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Scientific Echo Sounders A Versatile Instrument

2022-03-22

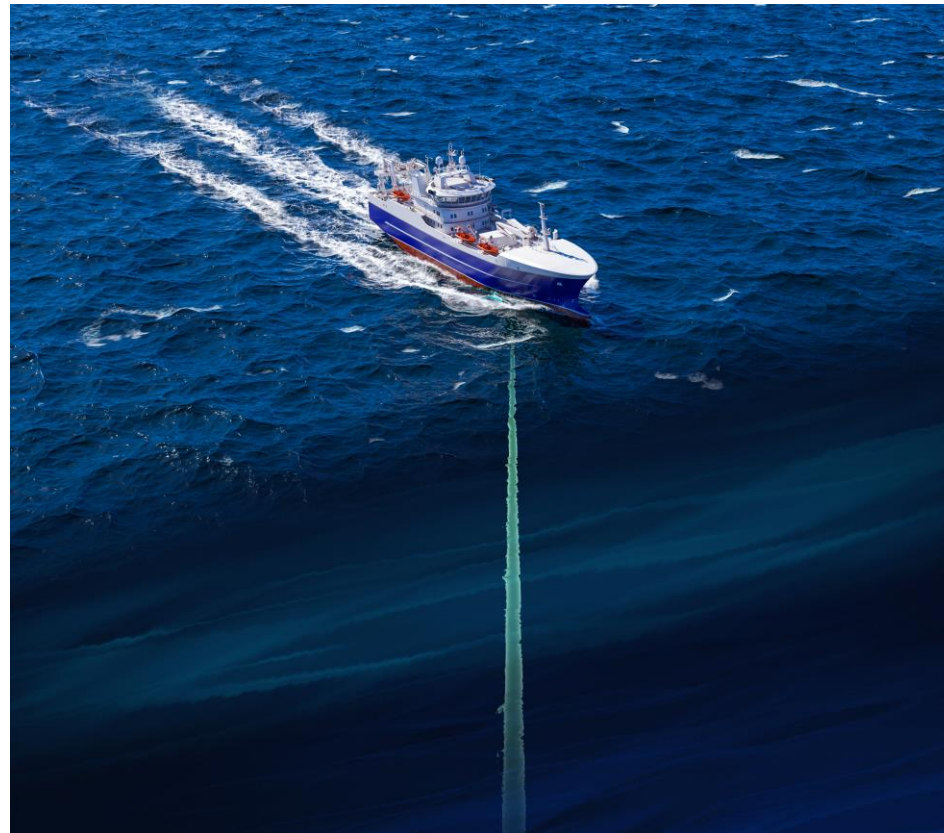
Ivar Wangen – Product Manager Ocean Science



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Traditional Use – Stock Assessment

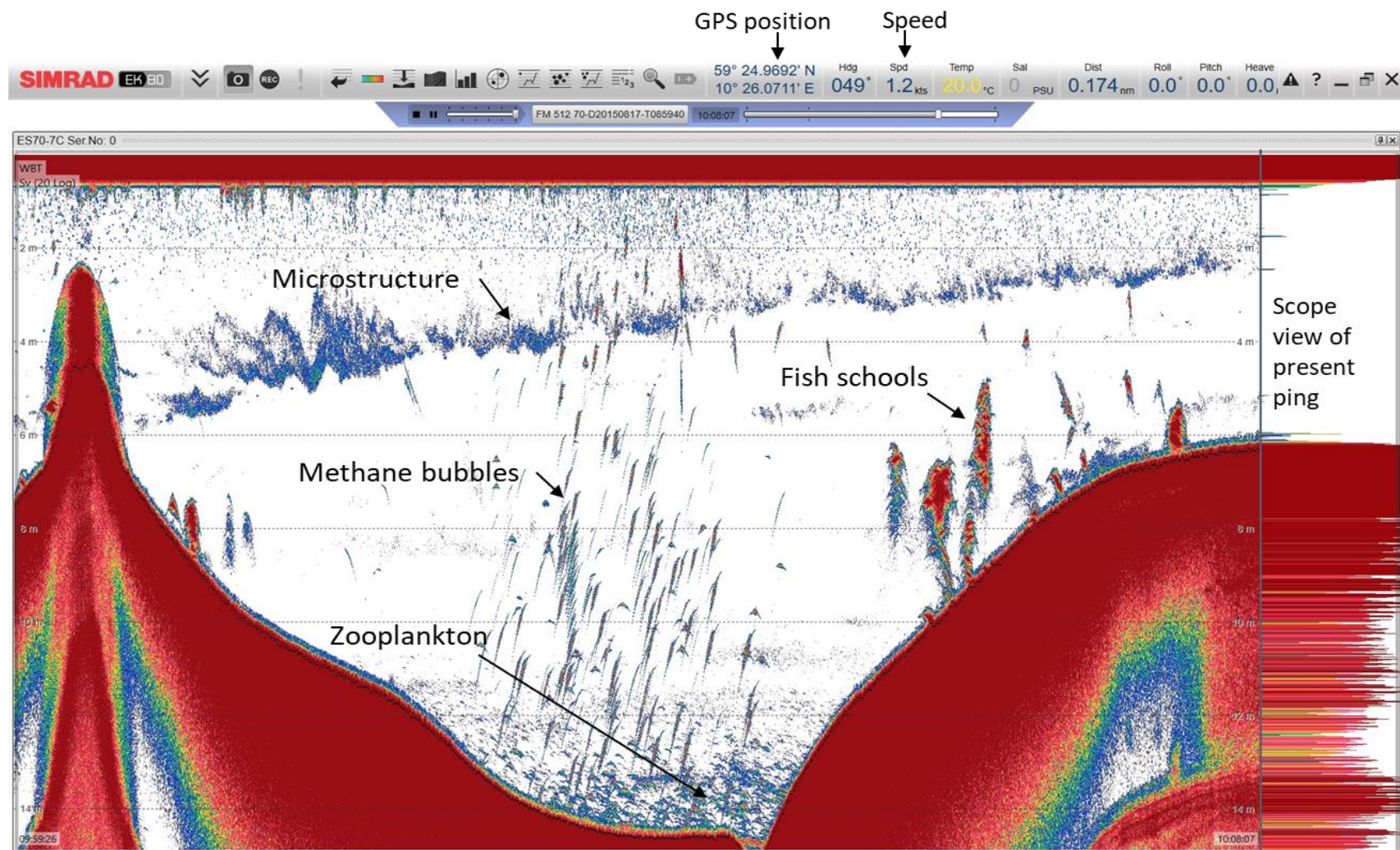
Quantitative biomass measurements by means of calibrated scientific echo sounders.





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Eco System Monitoring

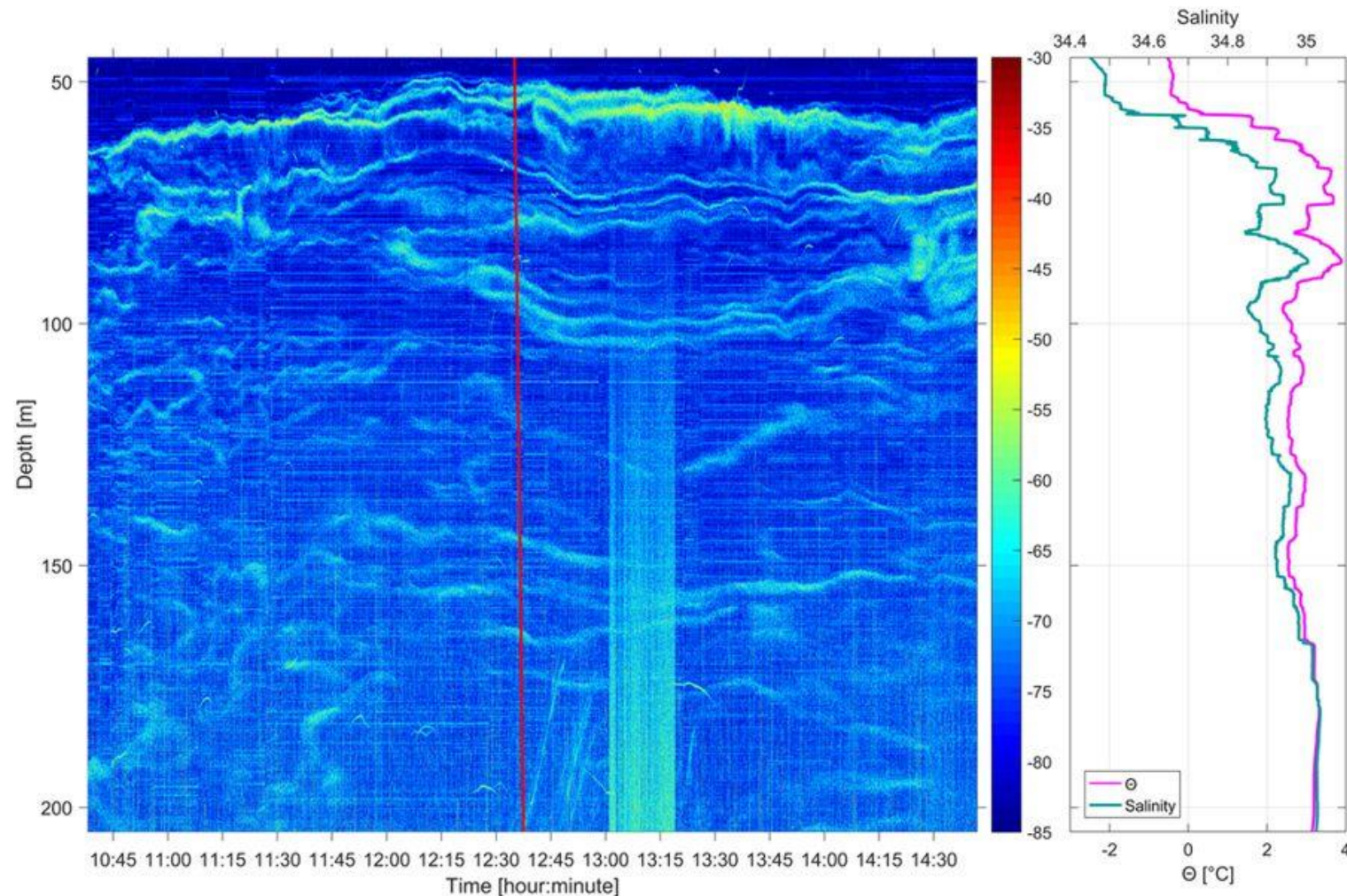




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Scientific Applications

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

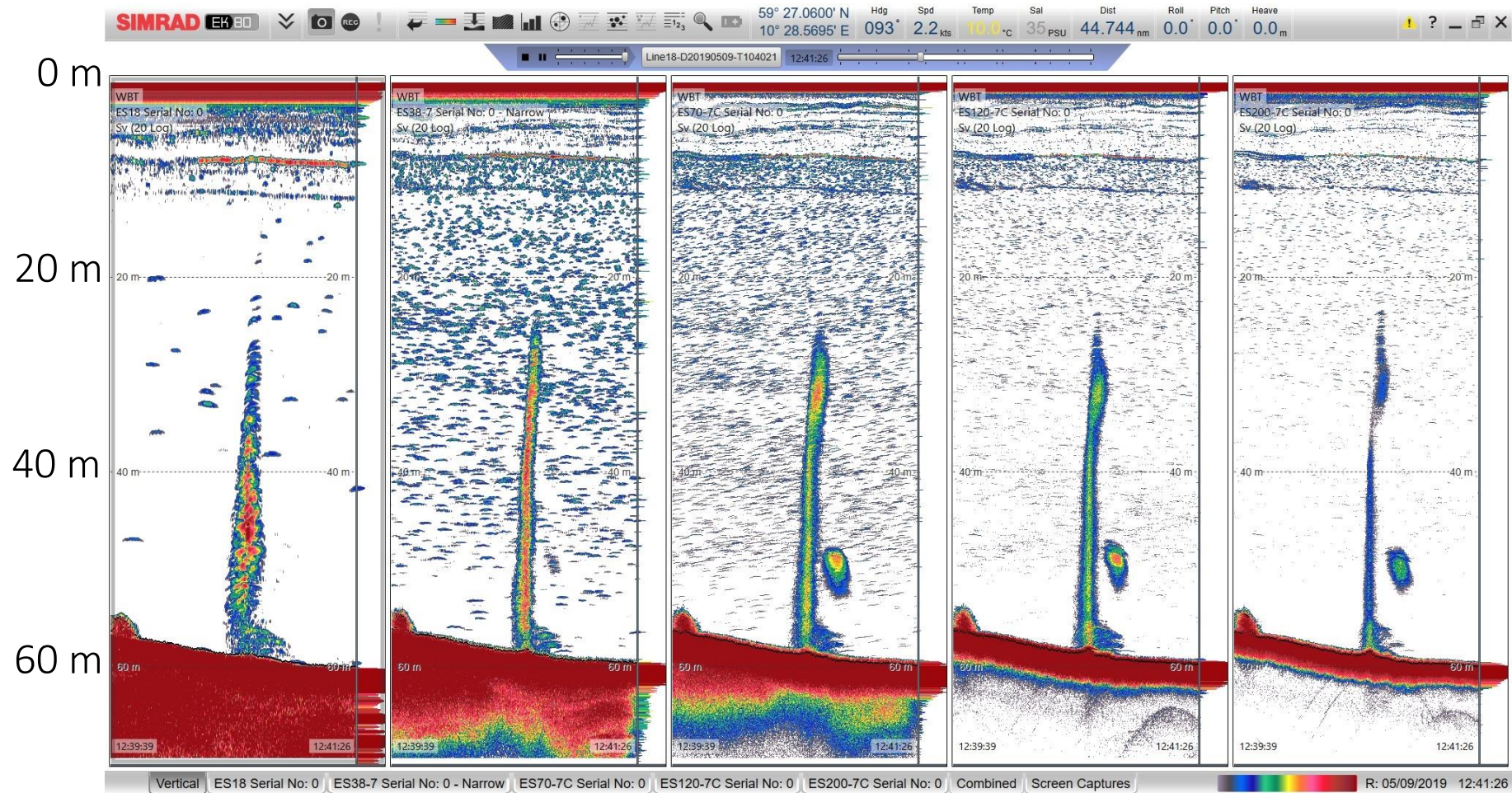
<https://www.nature.com/articles/s41598-017-15486-3/figures/7>



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EK80 five frequencies

1.3 L/min CO₂

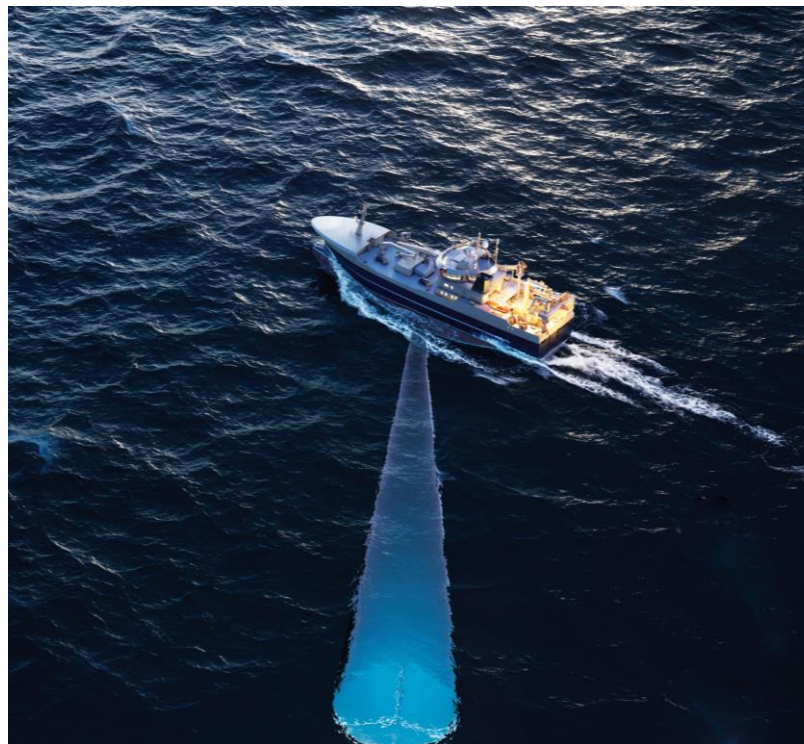




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The EK80 Instruments

The WBT – for larger vessels





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The EK80 Instruments

WBT Mini – USVs, AUVs and gliders

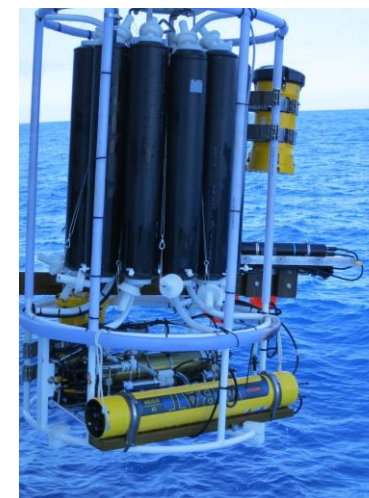
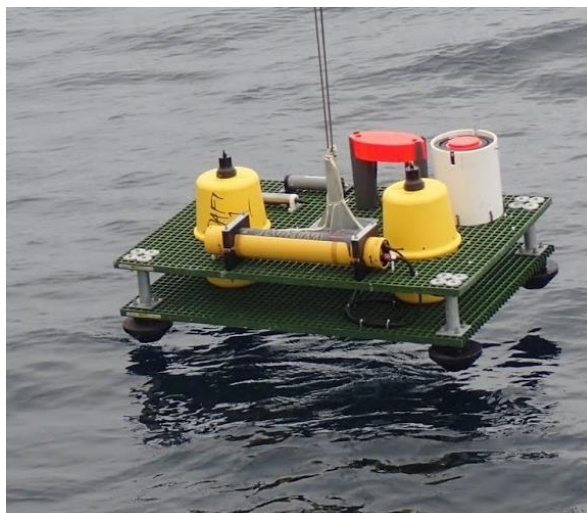




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The EK80 Instruments

WBAT – autonomous, stand-alone, 1500 m depth rated

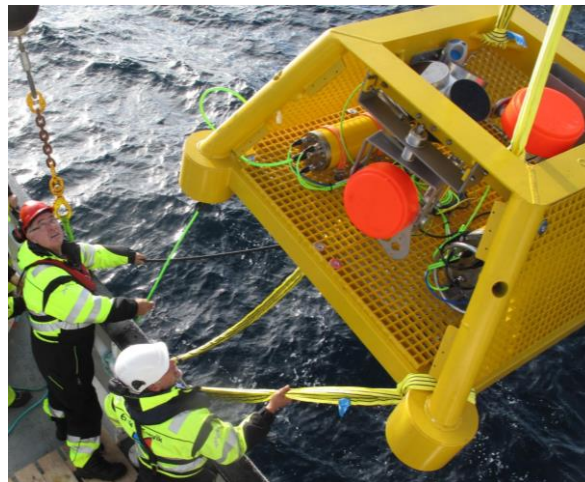




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The EK80 Instruments

WBT Tube – moorings and other platforms with power and Ethernet , 1500 m depth rated





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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”).

www.kongsberg.com/ek80



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