

# SOUNDINGS



Newsletter

A YSI Environmental Company

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## SHALLOW WATER FLOW

### Argonaut®-SW

Typically mounted on the bottom of a channel or pipe to measure real-time flow, the Argonaut-SW uses two angled beams to measure water velocity and a third vertical beam to measure the water level.



AWARD WINNER

Winner of the Irrigation Association's Best New Product 2003

### Multi-Purpose Mini-ADP®

The Mini-ADP has the advantage of being both a compact and robust system. It offers the same features and capabilities as other profilers but in a smaller and more easily managed package.

The SonTek Mini-ADP is suitable for both vessel mounted data collection and long-term field deployments.

It is available in 3.0 and 1.5 MHz configurations.



### RiverCAT Regatta

In March 2004, YSI China hosted the 1st Annual RiverCAT Regatta for users in Shanghai. Eight hydrology survey administrations from across China participated in classroom training on the latest hydrology techniques.



Contestants line up prior to the RiverCAT measurement competition, along the bank of the tidally influenced Taipu River.

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## OCEANOLOGY 2004

Every two years, the world's leading users of oceanographic and hydrographic equipment gather in London for the Oceanology Exhibition. In March of this year, SonTek, YSI Environmental and Endeco combined forces to showcase our multiple solutions for water velocity, water quality, and integrated solutions. On display were SonTek's traditional instrumentation line of ADVs, ADP Current Profilers, and the industry leading Argonaut current meter platform.

Specifically featured was the new HorizonADV software platform (real-time data acquisition for ADVs), as well as the new RiverSurveyor/Current Surveyor package for underway current surveys from moving boats. YSI Environmental displayed the new ADV6600 product that combines precise 3D current measurement with water quality parameters, as well as the complete line of water quality sondes, environmental buoys and integrated data collection systems.

SonTek, YSI and Endeco have a wide range of products designed for almost every environment and application.



# STREAM GAUGING

## Shallow River Discharge Measurement - USGS Arkansas

After many years of relying on mechanical-type current meters for measurements in shallow water, the USGS has begun the transition to high-precision acoustic Doppler instruments in order to satisfy the growing demand for accurate discharge information.

More specifically, shallow-water areas that have long-since been difficult or impossible to work in, are now being measured by many USGS offices using the SonTek FlowTracker.



Bill Baldwin with the USGS Arkansas district office is shown (left) measuring Yocum Creek near Oak Grove, Arkansas using a SonTek FlowTracker mounted to a USGS-style "top-setting" wading rod. The depths of the creek were extremely shallow and FlowTracker measurements ranged from 0.15-ft (5-cm) to 0.5-ft (15-cm).

A rating-table (below) shows the discharge measurement plotting about - 3% off the rating curve. According to Bill, this followed the trend in the river.

As you can see, this creek is "no-mans" land for all instruments other than the FlowTracker.



Note: The mention of the USGS in this article does not constitute U.S. Government endorsement of this product.

## USER TIPS

### Making Discharge Measurements



The things that you should care about:

- Accuracy and repeatability
- User-friendly software
- Ease of deployment and system setup
- Minimal required training
- Operational issues (vessel maneuvering, etc.)

## RiverSurveyor Reports

It's easy to add your company logo to the top of the discharge report in RiverSurveyor for an easily printed professional quality summary. You can even customize the report to meet your project requirements.



Built in HTML, the Discharge Report can be modified just like a webpage.

# FLOW MEASUREMENT

## Argonaut-SW Installation in Spain

Approximately 80% of the water in Spain is dedicated to agricultural purposes, and many areas are pursuing major renovations to water delivery systems. Accurate and reliable flow data are required to improve measurement and regulation of water delivery.

Qualitas Instruments of Madrid recently completed the installation of 30 Argonaut-SW systems in the Orellana irrigation area. The systems were installed to monitor flow and water delivery for the 2004 irrigation season. Another 25 Argonaut-SWs will be installed for the 2005 irrigation season.

The SWs are installed in a variety of small channels, with depths ranging from 20 cm to 2 meters. The flow data is part of an expanding system to monitor water delivery in the agricultural areas of Spain.

A number of key points determined the selection of the SW:

- High quality of flow data
- Ease of operation (including new PDA software)
- Simple installation and maintenance



The output water from a pumping station is used to irrigate a number of nearby peach orchards. An Argonaut-SW was deployed at the bottom of this canal.

# PRODUCT SPOTLIGHT

## RiverCat

by Lee Pimble (SonTek, UK)



When you need to measure a variety of river gauging sites, what you really need is a RiverCAT.

Whether you are carrying the 'Pack & Go' RiverCAT through an airport, driving by car or even taking the train, there's always that trail across the field or steep embankment at the end of the trip. You need something that is easily transportable.

Arriving at the site, you are asked to measure the discharge. You've never seen the site before, but you still have to set up and make a successful measurement. What you need in situations like this is reliability and an easy to operate system - and of course, the results just have to be good.

In the last couple of months the 3MHz RiverCAT has been on a whirlwind tour of

Europe, showing off the latest RiverSurveyor software and trialing the new radio modem system.

Well it came as no shock to ourselves, but we certainly surprised a few clients. The RiverCAT simply roared.

So whether it's just crossing your local stream, crossing catchments or even national boundaries, the RiverCAT is the system to have with you.

So easy, even I can use it!  
- Lee Pimble's Gran, Age 92

And with the new integrated Stationary Mode software and improved Shallow Water operation, it's only going to get better.

Country	Max Depth (m)	Width (m)	Q (m <sup>3</sup> /s)	CoV
Portugal	2.6	80.0	55.621	0.019
UK	1.1	18.2	6.650	0.016
Italy	0.96	12.0	10.35	0.013
France	1.38	19.0	7.526	0.032
Spain	2.2	146.0	56.245	0.004

# DEEP OCEAN CURRENTS

## Argonaut-MD

The Argonaut-MD is designed for long-term deployments in deep ocean and low backscatter environments.



NOAA-PMEL services one of the TAO array buoys.

**Argonaut-MDs are used for monitoring as part of a multi-national climate study.**

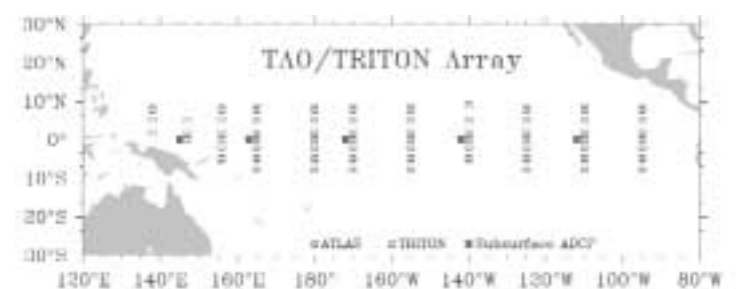
The Tropical Atmosphere Ocean (TAO) project is part of a multi-national effort to provide data for improved detection, understanding and forecasting of El Niño and La Niña. An array of moorings has been designed and established running across the tropical Pacific Ocean. These moorings telemeter real-time oceanographic and meteorological data to shore via satellite.

Each of the moorings measure surface meteorological parameters, upper ocean temperatures and at some locations, conductivity and/or ocean currents. Argonaut-MDs are used to measure single point ocean currents. The MDs are used to fill in regions that cannot be successfully covered by profilers.

As the one of the primary support members of the study team, NOAA/Pacific Marine Environment Laboratory (PMEL) is responsible for sensor integration, deployment of the mooring systems, data collection and delivery.

Real-time data from the moorings is available from the PMEL website at: [www.pmel.noaa.gov/tao](http://www.pmel.noaa.gov/tao)

*Note: The mention of the NOAA /PMEL in this article does not constitute U.S. Government endorsement of this product.*



## TURBULENCE

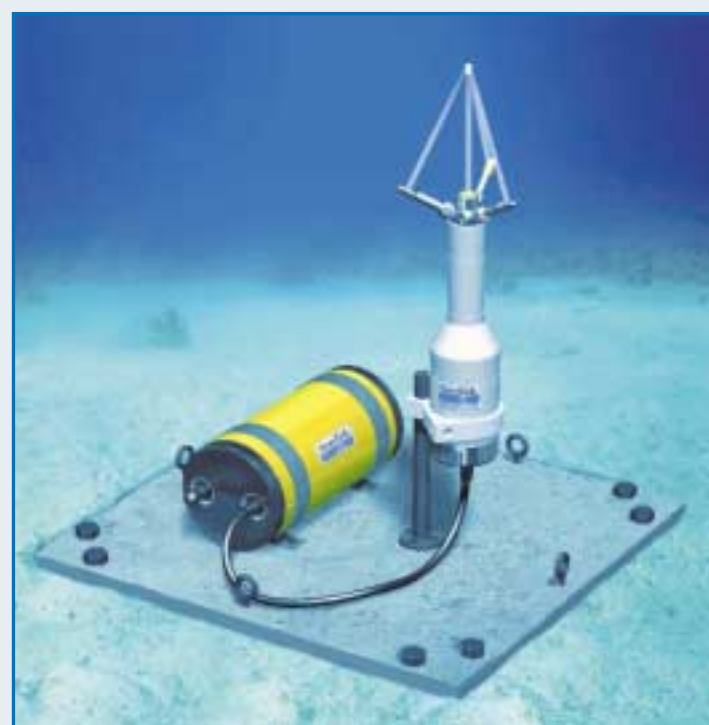
Pressure output rates to 25Hz!

Resonance-type pressure sensors (RPT) offer an order of magnitude increase in accuracy (0.01%) versus the SonTek piezoresistive (strain gauge) pressure sensor, which is typically 0.1% accurate at full scale. Typical strain gauge sensors are 0.25% accurate at full scale.

SonTek is unique in the industry for offering frequency-based interfaces for the internally-

integrated RPT. Up until now, the sampling rate for the RPT had been limited to 10 Hz. With the new design, sampling rates are enabled up to 25 Hz enabling synchronous sampling of 3D velocity and high-resolution pressure.

This cutting-edge capability is now available on the ADVOcean/Hydra systems making these systems more powerful than ever!



## Aquaculture Monitoring

The Japanese government is funding an experimental program to evaluate the air microbubbling methods for the improvement of the fish farming water environment.

A SonTek ADP and a YSI water quality profiling system are used for the continuous monitoring throughout the entire water column.

The research is carried out by a combined team from Kumamoto Prefectural University and Keiten, a fish farming company. Data from the site is collected in real-time and can be viewed on the YSI/Nanotech website ([www.nanotech.co.jp](http://www.nanotech.co.jp)).



# HIGH RESOLUTION WATER VELOCITIES



## New Software Horizon ADV<sup>®</sup>

The new real-time HorizonADV software for Windows 2000 and XP offers a flexible and dynamic user interface designed to easily guide the user through the data collection and review process.

This software operates with our standard ADV, MicroADV and ADVOcean systems and can be used to:

- Collect data using a single ADV
- Collect data using multiple ADVs connected to a MultiPort interface box
- Configure ADV systems
- Display data files collected using ADV systems

HorizonADV is freely available to all ADV users and can be downloaded from the SonTek website.



### MultiPort Option - Work with up to 6 ADVs at the same time

The MultiPort interface box is an optional hardware addition that allows you to connect, synchronize and work with up to six SonTek ADVs simultaneously. The HorizonADV software has a built-in interface for communicating and displaying real-time data from each of the ADVs connected to a MultiPort.

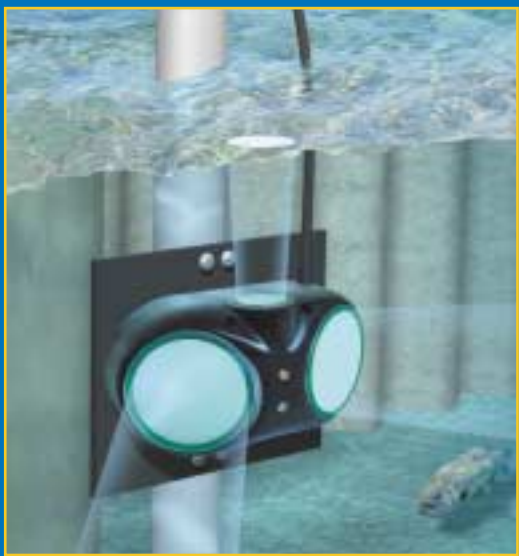
HorizonADV is freely available to all ADV users and can be downloaded from the SonTek website.

## NOW AVAILABLE

Need more range from your Argonaut-SL Vertical Beam system?

The all-new 500-kHz version of the Argonaut SL not only sports a new dynamic look but now includes a vertical beam to boot.

- Measure up to 120 m horizontal range
- Vertical beam for water level
- Internally calculated flow
- Current profiling



## NEW EMPLOYEES

### DAVE BROOKS TECHNICAL SALES

Dave has a B.A. in Physical Geography from San Diego State University. He has spent the last 10 years working for mapping (Earth Resource Mapping) and satellite remote sensing companies (SeaSpace Corporation) in San Diego.

Dave is in the Technical Sales department for North America. You can contact him on extension 136 or by email at [dbrooks@sontek.com](mailto:dbrooks@sontek.com).



### KEVIN LABBE APPLICATION SUPPORT

Kevin comes to SonTek/YSI from the US Geological Survey where he gained 15 years of experience in the collection of open channel flow and discharge data, the monitoring of ground water wells and water quality sampling.

Kevin is based in Baton Rouge LA, and provides technical and application support throughout the United States including demonstrations and system integration. To contact Kevin, call 225-753-2650 or by email at [klabbe@ysi.com](mailto:klabbe@ysi.com).



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