EARTHVISIONZ -2023- HURRICANE OUTLOOK

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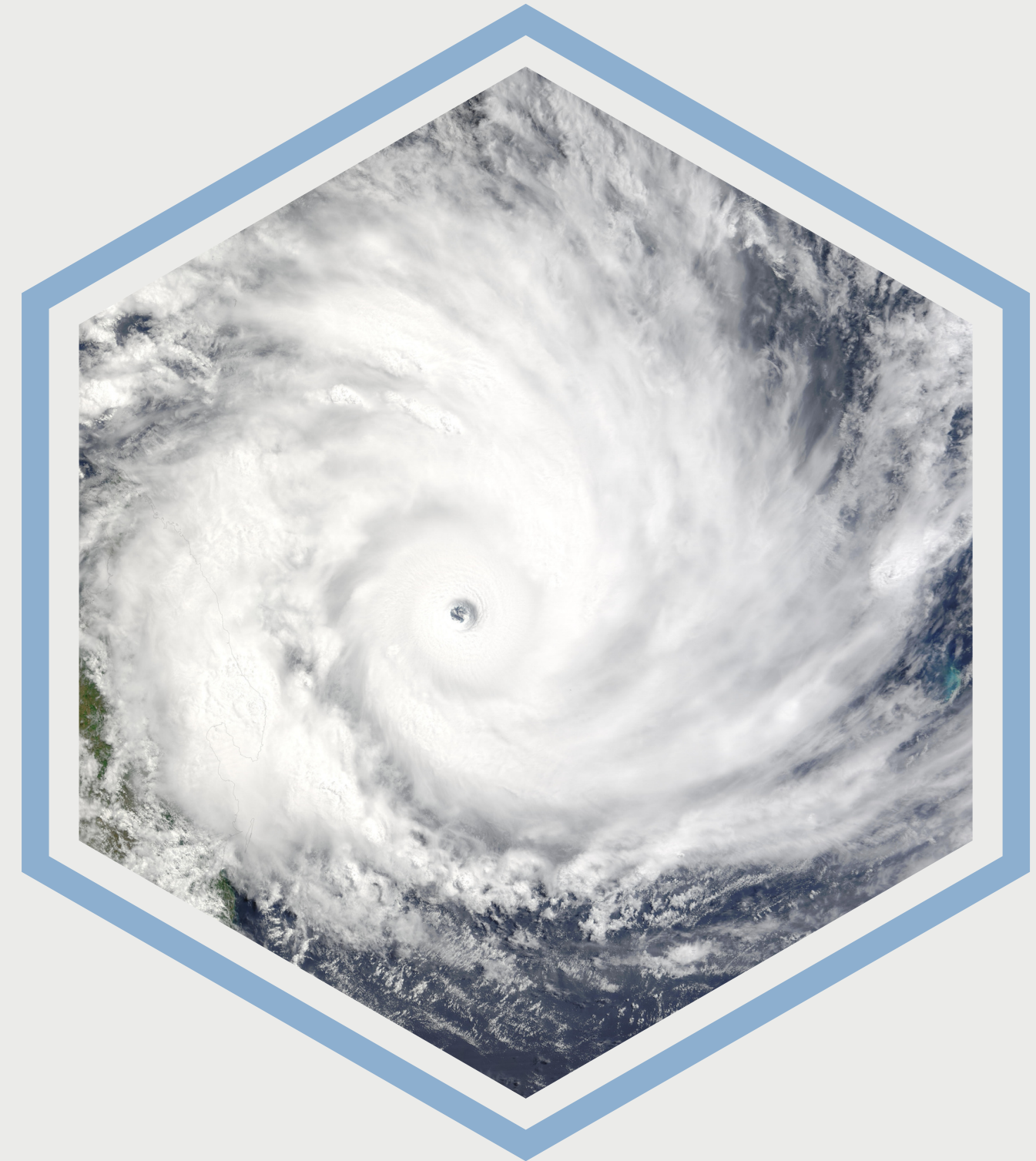www.earthvisionz.com

What we Cover

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Looking Back on 2022

The 2022 hurricane season brought a total of 14 named storms into the Atlantic, 7 of which were officially deemed hurricanes. These storms brought damage to the east coast and Florida, with the most destructive, Hurricane Ian, **boasting sustained winds of up to 150mph. These storms' effects were devastating for communities on both coasts, with total storm damage estimated at over $165 billion. The storms also caused 474 fatalities, making the 2022 hurricane season the 8th most deadly on record.**

Hurricane Ian is now tied as the 5th most destructive hurricane to reach land in the United States bringing with it $113 billion dollars in damage to people, homes, and businesses. Another important storm to mention is Hurricane Fiona which touched down in Puerto Rico and also caused significant damage. Fiona dumped over 30 inches of rain in some regions, resulting in widespread flooding and casualties. The final hurricane to touch down in the continental U.S. last year was Hurricane Nicole which caused 1 billion in damage and 5 direct casualties. Because this storm intensified suddenly and somewhat unexpectedly near the Florida coast, citizens were not as prepared for it as they could have been.

Aside from the more well-known storms that occurred in the Atlantic this year, there were also storms that touched down in the Pacific basin. The most significant storm was named Hurricane Darby and mostly affected the state of Hawai'i. This storm brought over 6 inches of rain and storm surges of over 12 feet to coastal regions of the Big Island, Kauai, and Maui.

The cumulative effects of severe hurricanes have had an enormous impact on families and communities across the nation. Over the last decade, **there have been 122 storms that have caused more than a billion dollars in damage bringing the inflation-adjusted total to over $1 trillion dollars. Aside from this, there has also been a significant cost to human life, with over 5,000 fatalities from these storms alone.** This increased frequency of high-cost storms has been magnified by the effects of climate change, with rising sea levels adding to the damage from hurricane-driven waves.

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Earthvisionz & Hurricane Ian
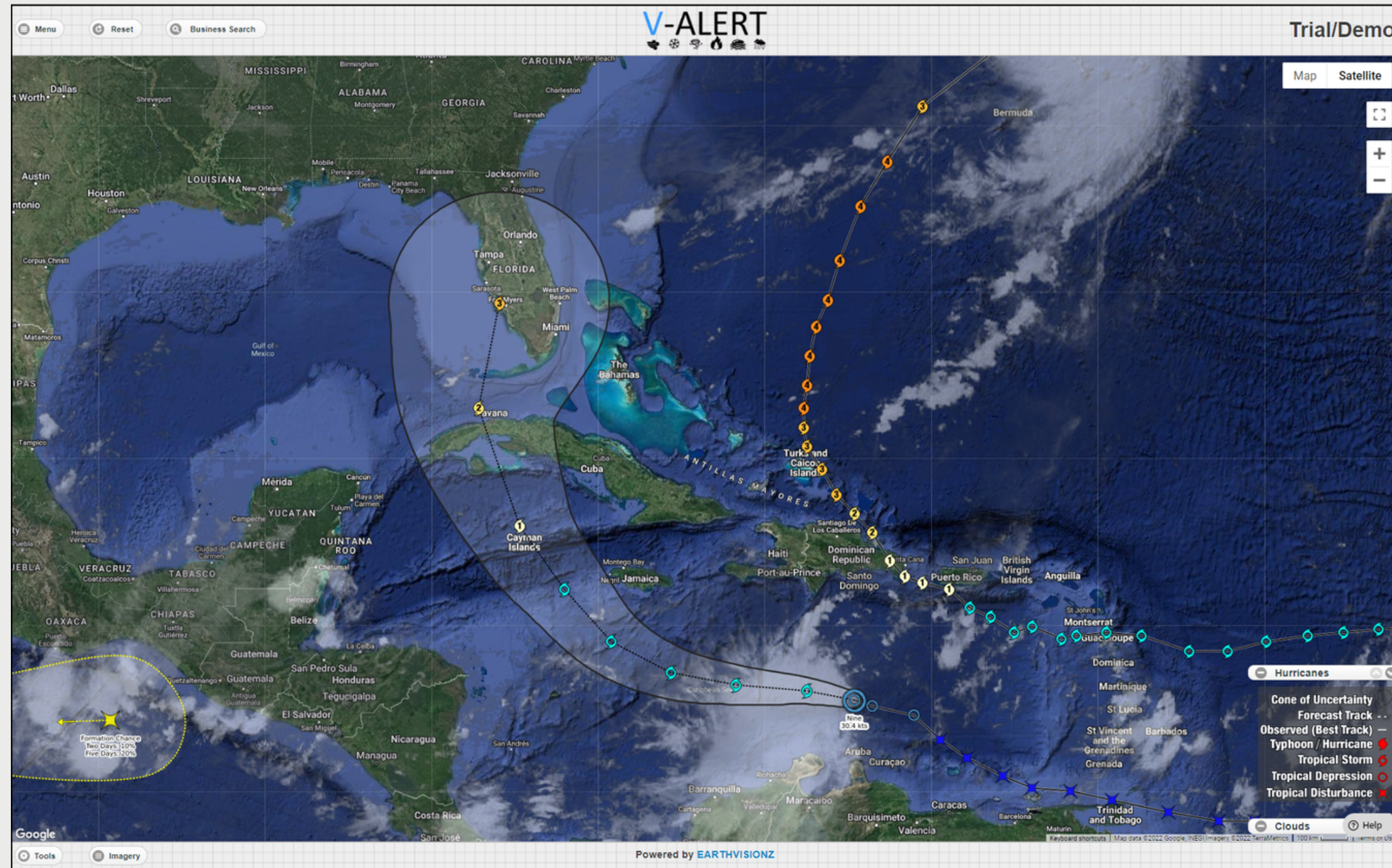
During 2022, Earthvisionz had many customers affected by Hurricane Ian. They included businesses in property management, banks, single family rentals, and restoration and recovery. New technologies helped these professionals receive regular reports on widespread flooding and wind damage.

The image to the left displays the hurricane track projection 6 days before landfall, before it was even officially named, yet providing an accurate prediction regarding impact location and severity. **Our customers used our map command center to view the hurricane track in great detail including metrics like windspeed, rain forecasts, and up-to-date alerts on all properties.** Additionally, customers were able to see the position of their assets in relation to the track so they could know in real-time if they were being affected.

"We get the entire view of the event before, during, and after the storm"

During Hurricane Ian, companies in the mortgage field services industry utilized V-Alert to conduct damage assessments and provide clients with critical information about the condition of their properties.

We interviewed Jodi Gaines, Chief Client Officer for MSI and the Insight One Family of Companies, who shared the importance of information during severe weather events. When asked how Earthvisionz helps with these types of events, she said, "Whenever there is a disaster, we count on Earthvisionz to get the entire view of the event before, during, and after the storm." She also mentioned how Earthvisionz provided direct cost savings for her clients: "because we have such precise information available, we don't waste resources inspecting properties that don't have any damage."

In the onslaught of a natural disaster such as Hurricane Ian, companies have an urgent need for reliable real-time information delivered to their inbox. Map views and satellite imagery overlays help to assess damage. Analyzed information allows our clients to focus their immediate attention on impacted assets. This may include customer outreach, expedited property inspections, damage property insurance claims and more. Although there is no way to prevent natural disasters from occurring, having real-time information helps you better prepare, respond, and restore.

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Rebuilding from Ian

After Hurricane Ian swept through Southwest Florida, the towns of Sanibel Island and Fort Myers Beach were devastated. The category 4 hurricane tore through homes and uprooted the two communities. However, citizens are optimistic about the future and are beginning to rebuild. Many business owners have been relying on community donations and volunteer efforts to reconstruct. Many of the buildings destroyed in the hurricane were built decades ago and are not up to standard with current building codes. New buildings are being constructed with impact-resistant windows and roof straps that allow the buildings to withstand extreme wind and rain conditions.

Increasing community resilience is becoming more and more important for homeowners and businesses across the nation. When disaster strikes, we must learn from our mistakes to ensure future impacts are lessened. This includes improving infrastructure and avoiding construction in regions that are particularly prone to damage during extreme weather events. If we can capitalize on these changes, the U.S. will certainly see less damage every year and increased safety for citizens across the nation.
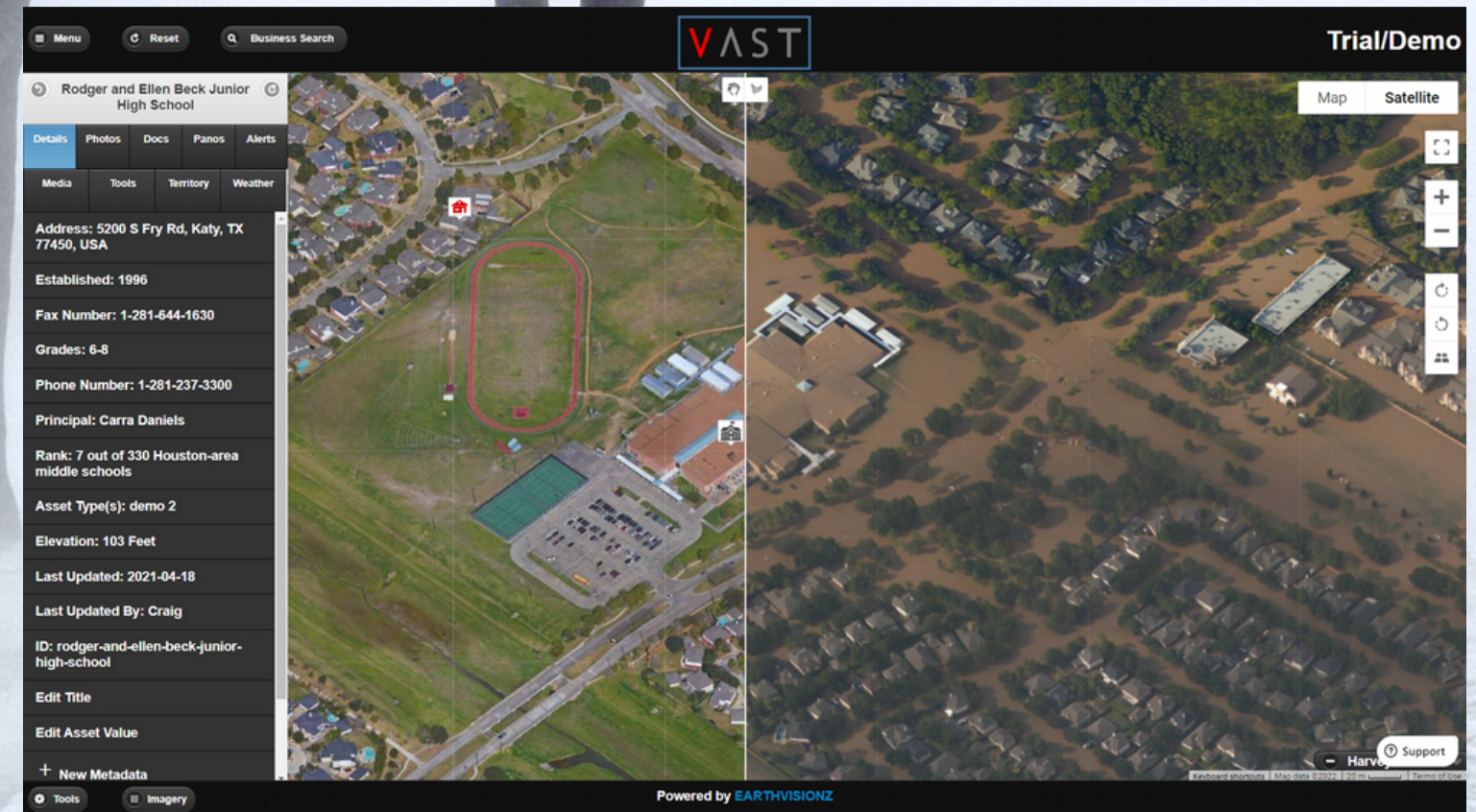

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Why the U.S. Has So Many Disasters

The U.S. has significantly more natural disasters, and more damaging ones, than most other nations of the world. There are two main reasons: The first is due to natural causes -- the U.S. has unique geographical features such as the Rocky Mountains, the Florida Panhandle, and the Gulf of Mexico that create unusually severe weather events. For example, large storms can quickly develop when when cold, dry air rising over the Rocky Mountains collides with hot, wet air moving up from the Gulf of Mexico.

The second reason is due to people -- over time, the United States has not been particularly wise about what, how and where we build. For example, the South has a high concentration of manufactured homes, which are more vulnerable to damage, in a region that experiences an especially high concentration of severe weather events. And many of our fastest growing cities are located in areas with substantial risk. In particular, rapid development on the East and Gulf Coast barrier islands create risk due to intensifying storms and rising sea levels.

In order to prepare ourselves for the inevitable increase in extreme weather from climate change, we must plan our cities in ways to avoid damage. We need improved construction standards and much more resilient infrastructure. Until then, the cycle of destruction and rebuilding is almost certain to continue.

Learn more:
https://apnews.com/article/tornadoes-disasters-extreme-weather-why-af8acdcb330cff39d689efc187cd17b7

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Intense Future for Hurricanes

Hurricanes and typhoons are responsible for more monetary losses than any other natural disaster. According to a recent study published in the journal <u>Science Advances</u>, in the last decade alone, the United States has seen $480 billion in losses due to tropical storms and hurricanes. By 2050, climate models show wind speeds in hurricane-like storms could increase by as much as 20%, as well as a tremendous increase in the frequency of category 4 and category 5 storms -- by more than 200% in some regions. Researchers at the University of Amsterdam used a statistical prediction system called STORM to simulate 10,000 years of past and future climate conditions. They then used high-resolution wind speed maps to examine the future changes on a local scale, which is critically important from a risk assessment perspective.

The region around Hong Kong and parts of the South Pacific have the highest likelihood of an increase in high-intensity storms, the study found. Tokyo, the largest metropolitan area in the world with a population of around 38 million people, currently has a 4.6% chance annually of being impacted by an intense storm. Over the next thirty years, scientists found that number jumps up to 13.9%. Another noticeable jump was for the Hawaiian Islands. Currently, Honolulu has a 4% probability each year of being hit by an intense hurricane, however, that number will be 8.6%, more than doubling within the next 25 years, the study suggests.

The only regions where the study didn't see cyclones doubling were in the Gulf of Mexico and the Bay of Bengal. However, when tropical storms do form in those regions, the warmer waters will provide extra fuel to intensify up to a category 3 or higher.

Learn More:
https://wvww.cnn.com/2022/04/27/weather/intense-tropical-cyclones-could-double-climate/index.html

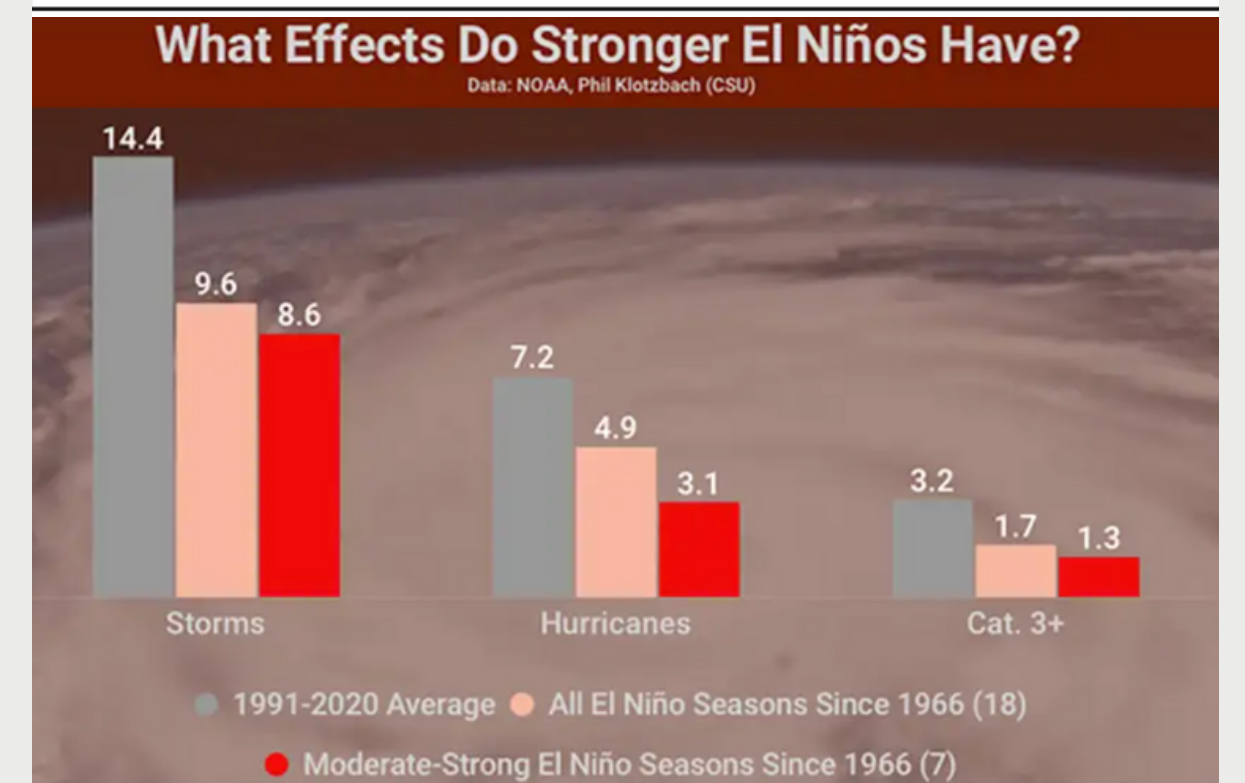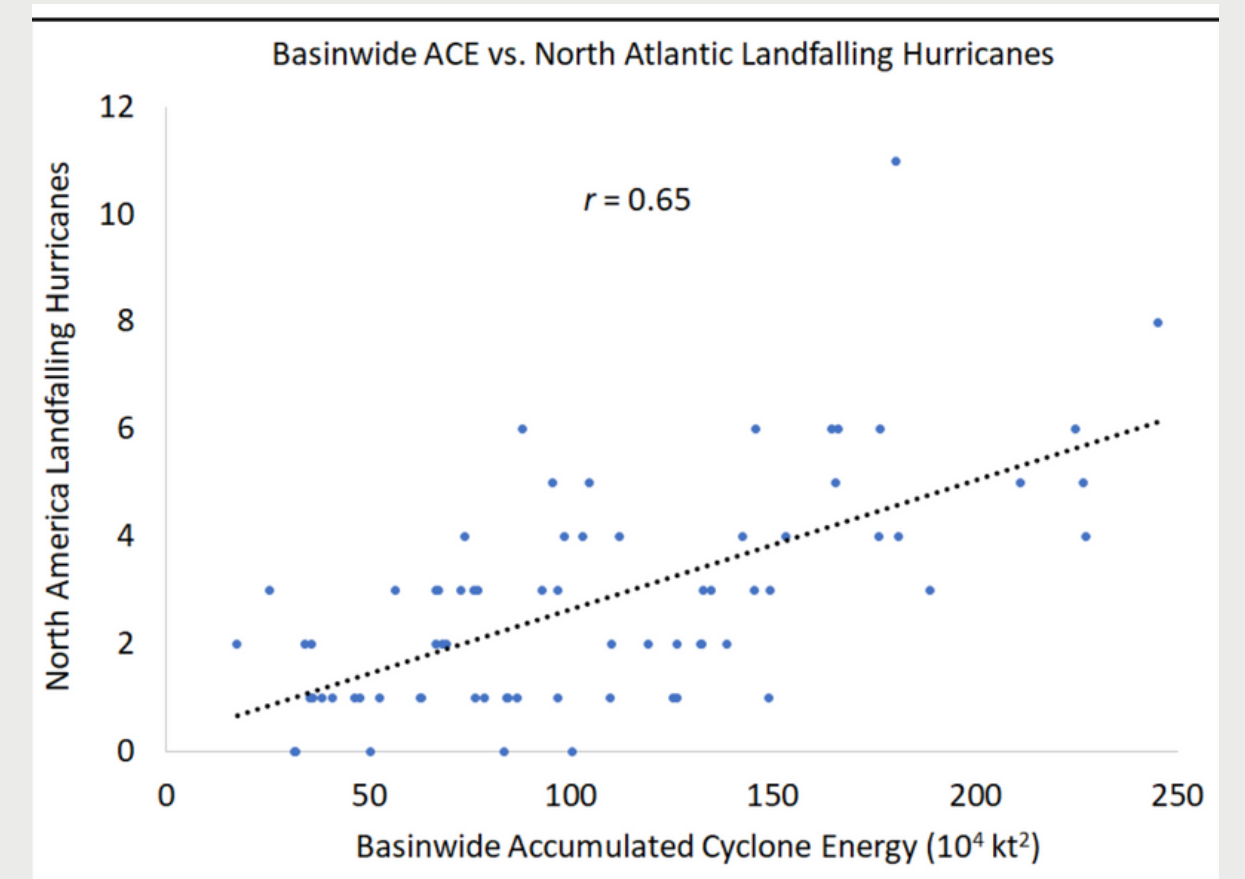# Hurricane Predictions for 2023: Slightly Below Average

When looking at research conducted by Colorado State University and NOAA, the 2023 hurricane season is predicted to be average to slightly below average. One of the key drivers of this prediction is the likelihood of an El Niño event beginning this summer or fall.

The term El Niño refers to a pattern of higher-than-normal sea surface temperatures in the central and eastern tropical Pacific Ocean. El Niño recurs at unpredictable intervals, ranging from two years to a decade. This condition affects wind patterns around the world, including in the North Atlantic Ocean, where the vast majority of hurricanes making landfall in the US originate. Because El Niño years tend to change the direction of trade winds in the Atlantic Basin, a phenomenon called wind shear is likely to occur. **Wind shear has the effect of pushing tropical storms off course or disrupting their cylindrical vortex leading to changes in the ideal heat conditions that hurricanes often form under.** The stronger the El Niño event is, the lower the chance of major hurricane events.

According to researchers at NOAA, **there is a 61% chance of an El Niño event occurring during the 2023 hurricane season.** This forecast was created by monitoring accumulated cyclone energy west of 60° West longitude. In typical El Niño years, there is little cyclonic energy in the aforementioned region, as shown in the first chart. This has led forecasters to believe this coming season is likely to be moderate and only contain a few major hurricanes. However, the unusually high temperatures this spring in the Atlantic Ocean, especially in the Gulf of Mexico and off the Southeast US coast, may temper the impact of any El Niño event and serve to increase the uncertainty in forecasting this year's season.

According to projections by Colorado State University, **there will be a total of 13 named storms with 6 hurricanes and 2 severe hurricanes.** Using historical data from the last 30 years, researchers conducted analysis on sea temperatures and pressure and found that the coming season appears to have similarities to the years 1969, 2002, 2004, 2006, 2009, 2012, 2014, and 2015. Some of these seasons were hyperactive, while some were moderate, leading to a sense of general unpredictability, even with a likely El Niño event.

Additionally, the team at CSU put forth landfall predictions showing a **44% chance of hurricane landfall on the entire U.S. coastline, 28% chance for the Gulf Coast, and a 49% chance for the Caribbean.** These metrics fall close to or below the national 30-year average, bolstering the outlook for a moderate hurricane season in 2023.

Basinwide ACE vs. North Atlantic Landfalling Hurricanes
$r = 0.65$
North America Landfalling Hurricanes
Basinwide Accumulated Cyclone Energy (10^4 kt²)

What Effects Do Stronger El Niños Have?
Data: NOAA, Phil Klotzbach (CSU)

Storms: 14.4, 9.6, 8.6
Hurricanes: 7.2, 4.9, 3.1
Cat. 3+: 3.2, 1.7, 1.3

1991-2020 Average • All El Niño Seasons Since 1966 (18) • Moderate-Strong El Niño Seasons Since 1966 (7)

Learn More:
- https://tropical.colostate.edu/forecasting.html
- https://weather.com/storms/hurricane/news/2023-04-11-hurricane-season-outlook-atlantic

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One Hurricane Can Wreak Havoc

Although current forecasts are pointing to a moderate hurricane season this year, there is still the potential for powerful storms and extreme damage. It is true that El Niño years tend to bring fewer and more moderate storms, however, there have been historical instances of intense hurricanes forming under such conditions. For example, Hurricane Michael occurred 5 years ago during an El Niño year and brought significant destruction to the Florida Panhandle. Hurricane Michael was the first Cat 5 hurricane on record in the Panhandle and caused $25 Billion in damage while taking the lives of 59 U.S. citizens.

Prepare every year.

With the above insights in mind, know the importance of preparing every year, regardless of the forecast. Although complicated forecasting metrics and historical data are convincing, they are almost never 100% accurate. There will inevitably be hurricanes this year meaning it's time to prepare before its too late.

Hurricane Preparedness Checklist

V-Alert

1. Are all assets geo-tagged with critical data on a map?
2. Do you have alerts in place to notify you severe weather may be affecting your assets?
3. Are you able to reference historical data and satellite imagery to plan for future events?
4. Do you have aerial imagery and damage proxy maps for virtual inspections?
5. Does your team have a single-pane of glass dashboard to help plan and execute?

FieldTeam Tracker

1. Do you have the ability to view the location of your team 24/7 in real time?
2. Do you have automatic notifications when job sites or conditions change?
3. Do you have the ability to integrate sensors to track important equipment?

Drive Tracker

1. Do you have critical information about closures, traffic, and other road conditions?
2. Do you have the ability to optimize routes to get to the scene as quickly as possible?
3. Can you integrate routes with V-Alert and FieldTeam Tracker to have a birds-eye view of everything going on in the field?
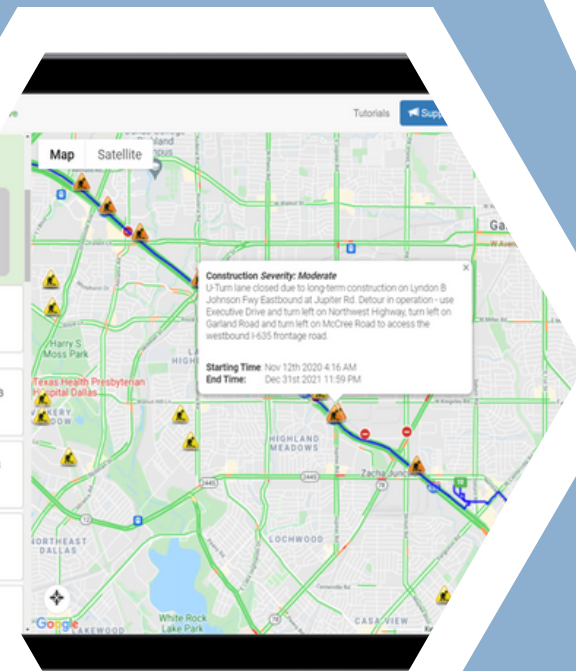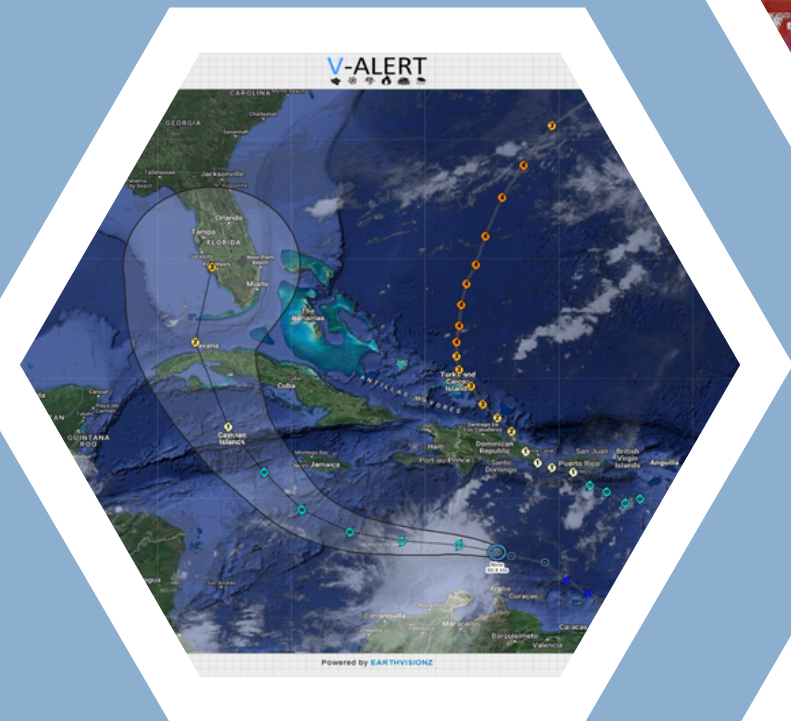
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Leverage our Technology Suite

When the next hurricane inevitably strikes, be prepared with our fully integrated suite of technology applications. **Earthvisionz offers a suite of tools to help you communicate in real-time, manage field teams, and optimize routes.** Together, this state-of-the-art technology allows you to make critical decisions with accurate data at your fingertips.

With a subscription to V-Alert, you and your team will receive automated alerts whenever one of your assets is threatened. You can also overlay before and after satellite imagery to assess damage. Every floodplain in the U.S. is on the map so you can see which assets are at greatest risk of flooding.

Need to keep track of personnel and plan operations? Earthvisionz has you covered with FieldTeam Tracker and Drive Tracker. These applications allow you to monitor your fleet and establish two-way communications with you team   anywhere in the country while choosing the most optimal routes for safe travel.

In the face of a hurricane or other natural disaster, be prepared with Earthvisionz's comprehensive suite of software applications.
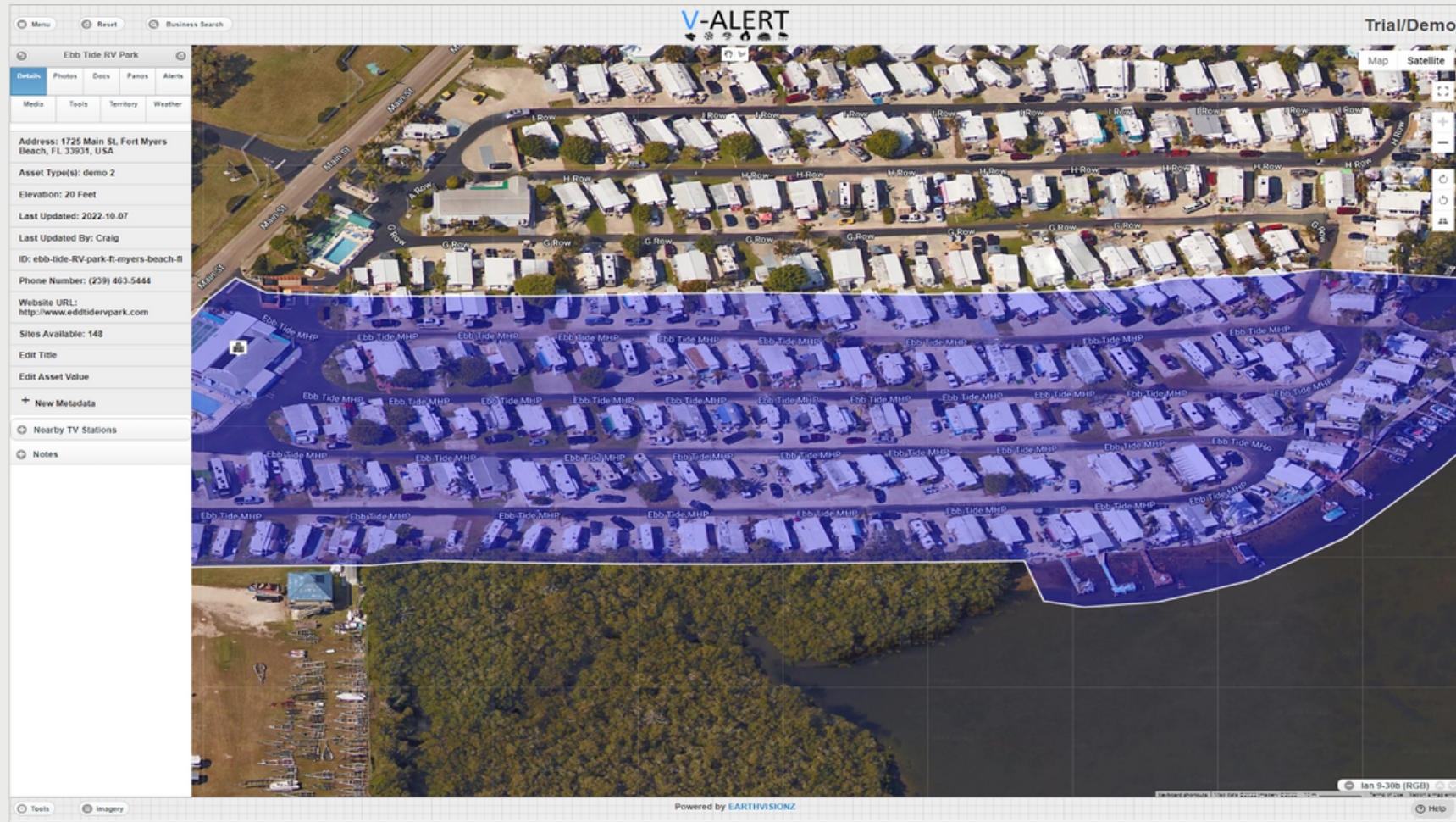
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New and Improved Storm Surge Monitoring

New to Earthvisionz this year: storm surge monitoring. During a hurricane, the most vulnerable assets are those closest to the coast. Oftentimes, these same assets are the most valuable and important to our customers. Over the past year, **we have worked tirelessly to develop real-time storm surge mapping, allowing customers with properties on the coast to better understand property risks in critical situations.**

For our customers, knowing how storm surges could affect their assets on the coast was of utmost importance. They were able to utilize our color-coded storm surge indicator to know if their properties were at risk during Hurricane Ian. With this information at their disposal, they were able to prepare for damage and actively monitor assets during the storm.
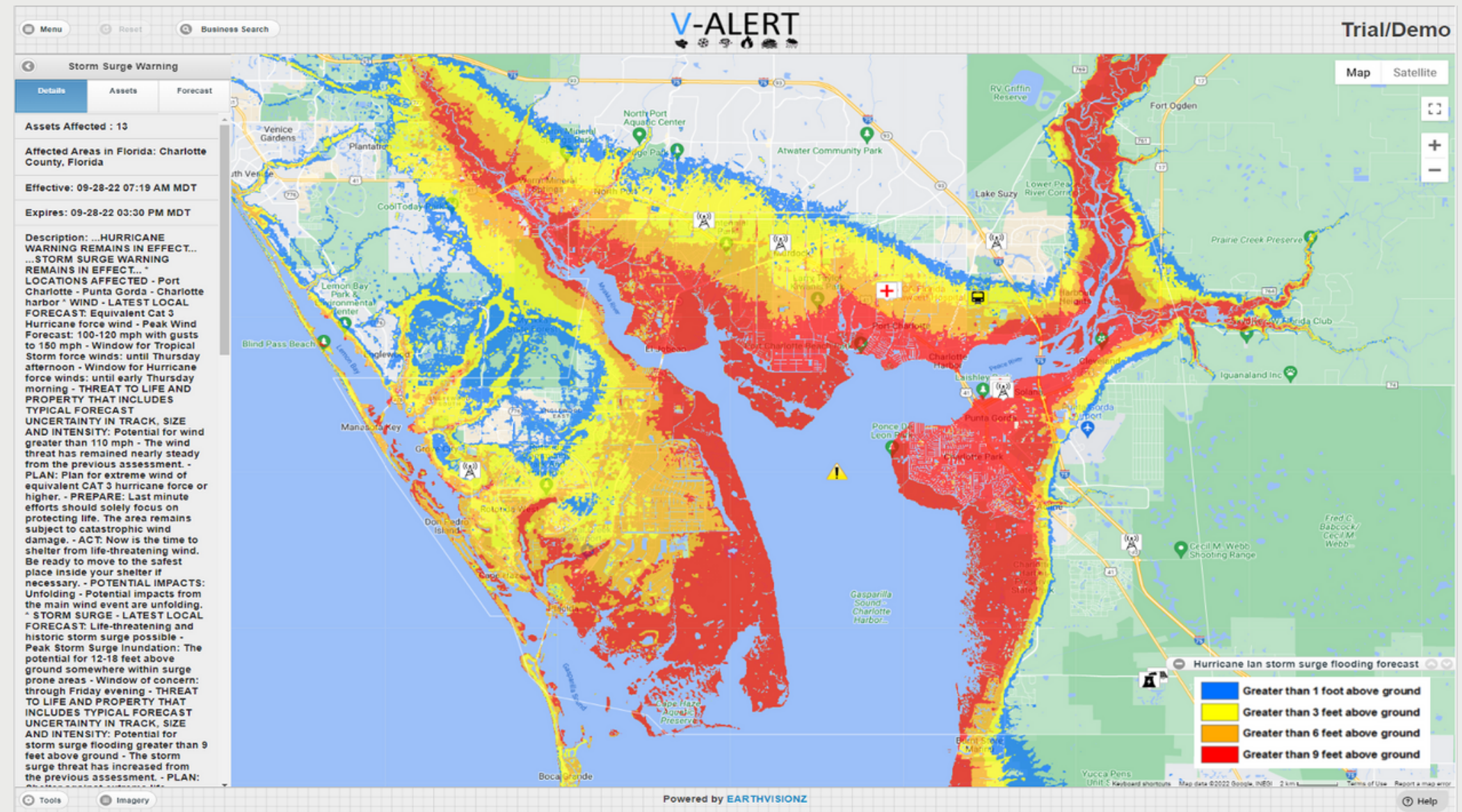
Before and After Satellite Damage Assessment

Before
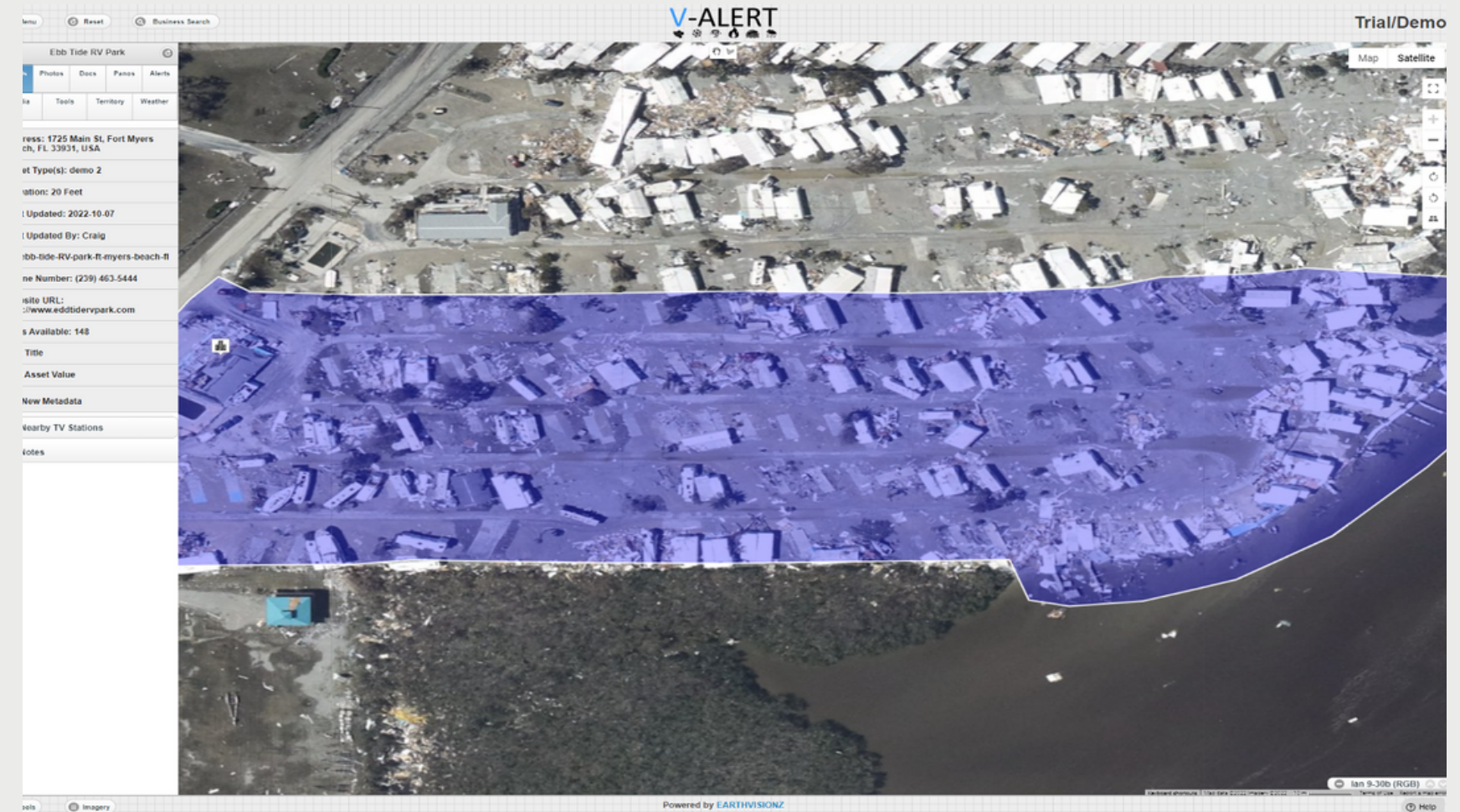
After

Earthvisionz knows how difficult it can be for property inspectors and insurance adjustors to get on site when conditions are still unsafe. Earthvisionz has you covered. **With access to satellite imagery and remote sensing, you have the ability to inspect your assets virtually, from anywhere in the world.** Other than imagery, Earthvisionz also provides tools and insights to help you assess the damage. In the above images, the V-Alert overlay shows which portions of the property have received the most damage. Additionally, any other information you deem valuable can be displayed onscreen alongside our imagery. Customers gain insight by receiving data from IoT networks with property information and analysis of potential damage.

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CONTACT US FOR A FREE DEMO

At Earthvisionz, we strive to help our customers by providing precise information to help with all of their scenario planning and response challenges. We are committed to building partnerships that meet the specific needs of our customers, in a fast-changing and ever more dangerous world. We pride ourselves on maintaining a balance between affordability and usability so anyone can understand the condition of their assets as quickly as possible after a severe weather event.

With hurricane season just around the corner, is your company prepared?

Interested in learning more about how Earthvisionz can help you with your hurricane preparation and response? **Please visit our website at www.earthvisionz.com and click "Consult our Tech Team" or "Let's get started" to set up a free demo and trial of our software.**

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