



**METER**  
ENVIRONMENT



METER ENVIRONMENT

# BRINGING YOU INSTRUMENTS OF THE FUTURE

SEE WHAT'S NEW →



# 70%

## OF WATER USAGE GOES TOWARDS FARMING AND IRRIGATION

**As world water demand increases and supplies decrease, how can we turn more of the water we use for agriculture into biomass?** Scientists and engineers worldwide depend on METER systems for deeper understanding of these and other critical issues with global impact.



The ATMOS 41 linked to our ZL6 Data Logger for real-time data with Zentra Cloud

# Research is Changing the World

## THE EFFECT OF CLIMATE CHANGE ON TREE LINES

Dr. Richard Gill, ecologist at BYU, and his team use METER all-in-one weather stations, soil moisture, water potential, and NDVI sensors to measure environmental parameters in tree islands to learn what makes these areas advantageous for survival. ZENTRA Cloud gives the team the ability to recognize and troubleshoot data or technical problems in near real-time without having to make regular treks to high elevations in remote areas.



## REDEFINING HOW WATER RETENTION IS MEASURED

Dr. Marco Bittelli, an associate professor at the University of Bologna, knows that data is only as good as its accuracy. Pressure plates have been in use to measure water retention since the 40's, but as technology advances, decades-long standards became the least precise option. Dr. Bittelli chose instead to utilize LABROS instruments for water retention measurements in the lab and soil water content and water potential measurements in situ.



## ACHIEVING AMAZING TURF WITH LESS WORK

BYU turf scientist, Dr. Bryan Hopkins, envisioned a failproof system of soil moisture sensors to ensure turf never died and to learn to grow healthier turf. His team installed METER soil water content and water potential sensors. Combining measurements showed when grass was reaching stress conditions and how quickly the turf hit permanent wilting point. Ancillary measurements of temperature and electrical conductivity allowed for modeling surface and root zone temperature and fertilizer concentration dynamics.



# READY TO TACKLE THE WORLD'S MOST DIFFICULT CHALLENGES?

GET SET FOR FIELD SEASON →



WEATHER DATA



SOIL SCIENCE



HYDROLOGY



LAB INSTRUMENTS



THERMAL PROPERTIES



PLANT SCIENCE

NEW RELEASE

# ATMOS<sup>o</sup>

## 41W

THE TRULY WIRELESS ALL-IN-ONE WEATHER STATION

**Most all-in-one remote weather stations claim to be “wireless” but require a cable to telemetry in a separate bulky enclosure.**

Add a large solar panel and a giant battery, and their “all-in-one” weather stations don’t feel so “wireless.” At METER, we think getting your data should be uncomplicated and straightforward — with no strings attached.

**That’s why we made the ATMOS 41W.**



**MEET THE WORLD'S SIMPLEST WIRELESS WEATHER STATION**

The ATMOS 41W all-in-one remote weather station is one of the world's few truly wireless weather stations and the most affordable research-grade station in its class. All the telemetry is enclosed within an integrated cell module, making it robust, reliable, and simple to use. But that's not even the best part. There is nothing on the market that is easier to install. Put it in a backpack, take it to your site, secure it to a post pointing north, and you're done. It's that easy to start broadcasting real-time data directly to the cloud.

**NOT PLUG AND PLAY. JUST PLAY.**

We engineered the ATMOS 41W to work right out of the box without the hassle of managing a cell provider or connection, and there's no programming involved. It's a true wireless IoT instrument, sending data directly to the cloud. What if there's a data transmission interruption? No problem. The integrated logger

stores your data, so you've got 24-hour backup. Your continuous data stream is transmitted to ZENTRA Cloud every 15 minutes for easy access to high-quality measurements. Once in the cloud, you can see, share, and manage your data from anywhere worldwide on any device.

**LOW POWER, LOW COST, LOW MAINTENANCE**

The ATMOS 41W remote weather station is specifically designed for remote areas with harsh weather conditions. It is tough, durable, requires very little maintenance, and is entirely solar-powered. No configurations are necessary, and an innovative tilt sensor signals out-of-level condition, saving unnecessary trips to your site. It's perfect for microenvironment monitoring, spatially-distributed environmental measurements, crop weather monitoring, fire danger applications, weather networks, and more.



Scan the QR code or visit [go.meter.group/41W](https://go.meter.group/41W) →



COMING SOON

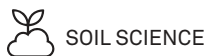
# TEROS<sup>®</sup>

# 54

SOIL MOISTURE PROFILE PROBE

**You need accurate soil moisture measurements from easily installed sensors without extensive excavation.** Most profile probes require you to choose between the ease of installation and removal, sensor accuracy, measurement volume, and durability. At METER, we weren't willing to create a soil moisture profile probe unless it could meet all of these requirements in one probe.

**Introducing the TEROS 54.**





**THERE'S THE HARD WAY, AND THEN THERE'S THE RIGHT WAY**

We designed the TEROS 54 profile probe to make every step of your measurement process easier—without sacrificing accuracy or durability. Soil water content and temperature sensors are positioned at 15, 30, 45, and 60 cm (6, 12, 18, and 24 in) depths, providing root zone measurements without requiring soil pits or cumbersome sensor retrieval at lower depths. You get all of the conveniences of profile measurements combined with the research-grade accuracy you've come to expect from METER.

**GET IN. GET OUT. GET DATA.**

Avoid the cost, hassle, and time of large drilling equipment and pilot tubes. TEROS 54 installation only requires a simple 2 cm (0.8 in) borehole for the robust quad-fin profile sensor to then be hammered into the soil. This creates better sensor/soil contact for more accurate readings. Removing the TEROS 54 is made

simple with the dedicated extraction tool, making this sensor ideal for annual crops that require sensors to be installed and removed multiple times throughout the year.

**DO MORE WITH LESS**

Using multiple individual sensors in a large sensor network can create a cord management nightmare, requiring a plethora of wires and using up all the ports on your data logger. The TEROS 54 alleviates this problem, connecting all the sensors to the ZL6 data logger via one wire while maintaining your ability to monitor individual sensors in ZENTRA Cloud. Best of all, the TEROS 54 is plug-and-play—no programming or wiring necessary.



Get notified when the TEROS 54 is released. Sign up at [go.meter.group/TEROS-54](https://go.meter.group/TEROS-54) →



# ZENTRA<sup>®</sup> CLOUD

**Increased data is more of a burden than help if it drains your limited resources to obtain, store, and process it.** ZENTRA Cloud works with the ZL6 data logger to start your analysis by automating processes and common calculations. It aggregates all your data in one easy place and automatically graphs it in near-real time.



Scan the QR code or [go.meter.group/ZENTRA](https://go.meter.group/ZENTRA) →

# TIE YOUR WHOLE SYSTEM TOGETHER WITH THE ZL6 AND ZENTRA CLOUD



**Choose from our system of research-grade sensors, software, and lab instrumentation, and enter the world of research made simple.**



**WEATHER MONITORING** | ATMOS 41, ATMOS 22, ATMOS 14



**SOIL SCIENCE** | TEROS 32, TEROS 12, TEROS 21



**HYDROLOGY** | HYPROP, SATURO, KSAT



**LABORATORY INSTRUMENTS** | HYPROP 2, PARIO, KSAT, WP4C, VARIOS




**THERMAL PROPERTIES** | TEMPOS, VARIOS



**PLANT SCIENCE** | SC-1, ACCUPAR LP-80, NDVI/PRI

# Products


## Data loggers / telemetry



**ZL6/ZL6 Pro**

Easier, more advanced, and more robust, the ZL6 introduces cloud-based data delivery, Bluetooth® configuration, firmware-over-the-air updates, and integrated metadata.


[go.meter.group/zl6](http://go.meter.group/zl6)



**ZL6 Basic**

If you need an ultra-robust, entry-level data logger that is easy to set up and practically maintenance free, you'll love the ZL6 Basic.

[go.meter.group/basic](http://go.meter.group/basic)



**ZSC BLUETOOTH**

During sensor installations, the ZSC lets you monitor a sensor reading as it is installed. Get real-time, wireless readings via Bluetooth on your smartphone with the push of a single button.

[go.meter.group/ZSC](http://go.meter.group/ZSC)

## Weather



**ATMOS 41**

The world's best all-in-one weather station for atmospheric measurements that doesn't limit you with other sensors.


[go.meter.group/ATMOS-41](http://go.meter.group/ATMOS-41)



**ATMOS 41W  
Wireless Remote  
Weather Station**

At METER, we think getting your data shouldn't be complicated or costly. And we think wireless should actually be wireless. That's why we made the ATMOS 41W.

[go.meter.group/41W](http://go.meter.group/41W)



**ATMOS 22**

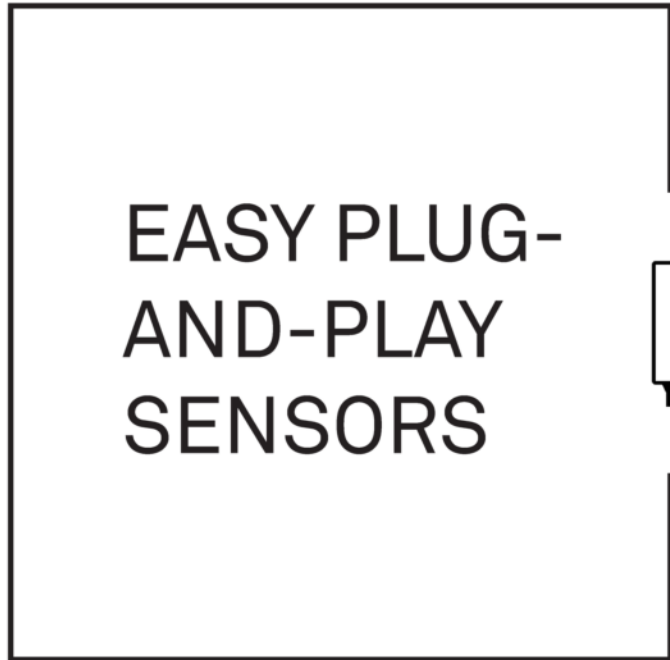
Accuracy. Dependability. Affordability. You get all three with the ATMOS 22 ultrasonic wind anemometer.

[go.meter.group/ATMOS22](http://go.meter.group/ATMOS22)



### ATMOS 14

The ATMOS 14 will rapidly and reliably measure air temperature, relative humidity, barometric pressure, and vapor pressure, making benchmarking quick and hassle free.



[go.meter.group/ATMOS14](http://go.meter.group/ATMOS14)

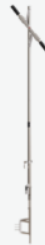
## Soil water content / soil temperature



### TEROS 10/11/12

The TEROS 10, 11, and 12 are a robust series of soil moisture sensors with ultra durable epoxy bodies. Choose the sensor that fits your needs best with choices in volume of influence and integrated temperature and EC measurements.

[go.meter.group/TEROS](http://go.meter.group/TEROS)



### TEROS Borehole Installation Tool

TEROS Borehole Installation Tool was engineered to provide easier, faster, and better sensor installation at greater depths.

[go.meter.group/tool](http://go.meter.group/tool)



### ECH20 EC-5

The ECH20 EC-5 soil moisture sensor delivers research-grade accuracy at a price that makes large sensor networks economically practical.

[go.meter.group/EC5](http://go.meter.group/EC5)



### ECH20 10HS

The 10HS soil moisture sensor is better at characterizing spatial variability as it averages soil moisture over a greater volume.

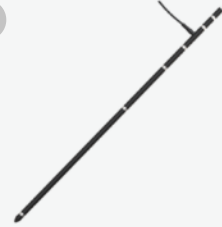
[go.meter.group/10hs](http://go.meter.group/10hs)



### MAS-1

The MAS-1 is a current-based soil moisture sensor with ultra-long cable lengths.

[go.meter.group/mas1](http://go.meter.group/mas1)



### TEROS 06

The ultra-robust TEROS 06 is a research-grade temperature profile probe that delivers accurate soil temperature data for better models and predictions.

[go.meter.group/TEROS06](http://go.meter.group/TEROS06)



### RT-1

Easy-to-use sensor for measuring the temperature of soil or other materials.

[go.meter.group/RT1](http://go.meter.group/RT1)

AFFORDABLE,  
RESEARCH-  
GRADE  
ACCURACY



## Soil water potential / soil suction



### TEROS 21

The TEROS 21 matric potential sensor is incredibly easy to use and surprisingly affordable.

GEN 2

[go.meter.group/TEROS-21](http://go.meter.group/TEROS-21)



### TEROS 31

Nobody in the world makes a tensiometer this small, this simple, or this precise. Trust the TEROS 31 for fast, accurate point to point water potential in all your tightest spaces.

[go.meter.group/TEROS31](http://go.meter.group/TEROS31)



### TEROS 32

The new plug-and-play TEROS 32 tensiometer combines legendary precision engineering with the power of ZENTRA Cloud, giving you easier, faster, more accurate data in near-real time.

[go.meter.group/TEROS32](http://go.meter.group/TEROS32)

## Hydrology



### SATURO

We think you should spend less time on complex processes and more time being productive. That's why we automated almost everything in the new SATURO infiltrrometer.

[go.meter.group/SATURO](http://go.meter.group/SATURO)



### MINI DISK INFILTRMETER

Get a more complete picture of highly variable unsaturated hydraulic conductivity with the infiltrrometer that gives you more measurements for less time, less effort, less expertise, and less money.

[go.meter.group/MINIDISK](http://go.meter.group/MINIDISK)



### HYDROS 21

Measure water depth, temperature, and electrical conductivity. Low-complexity, low-maintenance, and low-cost design saves you time, hassle, and money.

GEN 2

[go.meter.group/HYDROS](http://go.meter.group/HYDROS)



### G3 LYSIMETER

The Drain Gauge G3 is an easy-to-use lysimeter specifically designed to measure deep drainage over larger areas at an affordable cost.

[go.meter.group/G3](http://go.meter.group/G3)



### DRAIN GAUGE G3 AUTOPUMP

The AutoPump automatically drains the Drain Gauge G3 reservoir into bottles for later collection or away from the measurement area.

[go.meter.group/G3pump](http://go.meter.group/G3pump)

## Lab instruments



### PARIO

A revolutionary new method for soil particle analysis. Automated, simple, and fast—with much less human error than traditional methods.

[go.meter.group/PARIO](http://go.meter.group/PARIO)



### HYPROP 2

Automated calculation of high-resolution soil moisture release curves and unsaturated hydraulic conductivity—in just days, instead of months.

[go.meter.group/HYPROP](http://go.meter.group/HYPROP)



### WP4C

The WP4C measures water potential by determining the relative humidity of the air above a sample in a sealed chamber (conforms to ASTM D6836).

[go.meter.group/WP4C](http://go.meter.group/WP4C)





### KSAT

The KSAT is the only easy-to-use automated setup for taking saturated hydraulic conductivity measurements in the lab. Best of all, it's completely integrated.

[go.meter.group/KSAT](http://go.meter.group/KSAT)



### VAPOR SORPTION ANALYZER

For understanding complex soil issues like clay behavior, specific surface area, and more the VAPOR SORPTION ANALYZER is your simplest, most accurate option.

[go.meter.group/VSA](http://go.meter.group/VSA)



### VARIOS

VARIOS automatically generates complete, high-resolution dry down curves with less effort and less cost, so you can focus on what you love.

[go.meter.group/VARIOS](http://go.meter.group/VARIOS)

## Thermal properties



### TEMPOS

More accurate than any thermal properties analyzer in its class, with an incredible one-minute read time.

[go.meter.group/TEMPOS](http://go.meter.group/TEMPOS)



### VARIOS

VARIOS automatically generates complete, high-resolution dry down curves with less effort and less cost, so you can focus on what you love.

[go.meter.group/VARIOS](http://go.meter.group/VARIOS)

## Plant and canopy



### PHYTOS 31

The PHYTOS 31 leaf wetness sensor is not only a more accurate instrument, it's also the easiest to set up, making it a simple and straightforward solution.

[go.meter.group/PHYTOS31](http://go.meter.group/PHYTOS31)



### ACCUPAR LP-80

The LP-80 is a highly accurate way to determine canopy growth and canopy light interception (PAR and LAI), along with calculating fractional interception and crop coefficient.

[go.meter.group/LP80](http://go.meter.group/LP80)



### SC-1 LEAF POROMETER

Quick measurements. Easy-to-use engineering. Low cost in the short and the long run. The SC-1's breakthrough steady-state technology makes it the best for measuring stomatal conductance.

[go.meter.group/SC1](http://go.meter.group/SC1)



### NDVI / PRI SENSOR

Apogee NDVI and PRI sensors combine an ultra-rugged form with sophisticated cloud data delivery for an unbeatable price-to-performance ratio.

[go.meter.group/NDVI](http://go.meter.group/NDVI)



### PAR SENSOR

The SQ-521 PAR Sensor provides accurate and cost-effective measurement of photosynthetically active radiation (PAR) from all light sources used to grow plants.

[go.meter.group/PAR](http://go.meter.group/PAR)



### IRT

The IRT infrared thermometer monitors surface temperature by measuring the thermal energy radiated from any surface.

[go.meter.group/IRT](http://go.meter.group/IRT)



### PYR Sensor

The PYR solar radiation sensor is designed for continuous outdoor use and is completely waterproof and submersible.

[go.meter.group/PYR](http://go.meter.group/PYR)



### NET RADIATION SENSOR

If you need research-grade net radiation accuracy at an affordable price, then you'll love the easy-to-use Apogee Net Radiometer.

[go.meter.group/radiation](http://go.meter.group/radiation)



### ULTRAVIOLET (UV) SENSOR

The low-cost Apogee Ultraviolet (UV) Sensor is a scientific-grade sensor that provides the accuracy you need for less. Access remote data in real-time, wherever you are.

[go.meter.group/UV](http://go.meter.group/UV)

## Supporting sensors



### SO-411 Oxygen Sensor

The rugged, reliable SO-411 Oxygen Sensor is perfect for the lab or field. And the best part? Easy remote data access through ZENTRA Cloud.

[go.meter.group/oxygen](http://go.meter.group/oxygen)



### ECRN-100 Rain Gauge

High-resolution rain gauge for measuring precipitation and for use in scientific research.

[go.meter.group/ECRN100](http://go.meter.group/ECRN100)



### ECRN-50 Rain Gauge

Low-resolution rain gauge for measuring irrigation events.

[go.meter.group/ECRN50](http://go.meter.group/ECRN50)



### ECT

An easy-to-use research-grade air temperature sensor.

[go.meter.group/ECT](http://go.meter.group/ECT)



### ES-2

The ES-2 is designed to measure the electrical conductivity of water in a pipe or tank.

[go.meter.group/ES2](http://go.meter.group/ES2)



### PS-1

The PS-1 Irrigation Pressure Switch adds irrigation water on/off data into the soil moisture data set.

[go.meter.group/PS1](http://go.meter.group/PS1)



### FM-25 Flow Meter

The FM-25 combines the accuracy of positive displacement meters with the reliability and economy of nutating disc technology.

[go.meter.group/FM25](http://go.meter.group/FM25)



### D1 DENDROMETER

The D1 Dendrometer is a simple tool to manually measure changes in the circumference of tree stems over time.

[go.meter.group/D1](http://go.meter.group/D1)



### VS-Pro

The VS-pro series of vacuum systems are capable of applying a constant or tension-controlled vacuum for long-term monitoring projects. Keyboard display allows for status checks and configuration without hooking it up to your PC.

[go.meter.group/VSPRO](http://go.meter.group/VSPRO)



### **Vacuporter Portable Electric Vacuum**

This portable vacuum has a rugged case and uses a powerful pump and rechargeable battery, which make it easy to collect pore water samples at remote locations.

[go.meter.group/vacuporter](http://go.meter.group/vacuporter)



### **SPE20 Suction Cup with Shaft Storage**

The SPE20 allows for water and solute collection down to depths of 8 meters that could not normally be collected from other pore water samplers.

[go.meter.group/SPE20](http://go.meter.group/SPE20)



### **SKS20 Suction Cup with Shaft Storage**

The SKS20 allows for water and solute collection down to depths of 8 meters that could not normally be collected from other pore water samplers.

[go.meter.group/SKS20](http://go.meter.group/SKS20)

# INTERESTED IN LEARNING MORE ABOUT OUR PRODUCTS?

Visit our website at [metergroup.com](http://metergroup.com) to learn more at [go.meter.group/products](http://go.meter.group/products) →





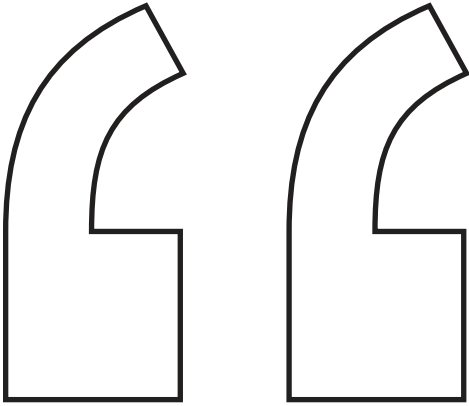
To date, TAHMO has installed over 500 weather stations in Cameroon, Chad, Democratic Republic of Congo, Ghana, Kenya, Mali, Nigeria, Senegal, South Africa, and Uganda.

# Together We Impact the World

**Environmental scientists around the world are stretching the bounds of innovation on a daily basis** and we are proud to know that METER instrumentation is enabling and empowering them to be forces for discovery and change.

- Predicting the risk of landslides to save lives, property, and infrastructure.
- Understanding the impact of climate change on ecology as a whole.
- Determining forest fire risk and determining the impacts of previous fires to soil and flood risks.
- Discovering ways to quantify the impact of land management choices on soil health.
- Reimagining geotechnology by adding sensors under roadbeds, bridges, building, levees to protect infrastructure from erosion and water damage.
- Monitoring weather locally in underserved communities across the world to harness the predictive power and the advantages of a meteorological record database.

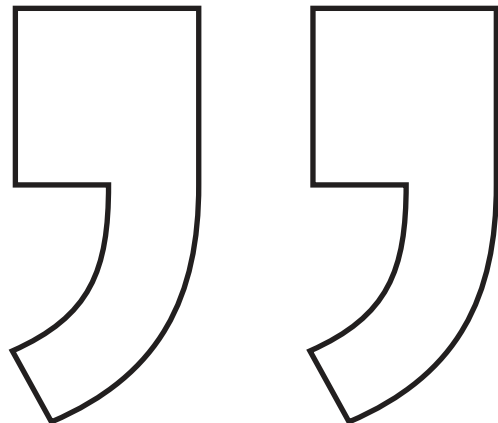
These endeavors impact hundreds of thousands of people worldwide every day. The food that we eat, the air that we breathe, the roads that we drive upon — that is the impact of environmental scientists empowered by METER instrumentation.



When we were deciding on equipment we asked ourselves: What kind of technology should we use? It had to provide high data integrity. It had to be easy to deploy and maintain. And it had to be cost effective. There's not a lot of people in that sector.

**METER systems are low profile, they're affordable, and the reliability is there.**

- Kevin Hyde, Montana Mesonet Manager





**METER**  
**ENVIRONMENT**

## Contact

### USA

2365 NE Hopkins Ct.

Pullman, WA 99163

P +1.509.332.2756

[info@metergroup.com](mailto:info@metergroup.com)

### Europe

Mettlacher Straße 8

81379 München

T +49 89 1266520

[info.europe@metergroup.com](mailto:info.europe@metergroup.com)