Development of high speed data telemetry systems for remote locations, applicable to coastal, deep-ocean landers and moorings.
POL Sea Level telemetry development in three projects:

- **ODINAFRICA**
  Contract from IOC to POL (PSMSL), to provide instrumentation, technical expertise, training and support for a network of tide gauges around the coastline of Africa and the North West Indian Ocean.

- **Southern Ocean Tide Gauge Network (WP 10.7)**
  A network of 8 stations, monitoring sea level variations in the South Atlantic and Antarctic as part of the Global Sea Level Observing System (GLOSS). Producing high quality data sets and the data available in near real-time.

- **Telemetry Development (WP 8.6)**
  The aims of this project are to investigate and develop telemetry systems to return data from inaccessible areas, such as the deep ocean and from remote island sites. With the aim of developing instruments capable of autonomous operation for up to 10 years.
ODINAFRICA - Ocean Data and Information Network for Africa

Installed, and Upgraded Tide Gauge Sites
OTT Meteosat DCP Tide Gauge
POL Sea Level Stations in the South Atlantic and Antarctic

8 Sea Level Stations

Real time telemetry:

- Ascension (DCP/BGAN)
- Port Stanley (DCP/Internet)
- Rothera (Broadband)
- South Georgia (Broadband)
- Vernadsky (GOES DCP)

Delayed data retrieval:

- St Helena (Rebuild 2009)
- Signy Island (Retired)
- Tristan (Reinstall 2010)
Sea Level Sensors – Pressure

Digiquartz

KPSI 500
Sea Level Sensors – Radar
DCP telemetry issues

- Meteosat DCP is low cost and conforms to standards of Pacific TWS. Automatic data flow to GTS.
- Limited bandwidth, cannot report faster than every 15 minutes. The new recommended data reporting rate is every 6 minutes.
- For tsunami monitoring an alternative to DCP is required...
Oceans 2025 Telemetry Development
BGAN Sea Level Measurement
This map depicts Inmarsat's expectations of coverage, but does not represent a guarantee of service. The availability of service at the edge of coverage areas fluctuates depending on various conditions.

BGAN coverage February 2009.

inmarsat.com
BGAN Terminals

Hughes 9201

T&T 300

WideEye Sabre 1

Nera 1010 (T&T 110)
Tsunami Monitoring System using BGAN Data Telemetry

BGAN transmissions over IP
Ascension BGAN TG Installation
New Oceans 2025 Development - MYRTLEX

- 10 year duration at up to 5000 metres deployment depth
- Multiple Releasable Data Capsules with satellite telemetry
- Acoustic telemetry for diagnostics and emergency data retrieval
- Capable of acoustic networking with other moorings or surface buoy
Surface telemetry – Releasable Data Capsules and Telemetry Buoy
Summary of Progress

Objectives

'To investigate and develop telemetry systems to return data from inaccessible areas, such as the deep ocean and from remote island sites'

Progress and achievements

Successful deployment and recovery in the deep ocean during the RRS Discovery trials cruise, October 2008. During MYRTLEX's second deployment there was a release system failure, necessitating another Hybis deployment to inspect and recover the lander. Highlighting the vital importance of Oceans 2025 trials cruise programme.


Knowledge transfer discussions with OTT Messtechnik of Germany have led to a newly designed OTT instrument incorporating BGAN telemetry.

The pioneering work by POL directly led to an agreement between Inmarsat and UNESCO to provide BGAN telemetry for 50 tsunami monitoring stations in the Indian Ocean.
UNESCO and Inmarsat sign an agreement to provide BGAN telemetry for 50 tsunami monitoring stations in the Indian Ocean with the potential to save many lives.