

## Earth Networks Debuts PulseRad – First-of-its-Kind Radar Alternative Based on Total Lightning

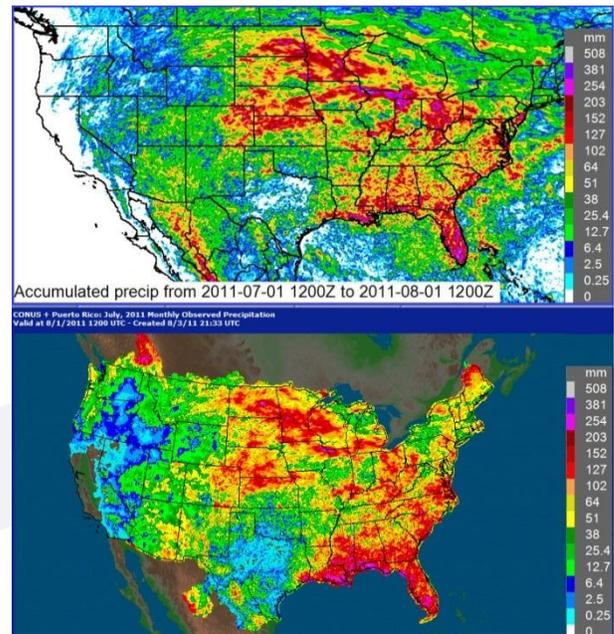
*PulseRad Helps Improve Forecasting, Severe Weather Warnings, and  
Assess Potential Flooding and Drought in Areas without Radar Coverage*

**Germantown, MD – January 20, 2012** – [Earth Networks](#)<sup>SM</sup> the operator of the largest weather, lightning and climate observation networks, announces the debut of [PulseRad](#)<sup>SM</sup>, the first radar alternative based on total lightning detection. PulseRad is designed to be a cost-effective solution to empower meteorologists with more information to improve forecasting and lead times for dangerous storms with the potential for flooding or severe weather such as damaging winds, large hail, tornadoes, and drought in places with significant convective weather, and where actual radar coverage is incomplete or nonexistent, for example, mountainous terrain, oceans, remote regions and developing countries.

While radar is a proven and useful tool providing great benefits to meteorologists, many areas of the world lack the financial resources and technical expertise to deploy, operate and maintain a radar solution. PulseRad's patent-pending technology is designed to provide similar benefits to radar at lower cost, and can be quickly implemented. This capability is appropriate for regions where convective storms pose a serious threat to lives and property. In the near future, capabilities will be expanded to include non-convective storms using satellite and model data. PulseRad is also the first practical alternative radar solution capable of coverage on a national and continental scale.

PulseRad visually resembles radar and shares key attributes of composite radar. Like traditional radar, PulseRad tracks storm severity by estimating radar reflectivity (dBZ). In conjunction with data from the Earth Networks Weather Network, PulseRad estimates rainfall rates and accumulated precipitation for both short- and long-term events lasting for minutes to months. PulseRad can serve as an effective alternative for areas with limited or no radar coverage by tracking storm cells and supporting automated alerting for severe weather on a more granular scale.

This innovative solution is enabled by the [Earth Networks Total Lightning Network](#), the largest global sensor network for the detection of both in-cloud (IC) pulses and cloud-to-ground (CG) lightning. PulseRad is the first proxy radar resource to utilize total lightning to correlate total lightning flash rate (dBR) and radar reflectivity (dBZ).



**Caption:** Accumulated precipitation as estimated by PulseRad for July 2011 (top) as compared to actual National Weather Service observed (bottom) for July 2011. Demonstrates the accuracy of PulseRad algorithms that correlate lightning flash rate to radar reflectivity. PulseRad provides visibility where radar coverage is incomplete or nonexistent, including mountainous terrain, oceans and remote regions.

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Earth Networks will incorporate PulseRad into its weather monitoring and severe weather alerting offerings for utilities, agriculture, airports, emergency response organizations and in other professional operations to track conditions for timely decision making.

Key benefits of PulseRad include the following:

- **Cost Effectiveness:** Deploying traditional radar requires millions of dollars in instrumentation and experienced personnel to ensure proper operation and perform maintenance. PulseRad can be deployed more easily and at a lower cost with minimal maintenance, while providing similar benefits to radar.
- **Interactive Storm Map:** Provides a proxy, or simulated, radar map of convective storms, using the strong correlation that exists between total lightning flash rate and radar reflectivity. Distinct algorithms for multiple climate zones, including mountainous, tropical, and subtropical, within a forecast area are seamlessly integrated into the application.
- **Flood Potential Indicator:** Provides real-time estimation of rainfall rates and accumulated precipitation providing the data for flood monitoring and warning.
- **Drought Threat Estimate:** Long-term accumulated precipitation estimates enable drought monitoring and warning.
- **Nowcasting for Advanced Warning:** Enables advanced, automated alerts of building storms through continuous proxy radar coverage updated every minute. In contrast, traditional radar typically updates every five minutes.
- **Dangerous Thunderstorm Indicator:** Highlights the potential for dangerous total lightning flash cells that increase the likelihood of damaging winds, large hail, tornadoes and cyclones within convective storms. The feature uses lightning cell tracking to identify storm cells and correlate the total lightning flash rate within a cell with radar reflectivity.
- **Ocean and Land Coverage:** When compared to traditional limited-range radar, PulseRad greatly improves forecasting of approaching storms spanning mountainous terrain, remote regions and over oceans. This expanded coverage is enabled by the Earth Networks Total Lightning Network, which provides the broadest lightning coverage of both in-cloud pulses and cloud-to-ground strikes, independent of terrain or location.

“Researchers have long held that a correlation exists between lightning and increasing storm strength, but until recently there has been limited availability of in-cloud lightning data, which is required to establish this correlation,” says [Earth Networks Chief Architect Dr. Charlie Liu](#). “With information from the Earth Networks Total Lightning Network, we are showing that a correlation not only exists, but that the data can also be used to create an alternative radar solution for convective storms in which lightning is present.”

**To Learn More:** Earth Networks Senior Scientist Charlie Liu will explain more about this correlation and the detection technology involved in a presentation at the [92nd Annual American Meteorological Society \(AMS\) Meeting](#) in New Orleans. His presentation, “Relationships Between Total Lightning Flash Rate and Radar Reflectivity in Convective Storms,” will be given Monday, January 23 at 1:45pm in room 340/341. Those unable to

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attend the session may request a copy of the presentation by contacting Steve Prinzivalli [SPrinzivalli@earthnetworks.com](mailto:SPrinzivalli@earthnetworks.com).

“Radar is a proven and effective solution providing great benefit in the limited areas of the world where implemented,” says [Earth Networks President and CEO Bob Marshall](#). “However, many parts of the world are greatly affected by severe storms but are not covered by radar and simply do not have the resources necessary to properly deploy and operate radar. PulseRad offers a practical alternative for these regions.”

“When we launched the Earth Networks Total Lightning Network, we envisioned a wide array of beneficial applications for the data,” continues Marshall. “PulseRad exemplifies this vision. By leveraging the largest global network that detects total lightning on national and continental scales, PulseRad provides a groundbreaking new radar alternative that can be used to help save lives and protect property from extreme weather by enabling improved storm tracking, flood and drought warnings, and severe weather alerting in regions with little or no radar coverage.”

#### **About the [Earth Networks Total Lightning Network](#)**

Earth Networks Total Lightning Network is the largest worldwide network of broadband weather sensors for monitoring and detecting both in-cloud lightning and cloud-to-ground lightning in real-time. In-cloud lightning often serves as a precursor to heavy rain, large hail, dangerous cloud-to-ground lightning strikes, tornadoes and downburst winds. Introduced in early 2009, the Earth Networks Total Lightning Network now includes more than 550 sensors deployed across North America, South America, Europe, Africa and Asia. When lightning rates exceed a “severe” threshold and there is an increased threat of severe weather, Earth Networks issues alerts that can provide significant advanced notice of potentially dangerous conditions.

#### **About [Earth Networks<sup>SM</sup>](#)**

As the provider of advanced weather data for nearly 20 years, Earth Networks (formerly AWS) operates the world’s largest weather observation and lightning detection networks and is building what will become the largest greenhouse gas monitoring network. Observations from Earth Networks inform and alert consumers, enterprises and governments around the world, providing them with advanced environmental intelligence for decision making and safety. The company’s popular WeatherBug [website](#), [desktop application](#) and [mobile](#) apps provide millions of consumers with real-time, local weather information and dangerous severe weather alerts. Enterprise solutions from Earth Networks enable organizations, including energy and utilities, agriculture, schools, sports and recreation, emergency operations and government entities, to safeguard lives, prepare for weather and climate events and improve business operations. Earth Networks ([www.earthnetworks.com](http://www.earthnetworks.com)) is headquartered in the Washington, D.C. area with offices in Mountain View, Calif.; New York, NY; Milan, Italy and a local presence in 50 countries worldwide.

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