

GLANAM

G l a c i a t e d N o r t h A t l a n t i c
M a r g i n

Bimonthly Newsletter

25.12.2015 Issue 8

This issue

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Work in progress by Björn Morén

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Some laboratory work and some Christmas shopping with addictive Julmust in Stockholm.

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Conferences

Riccardo Arosio will attend the QRA Annual meeting at Royal Holloway University in London.

He is going to present new insights on the deglaciation of the Hebrides Shelf, Scotland

Check out the latest papers!

Katharina Streuff on palaeosurges in Kongsfjorden, Svalbard

<http://link.springer.com/article/10.1007/s41063-015-0003-y>

Benjamin Bellwald on mass movements in Hardangefjorden, West Norway

http://link.springer.com/chapter/10.1007%2F978-3-319-20979-1_7



View of Esmarkbreen in Ymerbukta, Svalbard

GLANAM towards 2016

Dear readers, once again the GLANAM Newsletter changes skin. 2016 will be a pretty busy year for the fellows; major deadlines are seen on the horizon and the time for anything else than work related to the PhD project will be much reduced. For these reasons the news presented will be more concise and technical. As the fellows get busy with their thesis and publications we will endeavour nonetheless to keep you updated with the latest results, publications and the major events to which GLANAM members will

take part.

Overall, 2015 has been a fruitful year for the ITN; after a successful Mid-term Review from the EU officers and already several contributions to the understanding of the Glaciated North Atlantic Margin, we are now moving towards the last phases of this Network.

We have seen the first member, Amandine Auriac, leave. Now I would like to say a proper goodbye and thanks to Katrien Heirman. Katrien has been a Postdoctoral member of GLANAM working together with Tove Nielsen at

GEUS; she has now moved on to the Earth Science Division in the



UNESCO headquarters in Paris. On behalf of the entire Network I would like to congratulate Katrien and wish her good luck with her, plainly bright, future.

Old friends leave and new researchers arrive. Jens Karstens is the new postdoctoral fellow that has joined GLANAM a few months ago. Jens will be

working in Bergen under the supervision of Haflidi Haflidason.

This is all for now, a Merry Christmas and Happy New Year to you all.

Riccardo Arosio

Post-LGM breakup and episodic retreat of the Norwegian Channel Ice Stream

The Norwegian Channel is located off the coast of southern and western Norway and is a glacial trough that, during glaciations, was occupied by an ice stream, the Norwegian Channel Ice Stream (NCIS) (Fig. below; Sejrup et al. 2003) that has been suggested to reach the continental shelf break

during Marine Isotope Stages 2, 6, 8, 10 and 12 (Hjelstuen et al. 2005).

Along the Norwegian Channel, there are number of grounding-zone wedges and end moraines (Morén et al. in prep), indicating

Models of the NCIS broadly agree with the landform record

thought to be inherently unstable (Schoof 2007), this not entirely

unexpected, even though Jamieson et al. (2012) showed that ice streams on reverse-sloping

beds can be stable under certain conditions,

an episodic retreat pattern, with a series of standstills or slowdowns (Dowdeswell et al. 2008). These ice-marginal landforms are most common in the outer part of the Norwegian Channel, showing that the retreat was more episodic in that part compared with the inner parts of the channel. The Norwegian Channel is reverse sloping from a threshold outside Stavanger to the Skagerrak and because reverse-sloping beds are

such as narrowing channel widths. Preliminary results from flowline modelling of the NCIS seem to broadly agree with the style of deglaciation suggested by the landform record, with the grounding line slowing down or stopping at the locations where grounding-zone wedges and end moraines are found and retreating much faster in the Skagerrak (Fig. 2).

There has been some debate about the timing and style of the breakup of the NCIS. Svendsen et al. (2015) suggested that, based



on cosmogenic exposure ages from the island of Utsira, located in the Norwegian Channel off Stavanger, the NCIS had retreated past that location as early as 20 ka. However, Morén et al. (in prep) compiled and recalibrated radiocarbon ages obtained from sediment cores along the Norwegian Channel and together with new radiocarbon ages from five cores along the Norwegian Channel an age-distance model was created. The model showed that the NCIS retreated from the continental shelf break at around 19.1 ka, before reaching the Troll area outside Bergen at around 18.7 ka and the island of Utsira at around 18.4. The inner part of the Skagerrak, where the Norwegian Channel starts, was deglaciated at around 17.5.

The deglaciation ages in the model are based on a mean retreat of 450 m a⁻¹, which is higher than the

mean retreat rates reported from, for example, Antarctica (Livingstone et al. 2012), and the entire Norwegian Channel was deglaciated in about 1500 years.

Björn Morén

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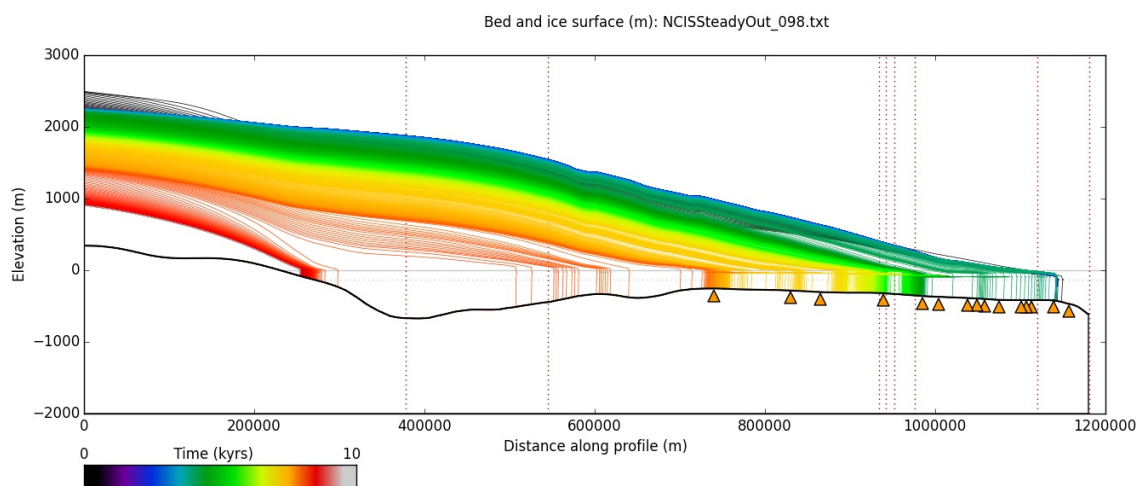


Fig. 2. Modelled ice-stream retreat of the Norwegian Channel Ice Stream illustrating grounding-line movement, with slower retreat in the outer part of the channel and rapid retreat in the reverse-sloping Skagerrak. The orange triangles show mapped grounding-zone wedges.

Lab work and Christmas in Stockholm

With 150 kilos of sediments after a successful cruise onboard of the Helmer Hanssen in September, I have temporarily left Svalbard to carry out some lab work in the Department of Geological Sciences at Stockholm University. This department is a little bit like my second home since I spent five years here during my bachelor's and master's degrees. More importantly it is also, just like other departments, a great place to do marine geology. Arctic and Antarctic often get into focus here when cruises on the icebreaker Oden are planned and organized. By the way, Oden was the first non-nuclear icebreaker to reach the North Pole, which happened in 1991. Also the facilities in the department are great. I am here to scan sediment gravity cores with a Multi-Sensor Core Logger, Itrax XRF, Malvern, and also to simply measure shear strengths. Busy days in other words, but it is going quite well. I was asked to tell something about the Christmas atmosphere in Longyearbyen. Obviously it is hard to report it from here now, so instead I will tell you something about

Stockholm's Christmas atmosphere.

I used to be reminded that Christmas was coming in Stockholm when I started finding "Julmust" in the stores. Julmust is a very sweet soda that Swedes usually like and foreigners not. Nowadays they start selling Julmust already in October so it is not the best indicator for Christmas anymore. Anyway, for me that is a good thing since I can enjoy the beverage for a longer time! What I moreover like with the Christmas season in Stockholm is that many of the parks, squares and public places are nicely decorated with lights, which is needed in the dark. It is worth taking a walk looking at that, even though downtown is already very crowded!

Merry Christmas and a happy New GLANAM Year to all of you!

Oscar Fransner



Editor:

Riccardo Arosio

Assistants:

Björn Morén
Oscar Fransner

Advisors

Prof. Mike Bentley
Prof. Colm O'Cofaigh

email:

riccardo.ariosio@sams.ac.uk

web:

www.glanam.org

GLANAM is an Initial Training Network (ITN) funded under the EU Marie Curie Programme.

