INSIGHTS

The complete picture: how Fondriest and Gill are advancing environmental intelligence

> "Data is key to responding to and mitigating damage being done by the changing climate. Extreme weather events are becoming increasingly common, and data is our best defence."
>
> Samantha Baxter, Managing Editor, Fondriest Environmental

FONDRIEST ENVIRONMENTAL, INC.



Environmental monitoring has entered a new era.

Once centred on recording conditions and analysing trends after the event, today's monitoring systems are expected to do far more. They inform operational decisions in real time, support regulatory compliance, improve public safety and provide the environmental intelligence organisations need to respond with confidence.

Whether monitoring offshore construction projects, protecting communities from flood risk, supporting scientific research or guiding emergency response operations, accurate environmental data has become an essential part of modern decision-making.

For more than 25 years, Fondriest Environmental has helped researchers, engineers and environmental professionals build monitoring systems that deliver dependable, actionable data. Having supported more than 99,000 customers, the company has earned a reputation for combining technical expertise with practical application, ensuring customers select the right technology for their environment, objectives and long-term success.

As demand for real-time environmental intelligence continues to grow, so too does the importance of strong technology partnerships.

Building partnerships on performance

Environmental monitoring is not a sector where reputation is built through marketing alone. Trust is earned through years of dependable performance in environments where equipment failure simply isn't an option.

For Fondriest, every technology partnership begins with a simple question: will this help customers collect better data?

General Manager Paul Nieberding explains that Gill's reputation preceded the partnership itself.



"We have heard for years from our customers that Gill has a strong reputation and is the preferred sensor for many organisations. A few years ago, I met Paul Berberian from Gill at a conference, which started one of many discussions about forming a mutually beneficial partnership."

That customer-led confidence reflects the philosophy both organisations share. Rather than promoting products for their own sake, the focus is on recommending technologies that perform consistently, integrate seamlessly and deliver meaningful value in the field.

For Fondriest, that means understanding exactly what customers need to measure, how accurate those measurements must be and how environmental data fits into the wider monitoring system. Every recommendation is driven by application, not assumption.

From monitoring conditions to driving decisions

One of the biggest shifts within environmental monitoring has been the move from observation to action.

Increasingly, weather and environmental data is being collected not simply to understand what has happened, but to influence what happens next.

"The need for high quality, high resolution, real-time data has risen drastically in recent years as users begin to rely on environmental measurements to make decisions," says Baxter.

That evolution is evident across almost every sector.

Offshore development projects use environmental monitoring to ensure compliance during dredging operations. Research organisations combine weather data with water quality measurements to better understand ecosystem dynamics and improve predictive models. Flood warning systems integrate rainfall and water level monitoring with automated alerts, giving communities earlier warning before conditions become critical.

Environmental monitoring has become operational intelligence.

Reliability that extends beyond the specification sheet

Collecting environmental data is relatively straightforward.

Collecting reliable environmental data, year after year, in exposed and often hostile environments is considerably more challenging.

Deployment sites can range from offshore platforms and coastal waters to inland lakes, rivers and remote research stations. Every location presents its own environmental pressures, yet the expectation remains the same: continuous, dependable measurements.



For Samantha Baxter, Managing Editor, Fondriest Environmental, genuinely reliable instrumentation is defined by one characteristic above all others.



"Consistent quality data and long-term performance."

"Regardless of where equipment is being deployed, it must be able to withstand the elements and continue to provide data."

Nieberding agrees that consistency is what ultimately distinguishes a technology partner.



"The ability to perform consistently and provide quality data, even in demanding environments. Pairing the Gill sensor with NexSens systems allow users to collect real-time meteorological data wherever they need it, whether that be the open ocean, the Great Lakes, or inland applications."

That combination of proven sensing technology and integrated monitoring systems enables organisations to focus less on maintaining equipment and more on acting upon the information it provides.

Why ultrasonic technology continues to stand out

Gill's ultrasonic technology has become an important part of that equation.

Unlike conventional mechanical wind sensors, ultrasonic instruments contain no moving parts, reducing wear and significantly lowering maintenance requirements, particularly in marine and high-exposure environments.

"This is particularly helpful in rougher water applications," says Baxter. "Because there are no moving pieces, the risk of individual components being damaged is decreased, ultimately minimising the need for repairs or replacement."

For customers deploying monitoring systems in difficult-to-access locations, reducing maintenance visits not only lowers operational costs but also increases confidence that critical environmental data will continue flowing uninterrupted.

Gill's integrated GPS capability and high-accuracy compass have also proven particularly valuable for buoy-based deployments, allowing customers to collect multiple environmental parameters from a single, compact platform without compromising measurement quality.

MaxiMet Marine GMX560

Compact ultrasonic weather station built for marine deployment. Wind speed and direction, temperature, humidity, pressure, GPS position and a high-accuracy compass from a single unit, with no moving parts to service.

gillinstruments.com/maximet-marine



Supporting critical operations when it matters most

Perhaps the greatest measure of any environmental monitoring system is how it performs when the stakes are highest.

Gill weather stations integrated with NexSens systems have supported navigation and recovery operations following the 2025 aircraft accident in the Potomac River, where a CB-950 data buoy equipped with a Gill GMX560 Marine Compact Weather Station, acoustic Doppler current profiler and water quality sensors provided critical environmental information during recovery efforts.

Elsewhere, Gill technology is supporting long-term environmental monitoring across the Great Lakes. A recent deployment near Buffalo, New York combines a Gill weather station with a NexSens CB-650 data buoy and environmental webcam to monitor seiches, standing wave events capable of causing significant fluctuations in water level.

Although the applications differ dramatically, they share a common requirement: dependable environmental intelligence delivered precisely when it is needed.

Bringing water and weather together

While Fondriest has traditionally been recognised for its expertise in water monitoring, customers increasingly require a broader environmental picture.

For Nieberding, integrating weather and water monitoring represents a natural evolution.



"While our focus has historically been water monitoring, collecting reliable weather data is key for our customers to better understand the complete picture. They find strong value in getting both water and weather data from a single station rather than deploying independent stations and trying to merge the data together in post-processing."

That single observation perfectly captures the direction environmental monitoring is taking.

Customers no longer want isolated measurements.

They want connected environmental intelligence that delivers richer insight, reduces complexity and supports faster, more informed decisions.

From data to understanding

Technology alone does not solve environmental challenges.

Helping customers understand what the data means, and how it can improve decisions, remains one of Fondriest's defining strengths.

"Our goal is to help bridge the gap between the public and science and help show the importance and value in data collection," says Baxter.

Whether informing flood warnings, supporting environmental compliance, protecting ecosystems or advancing scientific research, environmental monitoring only creates value when data becomes understanding.

That philosophy aligns closely with Gill's own approach to sensing technology: providing measurements that customers can trust, interpret and ultimately act upon.

Looking ahead

As environmental monitoring continues to evolve, both organisations see enormous potential in greater connectivity, richer datasets and advances in artificial intelligence.

Real-time monitoring is replacing periodic sampling. Remote access is reducing operational costs. Predictive modelling is becoming increasingly sophisticated.

Nieberding is particularly excited by AI's ability to unlock insights previously beyond reach.



> **"We're interested to see the role AI can play in deriving environmental parameters or information that is currently difficult or impossible to measure directly."**

It is a reminder that the future of environmental monitoring will not simply be about collecting more data.

It will be about generating better understanding.

The complete picture

Environmental monitoring has become one of the world's most valuable sources of operational intelligence. Across research, infrastructure, public safety, water management and environmental protection, organisations increasingly depend on trusted data to make decisions with confidence.

Together, Fondriest Environmental and Gill are helping customers build monitoring systems that do more than measure conditions. They provide context, improve understanding and enable better decisions.

Because ultimately, environmental intelligence is not about collecting more data.

It's about seeing the complete picture.

WITH THANKS TO



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FONDRIEST ENVIRONMENTAL, INC.

Open water, coastal sites, inland rivers or remote research stations. Tell us what you need to measure and our engineers will help you specify the right sensing technology for the conditions.

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