A magnitude 7.8 earthquake occurred 80 km to the northwest of the Nepalese capital, Kathmandu on 25th April 2015. This earthquake is the largest to have hit the Nepal region in over 80 years.

The strongest shaking was felt by people living in surrounding towns and villages within 100 km of the epicentre, but significant shaking was felt up to 250 km away. Current estimates suggest there are around 4,000 fatalities. Damage and loss of life has also been caused by secondary effects such as landslides and mountain avalanches.

The earthquake was caused by the ongoing collision between the Indian and Eurasian tectonic plates.
What are the likely impacts of the earthquake?

Fatalities and damage
Red alert for shaking-related fatalities and economic losses. High casualties and extensive damage are probable and the disaster is likely widespread. Shaking intensified by thick sediments in the Kathmandu Valley.

Estimated economic loss
Estimated economic losses may exceed the GDP of Nepal.

Type of building structures in the area
Overall, the population in this region resides in structures that are highly vulnerable to earthquake shaking, though some resistant structures exist. The predominant vulnerable building types are unreinforced brick masonry and rubble/field stone masonry construction.

Secondary hazards
Recent earthquakes in this area have caused secondary hazards such as landslides and liquefaction that might have contributed to losses.
Very strong (VII) to violent (IX) shaking was likely felt within ~125 km of the earthquake’s epicentre. This radius includes the Nepalese capital, Kathmandu, and Pokhara, the country’s second largest city. Nearly 10,000 people are estimated to have been exposed to Destructive (VIII) or Violent (IX) shaking. Strong shaking also likely affected the India-Nepal border region, as well as southern Tibet (China).
Past earthquakes in the region

The Himalayas are a very tectonically active part of the world. This means that earthquakes are not uncommon, with several earthquakes that are large enough to be felt occurring every year. Large earthquakes are however more rare.

The last massive earthquake to occur in this area was the M 8.2 Nepal-Bihar earthquake that happened in January 1934. This earthquake caused widespread devastation, and flattened several towns in Nepal and India.

It is worth noting that all of the earthquakes in this are relatively shallow, with almost all being at less than 33 km depth. This is one of the reasons why the April 2015 earthquake has caused so much damage and loss of life.
Magnitude 7.8 earthquake
Nepal
Saturday, 25 April, 2015 at 06:11:26 UTC
What caused this earthquake to occur?

At the location of this earthquake, the India plate is underthrusting beneath the Eurasia plate at a rate of about 45 mm per yr. This makes the region one of the most seismically hazardous on Earth. A series of thrust faults partially accommodate this convergence. According to the preliminary location, size and focal mechanism, the April 25, 2015 M 7.8 Nepal earthquake occurred as a result of thrust faulting on or near the main Himalayan frontal thrust between the India plate and the overriding Eurasia plate to the north.
Magnitude 7.8 earthquake
Nepal
Saturday, 25 April, 2015 at 06:11:26 UTC
Recordings of the earthquake from the British Geological Survey seismometer network

These seismometers are located some 7000 km (4500 miles) from the earthquake’s epicentre. The P-waves are the first to arrive, but the later-arriving surface waves have the strongest amplitude.

Plot similar seismograms yourself at: http://ds.iris.edu/wilber3/find_stations/5111620
As with any significant earthquake, aftershocks are expected.

At the time of writing (27/04/15), nearly 60 aftershocks have been recorded by the USGS.

The largest recorded aftershocks have been M6.6 and M6.7 events, 40 minutes and 1 day after the mainshock, respectively.

Interestingly, most aftershocks are located to the southeast of the mainshock hypocentre. This indicates that the rupture may have travelled a south-easterly direction during the mainshock.
Magnitude 7.8 earthquake
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Find out more …

• USGS webpage for this earthquake
  http://earthquake.usgs.gov/earthquakes/eventpage/us20002926#general_summary

• BGS (British Geological Survey) – seismology and earthquakes – frequently asked questions
  http://www.earthquakes.bgs.ac.uk/education/faqs/faq_index.html

• BBC News article on this earthquake

• IRIS special event page
  http://ds.iris.edu/ds/nodes/dmc/specialevents/2015/04/25/nepal/

• IRIS (Incorporated Research Institutions for Seismology) – learning about earthquakes
  http://www.iris.edu/hq/programs/education_and_outreach/students

• UK School Seismology Project – classroom activities, videos and support documents
  http://www.bgs.ac.uk/schoolseismology/home.html

• USGS (United States Geological Survey) – FAQs, glossary, posters, animations
  http://earthquake.usgs.gov/learn/

• EMSC (European Mediterranean Seismological Centre)
  http://www.emsc-csem.org/