



Volume 18 - Summer 2021



Jagadish Chandran Kaimal
1930 – 2021

We are very sad to announce that Jagadish Chandran Kaimal, atmospheric physicist, known for his important contributions to the study of turbulence in the Earth's boundary layer, died peacefully of natural causes at his home in Hamilton, New York on January 25th. He was 90 years old.

[Read his Obituary](#)



Research From The Vaults

If you are like some of our customers - self professed instrument geeks - you enjoy the obscure facts we share on sonic anemometers and related technology. I recently encountered a research paper written by Kochendorfer et al. (Boundary-Layer Meteorol, 145:383-398, 2012) that I think is as relevant today as it was when it was originally written.

Titled, "How Well Can We Measure the Vertical Wind Speed? Implications for Fluxes of Energy and Mass", this paper summarizes research conducted with various sonic anemometers used to measure the true eddy covariances, which is a key atmospheric measurement technique that measures and calculates vertical turbulent fluxes within atmospheric boundary layers. The researchers discovered that sensor design can have a significant impact on the accuracy of the measured data. They compared non-orthogonal sonic anemometers with orthogonal sonic anemometer.

Spoiler Alert - The researchers note, "These results indicated that sensors with a non-orthogonal transducer orientation, which includes the majority of the research grade three-dimensional sonic anemometers currently in use, should be redesigned to minimize sine errors my measuring the vertical wind speed using one pair of vertically aligned transducers".

Nice to have our designs and research validated.

Below is a link for those wanting to read the paper in its entirety:

[Read More](#)



TriSonica™ Mini Wind and Weather Sensor

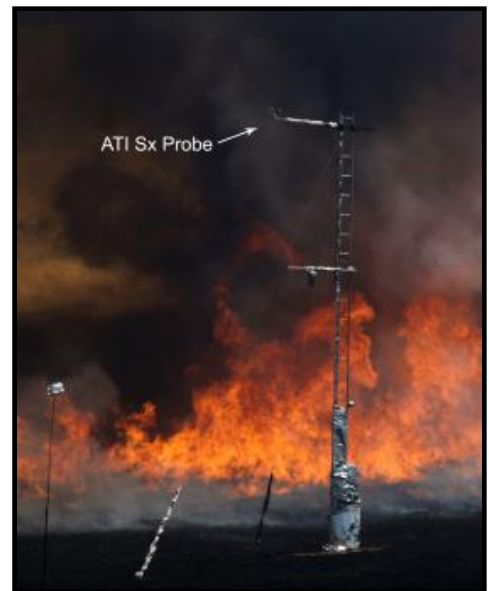
Optimized for UAV Use

“Honestly, among all of the sensors that we used, the TriSonica Mini was the easiest to integrate, even though it was the most sophisticated, as far as functionality.

William Villers, VP of Engineering
Ten Tech LLC

[More TriSonica Information](#)

Can You Calibrate Above Ambient?



For some users, this question would never arise, but for Craig Clements, Ph.D., San Jose State University the answer was critical. Dr. Clements heads up a multi-discipline team at the Fire Weather Research Laboratory, Wildfire Interdisciplinary Research Center whose goal is understanding how the atmosphere influences wildfire behavior as well as how those fires influence the atmosphere. Other manufacturers responded that their sensors would max out at 50° C., and since Clements was interested in measuring top plume temperatures around fires, that eliminated their devices from further consideration. He posed the same question to Herb Zimmerman at Applied Technologies, Inc. (ATI) and was encouraged at his response: “Let me test it and I will get back to you.” ATI’s tests demonstrated that their sonic anemometer would work up to 110° C, a threshold that Clements subsequently validated for himself.

A superior design

In Clements’ research, extreme temperatures are the norm. Devices rarely escape unscathed. “Most sonics melt when exposed to these extreme temperatures, including ATI,” says Clements. “One thing about the ATI Sonic is that the electronics are housed in the cross arm and for fire applications, that’s important because you can wrap the cross arm with fire proofing material to shield the electronics from radiation from the fire. ATI Sonics are the only sonic that really survived our wildfire experiments and are the only ones calibrated high enough for our unique environment.”

ATI’s design provides additional distinctions from Clements’ perspective. “I think ATI’s approach, in terms of where the electronics are and the cross arm, is pretty cool,” mentions Clement. “This allows us to simply run one cable out and it doesn’t require a separate box. It’s all confined into a very streamline product. That’s important for reducing a wake turbulence from the head itself.”

In the field of wildfire research, San Jose State University’s Fire Research Laboratory sets the standard for benchmark data sets for the testing of fire models around the globe. “That’s a lot of pressure on me to collect the best data set as possible,” Clements says. Yet he is quick to summarize, “In my opinion, to conduct fire turbulence research, you need to use ATI’s sensors. I own six of their anemometers, and soon will have two more. I just think ATI sonics are simply the best sonics available, period!”

Random Quotes:

I cannot live without books.
-Thomas Jefferson

I believe that our Heavenly Father invented man because he was disappointed in the monkey.
-Mark Twain

I never think of the future, it comes soon enough.
-Albert Einstein

If bread is the first necessity of life, recreation is a close second.
-Edward Bellamy

A woman who has never seen her husband fishing doesn't know what a patient man she has married.
-Ed Howe

Manners are the happy way of doing things.
-Ralph Waldo Emerson

A dog is the only thing on this earth that loves you more than he loves himself.
-Josh Billings

Life is something you do when you can't get to sleep
-Fran Liebowitz

Some cause happiness wherever they go; others whenever they go.
-Anonymous

The basic problems facing the world today are not susceptible to a military solution.
- John F. Kennedy

Diplomacy: The art of jumping into troubled waters without making a splash.
-Art Linkletter

Tact is the ability to describe others as they see themselves.
-Abraham Lincoln

An atheist is a guy who watches a Notre Dame – SMU football game and doesn't care who wins.
-Dwight D. Eisenhower

To err is human, but when the eraser wears out ahead of the pencil, you're overdoing it.
-J. Jenkins

Growth for the sake of growth is the ideology of the cancer cell.
-Edward Abbey

When opportunity knocks, some people are in the back yard looking for four-leaf clovers.
-Anonymous

Standing in the middle of the road is dangerous; you get knocked down by the traffic from both sides.
-Margaret Thatcher



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