

# GIS for Insurance

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# GIS for Insurance

Insurers know that to be successful they must offer the products and services customers need at the right price. Insurance has a strong geographic component, from managing the addresses of policyholders to the location of risk to the logistics of handling claims. This is where GIS can benefit you the most.

Esri's GIS software allows you to address these challenges with geographic analysis in

- Underwriting
- Reinsurance
- Corporate governance
- Sales and marketing
- Claims handling
- Customer service

Location intelligence, such as knowing where assets are located and their proximity to hazards, is vital when developing risk profiles. GIS provides tools that allow users to combine location-based data, such as vegetation density, road access, and traffic flow patterns, to make more informed decisions. Whether you

are identifying a driver's route to work or locating a building, GIS offers a more complete and accurate picture of risk. This information helps insurers meet the needs of their customers.

Following a major catastrophe, locating policyholders can be a challenge if historical landmarks or directional markers are no longer present. Claims organizations using GIS are able to evaluate the impact on their policyholders to expedite services where needed.

Identifying potential claimants, balancing workloads, and adjuster routing are tasks that can be performed using GIS. Armed with GIS-enabled mobile devices, adjusters can efficiently locate customers and collect important details needed for settling claims. This results in improved customer service, faster and more accurate decision-making tools, and a more responsive claims support process.

In today's competitive market, understanding who your customers are and their proximity to hazards ensures you are offering the right products and services to fit their needs. Being able to map your policyholders and analyze demographics exposes patterns and behaviors that were previously concealed.

Product development strategies and internal sales tracking benefit from detailed geographic analysis combining many data sources and market assessment tools. The result is a more targeted and strategic approach to your sales and marketing efforts.

# Grabbing Hurricane Irene by the Tail

## Insurers around the World Use Interactive Mapping and Modeling to Understand Impacts of Hurricanes and Other Disasters

Because of the millions of people in its path along the East Coast of the United States, the wrath of Hurricane Irene turned into a major news story this past August.

The 2011 Atlantic Ocean hurricane season in the United States, which was more active than normal, also churned up Arlene, Bret, Cindy, Don, Emily, Franklin, Gert, Harvey, Katia, and 10 other storms.

Hurricanes and other natural disasters caused more than \$265 billion in damage globally during the first half of 2011. While emergency response and government organizations play important roles in responding to these disasters, in many cases, it is insurance companies that cover the costs of rebuilding people's houses and businesses. Insurers must understand the risk associated with the policies they cover and ensure that they can pay claims when submitted.

Esri writer Karen Richardson interviewed Mark McCoy, the insurance industry solutions manager for Esri, about how GIS data and mapping technology is being used to plan for events like hurricanes to help people rebuild their lives after a catastrophe occurs.

**Richardson:** Why is location intelligence so important in the insurance industry?

**McCoy:** Understanding the likelihood—or, as they say in the insurance business, the risk—that an event such as a hurricane, flood, or earthquake could occur and damage property or harm people is at the heart of what insurers do.

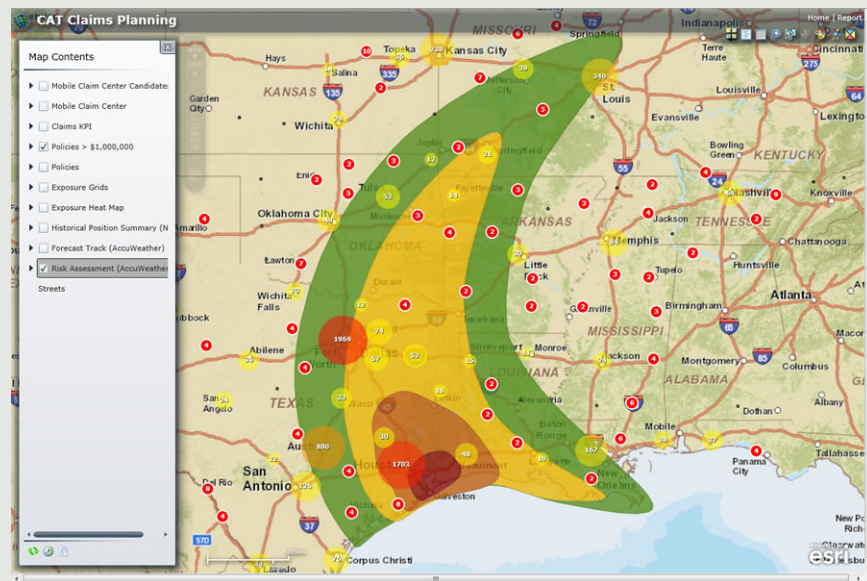
Understanding risk at a given location has two primary benefits. First, insurers can use this information to make certain their customers are as safe as possible (think about trimming brush and trees around houses and other structures in burn areas) and that they carry the appropriate coverages for any catastrophe that might affect that location. Second, insurers can accurately rate the risk to ensure they are collecting appropriate premiums for the losses that are likely to be incurred.

Location intelligence helps insurers better understand how to respond to customers by tracking, ahead of time, the severity of



Esri's Mark McCoy explains how ArcGIS helps insurers monitor catastrophic events such as hurricanes, floods, and wildfires.

an event such as a hurricane. They can view information about the storm conditions, along with policyholder concentrations in the affected areas. This allows carriers to make timely decisions to ensure they have adequate resources available to service their policyholders at a time when they are needed most. Hurricane Irene, which caused severe flooding and wind damage in states such as New Jersey, New York, and Connecticut last August, exemplifies why it is important to know the exact location of both insured properties and storm intensity. The insured loss for that natural disaster will likely be more than US\$2 billion. That means there will likely be hundreds of thousands of claims to process.



Viewing wind speed on a map helps insurers monitor how much they must pay based on the intensity of the storm at each location.

Knowing where policyholders are located and the specific path of the hurricane, insurers can accurately identify customers in the areas that were impacted by Irene. This is important, because claim severity—the monetary amount of the claim—can vary significantly depending on the intensity of the storm at the location of each claim.

Irene is a great case study. The hurricane's intensity varied as it progressed across the northeastern United States, dissipating from a category 1 hurricane when it made landfall near Cape Lookout, North Carolina, to a tropical storm as it moved inland to New York, New Jersey, and Connecticut. In North Carolina and Virginia winds were strong enough to cause significant structural damage to homes. In parts of the Northeast, including New Jersey, New York and Vermont, winds were relatively weak but flooding caused substantial damage. In states like Rhode Island, Massachusetts and Connecticut there were significant volumes of minor claims from food spoilage and tree debris removal. Being able to determine exposures in different areas as well as knowing the likely severity of the damage allows insurers to proactively plan for potential claims volume and ensure they have resources with adequate training available to assist with the influx of claims.

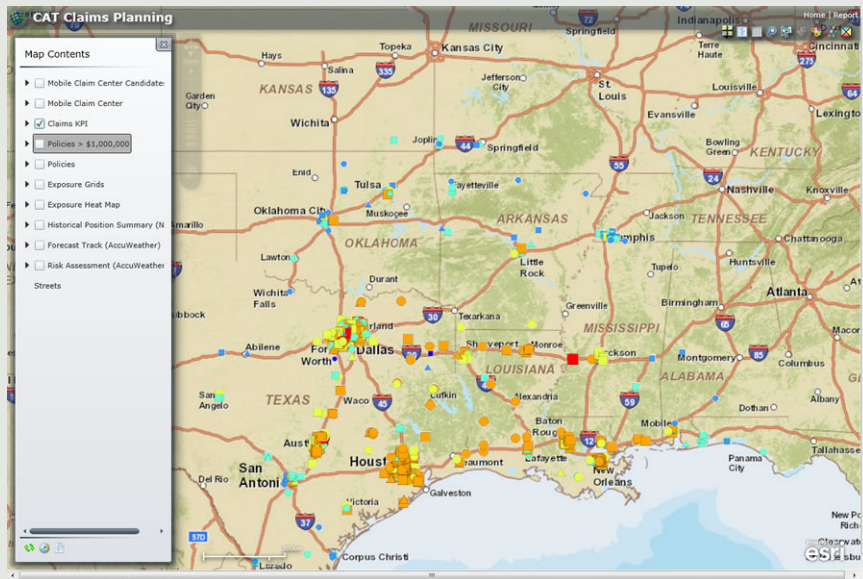
**Richardson:** What is the best way for insurers to integrate location information into their claims workflows?

**McCoy:** Many insurers use [ArcGIS Online](https://www.esri.com/en-us/arcgis/arcgis-online), a cloud-based geospatial content management system from Esri that anyone

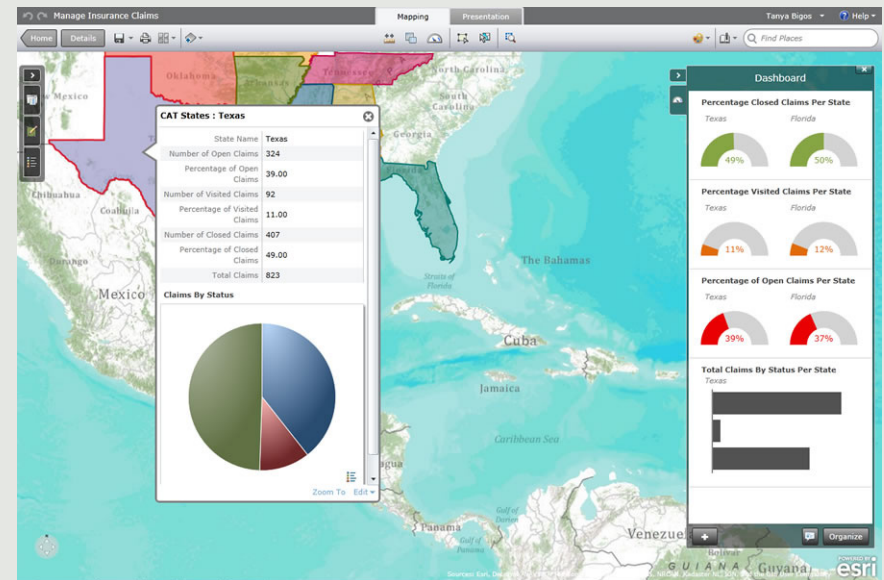


can use to create and share geographic content and build applications, then share them at no cost.

ArcGIS is also used on servers, desktops, and mobile devices at insurance companies to create applications that staff can use throughout their organizations. Tracking real-time events like Hurricane Irene and viewing geocoded policy locations simplifies and improves the accurate identification of customers in impacted areas. Insurers use this information to call on policyholders that may have experienced losses, provide



Viewing claims on a map allows insurers to proactively plan for the volume of potential claims and ensure they have staff with adequate training and other resources available to assist with an influx of claims.



GIS provides analysis and oversight for insurers. Using this custom-built dashboard, they could view the status of claims after the Texas wildfires.

immediate assistance including hotel vouchers and rental cars, and calculate what their exposed loss may be in real time.

**Richardson:** How do insurance agencies incorporate mapping of real-time events such as hurricanes into their claims management process?

**McCoy:** Amica Mutual Insurance, an insurer headquartered on the East Coast, uses real-time weather warnings brought in as a service to ArcGIS. ([Read this article](#) about Amica's use of ArcGIS). These weather warnings include radar loops that display the strongest parts of the storm. This allows claims managers to

see, as the event is happening, which policy locations the storm has affected. By viewing this on a map, the path of destruction becomes very clear, very quickly.

Once the storm has passed, the insurer's staff plots claims on a map, as they are reported, using ArcGIS. This immediately gives claims managers the precise areas of damage to decide what resources they need to help their policyholders and quickly start the claims process.

**Richardson:** In many instances, catastrophic events that cause so much insured loss are insured by reinsurers. Do they use location and GIS to help with their claims management process as well?

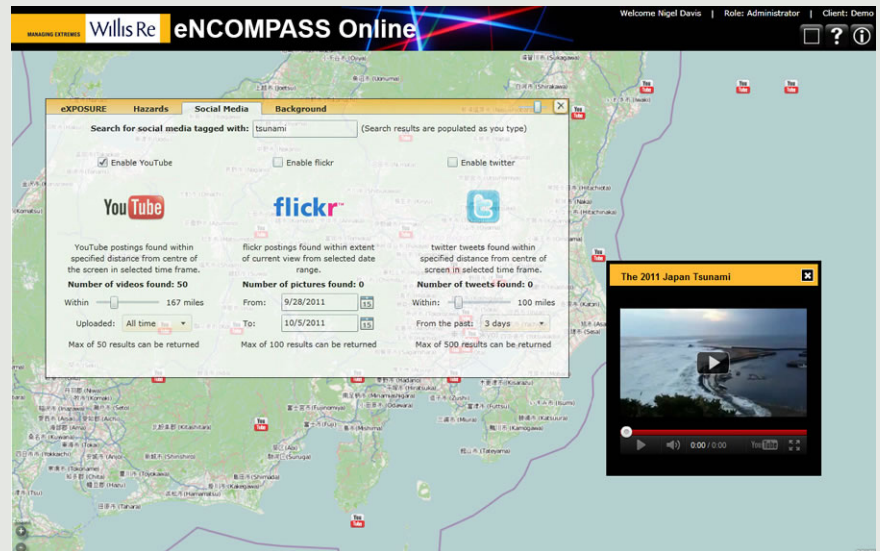
**McCoy:** Absolutely. Reinsurers provide insurance to insurance companies. Using ArcGIS Online for cloud-based mapping and analysis, it is easy to connect with clients around the world and share data and analysis.

Willis Re, one of the largest reinsurers in the world, uses ArcGIS to do exactly this. Willis Re's clients, insurance companies, log on to its system, called eCOMPASS Online, to visualize all policies that were affected by a catastrophe such as Hurricane Irene. After Willis Re's clients find and select those policies, descriptive information, such as the property owner and the value of the policy, can be viewed and analyzed further if necessary.

**Richardson:** The use of social media during disasters like Hurricane Irene has received a lot of media attention lately.

Do insurers use social media to assist with their catastrophe response?

**McCoy:** We are living in a time of unprecedented information availability. Insurers used [online interactive maps](#) provided by Esri or created their own on ArcGIS Online during Hurricane Irene. Willis Re is again a great example. They have been pioneers in mapping social media and making crowd sourced data actionable.



Willis Re's eCOMPASS Online allows clients to map social media, making crowd-sourced data available for quick analysis of what is happening near their policyholders.



ArcGIS allowed them to view social media posts in conjunction with frequently updated storm tracking information from weather services and earthquake activity from the USGS. Alongside detailed local street and topographic maps, this provided a new way to assess local conditions in the wake of major tropical storms and earthquakes across the globe during 2011. By turning on the geolocation feature of social media platforms like Facebook, Twitter, Flickr, and YouTube, people can annotate their posts with exact locations. While one or two of these posts may not be alert worthy, a large number coming from one location can indicate that there is a severe problem or many people are affected. A scattering of many posts distributed across a vast location can be analyzed by creating a heat map in ArcGIS of those posts, which can more easily display clusters of information for quicker analysis. Using this information, insurers might better prepare field crews to respond to situations such as impassible roads, power failures, or other issues that may affect their service to clients.

**Richardson:** Do you expect that the trend of using mapped information to more quickly and accurately process claims will continue?

**McCoy:** Yes, I do. Applications like ArcGIS Online provide an analysis and oversight solution for insurers. ArcGIS Online combines authoritative data from storm track modeling and weather services with social media to provide a complete picture of the widespread impacts of natural disasters. The insurance

industry can use the most up-to-date information, historical data, and what-if analysis to understand and manage exposure while providing better service to its clients.

Visit [esri.com/insurance](http://esri.com/insurance) to learn more about GIS for insurance.

(This article originally appeared in the November 2011 issue of *ArcWatch* e-magazine.)

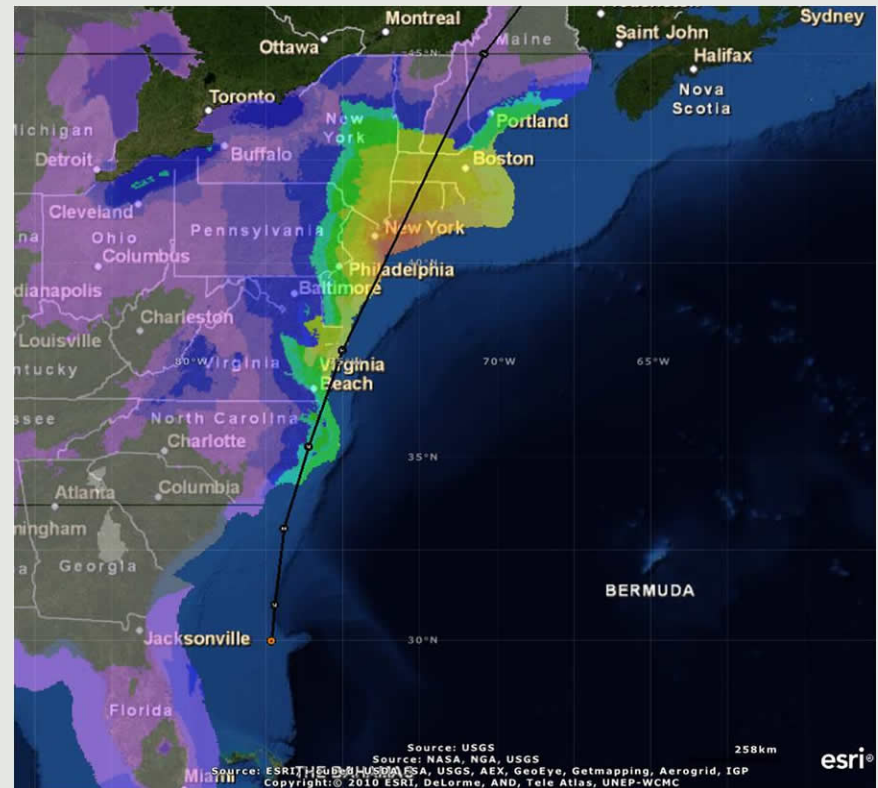
# Storm Chaser

## Amica Mutual Insurance Maps Real-Time Data, Providing Better Service to Policyholders

By Karen Richardson, Esri

Because many [Amica Mutual Insurance](#) policyholders owned homes or other property in the path of Hurricane Irene, the company wanted to ensure that it had adequate resources to provide services when these people needed them most. Amica, a provider of personal insurance for autos, homes, and boats, is headquartered in Lincoln, Rhode Island. Known in the industry for its high standard of customer service, the company has been awarded several J.D. Power and Associates customer satisfaction awards.

Amica monitored Irene last summer as the hurricane moved up the East Coast of the United States, using real-time weather warnings from the National Oceanic and Atmospheric Administration (NOAA). This information, which included live radar loops focused on the strongest parts of the storm, was brought into Esri's ArcGIS Online as map services, a standard way to view location-based information on the web. By viewing live data streams and comparing them with internal policy data, Amica personnel were able to watch the storm in real time and quickly identify which areas were likely to generate the most claims.



Amica used ArcGIS to track Hurricane Irene and view forecasted wind speeds from the National Oceanic and Atmospheric Administration's NowCast Web Map Services. This map displays the storm one day prior to making landfall in North Carolina.

Before their eyes, the path of destruction passed through North Carolina, Virginia, and all the way up the East Coast. “Our exposure along the forecast track was significant, and we immediately knew this would be a big event for us,” said Adam Kostecki, a claims examiner in the Property Loss Division at Amica Mutual Insurance.

When tracking Irene, Kostecki combined real-time event tracking and geocoded policy locations displayed in ArcGIS. Taking a NOAA map service that forecasted wind speed and creating it as an ArcGIS web mapping service (WMS), Kostecki was able to input where Hurricane Irene was moving in real time on a map, along with Amica’s plotted policies. He and other personnel drew lassos around policies in the areas they were interested in. The lasso Select tool allowed Amica staff to select multiple policies in contiguous areas without being restricted by administrative or geographic boundaries. Combining both datasets—wind speed high enough to cause damage plus policies in the area—Amica found out the number of policies that might be at risk.

By viewing the policy locations along with the area of impact, Kostecki could find out exactly which policies were in the path of the event and generate reports for claims adjusters quickly. “Simply by viewing and exploring the data in ArcGIS, I simplified and improved the accurate identification of customers in Hurricane Irene’s impact area,” said Kostecki.

For insurers, knowing precisely where damage has occurred is paramount in developing a timely and appropriate response. The quicker an insurer can respond to claims, the faster people can rebuild and continue on with their lives. Being able to determine exposures in different areas, as well as knowing the likely severity of the damage, allowed the Amica claims department to proactively plan for potential claims volume. “Once Irene passed, we plotted claims as they were reported,” said Kostecki. “Waiting days for first-responder reports, damage models, or even post-event aerial imagery just isn’t an option anymore when responding to catastrophes.”

Knowing how many policyholders might be affected helped Amica better determine how many adjusters were needed and where they should be sent after Hurricane Irene passed. From the information gathered in ArcGIS, the staff was able to generate a quick summary and export the information into a report. This information provided a better picture of how many claims Amica might need to respond to in a certain geographic area.

“We had a much better idea of what our claim potential was going to be after this event,” said Kostecki. “And even better, we had this information ready to go hours after the storm.”

Amica implemented the use of GIS in claims about five years ago, in order to better estimate the company’s exposure after a catastrophic event such as a hurricane, earthquake, wildfire, or tornado. Knowing this information helps Amica ensure that it is

appropriately staffed to handle the volume of claims that might be reported. Since implementing GIS technology, Amica has realized that pushing this technology to the front lines could have a profound impact on the way it services its policyholders. Kostecki explained, “It’s a technology that our staff embraces—because it makes their jobs easier, and it allows them to be more efficient.”

For more information on how ArcGIS is used in the insurance industry, visit [esri.com/insurance](http://esri.com/insurance).

(This article originally appeared in the November 2011 issue of *ArcWatch* e-magazine.)

# Putting the Pieces Back Together

From Crowdsourcing to Tsunami Zones, Willis Re Relies on GIS for Accurate Event Response

## Highlights

- Using ArcGIS, insurance risks in a tsunami zone can be easily identified.
- GIS can help brokers find all the Flickr posts within 100 meters of an insured property.
- eCOMPASS Online streamlines policy data capture to include addresses, not just postal or ZIP Codes.

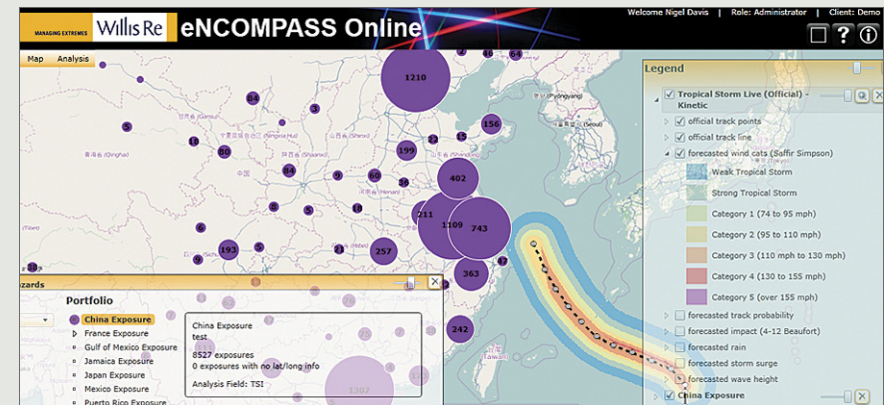
A string of natural catastrophes since January 2010 has cost the insurance industry billions of dollars worldwide and has forced insurers and reinsurers to reevaluate their risk management and claims response processes. Willis Re, headquartered in London, England, serves the risk management and risk transfer needs of a diverse, global client base that includes all the world's top insurance and reinsurance carriers, as well as national catastrophe schemes in many countries around the world.

Following the magnitude 9.0 earthquake that rocked Japan on March 11, 2011, and set off a tsunami, Willis Re quickly went to work gathering critical information for its insurance clients. Using an online system called eCOMPASS, Willis Re provides data on policies and hazards and other related spatial information to its

clients to view and analyze. In turn, insurers use the information to understand clients' needs, analyze potential insured losses, and pay out claims.

## Preparing for the Worst

Willis Re's core focus is to provide insurance companies with a superior understanding of the risks they face. When the organization anticipated that a large number of hurricanes would make landfall last year, it was inspired to build eCOMPASS



Willis Re's eCOMPASS Online includes data that covers major perils worldwide, including live feeds like this tropical storm tracker.



to estimate the potential impact of large tropical storms and exposure for clients.

Willis Re's clients can conveniently log on to eNCOMPASS Online from anywhere in the world and quickly visualize all policies for locations in the path of a storm. Once the affected policies are selected, all the descriptive information associated with those policies becomes available for further analysis and action. Using this data, loss adjusters, as well as the policyholders themselves, are contacted, ensuring that response and customer service are accurate and timely.

The software on which eNCOMPASS is built is ArcGIS, which was chosen following a deliberate and intense review of potential technologies.

Willis Re is one of the first in the insurance business community to understand and implement a solution that integrates all levels and supports open access, collaboration, and transparency. It is able to do this because it has access to authoritative data and can create high-quality maps that support visualization, spatial analysis, and models through a rich application.

eNCOMPASS Online includes data that covers major perils worldwide, from flood zones in Latin America to earthquakes in New Zealand. Willis Re staff use live feeds for real-time or near real-time information on events. For example, the United States Geological Survey (USGS) live feed is used to display recent significant earthquake activity around the globe.

## Events Increase Data Appetite

When the earthquake and subsequent tsunami hit Japan, Willis Re staff derived a bespoke—or custom-made—estimated representation of the tsunami zone using GIS geoprocessing, a digital elevation model (DEM), and ground observations. The DEM was derived from Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) sensors. ASTER provides remotely sensed terrain data that is easy to access and of a reasonable resolution (30 m) and wide coverage. Land elevation and slope were derived to analyze where inundation from water would take place. This tsunami dataset was loaded in eNCOMPASS Online soon after the event for analysis purposes. Willis Re staff also provided earthquake ShakeMaps from USGS and displayed this data on top of a world topographic map from Esri.

One of the powerful analytic functions of the solution is the tsunami impact footprint. Using a mapcentric view of risks in a portfolio makes it much easier to identify insurance risks impacted by the tsunami. Using ArcGIS, risks in the tsunami zone can be easily identified, extracted, and exported for offline loss estimation.

Finding the correct location of policyholders was more difficult. Often, insurance companies hold policy data aggregated in various levels, such as administrative boundaries. Instead of providing point data for each policy at the street address level,

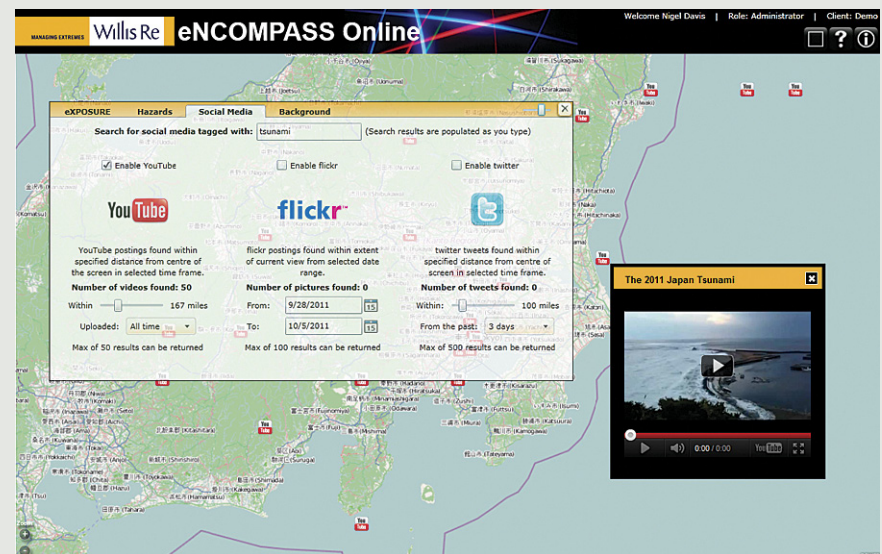
many insurers only hold policy location information by postal codes, counties, or municipalities. This is often true in Japan, as well as many other countries. Poor addresses are the result of incomplete data capture, poor addressing systems for a particular country, or perhaps high purchase costs for geocoding to high resolution in a particular country. While many insurers believe that the cost of creating the geocodes surpasses the benefit of doing so, not providing accurate address-level information means that there is not much to work with when estimating damage. Willis Re worked with clients in Japan to find the most accurate location information it could. Coupled with data on flood inundation, Willis Re was able to begin providing the services required to assist people in rebuilding their homes and businesses. Next time, hopefully, the process will be easier.

After the various catastrophes this year, Willis Re observed an increase in the appetite for better address data to use in tools, such as eCOMPASS Online, to facilitate decision making. Insurers have begun capturing policy data, including the address, not just a postal or ZIP Code, and passing this up to the broker. Nigel Davis, executive director of product development at Willis Re, says, “Unfortunately, a disaster tends to emphasize the importance of having better data.”

## Remote Sensing Versus Near Sensing

Another aspect assisting in collection of more accurate data is a phenomenon called volunteered geographic information.

“Suddenly, we have all these people on the ground who are connected by virtue of their personal devices: laptops, smartphones, digital assistants—you name it,” says Davis. “Instead of remotely sensed data, we are getting ‘near-sensed’ data from people who are using social media to report on events as they happen via text messages or photos they take on the ground.”



Visualizing social media posts allows insurers to get reports on events as they happen.

If these on-the-scene reports contain a location—and many do—this information can be harnessed. Location-aware social networks have a huge potential to enable people in a community

to help themselves during a crisis. Spatial analysis makes crowdsourced data actionable. While one Flickr, Twitter, or Facebook post may not be critical, if there are many posts, a heat map from data collected on the ground pertaining to property damage, hazards, evacuations, power outages, and help and services can be collected from the best source of data—those affected. Visualizing this data as hot spots or trends gives an idea of the density of reports coming from a single area. This can assist in allocating resources to those who need the help most or aid the validation of whether incidents reported are corroborated by others, adding increased clarity to a situation. More than just dots on maps, hot spots organize lots of data and quickly provide a better understanding of the data. Reports can also be filtered by date to see daily trends. Providing this information in a spatial context can connect individuals and optimize the use of trained resources.

“GIS can help brokers find all the Flickr posts within 100 meters of an insured property, for example, to get real understanding of damage and claims from those actually in the area,” says Davis.

## From Crowd to Cloud

The Internet is a natural platform for geospatial analysis. Many participants can easily move from data sharing to creating shared services in this environment. The technology makes it possible: collaborative computing, service integration, mashups, user-contributed content, and distributed data management are some

of the many ways that access has been opened to many new users and applications. While the technology opens the gates, it takes more than technology to create applications that are useful. Access to authoritative data and committing the platform resources allow communities to use the technology in the manner they need to accomplish their tasks.

For more information, contact Nigel Davis, executive director, Team Leader Platforms and Delivery, Global Analytics, Willis Re (e-mail: [davisn@willis.com](mailto:davisn@willis.com)), or visit [www.willisre.com/Risk\\_Quantification/Risk\\_Management/Analytics](http://www.willisre.com/Risk_Quantification/Risk_Management/Analytics). To learn more about how GIS helps insurers, visit [esri.com/insurance](http://esri.com/insurance).

(This article originally appeared in the Winter 2011/2012 issue of *ArcNews*.)

# Counting on Risk

## Insurance Underwriters Turn to GIS for More Accurate Risk Analysis

### Highlights

- ArcGIS Server helps analysts evaluate the risk of fire peril and provide the data for FIRESAFE.
- ArcGIS and Microsoft SQL Server help maintain very large databases with millions of records.
- ArcGIS Server creates, manages, and distributes Explore's GIS services over the web.

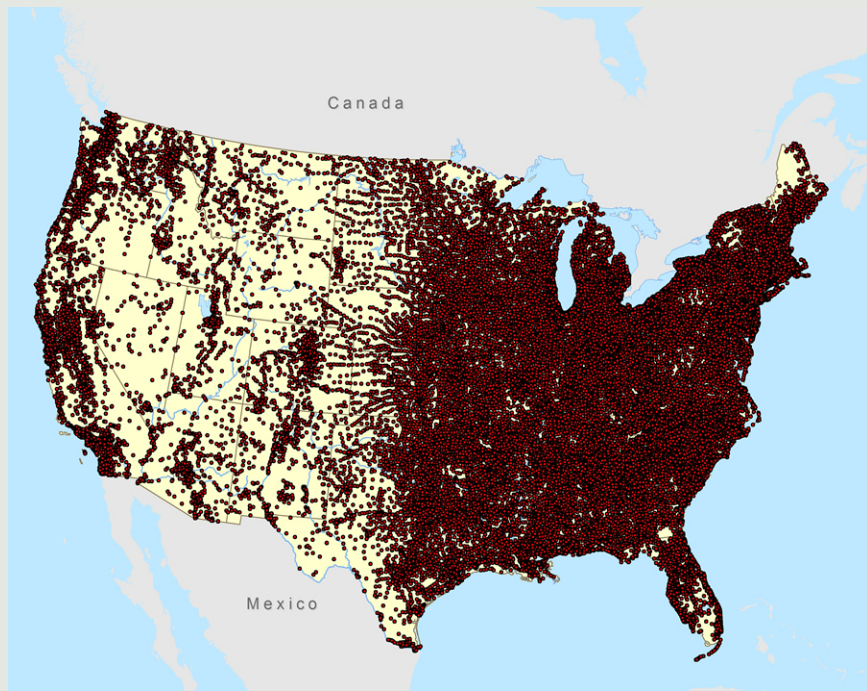
To build insurance pricing models that are equitable and fair depends heavily on accurate location-based information. Insurers need solutions that effectively organize, manage, and analyze extremely large datasets that can be used to measure risk. These include such information as proximity to hazards and emergency services, traffic patterns, commute routes, assets, and crime. The intelligence gained from analyzing all these factors, along with the location of a policy or claim, means better pricing methodologies for the insurance industry.

Based in Eagan, Minnesota, Explore Information Services aggregates, analyzes, and delivers location-based risk intelligence to insurance carriers in the United States. For more than two decades, the company has built online solutions that

are integrated into insurance underwriting and rating workflows. Explore's solutions help insurers reduce expenses and better align the price of each policy to actual risk exposures using, among other factors, the location of the policy. "GIS allows us to quickly organize a vast amount of location-based data for more accurate modeling," says Deric Morgando, senior GIS and data acquisition analyst from Explore.

The first solution Explore created using GIS and models was the automated fire protection information service FIRESAFE ([www.exploredata.com/firesafe.aspx](http://www.exploredata.com/firesafe.aspx)). FIRESAFE organizes and analyzes data Explore has gathered about fire stations across the United States, including personnel, staffing, equipment capabilities, and jurisdiction boundaries. From this analysis, Explore produces emergency response times to the location of the property and performs the corresponding risk analysis.

"As we added data for fire stations from across the country, the analysis started to get pretty complex," says Morgando. "It became readily apparent that our previous in-house solution was not capable of managing the task."



A national fire station GIS map output.

## Pushing the Limits with GIS

Morgando had previous experience with ArcGIS software. “I learned the software while working on my master’s at Southern Illinois University,” he says. “I knew the capabilities of the software and that Explore could really benefit from its open environment and analytic capabilities.”

Morgando came to Explore from Ducks Unlimited, an organization that leads the charge in wetlands and waterfowl

conservation. While no longer analyzing wildlife habitats, Morgando’s premise for working with geospatial data is the same at Explore: to understand a subject’s location and the effect of its surroundings. Today, he applies this knowledge to manage a team of GIS professionals who provide spatial modeling throughout Explore.

Morgando now uses ArcGIS Server and Microsoft SQL Server to create and maintain FIRESAFE. ArcGIS Server can create, manage, and distribute GIS services over the web to support desktop, mobile, and web mapping applications. ArcGIS Server helps analysts evaluate the risk of fire peril and provide the data for FIRESAFE. Depending on the solution, hundreds of attributes are assigned to a particular location and analyzed, then risk scores are assigned. Using ArcGIS and Microsoft SQL Server, Morgando works with very large databases, many containing millions of records. “We’ve really pushed the limits of Microsoft SQL Server,” he explains.

After integrating ArcGIS into FIRESAFE, Explore built additional solutions including Auto Location Insight. Auto Location Insight helps insurance carriers assess location-based risk for automobile policyholders derived from their garaging address and the likely commute routes in the area. Analysis is done with ArcGIS Server and Esri StreetMap Premium—a dataset from providers and Esri Partners NAVTEQ and Tele Atlas.



Street addresses are converted into spatial data that is displayed on a map; analysis can then be run against that data to find the shortest or fastest distance between locations. The commute time is highly accurate due to the information provided with the street networks. Historical traffic data, such as the average travel speed for roadways to create more accurate arrival time

<b>NEAREST FIRE STATION (S):</b>	
FIRE STATION #1	
USA	
<b>RESPONDER: YES</b>	
<b>PROTECTION STATUS:</b> UNPROTECTED	<b>TYPE:</b> FT/VOL
<b>DRIVE DISTANCE TO STATION:</b>	7.32 MILES
STRAIGHT LINE DISTANCE	5.70 MILES
MANHATTAN DISTANCE	6.42 MILES
FIRE STATION #2	
USA	
<b>PROTECTION STATUS:</b> UNPROTECTED	
<b>DRIVE DISTANCE TO STATION</b>	18.89 MILES
STRAIGHT LINE DISTANCE	12.61 MILES
MANHATTAN DISTANCE	14.82 MILES
FIRE STATION #3	
USA	
<b>PROTECTION STATUS:</b> UNPROTECTED	
<b>DRIVE DISTANCE TO STATION</b>	19.21 MILES
STRAIGHT LINE DISTANCE	14.38 MILES
MANHATTAN DISTANCE	20.17 MILES

An example of a FIRESAFE report.

projections and avoid congestion based on day and time, can be applied to the modeling.

The solution provides a more accurate risk assessment by using the actual address rather than by modeling traditional ZIP Code-level territories. Additional georeferenced data can be analyzed, including traffic, weather, and crime. Morgando's staff has achieved higher levels of accuracy with ArcGIS Server and StreetMap Premium.

"What I really like is the fact that I can work with a combination of data from more than one provider and build my own geocoders from so many different sources," says Morgando. "We've worked with up to 20 different geocoders at a time, which has minimized the number of unmatched addresses."

### Advantages Found in Data Accuracy

Explore's solutions help insurance carriers fine-tune premiums to maximize their profitability. "We've experienced significant growth in our business over the last few years. Nearly two-thirds of the top 100 insurance carriers rely on our solutions to effectively price the products they sell," Morgando says.

Ironically, Explore's clientele, insurance carriers, don't even see a map. Most of Explore's GIS work is done on the back end of the solutions it provides. Explore's actuarial staff takes the geocoded information that is created and implements it into the company's predictive analytics solutions. The end result is delivered to the

customer in various forms, such as a table with risk scores that carriers use to more accurately price their policies.

With GIS, Explore's service to customers has also increased. Before switching to ArcGIS, the entire process of updating, rebuilding, and republishing street networks to analyze policies required the system to be taken offline each quarter. This could take the time equivalent to one full-time employee's work for a month. Now, the entire process takes less than two days.

Morgando has been able to spread the use of GIS and geospatial data throughout Explore. While the ease of using an open environment like ArcGIS has opened the door to GIS use throughout the organization, Morgando's insight and expertise have helped other teams implement the technology in their solutions.

For more information about Explore, contact DeLonn Crosby, marketing director, Explore Information Services (tel.: 651-405-4272, e-mail: [delonn.crosby@exploredata.com](mailto:delonn.crosby@exploredata.com)) or visit [www.exploredata.com](http://www.exploredata.com). To learn more about how GIS is used in the insurance industry visit [esri.com/insurance](http://esri.com/insurance).

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(This article originally appeared in Spring 2011 issue of ArcNews.)

# Insuring America's Farmland

## The USDA's Risk Management Agency Uses Actuarial Maps for More Equitable Premium Pricing

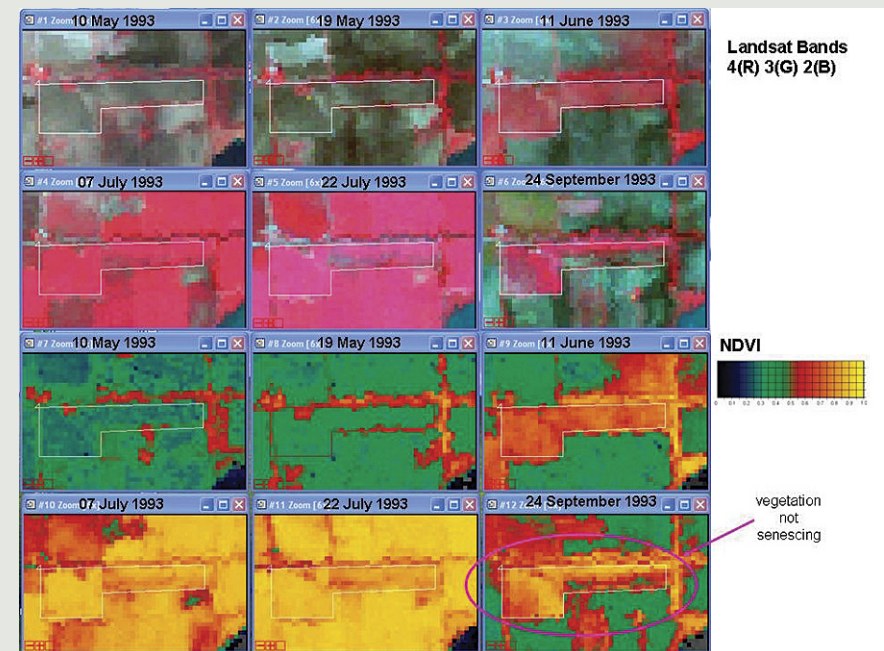
### Highlights

- GIS helped RMA save \$20 million a year and lower premiums for regular rated land.
- In cases of suspected fraud or abuse, the agency uses imagery to examine a producer's crop and reconstruct the growing season.
- RMA uses GIS to drill down past the county designation to evaluate designated subcounty insurance offers.

The United States Department of Agriculture's (USDA) Risk Management Agency (RMA), based in Washington, D.C., helps food producers manage their business risks through effective market-based risk management solutions. As part of this mission, RMA manages the Federal Crop Insurance Corporation (FCIC) to provide American farmers and ranchers with crop insurance. RMA develops and approves the premium rate, administers premium and expense subsidies, approves and supports products, and reinsures the private-sector insurance providers through the Standard Reinsurance



Agreement. In crop year 2009, RMA managed nearly \$80 billion worth of potential liability.



The United States Department of Agriculture Risk Management Agency (RMA) uses forensic remote sensing to examine the growing conditions, crop health, and vigor within fields.

FCIC relies on actuarial maps for crop insurance to designate different areas within a county that have varying amounts of risk due to factors such as flooding or highly erodible soil based on type. These maps are used by 16 private-sector insurance companies that sell and service FCIC policies. While RMA has been using hard-copy actuarial maps for decades, it had no way to validate whether an agent or insurance company was reporting accurate claims or the claims reported were in the correct areas.

Inaccurate reporting skews the adjustment of the risk rate for producers and can create unnaturally high premiums in areas where it is not necessary. Because of this, RMA incorporated GIS to manage the information and analyze the program. Using GIS has helped RMA save \$20 million a year and lower premiums for regular rated land, which in turn reduces the government subsidy on insurance across all acreage.

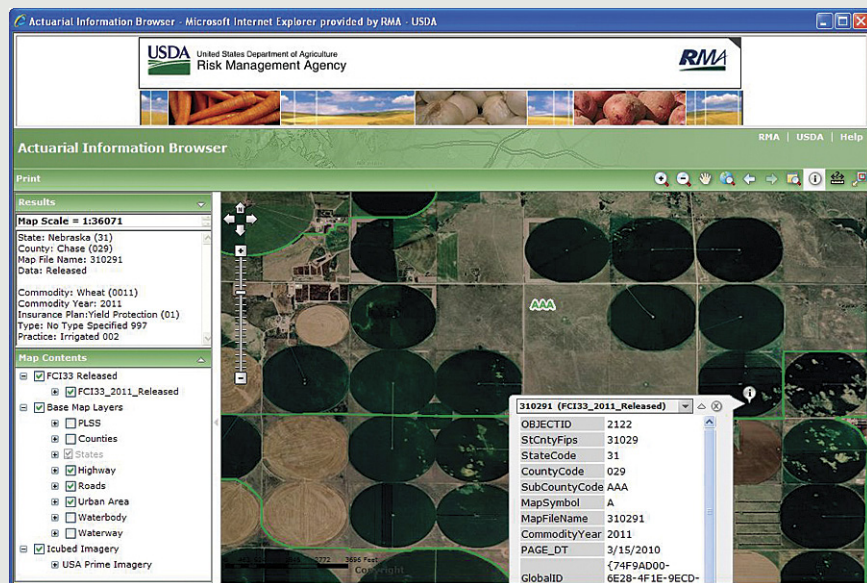
## **Saving Money and Time**

Since most federal agencies are standardized on Esri software and data formats, RMA chose to incorporate Esri software in the early 2000s to begin the FCI-33 Actuarial Map Digitizing Project to convert hard-copy maps, using aerial photos and USDA Common Land Unit data, into GIS. This process took several years, and at the end, RMA's 10 regional offices digitized more than 1,500 maps into shapefile format.

Managing such a large number of digital maps was difficult, prompting USDA to upgrade to ArcGIS when it was released and use a personal geodatabase to manage the digital files. The geodatabase allowed it to aggregate the maps into 10 more manageable feature classes instead of the 1,500 stand-alone maps. In 2008, RMA upgraded to ArcGIS Server, which allows it to more easily share the data throughout its regional offices using a central server without keeping copies of maps on regional office computers.

RMA uses the digital actuarial maps to cross-check and approve maps generated by the regional offices. "The ability to validate these automatically instead of by hand has saved us so much time," says Greg Oetting, risk management specialist, USDA-RMA, Topeka Regional Office.

The actuarial maps for 2010 and previous years are published as PDF files on the Internet for the insurance companies to view. In 2011, RMA rolled out an interactive map viewer that is hosted publicly. Insurance companies have access to the data and can host it internally. "This will be a real time-saver to RMA," says Oetting. "Creating the map viewer means we don't have to spend time and man-hours building out and proofing 1,500 individual PDFs."



The RMA Actuarial Information Browser map viewer is used by farmers, crop insurance agents, approved insurance providers, and RMA to view insurance offers at a subcounty level.

## Analyzing the Crop Insurance Program

Over the last few years, RMA has been incorporating more satellite imagery into the program. “A majority of the maps we create are located in flood-prone land, which has a higher risk than any other insurance peril,” states Oetting. Unlike a Federal Emergency Management Agency map, however, where land is designated as a flood risk or not, RMA is interested in whether a certain land floods only during the specified growing season. Floods that occur in the winter months on a producer’s land won’t

have any impact on the insurance policy for crops planted in the spring because the land is not being used for crops at that time.

Satellite imagery provides a good source to find the extent of floods. “Flooding near major rivers like the Mississippi and Missouri are easy to determine,” says Oetting. “But it’s harder to determine flood extent and frequency on smaller tributaries. Using GIS to overlay satellite imagery provides an accurate visual of where exactly the flood happened.” RMA can check areas that might be designated as high risk when, in reality, they weren’t flooded during the actual growing season.

GIS is also used to update maps quickly and help RMA with the appeal process. If a producer doesn’t agree with a particular rating class, he can appeal it. For example, a producer may argue that the land he is cultivating is not flood prone. The ability to pull up satellite imagery for the day the river was at its highest during the year and see that, in fact, there was no water on the producer’s land allows RMA to rectify the misclassification.

## Transparency Leads to Equitable Pricing

Having the maps standardized across the country also helps with creating fair and equitable pricing and makes the process transparent to the producers. RMA has created handbooks for each office so it can standardize editing performed on maps.

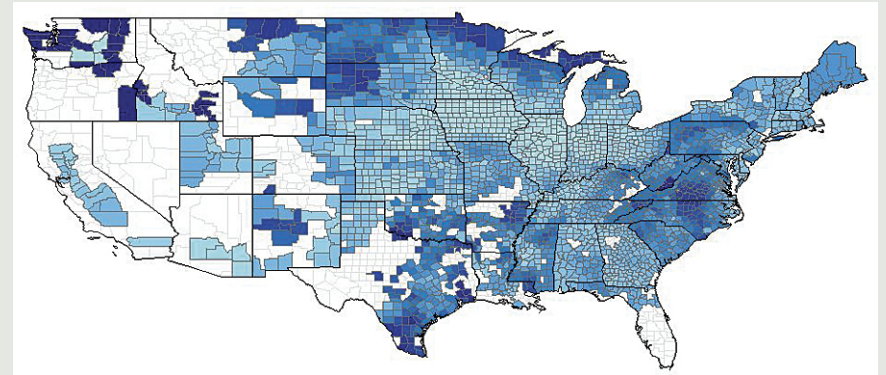
This is important, since where crops are physically located dictates the type of coverage farmers are offered. Insurance



offers are based on the crop yield for a particular parcel of land. This information is garnered from the producer's production history, the harvest-time futures price set at a commodity exchange before the policy is sold, and the type of crop planted. The policy will pay an indemnity if the combination of the actual yield and the cash settlement price in the futures market is less than the guarantee.

Using GIS to drill down past the county designation, RMA can designate subcounty insurance offers that are considered high risk, which excludes the insurance history from the calculations that are used to determine the premium rates for the entire county. The end result is a premium rate decrease for most producers, as more high-risk acreage gets reported correctly.

In the past, reviewing premium rates involved colored pencils and large pieces of construction paper on which RMA staff would manually write down all the components of the premium rate by county. Now, GIS can be used to thematically map areas and look for the anomalies. For example, if rates are going down all over Kansas except one county, RMA can not only see the discrepancy quickly but also investigate why. "Trying to answer the why was impossible before," says Oetting. "We would have to find all the documents and papers and then send someone out for a manual check just to chase down the answer. With GIS, everything is linked and very easy to find."



Using its rate review mapping tool, RMA can easily visualize how rating components flow across the nation.

In cases of suspected fraud or abuse, RMA uses imagery to examine a producer's crop for a particular time frame and reconstruct the growing season. Using imagery allows RMA to perform, in essence, forensic remote sensing at any location to see what actually happened on the ground. RMA can pull up the imagery and overlay the digitized map of the farm field boundary. RMA agents can see if the land has been planted as the producer said it would. Since images are captured every 16 days, gathering this visual evidence is important because it provides the evidence needed in a sound, scientific protocol.

"The vast majority of farmers follow the rules," says James Hipple, PhD, physical scientist, USDA-RMA, Office of Strategic Data Acquisition & Analysis. "Remote sensing and GIS are part of the toolbox RMA utilizes in creating an actuarially sound agricultural safety net for America's producers while simultaneously

minimizing the amount of fraud, waste, and abuse in the program.”

For more information, contact RMA's External Affairs office at [rma.cco@rma.usda.gov](mailto:rma.cco@rma.usda.gov).

(This article originally appeared in the Spring 2011 issue of *ArcNews*.)

# Bringing Value to Customers

## USAA Champions GIS through Its Enterprise

*"You truly realize the relationship between a big ocean and a tiny house when seeing them on a map."*

—Manny Rios, USAA

The seventh annual Esri Business GIS Summit kicked off on Sunday, July 11, 2010, with presentations, sessions, and a social for a crowd of enthusiastic attendees. Esri's Karen Richardson sat down with one of the keynote speakers for the summit—Manny Rios, a senior vice president for Property and Casualty Underwriting at United Services Automobile Association (USAA)—to discuss his vision of GIS.

### **Esri: Please tell me a little bit about USAA.**

**Rios:** The company started humbly in 1922, when 25 U.S. Army officers in San Antonio, Texas, established their own auto insurance association, USAA, because auto insurers considered military service personnel too great a risk. Today, USAA is a fully integrated financial services provider, offering a wide range of investments, banking, insurance, and financial advice to all who have ever honorably served and their families.

USAA strives to understand and anticipate the needs of its members and continually develops innovative solutions to



make their lives easier. Throughout its history, the association pioneered the use of direct mail, automated policy administration systems, and 1-800 and satellite communications. Today, USAA is a leader in mobile phone applications for banking, insurance, and investment transactions and in 2009 became the first to permit customers to deposit checks with a smartphone camera.

**Esri: So, the use of GIS technology is one of your next big things?**

**Rios:** Absolutely. We're always looking for new ways to enhance member service, increase operational efficiency, and bring more value to our membership.

**Esri: How did you learn about GIS?**

**Rios:** I first learned about GIS technology early in my career as an underwriter. The idea of being able to see the precise location of homes and their proximity to hazards such as flood zones or wildfires was an exciting prospect. I was introduced to a whole new way of using technology to understand risk management.

Throughout my career, I learned that GIS is best comprehended with images. Visuals are more compelling storytellers than spreadsheets or databases. You truly realize the relationship between a big ocean and a tiny house when seeing them on a map.

Prior to joining USAA, I served as chief underwriter at a property insurance Internet startup company, and location is everything when you're only writing property insurance.

**Esri: How did your understanding of GIS translate when you came to USAA?**

**Rios:** I like to motivate people and teams to take GIS to the next level with a focus on member safety and loss prevention.

USAA seeks to help members anticipate and prepare for the natural perils they may face around the country. Helping our members understand what they're up against and giving them the tools and information to help them make informed decisions was the answer.

USAA's underwriting departments quickly adopted and consistently demonstrated the effectiveness of GIS. I spoke in terms of the immense benefits GIS would provide *when* implemented, not *if* implemented.



**Esri: During your keynote, you spoke of GIS as being like kids' building blocks—I think everyone can relate to that analogy.**

**Rios:** I have blocks from more than 30 years ago and, you know, if you buy blocks off the shelf today, you can use them with the ones you had back then. That's the thought around our own GIS strategy. It's an infrastructure that stands the test of time, just like blocks, and today's are really cool! One block at a time, we've built momentum for GIS applications and garnered leadership support at USAA.

**Esri: You do quite a bit of work with other organizations including the Institute for Business and Home Safety, Federal Alliance for Safe Homes, and International Association of Fire Chiefs. Can you talk about the work you are doing?**

**Rios:** USAA is assisting in the development of programs that help manage and minimize catastrophic loss. Additionally, USAA now has a stake in making a broader difference through my service on the board of the National Alliance for Public Safety GIS Foundation. GIS technology represents a leap forward in community preparedness to help solve some of our country's greatest emergency preparedness challenges.

Coordination among safety organizations and emergency responders before, during, and after a crisis is paramount to reducing risk and ensuring safety and property protection. GIS can help public safety organizations and emergency responders

capture, manage, analyze, and view geographic images and data and thus greatly improve their preparation and response.

**Esri: What words of wisdom can you leave with other managers and leaders in organizations interested in spearheading an effort to engage with GIS technology?**

**Rios:** It's essential to help the leaders in your organization understand that GIS gives you precision.

I strongly advise patience in building momentum. The more people hear over time, the more they start to connect the dots. Then all of a sudden, they're saying, "Hey, *when* is this new solution going to be done?" as opposed to "Will it get done?"

(This article originally appeared in the Fall 2010 issue of *BusinessGeoInfo*.)



# Esri's Online Maps Offer Companies a Clear Picture of the Crisis in Japan

By Karen Richardson, Esri Writer

After a magnitude 9.0 earthquake rocked Japan on March 11, 2011, and set off a tsunami, the catastrophe risk modeling firm EQECAT, Inc., headquartered in Oakland, California, quickly went to work gathering information for clients.

Besides collecting economic and scientific data related to the disaster, EQECAT needed digital maps that showed the tsunami flood zones, where aftershocks were located, damaged areas including roads, and the location of population centers in the affected areas.

The maps were created by Esri staff using [ArcGIS Online](#), a platform anyone can use to create and share geographic content and build GIS and mapping applications. Accessible via ArcGIS.com, ArcGIS Online hosts maps, applications, and tools published by the GIS user community that can be shared freely.

## Quick Access to Maps and Data

EQECAT knows the power of seeing where natural disasters strike. The consulting firm helps clients in the insurance, financial, and commercial industries better understand the risk of earthquakes, typhoons, and tsunamis so they can better manage their business operations.



Satellite imagery provides a very quick and accurate sense of what happened on the ground after a catastrophic event, including where damage occurred. This image shows the location of impassable roads in Japan after the recent earthquake and tsunami.

Just seven days after the earthquake struck the Japan Trench megathrust fault off Honshu's east coast, EQECAT was in action. The company gathered staff and clients from around the world for a report called a Catastrophe Watch, or CatWatch, that delved into what occurred.

Broadcast via a webinar, this report on the earthquake detailed postevent effects including economic and insured losses. The CatWatch was attended by primary insurers, reinsurance agencies, brokers, corporations, hedge fund managers, and investment firms that have business dealings in Japan. EQECAT's clients were provided with a comprehensive overview of the event, in part due to the maps created using ArcGIS Online.

Simon Thompson, director of commercial solutions at Esri, and Mark McCoy, Esri's industry solutions manager for insurance, created the maps based on a telephone conversation with Paul Little, EQECAT's head of planning and development, two days before the CatWatch. Working quickly, Thompson and McCoy produced maps displaying data on the tsunami flood zone, data on Japan's highways and major roads, topographic data, and even population information from the Japan Society of Family Sociology.

"Timely delivery of information immediately after an event is one of the ways we create value for our clients," said Little. "Providing maps that give a general overview of an area and providing the ability to drill down to get even more granular information is a huge part of what we feel our clients need so they can begin assessing the financial impact and make decisions on how to deal with a crisis like this."

Knowing EQECAT needed information quickly, Thompson decided to pull together maps and data using ArcGIS Online.

"The power of ArcGIS Online is the fact that all the data and all the template code is available to anyone who needs it," said Thompson. "To create these particular maps, I took a map template shared on ArcGIS Online and edited it to display only what I wanted. I then shared the maps over the Internet with EQECAT staff, who in turn can share them through any browser on a computer or a phone. That's the power of ArcGIS Online and cloud computing."

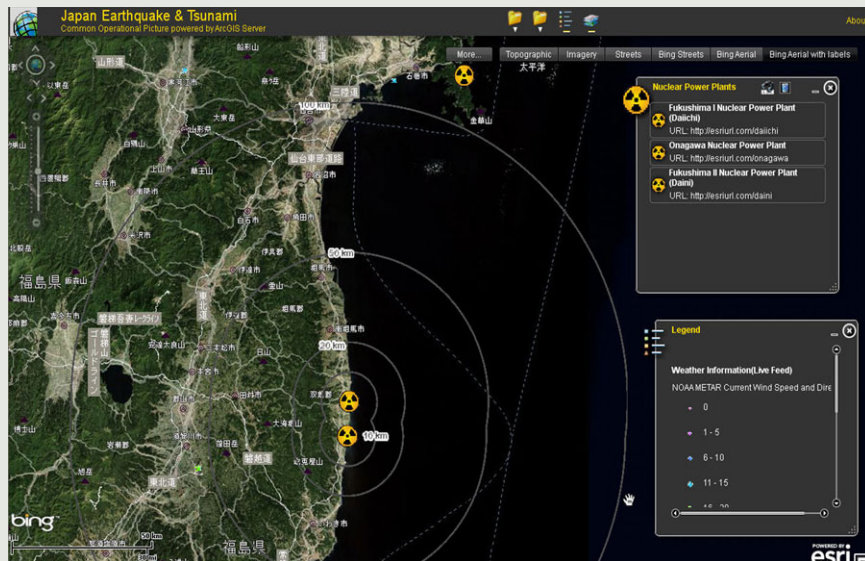
By clicking the Share button, Thompson provided the maps he created for EQECAT to anyone who wants to view them both on ArcGIS Online and in map viewers such as Esri's free ArcGIS Explorer application.

"This is a prime example of operational GIS," says McCoy. "It's providing data in real time while you are telling me what you want to see. This intelligent map supports effective collaboration by making a vast amount of aggregated knowledge easily understandable to people who need the 30,000-foot level of detail, like CEOs."

### **Making It Even Easier to "See" an Event**

ArcGIS Online hosts a repository of authoritative content from the worldwide GIS community. Esri also provides published disaster [mapping applications](#) so organizations can see the information, identify their exposure in the impacted area, and plan effective responses.

[The Japan Trends Map](#) is one example. Esri created this heat map from data collected on property damage, hazards, evacuations, power outages, and help and services available. Visualizing this data as hot spots or trends gives an idea of the density of reports coming from a single area. This can assist in allocating resources to those who need the help most or aid the validation of whether incidents reported are corroborated by others, adding increased clarity to a situation. More than just dots on maps, hot spots organize lots of data and provide a better understanding of the



You can learn which population centers may be evacuated by viewing a map with various radiuses around Japan's nuclear power plants.

data quickly. Reports can also be filtered by date to see daily trends.

Besides Twitter, YouTube, and Flickr postings, Esri's Japan Trends Map supports reports from Ushahidi, a nonprofit technology company that develops a social network to allow people to report incidents via SMS, e-mail, or the web. The information is categorized and analyzed using ArcGIS. By selecting Show Reports, users can view individual Ushahidi reports. Public content from Ushahidi is added to the site through direct access to the Ushahidi Earthquake Tohoku service. This feed aggregates information from the public for use in crisis response.

The Japan Trends Map has been used by many different organizations, including those in the media, to provide detailed information and analytic support to relief efforts. This spatial analysis makes crowdsourced data like Ushahidi reports actionable. "We're able to model the disaster. How many people are affected, and where are they?" Thompson said. "By combining population data with elevation maps, relief organizations can begin to calculate the number of people affected by flooding. How many supplies, like food, water, and temporary shelter, is just one thing that can be estimated to care for those in need."

Many organizations, including the media, have caught on to these ready-made apps showing current events and are embedding these to provide information to their constituents. "I love this kind

of content,” said Eric Gakstatter, contributing editor for survey and construction for *GPSWorld* magazine. “I think this puts the event in an entirely new perspective.”

(This article originally appeared in the May 2011 issue of *ArcWatch* e-magazine.)

# Making Place-Based Decisions in the Face of Catastrophe

Harnessing Esri's GIS to Analyze, Predict, and Manage Risk for Fires and Other Disasters

By Simon Thompson, Commercial Business Industry Manager, Esri

Late August 2009 brought with it the beginning of a volatile fire season in California. For the last several years, damage to highly



Flames light up the night sky near Oak Glen, California. Photo/Brenda Martinez, Esri

developed, densely populated areas has become an unwanted trend. In 2003, the Cedar Fire struck the San Diego, California, area, torching more than 270,000 acres, killing 14 people and

destroying approximately 2,000 homes. Wildfire spread again in San Diego nearly four years later, leaving behind 200,000 charred acres, 515,000 evacuees, and approximately 1,500 destroyed homes. The risk of bearing uninsured loss in a disaster today is higher than it has ever been because of increased property values and dense building; think of the hills of Santa Monica. Insurers' financial and regulatory obligations need to be met at the same time their companies' stability is ensured. Customers also expect policy writers to handle claims effectively and make things right. This makes insurance a high-stakes balancing act—a competitive business with little margin for error.

As another blistering wildfire season comes to an end in California, insurers looking for better ways to examine their portfolios and manage losses incurred by their clients found relief in solutions based on GIS. The technology can provide tools to measure many different dimensions of risk and estimate the severity and breadth of potential loss under several scenarios. Insurers can make more informed decisions about the risk they can carry by combining policy information with location-based data such as vegetation density, road access, and maps down to parcel level. Monitoring and assessing a portfolio through its geography helps insurers be better prepared for disasters and



quickly confirm they have the appropriate reserves necessary to assist their customers and protect their holdings.

## Providing Insurers with Place-Based Decisions

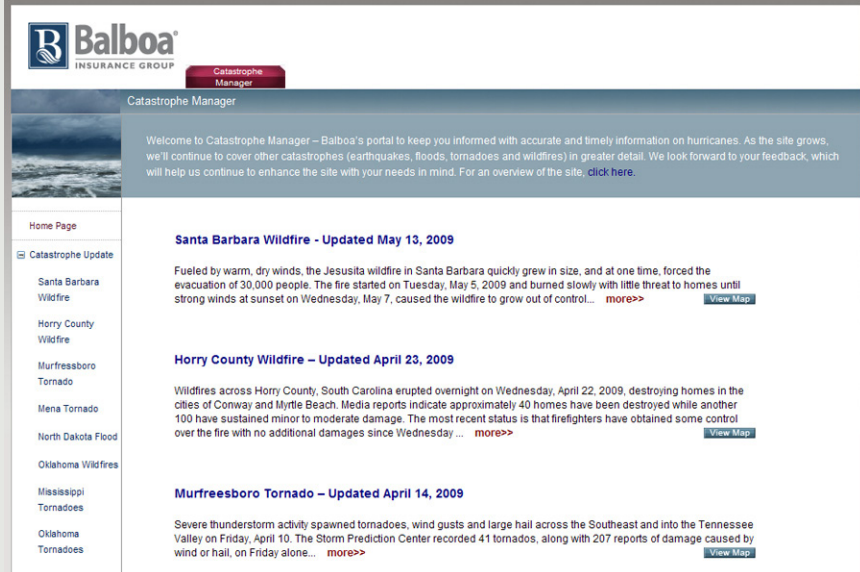
Insurers like Balboa Insurance Group in Irvine, California, which won a [Special Achievement in GIS \(SAG\) award](#) from Esri this year, rely on GIS software to better prepare for disasters. Balboa has been providing risk management and loss mitigation solutions to financial institutions in the mortgage finance industry for more than 20 years. If a collateralized property in a mortgage lender's portfolio is damaged, and the borrower does not have adequate hazard insurance, Balboa provides the lender with insurance that helps make money available to repair the property.

With the help of Esri's [ArcGIS Server](#) software, Balboa's financial services clients can view maps of catastrophes and gauge potential risks to their portfolios through a secured interactive application available over the Internet called Catastrophe Viewer (CATViewer). CATViewer allows lenders to see information by viewing loan locations along with the geography of various natural disasters.

Balboa's experienced associates and advanced technology are quickly mobilized after a catastrophe. The company's risk modeling team monitors multiple online and television broadcasts of natural disasters around the country, posting

updates immediately to CATViewer and helping the claims department respond to customers 24/7.

One of the most recent examples of GIS helping Balboa respond quickly was during the Station wildfire that struck parts of La Canada-Flintridge, northern San Fernando, Altadena, and many other areas that border the Angeles National Forest. For clients to assess their exposure to the event, Balboa created a map of the then-current fire perimeter for the Station fire. The map showed which loans within the fire boundary should be considered at risk, allowing Balboa's clients to prepare



The screenshot shows the Balboa Insurance Group Catastrophe Manager website. The header includes the Balboa logo and the text "Catastrophe Manager". Below the header is a navigation menu with "Home Page" and "Catastrophe Update". The main content area displays three disaster updates:

- Santa Barbara Wildfire - Updated May 13, 2009**: Fueled by warm, dry winds, the Jesunita wildfire in Santa Barbara quickly grew in size, and at one time, forced the evacuation of 30,000 people. The fire started on Tuesday, May 5, 2009 and burned slowly with little threat to homes until strong winds at sunset on Wednesday, May 7, caused the wildfire to grow out of control... [more>>](#) [View Map](#)
- Horry County Wildfire - Updated April 23, 2009**: Wildfires across Horry County, South Carolina erupted overnight on Wednesday, April 22, 2009, destroying homes in the cities of Conway and Myrtle Beach. Media reports indicate approximately 40 homes have been destroyed while another 100 have sustained minor to moderate damage. The most recent status is that firefighters have obtained some control over the fire with no additional damages since Wednesday... [more>>](#) [View Map](#)
- Murfreesboro Tornado - Updated April 14, 2009**: Severe thunderstorm activity spawned tornadoes, wind gusts and large hail across the Southeast and into the Tennessee Valley on Friday, April 10. The Storm Prediction Center recorded 41 tornadoes, along with 207 reports of damage caused by wind or hail, on Friday alone... [more>>](#) [View Map](#)

The Catastrophe Manager Website keeps Balboa's financial services clients up-to-date during natural disasters.

the appropriate paperwork and evaluate their loss potential accurately. Fortunately few homes were lost in this particular fire, but the ability to view the disaster as it was happening and run 'what if' scenarios on potential properties meant the lenders were ready for any outcome.

Balboa enhances CATViewer with geographically based datasets available through [ArcGIS Online](#), a Web-based repository that lets users easily share and find GIS data, maps, layers, services, and tools. The company uses many different datasets from ArcGIS Online, including satellite imagery, topographic maps, and street maps.

The Balboa Catastrophe Modeling Team also monitors specific catastrophes and gets data from organizations such as the National Hurricane Center, National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Survey (USGS), and AccuWeather.

With this highly accurate data, Balboa's clients can more precisely map where loans are at risk because there's a high probability that the property will be damaged during a catastrophic event. The technology gives Balboa clients the information to begin asking themselves crucial questions:

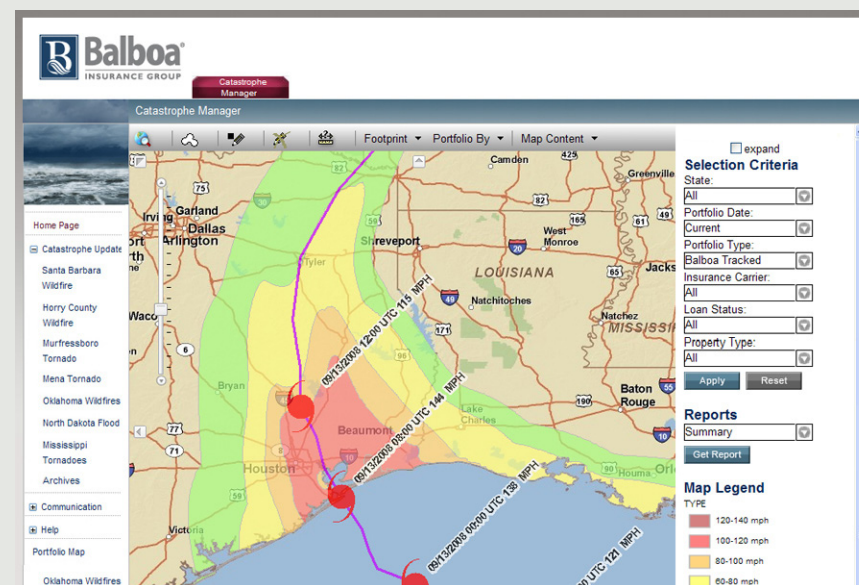
- How likely is the risk of loss?
- How much overall monetary loss exposure is in the portfolio?
- How many loans are affected by a particular event?

- Does the borrower have enough insurance to cover the damage caused by the catastrophe?

Lenders view data and show results of different property risks including geographic concentrations, property values, and loan values. Using CATViewer, Balboa's clients apply risk and loss calculations for more accurate assessments.

## Partnering for the Best Solutions

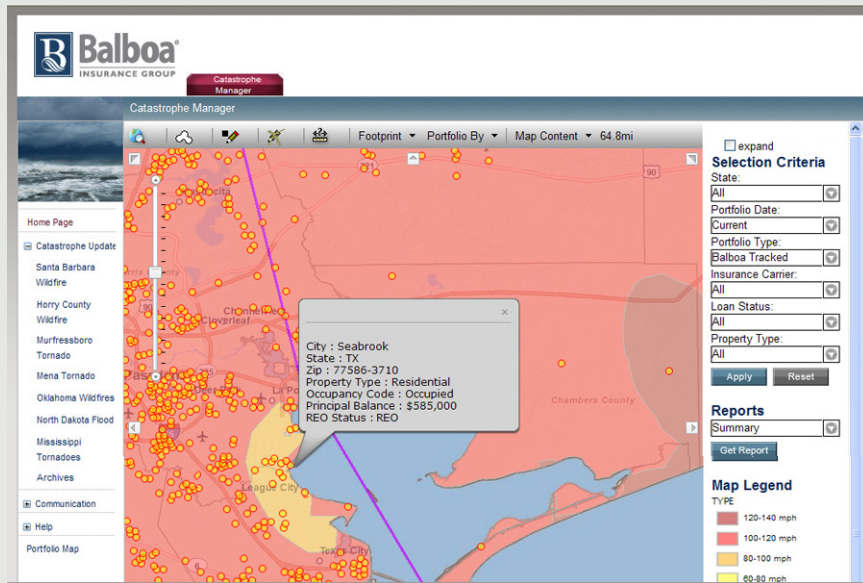
Earlier this year, Esri and First American Spatial Solutions (FASS), an industry leader in geospatial software, natural hazard analytics,



Clients can view loan locations along with the geography of various events.

and property and tax information, announced the release of [Risk Analysis Solution for ArcGIS](#). Insurance companies can use Risk Analysis Solution for ArcGIS to view and analyze data at the policy and portfolio level, quickly assessing concentration of risk and increasing and improving underwriting decisions.

Risk Analysis Solution for ArcGIS combines Esri's GIS technology with FASS's advanced parcel-based geocoding, natural hazard, and property location data for the United States. FASS's parcel-based geocoding, called ParcelPoint Technology, combines parcel and address information with exact latitude and longitude.



The results of different property risks, including geographic concentrations, property values, and loan values, are viewed easily.

Originally developed for use at FASS to provide extremely precise flood information for lenders and insurers, this dataset now includes 100 million parcels and is available through Risk Analysis Solution for ArcGIS. Using the data will help eliminate inaccurate results obtained when guessing the location of properties by interpolating their positions on a street network.

Risk Analysis Solution for ArcGIS offers a powerful geospatial solution that easily integrates into an insurer's current workflows and rapidly delivers accurate information. Users can assess multiple-peril risks, generate composite risk scores, determine probable maximum loss, understand risk concentration, and generate detailed reports.

## Esri Resources

Esri software, data, and services are used at the front lines of catastrophes, including the recent Station, Oak Glen, and Pendleton fires in Southern California. Tom Patterson, a wildland fire specialist for Esri, went to the command post for the Oak Glen 3 and Pendleton fires to help prepare maps for meetings and ensure that the most comprehensive analysis of the fires could be accessed.

**Disaster Assistance**—Esri provides resources to agencies, organizations, and businesses that respond to and operate programs to recover from wildfires. Esri provides GIS operations

with software, data, imagery, project services, and technical support.

**ArcGIS Online**—This online repository hosted by Esri includes more than 20 different fire-related datasets and maps created for this online community to share and explore. From historic information on fires to recent fire perimeters, information can be easily and freely accessed. [Learn more](#).

**Data Models**—Esri works with organizations to create industry-specific data models to simplify project implementations. Organizations representing fire and emergency services (ESF 4) have initiated a project to develop a national GIS data model. The initial phase is [available online](#).

**Situational Awareness**—[Esri Situational Awareness](#) helps organizations fuse, analyze, and disseminate information for optimal decision making.

Visit [esri.com/insurance](http://esri.com/insurance) to find out more about Esri's insurance solutions, keep up-to-date on the latest trends and technologies in the industry, and learn how we are working with companies like yours.

(This article originally appeared in the November 2009 issue of *ArcWatch* e-magazine.)

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