

**Publications: Papers, books & book chapters**

**Birkel, C., Soulsby, C., and Tetzlaff, D.** 2015. *Conceptual modelling to investigate the influence of tracer dynamics, hydrological connectivity and catchment storage on non-stationary water age estimates*. Hydrological Processes. DOI:10.1002/hyp.10414.

**Bond, C.E.,** Johnson, G. & Ellis, J.F. 2015. *Structural model creation: the impact of data type and creative space on geological reasoning and interpretation*. Special Publication - Geological Society of London, vol 421.

Dickson, N. E. M., **J.-C. Comte,** J. McKinley, and U. Offerdinger. 2014. *Coupling ground and airborne geophysical data with upscaling techniques for regional groundwater modeling of heterogeneous aquifers: Case study of a sedimentary aquifer intruded by volcanic dykes in Northern Ireland*. Water Resour. Res., 50, 7984–8001, doi:10.1002/2014WR015320.

J. Prudencio, **L. De Siena,** J. M. Ibáñez, E. Del Pezzo, A. García-Yeguas, A. Díaz-Moreno, 2015. *The 3D Attenuation Structure of Deception Island (Antarctica)*. Surveys in Geophysics, Springer, doi:10.1007/s10712-015-9322-6.

**Ebinghaus, A., Hartley, A.J., Jolley, D., Hole M & Millett, J.** 2014. *Lava-Sediment interaction and drainage system development in a Large Igneous Province: Columbia River Flood Basalt Province, Washington State, USA*. Journal of Sedimentary Research, 84, 11, 1041-1063.

**Geris J., Tetzlaff D. & Soulsby C.** 2015. *Resistance and Resilience to Droughts: Hydrogeological Controls on Catchment Storage and Runoff Response*. Hydrological Processes. DOI: 10.1002/hyp.10480.

Martín-Martín, J.D., Travé, A., **Gomez-Rivas, E.,** Salas, R., Sizun, J.-P., Vergés, J., Corbella, M., Stafford, S.L. and Alfonso, P. 2015. *Fault-controlled and stratabound dolostones in the Late Aptian-earliest Albian Benassal Formation (Maestrat Basin, E Spain): petrology and geochemistry constraints*. Marine and Petroleum Geology.

Mather, A.E., **Hartley, A.J.** & Griffiths, J.S. 2014. *The giant coastal landslides of Northern Chile: tectonic and climate interactions on a classic convergent plate margin*. Earth and Planetary Science Letters, 388, 249-256. DOI: 10.1016/j.epsl.2013.10.019, 388, 249-256.

Holzweber, B.I., **Hartley, A.J.** & Weissmann, G.S. 2014. *Scale invariance in fluvial barforms: implications for interpretation of fluvial systems in the rock record*. Petroleum Geoscience, 20, 211-224.

Kilhams, B., **Hartley, A.J.,** Huuse, M. & Davis, C. 2014. *Characterizing the Palaeocene turbidites of the North Sea: Maureen Formation, UK Central Graben*. In: McKie, T., Rose, P.T.S., Hartley, A.J., Jones, D.W. & Armstrong, T.L. (eds), Tertiary Deep-Marine Reservoirs of the North Sea Region. Geological Society, London, Special Publication, 403 doi:10.1144/SP403.1.

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**Publications (continued...)**

- Thomas, R. & **Hartley, A.J.** 2014. *Seismic geomorphology and sequence stratigraphy as tools for the prediction of reservoir facies distribution; Palaeocene, South Buchan Graben, Outer Moray Firth Basin, U.K.* In: McKie, T., Rose, P.T.S., Hartley, A.J., Jones, D.W. & Armstrong, T.L. (eds), Tertiary Deep-Marine Reservoirs of the North Sea Region. Geological Society, London, Special Publication, 403, doi:10.1144/SP403.8.
- Davidson, S. & **Hartley, A.J.** 2014. *A quantitative approach to linking drainage basin area and distributive fluvial system area in modern and ancient endorheic basins.* Journal of Sedimentary Research, 84
- Hartley, A.J.** & Leleu, S. 2015. *Sedimentological constraints on the late Silurian history of the Highland Boundary Fault, Scotland: Implications for Midland Valley Basin development.* Journal of the Geological Society London, 172, 213-217.
- Evenstar, L., **Hartley, A.J.**, Archer, S. & **Neilson, J.** 2015. *Climatic and halokinetic controls on alluvial-lacustrine sedimentation during compressional deformation, Andean forearc, northern Chile.* Basin Research. DOI: 10.1111/bre.12124.
- Eide, C.H., **Howell, J.A.**, Buckley, S.J. 2015. *Sedimentology and reservoir properties of tabular and erosive offshore transition deposits in wave-dominated, shallow-marine strata: Book cliffs, USA.* Petroleum Geoscience, 21 (1), pp. 55-73.
- Owen, A.**, Jupp, P.E., Nichols, G.J., **Hartley, A.J.**, Weissmann, G.S., Sadykova, D. 2015. *Statistical estimation of the position of an apex: application to the geological record.* Journal of Sedimentary Research, 85, 142-152.
- Geremia F., Bentivenga M. & **Palladino G.** 2015. *Environmental Geology Applied to Geoconservation in the Interaction Between Geosites and Linear Infrastructures in South-Eastern Italy.* Geoheritage . DOI 10.1007/s12371-015-0145-0.
- Pilia, S., **Rawlinson, N.**, Cayley, R.A., Bodin, T., Musgrave, R., Reading, A.M., Direen, N.G. & Young, M.K. (2015). *Evidence of micro-continent entrainment during crustal accretion.* Scientific Reports, vol 5, 8218.
- Addy, S., **Soulsby, C.** & **Hartley, A.J.** 2014. *Controls on the distribution of channel reach morphology in selectively glaciated catchments.* Geomorphology. 211, 121-133.
- Soulsby, C.**, **Birkel, C.**, **Geris, J.** and **Tetzlaff, D.** 2015. *Isotope hydrology of a large river system regulated for hydropower.* River Research and Application. DOI:10.1002/rra.2740.
- Dowling, T., **Spagnolo, M.**, Moller, P. 2015. *Morphometry and core type of streamlined bedforms in southern Sweden from high resolution LiDAR.* Geomorphology, 236, 54-63. 10.1016/j.geomorph.2015.02.018
- Douwe J.J. van Hinsbergen, Hemmo A. Abels, Wolter Bosch, Flora Boekhout, Douwe G. van der Meer, Alexander Kitchka, Maartje Hamers, Mark Geluk & **Randell Stephenson.** 2015. *Sedimentary geology of the Middle Carboniferous of the Donbas region (Dniepr-Donets basin, Ukraine).* Scientific Reports.
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**Publications (continued...)**

Frederiksen, AW., **Thompson, DA.**, Rost, S., **Cornwell, DG.**, Gulen, L., Houseman, GA., Kahraman, M., Altuncu Poyraz, SA., Teoman, UM., Turkelli, N. & Utkucu, M. 2015. *Crustal thickness variations and isostatic disequilibrium across the North Anatolian Fault, western Turkey*. Geophysical Research Letters, vol 42, no. 3, pp. 751-757.

**Thompson, DA.**, Hammond, JOS., Kendall, J-M, Stuart, GW., Helffrich, GR., Keir, D., Ayele, A. & Goitom, B. 2015. *Hydrous upwelling across the mantle transition zone beneath the Afar Triple Junction*. Geochemistry, Geophysics, Geosystems, vol 16.

**Watkins, H., Bond, C. E., Butler, R. W. H. & Healy, D.** 2015. *Appraisal of fracture sampling methods and a new workflow to characterise heterogeneous fracture networks at outcrop*. Journal of Structural Geology, 72, 67-82.

**Watkins, H., Butler, R. W. H., Bond, C. E. & Healy, D.** 2015. *Influence of structural position on fracture networks in the Torridon Group, Achnashellach fold and thrust belt, NW Scotland*. Journal of Structural Geology, 74, 64-80.

**Funding**

**Luca De Siena** received the Royal Society of Edinburgh-Academia dei Lincei Bilateral Travel Grant to support a 14 days trip to the INGV-Osservatorio Vesuviano, Italy between the 14/09/2015 and the 27/09/2015. In this period, discussion about further cooperation between Aberdeen, Italy and Japan will take place.

**Josie Geris** has had two grant successes: 1) British Society for Geomorphology, Early Career Researcher Grant (£5000) 'Suspended sediment transport dynamics in tropical volcanic landforms'. 2) The Carnegie Trust for Scottish Universities, Research Incentive Grant (£7500) 'Integrated approaches to assess multiscale water sources, flow paths and residence times in changing landscapes'.

**Enrique Gomez-Rivas** has been awarded a small grant from the Geological Society of London (£1,550): "Controls on fault-associated dolomitisation geometries: insights from 3D virtual outcrop models and high-resolution petrography".

**John Howell** and **Dave Healy** have secured funding from RWE-Dea to undertake petrophysical and ground penetrating radar work on the Page Sandstone in Arizona (£50k).

**Doerthe Tetzlaff** and **Chris Soulsby** secured funding from the Royal Society, Newton Institutional link grants: *ConSIST Collaboratory - CHile Scotland Isotope Collaboratory*. Royal Society, Newton Institutional Links grants. UK Principal Investigator. £100k. 2015-2016. The goal of this project is to apply stable isotopic tracers and numerical modeling to quantify the contributions of snow and glacial melt to streamflow and groundwater in Northern-Central Chile. The Chile-Scotland Isotope Collaboratory is funded by the Comisión Nacional de Investigación Científica y Tecnológica (CONICYT), British Council, and the Newton-Picarte Fund. The project has a considerable outreach and education component.

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**Funding (continued...)**

**Doerthe Tetzlaff** was awarded funding from the Scottish Government HYDRONATION programme for a PhD studentship: Linking small-scale hydrological flow paths, connectivity and microbiological transport to protect remote private water supplies. £100K. Scottish Government, 2015-19. This project seeks to integrate empirical and theoretical methods of catchment hydrology, microbial ecology and risk assessment. A novel integrated data set will be developed to understand how closely coupled transient diffuse pollution fluxes for faecal indicator organisms are to non-linearities in hillslope hydrological response at the plot and hillslope scale. Such understanding of how water is routed and microbiological pollutants transported to groundwater bodies and streams is of great importance in understanding risks to water resources and associated potential health risks.

**Conferences, Presentations**

**John Howell** gave the PESGB Aberdeen Evening lecture, and was also a Keynote speaker at the "Finding Petroleum" event on 17th March.

**Doerthe Tetzlaff** presented the work of the hydrology group to Dame Jocelyn Bell, the current President of the Royal Society of Edinburgh (RSE), during a recent visit of Dame Jocelyn to the University.

**Esteem**

**JC Comte's** article 'Modelling the response of fresh groundwater to climate and vegetation changes in coral islands', Comte, J-C, Join, J-L, Banton, O. & Nicolini, E. (2014), *Hydrogeology Journal* 22(8):1905-1920, 2014, was designated as an "Editors' Choice" article of *Hydrogeology Journal* for 2014 within the 5 best articles selected among about 150 published articles in the year.

**Luca De Siena** has given an invited presentation at the Dept. of Geology, University of Leicester, on the 26/02/2015. Title: "3D imaging of volcanic cones and calderas by using seismic absorption and scattering".

**David Iacopini** has been awarded a Certificate of Reviewing Excellence (i.e. in the top 10 best reviewers) by the *Journal of Structural Geology* for 2014.

**Joyce Neilson** gave the inaugural Anne Isabella Milbanke Lecture as part of the University of Durhams 'Women in Science' week.

**Amanda Owen** went to Prague for the Imperial Barrel Award as a representative for the Uni with 4 of the MSc IPG students. The team did great and came 3/22 university across Europe, and won \$1000. The team consisted of **Robert Horne**, **Bartosz Kurjanski**, **James Stalbow**, **Alex Clarke** and **Edgar Nambiro**.

**Claire Tunaley**, PhD student in the Northern Rivers Institute, supervised by Doerthe Tetzlaff and Chris Soulsby, was invited to become a member of the AGU Technical Committee on Surface Water. Claire will serve on the committee for two years as one of only 15 members from around the world.

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**Fieldwork & visits**

**Enrique Gomez-Rivas** visited the University of Barcelona for 18 days in February, to work on salt deformation microstructures and carry out fieldwork at the Cabanasses salt mine (Ebro Basin).

**John Howell** did some fieldwork in Yorkshire, lidar scanning for the Safari 3 project; 9-13th March.

**John Howell** visited PDO in Oman for project close out 21st – 24th March.

In February **Chris Soulsby** made a research visit to the Water Institute at the University of Waterloo, Canada, which has initiated various new collaborations.

Recent weeks saw intense field work activities from colleagues from the Hydrology group installing equipment for plant sap flow measurements in one of the main experimental sites, the Bruntland Burn catchment near Ballater. The experimental set up is part of **Doerthe Tetzlaff's** ERC funded VeWa project (*Vegetation effects on water flow and mixing in high-latitude ecosystems*) project, which aims to understand the nature of water partitioning along cross-regional hydroclimatic gradients of moisture and temperature and to assess the role of vegetation, soils and other landscape features.

**Other**

We welcome new post-doc **Dr Juan Alcalde** to the team working on the NERC funded Uncertainty project - Improving Interpretation Outcomes: quantifying biases and designing workflows for better seismic interpretation 2014-2015 (PI Clare Bond). Juan joins us from a post-doc in Edinburgh.

**Carla Galuppo** is visiting from the University of Pavia on an Erasmus exchange scheme – working on 3D models with **Clare Bond** and **David Iacopini**.

**Dr Danni Pearce** takes up a new 2.5 year post-doc position in the School of Geosciences joining the glaciology research group as part of the Leverhulme Trust supported CALVE research project (Calving Glaciers: Long-term Validation and Evidence). She will be working with Doug Mair, Brice Rae and Ed Schofield along with colleagues at the University of Glasgow to undertake work to reconstruct and independently validate the longest ever record of Greenlandic tidewater glacier calving behaviour and in so doing, offer exciting new insights linked to the demise of the Norse Western Settlement of Greenland. This project is unique in integrating glaciology, geomorphology, palaeoecology at archaeological sites and marine biology. Danni will be based in Rm G14 of St Mary's.

Professor Andrea Rinaldo (EPFL Lausanne) and Drs Gianluca Botter and Paolo Benettin (University of Padua) visited the Northern Rivers Institute. A focused workshop on areas of common interest in stochastic aspects of ecohydrology was held involving **Chris Soulsby** and **Doerthe Tetzlaff**.

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**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 Geography & Environment. All welcome.

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

**Next copy deadline: June 3<sup>rd</sup>, 2015**

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