

March 2011 Monthly Cat Recap – Impact Forecasting

April 5, 2011

Table of Contents

Executive Summary	2
United States	3
Remainder of North America (Canada, Mexico, Caribbean Islands)	4
South America	4
Europe	5
Africa	5
Asia	5
Oceania (Australia, New Zealand, New Guinea, Micronesia, Guam, Northern Mariana Islands)	7
APPENDIX	8

Executive Summary

- Historic earthquake and tsunami causes extensive damage and loss of life in Japan
- Severe weather during the month causes hundreds of millions of dollars (USD) in damage in the U.S.
- Flood events cause damage to parts of Asia, Australia, South America and Africa

A massive mega-earthquake and tsunami struck the northeastern coast of Japan, killing more than 12,300 people, injuring nearly 3,000 more and causing widespread extensive damage. Following the main tremor, more than 830 aftershocks rattled the region with at least 57 shocks registering above magnitude-6.0. The tremor spawned a significant tsunami (in excess of 15 meters (49.2 feet) at some locations) that swept across and particularly affected the coastlines of Miyagi, Iwate and Fukushima prefectures. According to the National Police Agency of Japan, at least 203,000 homes and other structures were either fully destroyed or damaged by ground shaking, tsunami waves, fires or liquefaction. In the days that followed the earthquake and tsunami, the attention shifted to several nuclear reactor failures at the Fukushima Daiichi nuclear power plant facility. The Japanese government estimated total economic losses to range between JPY16.2 to 25.3 trillion (USD198 to 309 billion); while the World Bank estimated insured losses to fall between JPY1.1 to 2.7 trillion (USD14 to 33 billion).

Tsunami waves from the Japan earthquake also crossed the Pacific Ocean and caused a combined USD88.4 million in damage to coastal locations of Hawaii and California in the U.S. Additional tsunami damage was recorded in Peru and Chile to more than 500 homes.

In other earthquake news this month, a magnitude-5.4 earthquake rattled parts of southwest China. At least 26 people were killed and 313 others were injured. According to officials from the Ministry of Civil Affairs, the tremor damaged or destroyed at least 68,000 homes in Yingjiang County. The Chinese government allocated CNY105 million (USD16 million) for relief and recovery costs.

Myanmar recorded a magnitude-6.8 earthquake that left at least 75 people dead. Myanmar's official state media reported that at least 3,152 homes, 31 religious buildings, nine government buildings and a hospital were destroyed. Total economic losses were listed at MMK23.5 million (USD3.6 million).

Elsewhere, multiple severe weather events led to damage across the United States. One event that affected parts of the Southeast and the Mississippi Valley during the first half of the month led to more than 20,000 insurance claims being filed with payouts exceeding USD120 million. Separate events at the end of the month were expected to cause at least tens of millions of dollars (USD) in insured losses across the Southeast as well.

Flooding in southern Thailand left at least 51 people dead after more than a year's worth of rain fell over a six day span. As many as 580,000 homes were damaged or destroyed and transportation was severely hampered. The University of the Thai Chamber of Commerce estimated economic damages to potentially reach THB10billion (USD330 million).

Additional flood events in Brazil, Indonesia and Namibia led to tens of thousands of homes being destroyed and millions of dollars (USD) in total economic damages.

Natural disaster declarations were also made in Australia's New South Wales after more than 800 homes sustained flood damage.

United States

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
3/5-3/7	Winter Weather	Southeast, Midwest, Northeast	1+	Thousands+	Millions+
3/7-3/9	Wildfires	New Mexico	0	60+	Unknown
3/8-3/11	Winter Weather	Southeast, Midwest, Northeast	4+	20,000+	200+ million
3/11	Tsunami	West Coast, Hawaii	1+	Hundreds+	88.4+ million
3/12-3/13	Wildfires	Oklahoma, Texas	0	67+	3+ million
3/20-3/23	Severe Weather	West, Southeast, Northeast	3+	Thousands+	27+ million
3/26-3/28	Severe Weather	Southeast	0	Thousands+	Millions+
3/29-3/31	Severe Weather	Southeast	0	Thousands+	Millions+

A winter storm brought heavy snow, rain and rounds of severe weather across parts of the Midwest, Mississippi Valley, Southeast and the Northeast between the 5th and 7th. A squall line spawned at least 10 tornado touchdowns in Louisiana on the 5th, with the most devastating tornado in the town of Rayne. The EF-2 twister with 135 mph (215 kph) winds damaged or destroyed nearly 150 homes, killed one person and caused 12 injuries. Additional damage and injuries were reported in parts of Mississippi and Alabama. On the 6th, at least three tornadoes touched down in North Carolina, while straight-line winds caused damage in parts of eastern Virginia. In New England, heavy snow and gusty winds led to damage and power outages as power lines and tree branches were snapped.

A large wildfire burned across parts of New Mexico between the 7th and 9th, charring nearly 1,800 acres (728 hectares) of land near Silver City. According to local firefighters, the Quail Ridge Fire led to the destruction of at least 60 structures (including 13 homes). No injuries or fatalities were reported.

A strong storm system brought additional rounds of heavy snow, rain and severe weather across parts of the Midwest, Mississippi Valley, Southeast and Northeast between the 8th and 11th. At least four people were killed. The most significant effects were due to severe weather that impacted areas from Texas to the Carolinas. Dozens of tornadoes touched down on the 8th and 9th in parts of Texas, Mississippi, Louisiana and Tennessee, which led to home and business structural damage. On the 10th and 11th, heavy rains fell across already oversaturated regions of the Northeast and the Mid-Atlantic States. Flooding occurred from Ohio to Maine as dozens of rivers, streams and creeks exceeded flood stage. Total economic losses were estimated at USD200 million, while insurers received at least 20,000 claims with payouts totaling in excess of USD120 million.

Areas along the west coast of the U.S. and Hawaii were affected by the magnitude-9.0 earthquake that struck Japan on the 11th. The triggered tsunami led to widespread damage in parts of California and Hawaii. Total damages in California from the tsunami were listed at more than USD50 million, primarily to docks, harbors and boats. In Hawaii, the state estimated that more than USD8.5 million in damages to infrastructure while direct damage to personal property and local businesses was USD29.9 million.

Dozens of grass fires burned across parts of Oklahoma and Texas on the 12th and 13th. At least 15 injuries were reported. In Oklahoma, the most affected areas coming in Oklahoma County where at least 30 homes were destroyed and seven more were severely damaged. Total damages in the county were listed at USD3 million. A total of 49 homes were destroyed state-wide. In Texas, at least 8 homes were destroyed in the towns of Jacksboro and Granbury.

A strong storm system crossed the United States between the 20th and the 23rd, leaving at least three people dead. The system came ashore in California on the 20th and brought heavy rain and blizzard conditions to the Sierras. Damage occurred to hundreds of homes and businesses due to landslides and flash flooding, with costs listed at USD17 million. As the main area of low pressure crossed the northern Plains into New England, heavy snow accumulations were recorded. On the 22nd and 23rd, the Storm Prediction Center recorded over 500 damage reports from Nebraska to Virginia. In Hempfield Township, Pennsylvania an EF-2 tornado caused well over USD10 million in damage costs to over 200 homes, businesses and schools. Reports of golfball-sized hail led to roof damage to homes and vehicles.

Severe weather caused widespread damage to parts of the Deep South between the 26th and the 28th. Parts of Mississippi, Alabama and Georgia were primarily affected as hail ranging from nickel to golfball-size was blamed for the majority of inflicted damage to roofs and windows. The Storm Prediction Center recorded nearly 400 separate reports of tornadoes (10), damaging winds (43) and large hail (327). Total economic and insured losses were anticipated to reach well into the millions of dollars (USD).

Another round of severe weather impacted the Southeast between the 29th and 31st, as an area of low pressure developed along the remnants of the stationary frontal boundary. In Louisiana, at least five tornadoes touched down, while at least four counties in Mississippi sustained major damage. The Mississippi Emergency Management Agency noted that nearly homes were severely damaged after large hail and straight-line winds of 110 mph (175 kph) struck Simpson and Copiah counties. On the 30th and 31st, the focus shifted into Central Florida as a nearly persistent band of showers and severe thunderstorms occurred over a 36-hour span. Damage to homes, airplane hangars, businesses and vehicles was widespread throughout the greater Tampa Bay area. Total economic and insured losses were anticipated to reach well into the millions of dollars (USD).

Remainder of North America (Canada, Mexico, Caribbean Islands)

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/ Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
3/7	Winter Weather	Canada	0	Hundreds+	20.6+ million

A strong winter system affected parts of eastern Canada on the 7th. According to Environment Canada, the province of Quebec saw snow accumulations ranging from 25 to 75 centimeters (0.82 to 2.46 feet). The city of Sherbrooke was particularly affected, where snowbound streets paralyzed travel and caused schools and businesses to close. In Montreal, heavy snows cost the city at least CAD20 million (USD20.6 million) to clean-up. No injuries or fatalities were reported.

South America

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/ Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
3/10-3/14	Flooding	Brazil	10+	25,000+	Millions+
3/11	Tsunami	Chile, Peru	0	500+	Unknown

Consecutive days of heavy rain led to renewed flooding across parts of southern Brazil between the 10th and the 14th. At least 10 people were killed and more than 31,000 others were left homeless in the states of Rio Grande do Sul, Santa Catarina, Espirito Santo and Parana. Widespread damage to tens of thousands of homes was prevalent, and the agricultural, transportation and electrical infrastructures all sustained significant effects as well. In the town of Sao Lourenco do Sul alone, over 1,000 farms (primarily growing tobacco, corn and soybean crops) were damaged by floods. Landslides and floods also reportedly blocked highways and damaged more than 40 bridges.

Areas along the west coast of South America were affected by the massive magnitude-9.0 earthquake that struck Japan on the 11th. Reports indicated that 300 homes were damaged in the towns of Pueblo Nuevo de Colan and Pisco in Peru, and 200 additional coastal homes were destroyed Chile.

Europe

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/ Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
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No major natural disaster events were recorded in Europe during the month of March.

Africa

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/ Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
3/27-3/31	Flooding	Namibia	62+	30,000+	4+ million

Heavy rains fell across northern sections of Namibia between the 27th and the 31st as a state of emergency was declared. The flooding rains led to the deaths of at least 62 people in the village of Oshakati alone. The regions of Oshana, Ohangwena, Caprivi and Omusati were the most affected with 30,000 homes, schools and health centers being damaged and large tracts of agricultural land (primarily maize crops) being submerged. Livestock losses were also reported. Total economic damages were expected to exceed NAD30 million (USD4 million).

Asia

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/ Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
3/10	Earthquake	China	26+	68,000+	16+ million
3/11	Earthquake	Japan	12,300+	203,000+	198- 309 billion
3/17-3/31	Flooding	Indonesia	13+	5,000+	Unknown
3/21-3/31	Flooding	Thailand	51+	583,589+	330+ million
3/24	Earthquake	Myanmar, Thailand	75+	3,194+	3.6+ million

A moderate earthquake rattled parts of southwest China near the border with Myanmar on the 10th. The magnitude-5.4 tremor occurred at 11:28 AM local time (4:58 UTC) with an epicenter in Yingjiang County, Yunnan Province, China. At least 26 people were killed and 313 others were injured. According to officials from China's Ministry of Civil Affairs, the earthquake damaged or destroyed at least 68,000 homes in Yingjiang County (which borders with Myanmar). Supermarkets, apartments and hotels also collapsed in areas closest to the epicenter. The Chinese government allocated CNY105 million (USD16 million) for relief and recovery costs. The Myanmar government did not release any damage details.

A massive mega-earthquake and tsunami struck the northeastern coast of Japan on the 11th, killing at least 12,300 people, injuring nearly 3,000 more and causing damage to at least 203,000 homes and other structures. The main magnitude-9.0 earthquake struck at 2:46 PM local time (5:46 UTC) with an epicenter 130 kilometers (80 miles) east of Sendai, Japan and 373 kilometers (231 miles) northeast of Tokyo at a depth of 24.4 kilometers (15.2 miles). Ground shaking from the temblor reportedly lasted for two full minutes. Following the main tremor, more than 830 aftershocks rattled the region with at least 57 shocks registering above magnitude-6.0. The tremor spawned a significant tsunami (in excess of 15 meters (49.2 feet)) that swept across the coastlines of Miyagi, Iwate and Fukushima prefectures. Many towns were completely washed away. In the days that followed the earthquake and tsunami, the attention shifted to several nuclear reactor failures at the Fukushima Daiichi nuclear power plant facility. The Japanese government estimated total economic losses to range between JPY16.2 to 25.3 trillion (USD198 to 309 billion); while the World Bank estimated insured losses to fall between JPY1.1 to 2.7 trillion (USD14 to 33 billion).

Persistent heavy rains fell between the 17th and the 31st in Papua, Indonesia, which spawned floods that left at least 13 people dead. More than 5,000 homes were destroyed as floodwaters rose as high as 2 meters (6.6 feet) in several districts after the Aga River overflowed its banks. Thousands of hectares (acres) of crops sustained inundation. An unspecified number of livestock also perished during the event.

Torrential monsoonal rains inundated southern sections of Thailand between the 21st and the 31st, leaving at least 51 people dead. Ten provinces were listed as disaster zones after more than a year's worth of rain fell over a six day span. At least 580,000 homes were damaged or destroyed, 2,222 main roads and bridges were washed away or damaged, 1,367 schools and hospitals were damaged, 118,000 hectares (290,000 acres) of farmland were submerged, power poles snapped and thousands of residents and tourists were left stranded. Transportation via airports and railways were also suspended due to flooding. The University of the Thai Chamber of Commerce preliminarily estimated economic damages to potentially reach THB10billion (USD330 million).

A strong, magnitude-6.8 earthquake rattled northeast Myanmar on the 24th, causing widespread damage and leaving at least 75 people dead. According to the USGS, the main tremor struck at 8:25 PM local time (13:55 UTC) with an epicenter located 89 kilometers (55 miles) north of Chiang Rai, Thailand. Myanmar's official state media reported that at least 700 homes, 14 Buddhist monasteries and nine government buildings were destroyed. A small hospital and a main bridge were also severely damaged. In Thailand, one woman was killed after a wall collapsed; though damage elsewhere was not extensive. Total damages were listed at MMK23.5 million (USD3.6 million).

Oceania (Australia, New Zealand, New Guinea, Micronesia, Guam, Northern Mariana Islands)

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/ Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
3/20-3/21	Flooding	New South Wales	1+	800+	Millions+

Torrential rains over a 24-hour period on the 20th and 21st led to river and flash flooding across parts of New South Wales, Australia, leaving at least one person dead. The floods led to widespread damage and natural disaster declarations for Shellharbour, Bombala, Kiama, Bega, Shoalhaven City and Eurobodalla in the Illawarra and South Coast regions. The NSW State Emergency Service received more than 800 calls for assistance, primarily due to leaking roofs and structural damage due to flood inundation. Additional damage occurred to businesses and the transportation infrastructure. Early economic loss projections from the NSW government suggested losses to be well into the millions of dollars (USD).

APPENDIX

Updated Jan. 2011 – Feb. 2011 Data

United States

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
12/31-1/1	Severe Weather	Midwest, Southeast	8+	10,000+	Millions+
1/7-1/12	Winter Weather	Midwest, Southeast, Northeast	11+	Thousands+	Millions+
1/17-1/24	Winter Weather	Plains, Midwest, Northeast, Tennessee Valley	10+	Thousands+	Millions+
1/24-1/26	Winter Weather	Southeast, Northeast, Mid-Atlantic	0	Thousands+	Millions+
1/31-2/2	Winter Weather	Midwest, Southeast, Northeast	36+	80,000+	700+ million
2/2-2/6	Winter Weather	Plains, Southeast, Southwest	4+	40,000+	500+ million
2/20-2/21	Winter Weather	Midwest, Ohio Valley, Northeast	1+	4,000+	Millions+
2/24-2/25	Winter Weather	Midwest, Southeast, Northeast	4+	20,000+	225+ million
2/27-3/4	Wildfires	Texas	1+	241+	14.5+ million
2/27-2/28	Severe Weather	Southeast, Midwest, Mid-Atlantic	4+	45,000+	250+ million

Remainder of North America (Canada, Mexico, Caribbean Islands)

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
1/10-1/13	Winter Weather	Canada	0	Hundreds+	Unknown
1/11-1/15	Winter Weather	Mexico	16+	Unknown	Unknown
1/27-1/28	Winter Weather	Canada	0	Hundreds+	Unknown
2/1-2/2	Winter Weather	Canada	0	Dozens+	Unknown
2/15-2/16	Winter Weather	Canada	0	Dozens+	Unknown

South America

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
12/25-1/6	Flooding	Brazil	35+	30,000+	Unknown
1/1-3/5	Flooding	Bolivia	52+	25,000+	20+ million
1/10-1/14	Flooding	Brazil	902+	21,500+	1.2+ billion
1/20-1/31	Flooding	Brazil	6+	21,000+	Unknown
2/27	Landslides	Bolivia	0	400+	Unknown

Europe

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
1/9-1/14	Flooding	Germany, Poland, Czech Republic	5+	Thousands+	Millions+
1/29	Earthquake	Hungary	0	8,481+	5+ million
2/1-2/28	Winter Weather	Poland	29+	Unknown	Unknown

Africa

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
1/1-1/31	Flooding	South Africa, Mozambique	136+	38,000+	495+ million
2/14-2/16	CY Bingiza	Madagascar, Mozambique	22+	35,729+	Unknown

Asia

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
1/1-1/31	Drought	China	0	Unknown	1+ billion
1/1-1/28	Flooding	Philippines	75+	5,729+	46.6+ million
1/1-1/24	Winter Weather	China	2+	150,000+	1.77+ billion
1/2-1/15	Flooding	Sri Lanka	43+	50,000+	500+ million
1/19	Earthquake	Pakistan	0	200+	Unknown
1/29-1/31	Flooding	Malaysia	5+	25,000+	Unknown
1/31-2/7	Flooding	Philippines	22+	2,598+	12.3+ million
2/1-2/10	Flooding	Sri Lanka	18+	27,497+	450+ million
2/1	Earthquake	China	0	678+	Unknown
2/3-2/17	Winter Weather	Afghanistan	25+	3,000+	Unknown
2/11-2/13	Winter Weather	South Korea	0	1,000+	70+ million

Oceania (Australia, New Guinea, New Zealand, Micronesia, Guam, Northern Mariana Islands)

Event Date	Event Name Or Type ¹	Event Location	# of Deaths ²	# of Structures/Claims ^{2,3}	Damage Estimates ^{2,4} (USD)
1/1-1/14	Flooding	Queensland	35+	49,400+	5.6+ billion
1/13-1/18	Flooding	Victoria	1+	6,609+	125+ million
1/23-1/24	Flooding	New Zealand	0	500+	11.4+ million
1/25-1/29	CY Wilma	Tonga, New Zealand	3+	1,000+	22+ million

2/3	STC Yasi	Australia	1+	59,990+	1.8+ billion
2/4-2/6	Severe Weather	Australia	0	38,984+	200+ million
2/5-2/6	Bushfire	Australia	0	410+	40+ million
2/16-2/22	STC Carlos	Australia	0	4,000+	15+ million
2/16-2/17	STC Dianne	Australia	0	Unknown	Unknown
2/22	Earthquake	New Zealand	166+	99,042+	7.5-11.3+ billion
2/28	Severe Weather	Australia	0	170+	1.02+ million

¹ TD = Tropical Depression, TS = Tropical Storm, HU = Hurricane, TY = Typhoon, STY = Super Typhoon, CY = Cyclone

² As reported by public news media sources

³ **Structures** defined as any building – including barns, outbuildings, mobile homes, single or multiple family dwellings, and commercial facilities – that is damaged or destroyed by winds, earthquakes, hail, flood, tornadoes, hurricanes or any other natural-occurring phenomenon. **Claims** defined as the number of claims (which could be a combination of homeowners, commercial, auto and others) reported by various insurance companies through press releases or various public media outlets.

⁴ Damage estimates obtained from various public media sources, including news websites, publications from insurance companies and financial institution press releases. These estimates can include insured or economic losses.

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