

## CAT REPORT 2: January 1, 2002 – March 1, 2003

### Summary for the period

Due to relatively little serious activity on the geological front, both economic and insured losses over the past fifteen months were dominated by weather-related events, particularly floods. The most lethal event, once again, however, resulted from a moderate earthquake in a developing world country. Estimates of the total number of events range from over 300 major natural and technological catastrophes (Swiss Re.) to around 700 (Munich Re.) for natural catastrophes alone. Significant lethal events are estimated by BGHRC at around 125. Floods, in April (Hungary), August (Czech Republic, Germany, Austria, Slovakia), and September (France), along with damage associated with Winter Storms Anna and Jeanett ensured that western Europe dominated tables of both economic and insured losses, with 22 billion US\$ and 5 billion US\$ respectively. Elsewhere, major economic losses in the US, arising primarily from Hurricane Lili, the Spring 2002 tornado season and sustained drought in Nebraska and the surrounding region, totalled around 7 billion US\$. Insured cat losses (natural and technological) in the US, as a whole, were 50 percent down on the 10-year average at 5.8 billion US\$. Asia was badly hit, once again, by floods and tropical cyclones, with China and Korea bearing the brunt with economic losses exceeding 10 billion US\$. Associated insured losses are minimal, at less than 200 million US\$. In Australia, the major wildfires of late 2001 continued to burn into January 2002 (insured losses ~ 70 million US\$) and were succeeded by even more destructive fires following during early 2003. In the developing world, death tolls were dominated by an earthquake in Afghanistan (2,000), floods and a cold wave in Nepal, Bangladesh and northern India (both resulting in over 1,000 deaths), and a severe heat wave in India (1,100). Hundreds more died in earthquakes in Iran and China, with thousands more losing their lives in floods, storms and mudslides in China, Vietnam, Indonesia, Russia, Ecuador, Peru, Bolivia, Malawi, Madagascar and elsewhere. Munich Re. estimates that 11,000 deaths resulted from natural catastrophes worldwide during 2002, while Swiss Re. claims a figure of 19,000 for all catastrophes. Total economic losses were of the order of 55 billion US\$, of which 11.5 billion US\$ were insured losses. While the former are up over 50 percent on 2001, the latter are comparable. Munich Re. report that 98 percent of insured losses arose from floods and windstorms.

### Selected major events

- Territory:** UK and Germany
- Region:** Wales and southern England; western Germany
- Date:** February 26 - 27
- Event:** Winter storm Anna
- Impact:** Strong winds and falling trees damaged buildings, brought down power lines and disrupted transport and communications in the UK and Germany. Three deaths resulted from falling trees. Economic losses are estimated at 500 million US\$, with insured losses standing at 300 million US\$
- Summary:** Winter Storm Anna tracked across the UK on February 26<sup>th</sup> (see below) bringing strong winds to the UK before heading westwards into Germany. Gusts of close to 150 km h were recorded in the UK, and up to 180 km h in Germany.
- Data sources:** The UK Met Office  
<http://www.metoffice.com/climate/uk/interesting/26feb2002storm.html>
- Territory:** United States
- Region:** **Spring:** 17 states including Maryland, Pennsylvania, Tennessee, Ohio, Missouri, Illinois, Kentucky, Texas, Virginia, Wisconsin

**Autumn:** 13 states including Tennessee, Ohio, Alabama (less affected – Georgia, Kentucky, Mississippi, Pennsylvania)

**Date:** April 27 – May 3 and November 9 – 11, 2002

**Event:** Tornadoes and associated thunderstorms

**Impact:** **Spring storms:** 65 percent of buildings destroyed in downtown La Plata (Maryland), causing damage estimated at 115 million US\$. Over 60 homes and mobile homes destroyed in Indiana, Illinois, Missouri, and Texas. Total fatalities ~ 12. Economic losses estimated at 2 billion US \$, with insured losses totalling 1.5 billion US\$.

**Autumn storms:** A third of the town of Carbon Hill (Alabama) was destroyed and twelve people killed. Dozens of buildings and mobile homes in Tennessee, Alabama, Mississippi, Pennsylvania and Ohio were destroyed resulting in the loss of another 24 lives. In Ohio alone over 600 buildings were damaged, leading to insured losses in excess of 90 million US\$. Total economic losses are estimated at 600 million US\$, with insured losses totalling 469 million US\$.

**Summary:** **Spring:** Collision of warm, wet air from the Gulf of Mexico and much colder air plunging south from Canada resulted in dozens of severe thunderstorms that spawned tornadoes across the mid-west. The worst tornado ever to hit the state struck Maryland on April 28<sup>th</sup>, killing five and injuring over a hundred. The tornado registered 4 on the Fujita Tornado Damage Scale, with wind speeds exceeding 330km h, and cut a path of devastation 50km long through La Plata and across Charles and Calvert counties.

**Autumn:** Violent thunderstorms developed ahead of a strong cold front on November 10 resulting in a widespread outbreak of severe weather, including many tornadoes that affected thirteen states. The worst tornado damage was concentrated in Ohio, Tennessee and Alabama. An F4 tornado struck Van Wert county in Ohio. In Tennessee, the community of Mossy Grove was virtually destroyed by a mile-wide tornado that claimed 12 lives. Peak activity was reached on November 10<sup>th</sup>, when 75 tornadoes touched down.

**Data sources:** National Environmental Satellite, Data and Information Service  
<http://wlf.ncdc.noaa.gov/oa/climate/research/2002/nov/hazards.html>

**Additional sources:** NOAA Recent Tornadoes 2002  
<http://www.tornadoproject.com/recent/recentts.htm>

NOAA Maryland tornado report  
<http://www.nws.noaa.gov/pa/MDTornadoAssessment5-7-02.html>

**Territory:** Czech Republic, Slovakia, Germany, Austria (also Hungary, Romania and Russia)

**Region:** Areas adjacent to the Elbe (Germany), Inn and Salzach (Austria), Moldau (Czech Republic), and Danube (Germany, Austria, Slovakia, Hungary) rivers

**Date:** August 6 – 20

**Event:** Flood

**Impact:** Over 320,000 people were evacuated in Germany and the Czech Republic alone. In Germany, Dresden bore the brunt of the flooding but severe damage to buildings and infrastructure occurred all along the Elbe as far as Hamburg. The Czech capital, Prague, was also severely affected, with many historic buildings badly damaged and

the underground system inundated. Tens of thousands of homes were affected in Upper and Lower Austria, Salzburg, the Tyrol, and along the Danube in Slovakia. Transportation was seriously disrupted for months and extensive power outages resulted from damaged electrical installations. Total economic losses are estimated at 18.5 billion US\$, with insured losses likely to stand at 3 billion US\$, by far the greatest loss of 2002,

**Summary:** Flooding was triggered by meteorological conditions similar to those that resulted in the major central and eastern European floods of 1997. A low pressure system moved northwards from the Mediterranean, causing flash floods in Italy and Austria, saturating the ground and swelling rivers. A second system followed, dumping over 40cm of rain over the Elbe and Moldau catchments in just three days. Widespread flooding started on August 6<sup>th</sup>, and continued until the end of the month. Peak discharges on the Moldau, the Danube and the Elbe exceeded any for over a century.

**Data sources:** Partner Re.  
[http://www.partnerre.com/pages/news-research/news\\_frmset-research.html](http://www.partnerre.com/pages/news-research/news_frmset-research.html)  
European Space Agency, Earthnet  
[http://earth.esa.int/ew/floods/northern\\_europe\\_02/](http://earth.esa.int/ew/floods/northern_europe_02/)

**Additional sources:**

EQECAT Central European Floods 2002 report  
[http://www.absconsulting.com/eqecat%20flood/flood\\_rept.pdf](http://www.absconsulting.com/eqecat%20flood/flood_rept.pdf)

**Territory:** France

**Region:** South East France. Departments of Gard, Hérault and Vaucluse

**Date:** September 8 – 9, 2002

**Event:** Flood

**Impact:** 24 fatalities and over 1100 people evacuated from their homes. Several bridges destroyed and utilities severely affected. The A7 and A9 motorways from the Mediterranean coast were both closed by the floods and TGV rail services suspended. Power supplies and telephone lines to tens of thousands of homes were cut. Vineyards producing Châteauneuf-du-Pape were also badly affected. In Gard, 80 percent of vineyards were reported destroyed and over a dozen wine producing centres damaged. Livestock and crops also suffered serious damage. Total economic losses are estimated at 1.2 billion US\$, with insured losses close to 450 million US\$.

**Summary:** Torrential rains caused rapid flooding of the Rhone in South East France, with up to 67cm of rain falling in places, more than the annual rainfall for Paris. Around Nîmes and Alès, water was up to 3m deep in places. The town of Orange was also badly affected along with villages outside Avignon and Uzès, The volume of water caused a dyke to fail in the village of Aramon, close to Nîmes, resulting in 11 deaths. A further dozen people lost their lives

**Data sources:**

NASA Earth Observatory – Natural Hazards  
[http://earthobservatory.nasa.gov/NaturalHazards/natural\\_hazards\\_v2.php?img\\_id=4766](http://earthobservatory.nasa.gov/NaturalHazards/natural_hazards_v2.php?img_id=4766)

Floods of September 2002  
<http://www.inondations-gard.com/index.html>

**Additional sources:**

Spot Image satellite imagery  
<http://www.spotimage.fr/home/news/month/welcome.htm>

- Territory:** North and South Korea
- Region:** **South Korea:** provinces of Gyeongsang, Chula, Chungcheong and Gangwon and Jeju Island  
**North Korea:** Kwangwong province
- Date:** August 31 – September 6
- Event:** Typhoon Rusa
- Impact:** In the Republic of Korea, 151 people were confirmed dead due to flash floods and landslides, with over 30 reported missing. Close to 90,000 people were evacuated from their homes. Damage to power lines resulted in the loss of electricity to over 1.25 million households and floods crippled the Ulchin nuclear power plant. The eastern coastal city of Gangneung was badly affected, suffering 87cm of rain, leading to nearly the entire city being submerged beneath chest-high water and the destruction of over 8,000 homes. Close to 300 bridges were destroyed and road and rail links cut in over 150 places. Over 200 ships were swept away and damage caused to 24 port facilities. Economic losses of 4.5 billion US\$ make the event the second most costly of 2002, although insured losses were just 170 million US\$.
- Rusa also struck the Democratic People's Republic of Korea (North Korea), where over 70cm of rain fell along the east coast. Over 6,000 homes were reported damaged or destroyed, irrigation and telephone networks submerged, railways, roads and bridges destroyed and farmland inundated. Loss figures are not available for the DPRK
- Summary:** Typhoon Rusa bypassed Taiwan and caused some damage in southern Japan before causing major destruction on the Korean peninsula. The typhoon was the most powerful to strike Korea for over 43 years, with winds in excess of 200km/h and over thirty-six inches of rain falling in a 48-hour period. After leaving Korea, Rusa continued northwards to strike Sakhalin Island in the Russian Federation.

**Data sources:**

ReliefWeb  
<http://www.reliefweb.int/w/rwb.nsf/vLND?OpenView&Start=30>

NASA Earth Observatory – Natural Hazards  
[http://earthobservatory.nasa.gov/NaturalHazards/natural\\_hazards\\_v2.php3?img\\_id=4738](http://earthobservatory.nasa.gov/NaturalHazards/natural_hazards_v2.php3?img_id=4738)

**Additional sources:**

Association for Asia Research  
<http://asianresearch.org/articles/865.html>

WeatherMatrix  
<http://www.cybervox.org/archive/stormreports/200207-200208/0089.html>

- Territory:** US, Caribbean
- Region:** Cuba, Jamaica, Haiti, Cayman Islands, Louisiana (US)

**Date:** September 29 – October 3

**Event:** Hurricane Lili

**Impact:** Thirteen deaths were caused as Lili crossed the western Caribbean, mainly from flooding and mudslides due to torrential rain. Winds of up to 145 km h and a storm surge approaching 3m caused substantial damage to US offshore oil installations in the Gulf, while weaker winds (up to 110 km h) damaged properties and infrastructure onshore. Most property damage in Louisiana resulted from fallen trees and flying debris. 10 oil platforms/drilling rigs were seriously damaged and crude oil and natural gas production was virtually shut down for three days. Over 22cm of rain fell in SW and central Louisiana, exacerbating flood conditions following Tropical Storm Isidore that struck the region a week earlier. Hurricane Lili proved to be the fourth largest insurance loss of 2002, with claims totalling 750 million US\$. Economic losses are estimated at 2 billion US\$.

**Summary:** The most intense and destructive landfalling hurricane of the 2002 season, Lili cut a swathe of damage right across the Caribbean. The storm began life as a tropical depression on September 13<sup>th</sup>, about 1500km west of the Lesser Antilles. Ten days later, Lili crossed the Windward Islands as a tropical storm and by October 1<sup>st</sup>, close to western Cuba, she became a category 1 hurricane. Lili continued to strengthen to a category 4 storm, battering western Cuba, the Cayman Islands and Jamaica as it passed and causing floods and mudslides. Lili made US landfall in SW Louisiana on October 3<sup>rd</sup>, shortly after dramatically weakening to a category 2 storm, and travelled northwards up the Mississippi valley.

**Data sources:** National Climatic Data Centre (NOAA) 2002 Hurricane Season  
<http://lwf.ncdc.noaa.gov/oa/climate/research/hurricanes02.html>  
GoPBI.com Lili recap  
<http://www.gopbi.com/weather/special/storm/atlantic/lili.html>

**Additional sources:**

NASA Earth Observatory - Natural Hazards  
[http://earthobservatory.nasa.gov/NaturalHazards/natural\\_hazards\\_v2.php3?img\\_id=5164](http://earthobservatory.nasa.gov/NaturalHazards/natural_hazards_v2.php3?img_id=5164)

**Territory:** UK, Netherlands, France, Belgium, Denmark, Germany, Switzerland (also affected Austria, Poland and Sweden)

**Region:** Worst damage recorded in Wales and the English Midlands (UK), the Netherlands and western Germany.

**Date:** October 26 – 28

**Event:** Winter storm Jeanett

**Impact:** In the UK and the Netherlands, transport was severely disrupted, buildings damaged by high winds or falling trees, and power cables brought down leading to electricity outages. In Germany, older buildings in particular suffered wind damage, and flooding resulted from heavy rains. 33 deaths occurred across Europe, mainly due to falling trees. Economic losses are estimated at 2.3 billion US\$, with insured losses of 1.5 billion US\$ making the event the second costliest of the year for insurers. In Germany alone, where insured losses are likely to exceed those (650 million US\$) of Winter Storm Lothar in 1999, over 80,000 claims were received in the two days following the storm

**Summary:** A deep and severe storm system crossed the UK and continued across western and central Europe, bringing heavy rainfall and damaging winds gusting up to 180km h. At 00.00 h GMT on October 27<sup>th</sup> the synoptic situation (see below) shows the system and associated fronts to the west of Ireland. The storm moved rapidly across the UK and by 18.00 h GMT sat over Denmark with a central low pressure of 976 mb. The UK experienced up to 6.8cm of rain and gusts reaching 160 km h.

**Data sources:** UK Met Office  
<http://www.metoffice.com/climate/uk/interesting/27oct2002storm.html>

**Additional sources:** National Satellite, Data, and Information Centre  
<http://lwf.ncdc.noaa.gov/oa/climate/research/2002/oct/hazards.html>

Research Management Solutions  
<http://www.rms.com/>

### Other notable and unusual events (selected)

Date	Country/region	Event	Fatalities	Economic losses (mil US\$)	Insured losses (mil US\$)
Feb 24 2003	China	Earthquake	> 250		
Jan 2003	Australia (ACT)	Wildfires	5	> 125	125
Dec 2002 – Jan 2003	Bangladesh, India & Nepal	Cold wave	~1,500		
28 – 29 Dec 2002	Solomon Islands	Cyclone Zoe			
20 Sept 2002	Russia (Ossetia)	Glacier collapse and avalanche	~100		
18 – 25 Sept 2002	Central America, US & Caribbean	Hurricane Isidore	15	850	250
7 – 22 Aug 2002	China	Floods	~250	1,700	
Jul – Dec 2002	Australia	Drought		3,000	
Jul – Oct 2002	Vietnam	Floods	155	25	
Jul – Aug 2002	Nepal, India & Bangladesh	Floods	1,200	80	
Jul-Aug 2002	US (esp. Nebraska)	Heat waves & drought		3,300	
July 2002	Bolivia & Peru	Snowstorms	~150 and 65,000 llamas		
22 June 2002	Iran	Earthquake	245	300	
June 2002	China	Floods	~500	3,100	
June 5 2002	Syria	Dam break and floods	20		
10 – 22 May 2002	India	Heat wave	1,100		

3 May 2002	Bangladesh	Severe storm	270		
2 April	Papua New Guinea	Landslide	36		
8 – 11 March 2002	US (esp. Iowa, Illinois & Michigan)	Severe storm		250	210
25 – 27 March	Afghanistan	Earthquakes	~2,000		
30 Jan – 1 Feb 2002	US (east and mid-west)	Winter storm	28	400	300
11 Jan – 22 Feb 2002	Indonesia	Floods and landslides	150	350	200
3 March 2002	Afghanistan	Earthquake	150		
3 Feb 2002	Turkey Western Anatolia)	Earthquake	44		
17 Jan 2002	DR Congo	Volcanic eruption	45		
12 Dec 2001 – 13 Jan 2002	Australia (New South Wales)	Wildfires		105	70