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Dr.ir. Stuart G. Pearson

Summary

Assistant professor of coastal engineering at TU Delft. In a nutshell, I investigate how waves and tides move sand around the coast and lead to flooding or erosion. This helps us make informed decisions about how to adapt to climate change and sustainably manage our coasts. My main line of research relates to analyzing sediment transport pathways, connectivity, and morphodynamics of coasts. I am also engaged in science communication and research on flood prediction for coral reef-lined coasts and small islands.

Academic Appointments

2022–Present **Assistant Professor**, *Delft University of Technology (1.0 FTE)*, Delft, The Netherlands, Coastal Engineering: Climate-Robust Deltas

2021–2022 **Postdoctoral Researcher**, *Delft University of Technology (0.8 FTE)*, Delft, The Netherlands, Environmental Fluid Mechanics. Advisor: Bram van Prooijen
NWO-funded ENW project: TRAILS (TRacking Ameland IIving Lab Sediment) Work Package D: Sediment pathway modelling [Link]

Education

2016–2022 **PhD**, *Cum Laude (Top 5%), Delft University of Technology (0.8 FTE)*, Delft, The Netherlands, Coastal Engineering. Promotors: Zheng Bing Wang & Bram van Prooijen
Dissertation: *Sediment Pathways on Ebb-Tidal Deltas: New Tools and Techniques for Analysis* [Link]. NWO-funded AES/TTW project: SEAWAD.

2014–2016 **MSc**, *Cum Laude, Delft University of Technology; Norwegian University of Science & Technology; University of Southampton*, Delft, The Netherlands; Trondheim, Norway; Southampton, United Kingdom, Coastal & Marine Engineering and Management (CoMEM)
Thesis: *Predicting Wave-Induced Flooding on Low-Lying Tropical Islands Using a Bayesian Network* [Link]

2007–2012 **BASc**, *with Distinction, University of Waterloo*, Waterloo, Canada
Honours Civil Engineering Co-op (Water Resources & Management Science)

Experience

Research

2022–Present **Assistant Professor**, *Delft University of Technology (1.0 FTE)*, Delft, The Netherlands, Coastal Engineering: Climate-Robust Deltas

- Investigating how sediment contributes to the robustness of our coasts and deltas against climate change
- Quantifying sediment pathways and connectivity for strategic placement of sediment via numerical modelling and field measurements.

2021–2022 **Postdoctoral Researcher**, *Delft University of Technology*, Delft, The Netherlands

Investigating coastal sediment pathways (0.8 FTE).

- Developing a numerical particle tracking model (SedTRAILS) aimed specifically at defining sediment transport pathways and connectivity in coastal systems and estuaries
- Integrated within project which focuses on viability of Optically Stimulated Luminescence (OSL) as a tracer for sand nourishments in coastal environments

2016–2022 **PhD Candidate**, *Delft University of Technology*, Delft, The Netherlands

Researched the influence of grain size on sediment transport pathways on ebb-tidal deltas, for the purpose of planning large-scale sand nourishments (0.8 FTE).

- Conducted field measurements of sediment transport, waves, and currents and analyzed the results
- Laboratory analysis of sediment samples obtained in the field as part of a tracer study
- Numerically modelled of hydrodynamics and sediment transport

2019–2019 **Visiting Researcher**, *Ifremer*, Brest, France

- Analyzed and interpreting suspended sediment measurements in estuaries using optical and acoustic techniques (LISST, ADV, OBS, CTD, ADCP)
- Conducting laboratory experiments on mixed sediment measurements
- Hosted for two months by Dr. Romaric Verney at the DYNECO/DHYSED unit of Ifremer

2019–2019 **Visiting Scientist**, *US Geological Survey (USGS)*, Santa Cruz, California

- Researched sediment dynamics in estuaries and tidal inlets
- Simulated sediment transport pathways at the mouth of the Columbia River and applied sediment connectivity framework
- Investigated coral reef dynamics on low-lying islands in the Pacific
- Hosted for three months by Edwin Elias, Guy Gelfenbaum, and Curt Storlazzi at the Pacific Coastal and Marine Science Center

2016–2016 **Intern**, *Deltares*, Delft, The Netherlands

- Researched wave-induced flooding on coral atolls in the Pacific for my MSc thesis
- Developed a runup/overtopping prediction method for use in operational flood forecasting
- Modelled wave runup and inundation using XBeach over a range of idealized reef profiles
- Cast the model results in a Bayesian network probabilistic model
- Validated the Bayesian network on other atolls and fringing reefs across the Pacific

2015–2015 **Research Assistant**, *Norwegian University of Science and Technology (NTNU)*, Trondheim, Norway

- Modelled the thermo-mechanical erosion of permafrost coastlines in the Arctic
- Hosted for two months by Raed Lubbad of NTNU's Sustainable Arctic Marine and Coastal Technology group

2011–2011 **Undergraduate Research Assistant**, *University of Waterloo*, Waterloo, Canada

- Developed hydrological model pre-processor in VB.NET for Professor James Craig

Consulting/Industry

2016–2023 **Consultant/Researcher**, *Deltares (0.2 FTE)*, Delft, The Netherlands

Applied hydrodynamic and morphodynamic modelling and software devleopment related to my research on coral reefs and tidal inlets.

- Developed and applied a numerical particle tracking model aimed specifically at defining sediment transport pathways and sediment connectivity in coastal systems
- Developed an early warning system for wave induced flooding on low-lying tropical islands using non-hydrostatic wave models and Bayesian networks
- Supervised/mentored interns and junior staff on a wide variety of coastal projects

2012–2014 **Coastal Engineer-in-Training**, *W.F. Baird & Associates Coastal Engineers (1.0 FTE)*, Oakville, Canada

Numerical modeller of flood hazards and sediment transport in rivers and estuaries, contributing to numerous international coastal engineering projects.

- Developed, calibrated, and post-processed hydrodynamic, long-term morphologic, and water quality models in Delft3D for two major projects including a contaminated harbour and a river with multiple dams
- Modelled flooding of urban areas using 2D (MIKE 21, Delft3D), 1D (MIKE 11, HEC-RAS), and 1D-2D coupled models (MIKE FLOOD)
- Adapted shore protection damage algorithm in Baird's Flood and Erosion Prediction System (FEPS) software and prepared user manual/technical documentation

2011–2011 **Coastal Engineering Co-op Student**, *Baird & Associates Coastal Engineers*, Oakville, Canada

- Modelled river flooding in urban areas with MIKE 21 and HEC-RAS (4 month internship)

2011–2011 **Hydrotechnical Engineering Co-op Student**, *BC Hydro*, Burnaby, Canada

- Developed hydraulic model for dam breach flooding scenarios using MIKE 11, Blue Kenue, and ArcMap as part of inundation mapping and flood risk program (4 month internship)

2010–2010 **Student Designer**, *MTE Consultants Inc.*, Kitchener, Canada

- Engaged in dozens of municipal projects ranging from stormwater management and creek rehabilitation to road reconstruction and roundabout design (4 month internship)

2009–2009 **Junior Engineering Co-op Student**, *PCL*, Toronto & North Bay, Canada

- Supervised construction at condominium towers and hospital construction site (2x4 month internships)

2008–2008 **Cost Engineering Co-op Student**, *Kiewit Energy*, Fort McMurray, Canada

- Assisted engineers with project controls tasks on Steam-Assisted Gravity Drainage (SAGD) oil plant construction site including cost and labour analysis (4 month internship)

Miscellaneous

2009–2010 **Engineering Orientation Committee Head**, *University of Waterloo*, Waterloo, Canada

- Led team in the planning and execution of the university's Orientation Week
- Prepared detailed budgets and risk management procedures for the week's events
- Managed over 300 volunteer leaders and 1600 first-year engineering students

2008–2009 **Editor-in-Chief/Assistant Editor**, *University of Waterloo*, Waterloo, Canada

- Coordinated over 50 staff and contributors for biweekly publication; ran weekly meetings
- Managed advertising and finances; stayed on budget and recruited advertising clients
- Designed newspaper layout, proofread and edited content, and wrote numerous articles

Research Interests

Coastal Sediment Pathways	Sediment transport pathways and connectivity on coasts and in estuaries; hydrodynamic and morphodynamic processes at tidal inlets and in estuaries; spatial and temporal variations in grain size.
Flooding on Reef-Lined Coasts & Small Islands	Wave transformation on fringing coral reefs and relation to flooding; development of early flood warning systems for reef-lined coasts; assessment of climate change impacts on reef-lined coasts and small islands
Arctic Coastal Erosion	Erosion of permafrost coastlines; impacts of climate change on Arctic coasts; changes in wave climate due to changes in sea ice cover; infragravity waves on Arctic coasts
Science Communication	Engaging the general public and stakeholders in coastal science and contemporary coastal issues e.g. climate change impacts to coastal regions. I also blog!

Publications

Citation Statistics

ORC-ID: 0000-0002-3986-4469
Citations: 362
h-Index: 11
Source: Google Scholar (2023-08-15)

(served as research mentor for starred names)*

Peer-Reviewed Journal Articles

18. Stevens, A.W., Moritz, H.R., Elias, E.P., Gelfenbaum, G.R., Ruggiero, P.R., **Pearson, S.G.**, McMillan, J.M., Kaminsky, G.M. (2023) *Monitoring and modeling dispersal of a submerged artificial nearshore berm at the Mouth of the Columbia River, USA*. Coastal Engineering. [Link]
17. *Uphues, C.F.K., van IJzendoorn, C., Hallin, C., **Pearson, S.G.**, van Prooijen, B.C., Miot da Silva, G. & de Vries, S. (2022). *Coastal aeolian sediment transport in an Active Bed Surface Layer: tracer study and conceptual model*. Earth Surface Processes and Landforms. [Link]
16. Bruch, W., Cordier, E., Floc'h, F., **Pearson, S.G.** (2022). *Water Level Modulation of Wave Transformation, Setup and Runup over La Saline Fringing Reef*. Journal of Geophysical Research: Oceans. [Link]
15. *Bakker, T., Antolinez, J.A.A., Leijse, T., **Pearson, S.G.** & Giardino, A. (2022). *Estimating tropical cyclone-induced wind, waves, and surge: a general methodology based on representative tracks*. Coastal Engineering. [Link].
14. **Pearson, S.G.**., Elias, E.P.L, van Prooijen, B.C., van der Vegt, H., van der Spek, A. & Wang, Z.B. (2022). *A Novel Approach to Mapping Ebb-Tidal Delta Morphodynamics and Stratigraphy*. Geomorphology. [Link].
13. Elias, E.P.L, **Pearson, S.G.**., van der Spek, A., & Pluis, S. (2022). *Understanding meso-scale processes at mixed-energy tide-dominated tidal inlet; Ameland Inlet, the Netherlands.*. Ocean &

Coastal Management. [Link]

12. *van Weerdenburg, R., **Pearson, S.G.**, van Prooijen, B.C., Laan, S., Elias, E.P., Wang, Z.B. (2021). *Field measurements and numerical modelling of wind-driven exchange flows in a tidal inlet system in the Dutch Wadden Sea*. Ocean & Coastal Management. [Link].
11. **Pearson, S.G.**, van Prooijen, B.C., Poleykett, J., Wright, M., K. Black, K., & Wang, Z.B. (2021). *Tracking fluorescent and ferrimagnetic sediment tracers on an energetic ebb-tidal delta to monitor grain size-selective dispersal*. Ocean & Coastal Management. [Link].
10. **Pearson, S.G.**, Verney, R., van Prooijen, B.C., Tran, D., Hendriks, H.C.M., Jacquet, M., Wang, Z.B. (2021). *Characterizing Mixed Sand and Mud Suspensions using Combined Optical and Acoustic Measurements in Estuarine Environments*. Journal of Geophysical Research: Oceans. [Link].
    - **AGU Editor's Highlight** [Link].
9. *Roelvink, F.E., Storlazzi, C.D., van Dongeren, A.R., & **Pearson, S.G.** (2021). *Coral reef restorations can be optimized to reduce coastal flooding hazards*. Frontiers in Marine Science. [Link].
8. **Pearson, S.G.**, van Prooijen, B.C., Elias, E.P., Vitousek, S., Wang, Z.B. (2020). *Sediment Connectivity: A Framework for Analyzing Coastal Sediment Transport Pathways*. Journal of Geophysical Research: Earth Surface. [Link]
7. van Prooijen, B.C., Tissier, M.F.S., de Wit, F.P., **Pearson, S.G**., Brakenhoff, L.B., van Maarseveen, M.C.G., van der Vegt, M., Mol, J.W., Kok, F., Holzhauer, H., Borsje, B.W., van der Werf, J., Vermaas, T., Gawehn, M., Grasmeijer, B., Elias, E.P., Tonnon, P.K., Reniers, A.J.H.M., Wang, Z.B., den Heijer, K., van Gelder-Maas, C., Wilmink, R.J.A., Schipper, C., & de Looff, H. (2020). *Measurements of Hydrodynamics, Sediment, Morphology and Benthos on Ameland Ebb-Tidal Delta and Lower Shoreface*. Earth System Science Data. [Link]
6. *Parodi, M.U., Giardino, A., van Dongeren, A.R., **Pearson, S.G.**, Bricker, J., Reniers, A.J.H.M. (2020). *Investigating Uncertainty in Coastal Flood Risk Assessment in Small Island Developing States*. Natural Hazards and Earth System Sciences. [Link]
5. *Scott, F., Antolinez, J.A.A., McCall, R.C., Storlazzi, C.D., Reniers, A.J.H.M., & **Pearson, S.G.** (2020). *Hydro-morphological characterization of coral reefs for wave-runup prediction*. Frontiers in Marine Science. [Link]
4. Elias, E.P.L., van der Spek, A.J.F., **Pearson, S.G.**, & Cleveringa, J. (2019). *Understanding sediment bypassing processes through analysis of high-frequency observations of Ameland Inlet, the Netherlands*. Marine Geology. [Link]
3. Rueda, A., Cagigal, L., **Pearson, S.G.**, Antolinez, J.A.A., Storlazzi, C.D., van Dongeren, A.R., Camus, P., Mendez, F.J. (2019). *HyCReWW: A Hybrid Coral Reef Wave and Water Level Metamodel*. Computers and Geosciences. [Link]
2. Giardino, A., *Diamantidou, E., **Pearson, S.G.**, Santinelli, G., & den Heijer, C.K. (2019). *A regional application of Bayesian modelling for coastal erosion management*. Water, 11(1), 61. [Link]
1. **Pearson, S.G.**, Storlazzi, C.D., van Dongeren, A.R., Tissier, M.F.S., Reniers, A.J.H.M. (2017). *A Bayesian-based system to assess wave-driven flooding hazards on coral reef-lined coasts*. Journal of Geophysical Research: Oceans, 122. [Link]

Peer-Reviewed Conference Proceedings

10. **Pearson, S.G.**, Reniers, A.J.H.M., & van Prooijen, B.C. (2023). *Unveiling the Hidden Skeleton of Coastal Sediment Pathways with Lagrangian Coherent Structures* [Oral Presentation]. Coastal Sediments 2023. [Link].
9. Roelvink, F.E., Elias, E.P.L., van der Wegen, M., de Wilde, T., & **Pearson, S.G.**. (2023). *Analysis and Simulation Methods to Assess Sand Mining Effects on the San Francisco Bay and Outer Coast Area* [Oral Presentation]. Coastal Sediments 2023. [Link].
8. Nederhoff, C., Erikson, L., Engelstad, A., **Pearson, S.G.**. (2023). *Lagrangian Sediment Transport Modelling in Current and Future Climate Along the North Slope of Alaska* [Oral Presentation]. Coastal Sediments 2023. [Link].
7. **Pearson, S.G.**, Elias, E.P., van Ormondt, M., Roelvink, F., *Lambregts, P., Wang, Z.B., van Prooijen, B.C. (2021). *Lagrangian Sediment Transport Modelling as a Tool for Investigating Coastal Connectivity* [Oral Presentation]. Coastal Dynamics 2021, June 2021. [Link].
6. **Pearson, S.G.**, van Prooijen, B.C., de Wit, F.P. Holzhauer-Meijer, H., de Loof, A.P., & Wang, Z.B. (2019). *Observations of suspended particle size distribution on an energetic ebb-tidal delta* [Poster]. Coastal Sediments '19, May 27-31, 2019, St. Petersburg, Florida. [Link].
5. Reniers, A.J.H.M., de Wit, F.P., Tissier, M.F.S., **Pearson, S.G.**, Brakenhoff, L., van der Vegt, M., & van Prooijen, B.C. (2019). *Wave-and current-related ebb-tidal sediment transport: observations and modeling* [Oral Presentation]. Coastal Sediments '19, May 27-31, 2019, St. Petersburg, Florida. [Link].
4. Rueda, A., Cagigal, L., Anderson, D. Storlazzi, C.S., van Dongeren, A.R., **Pearson, S.G.**, Marra, J., Ruggiero, P., Mendez, F. (2019). *Towards A Flood Risk Assessment On A Reef-lined Coastline* [Poster]. Coastal Sediments '19, May 27-31, 2019, St. Petersburg, Florida. [Link].
3. Tissier, M.F.S., *Dekkers, J., van Dongeren, A.R., **Pearson, S.G.**, Reniers, A.J.H.M. (2018). *Etude experimentale de la formation de ressauts ondules sur un recif frangeant* [Oral Presentation]. Journees Nationales Genie Cotier - Genie Civil, May 29, 2018, La Rochelle, France. [Link].
2. van Dongeren, A.R., Storlazzi, C.S., Quataert, E., **Pearson, S.G.** (2017). *Wave dynamics and flooding on low-lying tropical reef-lined coasts* [Oral Presentation]. Coastal Dynamics 2017, June 12-16, 2019, Helsingor, Denmark. [Link].
1. **Pearson, S.G.**, Lubbad, R., Le, T.M.H., Nairn, R.B. (2016). *Thermo-mechanical Erosion Modelling using COSMOS: A case study at Baydaratskaya Bay, Russia* [Oral Presentation]. 8th International Conference on Scour and Erosion (ICSE 2016), Oxford, UK. https://doi.org/10.1201/9781315375045-34 [Link]

Other Conference Abstracts, Presentations, & Posters

53. Brown, C., Mallinson, D., **Pearson, S.G.**, Mulligan, R. (2023). *Morphodynamic Evolution of Bogue Inlet, NC, USA: An Annual- to Decadal-scale Geophysical, Hydrodynamic, Sedimentological, and Microfossil Analysis* [Poster]. GSA Connects 2023 meeting (Pittsburgh, PA).
52. Stevens, A.W., Moritz, H.R., Elias, E.P., Gelfenbaum, G.R., Ruggiero, P.R., **Pearson, S.G.**, McMillan, J.M., Kaminsky, G.M. (2023) *Monitoring and modeling dispersal of a submerged artificial nearshore berm at the Mouth of the Columbia River, USA*. NOAA Coastal Ocean Modeling Science Seminar, April 18, 2023. [Link]

51. **Pearson, S.G.**, Mallinson, D., Brown, C., Mulligan, R. (2023). *Bathymetry-derived Stratigraphic Mapping of Bogue Inlet, NC* [Poster]. [Presented by Dave Mallinson]. Geological Society of America Joint 72nd Annual Southeastern/58th Annual Northeastern Section Meeting - 2023. [Link]
50. Brown, C., Mallinson, D., **Pearson, S.G.**, Mulligan, R. (2023). *Testing a stratigraphic model of Bogue Inlet, NC, using geophysical, hydrodynamic, and sedimentological analyses* [Poster]. Geological Society of America Joint 72nd Annual Southeastern/58th Annual Northeastern Section Meeting - 2023. [Link]
49. **Pearson, S.G.**, de Boer, A.M., *Kooistra, T., Chamberlain, E.L., van Prooijen, B.C., & Wallinga, J. (2023). *Tracing Sand Nourishment Dispersal by Modelling Light Exposure History*. NCK Days 2023, Delft, the Netherlands. [Link]
48. *Kooistra, T.J., Witbaard, R., Soetaert, K., Bouma, T., & **Pearson, S.G.** (2023). *How SANDsitive are seafloor animals in the Wadden Sea? Quantifying sandification sensitivity of Wadden Sea benthic communities* [Poster]. NCK Days 2023, Delft, the Netherlands. [Link]
47. *Haarbosch, S.H., *Kooistra, T.J., Bosma, J.W., **Pearson, S.G.**, van Prooijen, B.C., & Bouma, T.J. (2023). *The influence of bivalve shells on sediment transport: an experimental flume study* [Poster]. NCK Days 2023, Delft, the Netherlands. [Link]
46. de Wilde, T., Roelvink, F.E., van der Wegen, M., & **Pearson, S.G.** (2023). *Determining the connectivity of sand mining regions within San Francisco Bay using SedTRAILS* [Poster]. NCK Days 2023, Delft, the Netherlands. [Link]
45. **Pearson, S.G.**, de Boer, A.M., *Kooistra, T.J., Chamberlain, E.L., van Prooijen, B.C., & Wallinga, J. (2022). *Modelling Light Exposure History for Tracing Coastal Sand Nourishment Dispersal*. AGU Fall Meeting 2022, Chicago, USA. [Link].
44. *Kooistra, T.J., Witbaard, R., Soetaert, K., Bouma, T. **Pearson, S.G.** (2022). *Sensitivity of benthic communities in a tidal inlet to novel sand nourishments*. [Poster]. Estuarine & Coastal Sciences Association (ECSA) 59, San Sebastian, Spain.
43. **Pearson, S.G.**, Elias, E.P.L., van Prooijen, B.C., van der Vegt, H., van der Spek, A.& Wang, Z.B. (2022). *New Techniques for Mapping Ebb-Tidal Delta Morphodynamics and Stratigraphy* [Presented by Bram van Prooijen due to Covid]. NCK Days 2022, Enschede, the Netherlands. [Link].
42. *Kooistra, T.J., Witbaard, R., Soetaert, K., Bouma, T., **Pearson, S**. (2022). *Benthos-sand interactions in the context of an ebb-tidal delta nourishment*. [Poster]. NCK Days 2022, Enschede, the Netherlands. [Link].
41. *Lambregts, P.M., **Pearson, S.G.**, Elias, E.P.L, van Prooijen, B.C., Wang, Z.B., Pluis, S., Storms, J.E.A. (2022). *Sediment bypassing at Ameland inlet and the role of an ebb-tidal delta nourishment* [Poster]. NCK Days 2022, Enschede, the Netherlands. [Link].
40. **Pearson, S.G.**, Elias, E.P.L, van der Vegt, H., van der Spek, A., van Prooijen, B.C. & Wang, Z.B. (2021). *A Novel Methodology for Mapping Decadal-Scale Ebb-Tidal Delta Morphodynamics and Stratigraphy* [Oral Presentation]. American Geophysical Union Fall Meeting 2021. [Link].
39. **Pearson, S.G.**. (2021). *Weird waves cause big trouble on small lands in the middle of the big blue wet thing* [Oral Presentation]. American Geophysical Union Fall Meeting 2021. [Link]. [Video].
    - **Awarded Outstanding Student Presentation Award (OSPA)**.

38. *Uphues, C.F.K., van IJzendoorn, C.O., Miot da Silva, G., **Pearson, S.G.**, de Vries, S. 2021). *Observations of Coastal Aeolian Sediment Transport in an Active Surface Layer using Tracers* [Oral Presentation]. American Geophysical Union Fall Meeting 2021. [Link].
37. **Pearson, S.G.** (2021). *Where Does All The Sand Go? Simulating Sand Pathways* [Virtual Presentation]. European Maritime Day 2021, September 2021. [Link].
36. **Pearson, S.G.**, Verney, R., Hendricks, H.C.M., Tran, D., Jacquet, M., Wang, Z.B., van Prooijen, B.C. (2021). *Characterizing the Composition of Suspended Sand and Mud Suspensions in Coastal Environments using Combined Optical and Acoustic Measurements: Ameland Ebb-Tidal Delta* [Oral Presentation]. INTERCOH 2021, September 2021. [Link].
    - **2nd Place – Ray Krone Award for Best Presentation**.
35. Tran, D., **Pearson, S.G.**, Jacquet, M., van Prooijen, B.C., Verney, R. (2021). *Characterizing the Composition of Suspended Sand and Mud Suspensions in Coastal Environments using Combined Optical and Acoustic Measurements: Laboratory Experiments* [Virtual Presentation]. INTERCOH 2021, September 2021. [Link].
34. Tran, D., Bocher, A., Jacquet, M., **Pearson, S.G.**, Floc'h, F., Le Dantec, N., Dorval, F., Fromant, G., Vergne, A., Jourdin, F., Crave, A., Lintanf, H., & Verney, R., (2021). *DEXMES: A novel cylindrical device for SPM experiments* [Poster]. INTERCOH 2021, September 2021. [[Link].
33. McCall, R., **Pearson, S.G.**, Roelvink, F., Antolinez, J.A.A., Storlazzi, C.D., de Goede, R., Scott, F. (2021). *Rapid Prediction of Wave Runup and Flooding on Reef-Lined Coasts* [Oral Presentation]. Coastal Dynamics 2021, June 2021. [[Link].
32. *van Gorsel, J., Patil, A., Bricker, J., **Pearson, S.G.**, Raby, A., Dassanayake, D., Antonini., A. (2021). *Numerical Investigation Of Breaking And Broken Regular Wave Forces On A Shoal Mounted Cylinder* [Virtual Presentation]. 16th OpenFOAM Workshop, June 2021. [Link].
31. Tran, D., Jacquet, M., **Pearson, S.G.**, Verney, R. (2021). *Investigating suspended particulate matters from multi-wavelength optical and multi-frequency acoustic measurements* [Virtual Presentation]. EGU General Assembly 2021, Online Conference due to COVID-19, May 19-30, 2021. [Link].
30. *Bertoncelj, V., Leijnse, T., Roelvink, F.E., **Pearson, S.G.**, Bricker, J., Tissier, M.F., van Dongeren., A.R. (2021). *Efficient and accurate modeling of wave-driven flooding on coral reef-lined coasts: Case Study of Majuro Atoll, Republic of the Marshall Islands* [Virtual Presentation]. EGU General Assembly 2021, Online Conference due to COVID-19, May 19-30, 2021. [Link].
29. Wallinga, J., Goldsborough, D., Witbaard, R., van Prooijen, B.C., van der Spek, A.F.J., Elias, E.P., Lodder, Q., de Boer, A.M., *Kooistra, T., **Pearson, S.G.** (2021). *Introducing the TRAILS project: Tracking Ameland Inlet Living lab Sediment*. NCK Days 2021, March 2021. [Link].
28. **Pearson, S.G.**, Verney, R., Hendricks, H.C.M., Tran, D., Jacquet, M., Wang, Z.B., van Prooijen, B.C. (2021). *Characterizing the Suspended Sand and Mud Composition on Ameland Ebb-Tidal Delta using Combined Optical and Acoustic Measurements* [-]. NCK Days 2021, March 2021. [Link].
27. **Pearson, S.G.**. (2021). *Sediment connectivity in estuaries and coastal systems* [Virtual Presentation]. IAG Working Group on Connectivity in Geomorphology, Connectivity Conversations III. January 21, 2021. [Link].
26. **Pearson, S.G.**, Elias, E.P., Vitousek, S., Roelvink, F., Stevens, A., van Weerdenburg, R., van Gijzen, L., van der Wegen, M., Wang, Z.B., van Prooijen, B.C. (2020). *Sediment Connectivity of*

Estuaries around the World [Poster]. American Geophysical Union Fall Meeting 2020, Online Conference due to COVID-19, December 16th, 2020. [Link].

25. **Pearson, S.G.**, Gijon Mancheno, A., Ylla Arbos, C. (2020). *Keeping our feet dry and safe from the big water by using lots of very tiny rocks* [Oral Presentation]. American Geophysical Union Fall Meeting 2020, Online Conference due to COVID-19, December 8th, 2020. [Link]. [Video].
    - **Awarded Outstanding Student Presentation Award (OSPA)**. [Link].
24. **Pearson, S.G.**, Elias, E.P.L., Roelvink, F.E. (2020). *Following Coastal Sediment Transport Pathways with SedTRAILS* [Oral Presentation]. Delft3D User Days - Australian Time zone: Coast, Lagoon and Estuary, Online Conference due to COVID-19, November 10th, 2020. [Link].
23. **Pearson, S.G.**, van Prooijen, B.C., & Wang, Z.B. (2020). *Connectivity: A Framework for Interdisciplinary Collaboration on Transport Pathways in Coastal Environments* [Oral Presentation]. IHE PhD Symposium 2020, Online Conference due to COVID-19, October 8th, 2020. [Link].
    - **Awarded Best Presentation (Hydraulic Engineering Session)**
22. *Gaido, C., Tissier, M.F.S., Reniers, A.J.H.M., **Pearson, S.G.**, Bricker, J. (2020). *Numerical Experiments on Resonant Wave Amplification Over a Fringing Reef* [Oral Presentation]. 37th International Conference on Coastal Engineering 2020, 5-9 October 2020, Online Conference due to COVID-19. [Link].
21. **Pearson, S.G.**, van Prooijen, B.C., & Wang, Z.B. (2020). *Sediment Connectivity: A Framework for Analyzing Coastal Sediment Transport Pathways* ['Hotplot' Presentation]. Eurocoast Webinar (Hosted by the University of Plymouth), October 7th, 2020. [Link].
20. **Pearson, S.G.**, van Prooijen, B.C., Elias, E.P., Wang, Z.B. (2020). *Sediment Connectivity: a Framework for Analyzing Coastal Sediment Transport Pathways* [Cancelled due to COVID-19]. NCK Days 2020, Texel, Netherlands, March 19-20, 2020.
19. *van Gijzen, L., Herman, P.M.J., van der Wegen, M., van Prooijen, B.C., **Pearson, S.G.** (2020). *Fine sediment transport pathways and connectivity in San Francisco Bay* [Cancelled due to COVID-19]. NCK Days 2020, Texel, Netherlands, March 19-20, 2020.
18. Lowe, R.J., Quataert, E., McCall, R., van Dongeren, A.R., Antolinez, J.A.A., Buckley, M., Hansen, J., & **Pearson, S.G.** (2019). *Global contributions to extreme sea levels at reef coastlines* [Oral Presentation]. 16th International Workshop on Waves, Storm Surges and Coastal Hazards, November 10-15, 2019, Melbourne, Australia. [Link].
17. Tissier, M.F.S., *Dekkers, J., Reniers, A.J.H.M., **Pearson, S.G.**, van Dongeren, A.R. (2019). *Undular bore formation and extreme runup on reef-lined coasts* [Invited Talk]. EGU General Assembly 2019, Vienna, Austria, April 7-12, 2019. [URL].
16. *van Weerdenburg, R.J.A., van Prooijen, B.C., **Pearson, S.G.**, Tonnon, P.K., Tissier, M.F.S., Wang, Z.B. (2019) *Exploring the relative importance of wind for exchange processes around Ameland Inlet* [Oral Presentation]. NCK Days 2019, Enkhuizen, Netherlands, March 20-22, 2019. [Link]
15. **Pearson, S.G.**, van Prooijen, B.C., Poleykett, J., Wright, M., K. Black, K., Wang, Z.B. (2018). *Monitoring sediment transport patterns on an energetic ebb-tidal delta using dual-signature tracers* [Poster]. American Geophysical Union Fall Meeting 2018, Washington, D.C. [Link]
14. **Pearson, S.G.**, Tissier, M.F.S. (2018). *The Curious Undular Bore* [Poster]. American Geophysical Union Fall Meeting 2018, Washington, D.C.[Link]

13. van Prooijen, B.C., de Looff, H., **Pearson, S.G.**, Mol, J.W., de Wit, F.P., Kok, F., Tonnon, P.K., van de Vegt, M., Tissier, M.F.S., Brakenhoff, L., Wilmink, R., *van Weerdenburg, R., Wang, Z.B. (2018). *Large-scale field campaign for improving nourishment strategies in the Netherlands - Exploring the effects of wind* [Oral Presentation]. American Geophysical Union Fall Meeting 2018, Washington, D.C. [Link]
12. McCall, R., Nederhoff, K., Quataert, E., Hagenaars, G., Storlazzi, C., **Pearson, S.G.**, van Dongeren, A.R. (2018). *Towards an global forecast for wave-induced flooding on coral reef-lined coastlines* [Poster]. American Geophysical Union Fall Meeting 2018, Washington, D.C. [Link].
11. **Pearson, S.G.**, van der Lugt, M., van Dongeren, A.R., Hagenaars, G., Burzel, A., van Zanten, B.T. (2018). *Assessment of runup reduction potential due to coral reef restoration* [Oral Presentation]. XBeach User Day 2018, Delft, the Netherlands, November 15, 2018. [Link].
10. Tissier, M.F.S., *Dekkers, J., Reniers, A.J.H.M., **Pearson, S.G.**, van Dongeren, A.R. (2018). *Undular Bore Development Over a Laboratory Fringing Reef* [Oral Presentation]. 36th International Conference on Coastal Engineering 2018, Baltimore, MD, July 30-August 3, 2018. [Link].
9. **Pearson, S.G.**, van Prooijen, B.C., Poleykett, J., Wright, M., K. Black, K., Wang, Z.B. (2018). *Sediment Transport Patterns on Ameland Ebb-Tidal Delta Determined by Dual-Signature Sediment Tracers* [Oral Presentation]. NCK Days Conference, March 23 2018, Haarlem, the Netherlands. [Link]
8. de Wit, F.P., Tissier, M.F.S., **Pearson, S.G.**, Radermacher, M., van de Ven, M.J.P., van Langevelde, A.P., Vos, T.A., Reniers, A.J.H.M. (2018). *Measuring the spatial and temporal variability of currents on Ameland Ebb-Tidal Delta* [Poster]. NCK Days Conference, March 23 2018, Haarlem, the Netherlands. [Link]
7. van Prooijen, B.C., de Looff, H., Holzhauer, H., Mol, J.W., van Maarseveen, M., de Wit, F.P., Kok, F., van de Vegt, M., Tissier, M.F.S., **Pearson, S.G.**, Brakenhoff, L., Wilmink, R., Wang, Z.B. *Kustgenese2/SEAWAD - Ameland Inlet Field Campaign* [Oral Presentation]. NCK Days Conference, March 23 2018, Haarlem, the Netherlands. [Link]
6. **Pearson, S.G.**, van Prooijen, B.C., Wang, Z.B., *Bak, J.P. (2018). *Sediment Connectivity and Exchange in Ameland Inlet* [Oral Presentation]. NCK Symposium on Sediment Sorting, January 11 2018, Delft, the Netherlands. https://doi.org/10.13140/RG.2.2.15706.03527 [Link]
5. **Pearson, S.G.**, van Prooijen, B.C., Wang, Z.B. *Bak, J.P. (2017). *Sediment Connectivity and Transport Pathways in Tidal Inlets: a Conceptual Framework with Application to Ameland Inlet* [Oral Presentation]. American Geophysical Union Fall Meeting 2017, New Orleans, Louisiana. [Link]
4. **Pearson, S.G.**, van Dongeren, A.R., Storlazzi, C.D., Tissier, M.F.S, Reniers, A.J.H.M, Lapidez, J.P, Tajima, Y. Shimozono, T. (2017). *BEWARE: Bayesian estimation of wave attack in reef environments* [Oral Presentation]. XBeachX Conference 2017, Delft, The Netherlands. [Link]
3. Rueda, A., Cagigal, L., Antolinez, J.A.A., **Pearson, S.G.**, Mendez, F.J., Storlazzi, C.D., van Dongeren, A.R. (2017). *A Metamodel to Estimate Runup Along Coral Reef-Lined Shorelines* [Oral Presentation]. XBeachX Conference 2017, Delft, The Netherlands. [Link]
2. *Dekkers, J., Tissier, M.F.S., Reniers, A.J.H.M., **Pearson, S.G.**, van Dongeren, A.R. (2017). *Experimental Study on Undular Bore Development Over a Fringing Reef* [Poster]. XBeachX Conference 2017, Delft, The Netherlands.
1. **Pearson, S.G.**, van Prooijen, B.C., Wang, Z.B. *The Influence of Grain Size on Sediment Transport*

Pathways at Ameland Inlet [Poster]. NCK Days Conference 2017, Den Helder, Netherlands https://doi.org/10.13140/RG.2.2.14690.12481 [Link]

Invited Talks

11. *Speaking Simply About Complex Coral Reef Hydrodynamics*. **American Geophysical Union (AGU) Fall Meeting 2022**. Chicago, USA. December 2022. [Link].
10. *Scientific Spinoff & Impact of the Amelander Zeegat Pilotsuppletie*. Pilotsuppletie Amelander Zeegat: de eindbalans symposium, hosted by **Rijkswaterstaat [Dutch Ministry of Infrastructure and Water Management]**. Amersfoort, the Netherlands. December 2022. [Link]
9. *Morphodynamics of the Sand Motor* (guided field visit). **Kring of Coastal Engineers 2022**. The Sand Motor, NL. September 2022. [Link]
8. *New Tools and Techniques for Analyzing Sediment Pathways on Barrier Coasts*. Virtual Seminar at **The Water Institute of the Gulf**, Baton Rouge, Louisiana, August 18, 2022.
7. *Sustainable coastal management* [Panel Discussion]. **TEKNOWLOGY: NWO Innovation Festival**, Utrecht, the Netherlands. May 31, 2022. [Link, Video].
6. *Where Does All The Sand Go?*. BWRC and LEADERS Seminar Series at **Queen's University**, Kingston, Canada, January 26, 2022. [Link].
5. *Coastal Sediment Connectivity*. Eurocoast Zoominar, co-ordinated by the **University of Plymouth**, December 17, 2021. [-].
4. *Speaking Simply about Complex Coastal Morphodynamics*. **American Geophysical Union (AGU) Fall Meeting 2021**. New Orleans, USA. December 2021. [Link].
3. *Sediment Transport Pathways and Connectivity at Tidal Inlets*. **Ifremer**, Brest, France. November 22, 2019. [-]
2. *Sediment Transport Processes and Pathways at Ameland Inlet*. **USGS Pacific Coastal and Marine Science Center** Seminar Series. Santa Cruz, CA. May 22, 2019. [Link]
1. *Postcards from the Field: Highlights from the Ameland Field Campaign*. Kustgenese 2.0: de Tussenstand. **Rijkswaterstaat [Dutch Ministry of Infrastructure and Water Management]**. Amersfoort, Netherlands. October 16, 2018. [Link]

Technical Reports

13. Elias, E.P.L, Roelvink, F.E., Schrijvershof, R., **Pearson, S.G.** (2021). *Morfologische analyse effecten doorlaat Brouwersdam [ENG: Morphological Analysis of the Effects of Sluice Gates in the Brouwersdam]*. Deltares report 11206580-004-ZKS-0004. In Dutch.
12. Elias, E.P.L, Quataert, E., **Pearson, S.G.** (2021). *Morfologische analyse systeemsuppletie Callantsoog [ENG: Morphological Analysis of System Nourishments at Callantsoog]*. Deltares report 11206794-004-ZKS-0002. In Dutch. [Link]
11. Elias, E.P.L, **Pearson, S.G.**, van Weerdenburg, R. (2021). *Evaluatie systeemsuppletie Bankje van Zoutelande [ENG: Evaluation of System Nourishments for Bankje van Zoutelande]*. Deltares report 11205236-003-ZKS-0002. In Dutch. [Link]
10. Elias, E.P.L, Roelvink, F.E., **Pearson, S.G.** (2021). *Systeemsuppleties op Eilandkoppen: synthese [ENG: System Nourishments at Barrier Island Heads: Synthesis]*. Deltares report . In Dutch. [Link]

9. Elias, E.P.L, Roelvink, F.E., **Pearson, S.G.** (2021). *Systeemsuppleties op Eilandkoppen: modellering suppletievarianten Texel en Ameland [ENG: System Nourishments at Barrier Island Heads: Modelling Nourishment Variations at Texel and Ameland]*. Deltares report . In Dutch. [Link]
8. Stevens, A., Elias, E.P.L., **Pearson, S.G.**, Kaminsky, G.M., Ruggiero, P.R., Weiner, H.M. Gelfenbaum, G. (2020). *Observations of Coastal Change and Numerical Modeling of Sediment-Transport Pathways at the Mouth of the Columbia River and its Adjacent Littoral Cell*: USGS Open-File Report 2020-1045. [Link]
7. Elias, E.P.L, van der Spek, A., Wang, Z.B. **Pearson, S.G.**, (2020). *Technisch advies rol en mogelijkheden buitendelta's voor het kustbeheer: ten behoeve van beleidsadvies Kustgenese 2.0. [ENG: Technical advice on the role and possibilities of outer deltas for coastal management: for policy advice on Coastal Genesis 2.0]*. Deltares Report 1220339-009-ZKS-0006. In Dutch. [Link]
6. Elias, E.P.L, **Pearson, S.G.**, Stevens, A. (2020). *Understanding Sediment Pathways in Tidal Inlet systems: Development and Application of SPIT*: Deltares report 11203683-001.
5. Elias, E.P.L, Roelvink, F., **Pearson, S.G.**, Huisman, B. (2020) *Investigation of Sediment Pathways in the Put van Hansweert: Morphological effects of dumping in a deep pit of the Western Scheldt*: Deltares report 1210301-001-ZKS-0010. [Link]
4. Elias, E.P.L, **Pearson, S.G.**, van der Spek, A. (2020). *Understanding the morphological processes at Ameland inlet: Kustgenese 2.0 synthesis of the tidal inlet research*: Deltares report 1220339-008-ZKS-0008. [Link]
3. van der Werf, J., Antolinez, J.A.A., Brakenhoff, L., Gawehn, M., den Heijer, K., de Looff, H., Meijer-Holzhauer, H., van Maarsseveen, M., Mol, J.W., **Pearson, S.G.**, van Prooijen, B., Tissier, M., Tonnon, P.K., de Vet, P.L.M., Vermaas, T., Wilmink, R., de Wit, F. (2019). *Data report: Kustgenese 2.0 Measurements*: Deltares report 1220339-015-ZKS-0004. [Link]
2. **Pearson, S.G.**, van der Lugt, M., van Dongeren, A.R., Hagenaars, G., Burzel, A. (2018). *Quick-scan runup reduction through coral reef restoration in the Seychelles*: Deltares report 11202446-000-ZKS-0001.
1. **Pearson, S.G.**, Tonnon, P.K. (2018). *Kustgenese 2.0; overview of available sediment data at Ameland inlet, The Netherlands*: Deltares report 1220339-007-ZKS-0003.

Datasets

7. **Pearson, S.G.**, van Prooijen, B.C., Poleykett, J., Wright, M., K. Black, K., & Wang, Z.B. (2021): Dataset accompanying the paper "Tracking fluorescent and ferrimagnetic sediment tracers on an energetic ebb-tidal delta to monitor grain size-selective dispersal". 4TU.ResearchData. Dataset: `https://doi.org/10.4121/15057378.v1` [Link]
6. **Pearson, S.G.**, Verney, R., van Prooijen, B.C., Tran, D., Hendriks, H.C.M., Jacquet, M., Wang, Z.B. (2021): *Dataset accompanying the paper "Tracking fluorescent and ferrimagnetic sediment tracers on an energetic ebb-tidal delta to monitor grain size-selective dispersal"*. 4TU.ResearchData. Dataset: https://doi.org/10.4121/14815893.v1 [Link]
5. **Pearson, S.G.**, van Prooijen, B.C., Elias, E.P.L., Vitousek, S., Wang, Z.B. (2020). *Supplementary Info: "Sediment Connectivity: A Framework for Analyzing Coastal Sediment Transport Pathways"*. 4TU.ResearchData. Dataset: https://doi.org/10.4121/13072820.v1. [Link].
4. Scott, F., Antolinez, J.A., McCall, R.T., Storlazzi, C.D., Reniers, A., and **Pearson, S.G.** (2020).

Coral reef profiles for wave-runup prediction: U.S. Geological Survey data release. [Link]

3. Rijkswaterstaat (2019). *Kustgenese 2.0 Measurements*, Rijkswaterstaat Water-Info. [Link]. *Contributed to collection and processing of hydrodynamic and sediment transport data*.
2. Rueda, A., Cagigal, L., **Pearson, S.G.**, Antolinez, J.A.A., Storlazzi, C.D., van Dongeren, A.R., Camus, P., Mendez, F.J. (2019). *HyCReWW database: A Hybrid Coral Reef Wave and Water Level Metamodel*. Computers and Geosciences, U.S. Geological Survey data release, https://doi.org/10.5066/F7SX6CFQ. [Link]
1. **Pearson, S.G.**, Storlazzi, C.D., van Dongeren, A.R., Tissier, M.F.S., Reniers, A.J.H.M. (2017). *BEWARE database: A Bayesian-based system to assess wave-driven flooding hazards on coral reef-lined coasts*: U.S. Geological Survey data release, https://doi.org/10.5066/F7T43S20. [Link]

Media Coverage/Interviews

6. "Thousands of scientists are cutting back on Twitter, seeding angst and uncertainty" by Myriam Vidal Valero. *Nature*, August 16, 2023. [Link]
5. "Building coastal protection with nature" by NWO (Dutch Research Council), June 15, 2022. [Link, Video]
4. "Editor's Highlight: Unravelling Sands and Muds Suspended in Coastal Environments" by Ryan Mulligan. *EOS*, July 26, 2021. [Link]
3. "'Adaptation', comunicare i cambiamenti climatici in maniera costruttiva ('Adaptation', to communicate climate change in a constructive way)" by Amanda Ronzoni. *National Geographic (Italia)*, July 16, 2019. [Link]
2. "Adaptation: Building Barriers & Building with Nature" by Marco Merola. Web documentary/interview, June 6, 2019. [Link 1, Link 2]
1. "Scientists counter threat of flooding on coral reef coasts" by Roeli Suiker. *AGU GeoSpace*, November 22, 2017. [Link].

Science Communication

CoastallyCurious.com

I also write a blog about my research and share some of the things that I love about working in coastal science and engineering. I love to write, so the blog also gives me a creative outlet and chance to practice communicating with a broader audience. [Link]

Field Experience

Estuaries/ Tidal Inlets

Ameland Ebb-Tidal Delta, *Ameland, Netherlands*, 2017, 23 days

Extensive marine field campaign for SEAWAD/Kustgenese2.0/TRAILS projects including sediment sampling from a ship (grab & box core); sediment tracer study; Lagrangian drifter study; assembly, deployment and retrieval of measurement frames. LISST, ADV, OBS, ADCP, Aquadopp, YSI programming and data analysis

Gironde Estuary, *Bordeaux, France*, 2018, 1 day

Estuarine Physics Summer School at the University of Bordeaux. ADCP, LISST, and CTD measurements; analysis of turbidity using optical and acoustic methods.

Solent Estuary, *Southampton, UK*, 2015, 1 day

Field excursion with group at the University of Southampton/National Oceanographic Centre. Sediment grab samples, Niskin bottles, ADCP, and CTD measurements.

Mudflats **Eastern & Western Scheldt Estuaries**, *Zeeland, Netherlands*, 2016-2018, 2022, 8 days

Deployment of ADVs, OBSs, CTDs, bed level and pressure sensors, sediment sampling, benthic ecological monitoring, topographic surveying. Also 5x field trips as teaching assistant/co-instructor for MSc/PhD field courses.

Wadden Sea, *Friesland, Netherlands*, 2017,2022, 2 days

Deployment of ADCPs along tidal watershed for SEAWAD/Kustgenese2.0 project. Teaching assistant for PhD summer school course.

Beaches **Columbia River Littoral Cell**, *Oregon/Washington, USA*, 2019, 3 days

Field volunteer with USGS/OSU/Washington State Dept. of Ecology for topographic beach survey; linked to my research on sediment pathways at the Mouth of the Columbia River.

The Sand Engine, *Kijkduin, Netherlands*, 2017, 2018, 2019, 2020, 10 days

TA for Fieldwork in Hydraulic Engineering course. Optical grain size sampling, beach scarp development, nearshore circulation estimation using tracer dye, estuarine process monitoring in small lagoon, student mentoring.

Texel Paal 9, *Texel, Netherlands*, 2017,2022, 2 days

NCK Summer School, as participant and later as teaching assistant. Grain size, surf and swash zone processes, runup, ADCP/ADV/OBS instruments.

Dikes/Levees **Hedwige-Prosperpolder**, *Netherlands/Belgium*, 2022, 1 day

Volunteer for Polder2C project. Participating in tests of human instability due to wave overtopping on dikes.

Laboratory Experience

- **Grain Size Analysis.** Malvern Mastersizer, Keyence VHX-5000 Digital Microscope.
- **Tracer Separation.** Fluorescent and magnetic sand separation.
- **Suspended Sediment Measurement.** Measured mixed sand and mud suspensions in DEXMES mixing tank facility at Ifremer (Brest, France) using optical/acoustic instruments and water samples.

Teaching Experience

Co-Instructor **Coastal Systems**, *TU Delft*, MSc course, 2023

Lecturing on tidal inlet systems, co-developing exam and other course material. Awarded prize for *"#2 Best Educator of Hydraulic Engineering (Civil Engineering Master)"*. Main Instructors: Judith Bosboom & Jose Antolinez.

Advanced Coastal & Estuarine Systems, *TU Delft*, MSc course, 2023

Coordinating field excursion, co-developing exam and other course material. Main Instructors: Matthieu de Schipper & Bram van Prooijen

Coastal & Estuarine Modelling, *TU Delft*, MSc course, 2023

Lecturing on model visualization. Main Instructors: Sierd de Vries & Arjen Luijendijk

Leveraging Dutch Expertise in Advanced Techniques for Water Management, *TU Delft/Deltares/University of New Orleans*, 2022-2023

PhD course. Served as co-instructor for 2-week PhD summer school about coastal geoscience and management, with a focus on numerical modelling and field visits. Offered to 14 visiting US students and 6 Dutch students. [Link]

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Coastal Dynamics 1, *TU Delft*, MSc course, 2019-2022

Coordinated logistics for online and in-class portions of the course. Redeveloped and delivered 4.5 hrs of lectures on Tidal Inlet and Basin Morphodynamics. Redeveloped and recorded online lectures, moderated discussion boards and question periods, and coordinated online exam during early stages of pandemic in 2020. Overall teaching evaluation of 4.65/5.00 (93%) in 2022. Main Instructor: Judith Bosboom

Study Trip to Canada/US, *TU Delft (Practische Studie)*, 2022

Main academic supervisor for 3-week BSc civil engineering study trip to the west coast of Canada and the United States.

Study Trip to India/Sri Lanka, *TU Delft (Waterbouwdispuut)*, 2017

Main academic supervisor for 2-week MSc hydraulic engineering study trip to India and Sri Lanka, with focus on coastal structures and dynamics. Lectured on Sri Lankan coast.

Teaching Assistant

NCK Summer School, *Netherlands Centre for Coastal Research*, 2022, Main Instructor: Ad Reniers

PhD course. Co-supervised field class on mudflat and beach dynamics in Texel (Netherlands), with a focus on instrumentation and mudflat safety.

Coastal Oceanography and Delta Geology, *Wageningen University & Research*, 2020-2022, Main Instructors: Ton Hoitink/Jakob Wallinga/Bart Makaske

MSc course. Led students on guided field trip to sand nourishment/beach and engaged them in inquiry about coastal processes.

Coastal Dynamics 1, *TU Delft*, 2016-2019, Main Instructor: Judith Bosboom

MSc course. Ran weekly tutorial sessions, gave lectures on longshore sediment transport, developed and graded final exam questions, coordinated logistics for final exam

Fieldwork in Hydraulic Engineering, *TU Delft*, 2017-2020, Main Instructor: Matthieu de Schipper

MSc course. Helped to plan/run field trip to sand nourishment/beach, supervised field measurements, and mentored students through data processing and reporting

Sediment Dynamics, *TU Delft*, 2017-2018, 2022, Main Instructor: Bram van Prooijen

MSc course. Joined field trips to mudflats as a teaching assistant

Mentorship and (Co-)Supervision

I mentor and (co-)supervise early-career researchers (postdoc, PhD, MSc, and BSc students) in a wide range of research topics. The projects generally support my main lines of research in coastal sediment transport pathways, tidal inlet dynamics, and flood hazards on coral reef-lined coasts and small islands.

Postdocs

1. **Natascia Pannozzo**. *Tracing sand nourishment dispersal with optically stimulated luminescence*. Jun 2023 – Present. Co-supervisors: Bram van Prooijen (TU Delft).

PhD Students

2. **Gijs Hendrickx**. *Nature-based solutions against salt intrusion*. Jan 2023 – Present. Co-supervisors: Stefan Aarninkhof (TU Delft), and Peter Herman (TU Delft).

1. **Tjitske Kooistra**. *Far-field impacts of sand nourishments on benthic ecosystems*. Oct 2021 – Present. In cooperation with NIOZ. Main Supervisors: Rob Witbaard (NIOZ), Karline Soetaert

(NIOZ), and Tjeerd Bouma (NIOZ).

MSc Students (Thesis)

I served on the thesis assessment committees of these students in a formal capacity and was responsible for regular supervision, mentoring, and grading.

32. **Bernice van der Kooij**. *Coral reef hydrodynamics*. April 2023 – Present. In cooperation with Deltares. Chair: Ad Reniers
31. **Nirubha Raghavi Thillaigovindarasu**. *Modelling Pathways of Mangrove Propagules and Sediment in the Presence of Structures to Aid Mangrove Restoration*. Jan 2023 – Present. In cooperation with Deltares. Chair: Ad Reniers.
30. **Wouter Hoek**. *Predicting the short-term response to inlet interventions in Lake Bardawil*. Dec 2022 – Aug 2023. In cooperation with the Weathermakers. Chair: Zheng Bing Wang. [Thesis]
29. **Steven Haarbosch**. *Lab Experimental Study of the Influence of Shells on Sediment Transport*. June 2022 – Present. In cooperation with NIOZ. Chair: Bram van Prooijen. [Thesis, Conference Poster]
28. **Kimon Kadoglou**. *Impact of Reef Enhancing Breakwaters*. May 2022 – May 2023. In cooperation with Reefy. Chair: Marcel van Gent. [Thesis]
27. **Femke Bisschop**. *Modelling sediment and propagule pathways to improve mangrove rehabilitation: A case study of the pilot project in Demak, Indonesia*. May 2022 – Feb 2023. In cooperation with Deltares. Chair: Ad Reniers. [Thesis]
26. **Lars Krikke**. *Impact of the Eastern Scheldt Storm Surge Barrier on the Morphodynamics of the Ebb-Tidal Delta*. Oct 2021 – Feb 2023. In cooperation with Deltares and Rijkswaterstaat. Chair: Bram van Prooijen. [Thesis]
25. **Carlijn Meijers**. *Sediment transport pathways in Burrard Inlet*. Feb – Dec 2021. In cooperation with Deltares, Kerr Wood Leidel, and Tsleil Watuth First Nation. Chair: Zheng Bing Wang. [Thesis]
24. **Denzel Harlequin**. *Morphodynamic Modelling of Ameland Ebb-Tidal Delta*. Sep 2020 – Nov 2021. In cooperation with Deltares & Rijkswaterstaat. Chair: Bram van Prooijen. [Main Thesis, Additional (Minor) Thesis]
23. **Charlotte Uphues**. *Observations of Coastal Aeolian Sediment Transport in an Active Surface Layer using Tracers*. Feb – Oct 2021. In cooperation with Flinders University. Chair: Sierd de Vries. [Thesis, Conference Presentation]
22. **Paula Lambregts**. *Sediment bypassing at Ameland inlet and the role of an ebb-tidal delta nourishment*. Sep 2020 – Jun 2021. In cooperation with Deltares and Rijkswaterstaat. Chair: Bram van Prooijen. [Thesis, Conference Presentation]
21. **Jan van Gorsel**. *Pressure distribution due to slamming of breaking waves into lighthouses*. Aug 2020 – May 2021. Chair: Alessandro Antonini. [Thesis, Conference Presentation]
20. **Vesna Bertoncelj**. *Efficient and accurate modeling of wave-driven flooding on coral reef-lined coasts: On the interpolation of parameterized boundary conditions*. Jun 2020 – May 2021. In cooperation with Deltares. Chair: Marion Tissier. [Thesis, Conference Presentation]
19. **Mayra Ithzel Zaldivar Piña**. *Stability of intertidal and subtidal areas after Delta21 plan*. Feb – Oct 2020. In cooperation with Delta21. Chair: Zheng Bing Wang. [Thesis]

18. **Paul van Wiechen**. *Wave dissipation on a fringing coral reef: an experimental study*. Dec 2019 – Aug 2020. In cooperation with Boskalis. Chair: Marion Tissier. [Thesis]
17. **Tije Bakker**. *Compound flood hazard assessment of atoll islands based on representative scenarios for typhoon and non-typhoon conditions: A Majuro case study*. Jul 2019 – Apr 2020. In cooperation with Deltares. Chair: Stefan Aarninkhof. [Thesis, Paper]
16. **Laurie van Gijzen**. *Sediment transport pathways in San Francisco Bay.*Apr 2019 – Mar 2020. In cooperation with Deltares. Chair: Bram van Prooijen. [Thesis]
15. **Camila Gaido**. *Dynamics of resonant low-frequency waves over a schematized fringing coral reef*. Feb 2019 – Dec 2019. Chair: Marion Tissier. [Thesis, Conference Presentation].
14. **Hilary Richards**. *Flood hazard prediction for St. Martin*. Feb 2019 – Jul 2019. In cooperation with Deltares. Chair: Stefan Aarninkhof. [Thesis]
13. **Matteo Parodi**. *Investigating uncertainty in coastal flood risk analyses in Small Island Developing States – a case study: Sao Tome & Principe*. Feb – Jul 2019. In cooperation with the Deltares. Chair: Ad Reniers. [Thesis, Paper]
12. **Fred Scott**. *Data reduction techniques of coral reef morphology and hydrodynamics for use in wave runup prediction*. Feb – Jul 2019. In cooperation with Deltares and the US Geological Survey. Chair: Ad Reniers. [Thesis, Paper]
11. **Floortje Roelvink**. *Coral Restoration for Coastal Hazard Risk Reduction: The effect of coral restoration on wave transformation over various reef morphologies and the resulting runup*. Sep 2018 – Jul 2019. In cooperation with Deltares and the US Geological Survey. Chair: Ad Reniers. [Thesis, Paper]
10. **Timo Veldt**. *The effect of wave directional spread on coastal hazards at coastlines fronted by a coral reef*. Jul 2018 – Jun 2019. In cooperation with Deltares. Chair: Ad Reniers. [Thesis].
9. **Rens Harteveld**. *Marine erosion of the Point Grey cliffs*. Jul 2018 – Jun 2019. In cooperation with Boskalis and the University of British Columbia. Chair: Stefan Aarninkhof. [Thesis]
8. **Roy van Weerdenburg**.*Exploring the relative importance of wind for exchange processes around a tidal inlet system*. Jun 2018 – Jan 2019. Chair: Zheng Bing Wang. [Thesis, Paper, Conference Presentation].
7. **Michelle Gostic**. *Sediment Transport Pathways in San Francisco Bay* Feb – Jul 2018. In cooperation with Deltares. Chair: Wim Uijttewaal. [Thesis].
6. **Albert Monclús Abadal**. *Assessment of Climate Change Impacts in Sandy Nearshore Inlet Systems*. Feb – Jul 2018. Chair: Stefan Aarninkhof. [Thesis]
5. **Jochem Dekkers**. *Experimental Study on Undular Bore Development Over a Fringing Reef*. Oct 2016 – Jul 2018. Chair: Marion Tissier. [Thesis]
4. **Thomas Vos**. *Spatial distribution of surface velocities on the ebb tidal delta near Ameland*. Additional (Minor) Thesis Project. Sep 2017 – Mar 2018. Chair: Marion Tissier. [Thesis]
3. **Bart van Langevelde**. *Measuring wave transformation in a tidal inlet using wave resolving drifters*. Additional (Minor) Thesis Project. Sep – Nov 2017. Chair: Marion Tissier. [Thesis].
2. **Jasper Bak**. *Nourishment strategies for the Ameland Inlet*. Mar – Oct 2017. In cooperation with Deltares, Boskalis, and Rijkswaterstaat. Chair: Zheng Bing Wang. [Thesis]
1. **Hithaishi Hewageegana**. *Wave Transformation Through Mangrove Coasts: A Model Study*

with XBeach-Surfbeat. Feb – Jul 2017. In cooperation with Deltares. Chair: Ad Reniers. [Thesis]

BSc Students (Thesis)

5. **Gabriel Glerum**. *Biota Presence in River Channels*. May - Jun 2023. Chair: Laura Stancanelli.
4. **Daan van den Helder**. *Sandbar Monitoring*. May - Jun 2023. Chair: Rolf Hut.
3. **Jelle Freund**. *A Suction Caisson at the Beach*. Mar - Apr 2023. Chair: Rolf Hut.
2. **Klaas Sicking**. *Measuring Sandbars with Acoustic Sensors*. May - Jun 2022. Chair: Rolf Hut.
1. **Rieneke van Noort**. *Variations in Suspended Sediment Grain Size at Ameland Inlet*. Apr - Jun 2018. Chair: Bram van Prooijen

MSc Students (External)

For these students, I served as an external examiner in the final assessment of their thesis or internship projects, but did not contribute substantially to supervision.

2. **Cody Brown**. *Testing a Stratigraphic Model of Bogue Inlet, NC, using Geophysical, Hydrodynamic, and Sedimentological Analyses*. April 2023. Institution: East Carolina University. Chair: Dave Mallinson.
1. **Abdulla Alson Athif**. *Computationally efficient modelling of wave driven flooding in atoll islands*. April 2020. Institution: IHE Delft. Chair: Dano Roelvink.

MSc Students (Internships)

Supervised MSc student interns in my capacity as a consultant/researcher at Deltares.

3. **Mónica Aguilera Chaves**. *Sediment pathway modelling across the Voordelta*. Sep – Dec 2022. Internship in cooperation with Deltares.
2. **Nirubha Raghavi Thillaigovindarasu**. *Sediment transport modelling at the mouth of the Western Scheldt*. Jul – Aug 2022. Internship in cooperation with Deltares.
1. **Math van Soest**. *Influence of Wave Climate Parameterization on Morphodynamic Modelling of Ebb-Tidal Delta Nourishments*. Dec 2020 – April 2021. Internship in cooperation with Deltares and Utrecht University.

MSc Multidisciplinary Projects

TU Delft MSc students may complete a multidisciplinary consulting project as part of their studies, usually for several months with a company located abroad. I was responsible for regular supervision, coordination with company supervisors, and grading.

3. **Nicole Hartman, Bart Scheurwater, Jasper Scheijmans, Jim Tukker, Mizzi van der Ven**. *Coastal adaptation for the British Columbia Lower Mainland*. Jan 2020 - Apr 2020. In cooperation with Kerr Wood Leidel. [Report]
2. **Irene Cantoni, Camila Gaido, Tessa Jonker, & Laurie van Gijzen**. *Cliff Erosion at Point Grey UBC*. Nov 2018 - Mar 2019. In cooperation with Kerr Wood Leidel and the University of British Columbia. [Report]

1. **Tjerk Veenman, Rens Janmaat, Godert van Rhede, Floris Boersma, & Daan van der Ven**. *Erosion on Isle of Palms due to shoal bypassing*. Sep 2018 - Feb 2019. In cooperation with Tim Kana at Coastal Science & Engineering. [Report].

Outreach Activities

Skype-a-Scientist

Shrewsbury Primary School, *Shrewsbury, MA, US*, October 2022
Matched with a classroom of 8-year-old students (Teaching Partner: Erin Goulding). Answered student questions about a wide range of scientific topics. [Link]

Northville Central School, *Northville, NY, US*, February 2022
Matched with a classroom of 16-year-old students (Teaching Partner: Jamie Dickinson). Discussed careers in science & engineering, beach erosion, and estuaries. [Link]

Genoa Middle School, *Westerville, OH, US*, May 2018
Matched with a classroom of 11-year-old students (Teaching Partner: Jessica Meginnis). Discussed careers in science & engineering, climate change, and my research. [Link]

Letters to a Pre-Scientist

Anacapa Middle School, *Ventura, CA, US*, August 2022 - Present
Matched as a pen-pal to exchange letters with young US students about careers in science [Link]

Valuing Water Competition

IHE Delft, *Delft, NL*, October 2020
Pitched animated children's documentary about nature-based flood defenses with two colleagues. [Link]

I Lab U: Speed-date a Scientist

Delft University of Technology, *Delft, NL*, February 2020
Engaged the public in discussions about my research in a rotating, "speed-dating" format. [Link]

Research Grants

Lead Applicant

ISblue Mobility Grant, *1,315 EUR*, Plouzane, France, April 2019
Research grant to visit IFREMER in Brest, France, to analyze suspended sediment measurements in partnership with Romaric Verney. Funded by Interdisciplinary School for the blue planet (ISblue) [Link]

Co-Applicant

IRES Track II: Leveraging Dutch Expertise in Advanced Techniques for Water Management, *399,000 USD*, New Orleans, USA, November 2020
Lead Applicant: Madeline Foster-Martinez, University of New Orleans. This project capitalizes on unique expertise, facilities, and coastal geology in the Netherlands to provide a 2-week training opportunity for 14 advanced U.S. graduate students on the topic of water management. Funded by US National Science Foundation (NSF) [Link].

TRAILS: TRacking Ameland Ilving Lab Sediment, *228,000 EUR subproject, 1,450,000 EUR total project*, Delft, NL, December 2019
Lead Applicant: Jakob Wallinga, Wageningen University. Co-developed postdoc subproject proposal within larger consortium project, linking my research on sediment transport with luminescence tracing techniques and benthic ecology. (Partly) financed by the Dutch Research Council (NWO), Project #17600. [Link 1, Link 2]

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Leadership & Academic Service

Session Convener

- *NCK Days 2023*; Estuaries session; March 30, 2023

- *American Geophysical Union Fall Meeting 2022*; Coastal Geomorphology & Morphodynamics sessions; December 2022 [Link 1, 2, 3, 4].
- *EuroCoast Zoominar*; January 21, 2022
- *River, Coastal and Estuarine Morphodynamics (RCEM) Meeting 2021*; Scientific Graphics session. November 30, 2021.

Advisory Board Member

- *Living with Water* project, University of British Columbia, April 2022 – Present

Leadership & Service

- Tenure Track Hiring Committee, TU Delft, June 2023
- PhD Candidate Hiring Committee, TU Delft, November 2022
- NCK *Nieuw Élan* Committee, Netherlands Centre for Coastal Research (NCK), March 2022 – Present
- Hydraulic Engineering PhD Delay Committee, TU Delft, October 2020
- Invited external MSc thesis examiner (IHE Delft)
- Developed Hydraulic Engineering Fieldwork safety form, TU Delft, August 2017

Reviewer

- Earth's Future (x1)
- Journal of Geophysical Research: Earth Surface (x1)
- Journal of Geophysical Research: Oceans (x1)
- Journal of Hydrology (x2)
- Nature Sustainability (x1)
- Ocean Modelling (x1)
- Scientific Reports (x1)
- Sedimentology (x1)
- Water Resources Research (x1)

Awards & Scholarships

- **#2 Best Educator of Hydraulic Engineering (Civil Engineering Master)**. *Het Gezelschap Practische Studie, Delft University of Technology, May 2023.*
- **Outstanding Student Presentation Award 2021.** [Link]. [Video]. *American Geophysical Union, December 2021.*
- **Ray Krone Award 2021 – 2nd Place for Best Presentation** [Link]. *International Conference on Cohesive Sediment Transport (Intercoh), Sept 2021.*
- **AGU Editor's Highlight.** [Link]. *Journal of Geophysical Research: Oceans/EOS, July 2021.*
- **Outstanding Student Presentation Award 2020.** [Link]. [Video]. *American Geophysical Union, December 2020.*
- **Best Presentation (Hydraulic Engineering).** *IHE PhD Symposium, October 2020.*
- **Erasmus Mundus Category A Scholarship.** *NTNU/TU Delft/USouthampton, August 2014.*
  Two-year full scholarship for MSc CoMEM program. *Value: 48,000 EUR*

- **Ontario Professional Engineers Foundation Undergraduate Scholarship.** *University of Waterloo, November 2011.*
  Awarded for academic achievement, and leadership in professional affairs and extracurriculars.
- **Dean's Honour List.** *University of Waterloo, October 2011.*
  Awarded for outstanding academic achievement.
- **Dean's Leadership Award.** *University of Waterloo, July 2011.*
  Awarded for outstanding achievements and excellent leadership in university community.
- **Sandford Fleming Foundation Consulting Engineering Competition Award.** *University of Waterloo, July 2011.*
  First-place team member of Waterloo Engineering Competition's consulting engineering division.

Other Courses

Summer Schools

University of Bordeaux Estuarine Physics Summer School, *Bordeaux, France*, July 2018
Two-week summer school course led by Arnoldo Valle-Levinson, Aldo Sottolichio, and Romaric Verney at the University of Bordeaux. Theory on estuarine hydrodynamics and sediment transport, including field measurements and data processing exercises.

NCK Summer School, *Texel, the Netherlands*, July 2017
Two-week summer school course led by Ad Reniers on behalf of the Netherlands Centre for Coastal Research. Theory on coastal processes and practical sessions including field measurements and data processing exercises.

Technical Workshops

Data Science for Coastal Engineers and Scientists, *St. Petersburg, FL, USA*, May 2019
One-day course on 'big data' science and machine learning applications for coastal research, led by Fernando Mendez and Evan Goldstein at Coastal Sediments 2019 conference.

University Teaching Qualification

TU Delft, *Delft, the Netherlands*, 2023
Various professional development courses including: Supervise

Professional Development

TU Delft, *Delft, the Netherlands*, 2016–2022
Various professional development courses including: *Foundations of Teaching and Learning*, *Coaching Individual Students and Project Groups*, *Small Group Teaching and Lecturing*, *Popular Science Writing*, *The Art of Presenting Science*, and *Effective Management of Your Research*, *Developing Propositions for your PhD Defence*, *Writing a Dissertation*, *How to Write a Personal Grant*

Equity, Diversity, & Inclusion

Various, *Online*, 2021-2022
TU Delft Diversity Week Workshops: *Harassment against women in Dutch academia*, *Unconscious Bias*, *Ally Skills*; Online course with University of Glasgow via Coursera MOOC: *Diversity and Inclusion in Education*; Diversity training in prep. for Letters to a Pre-Scientist outreach program: *STEM Professional Training for New Pen Pals*

Languages

English — Native

French — Basic

Dutch	Basic (3x courses: A2→B1)

Computer skills

Modelling

Hydrodynamic	Delft3D, D-Flow FM, XBeach, MIKE 21, MIKE 11, MIKE FLOOD, SwanOne, HEC-RAS
Morphodynamic	Delft3D, D-Flow FM, XBeach, COSMOS, UNIBEST-CL+
Water Quality	Delft3D-WAQ
Probabilistic	Netica

Analysis

Programming	MATLAB, Excel
GIS	ArcMap, Google Earth

Other

Creative	LaTeX, Microsoft Office, Adobe Illustrator, Adobe Photoshop, Adobe Indesign, Webpage Development
Teaching	MapleTA, Mobius, Brightspace

Professional Memberships

- American Geophysical Union (2017 – Present)
- Dutch Network Science Society (2020 – Present)

Personal Interests & Hobbies

- Hiking and spending time by the sea or up a mountain
- Cooking for (and with) my friends
- Curling (the sport on ice), cycling, and running
- Reading, writing (poetry and prose), indie rock
- Photography, painting, and old maps