



DR. KIERSTEN (KIKI; RUNYAN) PATSCH
ASSISTANT PROFESSOR
California State University Channel Islands
Environmental Science and Resource Management
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RESEARCH INTERESTS and EXPERTISE

- Coastal Geologic Hazards
 - Seacliff and bluff erosion
 - Short-term and long-term changes in sandy beach geomorphology
 - Reductions to natural sand supply
 - Spatiotemporal geomorphic mapping with unmanned aerial vehicles (UAVs/Drones)
- Climate Change and the Impact on Coastal Geologic Systems
- Coastal Policy, Management, and Resilience
- Sediment Budget Analysis of Littoral Systems
- Sand as a resource/ Illegal sand mining/ Opportunistic beach nourishment
- Coastal Access
- Interdisciplinary approaches to coastal sandy beach monitoring
- Science Communication

EDUCATION

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| Ph.D. | Earth Sciences, University of California Santa Cruz
Advisor: Dr. Gary Griggs
Dissertation: <i>An Analysis of Littoral Cell Sand Budgets in California</i> | 2000-2004 |
| B.A. | Environmental Sciences, University of Virginia, Charlottesville, Virginia
High Distinction
Thesis Advisor: Dr. Robert Dolan
Honors Thesis: <i>Origin of a Dune Called Jockey's Ridge on the Outer Banks of North Carolina</i> | 1996-2000 |

PROFESSIONAL ACTIVITIES and EXPERIENCE

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| ASSISTANT PROFESSOR | | 2015-PRESENT |
| ▪ | California State University Channel Islands
Environmental Science and Resource Management
Dr. Sean Anderson (Chair) | |
| ADJUNCT PROFESSOR/LECTURER | | 2013-2015 |
| ▪ | James Madison University
Geology Department
Contact: Dr. Steven Leslie (Chair) | |
| ▪ | Lynchburg College
Environmental Studies Department
Contact: Dr. David Perault (Chair) | |

RESEARCH ASSOCIATE

2008-2012

- University of Virginia/UNC Chapel Hill
Contact: Dr. Laura Moore
-Academic paper preparation
-Utilized a MATLAB based model (GEOMBEST) to simulate the evolution of coastal geomorphology and stratigraphy, resulting from changes in sea level and sediment volume, to develop a late-Holocene simulation that evolves North Chandeleur Island (off the coast of Louisiana) to historical states
-Explored the potential future evolution of the island through forward simulation to determine future habitat conditions for the snowy plover
- Randolph-Macon College
Contact: Dr. Michael Fenster
-Post processed side-scan sonar data for the barrier islands of Virginia using SonarWiz.
-Edited consultant reports on beach erosion hazards

RESEARCH CONSULTANT

2005-2008

- PFC Energy: Global Energy 2007-2008
-Assisted in gathering data for the North American Petroleum Database
-Developed assessments of oil, gas, and coal bed methane data in the US in addition to creating a GIS of the data and PowerPoint presentations
- U.S. Army Corps of Engineers: 2006-2007
Coastal Hydraulic and Engineering Laboratory
-Researched the breaching processes of barrier beaches on the coast of northern California, for which a new breaching susceptibility index was introduced
-Reviewed case studies for Carmel River Lagoon, Lake Earl, Redwood Creek, Russian River Estuary, and Stone Lagoon
- University of Virginia: 2005-2006
Contact: (Dr. Robert Dolan) Dr. Patricia Wiberg
-Assisted in gathering research, writing, and editing a book concerning sinking cities around the world

POST-DOCTORAL RESEARCHER

2005

- Division of Boating and Waterways: Santa Cruz, CA
Contact: Dr. Gary Griggs
-Development of Sand Budgets for California's Major Littoral Cells: Eureka, Santa Cruz, Southern Monterey Bay, Santa Monica (including Zuma), San Pedro, Laguna, Oceanside, Mission Bay, and Silver Strand Littoral Cells
-Continuation of the comprehensive study and update of regional littoral cell boundaries and sand budgets with an emphasis on reductions to sediment supply through the damming of rivers and the armoring of seacliffs.

GRADUATE RESEARCHER

2000-2004

UNIVERSITY OF CALIFORNIA SANTA CRUZ

- Division of Boating and Waterways 2004
Littoral Cells and Sand Budgets along the Coast of California.
Comprehensive study and update of regional littoral cell sediment budgets with an emphasis on reductions to sediment supply through the damming of rivers and the armoring of sea cliffs. \$60,228 research grant (1 yr.). PI: Dr. Gary Griggs
- US Army Corps of Engineers Coastal Inlet Research Program 2001-2003
Littoral Cells, Littoral Drift, and Sand Budgets along the Coasts of California. Development of sand budgets for the majority of the coast of California using harbor dredging as a proxy for littoral drift. Harbor placement was analyzed regionally in reference to littoral cells and drift in California. \$78,000 research grant (2yrs). PI: Dr. Gary Griggs
- California Coastal Conservancy 2000-2001
Increasing Natural Sand Supply to California's Beaches. Contributions of Coastal Cliff Erosion to the Beach Sand Budget in California and the Effects of Armoring. Examination of sand contribution from sea cliff erosion in the Santa Barbara and Oceanside littoral Cells, and the reduction of sand supply due to coastal armoring
- US Geological Survey 2000-2001
Report to the Nation, Status and Trends of Seacliffs, California.
-Participated in a statewide assessment of seacliffs along California's coastline.
-Inventoried into a GIS environment shoreline attributes such as erosion rates, cliff geology, erosion hazard or hotspot areas, and development along the coastal zone of California.

WORKSHOPS AND TRAINING

- Advanced Modelling with XBeach-Nonhydrostatic 2019
This course focuses on the modeling of sandy, gravel, and vegetated coasts with XBeach-NH+, the new non-hydrostatic, wave-resolving mode of XBeach. Workshop held in conjunction with Coastal Sediment 2019 in Tampa, Florida. May 27th, 2019.
- Coastlines and People (CoPe) Workshop 2018
Under a grant from the National Science Foundation, the University Cooperation for Atmospheric Research (UCAR) is looking to better understand the research needs related to advancing understanding of the impacts of coastal environmental variability and natural hazards on populated coastal regions. NSF Geosciences Directorate supports this activity through award # [1844215](#). Selected participants attend workshops in San Diego, Chicago, and Atlanta September 26-28, 2018. Selected Participant <https://coastlinesandpeople.org/>
- Coastal Zone Foundation's Coastal Ecology Short Course 2017
Held in conjunction with the American Shore & Beach Preservation Association's National Coastal Conference: Beaches, Bays, and Beyond.
Fort Lauderdale, Florida October 24-26, 2017
4 Professional Development Hours.

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- [Coastal Zone Foundation's Coastal Policy Short Course](#) 2017
 Held in conjunction with the American Shore & Beach Preservation Association's National Coastal Conference: Beaches, Bays, and Beyond.
 Fort Lauderdale, Florida October 24-26, 2017
 4 Professional Development Hours.
 - [Introduction to R Spatial Analysis](#) 2017
 Introduction to the R program and learn basic spatial functions commonly used with GIS software. Time & Date: 8:30 am – 12:00 pm on Monday May 22, 2017 Instructor: Shannon Albeke is a Research Scientist and Ecoinformaticist at the Wyoming Geographic Information Science Center at the University of Wyoming. UC GIS Annual Conference, Washington D.C.
 - [Advanced Spatial Analysis Topics using R](#) 2017
 Using R and OSGEO\$W to create automated workflow that integrates cloud-based raster/satellite data acquisition/processing with the extraction of this data to either points or polygons to facilitate the modeling of a landscape process. Time & date: 1:00pm – 5 pm on Monday May 22, 2017. Instructor: Shannon Albeke is a Research Scientist and Ecoinformaticist at the Wyoming Geographic Information Science Center at the University of Wyoming. UC GIS Annual Conference, Washington D.C.
 - [Beach Sustainability Workshop](#), Organizer and facilitator 2017
 Funded by COAST with Dr. Philip King, SFSU. A two-day workshop with CSU and UC academics, NGOs, as well as state and federal agencies to form a working group to develop the Beach Sustainability Project and Beach Sustainability Index.
 - [Drone2Map and Arc Collector Workshops](#) 2016
 Workshops held at the 2016 ESRI User Conference in San Diego, California to train educators to use and teach Drone to Map and Arc Collector in college-level courses.
 - [Pix4D User Workshop](#) 2016
 Face-to-face workshop for guided instruction on Pix4D software to develop 2D and 3D images and models from UAV-derived images
 - [Coastal Zone Foundation's Coastal Geology short course](#) 2016
 Held at the American Shore & Beach Preservation Association's National Technical Conference held in Washington DC on February 25, 2016 and provided 4 Professional Development Hours.
 - [Coastal Inlets Research Program Technology-Transfer Workshop](#) 2003
 Thirteen professional development hours for attending the 2003 workshop held February 10-12 in Pointe Verda Beach, Fl. Concentration on shoreline modeling using GenesisT and other models developed by the Army Corps of Engineers
 - [USGS: Status and Trends of Seacliffs in the United States- Workshop](#) 2002
 Workshop held January 9-11, 2002 in Santa Cruz, California for all of the regional authors participating in the USGS Report to the Nation on the status of seacliffs
 - [National Conference on Beach Preservation: Technology-Transfer Workshop](#) 2002
 Thirteen professional development hours for attending the 2002 workshop held January 23-25, 2002 in Biloxi, Mississippi. Concentration on GIS development for shoreline processes

TEACHING EXPERIENCE

- California State University Channel Islands, Camarillo, CA
ESRM 100: Introduction to Environmental Science
ESRM 210: Physical Oceanography & Lab
ESRM 328: Introduction to Geographic Information Systems (GIS) & Lab
ESRM 335: The Beach, Upper Division Interdisciplinary General Education (UDIGE) course
ESRM 428: Intermediate Geographic Information Systems (GIS) & Lab
ESRM 371: Coastal Monitoring with Remotely Piloted Systems & Lab
ESRM 494: Independent Research
COMP 490: Computational Beauty and the Beach & Lab
Coastal Geomorphology, Osher Lifelong Learning Institute
- James Madison University, Harrisonburg VA
GSCI 100: The Physics and Chemistry of the Human Experience
GSCI 104: Scientific Principles- Coastal Processes and Hazards Laboratory
- Lynchburg College, Lynchburg, VA
ENVS 333: Physical Oceanography & Lab (4 day field trip to the Outer Banks of North Carolina)
- University of California Santa Cruz, Santa Cruz, CA
Physical Oceanography & Lab (Teaching Assistant)
Marine Policy (Writing Assistant/Tutor)
Mentor for Senior Thesis Research
Coastal Geology & Lab (Guest Lecturer and Teaching Assistant)

COMPUTER/TECHNICAL SKILLS

- Geographical Information Systems (ArcMap; ArcPro; ArcGIS Online, ArcCollector; Survey123; ArcCatalog; Drone2Map)
- Pix4D, DJI GO4, Drone Deploy, Cloud Compare, LP360
- MapSmart
- GEOMBEST (Geomorphic Model of Barrier, Estuarine, and Shoreface Translations), MATLAB based quantitative simulation of large-scale coastal behavior
- SonarWiz
- USACOE Sediment Budget Analysis System (SBAS)

PROFESSIONAL ASSOCIATIONS AND MEMBERSHIP

AAG GeoMentor
American Shore & Beach Preservation Association (ASBPA)
American Geophysical Union (AGU)
California Shore & Beach Preservation Association (CSBPA)
Coastal Education and Research Foundation (CERF)
CSU GIS Specialty Center, Board Member
University Consortium for Geographic Information Science

AWARDS

Kiki Patsch (2019). President's Award for Innovations in Teaching and Learning. California State University Channel Islands.

Kiki Patsch (2019). Top 5 Finalist, Maximum Faculty Teaching Award, Student Government and Selection Committee, California State University Channel Islands.

PROFESSIONAL CONTRIBUTIONS

PROFESSIONAL PEER-REVIEWED JOURNAL ARTICLES **IN PRESS**

Anderson, R., **Patsch, Kiki**, Lester, C., and Griggs, G. (In press). Adapting to Long-term Sea Level Rise: Managed Relocation- Stepping back from the Edge. *Shore & Beach*.

Anderson, Stacey, **Patsch, Kiki**, and Baker, Raquel. (In press). Eroding the Future: Telling the Story of Sand Mining, Climate Change, and Environmental Justice in Coastal South Africa. *Enculturation: A Journal of rhetoric, writing, and culture*. [LINK](#)

PROFESSIONAL PEER-REVIEWED JOURNAL ARTICLES **PUBLISHED**

Griggs, G., **Patsch, K.**, Lester, C., Anderson, R. (2020). Groins, Sand Retention, and the Future of Southern California Beaches. *Shore & Beach*. Vol. 88(2), pp. 1-23. [LINK](#) [DOI](#)

Anderson S., Castillo, H., **Patsch, K.** (2020). Arts under the Stars: Integrated Collaboration of Performing Arts, Environmental Science and Resource Management, and English. *Impact: The Journal of the Center for Interdisciplinary Teaching and Learning*. Boston University Center for Interdisciplinary Teaching and Learning. Vol9, Number 2, Summer 2020, pp. 17-34. [LINK](#)

Griggs, G., and **Patsch, K.** (2019). The Protection/Hardening of California's Coast: Times Are Changing. *Journal of Coastal Research*. Vol 35(5). pp. 1051-1061. [LINK](#)

Griggs, G.B. and **Patsch, K.** (2019). California's Coastal Development, Sea-Level Rise & Extreme Events: Where do we go from here? *Shore & Beach*. Vol 87(2). pp. 1-14. [LINK](#)

Griggs, G.B., **Patsch, K.** (2018). Natural changes and human impacts on the sand budgets and beach widths of the Zuma and Santa Monica littoral cells, southern California. *Shore & Beach*, 86(1), 3-16. [LINK](#)

Moore, L.J., **Patsch, K.**, Williams, S.J., and List, J.L. (2014). The potential for sea-level-rise-induced barrier island loss: Insights from the Chandeleur Islands, Louisiana, USA. *Marine Geology*, 355, 244-259.

Moore, L. J., J. H. List, S. J. Williams, and **K. Patsch**. (2011). Barriers on the brink: the complex intertwined roles of geologic framework, sediment availability and sea-level rise in island evolution. In: *Coastal Sediments 2011*, edited by P. Wang, J. D. Rosati and T. M. Roberts, pp. 272-285, World Scientific, Miami, FL, USA.

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- Moore, L.J. List, J.H., **Patsch, K.**, and Williams, S.J. (2009). Barrier island sensitivity to sea-level rise: Insights from numerical model experiments, North Carolina Outer Banks and Chandeleur Islands, LA, USA. *EOS Transactions. AGU*, 9(22), Fall Meet. Suppl., Abstract U51A-0012.
- Patsch, K. B.**, & Griggs, G. B. (2008). Development of a Sediment Budget for the Santa Barbara Littoral Cell. *Marine Geology*, 252(1-2), 50-61.
- Kraus, N. C., **Patsch, K. B.**, & Munger, S. (2008). Barrier Beach Breaching from the Lagoon Side with Reference to Northern California. *Shore & Beach*, 76(2), 33-43.
- Limber, P. W., **Patsch, K. B.**, & Griggs, G. B. (2008). Coastal Sediment Budgets and the Littoral Cut-off Diameter: A Grain Size Threshold for Quantifying Active Sediment Inputs. *Journal of Coastal Research Special Issue*, 24(2), 122-133.
- Runyan, K. B.**, & Griggs, G. B. (2003). The Effects of Armoring Seacliffs on the Natural Sand Supply to the beaches of California. *Journal of Coastal Research* 19(2), 336-347.
- Runyan, K. B.**, & Griggs, G. B. (2003). Implications of Harbor Dredging for the Santa Barbara Littoral Cell. *Proceedings from the California and the World Ocean Conference 2002*, Santa Barbara, California.
- Runyan, K. B.**, & Dolan, R. (2001). Origin of Jockey's Ridge, North Carolina: End of the Highest Sand Dune on the Atlantic Coast? *Shore & Beach*, 69(3).
- Griggs, G. B., & **Patsch, K. B.** (2004). Cliff Erosion and Bluff Retreat along the California Coast. *Sea Technology*, 45(9), 36-40.
- Griggs, G. B., & **Runyan, K. B.** (2004). Cliff Erosion and Bluff Retreat along the California Coast. *Proceedings from the Oceans 2003 Marine Technology and Ocean Science Conference*.

BOOKS AND BOOK REVIEWS FOR ACADEMIC JOURNALS **PUBLISHED**

- Anderson, Stacey and Patsch, Kiki. (In prep; Chapter Proposal Accepted; Draft due October 2020). Coastal Communication: Enhancing Scientific Literacy and Discourse in English and Environmental Science
- Patsch, K.** (2018). A Review of Coasts in Crisis: A Global Challenge. *Coastal Management*. Vol. 46(2). pp. 1-3. DOI 10.1080/08920753.2018.1426378.
- Griggs, G. B., **Patsch, K. B.**, & Savoy, L. (2005). *Living with the Changing California Coast*. Berkeley, California: University of California Press. 540pp

MULTIMEDIA SCHOLARSHIP

- Castillo, H., **Patsch, K.**, Anderson, S. (2019). CSU Channel Islands Performing Arts, English, Political Science, and Environmental Science and Resource Management Programs Perform a Climate Awareness Dance for the Ten Strands/UC-CSU Climate Literacy Summit December 11, 2019. [LINK](#)
- Patsch, K.**, Sanchez Ramirez, R., and Woods, T. (2019) Coastal Armoring in California. <https://arcg.is/0DTely>

Patsch, K. and Anderson, Stacey. (2019). *Save Our Sand*. Dance Performance/Website Arts under the Stars Collaboration with ESRM 335 The Beach, English 331, and Performing Arts. California State University Channel Islands. May 3th and 4th, 2019. <https://youtu.be/nrRF19oqy9s> and <http://arcg.is/18G04q>

Patsch, K. and Anderson, Stacey. (2018). *Obituary to the Beach*. Dance Performance/Website Arts under the Stars. California State University Channel Islands. May 4th and 5th, 2018. LINK <http://beachesontheedge.sandshed.org/arts-under-the-stars/>

Patsch, K. and Anderson, Stacey. (2017). *Beaches on the Edge*. California State University Channel Islands. <http://beachesontheedge.sandshed.org/>

PEER-REVIEWED PAPERS AND ARTICLES WITH UNDERGRADUATES*

Patsch, K., and DeSilva*, J. (2019). Determining the Efficacy of Solar Panels on Campus Rooftops using GIS, UAVs, and Area Solar Radiation Models. *CSU Geospatial Review: Geographic Information Science in the California State University System*. Vol. 15, Spring 2019.

Patsch, K., Wells*, M, Monak*, M.(2019). Communicating Geospatial Science with Story Maps. *CSU Geospatial Review: Geographic Information Science in the California State University System*. Vol. 15, Spring 2019.

Patsch, K., Coty*, A., and Costa*, P. (2017). Establishing Sea Cliff Erosion Rates and Identifying Erosional Hotspots for Becher's Bay, Santa Rosa Islands. *CSU Geospatial Review: Geographic Information Science in the California State University System*. Vol. 14, Spring 2017, pp 1; 6-7. http://csugis.sfsu.edu/CSU_Geospatial_Review/2017.pdf

TECHNICAL REPORTS

Anderson, R., Blalock, J., Ellis, J., Lester, C., and **Patsch, K** (2018). *CoPe Nodes: Enhancing Coastal Resilience through Community-Driven Research and Education*. National Science Foundation University Cooperation for Atmospheric Research White Paper. Coastlines and People (CoPe) Scoping Sessions, San Diego, California, September 28, 2018.

Patsch, K. B., & Griggs, G. B. (2007). *Development of Sand Budgets for California's Major Littoral Cells: Eureka, Santa Cruz, Southern Monterey Bay, Santa Barbara, Santa Monica (including Zuma), San Pedro, Laguna, Oceanside, Mission Bay, and Silver Strand Littoral Cells*. Oakland, California: Report to the California Coastal Sediment Management Work Group, California Department of Boating and Waterways.

Patsch, K. B., & Griggs, G. B. (2006). *Littoral Cells, Sand Budgets, and Beaches: Understanding California's Shoreline*. Oakland, California: California Sediment Management Group. <http://www.dbw.ca.gov/CSMW/PDF/LittoralDrift.pdf>

Griggs, G. B., & **Patsch, K. B.** (2004). *California's Coastal Cliffs and Bluffs: Formation, Evolution, and Stability of Coastal Cliffs Status and Trends*: United States Geological Survey Professional Paper Number 1693. 123pp.

Runyan, K. B., & Griggs, G. B. (2003). *CIRP Web Database: Net/Gross Longshore Transport Rates, California*. Vicksburg, Mississippi: Army Engineer Research and Development Center.

Runyan, K. B., & Griggs, G. B. (2002). Chapter 8: Contributions from Coastal Cliff Erosion to the Littoral Budget. In M. Coyne & K. Sterrett (Eds.), *California Beach Restoration Study* (pp. 8.1-8.5). Sacramento, California: California Division of Boating and Waterways and the State Coastal Conservancy.

THESES

Patsch, K. B. (2004). *An Analysis of Littoral Cell Sand Budgets for California*. Unpublished Ph.D. Dissertation, University of California, Santa Cruz, Santa Cruz.

Runyan, K. B. (2000). *A Dune Called Jockey's Ridge*. Unpublished Undergraduate Honor's Thesis, University of Virginia, Charlottesville, Virginia.