

Frank R. Rack, Ph.D.
Curriculum Vitae

Contact Information

Executive Director, ANDRILL Science Management Office, and Associate Professor (tenured), Department of Earth and Atmospheric Sciences, 126 Bessey Hall [P.O. Box 880341] University of Nebraska - Lincoln
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Education

May 1992 Ph.D. Geological/Geophysical Oceanography; College of Geosciences, Department of Oceanography, Texas A&M University, College Station, TX, 77843; Advisors: Dr. Philip D. Rabinowitz, Director of ODP/TAMU from 1983-1995 and Professor of Geology/Geophysics; and Dr. William R. Bryant, Professor of Oceanography.

Dissertation Title: Geotechnical Stratigraphy and Sedimentary Microfabric of Oligocene to Late Miocene Pelagic Sequences in the Southern Ocean: Paleoceanographic Implications.

Dec. 1978 B.S. Natural Resources, College of Natural Resources, University of Rhode Island, Kingston, R.I. 02881.

Work History

Aug. 2006 –

Present: Executive Director, ANDRILL Science Management Office and Associate Professor (tenured in 2007), Department of Earth and Atmospheric Sciences, University of Nebraska-Lincoln, Lincoln, NE

Responsible for overall program management and implementation of the U.S. ANDRILL Program, including directing the UNL ANDRILL Science Management Office operations, conducting strategic planning, and general office management; selecting and integrating all activities to achieve annual strategic goals related to project development, research, education, and public outreach; and working with the ANDRILL Director of Research in managing the research program. From 2006 to 2008, ANDRILL successfully drilled the two deepest wells in Antarctica with 98% core recovery, completed two over-ice seismic surveys, and prepared for sustained future field operations beyond 2012. Rack was US PI for the Coulman High field surveys in 2010-2011 on the Ross Ice Shelf, Antarctica, managing and providing oversight for multiple subawards and vendor agreements.

Rack was also the UNL PI for WISSARD (Whillans Ice Stream Subglacial Access Research Drilling) Hot Water Drill System (HWDS) development, which has involved management and oversight of a team of UNL drillers and the design, fabrication, assembly, testing and commissioning of two hot water drill systems, related components, and oceanographic equipment, including a remotely operated vehicle named Deep-SCINI, which is being used to support NSF and NASA funded projects in Antarctica.

Rack was the lead PI for a NOAA-funded STEM education grant focused on establishing teacher professional development regarding environmental literacy and developing curriculum resources for middle school and high school students. The project successfully expanded from a pilot program to sites in 10 states across the U.S. over four years and directly involved the participation of more than 400 teachers and 800 students in capstone events known as Climate Change Student Summits, with more than 10 times that number of students participating in classroom and after school activities.

Rack developed a diversified and aggressive strategy of opportunity-based proposal writing and competition for research and educational funding involving numerous investigators across the University of Nebraska-Lincoln and at peer institutions across the nation. This strategy involved pursuing a high risk-high reward approach to changing national and international research priorities in order to maintain the reputation and status of the UNL Science Management Office as a leader and valued partner in geoscience research, education, and project management.

Nov. 2003 –

July 2006: Director, Ocean Drilling Programs (contract with NSF); Director, DOE Programs (cooperative agreement with DOE/NETL), Joint Oceanographic Institutions (JOI), Inc., Washington, DC

Responsible for all aspects of prime contracts and subcontracts for the U.S. Systems Integration Contract with the National Science Foundation (NSF) for the Integrated Ocean Drilling Program (IODP), which is implemented in cooperation with vessel operators in Japan and Europe, as well as the coordinated integration of efforts through IODP-Management International, Inc. (IODP-MI) for science operations. Responsible for overseeing the preservation of the scientific and programmatic legacy of the Ocean Drilling Program (ODP), which consists of data, samples, and documentation extending across 20 years of continuous operations for that program. Responsible for activities relating to the JOI cooperative agreement with the U.S. Department of Energy/National Energy Technology Laboratory (DOE/NETL) relating to methane hydrates. Responsible for coordinating additional external efforts in cyberinfrastructure, data management, analysis and visualization related to ocean drilling science and oversight of outreach and education efforts in cooperation with JOI Alliance staff, including international efforts to expand the public understanding of science, technology and research. Worked

proactively with the JOI President and Board of Governors to explain and defend new research initiatives and strategic directions in response to identified opportunities.

April 2002 –

Oct. 2003: Associate Director, U.S. Science Support Program (USSSP, cooperative agreement with NSF), Assistant Director, Ocean Drilling Programs (ODP, contract with NSF), and Director, DOE Programs (cooperative agreement with DOE/NETL), Joint Oceanographic Institutions, Inc., Washington, DC

Responsible for implementing program management and oversight of JOI contracts and cooperative agreements with NSF for the ODP (\$46M/year) and USSSP (\$6M/year) related to the implementation of scientific drilling cruises and the participation of U.S. scientists in scientific ocean drilling. Responsible for management and implementation of DOE/NETL and Chevron Texaco projects related to the characterization and in situ sampling of marine methane hydrates. Supported the JOI President and ODP Director in all activities related to these programs and provided strategic planning for new ventures related to scientific ocean drilling and other topics (e.g., cyber-infrastructure, ocean observing, new and emerging technology).

May 1998 –

April 2002: Assistant Director, Ocean Drilling Programs and U.S. Science Support Program. Joint Oceanographic Institutions (JOI), Inc.

Responsible for program management and oversight of JOI contracts and cooperative agreements with NSF for the ODP (\$46M/year) and USSSP (\$6M/year), provided support to the Director, Ocean Drilling Programs and JOI President for all activities related to these programs and their implementation. Coordinated the review and award of multi-year fixed purchase order grants (e.g., salary, travel and post-cruise research support) to over 600 U.S. scientists participating in the ODP and worked with the Texas A&M Research Foundation (TAMRF) to provide management and oversight of these awards. Worked with investigators and external groups to support workshops and issue small grants to support augmentation of U.S. activities in ODP.

April 1996 –

April 1998: Research Associate (non-tenure track Asst. Professor), Ocean Mapping Group, Department of Geodesy and Geomatics Engineering, University of New Brunswick-Fredericton, New Brunswick, Canada.

Responsible for field and research activities pursued under the Canadian Natural Science and Engineering Research Council (NSERC) program: "Climate System History and Dynamics Program", which included efforts to collect and analyze marine sediment cores and integrate results with interdisciplinary research studies on land and using numerical models. Participated in several international research expeditions.

Jan. 1993 –

March 1996: Post-doctoral Fellow, Ocean Mapping Group, Department of Geodesy and

Geomatics Engineering, University of New Brunswick-Fredericton, New Brunswick, Canada

Responsible for research under the Canadian NSERC program: "Joint Global Flux Study", which focused on carbon fluxes recorded by marine sediment archives. Participated in IMAGES coring and ODP cruises and was co-convenor of the 5th International Conference on Paleoceanography (ICP-V) held in Halifax, Nova Scotia, Canada, which is the premier conference for this scientific field, held every 3 years.

April 1992 –

Dec. 1993: Staff Scientist, Ocean Drilling Program, Texas A&M University, College Station, TX.

Expedition Project Manager for ODP Leg 144. Responsible for coordination of shipboard scientific party activities related to the accomplishment of the leg scientific objectives and the formulation, editing and publication of an Initial Report and a Scientific Results volume for the ODP Proceedings.

Jan. 1990 –

March 1992: Research Assistant, Ocean Drilling Program, Texas A&M University, College Station, TX.

Provided research support to ODP staff scientists and cruise participants, maintained ODP shorebased laboratories and library facilities. Conducted research and wrote peer-reviewed and occasional papers related to research results.

May 1984 –

Dec. 1990: Graduate Research Assistant, Ocean Drilling Program, Texas A&M University, College Station, TX.

Provided research support to ODP staff scientists and cruise participants, conducted literature searches for ODP cruises around the world, coordinated meetings, developed agenda books, conducted scientific research and wrote peer-reviewed papers.

Jan. –

April 1984: Graduate Research Assistant: Department of Oceanography, Biological and Chemical Oceanography Sections, Texas A&M University, College Station, TX.

Provided research support culturing Antarctic diatoms in a laboratory setting. Participated in a sediment coring expedition aimed at mapping oil seeps and benthic communities associated with gas hydrate deposits in the Gulf of Mexico.

Jan. 1981 –

Mar. 1983: Navigator for offshore seismic surveys, Petty Ray Geophysical Division of Geosouces, Inc., Houston, TX

Sailed on a schedule of six weeks on, three weeks off (or multiples thereof), primarily exploring in the Gulf of Mexico and up the East coast of the United States and Canada. Deployed and recovered marine multi-channel seismic survey cables, used satellite and other navigation systems (Loran-C), operated Lacoste and Romberg gravity meters.

April 1979 –

Dec. 1980: Whitney Fidalgo Seafoods, Petersburg, AK; worked in seafood processing plants in Kodiak, AK; worked on crab fishing boats in the Gulf of Alaska and from Kodiak to Dutch Harbor to King Cove, AK.

Worked for Whitney Fidalgo Seafoods salmon cannery in Petersburg, AK from early season start-up to closure of salmon season in July; traveled through SE Alaska, Yukon, and central Alaska to Kodiak to work on King crab, tanner crab and snow (opilio) crab seasons; Worked on crab fishing boat recovering late season crab pots from Kodiak to Dutch Harbor to King Cove, AK.

Research Expeditions and Field Experiences

Dec. 2014 to Jan. 2015: WISSARD Project grounding zone drilling to investigate processes at the ice sheet to ice shelf transition zone using a hot water drill system and a prototype remotely operated vehicle (Deep-SCINI).

Nov. to Dec. 2012: WISSARD Project hot water drill system acceptance and commissioning tests, McMurdo Station and McMurdo Ice Shelf. Antarctica - near ANDRILL MIS site; UNL Lead for NSF Engineering Readiness Review.

Oct. 2010 to Feb. 2011: ANDRILL Coulman High Project Site Surveys, McMurdo Station and Ross Ice Shelf, Antarctica; PI and Pisten Bully driver for radar surveys.

Nov. 2006 to Jan. 2007: ANDRILL McMurdo Ice Shelf (MIS) Project, McMurdo Station, Antarctica; Executive Director, Science Management Office, and volunteer Physical Properties Technician

July to Sept. 2002: R/V JOIDES Resolution; ODP Leg 204: Gas Hydrates on Hydrate Ridge, acting ODP Staff Scientist and Project Manager.

Jan. to March 1996: R/V Thomas Thompson; SUBSAT Cruise: Subantarctic South Atlantic Ocean Transect; Physical Properties Specialist.

July to Sept. 1995: R/V JOIDES Resolution; ODP Leg 162: North Atlantic/Arctic Gateways II, Norwegian-Greenland Sea and Arctic Ocean; Physical Properties Specialist.

May to June 1995: R/V Marion Dufresne; first IMAGES (MD 101) cruise: Norwegian-Greenland Sea and North Atlantic Ocean; Canadian PI and Physical Properties Specialist.

Aug. to Sept. 1993: R/V JOIDES Resolution; ODP Leg 151: North Atlantic/Arctic Gateways I, Norwegian-Greenland Sea and Arctic Ocean; Physical Properties Specialist.

Sept. 1992: ODP Leg 146, Part 2, shore-based study of ODP sediment cores from the Santa Barbara Basin, offshore California, participated as Physical Properties and Magnetism Specialist.

May to July 1992: R/V JOIDES Resolution; ODP Leg 144: Atolls and Guyots II, Western Pacific Ocean; ODP Staff Scientist.

June to Aug. 1990: R/V JOIDES Resolution; ODP Leg 132: Sumisu Rift and Shatsky Rise, northwest Pacific Ocean; ODP Staff Representative.

Feb. to April 1988: R/V JOIDES Resolution; ODP Leg 120: central Kerguelen Plateau, southern Indian Ocean; Physical Properties Specialist.

Dec. 1986 to Mar. 1987: R/V JOIDES Resolution; ODP Leg 113: Weddell Sea, Antarctica; Marine Scientist/Technician.

Aug. to Nov. 1986: R/V JOIDES Resolution; ODP Legs 104B and 105: trans-Atlantic Ocean crossing, Baffin Bay and Labrador Sea; Marine Scientist/Technician.

March to May 1984: M/V Bengal Seal: TAMU chemical oceanography piston coring cruise, Texas A&M University, Geochemical and Environmental Research Group.

Research Proposals and Funding History

UNL (2006-2014) Funded Grants and Cooperative Agreements

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| \$356,460 | NSF-GEO-PLR-AISS (ANT-1439774), 2014. WISSARD: Integrative Study of Marine Ice Stream Stability and Subglacial Habitats in West Antarctica; PI: John Priscu MSU; Montana State University subaward to UNL; F. Rack, PI; 09/01/14 - 08/31/16. |
| \$524,986 | NSF-GEO-PLR-AISS (ANT-1346249); 2013. Frank Rack, PI; Collaborative Research: Developing New Science and Technology for Subglacial Studies of the Whillans Ice Plain and West Antarctic Ice Sheet; 07/01/2013 - 06/30/2014. |
| \$76,205 | NSF-GEO-PLR-AISS (ANT-0838885, subaward agreement S0183481), 2012. Investigating (Un)Stable Sliding of Whillans Ice Stream and |

- Subglacial Water Dynamics Using Borehole Seismology; PI: Susan Schwartz, UCSC; UNL subaward for Mobile Hot Water Drill System; UNL PI: F. Rack; 06/01/12- 05/31/13.
- \$391,591 NASA-NNH11ZDA001N-ASTEP (Astrobiology Science and Technology for Exploring Planets), 2012. Britney Schmidt, Donald Blankenship, PIs, with William Stone, Peter Doran, Stacy Kim, Mark Skidmore, Frank Rack, Nathan Bramall, and Andrew Johnson, Co-Is; SIMPLE: Sub-ice Investigation of Marine and Planetary-analog Ecosystems; (UTIG prime award = \$4,948,192; UNL subaward = \$391,591), 04/01/2012 - 03/31/2015 [Funds to design and build biological version of Deep-SCINI remotely operated vehicle].
- \$299,725 NSF-OPP-AISS (ANT-1146554); 2011. Frank Rack, PI; EAGER: Handbook of Hot Water Drill System (HWDS) Design Considerations and Best Practices; 08/15/2011 - 07/31/2013.
- \$3,097,964 NSF-OPP-AISS (ANT-0839107 prime award; three subawards from MSU, NIU and UCSC to UNL), 2011. Frank Rack, PI; WISSARD Subglacial Access Drill - Phases I and II; 03/01/2011 - 09/30/2014; American Reinvestment and Recovery Act (ARRA) Funding.
- \$2,684,370 NSF OPP (ANT-0839108), 2009. Frank Rack, Steve Fischbein, David Harwood, Bruce Luyendyk and Terry Wilson, PIs; ANDRILL Coulman High Project -- Investigating Antarctica's Role in Cenozoic Global Environmental Change. 9/1/2009- 8/31/2012; American Reinvestment and Recovery Act (ARRA) Funding.
- \$694,094 NOAA Office of Education (NA09SEC4690009), 2009. Frank Rack, Louise Huffman, and Susan Lynds, PIs; Promoting Environmental Literacy Through Teacher Professional Development Workshops and Climate Change Student Summits (C2S2). 09/01/2009 - 08/31/2012.
- \$36,094 NSF-OCE (OCE-0602121 prime award; subaward A5246402) University of Minnesota subaward to UNL, 2009. Frank Rack and Joshua Reed, PIs; Collaborative Research: Corewall - Integrated Environment for Interpretation of Geoscientific Data from Sediment and Crystalline Cores; 10/01/2009 - 02/28/2011.
- \$112,991 NSF-EAR (EAR-502471 prime award; UMASS subaward 07-003984 to UNL), 2008. Frank Rack, UNL PI; Collaborative Research: Millennial Scale Arctic Climate Change for the Last 3.6 My: Scientific Drilling at Lake El'gygytgyn, NE Russia - Subaward for Project Management; 02/01/2008 - 05/31/2010.

\$13,310,123 NSF-OPP 0342484, 2005. David Harwood and Richard Levy, PIs; Frank Rack, recruited to be Executive Director (2006-2014) of the ANDRILL Science Management Office (administering/managing the NSF Cooperative Agreement with UNL); ANDRILL: Investigating Antarctica's Role in Cenozoic Global Environmental Change: Collaborative Research; 06/01/2005 - 12/31/2014 [Including no-cost extensions and supplementary funding provided by NSF-OPP in 2011].

Pre-UNL (1988-2006) Funded Grants and Contracts

\$500,000 Department of Energy/National Energy Technology Laboratory, 2004. Frank Rack, PI and Contract Officer's Technical Representative (COTR); JOI Phase II Cooperative Agreement with DOE/NETL; 06/01/2004 to 09/30/2006; supported hydrate characterization efforts on IODP Expedition 311.

\$90,000,000 NSF-ODP (MREFC activity), 2003. Frank Rack was lead JOI writer on this proposal; Initial Project Execution Plan (PEP) for the Scientific Ocean Drilling Vessel (SODV) conversion, acceptance and commissioning; 07/01/2006 to 06/30/2008; JOI hired a dedicated Project Manager for this activity.

\$1,999,259 NSF-OCE 0404581, 2003. 1201 Group (JOI and CORE), A Project Office to Coordinate Ocean Observing Activities; Frank Rack was lead JOI writer on this proposal; 01/01/2004 to 12/31/2006 (NSF 03-576).

\$680,000,000 NSF-OCE, 2003. Frank Rack named Contract Officer's Technical Representative (COTR); JOI Alliance IODP Systems Integration Contract (Solicitation DACS-03-00001); 10/01/2003 to 09/30/2013. [Rack executed this contract until July 2006 when vessel went off contract prior to shipyard overhaul; Rack moved to UNL position with ANDRILL at this time].

\$191,732 Two ChevronTexaco Gulf of Mexico Gas Hydrate Joint Industry Project grants to the JOI Alliance, 2002. Frank Rack, PI and Contract Officer's Technical Representative (COTR); RFP #2 – Generic Operations Plan for Safe Drilling and Coring Gas Hydrates, and RFP #3 – Generic Plan for Safe Gas Hydrate Core Handling and Analysis; 09/01/2002 to 08/31/2004.

\$1,438,202 Department of Energy/National Energy Technology Laboratory (DOE/NETL) grant to JOI, 2001. Frank Rack, PI and Contract Officer's Technical Representative (COTR) for Cooperative Agreement; In-Situ Sampling and Characterization of Naturally Occurring Marine Methane Hydrates Using the D/V JOIDES Resolution; 12/01/2001 to 06/30/2005."

- \$442,000 NSERC and AES Grant (in Canadian funds); Canadian Climate History System and Dynamics Program; 1995; Dr. Larry Mayer - Project Leader (Frank Rack funded as a Research Associate and Co-Investigator); High-resolution marine paleoclimatic time series; 01/01/1995 to 12/31/1998.
- \$150,000 NSERC Grant (in Canadian funds): Canadian JGOFS Program; 1993. Dr. Larry Mayer - Project Leader, (Frank Rack funded as a Post-doctoral Fellow); Temporal and spatial variability of carbonate sedimentation in the equatorial Pacific; 01/01/1993 to 12/31/1994."
- \$12,999 Joint Oceanographic Institutions/U.S. Science Support Program (JOI/USSSP) Grant #8341, 1992. Frank Rack, PI; Neogene records of biogenous and eolian sediment accumulation on western Pacific guyots: Paleoceanographic implications; 10/01/1992 to 08/31/1993.
- \$30,010 Joint Oceanographic Institutions/U.S. Science Support Program (JOI/USSSP) Grant #6774, 1991. Frank Rack, PI; Magnetic, sedimentologic, and physical property variations on Shatsky Rise, ODP Site 810: Paleoclimatic implications and land-sea correlations; 03/01/1991 to 08/31/1992.
- \$13,499 Joint Oceanographic Institutions/U.S. Science Support Program (JOI/USSSP) Grant #6185, 1988. Frank Rack, PI; Consolidation characteristics, microfabric, and geotechnical stratigraphy of sediments from the Kerguelen Plateau; 11/01/1988 to 01/31/1990.

University Academic Appointments

Aug. 2006 –

Present Associate Professor (tenure awarded in Spring 2007), Department of Earth and Atmospheric Sciences, University of Nebraska-Lincoln, City Campus

Jan. 1996 –

April 1998 Research Assistant Professor (full-time Graduate College faculty) in the Department of Geodesy & Geomatics Engineering, University of New Brunswick, Fredericton campus; NSERC funding.

Jan. 1995 –

Dec. 1995 Post-Doctoral Fellowship – University of New Brunswick - Climate System History and Dynamics (CSHD) Program; NSERC funding.

Summer

1994 Assistant Marine Research Scientist at University of Rhode Island (URI), Graduate School of Oceanography (GSO, collaborative research with URI/GSO faculty).

Jan. 1993 –

Dec. 1994 Post-Doctoral Fellowship – University of New Brunswick – Canada Joint Global Flux Study (C-JGOFS); NSERC funding.

**May 1989 –
Dec. 1998** Lecturer – Lee College, Baytown, Texas

Formal and Informal Teaching Activities

- 2006 –
Present** University of Nebraska-Lincoln - Taught seminars for Teacher Professional Development as part of NOAA-funded Environmental Literacy grant and NSF-funded ANDRILL EPO activities; also provided invited seminars for individual Energy Science and Earth and Atmospheric Sciences classes at UNL.
- 1998-2006** Joint Oceanographic Institutions (JOI), Inc. - Taught informal seminars on ocean drilling science and other topics, such as gas hydrates, ocean drilling technology, data visualization, and ocean mapping (individual instruction).
- 1993-1998** University of New Brunswick (1993-1998) – Taught 2-3 classes each year on subjects related to Paleoceanography and Physical, Acoustical and Geotechnical Properties of Marine Sediments, as well as presenting many Ocean Drilling Program science talks relating to Legs 146 (Part 2), 151 & 162 (with from 6 to 20 students in each class).
- 1989-1992** Texas A&M University (1989-1992) – Taught 3-4 classes each year on subjects relating to Special Topics in Ocean Drilling and Physical, Acoustical and Geotechnical Properties of Marine Sediments, as well as giving several Ocean Drilling Program science talks relating to Legs 113 & 114, Legs 199 & 120, Leg 132, and Leg 144 (from 6 to 25 students in each class).
- June 1989 –
Dec. 1989** Lee College (511 South Whiting Street, Baytown, TX 77520-4703) Associate Degree Program: Ferguson Unit (June to August, 1989) and Goree Unit (September to December, 1989) of Texas Department of Corrections – Taught Physical Geology class and laboratory (about 22 students in summer session; 28 students in fall session).

Students Advised and/or Mentored

Joint Oceanographic Institutions (1998-2006):

- 2003-2006 Arun Rao - EVL, University of Illinois at Chicago (MS Thesis)
2001-2002 Christina Reisselman – JOI/USSSP Intern (went on to graduate from Ph.D program at Stanford University)

- 2001-2002 Micha Nicolo – JOI/USSSP Intern (went on to graduate from Ph.D. program at Rice University)
- 2002-2003 Tony Goodman – JOI/USSSP Intern (went on to graduate from M.S. program at University of Michigan)
- 2002-2003 Jennifer Anziano – JOI/USSSP Intern (went on to graduate from M.S. program at Columbia University)
- 2003-2004 Anna Henderson – JOI/USSSP Intern (went on to graduate from Ph.D. program at University of Minnesota)
- 2003-2004 Matthew Neimitz – JOI/USSSP Intern (hired at JOI as Education & Outreach Program Associate; went on to graduate from M.S. program at Harvard University)
- 2004-2005 Andy Baker – JOI/USSSP Intern (now working for family business in Iowa)

University of New Brunswick (1993-1998):

- 1993-1998 Steve Bloomer (Ph.D. student in Ocean Mapping Group at UNB)
- 1993-1998 Tianhang Hou (Ph.D. student in Ocean Mapping Group at UNB)
- 1995-1996 Rustan Finndin (visiting M.S. student from Chalmers University, Gothenburg, Sweden; spent one year at UNB)
- 1997-1998 Antony Hewitt (visiting Ph.D. student from University of Victoria, B.C., Canada; sailed on ODP Leg 177)
- 1997-1998 Geraldine English (Senior undergraduate thesis project: "Interpretation of color in sediment cores collected from offshore Nova Scotia and Newfoundland, Eastern Canada")
- 1997-1999 Sean Galway (M.S. student in Ocean Mapping Group at UNB)

Texas A&M University (1988-1992):

- 1988-1990 Monty Lawyer (undergraduate student and lab technician)
- 1990-1992 Egon Weber (undergraduate student and lab technician)
- 1988-1989 Ingrid ten Wold (undergraduate student and lab technician)
- 1989-1990 Anita Bruno (undergraduate student and lab technician)
- 1990-1992 Ari Rozycki (undergraduate student and lab technician)
- 1988-1992 Yanchang Hu (Ph.D. student in geophysics; ODP student worker)
- 1988-1990 Jia-Yuh Liu (M.S. student in oceanography; ODP student worker)
- 1988-1991 Kyung-Hee Lee (M.S. student in geophysics; ODP student worker)
- 1988-1991 Khaled Mahmood (M.S. student in geology; ODP student worker)

Awards and/or University/Community Service

2011 –

Present Member, UNL representative to the Consortium of Ocean Leadership's Board of Trustees; Member, Ocean Drilling Program Subcommittee; Member, Ocean Observing Initiative Subcommittee

2006 –

Present Secretary, ANDRILL Science Committee

2004 –

- 2012** Member of IAPSO-IAHS Joint Commission on Groundwater-Seawater Interactions
- 1998 – 2003** Scientific Advisor to the International Marine Aspects of Past Global Changes (IMAGES) program
- 1996 – 1998** Chair, IMAGES Standing Committee on “New Technologies in Sediment Imaging” (NTSI); issued report: Tomorrow’s Technology Today: A survey of emerging trends in non-destructive measurements for the geosciences.
- 1992** Texas A&M University, College of Geosciences and Maritime Studies 4th Student Symposium – Student Coordinator – 71 students participated.
- 1991** Texas A&M University, College of Geosciences and Maritime Studies 3rd Student Symposium – Student Coordinator – 58 students participated.
- 1990** Texas A&M University, College of Geosciences and Maritime Studies 2nd Student Symposium – Rack was Student Coordinator – 53 students participated.
- 1989 – 1990** Awarded the Lamar Hayes Graduate Assistantship, Texas A&M University
- 1989** Texas A&M University, College of Geosciences and Maritime Studies 1st Student Symposium – Rack was Student Coordinator and Keynote Speaker – 45 students participated.
- 1984 – 1985** President, Oceanography Graduate Council, Texas A&M University

Membership in Professional Societies

- 2002 – Present** The Oceanography Society
- 1989 – Present** American Geophysical Union
- 1989 – Present** Geological Society of America
- 1992 – 1995** American Society of Photogrammetry and Remote Sensing
- 1989 – 1993** American Association of Petroleum Geologists

LIST OF PEER-REVIEWED PUBLICATIONS

Rack, F.R., Duling, D., Blythe, D., Burnett, J., Gibson, D., Roberts, G., Carpenter, C., Lemery, J., and, Fischbein, S., 2014. Developing a hot water drill system for the WISSARD Project: Part 1 – Basic drill system components and design. *Annals of Glaciology*, 55(68):285-297; doi:10.3189/2014AoG68A031.

Burnett, J., Rack, F.R., Blythe, D.S., Carpenter, C., Duling, D., Gibson, D., Roberts, G., Lemery, J., Fischbein, S., Swanson, P., Melby, A., (revised, pending acceptance, 2014) Developing a hot water drill for the WISSARD Project: Part 3 – Instrumentation and control systems, *Annals of Glaciology* 55(68):303-310; doi:10.3189/2014AoG68A039.

Tulaczyk, S., Mikucki, J.A., Siegfried, M.R., Priscu, J.C., Barcheck, C.G., Beem, L.H., Behar, A., Burnett, J., Christner, B.C., Fischer, A.T., Fricker, H.A., Mankoff, K.D., Powell, R.D., Rack, F., Sampson, D., Scherer, R.P., Schwartz, S.Y., and the WISSARD Science Team, 2014. WISSARD at Subglacial Lake Whillans, West Antarctica: scientific operations and initial observations. *Annals of Glaciology*, 55(65):51-58; doi:10.3189/2014AoG65A009.

Daly, M., Rack, F.R., and Zook, R. 2013. *Edwardiella andrillae*, a New Species of Sea Anemone from Antarctic Ice. *Public Library of Science (PLoS) One*, 8(12), e83476. doi:10.1371/journal.pone.0083476.

Huffman, L., Pennycook, J., Rack, F., and Youngman, B., 2012. The ELF (Environmental Literacy Framework with a Focus on Climate Change): Building Climate Change Science Knowledge Through Hands-on Activities. *The Earth Scientist*, 28(3): 14-18.

Cattadori, M., Florindo, F., and Rack, F. 2011. Short- and long-term effects in the school system of a research immersion experience for science educators: An example from ANDRILL (Antarctic Geological Drilling), *Geosphere*, 7(6):1331-1339; doi:10.1130/GES00678.1

Huffman, L.T., Levy, R.H., Lacy, L., Harwood, D.M., Berg, M., Cattadori, M., Diamond, J., Dooley, Dahlman, L., Frisch-Gleason, R., Hubbard, J., Lehman, R., Mankoff, K., Miller, V., Pound, K., Rack, F., Scotto di Clemente, G., Siegmund, A., Thomson, J., Trummel, E., Williams, R., and the ANDRILL MIS and SMS Projects Science Teams, 2008. ANDRILL's Education and Outreach Programme 2005-2008: MIS and SMS Project Activities during the 4th IPY. *Terra Antarctica*, 15(1-2):221-235.

Rothwell, R.G. and Rack, F.R., 2006. New techniques in sediment core analysis: an introduction. In: Rothwell, G., (Ed.), *New Techniques in Sediment Core Analysis*, Geological Society of London, Special Publication 267:1-29.

Chen, Q., Rack, F. and Balcom, B., 2006. Quantitative magnetic resonance imaging methods for core analysis. In: Rothwell, G., (Ed.), *New Techniques in Sediment Core Analysis*, Geological Society of London, Special Publication 267:193-207.

Freifeld, B.M., Kneafsey, T.J., and Rack, F.R., 2006. On-site geologic core analysis using a portable X-ray computed tomographic system. In: Rothwell, G., (Ed.), *New Techniques in Sediment Core Analysis*, Geological Society of London, Special Publication 267:165-178.

Ribes, A.C., Rack, F.R., Tsintzouras, G., Damaskinos, S., and Dixon, A.E., 2006. Applications of confocal macroscope-microscope luminescence imaging to sediment cores. In: Rothwell, G., (Ed.), *New Techniques in Sediment Core Analysis*, Geological Society of London, Special Publication 267:141-150.

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Unsuccessful Research Proposals (Declined or Withdrawn)

UNL (2008- 2014):

- \$34,999,946 NSF-OCE (ODP-1450537), 2014. PI: Rack, F., Co-PI, Arthurs, L., RE-IMAGINE USSSP: Reflective Evaluation on the Integrated Management and Global Implementation of a Networked Enterprise for the US Science Support Program of the IODP; 03/01/2015-02/28/2020; submitted to NSF-OCE on June 30, 2014 (NSF 14-549); declined.
- \$3,051,141 NSF-PLR-AES (ANT-1440262), 2014. PI: David Harwood; The Coulman High Project: Drilling beneath the Ross Ice Shelf to understand Antarctic ice sheet sensitivity to climatic and tectonic forcing in a high CO2 world; 06/01/2015-05/31/2020; submitted to NSF-PLR on February 7, 2014; declined.
- \$3,621,181 NSF-EAR 1338273; PI: Rack, F., Co-PI: Fischbein, S., Cooperative Agreement for Continental Scientific Drilling Coordination Office (CSDCO); submitted to NSF-EAR on February 22, 2013 (NSF 13-514); declined.
- \$999,996 NSF-EHR 1331744; PI: Rack, F., Co-PI: Arthurs, L., Climate Change Education Partnership Alliance (CCEPA) Office: Building an Effective CCEPA Network with a Common Identity; submitted to NSF-EHR on February 5, 2013 (NSF 13-513); declined.
- \$3,522,353 NSF-OCE 1327635; PI: Rack, F., Cooperative Agreement for Robust and Cost Effective Management of the IODP Science Support Office; submitted to NSF-OCE on January 22, 2013 (NSF 12-611); declined.
- \$17,989,171 NSF-OPP 1327636; PI: Rack, F., Co-PIs: Fischbein, S., McManis, J., Integrated Management of the Ice Coring and Drilling Program for the

- NSF-OPP: Establishment of an Ice Drilling Program Office and Ice Drilling Development Office; submitted to NSF-OPP on January 22, 2013 (NSF 13-503); declined.
- \$2,755,374 NSF-OCE 1327663; PI for UNL Subaward from Lamont-Doherty Earth Observatory of Columbia University: Rack, F., Operations and Management of the Drilling Vessel JOIDES Resolution for the International Ocean Discovery Program (IODP): Warehousing, Shipping/Receiving and Logistics Services (UNL Subaward); submitted to NSF-OCE on January 22, 2013 (NSF 12-612); declined.
- \$2,791,548 NSF-EHR 1316895; PI: Rack, F., Co-PIs: Arthurs, L., Huffman, L., Pytlík-Zillig, L., Teaching Scientific Thinking (SciThink) with an Innovative Instructional Model that Integrates Hot Button Topics and Evidence-Based Strategies in the Science Classroom; submitted to NSF-EHR on December 5, 2012 (NSF 11-588); declined.
- \$150,000 NSF-ENG 1312191; PI: Hawks, J., Co-PI: Rack, F., PFI-AIR: Translating a Robotic Surgery Manipulator to a Deep-Water Micro-ROV; submitted to NSF-ENG on November 5, 2012 (NSF 12-571); declined.
- \$3,996,048 NSF-OPP, PI: Ross Powell; UNL PI: F. Rack; Collaborative Research: Grounding Line Dynamics and Environments of the Ross Embayment (GLiDE); hot water drill system subaward to UNL; 06/01/13 - 05/31/18; declined.
- \$14,199,657 NSF OPP (ANT-1237630), submitted February 29, 2012. PI Bruce Luyendyk, co-PIs Rob DeConto, David Harwood, Frank Rack, Amelia Shevenell, [and submitted on behalf of International ANDRILL Partner nations - Brazil, Germany, Italy, New Zealand, South Korea, United Kingdom]; ANDRILL Coulman High Project: Drilling Beneath the Ross Ice Shelf to Uncover the Tectonic, Climatic, and Glacial History of Antarctica in a Warmer World; 9/1/2012 - 8/31/2017; declined.
- \$1,373,431 NSF MRI (ANT-1229666), submitted January 26, 2012. PI Rack, co-PIs Carrick Detweiler, Shane Farritor, David Harwood, Jeff Hawks; MRI: Development of a Deep-SCINI ROV for Sub-ice Research; 09/01/12 to 08/30/17; declined.
- \$1,211,065 NSF-OPP 09-536 (ANT-0944099), (submitted in 2009, pending award of Cooperative Agreement as of April 2012; withdrawn upon NSF request), Frank Rack, Bruce Luyendyk PIs; Collaborative Research: SHALDRIL Coring in the Southeastern Ross Sea, Antarctica: Early History of the West Antarctic Ice Sheet and Pre-Neogene Climate and Tectonics; 07/01/2009 to 06/30/2011; withdrawn.

- \$2,849,990 NSF-OCE 10-527, COSEE (NSF-OCE-1038941), submitted 2010. Frank Rack (PI), David Divins, Sean Higgins, Elizabeth Mulkerrin and Terrence Quinn (Co-PIs); COSEE: Polar Oceans and Paleoclimate - Scientist and Student Inquiry Informing Climate and Ocean Literacy; 10/01/10 to 09/30/2015; declined.
- \$5,986,331 NSF-MRI 09-561, submitted 2009. Frank Rack, David Harwood, James McManis, and Bob Zook, PIs; MRI-R2 Consortium: Development of an Antarctic Ice Shelf Environmental Survey and Oceanographic Capability (AISESOC); 01/01/2010 to 12/31/2013; declined.
- \$504,928 NSF 08-604 (NSF-OIA 0913441); submitted 2009; Frank Rack and Joseph Ortiz, PIs; CDI-Type II: Using Computational Thinking to Explore Polar Data and Images; 01/01/2010 to 12/31/12; declined.
- \$2,309,482 NSF-OPP 08-535 (ANT-0839127, \$856,165 UCSB; ANT-0838900, \$308,202 FSU; ANT-0839008, \$491,374 UNC; ANT-0839028, \$127,627 UNL; ANT-0838974, \$227,604 PSU; ANT-0839003, \$298,510 UMASS), submitted 2009. Bruce Luyendyk, Christopher Sorlien, Doug Wilson (UCSB), Sherwood Wise (FSU), Louis Bartek (UNC), Frank Rack (UNL), David Pollard (PSU) and Robert DeConto (UMASS), PIs; Collaborative Research: SHALDRIL Coring in the Southeastern Ross Sea, Antarctica: Early History of the West Antarctic Ice Sheet and Pre-Neogene Climate and Tectonics; 07/01/2010 to 06/30/2013; declined.
- \$1,429,263 NSF-OPP 07-549 (ANT-0739770; \$592,359 UCSB; ANT-0739327, \$290,304 FSU; ANT-0739688, \$457,433 UNC; ANT-0739754, \$89,167 UNL); submitted in 2008; Bruce Luyendyk, Christopher Sorlien, Doug Wilson (UCSB), Sherwood Wise (FSU), Louis Bartek (UNC), and Frank Rack (UNL), PIs; Collaborative Research: SHALDRIL Coring in the Southeastern Ross Sea, Antarctica: Early History of the West Antarctic Ice Sheet and Pre-Neogene Climate and Tectonics; 07/01/2009 to 06/30/2012; declined.