

# APNA

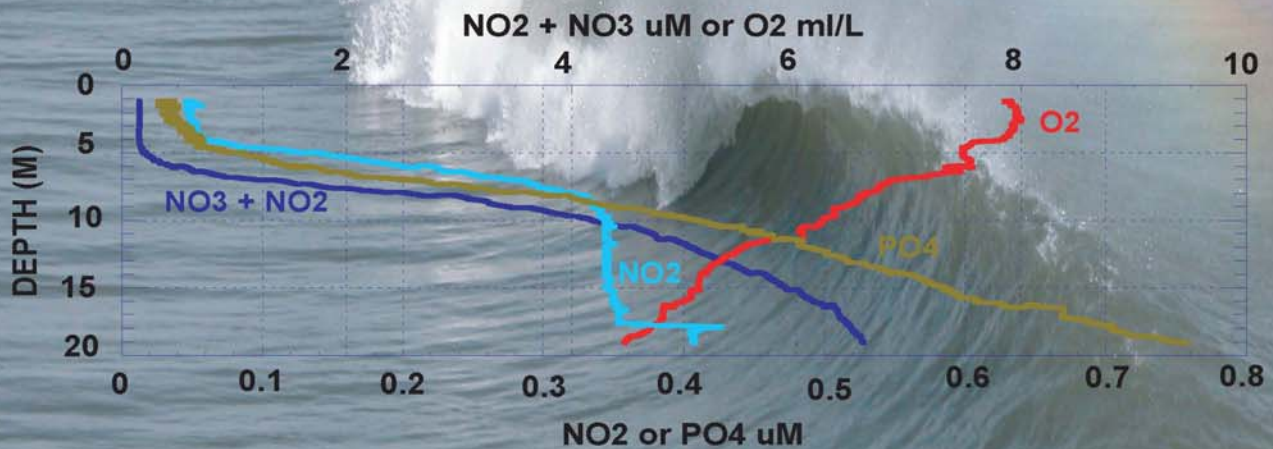
## *Autonomous Profiling Nutrient Analyzer*

- Four to Six Channel Analyzer
- Multi-Chemical Capability
- Fast Response - Trace Concentrations
- Real-Time Data
- Programmable Controller
- Multi-Platform Adaptability



## *Autonomous or Cabled Multi-Mode Operation*

- Autonomous Hi-Res Vertical Profiling
- Continuous Underway Surveying
- Intermittent Long-Term Sampling



**Nitrate, Nitrite, Ammonium, Phosphate, Silicate, Iron**



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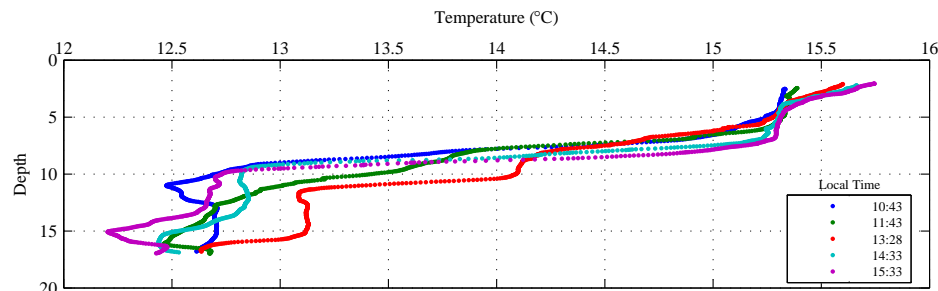
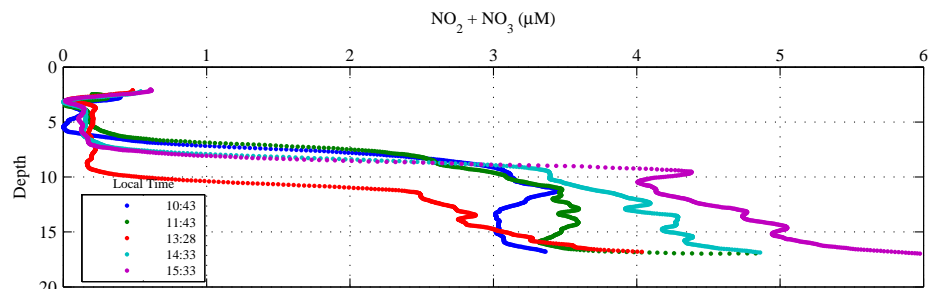
## APNA SPECIFICATIONS

<b>Number of Analytical Channels</b>	3, 4, or 5					
<b>Nutrients</b>	<b>Nitrite</b>	<b>Nitrate</b>	<b>Phosphate</b>	<b>Silicate</b>	<b>Iron(II)</b>	<b>Ammonium</b>
<b>Wavelengths (nm)</b>	A 540	A 540	A 820	A 820	A 560	F 370/460 ex/em
<b>Path lengths (cm)</b>	1, 5	1, 5	1, 5	1, 5	1,5	N/A
<b>Range-1 (<math>\mu\text{M}</math>)</b>	0.05-50	0.05-50	0.05-50	0.15-170	0.05-50	0.01-15
<b>Range-5 (<math>\mu\text{M}</math>)</b>	0.02-11	0.02-11	0.02-14	0.05-45	0.02-13	0.1-100
<b>Precision (% range)</b>	2	2	2	3	2	1

<b>Deployment Mode</b>	<b>Continuous</b>	<b>Intermittent Profiling</b>	<b>Intermittent Sampling</b>
<b>Endurance (max )</b>	~7 Days (1 reading/sec)	~400 Profiles (20 m depth– 20 min ea.)	~2000 Measurements (2-3 months at 24/day)
<b>Reagent volume (max)</b>	~1 Liter/channel	~1 Liter/channel	~1 Liter/channel
<b>Battery Usage (max)</b>	~60 Amp-Hr	~60 Amp-Hr	~60 Amp-Hr

<b>Power Supply/Range</b>	12 volt DC / 12-75 volt DC
<b>Power consumption</b>	Analysis: 28 W, Sleep: 33 $\mu\text{W}$
<b>Dimensions</b>	Length: 12.9 in (32.6 cm), Diameter: 6.6 in (16.8 cm)
<b>Weight</b>	Air: 19.5 lbs (8.8 kg), Water: 3 lbs (1.4 kg)
<b>Displacement</b>	460 cubic in (7.5 liters)
<b>Depth Capability</b>	200 meters, pressure compensated
<b>Instrument Control</b>	Programmable microcontroller with 1-8 Gb compact flash memory
<b>Communications</b>	RS232/485-ACII, 9.6-115.2 kBAUD, Ethernet
<b>Materials</b>	Peek, PVC, Nylon, Aluminum, Delrin, AcetalGP
<b>Multi-mode Deployment Platforms</b>	Ship-deployed vertical or towed profilers, autonomous moored profilers, autonomous underwater vehicles, or fixed-depth on piers or moored buoys.
<b>Optional Capabilities and Extras</b>	Real Time Data Telemetry (Acoustic/RF/cellular/Wi-Fi/Iridium/LAN) External server with local FTP site, web data display Integrated peripheral sensors (CTD, O <sub>2</sub> , Chl, etc)

A time series of five hourly high-res vertical tot. nitrate and temperature profiles that were obtained in Monterey Bay, CA with the APNA multi-nutrient analyzer deployed on an autonomous bottom-up profiler.



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