



Weathering the Storm with AI

2017 was the most expensive year on record for disasters in the United States, with \$306 billion in total damage, according to [the National Oceanic and Atmospheric Administration](#). With the 2018 Atlantic Hurricane season predicted to see [13 named storms, 6 hurricanes, and 2 major hurricanes](#), mitigating loss from severe weather and natural disasters is likely top of mind for consumers and businesses alike.

More and more, businesses are turning to artificial intelligence (AI) to mitigate damage, lower costs, and change how they serve customers before, during, and after natural disasters. Yes, AI can help accurately forecast the weather, but it's about so much more than the forecast; AI can provide a foundation for helping to better serve customers across three critical areas: safety and preparation, operations, and disaster response.

Safety & Preparation

The use of AI technology for storm safety and preparation is becoming more sophisticated and widespread. A smart use of AI can help companies prepare for the worst, as well as proactively communicate with customers to keep them informed and safe. Read on for some examples of AI in use for storm safety and preparation.



The Weather Company, an IBM Business is [applying machine learning](#) to help predict storm damage, helping businesses like utility companies prepare for the impact of major storms. The data science combines forecast predictions with outage models and historical data to build an analytical model with machine learning that can categorize weather events as the forecast is coming in - providing an analysis back to the utility's operations center, and helping them take action prior to the storm.



When Typhoon Haima hit the Philippines, the Red Cross initiative [510 Global](#) was able to quickly analyze which areas would be most desperate for immediate aid when the hurricane hit - before the storm. By leveraging AI and relying on open data on wind speeds, rainfall, and areas previously affected by natural disasters, they created a Priority Index in just 24 hours, ranking areas based on need.



A team at [Cornell University](#) is using machine learning to predict laboratory-simulated earthquakes, through an algorithm that can detect earthquakes in a lab-made fault line. By listening to the acoustic signal emitted by that fault, machine learning predicts the time remaining before the "earthquake" occurs. While this has not been applied in any real-world earthquake scenarios yet, these results show that machine learning could be the solution to reliable earthquake prediction.

Operations

"Once-in-a-thousand-year" storms seem to be occurring more regularly, putting a strain on emergency services, governments, and citizens. AI technology can do more than help save lives - it can enable businesses to proactively respond to potential operational issues, give IT administrators a more holistic view of what's going on with their systems, and model and test disaster scenarios to identify and solve for pain points in a business's infrastructure.



California startup [One Concern](#) is using machine learning and AI to help first responders plan for earthquakes and respond to them, helping to save lives during emergencies. AI systems are fed data on the makeup of local buildings, environmental factors such as soil condition, and live data such as the magnitude of the earthquake, traffic in the area, and weather at the time of the quake. This, combined with data from past earthquakes, is used to make predictions about what would happen if an earthquake occurred in a particular area.



With 64 percent of consumers expecting real-time responses to their travel issues, [KLM Royal Dutch Airlines is leveraging AI](#) to help their employees communicate more effectively with consumers whose travel plans may be impacted by weather. AI is helping KLM handle over 130,000 social media mentions per week, freeing up time for their employees to better respond to time-sensitive, weather-related travel changes.



[Optima Predict](#), a software suite that collects and analyzes information about disasters, can spot geographical clusters of reported incidents before humans notice the trend. Using machine learning and predictive analytics, this software can help officials identify and extract patterns to understand the potential impact of a natural disaster, and alert key officials and emergency medical services personnel in real-time.

Disaster Response

There is incredible potential in AI and deep learning for humanitarian operations, especially in the critical hours following threatening severe weather and natural disasters. Neural networks can process and analyze imagery and details unheard of just a few years ago. AI systems like the examples below are able to examine millions of images, catalogue them into thousands of categories, determine their location, and identify natural disaster damage in an instant, helping with disaster response efforts.



IBM, along with the United Nations, the Red Cross, and more are joining together to help communities prevent, respond to, and recover from natural disasters. Through "[Call for Code](#)," developers in the global IT community are creating new applications that help communities respond faster and more efficiently to natural disasters. One app that uses weather data and supply chain information to alert pharmacies to stock up on medicine ahead of severe weather. Another predicts when and where the disaster will be most severe so emergency crews can be dispatched ahead of time.



Insurance companies are using AI to conduct inspections and speed up the damage claims process when customers need help the most. In the aftermath of Hurricane Harvey, [Farmer's Insurance leveraged drones](#) to conduct inspections, flag damage, and access areas that may be unsafe for humans. In addition, [Allstate and Esurance](#) are leveraging AI software to analyze before and after photos along with weather data to assess damage to policyholders, allowing for faster claims payment.



The "[Open AI Challenge: Aerial Imagery of South Pacific Islands](#)" AI challenge by the World Bank, WeRobotics, and OpenAerialMap looks to find new AI approaches from within the global open research community to process aerial imagery of a disaster quickly, and at scale, providing first responders and aid agencies with critical assessment and disaster response planning information.

We have only just begun to see how artificial intelligence can help marketers better serve consumers - and the communities they live in - that are disrupted by severe weather patterns. There is great opportunity for marketers to leverage AI in safety and preparation efforts during natural disasters. AI can help predict where damage is likely to occur, allowing businesses to communicate with their customers proactively and make recommendations. AI can help insurers communicate with policyholders about how to protect their property, help retailers better stock shelves to meet the demands of a city in need, and help travel companies ensure that travelers displaced by disruptions have a plan B in place.

If one thing is clear, the potential for AI to transform preparation and safety, drive operational efficiencies, and speed recovery efforts is exponential.