

SCAR Fellowship report 2012/2013

Participant:

Dr Bethan Davies

Centre for Glaciology, Department of Geography and Earth Sciences, Aberystwyth University, Wales, UK.

Now at: Centre for Quaternary Research, Department of Geography, Royal Holloway, University of London, UK.

Project title:

Understanding Holocene glacier dynamics in the NE Antarctic Peninsula, and projecting future glacier behaviour under a warming climate

Host:

Dr Nicholas Golledge and Professor Timothy Naish

Antarctic Research Centre, Victoria University of Wellington, New Zealand

Duration:

1st March 2013-31st August 2013

6 month stay at Victoria University of Wellington

Work conducted during stay:

The aim of this project was to use a glacier flowline model to analyse glacier mass balance sensitivities on James Ross Island, northern Antarctic Peninsula, and to use this model to investigate the behaviour of this glacier during the Holocene and into the next two centuries. This involved learning the modelling technique, developing coding skills, assimilating relevant glaciological and climatic input data, and running the model through various tuning experiments, sensitivity tests, response time tests, and transient runs through the Holocene and through the next two centuries. The work involved an international team, with model code provided by colleagues at Victoria University of Wellington, and forcing data provided by colleagues in The Netherlands.

The resulting data have been presented at several international conferences, including the SCAR Open Science Conference. The results have been published in *Nature Climate Change*.

I also worked with several colleagues at VUW who have interests in science communication. They encouraged the development of a peer-reviewed journal article on online science communication, several talks at conferences, and the convening of a session on science communication at the American Geophysical Union conference. This was an additional bonus to the scientific work undertaken at VUW.

Publications:

Davies, B.J., Gолledge, N.R., Glasser, N.F., Carrivick, J.L., Ligtenberg, S.R.M., Barrand, N., van den Broeke, M.R., Hambrey, M.J., and Smellie, J.L., 2014. Modelled glacier response to centennial temperature and precipitation trends on the Antarctic Peninsula. *Nature Climate Change*. DOI: **10.1038/nclimate2369**

Davies, B.J., and Glasser, N.F., 2014. Analysis of www.AntarcticGlaciers.org as a tool for online science communication. *Journal of Glaciology* 60(220), 399-406. Correspondence paper.

Conference presentations:

August 2014. *Modelled glacier response to temperature and precipitation trends on the Antarctic Peninsula*. Scientific Committee for Antarctic Research (SCAR) Open Science Conference, Auckland, New Zealand. Oral presentation.

May 2014. *Glaciers on the northern Antarctic Peninsula are more sensitive to temperature than precipitation*. International Glaciological Society International Symposium, Chamonix.

April 2014. *Glaciers on the northern Antarctic Peninsula are more sensitive to temperature than precipitation*. EGU General Assembly, Vienna.

December 2013. *Holocene glacier dynamics on James Ross Island, NE Antarctic Peninsula*. AGU Fall Meeting 2013, San Francisco, USA.

December 2013. *Analysis of AntarcticGlaciers.org: a website used to communicate glaciology by an academic*. AGU Fall Meeting 2013, San Francisco, USA. **Invited Speaker.**

Financial Statement:

Expenses	Cost	NZ \$
Return travel to airport	£ 110.00	\$ 207.55
Air flights	£ 940.60	\$ 1,774.72
Living expenses and misc.	£ 1,188.00	\$ 2,241.51
Accommodation	£ 3,000.00	\$ 5,660.38
SCAR Conference (August 2014)		
Flights	£ 1,259.85	\$ 2,377.08
Conference registration	£ 331.25	\$ 625.00
Accommodation (Airport Lodge)	£ 54.91	\$ 103.60
Accommodation (£50 / night for 6 nights)	£ 235.39	\$ 444.13
Travel and Subsistence (£40/day)	£ 240.00	\$ 452.83
Return train travel to airport	£ 80.00	\$ 150.94
Total	£ 7,440.00	\$ 14,037.74
Total awarded:		
US\$	\$ 11,612.00	
£	£ 7,431.68	

Acknowledgements:

I am very grateful to SCAR for this fellowship, which allowed me to gain new collaborations, develop new modelling skills, and extend and further develop my research.

I am grateful to my hosts at Victoria University of Wellington, where I was welcomed with open arms. I am particularly grateful to Nicholas Golledge for his assistance in the modelling work, and to Professor Tim Naish for hosting. I met many others, with whom I hope to maintain long term collaborations.