

The following application was submitted to the MARGINS Office:

Name:

Gail Kineke

Category: Professor

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Statement of interest:

My primary research interests include fine-sediment transport in estuarine, coastal and shelf settings. I have worked in areas dominated by fine sediments including the Amazon shelf, the inner shelf of the Gulf of Mexico, the Sepik River, Papua New Guinea, as well as several estuarine environments in the United States. I have great interest in the Waipaoa focus area and was a co-PI on a prior proposal submission for a Source-to-Sink study, with my contribution focusing on sediment dispersal in Poverty Bay and the adjacent shelf. In particular I am interested in the processes and conditions necessary for formation of fluid muds, or high-concentration sediment suspensions. A combination of factors can promote rapid deposition of fine sediments and formation of fluid mud, potentially leading to gravity flows. These factors include stratification in the water column, flocculation and enhanced settling brought on by mixing of fresh- and saltwater, and high suspended-sediment concentrations of the source waters (high discharge events of the Waipaoa can supply suspended sediment at concentrations as high as 20-40 g l⁻¹). In addition, fluid muds have been observed on the shelf following a strong storm event (e.g. Cyclone Bola in 1988). The mechanisms of fine-sediment transport and dispersal are important with respect to where sediments will be sequestered in the geologic record and how associated constituents (chemical species, organic carbon) will be recycled back into the water column or buried.

I could contribute to the workshop by providing information of fine sediment transport, estuarine and shallow shelf circulation, and fluid mud processes. I would like to suggest possible ways these background topics, with information

drawn from other dispersal systems, could be relevant to the Waipaoa system. I also have substantial field experience in coastal settings and could contribute to discussions of field research programs.

Short resume:
Gail C. Kineke

EDUCATION

M.S., Ph.D., Oceanography, University of Washington, 1988,1993
B.A., Geology, Princeton University, 1983

PROFESSIONAL EXPERIENCE

Associate Professor, Dept. of Geology and Geophysics, Boston College (2002-present)
Adjunct Scientist, Applied Ocean Physics & Engineering Dept., Woods Hole Oceanographic Institution (1997-present)
Associate, Belle W. Baruch Institute for Marine Biology and Coastal Research (1995-present)
Assistant Professor, Dept. of Geology and Geophysics, Boston College (1997-2002)
Visiting Investigator, Applied Ocean Physics & Engineering Dept., Woods Hole Oceanographic Institution (1995-1997)
Assistant Professor of Marine Science and Geological Sciences, University of South Carolina (1995-1997)
Postdoctoral Investigator, Applied Ocean Physics & Engineering Dept., Woods Hole Oceanographic Institution (1993-1994)

RESEARCH INTERESTS: Coastal and estuarine processes, fine sediment transport, fluid mud processes

SELECTED PUBLICATIONS

Kineke, G.C., R.W. Sternberg and R. Johnson. 1989. A new instrument for measuring settling velocities in situ. *Marine Geology*, 90: 149-158.

Kineke, G.C. and R.W. Sternberg. 1989. The effect of particle settling velocity on computed suspended sediment concentration profiles. *Marine Geology*, 90:159-174.

Kineke, G.C., R.W. Sternberg, D.A. Cacchione, K. Kranck and D.E. Drake. 1991. Distribution and characteristics of suspended sediment on the Amazon shelf. *Oceanography*, April: 21-26.

Sternberg, R.W., G.C. Kineke and R. Johnson. 1991. An instrument system for profiling suspended sediment, and fluid and flow conditions in shallow marine environments. *Continental Shelf Research*, 11: 109-122.

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Cacchione, D.A., D.E. Drake, R.W. Kayen, R.W. Sternberg, G.C. Kineke, and G.B. Tate, 1995. Measurements in the bottom boundary layer on the Amazon subaqueous delta. *Marine Geology*, 125:235:258.

Sternberg, R.W., D.A. Cacchione, B. Paulson, G.C. Kineke, and D.E. Drake, 1996. Active sedimentary processes on the Amazon prodelta. *Continental Shelf Research*, 16:697-715.

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Berhane, I., Sternberg, R.W., Kineke, G.C., Milligan, T.G. and K.Kranck, 1997. The variability of suspended aggregates on the Amazon continental shelf. *Continental Shelf Research*. 17:267-285.

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Blanton, J., C. Alexander, M. Alber, and G. Kineke, 1999. The Mobilization and deposition of mud deposits in a coastal plain estuary. *Limnologica*, 29:293-300.

Allison, M.A., G.C. Kineke, E.S. Gordon and M.A. Goni, 2000. Development and reworking of an annual flood deposit on the inner continental shelf off the Atchafalaya River. *Continental Shelf Research*, 20:2267-2294.

Kineke, G., K.J. Woolfe, S.A. Kuehl, J. Milliman, T. Dellapena and R.G. Purdon, 2000. Sediment export from the Sepik River, Papua New Guinea: Evidence for a divergent dispersal system. *Continental Shelf Research*, 20:2239-2266.

Ogston, A.S., D.A. Cacchione, R.W. Sternberg, and G.C. Kineke, 2000. Storm and river flood-driven sediment transport on the northern California continental shelf. *Continental Shelf Research*, 20:2141-2162.

Orton, P.M., and G.C. Kineke, 2001. Comparing Calculated and Observed Vertical Suspended-Sediment Distributions from a Hudson River Estuary Turbidity Maximum. *Estuarine, Coastal and Shelf Science*, 52:401-410.

Blake, A.C., G.C. Kineke, T.G. Milligan, and C.R. Alexander, 2001. Sediment trapping and transport in the ACE Basin, South Carolina. *Estuaries*, 24:721-733.

Milligan, T.G., G.C. Kineke, A. Carlson, C.R. Alexander, and P.S. Hill, 2001. Flocculation and Sedimentation in the ACE Basin, South Carolina. *Estuaries*, 24:734-744.

Gordon, E.S., M.A. Goñi, Q.N. Roberts, G.C. Kineke, and M.A. Allison, 2001. Organic matter distribution and accumulation on the inner Louisiana Shelf west of the Atchafalaya River. *Continental Shelf Research*, 21:1691-1721.

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ABSTRACT

Title:

Authors:

Abstract:

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