



# vertical profiling systems



**Automated water quality monitoring and telemetry systems**

providing 24/7 water column profiling  
and remote data delivery for  
freshwater and marine environments

# vertical profiling for continuous monitoring

Simultaneously monitor water quality, water velocity, and meteorological data 24/7 with an automated Vertical Profiling System, the most comprehensive environmental monitoring system available.

## Why Profile?

Water quality assessment is best conducted through a complete time series that monitors physical, chemical, and biological parameters. Developments in electronics, remote communications, optics, and material sciences have resulted in reliable automated systems for water quality monitoring, drastically improving the temporal resolution of a time series.

YSI's Vertical Profiler has taken this a significant step further by **sampling at different depths, allowing you to monitor an entire water column.**

Variations in temperature, wind, rainfall, salinity, and flow cause changes in the vertical structure of a water column, varying from highly stratified to well-mixed.

Users who apply the continuous data from a Vertical Profiler will **see the impacts of the physical environment on their water resources – without frequent trips to the field.**

## Coastal & Lake Monitoring



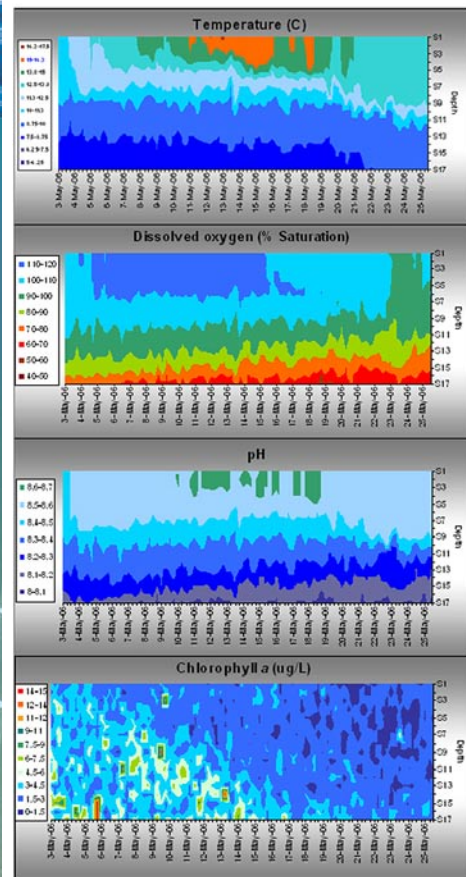
Typical coastal monitoring deployment with a buoy, profiling water quality sonde, bottom-mounted acoustic Doppler profiler, and meteorological sensor suite.

Near coasts, a robust Vertical Profiler generates a unique data set that unveils water quality variability through depth and time.

Use profiling data to:

- Monitor changes in the thermocline and pycnocline with YSI CTD sensors
- Track vertical distribution of phytoplankton and blue-green algae populations
- Evaluate the impacts of storms with turbidity sensors
- Monitor dissolved oxygen concentrations and detect onset of low-oxygen events
- Generate the most comprehensive baseline water quality record

## Real-time data



**One-month data set shows diurnal changes** in water column that your current program might not capture as well as gradual seasonal changes occurring throughout the time series.

## Make informed decisions about:

- Water quality at different drinking water intakes
- Taste and odor issues
- Water quality in lakes, bays, estuaries, and near-coastal areas
- Impacts of nearby development and construction

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## Source Water Monitoring

buoy-based vertical profiler

sonde collects water quality data at uniform steps throughout the water column

submerged water intake tower

data is used to identify which intake is closest to the best water quality

19-20 °C

18-19 °C

17-18 °C

16-17 °C

15-16 °C

14-15 °C

**A Vertical Profiler** is moored next to a water intake tower commonly used in drinking water reservoirs. Profiler data is used to continuously assess water quality, allowing plant managers to select the most appropriate intake.

The Vertical Profiler can ensure the best water is entering the plant in order to:

- Reduce treatment chemical use
- Provide early warning on potentially harmful conditions
- Improve filter run time
- Change filter media
- Obtain higher quality drinking water

An optional SCADA interface converts highly resolved temporal and spatial data to analog outputs which are easily integrated into plant systems.



This adds up to an **optimal system for managing source water, saving you money while improving drinking water quality and plant efficiency.**

## Raw Water Intake



**An automated system provides a data set far superior to one generated through spot sampling.**

The system will detect short-term events routinely missed by traditional field sampling programs:

- Early identification of algal blooms
- Diurnal low-oxygen events
- High turbidity plumes

**Knowledge is power:** Data about these events will help you decide where and when to draw water and how to treat it efficiently – saving you significant time and money.



## Why YSI?

**YSI understands the true value of generating continuous environmental data** because many of our employees were once our customers. We know that longer intervals between maintenance and fewer failures equal significant savings in time and money.

Our systems include water quality and velocity sensors, floating and fixed platforms, mounting hardware, flexible data collection platforms, and installation and maintenance services.

Every environment is unique. Talk with our hands-on applications specialists, who can assist you with your specific monitoring needs.



**YSI applications specialists** and customer set up a vertical profiler.



## Vertical Profiling Systems

Comprised of three components: **1)** a floating or fixed mounting platform, **2)** a profiling package composed of a controller, winch, data logging and telemetry system, and meteorological sensor suite (optional), and **3)** an underwater sensor package that typically includes a YSI 6-Series water quality sonde and other sensors upon request.

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**ISO 9001**  
**ISO 14001**

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YSI 6950 Fixed Profiling System allows attachment to any fixed structure such as a bridge or pier

YSI 6951 Pontoon-Mounted Profiling System with meteorological package provides a stable work surface and easy-to-deploy design for low-energy environments

YSI 6952 Buoy-Based Profiling System for high-energy environments

### Anti-fouling technology

Integrated anti-fouling wipers on most YSI sensors prolong maintenance intervals, lower operating costs, improve reliability, and save users significant time and money.



### Adjust profile steps

As water levels change, data from an optional fixed reference sonde or optional depth sounder automatically compensate for water level changes. Alternately, a 50-point table entry may be used.



### Vertical Profiling System Specifications

Minimum Profile Depth	1 meter
Maximum Profile Depth	100 meters
Depth Profile Setpoint Accuracy	±0.1 meter (±0.2 meter for fixed reference)
Recommended/Min. Step Size	1 meter/0.5 meter
Maximum Profile Frequency	~50% of duty cycle
Sensor Options	<u>Water Quality</u> : Conductivity, temperature, depth, dissolved oxygen, pH/ORP, turbidity, chlorophyll <i>a</i> , blue-green algae, PAR, and velocity <u>Meteorological</u> : Wind speed and direction, barometric pressure, rainfall, relative humidity, light, and air temperature
Sensor Step Modes	Table entry (50 steps max.) or computed
Power Requirement	12 VDC 18Ah (fixed), 120/240 VAC (fixed), 12 VDC 95Ah (floating)
Cable Options	15 meter vented, 50 meter, or 100 meter