



Marine Environmental Monitoring

MACHC Region

OceanWise

Overview:

- Introducing OceanWise
- UKHO MEMS Specification
- Work Achieved to Date
- Community Engagement & Outreach
- Future Project

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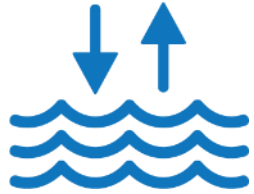


Enjoy the confidence of working with marine data experts

Who are OceanWise



Vast range of experience including **marine science, hydrography, oceanography and informatics**



Monitoring

Environmental monitoring products and services using a variety of sensors, techniques, data & analysis. Promotion of data sharing and availability through **OceanWise's** online portal **Port-Log**



Marine Mapping

Creation of **high-resolution mapping** data products and services for which **OceanWise** is the leading supplier to governments, ports and offshore energy operators for use in GIS



Compliance

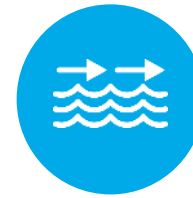
Development of software applications for use in marine environment including an **Asset Management System**

Importance of Environmental Monitoring



Marine Environmental Monitoring Stations (MEMS)

- 3-year Framework Agreement between OceanWise and the UKHO
- Includes installations, provision of a data platform, shore control and GNSS surveys, as well as local training and mentoring.
- Tidal data collected to be uploaded to the IOC's Sea Level Station Monitoring Facility
- Data analysis, processing, archiving and sharing via OceanWise's online Port-Log data platform



Refine Tidal Modelling & Predictions

Update Chart & Navigation Publications



Tsunami Warning

IOC's Sea Level Station Monitoring web portal



Near real-time data availability



OceanWise

Installations and Equipment

Sites attended to date

UKHO MEMS



UKHO MEMS – Cayman Islands



Objective: Condition assessment, remediation works, facilitate data sharing

- Four locations identified
 - Grand Cayman – 2 sites
 - Little Cayman
 - Cayman Brac
- Levelling of Tide Gauges

Challenges faced: vandalism of equipment in Cayman Brac

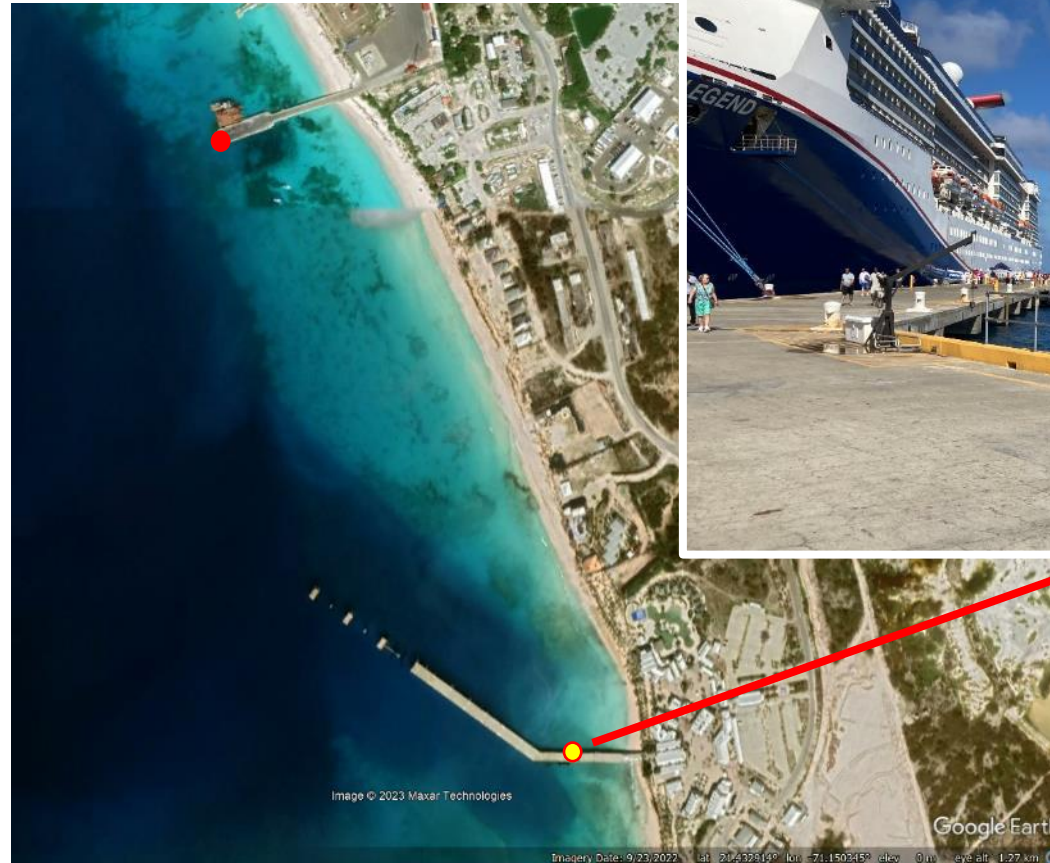


UKHO MEMS – Turks & Caicos



Objective: Condition assessment, remediation works facilitate data sharing

- Sapodilla Bay
 - Remediation work to existing Sutron Tide Gauge
 - OceanWise ip.buffer install
 - Meteorological sensor install
 - GNSS Levelling
- Port of Grand Turk
 - New MEMS to replace equipment lost in Sept 2022 Hurricane Fiona



UKHO MEMS – Anguilla



Objective: Installation of MEMS

- Road Bay
 - Jetty Mast
 - Vega C23 Radar
 - Pressure Transducer
 - Meteorological sensor
 - OceanWise ip.buffer
 - FTS GOES Meteosat transmitter
 - Leica CORS GR30
 - Off grid power backup
 - Stilling well & sounding board
- Geodetic Mark establishment for tide gauge levelling and establishing datum

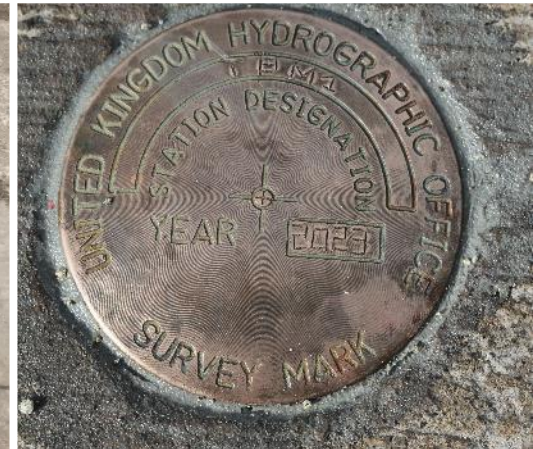


UKHO MEMS – Montserrat



Objective: Installation of MEMS

- Little Bay
 - Jetty Mast
 - Vega C23 Radar
 - Pressure Transducer
 - Meteorological sensor
 - OceanWise ip.buffer
 - FTS GOES Meteosat transmitter
 - SRT Carbon AIS
 - Webcam
 - Off grid power backup
 - Stilling well & sounding board
- Geodetic Mark establishment for tide gauge levelling and establishing datum



The logo for OceanWise, featuring the word "OceanWise" in a white, sans-serif font. The text is enclosed within a white, hand-drawn style oval that has several overlapping loops, giving it a dynamic, circular feel. The background of the entire image is a dark blue, semi-transparent overlay over a photograph of a person's hands typing on a laptop keyboard. The laptop screen displays a software interface with a sidebar on the left containing menu items like "Assets List", "Organisations", "Personnel", and "Components". The main area of the screen shows a table with columns for "Code", "Name", "Type", "Category", "Status", and "Serial No". The table contains several rows of data, including entries like "PP/Unit/BLD/002" and "PP/Unit/BLD/001". To the right of the table, there is a map showing a geographical area with various colored markers and lines. In the foreground, to the left of the laptop, there is a clear glass filled with water. The overall scene is dimly lit, with a strong blue color cast.

Data Visualisation & Sharing

UKHO MEMS Port-Log

UKHO – Port-Log Data Platform



[Port-Log](#)
[Map](#)
[Latest](#)
[History](#)
[System](#)

Find Site:

— ALL ACTIVE STATIONS —

| Tides | Tide Level (m) | Predicted (m) | Surge (m) | AquaTrak Level (m) | Radar Level (m) | Pressure (dBar) | Age (mm:ss) | Alerts |
|-----------------------------------|----------------|---------------|-------------|--------------------|-----------------|-----------------|-------------|----------|
| Anguilla | | | | | | | | |
| Road Bay: | 1.11 | 0.28 | 0.83 | | --- | 1.112 | 4.5 mins | |
| Cayman Islands | | | | | | | | |
| Gun Bay: | 0.73 | 0.47 | 0.26 | | 0.73 | | 90 secs | |
| George Town: | 0.74 | 0.45 | 0.29 | | 0.74 | | 90 secs | |
| Montserrat | | | | | | | | |
| Little Bay: | | --- | --- | | | --- | 10.1 weeks | !TimeOut |
| Turks & Caicos Islands | | | | | | | | |
| Providenciales: | 0.48 | 0.36 | 0.12 | 0.48 | 0.50 | | 3.5 mins | |

| Wind | Wind Direction (Deg) | Wind Speed (Knots) | Gust Speed (Knots) | Gust Direction (Deg) | | Age (mm:ss) | Alerts |
|-----------------------------------|----------------------|--------------------|--------------------|----------------------|--|-------------|--------|
| Anguilla | | | | | | | |
| Road Bay: | SSE | 5.1 | 7.5 | SE | | 4.5 mins | |
| Montserrat | | | | | | | |
| Little Bay: | ESE | 4.7 | 6.3 | ESE | | 35.5 mins | |
| Turks & Caicos Islands | | | | | | | |
| Providenciales: | ESE | 5.3 | 7.3 | E | | --- | |

| Met | Atmos Pressure (mBar) | Air Temperature (Deg C) | Humidity (%) | DewPoint (Deg C) | Solar Radiation (W/m2) | | Age (mm:ss) | Alerts |
|-----------------------------------|-----------------------|-------------------------|--------------|------------------|------------------------|--|-------------|--------|
| Anguilla | | | | | | | | |
| Road Bay: | 1013 | 30.1 | 80 | 26.2 | 856 | | 4.5 mins | |
| Montserrat | | | | | | | | |
| Little Bay: | 1013 | 30.1 | 78 | 25.9 | 905 | | 35.5 mins | |
| Turks & Caicos Islands | | | | | | | | |
| Providenciales: | 1013 | 29.4 | 67 | 22.8 | 855 | | --- | |

Select the Site Names above for more details on each site.

Turks & Caicos | Latest Data



Port-Log Map Latest History System

Find Site: All Sites...

SW 8.4 knots
Tides 0.9m

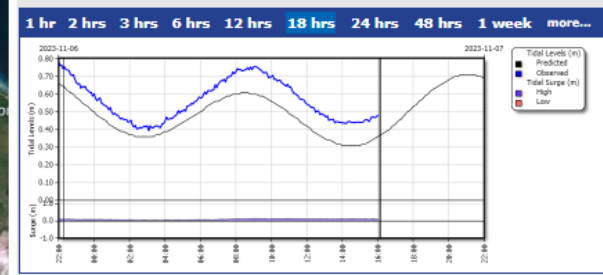
Providenciales

Bottle Creek Settlements

- Live, real-time data
- QA/QC status
- Alerts and warnings
- Web-based and mobile compatible

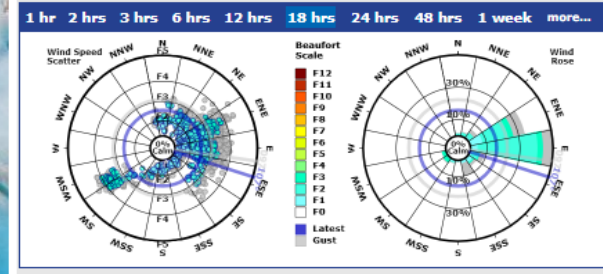
--- PROVIDENCIALES (UKHO-TCA1) ---

| | Tide Level (m) | Predicted (m) | Surge (m) | AquaTrak Level (m) | Radar Level (m) | Pressure (dBar) | Age (mm:ss) | Alerts |
|--------|-----------------------|-------------------------|--------------------|----------------------|------------------------|-----------------|-------------|--------|
| Tides: | 0.48 | 0.36 | 0.12 | 0.48 | 0.50 | | 5.7 mins | |
| | Wind Direction (Deg) | Wind Speed (Knots) | Gust Speed (Knots) | Gust Direction (Deg) | | | Age (mm:ss) | Alerts |
| Wind: | ESE | 5.3 | 7.3 | E | | | 103 secs | |
| | Atmos Pressure (mBar) | Air Temperature (Deg C) | Humidity (%) | DewPoint (Deg C) | Solar Radiation (W/m2) | | Age (mm:ss) | Alerts |
| Met: | 1013 | 29.4 | 67 | 22.8 | 855 | | 103 secs | |



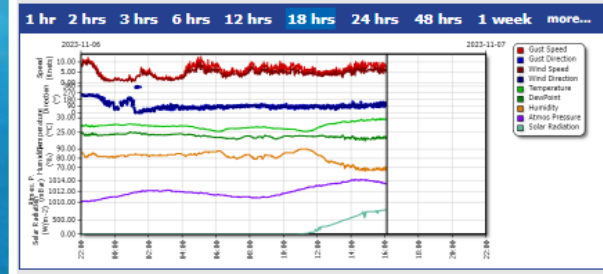
--- TIDAL TURNING POINTS ---

| Turning Point | Predicted | | Observed | | Difference | |
|---------------|------------|------------|------------|------------|-------------|------------|
| | Time (UTC) | Height (m) | Time (UTC) | Height (m) | Time (h:mm) | Height (m) |



--- RECENT WIND SPEEDS ---

| Date/Time (UTC) | Average | | Gust | |
|-----------------|---------------|-----------------|---------------|-----------------|
| | Speed (Knots) | Direction (Deg) | Speed (Knots) | Direction (Deg) |
| 07 Nov 12:00 | 3.9 | E | 6.2 | ENE |
| 13:00 | 4.7 | E | 9.4 | E |
| 14:00 | 5.7 | E | 10.6 | E |
| 15:00 | 6.0 | ESE | 9.8 | E |
| 16:00 | 6.5 | SE | 7.9 | ESE |



--- RECENT MET VALUES ---

| Date/Time (UTC) | Averaged Parameters | | | | |
|-----------------|-----------------------|---------------------|--------------|------------------|--|
| | Atmos Pressure (mBar) | Temperature (Deg C) | Humidity (%) | DewPoint (Deg C) | Solar Radiation (up) (W/m ²) |
| 07 Nov 12:00 | 1013 | 27.4 | 79 | 23.6 | 268.78 |
| 13:00 | 1014 | 28.4 | 73 | 23.3 | 466.95 |
| 14:00 | 1014 | 29.0 | 69 | 22.9 | 671.75 |
| 15:00 | 1014 | 29.4 | 68 | 23.0 | 809.65 |
| 16:00 | 1014 | 29.6 | 68 | 23.1 | 851.00 |

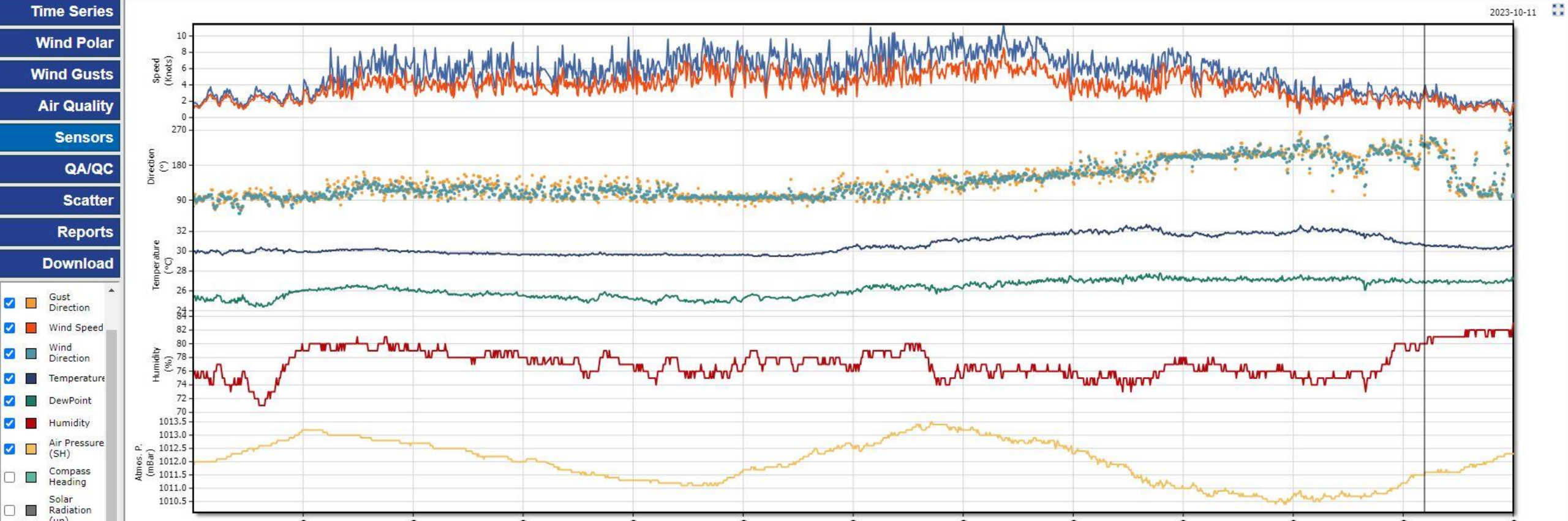
Historical Records



Port-Log Map Latest **History** System OceanWise

Datasets Tides **Met** Currents Waves CTD WQ River GPRS Buoy

Charts Site: **Providenciales** Start Date: **2023-10-10** Period: **24 hrs**
Latest Filter: **Passed QA/QC** End Date: **2023-10-11**



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OceanWise

Community Engagement Outreach & Training

BECKY CONWAY | MACHC24 | DECEMBER 2023

UKHO MEMS – Outreach & Training



- Education and awareness is key to highlight the importance of system maintenance
- Promotes continued accurate and reliable data



UKHO MEMS – Montserrat



- Training and equipment and Port-Log data platform provided to Montserrat Port Authority
 - Discussion and changes to MPA's Hurricane Preparation Plan



Cabling with red and green markings to assist with mast removal in the event of a storm

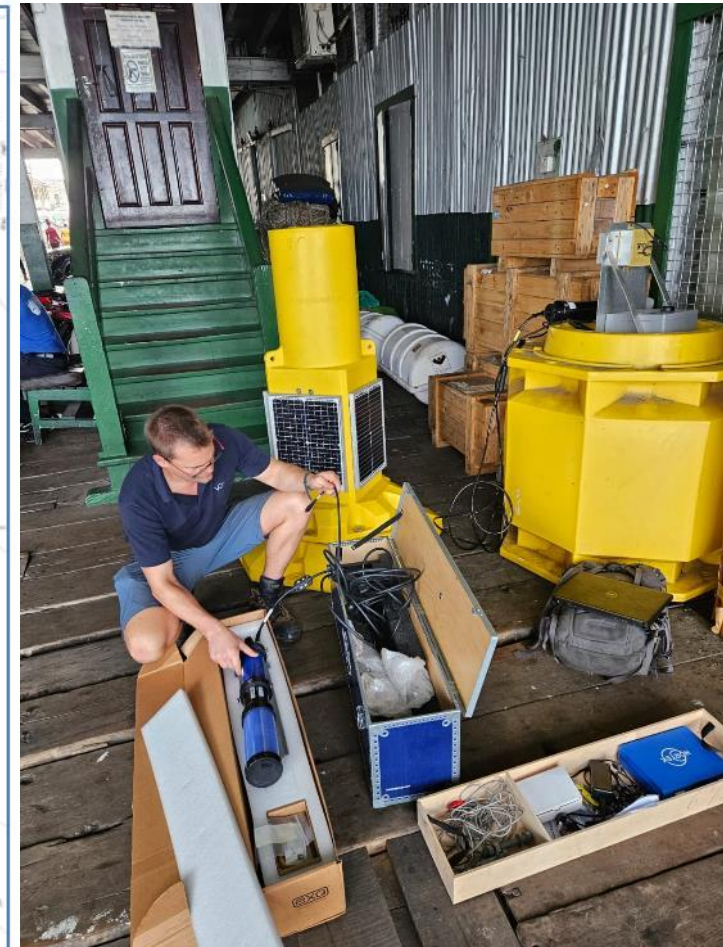
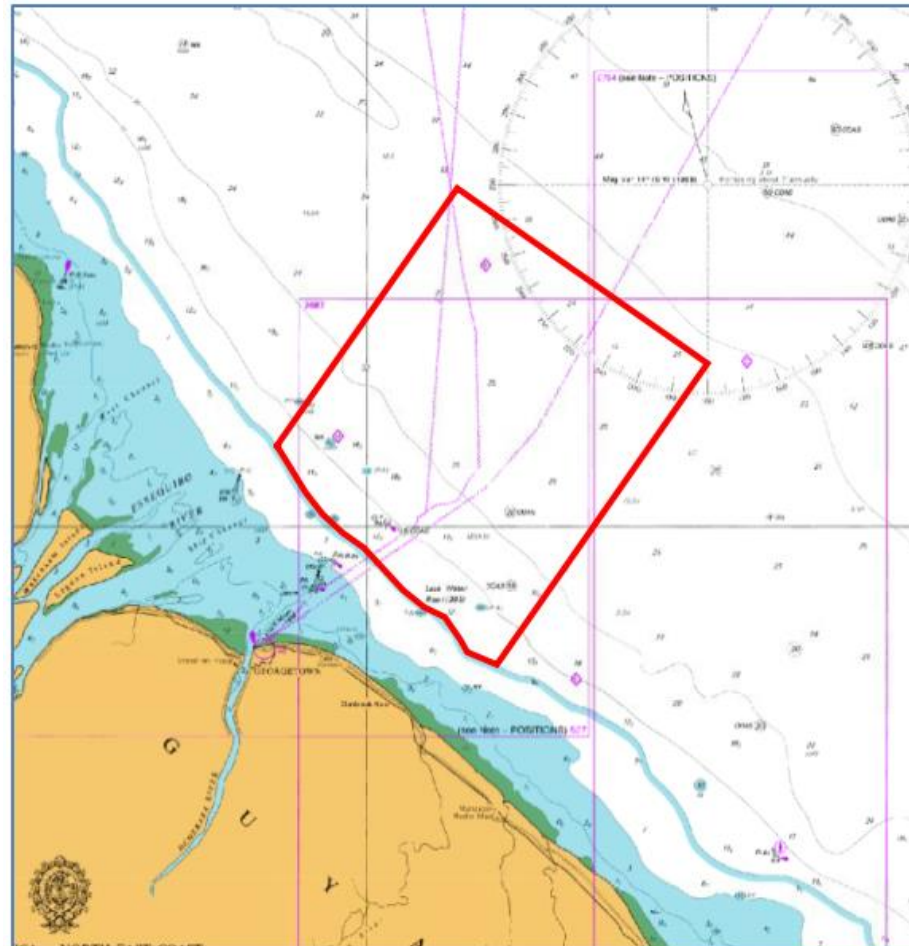


Future Project

Within the MACHC Region

Guyana GNSS Buoy

- Deployment of a GNSS tide buoy
 - Tidal height & stream data
- Accurately assess both tidal characteristics and spheroidal separation for the area.
- 30-day deployment
- Long-term MetOcean data buoy





Thank you

Enjoy the confidence of working with marine data experts

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