

CONTINUOUS SURFACE CURRENT MAPPING & WAVE MONITORING SYSTEM

See The Ocean From an Amazing Perspective

The SeaSonde HF radar system by CODAR Ocean Sensors is your solution for making continuous, wide-area ocean observations. The SeaSonde will provide you with years of real-time data over large coverage areas, with ranges up to 200 km -- This is not possible with any other technology!

The SeaSonde is a compact, non-contact surface current and wave measurement system that can be deployed and maintained easily, and will perform even during extreme weather conditions such as hurricanes.

High Quality Data

CODAR Ocean Sensors' patented technologies, including our processing algorithms, allow the SeaSonde to produce extremely accurate 2-D surface current velocity maps and measures the most important wave parameters. Patented antenna design and processing algorithms enable the system with up to 360° coverage. The patented pulsed FMCW eliminates the range aliasing and antenna wind-vibration noise inherent to other HF system designs.

Focus on Your Application

The SeaSonde is an off-the-shelf tool that allows you to focus on applying the data rather than the technology of collecting it. Whether your work efforts involve guiding search and rescue operations, providing critical information to maritime vessels, or driving and improving numerical circulation models, the SeaSonde will be an immense aid.

System Highlights:

Convenient: Nothing in the water: a truly non-contact sensor. All hardware is located on the coast or an off-shore structure. The patented compact antenna design greatly simplifies siting requirements.

Reliable: All system hardware and software are developed by our own staff specifically for continuous, long-term field operations, and consistent data outputs.

Flexible: The software parameters are highly flexible, yet designed to work smoothly, eliminating any need for you to become a computer programmer or radar expert.

Automated: Data can automatically arrive at your office at your preferred intervals, and can also be sent directly to the Web for public viewing. †

Remote Access: Data retrieval, system monitoring, parameter modifications and even factory support are all conducted through system remote access. †

Low Power: SeaSondes' low power consumption allow for working off-the-grid with alternative energy sources.

Cross-Platform Data Format: All data products are stored as ASCII files for convenient data transfer to various computer platforms, incorporation into numerical models and GIS programs.

Compatible with Coastal Culture: Where visual impact and minimum land-use footprint are all important, nothing beats the SeaSonde ultra-compact design.

† Communication Link Required

THE SeaSonde®

SeaSonde® General Specifications†

SeaSonde Configuration:	Standard	Hi-Res	Long-Range
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Spatial Range (typical)

Alongshore:	20-60 km	15-30 km	100-220 km
Offshore:	20-75 km	15-20 km	140-220 km

• Ranges achieved vary with environmental conditions and antenna placement. Note: Two radars are normally required for creating 2-D surface current maps of direction and speed.

Range Resolution

	500 m - 3 km	200-500 m	3-12 km
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• Resolution is user selectable.

Angular Resolution: 1-5 degree grid; user selectable.

Current Accuracy:

Varies with environment. Comparisons with ADCPs located in close proximity to the surface are typically < 7 cm/s of the total current velocity and 1-2 cm/s of the tidal component.

Wavefield Products

(measured at each radar): Local on-shore wave conditions in ring centered ~3 km from coast around each radar. Significant Waveheight: typical accuracy: 7-15%; Dominant On-Shore Direction: typical accuracy: 5 degrees -12 degrees; Dominant Wave Period: typical accuracy: 0.6 s; Other spectral wave parameters available. Wave information is limited by environmental conditions and operating frequency.

Frequency Range (antennae tuned to operate at a frequency subband within):

Standard	Hi-Res	Long-Range
one of either: 11.5-14 MHz or 24-27 MHz	one of either: 24-27 MHz or 40-45 MHz	4.3-5.4 MHz

• Patented technology permits the simultaneous operation of multiple radars on a single frequency, thereby minimizing frequency requirements and interference.

• Operators must adhere to their country's radio communications regulations regarding radiated signal specifications, and receive proper authorizations prior to operation. *Consult company.*

Equipment Dimensions:

Transmit Antenna Height:	4.8 m for 11-14 MHz	Combined with RX	9 m
Transmit Antenna Post	4 m	N/A	N/A
Receive Antenna System (mast, dome loopstick antenna unit & vertical element atop dome) approx. total height 7m			
Receive Chassis: 13H x 49W x 53D cm. Weight: 14 kg			
Transmit Chassis: 13H x 49W x 53D cm. Weight: 15 kg			

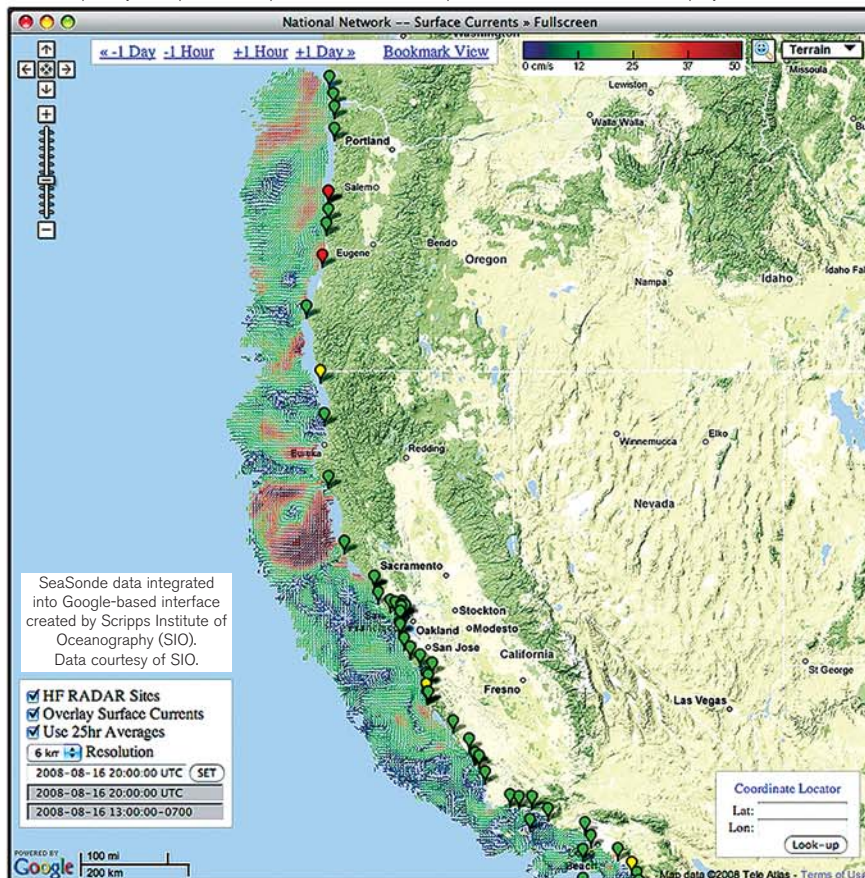
Maximum Distance Between Adjacent Radars: Recommend 40-60% of the radar's offshore range.

Power Requirements:

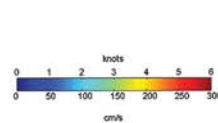
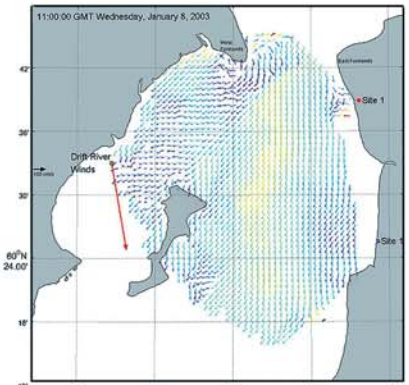
Either 120 VAC or 220 VAC, 50-60 Hz; total onsite electronics varies between 350 and 500 watts depending upon peripherals desired. [24 volt DC versions also available]

Output Radiated Power: 80 watts peak, 40 watts average

† For complete system specifications, please consult Technical Specification sheets available on company website.



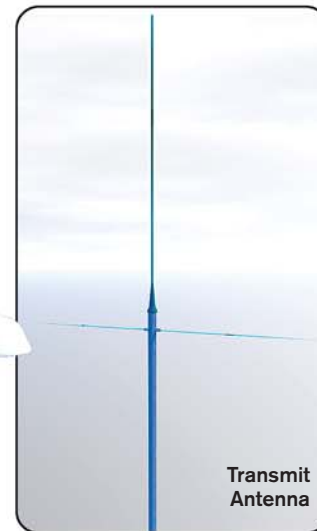
SeaSonde® Surface Currents - Cook Inlet - Alaska



Courtesy of D. Musgrave,
U. Alaska Fairbanks



SeaSonde Electronics



Transmit
Antenna

Receive Antenna



About CODAR

CODAR Ocean Sensors personnel are the inventors and original developers of HF and VHF radar technology for ocean monitoring applications, some having been in this field for nearly 40 years. CODAR staff continue to make advancements in radar physics theory as well as product engineering refinements, and apply them to ensure the SeaSonde as the most reliable HF radar system in the world. The RiverSonde is their latest product to enter the market, and takes advantage of many key SeaSonde features.

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