

Tessa M. Hill

UC President's Postdoctoral Fellow
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EDUCATION

- 2004 Ph.D., Interdepartmental Graduate Program in Marine Science,
UCSB. Major Professor: Dr. James P. Kennett
- 1999 Bachelor of Science with Honors (Marine Science),
Eckerd College, FL

ACADEMIC APPOINTMENTS

- 2004- Current University of California President's Postdoctoral Fellow,
UC Davis, Department of Geology
- 1999 – 2004 Graduate Researcher, Interdepartmental Graduate Program in
Marine Science, University of California, Santa Barbara.
- 1997-1999 Undergraduate Research Assistant, Marine Science Department,
Eckerd College.

HONORS AND AWARDS

- University of California President's Postdoctoral Fellowship.** For postdoctoral research on: *The oceanic response to abrupt climate change: California margin sediment and coral records.* 10/01/04-9/30/05.
- UCSB Affiliates Nancy Brown Environmental Graduate Dissertation Fellowship.** Given by the UCSB Graduate Division and UCSB Affiliates to a graduate student whose dissertation research has strong potential for environmental impact. \$3000, May 2003.
- Joseph A. Cushman Award.** Given by the Cushman Foundation for Foraminiferal Research to students conducting exceptional investigations. \$700, November, 2002.
- Geological Society of America Gretchen L. Blechschmidt Award.** Selected from a nationwide pool to support research by women pursuing a Ph.D. in the geological sciences and a career in academic research. Spring 2002.

Wendell Phillips Woodring Memorial Graduate Fellowship. Given by the UCSB Geological Sciences faculty to a graduate student who is working on a thesis of highest merit. \$1000, Spring 2001.

GRANTS IN SUPPORT OF RESEARCH

NOAA Undersea Research Program. *Deep-sea corals from the Californai margin: Recorders of intermediate depth ocean chemistry and climate change.* Developmental proposal, pending.

***Department of Energy Ocean Carbon Sequestration Program:** *Effects of oceanic disposal of carbon dioxide on benthic microfauna: Foraminifera as indicators of dissolution and ecosystem health* (co written with PI's, J. P. Kennett and J. Bernhard). \$450,826; 10/01/03-9/30/06.

***National Science Foundation:** *Abrupt climatic transitions: Surface to deep-water response from high-resolution sediment records, Santa Barbara, California* (co-written with PI, J.P.Kennett). \$300,000; 1/1/03-1/1/05.

Geological Society of America Graduate Student Research Grant: *Effects of oceanic disposal of CO₂ on benthic microfauna: Foraminifera as indicators of dissolution and benthic ecological change.* \$1,300, May 2002.

UCSB Graduate Student Science and Engineering Research Grant: *Massive releases of methane from the hydrate reservoir: Cause of rapid climate warming?* \$1,900, June 2002.

***American Chemical Society Petroleum Research Fund:** *Ecology and Stable Isotopic Composition of Modern Methane Seep Foraminifera: Santa Barbara, California* (co-written with PI, J.P. Kennett). \$59,233, 9/1/01-9/1/03.

Geological Society of America Graduate Student Research Grant: *Study of the Ecology and Stable Isotopic Composition of Methane-Associated Foraminifera, Santa Barbara Basin, California.* \$2,000, May 2001.

*Graduate students are unable to serve as PI on these grants according to UC policy. However, integral writing responsibilities were shared by T. Hill.

PUBLICATIONS

Hill, T.M., Kennett, J.P., Spero, H.J. (2003). *Foraminifera as indicators of methane rich environments: A study of modern methane seeps in Santa Barbara Channel, California.* Marine Micropaleontology, v. 49, p. 123-138.

- Hill, T.M., Brooks, G.R., Duncan, D.S., Medioli, F.S. (2003).** *Benthic foraminifera of the Holocene transgressive west-central Florida inner shelf: paleoenvironmental implications.* Marine Geology, v. 200, p. 263-272.
- Hill, T.M., Kennett, J.P., Spero, H.J. (2004).** *High-resolution records of methane hydrate dissociation: ODP Site 893, Santa Barbara Basin.* Earth & Planetary Science Letters, v.223 (1-2), p. 127-140.
- Hill, T.M., Kennett, J.P., Valentine D.L. (2004).** *Isotopic evidence of methane-derived carbon into living foraminifera from modern methane seeps, Hydrate Ridge, OR.* Geochimica et Cosmochimica Acta, v. 68 (22), p. 4619-4627.
- Keller, E.A., Duffy, M., Eichhubl, P.E., Kennett, J.P., **Hill, T.**, Kamerling, M.J. (in review). *Tectonic geomorphology and hydrocarbon induced topography of the Mid-Channel Anticline, Santa Barbara Basin, CA.* GSA Bulletin.
- Hill, T.M., Kennett, J.P. (In review).** *Pre-Bolling warming in Santa Barbara Basin, California: Surface and intermediate water records of early deglacial warmth.* Quaternary Science Reviews.
- Hill, T.M., Behl, R., Kennett, J.P. (In prep).** *Records of North Pacific oxygen minimum zone during deglacial warming imply changes in ventilation, primary productivity and methane oxidation.*
- Hill, T.M., Kennett, J.P., Valentine, D.L. (In prep).** *Tar deposits in Santa Barbara Basin sediments: Episodic hydrocarbon seepage during deglacial warming on the California margin.*
- Pak, D.K., **Hill, T.M.**, Lea, D.W., Kennett, J.P. (In prep). *Magnitude of warming on the California margin during the abrupt deglacial transition.*
- Ohkushi, K., Kennett, J., **Hill, T.M.** (In prep). *Intermediate water faunal changes during abrupt warming of the last deglaciation.*
- Ricketts, E.R., Kennett, J.P., **Hill, T.M.** (in prep). *Effects of CO₂ hydrate on California margin benthic foraminiferal assemblages.*

SELECTED CONFERENCE PRESENTATIONS

- Hill, T.M., Brooks, G.R., Drexler, T. (2000).** *Evidence for Holocene climate change in West Florida: Implications for barrier island development.* Poster, Geological Society of America national meeting, November 2000.
- Hill, T.M. and Kennett, J.P. (2000).** *Methane-associated foraminifera in Santa Barbara Basin, California: Ecology and stable isotopic composition.* Poster, American Geophysical Union meeting, December 2000.
- Hill, T.M. and Kennett, J.P. (2001).** *Foraminiferal ecology and stable isotopes at methane*

- seeps, Santa Barbara Basin, California: Implications for Quaternary climate change.* Poster, Geological Society of America and Geological Society of London, Earth System Processes, Edinburgh, Scotland, June 2001.
- Hill, T.M.** and Kennett, J.P. (2001). *High resolution records of late Quaternary carbon isotopic excursions: Santa Barbara Basin, California.* Poster, American Geophysical Union meeting, December 2001.
- Hill, T.M.**, Kennett, J.P. (2002). *Methane hydrate and Quaternary climate change: Evidence from sediment records and modern methane seeps.* Oral presentation, INQUA Congress, July 2002.
- Hill, T.M.**, Kennett, J.P., Hendy, I., Cannariato, K.G. (2002). *Intermediate waters and abrupt climate change: Ultra-high resolution sediment records from Santa Barbara Basin, California.* Poster, American Geophysical Union meeting, December 2002.
- Hill, T.M.**, Kennett, J.P., Valentine, D.L. (2003). *Foraminifera from Hydrate Ridge, Oregon: Carbon isotopic values and implications for paleomethane release.* Oral presentation, GSA Annual Meeting, November 2003.
- Hill, T.M.**, Pak, D., Kennett, J.P., Lea, D.W., White, J. (2003). *Abrupt climatic transitions: Surface to intermediate-water response from high-resolution sediment records, Santa Barbara Basin, CA.* Poster, American Geophysical Union, December 2003.
- Hill, T.M.**, Kennett, J.P., Behl, R., Pak, D., Ohkushi, K., Robert, C., Beaufort, L., Zeleski, C.M. (2004). *High-resolution records of deglaciation on the California margin: Rapid warming as recorded in surface and intermediate waters.* Poster, American Geophysical Union, December 2004.

TEACHING EXPERIENCE

- Spring 2003: Teaching Assistant, *Geology 164B, Earth Systems Ocean/Atmosphere*, UC Santa Barbara. Developed undergraduate curriculum for new course, lectured, led discussion/lab sections, tutored students during office hours, advised students in writing of term papers and oral presentations. In addition to TA responsibilities with undergraduate students, provided two invited lectures to mixed graduate/undergraduate class.
- Fall 2000: Teaching Assistant, *Geology 4, Introduction to Oceanography*, UC Santa Barbara. Head TA for a course of 250 students, three TA's. Led three discussion/laboratory sections, extensive curriculum development and restructuring, lectured on supplemental material, writing and grading of exams.
- Winter 2000: Teaching Assistant, *Geology 4, Introduction to Oceanography*, UC Santa Barbara. Led three discussion/laboratory sections, developed new laboratory exercises, lectured on supplemental material, writing and grading of exams.
- Fall 1999: Teaching Assistant, *Geology 4, Introduction to Oceanography*, UC Santa Barbara. Led three discussion/laboratory sections, lectured on supplemental material, writing and grading of exams.
- Fall 1998: Teaching Assistant and Tutor, *Introduction to Oceanography*, Eckerd College. Invited lectures and tutoring for students.
- Spring 1997 & 1998: Teaching Assistant, *Marine Geology*, Eckerd College. Led laboratory sections and field trips, writing and grading of section activities.

PROFESSIONAL SERVICE

Invited Speaker, Lawrence Livermore National Laboratory, Center for Accelerator Mass Spectrometry

“Deep sea sediments and corals: How mysteries of the deep may solve riddles of climate change” December 7, 2004.

Speaker, Department of Geology, UC Davis

“Deep sea sediments and corals: How mysteries of the deep may solve riddles of climate change” November 19, 2004.

Judge for Student Presentations

Western Society of Naturalists, Annual Meeting, November 11-14, 2004, Rohnert Park, CA.

Supervisor for undergraduate student intern

Supervised project with Z. Yang on quantifying the presence of tar in Santa Barbara Basin sediments; included tar extractions, chromatography, TOC analyses. Summer 2004.

Invited Speaker, Geology 182 (Marine Geochemistry), UC Santa Barbara

“Intermediate waters and the oxygen minimum zone: Lessons from Southern California” May 21, 2004.

Invited Participant: Role of Ocean Methane and Gas Hydrates in Global Climate Change, NOAA CMDL Workshop, Boulder CO, May 13-14 2004

Mentor and member of advisory committee for two M.S. Students

Mentor for two M.S. students (E. Ricketts and D. Murphy) in Kennett laboratory. Trained in micropaleontologic/paleoceanographic techniques and served on research advisory committee (Ph.D. candidates are permitted to serve in this capacity). 2003-present.

Mentor, Academic Research Consortium

Mentor for undergraduate student J. White. Supervised training in laboratory techniques, writing and analytical skills for project entitled “Ocean water response to climate change: Transitions in surface and deep water seen in high-resolution sediment cores” Summer 2003.

Invited Speaker, Geology 266/164B (Chemical Oceanography), UC Santa Barbara.

Carbonate chemistry and sedimentation. April 29, and May 1, 2003.

Invited Speaker, Dunn High School, Santa Ynez, CA. “Climate change: Is the past the key to the future?”, to AP Environmental Studies class, April 4, 2003.

Member, Geological Sciences Information Technology Committee

Graduate student representative. Fall 2001 – Spring 2002.

Member, Geological Sciences Alumni Committee

Graduate student representative. Fall 2000 – Spring 2002.

Mentor for undergraduate students in laboratory of J. Kennett

Supervised and advised students on laboratory techniques and research skills. Spring 2001-present.

Member, Search committee for Marine Sediment Geochemist

Graduate student representative. Fall 2000 - Spring 2001.

RESEARCH CRUISE EXPERIENCE

- R/V Knorr*, Piston coring and investigations of the Storegga slide, offshore Norway, Aug 26-Sep. 12, 2004.
- R/V Western Flyer*, California Borderlands Seamount Expedition, April 27-May 8, 2004, sampling seamounts for intermediate depth corals.
- R/V N.B. Palmer*, Santa Barbara Basin, CA, November 6-10, 2002, piston cores to complete an intermediate water transect for the Southern California Borderland.
- R/V Atlantis*, Hydrate Ridge, Oregon, July 25-31, 2002, sampled modern methane seeps offshore Oregon.
- R/V Marion Dufresne*, IMAGES/MONA program, May 29 – June 8, 2002, piston coring of continental margin sites from Vancouver, B.C. to Santa Barbara Basin, CA.
- R/V Western Flyer*, Monterey Bay Aquarium Research Institute, October 22-24, 2001, CO₂ sequestration studies off the coast of Monterey, California
- R/V Western Flyer*, Monterey Bay Aquarium Research Institute, July 8-11, 2001, CO₂ sequestration studies off the coast of Monterey, California
- R/V G.K. Gilbert*, Eckerd College/USGS, day cruises during summer of 1998 and 1999, vibracoring and seismic studies of West Florida Shelf

COMMUNITY OUTREACH AND SERVICE

Cofounder, UCSB Women in Science and Engineering (WISE)

Established a campus organization which now includes over 400 students, faculty and staff. Cofounder and cochair of organizing committee since May 2001. Recruited and hosted speakers, organized monthly events, fundraised, published e-newsletter and website. Spring 2001-Summer 2004.

Member, Organizing Committee for *The Next Step: A workshop for graduate students and researchers seeking an academic career*. January 30-31, 2004; Cosponsored by the NSF ADVANCE program and UCSB WISE. Spring 2003-Winter 2004.

Coordinator and volunteer, WISE undergraduate mentoring program

Designed and implemented program that mentors undergraduates in science and engineering by pairing them with graduate students/researchers. Hosted monthly meetings to discuss career options, graduate school, and pursuing a career in the sciences. 2002-2004.

Invited Speaker, UCSB Workshop on Gender Diversity in the Sciences. May 2003.

Volunteer, UCSB Scienceline

Online outreach to schoolchildren. Spring 2001-2004.

Volunteer, Marine Science Institute Outreach

Led tours of the Marine Science Institute and educational facility to school groups and prospective students. Summer 2001 – Summer 2002.

COLLABORATORS

Jim Barry; MBARI; Rick Behl, California State University, Long Beach; Dave Clague, MBARI; Tom Guilderson, LLNL CAMS; James Kennett, UC Santa Barbara; David Lea,

UC Santa Barbara; Dorothy Pak, UC Santa Barbara; Charles Paull, MBARI; Christian Robert, Centre d'Océanologie de Marseille; Laura Rademacher, California State University, LA; Brendan Roark, UC Berkeley; Howard Spero, UC Davis; Dave Valentine, UC Santa Barbara.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
Association for Women Geoscientists
Association for Women in Science
Geological Society of America
Sigma Xi

REFERENCES

Dr. James P. Kennett

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Dr. Howie J. Spero

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Dr. Alice Alldredge

Chair, Department of Ecology, Evolution and Marine Biology
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Dr. Dave Valentine

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Dr. Gregg Brooks

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