

PERSONAL STATEMENT

I am a Chartered Geotechnical Engineer and UK Registered Ground Engineering Adviser with 15 years of experience in research and industry. She is a and Deputy Chair the Proceedings of the ICE Geotechnical Engineering Editorial Panel. My main area of expertise is advanced geotechnical laboratory testing, including apparatus design, scheduling and interpretation and have extensive experience in advising on appropriate laboratory testing schemes and interpretation of geotechnical testing from soft soils to rock for infrastructure projects ranging from nuclear facilities to transportation.

I am experienced in journal paper writing and review with 15 technical papers published in international peer-reviewed journals and am currently Deputy Chair the Proceedings of the Proceedings of the ICE Geotechnical Engineering Editorial Panel.

WORK EXPERIENCE

[2020 – 2022]

Geotechnical Consulting Group LLP, London

Full-time Principal Geotechnical Engineer. Chartered Geotechnical Engineer and RoGEP Adviser with experience in advanced laboratory testing scheduling and interpretation for transportation and energy projects. Involved with Client Engagement, technical support for Expert Witness Statements, Settlement Analyses and technical report writing.

Whilst with GCG, she has worked on projects involving difficult soft soil conditions, including on deep mixing in soft ground containing alluvium and peat in Scotland and soil stabilisation works of deep soft clay deposits for a major highway project in Georgia, comparing the effectiveness of stone columns and wick drains (or prefabricated vertical drains, PVD's) with surcharging. She has also performed assessments of geotechnical parameters for problematic soft soils including peats for projects in London and Central Java. She has assisted with the review of site investigation and test interpretation proposals for large volume mining tailings storage reservoirs in Brazil. Within Greater London, she has performed settlement assessments for Network Rail lines and gas pipelines due to proposed constructions. She has undertaken desk studies for directional drilling and the impact of cyclic loading from high speed trains on existing tunnels.

[2016 – 2019]

Atkins, Bristol, UK

Part-time Senior Geotechnical Engineer. Specification and interpretation of Advanced Laboratory testing of crushed rock backfill for nuclear rated structures to obtain static and dynamic engineering parameters. Bearing capacity and settlement analyses based on interpreted ground conditions for a new build nuclear power station. Interpretation of Advanced Laboratory testing for rail structures (use of ProjectWise) to assess geotechnical design parameters.

[2016 – 2019]

Atkins, Bristol, UK

Full-time Senior Geotechnical Engineer. Analysis of rock laboratory test results, including UCS, point load and rock triaxial tests for the Geotechnical Interpretive Report for new build nuclear power. Scheduling of rock laboratory tests, specification on direct shear box pressures and rock triaxial cell pressures. Interpretation of rock testing for the Geotechnical Interpretive Report and involvement with review of downhole, sonic and suspension logging seismic velocities for new build nuclear power.

[2011 – 2015]

Imperial College, London

Full-time Lecturer. Teaching first year undergraduates Soil Mechanics as part of the Geotechnics module. Lecturing at Masters level of Foundations and

Laboratory Testing and Data Interpretation on the MSc in Soil Mechanics and electives. Laboratory Manager of the Geotechnical Testing Laboratories. Design and development of new advanced geotechnical apparatus to explore soil behaviour. Examinations Officer for the MSc in Soil Mechanics and electives. PhD, MSc and MEng research project supervision. Principle Investigator on EPSRC grant on the 'Effect of time on the evolution of soil behaviour', involving supervision of a 12 month Post- Doc and commissioning of new testing apparatus. Co-investigator on an ICE R&D grant 'Developing a rational basis for dam filter stability', involving a 3 month Post-Doc and computing facilities and access to microCT scanning facilities.

[2000 – 2010]

Ove Arup, London

Pre-University Traineeship and summer placements in a range of Geotechnical and Structural departments. Involved in projects including the Kings Cross Redevelopment and Nicoll Highway Collapse.

EDUCATION

2021	RoGEP Ground Engineering Professional – Adviser
2017	Institution of Civil Engineers (ICE) <i>CEng Chartered Civil Engineer</i>
2017	RoGEP Ground Engineering Professional – Specialist
2009	Univeristy of Tokyo, Japan PhD Civil Engineering “Model tests on the Response of buried pipes crossing a fault.”
2006	Imperial College, London, UK <i>MSc DIC in Soil Mechanics and Engineering Seismology, Distinction.</i>
2005	Imperial College, London, UK <i>MEng ACGI in Civil Engineering, First Class Honours.</i>

IT SKILLS

Microsoft Office; Visual Basic; Matlab; PDisp; HoleBase SI; Grapher;

AWARDS

JGS paper award 2018	for “Sub-Particle-Scale Investigation of Seepage in Sands” (Japanese Geotechnical Society).
Award of Excellence 2008	for best presentation at Geo-Kanto 2008, Funabashi (Japanese Geotechnical Society).
Geotechnical Engineering Research Papers of Excellence Award 2008	43rd JNCGE (Japan National Conference of Geotechnical Engineering), Hiroshima, Japan.
Soil Mechanics Prize 2006	MSc in Soil Mechanics and Engineering Seismology (Imperial College London).
Skempton Prize for Soil Mechanics 2005	MEng in Civil Engineering (Imperial College London).
Unwin Prize 2005	MEng in Civil Engineering (Imperial College London).
Certificate of Merit 2005	MEng in Civil Engineering (Institution of Civil Engineers).

MISCELLANEOUS

- 2015 Session Chair XVI
ECSMGE, Edinburgh: Co-chairing of the Laboratory Testing Session at the European Conference on Soil Mechanics and Geotechnical Engineering, Edinburgh, September 2015.
- 2015 Invited Presentation
SEG, Barcelona: Presentation of ‘Temperature Testing at Imperial’ at the Symposium on Energy Geotechnics, Barcelona, June 2015.
- 2015 Invited Presentation
NNL Presentation on ‘Geotechnical Testing Capabilities at Imperial’ at the National Nuclear Laboratory, Jan 2015.
- 2014 Session leader at IS
Cambridge Leading parallel session on imaging techniques at the International Symposium on Geomechanics from Micro to Macro, Cambridge, June 2014.

JOURNAL PAPERS

- O’Sullivan, C., Taylor, H., Shire, T., Moinet, W.W. (2018) “Influence of the coefficient of uniformity on the size and frequency of constrictions in sand filters”. *Géotechnique* 69(3): 274-282.
- Altuhafi, F., Jardine, R.J., Georgiannou, V.N., Moinet, W.W. (2018) “Effects of particle breakage and stress reversal on the behaviour of sand around displacement piles”. *Géotechnique*. 68(6): 546-555
- Taylor, H.F., O’Sullivan, C., Sim, W.W. Carr, S.J. (2017) “Sub-Particle-Scale Investigation of Seepage in Sands”. *Soils and Foundations*. 57(3): 439-452.
- Otsubo, M., O’Sullivan, C., Hanley, K.J. & Sim, W.W. (2017) “Influence of packing density and stress on the dynamic response of granular materials”. *Granular Matter* 19(3):50.
- Otsubo, M., O’Sullivan, C., Hanley, K.J. & Sim, W.W. (2017) “The influence of particle surface roughness on elastic stiffness and dynamic response”. *Géotechnique*. 67(5): 452-459.
- Taylor, H., O’Sullivan, C. & Sim, W. W. (2016) “Geometric and hydraulic void constrictions in granular media”. *Journal of Geotechnical and Geoenvironmental Engineering* 142(11). DOI: 10.1061/(ASCE)GT.1943- 5606.0001547. (Online 16/06/2016)
- Aghakouchak, A., Sim, W.W. & Jardine, R.J. (2015) “Stress path laboratory tests to characterise the cyclic behaviour of piles driven in sands”. *Soils and Foundations*. 55(5): 917-928
- Taylor, H., O’Sullivan, C. & Sim, W. W. (2015) “A new method to identify void constrictions in micro-CT images of sand”. *Computers and Geotechnics*. 69: 279–290.
- Otsubo, M., O’Sullivan, C., Sim, W.W. & Ibraim, E. (2015) “Quantitative assessment of the influence of surface roughness on soil stiffness”. *Géotechnique*. 65(8): 694 – 700.
- Fonseca, J., Sim, W. W., Shire, T. & O’Sullivan, C. (2014) “Microstructural analysis of sands with varying degrees of internal stability”. *Géotechnique*. 64(5): 405 – 411.
- Sim, W. W., Aghakouchak, A., & Jardine, R. J. (2013) “Cyclic triaxial tests to aid offshore pile analysis and design”. *Proceedings of the Institution of Civil Engineers - Geotechnical Engineering* 166 (GE2):111 - 121.
- Sim, W. W., Towhata, I., & Yamada, S. (2012) “one-g shaking table experiments on buried pipelines crossing a strike-slip fault”. *Géotechnique*. 62(12):1067 – 1079
- Sim, W. W., Towhata, I., Yamada, S. & Moinet, G., J., -M. (2012) “Shaking table tests modelling small diameter pipes crossing a vertical fault”. *Soil Dynamics and Earthquake Engineering* 35: 59-71.
- Sim, W. W. & Towhata, I. (2009) “Model tests examining the factors affecting the strains in buried pipes during simultaneous strike-slip faulting and shaking”. *Journal of Harbin Institute of Technology (New Series)* 16, Sup. 1: 12 – 18
- López-Querol, S., Coop; M. R., Bommer; J. J., Fenton, C., Sim, W. W. (2007) “Back-analysis of liquefaction in the 2006 Mozambique earthquake”. *Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards*. 1 (2): 89 – 101

CONFERENCE PUBLICATIONS

- [C1] Al Haj, K.M.A. & Sim, W.W. (2016) Effect of time on the evolution of soil behavior: new advanced triaxial creep cell experiments. In: Geotechnics for Sustainable Infrastructure Development - GeotecHanoi 2016, Phung (ed)., 24-29 Nov 2016.
- [C2] Martinez Calonge*, D., Gawecka, K.A., Zdravkovic, L., Sim, W.W. & Taborda, D.M.G. (2015) Development of a new temperature-controlled triaxial apparatus for saturated soils. In: Proc. XVI ECSMGE, Geotechnical Engineering for Infrastructure Development, Edinburgh 2015, 13-17 Sept. 2015. pp3219 – 3224.
- [C3] Dimitriadi, M., Ureña, C., Fenton, C.H., Sim, W.W., Cheeseman, C., Azañon, J.M. (2015) Sustainable improvement of an expansive soil using recycled materials In: Proc. XVI ECSMGE, Geotechnical Engineering for Infrastructure Development, Edinburgh 2015, 13-17 Sept. 2015. pp3219 – 3224.
- [C4] Martinez Calonge*, D., Sim, W.W. & Zdravkovic, L. (2015) On the development of a new temperature-controlled triaxial apparatus for saturated soils. In: Int. Symp. on Energy Geotech., SEG 2015, 2-5 June 2015. pp163 – 165
- [C5] Sim*, W.W. (2015) Testing at temperature at Imperial. In: Int. Symp. on Energy Geotech., SEG 2015, 2-5 June 2015. pp91 - 93
- [C6] Otsubo*, M., O’Sullivan, C. & Sim, W. W. (2014) “A methodology for accurate roughness measurements of soils using optical interferometry”. Proc. of TC105 ISSMGE Int. Symp. Geomechanics from micro to macro, Cambridge, UK 1 -3 Sept 2014. pp 1117 – 1122.
- [C7] Taylor*, H. F., O’Sullivan, C. & Sim, W. W. (2014) “Challenges analysing micro-CT images of dam filter materials”. Proc. of TC105 ISSMGE Int. Symp. Geomechanics from micro to macro, Cambridge, UK 1 -3 Sept 2014. pp 1147 – 1152.
- [C8] Sim, W.W. & Towhata*, I (2011) “Model Tests on Bending of embedded pipeline crossing a Strike- Slip fault”, Proc. of 14th Asian Regional Conf. Soil Mech. & Geotech. Eng., 23-27 May 2011, paper no. 244.
- [C9] Sim, W.W. & Towhata*, I (2010) “Effect of pipe-fault crossing angle on the bending and axial strains in a pipe crossing a strike-slip fault”, Proc. 45th JNCGE, 18-21 Aug 2010, pp. 1415-1416.
- [C10] Towhata*, I & Sim, W.W. (2010) “Model tests on embedded pipeline crossing a seismic fault”, 3rd Int. Earthquake Symp. Bangladesh 5-6 Mar 2010, Dhaka: pp.1-12.
- [C11] Sim*, W.W. & Towhata, I. (2009) “1g shaking table tests exploring the possible benefits of using tire-chips as a backfill material for buried pipelines crossing underlying strike-slip faults.”, Proc. 44th Japan Nat. Conf. Geotech. Eng, 18-21 Aug 2009, pp.1301-1302.
- [C12] Sim*, W.W. & Towhata, I. (2009) “Model tests examining the factors affecting the strains in buried pipes during simultaneous strike-slip faulting and shaking.”, Proc. of the 3rd Int. Geotech. Symp. (IGS2009) 22nd-25th Jul 2009, pp.692-699.
- [C13] Sim*, W.W. & Towhata, I. (2009) “1G shaking table experiments on the effect of shaking and vertical shear displacement on buried instrumented pipes – Implications for design.”, (IS-Tokyo 2009), 15-18 June 2009, pp.1033-1040.
- [C14] Sim*, W.W. & Towhata, I. (2008) “Shaking table tests on buried pipelines intersecting vertical faults”, Proc. 5th Geo-Kanto2008, 31Oct – 1 Nov 2008, pp.35-39.
- [C15] Sim*, W.W. & Towhata, I. (2008) “Experiments Modelling Buried Pipes Crossing Underlying Vertical Faults –1G Shaking Table Tests”, Proc. 43rd JNCGE., Hiroshima, Japan. 9– 12 Jul 2008, pp.1677-1678.
- [C16] Sim*, W.W. (2007) “1-G Experiments on Pipes Crossing Vertical Displacement Faults”, Proc.4th Geo-Kanto2007, Maebashi 31 Oct – 1 Nov 2007, pp.335-338.

* Presenting Author.

THESES

- Sim, W.W. (2009) “Model Tests on the Response of Buried Pipes Crossing a Fault”. PhD Thesis, University of Tokyo, Japan.
- Sim, W.W. (2006) “The Machaze, Mozambique Earthquake of 23rd February 2006. Implications for seismic risk and liquefaction hazard”. MSc Thesis, Imperial College London.
- Sim, W.W. (2005) “Investigating the Dissipation Properties of a Compacted Partially Saturated Residual Soil - Metasedimentary Phyllite”. MEng Thesis, Imperial College London.