



Royal Netherlands Institute
for Sea Research

GWJ Project

- NWO Large-scale Scientific Infrastructure Project



As a result of the renewal of the NIOZ fleet, there has also been an approval for the funding of some large critical research equipment. This equipment will be part of the National Marine Facilities Pool.



Gliders Application and intended use

The underwater gliders will be used to perform marine research in seas and oceans. The gliders will have a depth rate of 1000 meters. Deployments can vary between several weeks up to eight months and preferably more. Satellite communications will allow retrieval of most data in near real time and piloting.

The choice for the gliders has been made on the Teledyne Slocum G3, the main reason for this choice was the endurance of this glider.



Requirements and Sensors

Base Requirements

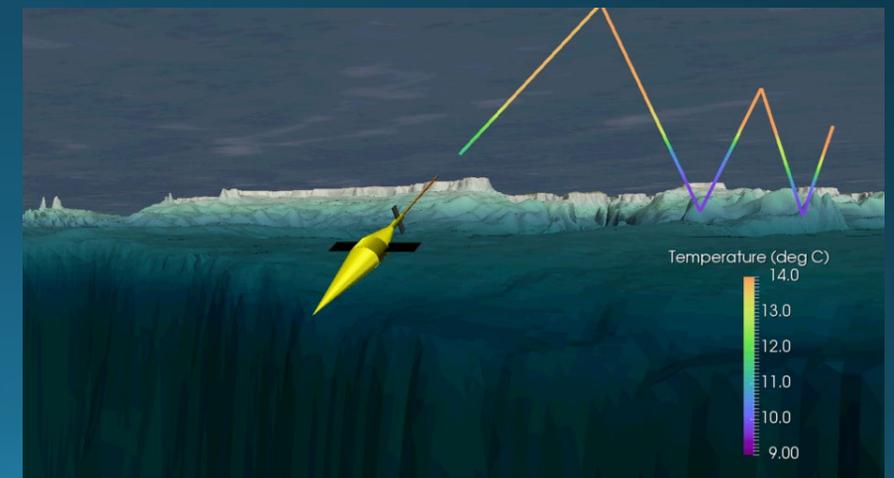
- Primary lithium batteries for two Gliders and Rechargeable lithium batteries for one Glider.
- An extended battery bay including batteries enabling an extended endurance.
- Iridium telemetry, GPS and altimeter.
- Glider management and piloting software for use on a desktop computer and, if possible, a mobile phone.
- Software for making endurance and range calculations.
- Argos backup tracking pinger.

Scientific Sensors

- Non pumped CTD, (RBR Legato3)
- Oxygen optode, (Aanderaa)
- Ecopuck, measuring chlorophyll, turbidity and CDOM, Wetlabs FLBB CD
- Acoustic modem, low frequency, broad antenna pattern, for acoustic data recovery from a subsea mooring.

Optimal Sensors

- Nitrate Sensor, SBE Suna V2
- Micro turbulence including probes and thermistors, RSI Microrider-1000
- pH, SBE ISFET
- A nose recovery system.
- An auxiliary thruster.



AUV Application and intended use

The AUV will be used to perform marine research in seas, oceans, fjords and possibly lakes. Deployments can vary between several hours up to 24 hours and preferably more. Underwater acoustic communication will allow near real time status, position and progress updates, contact and the possibility to adapt the mission program underway.

The choice for the AUV has been made on the Teledyne Osprey AUV with a depth rating of 2000 meter instead of the standard 1000 meter rated model. This model is still a low logistics AUV but with greater payload and endurance capability.



Requirements and Sensors

Base Requirements

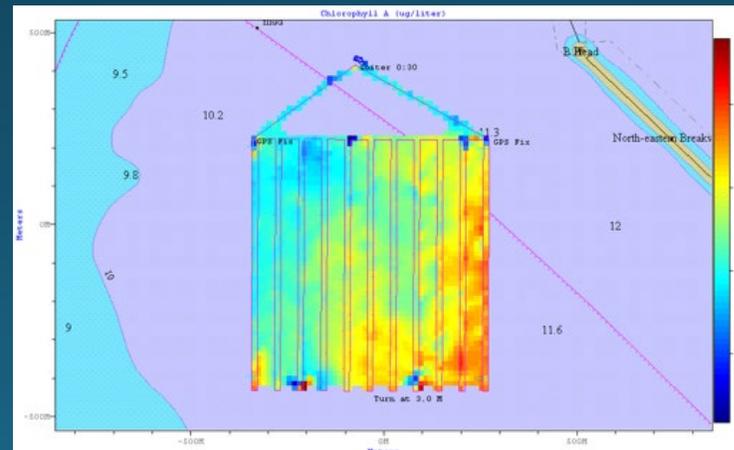
- Nosecone Module with Teledyne BlueView M900 MBES Obstacle Avoidance Sonar
- Battery Module (4.4 kWh rechargeable Lithium Ion)
- Altimeter, DVL with bottom track, GPS, compass
- Control Module with Septentrio DGPS
- Standard L1 GPS tower, WLAN, Iridium connection
- Propulsion Module with Nozzle Assembly
- Payload Module
- Net recovery cage and one pop up recovery buoy and Drop weight
- Emergency Pinger
- USBL navigation

Scientific Sensors

- Sound Velocity Meter (Valeport)
- pumped CTD (Seabird)
- Ecopuck (Seabird)
- O₂-optode (Aanderaa)
- Suna V2 Nitrate Sensor
- Reson T20-S Multibeam 400kHz Multi-Beam Echo (Teledyne)
- Flir Blackfly 5MP camera and Strobe (Teledyne)

Optional Instruments

- EdgeTech 2205 Dual Frequency Side Scan Sonar 230 / 850 kHz housed in a 2000m rated Module
- Voyis Recon camera and strobe light
- Upward looking Teledyne RDI Pathfinder DVL 300kHz with ADCP option enabled
- pCO₂ Optode scientific sensor
- PAR sensor
- Methane sensor
- pH sensor
- Extra Battery Module, 4.4kWh TESI rechargeable Li-Ion
- Spare Propulsion Module for full redundancy



Work class ROV Application and intended use

The project team responsible for choosing the desired ROV will start early 2023.

The wish from a science point of view is a 6000m depth rated ROV with full science and film package. Providing access to approx. 90% of the ocean. The ROV can be operated from ships of opportunity which fulfil certain requirements like dynamic positioning (DP), sufficient deck space and stability, power supply as well as crane/winch capacities. The ROV can be used within multidisciplinary scientific projects.





Thanks!

Any Questions?

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