

Patrick L. Barnard

Coastal Geologist
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EDUCATION:

Ph.D., 2003, Major: Geological Sciences

University of California, Riverside

M.S., 1998, Major: Coastal Geology

University of South Florida, Tampa

B.A., 1995, Major: Geology, Minor: Environmental Studies

Williams College, Williamstown, MA

PRESENT POSITION:

Research Geologist, USGS (2003-present)

Project Chief for the San Francisco Bay Coastal System and Climate Change Impacts to the U.S. Pacific and Arctic Coasts projects. Performs field- and numerical modeling-based research of the morphodynamics and evolution of high energy coastlines. The purpose of these studies is to assess coastal sediment transport patterns and trends, quantify rates of coastal change, and assess coastal vulnerability to climate change and sea level rise.

SELECTED MEMBERSHIPS:

- American Geophysical Union (2002-present)
- American Shore and Beach Preservation Association (2005-present)
- Bay Area Ecosystem Climate Change Consortium (2009-present)
- West Coast Governor's Agreement (WCGA) Climate Action Team (2009-present)
- Oversight Committee for the National Research Council's independent science review of sea level rise and climate change adaptation on the U.S. West Coast (2010-present)
- Coastal Education & Research Foundation (2011-present)
- Editorial Board (Associate Editor), *Journal of Coastal Research* (2011-present)
- Managing Guest Editor, Special Issue of *Marine Geology*. "A multi-discipline approach for understanding sediment transport and geomorphic evolution in an estuarine-coastal system: San Francisco Bay" (2011-present)

RECENT PUBLICATIONS (last three years, first-authored):

Barnard, P.L., Erikson, L.H. and Hansen, J.E., 2009. Monitoring and modeling shoreline response due to shoreface nourishment on a high-energy coast. *Journal of Coastal Research*, Special Issue 56, p. 29-33, http://e-gco.fcsch.unl.pt/ICS2009/docs/ICS2009_Volume_I/29.33_P.L.Barnard_ICS2009.pdf

Barnard, P.L., O'Reilly, B., van Ormondt, M., Elias, E., Ruggiero, P., Erikson, L.H., Hapke, C., Collins, B.D., Guza, R.T., Adams, P.N. and Thomas, J.T., 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., <http://pubs.usgs.gov/of/2009/1073/>

Barnard, P.L. and Kvitek, R.G., 2010. Anthropogenic influence on recent bathymetric change in west-central San Francisco Bay. *San Francisco Estuary and Watershed Science*, Volume 8 (3), 13 pp., <http://escholarship.org/uc/item/6k3524hg>

Barnard, P.L. and Warrick, J.A., 2010. Dramatic beach and nearshore morphological changes due to extreme flooding at a wave-dominated river mouth. *Marine Geology*, Volume 273 (1-2), p. 131-148, <http://dx.doi.org/10.1016/j.margeo.2010.01.018>

Barnard, P.L., Allan, J., Hansen, J.E., Kaminsky, G.M., Ruggiero, P. and Doria, A., 2011. The impact of the 2009-10 El Niño Modoki on U.S. West Coast beaches. *Geophysical Research Letters*, Volume 38, L13604, 7 pp., <http://dx.doi.org/10.1029/2011GL047707>

Barnard, P.L., Erikson, L.H. and Kvitek, R.G., 2011. Small-scale sediment transport patterns and bedform morphodynamics: new insights from high resolution multibeam bathymetry. *Geo-Marine Letters*, Volume 31 (4), p. 227-236, <http://dx.doi.org/10.1007/s00367-011-0227-1>

Barnard, P.L., Hoover, D. and Hansen, J.E., 2011. Nearshore bathymetric evolution on a high-energy beach during the 2009-10 El Niño winter. In: Wang, P., Rosati, J.D. and Roberts, T.M. (Eds.) *Coastal Sediments '11, Proceedings of the 7th International Symposium on Coastal Engineering and Science of Coastal Sediment Processes*, American Society of Civil Engineers, Miami, FL, p. 1390-1403, http://dx.doi.org/10.1142/9789814355537_0105

Barnard, P.L., Erikson, L.H., Rubin, D.M., Dartnell, P. and Kvitek, R.G., 2012. Analyzing bedforms mapped using multibeam sonar to determine regional bedload sediment transport patterns in the San Francisco Bay coastal system. *Sedimentology*, In: Li, M.Z., Sherwood, C.R., and Hill, P.R. (Eds.), *Sediments, Morphology and Sedimentary Processes on Continental Shelves: Advances in technologies, research and applications*. Special Publication 44 of the International Association of Sedimentologists (IAS), 440 pp.

Barnard, P.L., Hubbard, D.M., and Dugan, J.E., 2012. Beach response dynamics of a littoral cell using a 17-year single-point time series of sand thickness. *Geomorphology*, Volume 139-140, p. 588-598, <http://dx.doi.org/10.1016/j.geomorph.2011.12.023>

Barnard, P.L., Hansen, J.E. and Erikson, L.H., 2012. Synthesis study of an erosion hot spot, Ocean Beach, California. *Journal of Coastal Research*, Volume 28 (4), p. 903-922. <http://dx.doi.org/10.2112/JCOASTRES-D-11-00212.1>

Barnard, P.L., Erikson, L.H., Elias, E.P.L. and Dartnell, P., 2012. Sediment transport patterns in the San Francisco Bay Coastal System from cross-validation of bedform asymmetry and modeled residual flux. *Marine Geology*, Special Issue SF Bay, 24 pp., <http://dx.doi.org/10.1016/j.margeo.2012.10.011>

Barnard, P.L., Foxgrover, A.C., Elias, E.P.L., Erikson, L.H., Hein, J.R., McGann, M., Mizell, K., Rosenbauer, R.J., Swarzenski, P.W., Takesue, R.K., Wong, F.L. and Woodrow, D.L., 2013. Integration of bed characteristics, geochemical tracers, current measurements, and numerical modeling for assessing provenance of beach sand in the San Francisco Bay Coastal System. *Marine Geology*, Volume 336, p. 120-145 and Special Issue SF Bay, 26 pp., <http://dx.doi.org/10.1016/j.margeo.2012.11.008>

Barnard, P.L., Schoellhamer, D.H., Jaffe, B.E. and McKee, L.J., 2013. Sediment transport in the San Francisco Bay Coastal System: an overview. *Marine Geology*, Special Issue SF Bay, 20 pp., <http://dx.doi.org/10.1016/j.margeo.2013.04.005>