

CAT REPORT 1: January 1 – March 31, 2002
Benfield Greig Hazard Research Centre, University College London

Summary for the period

Thirty-three natural disasters are recorded for the first three months of 2002, of which just over half were floods. Over a third of a million people were made homeless by flood waters on the Indonesia island of Java, and serious floods and landslides also struck Ecuador, Brazil, New Zealand, Russia, Iran, Malawi, Peru, eastern Australia, and the southern United States. The remainder includes six damaging earthquakes, of which those that struck Turkey and Afghanistan were most serious, and wildfires in eastern Australia, New Mexico and southern California. Severe winter storms struck the US north west and caused at least US\$48 million of economic losses in the mid-west, and the UK. Cold damaged coffee crops in Mexico and took over 200 lives in Poland. Hailstones – some as large as coconuts – damaged over 5,000 homes in Thailand, while Mongolian blizzards killed over 800,000 head of cattle. Notable events are summarised in more detail below.

Notable events

Territory: Australia

Region: New South Wales (Blue Mountains, Central Coast, Central Tablelands, Central-Western, Hunter Valley, North Coast, South Coast, Southern Highlands, South-Western, Sydney and Environs)

Date: December 12th, 2001 to January 13th, 2002 (period of continuous bushfire emergency)

Event: Wildfires

Impact: 50 injured; ~200 buildings destroyed or seriously damaged; 360 homeless; 10,000 evacuated; 230,000 affected; 650,000 hectares burnt; 5,000 livestock killed. Provisional loss data: economic – US\$105 million; insured – US\$ 40 million

Summary: Severe wildfires, many apparently started deliberately, raged across much of New South Wales from mid-December 2001 to mid-January 2002, destroying an area twice the size of Greater London. Rapid fire spread resulted from sustained heatwave conditions, the extreme dryness of vegetation, and variable winds. Rainfall and rain days for December were well below average, while winds in the Sydney area gusted up to 100km h. At the height of the crisis, over 100 fires burnt simultaneously in different parts of the state. The worst affected areas, in terms of property damage, were Hawkesbury, Silverdale - Warragamba, Helensburgh and the Shoalhaven, In 1983, 72 people died in bushfires in Victoria and Southern Australia

Data sources: Emergency Management Australia (<http://www.ema.gov.au/>)

Additional sources:

For satellite imagery of the fires go to NASA Earth Observatory (Natural Hazards) at: <http://earthobservatory.nasa.gov/NaturalHazards/>

To find out more about the history of Australian bushfires and building performance⁴ during fires go to: <http://life.csu.edu.au/bushfire99/papers/leonard/>

Territory: Democratic Republic of Congo

Region: Goma district, eastern Congo (Rwanda border)

Date: Jan. 17, 2002

Event: Volcanic eruption

Impact: 45 dead; 40 percent of Goma (including much of the commercial and business district) and 14 villages destroyed by lava; Goma airport badly damaged; 400,000 people evacuated; 120,000 homeless

Summary: Mount Nyirogongo erupted on January 17th generating rapidly moving (1.2 to 1.8 km h) lavas on the eastern and southern flanks. The main phase of the eruption, which had been predicted by a local volcanologist, lasted for about a week, with all activity over by mid-March. The lavas issued from new fissures on the flanks of the volcano and travelled 19km in the first 24 hours. Nyirogongo's main crater contains a lava lake, which periodically drains through the flanks. This happened in 1977, killing around 70 people, and the lava lake was also active in 1994, when it threatened Rwandan refugee camps in the vicinity of Goma.

Data sources: Volcano World (<http://volcano.und.nodak.edu/vw.html>)
Reliefweb (www.reliefweb.int/w/rwb.nsf)

Additional sources:

For pictures of the latest eruption go to: to the BBC News site at:
http://news.bbc.co.uk/1/hi/english/world/africa/newsid_1772000/1772326.stm

For background information on Nyirogongo:
The Global Volcanism Program (<http://www.volcano.si.edu/gvp/>)

More images and 3D reconstructions from space.com at:
http://www.space.com/scienceastronomy/planetearth/volcano_020203.html

Territory: Indonesia

Region: Jakarta and Java provinces

Date: Late January into mid-February 2002

Event: Torrential rainfall and flood.

Impact: ~150 dead; >365,000 temporarily homeless; over 200,000 buildings damaged. Provisional loss data: insured - US\$200 million

Summary: Five days of intense precipitation at the end of January resulted in the worst flooding for a decade in Indonesia's capital, Jakarta, and across much of Java province. 29 of the capital's 35 districts were affected, with floodwaters reaching 6m in places and submerging 70 percent of the city. Heavy rains continued for the first half of February leading to further floods and landslides in 12 of Java's districts, and the temporary evacuation of a third of a million people. Late December 2001 and early January also saw Sumatra being hit by flash floods that took the lives of around 50 people. The severity of the floods in the capital is being blamed on uncontrolled building leading to increased surface run-off. The Indonesia government has been criticised for its poor response and is reported to be considering the use of cloud seeding to attempt to avert similar flooding in the future.

Data sources:

Reliefweb (www.reliefweb.int/w/rwb.nsf)
Center for International Disaster Information (www.cidi.org)

Additional sources:

For a business perspective go to Indonesian Business on the Web at: <http://articles.ibonweb.com/>

Territory: Turkey

Region: Afyon province, Western Anatolia

Date: Feb. 3 2002

Event: Earthquake. Initial quake - Richter magnitude 6.2, three following quakes of magnitude 5.0, 5.2, and 5.3, and over 600 smaller aftershocks; depth 10km

Impact: 44 dead; 340 injured; 4,351 buildings heavily/moderately damaged (including 246 offices and 35 public buildings); 6,900 buildings slightly damaged; 60,000 people temporarily homeless. Economic/insured loss data not yet available

Summary: A large, shallow earthquake caused damage and casualties in the town of Afyon (population 183,351), located some 250km SW of the capital Ankara, and its provinces of Sultandagi, Cay, Bolvadin, Cobanlar, Suhut, and Aksehir. The quake was also felt in the neighbouring provinces of Ankara, Burdur, Eskisehir and Sakarya. The epicentre was located in Sultandagi province and the quake was associated with the Sultandagi Fault Zone. Peak ground acceleration was 0.1g. Due to low strain accumulation rates, the fault zone has sourced few historical quakes. The fault was recently activated, however, by a magnitude 6.0 quake in December 2000 that struck the town of Bolvadin in the SE part of the fault zone. The damage toll reflects both the very shallow depth of the quake and the poorly enforced seismic building codes. The latter problem contributed substantially to the huge death toll of the 1999 Izmit earthquake further north.

Data sources: Earthquake Information Network (www.eqnet.org/index.asp)
Reliefweb (www.reliefweb.int/w/rwb.nsf)
Center for International Disaster Information (www.cidi.org)

Additional sources:

For the preliminary report of the Kandilli Observatory and Earthquake Research Institute (Istanbul) go to: <http://www.koeri.boun.edu.tr/deprenmmuh/sultandageq.pdf>

For a special report of the Earthquake Engineering Research Institute (EERI) go to: <http://www.eeri.org/earthquakes/recent.html>

Territory: Ecuador

Region: Coastal provinces of Manabi, El Toro, Los Rios, and Guayas

Date: February 28th continuing into late March

Event: Torrential rains and ensuing flood

Impact: 16 dead; 4,600 homes damaged or destroyed; 24,000 people affected; 15,000 hectares of crops (including coffee) damaged. Economic/insured loss data not yet available

Summary: From late February into the last week of March, heavy rains continued to affect the coastal region of Ecuador south west of the capital Quito, including the city of Guayaquil – the country’s second largest. Recorded rainfall is 2 –3 times above average and concerns are growing that the developing ENSO (El Niño – Southern Oscillation) may extend the rainy season beyond its normal close in April. Ecuador experienced severe rains and flood during both the 1982-3 and 1997-8 ENSO events. A State of Emergency has been declared

Data sources: Center for International Disaster Information (www.cidi.org)
Reliefweb (www.reliefweb.int/w/rwb.nsf)
Asian Disaster Reduction Centre (www.adrc.or.jp/top.asp)

Additional sources:

For more information on the potential 2002 ENSO go to:

Climate Prediction Centre: www.cpc.ncep.noaa.gov/index.html
National Climatic Data Centre: www.ncdc.noaa.gov/

Territory: Afghanistan

Region: Hindu Kush

Date: March 3 2002

Event: Earthquake. Richter Magnitude 7.4; depth 256km

Impact: 150 dead; 350 buildings destroyed. Economic loss data not yet available

Summary: The quake was centred 65km SW of Feyzabad and 240km NNE of Kabul. Shaking was felt over much of Central and South Asia, including India, Pakistan, Tajikistan, Uzbekistan, Kazakhstan, Kyrgystan and the Xinjiang province of China. The depth of the quake, which occurred within the Eurasian tectonic plate, resulted in the great areal extent of shaking, but also limited the degree of damage and loss of life. At least half the fatalities were caused by collapse of a weakened rock face at Zow in Samanghan province, which also dammed a river causing extensive flooding.

Data sources: National Earthquake Information Centre (<http://neic.usgs.gov/>)
Earthquake Information Network (www.eqnet.org/index.asp)
Center for International Disaster Information (www.cidi.org)

Additional sources:

Seismo-Watch at: <http://www.seismo-watch.com/index.html>

Asian Disaster Reduction Centre at: http://www.adrc.or.jp/view_disaster_en.asp?lang=&KEY=306

For information on the Surkundara landslide and flood go to CBS News at:
<http://www.cbsnews.com/stories/2002/03/04/world/main502770.shtml>

Territory: Afghanistan

Region: Hindu Kush

Date: March 25 2002

Event: Earthquake. Richter Magnitude 6.1; depth 8km

Impact: 800-1000 dead; 4,000 injured; 1,500 homes destroyed; 20,000 families homeless. Economic loss data not yet available

Summary: The quake was located 155km north of Kabul and 180km SW of Feyzabad, in the Nahrin district of Baghlan province. The most seriously affected area extends in a 12-15km radius about the settlement of Nahrin. Shaking was also felt in Pakistan and Tajikistan. Approximately 90 percent of the town of Nahrin is reported to have been destroyed, with between 50 and 80 percent of buildings damaged or destroyed in surrounding villages. Death tolls have been revised downwards from 1800 to between 800 and 1,000. The epicentre was close to the boundary between the Eurasian and Indian tectonic plates, which are converging at 4.5cm per year, in the highly seismic region of the Hindu Kush.. Although less powerful than the March 3rd quake, the very shallow depth ensured that the impact was much more severe

Data sources: National Earthquake Information Centre (<http://neic.usgs.gov/>)
Earthquake Information Network (www.eqnet.org/index.asp)
Center for International Disaster Information (www.cidi.org)
Reliefweb (www.reliefweb.int/w/rwb.nsf)
Seismo-Watch at: <http://www.seismo-watch.com/index.html>

Additional sources:

Asian Disaster Reduction Centre (http://www.adrc.or.jp/latestinfo/View_E.asp?lang=en&KEY=310)

For images go to:

Reuters Photo Gallery at: <http://www.alertnet.org/thefacts/imagerepository/413477>

BBC News at: http://news.bbc.co.uk/1/hi/english/world/south_asia/newsid_1896000/1896866.stm

For a special report of the Incorporated Research Institute for Seismology go to:

<http://www.iris.washington.edu/NEWS/afghan032002.htm>

Territory: Taiwan

Region: Offshore – NE coast of Taiwan; 80km NE of Hua-lien and 100km SE of Taipei

Date: March 30, 2002

Event: Earthquake. Richter Magnitude 7.1; depth 33km; over 300 aftershocks up to Richter Magnitude 4.8

Impact: 5 dead; >200 injured; minor structural damage. Economic and insured loss data not yet available

Summary: The quake caused panic and some damage in NE Taiwan and Taipei County. Five construction workers were killed when two cranes fell from the 60th floor of the Taipei Financial Centre, currently under construction. The Taipei rapid transport system was suspended for several hours for safety checks and mobile phone networks were down for 30 minutes. Semiconductor manufacturing and other industries were unaffected. Some buildings were declared unsafe and their residents evacuated. Landslides blocked roads in mountainous terrain. Small (~20cm) tsunami reached Yonaguni – the nearest island chain. The quake was centred in the geologically complex region known as the Taiwan Collision Zone, where the Philippine Sea tectonic plate plunges beneath the Eurasian plate. The region is highly seismic and experiences – on average – around 5 quakes a year in excess of Richter Magnitude 5.0. The quake occurred at the contact between the two plates and therefore differs

from the far more destructive (magnitude 7.7) quake of September 1999 that occurred within the crust of the Eurasian plate.

Data sources: National Earthquake Information Centre (<http://neic.usgs.gov/>)
Earthquake Information Network (www.eqnet.org/index.asp)
Reuters Alert (<http://www.alertnet.org/>)

Additional sources: Seismo-Watch at: <http://www.seismo-watch.com/index.html>