



Deep Thunder forecasts

- For Miami, Kansas City and Atlanta



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Deep Thunder

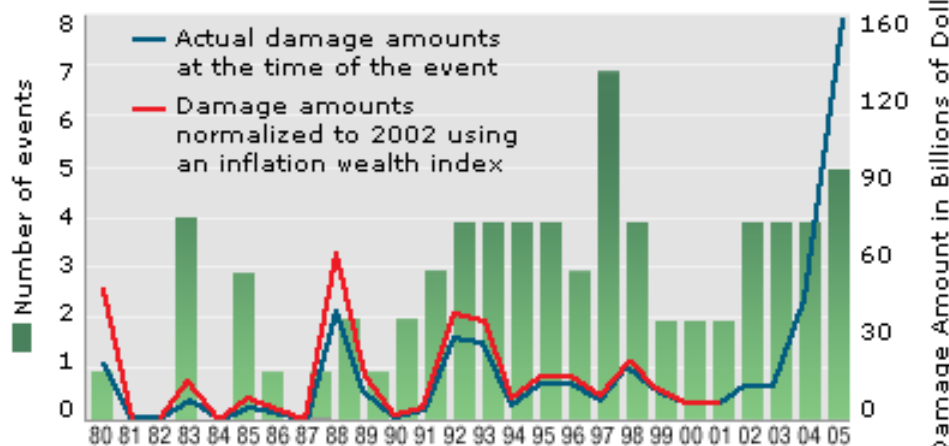
Weatherproof your operations with local, short-term forecasts



Smoothing out the highs and lows of running a business

As in daily life, one of the unruliest factors in running a business can be the weather. It can bring a highly functioning organization to a dead stop in a matter of seconds. Rack up billions in costs, in the blink of an eye. It's completely uncontrollable. And relentless. It is not, however, unpredictable. Increasingly, precise, short-term, extremely local forecasts can help companies sidestep major disasters as well as plan for the more routine weather events that hemorrhage energy and resources.

Billion Dollar U.S. Weather Disasters 1980-2005

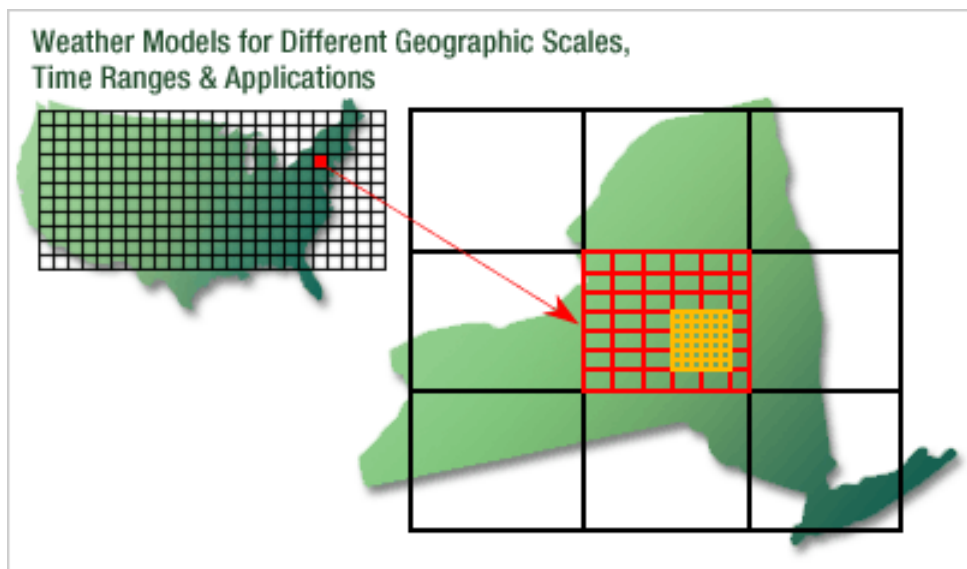


Source: NOAA/NESDIS/NCDC

It's not about the weather

A new IBM weather modeling capability, dubbed "Deep Thunder," provides high-resolution forecasts for a region—ranging from a metropolitan area up to an entire state—with calculations as fine as every mile. Forecasts are made up to a day ahead of time. The reports can be customized to visualize the specific weather elements a business may be concerned about, such as wind speed and direction for a firefighting crew. "It's not really about the weather," explains Lloyd Treinish, the IBM researcher who leads the project with fellow researcher Tony Praino. "It's about improving the effectiveness of a customer's weather-sensitive operations, such as asset management or logistics, with very specific, up-to-the minute information."

Deep Thunder complements the forecasts produced by the National Weather Service (NWS). In simple terms, weather is predicted by gathering observations from sensors on the ground, in the air and from spacecraft, which are input to a mathematical model. This model represents the physics of the atmosphere and is solved on a three-dimensional grid moving through time using a supercomputer. NOAA (National Oceanic and Atmospheric Administration), the parent agency of NWS, has several models which run on a large IBM supercomputer.



Making it personal

As a result, NOAA provides forecasts over a wide range of geographic and time scales, such as a hurricane tracking up the Atlantic coast over the course of a week. Deep Thunder utilizes a finer grid, pinpointing a much smaller area, leveraging the NWS data.

Using visualization techniques and Deep Computing technologies, forecasts of weather conditions are created, then customized to the needs of different industries. This fall, Deep Thunder forecasts are available to customers as an online, on demand Web service for three locations: Miami, Kansas City and Atlanta.

Adding predictability to your processes

Here are some predictions of how Deep Thunder forecasts could help public and private sector organizations.

With weather analytics, a company can optimize their supply chain by planning around adverse weather conditions, reducing delays, protecting and maximizing use of valuable assets, and streamlining scheduling.

If an organization can know with accuracy what the weather will be ahead of time, they can more effectively plan logistics for major sporting or entertainment events, including back-up operations.



And weather forecasts are a critical aspect of the planning and response involved in business continuity and recovery operations.

Aviation—air traffic controllers and dispatchers could re-route flights around hazardous weather; airlines could time de-icing and snow removal operations for optimum efficiency and start recovery plans before a snowstorm occurs: re-scheduling passengers, consolidating flights.



Fighting wildfires—fire fighters could use weather data such as temperature and wind for input to fire behavior and propagation models to better understand where and when conditions are most likely for an outbreak; managers could deploy crew and equipment for more effective fire suppression.



Highway management—a major line item in local government budgets, especially snow removal. Deep Thunder forecasts could help public and commercial transportation companies, highway supervisors and emergency services more efficiently staff and equip for flooding and snow removal; re-route traffic and even save lives.



Emergency management—knowing the time and location of an oncoming storm can help government officials hone their evacuation and emergency set-up plans; improve the timing and accuracy in deploying recovery crews.

Utilities and private energy companies—localized weather forecasts can be used to determine energy demand. In response, a utility can manage assets, including deciding to use additional power plants, or buy or sell energy on world markets. This can help reduce energy costs.



After a thunderstorm, the temperature typically drops several degrees. If a utility knew precisely when the storm would pass through and its duration, it could adjust post-storm usage accordingly to take into account the predicted drops in temperature.

In addition, such forecasts may enable a utility to more effectively repair its infrastructure that has been damaged by a severe weather event like strong winds.



Northeaster in NYC [02/12/06] resulting in the biggest snowfall ever recorded in Central Park (26.9 inches)

 [Watch the Deep Thunder forecast](#) (3.9MB)

- Heaviest snow fell in a 15-mile band over midtown Manhattan, Bronx and Queens
- Deep Thunder forecast available before midnight on 02/11 showing band structure and 22 inches for Central Park.
- The band can be seen in the image, where light shaded toward white indicates heavier accumulations.
- Above the terrain is a forecast of clouds, represented by a three-dimensional translucent white surface of total cloud water density. Within the clouds are translucent cyan [blue] surfaces showing a forecast of that band.
- The map is overlaid with arrows that show forecasted winds and colored to indicate wind speed.
- In animation, you can see the storm move across the New York City.



Hurricane Wilma in Florida [10/24/05], a category 3 storm

 [Watch the Deep Thunder forecast](#) (4.6MB)

- It made landfall before 0700 local time and moved rapidly NE across the state, about 25 mph, exiting around 1100 local time.
- Damage was widespread, with over 3 million losing power
- Deep Thunder forecast covers the whole state of Florida at high-resolution.
- The image is part of an animation sequence which shows the local topography colored by a forecast of total precipitation, where darker shades of blue indicate heavier accumulations.
- Above the terrain is a forecast of clouds, represented by a 3D translucent white surface of total cloud water density. Within the clouds are translucent cyan surfaces showing forecasts of the eye wall as well as convective cells within the thunderstorms in front of the hurricane.
- The map is overlaid with arrows that show forecasted winds and colored by the wind speed (white is over 100 mph).
- In animation, you can see the hurricane move across Florida.



Thunderstorms near Baltimore [10/16/04] causing largest multi-vehicle crash in Maryland history

 [Watch the Deep Thunder forecast](#) (1MB)

- A fast-moving line of late-afternoon thunderstorms
- The combination of the “hail”, rain, sun glare and steam rising off the pavement led to at least 17 multi-car collisions, involving more than 90 vehicles (cars, trucks and one bus) within a 5-mile stretch of the highway.
- Deep Thunder forecast was available more than 9 hours before storms.
- The image is part of an animation sequence that shows the local topography colored by a forecast of total precipitation, where darker shades of blue indicate heavier accumulations.
- Above the terrain is a forecast of clouds, represented by a three-dimensional translucent white surface of total cloud water density. Within the clouds are translucent cyan surfaces showing forecasts of convective cells within the line of thunderstorms.

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