

Cheryl J. Hapke, Ph.D.

Senior Consultant



Education and Credentials

Ph.D., Coastal Geology,
University of California Santa
Cruz, Santa Cruz, California,
2002

M.S., Geology, University of
Maryland, College Park,
Maryland, 1994

B.S., Geology, University of
Pittsburgh, Pittsburgh,
Pennsylvania, 1985

Continuing Education and Training

Leadership 201, USGS-Nominated
Leadership Training Course,
1-week (2019)

Leadership 101, USGS-Nominated
Leadership Training Course,
1-week (2016)

First Aid and CPR Certified (2018)

Professional Affiliations

American Geophysical Union

American Shore and Beach
Preservation Association

Association of Environmental and
Engineering Geologists

Achievements and Awards

2021 Presidential Citation,
Association of Environmental and
Engineering Geologists

2020 Invited Reviewer, UN World
Ocean Assessment II, Erosion
and Sedimentation

200 2nd Avenue S.
Suite 155
St. Petersburg, FL 33701

Professional Profile

Dr. Cheryl Hapke is a coastal geologist with more than 25 years of experience studying coastal evolution and coastal change processes in response to storms and future sea level rise in a variety of geomorphic settings, including barrier islands, mainland coasts, and rocky and reef-fringed coasts. Her research focuses on the vulnerability of coastal systems on various time scales, from single events to multiple decades, with application toward solving societal problems such as sea level rise through adaptation planning. Dr. Hapke's studies have scaled from large regional assessments of long-term coastal change, to barrier island response to extreme storm events, to forecasts of future behavior using statistical models.

Dr. Hapke has extensive experience overseeing and managing large projects and coordinating across diverse groups of stakeholders and partners. In addition, she has served as a technical advisor on coastal change hazards to state and federal agencies and international groups and authored numerous peer-reviewed journal articles.

Relevant Experience

Coastal Resiliency

Coastal Vulnerability Assessment, Captiva, Florida—Lead investigator on project that conducted a site characterization of coastal typology and land use for the island community of Captiva, Florida, including the open ocean and estuarine coasts. The assessment compiled and formatted extensive GIS data of community assets, including commercial and residential buildings, roadways, evacuation routes, and critical facilities. Integrated sea level rise flood inundation model outputs from the NOAA to evaluate what future conditions may be for the island's assets for the future scenarios. A subsequent risk assessment identified the numbers of various assets that would be impacted progressively as sea levels rise.

Coastal Adaptation Conceptual Designs, Captiva, Florida—Lead investigator on project that uses the foundational information from the Captiva vulnerability assessment to begin to develop nature-based adaptation strategies for various locations around the island. The designs consider the exposure to waves and currents, the

727.434.0024
chapke@integral-corp.com



gradient, accommodation space, and tidal flow. Worked closely with the community to present initial designs, gather feedback, and incorporate revisions to work toward developing an adaptation pathway. The designs are in the adaptation categories of protection (i.e., reef balls or mangrove restoration) or accommodation (i.e., raising roadways).

Beach and Dune Assessment for Resilience, South Padre Island, Texas—Lead investigator of a comprehensive study of beach and dune resilience at South Padre Island, Texas. The project evaluated a long time series of beach and dune profiles to evaluate the past response of the system to both storms and sea level rise. Modeling techniques were used to investigate how the system is likely to respond in the future to a variety of plausible storm and sea level rise scenarios. An evaluation of the health of the dune vegetation was incorporated into the overall resilience study. The project also developed an innovative data viewer for data visualization and analysis, and resulted in a new client deliverable.

Model-Based Decision Support Framework for Sea Level Rise Adaptation, Captiva Island, Florida—Formulated the initial concept to bring Bayesian statistical modeling into the realm of sea level rise adaptation planning by creating a decision support tool for communities. The effort utilizes standard guidelines for community sea level rise adaptation such as vulnerability and hazard assessments, and includes an additional phase wherein Bayesian networks will be used to model probabilistic outcomes of adaptation strategies to evaluate trade-offs and unintended consequences, as well as to develop adaptation pathways. Worked closely with a community-based sea level rise committee in Captiva Island, Florida, and garnered statewide support via numerous workshops and webinars.

Coastal Vulnerability and Processes, Fire Island, New York—As project lead, coordinated the work of both USGS scientists and external collaborators on a project showcasing the importance of a systematic approach toward understanding how the morphology of the inner shelf, the antecedent geology, variations in local sediment supply, hydrodynamics, and human activities combine to shape the subaerial portion of barrier islands and play an integral role in the long-term behavior of the beach and dune system. Responsible for the project design and research goals, budgeting and proposal writing, field planning and data acquisition, developing collaborations and partnerships, and writing publications. Developed and maintained solid partnerships with federal and state agencies and developed cooperative agreements and collaboration with academic researchers at several universities.

Morphodynamics of Tidal Inlet Evolution, Fire Island, New York—Principal investigator for a study examining breach evolution during Hurricane Sandy in 2012, when a tidal inlet was cut through Fire Island in a portion of the island deemed a National Wilderness Area. Wherein the U.S. Army Corps of Engineers (USACE) closed breaches on other New York and New Jersey barrier islands, the “Wilderness Breach” was left open, providing a unique opportunity to study and model the breach evolution. The project involved extensive field operations, collecting bathymetric data, and monitoring shoreline change. In collaboration with Deltares, developed a new hybrid Delft3D/XBeach model that was able to recreate the morphology and evolution of the inlet and lead



to new understandings of how these systems evolve. Worked in close conjunction with the National Park Service and USACE.

National Assessment of Coastal Change Hazards, East and West Coasts, U.S.—Lead investigator for 9 years carrying out three comprehensive studies including California Long-term Shoreline Change, California Historical Cliff Retreat, and the New England and the Mid-Atlantic Long-Term Shoreline Change Assessment. The research, data, and products generated in association with this project increased the knowledge of coastal behavior on a variety of time and spatial scales and addressed some of the most pressing coastal issues of present-day society. The objectives of the long-term shoreline change assessment effort included determining long-term coastal change and identifying vulnerabilities along all open-ocean coasts of the U.S., developing methods that can be applied nationwide, combining historical and modern data types, and communicating results to a broad range of coastal managers, planners, and other users. These efforts provided first-of-a-kind data and interpretation that allow for significant advancement in our understanding of regional trends of coastal change along two margins of the U.S. The reports and data generated by this effort are widely requested and used extensively in coastal management, planning, project design, and climate change vulnerability studies.

Coastal Vulnerability Assessments, Ghana—Collaborated and transferred knowledge to coastal scientists, managers, and planners along the coast of Ghana in a U.S. Office of Naval Research-funded effort. The collaboration included researchers from USGS, Woods Hole Oceanographic Institution, University of New Hampshire, and Deltares. The goal of the 3-year project was to assist in developing a sustainable program in Ghana to map and understand coastal vulnerability, hazards, and the processes driving change. The team worked directly with researchers at the University of Ghana in Accra to share technical knowledge and collect field data.

Pacific Coral Reefs Project, Hawaii—Lead investigator for project aspects involving remote sensing and the influence of terrestrial processes on reef function, on the islands of Oahu, Moloka`i, and the Big Island. The primary project objectives were to understand the coastal erosion vulnerability and the impact of sediment on coral reef systems, including sediment delivery pathways, residence time, and processes of transport on reefs. Understanding the erosion rates and processes that control sedimentation on reefs can aid in forecasting the impacts of particular land use practices and climate change influences such as sea level rise. An important component of the overall project was to understand long-term patterns and rates of sediment influx from the subaerial coastal region.

Slope Stability and Landslides Project, California—Principal of a task examining the terrestrial sediment influx to the littoral system for a project designed to develop a regional understanding of the extent, location, timing, and impact of landslides and cliff retreat along the coast of California. Created new and novel approaches to quantify historical volumes of landslides using photogrammetric techniques. Funded by the California Department of Transportation (Caltrans), the project required close interaction with communities composed of scientists, planners, and managers from Caltrans and the Monterey Bay National Marine Sanctuary.



Coastal Mapping

Coastal Mapping Program, Florida—Cofounder and coordinator since 2018 of the Florida Coastal Mapping Program (FCMaP), a burgeoning effort to coordinate and facilitate modern, high-resolution mapping of Florida’s coastal waters. Organized and led six workshops since January 2018 to communicate the value of the effort to multiple stakeholders and partners statewide. FCMaP includes six state agencies (FDEP, FGS, FDEM, FDOT, FWRI, and FIO) and four federal agencies (USGS, USACE, BOEM, and NOAA). In 2021, the Florida legislature passed \$100 million funding for coastal seafloor mapping of areas identified as top priorities as a result of the communication and coordination of FCMaP. The end result will provide data that will explicitly move the science of coastal morphodynamics and resiliency forward by providing detailed information on the morphology of the nearshore zone. The effort has resulted in two peer-reviewed publications to date.

Other Relevant Experience

Research Professor, University of South Florida, College of Marine Science—Develops and leads new research programs and teams, including formulation of new research ideas. Principal investigator in the Center of Ocean Mapping and Innovative Technologies, a cooperative agreement with NOAA. Serves as Chair of the FCMaP Science and Technical Advisory Council (STAC). Leads large stakeholder workshops, convenes monthly STAC committee calls, and writes reports and peer-reviewed journal articles.

Principal, Coastal Science Solutions, LLC, St. Petersburg, Florida—Owns and operates a coastal science consulting service, principally as a subcontractor on projects where extensive subject matter expertise is required. Company founded in May 2019. Projects to date include working with a team of scientists and engineers to review, evaluate, and comment on a new proposed cliff-top development project in California that required data analyses, site evaluation, and extensive report writing. Also contributor to team developing coastal resiliency plan for Oldsmar, Florida.

Research Geologist, U.S. Geological Survey, Various Locations—As a research scientist with the USGS Coastal and Marine Geology Program, worked on a variety of projects with principal focus on understanding coastal change hazards. Successfully promoted through the system until achieving the highest non-executive rank, a GS-15. Participated as a team member on projects focused on shoreline change, coastal cliff erosion and landslides, geomorphic characterizations of coastal systems, and vulnerability assessments, using a mix of field and remote sensing techniques. Built a wide network of colleagues working in three different USGS field offices: Santa Cruz, California; Woods Hole, Massachusetts; and St. Petersburg, Florida. As a coastal science expert, participated by invitation on international advisory teams in Goa, India, and Buenos Aires, Argentina.

Director, St. Petersburg Coastal and Marine Science Center, St. Petersburg, Florida—Director of research science center with approximately 120 staff overseeing all science and operations of the center with an annual budget exceeding \$10 million. Directly managed a senior leadership team within center and supervised as many as 24 employees concurrently. Actively promoted the science center to external partners and collaborators and represented the USGS Coastal and Marine



Geology Program at international venues. Briefed directors of other science centers, and participated in strategic science planning and organizational development.

Technical Advisor to FEMA, New York—In response to the federal disaster declaration after Hurricane Sandy, accepted assignment to the FEMA Federal Disaster Recovery Joint Field Office in Queens, New York. Served as the coastal science expert advisor to the leadership of multiple federal, state, and local agencies and was the lead of the Natural and Cultural Resources Recovery Support Function, working with a team comprising experts from NPS, FWS, EPA, and NOAA to develop a disaster recovery plan for the State of New York.

Special Assignments

FEMA Joint Field Office, New York, coastal science subject matter expert, 2013

Department of Interior coastal science subject matter expert; 2007–2017: primary representative on DOI team on Fire Island to Montauk Point Reformulation Plan

USGS coastal science expert on Fire Island Breach Contingency Plan team, 2012–2017; National Park Service

California Department of Transportation, coastal science subject matter expert, 1999–2004: scientific liaison to Monterey Bay National Marine Sanctuary in discussions with Caltrans regarding coastal landslides

Congressional and Other Testimony

Congressional Briefing to Senator Charles Schumer’s staff on Fire Island, July 2013

Congressional Briefing: David Wegner, senior democratic staffer to House Subcommittee on Water Resources and Environment, Obama Administration, July 2013

Briefing to Congressman Zeldin (R–NY) and Senators Schumer and Gillibrand (D–NY) staffers on Fire Island EIS, September 2016

Publications and Peer Reviews

Dr. Hapke conducts peer review for a minimum of three or four science journals per year, including the *Journal of Geophysical Research: Earth Surface*, *Marine Geology*, *Geomorphology*, *Continental Shelf Processes*, and *Coastal Engineering*.

Hapke, C.J., R. Baumstark, R. Druyor, X. Fredericks, P. Kramer, K. Jackson, and L. McEachon. 2022. Establishing seafloor mapping priorities for coastal states. *Ocean and Coastal Management* 216:105942.



- Seymour, A.C., C.J. Hapke, and J. Warrick. 2020. Cliff Feature Delineation Tool and Baseline Builder Tool, Version 1.0 User Guide: U.S. Geological Survey Open File Report 2020–1070. 54 pp. <https://doi.org/10.3133/ofr20201070>.
- Van Ormondt, M., T.R. Nelson, C.J. Hapke, and D. Roelvink. 2020. Morphodynamic modelling of the wilderness breach, Fire Island, New York. Part I: Model set-up and validation. *Coastal Engineering* 157:103621.
- Hapke, C.J., R. Druyor, R.D. Baumstark, P.A. Kramer, E. Fitos, X. Fredericks, and E.H. Fetherston-Resch. 2019. A federal-state partnership for mapping Florida’s coastal waters. *Proceedings of Coastal Sediments 2019*, American Society of Civil Engineers, 10 pp.
- Hapke, C.J., P.A. Kramer, E.H. Fetherston-Resch, R.D. Baumstark, R. Druyor, X. Fredericks, and E. Fitos. 2019. Florida Coastal Mapping Program—Overview and 2018 workshop report: U.S. Geological Survey Open-File Report 2019–1017. 19 pp. <https://doi.org/10.3133/ofr20191017>.
- Bennett, V.C., R.P. Mulligan, and C.J. Hapke. 2018. A numerical model investigation of the impacts of Hurricane Sandy on water level variability in Great South Bay, New York. *Continental Shelf Research* 161:1–11.
- Brenner, O.T., E.E. Lentz, C.J. Hapke, R.E. Henderson, K.E. Wilson, and T.R. Nelson. 2018. Characterizing storm response and recovery using the beach change envelope: Fire Island, New York. *Geomorphology* 300:189–202.
- Locker, S.D., J.L. Miselis, N.A. Buster, C.J. Hapke, H.M. Wadman, J.E. McNinch, A.S. Forde, and C.A. Stalk. 2017. Nearshore sediment thickness, Fire Island, New York: U.S. Geological Survey Open-File Report 2017–1024. 21 pp.
- Hapke, C.J., N.G. Plant, R.E. Henderson, W.C. Schwab, and T.R. Nelson. 2016. Decoupling processes and scales of shoreline morphodynamics. *Marine Geology* 381:42–53.
- Wilson, K.E., P.N. Adams, C.J. Hapke, E.E. Lentz, and O. Brenner. 2015. Application of Bayesian networks to hindcast barrier island morphodynamics. *Coastal Engineering* 102:30–43.
- Nelson, T.R., and C.J. Hapke. 2015. Shoreface response and recovery to Hurricane Sandy: Fire Island, NY. *Proceedings of Coastal Sediments 2015*, San Diego, CA. doi: 10.1142/9789814689977_0012. World Scientific Publishing Co. Pte. Ltd.
- Van Ormondt, M., C. Hapke, D. Roelvink, and T. Nelson. 2015. The effects of geomorphic changes at Fire Island on inundation during and after Hurricane Sandy. *Proceedings of Coastal Sediments 2015*, San Diego, CA. doi:10.1142/9789814689977_0221. World Scientific Publishing Co. Pte. Ltd.
- Hapke, C.J., O. Brenner, and R. Henderson. 2015. Quantifying the geomorphic resiliency of barrier island beaches. *Proceedings of Coastal Sediments 2015*, San Diego, CA. doi.org/10.1142/9789814689977_0249. World Scientific Publishing Co. Pte. Ltd.



Hapke, C.J., P.N. Adams, J. Allan, A. Ashton, G.B. Griggs, M.A. Hampton, J. Kelly, and A.P. Young. 2014. Rocky coast geomorphology: A global synthesis – The USA. In: *Rock Coast Geomorphology – A Global Synthesis*. D.M. Kennedy, W.J. Stevenson, and L.A. Naylor (eds.): Geological Society of London Memoir No. 40.

Barnard, P.L., M. Van Ormondt, L.H. Erikson, J. Eshleman, C. Hapke, P. Ruggiero, P.N. Adams, and A.C. Foxgrover. 2014. Development of the Coastal Storm Modeling System (CoSMoS) for predicting the impact of storms on high-energy, active-margin coasts. *Natural Hazards* 74(2):1095–1125.

Schwab, W.C., W.E. Baldwin, J.F. Denny, C.J. Hapke, P.T. Gayes, J.H. List, and J.C. Warner. 2014. Modification of the Quaternary stratigraphic framework of the inner-continental shelf by Holocene marine transgression: An example offshore of Fire Island, New York. *Marine Geology* 355:346–360.

Hapke, C.J., O. Brenner, R. Hehre, and B.J. Reynolds. 2013. Coastal change from Hurricane Sandy and the 2012–13 winter storm season—Fire Island, New York. U.S. Geological Survey Open-File Report 2013–1231. 37 pp.

Lentz, E.E., C.J. Hapke, H.F. Stockdon, and R.E. Hehre. 2013. Improving understanding of near-term barrier island evolution through multi-decadal assessment of morphologic change. *Marine Geology* 337:125–139.

Hapke, C.J., M.G. Kratzmann, and E.A. Himmelstoss. 2013. Geomorphic and human influence on large-scale coastal change. *Geomorphology* 199:160–170.

Schwab, W.C., W.E. Baldwin, C.J. Hapke, E.E. Lentz, P.T. Gayes, J.F. Denny, J.H. List, and J.C. Warner. 2013. Geologic evidence for onshore sediment transport from the inner-continental shelf—Fire Island, New York. *Journal of Coastal Research* 29(3):526–554.

Hapke, C.J., H.F. Stockdon, W.C. Schwab, and M.K. Foley. 2013. Changing the paradigm of response to coastal storms. *Eos Trans. AGU* 94(21):189.

Kratzmann, M., and C.J. Hapke. 2012. Quantifying an anthropogenically driven morphologic changes on a Barrier Island: Fire Island National Seashore, New York. *Journal of Coastal Research* 28(1):76–88.

Lentz, E.E., and C.J. Hapke. 2011. Geologic framework influences on the geomorphology of an anthropogenically modified Barrier Island: Fire Island, New York. *Geomorphology* 126:82–96.

Hapke, C.J., and R.T. Thieler. 2011. USGS Science for the Nation’s Changing Coasts: Shoreline Change Research. U.S. Geological Survey Fact Sheet 2011–3073 (<http://pubs.usgs.gov/fs/2011/3073/>).



- Thieler, R.T., and C.J. Hapke. 2011. USGS Science for the Nation's Changing Coasts: Shoreline Change Assessment: U.S. Geological Survey Fact Sheet 2011-3074 (<http://pubs.usgs.gov/fs/2011/3074/>).
- Hapke, C.J., W.C. Schwab, P.T. Gayes, C. McCoy, R. Viso, E.E. Lentz, and J. List. 2011. Inner shelf morphologic controls on the morphodynamics of the beach and bar system, Fire Island, New York. *Proceedings of Coastal Sediments 2011*. pp. 1034-1047.
- Lentz, E.E., and C.J. Hapke. 2011. The development of a probabilistic approach to forecast coastal change. *Proceedings of Coastal Sediments 2011*. doi.org/10.1142/9789814355537_0140.
- Hapke, C.J., E.A. Himmelstoss, M. Kratzmann, J. List, and E.R. Thieler. 2010. National assessment of shoreline change: Historical shoreline change along the New England and Mid-Atlantic coasts. U.S. Geological Survey Open-File Report 2010-1118.
- Hapke, C.J., and N. Plant. 2010. Predicting coastal cliff erosion using a Bayesian probabilistic model. *Marine Geology* 278:140-149.
- Hapke, C.J., E.E. Lentz, P.T. Gayes, C.A. McCoy, R. Hehre, W.C. Schwab, and S.J. Williams. 2010. A review of sediment budget imbalances along Fire Island, New York: can nearshore geologic framework and patterns of shoreline change explain the deficit? *Journal of Coastal Research* 26(3):510-522.
- Hapke, C.J., D. Reid, and B. Richmond. 2009. Rates and trends of coastal change in California and the regional behavior of the beach and cliff system. *Journal of Coastal Research* 25(3):603-615.
- Hapke, C.J., S. Malone, and M. Kratzmann. 2009. National assessment of historical shoreline change: A pilot study of historical coastal bluff retreat in the Great Lakes, Erie, Pennsylvania. U.S. Geological Survey Open-File Report 2009-1042. 25 pp.
- Hapke, C.J. 2009. Integration of LiDAR and historical maps to measure coastal change on a variety of time and spatial scales. Chapter 4. In: *Remote Sensing of Coastal Environments*. Y. Wang (ed), pp. 79-102.
- Barnard, P.L., B. O'Reilly, M. van Ormondt, E. Elias, P. Ruggiero, L.H. Erikson, C. Hapke, B.D. Collins, R.T. Guza, P.N. Adams, and J.T. Thomas. 2009. The framework of a coastal hazards model; a tool for predicting the impact of severe storms. U.S. Geological Survey Open-File Report 2009-1073. 21 pp.
- Houser, C., C. Hapke, and S. Hamilton. 2008. Controls on coastal dune morphology, shoreline erosion and barrier island response to extreme storms. *Geomorphology* 100(3-4):223-240.
- Kratzmann, M., and C. Hapke. 2008. Anthropogenic influences on the dune/beach morphology of a moderately developed barrier island: Fire Island, New York. Technical Report NPS/NER/NRTR--2008/131. 45 pp.



- Lentz, E., C. Hapke, and W. Schwab. 2008. A review of sediment budgets at Fire Island National Seashore, New York. Technical Report NPS/NER/NRTR--2008/114. 40 pp.
- Hapke, C.J., and M. Christiano. 2007. Long-term and storm-related shoreline change trends in the Florida Gulf Islands national seashore. U.S. Geological Survey Open-File Report 2007-1392. 18 pp.
- Hapke, C.J., and D. Reid. 2007. The national assessment of shoreline change: Part 4, Historical coastal cliff retreat along the California coast. U.S. Geological Survey Open-File Report 2007-1133.
- Hapke, C.J., and D. Reid. 2007. Regional Beach/Cliff System Dynamics along the California Coast. *Proceedings of Coastal Sediments 2007*. May 13-17, New Orleans, LA. 12 pp.
- Hapke, C.J., and K. Green. 2006. Coastal landslide material loss rates associated with severe climatic events. *Geology* 34(12):1077–1080.
- Hapke, C.J., D. Reid, B.M. Richmond, P. Ruggiero, and J. List. 2006. National assessment of shoreline change: Part 3, Historical shoreline change and associated coastal land loss along sandy shorelines of the California coast. U.S. Geological Survey Open-File Report 2006-1219. 79 pp.
- Hapke, C., and K. Green. 2005. Decadal-scale analysis of coastal landslides along the Big Sur coast. Rates and processes. USGS Open File Report 2005-1434. 20 pp.
- Hapke, C. 2005. The Monterey Peninsula to Morro Bay. In: *Living with the Changing California Coast*. G. Griggs, K. Patsch, and L. Savoy (eds). Berkeley, University of California Press, pp. 311–333.
- Hapke, C.J. 2005. Estimated material yield from coastal landslides based on historical digital terrain modeling, Big Sur, California. *Earth Surface Landforms and Processes* 30:679–697.
- Hapke, C.J., R. Gmirkin, and B.M. Richmond. 2005. Coastal change rates and patterns: Kaloko-Honokohau National Historical Park, Hawai'i. USGS Open File Report 2005-1069. 28 pp.
- Thieler, E.R., and C.J. Hapke. 2005. Photogrammetry: Encyclopedia of Coastal Science. Dordrecht, The Netherlands, Kluwer Academic Publishers, pp. 764-769.
- Hapke, C. 2004. The measurement and interpretation of coastal cliff and bluff retreat. In: *Formation, Evolution, and Stability of Coastal Cliffs – Status and Trends*. M. Hampton and G. Griggs (eds). U.S. Geological Survey Professional Paper 1693. pp. 39–50.
- Hapke, C.J., and K.R. Green. 2004. Rates of landsliding and cliff retreat along the Big Sur Coast, California—Measuring a crucial baseline. USGS Fact Sheet 2004-3099. 4 pp.
- Hapke, C.J., K.R. Green, and K. Dallas. 2004. Map showing estimated sediment yield from coastal landslides and active slope distribution along the Big Sur Coast, Monterey and San Luis Obispo Counties, California, USGS Scientific Investigations Map 2852, 1 sheet, 1:67,500.



Hapke, C. 2003. Sediment yield from Big Sur coastal landslides. pp. 6-7. In: *Ecosystem Observations for the Monterey Bay National Marine Sanctuary, 2003*. National Oceanic and Atmospheric Administration, Monterey Bay National Marine Sanctuary.

Hapke, C.J. 2003. Quantifying sediment yield from coastal landslides using digital photogrammetry and GIS: Big Sur, California. *Proceedings of Coastal Sediments 2003*, Clearwater Beach, FL. May 18–23. 13 pp.

Hapke, C., and B. Richmond. 2002. The impact of climatic and seismic events on the short-term evolution of seacliffs based on 3-D mapping: Northern Monterey Bay, California. *Marine Geology* 187(3–4):259–278.

Hapke, C., and B. Richmond. 2000. Monitoring beach morphology changes using small-format aerial photography and digital softcopy photogrammetry. *Environmental Geosciences* 7(1):32–37.

Hapke, C., A. Gibbs, B. Richmond, M. Hampton, B. Jaffe, J. Dingler, A. Sallenger, B. Benumof, K. Brown, G. Griggs, L. Moore, D. Scholar, C. Storlazzi, W. Krabill, R. Swift, and J. Brock. 1998. A collaborative program to investigate the impacts of the 1997-98 El Niño winter along the California coast: *Shore and Beach* 66(3):24–32.

Invited Presentations

Prioritizing Mapping of Florida’s Coastal Seafloor: Program Development and Sea-level Rise Adaptation Applications, University of South Florida Geosciences Department Colloquium Series, Tampa FL. February 14, 2020.

Prioritizing Mapping of Florida’s Coastal Seafloor: Program Development and Adaptation Applications, Florida Resiliency Forum webinar. February 2020.

A Model-based Decision Support Framework for Coastal Community Sea-level Rise Adaptation Planning, 2020 Miami Climate Symposium. January 2020.

Climate Change and Sea Level Rise: What Floridians Need to Know, Florida Democratic Women’s Club Tally Days (Keynote). January 2020.

Progress in Understanding Seacliff Evolution Using Remote Sensing Techniques and Historical Data Sources, American Geophysical Union Fall Meeting, San Francisco, CA. December 2019.

A Federal-State Partnership for Mapping Florida’s Coast and Seafloor, 2019 BioBase Aquatic Mapping technology Symposium (Keynote), Orlando, FL. February 2019.

Why You Need Coastal Mapping (and Probably Don’t Know It), St Petersburg Innovation District State of the Science Conference, St. Petersburg, FL. October 2018.

Decoupling Processes and Scales of Shoreline Morphodynamics: Fire Island, NY, Woods Hole Oceanographic Institute Colloquium Series, Woods Hole, MA. August 2017.



National Assessment of Coastal Change Hazards, Puerto Rico Climate Change Summit, San Juan, Puerto Rico. April 2016.

Morphologic Change Studies at Fire Island in a Post-Sandy World, Fire Island Biennial Science Meeting, Patchogue, NY. April 2016.

Coastal Change at Fire Island, NY: Influences of Storms, Geology and People (and Politics), University of Pittsburgh, Department of Planetary Sciences Seminar Series. October 2015.

Morphologic Response and Recovery Related to Hurricane Sandy at Fire Island, NY, Coastal Carolina University, Department of Marine Science and Geology Seminar Series. February 2015.

Controls on Barrier Island Response and Recovery to Hurricane Sandy and Beyond, Fire Island Biennial Science Meeting, Patchogue, NY. March 2014.

Geologic Constraints on the Morphologic Response to Hurricane Sandy at Fire Island, NY, University of Puerto Rico, Mayaguez, Department of Geology Seminar Series. March 2014.

Morphologic Response and Recovery Related to Hurricane Sandy at Fire Island, NY, Texas A&M University, Department of Geography Colloquium Series. October 2014.

Geomorphic and Human Influence on Large-Scale Coastal Change, Binghamton Geomorphology Symposium, Newark, NJ. March 2013.

Barrier Island Morphologic Response to Hurricane Sandy: Fire Island, NY; American Association of Petroleum Geology Annual Meeting, Pittsburgh, PA. May 2013.

Coastal Response to Hurricane Sandy at Fire Island, NY, Long Island Natural History Symposium, Stony Brook, NY. December 2013.

Influences on the Morphologic Response to Hurricane Sandy: Fire Island, NY, American Geophysical Union Fall Meeting. December 2013.

Scaling Controls of Barrier Island Evolution and Morphology: Fire Island, New York, University of Florida, Department of Geology Seminar Series. October 2012.

Multi-scale Coastal Change Analyses: Regional Trends, Local Processes and Coastal Response; USGS St. Petersburg Coastal and Marine Science Center Seminar. April 2011.

Multi-Scale Coastal Change Analyses in U.S. National Parks: Regional Trends and Local Processes; National Park Service Coastal Geology Webinar. June 2011.

Long-term Coastal Change and Hurricane Sandy Response and Recovery, Fire Island, NY, City College of New York Undergraduate Diversity in the Sciences Seminar Series. November 2011.



Investigating Coastal Processes and Hazards along the Coastline of Ghana, West Africa, American Geophysical Union Fall Meeting. December 2010.

Unraveling the Impacts of Severe Storms in the Long-term Shoreline Change Record, Gulf Islands National Seashore, University of Rhode Island, Department of Geosciences. 2007.

Historical Shoreline Rates and Trends along the California Coast, University of Rhode Island, Kingston, Department of Geosciences. 2006.

Multi-scale Approaches to Measuring Coastal Change and Mapping Coastal Geomorphology, University of Rhode Island, Kingston, Department of Geosciences. 2005.

Decadal-Scale Analysis of Coastal Landslides along the Big Sur Coast: Rates and Processes USGS Coastal Seminar, Santa Cruz. 2005.

Determining Landslide Volume Input to the Coastal Zone along the Big Sur Coastline, California, USGS Coastal Seminar, Menlo Park. 2003.

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Controls and Processes of Coastal Landslide Volume Influx to the Nearshore: Big Sur, California, University of Pittsburgh, Pittsburgh, Department of Earth and Planetary Sciences. 2002,

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