



National  
Oceanography  
Centre

Coastal & Shelf Seas  
Instrumentation Services

Shallow water Acoustic Doppler  
Current Profiler (ADCP) lander frame,  
designed and built by the NOC



The National Oceanography Centre's Coastal & Shelf Seas Instrumentation Services offer project lifecycle service, from engineering design, deployment and recovery, through to data management and analysis support.

We enable coastal and shelf seas science, by providing expert advice on instrumentation requirements and by implementing platform delivery methods to meet scientific objectives. We offer a fieldwork support service to ensure high quality data are collected.

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For more information visit [noc.ac.uk/facilities/cassis](http://noc.ac.uk/facilities/cassis)

## Mechanical Engineering

Our mechanical design and precision engineering service allows scientists to tap into our extensive oceanographic design knowledge to ensure their project data collection goals are realised.

The workshop personnel are experienced in machining high grade materials such as titanium and stainless steel to produce items to very tight tolerances. The workshop uses CNC lathes and milling machines for highly accurate and repeatable production of parts from in-house designs using CAD. We can produce design drawings as well as 3D rendered drawings and images of the finished product for presentations.



## Electronic and Instrumentation Engineering

Our engineers produce innovative data logging systems, working at component level, including circuit board PCB design for bespoke solutions.

Our engineers are capable of producing innovative data logging systems working at component level, including circuit board PCB design for bespoke solutions.

Our knowledge of commercially available instruments enables us to create a system of integrated sensors and data loggers to the scientist's requirements. Our electronics engineers work closely with our mechanical engineers to produce bespoke instrument systems, housed in enclosures and mounting systems designed specifically for the project.

Micro-fluidic sensors, developed and manufactured at the NOC

## Communications

Our engineers can advise on communication requirements to retrieve valuable data without having to visit the deployment site.

We are experienced in using all forms of communication systems.

These include terrestrial based systems such as:

- PSTN
- GSM
- GPRS
- 3G
- ADSL
- VDSL

As well as satellite based systems such as:

- MeteoSat
- GOES
- Iridium
- BGAN

We have a proven track record in retrieving data from remote installations in places such as South Atlantic islands and the Scottish Highlands.



Tide Gauge communications and power system, developed and assembled by the NOC for a site in Dominica.

## Autonomous Sensor Integration

We are experienced in working with autonomous vehicles, such as the Slocum glider and Liquid Robotics Wave Glider and have expertise in installing sensors into these platforms for different requirements.

We have installed a high accuracy GNSS receiver into a Wave Glider and used that to determine sea levels in the Southern Ocean.

We also designed a sensor guard to protect a very delicate and expensive Rockland turbidity probe that had been integrated into a Slocum glider. The design had to protect the sensors but also to minimise disruption to the water being measured.

We are also working on integrating the new NOC sensors into Slocum gliders and other autonomous platforms to expand the measurement capabilities of these systems.

## Tide Gauge Technologies

We are world leaders in undertaking sea level measurements and at the heart of this lies the experience of our engineers to design bespoke installations to suit each site.

We have a long history of installing and maintaining tide gauge networks in the UK and overseas. We designed, built and installed the UK National Tide Gauge Network, becoming responsible for the continuous running and maintenance of 44 sites.

Since the 1980's, the NOC has developed the South Atlantic Tide Gauge Network (SATGN), providing vital observations from an under-sampled ocean region and a test bed for sea level technology for remote and hostile regions.





Wirewall measuring wave overtopping at Crosby Beach, Merseyside, developed through a partnership led by the NOC

This high latitude network has enabled us to develop novel technologies to address challenges such as deploying and maintaining underwater equipment, recording surface measurements in Polar regions, operating with limited power resources and employing remote data telemetry systems. We have now developed a suite of high quality, technological solutions to deliver high accuracy sea level measurements from remote, harsh and difficult-to-reach environments.

These gauges combine accuracy and resilience with low manufacturing and maintenance costs and also afford high frequency sampling, which makes them ideally suited for areas of seismic and hurricane activity. As a result, we have installed numerous systems in areas such as the Caribbean Sea which have been integrated into the IOC's tsunami warning systems.



## Landers, Profilers, Sample Collection and Seabed Monitoring

A lander is a frame that is equipped with a suite of sensors or instruments and is lowered or free-falls to the seabed to collect measurements.

The NOC has a range of landers and frames for use in a variety of locations, from the deep ocean, through to coastal and intertidal regions. We are experts in lander operations with over forty years' experience in designing, deploying and recovering landers. We offer standard and bespoke lander design services.





Recovery of the mini STABLE shallow water lander following a measurement campaign





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