

Willem G.M. van der Bilt (b. 15-01-1985, male, Dutch)

Date: 01-10-2017

Address: Grønnestølsveien 40b, 5073, Bergen, Norway
Tel. +47 45 12 86 12

Affiliation: University of Bergen, department of Earth Science
Bjerknes Centre for Climate Research
Allégaten 41, 5007, Bergen, Norway
willemvanderbilt@uib.no

Research interests: my research is geared towards understanding and utilizing the climate sensitivity of alpine glaciers to reconstruct Late Quaternary climate variability in Earth's high latitudes. I investigate sites near both poles - on Svalbard, Greenland, South Georgia and the Kerguelen islands. Though the methods I employ also encompass geomorphological mapping and remote sensing techniques, I primarily harness the potential of lake sediments as continuous records of past (glacier) change. My past (PhD) research mostly focused on fingerprinting the signature of glacial rock flour - reflective of variations in glacier extent. To do so, I employed a combination of established physical analyses as well as novel techniques like X-Ray Fluorescence (XRF) and CT scanning. My current research integrates this sedimentological approach with biomarker (alkenones) paleothermometry to help constrain the climate signature of past glacier change. As a scarcity of organic material often precludes precise 'classic' ^{14}C dating of high-latitude (lake) sediments, I also started utilizing the geochronological potential of isochronously deposited layers of microscopic volcanic ash (tephra). My future research, secured by a number of recent grants, will further expand the outlined multi-disciplinary method toolbox with molecular paleohydrology (hydrogen isotopes) and (glacier) modelling techniques. When successful, this new approach will advance our understanding of Earth's climate system by yielding quantitative reconstructions of glacier size, precipitation and temperature – key parameters of atmospheric climate change.

EDUCATION

- 2013 – 2016** PhD, University of Bergen (UiB) & Lamont-Doherty Earth Observatory (LDEO)
Thesis: Towards a process-based understanding of Holocene polar climate change using glacier-fed lake sediments from Arctic Svalbard and Antarctic South Georgia
Supervision: Prof. J. Bakke (UiB) and Prof. W.J. D'Andrea (LDEO)
- 2006 – 2009** MSc Biogeology, Utrecht University (UU) and UNIS Svalbard, with distinction (A)
Thesis: Post Little Ice Age environmental change documented in lake sediments from Kongressvatnet, Spitsbergen
Supervision: Dr. W.Z. Hoek (UU), Dr. H. Cremer (TNO) and Dr. A. Hormes (UNIS)
- 2003 – 2006** BSc Earth Science, Utrecht University (The Netherlands), pass
Thesis: Global change and Amazon biomass, grade: A
Supervision: Prof. H. ter Steege (UU)

EMPLOYMENT

- 2017 – Present** Postdoctoral fellow, Earth Science department, University of Bergen (UiB)
- 2017 – 2017** Lecturer (non-tenured), Earth Science department, University of Bergen (UiB)
- 2016 – 2016** Researcher (Postdoctoral), Bjerknes Centre for Climate Research (BCCR)
- 2009 – 2012** Researcher, the Netherlands Environmental Assessment Agency (PBL)

KEY PUBLICATIONS (H-index = 5)

- In prep.** [van der Bilt, W.G.M.](#), Spagnolo, M., Born, A., Rea, B., Bakke, J. Non-linear responses of Holocene East Greenland climate to changing forcing: model and lake sediment evidence
- Submitted** Oppedal, L.T., Bakke, J., Paasche, Ø., Werner, J., [van der Bilt, W.G.M.](#) Cirque glacier rejuvenation and retreat on South Georgia during last 10 ka.

- Under review** Ólafsdóttir, S., Bakke, J., Stoner, J.S., Bradley, R.S, Gjerde, M., van der Bilt, W.G.M. Paleomagnetic secular variations as a tool for synchronizing Holocene Arctic lake sediment records at Svalbard. *Quaternary Science Reviews*.
- Under review** Bakke, J., Balascio, N.L., van der Bilt, W.G.M., Bradley, R.S., D`Andrea W.J., Gjerde, M., Ólafsdóttir, S., Røthe, T., De Wet, G. The Island of Amsterdamøya: a key site for studying past climate in the Arctic. *Quaternary Science Reviews*.
- 2017** van der Bilt, W.G.M., Lane, C.S., Bakke, J. Ultra-distal Kamchatkan ash on Arctic Svalbard: Towards hemispheric cryptotephra correlation. *Quaternary Science Reviews*
- 2017** van der Bilt, W.G.M., Bakke, J., Werner, J.P., Paasche, Ø., Rosqvist, G., Vatile, S.S. Late Holocene glacier reconstruction reveals retreat behind present limits and two-stage Little Ice Age on subantarctic South Georgia. *Journal of Quaternary Science*
- 2017** Sijtsma, F.J., van der Bilt, W.G.M., van Hinsberg, H., de Knecht, B., van der Heide, M., Leneman, H., Verburg, R. Planning nature in a highly urbanized country: an analysis of impacts of conservation policy scenarios in the Netherlands. *Helikon*
- 2016** van der Bilt, W.G.M., Bakke, J., Vasskog, K., Røthe, T., Støren, E.N. Glacier-fed lakes as paleoenvironmental archives. *Geology Today*
- 2016** van der Bilt, W.G.M., D`Andrea, W.J., Bakke, J., Balascio, N.L., Werner, J., Gjerde, M., Bradley, R.S. Alkenone-based reconstructions reveal four-phase Holocene temperature evolution for High Arctic Svalbard. *Quaternary Science Reviews*
- 2016** van der Bilt, W.G.M. Towards a process-based understanding of Holocene polar climate change. *Doctoral thesis*, University of Bergen, ISBN 978-82-308-3337-7, pp. 1-133
- 2015** van der Bilt, W.G.M., Bakke, J., Balascio, N.L. Mapping sediment–landform assemblages to constrain lacustrine sedimentation in a glacier-fed lake catchment in northwest Spitsbergen. *Journal of Maps*, 1-9
- 2015** van der Bilt, W.G.M., Bakke, J., Vasskog, K., D'Andrea, W.J., Bradley, R.S., Ólafsdóttir, S. Reconstruction of glacier variability from lake sediments reveals dynamic Holocene climate in Svalbard. *Quaternary Science Reviews*, vol. 126, pp. 201-218
- 2014** Westhoek, H., Van Zeijts, H., Witmer, M., van den Berg, M., Overmars, K., van der Esch, S., van der Bilt, W.G.M. Greening the CAP. An analysis of the effects of the European Commission's proposals for the Common Agricultural Policy 2020. PBL note 500136007
- 2011** van Hinsberg, A., van der Bilt W.G.M., de Knecht, B., Sijtsma, F.J., Leneman, H. The use of models in the Nature Outlook 2010-2040: challenges for nature conservation identified and assessed. *Landschap*, vol. 28, 4, pp. 199-209
- 2009** van der Bilt, W.G.M. Post Little Ice Age environmental change documented in lake sediments from Kongressvatnet, Spitsbergen. *TNO Netherlands Geological Survey report*, TNO-034-UT-2009-00266-B, Utrecht

GRANTS (total ≈ 15 800 000 NOK)

- 2017** co-applicant & WP leader, *NFR POLARPROG grant*, no. 267719/E10, 9 000 000 NOK
- 2017** lead applicant, *UiB alminnelige naturvitenskapelige research fund*, 10 000 NOK
- 2016** lead applicant, *UiB Global scholarship*, 50 000 NOK
- 2015** lead applicant, *Bjerknes (BCCR) fast-track initiative personal grant*, 120 000 NOK
- 2015** lead applicant, *Norwegian Research School in Climate Dynamics grant*, 15 000 NOK
- 2014** lead applicant, *NFR/SFU Arctic Field Grant*, 40 000 NOK
- 2014** co-applicant, *EU INTERACT transnational access grant*, 10 000 GBP
- 2014** lead applicant, *Meltzer stipend*, 25 000 NOK
- 2014** lead applicant, *EU Cost Action short stay grant*, 360 EUR
- 2012** co-applicant, *Dutch Science Council NWO grant*, no. 360-60-110, 700 000 EUR
- 2008** lead applicant, *Artic field grant*, 25 000 NOK
- 2007** lead applicant, *NUFFIC Erasmus grant*, 1000 EUR

TEACHING EXPERIENCE

- 2018** Program committee member, EGU training school: Glaciers, moraines and climate
2017 Co-supervisor, MPhil degree – S. Vineberg, Scott Polar Research Institute
2017 Examinator, BSc level, Introduction to Geology, University of Bergen
2017 Lecturer, BSc level, Introduction to Geology, University of Bergen
2017 Excursion leader, MSc level, Fieldwork in Quaternary Geology, University of Bergen and Queen Mary University of London
2016 Co-applicant, NOKUT Centre for Excellence in Education in Integrated Earth System education (iEARTH), University of Bergen
2012 Tutor, BSc level, Graduate School of Life and Earth Sciences, University of Amsterdam

PROFESSIONAL SKILLS

- Analytical** Physical, magnetic and chemical sediment analyses (e.g. Avaatech XRF scanner, Malvern Mastersizer 3000 laser granulometer, Bruker D8 Advance XRD system, Bartington MS 2E/3 sensors, 2G magnetometer), molecular paleoecology (alkenone paleothermometry, leaf-wax chain-length distribution, gas chromatography - FID), Mass Spectrometry (IRMS)
- Field** lake sediment coring and mapping in east Greenland (2014), northwest Spitsbergen (2014, 2017), Bear Island (2013), northern Norway (2013) and west Spitsbergen (2007-2009), hands-on experience with a range of gravity/piston coring and seismic systems
- Numerical** Geomatics (Esri ArcGIS and ENVI platforms), statistics (R programming environment, Canoco ordination package, MATLAB)
- Linguistic** Dutch (native), English (fluent), French (basic), German (intermediate), Norwegian (intermediate), Swedish (basic), Latin (written – basic)
- Departmental** Postdoc representative for the Quaternary Earth Systems group (2017), presenter at the UiB`s annual research partner days (2016-2017), involvement in faculty NOKUT Centre of teaching excellence proposal application (2016), coordinator of research group website update (2016), presenter at the Bjerknes Scientific Advisory Council meeting (2016), organizer of weekly Research Group seminar (2014-2015)

RECENT CONFERENCE CONTRIBUTIONS

- 2017** Oppedal, L.T., Bakke, J., Paasche, Ø., Werner, J., van der Bilt, W.G.M. Cirque glacier rejuvenation and retract on South Georgia since 10 ka BP, *Pages OSM*, Zaragoza, **poster**
- 2017** van der Bilt, W.G.M., Lane, C.S., Bakke, J. Kamchatkan ash found on Svalbard: towards pan-arctic tephra synchronization, *EGU General Assembly*, Vienna, **poster**
- 2017** van der Bilt, W.G.M., Lane, C.S., Bakke, J. Kamchatkan ash on Svalbard, Annual Bjerknes Getaway, Geilo, **invited talk**
- 2016** van der Bilt, W.G.M., D`Andrea, W.J., Bakke, J., Balascio, N., Werner, J. & Bradley, R. Alkenone-based reconstructions show four-phase Holocene temperature history for Arctic Svalbard, *AGU Fall Meeting 2016*, San Francisco, **poster**
- 2016** van der Bilt, W.G.M., Bakke, J., Werner, J., Paasche, Ø., Rosqvist, G. Rapid Late Holocene glacier fluctuations reconstructed from South Georgia lake sediments using novel analytical and numerical techniques, *EGU General Assembly*, Vienna, **talk**
- 2016** Bakke, J., Balascio, N.L., van der Bilt, W.G.M., D`Andrea, W.J., Bradley, R., Gjerde, M., Hormes, A., Olafsdottir, S., Røthe, T., Vasskog, K., 2016. Amsterdamøya: a key site for the post-glacial of Svalbard, *EGU General Assembly*, **poster**
- 2016** van der Bilt, W.G.M., Bakke, J., Werner, J., Paasche, Ø., Rosqvist, G. a continuous record of Late Holocene glacier fluctuations on South Georgia placed in a Southern Ocean climate perspective, *Southern Connections*, Punta Arenas, **talk**
- 2015** van der Bilt, W.G.M., Bakke, J., Vasskog, K., Ólafsdóttir, S. Rapidly shifting Holocene Arctic climate conditions recorded in a distal glacier-fed lake in Svalbard Spitsbergen, *XIX INQUA conference*, Nagoya, **talk**

- 2015** van der Bilt, W.G.M., Bakke, J., Vasskog, K., D'Andrea, W.J., 2015. A full Holocene record of glacier variability on Svalbard reveals a dynamic Holocene in the Arctic, *45th International Arctic Workshop*, Bergen, **talk**
- 2015** Bakke, J., Røthe, T., van der Bilt, W.G.M., Paasche, Ø., 2015. The fleeting glaciers of the Arctic, *EGU General Assembly*, **poster**
- 2014** van der Bilt, W.G.M., D'Andrea, W.J., Bakke, J., Balascio, N.L. The Dark Ages in Svalbard, *The Dark Ages of the Lowlands workshop*, Amersfoort, **talk**
- 2014** van der Bilt, W.G.M., Bakke, J., Lane, C.S. Towards a process-based understanding of Holocene Arctic climate dynamics using sediments from a glacier-fed lake on Svalbard, *INTIMATE workshop*, Zaragoza, **poster**

SERVICE TO PROFESSION

- 2018** Convener, *Glacial-to-Holocene transition session (CL 1.28)*, EGU assembly, Vienna
- 2017** Convener, *Glacial-to-Holocene transition session (CL 1.28)*, EGU assembly, Vienna
- 2017** Reviewer, *Scientific Reports*
- 2016** Reviewer, *Quaternary Science Reviews*
- 2016** Reviewer, *Global and Planetary Change*
- 2016** Reviewer, *Polar Research*
- 2016** Co-convenor, *Pages 2K session (CL 1.07)*, EGU assembly, Vienna
- 2016** Judge, *Outstanding Student Poster and PICO (OSPP) award*, EGU conference
- 2011** Member, *Panorama Natuur think tank*, Dutch Innovation Network

PROFESSIONAL MEMBERSHIPS

- 2016 – Present** SHAPE focus group on Southern Hemisphere palaeoenvironments, INQUA
- 2014 – Present** RESCLIM Norwegian Research School in Climate Dynamics, NFR
- 2013 – Present** INTIMATE INTeegrating Ice core, MARine, and TERrestrial records, EU cost action

OUTREACH ACTIVITIES

- 2017** Harvest.no kronikk (NO), 'Ice adrift'
- 2017** IB Times interview, 'Ash from ancient volcano halfway round the world'
- 2017** Co-organizer of the Norwegian Geoscience Olympiad
- 2016** Science Daily, *Algal fat opens window on past Arctic temperatures*
- 2016** Den Norske Turistforening turspor project, *Hardangerjøkulen og blåisen*
- 2015** EOS – Scientific American magazine (NL/BE), 'Fieldwork on Svalbard'
- 2015-2016** Sciblogs (NL/BE), 'Prehistoric fat from algae family tells climate story'
- 2014** To Grader magasin (NO), 'Arctic glaciers: canaries in climate system'
- 2013** Norwegian TV interview (TV2), 'Take a piece of glacier home'
- 2013-Present** Op Pad (NL), regular science-outdoor reporter/blogger