SMART Cables for Oceanography Applications

SMART CABLES IN A SEA OF CONNECTIVITY, SERVING SCIENCE AND POPULATIONS

21 mar 2022

CFR Carlos Videira Marques

SMART CABLES IN A SEA OF CONNECTIVITY, SERVING SCIENCE AND POPULATIONS

Agenda

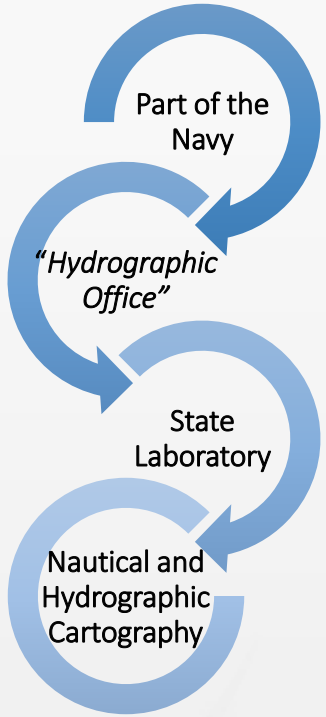
- Hydrographic Institute PT
- Oceanography
- Oceanographic Applications
- Final Thoughts

Hydrographic Institute

Hydrographic Base
Seixal

Lisbon

Legal Review



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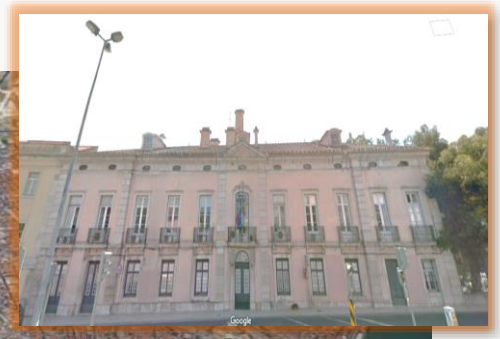
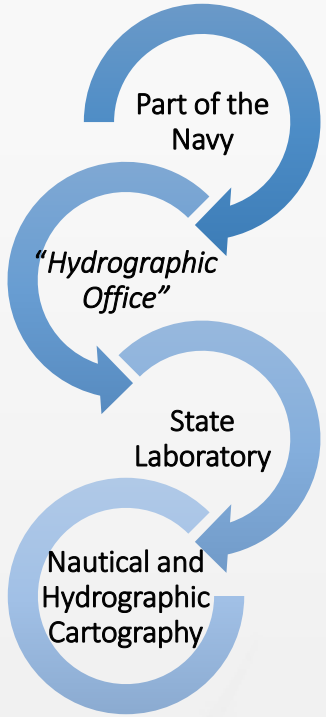
Hydrographic Institute



Legal Review



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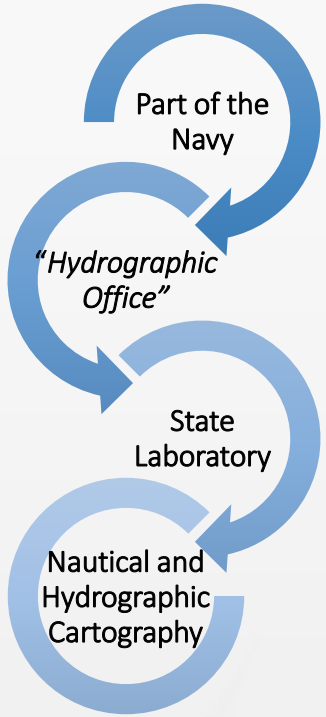
Hydrographic Institute

- **Portuguese Navy body** with administrative and financial autonomy
- **Hydrographic Office** and **Research Lab** integrated in the **Portuguese Research Laboratories Network**
- Regulates **Hydrographic cartography** and responsible for **Nautical cartography**;
- Under strategic supervision of the :
  - **Ministry of Defense,** together with,
  - **Ministry of Science, Technology and Higher education,**
  - **Ministry of the Sea.**

Legal Review



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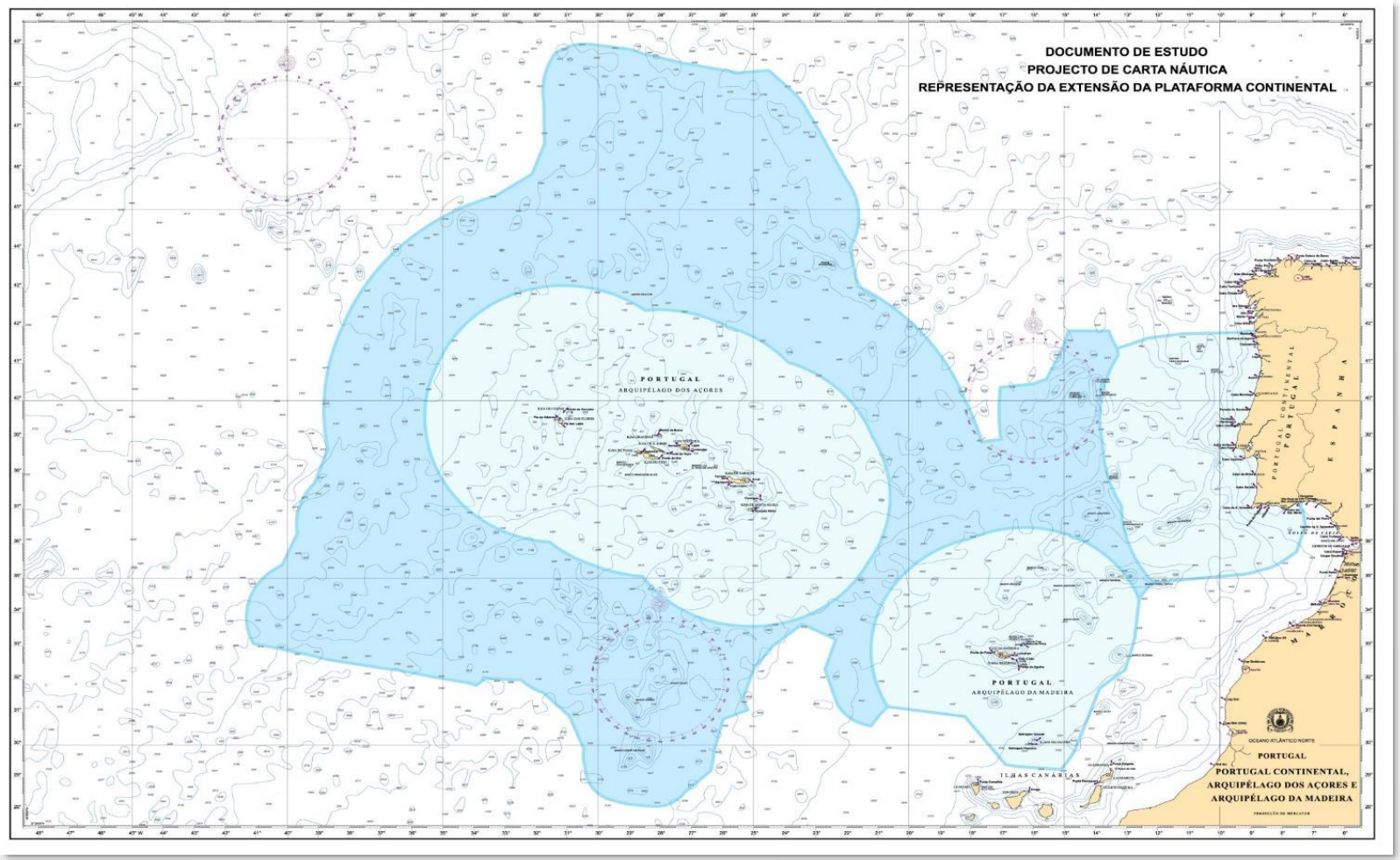
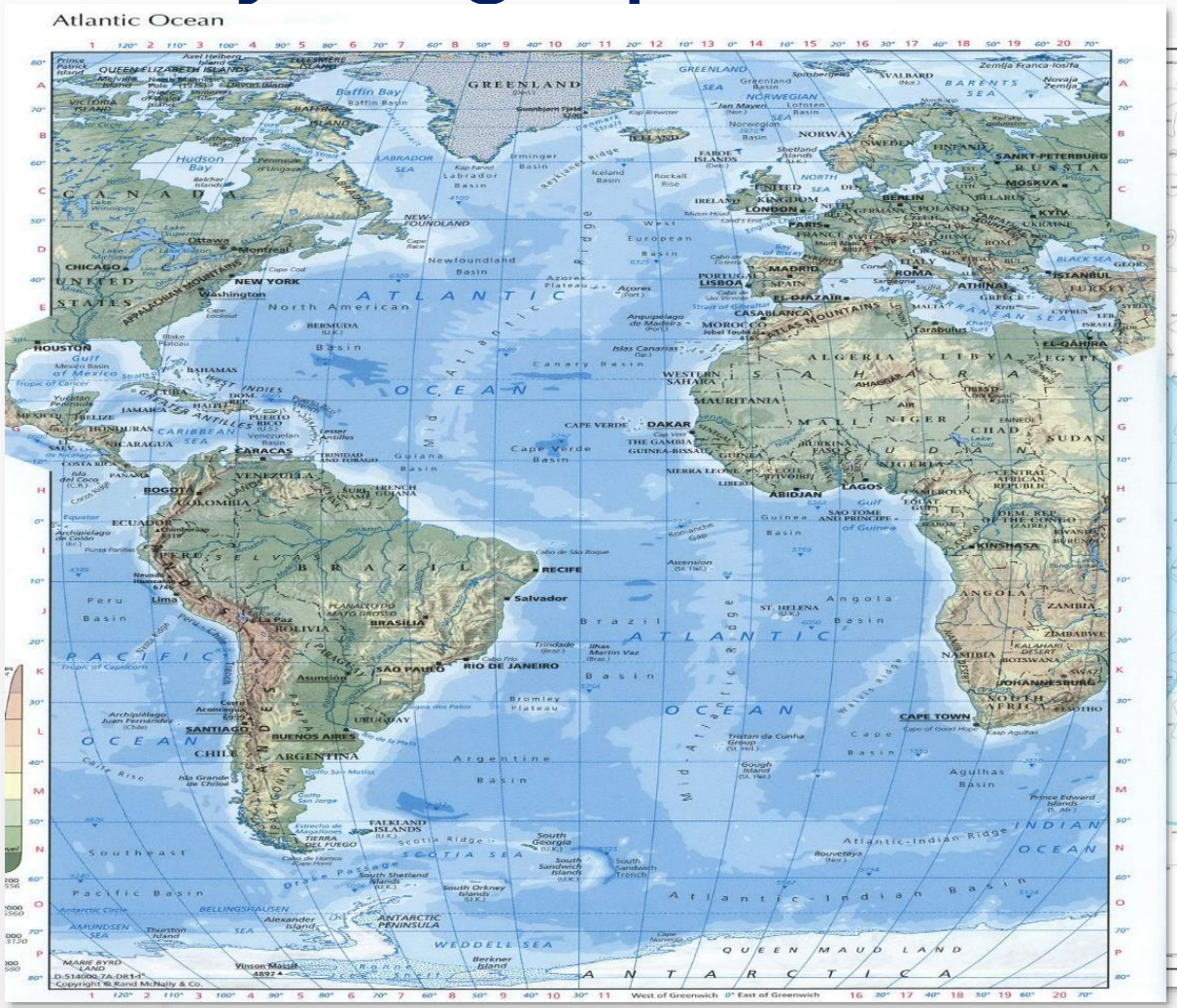
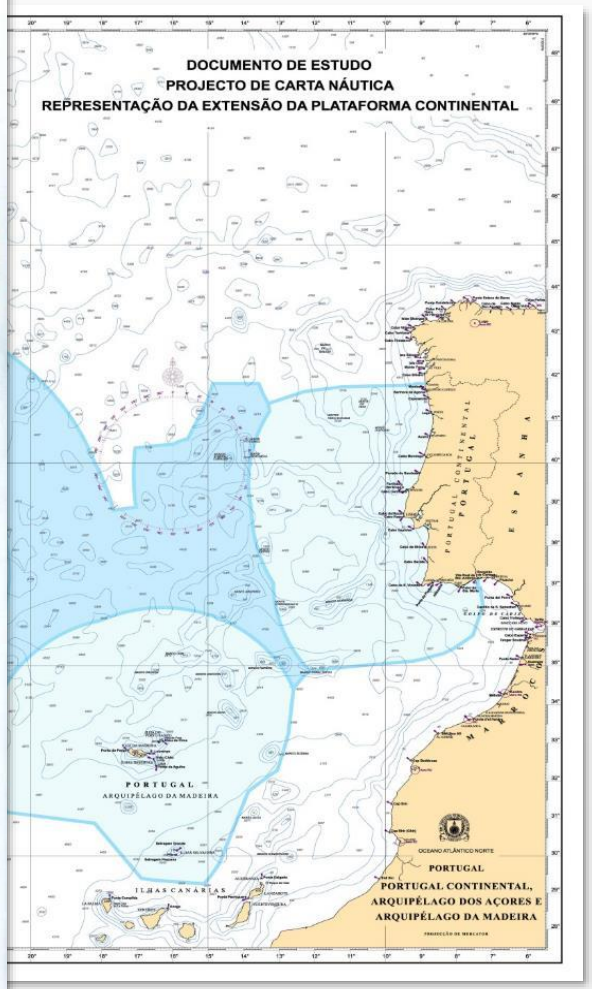


Maritime Areas of Interest

Hydrographic Institute





Maritime Areas of Interest

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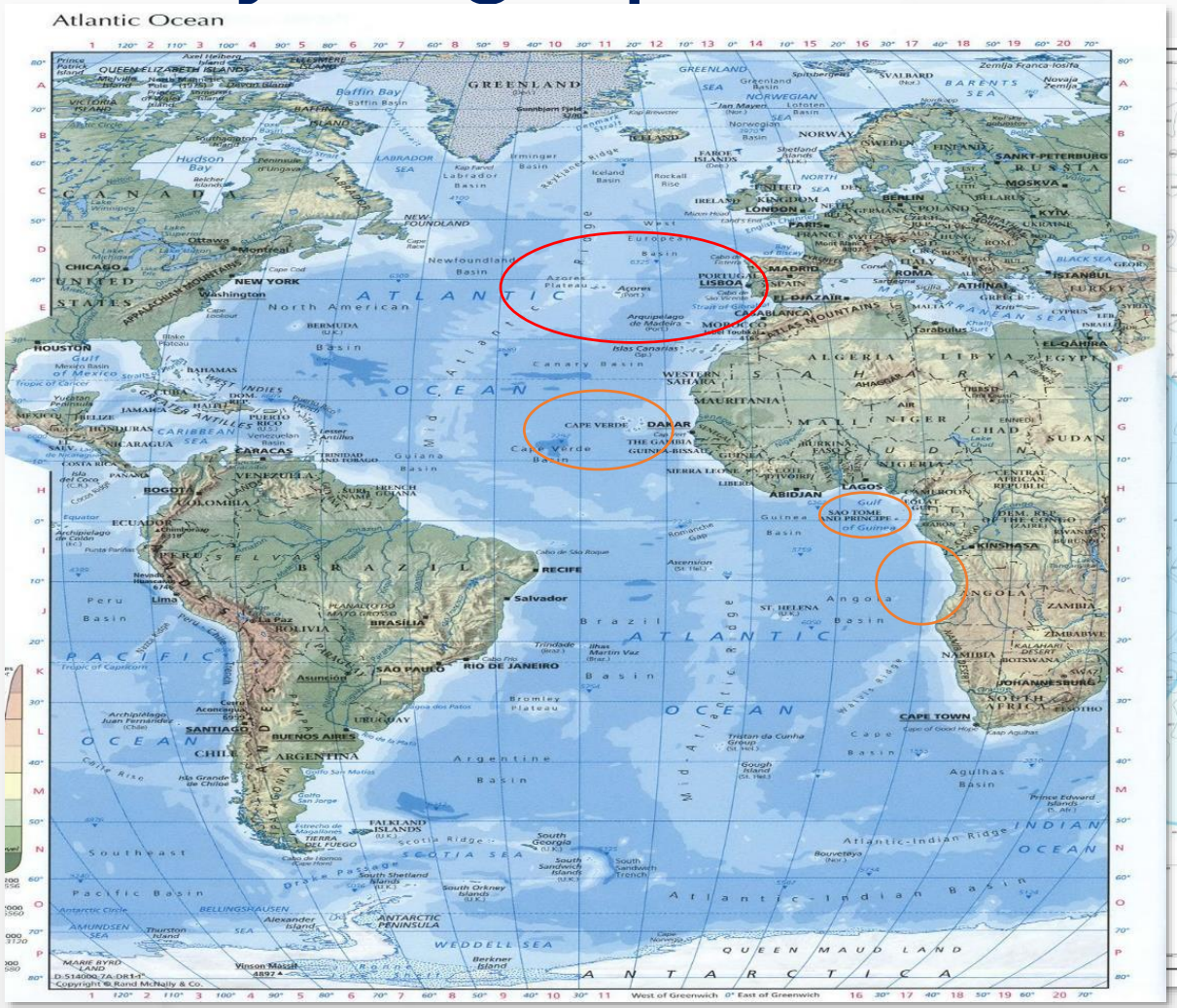
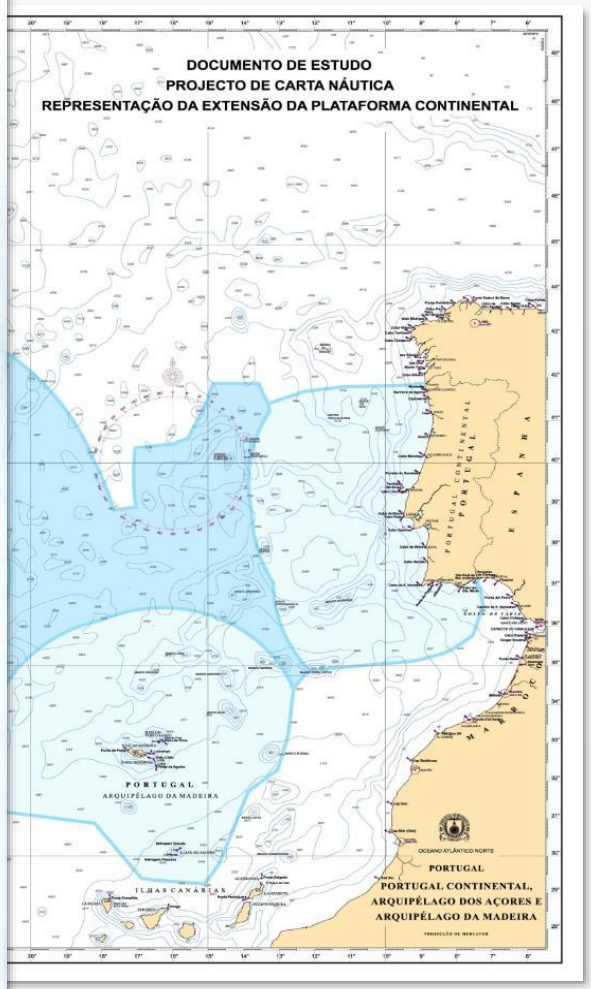
Marinha

hidrográfico marinha·portugal

Hydrographic Institute





Maritime Areas of Interest

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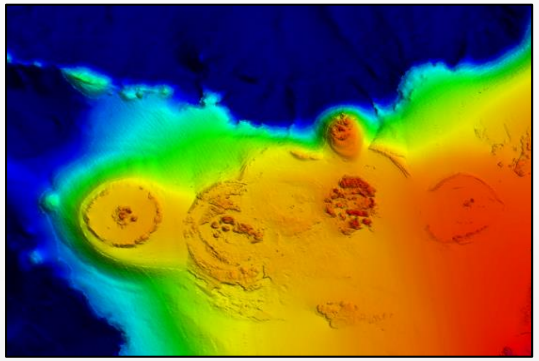
Marinha

hidrográfico marinha·portugal

Hydrographic Institute

Hydrography

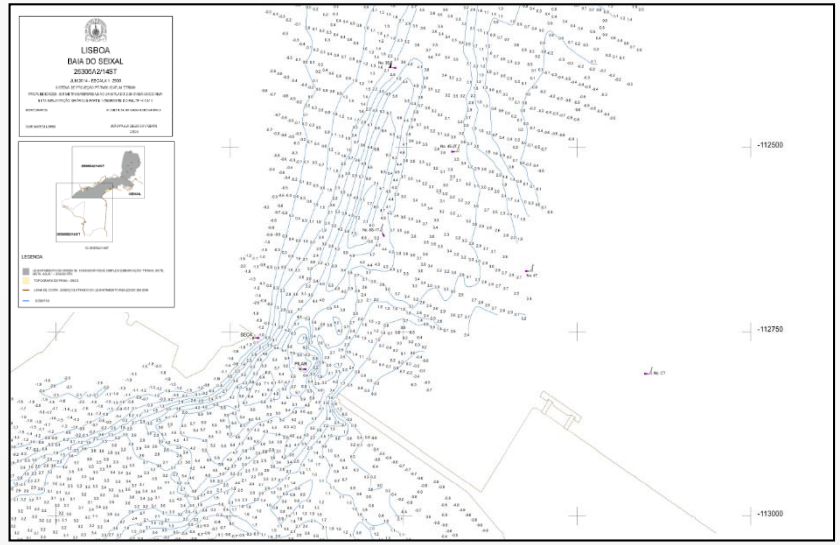


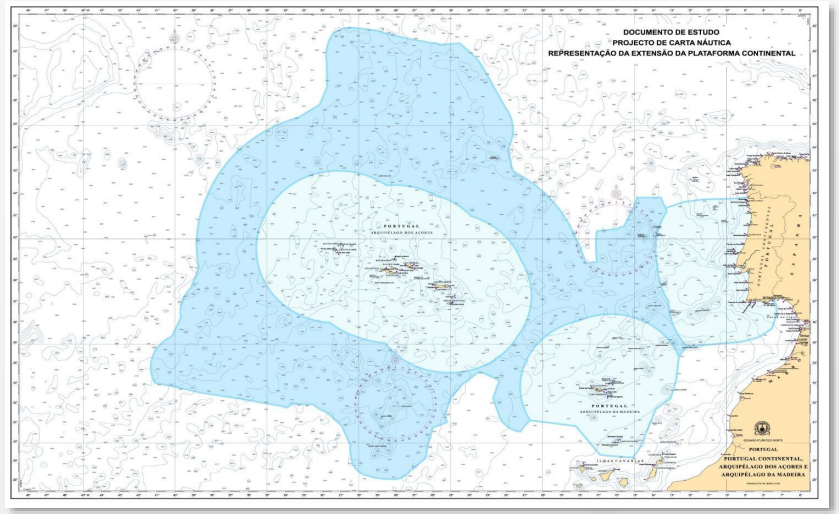
Oceanography

Geology

Marine Chemestry

Hydrographic Cartography





Nautical Cartography

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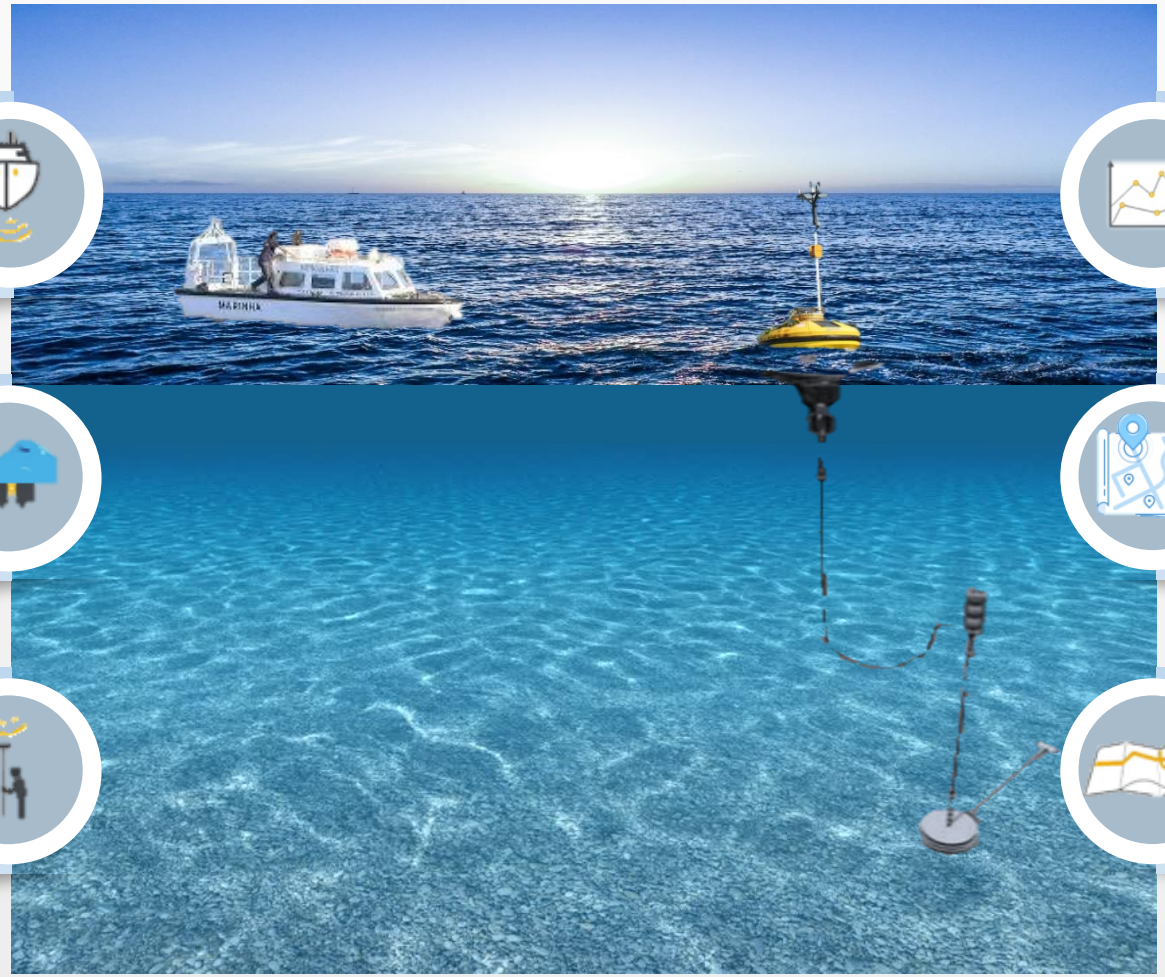
Oceanography

Scope
Marine Information



Hydrography	HI		QP	Marine Chemestry
Oceanography	OC		NV	Navigation
Marine Geology	GM		CN	Cartography

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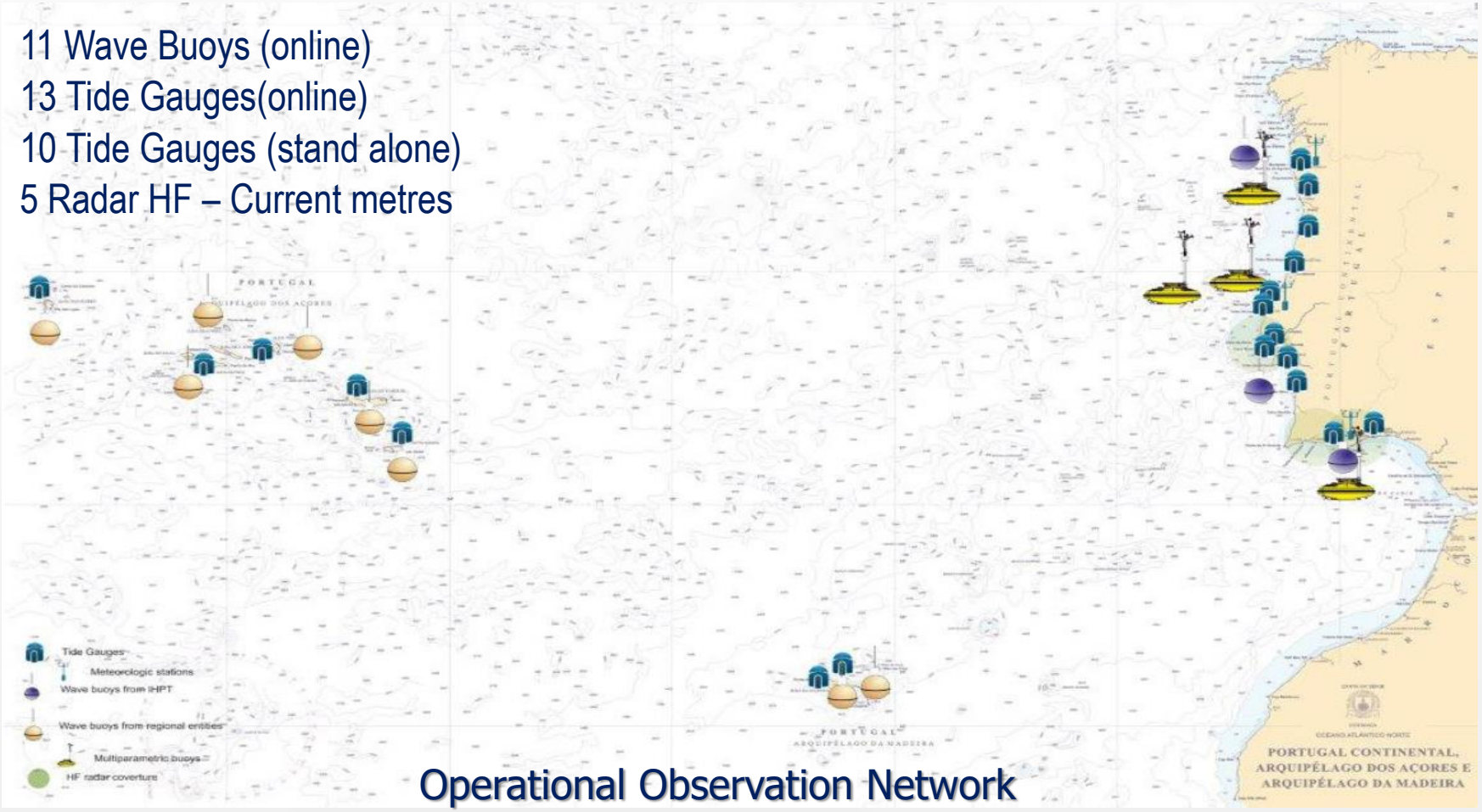
Oceanography

11 Wave Buoys (online)
13 Tide Gauges(online)
10 Tide Gauges (stand alone)
5 Radar HF – Current metres



Operational Observation Network

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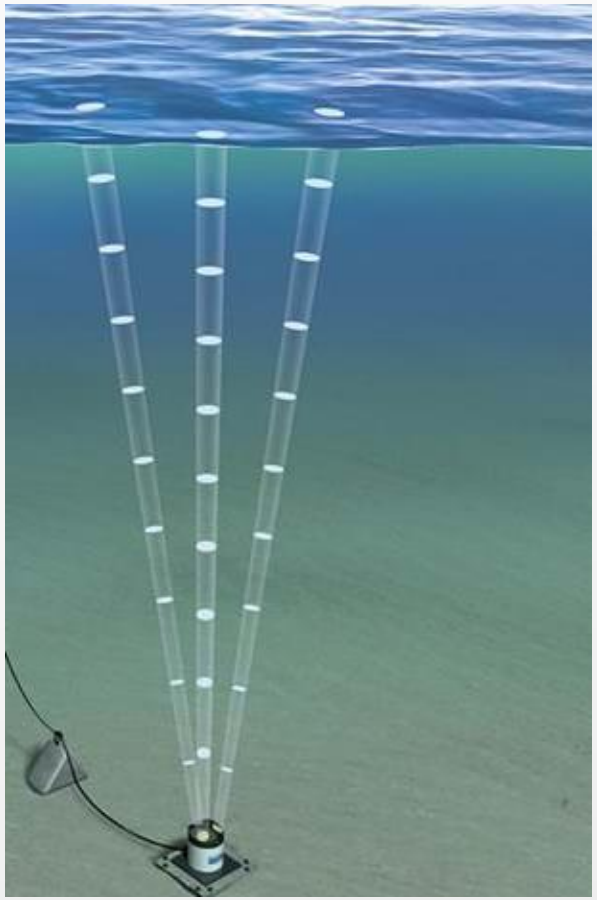
Oceanography



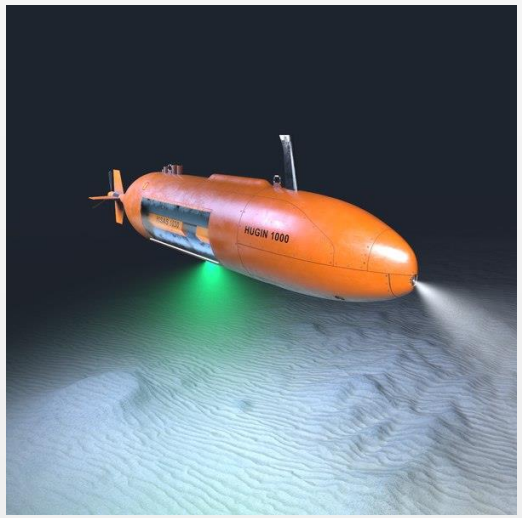
© xylem

ADCP

Acoustic Doppler Current Profiler

Measure currents

Oceanography



Autonomous Vehicles

Autonomous Underwater Vehicles

Unmanned Surface Vehicles

Gliders

Etc…

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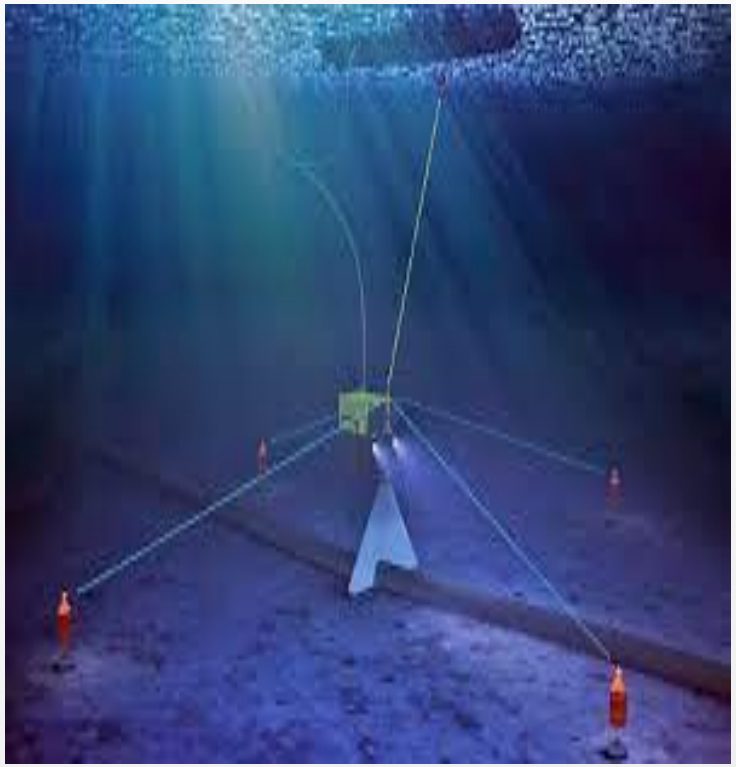
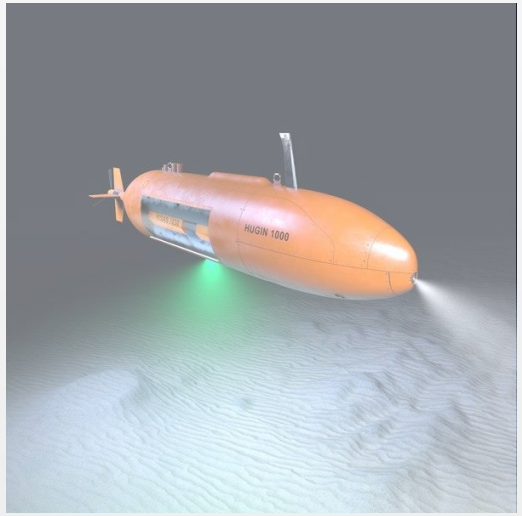
Oceanography





Underwater Positioning

- LBL
- USBL
- Etc …

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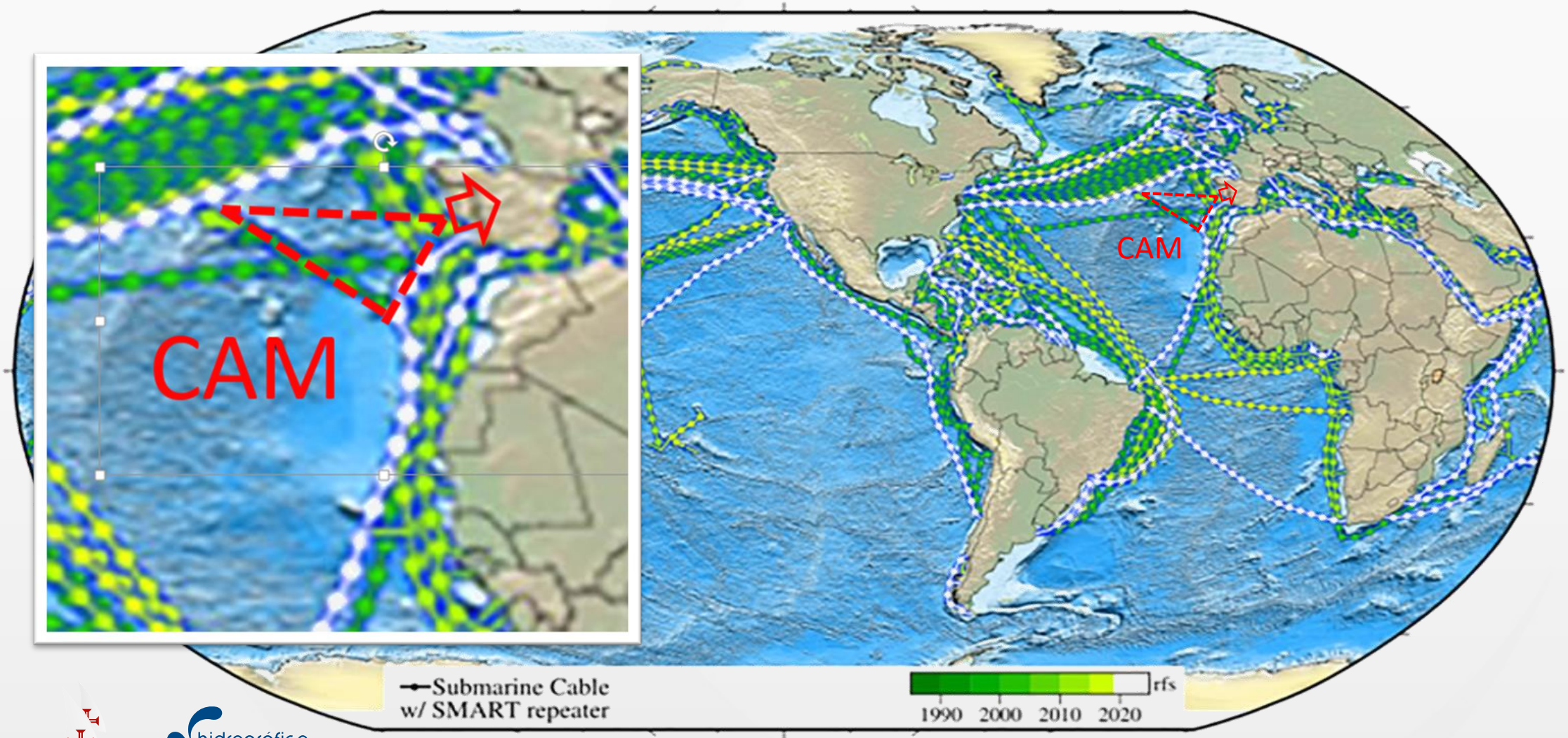
Oceanographic Applications



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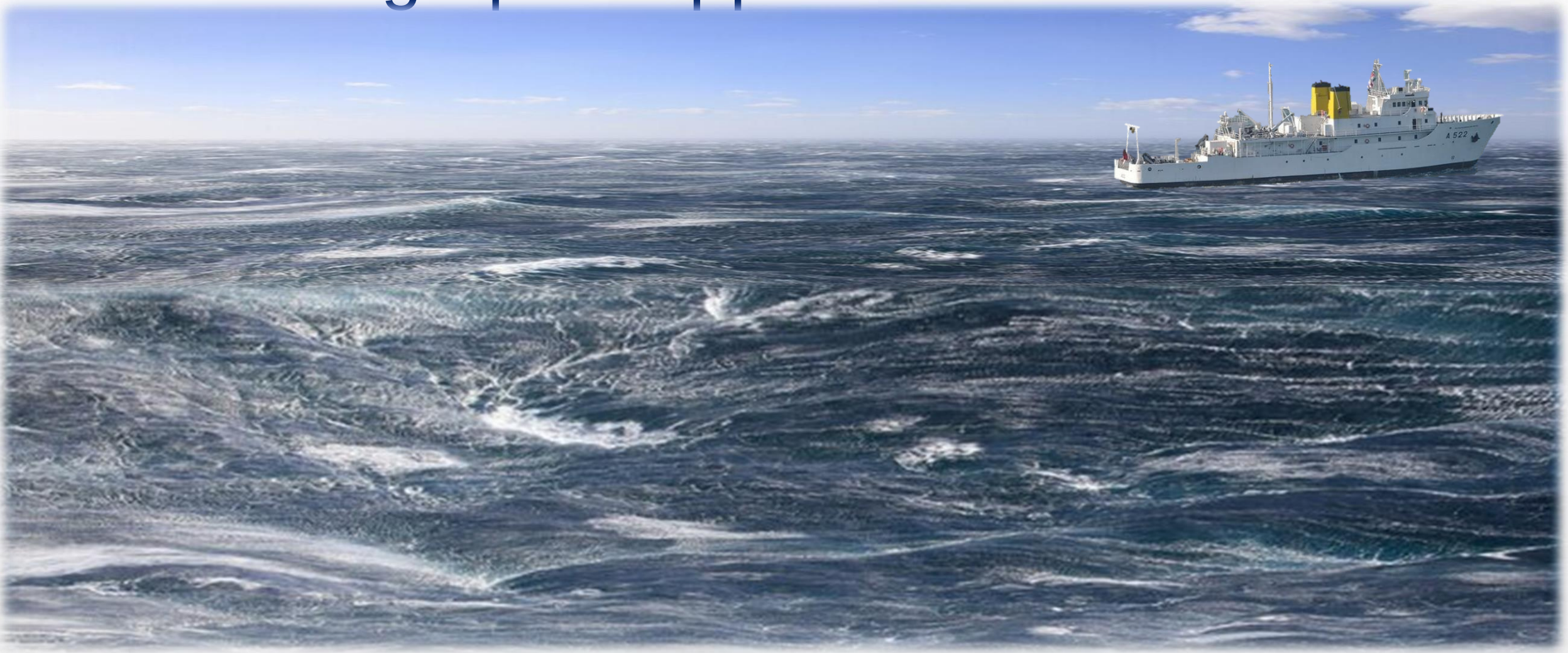
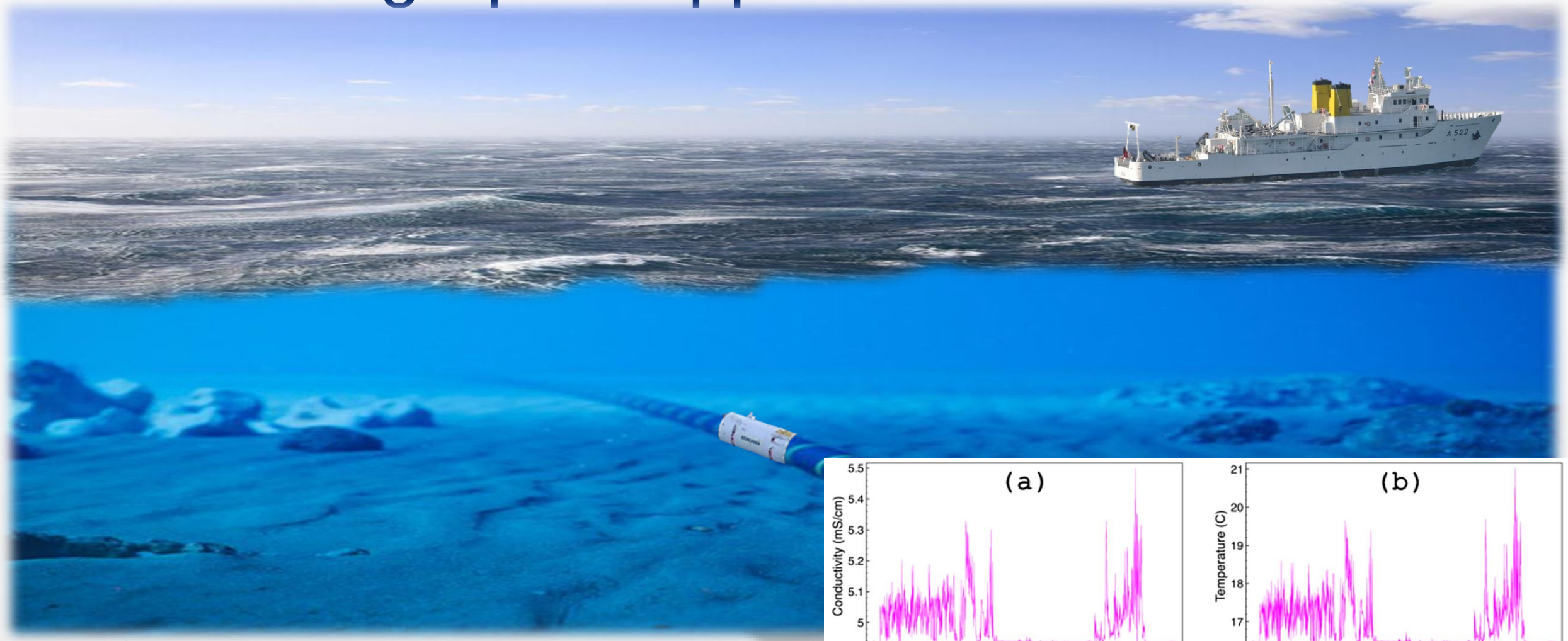
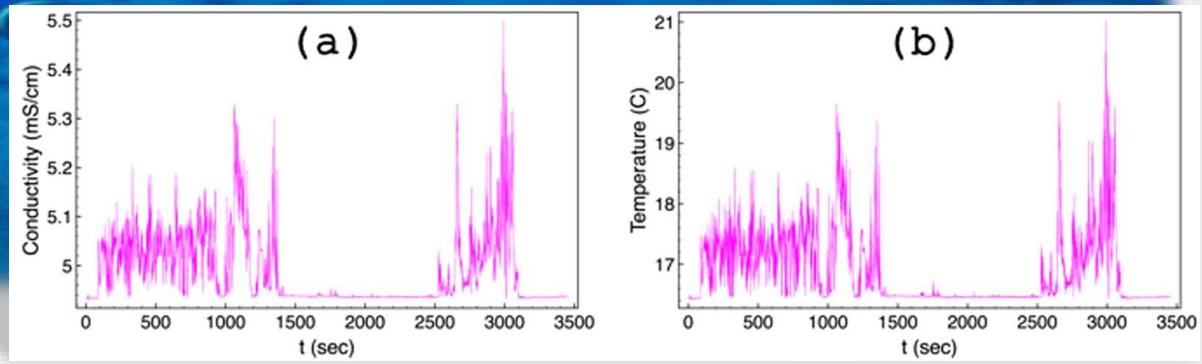
Oceanographic Applications



Oceanographic Applications





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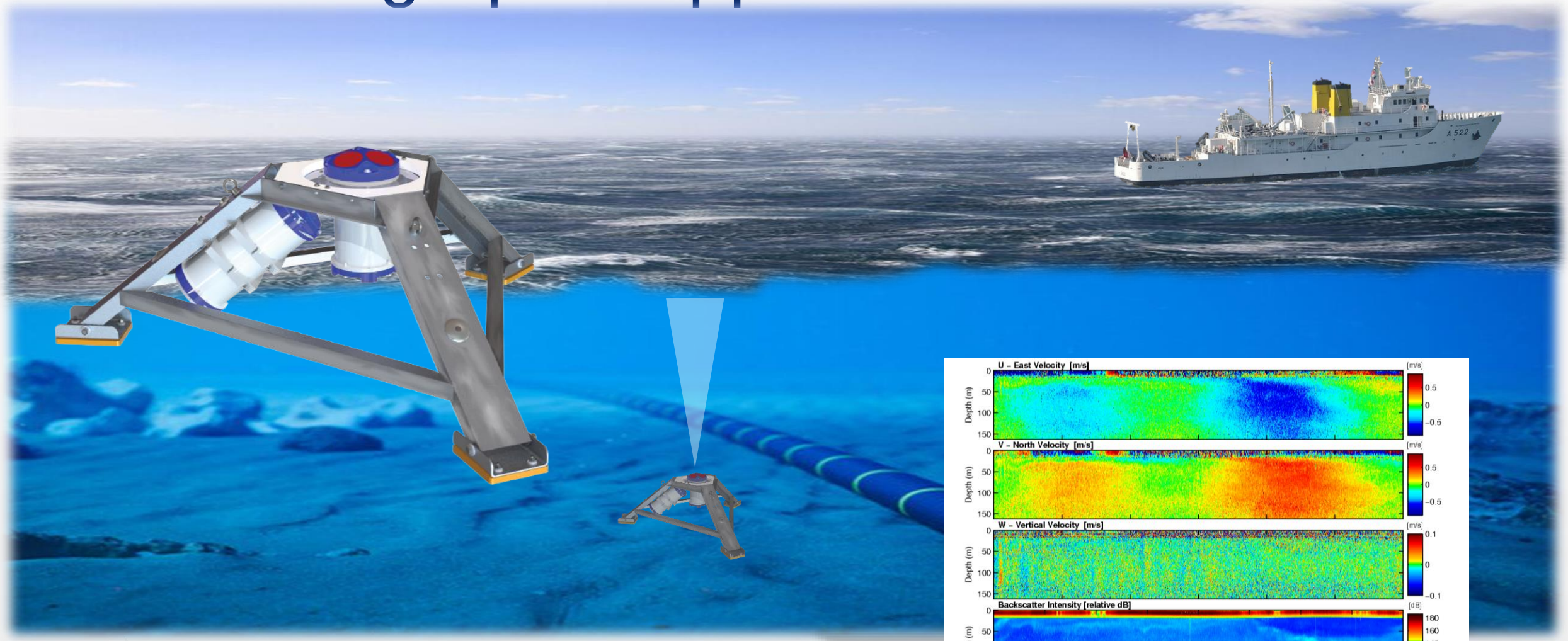

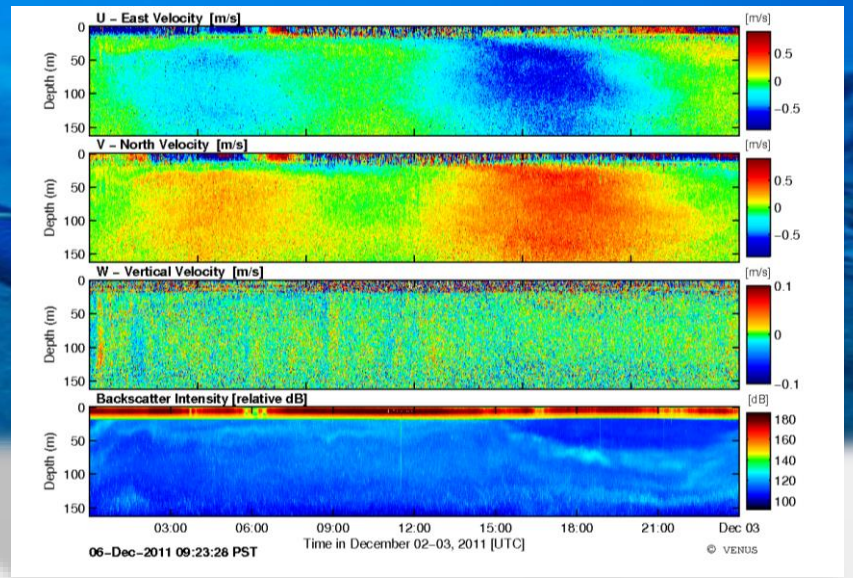

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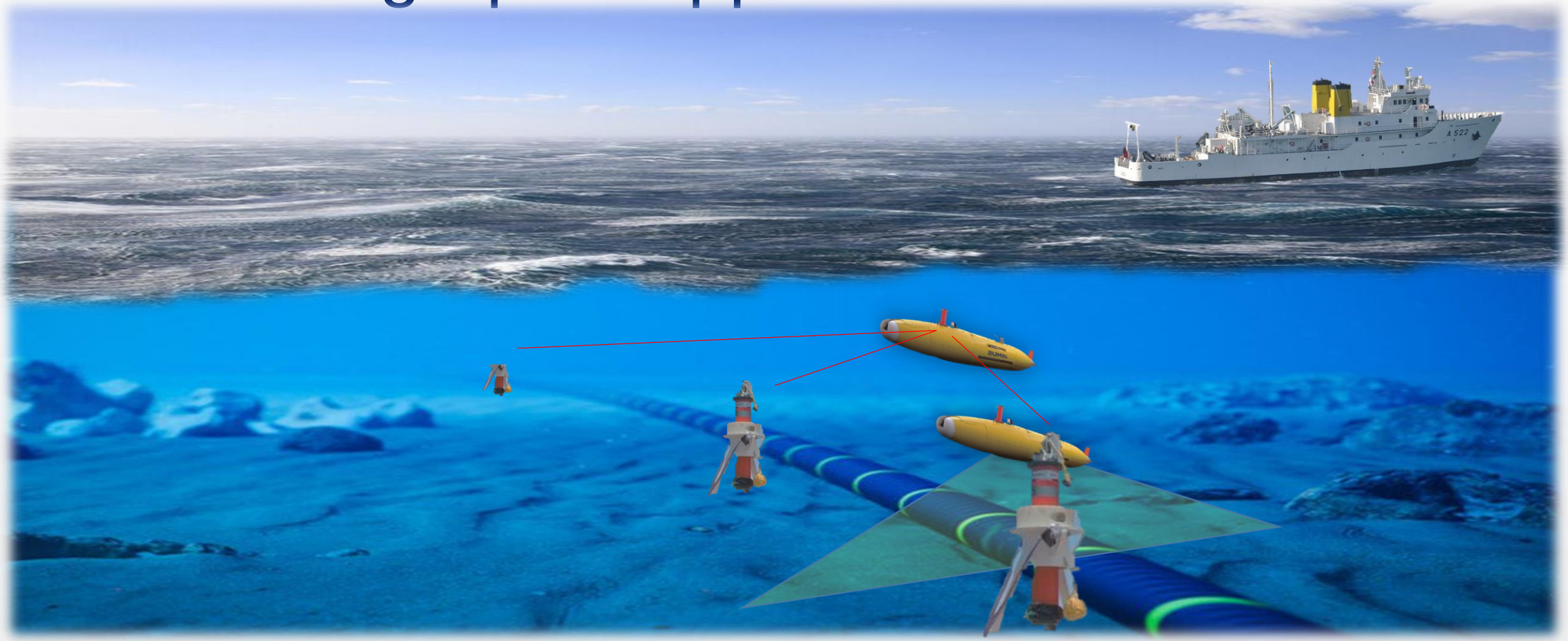

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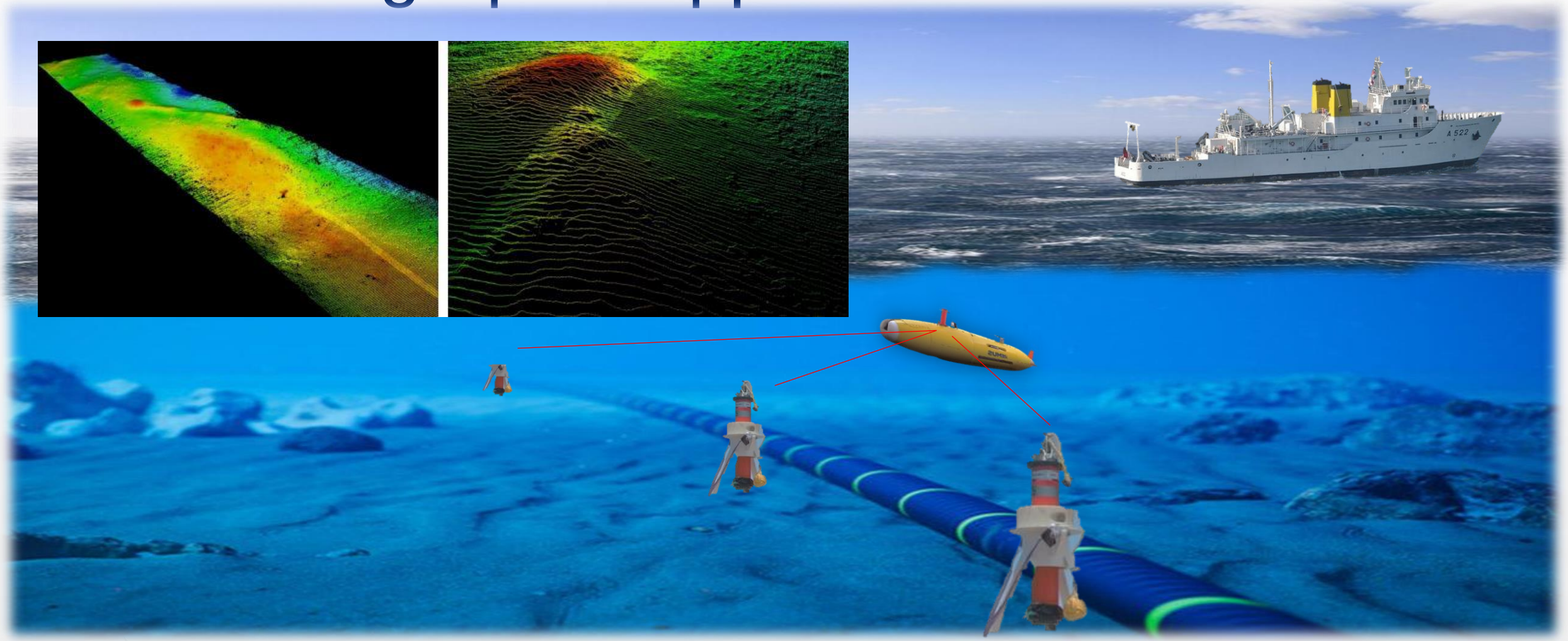

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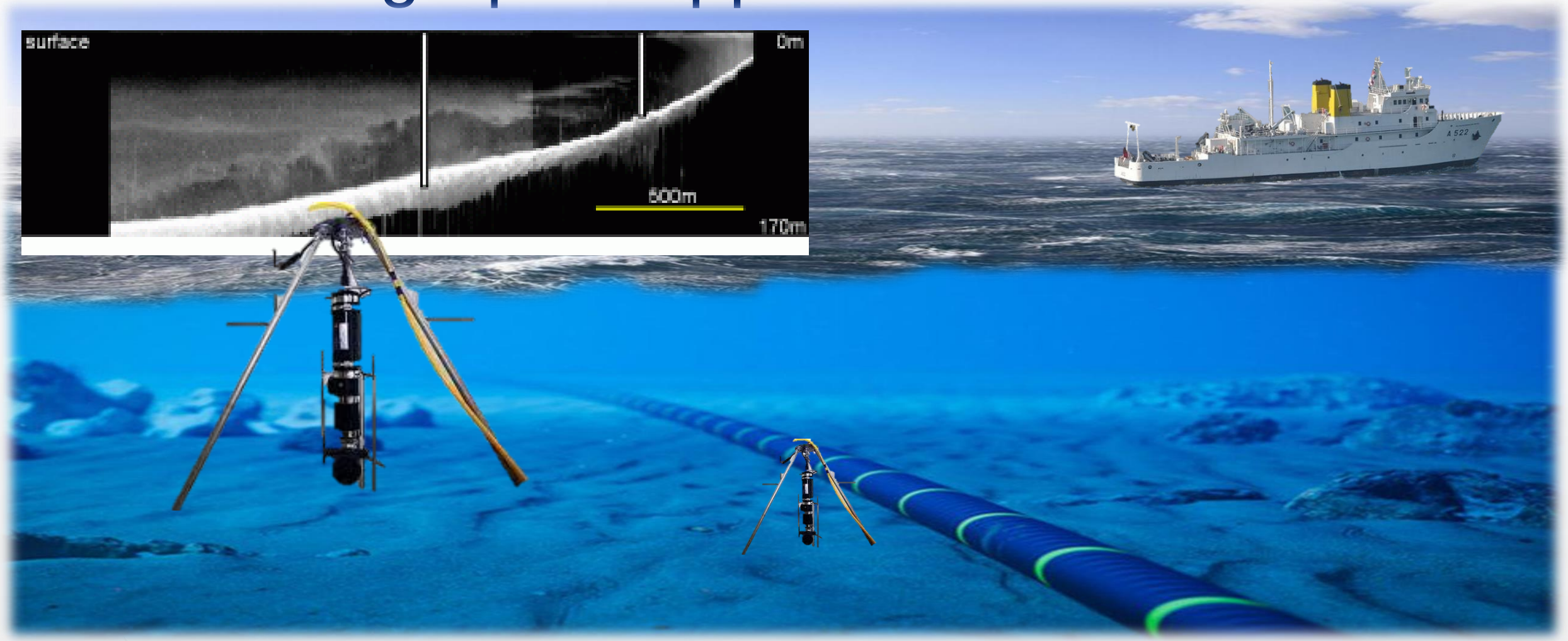

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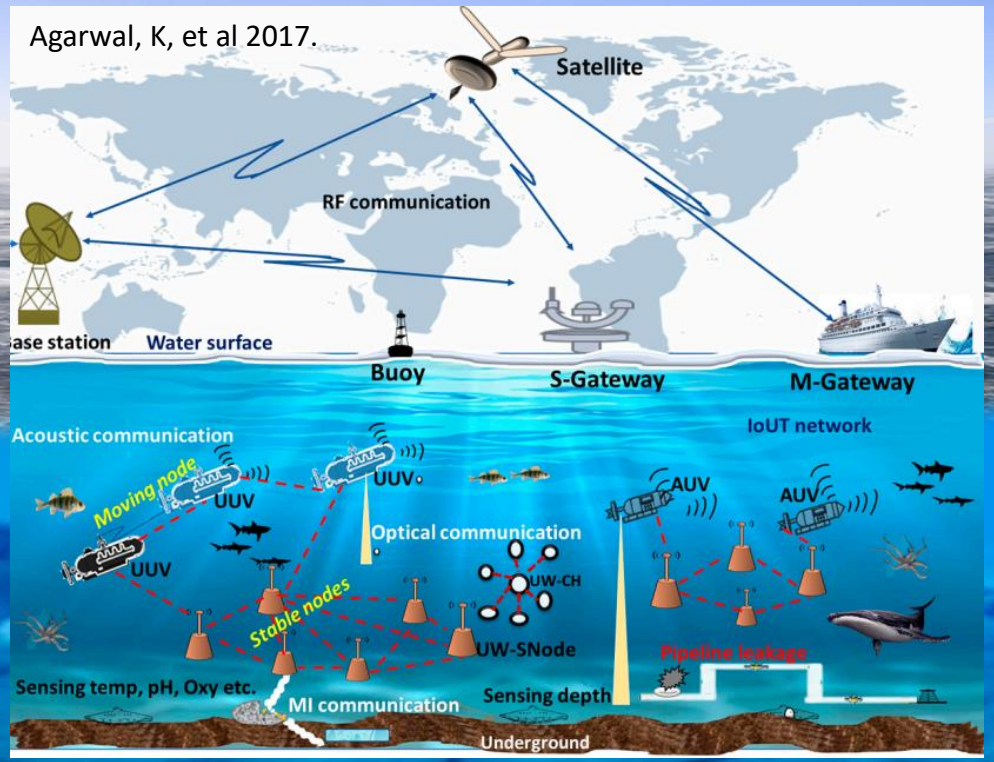

Conceptual architecture of underwater network management systems

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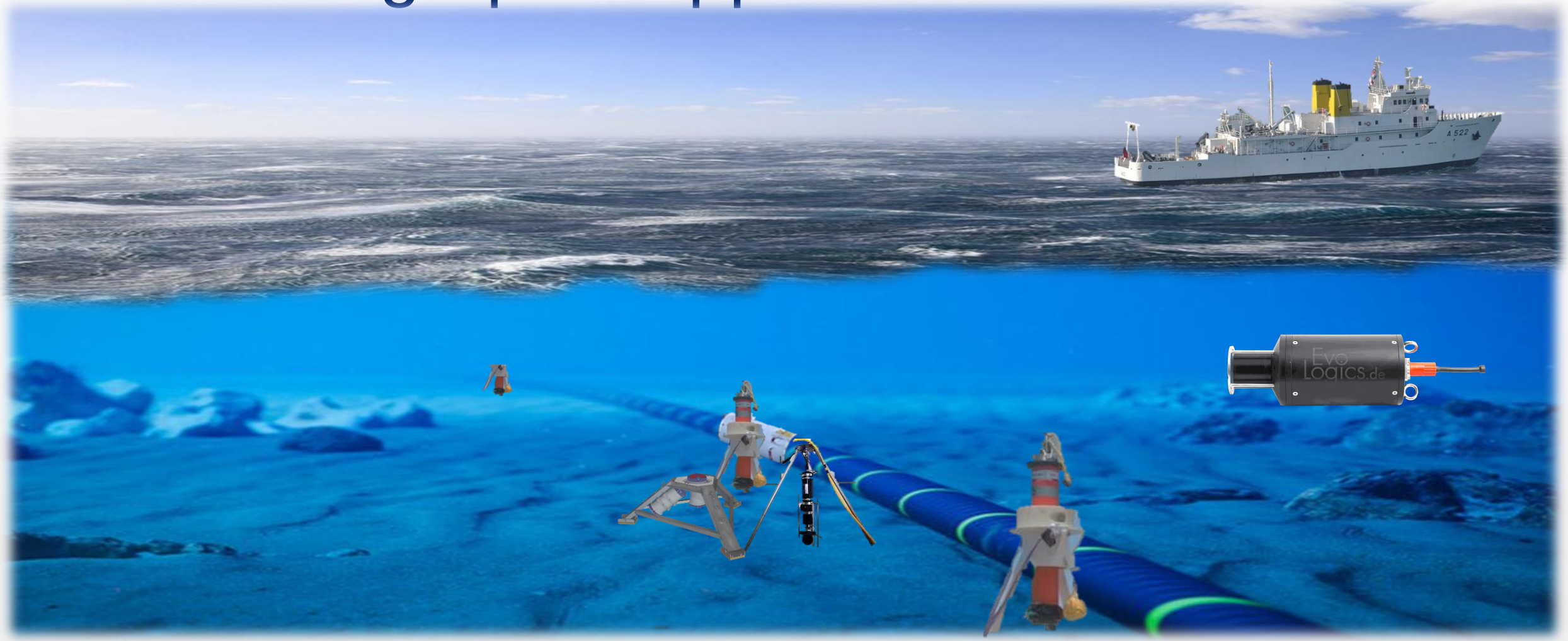
Oceanographic Applications



Final Thoughts

- Temperature, Salinity, Pressure, Ocean & Tsunami
- ADCP, Currents
- Transponder, Positioning
- SFS, Sediment Transport
- U-NMS, Acoustic Modem

- Challenges: Technology, Depth Pressure

Thank You

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