

Publications: Papers, books & book chapters

Butler, R.W.H., Maniscalco, R., Sturiale, G. & Grasso, M. 2015. Stratigraphic variations control deformation patterns in evaporite basins: Messinian examples, onshore and offshore Sicily (Italy). *Journal of the Geological Society, London*, 172, 113-124.

Howell, J.A., Martinius, A. W and Good T. 2014. Application of analogues to reservoir modelling in Martinius, A. W., **Howell, J. A.** & Good, T. (eds) *Sediment-Body Geometry and Heterogeneity: Analogue Studies for Modelling the Subsurface*. Geological Society, London, Special Publications, 387

Keogh KJ, Leary S, Martinius AW, Scott ASJ, Riordan S, Viste I, Gowland S, Taylor A and **Howell JA**. 2014. Data capture for multi-scale modelling of the Lourinhã Formation, Lusitanian Basin, Portugal: an outcrop analogue for the Statfjord Group, Norwegian North Sea. in Martinius, A. W., **Howell, J. A.** & Good, T. (eds) *Sediment-Body Geometry and Heterogeneity: Analogue Studies for Modelling the Subsurface*. Geological Society, London, Special Publications, 387

Rittersbacher A., Buckley S.J., **Howell J.A.**, Hampson G.J. and Vallet J. 2014. Helicopter-based laser scanning: a method for quantitative analysis of large-scale sedimentary architecture. In Martinius, A. W., **Howell, J. A.** & Good, T. (eds) *Sediment-Body Geometry and Heterogeneity: Analogue Studies for Modelling the Subsurface*. Geological Society, London, Special Publications, 387

Aas, T. E., Basani, R., **Howell, J.** & Hansen, E. 2014. Forward modelling as a method for predicting the distribution of deep-marine sands: an example from the Peira Cava Sub-basin. In: Martinius, A. W., **Howell, J. A.** & Good, T. R. (eds) *Sediment Body Geometry and Heterogeneity: Analogue Studies for Modelling the Subsurface*. Geological Society, London, Special Publications, 387

Kurz, T.H., Buckley, S.J., and **Howell, J.A.**, 2014. State of the art of ground-based hyperspectral imaging in geo-science applications. In: Humair F., Matasci B., et al. (eds.). *Vertical Geology, from remote sensing to 3D geological modelling*. Proceedings of the first Vertical Geology Conference, 2014

Buckley, S.J., Sima, A.A., **Howell, J.A.** and Galland, O. Photogrammetry for geological outcrop modelling: scales, accuracy and comparison to lidar. In: Humair F., Matasci B., et al. (eds.). *Vertical Geology, from remote sensing to 3D geological modelling*. Proceedings of the first Vertical Geology Conference 2014, University of Lausanne, Switzerland, 3-6.

Nyberg B and **Howell JA**. 2014. Latitudinal controls on modern shoreline geometries. AAPG/SEPM Hedberg Research Conference on Latitudinal Controls on Stratigraphic Models and Sedimentary Concepts. Banff Alberta Canada.

Martinius, A. W., **Howell, J. A.** & Good, T. (eds). 2014. *Sediment-Body Geometry and Heterogeneity: Analogue Studies for Modelling the Subsurface*. Geological Society, London, Special Publications, 387

Martinius, AW, Ravnas, R, **Howell, JA**, Steel, RJ and Wonham JP (eds). 2014. From Depositional Systems to Sedimentary Successions on the Norwegian Continental Margin. *International Association of Sedimentologists Special publication* 46 712p

Ledger, P.M., **Edwards, K.J.** and **Schofield, J.E.** 2015. Taphonomy or signal sensitivity in palaeoecological investigations of Norse landnám in Vatnahverfi, southern Greenland? *Boreas* 44, 197-215.

Publications (continued...)

Sharp, M., Burgess, D.O., Cawkwell, F., Copland, L., Davis, J.A., Dowdeswell, E.K., Dowdeswell, J.A., Gardner, A.S., **Mair, D.**, Wang, L., Williamson, S.N., Wolken, G. J. and Wyatt, F. 2014. "Remote Sensing of recent glacier changes in the Canadian Arctic" , Chapter 9 in *Global Land Ice Measurements from Space: Satellite Multispectral Imaging of Glaciers*. Kargel, J.S., Bishop, M.P., Kääh, A., Raup, B.H., and Leonard, G. Eds. Praxis-Singer. (Publisher), Berlin Heidelberg. 876 pp.

Lea, J.M., **Mair, D.W.F.**, Nick, F.M., **Rea, B.R.**, van As, D., Morlighem, M., Nienow, P.W. and Weidick, W. 2014. "Fluctuations of a Greenlandic tidewater glacier driven by changes in atmospheric forcing: observations and modelling of Kangiata Nunaata Sermia, 1859-present", *The Cryosphere*, 8, 2031-2045, doi:10.5194/tc-8-2031-2014.

Clason, C., **Mair, D.**, Bartholomew, I., Sole, A, Nienow, P., Swanghart, W. And Palmer, S. 2014. "Modelling the surface-to-bed transfer of meltwater in Leverett Glacier, southwest Greenland", *The Cryosphere Discussions*, 8, 4243-4280, doi:10.5194/tcd-8-4243-2014.

Morris, R.M., **Mair, D.W.F.**, Nienow P.W., Bell, C., Burgess, D.O., Wright, A.P. 2014 "Field-calibrated model of melt, refreezing and runoff for polar ice caps: application to Devon Ice Cap", *Journal of Geophysical Research*, 119, 1995–2012, doi:10.1002/2014JF003100

Lea, J.M., **Mair, D.W.F.**, Nick, F.M., **Rea, B.R.**, Weidick, A., Kjær, K., Morlighem, M. and Van as, D. 2014. "Terminus driven retreat of a major SW Greenland tidewater glacier during the early nineteenth century: insights from glacier reconstructions and numerical modelling.", *Journal of Glaciology*. 60(220), doi: 10.3189/2014JoG13J163

Lea, J., **Mair, D.** and **Rea, B.** 2014. "Evaluation of existing and new methods of tracking glacier terminus change", *Journal of Glaciology*, 60(220), doi: 10.3189/2014JoG13J061

Nicholson, U., van der Es, B., Clift, P., Flecker, R. & **Macdonald, D.I.M.** 2015. The sedimentary and tectonic evolution of the Amur River and North Sakhalin Basin: new evidence from seismic stratigraphy and Neogene-Recent sediment budgets. *Basin Research*. DOI: 10.1111/bre.12110

Lane, T.P., Roberts, D.H., **Rea, B.R.**, Ó Cofaigh, C., Vieli, A. (2015). Controls on bedrock bedform development beneath the Uummannaq Ice Stream System onset zone, West Greenland. *Geomorphology*, 10.1016/j.geomorph.2014.12.019

Golding, K.A., Simpson, I.A., Wilson, C.A., Lowe, E.C., **Schofield, J.E.** and **Edwards, K.J.** 2015. Europeanization of sub-Arctic environments: historical human-ecodynamic perspectives from Norse Greenland's outer fjords. *Human Ecology*. DOI 10.1007/s10745-014-9708-y

De Siena, L., C. Thomas, G. P. Waite, S. C. Moran, and S. Klemme (2014). Attenuation and scattering tomography of the deep plumbing system of Mount St. Helens. *J. Geophys. Res. Solid Earth*, 119, 8223–8238, doi:10.1002/2014JB011372.

McGrane, S, **Tetzlaff, D.**, Esserey, R, and **Soulsby, C.** (2015). Do catchment characteristics explain differences in coherence and trends in hydroclimatic behaviour in an upland-dominated region. *Hydrology Research*. Doi:10.2166/nh.2014.148.

Publications (continued...)

Tetzlaff, D., Buttle, J., Carey, S, McGuire, KJ, Laudon, H., **Soulsby, C.** (2015). Tracer-based assessment of flow paths, storage and runoff generation in northern catchments: a review. Hydrological Processes, DOI:10.1002/hyp.10412.

Vargas Meleza, L., Healy, D., Alsop, G.I., & Timms, N.E. 2015. Exploring the relative contribution of mineralogy and CPO to the seismic velocity anisotropy of evaporites. Journal of Structural Geology. <http://dx.doi.org/10.1016/j.jsg.2014.11.001>.

Funding

Clare Bond and **Rob Butler** are Co-PIs on a new NERC Knowledge Exchange grant “Improving interpretation outcomes: quantifying biases and designing workflows for better seismic interpretation” (£93k).

Natalie Farrell and **Roberto Rizzo** have been awarded postgraduate bursaries of £2,000 each from AFES (Aberdeen Formation Evaluation Society).

John Howell reports that SAFARI Phase 3 – a consortium JIP funded by 14 companies, now has a total value of £1.3 million split between Aberdeen and Bergen. £650k to Aberdeen which will fund three PhDs, a postdoc (TBC), software support and equipment for 3 years.

John Howell also has funding for VOM2MPS, with £300k from the Norwegian Research Council, of which £85k is to Aberdeen for a PhD project developing methods for using virtual outcrops as MPS training images.

Conferences, Presentations

Staff and students from GPG made several presentations at the Tectonic Studies Group AGM, held in Edinburgh, 6th – 8th January:

- Fluid flow in deforming media: Interpreting isotope signatures of marbles. **Clare Bond**.
- Effects of porosity on geomechanical risk. **Natalie Farrell**. (‘Honourable Mention’ for Best Talk)
- Permeability estimation for a multi-fractured system. **Roberto Rizzo**.
- Characterising and modelling fracture attributes in a fold-and-thrust belt. **Hannah Watkins**.
- Rapid digital data collection of fracture networks in shales. **Thomas Wild**.

Natalie Farrell gave an invited talk to the Aberdeen Formation Evaluation Society (AFES) at the Station Hotel on January 14th entitled ‘Using petrophysics to predict geomechanical risk’. **Dave Healy** gave an overview of recent and planned petrophysical projects, and the new HP/HT rock deformation apparatus at the same event.

Presentations (continued...)

Staff and students made presentations at the Quaternary Research Association, Annual Discussion Meeting, the Quaternary of the North Sea:

- Evidence and implications for a grounded ice sheet in the Central North Sea in the early Pleistocene. **Brice Rea**, Phil Rose (Apache), Francis Buckley (Senergy), John Cater (Ichron), **Matteo Spagnolo**, Stuart Archer (Dana), **Maral Halliyeva**, **Jon Basell**, **John Howell**, **Dave Cornwell**.
- Regional scale climatic trends derived from Younger Dryas glaciers in Britain. **Danni Pearce**, **Brice Rea**, Iestyn Barr (QUB), David Small (Glasgow), Des McDougall (Worcester).

Presentations at AGU, San Francisco, 15-20 December:

- Regional scale climatic trends derived from Younger Dryas glaciers in Britain. **Danni Pearce**, **Brice Rea**, Iestyn Barr (QUB), David Small (Glasgow), Des McDougall (Worcester).
- Attenuation and scattering tomography of the deep plumbing system of Mount St. Helens. **De Siena, L.**, C. Thomas, G. P. Waite, S. C. Moran, and S. Klemme.
- Process Inference from High Frequency Temporal Variations in Dissolved Organic Carbon Dynamics Across Nested Spatial Scales. **Claire Tunaley**, **Doerthe Tetzlaff**, **Jason Lessels**, **Chris Soulsby**.
- Coupling hydrological and biogeochemical models to assess the role of landscape units on dissolved organic carbon transport. **Jonathan Dick**, **Doerthe Tetzlaff**, **Christian Birkel**, **Chris Soulsby**.
- Utilising conservative tracers and spatial surveys to identify controls on pathways and DOC exports in an Arctic catchment. **Jason Lessels**, **Doerthe Tetzlaff**, Kerry Dinsmore, Lorna Street, Joshua Dean, Ian Washbourne, Michael Billett, Robert Baxter, Jens-Arne Subke, Philip Wookey
- Heterogeneity in sensitivity and response to drought in a headwater catchment. **Josie Geris**, **Doerthe Tetzlaff**, **Chris Soulsby**.
- Aquatic carbon and GHG export from a permafrost catchment; identifying source areas and primary flow paths. Kerry Dinsmore, **Jason Lessels**, Michael Billett, Lorna Street, Philip Wookey, **Doerthe Tetzlaff**, Robert Baxter, Jens-Arne Subke, Joshua Dean, Ian Washbourne.
- A coupled hydrological-biogeochemical model to simulate DOC dynamics in a sub-arctic headwater catchment underlain by permafrost. **Doerthe Tetzlaff**, **Jason Lessels**, Sean Carey, **Chris Soulsby**.
- Estimation of Dynamic Storage across Northern Catchments. **Marjolein Van Huijgevoort**, **Doerthe Tetzlaff**, James Buttle, Sean Carey, Hjalmar Laudon, James McNamara, **Chris Soulsby**.
- Influence of vegetation on water isotope partitioning across different northern headwater catchments. **Rachel Gabor**, **Doerthe Tetzlaff**, James Buttle, Sean Carey, Hjalmar Laudon, Carl Michell, James McNamara, **Chris Soulsby**.
- **Chris Soulsby** co-convened a successful AGU session on Large-Scale Field Experiments and Long-term Observations Networks in Hydrology.

Enrique Gomez-Rivas gave a talk at the Geological Society of London meeting “Small to subseismic scale reservoir deformation” at Burlington House entitled “*Stylolite-controlled stratabound dolomitization: examples from the Benicàssim case study (Maestrat basin, E Spain)*”.

Presentations (continued...)

David Macdonald and **Lori Menzies** gave presentations at BP's annual conference on the Parnaíba Basin, Brazil.

John Parnell gave a seminar on 'Metals and the Diversification of Life in the Mesoproterozoic' at Univ. Glasgow, January 2015.

Esteem

Natalie Farrell has won the prestigious Ramsay Medal for her first published paper '*Anisotropy of permeability in faulted porous sandstone*' (Journal of Structural Geology, co-authors **Dave Healy** and **Colin Taylor**). The Ramsay Medal is awarded annually by the Tectonic Studies Group (affiliated to the Geological Society of London), for the best postgraduate paper in the previous year. This award follows the Student Author of the Year Award 2014 from the Elsevier Journal of Structural Geology, which was presented by Chief Editor Cees Passchier at the recent AFES meeting (see Presentations above, and citation [here](#)).

Doug Mair was invited to give a "Hutton Club" research seminar at the School of Geosciences, University of Edinburgh in November 2014.

Jeff McDonnell 0.2 FTE 6th Century Chair in Hydrology has been voted President-elect for the AGU Hydrology Section. His Presidency will run 2016-18.

Brice Rea sat on the Science, Engineering and Technology awards committee for the new Carnegie Trust, Research Incentive Grants.

Brice Rea has been invited to join the editorial board for a forthcoming new Springer journal - arktos, Journal of Arctic Geoscience Research

Doerthe Tetzlaff was invited to chair the AGU Hydrology Section's Early Career Award Committee for the next 2 years.

Outreach, training, media

Luca De Siena gave an interview to the Press and Journal, Energy supplement: "Secret to mapping more detailed reservoirs? Volcanos, of course." 16 December 2014.

Luca De Siena wrote an article for "The Conversation": The very useful art of assessing a supervolcano without making it erupt. 15 January 2015 <https://theconversation.com/the-very-useful-art-of-assessing-a-supervolcano-without-making-it-erupt-36277>.

Luca De Siena is now an official STEM Ambassador.

Field

Dave Healy and **John Howell** bought a UAV (or drone) for fieldwork. The DJI Phantom 2 survived the maiden test flight and captured high resolution images of Footdee.

John Howell is completing the purchase of a Riegl z2000 terrestrial LIDAR scanner, for virtual outcrop work. This is the first of its kind the UK, and in any University anywhere.

John Parnell did fieldwork in Co. Meath, Ireland, in December 2014.

Other

The **Glaciology group** hosted visits by esteemed Canadian research collaborators, Professor Martin Sharp, Professor and Head of Department of Earth and Atmospheric Sciences at the University of Alberta and Dr Dave Burgess, Head of the Glaciology Section of Natural Resources Canada, Ottawa. Martin and Dave are world leading arctic glaciologists who have a long-standing collaboration with the glaciology group at Aberdeen investigating the links between climate, mass-balance and dynamics of the Canadian Arctic ice caps.

Doug Mair visited the School of Geographical and Earth Sciences at the University of Glasgow in December 2015 for research discussions and interviews for the forthcoming Leverhulme Trust funded CALVE project on Greenlandic tidewater glacier change.

Randell Stephenson participated in the British Council Newton Fund Institutional/Workshop/Researcher Links Engineering and Physical Sciences review panel in London 21-22 January. He notes: hundreds of applications, including many from other Scottish universities and the English big-hitters, but there was no single application in any category from U Aberdeen.

Seminars

Seminars take place on **Thursday afternoons 3.30-4.30pm in St Mary's 105**. These talks are jointly hosted by the Departments of Geology & Petroleum Geology and and Geography & Environment. All welcome. Please encourage new colleagues and PhD students to come along.

<http://www.abdn.ac.uk/geosciences/seminars/index.php>

Next copy deadline: March 25th, 2015

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