Stanford

Jane Kathryn Willenbring

Associate Professor of Geological Sciences

Bio

BIO

Jane Willenbring joined Stanford as an Associate Professor in the summer of 2020. Jane is a geologist who solves problems related to the Earth surface. Her research is primarily done to understand the evolution of the Earth's surface - especially how landscapes are affected by tectonics, climate change, and life. She and her research group use geochemical techniques, high-resolution topographic data, field observations, and, when possible, couple these data to landscape evolution numerical models and ice sheet models. The geochemical tools she uses and develops often include cosmogenic nuclide systems, which provide powerful, novel methods to constrain rates of erosion and mineral weathering. Jane has also started to organize citizen science campaigns and apply basic science principles to problems of human health with an ultimate broader impact goal of cleaning up urban areas and environments impacted by agriculture. She received her B.Sc. with honors from the North Dakota State University where she was a McNair Scholar and in the NDSU scholars program. She holds a Masters degree from Boston University. Her Ph.D. is in Earth Science from Dalhousie University in Halifax, Nova Scotia Canada where she was a Killam Scholar. She was a Synthesis Postdoctoral Fellow through the National Center for Earth Surface Dynamics at the Saint Anthony Falls Lab at the University of Minnesota, and an Alexander von Humboldt Postdoctoral Fellow and then subsequently a Postdoctoral Researcher at the Helmholz GFZ Potsdam, Germany. Jane was previously an Associate Professor in the Geosciences Research Division and Thomas and Evelyn Page Chancellor's Endowed Faculty Fellow at Scripps Institution of Oceanography, UC San Diego where she was the director of the Scripps Cosmogenic Isotope Laboratory (SCI-Lab). She was also a tenure-track professor at the University of Pennsylvania. She will be a Stanford University Gabilan Faculty Fellow in 2021-2023. She is a Fellow of the Geological Society of America and was the inaugural recipient of the Marguerite T. Williams award from the American Geophysical Union.

ACADEMIC APPOINTMENTS

- Associate Professor, Geological Sciences

HONORS AND AWARDS

- Gabilan Faculty Fellow, Stanford University (2021-2023)
- AGU Presidential Citation, American Geophysical Union (2020)
- Marguerite T. Williams Award, American Geophysical Union (2020)
- Thomas and Evelyn Page Chancellor's Endowed Faculty Fellow, University of California San Diego (2019-2020)
- Fellow, Geological Society of America (2018-present)
- University of California San Diego Diversity Award, University of California San Diego (2017)
- Antarctica Service Medal, United States Armed Forces (2016)
- Career Award, US National Science Foundation (2015)
- Distinguished Lecturer, Association of Women Geoscientists (2015)

- Blaustein Visiting Professorship, Stanford University (2013)
- Alexander von Humboldt Postdoctoral Fellow, AvH Foundation (2007-2009)
- TRiO Merit Award, U.S. Dept. of Education TRiO Program (2007)
- Helen Shull P.E.O. Scholar Award, Philanthropic Educational Organization (2003-2004)
- Killam Laureate, Izaak Walton Killam Foundation (2002-2005)
- Ronald E. McNair Scholar, U.S. Dept. of Education TRiO Program (1996-1999)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Lifetime Member, SACNAS (2019 - present)
- Lifetime Member, Earth Science Women's Network (2014 - present)
- Lifetime member, Association of Women Geoscientists (2011 - present)
- Lifetime Member, American Geophysical Union (2003 - present)
- Member and Fellow, Geological Society of America (1997 - present)

Teaching

COURSES

2021-22

- Diversity and Inclusion in the Geosciences: EARTH 203 (Win)
- Introduction to Geology: EARTHSYS 11, GEOLSCI 1 (Spr)
- Invisible Curriculum seminar: GEOLSCI 305 (Aut)
- Learn the (geo)science behind the environmental (in)justice concepts: GEOLSCI 20 (Spr)
- Life and Landscape Linkages Seminar: GEOLSCI 262 (Aut, Win)

2020-21

- Learn the (geo)science behind the environmental (in)justice concepts: GEOLSCI 20 (Spr)
- Life and Landscape Linkages Seminar: GEOLSCI 262 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Elizabeth Johnston

Doctoral Dissertation Advisor (AC)

Travis Clow

Doctoral (Program)

Travis Clow, Omar Rosales Cortez

Publications

PUBLICATIONS

- **Quantifying Rates of Landscape Unzipping** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
  Harrison, E. J., McElroy, B., Willenbring, J. K.
  2022; 127 (4)
- **Landscape Evolution as a Diversification Driver in Freshwater Fishes** *FRONTIERS IN ECOLOGY AND EVOLUTION*
  Val, P., Lyons, N. J., Gasparini, N., Willenbring, J. K., Albert, J. S.

2022; 09

- **Tectonically and climatically driven mountain-hopping erosion in central Guatemala from detrital Be-10 and river profile analysis** *EARTH SURFACE DYNAMICS*
  Brocard, G., Willenbring, J., Salles, T., Cosca, M., Guttierez-Orrego, A., Cacao Chiquin, N., Moran-Ical, S., Teyssier, C.
  2021; 9 (4): 795-822

- **Landslides, hurricanes, and sediment sourcing impact basin-scale erosion estimates in Luquillo, Puerto Rico** *EARTH AND PLANETARY SCIENCE LETTERS*
  Grande, A., Schmidt, A. H., Bierman, P. R., Corbett, L. B., Lopez-Lloreda, C., Willenbring, J., McDowell, W. H., Caffee, M. W.
  2021; 562

- **Quaternary record of terrestrial environmental change in response to climatic forcing and anthropogenic perturbations, in Puerto Rico** *QUATERNARY SCIENCE REVIEWS*
  Harrison, E. J., Willenbring, J. K., Brocard, G. Y.
  2021; 253

- **An actionable anti-racism plan for geoscience organizations.** *Nature communications*
  Ali, H. N., Sheffield, S. L., Bauer, J. E., Caballero-Gill, R. P., Gasparini, N. M., Libarkin, J., Gonzales, K. K., Willenbring, J., Amir-Lin, E., Cisneros, J., Desai, D., Erwin, M., Gallant, et al
  2021; 12 (1): 3794

- **Seepage Erosion in the Luquillo Mountains, Puerto Rico, Relict Landscapes** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
  Harrison, E. J., Brocard, G. Y., Gasparini, N. M., Lyons, N. J., Willenbring, J. K.
  2020; 125 (6)

- **Chemical and physical drivers of beryllium retention in two soil endmembers.** *The Science of the total environment*
  Boschi, V. n., Willenbring, J. K.
  2020; 754: 141591

- **Calibrating a long-term meteoric 10Be delivery rate into eroding western US glacial deposits by comparing meteoric and in situ produced 10Be depth profiles** *Geochronology*
  Clow, T. W., Willenbring, J. K., et al
  2020; 2 (2): 411-423

- **Meteoric Beryllium-10 as a Tracer of Erosion Due to Postsettlement Land Use in West-Central Minnesota, USA** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
  Jelinski, N. A., Campforts, B., Willenbring, J. K., Schumacher, T. E., Li, S., Lobb, D. A., Papiernik, S. K., Yoo, K.
  2019; 124 (4): 874–901

- **Be-10/Be-9 Ratios Reflect Antarctic Ice Sheet Freshwater Discharge During Pliocene Warming** *PALEOCEANOGRAPHY AND PALEOCLIMATOLOGY*
  Valletta, R. D., Willenbring, J. K., Passchier, S., Elmi, C.
  2018; 33 (9): 934–44

- **Addressing time-scale-dependent erosion rates from measurement methods with censorship** *GEOLOGICAL SOCIETY OF AMERICA BULLETIN*
  McElroy, B., Willenbring, J., Mohrig, D.
  2018; 130 (3-4): 381–95

- **Siderophore-mediated iron removal from chrysotile: Implications for asbestos toxicity reduction and bioremediation.** *Journal of hazardous materials*
  Mohanty, S. K., Gonneau, C. n., Salamatipour, A. n., Pietrofesa, R. A., Casper, B. n., Christofidou-Solomidou, M. n., Willenbring, J. K.
  2018; 341: 290–96

- **"Difference Dating": A novel approach towards dating alpine glacial moraines** *QUATERNARY GEOCHRONOLOGY*
  Valletta, R. D., Willenbring, J. K., Lewis, A. R.
  2017; 41: 1–10

- **Sediment supply controls equilibrium channel geometry in gravel rivers** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Pfeiffer, A. M., Finnegan, N. J., Willenbring, J. K.
  2017; 114 (13): 3346–51

- **Short-lived increase in erosion during the African Humid Period: Evidence from the northern Kenya Rift** *EARTH AND PLANETARY SCIENCE LETTERS*
  Garcin, Y., Schildgen, T. F., Acosta, V., Melnick, D., Guillemoteau, J., Willenbring, J., Strecker, M. R.
  2017; 459: 58-69
- **Framework for assessment and phytoremediation of asbestos-contaminated sites.** *Environmental science and pollution research international*
  Gonneau, C. n., Miller, K. n., Mohanty, S. K., Xu, R. n., Hwang, W. T., Willenbring, J. K., Casper, B. B.
  2017; 24 (33): 25912–22
- **Differential elemental uptake in three pseudo-metallophyte C4 grasses in situ in the eastern USA.** *Plant and soil*
  Gonneau, C. n., Mohanty, S. K., Dietterich, L. H., Hwang, W. T., Willenbring, J. K., Casper, B. B.
  2017; 416 (1-2): 149–63
- **Beryllium desorption from minerals and organic ligands over time** *CHEMICAL GEOLOGY*
  Boschi, V., Willenbring, J. K.
  2016; 439: 52–58
- **Abrupt Change in Forest Height along a Tropical Elevation Gradient Detected Using Airborne Lidar** *REMOTE SENSING*
  Wolf, J., Brocard, G., Willenbring, J., Porder, S., Uriarte, M.
  2016; 8 (10)
- **Relict landscape resistance to dissection by upstream migrating knickpoints** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
  Brocard, G. Y., Willenbring, J. K., Miller, T. E., Scatena, F. N.
  2016; 121 (6): 1182–1203
- **The null hypothesis: globally steady rates of erosion, weathering fluxes and shelf sediment accumulation during Late Cenozoic mountain uplift and glaciation** *TERRA NOVA*
  Willenbring, J. K., Jerolmack, D. J.
  2016; 28 (1): 11–18
- **Asbestos Fiber Preparation Methods Affect Fiber Toxicity.** *Environmental science & technology letters*
  Salamatipour, A. n., Mohanty, S. K., Pietrofesa, R. A., Vann, D. R., Christofidou-Solomidou, M. n., Willenbring, J. K.
  2016; 3 (7): 270–74
- **The effect of pH, organic ligand chemistry and mineralogy on the sorption of beryllium over timeL** *ENVIRONMENTAL CHEMISTRY*
  Boschi, V., Willenbring, J. K.
  2016; 13 (4): 711–22
- **Stable-isotope and solute-chemistry approaches to flow characterization in a forested tropical watershed, Luquillo Mountains, Puerto Rico** *APPLIED GEOCHEMISTRY*
  Scholl, M. A., Shanley, J. B., Murphy, S. F., Willenbring, J. K., Occhi, M., Gonzalez, G.
  2015; 63: 484–97
- **Sequence and chronology of the Cuerpo de Hombre paleoglacier (Iberian Central System) during the last glacial cycle** *QUATERNARY SCIENCE REVIEWS*
  Carrasco, R. M., Pedraza, J., Dominguez-Villar, D., Willenbring, J. K., Villa, J.
  2015; 129: 163-177
- **Effects of a tectonically-triggered wave of incision on riverine exports and soil mineralogy in the Luquillo Mountains of Puerto Rico** *APPLIED GEOCHEMISTRY*
  Brocard, G. Y., Willenbring, J. K., Scatena, F. N., Johnson, A. H.
  2015; 63: 586-598
- **Rain revs the crustal conveyor** *NATURE GEOSCIENCE*
  Willenbring, J. K.
  2015; 8 (6): 424–25
- **Extreme decay of meteoric beryllium-10 as a proxy for persistent aridity.** *Scientific reports*
  Valletta, R. D., Willenbring, J. K., Lewis, A. R., Ashworth, A. C., Caffee, M. n.
  2015; 5: 17813
- **In Situ Liquid Cell Observations of Asbestos Fiber Diffusion in Water.** *Environmental science & technology*

Wu, L. n., Ortiz, C. n., Xu, Y. n., Willenbring, J. n., Jerolmack, D. n.
2015; 49 (22): 13340–49

- **Identifying Sediment Sources and Sinks in the Root River, Southeastern Minnesota** *ANNALS OF THE ASSOCIATION OF AMERICAN GEOGRAPHERS*
  Stout, J. C., Belmont, P., Schottler, S. P., Willenbring, J. K.
  2014; 104 (1): 20–39
- **What does a mean mean? The temporal evolution of detrital cosmogenic denudation rates in a transient landscape** *GEOLOGY*
  Willenbring, J. K., Gasparini, N. M., Crosby, B. T., Brocard, G.
  2013; 41 (12): 1215–18
- **Supraglacial Debris Supply in the Cuerpo de Hombre paleoglacier (Spanish Central System): Reconstruction and Interpretation of a Rock Avalanche Event** *GEOGRAFISKA ANNALER SERIES A-PHYSICAL GEOGRAPHY*
  Carrasco, R. M., Pedraza, J., Dominguez-Villar, D., Willenbring, J. K., Villa, J.
  2013; 95 (3): 211–26
- **A cosmic trip: 25 years of cosmogenic nuclides in geology** *GEOLOGICAL SOCIETY OF AMERICA BULLETIN*
  Granger, D. E., Lifton, N. A., Willenbring, J. K.
  2013; 125 (9-10): 1379–1402
- **Meteoric Be-10 concentrations from saprolite and till in northern Sweden: Implications for glacial erosion and age** *QUATERNARY GEOCHRONOLOGY*
  Ebert, K., Willenbring, J., Norton, K. P., Hall, A., Hattestrand, C.
  2012; 12: 11-22
- **RATE AND PROCESSES OF RIVER NETWORK REARRANGEMENT DURING INCIPIENT FAULTING: THE CASE OF THE CAHABON RIVER, GUATEMALA** *AMERICAN JOURNAL OF SCIENCE*
  Brocard, G., Willenbring, J., Suski, B., Audra, P., Authemayou, C., Cosenza-Muralles, B., Moran-Ical, S., Demory, F., Rochette, P., Vennemann, T., Holliger, K., Teyssier, C.
  2012; 312 (5): 449-507
- **Steady state reach-scale theory for radioactive tracer concentration in a simple channel/floodplain system** *JOURNAL OF GEOPHYSICAL RESEARCH-EARTH SURFACE*
  Lauer, J., Willenbring, J.
  2010; 115
- **Meteoric cosmogenic Beryllium-10 adsorbed to river sediment and soil: Applications for Earth-surface dynamics** *EARTH-SCIENCE REVIEWS*
  Willenbring, J. K., von Blanckenburg, F.
  2010; 98 (1-2): 105–22