WP2000 - PORTAGAUGE MANUFACTURE, INSTALLATION AND OPERATION

DESIGN CONSIDERATIONS

- OBJECTIVES - Design and build a portable tide gauge that is suitable for transportation between different sites of scientific interest.

- LOCATION - Where will the tide gauge be installed?
  - What are the features at the prospective installation sites?

- SPECIFICATION - What are the measurement parameters of the system?
  - What are the operational parameters of the system?

LOCATION – TOAMASINA, MADAGASCAR

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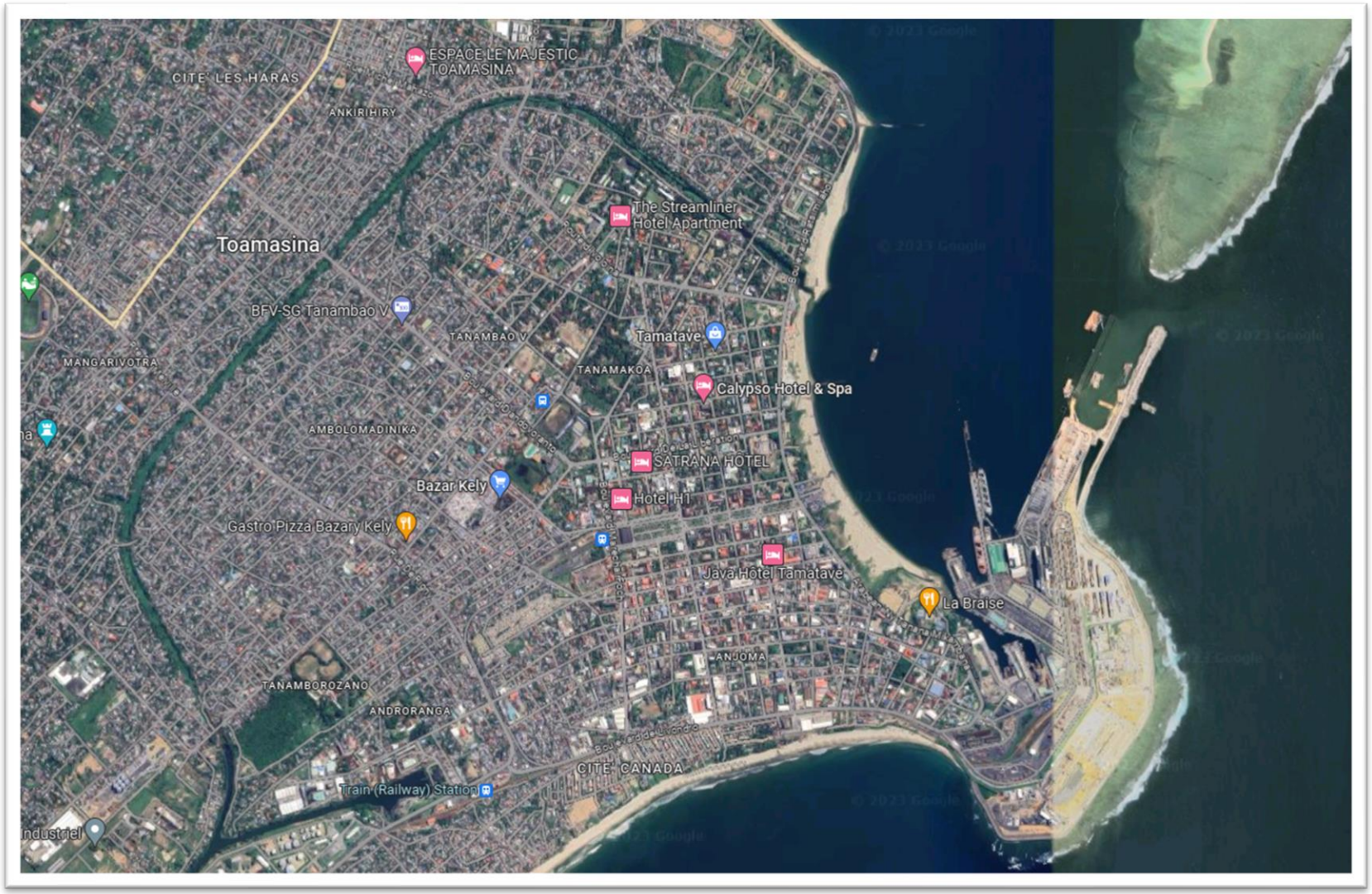
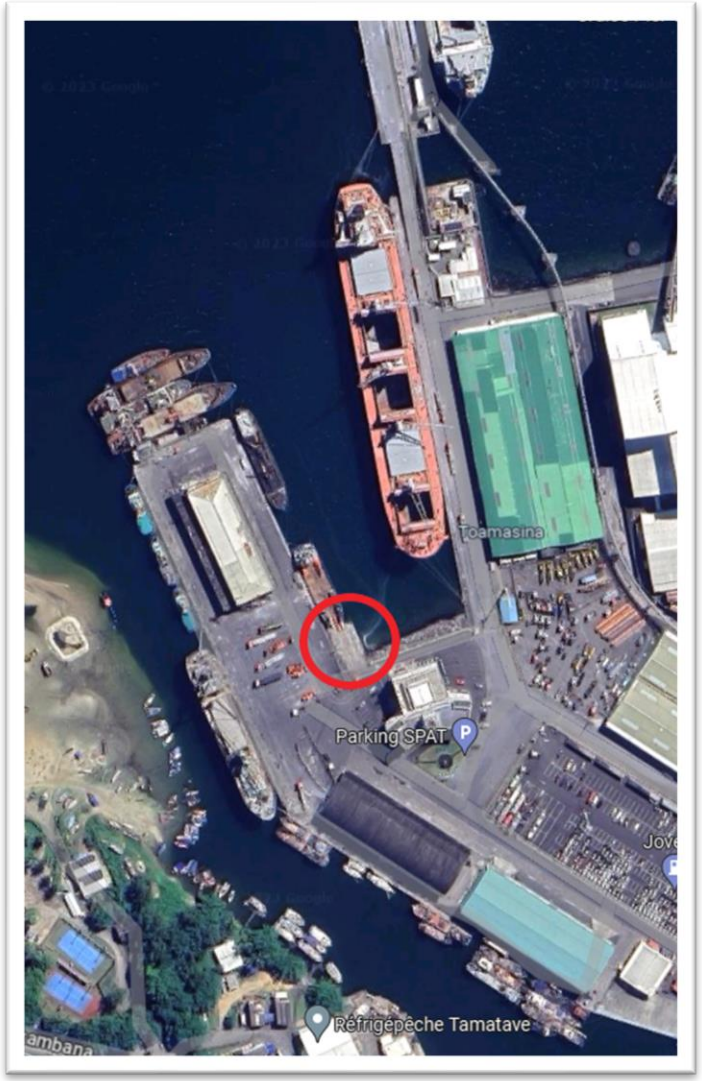
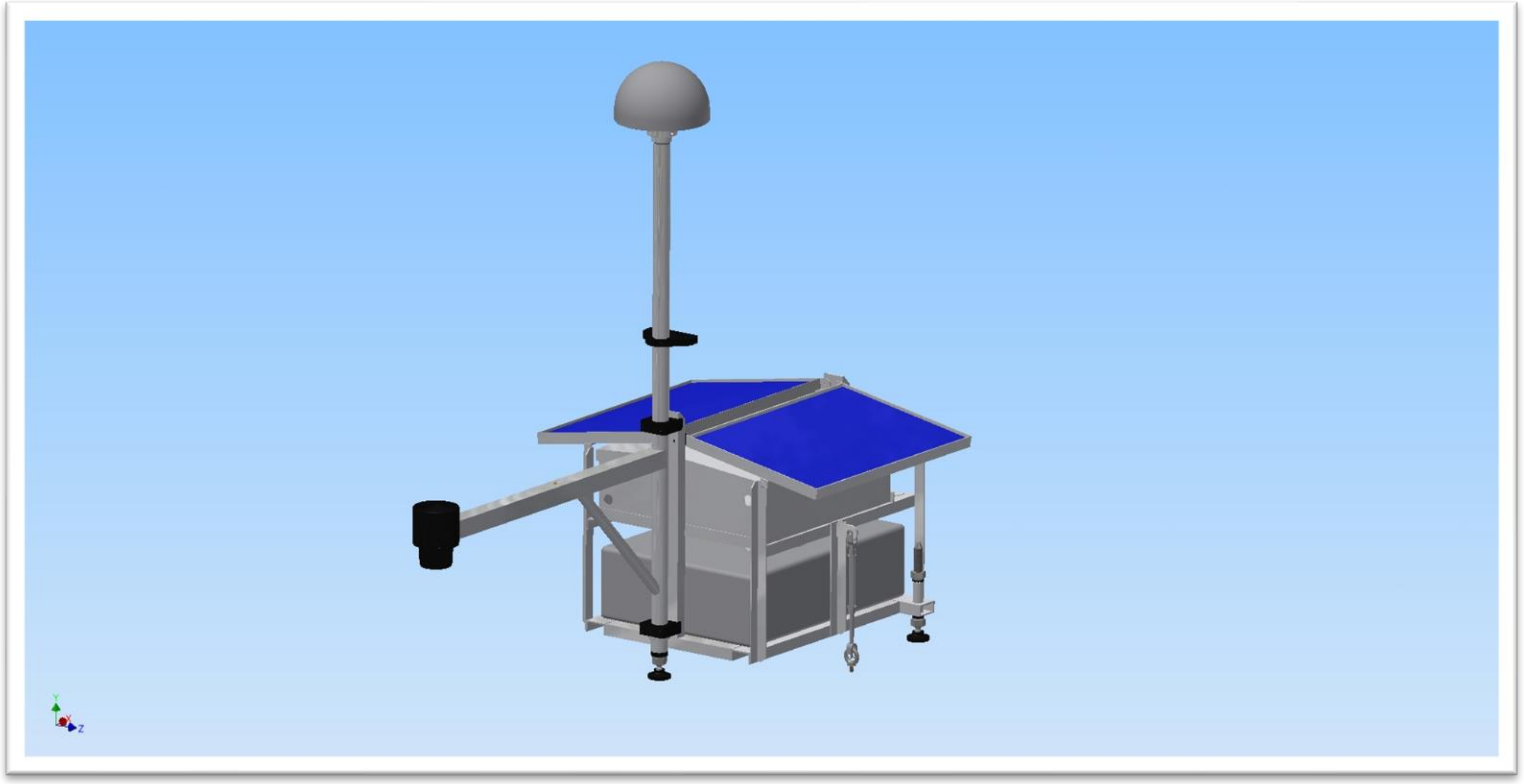




DESIGN - MECHANICAL

- **REQUIREMENTS**
- Need to incorporate the rigidity of a fixed GNSS tide gauge installation into a transportable package.
- Needs to be simple to assemble and disassemble.
- Easily transported.

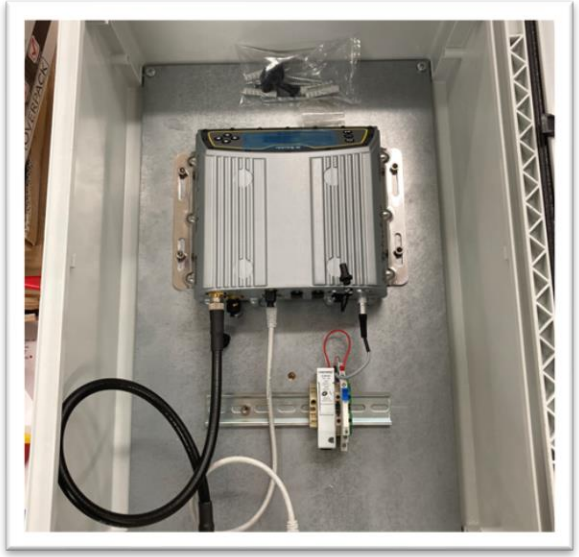
- **DESIGN OUTCOMES**
- Hinged solar panels for easy access to instrumentation.
- Adjustable feet for installing Portagauge on varying ground conditions.
- Built-in ballast tank to increase mass and aid stability.
- Removable radar arm and GNSS mast for ease of transportation.

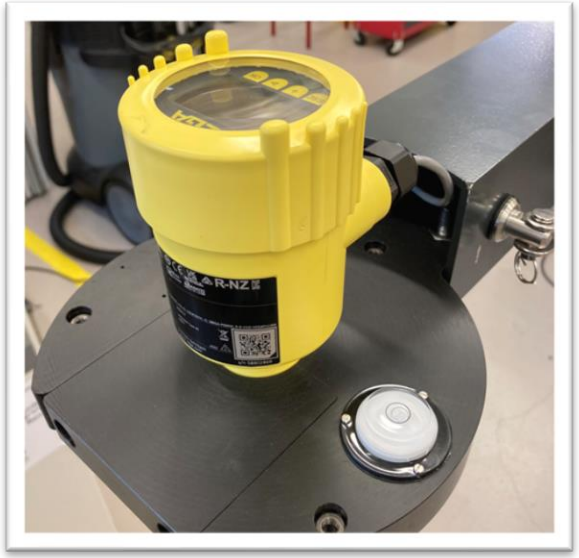


DESIGN - ELECTRONIC

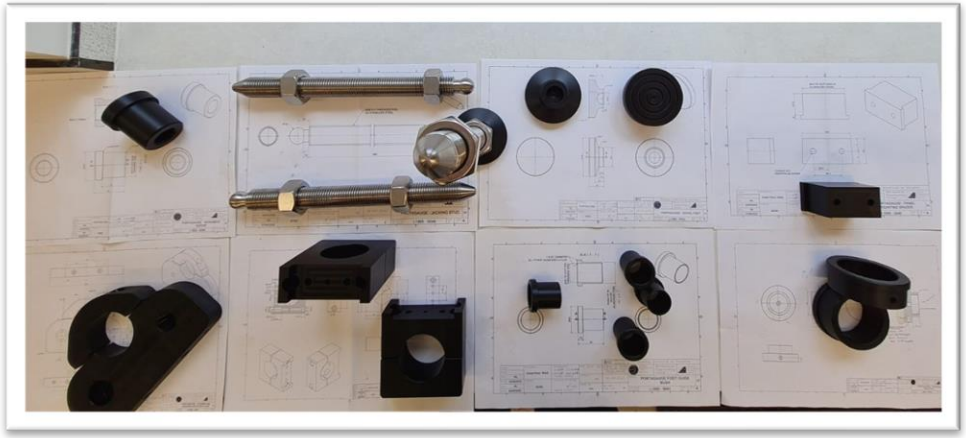
- **REQUIRMENTS**
- Operate from renewable energy and be completely self-sustained.
- One minute average sea level data logging.
- Include a high quality GNSS receiver.
- Data communications.

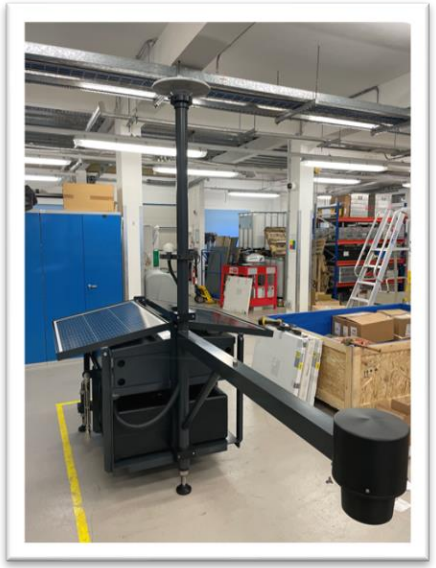
- **DESIGN OUTCOMES**
- System power draw calculated, and batteries/solar panels selected to meet the required demand.
- Radar sensor simplifies on-site installation.
- Electrical connections kept external to instrumentation enclosures, for ease-of-use.





MANUFACTURE & SHIPPING





INSTALLATION-LOCATION

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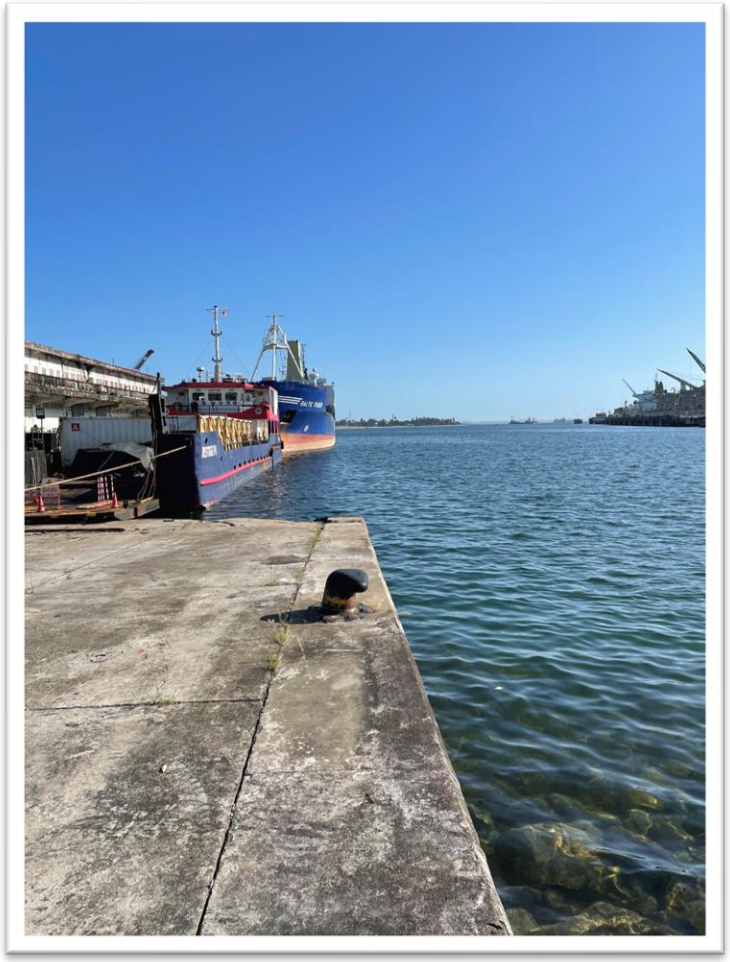

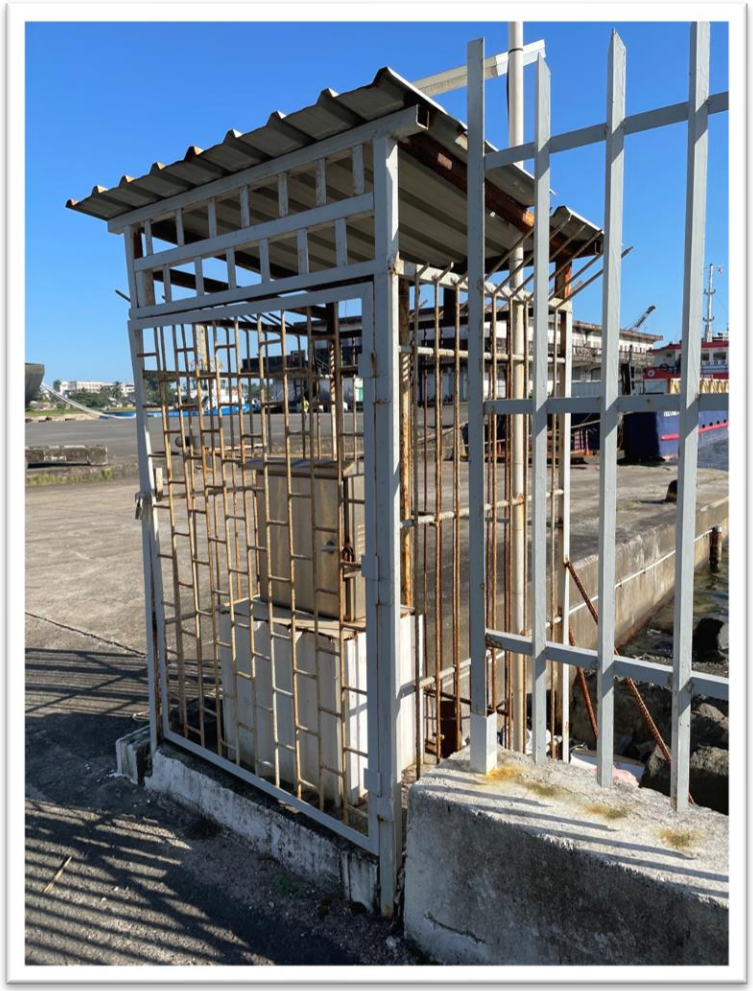

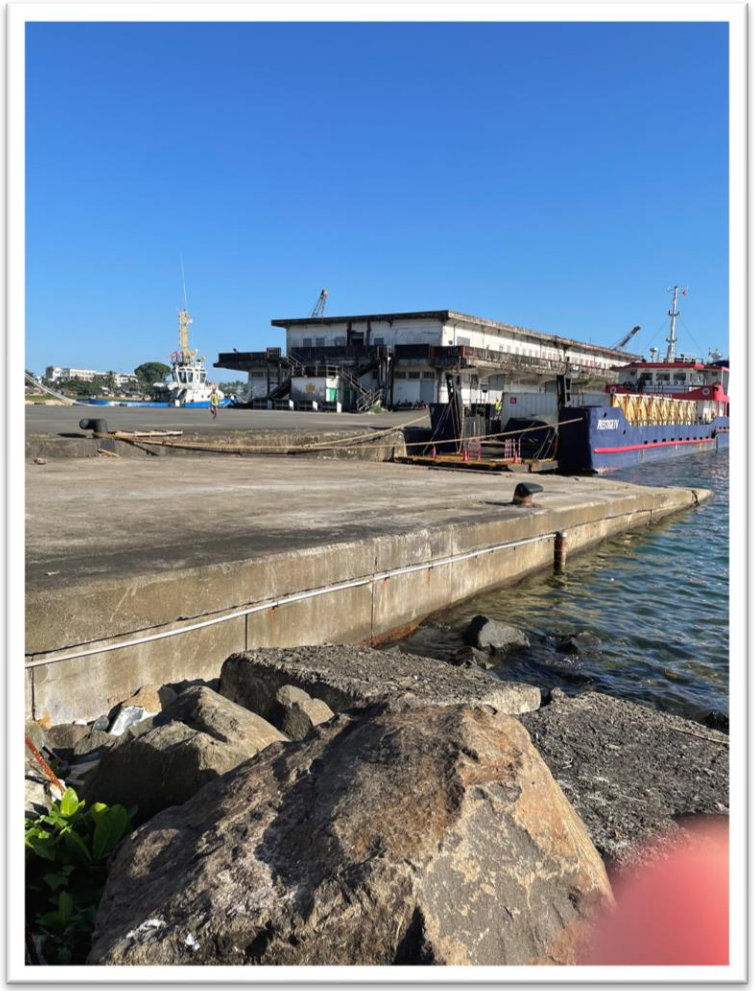

INSTALLATION – CRATE DELIVERY

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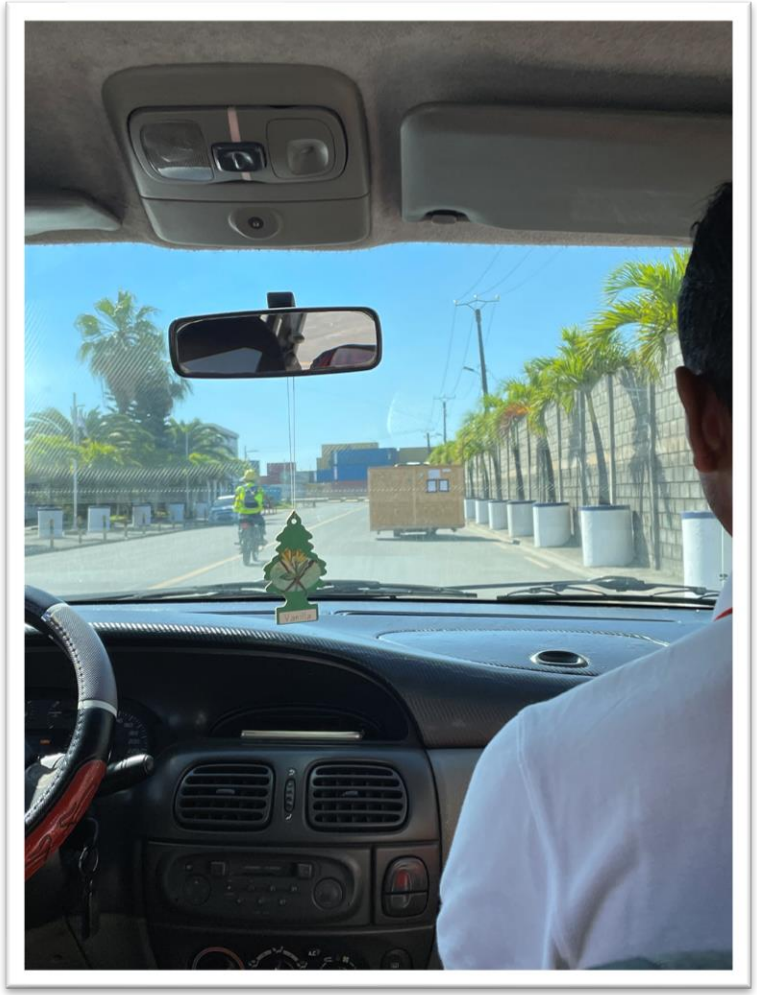

INSTALLATION - ASSEMBLY

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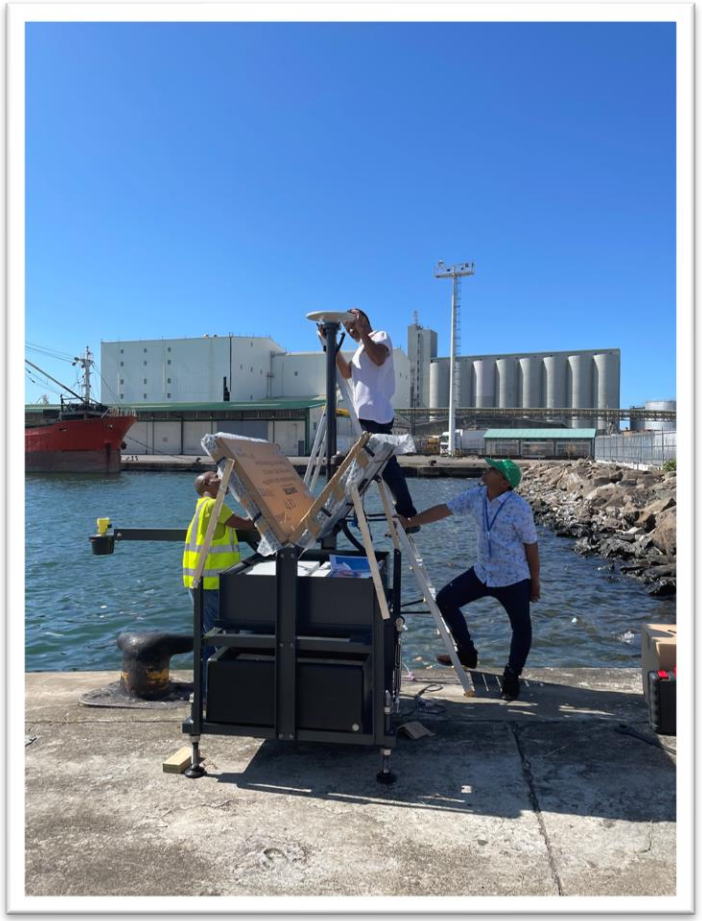

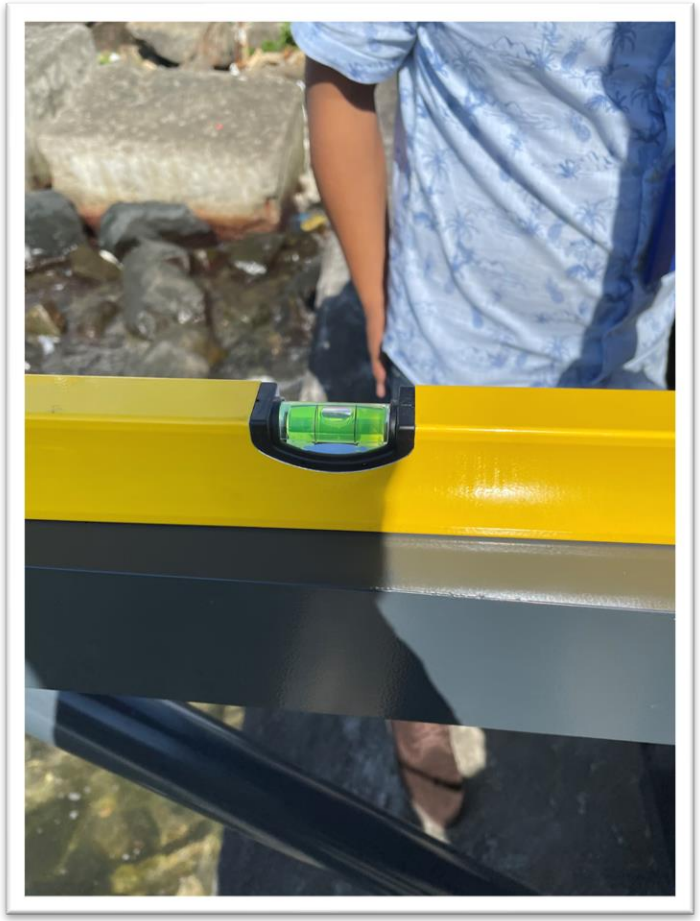

INSTALLATION

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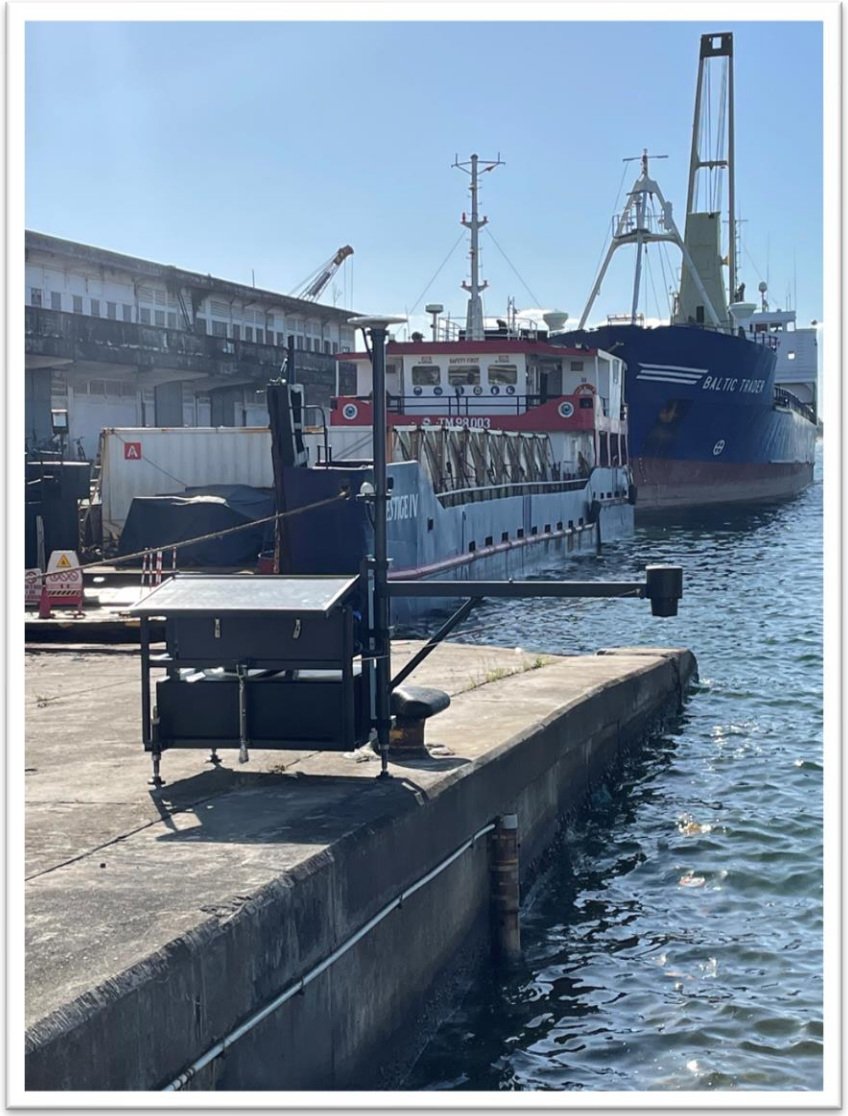
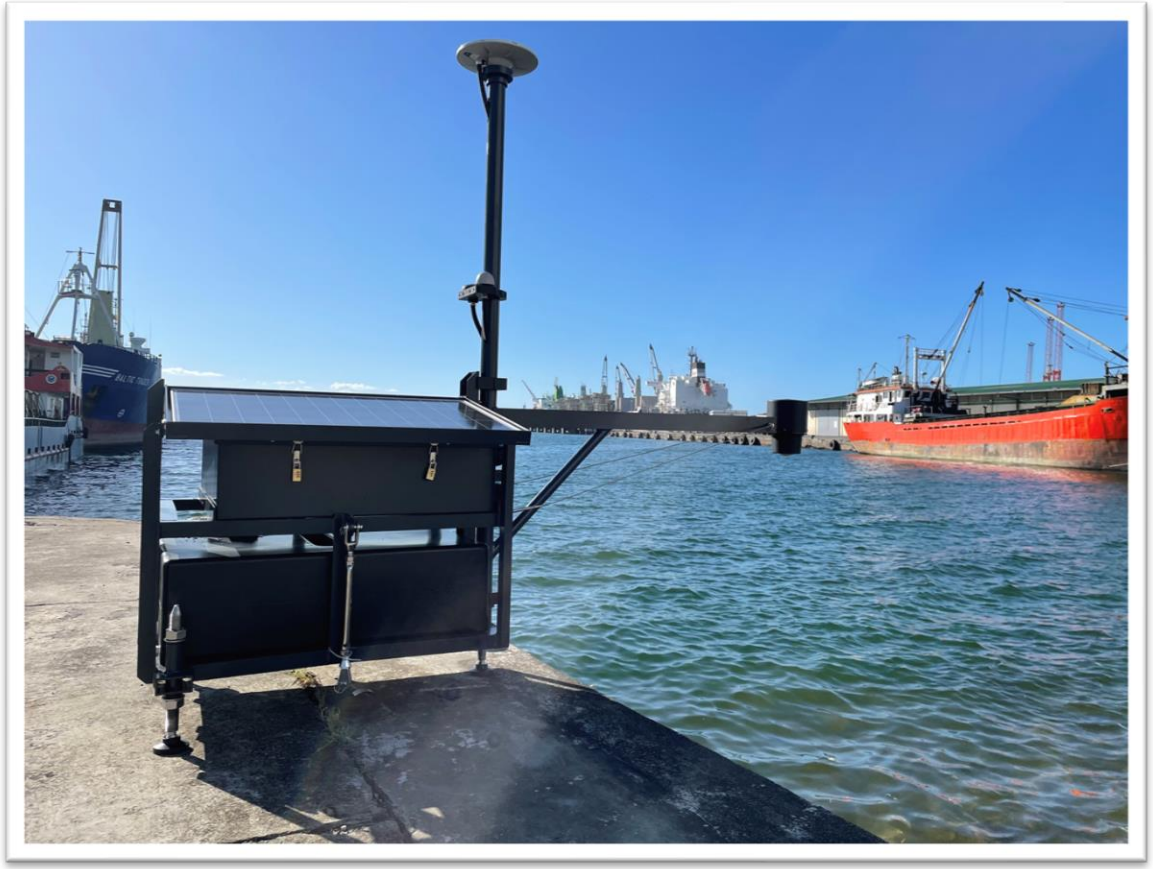
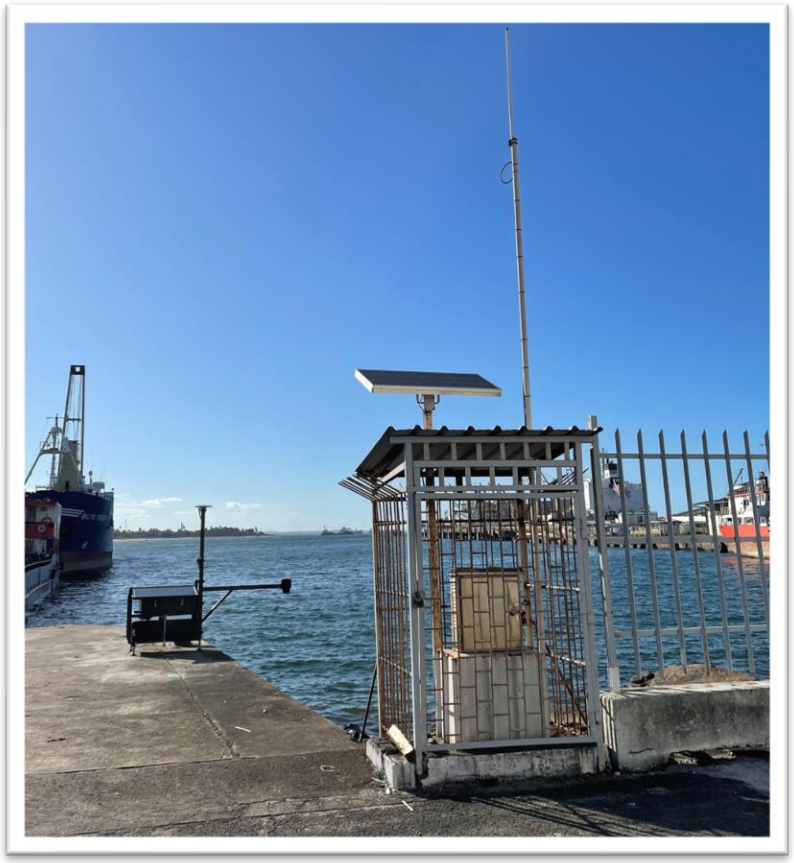
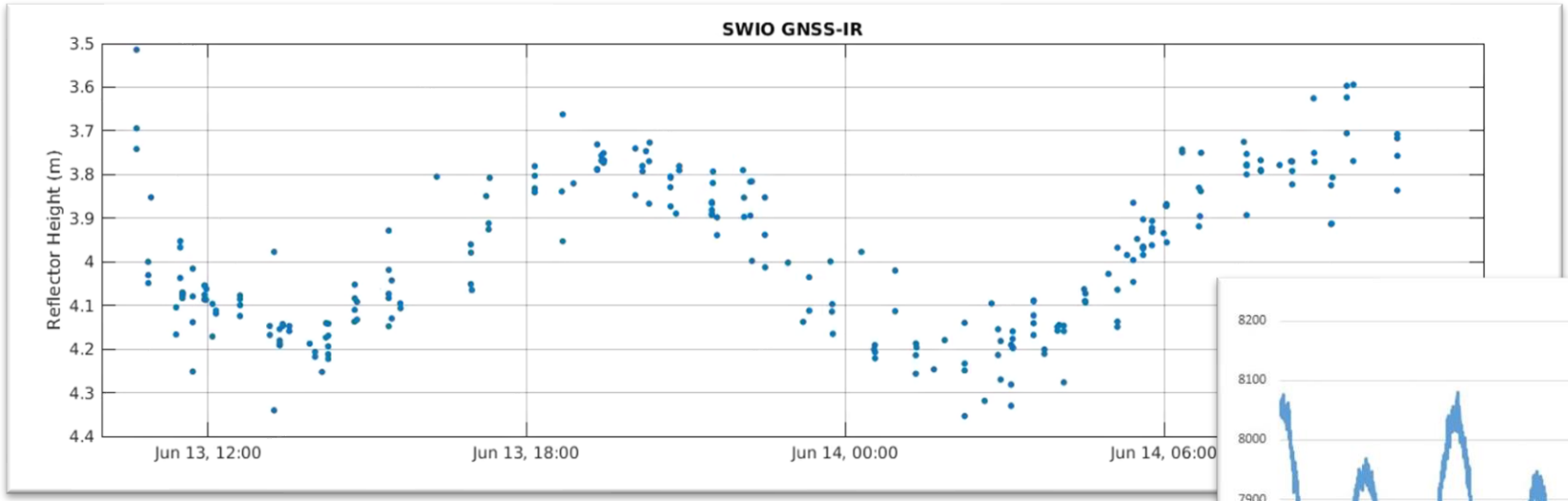


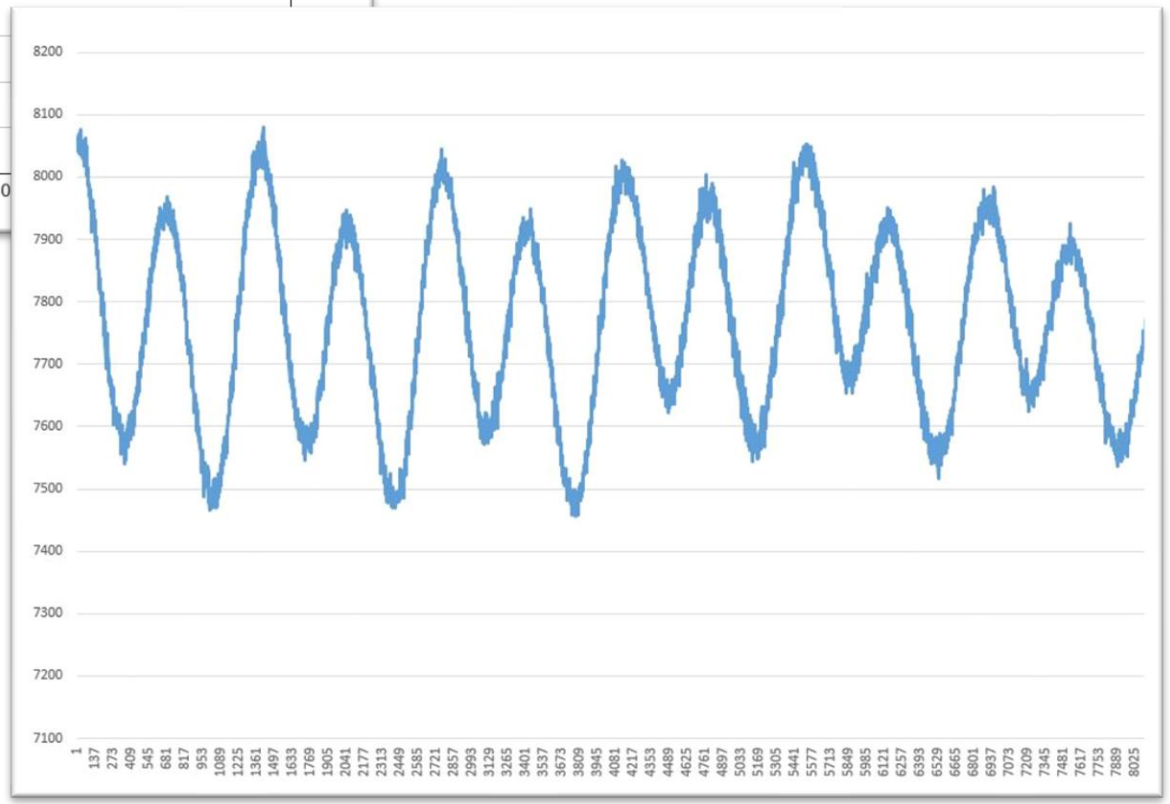


INSTALLATION



OPERATIONAL MONITORING - DATA



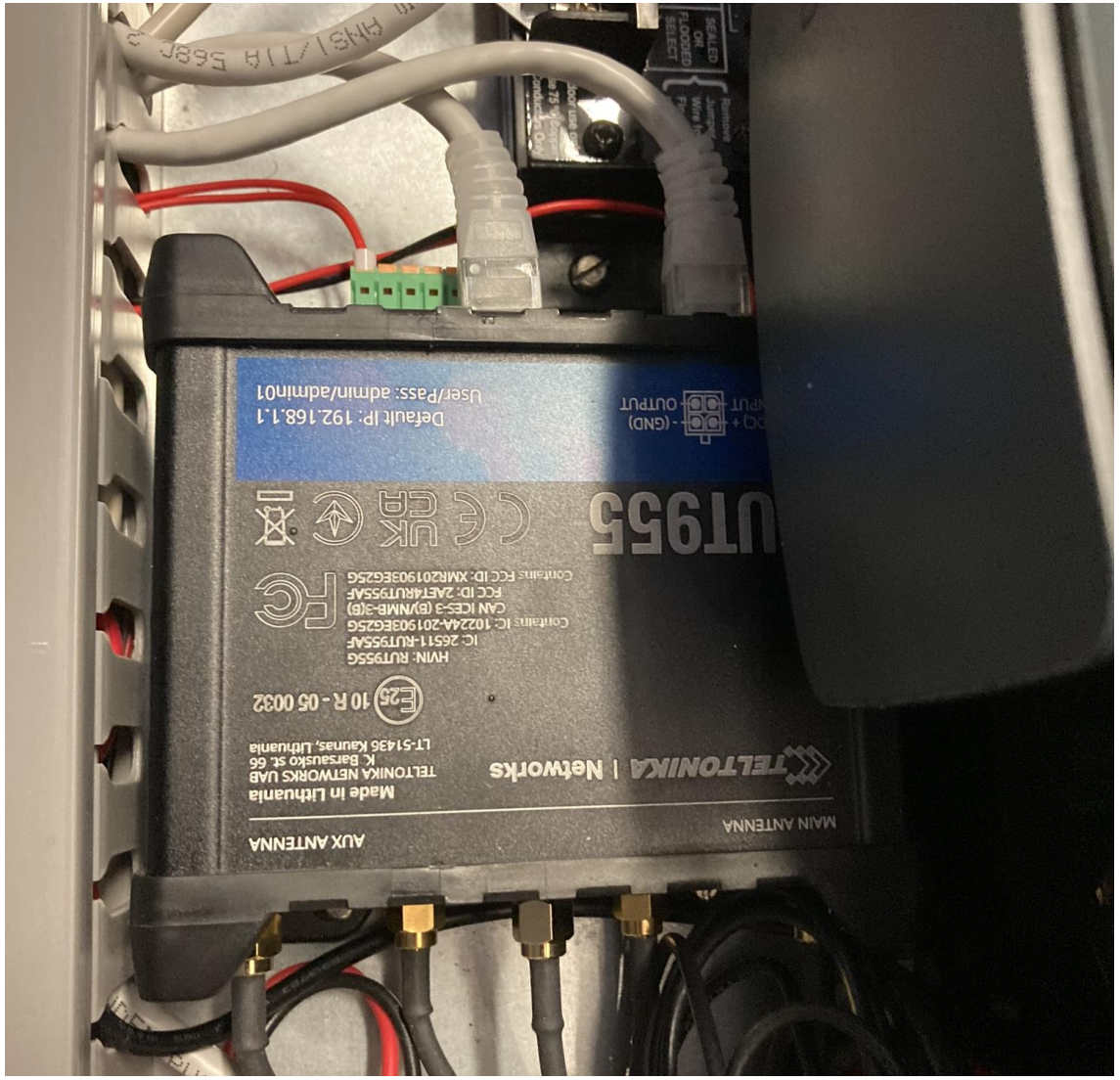


TROUBLESHOOTING

- The tide gauge has experienced operational issues since being installed.
- These issues involve using the 4G modem and mobile data connection.
- A Global Mobile data SIM card was shipped with Portagauge. This can access any mobile network.
    - Expectation: SIM card would connect automatically to the strongest available mobile network providing a reliable data connection. The data allowance is pre-paid, so no unexpected costs.
    - Reality: Mobile network must be set manually during installation.

      Mobile data connection worked for a few weeks after installation, then disconnected and would not reconnect.

      Many attempts to reconnect the SIM card to a local network failed.
- The router experienced technical issues, including loss of Wi-Fi that required a physical reset.
- Switching to a local SIM card restored the data connection.



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