microsferics

Time Of Arrival Lightning Detection Network

Introduction

Microsferics TOA LDN (Time Of Arrival Lightning Detection Network) is a community based lightning locating and tracking system designed around low cost electronics and primarily operated by hobbyists and weather enthusiasts. The TOA locating method enables highly accurate real-time positioning of lightning activity.

Participating in the network requires a TOA sensor with accompanying controller electronics module. All lightning data detected by a sensor site is sent over Internet to a central processing server by using a special network client software. The client software is available for a host of different platforms, ranging from Windows or Linux PC's to single board computers (SBC) such as Raspberry Pi and BeagleBone Black.

A brief history

2015 – First five experimental TOA sites, running revision 1 hardware, come online in the Benelux area in Europe with an additional two sites in the UK joining shortly thereafter. Participation at this point requires that the operator owns a relatively expensive Boltek lightning detector and runs a Windows PC 24/7 for the network client software.

2016 – The North American network is started with a number of sites in primarily Central and Eastern USA joining the network. During the following months several sites in Canada also join. Hardware revision 3 is released.

2017 – Start of hardware and firmware development for TOA Compute Unit revision 4.

2018 – The Microsferics TOA Compute Unit revision 4 is finalized. This is a significant improvement over the older revisions, utilizing a new and more powerful microprocessor, built in mini-display and optimized signal conditioning electronics.

TOA kit V4 front with integrated display

Another major milestone this year is that the design of our custom TOA lightning sensor is finished and we begin in-house testing.

2019 – In early summer, the first custom TOA sensor comes online in Baxley, GA, USA for field tests. By the end of the year, after a period of very satisfying test results, we begin readying the custom sensor for public release in early 2020. At around the same time development of the universal Linux client is wrapped up. The new lightweight client software can run on various Linux distributions including single board computers such as the Raspberry Pi.

Hardware options

There are three basic equipment options for participation in Microsferics Lightning Detection Network:

Option 1
If already operating a Boltek lightning detector, only a **TOA Compute Unit V4** is required.

Option 2
Microsferics custom **TOA sensor** with **TOA Compute Unit V4**.

Option 3 *— Coming soon!*
Microsferics custom **TOA sensor**, **TOA Compute Unit V4** and **NanoPi R1S-H5** single board computer preinstalled with client software on SD card.

Options 1 and 2 require you to additionally provide a Windows or Linux PC (Ubuntu or Debian distribution) or a single board computer such as Raspberry Pi 2/3 or BeagleBone Black for running the network client software.

Option 3 is our turnkey solution that does not require the user to supply a computer platform.
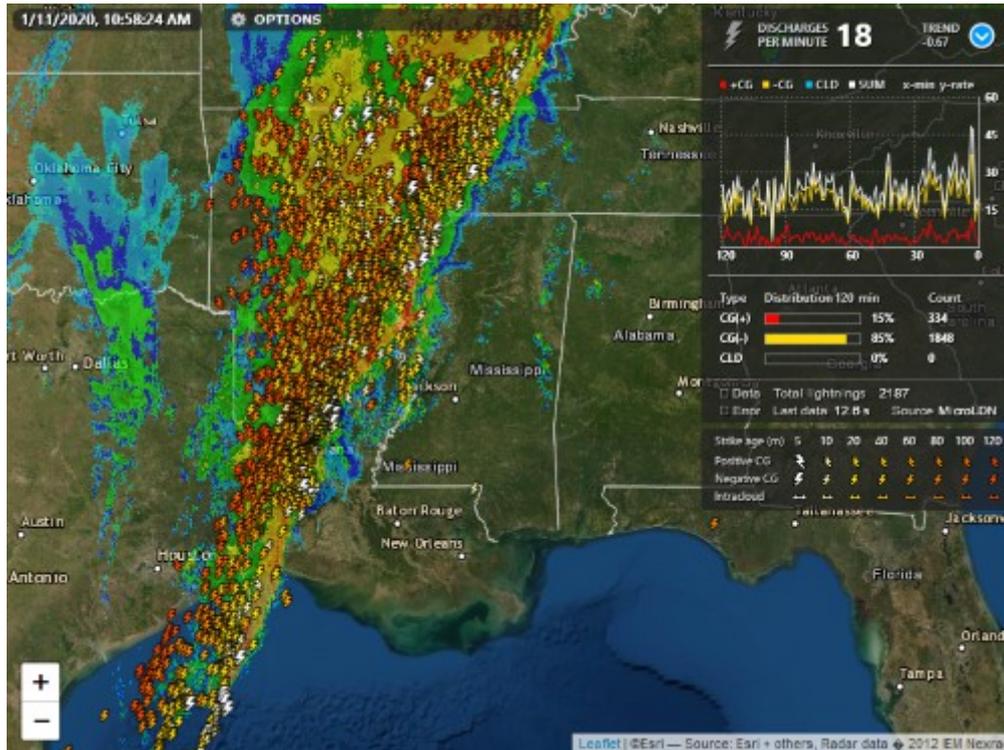
Joining the Microsferics TOA LDN

Microsferics networks are available in North America, Europe and soon, Eastern Australia.

First of all, you will need to decide which one of the hardware options listed on the previous page is the right one for you. Once that is done, head over to the Astrogenic Systems web shop, find your option and place the order: https://astrogenic.com/shop/index.php?cPath=31.

Once your order is shipped we will contact you and provide account details and other pertinent information that will enable you to connect your TOA sensor to our central processing server.

If you have any questions don't hesitate to get in touch with us!

www.microsferics.com
info@microsferics.com