

Windwords



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A Recent Testimonial

Thirty Years and Counting...

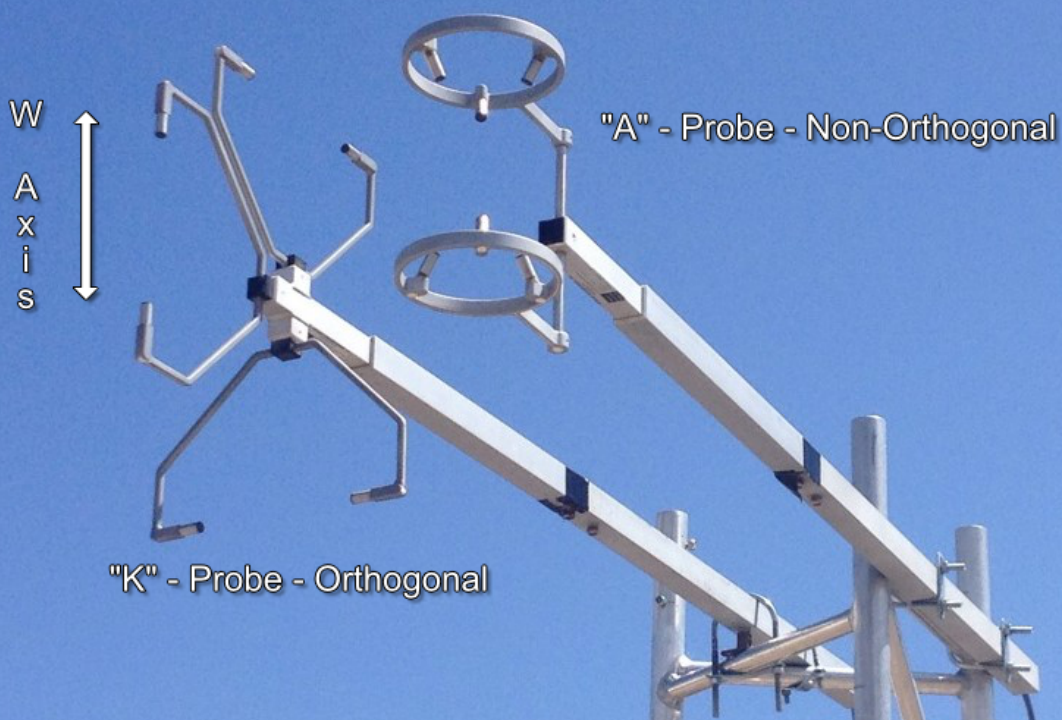
"ATI sonics have been a mainstay at the Harvard Forest research site for over 30 years. In terms of the long-term historical significance, the Harvard Forest site is the vanguard for research of this nature.

It's certainly the longest running CO₂ flux observation site.

With this 30 year record you can see how important ATI has been to us in our research."

Bill Munger, Senior Research Fellow, Harvard School of Engineering and Applied Sciences (SEAS).

No Vertical Flow Distortion



Why should I care about an orthogonal sonic anemometer?

What's so special about an orthogonal sonic vs. a non-orthogonal sonic?

Rather than being inferred or calculated from some other measurement, our orthogonal ultrasonic anemometers measure true vertical velocity (the "W" component) as a direct measurement with an alignment accuracy of better than $\pm 0.1^\circ$. The resulting data is captured with excellent frequency response, making it ideal for many aspects of atmospheric research, including Eddy Correlation and Eddy Flux (calculating vertical turbulent fluxes within atmospheric boundary layers).

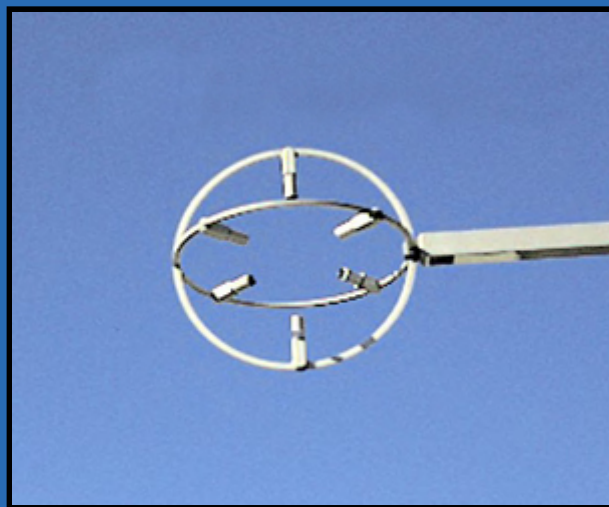
Non-orthogonal sonic anemometers have been around for about twenty years. They are defined as having three measurement axes inclined at an angle of 60 deg to the horizontal and intersecting at their midpoints to form a small sampling volume. A large number of the users today have this type of anemometer.

Investigators who have data collected from all their sites are finding that data from stations using the non-orthogonal probes were underestimating both the vertical wind component and the heat flux by about 15% compared to those using ATI's orthogonal probes.

We believe the non-orthogonal configuration also creates an extra sensitivity to blockage of the vertical wind flow. This is because the "W deficits" from the three probe axes simply add up, and they are all mounted vertically which puts a mass in the path of the vertical measurement whether the flow is up or down. To address the blockage problem Applied Technologies has designed a non-orthogonal probe, the ["A" Style Probe](#) that permits vertical air flow through the space between adjacent transducers.

The K-Probe is what the Harvard School of Engineering and Applied Sciences has relied upon for over 30 years.

Take a look at the document that compares orthogonal vs. non-orthogonal probes [HERE](#). See our orthogonal and non-orthogonal probe designs [HERE](#).



The "V" Style Probe

All of ATI's probes are based on 15 cm spacing between the transducers except for the ["V" Style Probe](#). The "V" probe is smaller, 10 cm, and was designed for turbulence, where eddy measurements must be the smallest. It is most useful for flux measurements in plant and forest canopies where wind speeds are very low, and directions are highly unpredictable. The "V" probe is an orthogonal probe, meaning it is measuring the vertical winds directly. This probe design utilizes the same rugged construction as our other sonic anemometers, as well as our extremely accurate electronics. The specs for our "V" probe, as well as our 15 cm probes, can be found [HERE](#). See all our probe designs [HERE](#).



Thirty Years and Counting

Harvard SEAS and Applied Technologies, Inc.

Micrometeorological research has been undertaken at the Harvard Forest for decades. The eddy-covariance flux tower at the Harvard Forest Environmental Measurements Site (HFEMS) was installed in 1989. It provides the world's longest continuous record of net ecosystem CO₂ exchange, evaporation, and energy flux between a forest and the atmosphere. The measurements are taken on an hourly time resolution.

Maintained since 1990 by Harvard researchers Steve Wofsy and Bill Munger, the Environmental Measurement Station Eddy Flux Tower (EMS) is fitted with sensors essential for atmospheric flux studies in addition to the continuous CO₂ exchange. One sensor that has been present since the tower's initial deployment is Applied Technologies, Inc. (ATI) sonic anemometer.

"ATI sonics have been a mainstay at the Harvard Forest research site for over 30 years," says Bill Munger, Senior Research Fellow in Atmospheric Chemistry, Harvard School of Engineering and Applied Sciences (SEAS). "I think in terms of the long-term historical significance, the Harvard Forest site is the vanguard for research of this nature. It's certainly the longest running CO₂ flux observation site. With this 30 year record you can see how important ATI has been to us in our research."

[Read the entire story and other customer stories here](#)



Courtesy of Andy Gresser on Pinterest

Will Rogers Advice!



Will Rogers was killed in a plane crash back in the 1930s.

**With all the fine advice we got from him,
nothing has really changed in the last 90 years.**

I don't make jokes; I just watch the government and report the facts.

Our Constitution Protects Aliens, Drunks and U.S. Senators.

The taxpayers are sending congressmen on expensive trips abroad. It might be worth it except they keep coming back.

There are men running governments who shouldn't be allowed to play with matches.

I can remember way back when a liberal was generous with his own money.

Good judgment comes from experience, and a lot of that comes from bad judgement.

The only difference between death and taxes is that death doesn't get worse every time congress meets.

The income tax has made liars out of more Americans than golf.

Last year we said, "Things can't go on like this," and they didn't, they got worse.

Never miss a good chance to shut up.

If you find yourself in a hole, one first thing to do is to stop digging.

Be thankful we're not getting all the government we're paying for.

When they told Will Rogers they wanted to put a statue of him in the U.S. Capitol he said that was OK, but to put it where he could keep an eye on Congress. If you visit the Capitol today, you will see Will Rogers right outside the entrance of the House Chamber with his eyes on the door!



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