



- › Campbell Scientific Australia - Official New Premises Opening - p2
- › IRGASON - New Powerful Research Tool - Integrated Gas Analyser & Sonic Anemometer - p7
- › AP200 - New Complete Integrated CO<sub>2</sub> and H<sub>2</sub>O Atmospheric Profile System - p7
- › Case Study - Water Quality Monitoring - Greenspan in China - p4
- › Case Study - Flood Warning Systems - p6
- › Tech Tip - The Secret Telstra Handshake - p8





# Monitoring Success

## CSA Officially Opens New Premises

The official opening of Campbell Scientific Australia's new premises was held on Friday 30th March in Townsville, Australia. Approximately 40 dignitaries, customers, board members, invited guests and staff attended the function. We had customers travel from Brisbane, Canberra and Adelaide which was very pleasing in view of the long distances involved.

These exciting new premises are the culmination of 19 years of hard work and planning, with a good degree of the credit to go to Bert Tanner, a Director on CSA's Board for most of that time.

Situated on a 6800m<sup>2</sup> block, the former ten pin bowling alley building was ideally suited to CSA's current and future needs. The large open plan frame was completely stripped and redesigned to provide purpose built premises. CSA currently occupies the rear half of the building and in the short to medium term, plan on sub leasing the front half. The approximate 1000m<sup>2</sup> that we now occupy is double the area of our previous premises and will allow us to more than double our capacity before we will need to expand into the front half of the building. This move will then allow us to quadruple our current size and there will still be room for future expansion on the block if needed.

Our Open Day comprised presentation sessions in the morning and afternoon, hands on product displays, and finished with a small celebration at the end of the day. Informative displays and demonstrations of many CS products, as well as an overview of some of our most recent case studies; including some spectacular pictures of applications on the Great Barrier Reef, were prepared for the event.

Products on display included the CS data loggers and peripherals, the new IRGASON integrated gas analyser and sonic anemometer, the range of OBS water quality sensors, our latest family of discrete and composite water samplers, a visibility sensor developed by Campbell Scientific Limited in the UK, a new outdoor camera developed by Campbell Scientific Canada, the Hydrosense II developed here at CSA, various weather stations including the quick deploy FIREHAWK for fire fighting applications, as well as a range of equipment suitable for Geotech applications such as the TDR systems we supply.



Above: Repair Room



Above: Building before construction began.

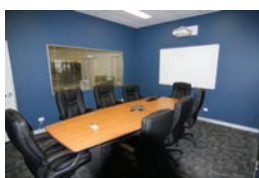
Thanks to all customers and suppliers that were able to attend and to all CSA staff who put in an extra effort to make this a day to remember.

*Rob Kurz*

Managing Director



Above: Side view and entrance to the building



Above: Meeting Room 1



Above: Steve and Alex in our new uniforms



Above: Reception



Above: Open Day - Application engineers and staff with customers

## CSA Welcomes Apogee President Dr. Bruce Bugbee



Above: Dr. Bruce Bugbee at CSA

This week we were very fortunate to have Dr. Bruce Bugbee, President and founder of Apogee Instruments visit us here in Townsville. A frequent visitor to Australia, Bruce is here to speak at the Australasian Controlled Environment Working Group (ACEWG) at Charles Sturt University in Wagga. Apart from his work at Apogee, Bruce is also Professor of Plants, Soils and Biometeorology at the Utah State University. This year he was awarded the Governor's Science and Technology Medal for his accomplishments over a lifetime and in the short time he was here with us, it became clear why he is held in such esteem.

Campbell Scientific and Apogee Instruments have a close affiliation. Apart from being neighbours in Logan Utah, both companies have an over-arching mission to improve the process of measurement - pure and simple. We were delighted to be reminded by Bruce of our shared passion for the scientific process and the significance and potential impact of better measurements on the big issues of the day - most notably limited water resource, food production and creating a sustainable future.

We look forward to a continuing close relationship with Apogee Instruments and the refinement and development of measurement tools and technologies to address real-world problems.

You can find some great articles on the Apogee blog - with new material weekly <http://blog.apogeeinstruments.com/>



## It's That Time Again

Many of our customers are bound by formal funding, so as we head closer to June 30 and the end of the financial year, we remind you to place orders now so that invoicing can be processed before the deadline where applicable.

Due to past experience at this time of year, we have increased our buffer stock levels and now stock items can ship within the week, however non standard products need to be shipped from the US and require a lead time of up to 6 to 8 weeks.

This is a busy time of year for us all so please contact us ASAP should you need delivery prior to June 30.

## OZWATER 2012



We are happy to be exhibiting again at **Ozwater 2012** at **The Sydney Convention Centre May 8-10.**

Rob and Corinne will be there and with our new water sampler, the OBS500, the OBS300, as well as the CC5MPX high res digital network camera from Canada. You'll find us at **Stand 4C26.** Please drop by and say hello.

## OZFLUX 2012

Dave Boadle and Dr Dave Hammond will be travelling to Methven, New Zealand in July to participate in the Australian and New Zealand Flux Research and Monitoring Meeting. The 2 Daves are our 'go-to-guys' for flux matters at CSA.



# Water Quality Monitoring Network - Yantai China



Yantai, China, is the pilot location for an innovative Coastal Water Quality monitoring network being jointly developed by Greenspan, Haicheng, the Chinese Academy of Science and the National Marine Agency.

Located on the Bohol Sea, the Yellow River basin is home to almost 350 million people. This large population, heavy industry and being one of the busiest seaports in the world all combine to potentially stress the natural environment. Coupled with extensive mariculture and oil & gas reserves being explored in the sea, the potential for water quality problems are high.

Recognising the risks, proactive steps are being taken to monitor the water quality and detect any issues before the problems spread undetected. Greenspan has delivered a water quality monitoring station that integrates a variety of water quality instruments into a real-time online system.

*The station includes in-situ monitoring for:*

## Physical Parameters (YSI Sonde):

Temperature, Salinity, pH, Dissolved Oxygen, Turbidity

## Nutrients (EnviroTech Instruments AutoLAB):

Nitrate, Ammonia, Phosphate using a wet chemistry analyser as Ion Selective Electrodes are ineffective in the marine environment

## Biological Activity (YSI Sonde):

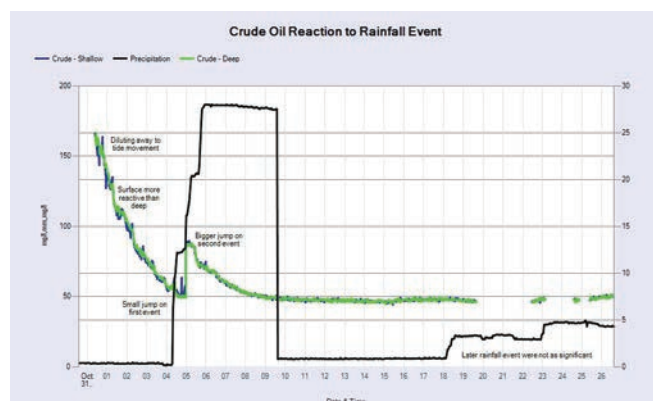
Chlorophyll, Blue Green Algae

## Pollutants (Turner Designs):

Oil (Crude and Refined)

Traditionally, instruments performing these measurements require frequent maintenance, however the system uses an innovative multi-depth flow through sampling system that keeps the instruments protected on shore, dry in between measurements and in light proof chambers. This solves the problems of bio-fouling, maintaining instruments without divers and obtaining measurements at multiple depths through the profile while minimizing hardware costs. With the same instrument being used to measure water quality conditions at various depths, instrument variability has been eliminated, providing meaningful depth inter-comparison beyond the accuracy of most instruments.

In terms of the measurement system, the Campbell Scientific CR1000 provides all the measurement and control for full remote operation, including various modes such as:



Above: Crude oil reaction to rainfall event

- **Low Temperature Shutdown.** The site can experience freezing conditions in the coastal waters so to protect the instruments the system is configured with a low temperature shutdown which stops water sampling, to be resumed only when the conditions warm up sufficiently
- **Manual Mode.** All instruments can be run at higher sampling frequencies or in continuous recording to sample the water conditions during suspicious events
- **Onboard Instrument Calibration.** The Nutrient analyser is equipped with reagents and standards for automatic calibration. As both the instrument performance and the quality of the reagents/standards may change over time, automatic routines are used to run the standards through the system and use these to automatically correct the measured data for decay and drift. The data logger is programmed with the routines for determining calibration coefficients for each parameter, in real time.

The CR1000 also manages the provision of data to various sources in real time – with a base station running Greenspan's EnviroSCADA (with native Chinese support) and ENVAULT ([www.envault.com.au](http://www.envault.com.au)) both receiving data in real time. Aquatic Informatics Aquarius is also used to process the data for gaps, drift and other corrections before reporting to national agencies.



Above: Greenspan and Chinese Academy of Science staff checking the system performance



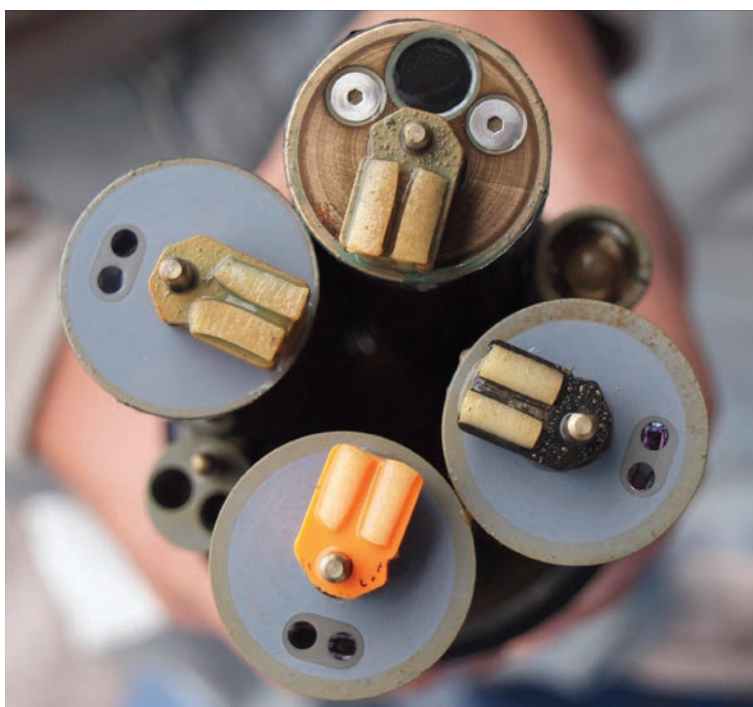


Above: Site inside hut with floating arm visible-Yantai Harbour

From the initial performance of the system, the benefits of the flow through system have been clearly demonstrated. As shown by the photos below, there has been significant growth in the high nutrient and high light warmer waters near the surface, while the instrument inside the flow through system has no visible growth or degradation of the instrument condition.



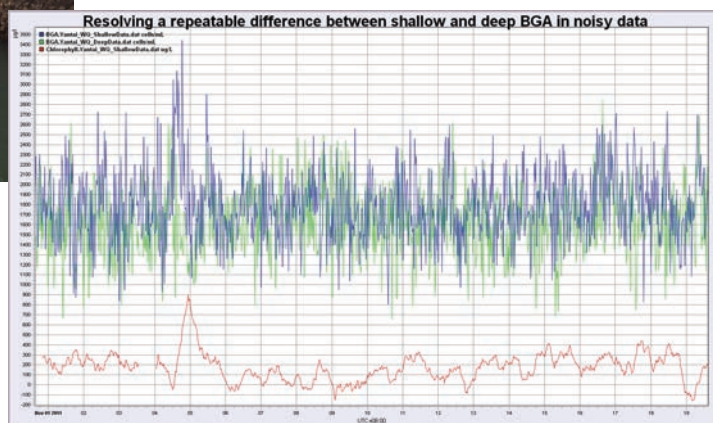
Above: The intake arm with growth after 6 weeks



Above: The YSI before cleaning after the same period of time

The inter-comparison data between two nearby depths (in this case for blue green algae) also demonstrates the ability to detect small but discernible differences in the measurements beyond the accuracy of the instrument, even when the absolute value of the measurement is very small.

For more information on the project, visit Greenspan's Gallery & Videos at <http://www.greenspan.com.au>



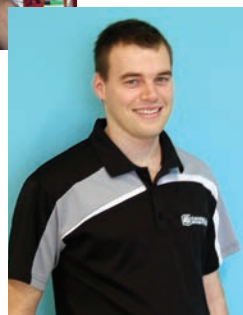
## New People

### Scott Daltonalomes

We're very pleased to add a new application engineer to our ranks.

Scott was born in New Zealand before his parents moved to Australia when he was 9 years old. He was schooled in Townsville and then went on to gain a Bachelor of Engineering, Electrical and Electronic degree at James Cook University, graduating only this year.

When not working as part of Dave Boadle's team, Scott enjoys camping, travelling and reading.





# Severe Weather Calls for New Flood Warning System



Inundation from flood waters is an annual occurrence for many living in Far North Queensland. For a remote community located an hour west of the Atherton tablelands, a rain event during a monsoon will often make it impossible for half the town's population to get to the local pub for over a week, a severe event could have a much larger impact as the local water supply is sourced at a dam located upstream from the creek that runs through the middle of town. Significant rainfall could cause a quiet creek to become a raging torrent in just a short time.

Until recently, the community has only had the sound of running water and predicted water heights to make critical evacuation decisions. Implementation of a siren network and current conditions display controlled by local disaster response teams makes use of incoming real time data from the dam spillway upstream. Warning SMS messages are transmitted to disaster management coordinators in extreme weather events.

The reality of severe weather events such as floods in south east Queensland in 2011 and category 5 Cyclone Yasi in North Queensland just a month later has prompted the installation of a flood warning system to protect the population from sudden inundation during a severe weather event. Real time data is measured at the dam spillway and provided to the evacuation planning centre to assist evacuation action plan procedures. A siren network throughout the town can be activated at a moment's notice and SMS warning messages are sent to regional disaster management coordinators.



*Above: Evacuation sirens*

Measurements are taken at the Dam spillway by existing Campbell Scientific equipment. A CR1000 data logger takes water condition and depth readings from bubblers in the catchment and downstream from the dam over a V-notch flume. An RF450 spread spectrum radio network relays real time data through repeaters to external databases using a cell phone modem in a strong signal area, data also transmits to a CR800 data logger at the emergency planning centre. This CR800 is capable of controlling the siren network throughout town by analysing data and is connected to a PC running Campbell Scientific LoggerNet



*Above: 3G Cell phone relay tower within RF450 network*

software with an RTMC user interface capable of displaying water levels and controlling siren functions.

The system will react to a severe weather event when flood waters exceed a critical predetermined upstream water level, this is communicated to the evacuation centre data logger. The system is capable of initiating the evacuation sirens automatically or manually by the evacuation coordinators using the RTMC interface in the evacuation centre. The availability of real time flood condition data provides a critical tool for evacuation coordinators and the siren network gives a reliable method of initiating evacuation procedures.



*Above: Upstream Dam catchment*

Learn More Here

[campbellsci.com.au/flood-warning](http://campbellsci.com.au/flood-warning)

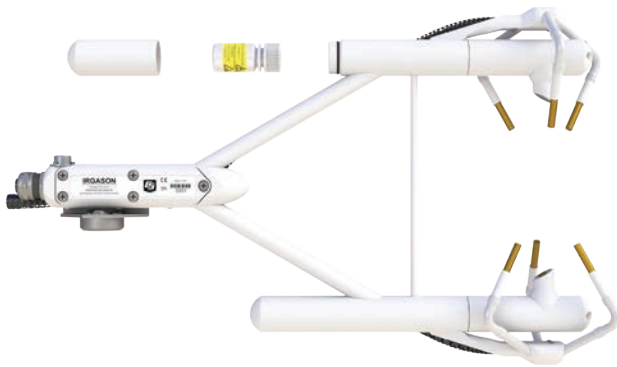


# IRGASON

Integrated Gas Analyzer and Sonic Anemometer



**Powerful Research Tool**  
**Combines two high-level sensors for**  
**eddy-covariance research**



Campbell Scientific's IRGASON is an integrated open-path analyzer and sonic anemometer specifically designed for eddy-covariance flux measurements. It simultaneously measures absolute carbon-dioxide and water-vapor densities, air temperature, barometric pressure, three-dimensional wind speed, and sonic air temperature.

## Benefits and Features

- Unique optical layout allows for a slim aerodynamic shape with minimal wind distortion and body heating
- Measurements are temperature compensated without active heat control
- Co-located analyzer and sonic anemometer measurement volumes
- Analyzer and sonic anemometer measurements are temporally synchronized by a common set of electronics
- Low power consumption; suitable for solar power applications
- Low noise
- Maximum output rate of 50 Hz with 25 Hz bandwidth
- Tolerant to window contamination
- Angled windows to shed water
- Field rugged
- Field serviceable (easy access to chemical bottles)
- Factory calibrated over wide range of CO<sub>2</sub>, H<sub>2</sub>O, pressure and temperature in all combinations encountered in practice
- Extensive set of diagnostic parameters to warn of questionable data
- Fully compatible with Campbell Scientific data loggers; field setup, configuration, and field zero and span can be accomplished directly from the data logger

Learn More Here

[campbellsci.com.au/irgason](http://campbellsci.com.au/irgason)



# AP200

CO<sub>2</sub>/H<sub>2</sub>O Atmospheric Profile System



**Pre-programmed and Low Power**  
**Complete, Integrated System**

The AP200 is a complete, integrated CO<sub>2</sub> and H<sub>2</sub>O atmospheric profile system. It measures carbon dioxide (CO<sub>2</sub>) and water vapor (H<sub>2</sub>O) concentration from up to eight intakes, which are normally spaced along the height of a tower to give a vertical profile.

The AP200 is often used in conjunction with an eddy-covariance system to measure the storage term and give a more complete measure of the surface gas exchange.

- Provides a fully integrated system
- Requires only 13 W (average at 25°C and 12 Vdc)
- Contains a Campbell Scientific CR1000 Measurement and Control Datalogger
- Automatically performs CO<sub>2</sub> span and zero
- Automated temperature and pressure control
- Datalogger program included



For more information email [Dave Boadle](mailto:dave.boadle@campbellsci.com)

# The Secret Telstra Handshake

 Tips and Tricks



The NextG modem is sold without an airtime agreement. The user must arrange connection of the modem to a network and have it enabled for data use. The service provider will supply a Subscriber Identification Module (SIM), which plugs into the MM-6280IND and acts as a key to enable its use.

When setting up the account, the service provider may require some information such as the make and model of the modem being used. They will then set up an account and provide a phone number. This phone number is a voice number. However, voice is not supported in the MM-

6280IND, and it is not possible for the data logger to receive data calls (circuit switched data) and SMS with a voice number.

A data number is required for circuit switched data and SMS transmissions to the data logger. The service provider will need to know this information when setting up the account and enabling the SIM card. Furthermore, you will need to ensure that Code 2620 is activated on your account.

Code 2620 is Telstra's code for data service on NextG. There are also options that can be specified to reduce complexity and cost of the service. You can strip all ancillary services such as Call Waiting, Call Diversion and Message Bank as these are not required.

If the unit is set up with a security code or pin number, it should be disabled before use with the Campbell Scientific data logger. The security code or pin number can be disabled by putting the SIM card into a normal digital mobile phone and select the security menu. Exact key presses will depend on the mobile phone used, but from this menu the PIN should be able to be disabled.



## Need Logger Training?

Townsville CRBasic Training June 18-20  
[Register now](#) to avoid disappointment.

 Training

We now have a dedicated training room on-site here in Townsville. This will be our first course in these premises and spots are filling quickly. Due to lower overheads we are able to offer the basic course at a reduced price of \$840 a saving of \$180 on a regular course. In the current market we believe our training course are already highly competitive so this course, with the added benefits of being based in balmy North Queensland in the middle of winter, makes it a very popular choice.

If you would like to register for either the basic 3 day course or the advanced 2 day course, please complete our [registration form](#) and return ASAP. Please make sure to indicate if you require an update or a full version of the latest Loggernet software. We are happy to send the software prior to the course so you're up to speed and ready to go on the first day.



Above: Our new training room in operation.

Learn More Here

[campbellsci.com.au/training](http://campbellsci.com.au/training)



[www.campbellsci.com.au](http://www.campbellsci.com.au)  
[info@campbellsci.com.au](mailto:info@campbellsci.com.au)

411 Bayswater Road Garbutt Q 4814  
t +61 (0)7 4401 7700  
f +61 (0)7 4755 0355