

# New acoustic sensors on Seagliders

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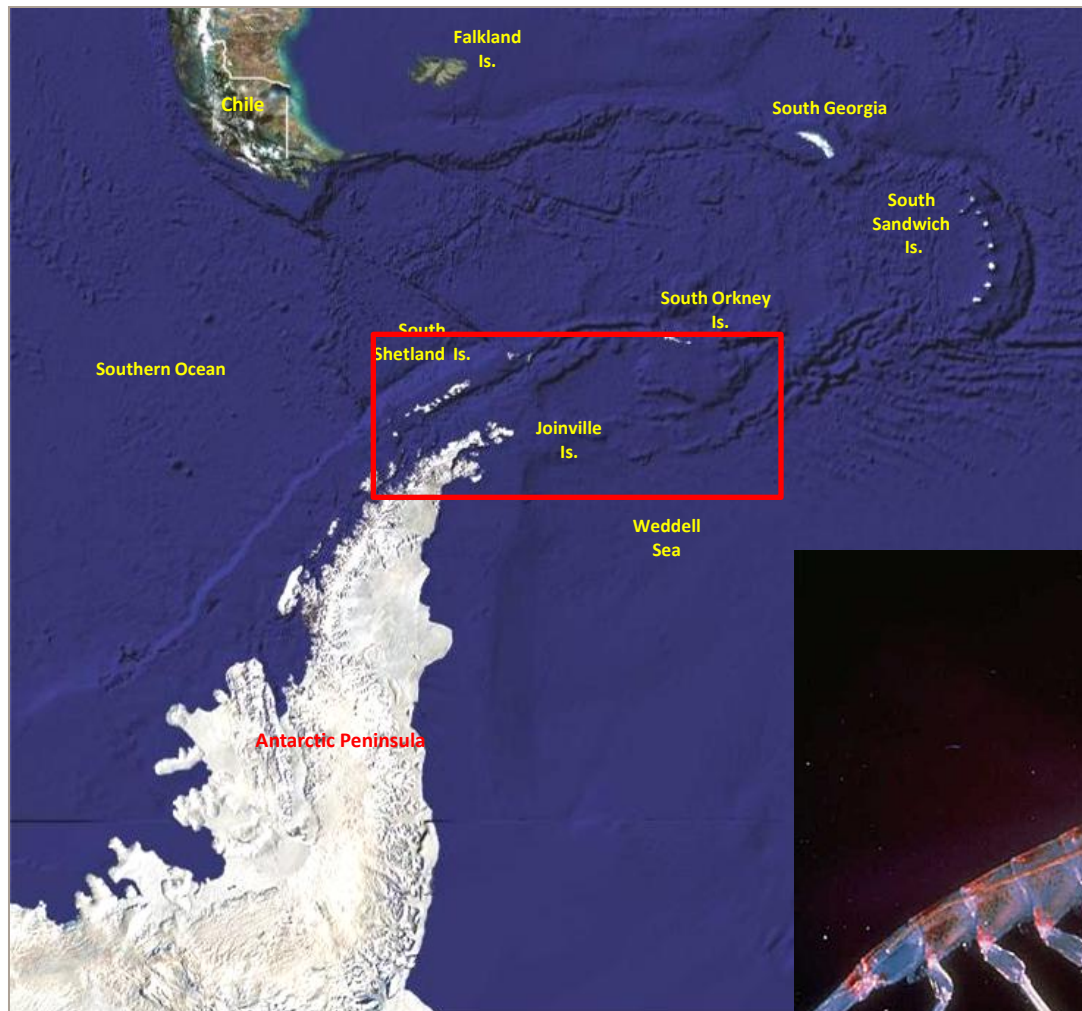
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# GENTOO

## Gliders: Excellent New Tools for Observing the Ocean



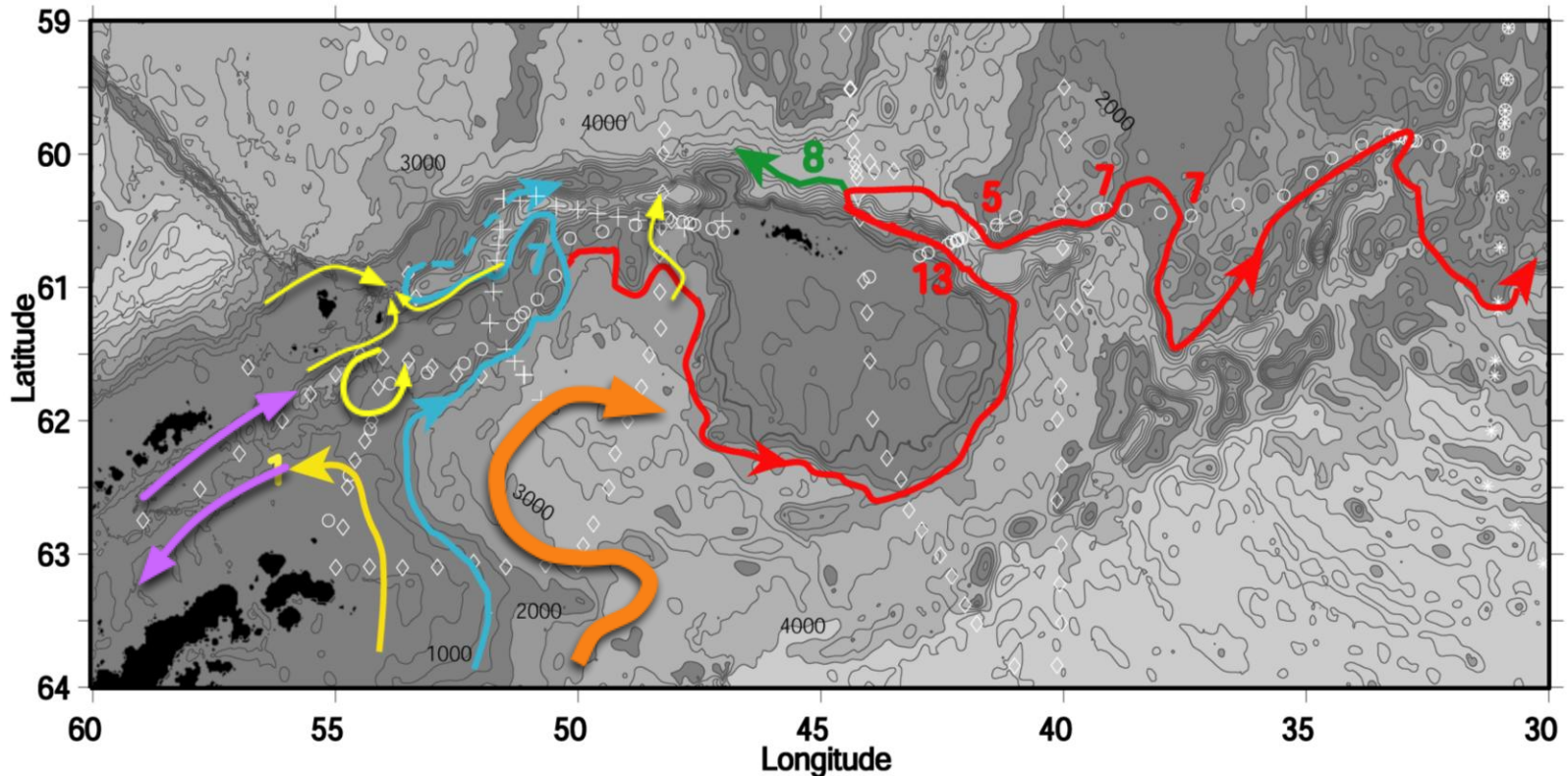
✦ **Project  
funded by  
NERC AFI**

✦ **Seagliders  
funded by  
UEA**



# GENTOO

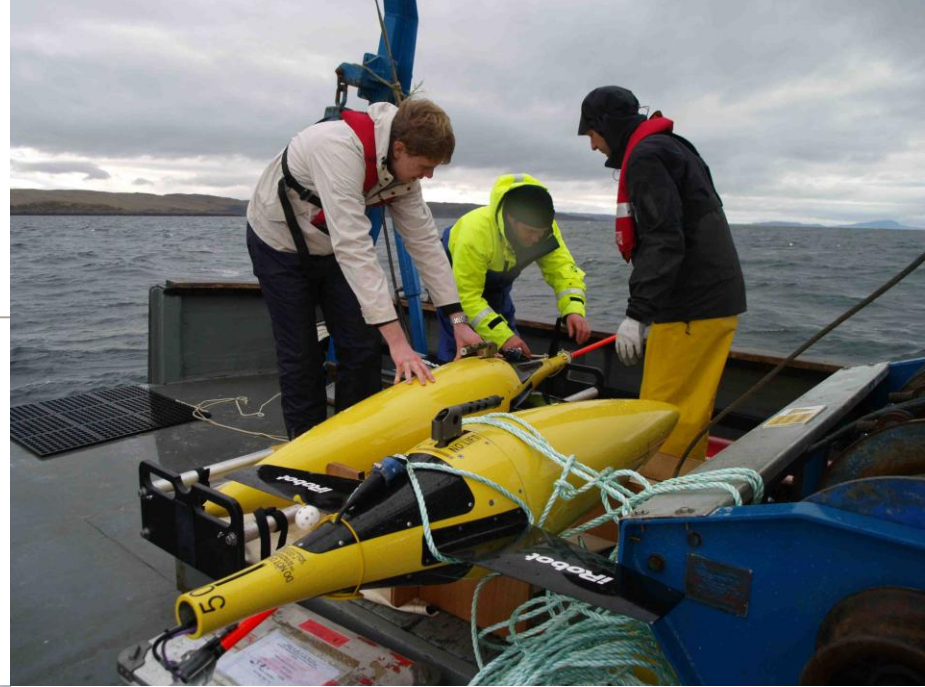
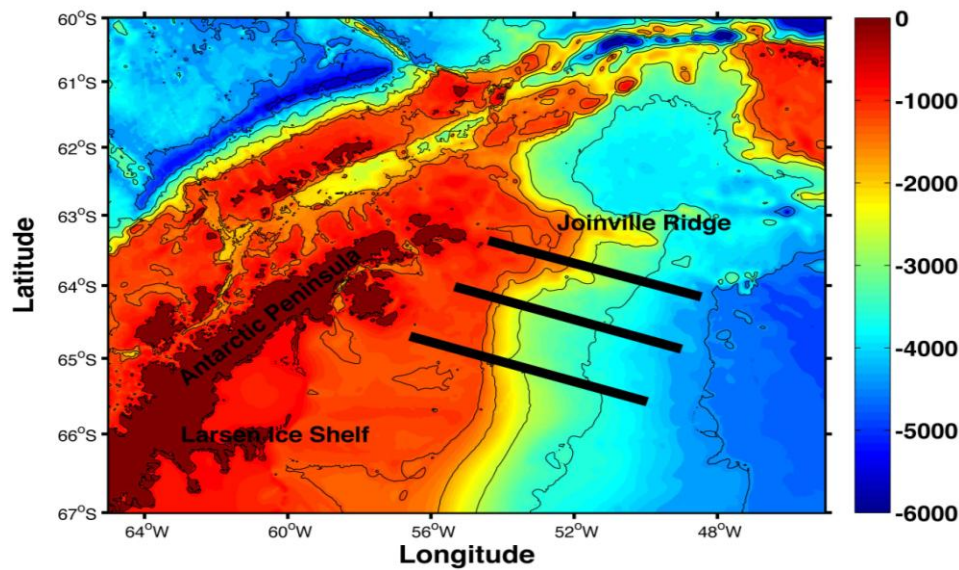
## Gliders: Excellent New Tools for Observing the Ocean



- ✦ What is the variability of the frontal jets?
- ✦ How do they affect the transport of krill?

(Thompson et al. 2009)





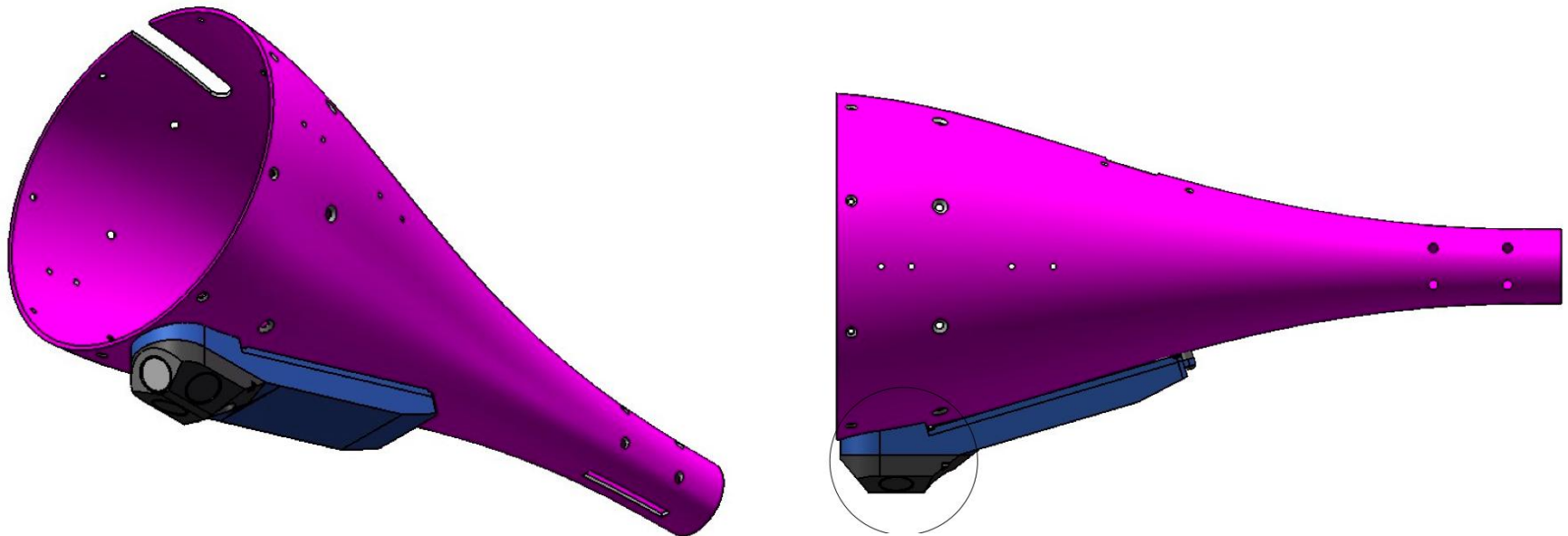
**Pilot study for Southern Ocean Observing System (SOOS) – multidisciplinary Seaglider deployments in Weddell Sea (January-February 2012)**

## Acoustic Doppler Current Profilers

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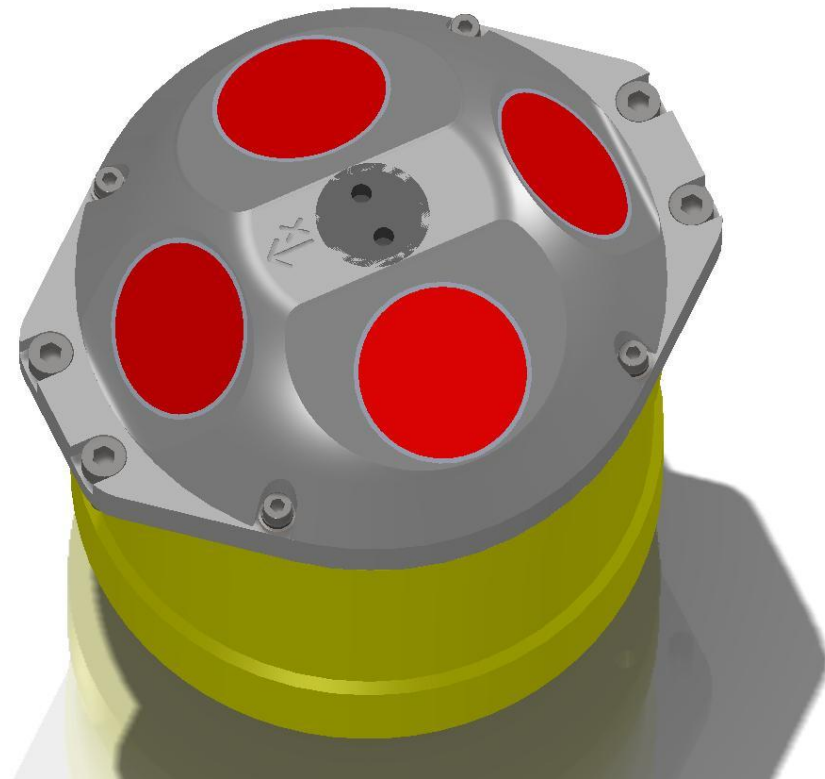
- ✦ **For measurement of current velocity and zooplankton abundance/distribution**
- ✦ **Scripps have been successfully flying a Sontek ADCP on their Spray gliders for years**
- ✦ **Rutgers and Teledyne Webb are flying RDI ADCPs on Slocums (400 kHz)**
- ✦ **UW have flown a Nortek ADP on a Seaglider**

✦ In our GENTOO project, we are working with iRobot and Nortek to install an AquaDopp in one of our Seagliders (1 MHz)



## ADCP

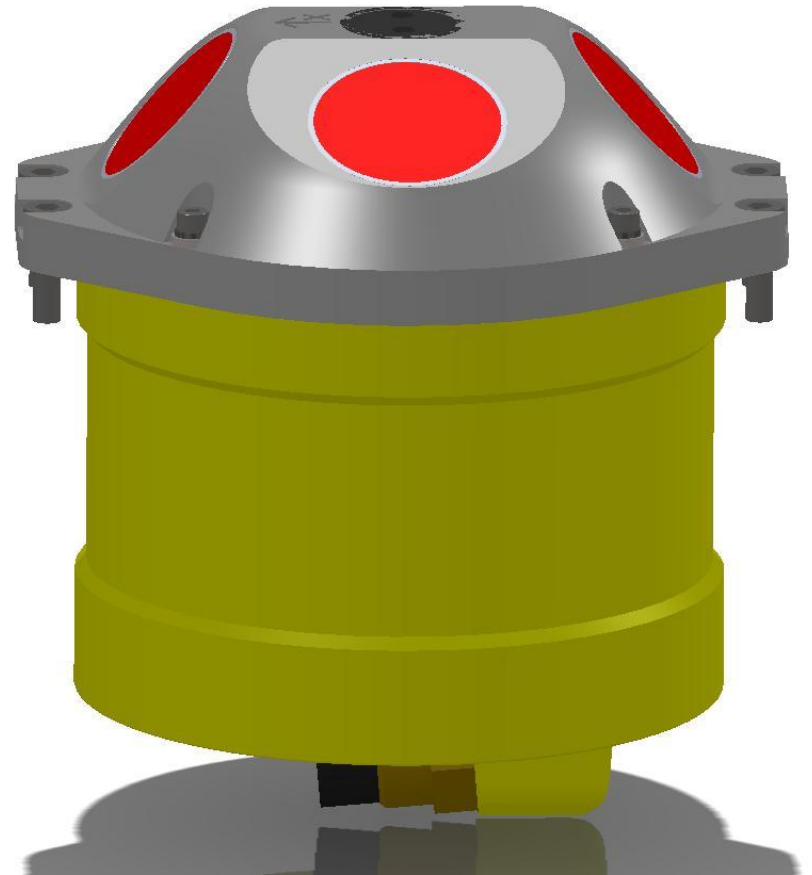
- ✦ **Nortek current profiler**
- ✦ **1 MHz**
- ✦ **Range: 5 – 20 m with an Acoustic Backscattering Strength (Sv) of -80 dB/m**
- ✦ **22.5° beam angles fore and aft (matched to the Seaglider projected glide angle)**
- ✦ **50° beam angles port and starboard**





## ADCP

- ✦ **Nortek current profiler**
- ✦ **Draft specification :**
- ✦ **64 depth cells**
- ✦ **0.3 m vertical resolution**
- ✦ **0.2 cm/s velocity resolution**
- ✦ **Sensor health (not full data set) will be transmitted back over iridium**
- ✦ **1000 m depth rating**

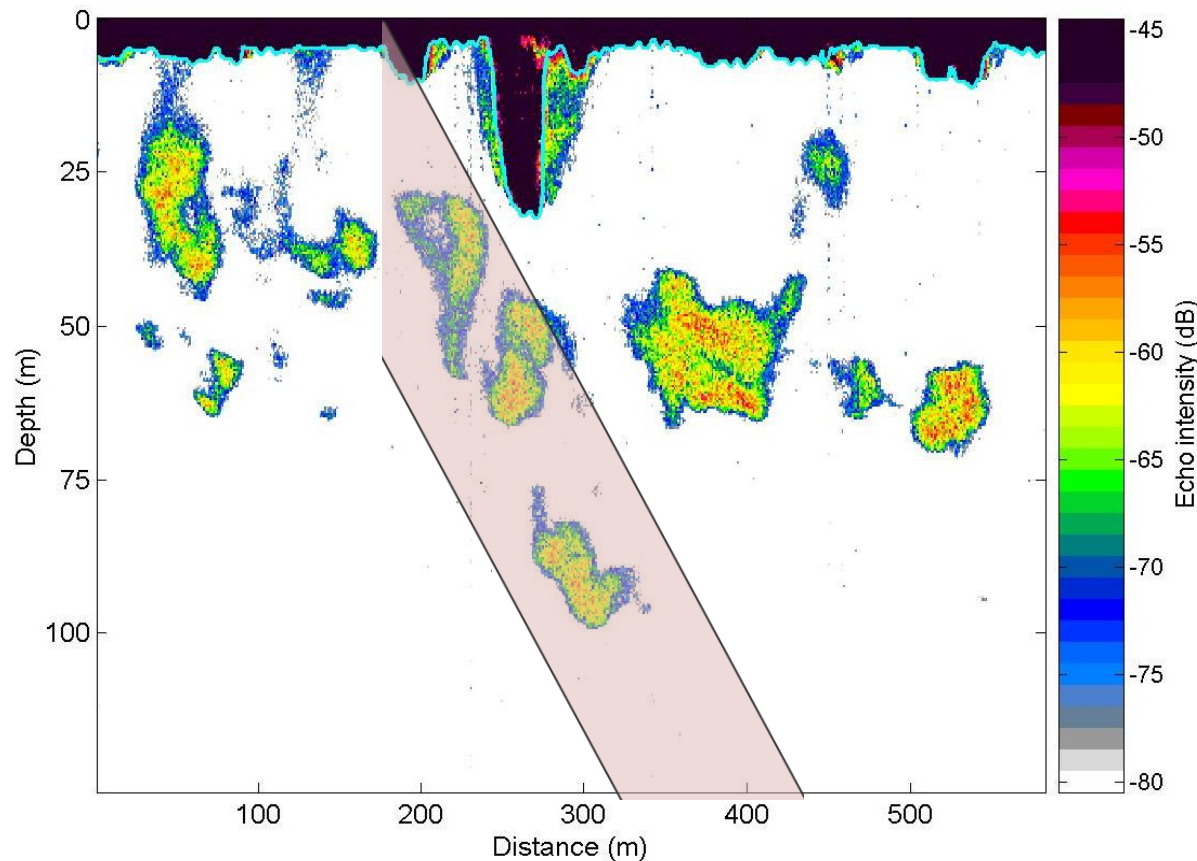






- ✦ We are also installing a small echo sounder for krill abundance estimation
- ✦ Imagenex model 853 ultra-miniature 1000 m echo sounder
- ✦ Based on existing model 852
- ✦ Designed for use on AUVs, ROVs and gliders

- ✦ **Provisional specification being finalised by iRobot and Imogenex:**
- ✦ **Single beam, single frequency echo sounder**
- ✦ **120 kHz conical transducer with a 10° beam width**
- ✦ **200 range bins, range 0.5 – 100 m**
- ✦ **Downward looking when glider descends**
- ✦ **We will calibrate against shipboard EK60 and RMT-8 krill net samples**



**Acoustic backscatter data from Autosub showing krill swarms near an ice keel.**

**Pink area illustrates the working area of a 40 m range (to -80 dB SV) glider echo sounder**