

The following application was submitted to the MARGINS Office:

Name:

Canuel Elizabeth

Category: Professor

Address:

Department of Physical Sciences
Virginia Institute of Marine Science
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Statement of interest:

My training and research interests lie primarily in the area of marine organic geochemistry. Within this discipline, my work has focused on the application of biomarkers, molecular and isotopic tracers that serve as tools for identifying the sources and composition of organic matter. The over-arching goal in my use of these geochemical tracers has been to identify key processes important in controlling the composition and cycling of particulate and sedimentary organic matter. Specifically, my work has documented short-term changes in the composition of organic materials deposited at the water-sediment interface and examined how these variations are reflected in the organic constituents preserved in coastal sediments. In recent years, I have studied these processes primarily in estuarine and nearshore environments with most of my work focussed at timescales of <500 years, when human impacts on coastal ecosystems have been strongest.

Some of the most challenging questions in contemporary biogeochemistry concerning the linkages between terrestrial and marine systems. I have recently become interested in applying biomarker studies to the New Zealand rivers, where such work could aid in understanding how sediment dynamics influence OC contents and compositions. High sediment yield rivers such as the Waipaoa provide an exciting venue for such studies. This work could also have practical benefits to New Zealand scientists and managers who are currently investigating the contribution of soil erosion to terrestrial carbon budgets in an effort to comply with the Kyoto Accords. Organic geochemical studies can further aid in

understanding the factors controlling sediment and carbon loss from eroding landscapes.

Short resume:

Biographical Sketch: Elizabeth A. Canuel

Virginia Institute of Marine Science

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A. PROFESSIONAL PREPARATION

National Research Council Post-doctoral Fellow, Water Resources Division, U.S. Geological Survey, Menlo Park, CA.

Ph.D., 1992, University of North Carolina, Chapel Hill, NC, Marine Sciences.

B.S., 1981, Stonehill College, North Easton, MA, Chemistry.

B. APPOINTMENTS

2000-present Associate Professor, Department of Physical Sciences, School of Marine Science, The College of William & Mary

1994-2000 Assistant Professor, Department of Physical Sciences, School of Marine Science, The College of William & Mary.

C. PUBLICATIONS [selected for greatest relevance to the workshop]

Cloern, J.E., E.A. Canuel and D. Harris (2002) Stable-isotopes of C and N in aquatic and terrestrial plants of the San Francisco Bay estuarine system. *Limnol. & Oceanog.* 47: 713-729.

Zimmerman, A.R. and E.A. Canuel. (2002) Sediment geochemical records of eutrophication in the mesohaline Chesapeake Bay. *Limnol. & Oceanog.* 47: 1084-1093.

Canuel, E.A. (2001) Relations between river flow, primary production and fatty acid composition of particulate organic matter in San Francisco and Chesapeake Bays: A multivariate approach. *Org. Geochem.* 32: 563-583.

Zimmerman, A.R. and E.A. Canuel. (2001) Bulk organic matter and lipid biomarker composition of Chesapeake Bay surficial sediments as indicators of environmental processes. *Estuarine Coastal and Shelf Science*, 53: 319-341.

Canuel, E.A. and A.R. Zimmerman (1999) Composition of particulate organic matter in the Southern Chesapeake Bay: Sources and reactivity. *Estuaries*, 22: 980-994

Canuel, E.A., K.H. Freeman, and S.G. Wakeham (1997) Isotopic compositions of lipid biomarker compounds in estuarine plants and surface sediments. *Limnol. & Oceanogr.* 42(7):1570-1583.

Canuel, E.A. and C.S. Martens (1996) Reactivity of recently-deposited organic matter: Degradation of lipid compounds near the sediment-water interface. *Geochimica et Cosmochimica Acta*, 60:1793-1806.

Canuel, E.A. and J.E. Cloern (1996) Regional differences in the origins of organic matter in the San Francisco Bay ecosystem: Evidence from lipid biomarkers. In: J.T. Hollibaugh (ed.), *San Francisco Bay: The Ecosystem*. Pacific Division, American Association for the Advancement of Science, San Francisco, CA.

Canuel, E.A., J.E. Cloern, D.B. Ringelberg, J.B. Guckert, and G.H. Rau (1995) Using molecular and isotopic tracers to examine sources of organic matter and its incorporation into the food webs of San Francisco Bay. *Limnol & Oceanogr.* 40:67-81.

Canuel, E.A. and C.S. Martens (1993) Seasonal variations in the sources and alteration of organic matter associated with recently-deposited sediments. *Org. Geochemistry*, 20:563-577.

D. SYNERGISTIC AND EDUCATIONAL ACTIVITIES

Participant, RioMar Workshop, Sponsored by NSF, Tulane University, October 2001.
Participant, Chinese-American Frontiers of Science Symposium, Co-Sponsored by U.S. National Academy of Science and Chinese Academy of Science, Beijing, China, August, 1999.

Participant, NSF Workshop on the Future of Chemical Oceanography in the U.S. (FOCUS), January, 1998.

Panelist, CAREER Program, Ocean Sciences Division. November 2000; November 2001

Director, Female Initiation into Research, Science and Technology Program. 1997-present; 29 high school participants since program's inception.

CAREER Grant Awardee 1995-2000

Future of ASLO Committee, December 1996.

TEACHING AND MENTORING

Graduate Students

Major Advisor (4)

Co-Major Advisor (3)

Thesis/Dissertation Committees (24)

Undergraduate Students

Honors Thesis Advisor (1)

REU Students (3)

High School Students

Mentor (5)

Director of Female Initiation into Research, Science & Technology Program (29)

Graduate Level Courses Taught in Last Three Years:

MS 524. Principles of Chemical Oceanography

MS 627. Marine Organic Geochemistry
MS501L. Fundamentals of Marine Sciences Laboratory
MS548. Experimental Design in the Marine Sciences Laboratory

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ABSTRACT

Title:

Authors:

Abstract:

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