

Jonathan Adam Warrick, Ph.D.

U.S. Geological Survey
Pacific Coastal and Marine Science Center
400 Natural Bridges Dr.
Santa Cruz, CA 95060
(831) 460-7569
jwarrick@usgs.gov

EDUCATION

- Ph.D. University of California, Santa Barbara (2002)**
Interdepartmental Program in Marine Science
Short-term (1997-2000) and long-term (1928-2000) observations of river water and sediment discharge to the Santa Barbara Channel, California.
Advisors: Leal A.K. Mertes, John D. Milliman, David Siegel, Libe Washburn
- M.Sc. University of Wisconsin-Madison (1995)**
Civil and Environmental Engineering
Area: Hydrology and Hydraulics
Advisor: Kenneth W. Potter
- B.Sc. California Polytechnic State University, San Luis Obispo (1993)**
Soil Science

PROFESSIONAL EXPERIENCE

- Research Geologist, GS-14 (2008-present)**
Pacific Coastal and Marine Science Center
United States Geological Survey, Santa Cruz, CA
- Research Geologist, GS-13 (2004-2008)**
Pacific Coastal and Marine Science Center
United States Geological Survey, Santa Cruz, CA
- Mendenhall Postdoctoral Fellow, GS-12 (2002-2004)**
Coastal and Marine Geology Program
United States Geological Survey, Menlo Park, CA
- Assistant Professor (2001-2002)**
Earth Sciences Department
Whittier College, Whittier, CA
- Instructor (1999)**
Department of Geography
University of California, Santa Barbara

Hydrologist (1997-1998)

Komex-H2O Science
Huntington Beach, CA

Staff Engineer (1996-1997)

Woodward-Clyde Consultants
Santa Ana, CA

Research Assistant (1993-1995)

Civil and Environmental Engineering Department
University of Wisconsin-Madison, WI

AWARDS**USGS Coastal and Marine Geology Program (2004-present)**

Funded projects include: Elwha River Restoration Project, Human Impacts and Geological Processes in Southern California Urban Ocean, Applied Sediment Transport, and Coastal Response to Southern California Wildfires. PI: Warrick (USGS).

(Amount: averaged \$250,000 per year)

U.S. EPA – Puget Sound Partnership Grant (2010-present)

Elwha River Restoration Project: the Dynamics and Downstream Impacts of Fine Sediments Released After Dam Removal. PI's: Magirl (USGS), Warrick (USGS), Duda (USGS), Beirne (LEKT). (Amount: \$1,050,000 / 6 yrs)

California Ocean Protection Commission (OPC) Grant (2008-2010)

Tijuana Estuary Fine Sediment Fate and Transport Study. Funding for project implementation also by: California Conservancy, U.S. Army Corps of Engineers, U.S. Geological Survey, and CA Boating and Waterways. PI: Warrick (USGS). (Amount: \$2,200,000 / 2 yrs)

NSF Research Grant (2007-2011)

NSF 06-514, OCE – Carbon and Water in Earth Science

Collaborative Research: Delivery and Burial of POC on Ocean Margins Dominated by Small, Mountainous Rivers: the Role of Effective Discharge. PI's: Goni (OSU), Wheatcroft (OSU), Warrick (USGS), Pasternack (UCD), Borgeld (HSU). (Amount: \$1,577,000 / 4 yrs)

California Sediment Management Workgroup (CSMW) Grant (2005-2006)

Sources of Fine Sediment to the Southern California Coast – Computation of a "Mud Budget." PI: Warrick (USGS). (Amount: \$297,000 / 2 yrs)

NASA Oceans & Ice Research Grant NRA-04-OES-02 (2004-2008)

Coastal Ocean Biological Response to Urbanization and Climate Variability in the Southern California Bight: Impact of Terrestrial Runoff in the Santa Monica and San Pedro Shelf Systems. PI's: DiGiacomo (JPL), Jones (USC), Stein (SCCWRP), Stolzenbach (UCLA), Warrick (USGS). (Amount: \$970,000 / 3 yrs) [Award ranked in top 5 of 120]

USGS Mendenhall Postdoctoral Fellowship (2002-2004)

Sedimentology in urban ocean areas

United States Geological Survey (Amount: \$200,000 / 2 yrs)

Merck/AAAS Undergraduate Science Research (2002-2005)

Influence of plant ecology on water chemistry in the San Gabriel River
Whittier College (Amount: \$60,000 / 3 yrs)

NASA Earth System Science Ph.D. Fellowship (1998-2001)

River dispersal of runoff from the western Transverse Range, California
University of California, Santa Barbara (Amount: \$66,000 / 3 yrs)

NSF - Graduate Research Training Grant (1997-1998)

Coastal Ocean Processes
University of California, Santa Barbara (Amount: \$16,000 / 1 yr)

PUBLICATIONS:

2015

Warrick, JA, JA Bountry, AE East, CS Magirl, TJ Randle, G Gelfenbaum, AC Ritchie, GR Pess, V Leung, and JJ Duda, 2015, Large-scale dam removal on the Elwha River, Washington, USA: Source-to-sink sediment budget and synthesis. Geomorphology, doi: 10.1016/j.geomorph.2015.01.010

Gelfenbaum, G, AW Stevens, IM Miller, **JA Warrick**, AS Ogston, and E Eidam, 2015, Large-scale dam removal on the Elwha River, Washington, USA: Coastal geomorphic change. Geomorphology, doi: 10.1016/j.geomorph.2015.01.002

Masteller, CC, NJ Finnegan, **JA Warrick**, and IM Miller, 2015, Kelp, cobbles, and currents: Biologic reduction of coarse grain entrainment stress. Geology, v. 43, no. 6, p. 543-546.

Gray, AB, GB Pasternack, EB Watson, **JA Warrick**, and MA Goñi, 2015, Effects of antecedent hydrologic conditions, time dependence, and climate cycles on the suspended sediment load of the Salinas River, California. Journal of Hydrology, v. 525, p. 632-649.

Foley, MM, M Beirne, R Paradis, JJ Duda, and **JA Warrick**, 2015, Rapid physical change in the Elwha River estuary complex during dam decommissioning. Limnology and Oceanography, doi: 10.1002/lno.10129.

2014

Gray, AB, GB Pasternack, EB Watson, **JA Warrick**, and MA Goñi, 2014, The effect of El Niño Southern Oscillation cycles on the decadal scale suspended sediment behavior of a coastal dry-summer subtropical catchment. Earth Surface Processes and Landforms, doi: 10.1002/esp.3627

Warrick, JA, 2014, Trend analyses with river sediment rating curves. Hydrological Processes, doi: 10.1002/hyp.10198.

Gray, AB, JA Warrick, GB Pasternack, EB Watson, and MA Goñi, 2014, Suspended sediment behavior in a coastal dry-summer subtropical catchment: Effects of hydrologic preconditions. Geomorphology, v. 214, p. 485-501.

Warrick, JA, 2014, Eel River margin source-to-sink sediment budget: revisited. Marine Geology, v. 351, p. 25-37.

2013

Warrick, JA, JD Milliman, DE Walling, RJ Wasson, JPM Syvitski, and RE Aalto, 2013, Forum Comment: Earth is (mostly) flat: Apportionment of the flux of continental sediment over millennial time scales. Geology, v. 42, n. 1, p. 316.

Rippy, MA, PJS Franks, F Feddersen, RT Guza, and **JA Warrick**, 2013, Beach nourishment impacts on bacteriological water quality and phytoplankton bloom dynamics. Environmental Science & Technology, vol. 47, no. 12, p. 6146-6154.

Warrick, JA, AR Simms, A Ritchie, E Steel, P Dartnell, J Conrad, and D Finlayson, 2013, Hyperpycnal-derived fans of the Santa Barbara Channel, California. Geophysical Research Letters, vol. 40, no. 50488, p. 1-6.

Warrick JA and CD Storlazzi, 2013, Fine-grained sediment dispersal along the California coast. U.S. Geological Survey Fact Sheet 2013-3023. 4 p.

Warrick, JA, MA Madej, MA Goñi, and RA Wheatcroft, 2013, Trends in the suspended-sediment yields of coastal rivers of northern California, 1955-2010. Journal of Hydrology, vol. 489, p. 108-123.

Warrick JA, 2013, Dispersal of fine sediment in nearshore coastal waters. Journal of Coastal Research vol. 29, no. 3, p. 579-596

2012

Warrick JA, JJ Duda, CS Magirl, and CA Curran, 2012, River turbidity and sediment loads during dam removal. Eos, vol. 93, no. 43, pp. 425-426.

Warrick JA and PL Barnard, 2012, The offshore export of sand during exceptional discharge from California rivers. Geology, vol. 40, no. 9, pp. 787-790.

Miller IM and **JA Warrick**, 2012, Measuring sediment transport and bed disturbance with tracers on a mixed beach. Marine Geology, vol. 299-302, pp.1-17.

Warrick JA, JA Hatten, GB Pasternack, AB Gray, MA Goni, and RA Wheatcroft, 2012, The effects of wildfire on the sediment yield of a coastal California watershed, Geological Society of America, Bulletin.

2011

Miller IM, **JA Warrick**, and C Morgan, 2011, Observations of coarse sediment movements on the mixed beach of the Elwha Delta, Washington State. Marine Geology, vol. 282, no. 3-4, pp. 201-214.

Duda JJ, **JA Warrick** and CS Magirl (eds.), 2011, Coastal habitats of the Elwha River—Biological and physical patterns and processes prior to dam removal: U.S. Geological Survey Scientific Investigations Report 2011-5120, 263 pp.

Kniskern T, **JA Warrick**, KL Farnsworth, RA Wheatcroft, and MA Goñi, 2011, Coherence of river and ocean conditions along the U.S. west coast during storms, Continental Shelf Research, vol. 31, no. 7-8, pp. 789-805.

Warrick JA and AW Stevens, 2011, A buoyant plume adjacent to a headland - Observations of the Elwha River plume, Continental Shelf Research, vol. 31, no. 2, pp. 85-97.

2010

Barnard PL and **JA Warrick**. 2010, Dramatic beach and nearshore morphological changes at a high-energy, wave-dominated river mouth, Marine Geology, vol. 271, pp. 131-148

Buscombe D, DM Rubin, and **JA Warrick**, 2010, Universal Measure of Mean Grain Size from Images of Non-Cohesive Sediment, Journal of Geophysical Research- Earth Surface, vol. 115, pp. F02015.

2009

Warrick JA, DM Rubin, P Ruggiero, J Harney, AE Draut, and D Buscombe. 2009. Cobble Cam: Grain-size measurements of sand to boulder from digital photographs and autocorrelation analyses. Earth Surface Processes and Landforms, vol. 34, no. 13, pp. 1811-1821.

Warrick, JA, DA George, G Gelfenbaum, G Kaminsky, and M Beirne. 2009. Beach morphology and change along the mixed grain-size delta of the Elwha River, Washington. Geomorphology, vol. 111, pp. 136-148.

Warrick, JA and LAK Mertes. 2009. Sediment production from the tectonically active semiarid Western Transverse Ranges of California. Geological Society of America, Bulletin, vol. 121, no. 7/8, pp. 1054-1070.

2008

Warrick JA, GR Cochrane, Y Sagy, and G Gelfenbaum, 2008. Nearshore substrate and morphology offshore of the Elwha River. Northwest Science, vol. 82, p. 153-163.

Warrick JA, J Xu, M Noble, and HJ Lee. 2008. Rapid formation of hyperpycnal sediment gravity currents offshore of a semi-arid California river. Continental Shelf Research. vol. 28, pp. 991-1009.

Farnsworth KL and **JA Warrick**. 2008. Sources, Dispersal and Fate of Fine-Grained Sediment for Coastal California. U.S. Geological Survey Scientific Investigations Report: SIR 2007-5254. 86 pp.

2007

Warrick JA, PM DiGiacomo, SB Weisberg, NP Nezlin, M Mengel, BH Jones, JC Ohlmann, L Washburn, EJ Terrill and KL Farnsworth. 2007. River plume patterns and dynamics within the Southern California Bight. Continental Shelf Research, vol. 27, pp. 2427-2448.

Warrick JA and D Rubin. 2007. Suspended-sediment rating-curve response to urbanization and wildfire, Santa Ana River, California. Journal of Geophysical Research – Earth Surface. vol. 112, F02018, doi:10.1029/2006JF000662.

2005

Warrick JA, Washburn L, Brzezinski MA, Siegel DA. 2005. Nutrient contributions to the Santa Barbara Channel, California, from the ephemeral Santa Clara River. *Estuarine, Coastal and Shelf Science*. vol. 62, pp. 559-574.

pre-2005

Warrick JA, Mertes LAK, Siegel DA, Wasburn L. 2004. A conceptual model for river water and sediment dispersal in the Santa Barbara Channel, California. *Continental Shelf Research*. vol. 24, no. 17, pp. 2029-2043.

Warrick JA, Fong DA. 2004. Dispersal scaling from the world's rivers. *Geophysical Research Letters*. vol. 34, pp. L04301. DOI: 10.1029/2003GL019114. [2004 AGU Journal Highlight]

Warrick JA, Mertes LAK, Siegel DA, Wasburn L. 2004. Dispersal forcing of a southern California river plume, based on field and remote sensing observations. *Geo-Marine Letters*. vol. 24, no., 1, pp. 46-52.

Warrick JA, Mertes LAK, Siegel DA, MacKenzie C. 2004. Estimating suspended sediment concentrations in turbid coastal waters of the Santa Barbara Channel with SeaWiFS. *International Journal of Remote Sensing-Remote Sensing Letters*. vol. 25, no. 10, pp. 1995-2002.

Warrick JA, Milliman JD. 2003. Hyperpycnal sediment discharge from semi-arid southern California rivers - implications for coastal sediment budgets. *Geology*. vol. 31, no. 9, pp. 781-784.

Mertes, LAK and **JA Warrick**. 2001. Measuring flood output from 110 coastal watersheds in California with field measurements and SeaWiFS. *Geology*. vol. 29, no. 7, pp. 659-662.

ACADEMIC ADVISING

Postdoctoral Scientists

Melissa M. Foley, USGS Mendenhall Postdoctoral Fellow, 2012-present. "*Observing the Largest Planned River Sediment Release in History.*"

Christopher C. Conaway (Co-advisor), USGS Mendenhall Postdoctoral Fellow, 2008-2010. "*Brown to Blue' Sediment, Nutrients, and Contaminants from a Small Fluvial System to the Nearshore Environment, Monterey Bay, California.*"

Tara A. Kniskern, USGS/UCSC Postdoctoral Scientist, 2007-2009. Funded by the National Science Foundation (NSF) Research Grant "*Collaborative Research: Delivery and Burial of POC on Ocean Margins Dominated by Small, Mountainous Rivers: the Role of Effective Discharge.*"

Katherine L. Farnsworth, USGS Postdoctoral Scientist, 2005-2007, "*Sources, Dispersal and Fate of Fine Sediment Supplied to California.*" Funded by the California Department of Boating and Waterways in collaboration with the California State Sediment Management Workgroup.

Graduate Students

Emily Eidam, Ph.D. Thesis Committee, University of Washington, 2013-present, "*Response of the Elwha River delta to dam removal*"

Bathany M. Nagid, M.S. Thesis Committee (lead advisor), University of California, Santa Cruz, 2014-2015, "*Historical Shoreline Evolution as a Response to Dam Emplacement on the Elwha River, Washington*", Degree Conferred: September 2015

Ian M. Miller, Ph.D. Dissertation Committee (lead advisor), University of California, Santa Cruz, 2007-2011, "*Mixed Beach Morphodynamics and Shoreline Evolution on the Dammed Elwha River Delta, Washington State, USA*", Degree Conferred: December 2011

Matthew J. Slagel, M.S. Thesis Committee, University of California, Santa Cruz, 2005-2006, "*Cumulative Losses of Sand to the Major Littoral Cells of California by Impoundment Behind Coastal Dams*", Degree Conferred: March 2006

Katherine L. Farnsworth, Ph.D. Dissertation Committee, Virginia Institute for Marine Science, College of William and Mary, 1997-2003, "*Controls on the Delivery of Fluvial Sediment to the Coastal Ocean: The Salinas River, California*", Degree Conferred: June 2003.

Undergraduate Students

Emily Hohn, Undergraduate Senior Thesis Advisor, University of California, Santa Cruz, 2014-2015, "*Spatiotemporal Variation in Creek Stream Temperature: Thermal Response to a Storm Event in a Drought Year, Fall Creek, California*," Degree Conferred: June 2015

Sarah McNaboe, Undergraduate Senior Thesis Advisor, University of California, Santa Cruz, 2005-2006, "*Digital Photographic Grain Size Analysis and Calibration of Delta Sediments, Elwha River, Washington*," Degree Conferred: June 2006

Departmental

Departmental Advisory Committee, California State University, Monterey Bay, Coastal and Watershed Science and Policy Program, 2012-present.

TEACHING EXPERIENCE

Instructor:

Geographic Remote Sensing and Image Processing (UCSB, 1999)

Introductory Earth Science (Whittier College, 2001, 2002)

Field Methods in Earth Science (Whittier College, 2002)

Undergraduate Research Methods (Whittier College, 2002)

Global Geochemical Cycles (Whittier College, 2002)

ADDITIONAL ACTIVITIES AND HONORS

Invited Briefing, Secretary of the Interior, Sally Jewell, 2013.

Invited Chair, 2012 Elwha River Science Symposium Organizing Committee.

Organizing Committee, 2011 Elwha River Science Symposium.

Invited Docent, National Park Service's invitation-only "Celebrate Elwha" event held at the Elwha Dam, September 2011

Invited Member, Matilija Dam Sediment Technical Advisory Committee

Evening Lecturer, 2011 AGU Chapman Conference on "Source to Sink Systems..."

USGS Nominee for the 2010 U.S. Presidential Early Career Award for Scientists and Engineers (PECASE).

Media Citations: New York Times, National Geographic News, Science Daily, Discovery Channel News, Environmental Science & Technology News, Seattle Times, North County Times, Peninsula Daily News, Southern California Public Radio.