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Gavia Scientific



TYPICAL SCIENTIFIC APPLICATIONS INCLUDE

Oceanography, limnology, habitat assessment, hydrography, bathymetric surveys, archeology, wreck finding and mapping, bottom type classification, water column, 3D CTD mapping, current profiling and under ice surveying.

HIGH QUALITY DATA OUTPUT

All data is left in manufacturers original format and readily exportable to a number of post processing packages.



Left: Wreck of a small fishing boat captured on a 900 kHz side scan.

Right: Under ice photograph taken from Gavia AUV while flying inverted looking up at ice from roughly 12m depth.



University of British Columbia and Demo Gavia vehicles in Bonaire during a break from operations, part of NOAA's Bonaire 2008: Exploring Coral Reef Sustainability with New Technologies operation.

MODULAR CONSTRUCTION

Due to the modular construction of the Gavia, the system can conduct a variety of applications and additional capability is just a changeable module away. Gavia modules can be purchased at later dates to increase capability as mission requirements dictate.



The Gavia Autonomous Underwater Vehicle (AUV) is a self contained, low logistics survey tool capable of delivering high quality data while operating from vessels of opportunity or from the shore.

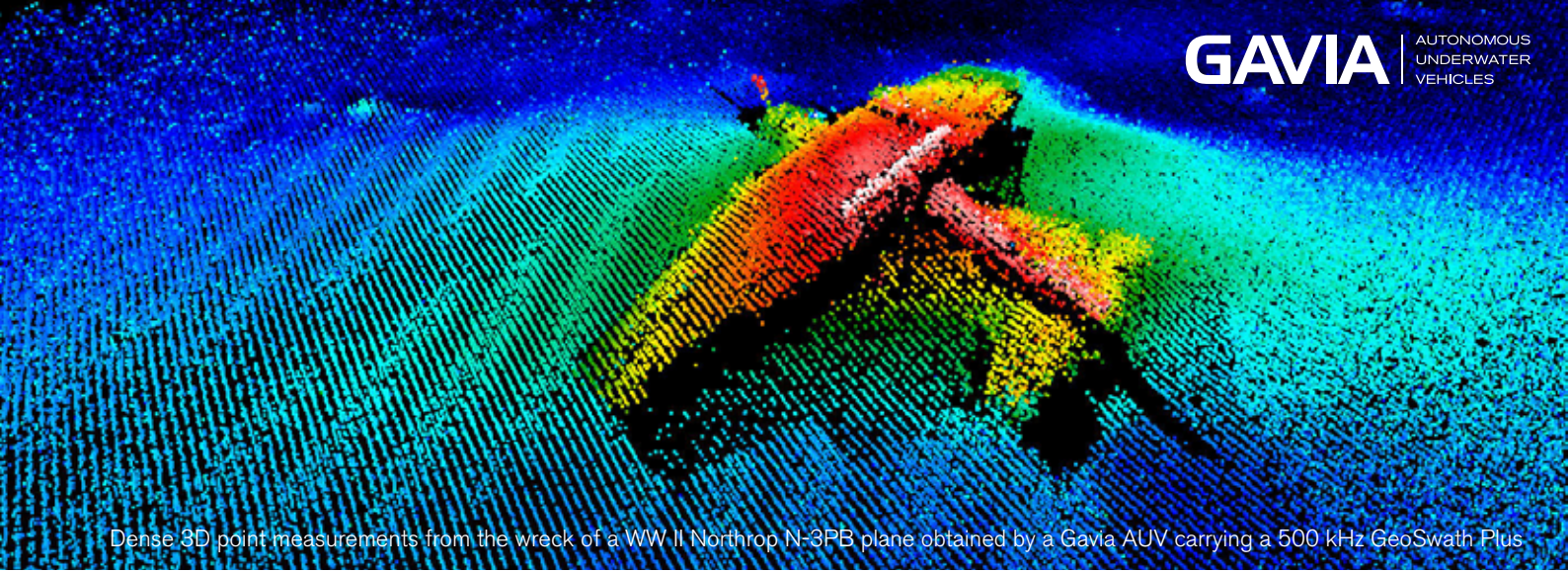
The Gavia has the ability to carry both user designed payload modules and an array of typical scientific standards, which makes it the ideal tool for researchers gathering a variety of data in depths of up to 1000m.

GAVIA SCIENTIFIC FEATURES

- » The Gavia AUV is stored in small cases that are both Fed-Ex shippable and easily transportable in a van or pickup truck to operational site.
- » The Gavia can be operated by two people and does not require any specialized equipment for launch and recover which is typically done either from the shore or small inflatables.
- » Quick mobilization / demobilization. No installation or calibration of peripherals required.
- » Small logistical footprint with no specialized equipment required to operate the system.
- » Easy to use chart-based graphical user interface for mission planning, execution and review.
- » Over the horizon communications through Iridium.
- » A wide array of additional sensors is available.
- » All data time synchronized and left in manufacturer's original format, all vehicle logs in an open format.
- » Optional Payload modules for customer supplied sensors with software development kit.
- » Compatible with a variety of third party post processing packages.
- » Additional modules can be purchased as mission requirements evolve.

GAVIA SCIENTIFIC PAYLOAD PACKAGE

- » A key feature of the Gavia AUV is the availability of user swappable payload modules to carry custom sensors
- » A payload package consist of the Gavia Interface kit, Module controller firmware with serial to Ethernet port forwarding and Serial Payload Operator software with configurable serial interfaces that allows serial payload devices to be controlled from within the Gavia User Interface
- » A custom module shell can be flooded if desired in the form of a nosecone payload
- » A typical 400mm payload module has roughly 295 mm usable space with a usable inside diameter of 178mm.



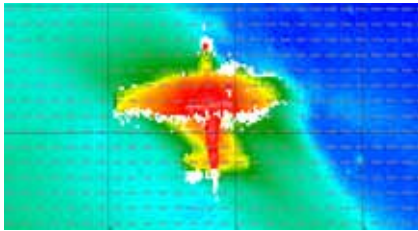
Dense 3D point measurements from the wreck of a WW II Northrop N-3PB plane obtained by a Gavia AUV carrying a 500 kHz GeoSwath Plus

Northrop Data Sets

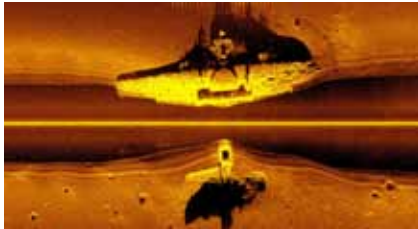
Crashed by Reykjavik Airport during WW2



Northrop N-3PB.



Binned GeoSwath MBES image of target.



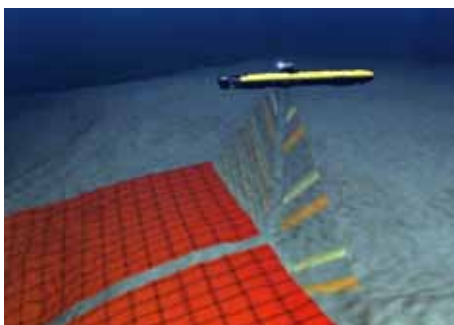
1800 kHz Side Scan Sonar image of target



Detail of bottom hatch from the Gavia camera system.

Bathymetric Survey

Image done by Black Laser Learning



GAVIA AUV SPECIFICATIONS

NAVIGATION

As standard GPS and Fluxgate Compass
 Optional DVL aided INS
 Optional DVL aided LBL

COMMUNICATION

Wireless LAN: IEEE 802.11g compliant
 Satellite communications: Full global coverage via Iridium link
 Acoustic Modem: For tracking and status updates

MEASUREMENTS

Length: From 1.8m for base vehicle
 Weight in air: From 49 kg for base vehicle
 Diameter : 200 mm
 Depth rating: 500m or 1000m
 Battery modules: 1.2 kW Lithium ion rechargeable cells per module
 Max speed: > 5.5 knots
 Endurance: Depending on speed and exact configuration. Typically around 7 hours with DVL INS and greater endurance when using acoustic positioning.
 Vehicle can be operated with two batteries for increased endurance (roughly doubled) or batteries can be field swapped for continuous operations.

TYPICAL SCIENTIFIC CONFIGURATIONS

Gavia base vehicle (500m or 1000m depth rating)
 DVL INS or LBL positioning
 Side scan sonar / Camera
 Sound velocity meter
 Obstacle avoidance sonar
 Typical options (others available): CTD (Seabird SBE 49), ADCP, Environmental characterization optics (Wetlabs ECO Pucks), O2, Swath bathymetry module, Spare battery module(s) and Custom payload modules for user supplied instrumentation.

The Gavia AUV has been in development since 1997 when the Gavia program was started as a joint development with the University of Iceland. Hafmynd was incorporated in 1999. Since then, numerous Gavia vehicles have been sold to military, commercial and scientific users in Iceland, Australia, Denmark, Portugal, United Kingdom, Canada and the United States as of 2010.

