**Dr Daniel David Buscombe**

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| **Education** | **University of Plymouth,** **UK**  Doctor of Philosophy in Coastal Geomorphology / Nearshore Oceanography  Thesis title: Morphodynamics, sediment dynamics and sedimentation of a gravel beach  Graduation date: September 2008  Advised by Prof. Gerhard Masselink and Dr Mark Davidson |
|  | **Lancaster University, Bowland College, UK**  Bachelor of Science (with Honours) Physical Geography, minors in Environmental Sciences and Biological Sciences  Thesis title: Morphodynamics of a Macrotidal Ridge-and-Runnel Beach  Graduation date: September 2003  Advised by Dr Suzana |
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| **Professional**  **Experience** | **Northern Arizona University, USA**  Assistant Research Professor, Sch. Earth Sciences & Environmental Sustainability  {Nov. 2016- present}  **United States Geological Survey, USA**  Research Geologist, Grand Canyon Monitoring & Research Center  {Nov. 2012- Nov. 2016}  **University of Plymouth, UK**  Postdoctoral Research Fellow, Sch. Marine Science & Engineering  {2009- 2012}  **University of California Santa Cruz, USA**  Postdoctoral Research Fellow, Dept. Earth & Planetary Sciences, and U.S. Geological Survey  {2008- 2009}  **University of Plymouth, UK**  Computer Programming Contractor, Marine Biology & Ecology Research Center  {2008- 2011}  Research Assistant, Sch. Marine Science & Engineering  {2007- 2008}  Associate Lecturer and PhD candidate, Sch. Geography  {2004- 2008}  **Field Studies Council, UK**  Assistant tutor, Castle Head Field Centre  {2003- 2004} |
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| **Publications** | 1. **Buscombe**, **D**., & Masselink, G. (2006) Concepts in Gravel Beach Dynamics. *Earth Science Reviews* 79, 33-52. 2. **Buscombe**, **D**., Austin, M.J. & Masselink, G. (2007) Field observations of step dynamics on a macrotidal gravel beach. In: Kraus, N. and Rosati, J. (Eds) *Proceedings of Coastal Sediments 2007* (Vol 1). 3. Austin, M.J., Masselink, G., Turner, I., **Buscombe, D.**, & Williams, J.J. (2008) Groundwater seepage between a gravel barrier and a freshwater lagoon. *Proceedings of the 31st International Conference on Coastal Engineering (ICCE)*, Hamburg. 4. Ruzi de Alegria, A., Masselink, G., Kingston, K., Williams, J.J., & **Buscombe, D.**(2008) Storm impacts on a gravel beach using the ARGUS video system. *Proceedings of the 31st International Conference on Coastal Engineering (ICCE)*, Hamburg. 5. **Buscombe**, **D**., Masselink, G., & Rubin, D.M. (2008) Granular properties from digital images of sediment: Implications for coastal sediment transport modelling. *Proceedings of the 31st International Conference on Coastal Engineering (ICCE)*, Hamburg. 6. Masselink, G. & **Buscombe**, **D**. (2008) Shifting gravel: A case study of Slapton Sands. *Geography Review* 22, 27-31. 7. **Buscombe**, **D**. (2008) Estimation of grain size distributions and associated parameters from digital images of sediment. *Sedimentary Geology* 210, 1-10. 8. Austin, M.J. & **Buscombe**, **D**. (2008) Morphological change and sediment dynamics of the beach step on a macrotidal gravel beach. *Marine Geology* 249, 167-183. 9. Masselink, G., **Buscombe**, **D**., Austin, M.J., O’Hare, T., & Russell, P. (2008) Sediment trend models fail to reproduce small scale sediment transport patterns on an intertidal beach. *Sedimentology* 55, 667-687. 10. Williams, J.J., Masselink, G., **Buscombe**, **D**., Turner, I., Matias, A., Ferreira, O., Meltje, N., Bradbury, A., Albers, T., & Pan, S. (2009) BARDEX (Barrier Dynamics Experiment): taking the beach into the laboratory. *Journal of Coastal Research* SI 56, 158 – 162. 11. Warrick, J.A., Rubin, D.M., Ruggiero, P., Harney, J., Draut, A.E., & **Buscombe**, **D**. (2009) Grain Size Information from the Statistical Properties of Digital Images of Sediment. *Earth Surface Processes & Landforms* 34, 1811-1821. 12. **Buscombe**, **D**., & Masselink, G. (2009) Grain Size Information from the Statistical Properties of Digital Images of Sediment. *Sedimentology* 56, 421-438. 13. **Buscombe**, **D**., Rubin, D.M. & Warrick, J.A. (2010) An automated and 'universal' method for measuring mean grain size from a digital image of sediment. *Proceedings of the 9th Federal Interagency Sedimentation Conference*, Las Vegas June 2010. 14. **Buscombe**, **D**., Rubin, D.M. & Warrick, J.A. (2010) Universal Approximation of Grain Size from Images of Non-Cohesive Sediment. *Journal of Geophysical Research - Earth Surface* 115, F02015. 15. Conley, D.C., **Buscombe**, **D**., & Nimmo-Smith, A. (2012) Use of digital holographic cameras to examine the measurement and understanding of sediment suspension in the nearshore. *Proceedings of the 33rd International Conference on Coastal Engineering*, Santander, July 2012. 16. **Buscombe**, **D**., & Conley, D.C. (2012) Schmidt number of sand suspensions under oscillating-grid turbulence. *Proceedings of the 33rd International Conference on Coastal Engineering*, Santander, July 2012. 17. Puleo, J.A., Conley, D.C., Masselink, G., Russell, P., Turner, I.L., Blenkinsopp, C., **Buscombe**, **D**., Lanckriet, T., McCall, R., and Poate, T. (2012). Comprehensive study of swash-zone hydrodynamics and sediment transport. *Proceedings of the 33rd International Conference on Coastal Engineering*, Santander, July 2012. 18. Lacy, J.R., Rubin, D.M. & **Buscombe**, **D**. (2012) Currents and sediment transport induced by a tsunami far from its source. *Journal of Geophysical Research - Oceans* 117, C09028. 19. **Buscombe**, **D**., & Rubin, D.M. (2012) Advances in the Simulation and Automated Measurement of Granular Material, Part 1: Simulations. *Journal of Geophysical Research - Earth Surface* 117, F02002. 20. **Buscombe**, **D**., & Rubin, D.M. (2012) Advances in the Simulation and Automated Measurement of Granular Material, Part 2: Direct Measures of Particle Properties. *Journal of Geophysical Research - Earth Surface* 117, F02002. 21. **Buscombe**, **D**., & Conley, D.C. (2012) Effective Shear Stress of Graded Sediment. *Water Resources Research* 48, W05506. 22. Williams, J.J., **Buscombe**, **D**., Masselink, G., Turner, I., & Swinkels, C. (2012) Barrier Dynamics Experiment (BARDEX): Aims, Design and Procedures. *Coastal Engineering* 63, 3 – 12. 23. **Buscombe**, **D**. (2013) Transferable Wavelet Method for Grain Size-Distribution from Images of Sediment Surfaces and Thin Sections, and Other Natural Granular Patterns. *Sedimentology* 60, 1709 – 1732. 24. **Buscombe**, **D**., Grams, P.E., & Kaplinski, M.A. (2014) Characterizing riverbed sediment using high-frequency acoustics 1: Spectral properties of scattering. *Journal of Geophysical Research - Earth Surface* 119, doi: 10.1002/2014JF003189. 25. **Buscombe**, **D**., Grams, P.E., & Kaplinski, M.A. (2014) Characterizing riverbed sediment using high-frequency acoustics 2: Scattering signatures of Colorado River bed sediment in Marble and Grand Canyons. *Journal of Geophysical Research - Earth Surface* 119, doi:10.1002/2014JF003191. 26. **Buscombe**, **D**., Rubin, D.M., Lacy, J.R., Storlazzi, C., Hatcher, G., Chezar, H., Wyland, R., & Sherwood, C. (2014) Autonomous bed-sediment imaging-systems for revealing temporal variability of grain size. *Limnology & Oceanography: Methods*, 32, 1241 – 1256. 27. Puleo, J., Blenkinsopp, C., Conley, D., Masselink, G., Turner, I., Russell, P.,A., **Buscombe**, **D**., Howe, D., Lanckriet, T., McCall, R., & Poate, T. (2014) Comprehensive Field Study of Swash-Zone Processes, Part 1: Experimental Design with Examples of Hydrodynamic and Sediment Transport Measurements, *Journal of Waterway, Port, Coastal & Ocean Engineering* 140, 29 - 42. 28. Tusso, R.B., **Buscombe**, **D**., & Grams. P.E. (2015) Using oblique digital photography for alluvial sandbar monitoring and low-cost change detection. *Proceedings of the 10th Federal Interagency Sedimentation Conference*, Reno, April 2015. 29. **Buscombe**, **D**., Grams. P.E., Melis, T.S., & Smith, S. (2015) Considerations for unsupervised riverbed sediment characterization using low-cost sidescan sonar: Examples from the Colorado River, AZ and the Penobscot River, ME. *Proceedings of the 10th Federal Interagency Sedimentation Conference*, Reno, April 2015. 30. **Buscombe**, **D**., Grams. P.E., Kaplinski, M.A., Tusso, R.B., & Rubin, D.M. (2015) Hydroacoustic signatures of Colorado riverbed sediments in Marble and Grand Canyons using multibeam sonar. *Proceedings of the 10th Federal Interagency Sedimentation Conference*, Reno, April 2015. 31. Grams, P.E., **Buscombe**, **D**., Topping, D.J., Hazel, J.E., & Kaplinski, M.A. (2015) Use of Flux and Morphologic Sediment Budgets for Sandbar Monitoring on the Colorado River in Marble Canyon, Arizona. *Proceedings of the 10th Federal Interagency Sedimentation Conference*, Reno, April 2015. 32. Davies, E.J., **Buscombe**, **D**., Graham, G.W., & Nimmo-Smith, W.A.M. (2015) Evaluating Unsupervised Methods to Size and Classify Suspended Particles using Digital in-line Holography. *Journal of Atmospheric & Oceanographic Technology* 32, 1241 – 1256. 33. **Buscombe**, **D**., Grams, P.E., & Smith, S.M. (2015) Automated riverbed sediment classification using low-cost sidescan sonar. *Journal of Hydraulic Engineering* 10.1061/(ASCE)HY.1943-7900.0001079, 06015019. 34. **Buscombe**, **D**. (2016) Spatially explicit spectral analysis of point clouds and geospatial data. *Computers & Geosciences* 86, 92-108. 35. **Buscombe**, **D**. & Grams, P.E. (2016) Stochasticity of riverbed backscattering, with implications for acoustical classification of non-cohesive sediment using multibeam sonar. *Proceedings of the 8th International Conference on Fluvial Hydraulics*, St. Louis, Missouri, July 2016. 36. Hamill, D., **Buscombe**, **D**., Wheaton, J.M., Melis, T.S., & Grams. P.E. (2016) Towards bed texture change detection in large rivers from repeat imaging using recreational grade sidescan sonar. *Proceedings of the 8th International Conference on Fluvial Hydraulics*, St. Louis, Missouri, July 2016. 37. Cuttler, M., Lowe, R., Falter, J., & **Buscombe**, **D**. (2016) Estimating the settling velocity of bioclastic sediment from common grain-size analysis techniques. *Sedimentology* 10.1111/sed.12338. 38. **Buscombe**, **D**. (2017) Shallow water benthic imaging and substrate characterization using recreational-grade sidescan-sonar. *Environmental Modelling & Software* 89:1-18. 39. Kaplinski, M.A., Hazel, J.E., Grams. P.E., Kohl, K., **Buscombe**, **D**., & Tusso, R.B. (2017) Channel mapping river miles 29–62 of the Colorado River in Grand Canyon National Park, Arizona, May 2009. *U.S. Geological Survey Open-File Report 2017–1030*, 35 p., <https://doi.org/10.3133/ofr20171030>. 40. **Buscombe**, **D**., Grams, P.E., & Kaplinski, M.A. (in review) Compositional signatures in acoustic backscatter over vegetated and unvegetated mixed sand-gravel riverbeds. *Journal of Geophysical Research - Earth Surface* 41. **Buscombe**, **D**., Conley, D.C, & Nimmo-Smith, W.A.M. (in prep) Effect of bubbles on acoustic measurements of suspended sand in the surf zone. *Continental Shelf Research* 42. Grams. P.E., **Buscombe**, **D**., Topping, D.J. Hazel, J.E., Kaplinski, M.A. (in prep) Constructing a closed sediment budget in a noisy river. *Earth Surface Processes & Landforms* |
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| **Presentations** | {2016} Ocean Sciences, New Orleans, USA; International Marine Conservation Congress, St. Johns, Newfoundland. |
| **Cruises** |  |
| **Reports/Invited Lectures** | **Workshop facilitator:** Rodwell, L.D., De Groot, J.R., Ashley, M., **Campbell, M**., Linley, A., 2013. Fisheries and marine renewable energy interactions: assessment and mitigation: a final report on the expert workshop for the Marine Renewable Energy Knowledge Exchange Programme (MREKEP), York, April 17-18, 33 pp.  **Workshop facilitator:** Rodwell, L.D., **Campbell, M**., De Groot, J.R., Ashley, M. (2012) Fisheries and marine renewable energy interactions: a summary report on a scoping workshop for the Marine Renewable Energy Knowledge Exchange Programme (MREKEP), held at *Environmental Interactions of Marine Renewable Energy Technologies (EIMR) Conference*, Orkney, May 3-6, 20 pp.  **Marine Spatial Planning (MSP) lecturer for government offices and NGOs**: Lecture in aid of a new Master of Science course for those in planning agencies. July 2009, July 2010, July 2011.  **Deep-sea advisor**: Seeley *et al*. (2010) Report to Defra. Contract No. MB0102.  **Deep-sea advisor**: Wilding *et al*. (2009) Marine Health Check Update. Flagship species revistited. Goldaming, WWF-UK. MarLIN report in conjunction with WWF.  **Researcher**: Von Lindenfels, M. (2006) An opportunity for High Seas Philanthropy. A Report for the J.M. Kaplan Fund. |
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| **Roles on External Bodies** | **1**. Member of International Council for Exploration of the Sea (ICES) Study Group on Environmental Impacts of Wave and Tidal Energy (SGWTE) {2012-} |
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| **Conferences Organised** | {2014} UK Marine and Coastal Policy Forum, Plymouth University, UK. |
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| **Workshops Organised** | {2016} International Marine Conservation Congress (IMCC), St Johns, Newfoundland. EU Fisheries Communication Group ‘Use of technology to engage fishers in marine conservation dialogue’ for OceansOnline Symposium. |
| **Workshops/**  **Courses**  **Attended** | {2016} NSF grant writing, science communication with Ari Daniel and teaching workshops, Ocean Sciences, New Orleans, USA |
| **Grants awarded** | {2016} Challenger Society for Marine Science for attendance at Ocean Sciences & International Marine Conservation Congress (IMCC) (500GBP) |
| **Science**  **Communication**  **Science Writing**  **Competitions**  **Featured**  **Research** | {2018} Book (*In Prep* with Dr Kate de la Haye, Natural England) ‘*Stories from the Surface, Stories from the Deep: A Marine Biologists Tale*’ |
| **Professional Membership** | Society for Conservation Biology (2015-); |
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| **Skills** | Post-graduate student Mentoring Scheme, |
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| **References** | Available on request |