

# DECEMBER 2017 NEWSLETTER

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# MESSAGE FROM THE GENERAL MANAGER

I step into the General Manager role at an exciting time as Campbell Scientific Australia (CSA) approaches its 25 year anniversary in May next year. I am very much looking forward to being a long term part of the great CSA team and continuing our customer centred focus of providing quality and reliable products backed up by great Australian based engineering support.

So you know a little more about me. Briefly, my background started in finance where I qualified as a Chartered Accountant with Ernst & Young and since then I have successfully both owned and operated my own businesses and also held senior commercial positions – further details can be found on my LinkedIn account please feel free to connect. My wife Jill is an electrical engineer and we have two terrific young kids, Sam (5) & Florence (1).

Since my very first day at CSA it is clear to me that CSA staff are very dedicated to you - our valued customer. Recently with all staff we sat down and agreed on what are our key values. They go some way to explaining more about us. CSA's values are; Respect. Integrity. Pride. Expertise. Teamwork. We look forward to continuing to be one of



your trusted partners.

In my view great people make great companies. As a result we are sad and grateful in the same measure to be wishing long serving Managing Director Steve Bailey and Production Manager Ron Russo a happy retirement at Xmas. Steve will remain active on the CSA Board and Ron has some terrific travel plans installed. Both Steve and Ron have been loyal servants to CSA and our customers over many years. From all of the staff at CSA we wish them publicly a well-earned and rewarding next chapter in their lives. Their careers have made a difference and we are very grateful for their significant contributions.

For now, I along with the rest of the CSA team wish you a very safe and happy festive season.



Best wishes from the Campbell Scientific Team!







# NEW PRODUCT: CS320 DIGITAL THERMOPILE PYRANOMETER

An affordable and accurate sensor for measurement of global solar radiation under changing weather conditions.

The <u>CS320</u> is a digital thermopile pyranometer that measures broad-spectrum short-wave radiation and communicates over the simple SDI-12 protocol to the data logger. This sensor design eliminates measurement error and programming errors that can adversely affect data quality.

This pyranometer has been designed to improve the global solar radiation measurement significantly (even under cloudy conditions) without adding substantial cost. The CS320 is suitable for applications ranging from environmental research to agriculture to large mesoscale weather networks (mesonets).

The CS320 sensor is heated (on/off switchable under user control) and allows continuous operation in changing environmental conditions. The pyranometer's calibration data is stored on the sensor.

### **Benefits and Features**

- Thermopile sensor eliminates spectral errors associated with silicon-cell pyranometers
- Much lower price point than other thermopile sensors
- On-board sensor automatically detects if the CS320 is level for installation, diagnostics, and remote troubleshooting
- > Designed for long-term stability and deployment
- Dome-shaped sensor head allows dew and rain runoff
- Internal heater to reduce errors from dew, frost, rain, and snow
- Detachable waterproof connector from sensor head for fast, easy servicing
- > Calibration data stored on sensor

The CS320 is great for environmental researchers, large monitoring networks, and many other meteorological applications. Its blackbody spectral response, heater, and digital output give you greater confidence in your data at an affordable price.

#### **DISCOVER THE SPECIFICATIONS**



## MEASURING THE SUN MORE ACCURATELY AND SIMPLY

To help environmental researchers who measure solar radiation improve their measurements and simplify their lives, Campbell Scientific and Apogee Instruments teamed up to develop a new sensor. This new sensor combines features from higher-end blackbody thermopile pyranometers and lower-end silicon photocell pyranometers. The <u>CS320 Digital Thermopile Pyranometer</u> offers a high level of accuracy, while keeping the cost competitive with silicon photocell designs.

#### **Why Solar Radiation Matters**

Obtaining accurate measurements for solar radiation is important for environmental researchers because it can have a significant impact on their understanding of the



natural world. This understanding is often critical to communicate to various stakeholders of that research.

For example, overestimating or underestimating solar radiation impacts the estimated evapotranspiration in crop water stress models developed by scientists and used by growers for running their businesses. Overestimation could cause more water than needed to be applied to crops, depleting a scarce or expensive resource. Underestimation may cause crops to be overly stressed and not grow properly. Either can result in poor yields or crop quality, which affects growers' bottom lines and impacts our global food source.

We expect this new sensor will ultimately benefit scientists, researchers, and humankind by helping when measurements matter. The CS320 has been designed to improve the global solar radiation measurement over silicon-cell pyranometers, but maintain the same cost.

FIND OUT MORE ABOUT MEASURING GLOBAL SOLAR RADIATION

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## MEASURING URBAN RAINFALL USING COMMERCIAL MICROWAVE LINKS AS WEATHER SENSORS

Monash University, together with the Bureau of Meteorology, Melbourne Water and Wageningen University (The Netherlands), is seeking to demonstrate that data on the time-variation of signal strengths for microwave links, such as those used to transfer data between mobile phone towers, can be used for estimating rainfall in the Australian context. Whilst already demonstrated in Europe, this is the first study in Australia.



Two microwave Scintillometers and Parsivel Disdrometer meausred by the Campbell Loggers.

Such data can complement the sparse rainfall measurement networks in and around our capital cities, and is expected to drastically improve the accuracy of quantitative rainfall estimates derived from weather radar.

The project, funded by the Australian Research Council, is based around the existing dense network of backhaul towers (primarily mobile phone tower base stations and antennas) in urban areas. In Melbourne, the network is operated and owned by multiple agencies and operators. While these links operate at diverse frequencies, only frequencies above 15 GHz can be used to derive rainfall rates.

#### APPLICATION

To monitor (1) Rain drop size distribution; (2) Weather variables; (3) Received microwave signals from active sources at 24 and 38 GHz

**LOCATION** Melbourne, Victoria

**CONTRIBUTORS** Dr Adrien Guyot

#### PARTICIPATING ORGANISATIONS

Monash University, partnering with the Bureau of Meteorology, Melbourne Water and Wageningen University

#### **PRODUCTS USED**

<u>CR1000</u> <u>CS215-L</u> <u>CCFC</u>

#### **MEASURED PARAMETERS**

Air temp, humidity, pressure, wind direction and velocity, radiation (shortwave), drop size diameter distribution and velocity, intensity of microwave signals at 24 and 38 GHz

These new rainfall maps (or rainfall products) need to be validated using existing rainfall estimates, using for example the network of rain-gauges, in addition to information on rainfall type and signal attenuation. For this reason, Monash University is currently deploying ground-based instrumentation to validate and improve link-derived rainfall products. This includes: (1) A high-end X-Band dual polarisation weather radar (Meteor 60D, Selex, Germany) covering the Melbourne region; (2) Microwave scintillometers operating at 24 and 38 GHz to sample microwave signal intensity at high frequency; and (3) A number of disdrometers, tipping bucket 0.2 mm resolution rain-gauges and automatic weather stations.

The monitoring setup is spread across different sites in Metropolitan Melbourne. Raindrop size distributions and velocities are measured over 30 second intervals by laser disdrometers (Parsivel 1, OTT, Kempten, Germany) and stored by either a CR300 or a CR1000 depending on the site. An automatic weather station (WTX520, Vaisala, Finland) is used to monitor air temperature, humidity, pressure and wind velocity and direction.

The microwave scintillometers are installed a few kilometres apart, having signal strengths measured every second with averages and other statistical data stored every 30 seconds on two CR1000 with compact flash extensions.

This project will set a baseline of understanding to enable the use of Commercial Microwave Links as weather sensors, in particular rainfall, for the very first time in Australia.



# **DEALS FOR THE QUARTER**

**Campbell Scientific is extending our** limited time offer to get your hands on some quality equipment with some great savings on our quality sensors and data loggers.

**FIND OUT MORE** 

## Products on offer:

- RM Young Aspirated Radiation Shield w/10m
- **Class A Digital Barometer w/Serial**
- Rimco 8000 Series Rain Guage 0.5mm Tip, No cable
- Weatherhawk 232 No software
- Weatherhawk w/922Mhz Wireless -No Software
- > Tripod Mast Assembly
- **Ipserv Direct Conn. to Ethernet** w/240V in House

## New Resource to help you **Design Your Automated** Weather Station

**Complimentary Design Assistance** 







We have developed an easy-to-use System Design Request form for you to request station design help. Just provide some information about your system requirements so our experts can design a quality, cost-effective system for you. This is a no-obligation, complimentary service, built to help our experts bring you closer to finding the perfect system for your specific application.

#### We will walk you through all the considerations you need to get the right system for your application.

Site Environment







Datalogging

Mounting

Power







Communications

Software





Services

# HOW MUCH POWER DOES YOUR DATA ACQUISITION SYSTEM NEED?



Are you wondering what size battery and solar panel you need to run all of the devices in your data acquisition system? How will you know if your power supply can keep pace with your needs? To get these answers, you will need to estimate the power requirements of your system. This is commonly referred to as a "power budget."

When you think of your system's power budget, it might be helpful to compare your power supply (battery) to a bank account. For example, a solar panel absorbs the sun's rays as a source of energy and then recharges a battery. In this manner, the solar panel deposits funds into your bank account. Then, the devices in your system that use power from the battery make withdrawals from the bank account.

Note: Your battery needs to be large enough to accommodate continuous withdrawals—even during times when minimal deposits are being made, such as on cloudy days.

Estimating the power budget of your system can help you select the most suitable power supply option. You can approximate your system's power consumption by calculating the average current required by the data logger, sensors, and peripheral equipment. This average current drain is primarily determined by the percentage of time the devices spend in an active versus quiescent state. You can approximate these states from the details specified in the datalogger program. For help estimating the power requirements of your system, we recommend using our <u>"Power Budget</u> <u>Spreadsheet."</u>

To help you use the spreadsheet, follow the instructions in our <u>"Power Budgeting" video</u>. The video covers making selections for the following parameters:

- > Program intervals
- Minimum average temperature
- Desired backup and battery size
- Sun hours for the area
- Size of the solar panel

#### RECOMMENDED

For more information, and guidance through the calculations needed to estimate your power budget, review our <u>"Power Supply Overview"</u> brochure and <u>"Power Supplies</u>" application note.

We hope the tool mentioned in this article helps you determine and meet the power needs of your data acquisition system. With a continuous, sufficient power supply, you can help ensure you are collecting the measurement data you need.





# RELIABLE MONITORING SOLUTIONS FOR SAFE AND SUSTAINABLE MINING

## International Mining and Resources Conference 2017

David Hammond, Business Development Manager, and Jordan Williams, Application Engineer, recently attended the Internationial Mining and Resources Conference (IMARC) in Melbourne, where Campbell Scientific Australia co-exhibited with Marcom Watson.

With an application focus on safe and sustainable mining, we displayed a unique, first of a kind system developed by systems integrator Marcom Watson using a Campbell Scientific lightning warning and meteorological monitoring system.

Marcom Watson have fully integrated control and environmental monitoring within their two-way radio communication tracking systems. This allows an extensive range of measurable quantities to be monitored and distributed to all workers in the field in real time on their portable radios, including warnings of a potential hazardous nature.

The software and communications interface includes geo-fencing capabilities, enabling clients to easily configure safe zones for their workers or exclusion zones where hazardous activities are being performed.

Combining the systems and capabilities of Campbell Scientific Australia and Marcom Watson has resulted in a unique delivery platform that is powerful, scalable and flexible, giving clients customised solutions tailored to their specific needs. Applications for this unique environmental monitoring system within a two-way radio communication tracking system include, but are not limited to:

- Meteorological and air quality monitoring for mine site blasting operations
- Meteorological monitoring for hazardous
  machinery operations (e.g. wind speed warnings for crane operations)
- Wave height monitoring for ship lifting operations at ports
- > Lightning warning systems for workplace health and safety to minimise operational downtime

## OTHER FEATURED SOLUTIONS:

- Weather Monitoring and Lightning Warning for
  Workplace Health and Safety
- Slope Stability Analysis
- > TDR Systems
- Dam Monitoring
- Air and Water Quality Monitoring
- Mine Closure Planning





## GETTING MARKET READY

Advance Queensland - Ignite Ideas Fund

After a successful temperature monitoring trial with our four local businesses, and some great feedback, our Altoview software and hardware has been fast tracked thanks to the help of the Queensland Government's Ignite Ideas Fund.

Ingite Ideas Fund that was set up to help small businesses to commercialise market ready innovative ideas. Through the fund's help Altoview will soon be readily compete in a global market.

With a boost to support our plans to test and implement commercialisation, Altoview is quickly heading towards our bigger Phase 2 Trial with some great local and state clients across Queensland.

Thanks to our current Phase 1 Trial we have been able to tailor and optimise our software to suit the hospitality, health and commercial sectors for monitoring, recording and reporting of the temperature of hot and cold foods as well as cold goods in storage.

Just some of the great benefits of the using smart sensors to monitor your appliances are:

- Quality control
- Reducing costs
- Continuous and reliable monitoring
- Automated Notifications, and
- Improving Food Safety Culture

For more information, or to get involved - please get in contact today!

www.altoview.com +61 7 4401 7700 info@altoview.com

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## SMART FLOOD WARNING

Our Knowledge Transfer Partnership (KTP) is leading to real-time Flood Warning Analysis

In collaboration with our local James Cook University in Townsville, the KTP Grant allowed us to employ a recent university graduate, Dane Lennon, to help develop an Altoview Smart Flood Warning System.

With the first phase complete (developing a Smart Rain Guage) earlier this year, Dane's second project - an Ultrasonic Water Level Sensor is about to head out for it's first round of trials. The sensors will be strategically placed over commonly known flood areas, including culverts, rivers and drains. This system aims to avoid the high costs associated with competing systems whilst reducing power requirements and device footprint. The smart sensor will be deployed as a self contained unit in large quantities across the community to capture water level.

As a Smart Sensor, the product provides continuous data to the cloud insuring local councils and other organisations can make real-time analysis and more informed decisions regarding community safety and legislation.



# **MEET OUR STAFF: NIKKI**

Nikki joined the Campbell Scientific Australia team earlier this year in February as our new Marketing Coordinator. Nikki made the move from Brisbane after completing her degree in Mass Communications with a major in Public Relations and Marketing at the Queensland University of Technology. After working for a digital marketing agency and multiple other internships her experience and fresh perspective has helped lift CSA and bring our business closer to helping our customers find the perfect solution for their needs.

She is currently working on many exciting marketing projects including video marketing and building relationships with current and new customers. In her spare time she enjoys brunching around town with her partner Grant and their new Border Collie puppy Finn.

## Connect with Nikki on LinkedIn in



## **CHRISTMAS HOLIDAYS - OFFICE CLOSURE**

With the holiday season fast approaching, our office will be closed from the 23-December to the 2-January as our staff celebrate the new year with friends and family.

From all our staff here at Campbell Scientific, we wish you a Merry Christmas and a Happy New Year and look forward to working with you next year!

# WANT TO CONNECT WITH CAMPBELL SCIENTIFIC?

There are lots of ways to stay up to date with what we're doing.



# **CONTACT US**



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