for Earthquake Technology - Nepal (NSET)** aims to make citizens aware of affordable construction techniques that can significantly reduce seismic risk. Currently, 80% of new buildings in Nepal are built informally, without engineering expertise.

After the earthquakes there was no electricity and shops around Kathmandu ran low on food, bottled water and phone cards. National and global action occurred:

- **National scale:** The Nepalese government set up tents and distributed food. Youth centres and mosques became shelters.
- **Global scale:** As a large number of people were forced to sleep outdoors, pneumonia rates rose. **Medecins Sans Frontieres (MSF)** supplied medical teams and clean water. The **World Health Organisation (WHO)** mobilised funds to aid the treatment of spinal cord injuries, which accounted for one third of the injuries. Organisations on the ground, including **UNICEF** provided water, sanitation, medical supplies and psychological support. The **Indian Army** delivered relief materials and rescued stranded people.  
The **Australian government** contributed \$20 million after the earthquake. Funding aims to support women and vulnerable communities to establish small businesses and help children go back to school.

**International Search and Rescue and Foreign Medical Teams Source:** Source:  
<http://un.org.np/sites/default/files/OCHANepalEarthquakeSituationReportNo.10%284May2015%29.pdf>

#### International Search and Rescue and Foreign Medical Teams

In the first hours and days of an earthquake, rapid search and rescue operations is critical in saving lives. Most people trapped by debris are rescued in the minutes and hours immediately following the event by family and friends, but many others are rescued by the local emergency services and international urban search and rescue (USAR) teams.

Globally, the International Search and Rescue Advisory Group (INSARAG) has been at the forefront of earthquake response. It has made major contributions to the international coordination system including the On-Site Operations Coordination Centre (OSOCC), USAR Coordination Cell (UCC) and the Reception and Departure Centre (RDC).

For the Nepal earthquake response, 53 USAR teams (1,872 personnel and 177 search dogs) from 23 countries worked across seven districts, making 16 live rescues, recovering 178 bodies and providing 1,182 people with medical assistance.

Over 100 Foreign Medical Teams (FMTs) also deployed to support the relief operation. Mobile medical teams have expanded services to reach remote communities by foot and airlift to provide vital medical care. During the first week of the response, over 10,000 health cases have been treated by FMTs. Field hospitals were also established in Dhunche (Rasuwa District), Chautara (Sindhupalchowk District), Bidur (Nuwakot District), and Ramechhap District to provide medical care including surgical and obstetric services for about six months.

After the Nepal earthquake and aftershocks, monsoon rains pose the risk of more rock falls, mudslides and floods. However Nepal's resources are stretched as the country recovers from earthquakes leaving hundreds of thousands homeless.

Relief organisations working hard to stay ahead of the monsoon rains. Unfortunately the worst affected earthquake areas are also vulnerable to floods and landslides. In June 2015, over 300 agencies are still supporting the government led response. To reach remote communities in mountainous and isolated villages, traditional delivery methods are supported by porters.

#### Activities

- List the problems faced by the Nepalese government and international aid agencies
- Why do you think the death toll increased over time?
- Refer to the map showing the extent of worst affected areas. What places were worst affected by the number of deaths? Include reasons.
- Buildings kill people not earthquakes. Explain this statement.
- In groups research how local, national and global organisations made a difference to the lives of these vulnerable people. Present research using Web 2.0 tools.
- Discuss how videos from cameras, drones and Gopros provides a visual image of the impacts of the earthquake <http://www.bbc.com/news/world-asia-32481945>
- Explain how technology has helped aid organisations reduce deaths and improve their wellbeing.
- Research why Nepal is currently one of the poorest countries in the world and how tourism has contributed to its economic growth.
- Explain how earthquakes and resulting avalanches and landslides could affect future tourism.
- The Nepalese Prime Minister has told the Nepalese to design an earthquake emergency kit that would be useful in the event of another earthquake. In groups design what you would include in an emergency kit.
- Collect ten media articles on the earthquakes in Nepal in 2015. Summarise their ideas. The Guardian 2015 tagged articles are useful <http://www.theguardian.com/world/nepal-earthquake-2015>
- Find a survivor story of a person affected by the earthquakes. Summarise the story. What are your thoughts on the story?
- Refer to the before and after photographs on the Nepal earthquake. Describe the differences <http://www.abc.net.au/news/2015-04-27/nepal-earthquake-before-after-photos/6424570>
- What is your role as an Australian concerning the earthquake in Nepal? Do we have any obligations or responsibilities? If you do, what are they?
- **Human trafficking an outcome of the earthquakes.** After the earthquake campaigners warned that girls and young women were vulnerable to human traffickers. *'Authorities in India have rescued more than 20 children from a human trafficking network targeting families who lost their livelihoods in last month's earthquake in Nepal'.* *'The children's parents, from poor villages in northern India, had been working as migrant labourers in Nepal and were laid off after the earthquake.'* What is human trafficking? Why is it occurring? What can be done to stop this illegal practice?



Source: <http://www.redcross.org.uk/en/What-we-do/Teaching-resources/Quick-activities/Nepal-earthquake>

### News coverage

News of a disaster doesn't just happen. A journalist receives a report from someone on the scene or is aware of what's going on, thinks about it and publishes it. That's the procedure whether it's mainstream newspapers, radio, television or other media such as Twitter or Facebook.

What people publish involves judgement.

Explore some of the choices editors make by **asking young people to imagine that they are in charge of a news outlet** - whether mainstream or social media.

Individually or in groups, work out answers to the following scenarios and be prepared to justify them to the whole group.

- You're getting some reports from Everest and others from villages much closer to the centre of the earthquake. Which would your readers or viewers be most interested in? Which do you want to tell them about? Why?
- Would you show images of dead bodies? A child in distress? Grieving parents? Such images are effective ways to convey the awfulness of the tragedy. But you are also concerned about the dignity of those pictured and the sensitivities of readers. What do you decide?
- A dramatic video sequence of an avalanche hitting Everest base camp has emerged. It is disturbing and contains a lot of swearing. Would you publish it where young children might see it?
- People are taking selfies in front of Nepal's famous Dharahara tower, whose nine stories were destroyed in the earthquake. Would you publish an opinion piece on what has been called "earthquake tourism"?
- You hear that an elderly person has been pulled from the rubble days after all hope of survivors had gone. How much space do you give to covering this apparent miracle, compared with reporting the hardships faced by survivors? How important is good news to your readers?



### Indian newspaper headlines on the Nepalese earthquake

Source: <http://www.gettyimages.com.au/detail/news-photo/indian-newspapers-displaying-front-page-headlines-and-news-photo/471174406>

## Teachers' resources on the Nepal earthquake and related resources

<https://www.tes.co.uk/teaching-resource/nepal-earthquake-11047748>

**Simple worksheet** <https://www.tes.co.uk/teaching-resource/nepal-earthquake-2015-11055085>

<b>TECHNICAL</b> Nepal is on a _____ plate boundary. Explain why earthquakes occur at this plate boundary: _____ _____ _____ _____ _____	<b>BACKGROUND</b> Date earthquake occurred _____ Country earthquake occurred in _____ Countries that boarder Nepal: _____ and _____ <div style="text-align: center; border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>NEPAL</b> </div>	<b>EARTHQUAKE IMPACTS: PHYSICAL</b> One physical impact of the earthquake _____ _____ _____ _____ _____
<b>EVALUATE</b> Rate Nepal on a scale of 1-5 of how well you think the country managed the effects of the earthquake? (1=very bad 5=very good) _____ Is there something you think they did well in response to the earthquake _____ Is there something you think they did badly in response to the earthquake _____ Explain why you agree or disagree with this sentence 'If Nepal was more developed, fewer people would have died' _____ _____	<b>EARTHQUAKE IMPACTS: HUMAN</b> Number of deaths _____ At least one other human impact _____ _____ _____ Try and get another _____ _____ _____	

**Plate boundary Jigsaw** <https://www.tes.co.uk/teaching-resource/plate-boundary-jigsaw-11049838>

**Webquest: Learning about emergencies: Nepal earthquake** <https://www.oxfam.org.au/act/resources-for-teachers/classroom-resources/learning-about-emergencies-nepal-earthquake/>

## ICT

- The science of earthquakes [http://www.wunderground.com/weather-infographics/earthquakes?cm\\_ven=tw102114-2](http://www.wunderground.com/weather-infographics/earthquakes?cm_ven=tw102114-2)
- Nepal earthquakes- April 2015 <http://www.geographypods.com/nepal-earthquake-2015.html>
- Nepal earthquakes: Devastation in maps and images <http://www.bbc.com/news/world-asia-32479909>
- Nepal Earthquake Situation Report 10 <http://un.org.np/headlines/nepal-earthquake-situation-report-10#.VUheRINN4GI.facebook>
- Satellite data on Nepal's brutal quake <http://www.wired.com/2015/05/satellite-data-tells-us-nepals-brutal-quake/>
- Nepal's earthquake on the radar [http://www.esa.int/Our\\_Activities/Observing\\_the\\_Earth/Copernicus/Sentinel-1/Nepal\\_earthquake\\_on\\_the\\_radar](http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Sentinel-1/Nepal_earthquake_on_the_radar)
- How crises mapping is shaping disaster relief in Nepal <http://news.nationalgeographic.com/2015/05/150501-nepal-crisis-mapping-disaster-relief-earthquake/?sf8933117=1>
- Earthquakes send humans a warning from the Gods <http://news.nationalgeographic.com/2015/05/150514-nepal-earthquake-kathmandu-kumaris-newar-buddhism/>
- Will Everest's climbing circus slow down after disasters? <http://news.nationalgeographic.com/2015/05/150513-everest-climbing-nepal-earthquake-avalanche-sherpas/>
- Nepal's 8 historic sites: What's rubble, what's still standing <http://news.nationalgeographic.com/2015/04/150427-nepal-earthquake-damage-temples-buddhism-hinduism-world-heritage-monuments-unesco/>
- Nepali mountains villages completely washed away by quake <http://news.nationalgeographic.com/2015/05/150513-everest-climbing-nepal-earthquake-avalanche-sherpas/>

- 10 pictures capture shock of another Nepal earthquake  
<http://news.nationalgeographic.com/2015/05/150512-nepal-second-earthquake-pictures-devastation-aftershock-people-places/>
- Nepal desperate for helicopters to reach shattered villages  
<http://news.nationalgeographic.com/2015/05/150508-nepal-earthquake-helicopter-himalaya-aid/>
- Ancient collision made Nepal earthquake inevitable  
[http://www.nytimes.com/2015/04/26/science/ancient-collision-made-nepal-earthquake-inevitable-epochs-later.html?smid=tw-share&\\_r=0](http://www.nytimes.com/2015/04/26/science/ancient-collision-made-nepal-earthquake-inevitable-epochs-later.html?smid=tw-share&_r=0)
- Map of Nepal's earthquakes and the impacts of the quakes on places within Nepal and the surrounding countries <http://www.washingtonpost.com/graphics/world/nepal-earthquake/>
- How did earthquakes form? <http://news.nationalgeographic.com/2015/04/150428-everest-height-nepal-earthquake-geology-science/>
- Read an Everest Guide's Diary of chaos amid quake, avalanche  
<http://news.nationalgeographic.com/2015/04/150428-everest-earthquake-base-camp-nepal-himalaya-climbing-sherpa/>
- List of earthquakes in Nepal 1255-2015 [http://en.wikipedia.org/wiki/List\\_of\\_earthquakes\\_in\\_Nepal](http://en.wikipedia.org/wiki/List_of_earthquakes_in_Nepal)
- May 2015 Nepal earthquake [http://en.wikipedia.org/wiki/May\\_2015\\_Nepal\\_earthquake](http://en.wikipedia.org/wiki/May_2015_Nepal_earthquake)
- USG shake map of Nepal  
[http://en.wikipedia.org/wiki/May\\_2015\\_Nepal\\_earthquake#/media/File:May\\_2015\\_Nepal\\_earthquake\\_ShakeMap\\_version\\_3.png](http://en.wikipedia.org/wiki/May_2015_Nepal_earthquake#/media/File:May_2015_Nepal_earthquake_ShakeMap_version_3.png)
- Institut De Physique Du Globe De Paris <http://www.ipgp.fr/en/central-nepal-earthquake-april-25th-2015>
- Geology of Nepal [http://en.wikipedia.org/wiki/Geology\\_of\\_Nepal](http://en.wikipedia.org/wiki/Geology_of_Nepal)
- April 2015 Nepal earthquake [http://en.wikipedia.org/wiki/April\\_2015\\_Nepal\\_earthquake](http://en.wikipedia.org/wiki/April_2015_Nepal_earthquake)

#### **Drone footage and Gopro**

- Drone flying over Kathmandu after the earthquake and GoPro walking around the damaged city  
<http://thewatchers.adorraeli.com/2015/04/30/satellite-imagery-shows-nepal-earthquake-displacement/>

#### **YouTube**

- Nepal earthquake <https://www.youtube.com/watch?v=rfJ7WEmUX1s&feature=youtu.be>
- After the earthquake Laprak, Barpak and Kerauja <https://www.youtube.com/watch?v=atYCqtlLB58>
- Geological hell of Nepal earthquakes may not be over  
<http://news.nationalgeographic.com/2015/05/150512-nepal-earthquake-everest-geology-science/>
- Avalanche at Everest Base Camp [https://www.youtube.com/watch?v=\\_JC\\_wIWUC2U](https://www.youtube.com/watch?v=_JC_wIWUC2U)

#### **Google Earth**

- Google Earth tour or Nepal earthquakes 2015 <http://www.geographypods.com/nepal-earthquake-2015.html>

#### **Geography Pods**

- Geography Pods 2015 <http://www.geographypods.com/nepal-earthquake-2015.html>

#### **Gigapixel image**

- Zoom into base camp on Mt Everest  
[https://s3.amazonaws.com/Gigapixel\\_Trees/Pumori\\_Spring2012\\_EBC\\_Full/EBC\\_Pumori\\_050112\\_8bit\\_FLAT.html](https://s3.amazonaws.com/Gigapixel_Trees/Pumori_Spring2012_EBC_Full/EBC_Pumori_050112_8bit_FLAT.html)

#### **Videos**

- Nepal earthquakes <http://www.geographypods.com/nepal-earthquake-2015.html>
- Continental drift and tectonic plates <http://www.geographypods.com/earthquakes--volcanoes.html>
- Motion of tectonic plates  
<http://apl.maps.arcgis.com/apps/MapJournal/?appid=df5f94c0050b4075adfbba54fb13eae>
- Earthquakes are devastating <http://video.nationalgeographic.com/video/101-videos>
- Nepal earthquake 101 <http://video.nationalgeographic.com/video/101-videos/weather-101-sci-1?source=relatedvideo>
- Earthquake and resulting landslide in Langtang <http://thewatchers.adorraeli.com/2015/05/05/landslide-in-langtang-valley-nepal/>



### Facts on Nepal

Location: 27°42'N 85°19'E

Capital: Kathmandu (population over 1 million)

Main religion: Hinduism. Shiva the guardian deity

Government: Federal parliamentary republic

GDP per capita \$743 (low)

Human Development Index (HDI) 0.540 (low – 145<sup>th</sup> out of 166 countries)

Population: 31 million

Annual population growth 1.35%

Population: 15-59 years (54% of the population)

Median age: 20 years (young)

Literacy rate: 75% (male), 57% (female) (gender differences)

Life expectancy: 65 years (male); 67 years (female)

### Main landforms:

- **Mountains:** Above 3,600m. Himalayan Mountains, Mt Everest (8,848m). Sparsely populated
- **Hills:** varies from 1,200m-3,600m. Most people live in the central highlands
- **Terai:** under 1,200m (southern lowlands bordering the Indo-Gangetic plains. Migration to the lowlands

### Climate zones

- Tropical and subtropical – below 1,200m
- Temperate 1,200-2,400m
- Cold 2,400m-3,600m
- Subarctic: 3,600-4,400m
- Arctic: Above 4,400m

Nepal is a **developing country** experiencing a range of economic, political, environmental and social incidents such as: conflict; high proportion of people suffering multidimensional poverty (MDP), food insecurity; corrupt government, high incidence of natural disasters, and adverse impacts of climate change.

### World's deadliest recent earthquakes

- **Iran, 2003:** More than 26,000 people killed in 6.6 earthquake near the city of Bam
- **Indonesia, 2004:** Devastating 9.1 earthquake and ensuing tsunami off the Sumatran province of Aceh kills more than 230,000 people in a dozen countries
- **Pakistani-administered Kashmir, 2005:** 7.6 earthquake near Muzafferabad kills about 100,000 people
- **China, 2008:** Nearly 90,000 killed in 7.9 earthquake in eastern Sichuan province
- **Haiti, 2010:** More than 220,000 people killed in 7.0 magnitude earthquake

Source: <http://www.bbc.com/news/world-asia-32461019>