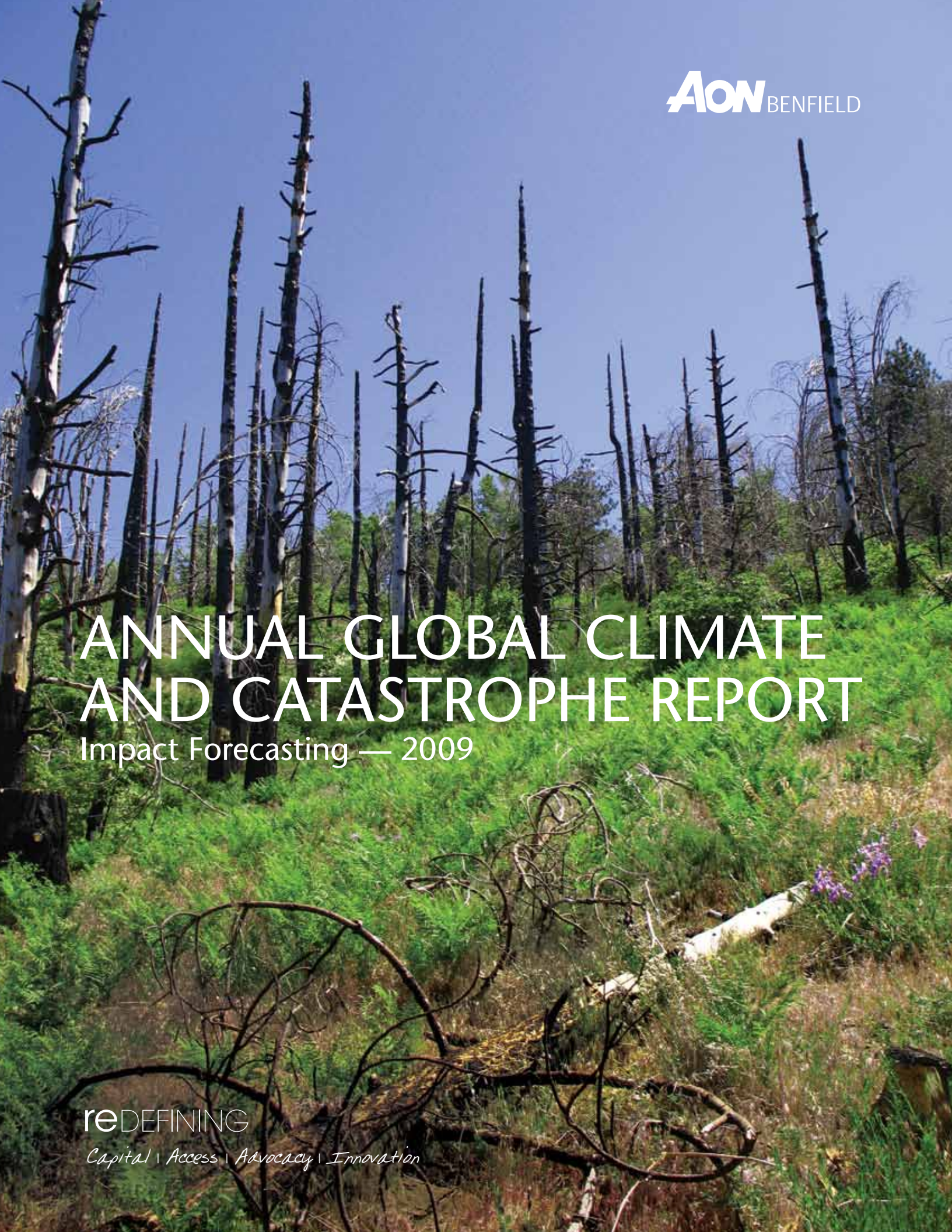

AON BENFIELD

ANNUAL GLOBAL CLIMATE AND CATASTROPHE REPORT

Impact Forecasting — 2009

reDEFINING

Capital | Access | Advocacy | Innovation

Impact Forecasting

Impact Forecasting LLC is a catastrophe modeling center of excellence within Aon Benfield Analytics whose seismologists, meteorologists, hydrologists, engineers, mathematicians, GIS experts, finance, risk management and insurance professionals analyze the financial implications of natural and man-made catastrophes around the world. Impact Forecasting's experts are redefining the software tools and models that help clients understand underlying risks from hurricanes, tornadoes, earthquakes, floods, wildfires and terrorist attacks on property, casualty and crop insurers and reinsurers. Impact Forecasting is the only catastrophe modeling firm integrated into a reinsurance intermediary. To find out more about Impact Forecasting, please visit www.impactforecasting.com.

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As the industry leader in treaty, facultative and capital markets, Aon Benfield is redefining the role of the reinsurance intermediary and capital advisor. Through our unmatched talent and industry-leading proprietary tools and products, we help our clients to redefine themselves and their success. Aon Benfield offers unbiased capital advice and customized access to more reinsurance and capital markets than anyone else. As a trusted advocate, we provide local reach to the world's markets, an unparalleled investment in innovative analytics, including catastrophe management, actuarial, and rating agency advisory, and the right professionals to advise clients in making the optimal capital choice for their business. With an international network of more than 4,000 professionals in 50 countries, our worldwide client base is able to access the broadest portfolio of integrated capital solutions and services. Learn more at www.aonbenfield.com.

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Executive Summary — 2009's Top Catastrophes

With our annual report, Impact Forecasting and Aon Benfield are helping to redefine the way in which our clients interpret and view natural catastrophe events and the potential impacts to their business. Insights in this year's report include a recap of 2009's top natural catastrophe events, a monthly tabular look at 2009's events, as well as climate reviews and forecasts for the first five months of 2010 - including the initial forecasts for the 2010 Atlantic Hurricane Season. By presenting catastrophe, meteorological, climatological and insurance data with a meaningful method, we are redefining the way in which information can be accessed and the value in which it is delivered to our clients.

2009's global natural catastrophic activity remained near the levels of the last two years. At least 222 separate events had damaging effects on various parts of the world, resulting in economic losses of US$58 billion and insured losses of US$20 billion. In comparison, 2008 had 213 events that produced damage, while 2007 had 217 events. Both Europe and the United States tallied the most insured losses for 2009 primarily due to damaging winter and springtime weather. Asia accounted for most of the economic losses, with flooding and typhoons accounting for the majority of their losses. Of the top 10 natural catastrophic events in 2009 from an insured loss standpoint, there were six severe weather events (tornadoes, hail, severe thunderstorm winds), one winter-based storm event (snow, icing, cold temperatures and damaging winds), one tropical system event, one wildfire event and one earthquake event.

The most costly event of the year in terms of insured loss was Europe's Windstorm Klaus, which caused an estimated US$3.3 billion for insurance companies. Klaus was the costliest event in terms of economic loss as well, as over US$6.0 billion in losses were reported, mainly from the countries of France and Spain. The storm, which occurred in late January, killed 26 people as insurers reported over 715,000 filed damage claims. The top 10 insured loss events, shown in figure 1, totaled US$10.88 billion, more than half of the total insured losses experienced in 2009. A combination of winter storms, severe weather, flooding, tropical system activity and earthquakes comprised the remaining US$9.12 billion in 2009's insured losses.

Figure 1: Top Insured Loss Events In 2009

Event Date	Event Name Or Type	Event Location	# of Deaths	# of Structures/ Claims	Insured Loss Estimates (US$)	Economic Loss Estimates (US$)
1/24-1/25	Windstorm Klaus	France, Spain, Italy	26+	715,000+	3.30 billion	6.00 billion
7/23-7/24	Severe Weather	Switzerland, Austria	11+	5,000+	1.25 billion	2.50 billion
2/10-2/13	Severe Weather	Oklahoma, Texas, Ohio Valley	13+	300,000+	1.20 billion	2.40 billion
4/9-4/11	Severe Weather	Plains, Midwest, Southeast	2+	190,000+	1.10 billion	2.20 billion
6/9-6/18	Severe Weather	Rockies, Plains, Midwest, Mid-Atlantic	1+	200,000+	1.00 billion	2.00 billion
2/7-2/20	Bushfires	Victoria, New South Wales	173+	10,040+	0.99 billion	1.00+ billion
3/25-3/29	Severe Weather	Plains, Southeast, Midwest, Northeast	6+	150,000+	0.83 billion	1.60 billion
7/20-7/21	Severe Weather	Rockies, Plains	1+	85,000+	0.70 billion	1.40 billion
9/26-9/30	Typhoon Ketsana	Philippines, Vietnam	645+	7.4+ million	0.26 billion	1.03 billion
4/6	Earthquake	Italy	308+	15,000+	0.25 billion	2.50 billion
ALL OTHER EVENTS					9.12 billion	35.37 billion
TOTALS					**20.00 billion**	**58.00 billion**

The most deadly event in 2009 was a magnitude-7.6 earthquake that occurred in Indonesia on September 30th. The earthquake killed nearly 1,200 people and caused US$2.2 billion in economic loss. Since earthquake insurance is scarce in the region, insured losses were less than two percent of the economic loss: only US$40 million. The earthquake damaged or destroyed nearly 250,000 structures. Figure 2 shows the top 10 catastrophe events in terms of human fatalities.

Figure 2: Top 10 Events In Terms Of Human Fatalities In 2009

Event Date	Event Name Or Type	Event Location	# of Deaths	# of Structures/ Claims	Economic Loss Estimates (US$)
9/30	Earthquake	Indonesia	1,195+	249,833+	2.20 billion
8/3-8/10	Typhoon Morakot	Taiwan, China, Philippines	717+	3.86+ million	5.04 billion
9/26-9/30	Typhoon Ketsana	Philippines, Vietnam	645+	7.40+ million	1.03 billion
11/25	Flooding	Saudi Arabia	500+	15,235+	0.93 billion
10/3-10/9	Typhoon Parma	Philippines	494+	58,156+	2.00 billion
5/25	Cyclone Aila	India, Bangladesh	330+	1.02+ million	0.46 billion
4/6	Earthquake	Italy	308+	15,000+	2.50 billion
10/1-10/6	Flooding	India	300+	2.5+ million	4.00 billion
7/2-7/9	Flooding	India	296+	6,906+	Unknown
1/9-1/14	Flooding	Fiji, Philippines, Indonesia	281+	2,679+	0.20 billion

The most damaging event of the year was Asia's Typhoon Ketsana. The typhoon, which affected the Philippines and Vietnam at the end of September, damaged or destroyed over 7.4 million structures. The system killed 645 people and caused over US$1 billion in economic losses. According to the Philippines Insurers and Reinsurers Association, insured losses were US$257 million. Figure 3 shows the top 10 catastrophe events in terms of number of structures damaged or destroyed.

Figure 3: Top 10 Events In Terms Of Structural Damage In 2009

Event Date	Event Name Or Type	Event Location	# of Deaths	# of Structures/ Claims	Economic Loss Estimates (US$)
9/26-9/30	Typhoon Ketsana	Philippines, Vietnam	645+	7.40+ million	1.03 billion
8/3-8/10	Typhoon Morakot	Taiwan, China, Philippines	717+	3.86+ million	5.04 billion
10/1-10/6	Flooding	India	300+	2.50+ million	4.00 billion
5/25	Cyclone Aila	India, Bangladesh	330+	1.02+ million	0.46 billion
1/24-1/25	Windstorm Klaus	France, Spain, Italy	26+	715,000+	6.00 billion
7/9	Earthquake	China	1+	655,832+	0.37 billion
7/17-7/22	Flooding	India, Pakistan	81+	500,000+	Unknown
9/1-9/14	Flooding	West Africa	159+	300,000+	Unknown
4/18-5/31	Flooding	Brazil	54+	300,000+	1.65 billion
2/10-2/13	Severe Weather	Oklahoma, Texas, Ohio Valley	13+	300,000+	1.20 billion

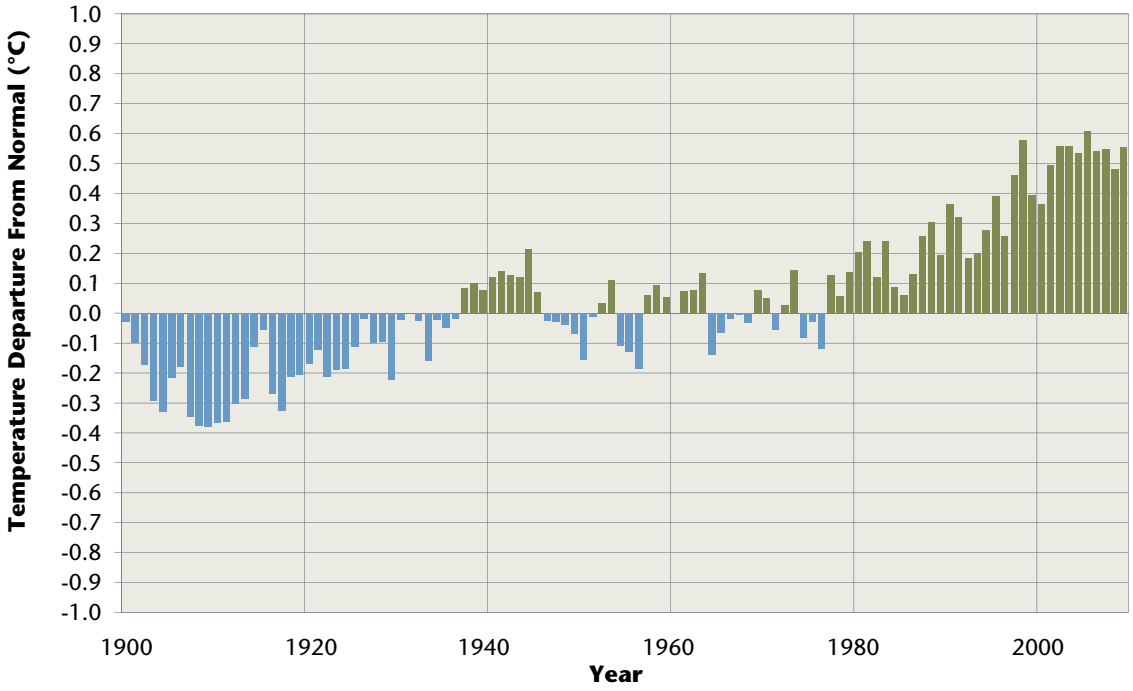
Unlike recent previous years, 2009 failed to produce a single extreme insured loss event that topped US$5 billion. In 2008, Hurricane Ike, which made landfall in Galveston, Texas, caused more than US$12.55 billion (in 2009 US$) in insured losses to not only coastal sections of Louisiana and Texas, but also far inland to states in the Mississippi and Ohio river valleys. In 2007, Windstorm Kyrill battered portions of Germany, Britain, Belgium and the Netherlands, costing insurers over US$6.26 billion (2009 US$). 2005 was the record-setting year for insured losses, mainly due to three landfalling major hurricanes in the United States. Hurricane Katrina, the costliest hurricane in history, produced insured losses that exceeded US$45.49 billion (2009 US$) across Louisiana, Mississippi, Alabama and Georgia. Hurricane Rita made landfall only a few weeks after Katrina and produced insured losses of US$6.22 billion (2009 US$) in Louisiana and Texas. Finally, Hurricane Wilma raced across central and southern Florida late in October, producing insured losses of US$11.40 billion (2009 US$).

Low insurance takeup rates in poorer sections of the world tend to lead to large economic loss events but relatively low insured losses. For instance, Typhoon Morakot damaged or destroyed nearly 3.9 million structures in Taiwan, China and the Philippines producing economic losses of over US$5 billion. According to official governmental sources, however, insured losses as of early December 2009 have only amounted to US$100 million. As the September 30th West Sumatra earthquake demonstrated, the low takeup rate scenario for the earthquake peril was once again an issue. The magnitude-7.6 earthquake damaged or destroyed over 249,800 structures in Indonesia, leading to economic losses of US$2.2 billion. However, due to the low takeup rate on earthquake insurance across the region, insured losses were estimated at only US$40 million by the Indonesian provincial governments, less than two percent of the economic loss total. Indonesian governmental agencies estimated that reconstruction costs would be around US$860 million.

2009 Climate Review

2009 was the 32nd consecutive year of above average global temperatures. Using data provided by the National Climatic Data Center through November, 2009's combined land and ocean temperatures for the earth averaged 0.56°C (1.01°F) above the long-term mean, making 2009 the fifth-warmest year since records on global land and ocean temperatures started being kept back in 1880. 2009's global temperature was similar to 2007 and 0.08°C (0.14°F) warmer than 2008. There were only four years that were warmer than 2009: 1998, 2002, 2003 and 2005. The warmest year on record came in 2005, when the combined land and ocean global temperatures reached 0.61°C (1.09°F) above average. The coolest global land and ocean temperature was registered in 1909 with a global temperature of 0.38°C (0.68°F) below the long-term average. The last below-average temperature year for the globe was recorded in 1976, when global land and ocean temperatures registered 0.12°C (0.22°F) below average.

Figure 4: Global Land And Ocean Temperature Anomalies: 1900-2009



Various ocean oscillations often influence the amount of warming or cooling that takes place in a given year. The El Niño/Southern Oscillation (ENSO) cycle is a warming or cooling of the waters across the central Pacific, leading to a drastic change in the orientation of the upper atmospheric storm track. Warming periods are noted as El Niño cycles, while cooling periods are known as La Niña cycles. 2009 started with a weak La Niña period that commenced in December 2008. La Niña conditions continued through April and ended by May. Neutral conditions quickly changed to a weak El Niño period that continued to gradually strengthen. By November, the El Niño had become a moderate to strong event.

2009 was the fourth consecutive year with declining tropical system production across the world's ocean basins (Atlantic, Pacific and Indian), with only 33 total hurricanes, typhoons and cyclones (sustained winds of 74 mph (119 kph) or greater), 19 major (Category 3 or higher) storms and 12 landfalling hurricanes, typhoons

and cyclones. In an average year, around 49 hurricanes, typhoons and cyclones typically develop – 24 of which strengthen to or above Category 3 status. On average, around 17 hurricanes, typhoons and cyclones would make landfall across the world. 2009 had the lowest number of named storms in the last 25 years, with 1988 being the previous lowest tropical system production year with 36 named storms.

Figure 5: Global Tropical Systems Over The Last 25 Years (>74mph)

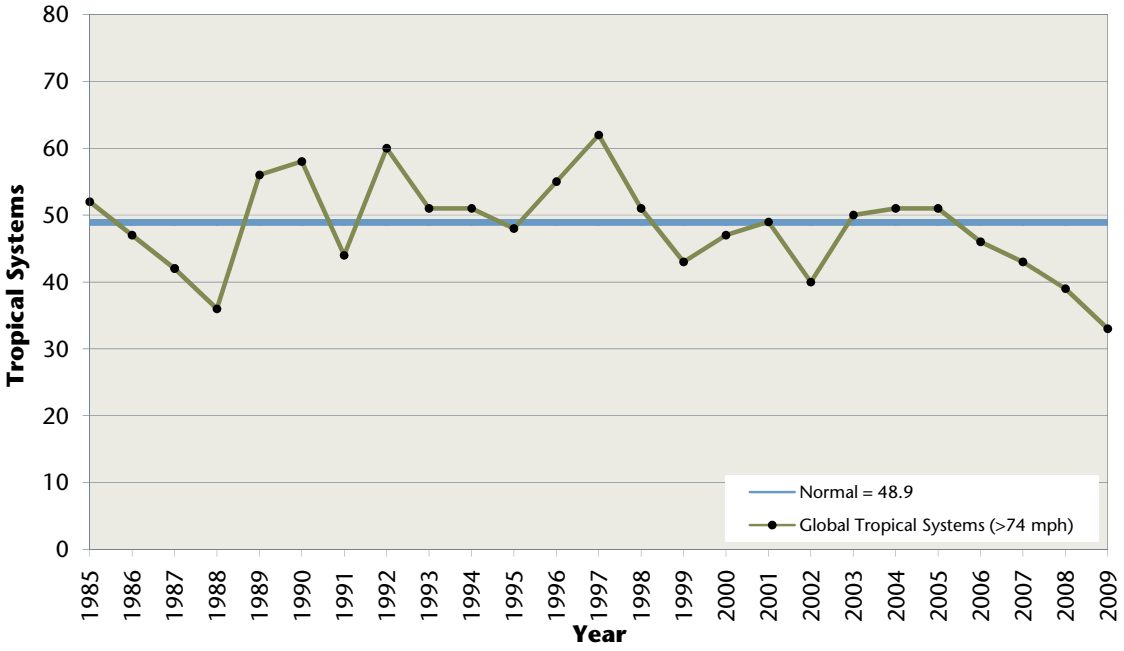


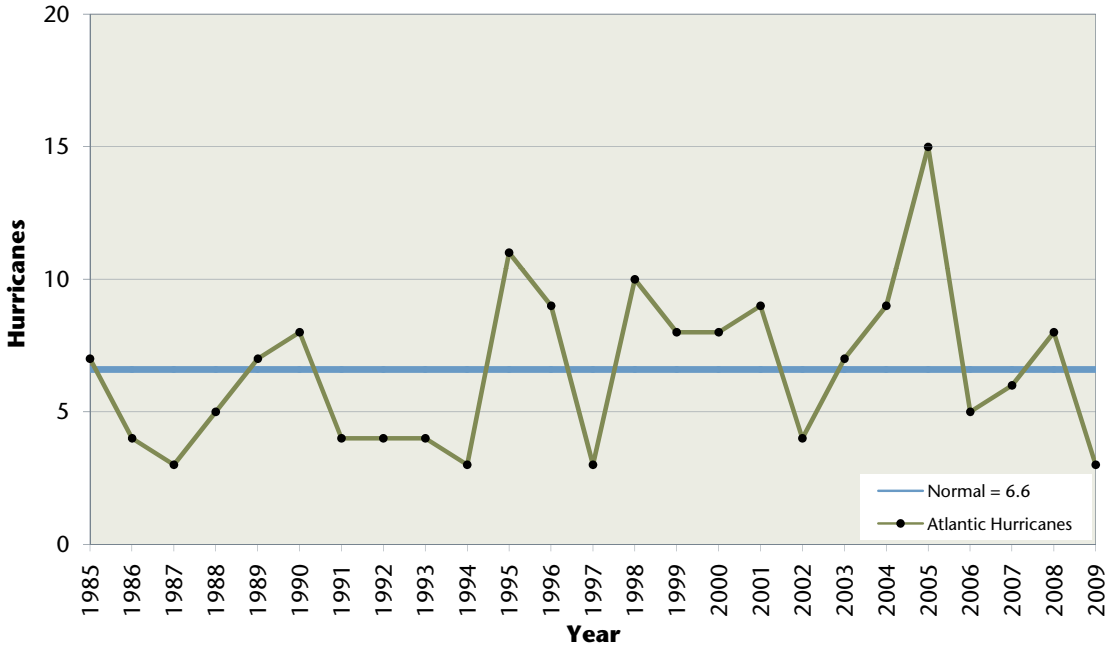
Figure 6: Regional Hurricane/Typhoon/Cyclone Activity Frequency Compared to Average Values

Region	All Tropical Activity				Category 3+ Tropical Activity				Landfalling Tropical Activity			
	Avg.	2009	Chg.	%	Avg.	2009	Chg.	%	Avg.	2009	Chg.	%
Atlantic/Caribbean	6.6	3	-3.6	-55%	2.8	2	-0.8	-29%	1.9	0	-1.9	-100%
East Pacific	9	8	-1	-11%	3.9	5	1.1	28%	1.2	1	-0.2	-17%
West Pacific	17.4	14	-3.4	-20%	9.2	7	-2.2	-24%	9.2	8	-1.2	-13%
Indian/South Pacific	15.8	8	-7.8	-49%	7.6	5	-2.6	-34%	4.8	3	-1.8	-38%
GLOBAL	**48.8**	**33**	**-15.8**	**-32%**	**23.5**	**19**	**-4.5**	**-19%**	**17.1**	**12**	**-5.1**	**-30%**

The following sections detail each region's tropical system production in 2009 compared to normal and the notable storms that developed and adversely affected countries bordered by these regions.

2009 Atlantic Hurricane Season Review

Figure 7: Atlantic Hurricanes Over The Last 25 Years



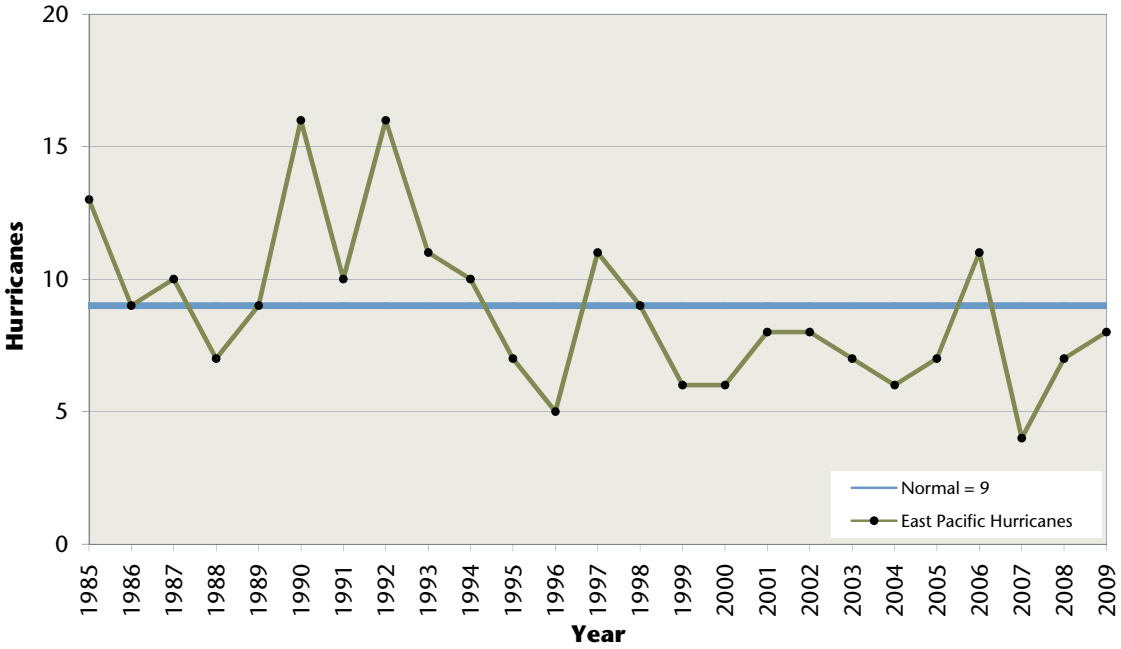
After an active 2008, 2009's Atlantic Hurricane Season was below average in named storms, hurricanes and landfalling hurricanes. Nine named storms developed in 2009, compared to a 25-year average of 13 storms. This equates to a season that was 31 percent below the 25-year average. Only three hurricanes developed during the season (compared to an average of 6.6 hurricanes) equating to a year that was 53 percent below average. Two of those hurricanes became major hurricanes (Category 3 or higher), compared to a 25-year average of 2.8, 29 percent below average. No hurricanes made landfall in the United States in 2009.

2009's Atlantic Hurricane Season was heavily influenced by increased upper-atmospheric wind shear, which acts to tear apart developing thunderstorms that eventually congeal into a tropical circulation. The El Niño/ Southern Oscillation (ENSO) quickly changed from a La Niña phase into an El Niño phase, promoting unfavorable conditions in the upper atmosphere. See Appendix B for information on hurricane frequency as it relates to the El Niño /Southern Oscillation cycle.

2009's first named storm, Tropical Storm Ana, developed on August 12th, the latest start to a hurricane season since 1992. Hurricane Bill developed on August 15th and made landfall in Newfoundland as a weakening tropical storm. Tropical Storm Claudette developed on August 16th and made landfall on the east end of Santa Rosa Island, Florida with 50 mph (85 kph) winds. Danny rounded out the month of August and did not make landfall, though its remnants brought heavy rains and flooding to the Canadian Maritimes. September's activity was well below average, with only two named storms forming – Tropical Storm Erika and Hurricane Fred. Fred was the strongest hurricane so far south and east in the National Hurricane Center's HURDAT dataset and became only the third major hurricane that developed east of 35°W latitude. October's Tropical Storm Grace was the farthest-northeast-forming tropical storm in the Atlantic. November's Hurricane Ida was the region's deadliest hurricane of the 2009 Atlantic Hurricane Season, forming on November 4th and reaching a peak intensity of 105 mph (165 kph) as it moved into the Gulf of Mexico. Ida made its first landfall in eastern Nicaragua before making a final landfall in southern Alabama as a tropical storm.

2009 Eastern Pacific Hurricane Season Review

Figure 8: Eastern Pacific Hurricanes Over The Last 25 Years



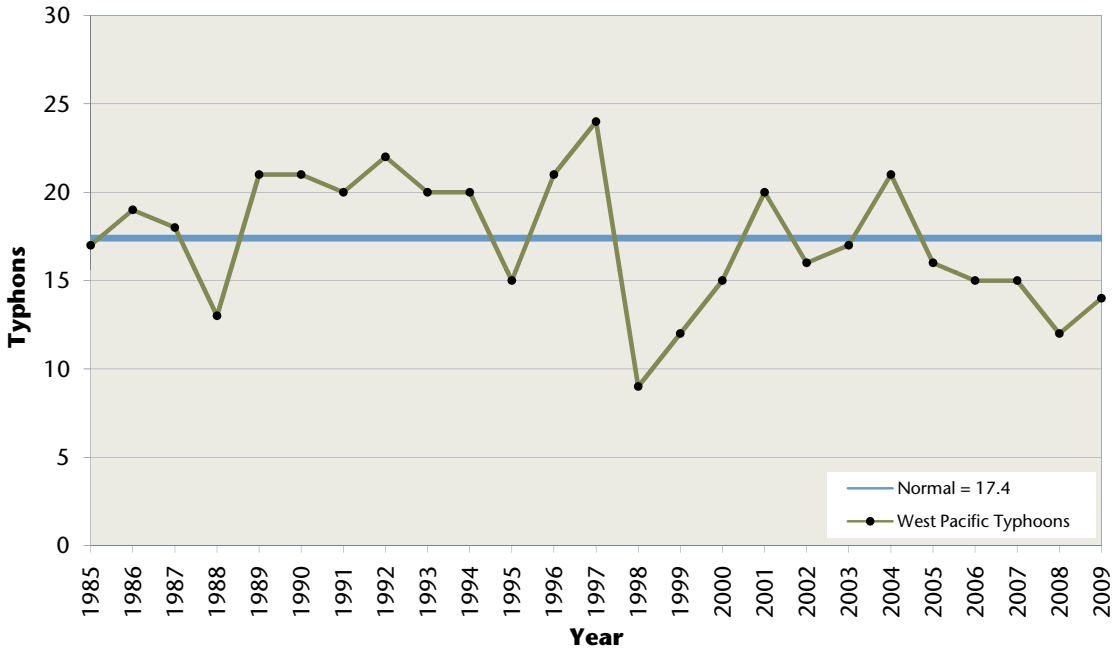
2009's Eastern Pacific Hurricane Season was closer to normal than the previous two years. The eastern Pacific Ocean produced 20 named storms, 25 percent above the average of 16.4 named storms. Eight hurricanes developed during the season (compared to a 25-year average of 9.0) – which was 11 percent below average. Five of these hurricanes strengthened to major hurricane status, 28 percent above the 25-year average of 3.9. One hurricane, Jimena, made landfall, which is near the 25-year average of 1.2.

The El Niño/Southern Oscillation (ENSO) played a large role in this year's activity across the eastern portions of the Pacific Ocean. Because of warm sea surface temperatures across the region due to a switch to an El Niño phase, many tropical systems were able to develop. Five of those storms that did develop and became hurricanes strengthened into major hurricanes. The very warm sea surface temperatures and low amounts of upper atmospheric wind shear promoted tropical system development through much of the season. See Appendix B for information on hurricane frequency as it relates to the El Niño/Southern Oscillation cycle.

2009's Eastern Pacific Hurricane Season, which typically starts on May 15th, got a late start this year. The first system developed first on June 21st, the latest starting season in nearly 40 years. However, favorable conditions more than made up for the late start, with the most active August occurring in the last 41 years with seven named storms. Hurricane Rick, which achieved a peak intensity of 180 mph (285 kph), became the second most powerful hurricane to ever develop in the eastern Pacific, only behind 1997's Hurricane Linda of 185 mph (295 kph). The last Category 5 major hurricane to develop in the eastern Pacific was 2002's Hurricane Kenna. Rick quickly weakened as it turned from a west-northwest heading to a northeast heading and made landfall near Mazatlan with winds of 55 mph (90 kph). Hurricane Andres caused heavy rains that triggered flooding and landslides to coastal Mexico, even though it never made landfall. Hurricane Jimena was the only system in 2009 that made landfall as a hurricane across the eastern Pacific Ocean. The system made landfall as a weak Category 2 hurricane on Baja California.

2009 Western Pacific Typhoon Season Review

Figure 9: Western Pacific Typhoons Over The Last 25 Years



For the fifth consecutive year, typhoon activity across the western Pacific Ocean was below the long-term average. A total of 25 named storms developed in the western Pacific Ocean, 17 percent below the 25-year average of 29.7. Of those storms, 14 typhoons formed – 18 percent below the 25-year average of 17.4. Only seven of the 14 typhoons reached Category 3 or higher – 22 percent below the 25-year average of 9.2. Of the 14 typhoons, eight made landfall – 11 percent below the 25-year average of 9.2.

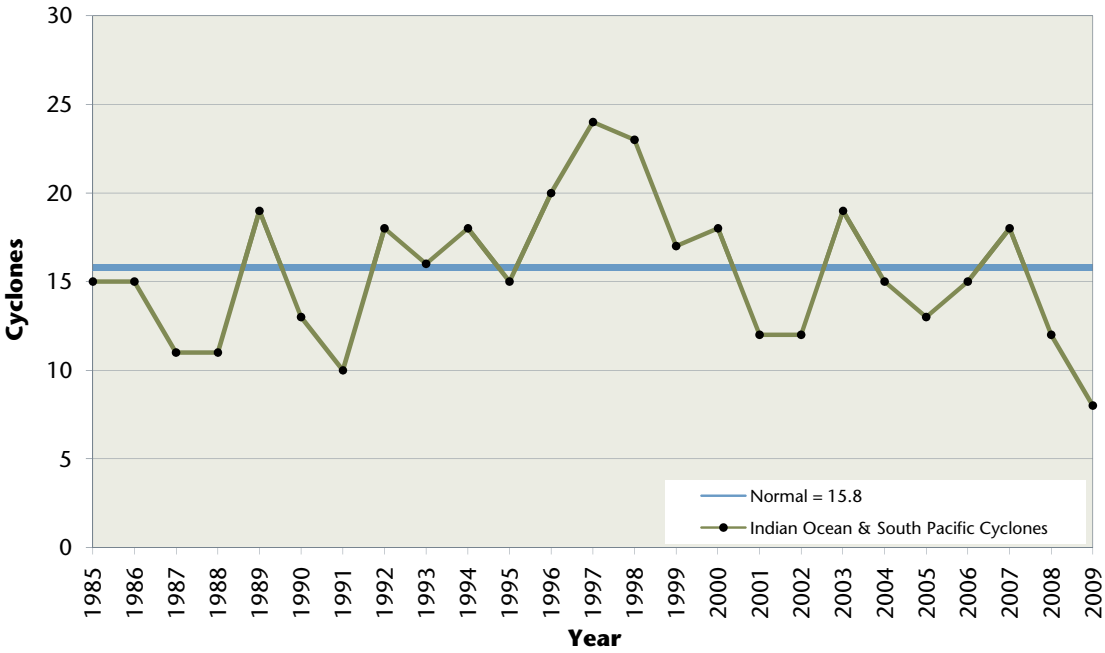
The western Pacific's typhoon season can start as early as January and continue year-round, which was the case in 2009. The first tropical system of 2009, named Auring, formed on January 3rd. Over a month went by before the next storm system, named Bising, developed east of Surigao City on Mindanao Island. The system following Bising didn't form until April 30th, when Crising formed southeast of Luzon. Two storms developed in both May and June, and one of these storms, Typhoon Kujira, reached Category 4 status. Two tropical systems developed in July, and one of these, Molave, became a minimal typhoon.

Typhoon frequency increased rapidly in August, with a total of seven tropical systems. Only two of these storms became typhoons. The active period continued into September with nine named storms. The strongest storm during the month of September was Super Typhoon Choi-Wan with 260 kph (160 mph) peak winds. Tropical system frequency decreased in October, November and December.

A late season storm became the strongest of the 2009 western Pacific Ocean typhoon season. Super Typhoon Nida, which developed on November 22nd and dissipated on December 3rd, reached a peak intensity of 295 kph (185 mph), but the system did not affect any major landmasses. The second most powerful storm of the 2009 Western Pacific Typhoon Season was Super Typhoon Melor, which reached a peak intensity of 270 kph (165 mph) and dissipated by October 8th after making landfall in southeastern Japan.

2009 Indian Ocean and Southern Pacific Cyclone Season Review

Figure 10: Indian Ocean & South Pacific Cyclones Over The Last 25 Years



The downward trend of tropical system frequency continued in 2009 across the northern and southern Indian Ocean and the southern Pacific Ocean. A total of 29 named storms developed in the region, 13 percent below the 25-year average of 33.5. Of those storms, eight cyclones formed – 49 percent below the 25-year average of 15.8. Only five of the eight cyclones reached Category 3 or higher – 34 percent below the 25-year average of 7.6. Of the eight cyclones, three made landfall – 38 percent below the 25-year average of 4.8.

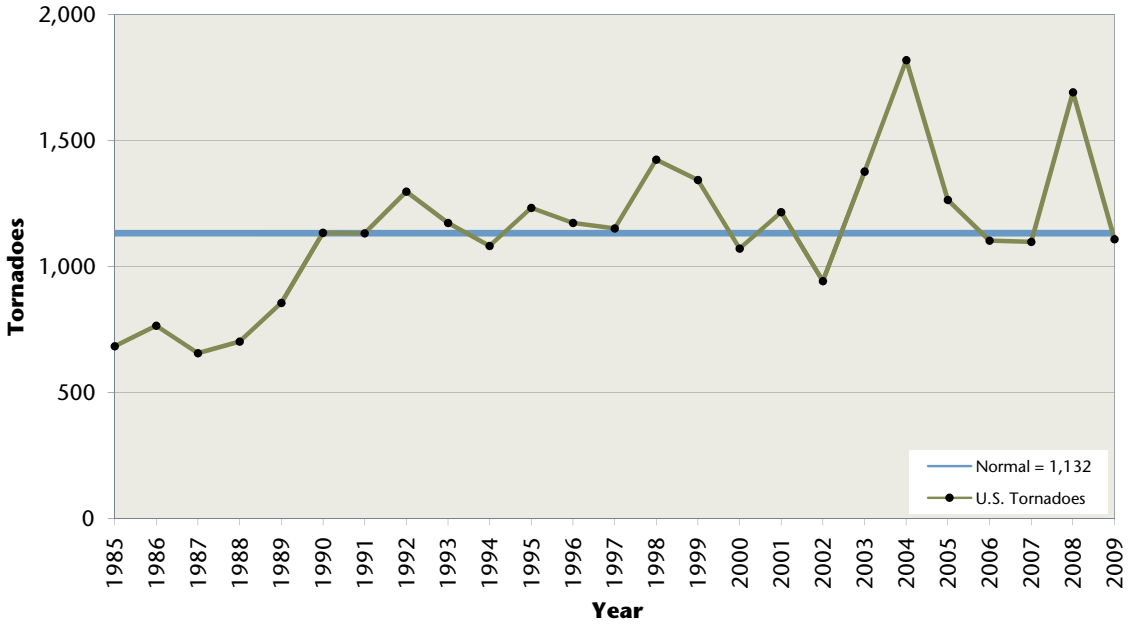
Most of the storms that developed in the southern Pacific Ocean stayed offshore and only achieved tropical storm status. However, one storm, Cyclone Hamish, reached a peak intensity of 240 kph (150 mph) while it remained just off the Queensland coastline. The system developed on March 5th and dissipated by March 12th.

The southern Indian Ocean was more active, producing seven cyclones, of which five achieved at least Category 3 strength. Only one of these storms, Cyclone Fanele, made landfall in Madagascar. The system developed on January 19th and dissipated by January 22nd. Cyclone Gael approached the eastern coast of Madagascar in early February with peak winds of 220 kph (140 mph), though it turned to the south and southeast right before it made landfall.

The northern Indian Ocean was very quiet, with only three tropical storms and one cyclone. The cyclone, named Aila, developed on May 24th and dissipated by May 25th with peak winds of 120 kph (75 mph). Aila made landfall during its peak intensity and caused damage to India and Bangladesh.

2009 United States Tornado Season Review

Figure 11: United States Tornadoes Over The Last 25 Years



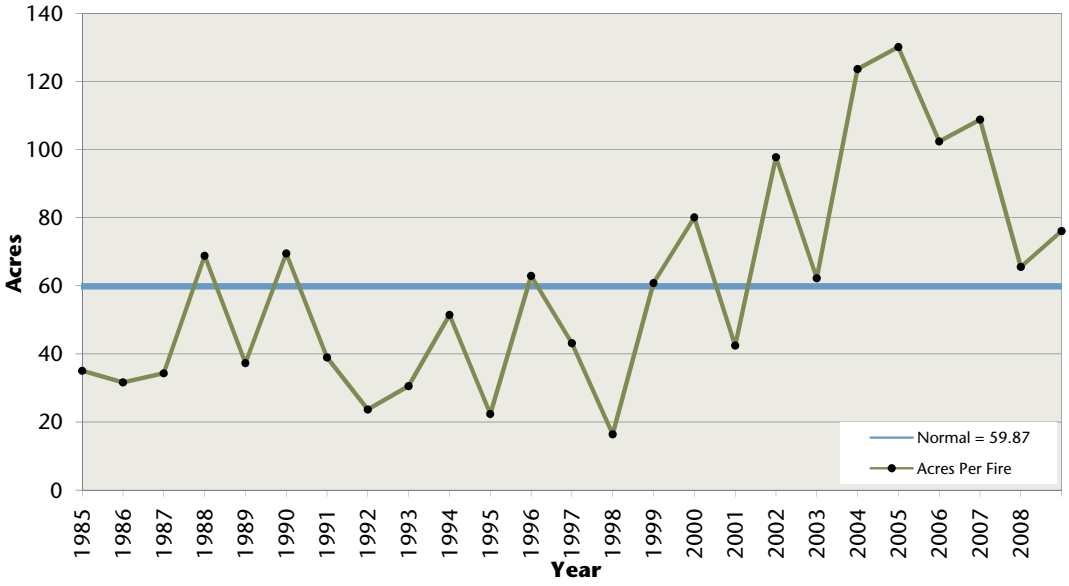
After 2008's active season, the Storm Prediction Center in Norman, Oklahoma counted approximately 1,109 tornadoes through mid-December, compared to 1,691 in 2008, 1,093 in 2007 and a 25-year average of 1,132. 2009's count was two percent below the 25-year average and 34 percent lower than 2008's near-record year.

A total of ten killer tornadoes occurred across the United States in 2009. This total was substantially lower than 2008, when 38 killer tornadoes occurred. 2009 broke the trend of the rise of tornado deaths since 2004. 2008 had the highest number of tornado deaths, 128, since 1998. 2009 only recorded 22 tornado deaths, 62 percent lower than an average year of 57 deaths. Like 2008, February was the deadliest month for tornadoes, with nine lives lost. Of the 22 deaths in 2009, 12 occurred in mobile homes, eight in permanent homes, one in a vehicle and one in a commercial structure.

The majority of the tornado deaths in 2009 occurred from one tornado that moved through Lone Creek, Oklahoma on February 10th. Eight people died when an EF4 tornado struck a mobile home park and moved northwest of Ardmore, Oklahoma after dark. On February 18th, an EF3 tornado killed one person and destroyed a church and four mobile homes in Hickory Grove, Georgia. On April 9th, an EF3 tornado moved through the town of Mena, Arkansas and killed three people. The same storm system spawned an EF4 tornado that caused significant damage and two fatalities in Murfreesboro, Tennessee. On April 19th, an EF1 tornado destroyed a mobile home in the community of Asbury, Alabama and killed one person. On May 8th, three frame houses and numerous outbuildings were destroyed in Charity, Texas by an EF2 tornado that killed one person. Two people were killed in Madison County, Kentucky on May 8th when their mobile home was destroyed by an EF3 tornado. On May 13th, two killer tornadoes in Missouri, an EF1 near Milan and an EF2 near Kirksville, killed three people. The last killer tornado of 2009 occurred on October 9th in Washington County, Mississippi. An EF2 tornado destroyed three mobile homes and damaged 16 homes while killing one person.

2009 United States Brushfire Season Review

Figure 12: United States Acreage Per Brushfire Over The Last 25 Years



For the fourth consecutive year, brushfire occurrence across the United States was above average. The National Interagency Fire Center in Boise, Idaho reported approximately 77,577 wildfires burning 5,906,238 acres (2,392,026 hectares) through mid-December, compared to 80,094 fires burning 5,254,109 acres (2,127,914 hectares) in 2008 and a 25-year average of 75,027 fires burning 4,505,453 acres (1,824,708 hectares). The 2009 wildfire season burned an average of 76.13 acres (26.57 hectares), compared to a 25-year average of 59.87 acres (24.25 hectares) per fire. The largest burn rate occurred in 2005, when an average of 130.17 acres (52.68 hectares) burned with each fire. The lowest burn rate occurred in 1998, when an average of 16.41 acres (6.64 hectares) burned within each fire, mainly due to an abundance of precipitation across California early in the year by a strong El Niño cycle.

Extremely dry conditions from California into the southern Plains led to high wildfire activity in January. January 2009 ranked third in number of acres burned in the last ten years with 57,150 (23,128 hectares). February continued to produce a large number of fires in the southern Plains, burning 120,447 acres (48,743 hectares). In March, fires primarily burned in central and southern Texas with a total of 401,741 acres (162,579 hectares). Texas, the Desert Southwest, Tennessee Valley and the Southeast accounted for 485,373 acres (196,424 hectares) burned in April, ranking second in the last ten years in area burned. Kentucky, Tennessee, Florida and Texas dealt with fires in May, though heavy rains extinguished many fires in Florida. Over 312,599 acres (126,504 hectares) burned in May. Above average rainfall during June led to the third-lowest acreage burned in the last ten years with 525,937 acres (212,839 hectares). In July, approximately 1,688,573 acres (683,341 hectares) were burned, 262,004 acres (106,029 hectares) below the ten-year average of 1,950,577 acres (789,370 hectares). Though some significant fires broke out in California, August was below the ten-year average burn rate by 64,814 acres (26,229 hectares), with a total of 1,646,363 acres (666,259 hectares). The largest fire in California's Los Angeles County's history occurred in September, though the nation recorded another month of below average wildfire activity with 378,523 acres (153,183 hectares), only 50 percent of the ten-year average. October 2009 continued that trend, with only 58,644 acres (64,201 hectares) burned across the United States, 173,199 acres (56,662 hectares) below the ten-year average of 331,843 acres (120,863 hectares). November brought another month of below average wildfire activity with 108,803 acres (44,031 hectares) burned, 96,220 acres (38,939 hectares) below the ten-year average of 205,023 acres (82,970 hectares).

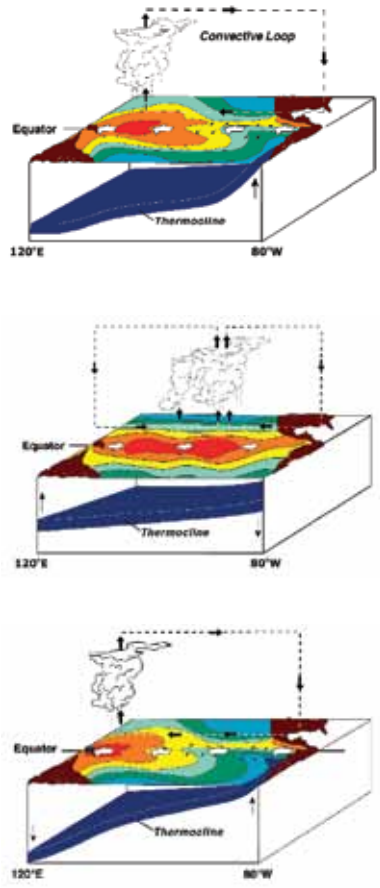
2010 Climate and Atlantic Hurricane Forecasts

One of the main influential factors for the globe's annual climate conditions is the El Niño/Southern Oscillation (ENSO), an anomalous warming or cooling of the central Pacific Ocean waters that generally occurs every three to seven years, mainly during the months of August through February.

During neutral conditions, surface trade winds blow from the east and force cooler waters that are upwelled from the deeper depths of the Pacific Ocean to the surface across the western coast of South America. Because of the displacement of water flowing to the west, the ocean is up to 60 centimeters (two feet) higher in the western Pacific Ocean as it is in the eastern Pacific Ocean. The warmer waters are forced into the western portions of the ocean, allowing thunderstorm activity leading to the majority of the Pacific's tropical storm and typhoon development to occur across the western half of the Pacific Ocean.

During El Niño conditions, the surface trade winds that normally blow from east to west weaken and sometimes even reverse direction. This allows the warmer waters to remain or even traverse eastward, bringing more frequent thunderstorm activity to the central and eastern portions of the Pacific Ocean. Warm and very wet conditions typically occur across Peru, Ecuador, Brazil and Argentina from December through April. Portions of Central America, Colombia and the Amazon River Basin are dry, as are southeastern Asia and most of Australia. In Africa, El Niño's effects range from wetter-than-average conditions across eastern portions to warmer and drier-than-average conditions across southern portions. In North America, the polar jet stream (the jet stream that is responsible for Arctic outbreaks) is usually pushed northward, keeping cold Arctic air across the northern portions of Canada. Warmer-than-average temperatures typically occur across the northern United States and southern Canada. The subtropical jet stream, which usually sinks southward during the winter months, will drift northward and bring a succession of storm systems across the southern tier of the U.S. and northern Mexico. See Appendix B for El Niño's effects on tropical system frequency for the Pacific and Atlantic Oceans.

Figure 13: Phases of the El Niño/ Southern Oscillation (ENSO)



During La Niña conditions, the surface trade winds will strengthen, promoting additional cooler water to be upwelled from the depths of the Pacific Ocean up to the surface and forced westward. This forces thunderstorm activity across the Pacific Ocean westward and often brings fewer tropical systems to the central and eastern Pacific regions. Because of the waters' influence of the upper atmospheric jet stream, La Niña's effects, like El Niño's effects, are experienced worldwide. The main effects are usually noted across the western Pacific regions, where wetter conditions are expected, especially during the beginning months of the year. Wet and cool conditions are typical across southern Africa and eastern South America between December and February. With the polar jet stream displaced further south, cool and wet conditions occur across the northern half of the North America West Coast, while dry and mild conditions are experienced for the southern half of the United States into northern Mexico. If La Niña's cycle continues into June, July and August, warm and wet conditions often occur across Indonesia and the southern half of Asia, while cool and wet conditions are found across the southern portions of the Caribbean Ocean. See Appendix B for La Niña's effects on tropical system frequency for the Pacific and Atlantic Oceans.

The following pages contain maps that depict the most likely occurrences of above and below average temperatures and precipitation from January through May across the world.

Temperature and Precipitation Outlook: January – March 2010

Figure 14: Temperature Outlook, January - March 2010

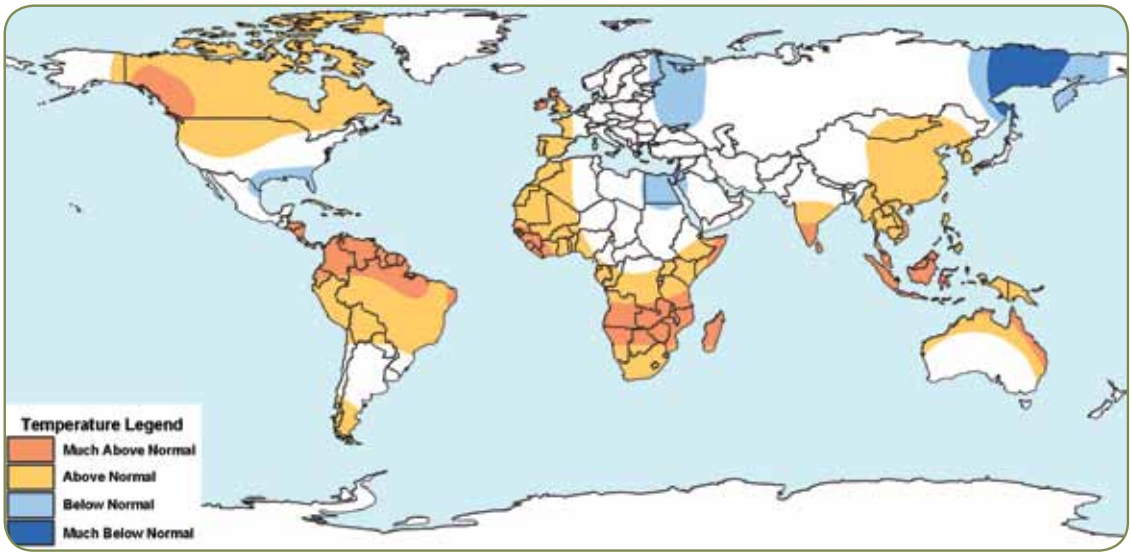
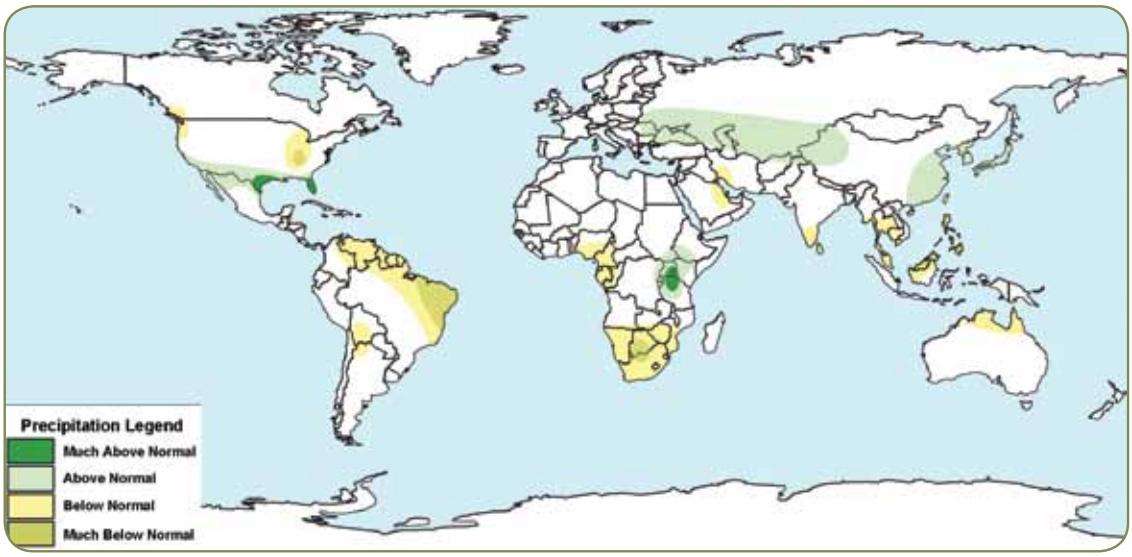


Figure 15: Precipitation Outlook, January - March 2010



The southern United States and northern portions of Mexico are expected to be wetter than normal due to a subtropical tap of moisture and the jet stream poised across the region. Above normal temperatures are expected for much of Canada into the northern half of the United States. Dry and warm conditions are expected across much of northern South America. Portions of southern Africa are also expected to be on the dry and warm side, as are portions of southern India, Thailand, Vietnam, the Philippines and extreme northern sections of Australia. Cooler than normal temperatures are expected throughout the southern United States, portions of eastern Europe and into northeastern Asia.

Temperature and Precipitation Outlook: March – May 2010

Figure 16: Temperature Outlook, March - May 2010

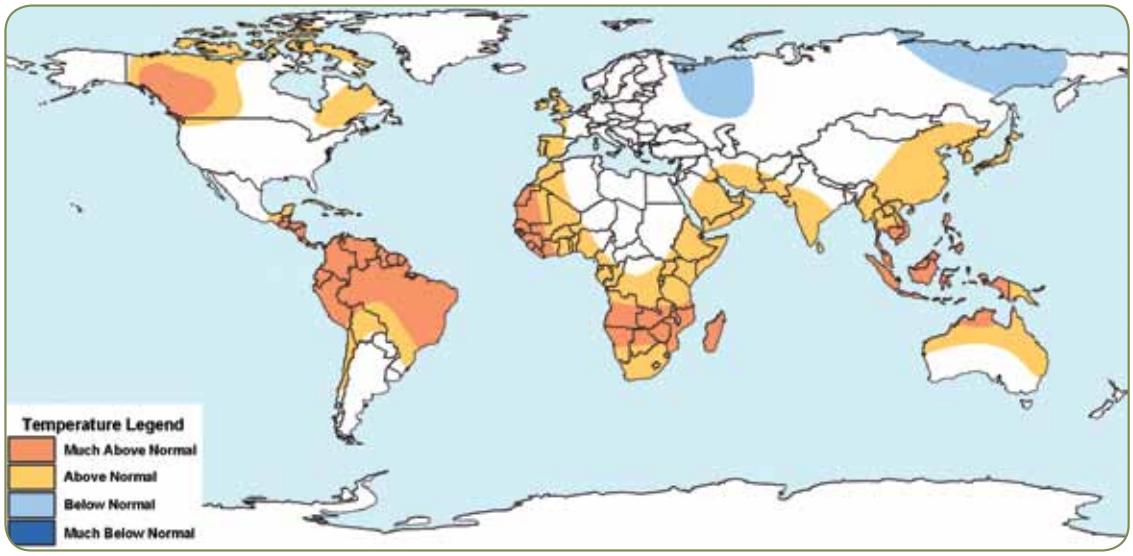
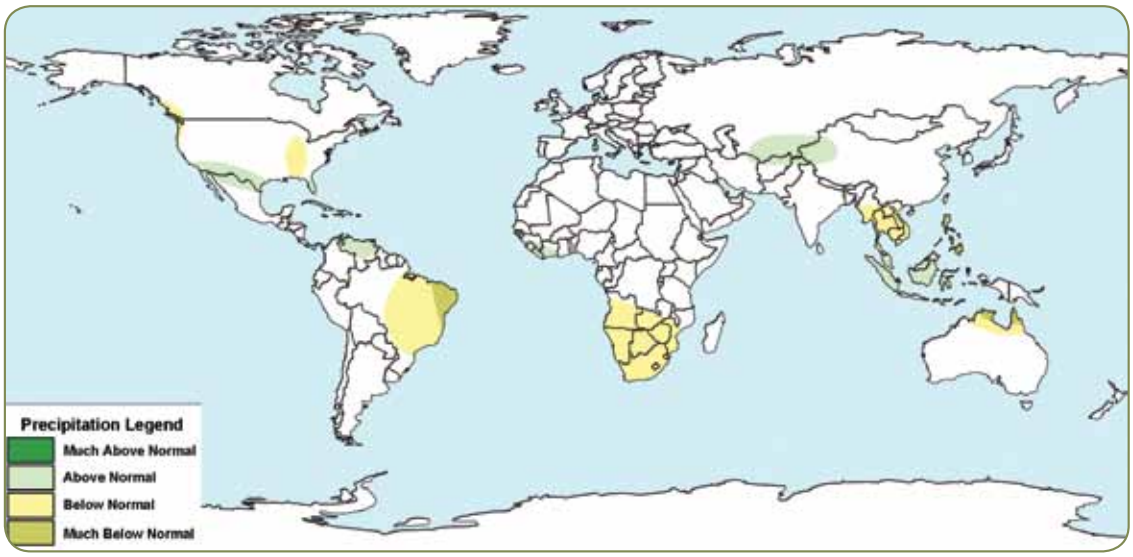


Figure 17: Precipitation Outlook, March - May 2010



Continued warm conditions are expected for Canada and through much of South America due to continued El Niño conditions, though the El Niño/Southern Oscillation (ENSO) phase is forecast to shift from El Niño conditions to more neutral conditions. Eastern South America is forecast to be drier than normal, as is southern Africa and into southeast Asia and extreme northern Australia. Above normal precipitation is forecast for the southern United States and northern Mexico as well as across central Asia. Much of central and southern Africa is forecast to be warmer than normal, while extreme western and extreme eastern portions of Asia are expected to be cooler than normal.

Historical Atlantic Hurricane Season Predictions

Abundant media attention has been given to various organizations across the world that issue hurricane season predictions for the Atlantic and Caribbean Oceans. These organizations utilize meteorological and climatic data obtained, in some instances, up to six months in advance to determine how active or inactive the following year's Atlantic Hurricane Season will be. Several different professional entities issue these forecasts, ranging from governmental agencies to universities to private companies. The three organizations that consistently make their forecasts public are:

- Colorado State University (CSU), a forecast group sponsored by Colorado State University and private companies led by Dr. Philip Klotzbach and Dr. William Gray;
- the National Oceanic and Atmospheric Administration (NOAA), the United States' official governmental climatological and meteorological office; and
- Tropical Storm Risk (TSR), an Aon Benfield-sponsored forecast group based in London, England led by Professor Mark Saunders and Dr. Adam Lea.

Some of these entities disclose in detail the parameters being used to derive these forecasts, while others cite general factors for the reasoning of their predictions. For the five-year period shown here, Colorado State University (CSU) and Tropical Storm Risk (TSR) provide specific numbers, while the National Oceanic and Atmospheric Administration (NOAA) provides a range of values. Starting in December 2009, CSU started issuing their forecasts utilizing a range of values.

The forecasts for the last five years made between the period of May 1st and June 10th along with the actual total number of named storms, hurricanes and major hurricanes are shown in the following figures. The May/June forecast was chosen due to the availability of forecasts from each organization. Additionally, a five-year cumulative forecast is shown to emphasize that short-term (one-year) forecasting is often more error-prone than long-term forecasting.

Figure 18: 2009 Forecast

Forecast Parameter	May/June Atlantic Hurricane Season Forecast				
	25-Year Average	CSU	NOAA	TSR	Season Total
Named Storms	11.0	11	9-14	11	9
Hurricanes	6.4	5	4-7	5	3
Major Hurricanes	2.6	2	1-3	2	2

Figure 19: 2008 Forecast

Forecast Parameter	May/June Atlantic Hurricane Season Forecast				
	25-Year Average	CSU	NOAA	TSR	Season Total
Named Storms	11.0	15	12-16	14	16
Hurricanes	6.4	8	6-9	8	8
Major Hurricanes	1.2	4	2-5	3	5

Figure 20: 2007 Forecast

Forecast Parameter	May/June Atlantic Hurricane Season Forecast				
	25-Year Average	CSU	NOAA	TSR	Season Total
Named Storms	11.0	17	13-17	16	15
Hurricanes	6.4	9	7-10	9	6
Major Hurricanes	1.2	5	3-5	4	2

Figure 21: 2006 Forecast

Forecast Parameter	May/June Atlantic Hurricane Season Forecast				
	25-Year Average	CSU	NOAA	TSR	Season Total
Named Storms	11.0	17	13-16	14	9
Hurricanes	6.4	9	8-10	8	4
Major Hurricanes	1.2	5	4-6	3	2

Figure 22: 2005 Forecast

Forecast Parameter	May/June Atlantic Hurricane Season Forecast				
	25-Year Average	CSU	NOAA	TSR	Season Total
Named Storms	11.0	15	12-15	14	27
Hurricanes	6.4	8	7-9	8	15
Major Hurricanes	1.2	4	3-5	4	7

Figure 23: 5-year Cumulative Forecast

Forecast Parameter	May/June Atlantic Hurricane Season Forecast				
	25-Year Average	CSU	NOAA	TSR	Season Total
Named Storms	55	75	59-78	69	76
Hurricanes	32	39	32-45	38	36
Major Hurricanes	13	20	13-24	16	18

2010 Atlantic Hurricane Season Outlooks

An active 2010 Atlantic Hurricane Season is being forecast by two leading hurricane forecast research groups: Colorado State University (CSU) and Tropical Storm Risk (TSR). The two firms released their predictions in early December.

Figure 24: CSU 2010 Atlantic Basin Hurricane Season Forecast (Issued December 9th, 2009)

Forecast Parameter	CSU Average Year	CSU Forecast
Named Storms	9.6	11-16
Named Storm Days	49.1	55-75
Hurricanes	5.9	6-8
Hurricane Days	24.5	24-39
Intense Hurricanes	2.3	3-5
Intense Hurricane Days	5.0	6-12
Net Tropical Cyclone Activity	100%	108%-172%

Figure 25: CSU 2010 Major Hurricane Landfall Probability Forecast (Issued December 9th, 2009)

Forecast Parameter	CSU Average Year	CSU Forecast
Entire U.S. Coastline	52%	64%
U.S. East Coast including the Florida Peninsula	31%	40%
Gulf Coast from the Florida Peninsula to Brownsville, Texas	30%	40%

The CSU Forecast can be viewed at: http://tropical.atmos.colostate.edu/forecasts/

Figure 26: TSR 2010 Atlantic Basin Hurricane Season Forecast (Issued December 7th, 2009)

Forecast Parameter	TSR Average Year	TSR Forecast
Named Storms	10.4 (±4.2)	13.9 (±4.9)
Hurricanes	6.1 (±2.7)	7.4 (±3.1)
Intense Hurricanes	2.7 (±2.0)	3.4 (±1.8)
Net Tropical Cyclone Activity	101% (±60)	135% (±59)

Figure 27: TSR 2010 Hurricane Landfall Forecast (Issued December 7th, 2009)

Forecast Parameter	TSR Average Year	TSR Forecast
U.S. Named Storms	3.1 (±2.1)	4.4 (±2.2)
U.S. Hurricanes	1.5 (±1.3)	1.9 (±1.5)
Caribbean & Lesser Antilles Named Storms	1.0 (±1.0)	1.3 (±0.9)
Caribbean & Lesser Antilles Hurricanes	0.5 (±0.7)	0.6 (±0.6)

The TSR Forecast can be viewed at: http://tropicalstormrisk.com/

2009 Monthly Catastrophe Review

January

- **Windstorm Klaus causes damage in eastern and central Europe**
- **Ice storm knocks out electricity to over 1.3 million people in the eastern United States**
- **Cyclones Eric and Fanele strike Madagascar**

Multiple winter storm systems affected nearly the entire United States between the 1st and the 8th. In Washington state, portions of the Cascade Mountains received over 18 inches (45 centimeters) on the 1st. On the 6th, an area of low pressure developed across parts of the central Plains and Lower Mississippi Valley and brought flooding rains across the Southeast and Mid-Atlantic States, leaving hundreds of roads underwater. Gusty winds knocked out electricity to 26,000 homes in North and South Carolina as well as West Virginia on the 6th and 7th. A mix of snow, sleet, freezing rain and ice fell across parts of the Midwest and Ohio Valley, killing at least one person in southern Illinois due to icy roads. By the 8th, another storm system came ashore in Washington, triggering flooding in western sections of the state. Some locations received over 15 inches (38 centimeters) of rain. Washington state officials estimated that at least US$125 million of loss had occurred.

Winter weather affected nearly all of Europe between the 2nd and the 9th, leading to the deaths of at least 17 people. The winter weather began in the United Kingdom on the 2nd, as a storm system swept through the region. Between the 5th and the 8th, the storm system swept across northern and central sections of Europe. In France, ten centimeters (four inches) of snow fell around Paris, while over 40 centimeters (a foot) of snow fell in Marseille. In Italy, 30 centimeters (one foot) of snow fell in Milan. In Poland, temperatures fell to -25°C (-13°F). At least ten people were found frozen to death. In Germany, heavy snow blocked roads. The winter weather also forced the temporary closure of airports in Dusseldorf and Frankfurt. Netherlands authorities at Rotterdam's port sent out an ice-breaking ship for the first time since 1996. In Belgium, Brussels was shut down as heavy snow made road travel nearly impossible. On the 9th, Madrid, Spain was hit by unusually heavy snows and Barajas airport was shut down.

In South Africa, severe weather occurred across parts of KwaZulu-Natal over the 3rd and 4th. At least 18 people were killed as lightning, gusty winds and heavy rains affected the region. Over 4,017 structures were damaged, totalling US$10 million in losses. Damage was also reported at the construction site of the stadium being built for the 2010 World Cup.

Extreme winter weather affected Uttar Pradesh state in India on the 4th. A strong storm system allowed temperatures to fall, freezing at least 65 people to death.

A series of earthquakes struck Indonesia on the 4th, with two tremors measuring 7.6 and 7.4 on the Richter Scale. At least five people were killed and 269 people sustained injuries. The first temblor struck approximately 145 kilometers (90 miles) west-northwest of Manokwari, Indonesia. Three main hotels in the Papua provincial capital city of Manokwari were flattened while thousands more buildings were significantly damaged. A second quake struck 85 kilometers (50 miles) west-northwest of Manokwari three hours later. According to Jayapura's Meteorology and Geophysics Agency (BMG), western Papua was affected by 842 aftershocks in a 29-hour period. The quakes knocked out electricity throughout the region and damaged at least 42 government office buildings, thousands of homes, two roads, 14 hotels, 40 religious buildings, eight bridges and four schools.

After months of heavy rain and flooding, a large landslide left at least 87 people dead or missing in Guatemala's Alta Verapaz region on the 4th. An additional 21 people were injured.

Heavy rains triggered flooding across northwestern Queensland in Australia between the 6th and 14th, killing at least one person. At least 21 districts in the province were eligible to receive government funding in clean-up efforts as floods damaged homes and agricultural fields. Total economic losses were estimated at US$50 million.

A wildfire started on the 7th near Boulder, Colorado after high winds over 65 mph (100 kph) downed a power line. At least six structures were destroyed in the nearly 1,400-acre (566-hectare) blaze.

A magnitude-6.1 earthquake occurred 20 miles (30 kilometers) north-northwest of San Jose, Costa Rica on the 8th, killing at least 40 people and injuring at least 90 others. The quake's epicenter was close to the surface, with a depth of only 2.8 miles (4.5 kilometers). The worst damage occurred in the region of Alajuela, where landslides killed two people. Economic losses were estimated at US$502 million, while total insured losses estimated at US$100 million.

A magnitude-4.5 earthquake affected southern California on the 8th. The quake's epicenter was located two miles (three kilometers) south-southwest of San Bernardino and was 8.8 miles (14.1 kilometers) deep. The quake, which lasted five to eight seconds, was felt in downtown Los Angeles, throughout Orange County and into parts of the High Desert. San Bernardino Fire Department officials reported that the quake caused minor cracks in concrete. One house sustained roof damage and some minor damage to walkways was reported.

Flooding affected parts of Asia-Pacific between the 9th and the 14th, killing at least 281 people. The heavy rains began in Fiji on the 9th and were accompanied by 90 kph (55 mph) winds. The islands of Vanua Levu and Viti Levu received over 104 centimeters (40 inches) of rain. In the city of Nadi, 65 centimeters (two feet) of water covered the streets. In the town of Ba on western Viti Levu, floodwaters of 3.2 meters (ten feet) flooded neighborhoods. The Disaster Management Office reported that thousands of homes were submerged, dozens of bridges were washed out and numerous roads were cut off by water and mud. Damage losses were estimated at US$200 million. In the Philippines, heavy rains triggered flooding and landslides in parts of Mindanao, the Visayas and Catanduanes Province. A sea surge of up to three meters (ten feet) washed away over 1,150 coastal homes in La Union province and southwestern Palawan Island. At least 2,679 homes were destroyed and 20 people were killed. The National Disaster Coordinating Council estimated US$2 million in infrastructure and crop damage. Additionally, large waves and driving rain from Tropical Cyclone Charlotte capsized a ferry off of Indonesia's Sulawesi Island. At least 250 people were killed after the ship encountered four-meter (13-foot) waves.

Extreme cold and snow affected eastern sections of the United States between the 10th and the 16th, killing at least 15 people. A storm system exited the Plains and headed eastward through the Midwest and New England. In New Hampshire, over nine inches (23 centimeters) of snow fell on the 11th. By the 14th, arctic air moved into the Midwest, with a morning low of -47°F (-44°C) at Embarrass, Minnesota. On the 15th and 16th, bitter cold engulfed the Northeast and Tennessee Valley. In northwestern Aroostook County, Maine, the morning low on the 16th was an all-time state record of -50°F (-45°C).

High winds and a heatwave across eastern Australia triggered bushfires across Australia's New South Wales on the 14th and 15th. The largest bushfire was reported in Londonderry, where three sheds, two vehicles and farm machinery were destroyed. At least US$500,000 worth of losses occurred.

Winter weather affected the United Kingdom and the United States between the 17th and the 20th. In Ireland, nearly 100,000 homes lost electricity as winds gusting to 130 kph (80 mph) snapped power lines and tree branches. At least one person was killed in Downpatrick. In Scotland, flooding and snow caused numerous traffic accidents. In the United States, two people were killed on the 19th in a 40-vehicle highway crash in northwestern Maryland due to snow and ice.

Two tropical cyclones struck both coasts of Madagascar between the 19th and the 22nd, killing at least nine people and leaving nearly 20,000 homeless. Tropical Cyclone Fanele developed on the 19th and rapidly intensified to Category 1 strength early on the 20th. Fanele reached a peak intensity of 185 kph (115 mph) shortly before landfall early on the 21st in Morondava district along Madagascar's west coast. Over 80 percent of the homes in Morondava had their roofs blown off or were flooded. Electricity was also knocked out in Morondava due to winds gusting to 210 kph (130 mph). At least eight people were killed and 27 others were injured. Tropical Cyclone Eric developed late on 18th before skirting the eastern coast on the 19th and 20th with 65 kph (40 mph) winds. The system killed one person, injured 27 and damaged 1,652 homes.

At least 15 people were killed in northern and southern Algeria on the 20th and the 21st as high winds and heavy rain damaged or destroyed thousands of homes.

Wildfires affected Texas during the second half of the month. A large wildfire burned in Jones County, Texas between the 22nd and the 23rd, destroying at least eight homes and damaging 20 other buildings and vehicles. The blaze burned 5,800 acres (2,347 hectares) before being fully contained. A 2,500-acre (1,011-hectare) wildfire destroyed four buildings and an airplane hangar at Moore Air Force Base on the 19th near Alton, Texas. Estimated damages were around US$10 million.

Windstorm Klaus affected parts of France, Spain, Portugal and Italy between the 24th and the 25th, killing at least 26 people. According to various insurers, insured losses were US$2.3 billion in France and US$1 billion in Spain after at least 715,000 claims were filed. Total losses ranged between US$4 and US$6 billion. The area of low pressure came ashore early on the 24th in southwestern France and northern Spain, causing winds up to 195 kph (120 mph). Some locations in northern Spain along the Bay of Biscay reported waves of 20 meters (70 feet). The storm brought heavy rain and high winds across central Europe, knocking out electricity to over 1.7 million homes in France alone. In Spain, tens of thousands of homes lost electricity in Galacia and Catalonia. Spanish and French authorities reported residential roof and chimney damage. Many vehicles were also damaged by falling trees and flying debris. The winds caused substantial damage to the forestry industry. In Landes Forest, at least 60 to 70 percent of all pine trees were uprooted. In France, the SNCF state rail company that 1,000 workers cleared over 1,500 kilometers (900 miles) of debris-covered rail lines. As Klaus entered Italy on the 25th, the storm triggered mudslides just south of Naples.

A powerful storm struck Algeria between the 24th and 25th, killing at least eight people. High winds, heavy rain and lightning damaged electrical and telephone infrastructures as well as 3,561 homes.

A magnitude-5.0 earthquake rattled Xinjiang Province in China on the 25th, damaging or destroying at least 3,106 buildings. No injuries or fatalities were reported. Economic losses were estimated at US$3.1 million.

Cyclone Dominic developed off the coast of Western Australia before making landfall near Onslow on the 26th. The cyclone briefly contained sustained winds of 95 kph (60 mph) before weakening over land. Dominic downed trees and power lines as the system dumped nearly 22 centimeters (nine inches) of rain in just 24 hours across some areas.

A winter storm affected the eastern half of the United States between the 27th and the 29th, killing at least 58 people. The storm system affected 26 states, damaged 209,000 homes and caused US$525 million in insured losses. The system first affected the southern Plains and the Mississippi Valley on the 27th, causing a thick glaze of ice up to three inches (eight centimeters) thick in some parts of Arkansas, Oklahoma and Missouri. Heavy snow snapped tree limbs that fell onto power lines, causing over 1.3 million power outages. The governor of Kentucky declared that the ice storm was the worst natural disaster in the state's history. Homes and businesses also sustained roof and window damage. Automobile damage from downed power lines and power poles also occurred. At the Indianapolis International Airport, 12.4 inches (31 centimeters) of snow fell, the largest snow total since 1996. As the storm system approached the East Coast on the 25th, a mix of rain, freezing rain and sleet fell across New England before changing to all snow by late afternoon. Over 13 inches (33 centimeters) of snow fell in parts of Vermont, Maine, New Hampshire and upstate New York.

February

- **Historic bushfire event hits parts of Victoria in Australia**
- **Powerful snowstorm affects the United Kingdom**
- **Multiple winter storms traverse the United States**

Heavy rains starting January 24th triggered flooding in parts of Brazil and Peru during the week of the 2nd. At least 14 people were killed in the city of Pelotas, Brazil. According to national emergency coordinators, significant flood damage occurred to residential areas and transportation infrastructure in Rio Grande do Sul state. In Peru, at least four people were killed in floodwaters. A combination of landslides and flash flooding destroyed two homes and severely damaged several roads and highways in the provinces of Celedín, Jaén, San Ignacio and Santa Cruz.

Heavy rains beginning on January 8th that lasted until February 12th in the northern and northwestern sections of the Dominican Republic killed at least seven people. Major structural damage was reported to thousands of homes as total losses were listed at US$52 million. Damage was also reported to bridges and roads in the provinces of Puerto Plata and Espaillat.

Flooding that began in January continued through February in Queensland, New South Wales and Western Australia, killing at least nine people. Floodwaters finally began to recede in northern sections of Queensland on the 17th. The town of Ingham reported at least 2,900 homes with significant flood damage. Coastal locations along the Gulf of Carpentaria endured nearly two months of flooding. At one point, over 62 percent of Queensland was underwater. According to state government officials, total flood damages exceeded US$140 million, of which US$17.5 million were insured losses. In New South Wales, heavy rains fell on the 14th, forcing at least six council areas to be declared natural disaster areas. Damage to the transportation infrastructure was estimated at US$3.9 million. Heavy rains and flooding occurred in Western Australia from the 16th to the 19th, with some locations reporting over 25 centimeters (ten inches) of rain.

A snowstorm affected parts of the United Kingdom and Europe between the 2nd and the 5th, killing at least six people. Forecasters called the system the largest snowstorm in over 18 years. According to Britain's Federation of Small Businesses (FSB), at least US$4.3 billion in lost economic productivity occurred. On the 2nd, snow totals of ten to 25 centimeters (four to ten inches) were reported from London northward into Scotland and Wales, where two people died. In London, all five of the region's major airports were temporarily closed. On the 3rd, heavy snow fell again throughout Britain, with some locations receiving an additional 30 centimeters (one foot) of snow. The FSB reported that nearly five million people did not report to work on the 3rd after 6.4 million people failed to show up to work the day before. Another round of heavy snow occurred on the 5th. At least 20 centimeters (eight inches) of snow fell across parts of Gloucestershire, the Midlands and central Wales. In France, flights were cancelled at Paris' Charles de Gualle Airport. In Belgium, highway officials reported 400 kilometers (250 miles) of traffic jams on the 2nd around Brussels. As the system entered Italy, heavy rains and gusty winds occurred in the cities of Lecco and Sicily, killing three people. In Switzerland, 20 centimeters (eight inches) of snow fell. In Spain, two tornadoes were reported. Winds gusted to 180 kph (115 mph) in Málaga, which left widespread damage to an unknown number of homes and other structures. At least 25 people were injured.

The worst drought since 1951 forced China to declare an emergency in eight northern and central provinces on the 5th. The lack of rainfall in Hebei, Shanxi, Anhui, Jiangsu, Henan, Shandong, Shaanxi and Gansu provinces devastated 10.3 million hectares (25.5 million acres) of crops. Economic losses from the drought eclipsed US$234 million in Anhui Province alone. Some areas of China went over 125 consecutive days without any measurable rainfall.

One of the deadliest bushfire events in Australia's history occurred between the 7th and 20th. More than 3,000 firemen struggled with the blazes as record temperatures soared above 46°C (116°F) and winds gusted to 100 kph (65 mph). An estimated 400 fires burned nearly 450,000 hectares (1.1 million acres) of land across the state. According to the Insurance Council of Australia, at least 10,040 claims totaled an estimated US$985 million in losses. The deadliest blaze, the Kinglake Complex Fire in the Gippsland area, killed at least 196 people after the fire burned over 220,000 hectares (543,600 acres) and destroyed at least 1,500 homes in the greater Kinglake area. The town of Narbethong reported that 95 percent of its homes were destroyed, while the town of Marysville was almost completely destroyed. An additional 334 homes were destroyed in other blazes. At least 60 wildfires burned in New South Wales.

Heavy rains triggered numerous landslides and mudslides across portions of Argentina and Bolivia between the 9th and the 17th, killing at least two people and injuring 300 more. Rains on the 9th triggered a massive landslide from the western Andes Mountains into the city of Tartagal. At least 4,000 homes were damaged or destroyed, leaving at least 10,000 people homeless. The landslide washed away a 50-meter (164-foot) railroad bridge and a secondary bridge, bringing 1.5 meters (five feet) of water and mud from the Tartagal River to the Santa Maria and Barrio Saavedra neighborhoods. In Bolivia, at least 300 people were injured as heavy rains triggered a mudslide in the city of La Paz on the 17th. A total of 50 homes were destroyed over a four-hectare (ten-acre) area.

Windstorm Quinten affected parts of Europe on the 9th and 10th, bringing gusty winds, heavy rain and snow. The storm system came ashore through southern England and northern France on the 9th. Quinten brought heavy rains across southern sections of Britain, while winds gusting to 140 kph (85 mph) downed trees and power lines that knocked out electricity to over 600,000 residents in France. As the storm advanced into Germany, winds and heavy snowfall caused five injuries and significant property damage. In Switzerland, at least 3,000 insurance claims were filed in Zurich, Bern, Aargau and Luzerne. Total insured losses were estimated at US$2.6 million.

Severe weather occurred in the U.S. southern Plains on the 10th, killing at least eight people and injuring over 50 others. Additional severe weather struck the Ohio and Tennessee valleys as the storm system advanced during the week, killing at least five others. Nearly 300,000 insurance claims totaled nearly US$1.2 billion. At least 11 tornadoes were reported on the 10th, four of which were outside of Oklahoma City. An EF2 tornado touched down in Edmund, causing roof damage to multiple homes, apartment complexes and businesses. At least six homes were completely destroyed and three people were injured. The deadliest tornado of the outbreak, an EF4 tornado in Lone Grove, killed eight people and damaged or destroyed two trailer parks as well as dozens of homes and businesses. Damage and power outages were also reported in Texas, as winds gusting to 88 mph (175 kph) and baseball-sized hail damaged homes and businesses. In Colleyville, an EF1 tornado damaged five homes, while winds tore off the roof at a medical services building in Greenville. As the storm system entered the Ohio and Tennessee valleys between the 11th through the 13th, severe weather developed across parts of Kentucky, Tennessee and northern Georgia. One person was killed in West Virginia after a school gymnasium collapsed. Many states reported downed trees and power lines.

Winter weather affected California on the 14th and 15th. Several feet of snow fell across the Sierra Nevadas while multiple inches of rain fell on lower elevations of the state. At least 20 homes were damaged in a burn area in Yorba Linda after a mudslide flowed over protective sandbags.

Severe weather occurred across the U.S. Southeast and Tennessee Valley on the 18th, killing at least one person and damaging or destroying at least 297 homes. Numerous tornadoes touched down in Georgia. In Jasper County, at least 100 homes were damaged and ten people were injured as an EF1 tornado with 100 mph (160 kph) winds touched down. An EF2 tornado in Thomas County damaged at least 160 homes and downed hundreds of trees. In rural Taylor County, two EF0 tornadoes touched down, while an EF0 tornado occurred at Robins Air Force Base in Houston County. In Wilkes County, an EF4 tornado destroyed 19 outbuildings and damaged 15 other homes. In Hancock County, at least one person was killed and three were seriously injured as a church and multiple mobile homes were destroyed in the Hickory Grove community. Wind damage was also reported south of Atlanta in Gwinnett, Fulton and Henry counties. At least two schools sustained minor damage in Fayette County. At least 13,400 homes were without electricity. Another tornado touched down in the town of Geneva, Alabama, snapping hundreds of trees.

Winter weather affected parts of the U.S. between the 21st and 28th. One storm system developed on the 21st across the Great Lakes and southern Canada. As the storm approached northern parts of New England early on the 23rd, the system strengthened, causing heavy wet snow and gusty winds across Vermont, New Hampshire and Maine. The snow and winds that gusted to 60 mph (95 kph) snapped tree limbs, power lines and utility poles. Over 145,000 customers lost electricity in Maine and 18,500 in New Hampshire. Snow totals exceeded two feet (60 centimeters) across much of northern and central Maine, with a peak total of 28 inches (71 centimeters) in Milo. Additional winter weather occurred in parts of the northern Plains and Upper Midwest on the 25th and 26th. Gusty winds and at least one foot (30 centimeters) of snow fell in the Dakotas and Minnesota. A new storm system moved across the Southeast and the Tennessee Valley between the 26th and 28th, spawning damaging winds, hail and tornadoes.

Heavy rains and thunderstorms struck parts of South Africa on the 26th, killing at least two people. At least 40 people sustained injuries and dozens of homes and a bridge were destroyed.

On the 27th, a one-mile (two-kilometer) wide avalanche along the Wyoming-Idaho state line killed at least three snowmobilers. The avalanche occurred near Alpine in the Snake River Range.

March

- **Multiple spring storms bring rounds of severe weather and blizzards to the United States**
- **Historic crest along the Red River in Fargo, North Dakota**
- **Floods affect parts of southern Africa**

A storm system developed on February 28th and continued through the 3rd, bringing adverse weather conditions to the eastern United States. The system brought freezing rain, heavy snow and gusty winds to the region, killing at least five people. The storm system triggered severe weather in Alabama, Georgia and Florida that damaged hundreds of homes and vehicles. The system also caused accumulating snows across the Southeast. In Jackson, Tennessee, 12.5 inches (32 centimeters) of snow fell, the city's heaviest one-day total on record. A combination of wet snow and gusty winds snapped tree limbs and power lines throughout the Southeast. At least 530,000 customers lost electricity in the region. The storm system paralleled the Atlantic seaboard on the 1st, bringing between five and 15 inches (13 to 38 centimeters) of snow throughout coastal New England. Nearly 1,000 flights were cancelled at New York City's three main airports, while an additional 300 flights were cancelled in Philadelphia. At Boston's Logan International Airport, hundreds of flights were cancelled. By the 3rd, the storm system exited into eastern Canada and the Maritimes. According to Environment Canada, some of the heaviest snowfall in nearly 40 years was reported.

A wildfire in Bastrop County, Texas between February 28th and March 2nd destroyed 23 homes, 12 businesses and 20 outbuildings. The 1,500-acre (607-hectare) blaze was ignited by a 60-foot (20-meter) tree falling onto a power line. The blaze, which was fueled by dry fuels and gusty winds, forced hundreds of residents to evacuate their homes.

Heavy snow fell across the U.S. Sierra Nevada Mountains between the 1st and the 3rd, with some areas receiving over six feet (180 centimeters) of snow. Hazardous driving conditions forced the California Highway Patrol to close a 76-mile (122-kilometer) stretch of Interstate 80. One person was killed.

In Indonesia, weeks of heavy rains led to flash flooding in the Kanor district of Bojonegoro, East Java between the 1st and the 3rd. At least 9,626 homes, schools, mosques and health centers were damaged across 86 separate villages as the Bengawan Solo River overflowed and burst eight dams on the 2nd. Reports indicated that some villages were submerged by nearly ten feet (three meters) of water. According to government officials, the floods also destroyed 720 hectares (1,780 acres) of rice paddies. Nearly 5,000 people sustained injuries and eight people were killed.

Heavy rains led to a landslide in Carabaya Province in Peru on the 2nd that killed at least 13 people. Nearly 50 homes were destroyed as an avalanche of mud and rock occurred in the southern region of Puno.

At least 111 people were killed in Namibia and Angola between late January and early March after heavy rains triggered widespread flooding. Vast areas of cropland were destroyed as seasonal monsoon rains affected the northern parts of Namibia.

Tropical Cyclone Hamish skirted southeast Queensland between the 6th and the 10th, bringing gusty winds and bands of heavy rain. The cyclone developed on the 6th as a 110-kph (70-mph) system before undergoing a rapid intensification cycle early on the 7th. The system became a Category 4 storm with 240 kph (150 mph) winds as it began to parallel the Queensland coast. No major damage, injuries or fatalities were reported, though beach erosion occurred from Noosa to Caloundra as four-meter (12-foot) waves battered coastal communities. Hamish was also blamed for a 30-tonne (33-ton) oil spill in Moreton Bay.

Heavy rains, tornadoes, hail, flooding and heavy snow occurred from the U.S. Plains into New England between the 7th and the 10th. At least 15,000 structures were damaged, with insured losses exceeding US$60 million.

At least seven tornadoes touched down across rural Kansas on the 7th, though no damage was reported. Heavy rains fell across the Great Lakes, allowing numerous rivers to rise in Illinois, Indiana and Ohio. On the 8th, the system produced at least 25 tornadoes across parts of Missouri, Illinois, Kentucky, Indiana and Ohio. Significant damage occurred in Sangamon County, Illinois, where a tornado touched down at two separate locations. The EF1 tornado brought 100 mph (160 kph) winds in the town of Laomi, damaging or destroying at least 37 structures. Two tornadoes touched down in Wayne County, damaging or destroying ten homes and outbuildings while downing hundreds of trees. In Greenville, Illinois, a tornado destroyed a church and a farm house. In Lawrence County, Indiana, an EF1 tornado with 95 mph (155 kph) winds damaged 16 homes and destroyed farm equipment and barns. One home was destroyed as the tornado lifted an empty school bus and dropped it through the roof. In Defiance County, Ohio, an EF0 tornado damaged three homes and a barn. In Findlay, Ohio, the Blanchard River crested and flooded the downtown area. Numerous roads were submerged and dozens of homes and businesses sustained water damage. Water poured through a broken levee along the Iowa River near the town of Wapello. On the 9th, a secondary area of low pressure developed and caused six to 12 inches (15 to 30 centimeters) of snow as well as winds up to 40 mph (65 kph) in the Midwest, Great Lakes and New England. Highway authorities were forced to shut down a 130-mile (210-kilometer) stretch of Interstate 94 from Jamestown, North Dakota to Fergus Falls, Minnesota.

Severe weather spawned a tornado across the Eyre Peninsula in South Australia on the 11th. Damage was reported to multiple properties and power was knocked out to 1,120 homes and businesses in more than a dozen small towns.

Weeks of heavy rains in Bosnia and Herzegovina caused significant flooding into mid-March. At least 167 homes were destroyed as floodwaters affected the municipalities of Trebinje, Popovo Polje, Ravno, Neum and Svitava.

Dry conditions and gusty winds across Asia caused multiple sandstorms across parts of Saudi Arabia, Kuwait, China and India. The first sandstorm was reported in Saudi Arabia on the 11th. Residents in the Saudi capital of Riyadh ran for shelter as a thick layer of yellow dust covered cars, homes and schools. The Khaled International Airport was temporarily closed. Kuwait also reported a heavy sandstorm. All oil exports through the Persian Gulf were temporarily halted as shipping was deemed too dangerous. Dust storms were also reported in the Chinese capital of Beijing on the 15th. The Central Meteorological Bureau reported that brisk winds were blowing sand from Inner Mongolia, Gansu and Qinghai provinces, regions that suffered through the worst drought in 50 years. In India, dust storms plagued the city of Guwahati in Assam state between the 15th and the 18th. Nearly all flights were forced to divert from Guwahati, stranding thousands of passengers.

A storm system brought flooding, tornadoes and blizzards across the U.S. Plains, Midwest and Southeast between the 22nd and 27th, spawning at least 38 tornadoes and causing up to two feet (60 centimeters) of snow in the Dakotas, western Nebraska, Wyoming and Montana. The storm system developed on the 22nd, causing heavy snows across parts of Colorado, Wyoming and southwest Montana. Soaking rains fell in the Dakotas and Minnesota, where residents prepared for massive flooding due to snowmelt and excess run-off. By the 23rd, at least 17 tornadoes touched down in parts of Nebraska, South Dakota, Kansas, Iowa and Oklahoma. Scattered home and vehicle damage was reported in rural Lancaster, Cass and Otoe counties in Nebraska, while at least 15 structures sustained damage in Harris County, Iowa. In the town of Magnolia, Iowa, 54 empty Union Pacific grain cars derailed as a tornado moved through. Rain initially fell across parts of the Dakotas, western Nebraska and Wyoming before changing to heavy snow on the 23rd. A peak wind gust of 90 mph (150 kph) was recorded in Perkins County, South Dakota. Highway authorities closed a 345-mile (555-kilometer) stretch of Interstate 90 from Chamberlain, South Dakota to Gillette, Wyoming for 48 hours as well as a 120-mile (195-kilometer) stretch of Interstate 94 in North Dakota from Bismarck to Dickinson. In Kansas, high winds knocked over at least 13 tractor-trailers along Interstate 70.

By the 24th, the system brought additional heavy rains and gusty winds to the Midwest and Mississippi Valley and between ten inches and two feet (25 to 60 centimeters) of snow to the northern Plains. A maximum snow total of 43 inches (110 centimeters) was recorded in the Black Hills of South Dakota. On the 25th, the Red River rose to nearly 20 feet (six meters) above flood stage. In Bismarck, two ice jams were reported along the Missouri River. The Red River broke its all-time record height at Fargo on the 28th, cresting at 40.82 feet (12.44 meters). In Mississippi, at least ten confirmed tornadoes touched down on the 24th. One tornado struck the town of Magee, where at least 82 homes were severely damaged or destroyed and 28 people were injured. On the 27th, severe thunderstorms damaged homes, toppled trees and knocked out electricity to thousands of customers in Louisiana. At least 150,000 insurance claims were filed with losses exceeding US$750 million.

A magnitude-4.7 earthquake occurred in southern California on the 24th. The temblor was centered 90 miles (150 kilometers) west of San Diego. There were no reports of any damage or injuries.

Adverse weather affected parts of the eastern U.S. between the 25th and April 2nd, bringing flooding, tornadoes and blizzard conditions to the Plains, Midwest and Southeast. At least 51 confirmed tornadoes touched down across the country, while nearly two feet (60 centimeters) of snow fell in the Dakotas, western Nebraska, Kansas, Wyoming and Montana. A storm system developed on the 25th, bringing heavy snow across parts of Colorado, Wyoming and southwest Montana. On the 26th and the 27th, a squall line spawned 24 tornadoes along the Gulf Coast and in North Carolina. Damage was reported to nearly 100 homes in Pitt, Johnston and Sampson counties in North Carolina after four tornadoes touched down. On the 28th, at least 11 tornadoes touched down from Tennessee southward into Georgia. In Murfreesboro, TN, a tornado damaged dozens of homes and businesses while injuring at least three people. Nearly 17 inches (43 centimeters) fell in parts of Mississippi and Alabama, damaging at least 500 homes. At least two feet (60 centimeters) of snow fell across the central and southern Plains, knocking out electricity to 17,000 homes in Kansas and prompting the governor of Oklahoma to declare a state of emergency for 50 counties. At least two people were killed in Oklahoma. On the 29th, severe weather and snow affected parts of the Midwest, Northeast and Southeast. A squall line with high winds and golf ball-sized hail affected Pennsylvania, New Jersey, New York and Connecticut, causing roof damage to homes. Another storm system developed in the northern Plains on the 29th, causing heavy snow and gusty winds. By the 31st, ten to 20 inches (25 to 50 centimeters) of snow had fallen. In the warmer air, severe weather formed in Texas. Near Fort Worth, golf ball-sized hail damaged homes and a local car dealership. Parts of rural Texas reported baseball-sized hail.

A dam in Tangerang, Indonesia failed on the 27th, killing at least 210 people and destroying over 400 homes. The ten-meter (33-foot) dam, which held back water from a lake fed by the Pesanggrahan River, broke and flooded the district with at least 2.5 meters (eight feet) of water.

Heavy rains from Tropical Storm Izilda brought flooding and 130 kph (80 mph) winds to Mozambique between the 28th and the 30th. At least 3,200 homes were destroyed and nearly 50 percent of the region's roads were damaged. Nearly 2,600 hectares (6,500 acres) of crops were lost. Damages were estimated at US$2.75 million.

A tornado tore through Orissa's coastal district of Kendrapara in India on the 31st, destroying at least 2,000 homes. The tornado struck at least 13 villages, killing 18 people and injuring 196 more. Authorities in the region reported that the tornado traveled nearly three kilometers (two miles) with a 200-meter (220-yard) wide path. Hundreds of trees were uprooted and dozens of power poles were snapped.

April

- **Strong earthquake causes damage in central Italy**
- **Multiple spring storms spawn tornadoes across the United States**
- **Wildfires destroy dozens of homes across parts of Oklahoma, Texas and South Carolina**

Heavy rains fell across parts of New South Wales and southeast Queensland between March 31st and April 3rd, triggering flash flooding. According to the Insurance Council of Australia, at least 2,500 claims from residential homes, vehicles and commercial properties were filed with losses totaling US$34.5 million. Some locations along the Sunshine Coast received up to 40 centimeters (16 inches) of rain in a 12-hour period. Five regions in New South Wales were declared disaster zones.

Between the 2nd and the 8th, wildfires burned across parts of Texas. Gusty winds downed electrical wires in Live Oak County, Texas and triggered a large fire on the 3rd, destroying at least 34 homes and injuring two people. On the 4th, a fire broke out near the Texas-Oklahoma border, destroying at least 16 homes and damaging 51 others.

Heavy snow, tornadoes and hail occurred over many parts of the United States between the 4th and 6th. A storm system developed on the 4th, bringing up to 16 inches (40 centimeters) of snow and winds gusting to 50 mph (85 kph) across the Nebraska Panhandle. Four tornadoes touched down in eastern Nebraska, causing home damage across Clay County. On the 5th, severe thunderstorms spawned three tornadoes in Georgia, while winds damaged roofs, downed trees and knocked out electricity in Kentucky's Lincoln, Clark and Casey counties. Gusty winds and heavy snow occurred in parts of Michigan and Indiana, causing nearly 124,000 power outages in Michigan. At least four people died. On the 6th, three tornadoes touched down in North Carolina, causing damage to dozens of homes across Gates and Bladen counties.

A magnitude-6.3 earthquake struck central Italy on the 6th, killing at least 308 people and injuring more than 1,500. The quake, with an epicenter approximately 95 kilometers (60 miles) northeast of Rome, occurred at a depth of only ten kilometers (6.2 miles). At least 26 towns and cities surrounding the epicenter were affected. Insured losses were estimated at least $250 million, while total economic losses totaled nearly US$2.5 billion. Insurers reported that only five percent of homes in the region were insured and that commercial coverage was approximately 35 percent. Total reconstruction costs throughout central Italy were estimated at US$16 billion. At least 10,000 to 15,000 buildings were either damaged or destroyed, many of which were historic Renaissance, Gothic, Romanesque and Baroque era buildings. At least 28,000 people were left homeless. Power outages left tens of thousands of residents without electricity. After the main tremor, at least 500 aftershocks struck the region, including a manigtude-5.6 quake on the 7th and a magnitude-5.3 on the 9th that further damaged buildings throughout the Abruzzo region.

Tropical Cyclone Jade skirted the Madagascar coastline between the 6th and the 8th, killing at least eight people as Jade made landfall on the 6th along northeastern sections of the country. The cyclone initially developed on the 4th with 65 kph (40 mph) winds and steadily strengthened on the 5th before becoming a Category 1 storm with 120 kph (75 mph) winds. The cyclone damaged homes and left over 3,300 people homeless.

Wildfires burned across parts of Oklahoma and Texas between the 9th and the 12th, killing at least three people and injuring 64 more. Hurricane-force winds on the 9th helped fires rapidly spread throughout north Texas. At least 49 major fires burned throughout the state, covering 192,000 acres (77,699 hectares) and destroying 32 homes. The town of Stoneburg was described by authorities as 'burned over' by a 25,000-acre (10,117-hectare) blaze. A couple was killed in Montague County as a fire swept through their property.

A massive wildfire burned along the Interstate 35 corridor from the Texas state line to about 100 miles (160 kilometers) north of Oklahoma City. Fires destroyed approximately 170 homes and businesses in Choctaw, Midwest City, Vilma, Lindsay, Carter County, Meridian and Loco. Local insurance officials reported that insured losses to homes and vehicles totaled US$20 million.

Tornadoes, damaging winds and large hail occurred across parts of the U.S. Tennessee Valley and Southeast between the 9th and the 14th, killing at least four people and injuring at least 100 others. At least 111 tornadoes touched down within a 48-hour period, causing at least 192,000 insurance claims totaling nearly US$1.1 billion. Residents in Mena, Arkansas cleaned up after an EF2 tornado destroyed at least 600 homes and devastated the city's downtown. A manufacturing plant was also flattened by the tornado, while the roof at the local community college was ripped off. As the storm system pushed eastward on the 10th, an EF4 tornado touched down in Rutherford County, Tennessee. The city of Murfreesboro reported at least 117 homes destroyed and 460 homes damaged. The tornado killed two people and left 36 others injured. Tornado damage was also reported across parts of Kentucky, Mississippi, Tennessee, Alabama, Georgia, North Carolina and South Carolina. On the 13th, at least two people were killed in Tennessee and Alabama as severe weather extended from Kentucky into the Florida panhandle. In Georgia, golf ball-sized hail was reported and over 290,000 homes lost electricity. By the 14th, the front triggered at least three tornadoes near Tampa, Florida. Seven homes were destroyed and at least 60 more were damaged in Trinity. More than 70,000 homes lost electricity during the storms.

Gusty winds and heavy rains occurred across parts of Australia and Tasmania between the 13th and 15th, killing at least six people and injuring ten more. Nearly 15 centimeters (six inches) of rain fell along the Sunshine Coast on the 13th. Similar rain totals fell in the greater Brisbane region near the town of Cootamundra, where one person died. On the 14th, additional rain and high winds affected Queensland, Victoria and New South Wales. Throughout the Melbourne area, 110 kph (70 mph) winds caused roof damage as well as downed trees and power lines. More than 10,000 residents lost electricity.

Between the 16th and the 20th, heavy snow fell in the U.S. Rockies while severe weather occurred across the Plains and Southeast. At least two people were killed in Alabama as 55 tornadoes touched down nationwide. The storm system developed on the 16th, dumping heavy snow across the eastern Rockies. Up to 52 inches (132 centimeters) of snow fell in the foothills west of Denver, forcing the closure of a 140-mile-long (220-kilometer) stretch of Interstate 80 in Wyoming and a 30-mile (50-kilometer) stretch of Interstate 25 in Colorado. As the storm system slowly shifted into the Plains on the 17th, at least eleven tornadoes touched down in rural sections of the Texas panhandle while large hail struck western sections of the state. Local authorities reported that snowplows were used to clear accumulating hail on a stretch of Interstate 27 between Lubbock and Amarillo. Downed power lines and uprooted trees were common and at least 25,000 homes lost power in the Dallas-Fort Worth area. On the 18th and 19th, dozens of tornadoes touched down across the Deep South, especially in Alabama. At least two people were killed in northern sections of the state as tornadoes damaged or destroyed at least 52 homes and businesses. On the 20th, numerous thunderstorms brought large hail along the East Coast. At least two tornadoes touched down in extreme southeast Virginia. Total losses from the event were listed at US$240 million.

Two earthquakes affected Afghanistan on the 17th, killing at least 40 people and injuring 60 others. The tremors, with magnitudes of 5.5 and 5.1, were centered east of the capital city of Kabul. Reports indicated that at least 300 homes in dozens of villages were destroyed.

Cyclone Bijli came ashore in Bangladesh on the 18th, killing at least five people and injuring 125 more. Bijli developed on the 15th as a 65 kph (40 mph) system. The storm slowly drifted northward and steadily strengthened before reaching its peak intensity on the 17th with 95 kph (60 mph) winds. Bijli came ashore along the southeast coastline in the districts of Chittagong and Cox's Bazar, damaging or destroying 7,557 homes and businesses across Bangladesh. Crop damage was reported along coastal districts, but significant losses did not occur.

Record heat affected more than a dozen Indian states between the 19th and 30th, killing at least 41 people. In New Delhi, the city recorded the highest April temperature in over 50 years of 43.5°C (110°F) on the 29th. The hottest recorded temperature was 47.5°C (118°F) in the town of Khandua. Power outages were reported across the country as electric companies struggled to keep up with demand.

Flooding rains inundated parts of Afghanistan between the April 20th and May 1st, killing at least 20 people and injuring dozens more. At least 25,000 homes were affected with total economic losses estimated at US$20 million.

Wildfires burned portions of North Myrtle Beach, South Carolina between the 22nd and the 27th, destroying at least 70 homes and damaging 100 others. According to state insurance officials, losses exceeded US$25 million. The fires scorched over 20,000 acres (8,093 hectares) of land. Most of the destroyed homes came at the Barefoot Resort. At least 27 homes were destroyed, and dozens more homes sustained siding damage.

At least seven people were killed and dozens more were injured between the 24th and 30th from severe weather and heavy snow across the United States and Canada. According to various insurers, at least 55,000 claims were reported with insured losses exceeding US$275 million. On the 24th, large hail and damaging winds were reported in Wisconsin, Iowa and extreme southeastern Minnesota. On the 25th, severe storms pushed into northern Illinois, Indiana and Michigan, knocking out electricity to over 145,000 homes. Damaging wind, large hail and a few tornadoes also occurred in southern Ontario. An EF0 tornado touched down just outside Ottawa, damaging dozens of homes, apartments and structures. At Rockliffe Airport, at least 22 small airplanes were either damaged or destroyed. A second EF0 tornado in Windsor damaged a local government union building. At Toronto's Pearson International Airport, the official weather reporting station recorded a 75 mph (115 kph) wind gust, the highest wind recording in over 30 years for that station. Over 100,000 homes lost electricity throughout the province. On the 25th, severe weather formed in the central and southern Plains. Several homes and outbuildings were destroyed in Reno Township near Interstate 70 in Missouri. In Kansas, one person was killed after being struck by lightning. By the 26th, tornadoes touched down in parts of Kansas, Oklahoma and Iowa. Wichita, Kansas, Ellis County, Oklahoma and Linn County, Iowa all reported significant damage to dozens of homes and buildings. On the 27th, additional tornadoes occurred in Texas. In Williamson County, an EF1 tornado damaged over 20 buildings, while another EF1 tornado damaged ten buildings in the town of Corsicana. On the 28th, heavy rains in Harris County triggered flash flooding and the closure of a section of Interstate 10. By the 29th into the 30th, additional tornadoes were reported in the central and southern Plains. In Oklahoma, a state of emergency was declared for at least nine counties due to excessive tornado damage and flooding. Flooding concerns were also raised in Kansas, as the Neosho, Verdigris, Walnut and Arkansas rivers were at or above flood stage. At least five people drowned across the state. A separate storm system in the Pacific Northwest dumped up to four feet (120 centimeters) of snow across parts of Montana. Two people died, a 75-mile (120-kilometer) stretch of Interstate 15 was closed between Great Falls and Shelby and the town of Great Falls set an all-time three-day record of 25.4 inches (65 centimeters) of snow.

Heavy rains in New Zealand triggered flooding between the 27th and the 29th, damaging dozens of homes and businesses. Heavy rains caused flood damage in the city of Greymouth. Local authorities reported that dozens of homes and businesses were damaged throughout the city as roofs collapsed. According to New Zealand Insurance Council officials, residents in flood-damaged homes were not allowed home for two to five weeks.

May

- **Tropical Cyclone Aila destroys 1.02 million homes in India and Bangladesh**
- **Flooding in New South Wales and Queensland triggers losses**
- **Multiple spring storms bring severe weather throughout the United States**

Floods and mudslides affected northern sections of Brazil into the month of May. According to local civil defense officials, at least ten states were affected. At least 54 people were killed while 415,000 others were left homeless. The flooding destroyed at least 40,500 homes and swamped six major highways. Rural farmers reported substantial crop loss. Total economic losses were estimated at US$500 million.

Tropical Storm Dante brought heavy rains and gusty winds throughout the Philippines on the 2nd and 3rd, killing at least 28 people and injuring eight more. The National Disaster Coordinating Center estimated at least US$26 million in losses. The storm developed on April 27th but dissipated before re-organizing on the 1st. Dante made landfall near Sorsogon within the Bicol region of the Philippines on the 2nd with 65 kph (40 mph) winds. Dante combined with remnants from Tropical Depression Crising, triggering flash floods and landslides throughout the country. Local officials reported that widespread damage occurred to agriculture, transportation infrastructure and shipping interests. At least 2,658 homes and structures were damaged or destroyed.

Severe thunderstorms led to the deaths of at least 11 people on the 3rd in India. Gusty winds uprooted trees and downed utility poles throughout the West Bengal region.

Severe weather developed across central and southern sections of the United States between the 2nd and the 6th, killing at least one person. Insurers recorded at least 30,000 claims totaling US$130 million. A storm system developed on the 2nd, spawning severe thunderstorms from Tennessee through Arkansas into Texas. Two EF1 tornadoes struck Lewis, Lawrence and Giles counties in Tennessee, damaging dozens of homes. On the 2nd, numerous severe thunderstorms from eastern Texas through the Carolinas caused sporadic structure damage. By the 3rd, rapid thunderstorm development occurred from Louisiana northeastward into southern Virginia. During the afternoon hours, a strong cluster of thunderstorms moved across the states of Texas, Louisiana, Mississippi, Alabama and Georgia, killing one person in Laurel, Mississippi and causing damage and power outages. On the 4th, three tornadoes touched down, including an EF0 in Laurens County, North Carolina that damaged nearly a dozen homes, trailers and vehicles. By the 5th, a low pressure area spawned at least ten tornadoes in central and eastern North Carolina. On the 6th and 7th, another low pressure area in the Tennessee Valley caused severe weather that damaged homes and businesses across Arkansas, Alabama, Mississippi, Georgia and the Carolinas.

A combination of hot temperatures and dry winds in California fueled a wildfire that destroyed 78 homes and damaged 22 high-end homes starting on the 5th. The Jesusita Fire started to the northeast of Montecito, California and burned over 8,733 acres (3,534 hectares) before being contained on the 13th. Winds gusting over 60 mph at times caused the fire to jump into residential areas in Mission Canyon, where mansions reside along narrow roads, thick brush and tall trees. The fire doubled in size in just 12 hours on the 7th. By the 8th, the fire burned through canyons, setting up a five-mile (eight-kilometer) wall of flames. The fire was fully contained on the 13th. At least twelve people sustained injuries from the fire.

A wildfire was sparked in Arizona near the Mexican border on the 5th. The Canelo Fire, covering over 4,000 acres (1,618 hectares) near Sierra Vista, destroyed at least eight structures.

Typhoon Chan-hom killed at least 67 people and injured over 53 others. Both the agriculture and transportation infrastructures were heavily impacted, with the National Disaster Coordinating Center reporting at least US$21 million in losses. The storm developed on the 4th and reached typhoon status with 130 kph (80 mph) winds on the 6th. Just prior to landfall on the 7th, the cyclone reached its peak intensity with 160 kph (100 mph) winds. As the typhoon came ashore, winds gusting to 140 kph (85 mph) and floods affected over 412,000 residents. At least 40,210 homes were damaged or destroyed, with the town of Anda being the hardest hit. Government officials reported that substantial damage occurred to the agricultural sector. By the 11th, Chan-hom had dissipated over the open waters of the western Pacific Ocean.

Severe weather occurred across parts of the eastern half of the U.S. between the 7th and the 14th. At least ten people were killed and dozens more were injured as tornadoes touched down in at least 15 states. Severe weather began on the 7th as a powerful thunderstorm line spawned at least 40 tornadoes over five states. Missouri was among the hardest hit states, where at least three people were killed and hundreds of homes were damaged or destroyed. Straight-line winds gusted to 90 mph (150 kph) and over 20 tornadoes touched down in the state. In Kentucky, two tornadoes destroyed dozens of homes and structures in the Kirksville community of Richmond in Madison County. At least one person was killed in the tornado, which also damaged two fire departments and local manufacturing facilities. On the 9th and 10th, severe weather developed in the Tennessee Valley, the Mid-Atlantic States and New England. In West Virginia, at least 3,450 homes and buildings were damaged or destroyed across six counties as heavy rains triggered flash flooding and multiple mudslides. The town of Gilbert was hit particularly hard, where an estimated 80 percent of businesses sustained water damage. The system spawned two tornadoes across Massachusetts and Vermont. At least 95,000 insurance claims were filed during the entire event, totaling over US$525 million in losses. Parts of the Great Lakes, Midwest and Plains received additional severe weather on the 13th. The first round of storms developed early in parts of Iowa and Illinois, while a second line of thunderstorms developed and spawned a tornado in Caddo County in Oklahoma. The tornado damaged dozens of homes. Numerous severe thunderstorms developed ahead of the line, triggering over a dozen tornadoes in parts of Missouri. In the town of Kirksville, an EF2 tornado damaged or destroyed at least 70 homes and buildings, including a local car dealership. At least three people were killed. In Illinois, the squall line brought damaging winds, heavy rain and lightning to northern sections of the state. Some locations received over three inches (eight centimeters) of rain in just 50 minutes. On the 14th, the line entered central Indiana, where street flooding and winds gusting up to 60 mph (95 kph) were reported.

Heavy rains, damaging winds, large hail and at least one tornado occurred on the 11th and 12th in New Zealand. In Warkworth, a small tornado touched down and damaged nearly a dozen homes. Local authorities reported that the severe weather collapsed dozens of roofs, cut electricity and forced the closure of major roadways. The storms also brought dime-size to golfball-size hail, where accumulations in some spots topped ten centimeters (four inches) in depth. Kiwifruit growers indicated that the weather halted the harvest of the crop. Insured losses were estimated at US$1.4 million.

Severe thunderstorms affected India's Uttar Pradesh state on the 11th and 12th, killing at least 32 people and injuring 23 more. Heavy rains, high winds and large hail all combined to cause dozens of walls and ceilings to collapse across eight separate districts.

At least 21 people were killed in Tajikistan after weeks of flooding and mudslides destroyed over 200 homes across 25 districts through the 15th. Economic losses to the agricultural and transportation infrastructures were estimated at US$1 million.

In South Africa, heavy rains on the 17th triggered flooding that damaged 497 homes near Cape Town. According to local disaster management officials, at least 28 residential areas were badly affected by winds and rains from the first winter storm of the season. Power outages were also reported throughout the city.

A magnitude-4.7 earthquake rattled the greater Los Angeles, California area on the 17th, causing minor property damage and injuring one person. The quake struck near the town of Lennox, approximately ten miles (16 kilometers) southwest of downtown Los Angeles. According to local reports, the tremor cracked windows, knocked down ceiling tiles and damaged light poles. The quake was felt within a 100-mile (160-kilometer) radius, including the city of San Diego.

A low pressure area off the east coast of Florida on the 17th brought five consecutive days of heavy rain. Some locations received nearly 20 inches (50 centimeters) of rain. In Volusia County, local public works officials reported that at least 1,531 homes sustained flood damage. Losses were estimated at US$55 million. The same system was responsible for flooding and mudslides across Haiti and the Dominican Republic. At least 16 people were killed.

Numerous days of heavy rains led to a large landslide in the southern Philippines on the 18th. At least 26 people were killed and 30 homes were destroyed. Damages were estimated at approximately US$2,000.

A series of low pressure systems affected parts of southeast Queensland and northern New South Wales between the 20th and the 24th. Over 75,000 homes lost electricity as heavy rains and winds gusting to 100 kph (65 mph) snapped power lines and tree branches. One person was killed in the Gold Coast. In Brisbane, enough rain fell in a 39-hour period to supply drinking water for more than a year to the region. According to the Bureau of Meteorology, an average of 25 centimeters (ten inches) of rain fell throughout the entire region. On the 22nd, the state government declared at least seven North Coast areas natural disaster zones. The Insurance Council of Australia reported that at least 9,500 claims had been reported, totaling at least US$44.2 million in losses. A strong storm also struck the state of Western Australia, causing at least 73,500 homes to lose power after high winds snapped power lines and lightning struck substations on the 21st.

Severe thunderstorms battered Lucknow in India's Utter Pradesh state on the 20th and 21st. At least 20 people were killed as monsoonal storms battered the region.

A magnitude-5.3 earthquake rattled parts of Macedonia on the 24th. The main tremor struck near the Macedonian town of Valandovo, 16 kilometers (ten miles) north of the Greece border. The temblor was one of at least 300 quakes that struck near the Macedonia, Bulgaria and Greece borders in a 72-hour period. Dozens of homes were destroyed in Valandovo and the village of Bashiboz, while sporadic minor building damage was reported throughout the Bulgarian capital of Sofia and the eastern city of Plovdiv. No injuries or fatalities were reported.

Tropical Cyclone Aila struck parts of India and Bangladesh on the 25th, bringing a large storm surge, heavy rains and gusty winds. At least 330 people were killed and 7,500 were injured. At least 1.02 million homes were damaged or destroyed, leading to economic losses of US$461 million. The storm was classified as a tropical depression on the 21st and became a tropical storm on the 24th. The system became a cyclone on the 25th just prior to landfall in West Bengal state, India. The system struck at high tide in Bangladesh, combining with three to four meters (ten to 13 feet) of storm surge. Nearly all of the fatalities occurred due to drowning or being washed away by the surge. Numerous rivers burst through at least 509 kilometers (316 miles) of flood embankments, triggering widespread flooding. Bangladesh officials reported at least 14 of the country's 64 districts were affected. At least 80 percent of the Barasal District was under roughly 2.5 meters (eight feet) of tidal water. An estimated 520,000 homes and 2,190 schools were destroyed. In India, at least 500,000 homes were damaged or destroyed. Bangladesh officials reported that the cyclone caused US$143 million in losses to the shrimp industry, as nearly 70 percent of the shrimp farms along the coast were destroyed. At least 162,400 hectares (400,000 acres) of cropland were flooded, and over 69,000 livestock were killed. In India, local agricultural officials reported 51,000 hectares (126,000 acres) of cropland were destroyed.

A magnitude-7.1 earthquake affected Honduras on the 28th, killing at least seven people and injuring over 50 more. The tremor was centered 130 kilometers (80 miles) northeast of La Ceiba, Honduras. The quake was felt across parts of El Salvador, Guatemala, Nicaragua and southern Mexico. At least 130 homes collapsed throughout northern Honduras, while at least 30 homes were damaged in Belize. At least 115 buildings were damaged in Guatemala. Damage was also reported to factories, roads and the Democracy Bridge, which spans Honduras's largest river and connects San Pedro Sula, the country's second largest city, to the rest of the nation. Electricity, telephone and internet connections were all cut across much of the region. Total economic losses were estimated at US$100 million.

Severe weather developed across parts of the U.S. during the end of the month. At least three tornadoes touched down on the 30th, including one near Indianapolis, Indiana that damaged buildings. Large hail and straight-line winds were reported across parts of Ohio, Kentucky and West Virginia. On the 31st, New England reported severe weather. In northern Maine, at least two tornadoes touched down in Aroostook County, downing trees and destroying multiple storage garages. The tornadoes followed an EF1 tornado that struck nearly the same region on the 24th and damaged several homes and cars. These became the first tornadoes to strike northern Maine since July 2001.

June

- **Nearly three consecutive weeks of severe weather reported in the United States**
- **Heavy rains trigger flooding across Central Europe**
- **Multiple storms kill dozens of people in China**

Severe weather struck parts of the United States between the 1st and the 4th. One tornado touched down in rural sections of western Illinois on the 1st. Tornadoes were also reported in Colorado, Kansas and Nebraska. Severe weather occurred again on the 2nd and 3rd across the Plains, southern Great Lakes and the Mid-Atlantic States. By the 4th, a new area of low pressure developed along the Gulf Coast and caused additional severe weather throughout the Southeast and along the Atlantic seaboard. According to insurers, over 20,000 claims were filed totaling at least US$100 million in losses.

Parts of the U.S. West Coast dealt with severe weather between the 2nd and 4th, killing at least three people. Over 6,000 lighting strikes triggered 40 small fires across the San Bernardino, Cleveland and Angeles national forests. Severe weather occurred across sections of Oregon on the 4th. At least twelve homes sustained roof damage as hail, gusty winds and one tornado affected the northern half of the state.

A strong storm killed at least 27 people and left at least 117 injured in China on the 3rd. The storm struck China's Henan and Anhui provinces with winds gusting to 110 kph (70 mph) and hail. At least 49,856 homes were damaged or destroyed. The Chinese government reported that damage to hundreds of thousands of fields caused at least US$324 million in losses.

A tornado touched down in the Philippines within the campus of the University of the Philippines-Diliman on the 4th. At least 22 structures were damaged. The tornado also downed hundreds of trees and electrical posts. No injuries or fatalities were reported.

A storm system triggered a tornado approximately 50 kilometers (30 miles) outside of Moscow, Russia on the 4th. The EF3 tornado damaged cars, multiple apartment complex roofs and downed hundreds of trees as it tore through the small town of Krasnozavodsk.

At least three tornadoes formed across northern sections of Italy on the 6th. According to local officials, at least 28 people sustained injuries as an EF3 tornado touched down near Riese. Dozens of homes, businesses and vehicles were damaged.

Heavy rain triggered flooding across parts of China between the 7th and the 9th, killing at least 23 people in Hunan Province. Over 20 centimeters (eight inches) of rain caused landslides and rivers to overflow. According to the Chinese government, at least 46,223 homes were damaged or destroyed, and over 16,060 hectares (39,685 acres) of fruit and vegetable crops were decimated. Total economic losses exceeded US$280 million.

Three consecutive days of heavy rain triggered flooding across central sections of Botswana beginning on the 7th. At least 657 homes were destroyed across seven separate districts of the country. According to local officials, over ten centimeters (four inches) of rain fell in 72 hours over a region that typically receives only five centimeters (two inches) of rain annually. No fatalities or injuries were reported.

Multiple rounds of severe weather struck the United States between the 7th and the 28th. At least 295,000 insurance claims were filed over three separate events, totaling at least US$1.475 billion. The extended severe weather was aided by a stationary frontal boundary across the Ohio Valley, Great Lakes, central Plains and eastern Rockies. At least 16 tornadoes touched down on the 7th, including five in the greater Denver, Colorado region. The most damaging tornado struck the city of Aurora, where an EF1 tornado caused damage to vehicles, homes, apartments, restaurants and the Southlands Mall. Additional severe weather was reported in the Plains and the Midwest. Near Wichita, Kansas, a strong microburst damaged a six-block area of duplexes and homes. On the 8th, multiple tornadoes touched down east of St. Louis, Missouri near O'Fallon, Illinois and Du Quoin, Illinois. The EF2 tornado near O'Fallon damaged at least 140 buildings, while the EF1 tornado in Du Quoin injured two people, destroyed two homes and damaged at least 34 others. Additional tornadoes touched down in southern Wisconsin near Mukwonago and Racine. By the 9th, major metropolitan areas including Philadelphia, Baltimore and Washington, D.C. reported high winds and hail. An EF0 tornado touched down in Baltimore County, Maryland. A new area of low pressure triggered numerous severe thunderstorms that spawned at least eight tornadoes in Kansas, Missouri, Arkansas, Oklahoma, Nebraska, Texas and Colorado. On the 10th, at least two tornadoes touched down in northern Colorado, damaging crops in Weld County. On the 11th, strong thunderstorms affected North Texas and knocked out electricity to 260,000 homes. Dime-sized hail and winds gusting to 70 mph (110 kph) caused chimney and roof damage in the Dallas-Fort Worth suburbs. A separate storm system brought severe thunderstorms from the Nebraska panhandle into the Great Lakes on the 11th. On the 12th, a powerful thunderstorm line developed across eastern sections of Kansas and Oklahoma, causing straight-line wind damage, large hail and tornadoes as it moved southeast through Arkansas, Tennessee, Mississippi and Alabama. Desoto County, Mississippi reported an EF2 tornado that damaged or destroyed at least 693 homes, schools and churches. At least five tornadoes touched down near Dallas, Texas. On the 13th, more tornadoes developed in the Texas Panhandle and Colorado. Another thunderstorm line developed in Arkansas and raced southeastward through southwest Tennessee, northern Mississippi and Alabama on the 14th. Significant tree damage was reported throughout Alabama as winds gusted to 70 mph (110 kph). Hundreds of homes reported minor roof damage. A separate storm system in the eastern Rockies and central Plains brought softball-size hail to parts of Texas and Wyoming. On the 15th, a storm system developed in the Plains and the eastern Rockies, causing roof damage to hundreds of homes. Storm damage was also reported in the Dakotas, Colorado, Nebraska, Oklahoma, Texas, Arkansas, Tennessee, Missouri, Mississippi and Alabama. In the greater Denver region, at least six tornadoes were reported. A separate storm system brought hail and gusty winds to parts of Delaware, Maryland, Pennsylvania, New York, New Jersey, Massachusetts and New Hampshire on the 15th. Numerous thunderstorms caused large hail, high winds and a few tornadoes across the Plains, Midwest and into the southern Appalachians on the 17th. A tornado was reported in Waseca and Steele counties in southeast Minnesota, while an EF2 tornado in Austin, Minnesota caused a ten-mile (16-kilometer) damage path. Wind damage occurred on the 18th and 19th in Indiana, Kentucky, eastern Tennessee, South Carolina, Georgia and Florida. Two tornadoes were reported in North and South Dakota, while significant tree damage was caused by storms that moved through southern Wisconsin. On the 20th, nine tornadoes touched down across central and southeast Kansas. Widespread damage and power outages were reported, particularly in McPherson County, where several outbuildings and structures were destroyed. On the 21st, multiple tornadoes occurred across central Iowa and southern Minnesota. Damage was reported in Grundy, Hamilton and Hardin counties in Iowa and in Faribault County, Minnesota. On the 24th, nearly a dozen tornadoes touched down across the Dakotas. On the 25th, a strong cluster of storms rolled through Detroit, Michigan, causing at least 100,000 homes to lose power. Hail and high winds occurred in Ohio, Pennsylvania and New York into the Mid-Atlantic States from the 25th through the 28th.

A hailstorm killed at least 15 people and left at least 181 injured in China on the 14th. The severe storms swept across east China's Anhui Province, bringing winds gusting to 100 kph (62 mph), flash flooding and hail. At least 9,690 homes were destroyed. The storms also damaged 24,300 hectares (60,000 acres) of crops. Total economic losses were estimated at US$66 million.

Flooding rains left at least 11 people dead across Chongquin Province in China between the 19th and the 22nd. At least 25,000 homes were damaged or destroyed as total economic losses were estimated at US$59 million.

A dust storm killed at least two people and injured ten others in India's Gujarat state on the 21st. High winds toppled hundreds of trees and flattened dozens of homes, particularly in the Banaskantha district. Local residents also reported that scores of animals were killed during the event.

The first tropical system of the 2009 Eastern Pacific Hurricane Season, Hurricane Andres, killed at least one person and flooded hundreds of homes. The storm was classified a tropical storm on the 22nd with 65 kph (40 mph) winds before intensifying into a Category 1 hurricane on the 23rd. Andres skirted along Mexico's southwestern coast near the tourist resort of Puerto Vallarta, bringing gusty winds, heavy rains and flooding. As Andres drifted northward, the cyclone quickly dissipated.

Tropical Storm Linfa made landfall on the morning of the 21st in Dongshi Township in China's Fujian Province with 85 kph (50 mph) winds. The system destroyed at least 100 homes and 32,000 hectares (79,000 acres) of cropland. One person was killed in a landslide in Guangdong Province. Total economic losses were estimated at US$49.4 million.

On the 22nd, Tropical Storm Nangka came ashore across central sections of the Philippines with 75 kph (45 mph) winds, turned northward and headed towards Taiwan, then came ashore near Hong Kong, China as a tropical depression. The cyclone killed at least 12 people in six provinces in the Philippines and destroyed 12,694 homes. Economic losses were estimated at US$4.3 million.

Heavy rains beginning on the 22nd caused dozens of rivers to overflow across parts of central Europe, killing at least 16 people. At least 4,055 homes were damaged as economic losses were estimated at US$977 million and insured losses were US$142 million. The Czech Republic received the most damage. At least ten people died in Novy Jicin. At least US$20.3 million in damages occurred to Czech railroad tracks in the Moravian and Silesian regions. In Austria, the heaviest rains in nearly 50 years caused the Danube River to overflow in and around Vienna, damaging thousands of homes, cutting access to villages and leaving roads underwater. In southern Poland, heavy rains flooded railroad tracks and roads, including a major national road that connects Poland with the eastern Czech Republic. Hundreds of homes, businesses and hospitals reported flood damage. Slovakia and Hungary reported damage as well.

Winter storms battered Western and South Australia as well as Victoria between the 28th and the 31st. In Western Australia, a storm struck parts of Perth with winds gusting to 100 kph (62 mph) and heavy rains. The State Emergency Service said at least 270 properties were damaged. In South Australia, two storm systems came ashore on the 29th and 30th, causing damage as winds gusted to 115 kph (75 mph). Another storm came ashore across parts of Victoria on the 31st, killing one person as winds gusted over 100 kph (65 mph).

July

- **Monsoon rains in Asia kill hundreds**
- **Powerful magnitude-7.6 earthquake strikes off New Zealand coastline**
- **Summer storm systems pound sections of the United States**

Two weeks of heavy rain triggered flooding and mudslides across China and Vietnam early in the month, killing at least 178 people. The Chinese government estimated total economic losses at US$3.9 billion after thousands of homes were damaged or destroyed and tens of thousands of crops were damaged. In Vietnam, the rains damaged at least 993 homes and 3,531 acres (1,429 hectares) of crops.

Heavy rain triggered flooding across India's Assam state between the 2nd and 9th, killing at least 287 people across 47 districts. Nearly 500,000 people were left homeless after 6,906 homes were destroyed. Over 6,906 hectares (17,065 acres) of crops were destroyed.

Severe weather affected parts of the United States between the 4th and 9th. Tornadoes, large hail and damaging winds were reported across much of the Plains, Midwest, Southeast and New England. On the 4th, a lightning bolt killed at least one person and injured 28 more in Lakeland, Florida.

A severe thunderstorm moved through northern New Zealand on the 4th, damaging dozens of homes, a hospital and an elementary school. Local officials said 42 homes were damaged by a tornado that touched down in Kaitaia. Additional storms on the 11th and 12th and again on the 21st caused insured losses over US$1.21 million.

Heavy rain between the 5th and 12th caused the Tesanjika and Trebacka rivers to overflow their banks in northern sections of Bosnia and Herzegovina, flooding at least 220 homes in Tesanj Municipality. Additional damage was reported to roads, bridges and the local food supply.

A magnitude-5.7 earthquake occurred in China's Yunnan Province on the 9th, killing at least one person and injuring 325 others. The quake was centered 100 kilometers (60 miles) east-northeast of the town of Dali. The quake destroyed at least 30,832 homes and damaged 625,000 others. At least eight aftershocks rattled the region. Total economic losses were listed at US$366 million.

Heavy rains fell in China's Sichuan Province between the 9th and 13th, killing at least 22 people. The deluge destroyed 1,686 homes and damaged 4,900 hectares (12,108 acres) of crops. On the 14th, gusty winds and heavy rains occurred in Fujian Province, leaving one person dead. Total economic losses were listed at US$374 million.

Severe weather affected the United States and southern Canada between the 9th and 16th, killing at least two people and injuring five others. On the 9th, a tornado ripped through a popular tourist resort near Ear Falls, Ontario, Canada, killing at least two people. Golf ball-sized hail and winds gusting to 70 mph (110 kph) occurred in parts of Nebraska, Iowa, South Dakota and Minnesota. As the system pushed eastward, two EF1 tornadoes touched down in southern Ohio on the 11th, damaging or destroying over a dozen homes and buildings. Another area of low pressure dropped southward out of Canada and entered the northern Plains and the Upper Midwest on the 13th, spawning an EF2 tornado in northeastern Wyoming that destroyed two homes and several barns while damaging home and car windows and roofs in the town of Hulett from large hail. Between the 14th and 16th, golf ball-sized hail fell in the greater Des Moines area, breaking car and home windows. Damage in Iowa was also reported in the towns of Knoxville, Bussey, Mason City and Clear Lake. At least four tornadoes touched down across west-central Minnesota on the 14th, damaging numerous homes. On the 16th, baseball-sized hail was reported in parts of Oklahoma.

A severe thunderstorm in the greater Cape Town, South Africa region on the 13th damaged or destroyed at least 2,500 shacks. The Lourens and Liesbeek rivers overflowed their banks, leaving 9,000 people homeless.

In North and South Korea, heavy rains left at least one person dead and 200 additional people injured between the 14th and 18th. Over 18 centimeters (seven inches) of rain fell across both nations.

Heavy rains inundated China between the 14th and 23rd, destroying hundreds of homes in Beichuan County. From the 20th through the 23rd, six people were killed in landslides in southwest China. Losses released by the Chinese government were estimated at US$14.6 million. In Mongolia, heavy rains killed at least 24 people on the 16th and 17th. At least 1,975 homes were severely damaged. Damage was also reported to numerous bridges, dams, power substations, power lines and roads.

Typhoon Molave struck parts of the Philippines and China between the 15th and the 19th. The system became a tropical storm on the 15th and slowly strengthened as it crossed just north of the Philippines and entered the South China Sea. As it approached a final landfall near Hong Kong, China on the 19th, Molave briefly became a typhoon. In the Philippines, Molave killed at least five people and damaged at least 7,297 homes in the Ilocos Norte Province on Luzon Island. In China, the cyclone brought heavy rains and winds gusting to 140 kph (85 mph). According to the China Insurance Regulatory Commission, at least 3,424 motor and non-motor claims were filed with losses estimated at US$6.77 million.

A magnitude-7.6 earthquake affected New Zealand's South Island on the 15th. The quake was centered 95 miles (150 kilometers) west-northwest of Invercargill. At least 13 strong aftershocks followed the main quake. At least 5,087 claims were filed totaling US$4.1 million. Damage included downed power lines in Invercargill, a water main bursting in Winton and cracked buildings in the town of Tuatapere.

Severe weather moved through parts of Texas and Oklahoma between the 16th and 20th. Large hail and high winds triggered at least 30,000 insurance claims from vehicle and home damage. Losses were estimated at US$140 million.

Heavy rains fell in India's Orissa, Kerala and Karnataka states between the 18th and 21st, killing at least 49 people. In Orissa, at least 500,000 homes sustained flood damage in low-lying areas. According to the National Disaster Management Cell, thousands of rice fields were damaged. Heavy rains killed at least 32 people in Karachi. Between the 17th and the 19th, additional heavy rains triggered flooding and landslides that destroyed hundreds of homes and cut power to over 15 million residents. Local officials reported that over 23 centimeters (nine inches) of rain fell in Karachi.

Tornadoes, large hail and damaging winds occurred in the United States on the 20th and 21st. On the 20th, damaging winds and large hail were reported all across the Rockies and central Plains, with softball-sized hail falling in some locations. In Denver, Colorado, a tornado and microburst struck late in the evening. At least 85,000 insurance claims were filed from vehicle, home and business damage, with losses exceeding US$700 million. Additional severe weather and associated damage occurred across parts of the Plains, Upper Midwest, New England and Southeast.

At least 15 people were killed after floods and over 110 landslides struck Japan's Hofu City in Yamaguchi state on the 21st and 22nd. Over 1,270 homes were damaged from flooded rivers and canals in more than 100 locations as over 23 centimeters (ten inches) of rain fell.

High temperatures and strong winds triggered dozens of wildfires across southern Europe between the 21st and 28th. In Spain, the wildfires charred over 20,000 hectares (49,400 acres) and destroyed dozens of homes and vehicles. At least six firefighters were killed. In Italy, wildfires killed two people on the island of Sardinia as nearly 25,000 hectares (62,000 acres) of land was singed. Insured property damage losses in Italy were estimated at US$114 million. Wildfires on the 23rd on the French island of Corsica scorched 3,500 hectares (8,650 acres) of land, destroying at least ten homes and 50 cars. Additional wildfires were reported in Greece and Algeria. Greece firefighters battled more than 50 fires. In Algeria, thousands of wheat, barley and free crops were destroyed.

Severe weather and flooding occurred across parts of Poland, Austria, Switzerland, Slovakia, Germany and the Czech Republic between the 23rd and 24th, killing at least 11 people and injuring 82 others. The storms left at least 150,000 homes without power in the Czech Republic as winds gusting to 130 kph (80 mph) downed trees and power lines. Dozens of homes, cars and buildings were also damaged in Poland and Germany. In Austria, tennis ball-sized hail damaged 60,000 hectares (148,000 acres) of crops and hundreds of structures. Crop losses were estimated at US$28.4 million. Crop damage was also reported in Switzerland; where over US$19 million in crop losses occurred. Local insurance agencies across central and eastern Europe received thousands of claims, with overall losses estimated at US$1.5 billion. Insured losses were estimated at US$1.25 billion.

Heavy rains between the 23rd and 27th triggered flooding in China's Sichuan, Hunan, Guizhou and Jiangxi provinces, killing at least 70 people and injuring 51 others. The flooding led to numerous landslides and mudflows, which damaged 3,000 homes and 533 hectares (1,317 acres) of crops. In Guizhou and Jiangxi provinces, flooding and landslides destroyed at least 137 homes, five kilometers (three miles) of highways and 17,000 hectares (42,000 acres) of crops. According to Chinese officials, over US$33 million in direct economic losses occurred.

Torrential rains in associated with Tropical Storm Nangka left at least 16 people dead in the Philippines between the 23rd and the 26th. At least 10,000 structures sustained damage as total economic losses of US$4.3 million were reported.

Severe weather between the 24th and the 30th caused tornadoes, large hail and damaging winds from the U.S. Northeast through the Ohio Valley and into the Plains. In Port Orange, Florida, an EF0 tornado damaged at least 181 mobile homes. A strong line of thunderstorms moved across parts of Minnesota, Iowa, Wisconsin, Illinois and Indiana, spawning over 45,000 claims. According to the Baltimore County Office of Emergency Management, at least 55 homes were damaged due to fallen trees and power lines on the 26th. By the 27th, a new storm system spawned severe weather in Wisconsin and northern Illinois. On the 29th, an EF2 tornado struck Monroe County, Pennsylvania, injuring at least two people and destroying four large farm buildings. A series of severe thunderstorms pounded sections of Colorado, including the greater Denver area, on the 29th. At least 50,000 claims were filed as large hail and damaging winds affected the region.

Heavy rains led to flooding and landslides across parts of Nepal and Bangladesh between the 25th and 28th, killing 38 people.

Giresun Province in Turkey experienced its worst flooding in 60 years as heavy rains occurred on the 28th. Over 100 homes were damaged along with several roads after two major rivers overflowed their banks.

A small tornado touched down in Scotland in the town of Stornoway on the Isle of Lewis late on the 28th. According to officials, several cars were damaged, along with slates, ridging and iron-work on residential homes. No injuries or fatalities were reported.

August

- **Typhoon Morakot leaves at least 700 people dead in Taiwan; total economic losses exceed US$5 billion**
- **Series of strong earthquakes rattle parts of Asia-Pacific**
- **Wildfires burn through Greece**

Over 700 lightning-induced wildfires that began on July 18th burned throughout the Canada's British Columbia during the month. The fires burned vast areas of land and cost at least US$110 million to fight. In Alaska, a wildfire near Fairbanks destroyed at least three homes.

A wildfire burned on Canary Island's La Palma between July 31st and the 5th. The fire destroyed dozens of homes and singed over 3,500 hectares (8,648 acres) of land.

Separate storm systems left at least two people dead and 75 people injured in Canada between the 2nd and the 4th. On the 2nd, a thunderstorm collapsed a stage in Alberta, killing one person and injuring dozens. On the 4th, another severe thunderstorm spawned an EF2 tornado that damaged or destroyed at least 40 homes in Mont-Laurier and Aumond in western Quebec. Another storm system on the 4th triggered large hail and damaging winds across southern Alberta. Virtually every home in Carstairs sustained hail or wind damage.

Numerous thunderstorms across parts of the United States between the 2nd and the 4th left damage and injured at least ten people. Severe thunderstorms damaged homes and vehicles and uprooted trees across parts of South Dakota, Minnesota, Iowa and Wisconsin on the 2nd. On the 4th, between four and seven inches (ten and 18 centimeters) fell in Louisville, Kentucky, flooding several sections of the city. Losses were estimated at US$115 million after 25,000 claims were filed.

Heavy rain between the 2nd and 5th killed at least 24 people in China and the Philippines. According to China officials, more than 26,000 homes were damaged or destroyed throughout Chongqing Province. Economic losses were estimated at US$99.5 million.

A series of strong earthquakes affected parts of Mexico and the U.S. within 45 minutes on the 3rd. All four earthquakes, including a magnitude-6.9 tremor, were centered in the Gulf of California. On the 5th, a magnitude-5.5 aftershock was recorded in the same region. No significant damage occurred, and no injuries or fatalities were reported.

Typhoon Morakot left at least 717 people dead and 65 people injured. Morakot became a tropical storm on the 4th and steadily intensified on the 5th before reaching a peak intensity of 160 kph (100 mph) just prior to landfall in Taiwan on the 7th. Morakot made a final landfall in China's Fujian Province on the 9th. At least 23 people were killed and an additional 18 people were injured as flash floods and landslides inundated the Philippines. At least eleven villages were submerged under 1.52 meters (five feet) of water after the Pinatubo Dike overflowed. At least 57 homes were damaged or destroyed and US$1 million in damages occurred. As Morakot approached Taiwan on the 6th, an all-time national record of 298 centimeters (118 inches) of rain was recorded in Alishan in southern Chiayi County between the 6th and 10th. A single-day record of nearly 142 centimeters (56 inches) of rain was recorded at Weiliao Mountain in Pingtun County. According to official government reports, over 7,000 homes were destroyed throughout the country and economic losses were at least US$3.5 billion. At least 10,000 homes were destroyed in China, while 3.56 million additional properties sustained damage due to floodwaters, landslides and mudflows. During a four-day span, isolated locations in Zhejiang Province recorded up to 124 centimeters (49 inches) of rain. At least 400,000 hectares (one million acres) of farmland were completely flooded. According to the Chinese government, Morakot caused at least US$1.4 billion in direct economic losses.

Tropical Storm Goni struck parts of the Philippines and China between the 4th and the 9th, killing at least 40 people. Goni became a tropical storm on the 3rd and slightly intensified before making landfall in Macau, China on the 4th. Goni destroyed 3,918 homes in China and the Philippines. According to the Philippine National Disaster Coordinating Council, the cyclone caused at least US$6.6 million in losses to both the property and the transportation infrastructures. Goni flooded at least 68,000 hectares (168,031 acres) of cropland in China and the Philippines.

Severe weather struck parts of the United States between the 7th and 13th, killing at least two people and injuring over a dozen more. More than 35,000 claims were filed totaling over US$175 million. On the 7th, thunderstorms affected Detroit, Michigan with winds gusting to 75 mph (120 kph). The storms raced eastward across Canada's Ontario Province before entering upstate New York, where at least two people died. According to officials in Gowanda, at least 400 homes sustained flood damage. In western New York, flooding in Genesee, Niagara and Orleans counties affected hundreds of homes and businesses. On the 10th, a thunderstorm damaged at least 2,500 homes and knocked out power to thousands in Saline County, Kansas. Slow-moving thunderstorms led to flash flooding in southern sections of New Jersey. Dozens of homes sustained flood damage in Bridgeton in Cumberland County. Additional strong to severe thunderstorms occurred in New England, the Southeast and the southern Plains between the 11th and 13th.

Moisture from Tropical Storm Etau combined with a rainy weather pattern to cause flash flooding and landslides in southern and western Japan between the 9th and 12th, killing at least 18 people. According to the Japan Meteorological Agency, the hardest-hit areas were Hyogo and Okayama prefectures, where at least 500 homes and three bridges were damaged or destroyed in the town of Sayo. Cars and household properties were washed away and trees were uprooted from an overflowing river.

A series of earthquakes affected Asia-Pacific between the 9th and 17th. The first quake, a magnitude-7.1 tremor, was centered 165 kilometers (100 miles) west of Hachijo-jima on Japan's Izu Islands. No major damage was reported. On the 11th, two separate strong earthquakes struck within 12 minutes of each other off the coasts of India and Japan. A magnitude-7.6 quake was centered 260 kilometers (160 miles) north of Port Blair, India on the Andaman Islands. There were no reports of damage, injuries or fatalities from this quake. A magnitude-6.4 quake occurred 12 minutes later and was centered 30 kilometers (20 miles) south-southwest of Shizuoka, Japan. A 56-centimeter (22-inch) tidal rise was recorded near Yaizu City. At least 4,926 buildings sustained partial damage and 122 people sustained injuries. One person was killed. On the 13th, a magnitude-6.7 quake struck the same area, but the tremor occurred far enough offshore that it did not cause any fatalities, injuries or damage. On the 16th, a series of strong earthquakes struck Indonesia. At least seven people were injured as at least 31 different events affected Indonesia's West Sumatra. The main quake, a magnitude-6.7 tremor, was centered 110 kilometers (70 miles) west-southwest of Padang City. One building collapsed and minor cracks occurred in various buildings and homes. On the 17th, two strong earthquakes struck between Japan's southernmost islands and the east coast of Taiwan. The quakes, with magnitudes of 6.6 and 6.0, were centered 80 miles (130 kilometers) southwest of Ishigaki, Japan and 200 kilometers (125 miles) east of Taiwan respectively. There were no reports of injuries, fatalities or major damage from these quakes.

Wildfires burned across parts of central and northern California between the 12th and 19th. One fire burned at least 7,017 acres (2,840 hectares) of land in the Bonny Doon and Swanton areas in Santa Cruz County. At least five people were injured.

Tropical Storm Claudette developed on the 14th and entered the Gulf of Mexico on the 15th. By the On the 17th, Claudette made landfall near the eastern end of Santa Rosa Island just southeast of Fort Walton Beach, Florida. The system primarily brought gusty winds and brief periods of heavy rain. One person died from the storm.

Severe weather struck parts of the United States and Canada between the 15th and 20th. Severe weather began on the 15th as an area of low pressure developed across the Plains. As the system shifted eastward on the 16th, additional severe storms developed from Kansas through Illinois into Michigan. Also on the 16th, an EF0 tornado touched down in Cape Coral, Florida that damaged at least 23 homes. Severe weather developed in the Plains and the eastern Rockies on the 17th. On the 18th, an EF1 tornado in Beaumont, Texas damaged dozens of vehicles and roofs of department stores. At least ten people sustained minor injuries. Strong thunderstorms in the Northeast downed over 100 trees in New York City's Central Park as winds gusted to near 80 mph (130 kph). On the 19th, multiple tornadoes were reported in and around Minneapolis, Minnesota, damaging at least 40 homes and structures. The storms moved through Wisconsin, Iowa, Illinois and Indiana, spawning at least 25 tornadoes. In Illinois, 19 people were injured and dozens of homes and businesses were destroyed in the Springfield area. Multiple tornadoes destroyed barns, homes and tore the roofs off apartment buildings and local schools in Iowa and Indiana. On the 20th, one person was killed after a tornado struck southern Ontario's West Grey municipality. According to local authorities, at least 600 houses in Vaughan sustained significant damage.

Hurricane Bill became a tropical storm on the 15th and gradually strengthened to a hurricane on the 17th. While passing north of the Leeward Islands, Bill reached its peak intensity of 135 mph (215 kph) on the 19th. Bill began to gradually weaken while skirting Bermuda, the U.S. East Coast and the Canadian Maritimes before making landfall at Point Rosie, Newfoundland late on the 23rd. On the 21st and 22nd, Bill primarily brought gusty winds and periods of heavy rain that downed trees, flooded roads and caused beach erosion in Bermuda. While passing near New England on the 22nd and 23rd, Bill triggered high waves that killed two people injured 20 others. Minimal damage was reported in the Canadian Maritimes.

Heavy rains triggered flooding across northwest Pakistan between the 16th and 18th, killing at least 27 people. At least 1,000 mud-built homes were destroyed in the Mardan and Swabi districts. Local officials reported that the flooding also submerged and destroyed the majority of the area's maize, rice, sugarcane and tobacco crops.

A landslide killed at least five people on the 21st at the popular southern Portugal tourist resort of Albufeira. Seven people were injured. Local authorities report that the landslide may have been triggered initially by a magnitude-4.2 earthquake that struck days earlier.

Dozens of wildfires affected parts of Greece between the 21st and 27th, particularly in areas northeast of Athens. Officially, 284 homes were damaged or destroyed as over 90 fires burned across Stamata, Dionysos and Rodopoli. One person was killed and at least five others were injured. The fires, which began on the 21st in Grammatiko, rapidly spread southeastward through pine trees and olive groves. The blazes burned 39,000 hectares (96,000 acres) of land, but insured losses were on the low side as only one in five homes in Greece are insured for losses from fires.

Three separate storm systems crossed parts of China between the 26th and 30th. The first system occurred between the 26th and 29th in central China's Hubei Province, killing at least 12 people. Over 28 counties in the province were affected and 6,962 homes were damaged or destroyed. Approximately 3,118 hectares (7,704 acres) of crops were also completely destroyed. The second system struck southwest Sichuan Province between the 28th and 30th. At least seven people were killed and 5,900 homes were destroyed. The final storm struck Anhui Province on the 30th, killing six people.

September

- **Massive earthquake triggers tsunami in the Samoan Islands; at least 190 people killed**
- **Magnitude-7.6 quake leaves over 1,100 people dead in Indonesia**
- **Typhoon Ketsana kills at least 511 dead across the Philippines, Vietnam and Cambodia**

Multiple wildfires burned across southern California between the end of August and mid-September. According to insurers, the fires damaged or destroyed at least 178 homes, commercial properties, outbuildings and communication sites. The primary blaze, the Station Fire, destroyed 64 homes, three commercial properties, 27 outbuildings and two communication sites. The fire charred over 170,000 acres (68,796 hectares) within the Angeles National Forest and near the communities of La Canada-Flintridge, La Crescenta, Acton, Soledad Canyon, Pasadena and Glendale. Two people died. The Morris Fire, which burned east of the Station Fire in the Angeles National Forest, charred at least 2,168 acres (877 hectares). The 49 Fire burned 343 acres (139 hectares) of land and destroyed at least 63 residential homes and three commercial structures. The Oak Glen Fire in San Bernardino County burned 1,159 acres (469 hectares), damaging at least one home and destroying two other buildings. The Pendleton Fire in San Bernardino County damaged one home near Yucaipa and burned at least 860 acres (348 hectares). The Big Meadow Fire at the Yosemite National Park in Mariposa County charred 7,240 acres (2,929 hectares).

In West Africa, the death toll from flooding rains between the 1st and 14th topped 159 in 16 separate nations. Senegal was amongst the hardest-hit regions, though other countries that were affected were Burkina Faso, Niger, Ghana, Benin, Guinea, Gambia, Mauritania, Ivory Coast and Sierra Leone.

Hurricane Jimena made landfall in Mexico on the 2nd, bringing gusty winds and heavy rainfall. The cyclone damaged over 35,000 homes across Baja California and killed three people. Jimena developed on August 29th and rapidly intensified into a hurricane later that day. Jimena strengthened up to a 250-kph (155-mph) Category 4 storm before slightly weakening on the 1st. The cyclone made landfall early on the 2nd with 150 kph (90 mph) winds near Cabo San Lazaro, Mexico. Local officials reported that 70 to 90 percent of structures on Baja California's central mesa had been destroyed, along with thousands of crops. At least 4,000 homes were destroyed in the town of Comondu. Jimena's winds snapped power lines and tore off roofs, while heavy rains, up to 38 centimeters (15 inches) in some locations, triggered flash flooding and mudslides in the villages of Loreto and Mulege. Total losses from the event were listed at US$37.3 million.

A magnitude-7.0 earthquake affected Indonesia on the 2nd, killing at least 79 people and injuring over 1,250 others. The quake was centered 95 kilometers (60 miles) south-southwest of Bandung, Indonesia. The tremor was felt throughout the entire Indonesian archipelago and shook the region for nearly a full minute. At least 168,000 homes and buildings were damaged or destroyed across three main districts in the highly-populated region of West Java. One report indicated that over 70 percent of all structures in the Tasikmalaya sub-district of Cipathujah were destroyed.

Heavy rains and a water main break on the 6th led to flash flooding throughout Mexico City, Mexico. At least four people were killed as 84 millimeters (3.5 inches) of rain fell in only a few hours. The water main break on the 6th in the suburb of Tlalnepantla sent a 1.5-meter (five-foot) wave of water that knocked down walls and sent cars floating down streets. Over 2,000 homes and 50 cars were damaged or destroyed in a 40-block radius in Tlalnepantla.

Thunderstorms affected parts of southern Brazil, northern Argentina, Uruguay and Paraguay on the 7th, killing at least 17 people and injuring over 120 others. At least 3,165 homes were destroyed and over 1.1 million residents lost power during the event. Local meteorologists determined that an EF2 tornado occurred with the storms. The Brazilian town of Guaraciaba in the state of Santa Catarina reported at least four people were

killed, 64 people were injured and 2,300 homes were damaged. At least 67 municipalities in Santa Catarina were severely affected. Heavy rains submerged locations in the state of Sao Paulo. Three people were killed after landslides caused homes to collapse. As the storms entered northeastern Argentina, heavy rain and strong winds damaged dozens of homes in the towns of Santa Rosa, Tobun and Pozo Azul. Local authorities in Paraguay reported that hail damaged 700 roofs.

Heavy rains affected northwestern Turkey between the 8th and 14th, killing at least 32 people. Locations within Istanbul experienced floodwaters from the combination of two flooding streams up to two meters (six feet) as surging water in at least three city districts crushed vehicles. At least 4,000 homes were damaged and at least 200 cars were washed into the Marmara Sea. Total economic losses were estimated at US$218 million, and insured loss damages were estimated between US$70 million and US$150 million.

In the Philippines, flooding and landslides killed at least 15 people. The rains began on the 8th and continued into the 9th affected more than 388,000 residents in four northern provinces. At least 20 homes were destroyed, and over US$6.3 million in damages occurred to the transportation and agricultural infrastructures.

Typhoon Koppu developed on the 13th and gradually strengthened as it moved through the Luzon Strait into the South China Sea. Koppu reached a peak intensity of 130 kph (80 mph) just prior to landfall in Guangdong Province, China on the 15th. According to the National Disaster Coordinating Council, dozens of homes and villages were damaged in the Philippines and at least three people died. Koppu killed 18 people injured 58 others in China. At least 1,250 homes were destroyed by landslides, mudflows and flooding in the cities of Yangchun, Xinyi and Luoding in Guangdong Province. Direct economic losses in China were estimated at US$300 million.

Strong thunderstorms triggered hail and damaging winds across extreme eastern Texas on the 16th. According to the Insurance Council of Texas, numerous claims were reported in the city of El Paso due to hail damage. Total losses were estimated at US$350 million.

Heavy rains fell across the southeastern United States between the 17th and 27th, killing at least ten people. Numerous rivers and creeks in metro Atlanta and surrounding suburbs either approached or exceeded flood stage. According to various insurers, nearly 25,000 claims were filed in Georgia, with insured losses topping US$150 million. Nearly 1,000 roads, highways and intersections were closed across the region. In the metro Atlanta area, hundreds of roads and bridges were either underwater or washed out. Rain totals ranged between eight and 21 inches (20 to 53 centimeters) throughout Georgia during a 72-hour period. Significant rain totals and flooding were also reported throughout at least 20 counties in western North Carolina. Flooding also occurred in eastern Tennessee as the French Broad and Pigeon rivers swelled. Thousands of corn crops were flooded as well.

A magnitude-6.1 earthquake affected Bhutan on the 21st, killing at least 12 people and injuring 15 others. The quake was centered 180 kilometers (110 miles) east of Thimphu, Bhutan. The main quake was felt throughout northeastern India, Bangladesh and southwestern China. Residents reported strong shaking for at least 20 seconds as homes and buildings crumbled. The most severe damage occurred in the Bhutan districts of Munggar and Trashigang. In Trashigang, at least 1,100 homes and structures were destroyed. In India's Assam state capital of Guwahati, dozens of buildings showed cracks in their foundation but no serious damage was reported. In southwest China's Tibet Autonomous region, more than 265 homes were damaged.

A magnitude-5.7 tremor struck parts of Indonesia early on the 19th, injuring at least 12 people. The quake, centered 65 kilometers (40 miles) west-northwest of Mataram, Indonesia, collapsed the roof of a shopping mall in Denpasar.

At least three people were killed in southwest China's Chongqing City after heavy rains struck between the 19th and 21st. Rainfall totals of 25 centimeters (ten inches) damaged at least 4,765 homes. A lightning strike destroyed a 35-kilovolt power transmission line in the Three Gorges Reservoir Area.

On the 23rd, at least five people died after a storm system triggered heavy rains and landslides in the town of Borcka in Turkey's Artvin Province. Dozens of homes were damaged or destroyed due to the landslides.

In Australia, the largest dust storm since 1942 occurred in Queensland and New South Wales on the 23rd. According to the Bureau of Meteorology, the dust storm measured 500 kilometers (510 miles) in width and 1,000 kilometers (620 miles) in length. Officials from the Australian Industry Group indicated that the dust storm likely cost states 'tens of millions of dollars' in lost productivity.

Between the 19th and 24th, severe thunderstorms triggered large hail over parts of southern and western New South Wales and the Australia Capital Territory. A storm system brought flooding and gusty winds to Adelaide. In Victoria, the Northern Territory and Queensland, the weather bureau issued severe weather warnings for flash flooding and damaging winds as yet another storm system pelted the region.

Typhoon Ketsana made two separate landfalls in the Philippines and in Vietnam between the 25th and 30th, killing at least 645 people and injuring over 550 others. Ketsana developed on the 23rd and became a tropical storm on the 25th. Ketsana officially made landfall near the border of Aurora and Quezon provinces in Luzon with 85 kph (50 mph) sustained winds. As the system pushed westward over the islands, Manila received 341 millimeters (13.4 inches) of rainfall in a six-hour period. The storm killed at least 464 people and caused at least US$234 million in economic losses in the Philippines. At least seven million homes were damaged or destroyed, millions of people were left homeless and over 203,477 hectares (502,802 acres) of crops were destroyed. Ketsana quickly became better organized after weakening over the Philippines and, by the 28th, the cyclone obtained typhoon status. Ketsana reached its peak intensity of 170 kph (105 mph) while heading towards Vietnam. Ketsana made a second and final landfall near Quang Nam, Vietnam on the 29th at its peak intensity. At least 164 people were killed in Vietnam. Vietnamese authorities reported that nearly 400,000 homes, 12,000 health clinics and 200 schools were damaged or destroyed due to massive landslides. Economic losses in Vietnam totaled nearly US$800 million. Ketsana destroyed at least 48,000 hectares (118,000 acres) agricultural and industrial crops in Vietnam. As Ketsana weakened, it caused 17 fatalities and 29 injuries in Cambodia. Over 500 homes either collapsed or were swept away. Total economic losses from Ketsana were estimated at US$1.03 billion.

A magnitude-8.0 earthquake affected the Samoan Islands on the 29th, killing at least 190 people and injuring over 145 others. The quake triggered at least four tsunamis, including a 1.55-meter (5.1-foot) wave that was recorded at Pago Pago on the northern side of American Samoa. The main tremor was centered 185 kilometers (115 miles) east-northeast from Hihifo, Tonga. Following the main quake, over three dozen aftershocks rattled the region with magnitudes ranging from 4.9 to 5.9. The resulting tsunamis flooded and completely flattened every building in at least three coastal villages. The hardest-hit region was Pago Pago, where local officials said that the island territory had been cut in half. Unconfirmed reports from the National Park of American Samoa indicated that the park sustained four tsunami waves with heights of 4.5 to 6.0 meters (15 to 20 feet) that surged over 1.6 kilometers (one mile) inland. Additional damage reports from the Solosolo region of the main Samoan Island of Upolu said that numerous landslides buried almost every home on the island. Dozens of homes were reportedly washed away along the southern coast of Savaii. The government of Samoa estimated losses at US$147.3 million.

On the 30th, a magnitude-7.6 earthquake occurred in Indonesia, killing at least 1,195 people and injuring over 2,400 others on the island of Sumatra. The quake was centered 45 kilometers (30 miles) west-northwest of Padang, Indonesia. Dozens of aftershocks, including a magnitude-6.6 tremor on October 1st, occurred after the main event. According to Indonesia's Disaster Management Agency, over 249,833 homes, hospitals, hotels, mosques and other structures were damaged or destroyed. Multiple landslides further destroyed homes at Lake Maninjau, located just inland from Padang. In Sumatra, underground water pipes burst and flooded numerous neighborhoods. Total economic losses were US$2.2 billion with insured losses estimated at US$40 million.

October

- **Four separate typhoons make landfall in the Philippines**
- **Typhoon Melor hits Japan**
- **Flooding and severe weather affect parts of the United States**

At least 300 people were killed in three Indian states as a result of heavy rains, flash flooding and landslides during the first week of the month. At least 2.5 million homes were destroyed from five consecutive days of heavy rains in the states of Karnataka, Andhra Pradesh and Maharashtra. At least 200 people died in the southern state of Karnataka alone. Total economic and property losses were estimated at US$4 billion.

Typhoon Parma made four separate landfalls between the 3rd and 14th, killing at least 465 people and damaging or destroying 58,156 homes across Luzon, Benguet and Pangasinan provinces in the Philippines. The typhoon caused at least US$586 million in total economic losses. At least 60 percent of Pangasinan Province was flooded as water reached the second story of some buildings. In the mountainous Cordillera region, 300 people were killed after over 40 landslides occurred. At least 428,034 hectares (1,057,695 acres) of rice, corn and high-value commercial cropland was destroyed.

Heavy rain killed at least 54 people between the 4th and 7th across western Nepal's Achham, Bardiya and Dadeldhura districts. At least 6,000 homes collapsed after the Karnali River overflowed its banks. Dozens of remote villages in the region were also washed away.

Typhoon Melor made landfall in Japan on the 8th, killing at least five people and injuring 100 others. Melor developed on September 30th and rapidly intensified on the 1st up to 220 kph (140 mph) by the 2nd. Melor reached its peak intensity on the 4th with 270 kph (165 mph) winds. Melor made landfall on the 8th with 120 kph (75 mph) winds south of Osaka, Japan. Over 1,000 homes were damaged or destroyed throughout the country. The Japan Meteorological Agency reported that over 50 centimeters (20 inches) of rain fell across isolated sections of southwestern Japan during a 24-hour period. Melor partially submerged cars, left large shipping containers scattered and damaged buildings. The town of Tsuchiura sustained widespread damage to numerous homes and the local post office after a tornado touched down.

In Indonesia, flash flooding and landslides destroyed at least 2,000 homes in central Sulawesi Province on the 8th. The flooding, which was the most severe at the Anoa Street Compound in Tuweley, was enhanced after the Tuweley River overflowed its banks and smashed through thousands of homes in Tolitoli.

Multiple storm systems triggered severe weather across the United States between the 9th and 14th, killing at least four people and injuring 12 others. On the 9th, 13 tornadoes touched down in Tennessee, Kentucky, Mississippi and Louisiana. The most damaging tornado occurred in Monroe County, Kentucky, where an EF2 tornado destroyed over 30 homes and damaged an additional 20. A second EF2 tornado in nearby Casey County destroyed at least two mobile homes. In Washington County, Mississippi, at least one person was killed and two others were injured from an EF1 tornado near the town of Wayside. At least three mobile homes were destroyed and 16 homes were damaged. Additional injuries were reported from Lincoln and Robertson counties in Tennessee. Heavy rains triggered a landslide in Yakima County, Washington on the 11th that damaged or destroyed at least 30 homes. The landslide was so large that it completely changed the course of the Naches River. In California, Typhoon Melor's remnants came ashore on the 13th and 14th. Mining Ridge in Monterey County received 21.34 inches (54 centimeters) of rain, while locations in Santa Cruz, Monterey and Santa Clara counties received over ten inches (25 centimeters) of rain during a 36-hour period. Strong winds also accompanied the system, with peak gusts of nearly 90 mph (150 kph) recorded in the Santa Cruz Mountains.

Hurricane Rick developed on the 15th and became a hurricane on the 16th. By the 17th, Rick underwent a rapid intensification cycle and reached its peak intensity on the 18th with 285 kph (180 mph), making Rick the second strongest eastern Pacific Ocean storm on record. Rick maintained major hurricane status until the 20th and made landfall on the 21st near Mazatlan, Mexico as a substantially weakened tropical storm. As Rick came ashore near Mazatlan, the storm brought heavy rains and 95 kph (60 mph) winds. Some locations in Sinoloa and the central state of Durango received over 25 centimeters (ten inches) of rain. At least two people were killed near Cabo San Lucas, but no significant damage was reported.

Typhoon Lupit moved across the western Pacific Ocean as it approached the Philippines between the 22nd and 24th. Lupit, at one time a 250-kph (155-mph) super typhoon, steadily weakened while stalling near northern Luzon Province. The storm brought significant rains to Luzon, and at least 45 homes sustained damage. Economic losses were estimated at US$43,000.

A magnitude-5.8 earthquake struck Indonesia's Papua Province on the 23rd. The tremor, centered near Manokwari in the Papua province, caused one building to collapse. No casualties or injuries were reported.

A magnitude-6.2 earthquake occurred 270 kilometers (165 miles) northeast of Kabul, Afghanistan on the 23rd. The earthquake caused buildings to sway in the Afghan and Pakistani capitals, but no casualties or injuries were reported.

Heavy rains affected parts of Greece between the 24th and 26th. One person drowned near the city of Volos. Officials reported widespread damage to homes, businesses, vehicles, farms and the agricultural infrastructure. Vast areas of crops were also severely damaged by the flooding.

Heavy rains and high winds affected parts of Australia's New South Wales on the 25th and 26th, killing one person in the greater Sydney area. According to the Bureau of Meteorology, over ten centimeters (four inches) of rain fell during a 36-hour period, causing flash flooding.

At least 157 people were killed due to Typhoon Mirinae. Mirinae developed on the 26th and slowly intensified before becoming a typhoon on the 28th. Mirinae continued to strengthen and reached its peak intensity of 170 kph (105 mph) on the 29th. Mirinae began to weaken prior to making its first landfall on the 30th in the Philippines' Quezon Province. The system brought heavy rains and winds gusting to 185 kph (115 mph). Flooding and landslides killed 32 people and damaged or destroyed 46,466 homes and other structures. Economic losses in the Philippines were estimated at US$10.3 million. The system emerged in the South China Sea on the 31st. Just prior to its final landfall, Mirinae briefly re-intensified to a weak typhoon as it came ashore in Vietnam's Phu Yen Province on November 1st. At least 123 people were killed and hundreds more injured as flash flooding and landslides inundated the country. At least 27,000 homes were damaged or destroyed and approximately 437,300 hectares (1.08 million acres) of rice and other crops were damaged. Vietnam's economic losses were estimated at US$280 million. At least two people died in Cambodia as Mirinae dissipated.

A winter storm affected parts of the United States between the 27th and 29th. In Denver, Colorado, the storm, which dropped nearly 18 inches (45 centimeters) of snow on the city, was the biggest October snowmaker since 1997. Throughout the foothills and mountains of the Rockies, snow totals ranged between three and four feet (90 to 120 centimeters). Winds gusting to 40 mph (65 kph) combined with heavy snowfall to create whiteout conditions. In the warmer air, heavy rain and thunderstorms developed throughout the Plains, Mississippi Valley and Midwest. Rainfall totals of two to seven inches (five to 18 centimeters) were widespread. In Louisiana, one person was killed. At least 20 tornadoes touched down in the region, damaging or destroying hundreds of homes across northern Louisiana, extreme eastern Texas and southern Arkansas.

A storm system moved through the United Kingdom on October 31st and November 1st. Scotland was hit the hardest, with the communities of Stonehaven, Huntly, Keith, Turriff, Fraserburgh and Rosehearty taking the brunt of the storm. Heavy rains and winds gusting to 95 kph (60 mph) occurred in some locations. At least one person was killed.

November

- **Historic rainfall triggers significant flooding across the United Kingdom**
- **Tropical Storm Ida makes landfall in the United States**
- **Heavy rains cause US$933 million in damage in Saudi Arabia**

Heavy rains leading to flash flooding and landslides killed two people across northern Iraq between October 30th and November 2nd. The rains affected over 3,000 people across the mountainous districts of Mergasur, Choman, Sumeil and Rawandus. At least 180 homes were destroyed. Total estimated losses were US$150,000.

Tens of thousands of residents were forced to evacuate their homes in the Mexico states of Veracruz and Tabasco after heavy rains that fell between October 31st and the 1st triggered flash flooding and landslides and also caused rivers to overflow their banks. At least three people were killed and over 200,000 homes were flooded in Tabasco state alone. In neighboring Veracruz state, the Uxpanapa and Agua Dulce rivers both overflowed their banks and flooded nearly 2,000 homes in the towns of Agua Dulce and Las Choapas. Three bridges were severely damaged and the main railroad that links Tabasco and Veracruz was cut off due to a massive mudslide.

Storms affected sections of Lebanon between October 31st and November 3rd. Hundreds of homes, vehicles, roads, billboards and other structures were damaged as flooding and high winds affected Beirut, Jounieh, Akkar, Tyre and Sidon. Local officials reported widespread damage to agricultural fields.

A magnitude-4.9 earthquake affected China's Yunnan Province on the 2nd, injuring 28 people. The main earthquake was centered 85 kilometers (55 miles) northeast of Yunnan Province's Dali. At least 1,000 homes collapsed and 30,000 more sustained damage. Direct economic losses were listed at US$985,000.

Heavy rains affected parts of India between the 3rd and 12th, killing at least 77 people and injuring dozens more. Local officials reported over 300 homes were destroyed. Heavy rains from Cyclone Phyan pelted the Maharashtra coast and parts of Gujarat between the 10th and 12th.

A magnitude-4.8 quake affected southern Iran on the 4th. The quake was centered 20 kilometers (15 miles) north-northwest of Bandar Abbas, Iran. At least 700 people sustained injuries as the quake rocked the port city of Bandar Abbas.

Hurricane Ida developed on the 4th and strengthened up to a 75-mph (120-kph) hurricane just prior to its first landfall in Tasbapauni, Nicaragua on the 5th. The cyclone crossed Nicaragua and Honduras and re-entered the Caribbean Sea on the 6th. By the 8th, Ida re-strengthened and reached its peak intensity of 105 mph (170 kph). Ida weakened as it moved northward and made its final landfall near Bon Secour, Alabama on the 10th. Total rainfall accumulations ranged between nine and 12 inches (22 and 30 centimeters) in Nicaragua. Ida destroyed over 80 percent of homes in the town of Karawala near the mouth of the Rio Grande de Matagalpa. In all, at least 930 homes were destroyed. Substantial infrastructure damage was also reported to the region's bridges, schools, government buildings and electrical transmission grid. Nearly 30 percent of offshore oil production and 28 percent of natural gas output in the Gulf of Mexico was shut down in preparation for Ida's effects. Heavy rains associated with Ida brought between three and five inches (eight and 13 centimeters) and isolated amounts of ten inches (25 centimeters) to the southeastern United States. Ida's remnants paralleled the Atlantic coastline and coupled with a new area of low pressure, becoming a Nor'easter on the 12th and 13th. The system triggered coastal flooding and a storm surge of three to five feet (one to 1.5 meters) across sections of the Mid-Atlantic. Damage losses were estimated at US$208 million as over 40,000 claims were filed and beaches suffered from significant beach erosion from the Carolinas to New Jersey.

On the 5th in Taiwan, two earthquakes with magnitudes 5.6 and 5.4 damaged at least 1,200 homes. No injuries or fatalities were reported.

Heavy rains killed 18 people in southern Thailand between the 5th and 10th. The rains affected ten provinces and flooded vast areas of farmland.

Heavy rains in El Salvador triggered flooding and landslides between the 5th and 8th, killing at least 192 people. Rain totals ranged between 12 and 25 centimeters (five and ten inches), with one localized report of 44 centimeters (17.2 inches). The rains caused rivers to burst their banks in Verapaz, mud and boulders to roll down the slopes of the Chichontepec volcano and further landslides in Teptitan. At least 1,800 homes, 18 main bridges and dozens of roads were destroyed. Agricultural losses were estimated at US$32 million after 50,000 hectares (123,000 acres) of crops were destroyed. Reconstruction costs were totaled at US$300 million.

A storm system triggered an isolated severe thunderstorm across northwest Oregon on the 6th, spawning a rare tornado. No injuries or fatalities were reported. The tornado touched down in the town of Lincoln City and damaged at least 11 homes, three cars and three decks.

Heavy rains between the 8th and 11th caused a major landslide near Mount Kilimanjaro in Tanzania. At least 25 people were killed and seven homes were destroyed.

A magnitude-6.6 earthquake affected Indonesia on the 9th, killing one person and injuring 178 others. The main tremor was centered 15 kilometers (ten miles) north-northwest of Raba, Indonesia. The town of Bima, located in West Nusa Tenggra province on Sumbawa Island, sustained the most significant damage. One health clinic, five school buildings, one bridge, three government offices and at least 720 homes were damaged or destroyed. The quake was responsible for at least US$2.43 million in losses, according to governmental sources.

Winter weather affected northern and central China between the 9th and 11th, killing at least 57 people. The storm affected the provinces of Hebei, Shanxi, Shaanxi, Shandong and Henan. At least 15,000 homes collapsed and 166,000 additional homes were evacuated. Chinese officials reported at least 237,000 hectares (585,000 acres) of winter crops were affected. Total economic losses were estimated at US$1 billion.

At least 13 people were killed in Indonesia after being buried by landslides near the South Sulawesi city of Palopo on the 10th.

A series of storm systems brought heavy rains across portions of Ireland and Britain between the 12th and the 26th, killing at least five people and flooding over 1,300 homes and businesses. The hardest-hit regions included Burneside, Cockermouth, Kendal, Keswick and Workington in Britain. The town of Seathwaite set an all-time rainfall record, as 31.44 centimeters (12.4 inches) of rain was recorded in less than 24 hours. In Ireland, the city of Cork sustained damage as thousands of homes were left without running water. Additional damage was recorded in Wales and Scotland, and officials warned it could take months to recover from the devastation. The Association of British Insurers reported that insured losses topped US$165 million, while total overall losses approached US$330 million.

Two weeks of heavy rain between the 14th and the 28th led to flooding in southern sections of Brazil. At least 12 people were killed across 81 separate municipalities. Over 20,000 homes were destroyed and officials estimated total economic losses at US$2 billion.

Three separate storm systems affected the west coast of Canada between the 15th and the 19th. The storms knocked out electricity to tens of thousands of residents in the province of British Columbia and on Vancouver Island. Heavy snows also triggered multiple avalanches.

Heavy rains fells in parts of Saudi Arabia on the 25th, killing at least 500 people. The floods first affected the city of Jeddah, after nearly nine centimeters (3.5 inches) of rain fell in four hours. According to civil defense officials, at least 5,024 homes and other structures were damaged or destroyed, and at least 4,690 vehicles were submerged. Additional damage and fatalities were also reported in Mecca and Rabigh. Total damage losses were estimated at US$933 million.

December

- **First major winter storm of the season hits the United States**
- **Flooding affects southern Brazil**
- **Isolated severe weather causes widespread damage in the U.S. Southeast**

Additional heavy rains triggered flooding and landslides across southern Brazil and northern Uruguay, killing at least 29 people and injuring dozens more between the 1st and 10th. At least 21 people were killed in southern Brazil's Sao Paulo state, after landslides collapsed hundreds of homes. Dozens of highways were closed as both the Tiete and Pinheiros rivers burst their banks. In nearby Rio Grande do Sul state, which borders Uruguay, at least eight people were killed after storms damaged over 14,000 homes. At least 161 towns declared states of emergency. Total economic losses were estimated at US$9 million.

An area of low pressure and associated cold front brought severe weather to the eastern United States on the 2nd, injuring at least ten people. Severe thunderstorms and tornadoes were reported in Florida, Georgia and the Carolinas. At least 100 homes were damaged or destroyed in these areas. Thousands of power outages, minor flooding and wind gusts of up to 60 mph (95 kph) occurred in the Carolinas before the system moved into New England. In Pennsylvania, storms brought 85 mph (140 kph) wind gusts that brought damage to homes.

The first major winter storm of the season affected the United States and Canada between the 6th and 11th. The system brought heavy snow, sleet, freezing rain, ice, severe thunderstorms and gusty winds. At least 17 people were killed. The storm system first brought rain and heavy snow across the Sierra Nevadas in California on the 6th before moving into the Intermountain West and the Rockies on the 7th. By the 8th, the storm system entered the Plains and brought heavy snow, ice and winds from the eastern Rockies through the Great Lakes. In the Southeast, damage was reported to hundreds of homes across parts of Mississippi, Alabama, Georgia, Florida and the Carolinas due to tornadoes and damaging winds. The system brought record amounts of snow to the Midwest and Great Lakes, while severe weather occurred from New England to the Southeast. On the 10th, heavy lake effect snows fell in parts of New England and the Great Lakes. In Canada, the provinces of Ontario, Quebec and New Brunswick all reported heavy snowfall. Behind the system, a large ridge of high pressure settled into the Plains and ushered in very cold air. By the 11th, winds subsided across the Midwest and Great Lakes, though snow showers lingered in parts of Michigan and New England.

APPENDICES

Appendix A: Catastrophe Recap Tables

2009 Natural Catastrophes (January through November 2009)

United States

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
1/1-1/8	Winter Weather	Northwest, Midwest, Northeast, Southeast	3+	Unknown	125+ million
1/7-1/9	Wildfires	Colorado	0	6+	Unknown
1/8	Earthquake	California	0	Unknown	Unknown
1/10-1/16	Winter Weather	Plains, Midwest, Northeast, Southeast	15+	Unknown	Unknown
1/19	Winter Weather	Maryland	2+	40+	Unknown
1/19-1/23	Wildfires	Texas	0	32+	10+ million
1/26-1/29	Winter Weather	Tennessee Valley, Plains, Northeast	58+	209,000+	525+ million
2/10-2/13	Severe Weather	Oklahoma, Texas, Ohio Valley	13+	300,000+	1.20+ billion
2/18	Severe Weather	Georgia, Alabama, Tennessee Valley	1+	17,000+	115+ million
2/23-2/26	Winter Weather	New England, Northern Plains, Midwest	0	Unknown	Unknown
2/26-2/28	Severe Weather	Southeast, Tennessee Valley	0	Dozens+	Unknown
2/28-3/2	Wildfires	Texas	0	60+	Millions+
2/28-3/4	Winter Weather	Southeast, Northeast, West	9+	Hundreds+	Unknown
3/7-3/10	Severe Weather	Northern Tier, Midwest	4+	15,000+	60+ million
3/22-4/17	Flooding	Red River Valley	2+	Dozens+	144+ million
3/22-3/26	Severe Weather	Rockies, Plains, Midwest, Southeast	0	Hundreds+	Unknown
3/24	Earthquake	Southern California	0	Unknown	Unknown
3/25-3/29	Severe Weather	Plains, Southeast, Midwest, Northeast	6+	150,000+	825+ million
3/30-4/2	Severe Weather	Texas	0	16,000+	100+ million

United States (Continued)

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
4/2-4/8	Wildfires	Texas	0	50+	Unknown
4/4-4/6	Severe Weather	Plains, Midwest, Southeast	5+	200+	Unknown
4/9-4/12	Wildfires	Oklahoma, Texas	3+	202+	20+ million
4/9-4/11	Severe Weather	Plains, Midwest, Southeast	2+	190,000+	1.10+ billion
4/12-4/14	Severe Weather	Southeast	2+	60,000+	170+ million
4/16-4/20	Severe Weather	Rockies, Plains, Northeast, Southeast	2+	30,000+	240+ million
4/22-4/27	Wildfires	South Carolina	0	170+	25+ million
4/24-4/28	Severe Weather	Plains, Midwest	7+	55,000+	275+ million
5/2-5/6	Severe Weather	Plains, Southeast	1+	30,000+	130+ million
5/5-5/13	Wildfires	Southern California	0	100+	Unknown
5/5-5/8	Wildfires	Arizona	0	8+	Unknown
5/7-5/9	Severe Weather	Plains, Midwest, Southeast	7+	95,000+	525+ million
5/13-5/14	Severe Weather	Plains, Midwest	3+	30,000+	125+ million
5/17	Earthquake	Southern California	0	Unknown	Unknown
5/18-5/23	Flooding	Florida	0	1,531+	55+ million
5/30-6/4	Severe Weather	Plains, Midwest, Southeast, Northeast	0	20,000+	100+ million
6/2-6/4	Severe Weather	Southern California	3+	Hundreds+	Unknown
6/5-6/8	Severe Weather	Rockies, Plains, Midwest, Southeast	0	80,000+	400+ million
6/9-6/18	Severe Weather	Rockies, Plains, Midwest, Mid-Atlantic	1+	200,000+	1+ billion
6/20-6/26	Severe Weather	Plains, Midwest, Southeast, Northeast	1+	15,000+	75+ million
6/27-6/30	Severe Weather	Rockies, Plains, Midwest	0	Hundreds+	Unknown
7/4-7/9	Severe Weather	Plains, Midwest, Southeast, Northeast	1+	Hundreds+	Unknown
7/8-7/16	Severe Weather	Northern Plains, Midwest, Ohio Valley	0	70,000+	350+ million

United States (Continued)

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
7/16-7/20	Severe Weather	Texas, Oklahoma	0	30,000+	140+ million
7/20-7/21	Severe Weather	Rockies, Plains	1+	85,000+	700+ million
7/21-8/9	Wildfires	Alaska	0	3+	Unknown
7/24-7/26	Severe Weather	Plains, Rockies, Midwest, Northeast	0	45,000+	200+ million
7/29	Severe Weather	Colorado	0	50,000+	200+ million
8/2-8/4	Severe Weather	Midwest, Plains, Southeast	0	25,000+	115+ million
8/7-8/13	Severe Weather	Plains, Midwest, New England	2+	35,000+	175+ million
8/12-8/19	Wildfires	California	0	2+	9.80+ million
8/14-8/16	TS Claudette	Florida	1+	Unknown	Unknown
8/15-8/19	Severe Weather	Midwest, Northeast, Southeast, Plains	0	500+	Millions+
8/23-8/24	HU Bill	New England	2+	Unknown	Unknown
8/26-9/1	Wildfires	Southern California	2+	178+	106.50+ million
9/16	Severe Weather	Texas	0	70,000+	350+ million
9/17-9/27	Flooding	Southeast	10+	25,000+	500+ million
10/9-10/14	Severe Weather	West, Midwest, Southeast	4+	100+	20+ million
10/27-10/29	Winter Weather	Rockies, Plains, Midwest, Southeast	1+	Hundreds+	Millions+
11/6	Severe Weather	Oregon	0	17+	Unknown
11/10-11/15	TS Ida	Southeast, Mid-Atlantic, Northeast	7+	40,000+	208+ million
12/2	Severe Weather	Southeast, New England	0	100+	Unknown
12/6-12/11	Winter Weather	West, Plains, Midwest, Northeast, Southeast	17+	Hundreds+	Unknown

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] (US$)
1/4	Landslide	Guatemala	37+	Unknown	Unknown
1/8	Earthquake	Costa Rica	40+	500+	502+ million
1/8-2/12	Flooding	Dominican Republic	7+	Thousands+	52+ million
4/25	Severe Weather	Canada	0	Dozens+	Unknown
5/18-5/21	Flooding	Haiti, Dominican Republic	16+	Hundreds+	Unknown
5/28	Earthquake	Honduras, Belize, Guatemala	7+	400+	100+ million
6/22-6/24	HU Andres	Mexico	1+	Hundreds+	Unknown
7/9	Severe Weather	Canada	2+	Unknown	Unknown
7/31-8/7	Wildfires	Canada	0	Unknown	110+ million
8/2-8/6	Severe Weather	Canada	2+	Hundreds+	Millions+
8/3	Earthquake	Mexico	0	Unknown	Unknown
8/20	Severe Weather	Canada	1+	600+	Millions+
8/21-8/24	HU Bill	Bermuda, Canada	0	Unknown	Unknown
8/1-8/5	HU Jimena	Mexico	3+	35,000+	37.30+ million
9/6	Flooding	Mexico	4+	2,050+	Unknown
10/20-10/22	HU Rick	Mexico	2+	Unknown	Unknown
10/31-11/1	Flooding	Mexico	3+	200,000+	Unknown
11/4-11/7	HU Ida	Nicaragua, Honduras, Mexico	0	1,000+	4.40+ million
11/5-11/8	Flooding	El Salvador	192+	1,800+	300+ million
11/15-11/18	Winter Weather	Canada	0	Unknown	Unknown
12/9-12/11	Winter Weather	Canada	0	Dozens+	1+ million

South America

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
1/24-2/5	Flooding	Brazil, Peru	18+	1,000+	Unknown
2/9-2/17	Flooding	Argentina, Bolivia	2+	4,000+	14.30+ million
3/2	Flooding	Peru	13+	50+	Unknown
4/18-5/31	Flooding	Brazil	54+	300,000+	1.65+ billion
9/7	Severe Weather	Brazil, Argentina, Uruguay, Paraguay	20+	10,102+	Unknown
11/14-11/28	Severe Weather	Brazil, Argentina, Uruguay	12+	20,000+	2+ billion
12/1-12/10	Flooding	Brazil	29+	14,000+	9+ million

Africa

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
1/3-1/4	Severe Weather	South Africa	18+	4,017+	10+ million
1/15-4/10	Flooding	Namibia, Angola	111+	3,203+	Unknown
1/19-1/20	CY Eric	Madagascar	1+	1,652+	Unknown
1/20-1/21	Severe Weather	Algeria	15+	Thousands+	Unknown
1/21-1/22	CY Fanele	Madagascar	8+	Thousands+	Unknown
1/24-1/25	Severe Weather	Algeria	8+	3,561+	Unknown
2/26	Severe Weather	South Africa	2+	Dozens+	Unknown
3/28-3/30	Flooding	Madagascar, Namibia	100+	3,200+	2.75+ million
4/6-4/8	CY Jade	Madagascar	8+	3,320+	35+ million
5/17	Flooding	South Africa	0	497+	Unknown
6/7-6/10	Flooding	Botswana	0	657+	150,000+
7/13	Severe Weather	South Africa	0	2,500+	Unknown
9/1-9/14	Flooding	West Africa	159+	300,000+	Unknown
11/8-11/11	Flooding	Tanzania	25+	7+	Unknown

Asia

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
1/4	Earthquake	Indonesia	4+	5,800+	320+ million
1/4	Winter Weather	India	65+	Unknown	Unknown
1/9-1/14	Flooding	Fiji, Philippines, Indonesia	281+	2,679+	202+ million
1/25	Earthquake	China	0	3,106+	3.10+ million
2/1-2/10	Drought	China	0	Unknown	234+ million
2/23-3/3	Flooding	Indonesia	8+	9,626+	Unknown
3/11-3/18	Dust Storms	Saudi Arabia, India, China, Kuwait	0	Unknown	Unknown
3/27	Flooding	Indonesia	215+	400+	Unknown
3/31	Severe Weather	India	18+	2,000+	Unknown
4/17	Earthquake	Afghanistan	40+	300+	Unknown
4/17-4/18	CY Bijli	Bangladesh	6+	7,557+	Unknown
4/19-5/1	Heatwave	India	41+	Unknown	Unknown
4/20-5/1	Flooding	Afghanistan	20+	25,000+	20+ million

Asia (Continued)

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
5/2-5/3	TS Dante	Philippines	27+	2,658+	26+ million
5/3	Severe Weather	India	11+	Dozens+	Unknown
5/7-5/9	TY Chan-hom	Philippines	67+	40,210+	21+ million
5/11-5/12	Severe Weather	India	32+	Dozens+	Unknown
5/15-5/18	Flooding	Philippines	26+	30+	2,000+
5/15	Flooding	Tajikistan	21+	200+	1+ million
5/20-5/21	Severe Weather	India	20+	Unknown	Unknown
5/25	CY Aila	India, Bangladesh	330+	1.02+ million	461+ million
6/3	Severe Weather	India	27+	49,856+	324+ million
6/4	Severe Weather	Philippines	0	22+	Unknown
6/7-6/9	Severe Weather	China	23+	46,223+	280+ million
6/14	Severe Weather	China	15+	9,690+	66+ million
6/14	Severe Weather	India	2+	Dozens+	Unknown
6/19-6/22	Flooding	China	11+	25,000+	59+ million
6/21	TS Linfa	China	1+	100+	49.40+ million
6/22-6/26	TS Nangka	Philippines, Taiwan, China	12+	12,694+	4.30+ million
6/29-7/9	Flooding	China, Vietnam	178+	Thousands+	3.90+ billion
7/2-7/9	Flooding	India	296+	6,906+	Unknown
7/9	Earthquake	China	1+	655,832+	374+ million
7/9-7/14	Flooding	China	23+	1,686+	Unknown
7/14-7/18	Flooding	North Korea, South Korea	1+	Unknown	Unknown
7/14-7/23	Flooding	China, Mongolia	6+	2,000+	14.60+ million
7/15-7/19	TY Molave	Philippines, China	5+	10,721+	6.77+ million
7/17-7/22	Flooding	India, Pakistan	81+	500,000+	Unknown
7/20-7/21	Severe Weather	Japan	25+	1.270+	Unknown
7/23-7/26	TS Nangka	Philippines	16+	10,000+	4.30+ million
7/23-7/27	Flooding	China	80+	3,137+	33+ million
7/25-7/30	Flooding	Nepal, Bangladesh, Turkey	32+	100+	Unknown
8/2-8/5	Flooding	China, Philippines	24+	26,000+	99.50+ million
8/3-8/10	TY Morakot	Taiwan, China, Philippines	717+	3.86+ million	5.04+ billion
8/4-8/9	TS Goni	Philippines, China	40+	3,918+	6.60+ million
8/9-8/12	TS Etau	Japan	18+	500+	Unknown
8/9	Earthquake	Japan	0	Unknown	Unknown

Asia (Continued)

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
8/11	Earthquake	India	0	Unknown	Unknown
8/11-13	Earthquake	Japan	1+	4,926+	Unknown
8/16	Earthquake	Indonesia	0	Dozens+	Unknown
8/16-8/18	Flooding	Pakistan	27+	1,000+	Unknown
8/17	Earthquake	Japan, Taiwan	0	Unknown	Unknown
8/26-8/30	Flooding	China	25+	12,862+	Unknown
9/2	Earthquake	Indonesia	79+	168,000+	148+ million
9/8-9/9	TS Mujigae	Philippines	15+	20+	6.30+ million
9/13-9/16	TY Koppu	China, Philippines	21+	1,250+	300+ million
9/19-9/21	Flooding	China	3+	4,765+	Millions+
9/21	Earthquake	Bhutan	12+	1,365+	Millions+
9/26-9/30	TY Ketsana	Philippines, Vietnam	645+	7.4+ million	2+ billion
9/29	EQ/Tsunami	Samoa, American Samoa, Tonga	190+	Thousands+	147.30+ million
9/30	Earthquake	Indonesia	1,195+	249,833+	2.30+ billion
10/1-10/6	Flooding	India	300+	2.5+ million	4+ billion
10/3-10/9	TY Parma	Philippines	494+	58,156+	2+ billion
10/4-10/7	Flooding	Nepal	54+	6,000+	Unknown
10/7-10/9	TY Melor	Japan	5+	1,000+	Unknown
10/8	Flooding	Indonesia	0	2,000+	Unknown
10/22-10/24	TY Lupit	Philippines	0	45+	Unknown
10/23	Earthquake	Indonesia, Afghanistan	0	1+	Unknown
10/29-11/1	TY Mirinae	Philippines, Vietnam, Cambodia	157+	73,466+	290.30+ million
10/30-11/2	Flooding	Iraq	2+	180+	150,000+
10/31-11/3	Flooding	Lebanon	0	Hundreds+	Unknown
11/2	Earthquake	China	0	31,000+	985,000+
11/3-11/12	Flooding	India, Thailand	97+	500+	Unknown
11/4	Earthquake	Iran	0	Hundreds+	Unknown
11/5	Earthquake	Taiwan	0	1,200+	Unknown
11/8	Earthquake	Indonesia	1+	720+	2.43+ million
11/9-11/11	Winter Weather	China	57+	15,000+	1+ billion
11/25	Flooding	Saudi Arabia	500+	15,235+	933+ million

Europe

Event Date	Event Name or Type[1]	Event Location	# of Deaths[2]	# of Structures/ Claims[2, 3]	Damage Estimates[2, 4] (US$)
1/2-1/9	Winter Weather	Eastern, Western, Southern Europe	17+	Unknown	Unknown
1/17-1/20	Winter Weather	United Kingdom	1+	Unknown	Unknown
1/18-3/17	Flooding	Bosnia and Herzegovina	0	167+	100,000+
1/24-1/25	Windstorm Klaus	France, Spain, Italy	26+	715,000+	4-6+ billion
2/2-2/5	Winter Weather	UK, France, Italy, Belgium, Spain	6+	Unknown	4.30+ billion
2/7-2/10	Windstorm Quinten	UK, France, Switzerland, Germany	0	3,000+	2.60+ million
4/6	Earthquake	Italy	308+	15,000+	2.50+ billion
5/24	Earthquake	Macedonia	0	Dozens+	Unknown
6/4	Severe Weather	Russia	0	Hundreds+	Unknown
6/6	Severe Weather	Italy	0	Dozens+	Unknown
6/22-6/27	Flooding	Central Europe	16+	4,055+	977+ million
6/28-7/2	Heatwave	United Kingdom	0	Unknown	315+ million
7/5-7/12	Flooding	Bosnia and Herzegovina	0	220+	Unknown
7/21-7/28	Wildfires	France, Spain, Italy, Greece	8+	Hundreds+	115+ million
7/23-7/24	Severe Weather	Central Europe	11+	5,000+	1+ billion
7/28	Severe Weather	Scotland	0	Dozens+	Unknown
7/31-8/5	Wildfires	Canary Islands	0	Dozens+	Unknown
8/21	Landslide	Portugal	5+	Unknown	Unknown
8/21-8/27	Wildfires	Greece	1+	284+	Millions+
9/8-9/14	Flooding	Turkey	32+	4,200+	218+ million
9/23	Flooding	Turkey	5+	Unknown	Unknown
10/24-10/26	Flooding	Greece	1+	250+	Unknown
10/31-11/1	Flooding	United Kingdom	1+	Unknown	Unknown
11/12-11/26	Flooding	United Kingdom	5+	1,300+	330+ 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] (US$)
1/6-2/20	Flooding	Queensland, NSW, Western Australia	9+	4,000+	140+ million
1/14-1/15	Wildfires	New South Wales	0	5+	500,000+
1/26	Cyclone Dominic	Western Australia	0	Unknown	Unknown
2/7-2/20	Bushfires	Victoria, New South Wales	173+	10,040+	985+ million
3/6-3/10	Cyclone Hamish	Queensland	0	Unknown	Unknown
3/31-4/3	Flooding	Queensland, New South Wales	0	2,500+	34.50+ million
4/13-4/15	Severe Weather	NSW, Queensland, Victoria, Tasmania	6+	Unknown	Unknown
4/27-4/29	Flooding	New Zealand	0	Dozens+	Unknown
5/11-5/12	Severe Weather	New Zealand	0	Dozens+	1.60+ million
5/18	Severe Weather	New Zealand	0	Dozens+	Unknown
5/20-5/24	Flooding	New South Wales, Queensland	1+	9,500+	44.20+ million
6/28-6/31	Severe Weather	Western Australia, South Australia	1+	270+	Unknown
7/4	Severe Weather	New Zealand	0	42+	5,500+
7/11-7/12	Severe Weather	New Zealand	0	Dozens+	1.20+ million
7/15	Earthquake	New Zealand	0	5,087+	4.10+ million
7/21	Severe Weather	New Zealand	0	Dozens+	355,000+
9/23	Dust Storm	Queensland, New South Wales, Victoria	0	Unknown	Millions+
10/25-10/26	Severe Weather	New South Wales	1+	80+	Unknown

[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.

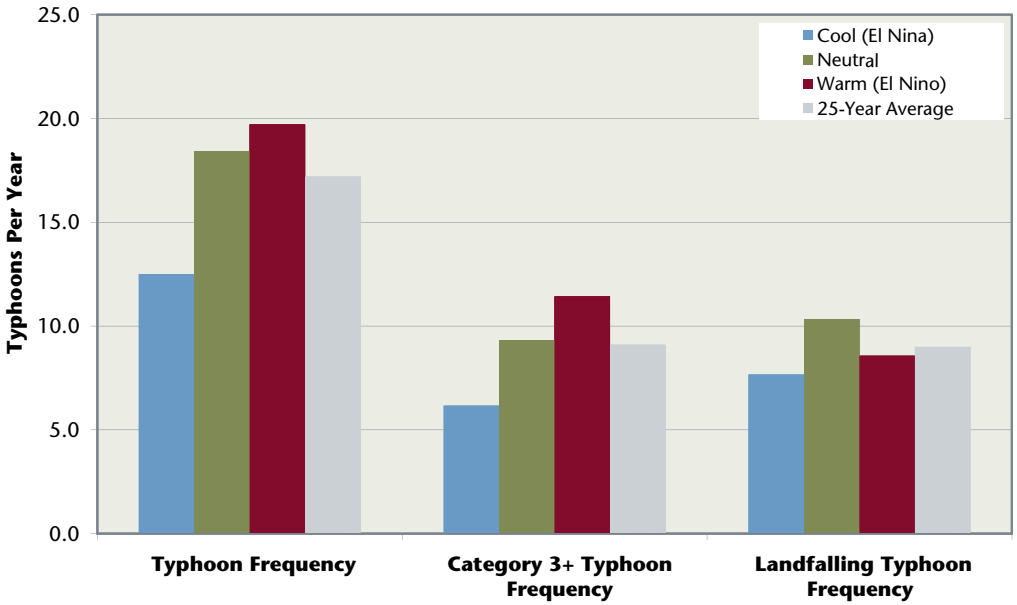
[4] Damage estimates obtained from various public media sources, including news websites, publications from insurance companies and financial institution press releases. These estimates can include insured or economic losses.

Appendix B: Tropical System Frequency Correlations

The following charts and text show how the phase of the El Niño/Southern Oscillation (ENSO) phase affects tropical system production in each Northern Hemisphere tropical basin. All conclusions are based on historical hurricane and typhoon occurrences as reported by the National Hurricane Center and the Joint Typhoon Warning Center.

Western Pacific Ocean Basin (ENSO)

Figure 28: 25-Year Western Pacific Typhoon Frequency By ENSO Phase



During El Niño Phases:

- Overall typhoon frequency increases
- Category 3 (sustained winds of 111 mph (179 kph) or greater) typhoon frequency increases

During La Niña Phases:

- Overall typhoon frequency decreases
- Category 3 (sustained winds of 111 mph (179 kph) or greater) typhoon frequency decreases

During Neutral Phases:

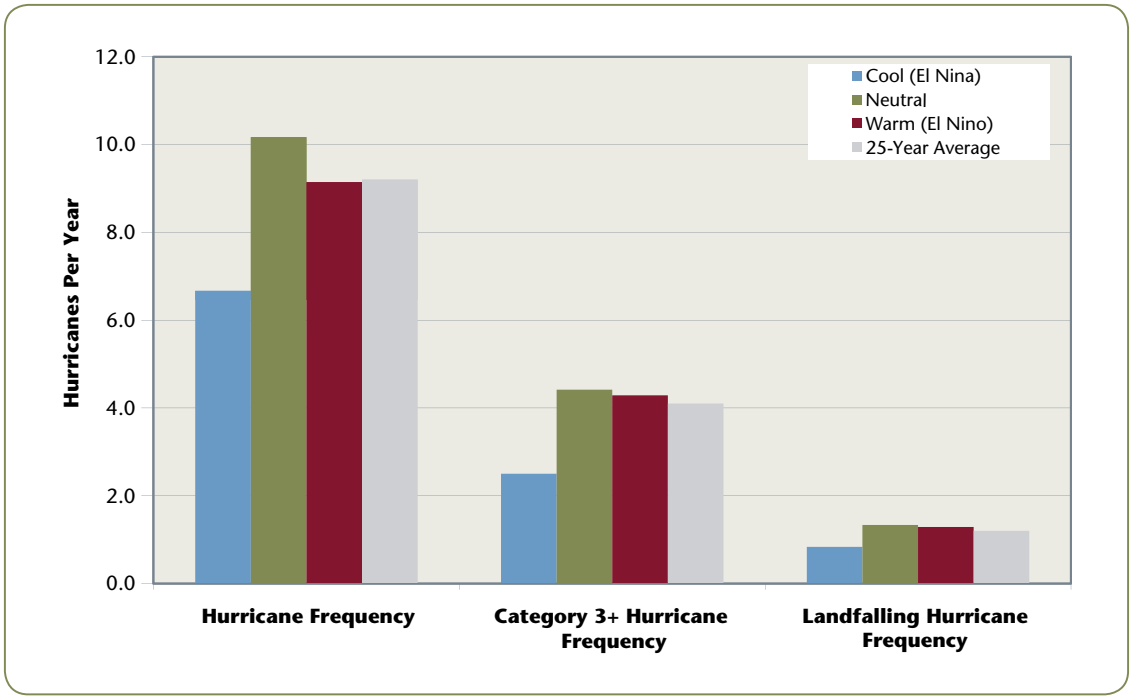
- Overall typhoon frequency remains near average

All Phases:

- The ENSO phase has no impact on landfalling typhoon frequency across the Western Pacific Basin

Eastern Pacific Ocean Basin (ENSO)

Figure 29: 25-Year East Pacific Hurricane Frequency By ENSO Phase



During El Niño Phases:

- Overall hurricane frequency remains near average
- Category 3 (sustained winds of 111 mph (179 kph) or greater) hurricane frequency remains near average
- Landfalling hurricane frequency remains near average

During La Niña Phases:

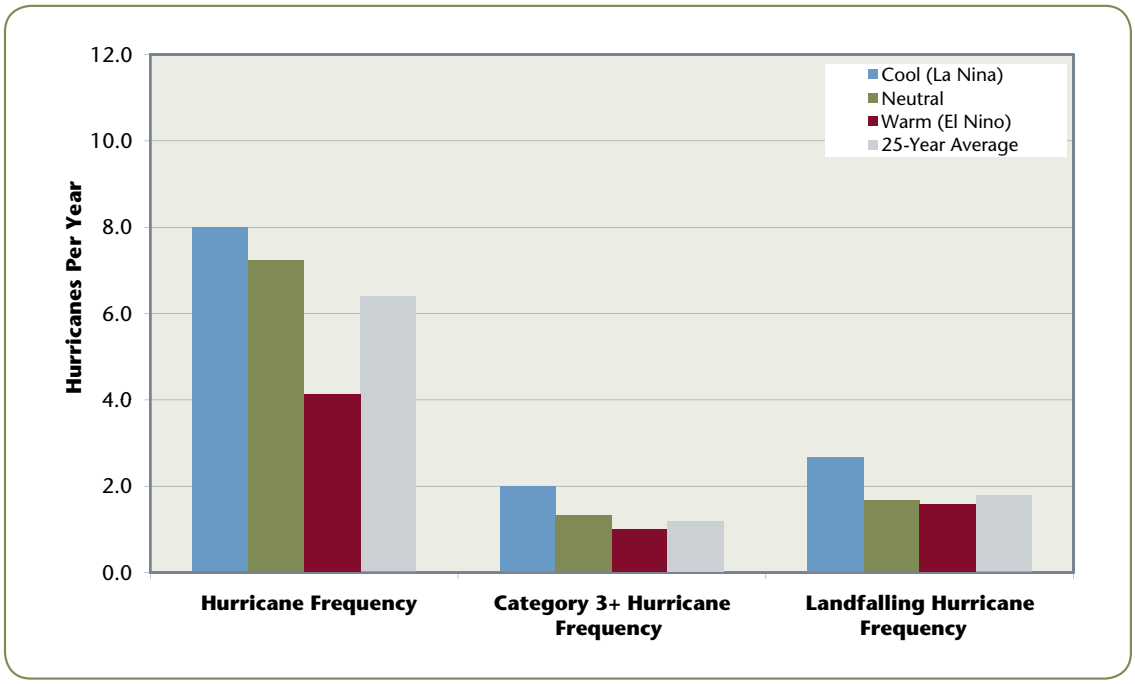
- Overall hurricane frequency decreases significantly
- Category 3 (sustained winds of 111 mph (179 kph) or greater) hurricane frequency decreases significantly
- Landfalling hurricane frequency decreases

During Neutral Phases:

- Overall hurricane frequency remains near average
- Category 3 (sustained winds of 111 mph (179 kph) or greater) hurricane frequency remains near average
- Landfalling hurricane frequency remains near average

Atlantic Ocean Basin (ENSO)

Figure 30: 25-Year Atlantic Hurricane Frequency By ENSO Phase



During El Niño Phases:

- Overall hurricane frequency decreases significantly
- Category 3 (sustained winds of 111 mph (179 kph) or greater) hurricane frequency decreases
- Landfalling hurricane frequency remains near average

During La Niña Phases:

- Overall hurricane frequency increases significantly
- Category 3 (sustained winds of 111 mph (179 kph) or greater) hurricane frequency increases
- Landfalling hurricane frequency increases

During Neutral Phases:

- Overall hurricane frequency remains near average
- Category 3 (sustained winds of 111 mph (179 kph) or greater) hurricane frequency remains near average
- Landfalling hurricane frequency remains near average

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