PETER W. SWARZENSKI

U.S. Geological Survey
400 Natural Bridges Dr
Santa Cruz, CA 95060
Tel: 831-427-4729
pswarzen@usgs.gov
www.coastal.er.usgs.gov/sgd

Personal Information:
Dual citizenship: USA and Switzerland
Married; 3 children
3507 Dover Dr.
Santa Cruz, CA, 95065
831-464-1275
pswarzen@gmail.com

Education

Environ. Geology Univ. Colorado 1985 B.S.
Chem. Oceanography LSU 1992 M.S.
Chem. Oceanography LSU 1997 Ph.D.

Professional Experience

2007-present	Assoc. Editor; Journal of Hydrology
2007-present	USGS-Santa Cruz, CA, Research Chemical Oceanographer
1999-2007	USGS-St. Petersburg, FL, Research Chemical Oceanographer
	Elected to FISC (FL Integrated Sci. Center) Science Council, Executive Committee
	Gov't leadership 101/201 training
2004-2005	Interim Deputy Dir. of Science; FISC
1998-1999	USGS-St Petersburg, FL, Postdoctoral Fellow
1988-1998	LUMCON – Res. Assoc./student

Current (2009) Projects

-Examining historic and modern hypoxia and sediment dynamics off the Mississippi River using a multi-proxy approach.
-Nutrient loading by coastal groundwater discharge and the evolution of harmful algal blooms.
-Submarine groundwater discharge as a vector of nutrients and other dissolved elements to coastal oceans
-The role of watershed climate cycles on coastal groundwater discharge.
-Examining coastal groundwater discharge in Israel.

Advise(d) 4 Post-docs, 6 PhD/MS students, and up to 10 employees

Recent (2005 to present) peer-reviewed Publications

Themes: **U/Th series isotopes as tracers of hydrologic/coastal processes**
Submarine groundwater discharge (SGD) and coastal pollution/eutrophication
Historic contaminant reconstruction in marine sediments

2009

Weinstein, Y., Shalem, Y., Yechieli, Y., Burnett, W. S., Swarzenski, P. S., Herut, B What is the nutrient contribution of Submarine Groundwater Discharge to the coastal seawater? An example from Dor bay, Israel. In Review.

Mwashote, B., Burnett, WC, Chanton, J, Peterson, R, Santosm I, Dimova, N. and Swarzenski PW. 2009. Calibration and us oe of continuous heat-type automated meters from subamrine groundwater discharge (SGD) measurements. Estuarine Coastal Shelf Science, Accepted.

Swarzenski, PW., Izbicki, JA, Grossman, EE, Glenn, CR, Plath, CA, and JL Kelly. 2009. A multiproxy tracer approach to submarine groundwater discharge studis: Examples from Santa Barbara, CA and Maunalua Bay, Oah'u HI. Geochimica Cosmochimica Acta 73: A1299-A1299.

Dougherty, JA, Swarzenski, PW, Takesue, RK, Dinicola, RS, and Reinhard, M Occurrence of pharmaceutical and personal care product residues in surface and groundwater impacted by septic systems. Jounral of Environmental Quality, Accepted.

Baskaran, M. Jweda, J., Newton, JL, Stringer, C. and Swarzenski, PW. 2009. Investigation on the Adsorption-Desorption Rate Constants and Retardation Factors Derived from 223,224,226,228Ra and 222Rn Isotopes in the Floridan Aquifer: Implication to the Mobility of Redox-Sensitive Species. Chemical Geology. In review.

Osterman, LE, Poore, RZ, and Swarzenski, PW, Senn, D, DiMarco, S and Turner, RE. 2009. 20th Century development and expansion of Louisiana shelf hypoxia, Gulf of Mexico. Geo-Marine Letters. DOI 10.1007/s00367-009-0158-2

Rosenbauer, RJ, Swarzenski PW, Orem, WH Kendall, C, Hostettler, FD, and Rollog, ME. 2009. A carbon nitrogen and sulfur elemental and isotopic study in dated sediment cores from the Louisiana Shelf. Geo-Marine Letters. DOI 10.1007/s00367-009-0151-9.

Santos, IR, Burnett , WC, Misra, S, Suryaputra, Froehlich, P, Chanton, J, Dittmar, T and Swarzenski, PW 2009. Submarine groundwater discharge as a sink for U and a source for Ba at a site of the Florida Gulf Coast. Geochimica Cosmochimica Acta, In Review

Xu, JP, Swarzenski PW, Noble, M, and Li AC Event driven sediment transport in Huemene and Mugu Canyons, southern California. Marine Geology. Accepted..

Price, RM, Swarzenski PW, Reich, CD, Stalker, JC and Rudnick, DT. Submarine Groundwater discharge using ^{222}Rn and Continuous Resistivity Profiling and its associated nutrient concentrations to Florida Bay, FL, USA. Estuaries and Coasts. In Prep.

Swarzenski. P.W., Dellapenna, TM., Reich, C.D. and Noll, CJ. 2009. Examining Submarine Ground-water Discharge into Simpson Bay, Alaska with Electrical Resistivity and Radon. EEGS/SAGEEP Proceedings volume. Ft Worth, TX March 31-April 2, 2009

Swarzenski, P.W. et al Geomorphic controls on submarine groundwater discharge in Puget Sound, WA. Applied Geochemistry. In Prep.

Baskaran, M., Swarzenski, PW and Biddanda, BS 2008. Retention of dissolved ^{234}Th on prefilters and MnO_2-coated filter cartridges and variability in the extraction efficiencies. Geochem. Geophys. Geosyst., 10, Q04011, doi:10.1029/2008GC002340

Izbicki, JA, Swarzenski, PW, Reich, C, Rollins, C, and Holden, P.2009. Sources of fecal indicator bacteria in urban streams and ocean beaches, Santa Barbara , CA Annals of Environmental Science*, 3, 139-178*.

Swarzenski, P.W., Baskaran, M., Rosenbauer, R., Edwards, B., Land, M. A Geochemical Investigation of a Coastal Aquifer System using Radioactive (^{223,224,226,228}Ra, ^{222}Rn, ^{3}H and ^{14}C) and Stable Isotope ($d^{18}O$, dD, $d^{13}C_{DIC}$) Tracers. In Biogeochemistry of Sediment and Groundwater Systems. Eds. O Braids and PWS Swarzenski, Springer.

Liu, B., Schaider, LA Senn, DB Mason, RP Bank, MS Swarzenski, PW, Shine, JP Holweg, T and Rabalais, N. 2009. Disturbance impacts on mercury dynamics in northern Gulf of Mexico sediments. J. Geophys. Res., doi:10.1029/2008JG000752

Swarzenski, P.W. and Izbicki, JA. Examining coastal exchange processes within a sandy beach using geochemical tracers, seepage meters and electrical resistivity. Estuarine, Coastal and Shelf Science, 83, 77-89,doi:10.1016/j.ecss.2009.03.027

Swarzenski, P.W., Simonds, F.W., Reich, C., Greenwood, J., Rosenberry, D. and Dinicola, R.A. (2008) Geochemical and geophysical examination of submarine groundwater discharge and associated nutrient loading estimates into Lynch Cove, Hood Canal, WA Proceedings Volume, CHIPS Meeting, NOV 2006 *U.S. Geological Survey* OFR IN PRESS

2008

Reich, CR, Swarzenski, PW, Greenwood, WJ and Wiese, DS. 2008. Investigation of coastal hydrology utilizing geophysical and geochemical tools along the Broward County coast, Florida. USGS OFR. 2008-1364.

Swarzenski, PW, Reich, C. and Rudnick, D. 2008. Examining submarine groundwater discharge into Florida Bay using 222Rn and marine resistivity. U.S. Geological Survey Open File Report 2008-1342, http://pubs.usgs.gov/of/2008/1342/

Swarzenski, P.W, Campbell, P.L., Osterman, L.E. and R.Z. Poore. 2008. A combined geochemical and foraminiferal study on the Louisiana shelf: evidence for recurring low-oxygen events during the last millennium? Marine Chemistry. 109, 130-142. doi: 10.1016/j.marchem.2008.01.003

Osterman, L.E., Poore, R.Z., Swarzenski, P.W. 2008 The last 1000 years of natural and anthropogenic low-oxygen bottom water on the Louisiana shelf, Gulf of Mexico, *Marine Micropaleontology* 2007. doi: 10.1016/j.marmicro.2007.10.005

Simonds, F.W., Swarzenski, P.W., Rosenberry, D.O., Reich, C.D., and Paulson, A.J. 2008. Estimates of nutrient loading by groundwater discharge into Lynch Cove area of Hood Canal, Washington. USGS Scientific Investigations Report 2008-5078.

2007

Osterman, L.E., Campbell, P.L., Swarzenski, P.W., and Ricardo, J.P., 2007, Biological, Physical and Chemical Data From Gulf of Mexico Gravity and Box Core MRD05-04: U.S. Geological Survey Open File Report 2007-1024, 18 p.

Orem, W.H., Rosenbauer, R.J., Swarzenski, P.W, Lerch, H.E., Corum, M.D., Bates, A.L. 2007. Organic Geochemistry of Sediments in Nearshore Areas of the Mississippi and Atchafalaya Rivers: I. General Organic Characterization. U.S Geological Survey, OFR 2007-1180.

Swarzenski, P.W., Simonds, F.W., Paulson, A.J., Kruse, S. and Reich, C. 2007. A Geochemical and Geophysical Examination of Submarine Groundwater Discharge and Associated Nutrient Loading Estimates into Lynch Cove, Hood Canal, WA. *Environmental Science and Technology*. 41, 7022-7029 http://pubs.acs.org/cgi-bin/asap.cgi/esthag/asap/pdf/es070881a.pdf

Swarzenski, P.W., Campbell, P.L., Poore, R.Z., Osterman, L.E., Rosenbauer, R.J., 2007. Examining offshore sediment-hosted contaminant transport from Hurricane Katrina, in: Farris, G.S., Smith, G.J., Crane, M.P., Demas, C.R., Robbins, L.L., Lavoie, D.L. (Eds.), Science and the storms—the USGS response to the hurricanes of 2005. U.S. Geological Survey Circular 1306. pp 198-201.

Burnett, W.C., Santos, I., Weinstein, Y., Swarzenski, P.W., and Herut, B. (2007) Remaining uncertainties in the use of Rn-222 as a quantitative tracer of submarine groundwater discharge. In, *A New Focus on Groundwater–Seawater Interactions.* Eds W. Sanford, C. Langevin, M. Polemio, and P. Povinec. IAHS Publ. 312: 109-118. http://www.cig.ensmp.fr/~iahs/redbooks/312.htm

Weinstein, Y., Y. Shalem, W.C. Burnett, P.W. Swarzenski, and B. Herut, 2007. Temporal variability of Submarine Groundwater Discharge: assessments via radon and seep meters, the southern Carmel Coast, Israel. In, *A New Focus on*

Groundwater–Seawater Interactions. Eds W. Sanford, C. Langevin, M. Polemio, and P. Povinec. IAHS Publ. 312: 125-133. http://www.cig.ensmp.fr/~iahs/redbooks/312.htm

Swarzenski, P.W. (2007) U/Th series radionuclides as tracers of coastal groundwater. *Chemical Reviews,* 107(2), 663-674, DOI: 10.1021/cr0503761

Kroeger, K.D., Swarzenski, P.W., Reich, C. and Greenwood, W.J. (2007) Submarine groundwater discharge to Tampa Bay: Nutrient fluxes and biogeochemistry of the coastal aquifer. *Marine Chemistry*, 104, 85-97.

Klerks, P.L., Felder, D.L., Strasser, K. and Swarzenski, P.W. (2007) Effects of ghost shrimp on zinc and cadmium in Tampa Bay sediment. *Marine Chemistry*, 104, 17-26.

Swarzenski, P.W., Reich, C., Kroeger, K. and Baskaran, M. (2007) Ra and Rn isotopes as natural tracers of submarine groundwater discharge in Tampa Bay, FL. *Marine Chemistry*, 104, 69-84.

Baskaran, M. and Swarzenski, P.W. (2007) Short-lived radionuclides as tracers of anthropogenic activity in Tampa Bay, FL *Marine Chemistry*, 104, 27-42.

Swarzenski, PW and Baskaran, M. 2007. Uranium distribution in the coastal waters and pore waters of Tampa Bay, Florida. *Marine Chem*., 104, 43-57.

Chen, Z., Hu, C, Comny, R.N., Swarzenski, P.W. and Muller-Karger, F. (2007) Colored dissolved organic matter in Tampa Bay *Marine Chemistry*, 104, 98-109.

Swarzenski, P.W., Baskaran, M., Yates, K and Henderson, C. (2007) Tampa Bay as a model estuary for examining the impact of human activities on biogeochemical processes: An Introduction. *Marine Chemistry*, 104, 1-3.

Swarzenski, P.W. Kruse, S. Reich, C. and Swarzenski, W.V. (2007) Multi-channel resistivity investigations of the fresh water / saltwater interface: A new tool to study an old problem. In, *A New Focus on Groundwater–Seawater Interactions.* Eds W. Sanford, C. Langevin, M. Polemio, and P. Povinec. IAHS Publ. 312: 100-108. http://www.cig.ensmp.fr/~iahs/redbooks/312.htm

Weinstein, Y., W.C. Burnett, P.W. Swarzenski, Y. Shalem, Y. Yechieli, and B. Herut, 2007. Fresh groundwater discharge and seawater recycling – the role of aquifer heterogeneity: an example from the Carmel coast, Israel. *Journal of Geophysical Research*, 112, C12016, doi:10.1029/2007JC004112.

Halley, R.B., Swarzenski P.W., Reich, CD., Hickey, D, and Curry, R. 2007. Ground water characterization in marine areas of Biscayne National park. US Geological Survey , Open File Report, OF 2007-1288, pp.32.

Orem, W.G., Swarzenski, P.W., McPherson, B., Hedgbeth, M., Lerch., T, Reich, C., Torres, A., and Corum, M. (2007) Assessment of groundwater input and water quality changes impacting natural vegetation in the Loxahatchee River and flood plain ecosystem, FL. *U.S. Geological Survey* OFR 2007-1304 pp 123. http://ergnetdev.er.usgs.gov/ofr2007-1304/

2006

Swarzenski, P.W., Burnett W.C., Weinstein, Y., Greenwood, W.J., Herut, B., Peterson, R. and Dimova, N. 2006. Combined time-series resistivity and geochemical tracer techniques to examine submarine groundwater discharge at Dor Beach Israel. *Geophysical Research Letters,* 33, L24405, doi:10.1029/2006GL028282.

Kroeger, K.D., Swarzenski, P.W., Crusius, J, Bratton, J.F. and Charette, M.A. (2006) Nitrogen Biogeochemistry In Zones Of Submarine Groundwater Discharge. *U.S. Geological Survey*, FS 2006-3110

Waldrop, W.R., Swarzenski, P.W. (2006) A new tool for quantifying flux rates between ground water and surface water. AIH Proc. pp 1-9.

Hu, C, Muller-Karger, F. and Swarzenski, P.W. (2006) Hurricanes, submarine ground-water discharge and west Florida's red tides. *Geophysical Research Letters,* 33, L11601, doi:10.1029/2005GL025449

Swarzenski, P.W., Baskaran, M., Orem, W.G. and Rosenbauer, R. (2006) Historical reconstruction of contaminant inputs within sediments of the Mississippi River Delta. *Estuaries and Coasts*, 29/6, 1-14.

Swarzenski, P.W., Orem, W.G., McPherson, B.F., Baskaran, M. and Wan, Y. (2006) Biogeochemical transport in the Loxahatchee river estuary: The role of submarine groundwater discharge. *Marine Chemistry* 101, 248-265. (http:/dx.doi.org/10.1016/j.marchem.2006.03.007)

Greenwood, W.J., Kruse,S. and Swarzenski, P.W. (2006) Extending electromagnetic methods to map coastal pore-water salinities. *Ground Water*, 44, 292-299.

Osterman, L.E., Swarzenski, P.W. and Hollander, D. (2006) Biological, physical and chemical data from Gulf of Mexico core PE0305-GC1. *U.S. Geological Survey* OFR 2006-1012.

Osterman, L.E., Swarzenski, P.W. and Poore, R.Z. (2006) Gulf of Mexico Dead Zone – the Last 150 years. *U.S. Geological Survey*, FS 2006-3005.

2005

Jaffe, L.A., Hilton D.R., Porcelli, D., Swarzenski, P.W., Baskaran, M. and Kulongoski, J.T. (2005) U-Th-Ra-Rn-He relationships in Mojave River Basin groundwater's. *Geochimica et Cosmochimica Acta*, 69, A839.

Swarzenski, P.W. (2005) Gulf of Mexico integrated science – Tampa Bay study, the impact of groundwater and contaminants on Tampa Bay. *U.S. Geological Survey*, OFR 2005-1015.

Cohen, A.S., Palacios, M.R., McGill, J., Swarzenski P.W., Vershuren, D., Sinyinza, R., Songori, T., Kakagozo, B., Syamphila, M., O'Reilly, C.O., and Alin, S. (2005) The Lake Tanganyika Biodiversity Project's paleolimnological investigations of anthropogenic environmental change in Lake Tanganyika. *Paleolimnology,* 1, 1-18.

Sune, G., Rehkamper, M., Porcelli, D., Andersson, P., Halliday, A., Swarzenski, P.W., Latkoczy, C. and Gunther, D. (2005) The thallium isotope composition of the upper continental crust and rivers – An investigation of the continental sources of dissolved marine thallium. *Geochimica et Cosmochimica Acta*, 69, 2007-2019.

Kim, G. and Swarzenski, P.W. (2005) Submarine ground-water discharge (SGD) and associated nutrient fluxes to the coastal ocean. *In*, Carbon and Nutrient Fluxes in Continental Margins: A Global Synthesis. Eds., K.-K. Liu, L. Atkinson, R. Quinones, and L. Talaue-McManus, Springer-Verlag, New York.

Dean, W, Forester, R., Colman, S., Liu, A., Skipp, G., Simmons, K., Swarzenski, P. and Anderson, R. (2005) Modern and glacial-Holocene carbonate sedimentation in Bear Lake. *U.S. Geological Survey*, OFR 1124.

Smoak, J.M., Krest, J.M. and Swarzenski, P.W. (2005) Geochemistry of the Amazon Estuary, The Handbook of Environ. Chem., Springer-Verlag GmbH, Vol. H, 71 – 90.

Swarzenski, P.W. and Campbell, P. (2005) On the world-wide riverine delivery of sediment-hosted contaminants. *In,* Encyclopedia of Hydrological Sciences. Ed., M.G. Anderson. Wiley, London, 2: 1341-1358.

Osterman, L., Poore, R., Swarzenski, P.W. and Turner, E. (2005) Reconstructing a 180-yr record of natural and anthropogenic induced hypoxia from the sediments of the Louisiana continental shelf. *Geology*, 33/4: 329–332.

Flocks, J. and Swarzenski, P. (2004) Cruise report: Sediment collection from Orca and Pigmy Basins, Gulf of Mexico, and analysis of trace metal concentrations. *U.S. Geological Survey* OFR 2004-1358, 37 p.

Select invited seminars (2005-present)

Swarzenski, PW (2009) Coastal groundwater exchange. SCCRWP, NOV 6, 2009

Swarzenski, PW (2009) Geologic controls on land / sea exchange. San Jose State Univ. Geology Department, SEP 21, 2009

Swarzenski, PWS (2009) Coastal groundwater discharge: Scales, Drivers and Ecological Impacts. Lawrence Livermore Nat'l Lab – Invited Seminar, May 14, 2009.

Swarzenski, PWS (2009) Coastal groundwater discharge: Scales, Drivers and Ecological Impacts. UCSC – Geology Department. Invited Seminar, May 5, 2009.

Swarzenski PW (2009) SGD in Maunalua Bay, Oahu, Hawaii. Maunalua Bay Science symposium. April 3, 2009. Hawaii Kai.

Swarzenski, PW (2009). Coastal ground water discharge in Simpson Bay, Alaska. SAGEEP invited talk. Ft Worth, TX. March 30, 2009

Swarzenski. P.W. (2008) Episodic forcing of submarine groundwater discharge and associated material fluxes. University of Hawaii, Nov 12, 2008.

Swarzenski, P.W. (2008) New tools for submarine groundwater discharge studies. Invited Seminar, MBARI, OCT 27, 2008.

Swarzenski, P.W. (2008) Natural controls on submarine groundwater discharge. Invited Seminar, University of Arizona, Geology Department, OCT 15, 2008.

Swarzenski, P.W. (2008) Examining coastal exchange processes within a marine beach using geochemical tracers, seepage meters and electrical resistivity. Invited Seminar, CAL STATE-East Bay Geology, April 3rd, 2008.

Swarzenski, P.W. (2007) Submarine groundwater discharge-driving forces and scales. Invited Seminar, Stanford Univ. Nov. 2. 2007.

Swarzenski, P.W. (2006) A geophysical and geochemical tracer study of submarine groundwater discharge off Broward County, Florida. Nova SE University Oceanographic Center. November 30, 2006

Swarzenski, P.W. (2006) Ecological impact of submarine groundwater discharge. Cape Breton Univ. Oct-11-2006.

Swarzenski, P.W. (2006) Forcing factors for submarine groundwater discharge. Marine Science, Univ. S. Florida. Sep. 29, 2006.

Swarzenski, P.W. (2006) Episodic forcing of submarine groundwater discharge and associated material fluxes. Gordon Research Conference - Permeable Sediments. Keynote June 25-29, 2006

Swarzenski, P.W. (2006) USGS watershed and coastal science activities. USGS strategic review. March 2006 Invited keynote

Swarzenski, P.W. (2006) Submarine groundwater discharge in Florida's coastal waters. Florida State University – Dept. of Oceanography, Feb. 2006

Swarzenski, P.W. (2005) New tools for submarine groundwater discharge studies. Florida International University – Geology Dept., Sept 30, 2005

Swarzenski, P.W. (2005) U/Th series tracers in Tampa Bay. Wayne State University – Geology Dept., March, 2005