The Indonesian earthquake and tsunami on December 26, 2004, devastated parts of South and Southeast Asia, leaving more than 200,000 dead around the Indian Ocean. This was the most deadly natural disaster in recent years and the fourth most deadly since 1900.

Even as efforts are made to assist the survivors of the Indonesian earthquake and tsunami, it behooves us to remember that there are examples of even more deadly earthquakes in the Earth’s history. The geographic pattern of these major disasters can provide useful information in planning for future international aid efforts.

Since the beginning of recorded history, there have been 34 earthquakes, which each claimed the lives of more than 25,000. Fourteen of those earthquakes killed more than 50,000 and seven killed over 100,000. Six massive earthquakes claimed over 200,000 lives.

As recently as July 26, 1976, an earthquake leveled the Chinese city of Tangshan, killing 255,000. The most deadly earthquake of all times, however, was the 1556 event that killed an estimated 830,000 in the Shaanxi province of China.

Most of these deadly earthquakes occurred around the Pacific Basin and around Southern Asia and the Mediterranean. These events accompanied the movement of the earth’s tectonic plates, particularly where one plate is being subducted beneath another. This activity is prevalent around the Pacific border in what is called the Belt of Fire or Ring of Fire, where volcanic activity is also associated with tectonic plate interaction. Active tectonic activity is also ongoing along a general line from the Himalaya to the Strait of Gibraltar at the western end of the Mediterranean.

Temporal examination of the 34 deadliest earthquakes also yields some interesting information. The A.D. 1200s saw only three deadly earthquakes, all occurring in East Asia. The 1500s were likewise rather quiet with only two of the deadly quakes, one in Lisbon, Portugal and the other in Shaanxi, China, the deadliest of all times.

The 1700s saw six occur along a line almost in sequence: Japan, India, Persia (Iran) Portugal and Italy, with an outlier in Peru. Only three of the deadly quakes occurred in the 1800s, two of which were in Japan and the other in Peru.

The 1900s, however, saw the largest number of deadly earthquakes of any century in recorded history. Fourteen deadly earthquakes occurred in the 1990s, including six in China and Japan, six along the Himalaya/Mediterranean axis and two in the Andes of South America. Four of these killed an estimated 175,000 or more.

Only three of the earthquakes generated tsunamis that killed more than 25,000. The tsunami from the eruption and implosion of Krakatao in 1883 at the east end of Sumatra generated a tsunami that killed an estimated 36,000 around the Indian Ocean. In 1896, a tsunami was generated by an undersea earthquake that killed 27,120 Japanese. But the deadliest of all tsunamis was the recent one generated by the earthquake to the west of Sumatra in the Indian Ocean.

What do we make of the geographical and temporal patterns of these 34 deadliest quakes? Geographically, most occurred around the Ring of Fire and along the Himalaya/Mediterranean axis. Temporally, they have tended to cluster somewhat and are occurring more and more frequently.

As the earth’s population has grown to more than 6.2 billion, population has clustered in places that are particularly susceptible to earthquakes and tsunamis. Consequently, there is an increasing likelihood of an even larger loss of life from these phenomena. As population densities grow in these places, increasing engineering and construction technology can reduce, but not eliminate deaths from earthquakes and tsunamis. These are facts of life—and death.

And that is Geography in the News™, February 25, 2005. #769

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