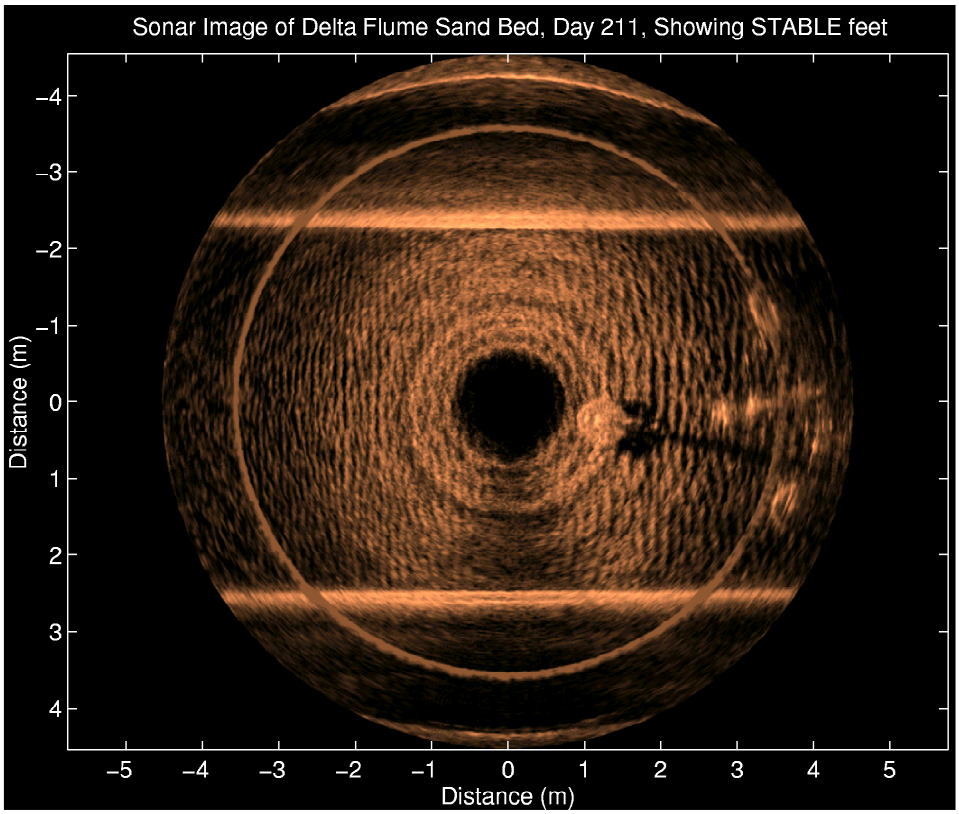
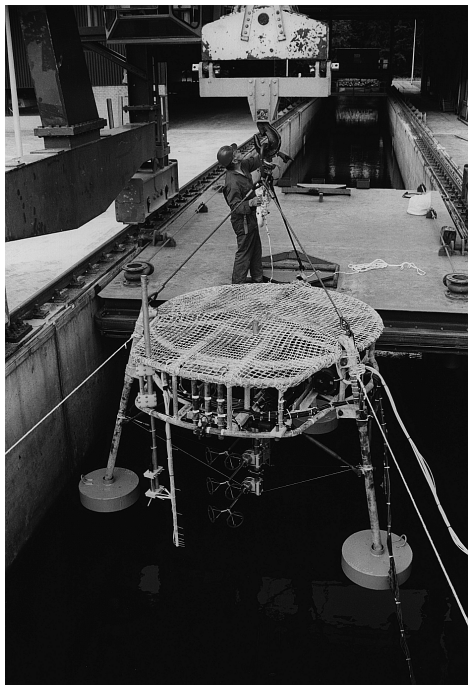
Sand Ripple Imaging

Sonar



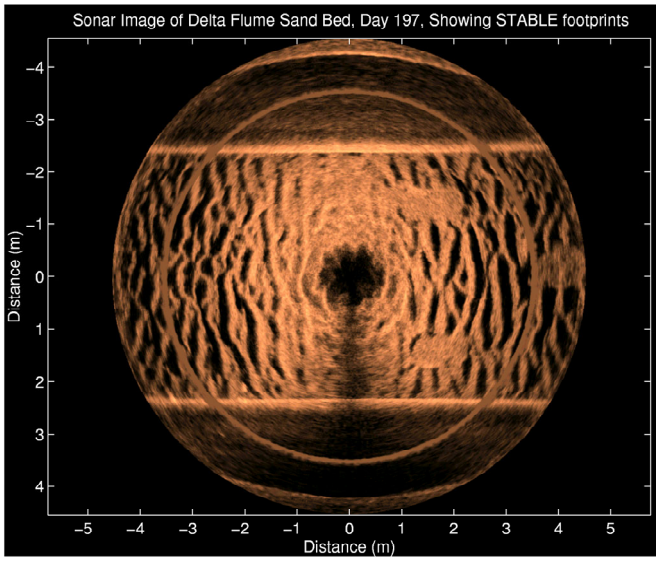


The STABLE II platform being lowered into the flume to act as a target for the Sand Ripple Imaging Sonar

The image above was measured using the Sand Ripple Imaging Sonar and shows small sand ripples as well as the feet of the STABLE II instrument tripod. Dark areas of the image represent low signal levels, or shadows, whereas bright areas represent strong signals, or targets. The sides of the flume define the upper and lower boundaries of the image. The central hole results from the height of the sonar above the seabed and the vertical beam pattern of the sonar transducer. The Sand Ripple Imaging Sonar is mounted vertically on a pole suspended from above the flume which causes a shadow in the six o'clock position.

The Sand Ripple Imaging Sonar has a narrow horizontal beam pattern and a wide vertical beam pattern. The transducer is rotated in the horizontal plane and data gathered for every 0.9° of the revolution.

The sonar operates as a slave to a host computer which controls the sonar via an RS232 serial data link. The acoustic receive signal is amplified and sent to the host computer as an analogue signal allowing free control over the digitisation of the data at the surface.



The platform has now been removed from the flume and the ripple period enlarged. The imprints of the platform feet are clearly visible.

Images Processed and Presented by

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Sand Ripple

Imaging and Profiling Sonars

The Sand Ripple Imaging (SRI) Sonar provides high resolution images in a transportable PC format for the minimum cost. Typically the sonar would be mounted near to the seabed and used to scan a circular area of the seabed up to 5m in range. The SRI Sonar operates at 2MHz with a 1° horizontal beamwidth and a 30° vertical beamwidth. Alternative transducers may be fitted to give different beam patterns and ranges depending on the specific application. In use the SRI Sonar requires a serial connection to a PC which controls the scanning process. The analogue output from the sonar provides freedom in the users choice of external signal processing. The transducer is fully enclosed in an oil filled rubber "boot" with no external rotating parts for complete environmental protection.

The Sand Ripple Profiling (SRP) Sonar effectively operates as an imaging sonar as it digitises the amplitude of the returned echoes over a programmed range. This approach allows the user to post-process the data to remove noise and mid-water targets caused by sand particles or fish. The SRP Sonar operates at 2MHz with a 1.1° conical beam to give precise range and bearing information over the scanned area which may be up to 360°. Typically the SRP Sonar is mounted horizontally near to the seabed and scans a cross-section of the seabed over an angular range of 120°. A data logging version is available with a built in hard disk for remote data gathering. The transducer is enclosed in a µPVC "boot" with no external moving parts for complete environmental protection.

Marine Electronics Sand Ripple Imaging Sonar

Mechanical

Length:	318mm
Diameter:	89mm
Finish:	Hard Anodised Aluminium
Operating Depth:	1000m standard, 3000m optional
Mating Connector:	Wet-Con 6 way IL6FS
Operating Temp:	0°C to +40°C
Storage Temp:	-20°C to +70°C
Weight in Air:	2.9kg
Weight in Water:	0.9kg

Acoustic

Acoustic Frequency:	2MHz
Horizontal Beamwidth:	1° (-3dB full angle)
Vertical Beamwidth:	30° depressed -15° from horizontal
Transmit Pulse Width:	10µsec to 1msec programmable
Range Resolution:	Dependent on sample rate

Interface

Type:	*(1)*	RS232 separate Rx/Tx
	(2)	Analogue 2MHz
Data Rate:		9600 baud
Protocol:		Asynchronous with LRC
Power Requirements:		24-36VDC at 400mA cont. 2A peak

Marine Electronics Sand Ripple Profiling Sonar

Mechanical

Length:	360mm
Diameter:	89mm
Finish:	Hard Anodised Aluminium
Operating Depth:	1000m standard, 3000m optional
Mating Connector:	Wet-Con 6 way IL6FS
Operating Temp:	0°C to +40°C
Storage Temp:	-20°C to +70°C
Weight in Air:	2.9kg
Weight in Water:	0.9kg

Acoustic

Acoustic Frequency:	2MHz
Beamwidth:	1.1° (-3dB full angle)
Transmit Pulse Width:	10 µsec to 1msec programmable
Sampling Clock:	1µsec to 1msec programmable
Sampling Resolution:	8 bits

Interface

Type:	RS232 separate Rx/Tx
Data Rate:	9600 baud
Protocol:	Asynchronous with LRC

Autonomous Version Differences

Length:	400mm
Diameter:	130mm
Weight in Air:	4kg
Weight in Water:	1.5kg
Power Requirements:	(a) Sleep mode 12v dc @ <1mA (b) Scanning 12v dc @ 1A

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