Scientific Echo Sounders
A Versatile Instrument

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Traditional Use – Stock Assessment

Quantitative biomass measurements by means of calibrated scientific echo sounders.
Eco System Monitoring

Microstructure

Methane bubbles

Fish schools

Zooplankton

GPS position

Speed

Scope view of present ping
Scientific Applications
Oceanography /Acoustic mapping of thermohaline layers

- Warm Atlantic waters has enough energy to melt all Arctic Sea ice within a few years!
- Heat exchange is limited by these layers
- **EK80:**
  - Range Resolution
  - Frequency spectrum
  - Calibration
  - Sensitivity/dynamic range

**Source of information:**
- Stranne et al, University of Stockholm

https://www.nature.com/articles/s41598-017-15486-3/figures/7
EK80 five frequencies

1.3 L/min CO₂
The EK80 Instruments
The WBT – for larger vessels
The EK80 Instruments

WBT Mini – USVs, AUVs and gliders
The EK80 Instruments
WBAT – autonomous, stand-alone, 1500 m depth rated
The EK80 Instruments

WBT Tube – moorings and other platforms with power and Ethernet, 1500 m depth rated
Advantages of echo sounders

- Very sensitive – can detect small targets such as plankton and fish eggs.
- Can detect non-biological physical features, such as plumes and gas bubbles.
- Observes a large water volume over long range.
- No bio-fouling.
- Miniaturization and specialization for a variety of platforms (landers, USVs and AUVs).
- Ongoing work towards automatic target classification using frequency modulation (looking for “acoustic fingerprints”).

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