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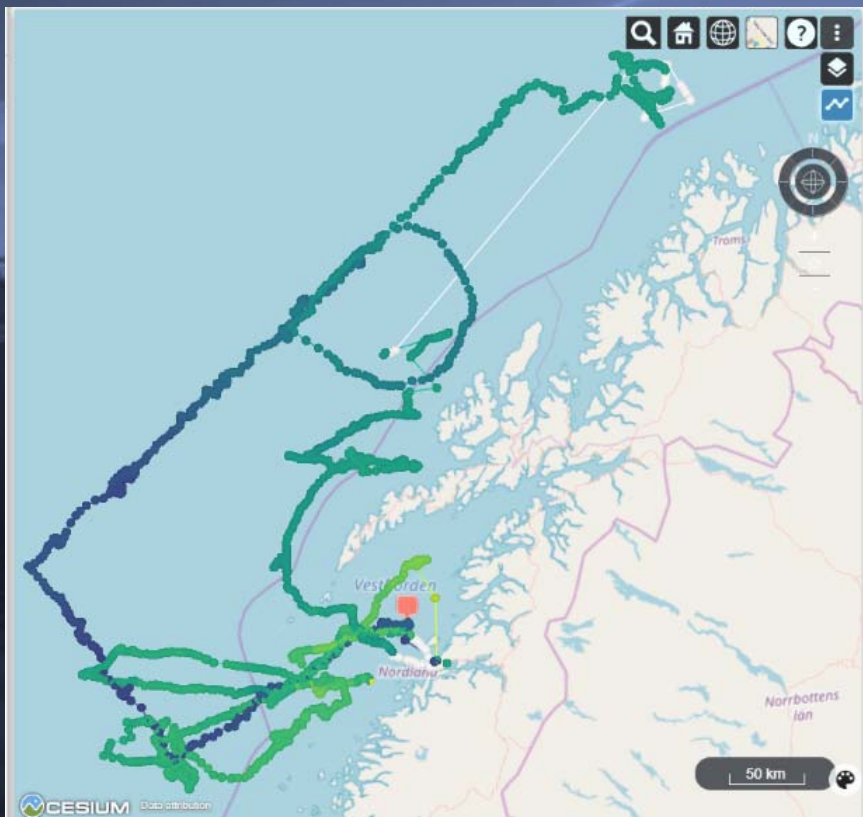


Resolving the dynamics of Lofoten`s *Calanus* and larval cod stocks using complimentary autonomous glider and ship based echosounder studies

Kathy Dunlop (Akvaplan-niva), Malin Daase (UiT), Geir Pedersen (Norce), Stig Falk-Pedersen (Akvaplan-niva), Knut Korsbrekke (IMR) and Sünnje Linnéa Basedow (UiT)

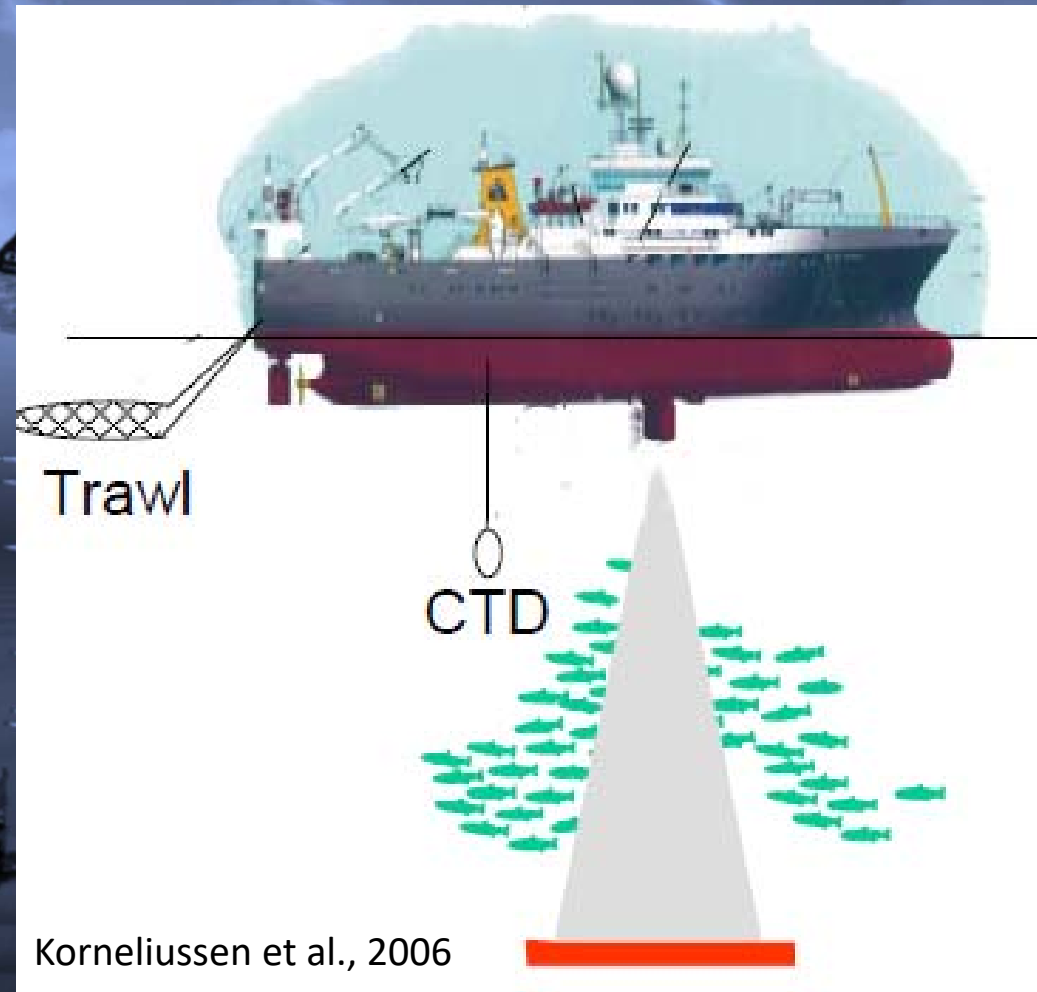


The Lofoten and Vesterålen Region (LoVe)



Ship based surveys; A combination of acoustics and trawling

- Species combination, length distribution and depth specific distribution of fish and zooplankton.
- Plankton net sampling and a pelagic trawl to sample fish and acoustic data (18, 38, 120 and 200 kHz).

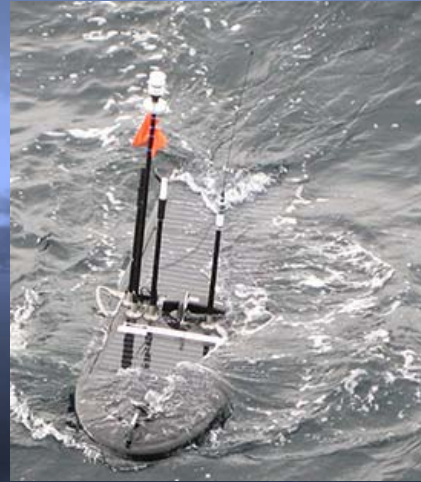


Combined GLIDER and ship surveys

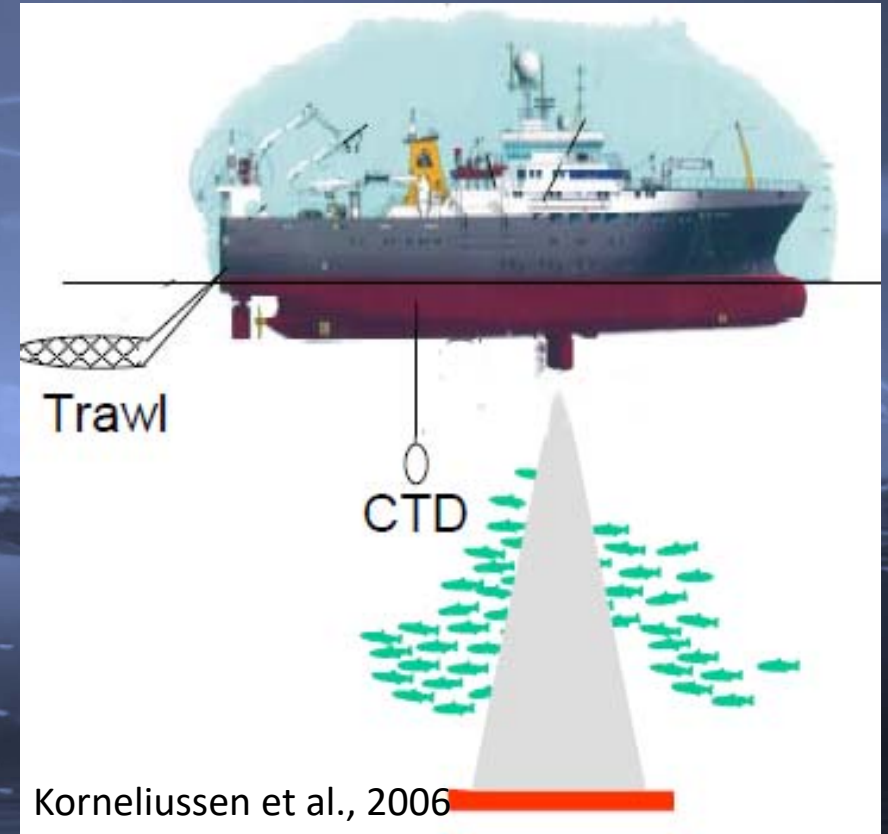
1) Springbloom Vestfjorden March and April 2018



EK80 333kHz, CTD and O₂



EK80 (333 and 70 kHz), CTD, chl *a* fluorescence, sea water turbidity, O₂, par (photosynthetically active radiation), microV), air temperature and windspeed.



Acoustic data. EK 80 (18, 70, 38, 200 and 333) khz.

Egg distribution data

Zooplankton trawl at 0-50 m

CTD and ADCP data

Combined GLIDER and ship surveys

1) Springbloom Vestfjorden March and April 2018



Combined GLIDER and ship surveys

1) Springbloom Vestfjorden March and April 2018

Title: Comparison of GLIDER and ship methods for resolving *Calanus* swarm dynamics during the spawning period of Norwegian Arctic cod in Lofoten.

Goal: Comparison and contrast ability of data from ship and GLIDER methods to resolve information on abundance, distribution and composition of *Calanus* swarms and interactions with cod larvae.

Outcome: Best complement of methods to survey *Calanus* swarms and fish larvae dynamics in space and time.

Combined GLIDER and ship surveys

1) Springbloom Vestfjorden March and April 2018

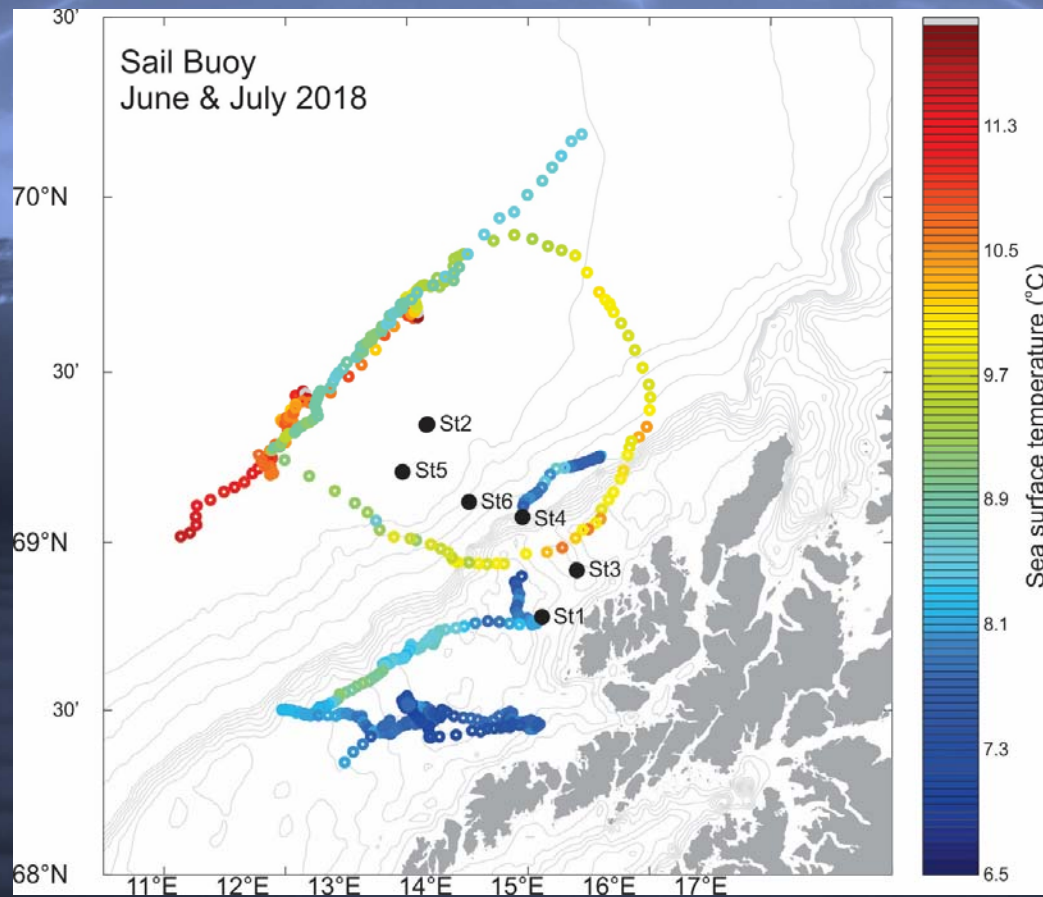
Main Goal: Does data from the Sailbuoy and Johan Hjort tell the same story about *Calanus* swarm structure, composition and temporal dynamics?

Subgoals:

- Identify the composition and structure of zooplankton and fish larvae in the top layers.
- Does the overlapping acoustic data from the ship and the Sailbuoy resolve the same zooplankton structure and composition?
- Is data missing from only using 333 kHz with the Sailbuoy compared to the multiple frequencies used by the ship?
- Can we resolve avoidance of *Calanus* swarms from the sailbuoy and/or the ship?

Combined GLIDER and ship surveys

2) LoVe Observatory



Combined GLIDER and ship surveys



2) LoVe Observatory

Title: Investigate the temporal dynamics of zooplankton swarms in Summer in the LoVe Observatory area.

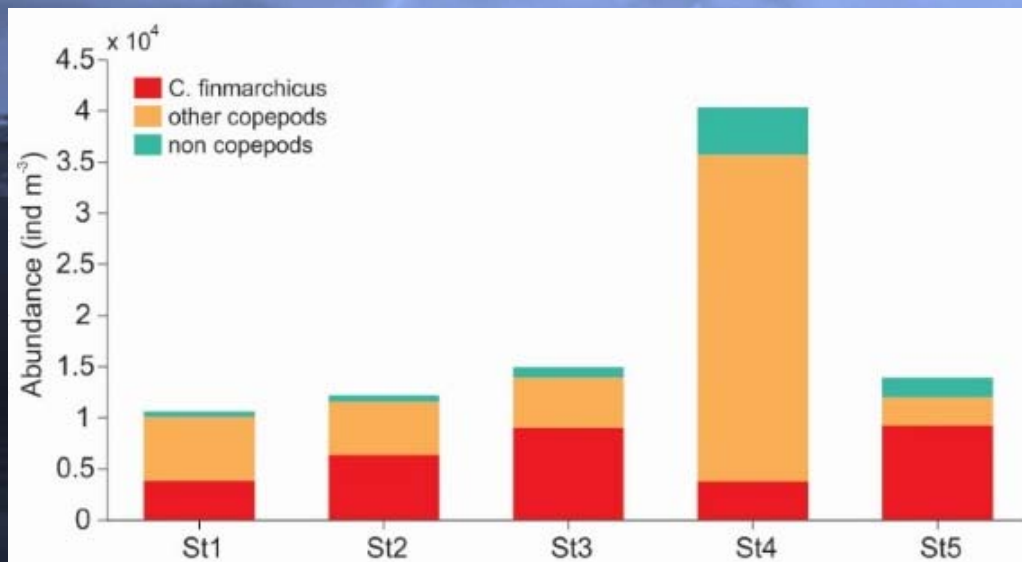
Goal: To resolve the development and persistence of *Calanus* on surface layers in LoVe

Outcome: Give a high temporal analysis of *Calanus* layers using a combination of methods; GLIDER and ship echosounder data and zooplankton net samples.

Combined GLIDER and ship surveys

Mesozooplankton composition and abundance

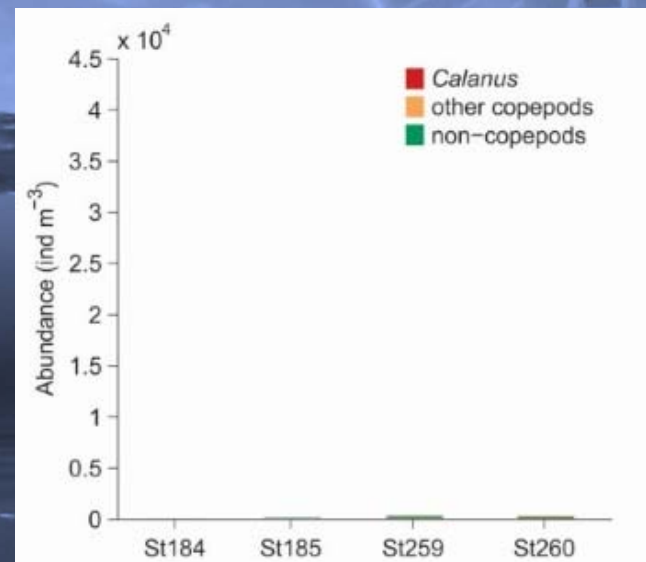
Vestfjorden 1-8 April 2018



50-0 m

375 μ m

LoVe 17-20 June 2018

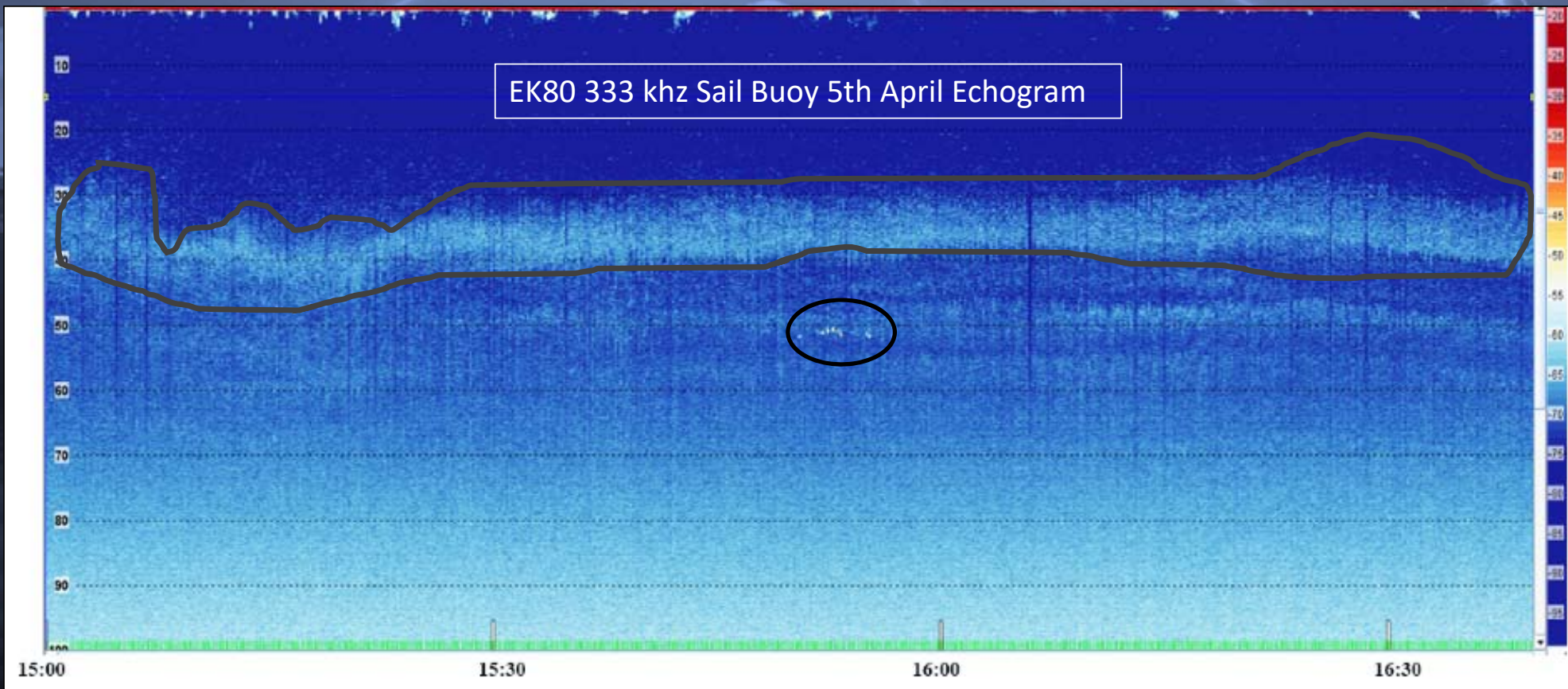


30-0 m

200 μ m

Combined GLIDER and vessel surveys

Echosounder comparison





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