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## EDUCATION

- Ph.D. Stanford University, Environmental Engineering and Science, 2008  
M.S. Stanford University, Environmental Engineering and Science, 2004  
B.A. Dartmouth College, Ecology & Evolutionary Biology, *cum laude*, 1999

## RESEARCH INTERESTS

Biogeochemistry of nitrogen and carbon in marine systems, influence of microbial community composition on geochemical processes, stable isotopes as tracers of microbial activity, techniques for cultivation of novel microbes

## RESEARCH AND PROFESSIONAL EXPERIENCE

- 2008-present **Woods Hole Oceanographic Institution, Woods Hole, MA**  
*Postdoctoral Scholar*, Marine Chemistry and Geochemistry  
*Sponsor*: Dr. Karen L. Casciotti  
*Project*: Isotope systematics of marine *Crenarchaeota*
- 2008 **Stanford University, Stanford, CA**  
*Postdoctoral Researcher*, Environmental Earth System Science  
*Advisor*: Dr. Christopher A. Francis  
*Project*: Activity and abundance of nitrifiers in the California Current
- 2003-2008 **Stanford University, Stanford, CA**  
*Graduate Research Assistant*, Civil and Environmental Engineering  
*Advisor*: Dr. Alexandria B. Boehm  
*Dissertation*: A multidisciplinary study of water quality along an urban coast:  
Nitrogen cycling, algal blooms, and microbial pollutants
- 2000-2003 **Environmental and Occupational Risk Management, Inc., Sunnyvale, CA**  
*Environmental Consultant*
- 1999-2000 **Dartmouth College, Hanover, NH**  
*Research Assistant*, Biological Sciences

## PEER-REVIEWED PUBLICATIONS

- Santoro, A.E.**, Casciotti, K.L., and C.A. Francis. Activity, abundance, and diversity of nitrifying archaea and bacteria in the central California Current. *submitted*.
- Larsen, L., Moseman, S., **Santoro, A.E.**, Hopfensperger, K., and A. Burgin. A multi-scale approach to predicting effects of sea level rise and nitrogen loading on nitrogen cycling in wetland ecosystems. *submitted*.

## PEER-REVIEWED PUBLICATIONS (CONT.)

- Spooner, D.E., Kramer, A.M., **Santoro, A.E.**, Spivak, A., Kelly, N., and B.D. Griffen. When is species functional redundancy important? *submitted*.
- Monismith, S.G., Davis, K.A., Shellenbarger, G.G., Hench, J.L., Nidzieko, N.J., **Santoro, A.E.**, Reidenbach, M.A., Rosman, J.H., Holtzman, R., Martens, C.S., Lindquist, N.L., Southwell, M.W., and A. Genin. Flow effects on grazing on a tropical reef. *in revision*.
- Santoro, A.E.**, Nidzieko, N.J., van Dijken, G.L., Arrigo, K.R., and A.B. Boehm. Contrasting spring and summer phytoplankton dynamics in the nearshore Southern California Bight. *Limnology and Oceanography*. *in press*.
- Santoro, A.E.** Microbial nitrogen cycling at the saltwater-freshwater interface. *Hydrogeology Journal*. *in press*.
- Santoro, A.E.**, Francis, C.A., de Sieyes, N.R., and A.B. Boehm. 2008. Shifts in the relative abundance of ammonia-oxidizing bacteria and archaea across physicochemical gradients in a subterranean estuary. *Environmental Microbiology* 10(4): 1068-1079.
- Santoro, A.E.** and A.B. Boehm. 2007. Frequent occurrence of the human-specific *Bacteroides* molecular marker at an open coast beach: Relationship to waves, tides, and traditional indicators. *Environmental Microbiology* 9(8): 2038.
- Yamahara, K.M., Layton, B.A., **Santoro, A.E.**, and A.B. Boehm. 2007. Beach sands along the California coast are diffuse sources of fecal bacteria to coastal waters. *Environmental Science & Technology* 41: 4515-4521.
- Santoro, A.E.**, Boehm, A.B., and C.A. Francis. 2006. Denitrifier community composition across a nitrate and salinity gradient in a coastal aquifer. *Applied and Environmental Microbiology*. 72: 2102-2109.
- Francis, C.A., Roberts, K.J., Beman, J.M., **Santoro, A.E.**, and B.B. Oakley. 2005. Ubiquity and diversity of ammonia-oxidizing archaea in water columns and sediments of the ocean. *Proceedings of the National Academy of Sciences*. 102: 14683-14688.
- Santoro, A.E.**, Lombardero, M.J., Ayres, M.P., and J.J. Ruell. 2001. Interactions between fire and bark beetles in an old growth pine forest. *Forest Ecology & Management* 144: 245-254.

## FUNDING ACQUISITION

Physiological diversity of marine *Crenarchaeota* (PI: K.L. Casciotti). Ocean Life Institute, Woods Hole Oceanographic Institution, 2009-2011. \$38,700

Genomic sequencing of a novel freshwater ammonia-oxidizing archaeal enrichment culture (PI: C.A. Francis). DOE Community Sequencing Program, 2008-2009. Funding for 450 Mbp of DNA sequencing, annotation, and assembly.

Submarine groundwater discharge of nitrogen to urban coastal waters. (PI: A.B. Boehm) UPS Foundation, 2006. \$28,000

## HONORS AND AWARDS

International Conference on Nitrification, Early Career Poster Award (2009)  
ASLO Aquatic Sciences Meeting Early Career Travel Award (2009)  
Woods Hole Oceanographic Institution Postdoctoral Scholar Fellowship (2008-2009)  
Ecological Dissertations in the Aquatic Sciences participant (Eco-DAS VIII, formerly DIALOG) (2008)  
ARCS Foundation Dissertation Award (2007)  
American Association of University Women Selected Professions Dissertation Fellowship (2007)  
American Society for Microbiology, Student Travel Award (2007)  
National Science Foundation Graduate Research Fellowship (2003-2006)  
Stanford Environmental Engineering and Science Masters Fellowship (2003)  
Dartmouth Presidential Scholar Research Fellowship (1998)

## TEACHING EXPERIENCE

Coastal Contaminants (CEE 272), *Technical Assistant* (Stanford)  
Environmental Health Microbiology (CEE 274P), *Laboratory Instructor* (Stanford)  
Pathogens in the Environment (CEE274E), *Teaching Assistant* (Stanford)  
Physiological Ecology (BIO 59), *Teaching Assistant* (Dartmouth)  
Introductory Italian (ITAL 1), *Teaching Assistant* (Dartmouth)

## INVITED TALKS

Bacterial and archaeal nitrifiers in the California Current. International Conference on Nitrification (ICoN1). Louisville, KY: July 2009.

Shifts in the relative abundance of ammonia-oxidizing bacteria and archaea across physicochemical gradients in a subterranean estuary. 9th Annual Microbiology Student Symposium, University of California, Berkeley: April 2008.

Using waves, tides, and microbial DNA to track sources of beach pollution. Northern California Beach Manager's Meeting. Alameda, CA: March 2007.

The surprising diversity of microbial nitrogen cyclers at Huntington Beach. University of California Irvine, Department of Ecology and Evolutionary Biology: August 2006.

## CONFERENCE PRESENTATIONS (ONLY FIRST-AUTHORED LISTED)

Activity and abundance of archaeal and bacterial nitrifiers across a coastal transition zone in the Eastern North Pacific. ASLO Aquatic Sciences Meeting. Nice, France: 2009.

Testing the effects of salinity on communities of ammonia-oxidizing bacteria and archaea using column experiments and selective enrichments. 12<sup>th</sup> International Symposium on Microbial Ecology (ISME-12). Cairns, Australia: 2008.

Interannual variability in coastal chlorophyll-*a* concentrations in the Southern California Bight. ASLO/AGU Ocean Sciences Meeting, Orlando, FL: 2008.

## CONFERENCE PRESENTATIONS (CONT.)

Diversity, abundance, and activity of ammonia-oxidizing Archaea and Bacteria in coastal permeable sediments. American Society for Microbiology General Meeting. Toronto, Ontario: 2007.

Using human-specific *Bacteroides* to assess the contribution of tidal lagoons to coastal microbial pollution. EPA National Beaches Conference. Niagara Falls, NY: 2006.

Striking difference in function gene richness between ammonia-oxidizing bacteria and archaea in a coastal sediment community. 11th International Symposium on Microbial Ecology (ISME-11). Vienna, Austria: 2006.

Physical predictors of biological water quality: Linking temperature, tides, and human health risk. ASLO/AGU Ocean Sciences Meeting. Honolulu, HI: 2006.

Microbiology on the urban coast: tales from the real Orange County. SCORE Oceans Colloquium, Hopkins Marine Station, Pacific Grove, CA: 2005.

Diversity of nitrite reductase genes along a salinity and nitrate gradient. ASLO Aquatic Sciences Meeting. Salt Lake City, UT: 2005.

Fire mediates interactions between pine trees and bark beetles. Entomological Society of America Annual Meeting, Atlanta, GA: 1999.

Interactions between fire and bark beetles in an old growth pine forest. Ecological Society of America Annual Meeting, Snowbird, UT: 1999.

## FIELD AND SEA EXPERIENCE

- 2009 R/V *Western Flyer*: Cruise WFAD09, Eastern North Pacific (12 days)  
Activity of microorganisms forming the primary nitrite maximum
- 2009 R/V *Knorr*: GEOTRACES Intercalibration Cruise 2, Honolulu to San Diego (23 days)  
Sampling for inter-laboratory calibration of NO<sub>3</sub>- stable isotopes
- 2007 R/V *Western Flyer*: Cruise CN107, Eastern North Pacific (10 days)  
Diversity and activity of ammonia-oxidizing microbes in California Current
- 2007 Gump Field Station: Mo'orea, French Polynesia (2/2007)  
Scientific dive support for reef-lagoon circulation experiment
- 2006 M/V *Nerissa*: Newport Beach, CA  
Deployment and recovery of offshore ADCP/CTD moorings
- 2006 Kerckhoff Marine Laboratory: Corona del Mar, CA (2005-2006)  
Two field seasons, coastal water and sediment sampling
- 2005 Gump Field Station: Mo'orea, French Polynesia (12/2005)  
Scientific dive support for reef-lagoon circulation experiment
- 2005 National Underwater Research Center: Key Largo, FL (7/2005)  
Surface diving support for Aquarius underwater habitat mission
- 2005 Scientific Diving Certification (100' depth rating), American Academy of Underwater Sciences (2005-2008)

## **PROFESSIONAL SERVICE AND AFFILIATIONS**

### **Mentoring and Advising**

High School Student: Lillian Lam (Lynbrook High '05)

Undergraduates: Leslie Silverthorn (Stanford '08), Jamie Marincola (Stanford '08), Marisa Choy (Stanford '09)

### **Association Memberships**

International Society for Microbial Ecology (ISME)

American Society of Limnology and Oceanography (ASLO)

American Geophysical Union (AGU)

### **Peer Review**

Journals: Environmental Microbiology, Aquatic Microbial Ecology, Journal of Applied Microbiology

Proposals: National Science Foundation (Biological Oceanography, Chemical Oceanography, and Geobiology); California Sea Grant; University of Southern California Sea Grant