

# Seafloor Morphology of the Storfjorden and Kveithola Palaeo-Ice Streams (NW Barents Sea): joint Italian and Spanish dataset



Michele Rebesco<sup>1</sup>, Angelo Camerlenghi<sup>2,3</sup>, Mayte Pedrosa<sup>3</sup>, Daniela Accettella<sup>1</sup>, Ben DeMol<sup>4</sup>, Roger Urgeles<sup>5</sup>, Renata Giulia Lucchi<sup>1,3</sup>, Andrea Caburlotto<sup>1</sup>



1) OGS, Trieste, Italy  
(mrebesco@ogs.trieste.it)



3) Universitat de Barcelona, Spain



2) Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain

4) Parc Científic, Barcelona, Spain



5) Consejo Superior de Investigaciones Científicas (CSIC), Barcelona, Spain

Stockholm, 4 May 2011

# IPY Activity 367 NICE-STREAMS

(Neogene ice streams and sedimentary processes on high-latitude continental margins)

<http://sites.google.com/site/ipynicestreams/>

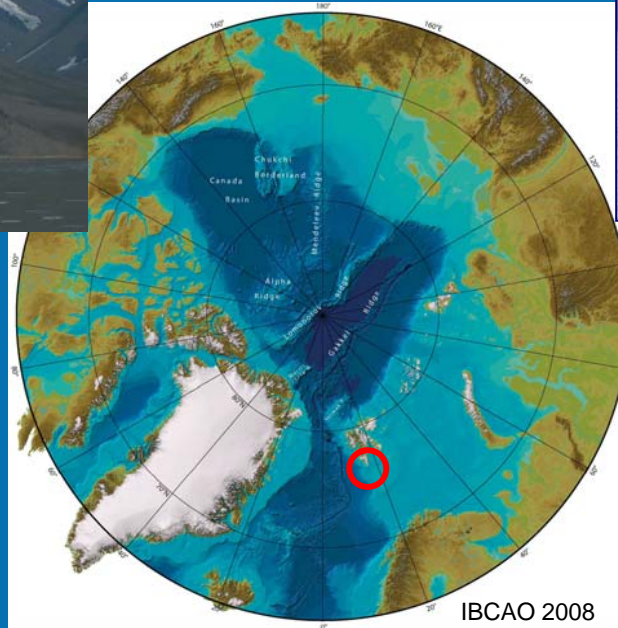


R/V OGS-Explora



BIO HESPÉRIDES

3



IBCAO 2008

**EGLACOM**

2008

P.I. Michele Rebesco  
OGS, Italy

**SVAIS**

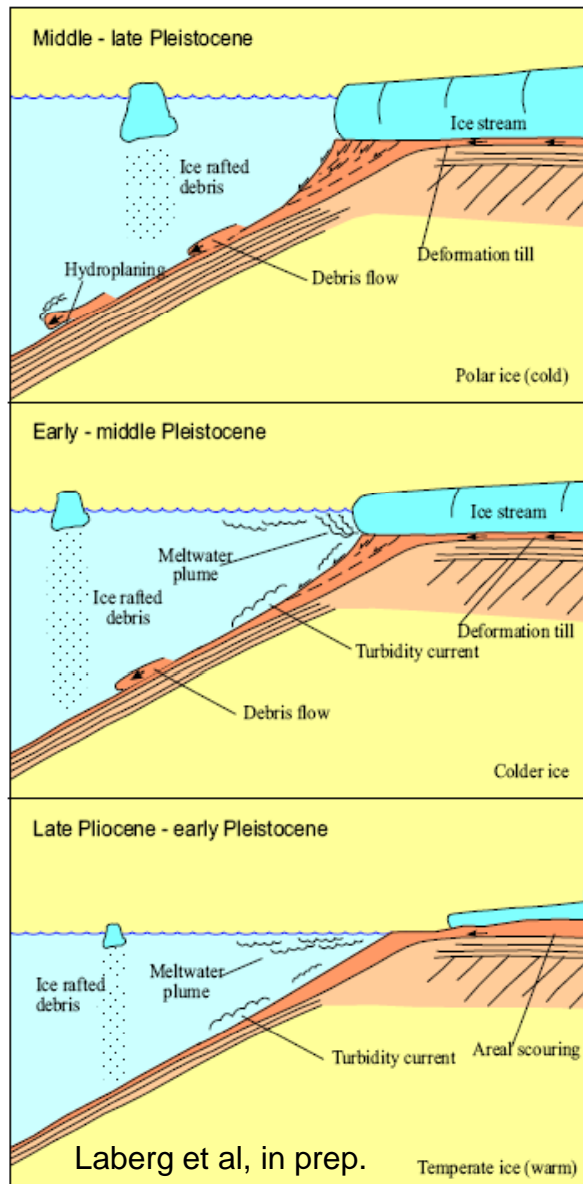
2007

P.I. Angelo Camerlenghi  
ICREA, Spain



Rebesco et al., joint Italian and Spanish dataset

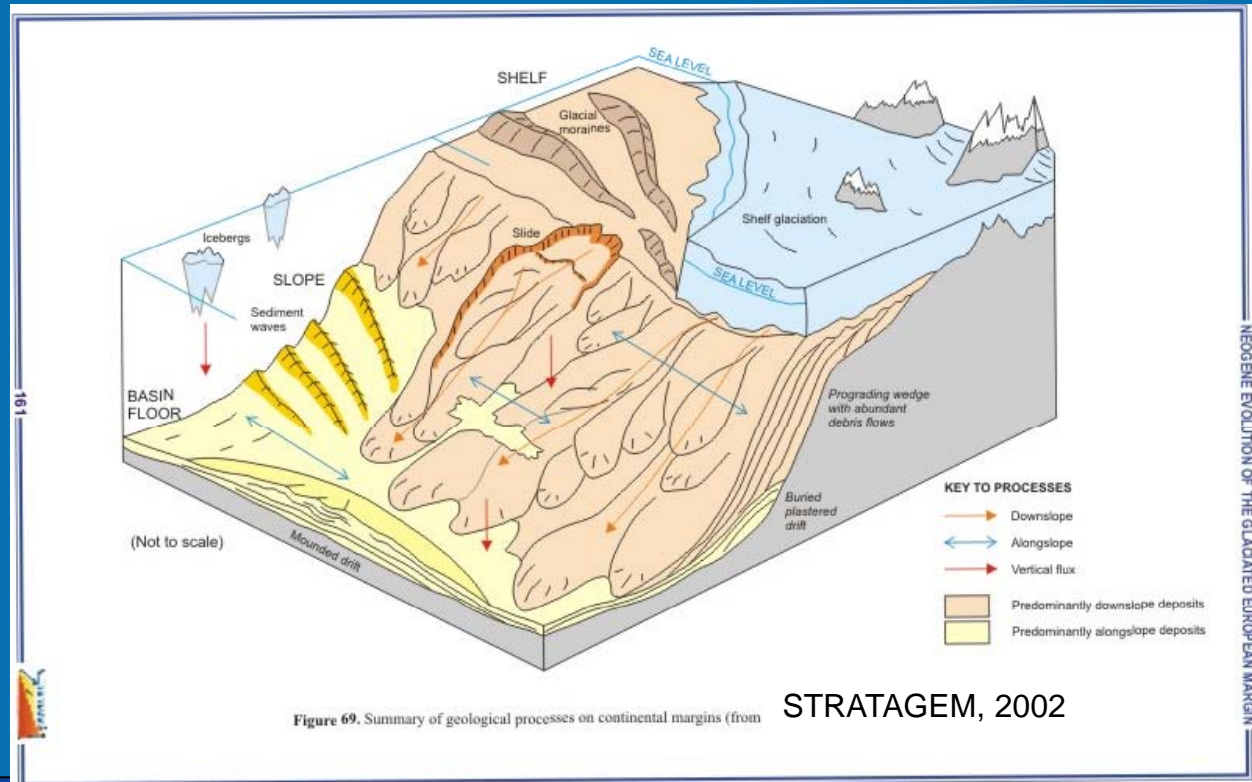




## Main Objective:

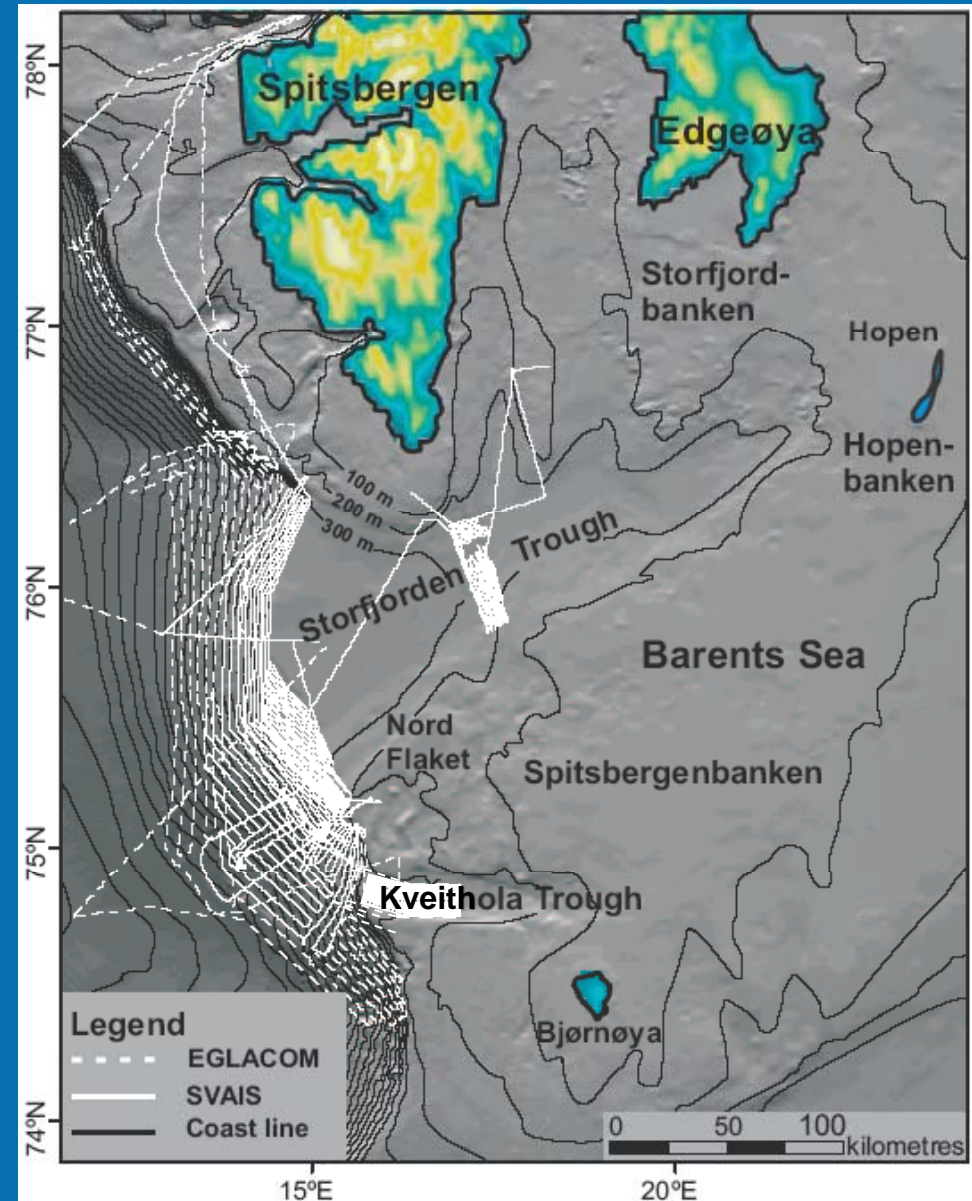
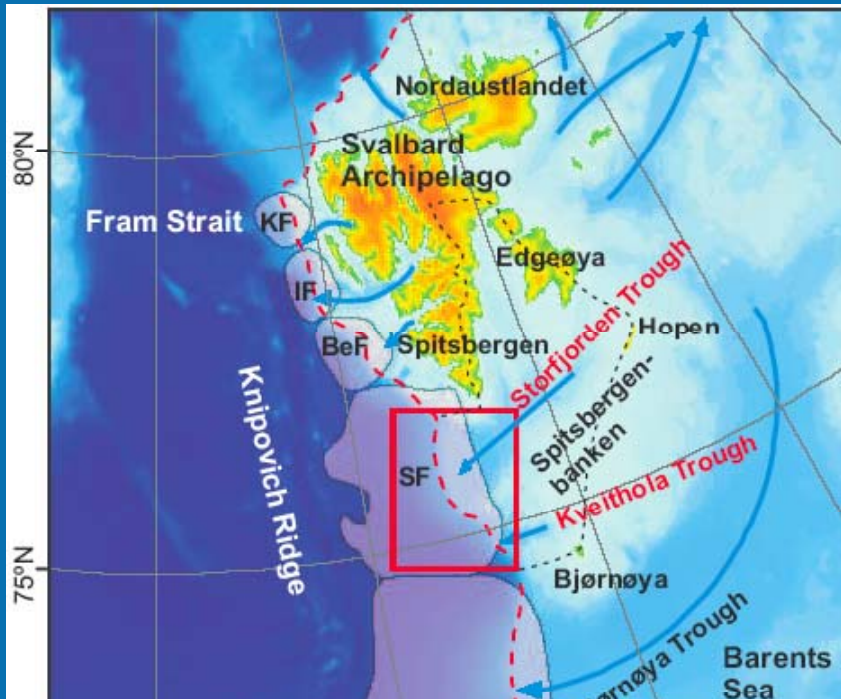
Geologic- geophysical study of an ice-stream dominated depositional system to reconstruct:

- The evolution of this Arctic margin since the onset of glaciation (Pliocene) to the last deglaciation
- Continental slope instability phenomena



Rebesco et al., joint Italian and Spanish dataset





BIO Hespérides: Simrad EM120  
(12 kHz) + EM1002S (95 kHz)

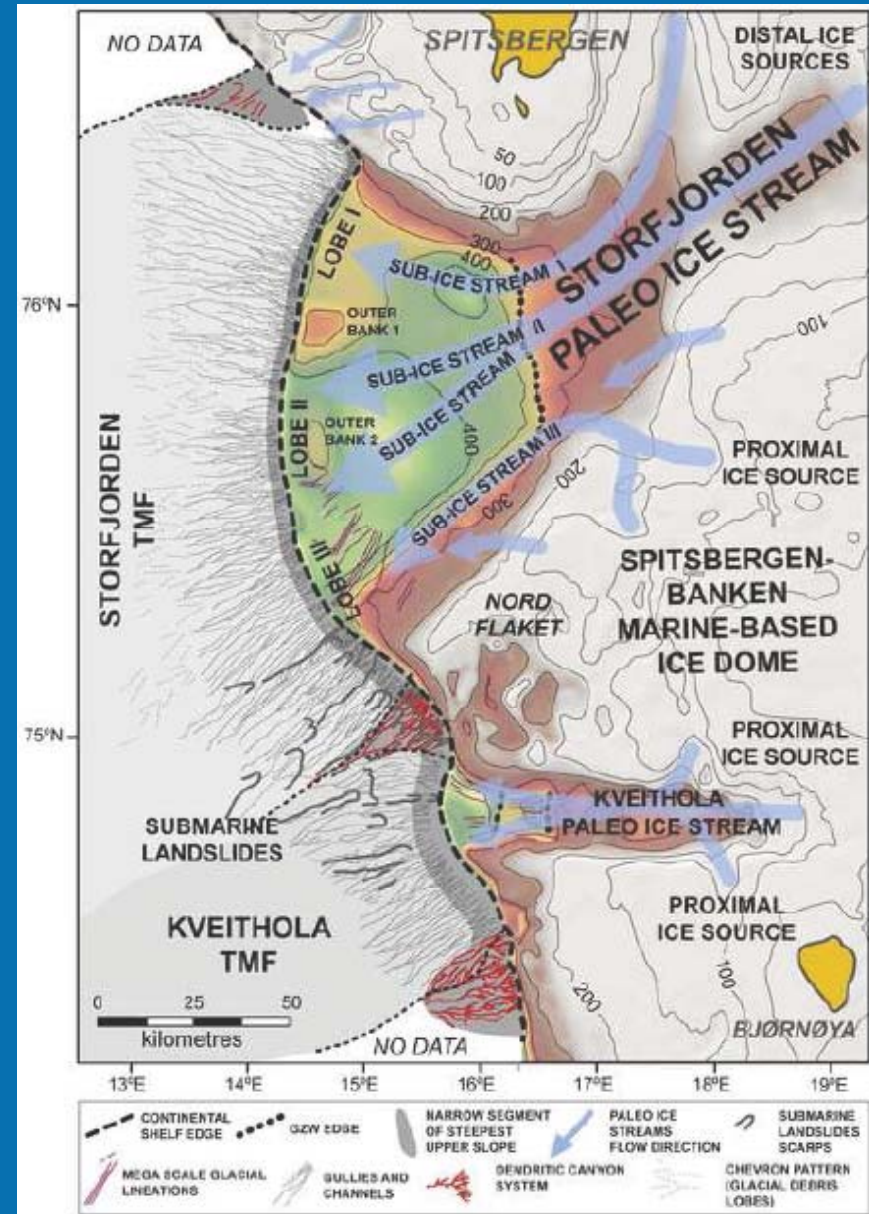
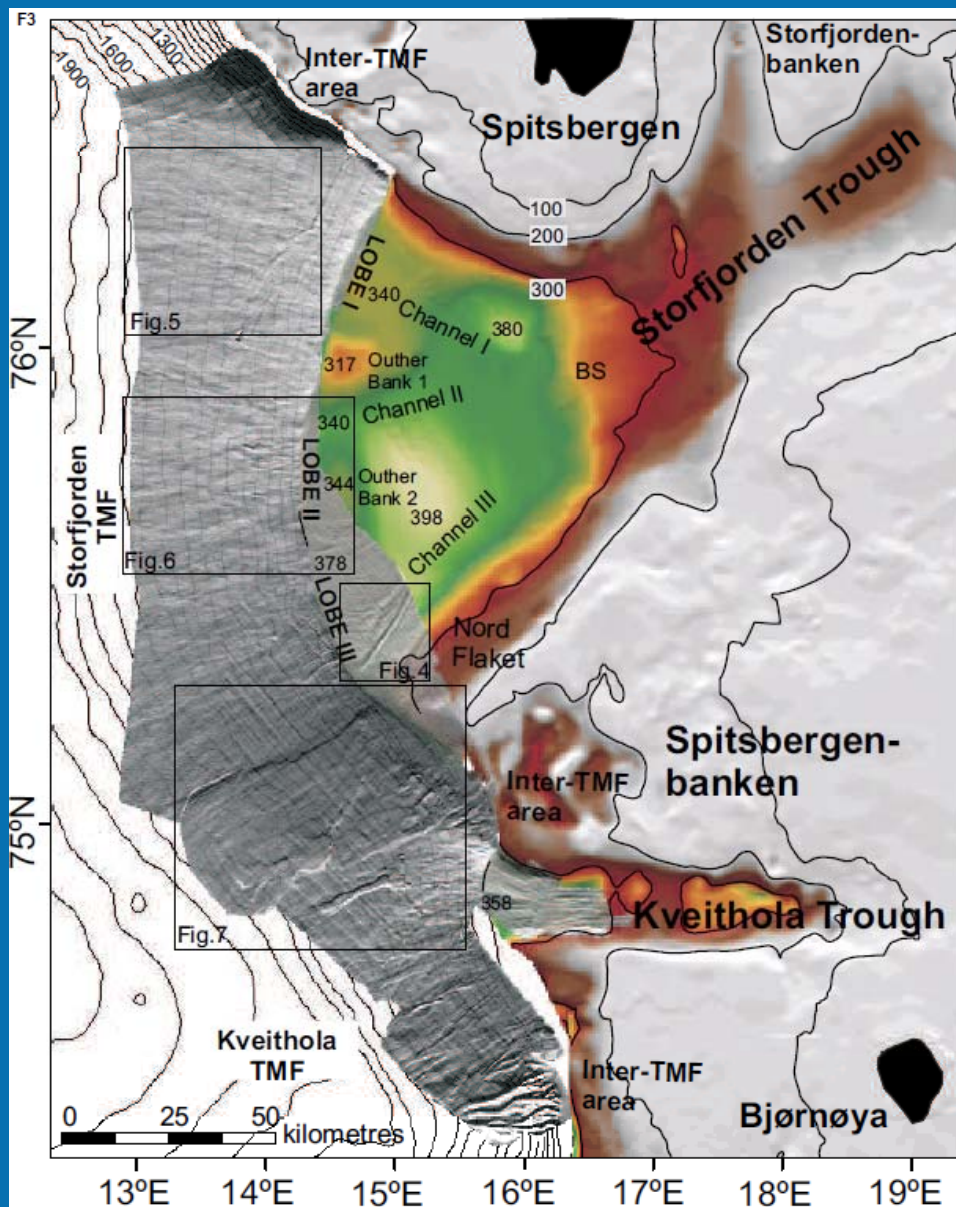
R/V OGS-Explora Reson MB8150  
(12 kHz) + MB8111 (100 kHz)

About 15,340 km<sup>2</sup> in total



Rebesco et al., joint Italian and Spanish dataset



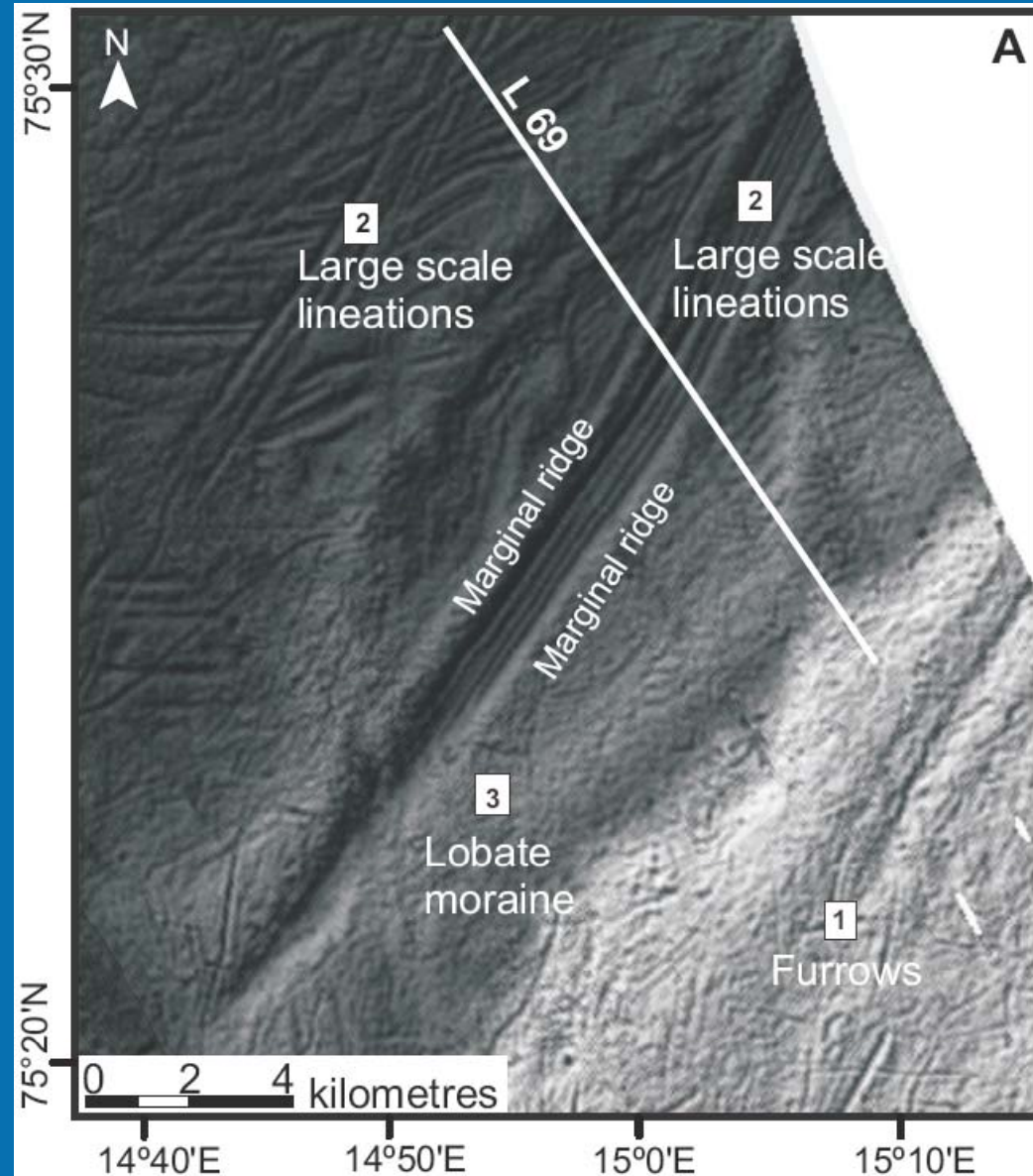
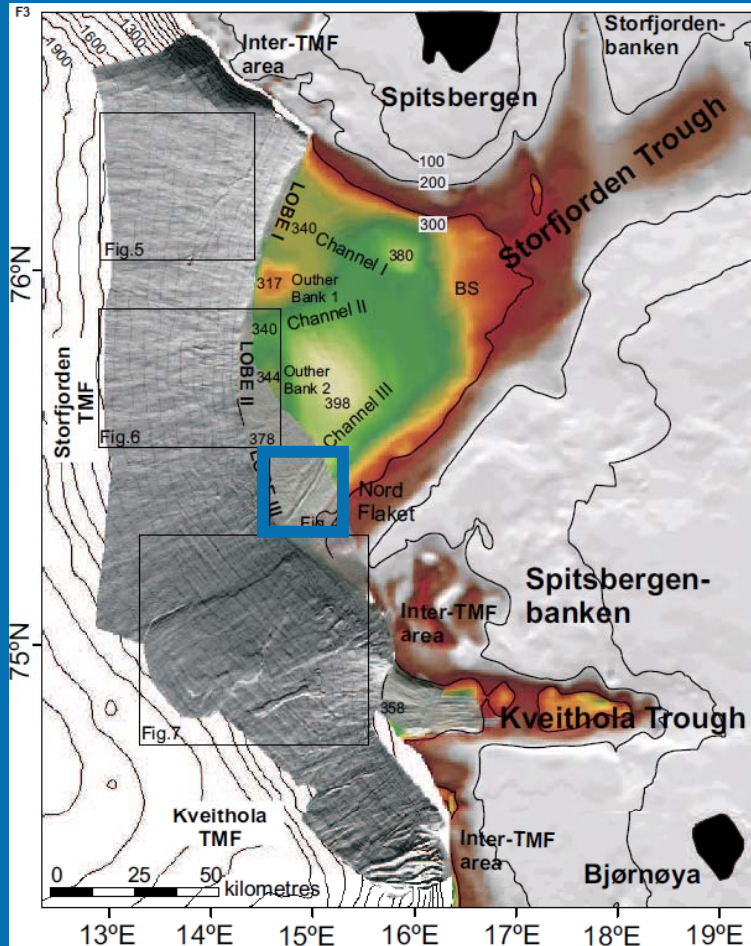


Pedrosa et al., in press, Marine Geology

Rebesco et al., joined Italian and Spanish dataset



# Multiple keel (?) Iceberg ploughing



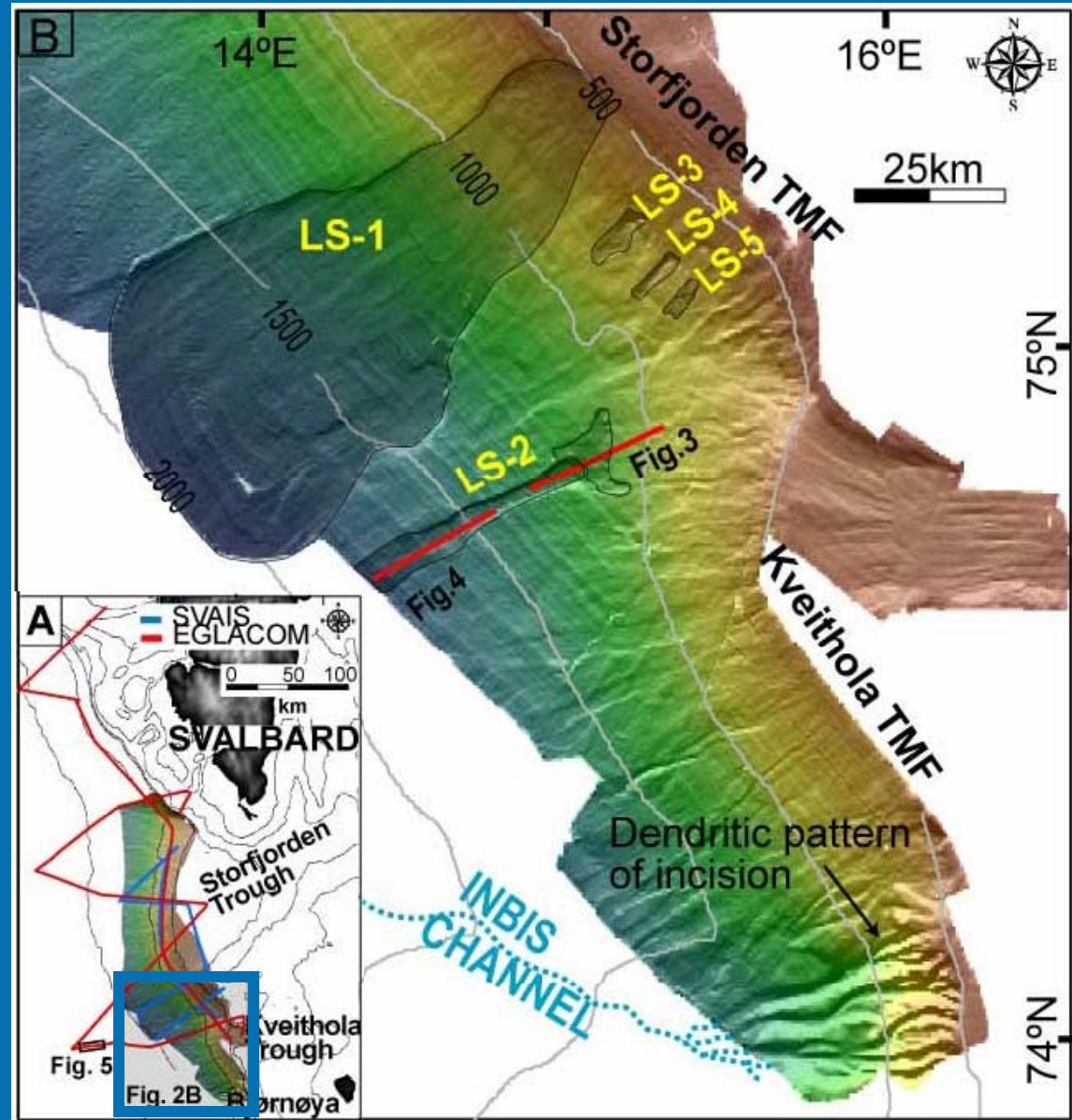
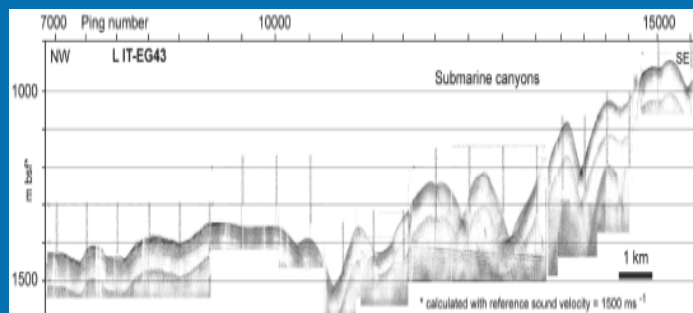
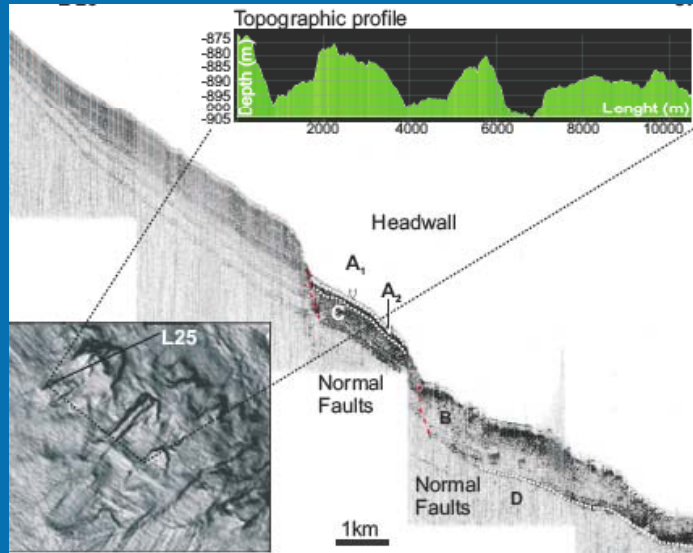
Pedrosa et al., in press, Marine Geology



Rebesco et al., joined Italian and Spanish dataset



# Canyons and landslides



Lucchi et al.; Rebesco et al., et al., in press, Springer

Rebesco et al., joint Italian and Spanish dataset

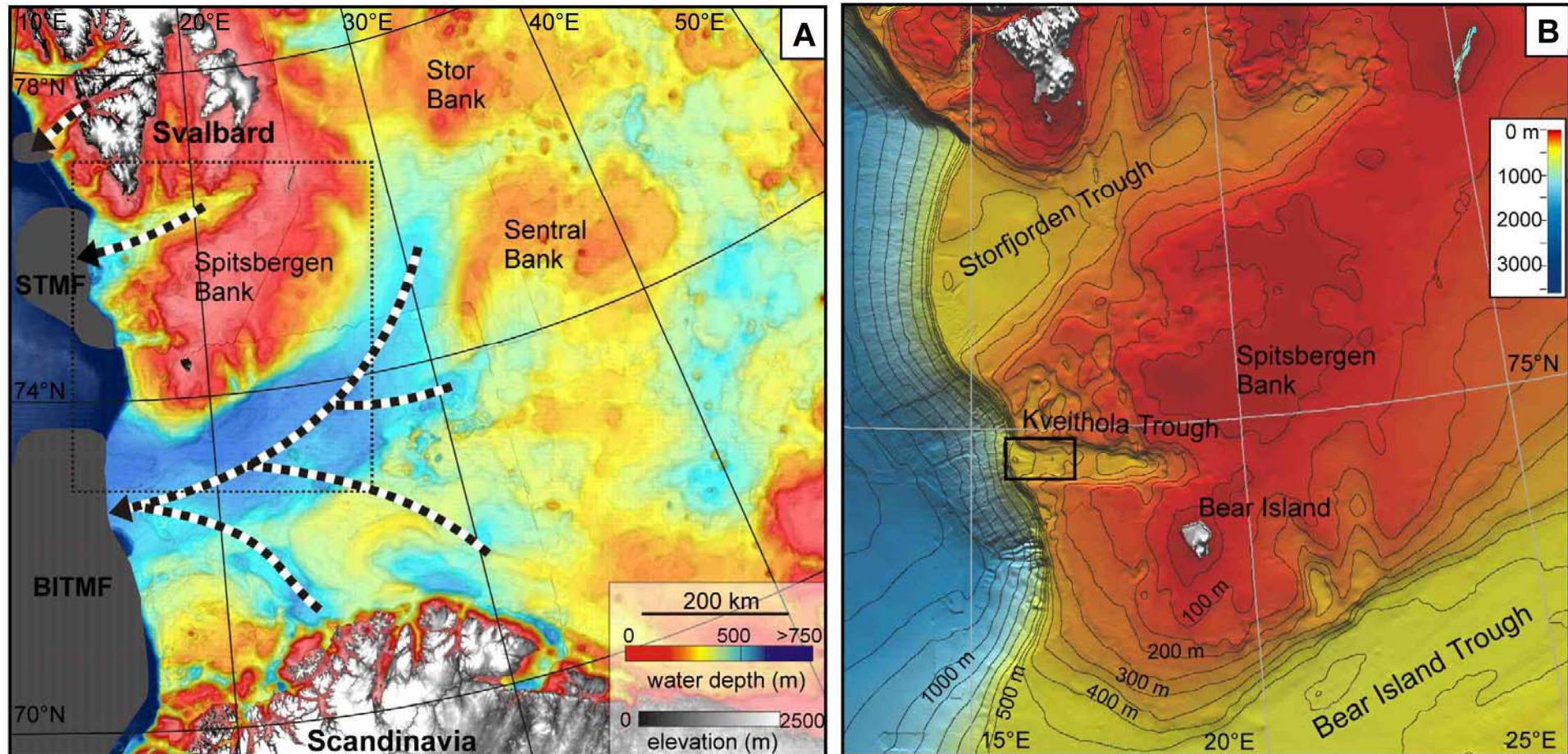


# Kveithola Trough, Location map (Fig.1).

A) Bathymetry of the Barents Sea (IBCAO).

2

B) Study area (Ottesen et al. (2006) + EGLACOM and SVAIS data).



Rebesco et al., joint Italian and Spanish dataset

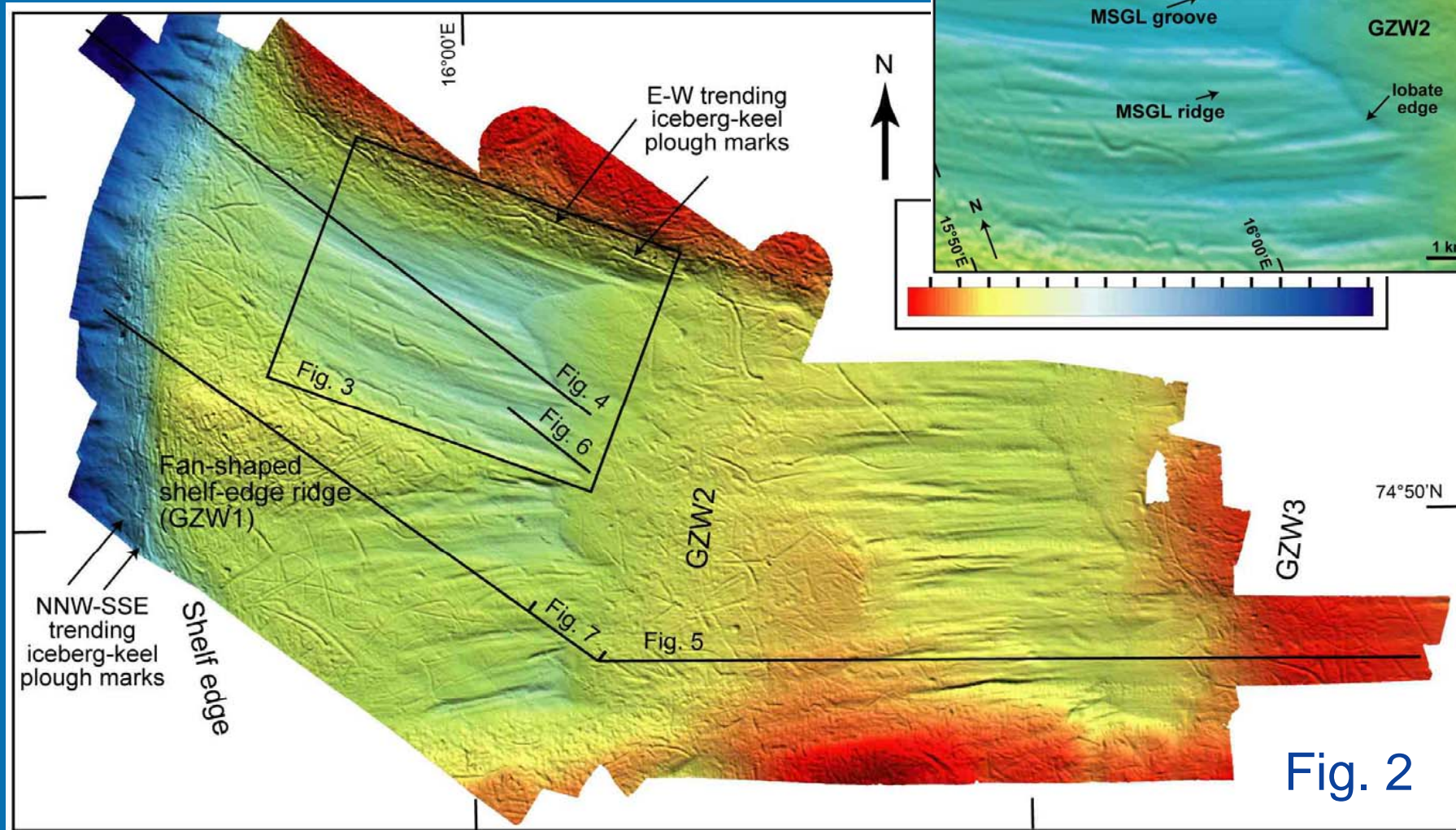
Rebesco et al., et al., 2011, Marine Geology





# Kveithola Trough, swath bathymetry

Mega Scale Glacial Lineations (MSGSL) overprinted by transverse Grounding Zone Wedges (GZW)

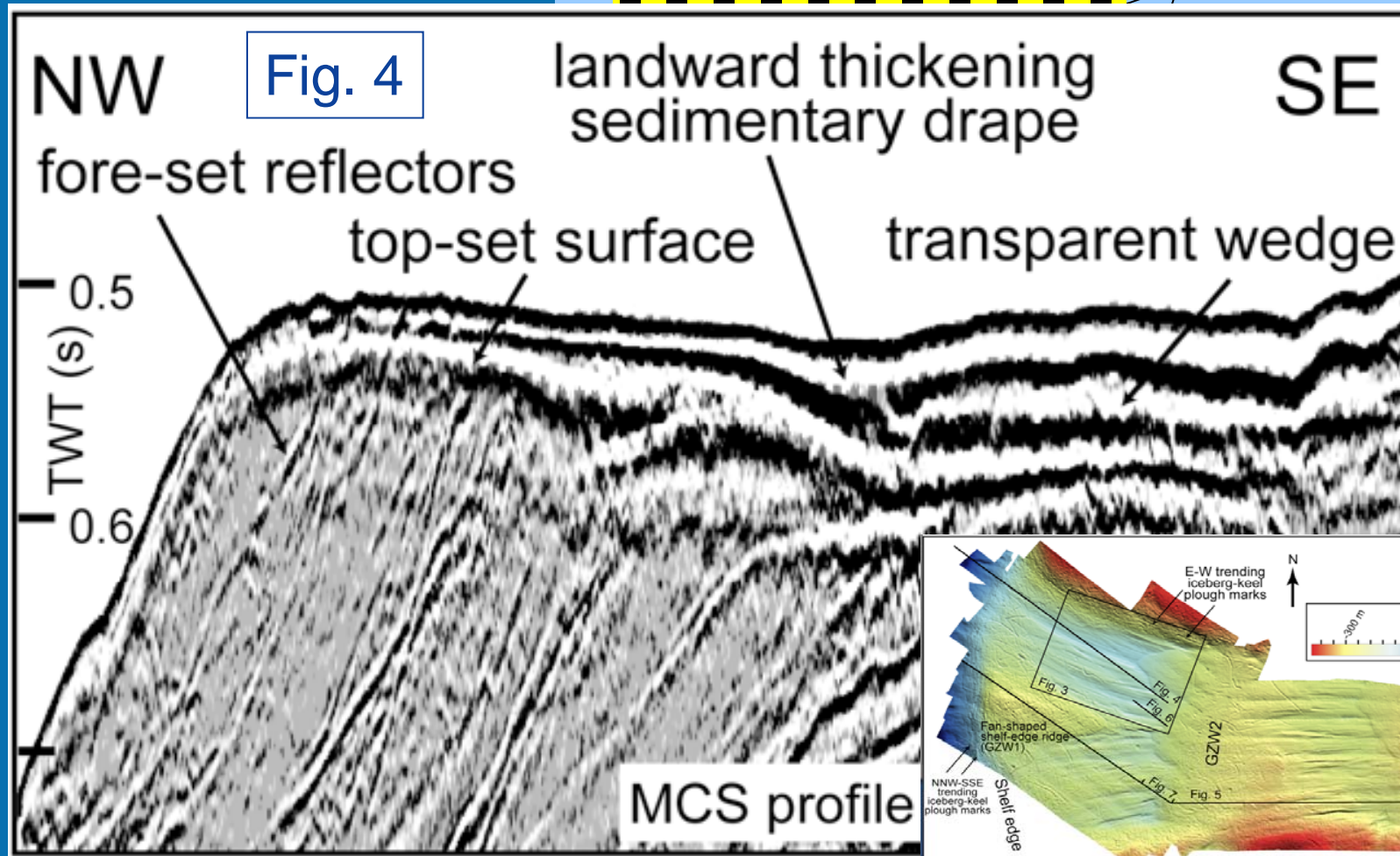


Rebesco et al., et al., 2011, Marine Geology

Rebesco et al., joint Italian and Spanish dataset



# Multi-channel seismic reflection profile IT\_EG-06: gross sub-bottom structure of the Kveithola Trough

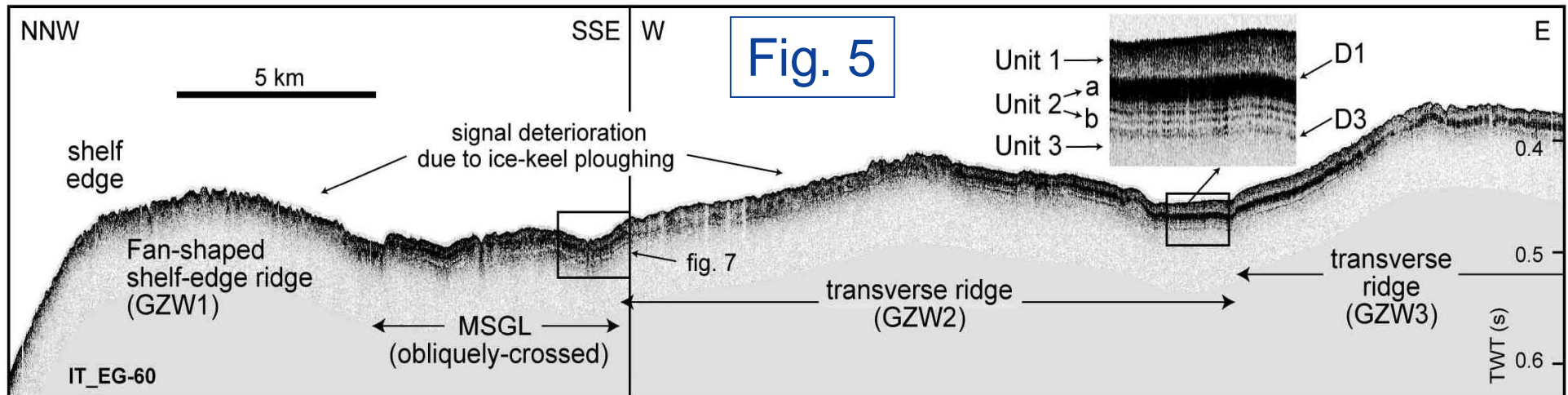
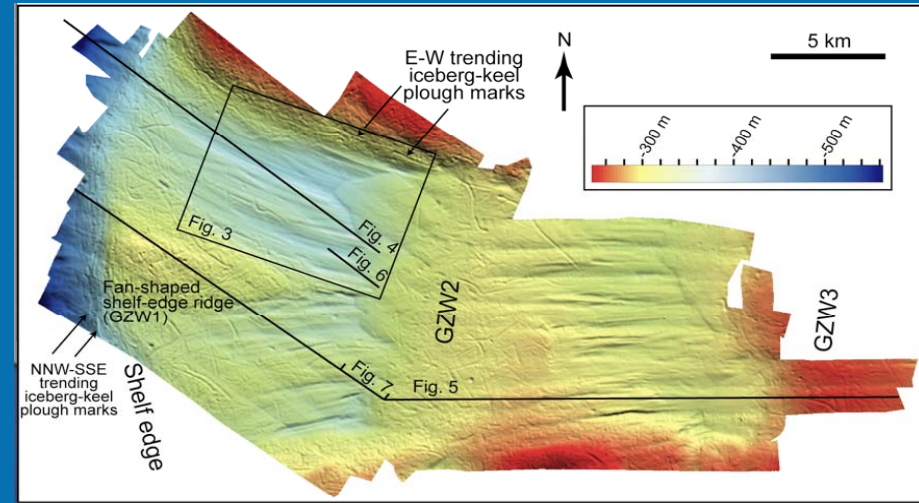


Rebesco et al., et al., 2011, Marine Geology

Rebesco et al., joint Italian and Spanish dataset



CHIRP profile IT\_EG-60,  
 sub-bottom characteristics:  
 Unit 1 = homogeneous,  
 Unit 2 = laminated,  
 Unit 3, transparent with MSGL  
 and transverse (GZW) ridges



Rebesco et al., joint Italian and Spanish dataset

Rebesco et al., et al., 2011, Marine Geology



# Close-up of CHIRP profiles IT\_EG-53 and -60: sub-bottom details of the transparent wedge and of the sedimentary drape

Fig. 6

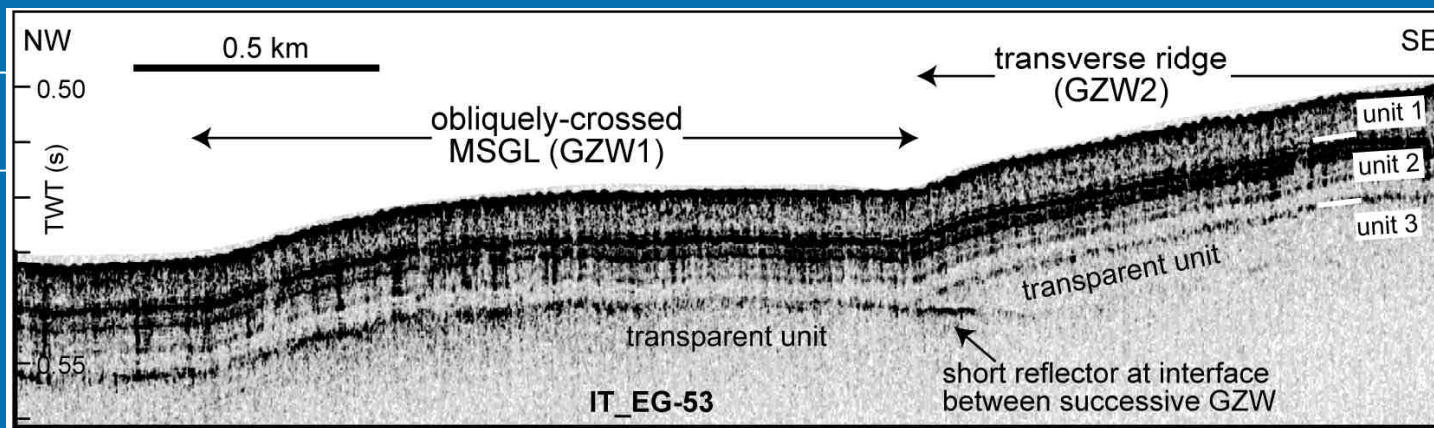
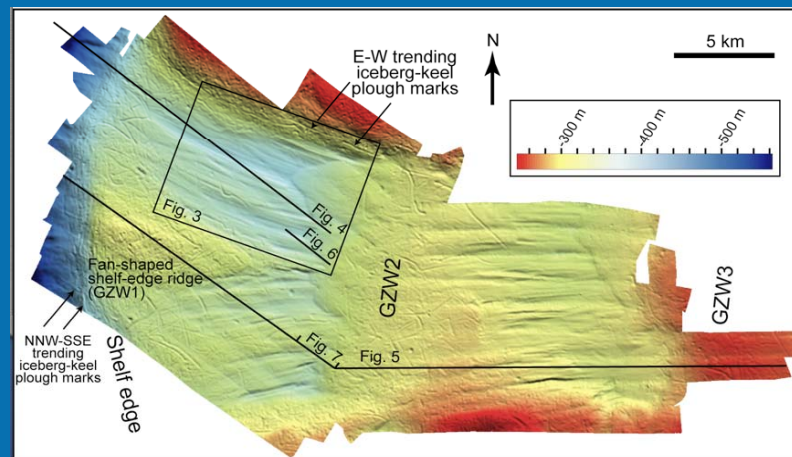
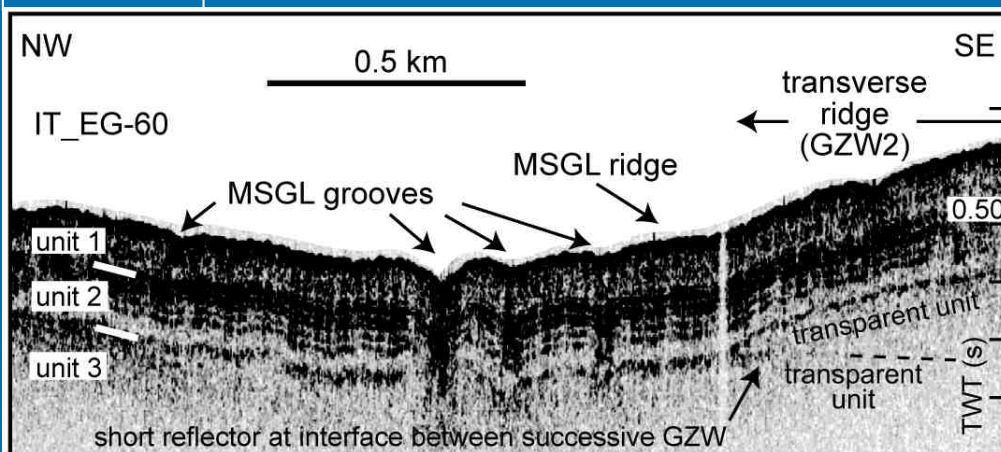


Fig. 7



Rebesco et al., et al., 2011, Marine Geology

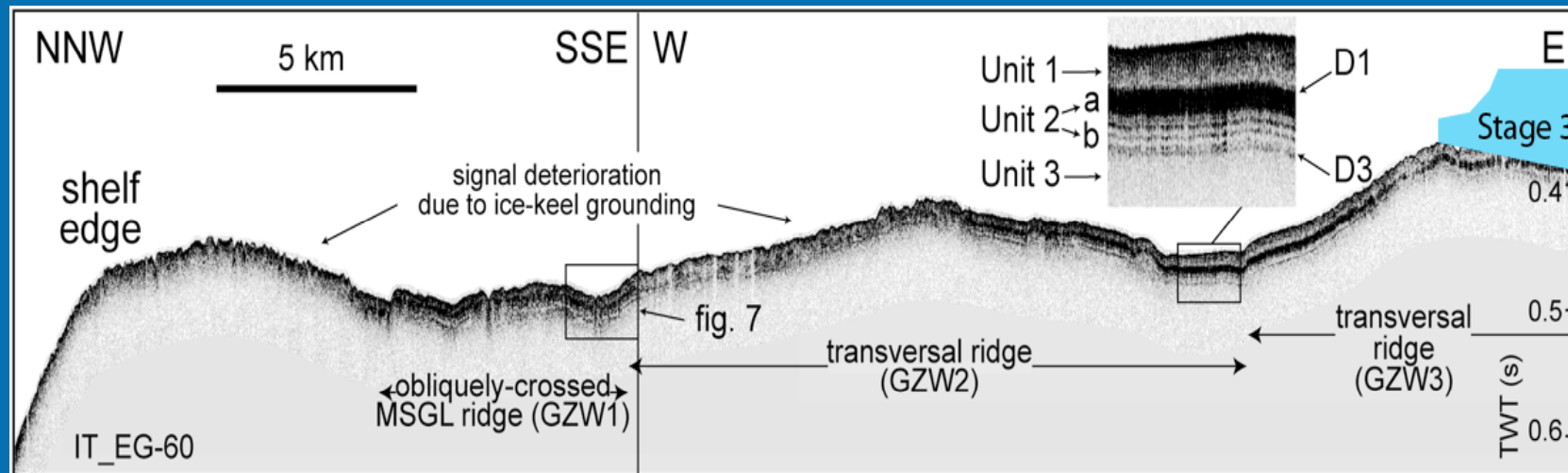


Rebesco et al., joint Italian and Spanish dataset



## Interpretation:

The series of transverse GZW ridges was produced during successive stillstands of an episodic deglaciation.



Rebesco et al., et al., 2011, Marine Geology



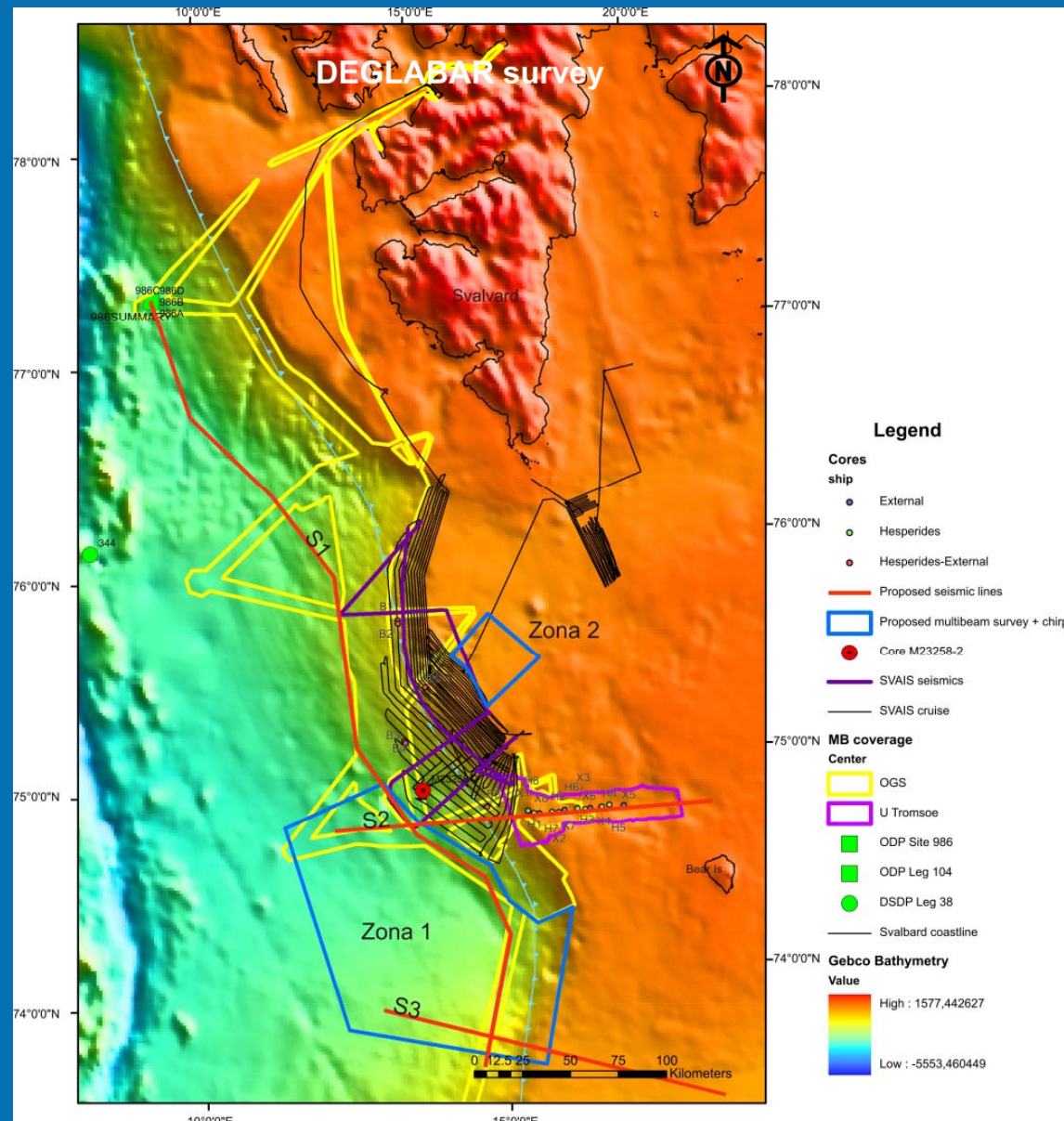
Rebesco et al., joint Italian and Spanish dataset



# Future Cruises:

DEGLABAR Cruise  
for additional  
bathymetric survey  
R/V Hespérides  
SIMRAD EM120  
EM1002S

July 2012



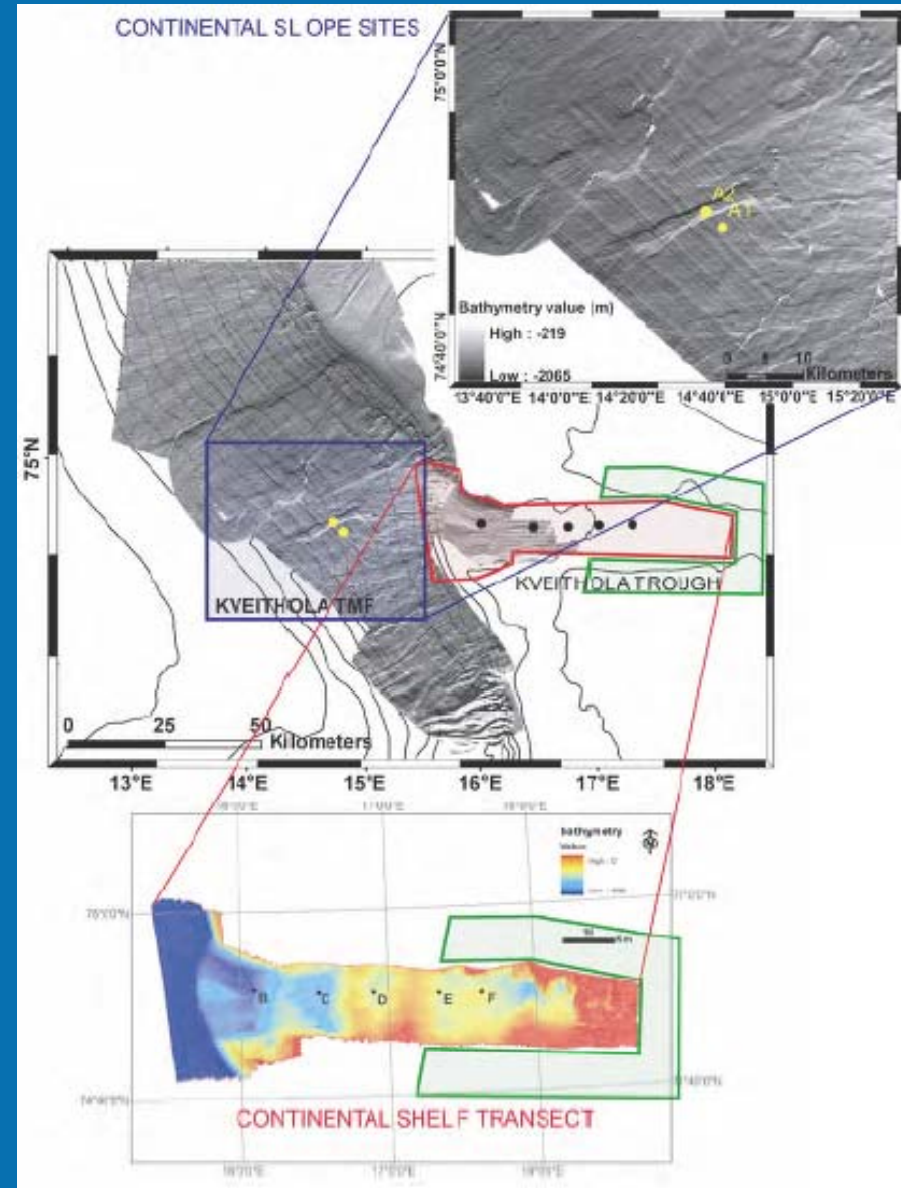
Rebesco et al., joint Italian and Spanish dataset



CORIBAR proposal to  
German DFG for MeBo  
Drilling on board R/V  
Maria S. Merian

SIMRAD EM 120 and  
EM1002

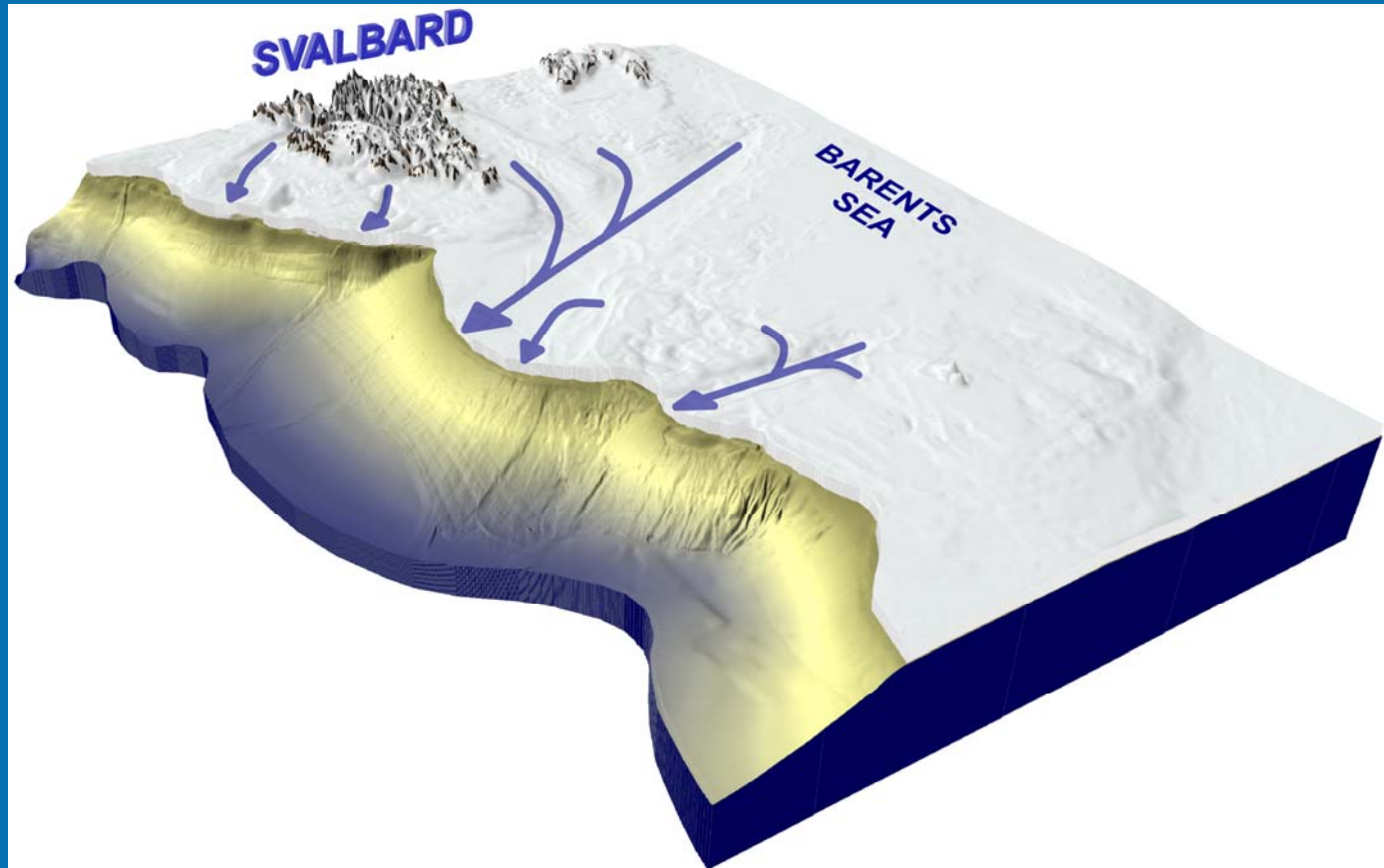
To be confirmed



Rebesco et al., joint Italian and Spanish dataset



<http://sites.google.com/site/ipynicestreams/>



# Thanks for your attention



Rebesco et al., joint Italian and Spanish dataset

