Which System Better Safeguards Against Lightning?

The PGA Golf Professionals at a premier club on Hilton Head Island had a problem. **While they invested and installed a new system that promised to predict lightning, it was not working and felt that the system had some deficiencies.**

They researched alternatives and contacted WeatherBug to learn more about our total lightning detection solution. The club asked us how our solution would compare with the lightning system they had installed—and whether we could validate what they had experienced.

Total Detection vs. "Prediction"

We compared the data from our solution to data from their existing system from April – October 2013:

- The data analysis compared data from one system claiming to predict the probability of lightning to total lightning detection powering the WeatherBug offering.
- The system that claims to predict lightning senses the probability of lightning via a single sensor on a customer site - such as a golf course, a school, or a park.
- The WeatherBug solution detects actual real-time lightning strikes in the clouds and on the ground from the world's largest lightning sensor network. Alerts are issued when lightning is detected within 10 miles or another customizable radius.

Comparative Analysis:

- 49 total storms with lightning were tracked and examined.[1]
- Storms occurred between April–October 2013, the peak season for lightning danger.
- Storms were defined as an event with lightning within 10 miles—the distance recommended by the National Weather Service to help ensure safety.[2]

Summary:

- The system that claims to predict lightning issued false alarms 16% of the time when there was no lightning within 10 miles of the course.
- The "prediction" system also performed poorly by issuing an early "all clear" 14% of the time; meaning there was still lightning present within 10 miles of the course.

Detection	"Prediction"
The total lightning detection solution detected and alerted to all 49 storms in this analysis.	The system that claims to predict lightning alerted to only 25 out of 49 storms in this analysis.
100% of storms were detected.	**Missed 49% of the storms.**
Alerted 100%	**Alerted 51%**

[1]76 total storms with lightning took place from April to October 2013; however, the system that claimed to "predict" lightning went offline for and failed to detect 26 storms. Only the 49 storms logged by both systems were used in this analysis.

[2]http://www.lightningsafety.noaa.gov/sports.htm

On every metric, the WeatherBug Total Lightning Solution beat the system that claims to predict lightning:

Analysis of Lightning "Prediction" vs. Total Lightning Detection, April–October 2013

Metric	Lightning "Prediction" System Performance	Comment
Probability of Detection (POD)	51%	The system appropriately alerted to 25 out of 49 storms. (In comparison, the WeatherBug Total Lightning Solution detection rate was >99% for these storms.)
No Alert	49%	Storms with lightning for which no alert was issued when lightning was within 10 miles.
Early All Clear	14%	All Clear issued when lightning was still present within 10 miles. Unsafe as defined by the NWS.
False Alert/Alarm	16%	Alerts issued when there was no lightning within 10 miles.

The WeatherBug Total Lightning Solution Advantage

Network Approach: Sensors are part of a network, and all detect and report lightning risk in unison – even if one sensor happens to go down. Deploying just one sensor means there is backup in place should the sensor go offline.

Detects Total Lightning: Detects in-cloud and cloud-to-ground lightning, a capability that is well beyond that of existing networks and single-node "prediction" systems.

Comprehensive Alerting: High rates of in-cloud lightning serve as precursory indicators of the potential for severe weather. Alerts for lightning and severe weather can be set for multiple locations and delivered via multiple methods – mobile devices, computers and mass outdoor alerting systems.

Know The Facts About Lightning "Prediction"

Most lightning experts agree that it's impossible to predict exactly *when* and *where* lightning will strike.

"Vendors who claim to 'predict' lightning in advance (which is impossible; it's just guesswork) should be rejected."

Source: *The National Lightning Safety Institute*.

Since in-cloud lightning often precedes cloud-to-ground strikes, relying *only* on cloud-to-ground strikes, let alone predicting them, does not provide the fastest warnings.

"Consider subscribing to a commercial, real-time lightning detection service that has been independently and objectively verified…Other commercial services claim to predict lightning rather than detect and report on lightning that is already present. Unfortunately, all devices have certain shortfalls, and many have not been independently or objectively verified."

Source: *National Athletic Trainers' Association*

What do the governing bodies for lightning safety recommend?

Lightning Safety System	National Weather Service NWS	National Athletic Trainers Assoc. NATA	National Lightning Safety Institute NLSI	American Meteorological Society AMS
Detection	✓	✓	✓	✓
"Prediction"	✗	✗	✗	✗
Handhelds	✗	✗	✗	✗