

DR. EVAN J. GOWAN

Personal Information

Surname: Gowan

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Date of Birth: 1982/07/12

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Contact Information

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Education

Doctor of Philosophy – Earth Sciences	2015
The Australian National University, Canberra, Australia	
Master of Science – Earth Sciences	2008
University of Victoria, Victoria, British Columbia, Canada	
Bachelor of Science (Honours) – Geophysics	2005
University of Manitoba, Winnipeg, Manitoba, Canada	

Work Experience

Postdoctoral Researcher , Alfred Wegener Institute, Bremerhaven, Germany	2018 – present
<i>Last interglacial sea level in Argentina and reconstructing past ice sheets</i>	
<ul style="list-style-type: none">• Compilation of sea level indicators along the Argentinian coast• Reconstruction of past ice sheets with glacial isostatic adjustment methods• Supervision of masters and PHD students	
Postdoctoral Researcher , Alfred Wegener Institute, Bremerhaven, Germany	2016 – 2018
<i>Investigating the basal conditions of ice sheets</i>	
<ul style="list-style-type: none">• Development and testing of a model for the basal conditions of ice sheets using PISM• Testing feasibility of past ice sheet configurations and stability• Supervision of masters and PHD students	
Postdoctoral Researcher , Stockholm University, Stockholm, Sweden	2014 – 2015
<i>Ice sheet modelling of the Barents-Svalbard Ice Sheet</i>	
<ul style="list-style-type: none">• Development and use of the high order ice sheet modelling software, Elmer-Ice• Testing the feasibility of using high order dynamics on glacial-interglacial time scales	

- Geophysicist**, Vale Exploration, Sudbury, Canada 2008–2009
Testing and implementation of geophysical measurement devices
- Development of signal processing techniques
 - Development of electronics related to electromagnetic measurement techniques
- Geophysicist**, Quantec Geoscience, Toronto, Canada 2008
Exploration geophysics for mining applications
- Collection and interpretation of electrical and electromagnetic geophysical data
 - Field work in extreme conditions
- Research assistant**, University of Manitoba, Winnipeg, Canada 2002, 2004 & 2005
Research assistant in geophysics
- Geophysical surveying, processing and interpretation of geophysical data

Teaching Experience

- Glaciology** – Stockholm University 2015
- In charge of discussion sessions on research papers and seminars
- Introductory Field Geology** – Australian National University 2010
- Teaching assistant
- Applied Geophysics** – University of Victoria 2007
- Teaching assistant
- Introductory Geophysics** – University of Manitoba 2004 & 2005
- Teaching assistant

Student Supervision

- Sara Khosravi (Masters supervisor, graduated 2018)
- Jeffrey Munar (Masters term project, completed July 2020)
- Sebastian Hinck (PHD co-supervisor, 2016-present)
- Lu Niu (PHD co-supervisor, graduated 2019)

Awards

- SERCE travel grant for GIA workshop in Ottawa, Sept 24-26, 2019 (Value \$500 USD)
- PALSEA meeting Early Career Researcher fee waver (2019) (Value \$125 Euro)
- PALSEA-QUIGS meeting Early Career Researcher fee waver (2018)
- Australian National University PHD Scholarship (2010–2014)
- University of Victoria Fellowship (2005–2007)
- Marty Morrice Field Geology Award (University of Manitoba) (2004)
- Faculty of Science Research Award (University of Manitoba) (2002)

Publications

Peer reviewed articles

- GOWAN, E.J., Rovere, A., Ryan, D.D., Richiano, S., Montes, A., Pappalardo, M., and Aguirre, M.L. (2021a). Last interglacial (MIS 5e) sea-level proxies in southeastern South America. *Earth System Science Data*, -, pp. -. In press.
- GOWAN, E.J., Zhang, X., Khosravi, S., Rovere, A., Stocchi, P., Hughes, A.L.C., Gyllencreutz, R., Mangerud, J., Svendsen, J.I., and Lohmann, G. (2021b). Global ice sheet reconstruction for the past 80 000 years. *Nature Communications*, -, pp. -. In press.
- Chen, F., Chen, S., Zhang, X., Chen, J., Wang, X., GOWAN, E.J., Qiang, M., Dong, G., Wang, Z., Li, Y., *et al.* (2020). Asian dust-storm activity dominated by Chinese dynasty changes since 2000 BP. *Nature Communications*, 11, pp. 1–7. doi:10.1038/s41467-020-14765-4.
- Hinck, S., GOWAN, E.J., and Lohmann, G. (2020). LakeCC: a tool for efficiently identifying lake basins with application to palaeogeographic reconstructions of North America. *Journal of Quaternary Science*, 35, pp. 422–432. doi:10.1002/jqs.3182.
- Liu, X., Sun, Y., Vandenberghe, J., Cheng, P., Zhang, X., GOWAN, E.J., Lohmann, G., and An, Z. (2020). Centennial-to millennial-scale monsoon changes since the last deglaciation linked to solar activities and North Atlantic cooling. *Climate of the Past*, 16, pp. 315–324. doi:10.5194/cp-16-315-2020.
- Yang, H., Lohmann, G., Krebs-Kanzow, U., Ionita, M., Shi, X., Sidorenko, D., Gong, X., Chen, X., and GOWAN, E.J. (2020a). Poleward shift of the major ocean gyres detected in a warming climate. *Geophysical Research Letters*, p. e2019GL085868. doi:10.1029/2019GL085868.
- Yang, H., Lohmann, G., Lu, J., GOWAN, E.J., Shi, X., Liu, J., and Wang, Q. (2020b). Tropical expansion driven by poleward advancing midlatitude meridional temperature gradients. *Journal of Geophysical Research: Atmospheres*, 125, p. e2020JD033158. doi:10.1029/2020JD033158.
- GOWAN, E.J., Niu, L., Knorr, G., and Lohmann, G. (2019). Geology datasets in North America, Greenland and surrounding areas for use with ice sheet models. *Earth System Science Data*, 11, pp. 375–391. doi:10.5194/essd-11-375-2019.
- Niu, L., Lohmann, G., and GOWAN, E.J. (2019a). Climate noise influences ice sheet mean state. *Geophysical Research Letters*, 46, pp. 9690–9699. doi:10.1029/2019GL083717.
- Niu, L., Lohmann, G., Hinck, S., GOWAN, E.J., and Krebs-Kanzow, U. (2019b). The sensitivity of Northern Hemisphere ice sheets to atmospheric forcing during the last glacial cycle using PMIP3 models. *Journal of Glaciology*, 65, pp. 645–661. doi:10.1017/jog.2019.42.
- Kirchner, N., van Dongen, E., GOWAN, E.J., Pattyn, F., Noormets, R., Jakobsson, M., and Ólafur Ingólfsson (2018). GRANTSISM: an Excel™ ice sheet model for use in introductory Earth Science courses. *Journal of Geoscience Education*, 66, pp. 109–120. doi:10.1080/10899995.2018.1412177.

- GOWAN, E.J., Tregoning, P., Purcell, A., Lambeck, K., Montillet, J.P., Moore, M., and McClusky, S. (2016a). A model of the western Laurentide Ice Sheet, using observations of glacial isostatic adjustment. *Quaternary Science Reviews*, 139, pp. 1–16. doi:10.1016/j.quascirev.2016.03.003.
- GOWAN, E.J., Tregoning, P., Purcell, A., Lea, J., Fransner, O.J., Noormets, R., and Dowdeswell, J.A. (2016b). ICESHEET 1.0: a program to produce paleo-ice sheet reconstructions with minimal assumptions. *Geoscientific Model Development*, 9, pp. 1673–1682. doi:10.5194/gmd-9-1673-2016.
- Kirchner, N., Ahlkrona, J., GOWAN, E.J., Lötstedt, P., Lea, J.M., Noormets, R., von Sydow, L., Dowdeswell, J.A., and Benham, T. (2016). Shallow ice approximation, second order shallow ice approximation, and full Stokes models: A discussion of their roles in palaeo-ice sheet modelling and development. *Quaternary Science Reviews*, 147, pp. 136–147. doi:10.1016/j.quascirev.2016.01.032.
- GOWAN, E.J. (2013). An assessment of the minimum timing of ice free conditions of the western Laurentide Ice Sheet. *Quaternary Science Reviews*, 75, pp. 100–113. doi:10.1016/j.quascirev.2013.06.001.
- GOWAN, E.J., Ferguson, I.J., Jones, A.G., and Craven, J.A. (2009). Geoelectric structure of the northeastern Williston basin and underlying Precambrian lithosphere. *Canadian Journal of Earth Sciences*, 46, pp. 441–464. doi:10.1139/E09-028.
- James, T., GOWAN, E.J., Hutchinson, I., Clague, J.J., Barrie, J.V., and Conway, K.W. (2009a). Sea-level change and paleogeographic reconstructions, southern Vancouver Island, British Columbia, Canada. *Quaternary Science Reviews*, 28, pp. 1200–1216. doi:10.1016/j.quascirev.2008.12.022.
- James, T.S., GOWAN, E.J., Wada, I., and Wang, K. (2009b). Viscosity of the asthenosphere from glacial isostatic adjustment and subduction dynamics at the northern Cascadia subduction zone, British Columbia, Canada. *Journal of Geophysical Research: Solid Earth* (1978–2012), 114. doi:10.1029/2008JB006077.
- Frederiksen, A.W., Ferguson, I.J., Eaton, D., Miong, S.K., and GOWAN, E.J. (2006). Mantle fabric at multiple scales across an Archean–Proterozoic boundary, Grenville Front, Canada. *Physics of the Earth and Planetary Interiors*, 158, pp. 240–263. doi:10.1016/j.pepi.2006.03.025.

Submitted articles

- Hinck, S., GOWAN, E.J., Zhang, X., and Lohmann, G. (2021). PISM-LakeCC: Implementing an adaptive proglacial lake boundary into an ice sheet model. *The Cryosphere*, -, pp. -. Submitted.
- Niu, L., Lohmann, G., Gierz, P., GOWAN, E.J., and Knorr, G. (2021). Coupled climate-ice sheet modelling of MIS-13 reveals a sensitive Cordilleran Ice Sheet. *Global and Planetary Change*, -, pp. -. In review.

Articles in preparation

- GOWAN, E.J., Hinck, S., Niu, L., and Lohmann, G. (2021a). Impact of changes in basal hydrology, sediment composition and sediment cover on ice sheet dynamics. -, -, pp. -. In preparation.

GOWAN, E.J., Rovere, A., Bender, M., Mann, T., and Switzer, A.D. (2021b). Holocene and late Pleistocene sea level indicators in southeastern Asia, The SEAMIS database v2.0. -, -, pp. -. In preparation.

Theses

GOWAN, E.J. (2014). *Model of the western Laurentide Ice Sheet, North America*. Ph.D. thesis, The Australian National University, Canberra, ACT, Australia.

GOWAN, E.J. (2007). *Glacio-isostatic adjustment modelling of improved relative sea-level observations in southwestern British Columbia, Canada*. Master's thesis, University of Victoria, Victoria, B.C., Canada.

GOWAN, E.J. (2005). *Investigation of the electrical resistivity of the crust in southern Manitoba using the magnetotelluric method*. Honours thesis, University of Manitoba, Winnipeg, MB, Canada.

Conferences

GOWAN, E.J. (2020). Evaluating ice sheet history for the past 80,000 years - are marine oxygen isotopes a reliable indicator of sea level? PALSEA (PALeo constraints on SEA level rise) Express 2020, 15-16 September 2020. **Invited Speaker**.

GOWAN, E.J., Rovere, A., Hinck, S., Stocchi, P., Ryan, D.D., Lohmann, G., Breckenridge, A., Wickert, A., and Hughes, A. (2019a). Reconstructing ice sheets with glacial isostatic adjustment methods using observations of past ice sheet extent, sea level and paleo-lake shorelines. INQUA 2019, Dublin, Ireland, 25-31 July 2019.

GOWAN, E.J., Rovere, A., Ryan, D.D., and Stocchi, P. (2019b). Last interglacial sea level along the Patagonian coast. PALSEA workshop, Dublin, Ireland, 21-23 July 2019.

GOWAN, E.J., Rovere, A., Stocchi, P., and Lohmann, G. (2019c). Reconstructing the configuration of ice sheets from Marine Isotope Stage 4 to present. A workshop on Glacial Isostatic Adjustment, Ice Sheets, and Sea-level Change – Observations, Analysis, and Modelling, Canadian Museum of Nature, Ottawa, Canada, 24-36 September 2019.

GOWAN, E.J., Niu, L., Knorr, G., Lohmann, G., and Hinck, S. (2018a). Investigating the role of subglacial geology on ice sheet dynamics. EGU General Assembly 2018. Abstract EGU2018-7212, Vienna, Austria.

GOWAN, E.J., Rovere, A., and Lohmann, G. (2018b). Determining the last interglacial ice sheet configuration using glacial isostatic adjustment modelling. PALSEA-QUIGS workshop, Galway, New Jersey, USA, 24-27 October 2018.

GOWAN, E.J., Knorr, G., Niu, L., and Lohmann, G. (2017a). Role of sediments in controlling the dynamics of paleo-ice sheets. PAGES 5th Open Science Meeting, Zaragoza, Spain.

GOWAN, E.J., Knorr, G., Niu, L., and Lohmann, G. (2017b). Role of sediments in controlling the dynamics of paleo-ice sheets. PAGES 3th Young Scientists Meeting, Morillo de Tou, Spain.

- GOWAN, E.J., Zhang, X., Khosravi, S., Lohmann, G., and Grosfeld, K. (2017c). Paleo-ice sheet reconstructions constrained by GIA and geological data for use in climate models. Paleoclimate Modelling Intercomparison Project 4 meeting, Stockholm, Sweden.
- GOWAN, E.J., Ahlkrona, J., Kirchner, N., and Lötstedt, P. (2015a). Model of the late glacial Svalbard Ice Sheet, using ISCAL (Ice Sheets with Coupled Approximation Levels). XIX INQUA Congress, Nagoya, Japan. Abstract T02497.
- GOWAN, E.J., Ahlkrona, J., Kirchner, N., Lötstedt, P., Lea, J., Fransner, O., Noormets, R., and Dowdeswell, J. (2015b). Dynamics of the Barents Sea Ice Sheet at the Last Glacial Maximum. IGS Nordic Branch Meeting 2015, Copenhagen, Denmark.
- GOWAN, E.J., Ahlkrona, J., Kirchner, N., Noormets, R., Lea, J., Dowdeswell, J., and Benham, T. (2015c). Model of the late glacial Svalbard Ice Sheet using ISCAL (Ice Sheets with Coupled Approximation Levels). Past Gateways 2015, Potsdam, Germany.
- GOWAN, E.J., Tregoning, P., and Purcell, A. (2014). Model of the western Laurentide Ice Sheet from glacio-isostatic adjustment analysis and revised margin locations. IGS Nordic Branch Meeting 2014, Iceland. Poster #1345.
- GOWAN, E.J., Tregoning, P., and Purcell, A. (2013a). Model of the western Laurentide Ice Sheet from glacio-isostatic adjustment analysis and revised margin locations. American Geophysical Union, Fall Meeting 2013. Abstract #G42A-04.
- GOWAN, E.J., Tregoning, P., Purcell, A., and Lambeck, K. (2013b). Modelling the Laurentide Ice Sheet using improved ice margin chronologies and glacio-isostatic observations. EGU General Assembly 2013. Abstract EGU2013-6337.
- GOWAN, E.J. and James, T. (2006). Glacio-isostatic adjustment modelling of improved postglacial sea-level constraints from Vancouver Island, British Columbia. American Geophysical Union, Fall Meeting 2006. Abstract #G33B-0052.