

Welcome to the Geography Programme Newsletter!



Classifynder workshop participants. From left to right: Yulia Arzhaeva, Anne-Elizabeth Bjune, Arild Breistøl, Elizabeth Levac, Leanne Bischof, Ken Mercer, Colin Plaw, Kat Holt (holding Classifynder machine), John Birks, Don Bailey, Gary Allen, Bob Hodgson, (not pictured – John Flenley).

Move to INR

There are a few changes coming to the programme next semester – in fact quite a big change: the physical geography lecturers are moving across the university to the Institute of Natural Resources in the College of Sciences. Don't worry though: this is not the end of the geography programme! It's an attempt to better align research trajectories with others in the university. We'll still be teaching geography as a single programme in the future.

*Dr Martin Brook,
Programme Coordinator*

Classifynder Workshop Draws More International Visitors

Some of the dedicated Compass Points readers out there may remember an article from the Autumn/Winter 2009 Issue that gave an account of the visit of Professor Keith Bennett from Queens University Belfast. Professor Bennett was visiting the Geography department to learn about the 'machine formerly known as AutoStage', which is a system aimed towards the automated counting of pollen. The system, now referred to as 'Classifynder' is the product of many years of research and development by staff in the School of Engineering and Technology (SEAT) in collaboration with staff in the Geography programme (Emeritus Professor John Flenley and Dr Kat Holt).

Earlier this year, Geography and SEAT staff again played host to more international visitors who came all the way down to Massey University to attend a workshop on the Classifynder, including academics and researchers from Bergen University in Norway, CSIRO in Australia, and Bishops University in Canada. The Bergen group comprised palynology post-doc Anne-Elizabeth Bjune, and computer programmer Arild Breistøl, lead by internationally renowned and well-respected palaeobotanist Professor H. John B. Birks. The Bergen team plan to apply the two systems they have purchased to their fossil pollen work in the Norway area. CSIRO representatives were Leanne Bischof and Yulia Arzhaeva, who specialise in image processing and classification. They have now taken possession of a Classifynder system which CSIRO scientists plan to use to identify pollen carried by Australian insects. Lastly, Elizabeth Levac of Bishops University plans to apply her Classifynder in her research on palynology of marine sediments and aeropalynology (pollen forecasting).

During the workshop participants were introduced to the hardware and software components of the system, and trained on how to 'drive' it on some of their own sample material they had brought with them. Much time was spent discussing the potential of the machine and possible applications to a range of palynological problems, as well as barraging the engineers with a 'wish list' of features for the Mark IV Classifynder. John Birks remarked that the system has the potential to revolutionise the science of palynology, which coming from such an eminent and well-respected member of the palynology community was very encouraging for the Classifynder development team.

Association of American Geographers Conference in Seattle 2011

by *Mike Roche*

From April 12th to 16th I attended the Association of American Geographers conference in Seattle, my first attendance at an AAG since the '99 conference in Honolulu. Airport security has changed a bit since then and I experienced the retina scan, thumb and palm print scans and the 'Total Recall' body X-Ray!

With 7000 participants the meeting tends to actually become a thread of themed presentations. I reported as part of the Marsden Funded Biological Economies project in a series of sessions on food production and consumption that brought together researchers from NZ and the UK. Incidental benefits included attending the plenary address given by David Lowenthal on 'Geography and the humanities', and catching up with contemporaries now teaching in the US former students now working in the UK university system.

I also got the chance to visit the University of Washington campus to look at back issues of a hard to find forestry journal relating to my research into colonial forestry networks. There are some significant Massey links to the university in that Keith Thomson, the first Dean of Social and Professor of Geography at Massey, completed his PhD there in the late 1940s, Richard Le Heron (now Professor at Auckland), Iain Hay (Flinders) and Patrick Aldwell (Lincoln) followed in the 1970s and 1980s. I did have a look at the geography department but more of my attention (a function of other research and teaching interests) was captured by the University war memorial (see picture). Being more versed with the iconography of Australian war memorials this one was certainly quite different!



University of Washington WWII Memorial for former students. A bronze plaque indicates that the design of the plaza represents the interruption to lives of those in war service. The inner circle of rocks represents the destruction of war and the outer the search for world peace. The iconography contrasts strongly with that employed in New Zealand for WWI and WWII.

European Geosciences Union General Assembly 2011, Vienna, Austria

3-8 April 2011

by *Martin Brook*



St Stephen's Cathedral, Stephansplatz, Vienna

I attended the EGU General Assembly 2011 in Vienna in April. This included almost 13,000 presentations in 707 conference sessions involving 10,725 scientists from 96 countries (including 24 from New Zealand), of which 28% were students! In order to accommodate so much geoscience, the meeting took place in the impressive modern setting of the Vienna International Centre (VIC), at Kaisermühlen. The centre has been home to numerous international organizations since 1979, including the International Atomic Energy Agency (IAEA) and the United Nations Industrial Development Organization (UNIDO). I gave 3 papers, 1 oral and 2 posters, but perhaps more than anything, such large conferences are terrific networking opportunities, and in this sense, I got more out of the conference than any other I have attended. GNS also had a stand, attended by Mike Sim, and it seems too much of a coincidence that out of 10,000+ delegates, it was a New Zealand delegate that won some bottles of Marlborough Sauvignon Blanc in Mike's GNS wine draw! The social side of the conference was great too, with dinners at traditional Viennese restaurants, including the eateries in Grinzing, a suburb on the northwest edge of Vienna. Art and culture have a long tradition in Vienna, including theatre, opera, classical music (Mozart, Strauss), fine arts, together with impressive architecture (baroque, Romanesque etc.). With other EGU delegates, I also did a day trip to Bratislava in Slovakia, which included a fast boat trip back to Vienna along the River Danube. All in all, a very enjoyable and worthwhile trip! The next EGU General Assembly 2012 is 22-27 at the same Vienna venue.



The GNS Riegl terrestrial laser scanner set up on the terminus of Franz Josef Glacier

Laser scanning the surface of Franz Josef Glacier

In early November 2010, Martin Brook and Rob Dykes took part in an international, multi-agency project looking at surface melt on the lower part of Franz Josef Glacier in South Westland. The project (with other researchers from GNS, University of Queensland, University of Canterbury, and Northumbria University) involved high-resolution surveying of the ice surface from two survey stations, every hour, for 24 hours. Most previous high-resolution surface melt studies on glaciers have taken place during the day time. However, on many glaciers, such as in New Zealand, due to the temperate maritime climate and low terminus elevations (~300 m above sea level), the energy balance is more complex, and melting of ice continues through the night as well. This is because at night, latent and sensible heat flux (heating from the atmosphere) is roughly as important as radiation during the day. In order to measure potential micro-scale changes in surface melting (on the lower part of Franz Josef, surface melt is typically about 10cm per day in summer), we used two terrestrial laser scanners and a GPS (global positioning system), together with ablation stakes drilled into the ice surface. These stakes allowed us to check the melt rates measured by the laser scanners. Laser scanners provide highly accurate, three-dimensional images enabling scientists to view and manipulating point-clouds in computer software. By sweeping a laser beam over the glacier surface, the laser scanner is able to record millions of 3D points. These x , y , z measurements ('point-clouds') can be imported into geographical information system software and displayed and analysed as 3D digital terrain models. The ice surface terrain models, one collected every hour for 24 consecutive hours, then provide a model of the evolution of the ice surface, due to melt. However, the glacier was also moving very slowly, and so to quantify this, and take it into account, a network of real-time kinematic Trimble Zephyr GPS receivers was installed on the ice surface. This meant the effect of ice flow on the digital terrain models could be accounted for. At the other end of the technology scale, traditional ablation poles were drilled into the ice surface to measure melt, and help calibrate the high precision laser scanning data.

145.303 Fieldwork: Alpine Physical Geography

Another successful visit to the West Coast in early January to measure ablation and velocity of the Fox Glacier and proglacial stream dynamics. Perfect weather and a keen group of students made for an excellent week all round. **Book early to avoid disappointment – this paper is capped at 20!** Dates for 2012: 9-16 January. Anonymous student feedback says, "...more than a fieldtrip. It is an adventure" "definitely the best paper!!"



Photographs from the Fox Glacier fieldtrip

Recent Publications

- Dean, JF, **Fuller, IC**, Phillips, E, Massey, C & Marden, M (2010). Quantifying slope-channel coupling in an active gully and fan complex at Tarnedale, Waipaoa catchment, New Zealand. *GeoScience* **2010/3**, 1-18. <http://muir.massey.ac.nz/handle/10179/1856>
- Dykes RC, Brook MS, Robertson CM, Fuller IC** (2011) Twenty-first century calving retreat of Tasman Glacier, Southern Alps, New Zealand. *Arctic, Antarctic and Alpine Research* **43**: 1-10.
- Dykes, R.C., Brook, M.S., Robertson, C.M. & Fuller, I.C.** (2011). Twenty-First Century Calving Retreat of Tasman Glacier, Southern Alps, New Zealand. *Arctic, Antarctic and Alpine Research*, **43**, 1-10.
- D. T. Feek**, M. Horrocks, W. T. Baisden and J. Flenley (2011) The Mk II sampler: a device to collect sediment cores for analysis of uncontaminated DNA. *Journal of Paleolimnology* **45**(1): 115-119.
- Fuller, I.C.** & Marden, M. (2011). Slope-channel coupling in steepland terrain: a field-based conceptual model from the Tarnedale gully and fan, Waipaoa catchment, New Zealand, *Geomorphology*, **128**, 105-115.
- Fuller, I.C.** (2010). River Morphology in New Zealand: Past and Present. In Williams, G. & Martin, B. (Eds) *Responsible Governance of Watersheds*, pp.111-119.
- Fuller, I.C., Brook, M.S. & Holt, K.A.** (2010). Linking teaching and research in undergraduate Physical Geography papers: the role of fieldwork. *New Zealand Geographer*, **66**, 196-202.
- Holt, K.A.**, Lowe, D.J., Hogg, A.G., & Wallace, R.C. (2010). How far do TVZ tephra go? Distal occurrence of Whakatane tephra and the potential for cryptotephra studies in the Chatham Islands. In: Eccles, J.D., Grigor, M.R., Hoskin, P.W.O., Hikuroa, D.C.H. (eds). Abstract Volume, GeoNZ 2010 Conference, Auckland, New Zealand. *Geoscience Society of New Zealand Misc. Pub. 129A*: p.133
- MacDonald- Creevey, A.M.**, Neall, V.E., **Holt, K.A.** & Vandergoes, M.J. (2010). Multi-proxy record of late Holocene environmental change from Lake Colenso, Northern Ruahine Range. In: Eccles, J.D., Grigor, M.R., Hoskin, P.W.O., Hikuroa, D.C.H. (eds). Abstract Volume, GeoNZ 2010 Conference, Auckland, New Zealand. *Geoscience Society of New Zealand Misc. Publication 129A*: p.179.
- Milan, D.J., Heritage, G.L., Large, A.R.G. & **Fuller, I.C.** (2011). Filtering spatial error from DEMs: implications for morphological change estimation. *Geomorphology*, **125**, 160-171.
- Milnes C, **Brook MS**, Mansvelt JR (2010). Visitor perception of natural hazards at Whakapapa and Turoa ski areas, Mt Ruapehu. In: Eccles JD, Grigor MR, Hoskin PWO, Hikuroa DCH (eds). Abstract Volume, GeoNZ 2010 Conference, Auckland, New Zealand. *Geoscience Society of New Zealand Miscellaneous Publication 129A*: p. 193.
- Prince R.** (2010) Fleshing out expertise: The making of creative industries experts in the United Kingdom. *Geoforum* **41**: 875-884.
- Richardson, J.M. & Fuller, I.C.** (2010). Quantification of channel planform change on the lower Rangitikei River, New Zealand, 1949-2007: response to management? *GeoScience* **2010/2**, 1-26. <http://muir.massey.ac.nz/handle/10179/1618>
- Roche M.** 2011 'World War One British Empire Discharged Soldier Settlement: Orthodoxy and Revisionism in Overview, *History Compass* **9** (1), 1-15.
- Roche, M.** 2010 'Historical Research and Archival Sources', In Hay, I. (ed) *Qualitative Methods in Human Geography*, Oxford University Press, Don Mills, Ontario, pp.173-190.
- Schwendel, A.C., Death, R., Joy, M. & **Fuller, I.C.** (2011). A macroinvertebrate index to assess stream bed stability, *Journal of Marine & Freshwater Research*, **62**, 30-37.
- Schwendel, A.C., Death, R.G., **Fuller, I.C.** & Joy, M.K. (2011). Linking disturbance and stream invertebrate communities – how best to measure bed stability. *Journal of the North American Benthological Society*, **30**, 11-24.