

# THOR GUARD LIGHTNING PREDICTION & WARNING SYSTEMS

**NORTH FLORIDA TERRITORY MANAGER**  
**Roger Lindsay**

**THOR GUARD CHIEF METEOROLOGIST**  
**Jake Swick**

**2018**

Thor Guard is designed to detect and most importantly **PREDICT** lightning by measuring the static electricity in the atmosphere and monitoring how much energy is building and changing **BEFORE** lightning occurs. All other lightning systems or methods can only detect lightning and warn you **AFTER** lightning has struck nearby.

Lightning detection systems and their networks leave you vulnerable to late warning of first strikes and waiting 30 minutes after the last strike. *Since every thunderstorm is unique*, only a Thor Guard Lightning Prediction System can alert decision makers to danger before it occurs.

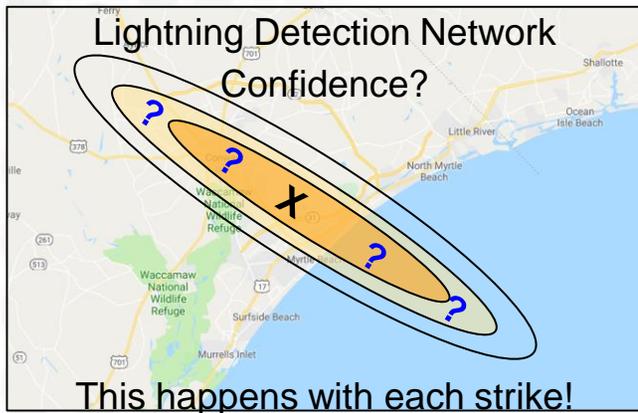
You can't control the lightning, but you can control how **PROACTIVE** you are when everyone's safety is in your hands. Don't be reactive like a detection system because...

**EVERY THUNDERSTORM HAS A FIRST STRIKE!**



# DETECTION VS. PREDICTION

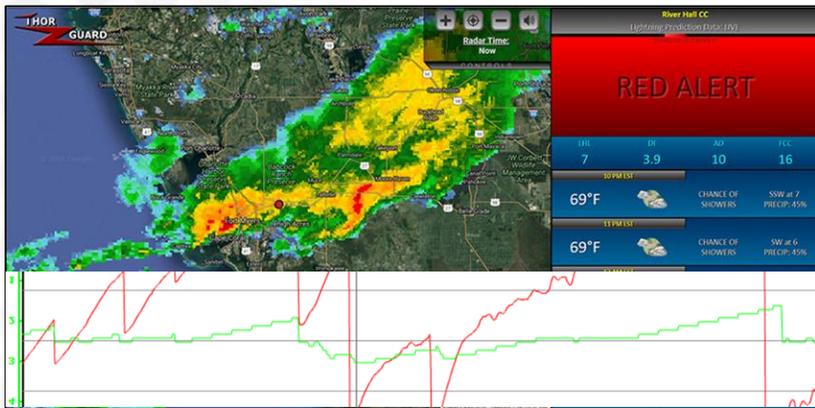
## DETECTION DANGERS



Lightning Detection Networks require multiple sensors reporting data as fast as possible to servers not at your location to triangulate the data, *re-sell the data* and then tell you where the lightning was AFTER it has already struck.

But the problems that cell phone networks have are very similar to the problems that lightning detection networks have. Dropping calls or showing you in the wrong location is a result of the connection having an issue or one of the towers not picking you up. In the case of detection networking, the confidence ellipse (left) that estimates the location of a lightning strike can become huge when the slightest issue occurs.

This means the network thinks that lightning struck in that area, but isn't 100% sure, so the center of that huge area is determined to be the location of the strike. What if it's wrong and the strike wasn't 1 mile away, but was really at one of the question marks 5 to 10 miles away or more?! Then you are stopping your outdoor activities based on a guess.



## PREDICTION POSITIVES

**Our Lightning Prediction Systems take out the guesswork by doing all of the millisecond calculations at each system's site. Then we display this extremely valuable information *only to you* in an easy to understand display increasing confidence for those making the decision to keep everyone safe.**

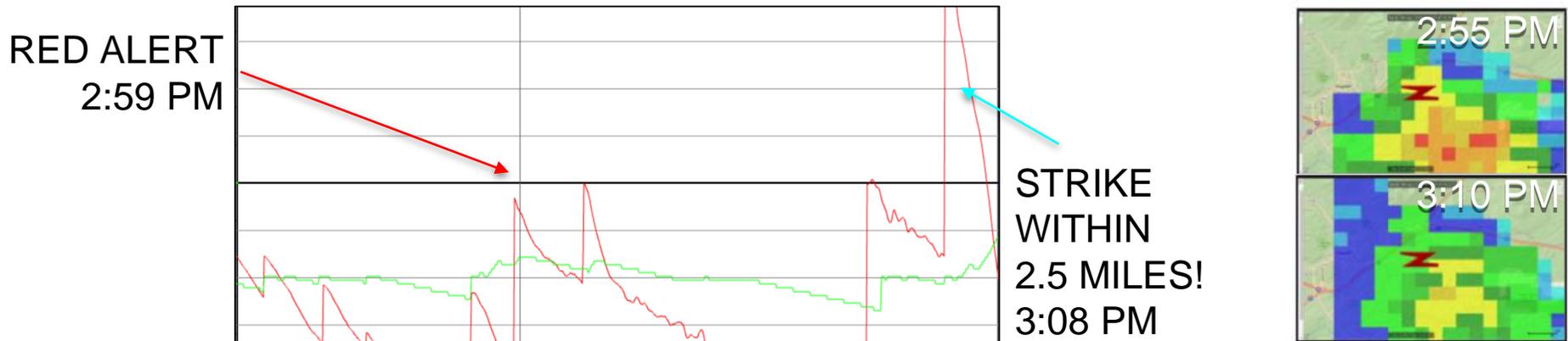


# TYPICAL LIGHTNING SCENARIOS

 Warning <b><i>BEFORE</i></b> Lightning Strikes Within 2.5 Miles Of Your Area	 Warning <b><i>AFTER</i></b> Lightning Strikes Within 2.5 Miles Of Your Area	Thor Guard Lightning Prediction System	Lightning Detection System	30/30 Rule
Large Area of Storms 10 miles Away Obviously Aiming for My Site.....				
First Storm Pops Up 10 miles Away and is Aiming for My Site.....				
First Storm Pops Up 6 miles Away and is Aiming for My Site.....				
First Storm Pops Up 2 miles Away and is Aiming for My Site.....				
First Storm Pops Up at My Site.....				
Storms 10+ Miles Away Create a Bolt Out of the Blue Strike Onsite....				
Large Area of Rain with Random Lightning every 30 Minutes.....				

## REAL WORLD EXAMPLE #1

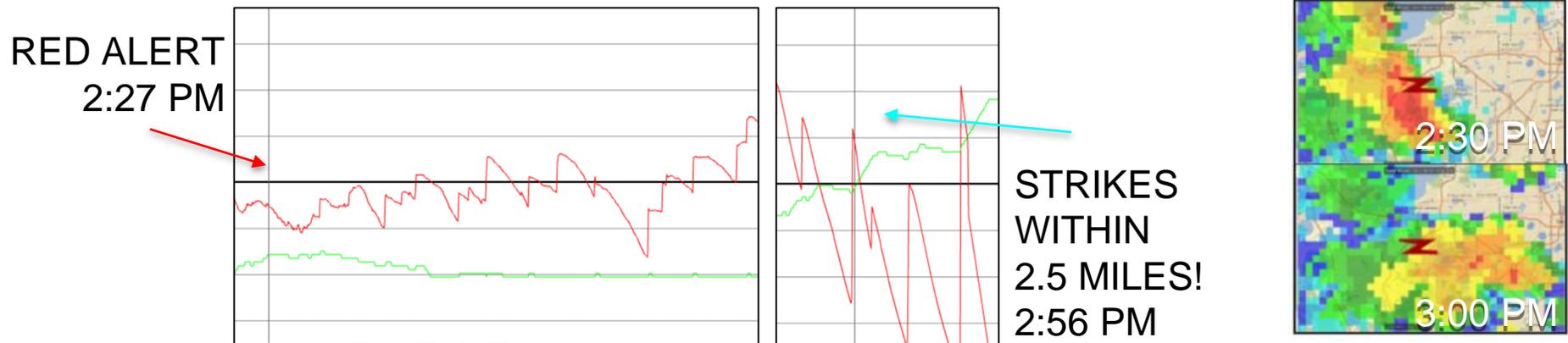
Thor Guard in **RED ALERT** 9 MINUTES BEFORE first and only strike!



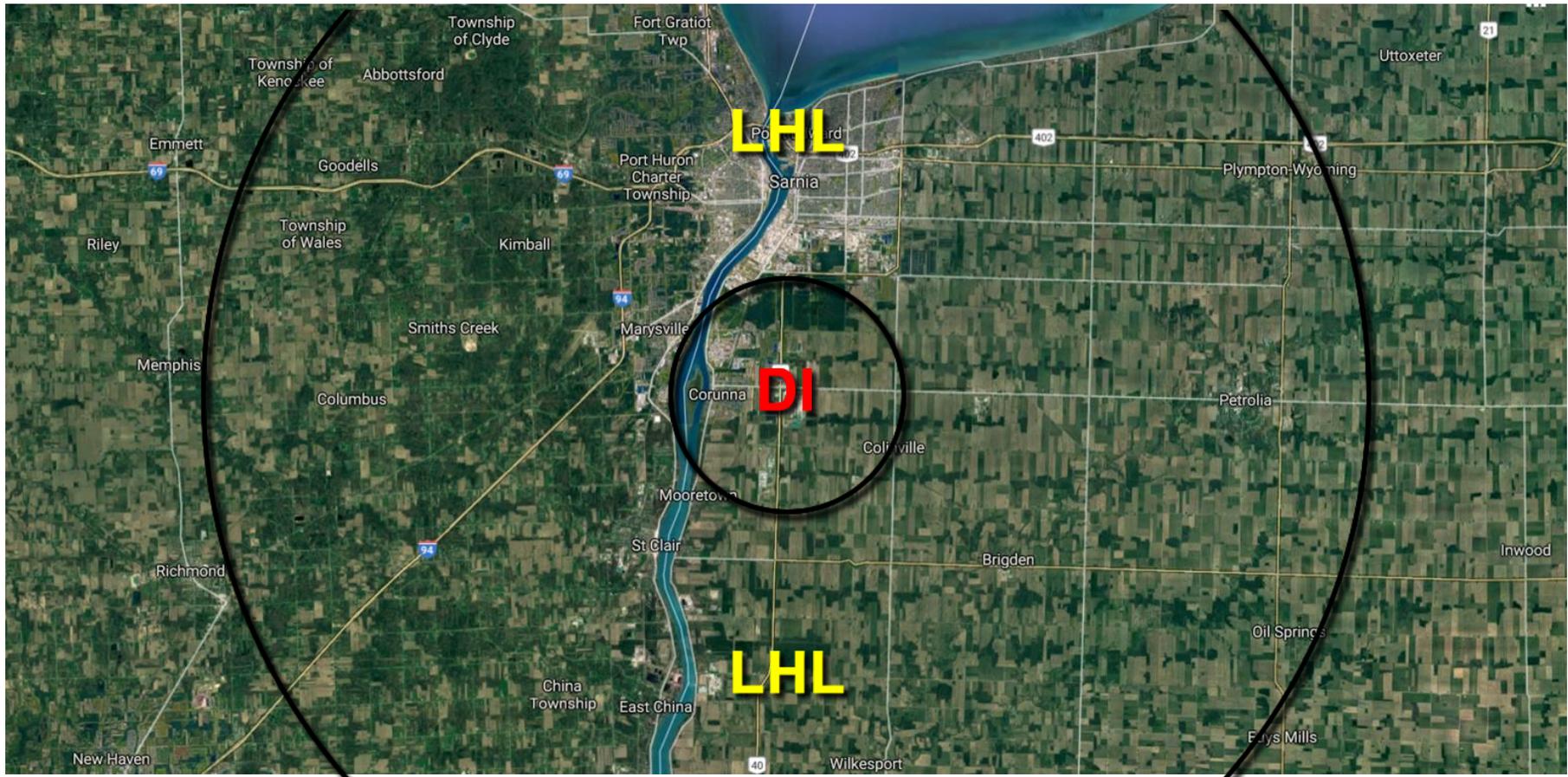
In the example above, the red line represents the energy the Thor Guard measures. At 2:59 PM, the Thor Guard system in Arizona went into **RED ALERT**. As you can tell on the radar imagery at 2:55 PM, the 'shower' was stronger than it was by 3:10 PM. However at 3:08 PM, the *first and only strike* heard by Thor Guard personnel in this area occurred. This means that not only can a Thor Guard detect lightning, but more importantly **PREDICT** lightning 9 MINUTES BEFORE it happened. Any other lightning warning system would have simply warned you a few moments after that lightning strike discharged very close by!

## REAL WORLD EXAMPLE #2

Thor Guard in **RED ALERT** 29 MINUTES BEFORE strikes within 5 miles!



In the example above, the red line represents the energy the Thor Guard measures. At 2:27 PM, the Thor Guard system at this location in Florida went into **RED ALERT**. Although the radar imagery at 2:30 PM shows the heaviest part of the storm near the Thor Guard's location, it was simply a heavy downpour with very distant rumbles. Then as it got closer to 3:00 PM the center of the storm moved farther away, but the lightning actually got closer since it was trailing behind. By 2:56 PM lightning began to get very close to this location again showing the Thor Guard's ability to detect and **PREDICT** the threat of lightning - in this case giving 29 MINUTES warning time.

**LIGHTNING SENSITIVITY RADIUS - QUOTE #1**

Even though our systems can detect lightning out to 20+ miles, for your facility we can set your lightning prediction outer range (LHL) to 10, 12 or 15 miles and warn you when the inner range (DI) sees enough energy changing within 2 or 2.5 miles to predict the threat of lightning before it happens.

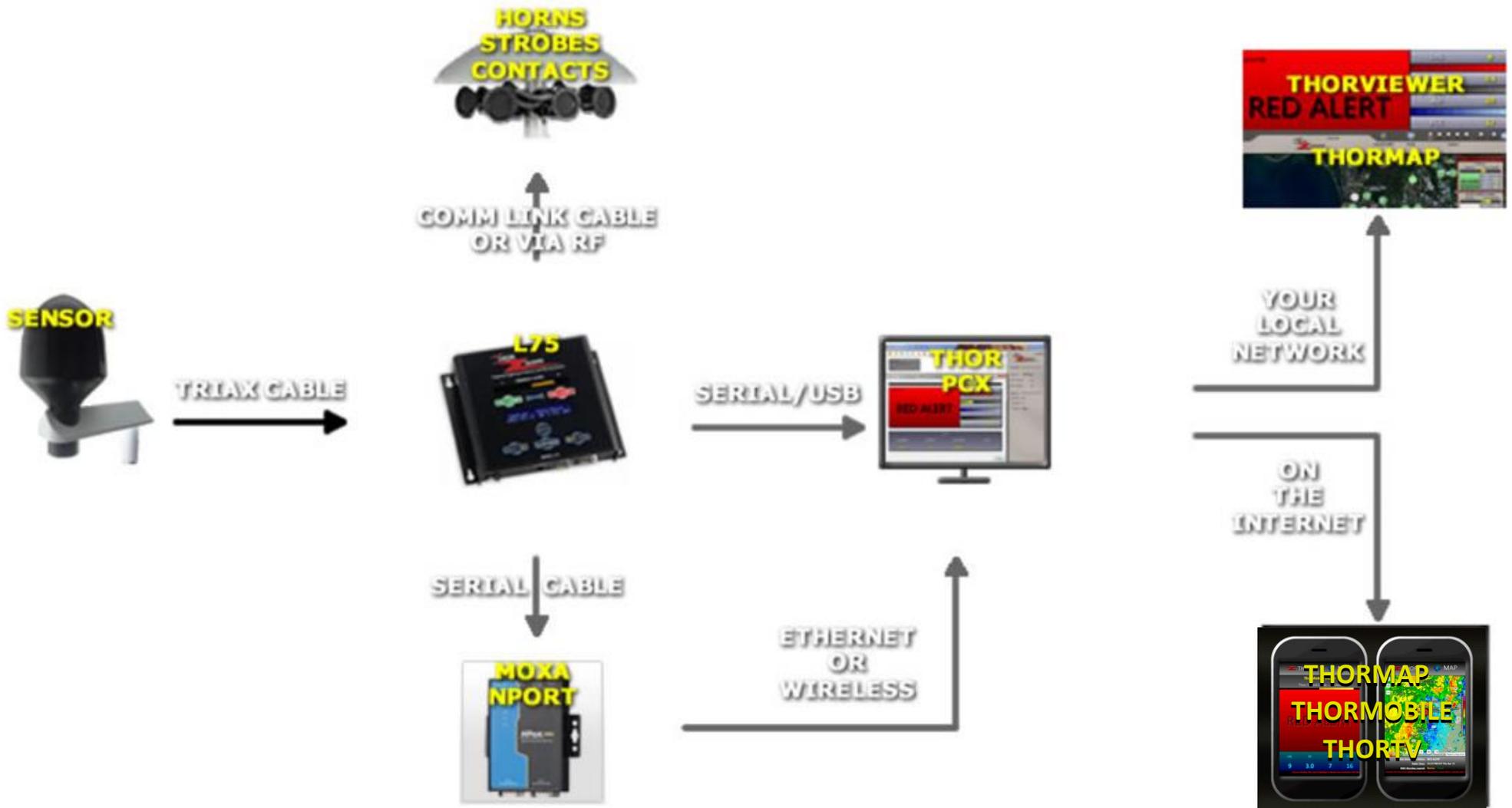
# LIGHTNING SENSOR INSTALLATION IMAGES



Our Lightning Sensors do not always have to be on the tallest building or object onsite, but need to have the best possible view of the sky in order to be able to accurately monitor the static electricity changing in the local atmosphere.

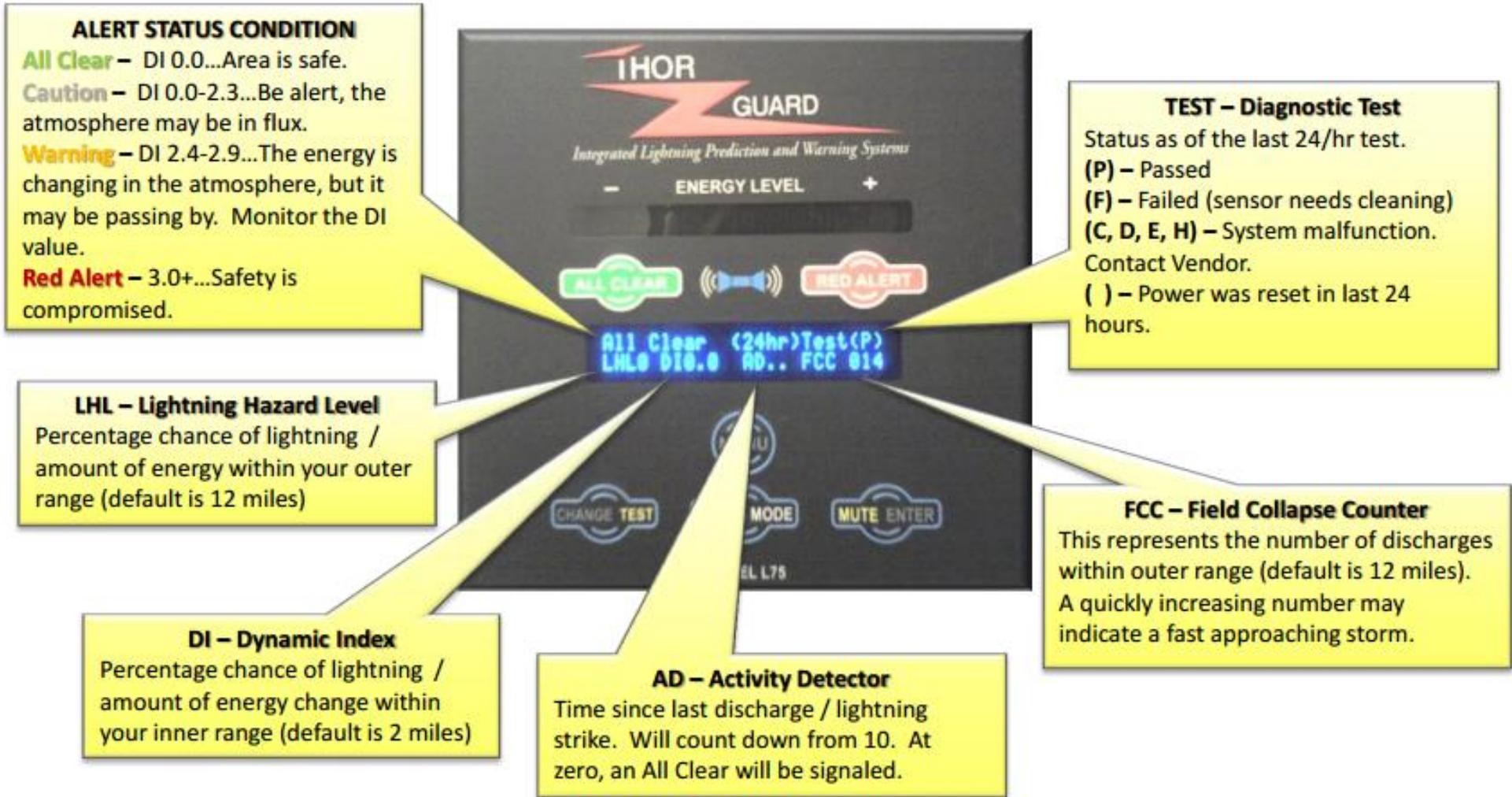


# INFORMATION PROCESS TREE



<http://www.thorguard.com/customer/>

# DATA INTERPRETATION



**ThorPCX** is software that installs on a Windows-based PC or Server. It is the core software that handles all THOR GUARD data. **ThorPCX** receives incoming data from your THOR GUARD system usually via a directly connected Serial/USB cable. **ThorPCX** can automatically archive storm data files for later review, send automatic email and text alerts, uploads your data to your ThorMobile/ThorTV/ThorMap website to provide all of your THOR GUARD Sensor data to any of our many software display products.



<http://www.thorguard.com/customer/>

## SOFTWARE DISPLAYS

### THORMOBILE



**WE HAVE LIVE DEMOS OF BOTH SOFTWARE PRODUCTS ONLINE...GO TO THE LINK BELOW!**

### THORTV



<http://www.thorguard.com/software/>

# A COUPLE OF TESTIMONIALS



**PRAIRIE DUNES COUNTRY CLUB**

4812 East 30th  
HUTCHINSON, KANSAS 67502  
(620) 662-0581  
FAX (620) 662-6653

March 7, 2018

Mr. Robert Dugan  
Thor Guard Inc.  
1193 Sawgrass Corporate Parkway  
Sunrise, FL 33323

Mr. Dugan,

As the General Manager of a mid-west destination golf club in the middle of tornado alley, I can assure you there are many days I spend wondering how weather might impact our operation. Pop-up thunderstorms are a way of life in Kansas and getting everyone off the course safely is a priority. Until recently we relied upon weather apps and looking out the window to determine if we should blow the siren sometimes based on the judgment of an inexperienced Assistant Golf Professional. It's a wonder no one has been killed over the years.

Our affiliation with Thor Guard began with a conversation with one of my members that works with the USGA on several of their national events. His familiarity with your Chief Meteorologist, Jake Swick, the Thor Guard system, and the fact that the USGA put their trust in Thor Guard made it an easy decision to proceed in that direction. With Jake's assistance and support material it was an easy sell to our Board of Trustees. Within about a month Thor Guard was up and running just in time for our busy season.

It's one thing to have a lightning detection system, it's another thing to have a lightning detection/prediction system with credibility. After the first couple of alerts and all-clears the members realized Thor Guard could be trusted to give them ample warning of pending weather, and clearance when the threat had dissipated, while at the same time taking the responsibility off the Pro Shop staff. Winner!!

I am happy to recommend the Thor Guard system as it has been a great addition for our facility. From beginning to end it's been a wonderful experience.

Sincerely,

Scott Nelson  
General Manager  
Prairie Dunes Country Club



*Developing Golf's  
Next Generation*

## American Junior Golf Association

1980 SPORTS CLUB DRIVE • BRASELTON, GA 30517 • (770) 868-4200 • AJGA.ORG • A 501(c)(3) NONPROFIT ORGANIZATION

August 7, 2013

Mr. Robert Dugan  
President  
THOR GUARD, Inc  
1193 Sawgrass Corporate Parkway  
Sunrise, FL 33323

Dear Bob:

As the Chief Operating Officer for the American Junior Golf Association (AJGA) I am pleased to highlight a successful partnership we've shared with THOR GUARD, Inc. for our lightning prediction equipment needs since 1998.

Because of THOR GUARD, our staff of 20+ Tournament Directors has complete confidence in knowing when to evacuate the golf course due to pending inclement weather. In running 102, National junior golf tournaments, we need a lightning detection system that we can trust. THOR GUARD is that and more.

Please pass along a special thank you to Larry Buchwald, our territory manager. Larry's dedication, time and expertise at a moment's notice has always been invaluable to our staff.

I am always pleased to recommend with confidence THOR GUARD, Inc. and your lightning prediction equipment products. Thank you for your continued support of the American Junior Golf Association and junior golf.

Sincerely,

Mark Oskarson  
Chief Operating Officer, AJGA

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