



FISK OG SEISMIKK 2026

**DAGENS NODER OG UTVIKLING
FOR UTLEGGING OG BRUK**

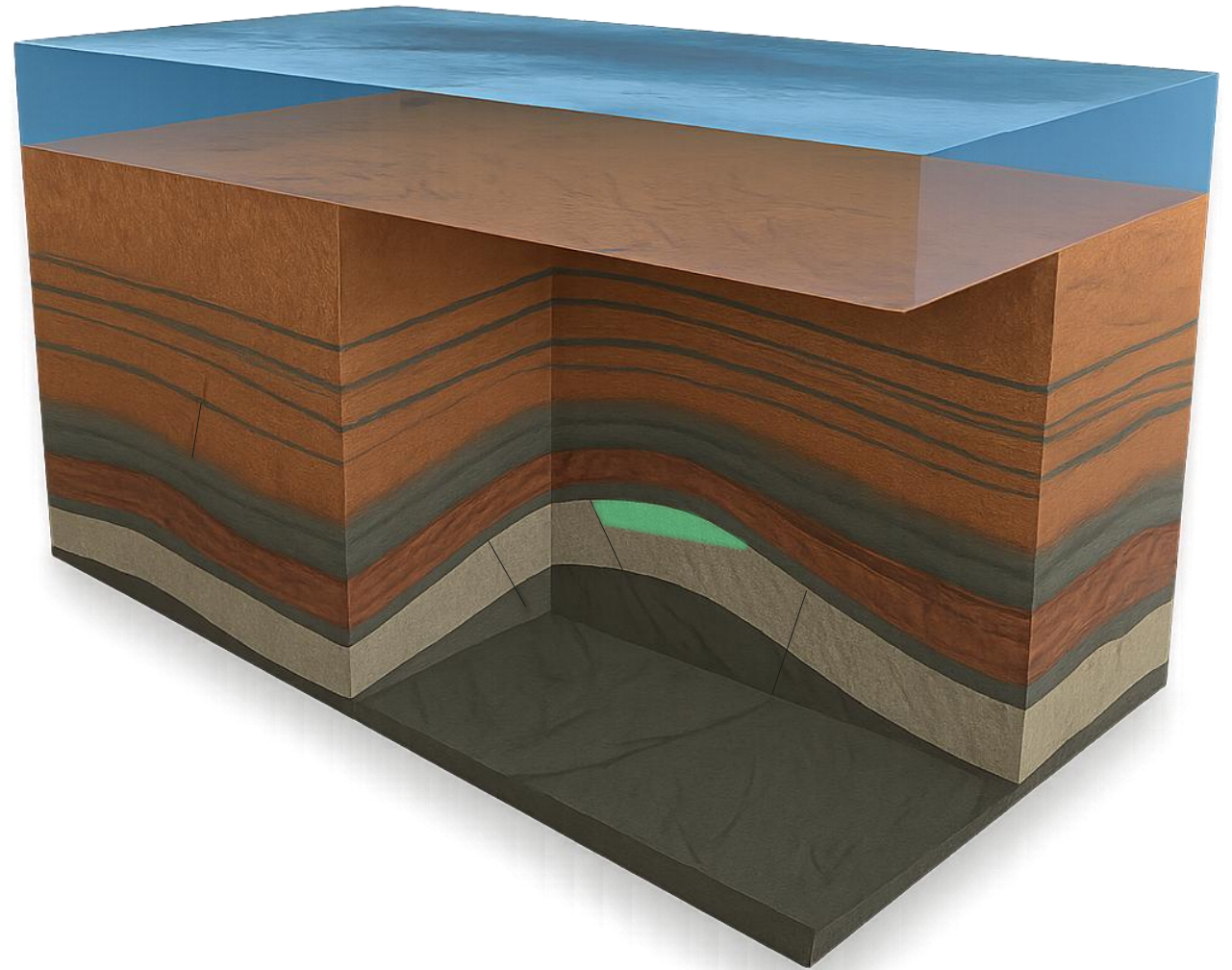
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Introduction to Ocean Bottom Seismic

- Marine seismic surveys are used to give **insights into the subsurface** below the seabed
- A sound **source sends waves downward** and different **rocks layers reflect the sound back** in different ways
- **Rocks tell their story** by how fast and strong those reflections return
- The **reflections are captured with** listening devices that contain a **set of sensors** (hydrophones and/or geophones)
- Those listening devices can be **towed, float, sit on the seabed or are buried in the seabed.**
- Sensors **stationary on the seabed** usually give the **richest and best dataset.**
- Seabed sensor packages are called ocean bottom nodes (OBN)
- **Increased appetite** for Ocean Bottom Seismic





Types of ocean bottom nodes



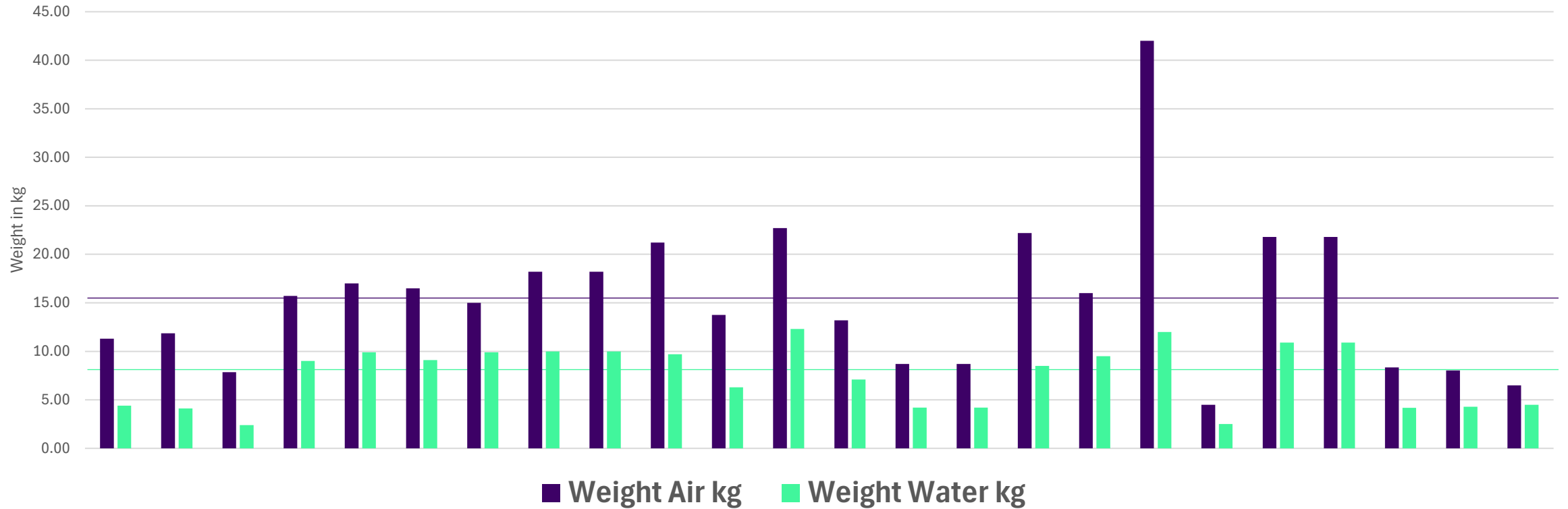
- Diverse set of nodes available to vendors on the Norwegian continental shelf
- Various shapes, sizes, weights
 - Most of rectangular shape, some are round and one is cylindrical
- Mostly yellow, some are orange for good visibility





Weight of Ocean Bottom Nodes

Weight in air and water



Average in air: 15.4kg

Average in water: 7.7kg



Most Common Deployment Methods on Norwegian Continental Shelf

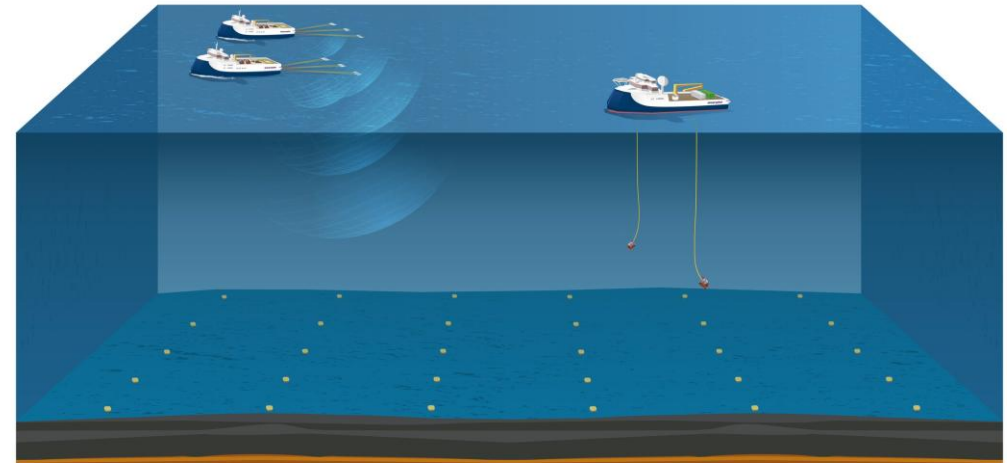
Node on a rope (NOAR)

- Nodes connected by a rope
- Typical spacing along the rope between 25m-50m
- Rope lines several km long – we used up to 20km
- Footprint built up laying several lines typically spaced 100-300m
- Used upto about 300m water depth



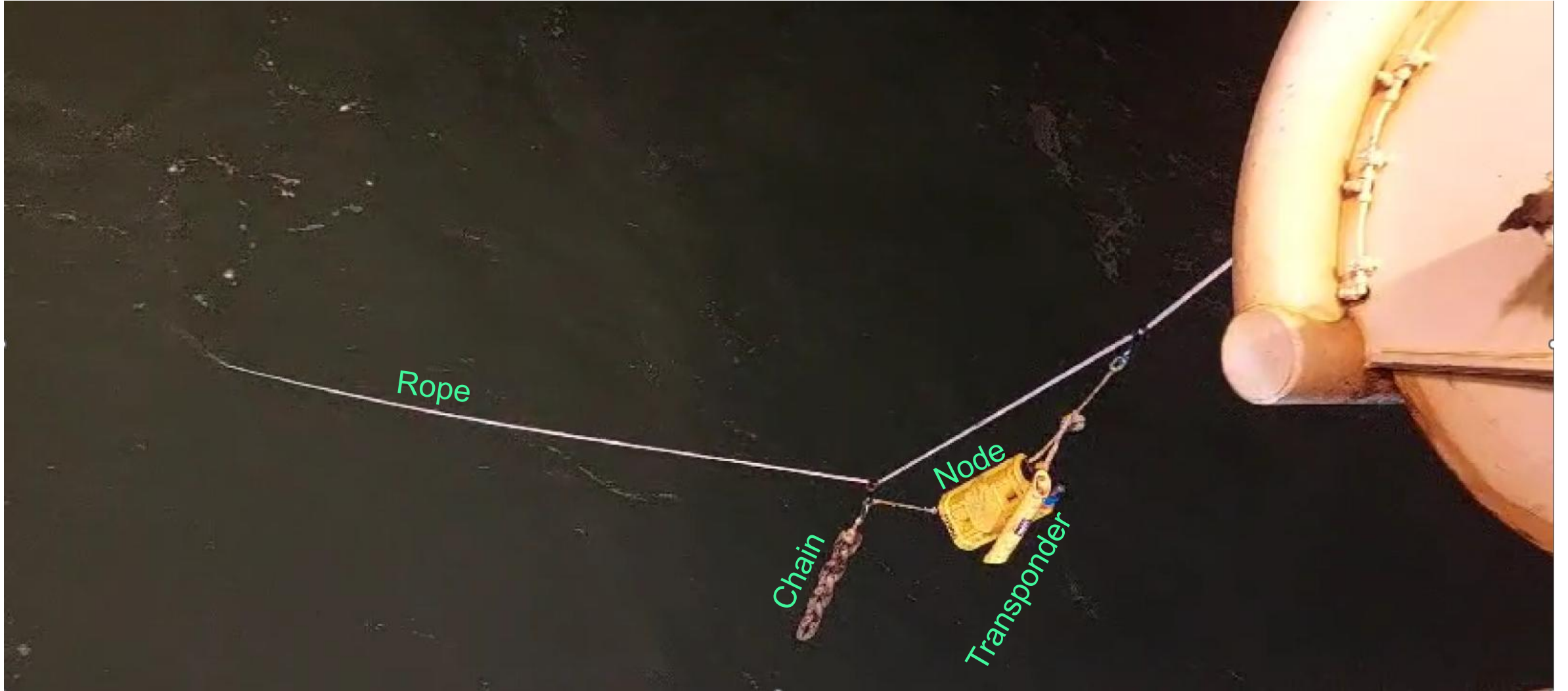
Autonomously placed nodes

- Nodes are placed independently
- Spacing can be anything from dense 25m to sparse 1.2km
- Placed by ROV, Drop & Pop or AUV
- Used from 25m onwards





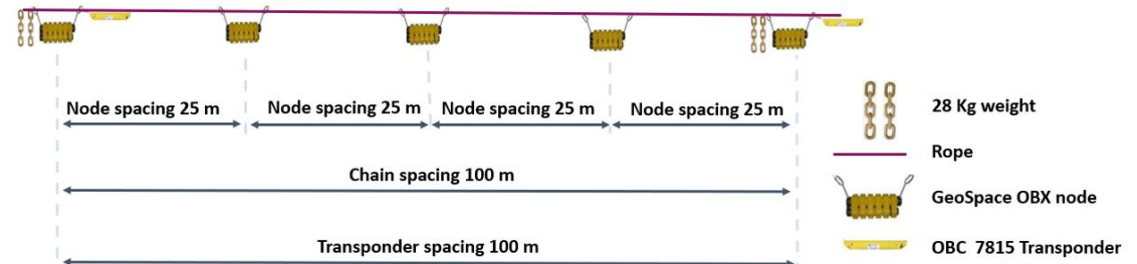
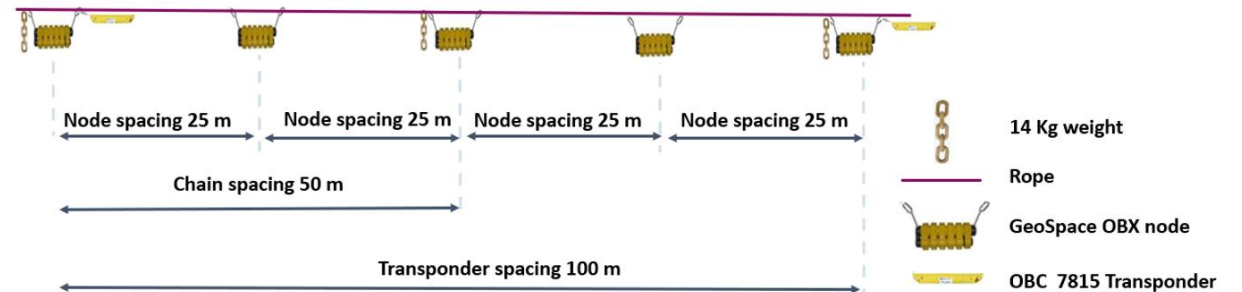
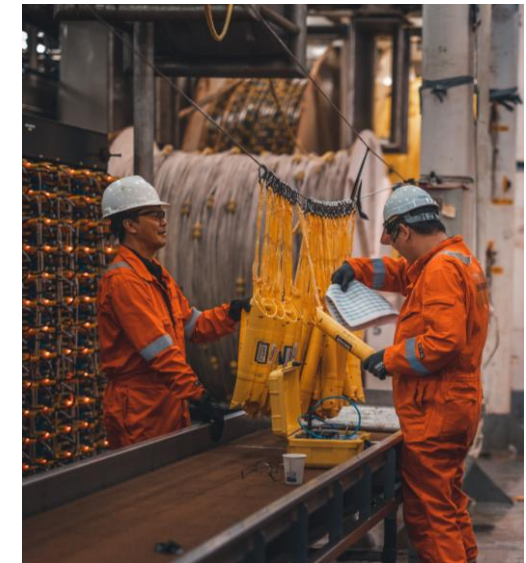
NOAR video





NOAR chains and transponders

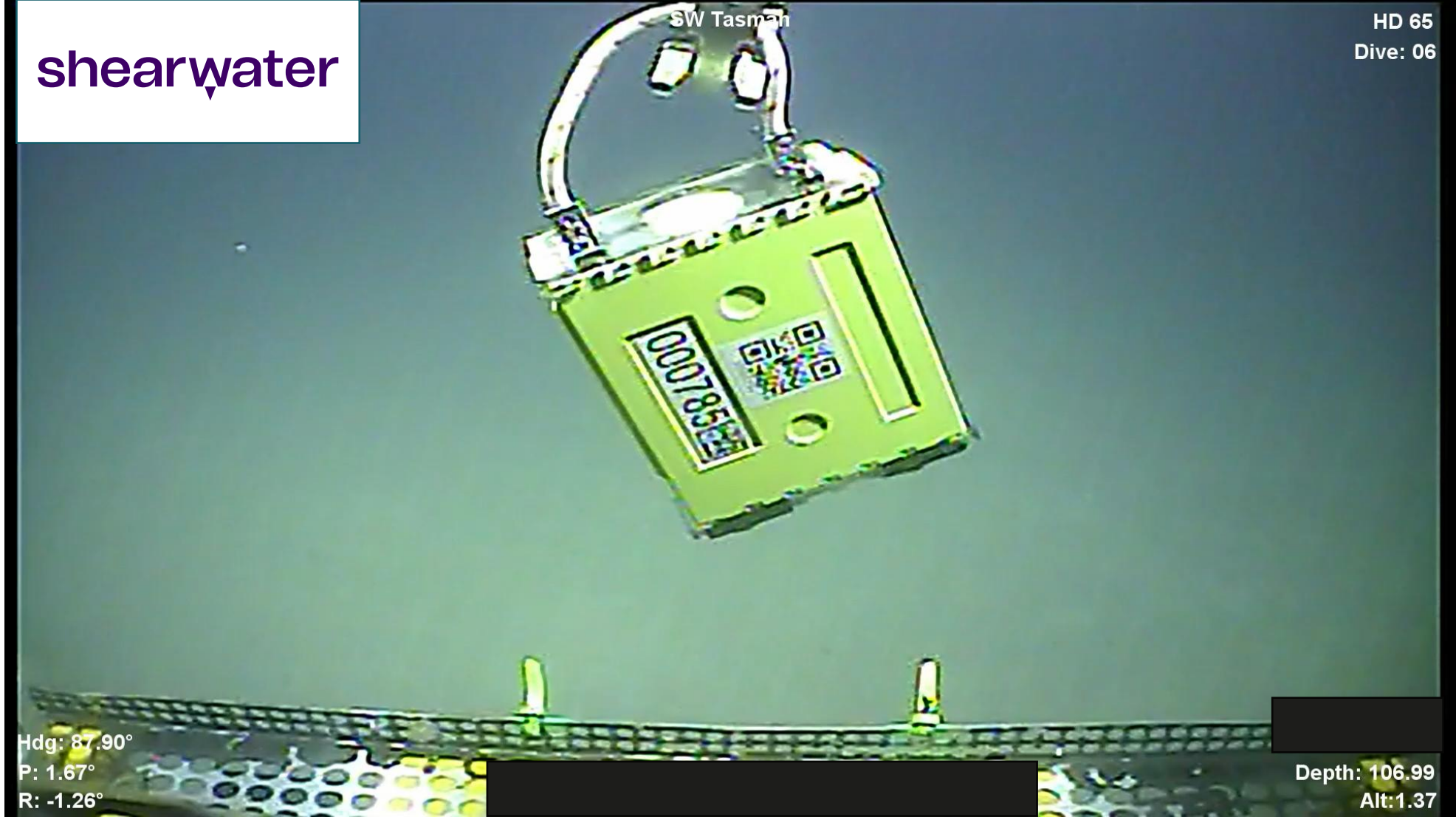
- Transponder spacing may vary
- Chain spacing and amount can vary
 - See examples on the right
- Chains may not be needed if rope is weighted or nodes are heavy





ROV video

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SW Tasmán

HD 65
Dive: 06

Hdg: 87.90°
P: 1.67°
R: -1.26°

Depth: 106.99
Alt: 1.37



ROV video

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SW Tasman

HD 65
Dive: 06

Hdg: 89.10°
P: 0.00°
R: -0.20°

Depth: 108.24

Alt:

01:46.99





AUV ambition

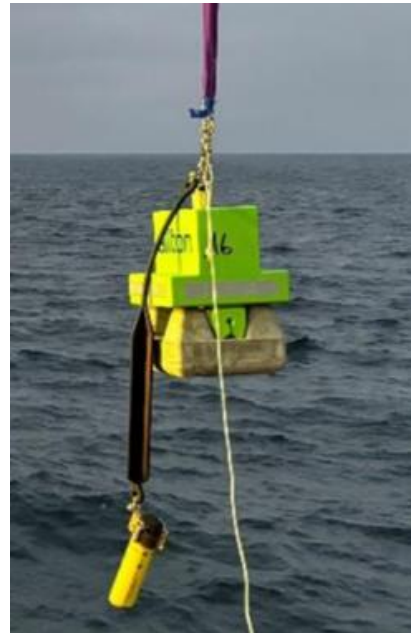
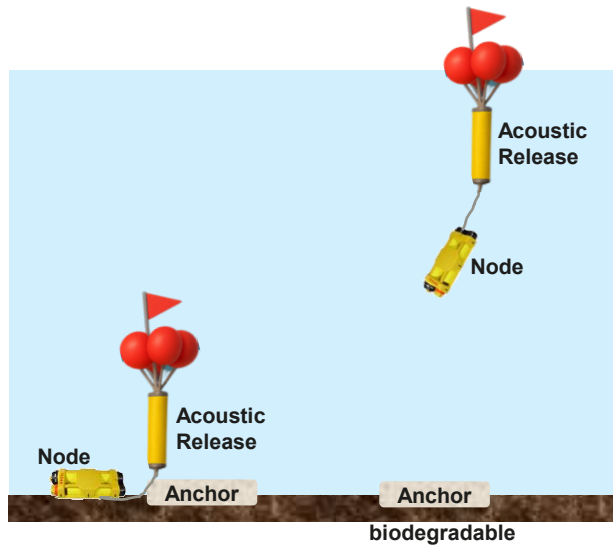
https://youtu.be/OoXFdf2sWLE?si=fBU_O6AZWxIry5XV





Drop and Pop

- Nodes are dropped to the seafloor rather than placed by a ROV operator
- Various options available
- Here a few examples:



<https://allton.com/nautilus-seismic-obn-system/>

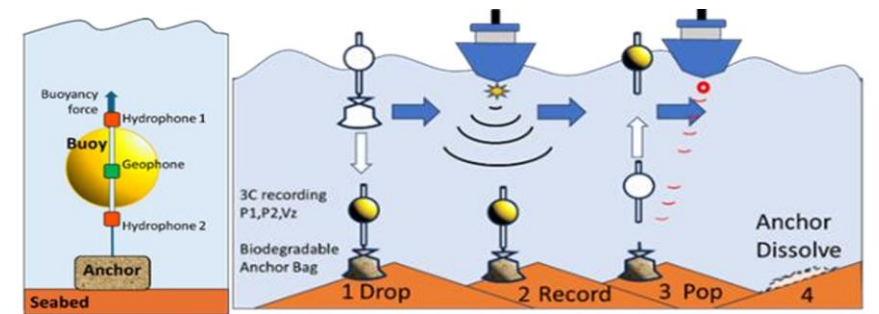


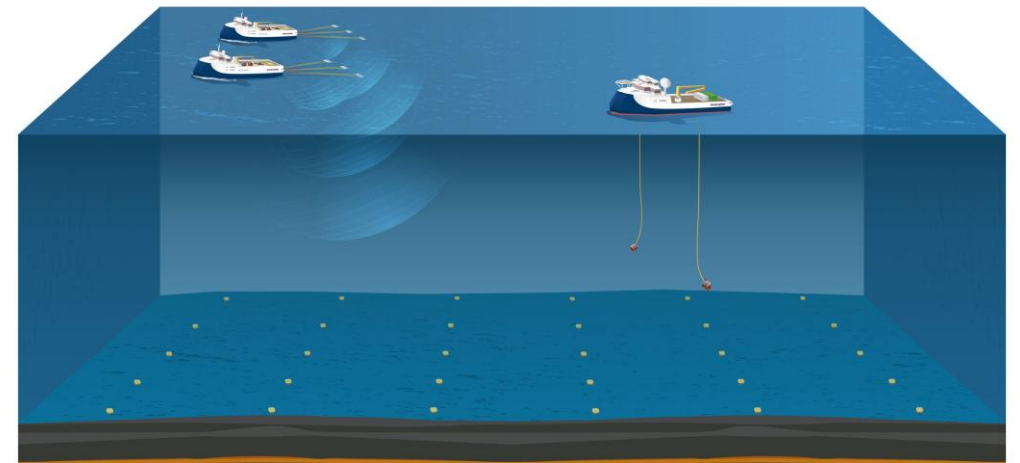
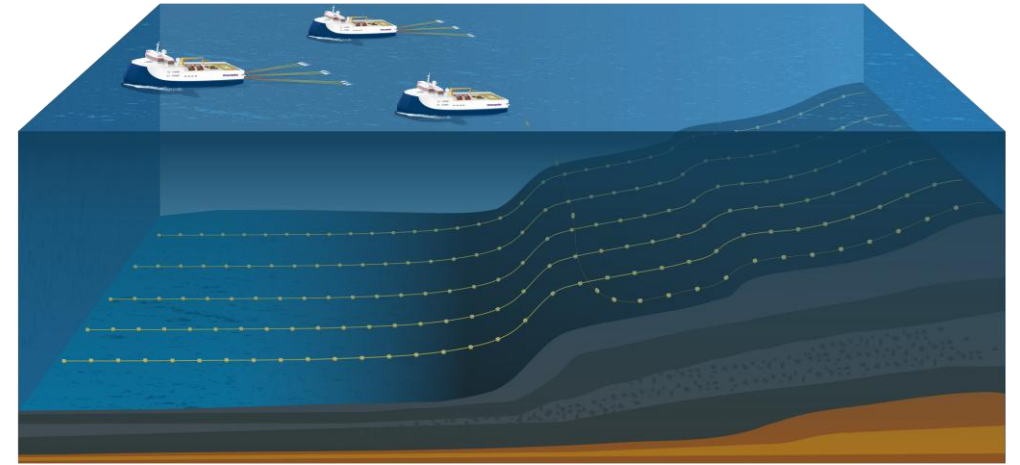
Figure 1 : The submersed floating node design and “Drop&Pop” deployment concept

Image source: “Drop & Pop” 3C Submersed Floating OBN for Cost-effective Marine Seismic Acquisition, Didier Lecerf and Einar Nielsen (TGS), 2025, SBGf



Summary

- Appetite for Ocean bottom seismic is growing
- Operations include source vessels, receiver vessels and support vessels
- Involves Ocean bottom nodes to be deployed on the seafloor
- Nodes come in different shapes and sizes
- Many deployment methods available
- Some nodes are connected by long ropes of many km length
- Typically stay on the seafloor for weeks to months before being picked up





First quarter update

THANK YOU

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