Curriculum Vitae: Timothy Adam Shaw

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Employment

2020 – **Senior Research Fellow**. Earth Observatory of Singapore, Nanyang Technological University, Singapore.

2019 – 2020 **Senior Research Fellow**. Asian School of the Environment, Nanyang Technological University, Singapore.

2017 – 2019 **Research Fellow**. Asian School of the Environment, Nanyang Technological University, Singapore.

2014 – 2017 **Postdoctoral Associate**. Department of Marine and Coastal Sciences, Rutgers University, United States.

Qualifications

2009 – 2014 **PhD** (NERC Studentship). Department of Geography, School of Environmental Sciences, University of Liverpool, United Kingdom/National Oceanography Centre, Liverpool, United Kingdom.

2007 – 2008 **MSc**. Environment and Climate Change. Department of Geography, School of Environmental Sciences, University of Liverpool, United Kingdom.

2004 – 2007 **BSc Honours**. Physical Geography. School of Biological and Environmental Sciences, Liverpool John Moores University, United Kingdom.

Publications

Published:

Saintilan, N., Horton, B., Törnqvist, T.E., Ashe, E.L., Khan, N.S., Schuerch, M., Perry, C., Kopp, R.E., Garner, G.G., Murray, N., Rogers, K., Albert, S., Kelleway, J., **Shaw, T.A.,** Woodroffe, C.D., Lovelock, C.E., Goddard, M.M., Hutley, L.B., Kovalenko, K., Feher, L., Guntenspergen, G., 2023. Widespread retreat of coastal habitat is likely at warming levels above 1.5 °C. *Nature* 1–8. https://doi.org/10.1038/s41586-023-06448-z.

Shaw, T.A., Li, T., Ng, T., Cahill, N., Chua, S., Majewski, J.M., Nathan, Y., Garner, G.G., Kopp, R.E., Hanebuth, T.J.J., Switzer, A., Horton, B.P. 2023. Deglacial perspectives of future sea level for Singapore. 2023. *Communications Earth & Environment.* 4, 204. https://doi.org/10.1038/s43247-023-00868-5.

Shaw, T.A., 2023. Late Quaternary relative sea-level changes in the tropics, in: *Reference Module in Earth Systems and Environmental Sciences*. Elsevier. https://doi.org/10.1016/B978-0-323-99931-1.00067-2.

Kim, H.L., Li, T., Kalsi, N., Nguyen, H, T., **Shaw, T.A.**, Ang, K., Cheng, K., Ratan, A., Peltier, W., Samanta, D., Pratapneni, M., Schuster, S., Horton, B. P. 2023. Prehistoric human migration between Sundaland and South Asia was driven by sea-level rise. *Communications Biology*. 6 (1), 1-10. doi.org/10.1038/s42003-023-04510-0.

Walker, J.S., Khan, N., **Shaw, T.A.**, Barber, D.C., Horton, B.P. 2023. Spatial and temporal distributions of live salt-marsh foraminifera in southern new jersey: implications for sea-level studies. *Journal for foraminiferal research.* 53 (1), 3-19.

Walker, J.S., Li, T., **Shaw, T.A.**, Cahill, N., Barber, D.C., Brain, M.J., Kopp, R.E., Switzer, A. D., Horton, B. P. 2023. A 5000-year record of relative sea-level change in New Jersey, USA. *The Holocene.* doi.org/10.1177/09596836221131696.

Kemp, A.C., **Shaw, T.A.**, Piecuch, C.G. 2022. The importance of non-tidal water-level variability for reconstructing Holocene relative sea level. *Quaternary Science Reviews* 290. 107637.

Majewski, J.M., Meltzner, A.J., Switzer, A.D., **Shaw, T.A.**, Li, T., Bradley, S., Samanta, D., Walker, J., Kopp, R.E., Natawidjaja, D.H., Bambang, W., Suwargadi, W., Horton, B.P. 2022. Extending instrumental sea-level records using coral microatolls, an example from Southeast Asia. *Geophysical Research Letters* 49. e2021GL095710.

Li. T., Khan, N., Baranskaya, A., **Shaw, T.A.**, Peltier, R., Stuhne, G., Wu, P., Horton, B.P. 2022. Influence of 3D Earth structure on Glacial Isostatic Adjustment in the Russian Arctic. *Journal of Geophysical Research: Solid Earth*, e2021JB023631.

Chua, S., Switzer, A., Li, T., Chen, H., Christie, M., **Shaw, T.A.**, Khan, N., Bird, M., Horton, B.P. 2021. A new Holocene sea-level record for Singapore. *The Holocene.* doi:10.1177/09596836211019096.

Walker, J.S., Kopp, R.B., **Shaw, T.A.**, Cahill, N., Khan, N.S., Barber, D., Ashe, E.L., Brain, M., Clear, J., Corbett, R., Horton, B.P. 2021. Common Era sea-level budgets along the U.S. Atlantic coast. *Nature Communications* 12, 2, 1-10.

Christie, M.A., Bernhardt, C.E., Parnell, A.C., **Shaw, T.A.**, Khan, N., Corbett, D.R., García-Artola, A., Clear, J., Walker, J.S., Donnelly, J.P., Hasse, T.R., Horton, B.P. 2021. Pollen geochronology from the Atlantic Coast of the United States during the last 500 years. *Water* 13, 362.

Roy, K., Khan, N.S., **Shaw, T.A.**, Kopp, R.E., Horton, B.P. 2021. Sea level under climate change: Understanding the links between the past and the future. *Climanosco Research Articles* 2, 14 Jan 2021.

Li, T., **Shaw, T.A.**, Samanta, D., Baranskaya, A.V., Khan, N.S., Horton, B.P. 2020. Past, present and future sea-level change in the Russian Arctic. *The International Expert Council on Cooperation in the Arctic. Arctic Review*. No.6.

Chen, H., **Shaw, T.A.**, Wang, J., Engelhart, S., Nikitina, D., Pilarczyk, J.E., Walker, J., García-Artola, A., Horton, B.P. 2020. Salt-Marsh Foraminiferal Distributions from Mainland Northern Georgia, USA: An Assessment of Their Viability for Sea-Level Studies. *Open Quaternary* 6, 6.

Li, T., Wu, P., Wang, H., Steffen, H., Khan, N.S., Engelhart, S.E., Vacchi, M., **Shaw, T.A.**, Peltier, W.R., Horton, B.P. 2020. Uncertainties of glacial isostatic adjustment model predictions in North America associated with 3D Structure. *Geophysical Research Letters* 47, e2020GL087944.

Horton, B.P., Khan, N.S., Cahill, N., Lee, J.S.H., **Shaw, T.A.**, Garner, A.J., Kemp, A.C., Engelhart, S.E., Rahmstorf, S. 2020. Estimating global mean sea-level rise and its uncertainties by 2100 and 2300 from an expert survey. *NPJ Climate and Atmospheric Science* 3, 1–8.

Walker, J.S., Cahill, N., Khan, N.S., **Shaw, T.A.**, Barber, D., Miller, K.G., Kopp, R.E., Horton, B.P. 2020. Incorporating temporal and spatial variability of salt-marsh foraminifera into sea-level reconstructions. *Marine Geology* 429, 106293.

Horton, B.P., Kopp, R.E., Dutton. A., **Shaw, T.A**. 2019. Geological records of past sea-level changes as constraints for future projections. *Past Global Changes Magazine,* 27, 1, 28-29.

Switzer, A.D., Felix, R.P., Soria, J.L.A., **Shaw, T.A.** 2019. A comparative study of the 2013 typhoon Haiyan overwash sediments from a coastal cave and beach system at Salcedo, Eastern Samar, Central Philippines. *Marine Geology* 419,106083.

Balmaki, B., Wigand, P.E., Frontalini, F., **Shaw, T.A.**, Avnaim-Katav, S., Rostami, M.A. 2019. Late Holocene paleoenvironmental changes in the Seal Beach wetland (California, USA): A micropaleontological perspective. *Quaternary International*, 530-531, 14-24.

Shaw, T.A., Plater, A.J., Kirby, J.R., Holgate, S., Roy, K., Tutman, P., Cahill, N., Horton, B. P. 2018. Tectonic influences on late Holocene relative sea levels from the central-eastern Adriatic coast of Croatia, *Quaternary Science Reviews,* 200, 262-275.

Horton, B.P., Shennan, I., Bradley, S., Cahill, N., Kirwan, M., Kopp, R.B., **Shaw, T.A.** 2018. Predicting marsh vulnerability to sea-level rise using Holocene relative sea-level data, *Nature Communications*, 9 1, 2687.

Horton, B.P., Kopp, R.E., Garner, A.J., Hay, C.C., Khan, N.S., Roy, K., **Shaw, T.A.** 2018. Mapping sea-level change in time, space and probability, *Annual Reviews,* 43, 1, 481-521.

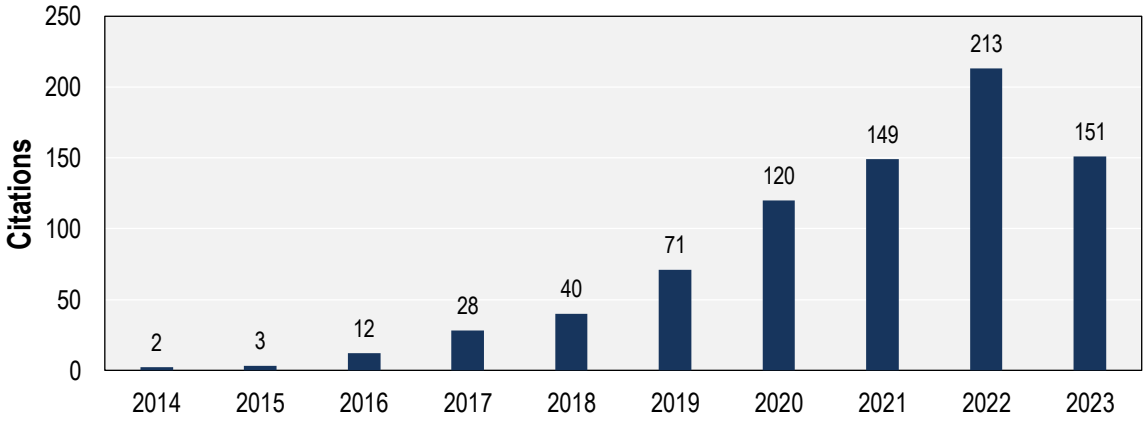
Holmquist, J., Windham-Myers, L., Bliss, N., Crooks., S., Morris, J., Megonigal, J., Troxler, T., Weller, D., Callaway, J., Drexler, J., Ferner, M., Gonneea, M., Kroeger, K., Schile-Beers, L., Woo, I., Buffington, K., Breithaupt, J., Brandon, B., Brown, L., Dix, N., Hice, L., Horton, B., MacDonald, G., Moyer, R., Reay, W., **Shaw, T.**, Smith, E., Smoak, J., Sommerfield, C., Thorne, K., Velinsky, D., Watson, E., Wilson Grimes, K., Woodrey, M. 2018. Accuracy and Precision of Tidal Wetland Soil Carbon Mapping in the Conterminous United States, *Nature Scientific Reports*, 8, 1, 9478.

Shaw, T.A., Kirby, J. R., Holgate, S., Tutman, P., Plater, A.J. 2016. Contemporary salt-marsh foraminiferal distribution from the Adriatic Coast of Croatia and its potential for sea-level studies, *Journal of Foraminiferal Research*, v. 46, 3, 314-332.

Khan, N.S., Ashe, E., **Shaw, T.A.**, Vacchi, M., Walker, J., Peltier, W.R., Kopp, R.E., Horton, B.P. 2015. Holocene relative sea-level changes from near-, intermediate-, and far-field locations, *Current Climate Change Reports*, 1, 4, 247-262.

Plater, A.J., Kirby, J.R., Boyle, J.F., **Shaw, T.**, Mills, H. 2015. Loss on Ignition and Organic Content, In: *Handbook of Sea-Level Research*, Shennan, I., Long, A.J., and Horton, B.P. (Eds.), John Wiley & Sons Ltd, Chichester, U.K.

Kirby, J., Clarke, D., **Shaw, T**., Toole, E. 2010. The Mid-Late Holocene Evolution of Southern Walland Marsh and the Origin of the 'Midley' Sand, In *Romney Marsh: Persistence and Change in a Coastal Lowland,* Waller, M. P, Edwards, E., Barber, L (Eds.), The Romney Marsh Research Trust, Sevenoaks, U.K.



Press Releases

The Straits Times: Singapore sea level could rise 1.37m by 2150

Grant Funding

During my postdoctoral positions, I have designed, wrote, and budgeted grant proposals with my advisors and collaborators gaining significant experience in the submission process to secure external funding from Singapore's agencies. I am currently involved in sea level and coastal environmental research grants including:

National Environment Agency National Sea Level Program: Driving mechanisms of past and present sea-level change to quantify projection uncertainties. S$1,286,306.40. 2021-2024. Co-investigator.

Ministry of Education Tier 3: SouthEast Asia Sea Level (SEA^2) Program. S$9,264,640.00. 2020-2025. Co-investigator.

Ministry of Education Tier 2. Relative sea-level changes along the Northern Sea Route: from patterns and rates to drivers and mechanisms. S$784,968.00. 2021-2024. Co-investigator.

Research Expertise

My research skills are founded in physical environmental research, developing expertise in field, laboratory, and analytical techniques that I continue to develop moving forward in my career. Specially these involve expertise in field reconnaissance through sediment stratigraphic investigations, core sampling and surveying techniques, micropaleontological (e.g., foraminifera) and sedimentological (e.g., particle size and organic carbon) analyses, developing chronologies and Bayesian age-depth modelling that incorporate radiocarbon and event-based chronohorizons (e.g., short-lived radionuclides and pollution markers), statistical modelling micropaleontology, environmental and sea-level datasets. Furthermore, I have skills in running global, regional, and local projections of sea-level with an understanding of the driving processes and sources of uncertainty.

Teaching Experience

I have gained experience in preparing and delivering undergraduate and postgraduate lectures on paleoenvironmental research with an emphasis on coastal environments and sea-level change for the undergraduate programme at the Asian School of the Environment, NTU. This has included lectures and tutorials (course code ES1007 Climate Change). I have also co-led overnight field excursions to Pulau Ubin, Singapore teaching student's skills in coastal geomorphology, sediment stratigraphy and surveying (course code ES2004 Sedimentary Geology). My postdoctoral experience has also enabled me to gain skills in mentoring PhD graduate students and junior research fellows including support in their fieldwork experiments and design, laboratory, and data analyses, preparing presentations and developing thesis and manuscripts for publication.

Conferences and Talks

I have delivered numerous oral and poster presentations on aspects of coastal environment and sea-level change from high, temperature and tropical latitudes at all major geoscience meetings. I gave the invited talk on Singapore sea levels at EGU 2021 (session led by Svetlana

Jevrejeva, CCRS, Singapore) and was lead convener of a sea-level research session AOGS 2021 (details below):

Past, Present and Future Sea Levels in Singapore, EGU General Assembly 2021, online, 19–30 April 2021, EGU21-10615. (Invited talk).

Asia Oceania Geosciences Society 2021 Virtual 18th Annual Meeting. Sea Level Change: Past, Present, And Future: Session IG10. 1 – 6 August 2021. (Lead convener).

IGCP Project 639 “Sea Level Change from Minutes to Millennia”. Session - Eustasy, isostasy and tectonics. Taranto, Italy. 16 – 23 September 2018. (Convener).

XIX INQUA Congress. Session C07 - Post-glacial drowning of continental shelves. Nagoya, Japan, 26 July – 2 August 2015. (Convener).

Past, Present and Future Sea-Level Change. Ministry of Foreign Affairs/Earth Observatory of Singapore Tour. 13 March 2019. (Invited talk).

Sea Levels in Southeast Asia: Past, Present and Future. Singapore Civil Defense Academy. 6 March 2019. (Invited talk).

Panel Discussion on Climate Change. Singapore Eco Film Festival, Singapore Art Science Museum, 1 – 4 November 2018. (Invited talk).

Sea Levels in Southeast Asia: Past, Present and Future. Singapore Civil Defense Academy, 4th senior executive program in disaster management, 29 October – 1 November 2018. (Invited talk).

The importance of high-resolution sea-level research. International Forum for Outstanding Overseas Young Scholars, State Key Laboratory of Estuarine & Coastal Research, East China Normal University, Shanghai, China, 28 April ,2018. (Invited talk).

Late Holocene sea-level variability from the mid U.S. Atlantic coast. Departmental seminar series, Department of Marine and Coastal Sciences, Rutgers University, NJ, USA. October 2016. (Departmental seminar).

Salt marshes and their potential to record sea-level changes along the coast of Croatia, Institute of Oceanography and Fisheries, Split, Croatia, December 2012. (Invited talk).

Academic Service

I continue to support academic integrity providing manuscript reviews for the following:

Peer review journals: Science Advances; Scientific Reports; Communications Earth & Environment, Quaternary Science Reviews, Palaeogeography Palaeoclimatology Palaeoecology; Geomorphology, Quaternary Research, Climate of the Past, Earth System Science Data, Estuarine, Coastal and Shelf Science, Journal of Foraminiferal Research, Open Quaternary.

Professional membership: American Geophysical Union, European Geophysical Union, Asia Oceania Geosciences Society, Quaternary Research Association, Cushman Foundation for Foraminiferal Research.

Referees

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2. **Associate Prof. Adam Switzer**. Earth Observatory of Singapore, Nanyang Technological University, Singapore.

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3. **Prof. Andrew Plater (PhD advisor)**. Department of Geography and Planning, University of Liverpool, Liverpool, United Kingdom.

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4. **Associate Prof. Andrew Kemp**. Department of Earth Sciences, Tufts University, Boston, United States.

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