

Biographical Sketch of
THOMAS C. ROYER

Born:

Battle Creek, Michigan

Education:

Ph.D. Texas A&M University, 1969, Physical Oceanography

M.S. Texas A&M University, 1966, Physical Oceanography

A.B. Albion College, 1963, Physics and Mathematics

Member:

Professional

American Association for the Advancement of Science

American Geophysical Union

American Meteorological Society

National Marine Educators Association

The Oceanography Society, Charter Life Member

Honorary

Sigma Xi

Special Research Interests:

Mesoscale ocean circulation with emphasis on sub-polar gyres; coastal boundary currents.

Experience:

Positions

Acting Chair, Department of Ocean, Earth and Atmospheric Sciences, Old Dominion University, 2002-3

Slover Professor of Oceanography & Eminent Scholar, Old Dominion University, 1996 -

Professor Emeritus, University of Alaska, 1997-

Professor, University of Alaska, 1981-1996

Chancellor's Faculty Associate for Research, University of Alaska Fairbanks, 1992-1993

Associate Editor, Journal of Geophysical Research, 1983-1989

Sabbatical Leave from University of Alaska, 1977-1978

Visiting Associate Professor, Texas A&M University, 1977-1981

Associate Professor, University of Alaska, 1974-1981

Assistant Professor, University of Alaska, 1969-1974

Research Assistant (Physical Oceanography), Texas A&M University, 1966-1969

Research Assistant, Woods Hole Oceanographic Institution, 1967

Research Fellow (Physical Oceanography), Texas A&M University, 1964-1966

Research Assistant, Woods Hole Oceanographic Institution, 1964

Teaching

Physical Oceanography Core Course - Fall 1999, 2000

Physical Oceanography Senior Level – Fall 1997, 1998, 2000, 2001

Sampling Techniques in Physical Oceanography - Spring 1997, 1998, 1999, 2000, 2001

Seminar: Coastal Processes – Spring 1994

Shipboard Techniques – Spring 1985, 1986

Marine Hydrodynamics – Fall 1975

Special topics: Ocean Circulation – Spring 1974

Seminar: Time Series – Spring 1974

Seminar: Air-Sea Interaction – Spring 1973

Introduction to Physical Oceanography/Lab – Fall 1970, 1971, 1972, 1974, 1976, 1978, 1979, 1981, 1983, 1985,
1990, 1991, 1994

Waves and Tides – Spring 1970

Consulting

Consultant to Canada Foundation for Innovation
Consultant to Anchorage Museum of History and Art
Consultant to the National Science Foundation
Consultant to CRC Press
Consultant to Exxon Production Research Company
Consultant to Alyeska Pipeline Service Company
Consultant to Greenhorne & O'Mara, Inc.
Consultant to ARCO Marine

Service

Member, Science and Technology Committee (STAC), Exxon Valdez Oil Spill (EVOS) Council, 2003-
Co-Chair, Oil Spill Recovery Institute (OSRI) Modeling Workshop, June 2003
Science Panel Member, North Pacific Research Board, 2003-
Review Panel Member, National Science Foundation, Clivar Program, June 2002
Review Panel Member for Canada Foundation for Innovation, Project Neptune, March 2002.
Guest Editor, Deep-Sea Research Topical Studies in Oceanography, Southeast Bering Sea Carrying Capacity, 2002.
Member, PICES Technical Committee on Data Exchange (TCODE), U.S. Representative, 1996-
Review Panel Member, National Academy of Sciences, Associateship Program, 1981-
Member, U. S. Northeast Pacific GLOBEC Executive Committee, 2000-2004
Member, Science and Technology Committee of Oil Spill Recovery Institute, Prince William Sound Science Center, 1994- .
Member, National Research Council Committee, Review of Gulf of Alaska Ecosystem Monitoring Program, 2000-2003.
Vice Chair, UNOLS, 1996-2000
Treasurer, The Oceanography Society, 1997-2000
Member, Coastal and Marine Sector work group of the National Assessment Synthesis Team of the National Climate Assessment. NOAA, 1998-2000
Co-Chair, NSF Workshop on Core physical oceanography, 1997-8.
Member, Scientific Steering Committee, Coastal Ocean Processes (CoOP), 1997-1999
Member, Ocean Studies Board, National Research Council, 1994-1997
Member, North Pacific Marine Science Organization, PICES, Working Group #6, Subarctic Gyre, 1993-1995
Member, The Committee on the Bering Sea Ecosystem, National Research Council, 1993-1995
Member, UNOLS Advisory Council, 1993-1996
Chairman, Arctic Research Vessel subcommittee, UNOLS Fleet Improvement Committee, 1992-1996
Chairman, Board of Editors, American Geophysical Union, 1990-1992
Member, Research Vessel Ice Breaker (*N. B. Palmer*) Oversight Review Committee, NSF, Division of Polar Programs, 1990-1992
Member, UNOLS Fleet Improvement Committee, 1989-1995
Co-Chairman, WOCE Hydrographic Implementation Panel (Repeat hydrography), 1989-
Member, OCS Advisory Board Scientific Committee, MMS, Department of Interior, 1989-1995
Member, Science Review Board, Alaska Modeling Studies, MMS, 1989-1992
Member, Publications Committee, American Geophysical Union, 1988-1992
Chairman, Small Ice Capable Research Vessel subcommittee of UNOLS Fleet Improvement Committee, 1988-1992
Member, Steering Committee, NSF Coastal Physical Oceanography Initiative, 1988-1991
Member, Advisory Committee for Ocean Sciences, National Science Foundation, 1986-1989
Associate Editor, *Journal of Geophysical Research*, 1983-1989
Chairman, National Science Foundation, Office of Facilities and Ships, Oversight Review subcommittee, 1987
Review Panel Member, National Science Foundation, Ocean Sciences, Physical Oceanography, 1983-1986

Honors

Received Edith R. Bullock Award for Excellence, University of Alaska, (\$15,000 cash award) 1993
Received Editors Award for Service to *Journal of Geophysical Research Oceans*, American Geophysical Union, 1990

Received a creativity extension award from the National Science Foundation, 1986-1988

Publications:

- Schroeder, I., C.E. Grosch and T.C. Royer. 2003. NCEP-NCAR Reanalysis: Comparison with Observations from the Coast of Alaska and the Gulf of Alaska, Submitted to *Bulletin Amer. Meteorol. Assoc.*
- Weingartner, T.J., S.L. Danielson and T.C. Royer. 2003. Freshwater Variability and Predictability in the Alaska Coastal Current, Submitted to *Deep Sea Res.*
- Royer, T.C., 2003. Hydrographic Responses of the Coastal Gulf of Alaska to Seasonal and Interannual Forcing, Submitted to *Deep Sea Res.*
- Sarkar, N, T. C. Royer, C. E. Grosch. 2002. Hydrographic Variability on Decadal and Interdecadal Scales in the Northern Gulf of Alaska, Submitted to *Jour. Geophys. Res.*
- Weingartner, T. B. Finney, L. Haldorson, P. Stabeno, J. Napp, S. Strom, R. Brodeur, M. Dagg, R. Hopcroft, A. Hermann, S. Hinckley, T. Royer, T. Whitledge, K. Coyle, T. Kline, E. Lessard, D. Haidvogel, E. Farley and C. Lee. 2002. The Northeast Pacific GLOBEC Program: Coastal Gulf of Alaska. *Oceanography Magazine* 15:30-35.
- Scavia, D., J.C. Field, D. F. Boesch, R. W. Buddemeier, V. Burkett, D. R. Cayan, M. Fogarty, M. A. Harwell, R. W. Howarth, C. Mason, D. J. Reed, T. C. Royer, A. H. Salienger, and J. G. Titus. 2002. Climate Change Impacts on U.S. Coastal and Marine Ecosystems. *Estuaries*, 25: 149-164.
- Hickey, B. M. and T. C. Royer. 2001. California and Alaska Currents. In: *Encyclopedia of Ocean Sciences*. Academic Press. London,
- Royer, T.C., C. E. Grosch, and L. A. Mysak. 2001. Interdecadal Variability of Northeast Pacific Coastal Freshwater and its implications on Biological Productivity. *Progress in Oceanography*, 49:95-111.
- Li, C.-Y., A. Valle-Levinson, L. Atkinson, and T. Royer. 2000. Inference of tidal elevation in shallow water using a vessel-towed ADCP. *J. Geophys. Res.*, 105: 26,225-26,236.
- Woody, C. E. Shih, J. Miller, T. Royer, L. P. Atkinson and R. S. Moody. 2000. Measurements of salinity in the coastal ocean: A review of requirements and technologies. *Marine Technology Society Journal*: 34:2, 26-33.
- Royer, T. C. & Thomas Weingartner. 1999. Coastal hydrographic responses in the northern Gulf of Alaska to 1997-98 ENSO event. In: *Proceedings of The 1998 Science Board Symposium on The Impacts of the 1997/98 El Niño Event on the North Pacific Ocean and Its Marginal Seas*, PICES Scientific Report N10, 89-92.
- Royer, T. C. and W. R. Young. 1999. Exciting, Unsettling Changes in Store for Physical Oceanography, *EOS Transactions, Amer. Geophys. Union*, 80:394-395.
- Royer, T. C. 1998. Coastal Ocean Processes in the Northern North Pacific. In: *The Sea*, Vol. 11, Edited by K. H. Brink and A. R. Robinson, John Wiley & Sons, New York, 395-414.
- Royer, T. C. and P. J. Stabeno, 1998. Polar Ocean Boundaries, In: *The Sea*, Vol. 11, Edited by K. H. Brink and A. R. Robinson, John Wiley & Sons, New York, 69-78.
- Valle-Levinson, A., C. Li, T. Royer and L. Atkinson. 1998. Flow patterns at the Chesapeake Bay entrance. *Continental Shelf Research*, 18:1157-1177.
- Bailey, K. M., S. A. Macklin, R. K. Reed, R. D. Brodeur, W. J. Ingraham, J. F. Piatt, M. Shima, R. C. Francis, P. J. Anderson, T. C. Royer, A. B. Hollowed, D. A. Somerton and W. S. Wooster. 1995. ENSO events in the northern Gulf of Alaska and effects on selected marine fishes. *CalCOFI Rep.* 36:78-96.
- Elsner, R., V. Alexander, and T. C. Royer. 1995. Meeting the challenge, research vessel support in the Arctic. *Mar. Tech. Soc. J.* 28:28-33.
- Muter, F., B. Norcross, and T. C. Royer. 1995. Do cyclic temperatures cause cyclic fisheries? *Can. Spec. Publ. Fish. Aquat. Sci.* 121:119-129.
- Parker, K. S., T. C. Royer, and R. B. Deriso. 1995. High latitude climate forcing and tidal mixing by the 18.6-year lunar nodal cycle and low frequency recruitment trends in Pacific halibut (*Hippoglossas stenolepis*). *Can. Spec. Publ. Fish. Aquat. Sci.* 121:447-459.
- Niebauer, H. J., T. C. Royer, T. J. Weingartner. 1994. Circulation in Prince William Sound, Alaska. *J. Geophys. Res.* 99:14,113-14,126.
- Kowalik, Z., J. L. Luick, and T. C. Royer. 1994. On the dynamics of the Alaska Coastal Current. *J. Cont. Shelf Res.* 14:831-845.
- Royer, T. C. 1993. High latitude oceanic variability associated with the 18.6 year nodal tide. *J. Geophys. Res.* 98:4,639-4,644.
- Musgrave, D. L., T. J. Weingartner, and T. C. Royer. 1992. Circulation and hydrography in the northwestern Gulf of Alaska. *Deep-Sea Res.* 39:1,499-1,519.

- Royer, T. C., J. A. Vermersch, T. J. Weingartner, H. J. Niebauer, and R. D. Muench. 1990. Ocean circulation influencing the *Exxon Valdez* oil spill. *Oce.* 3:2, 3-10.
- Royer, T. C. 1989. Upper ocean temperature variability in the Northeast Pacific Ocean: Is it an indicator of global warming? *J. Geophys. Res.* 94:18,175-18,183.
- Ahlnäs, K. and T. C. Royer. 1989. Application of satellite visible band data to high latitude oceans. *Remote Sens. Environ.* 28:85-93.
- Ahlnäs, K. and T. C. Royer. 1989. Evaluation of the ability of various remote sensors to map distributions of suspended sediments in the Gulf of Alaska. In: V. V. Salomonson (ed.), *Advances in Space Research*, Proc. COSPAR XXVII. 9:185-190.
- Johnson, W. R., T. C. Royer, and J. L. Luick. 1988. On the seasonal variability of the Alaska Coastal Current. *J. Geophys. Res.* 93(C10):12,423-12,437.
- Ahlnäs, K., T. C. Royer, and T. H. George. 1987. Multiple dipole eddies in the Alaska Coastal Current detected with Landsat thematic mapper data. *J. Geophys. Res.* 92(C12):13,041-13,047.
- Luick, J. L., T. C. Royer, and W. R. Johnson. 1987. Coastal atmospheric forcing in the Gulf of Alaska. *J. Geophys. Res.* 92:3,841-3,848.
- Royer, T. C. and W. J. Emery. 1987. Circulation in the Gulf of Alaska, 1981. *Deep-Sea Res.* 34:1,361-1,377.
- Royer, T. C. 1986. Temperature fluctuations in the Northeast Pacific from 1954 to 1985 in response to El Niño/Southern Oscillation and longer period forcing. *Intl. N. Pac. Fish. Comm. Bull.* 47:203-208.
- Johnson, W. R. and T. C. Royer. 1986. A comparison of two current meters on a surface mooring. *Deep-Sea Res.* 33:1,127-1,138.
- Emery, W. J., T. C. Royer, and R. W. Reynolds. 1985. The anomalous tracks of North Pacific drifting buoys 1981 to 1983. *Deep-Sea Res.* 32:315-347.
- Royer, T. C. and W. J. Emery. 1984. Circulation in the Bering Sea, 1982-1983, based on satellite tracked drifter observations. *J. Phys. Ocean.* 14:1,914-1,920.
- Xiong, Q. and T. C. Royer. 1984. Coastal temperature and salinity observations in the northern Gulf of Alaska, 1970-1983. *J. Geophys. Res.* 89:8,061-8,068.
- Royer, T. C., et al. 1983. Physical oceanography of continental shelves: Northern Gulf of Alaska. *Rev. Geoph. and Space Phys.* 21(5):1,149-1,181.
- Royer, T. C. 1983. Observations of the Alaska Coastal Current. In H. Gade, A. Edwards and H. Svendsen (eds.), *Coastal Oce.* Plenum Pub. Corp. pp. 9-30.
- Royer, T. C. 1982. Coastal fresh water discharge in the Northeast Pacific. *J. Geophys. Res.* 87:2,017-2,021.
- Niebauer, H. J., J. Roberts, and T. C. Royer. 1981. Shelf break circulation I the northern Gulf of Alaska. *J. Geophys. Res.* 86:4,231-4,242.
- Royer, T. C. 1981. Baroclinic transport in the Gulf of Alaska. Part II. Fresh water driven Alaska Coastal Current. *J. Mar. Res.* 39:251-266.
- Royer, T. C. 1981. Baroclinic transport in the Gulf of Alaska. Part I. Seasonal variations of the Alaska Current. *J. Mar. Res.* 39:239-250.
- Livingstone, D. and T. C. Royer. 1980. Eddy propagation determined from rotary spectra. *Deep-Sea Res.* 27A:823-835.
- Livingstone, D. and T. C. Royer. 1980. Observed surface winds at Middleton Island, Gulf of Alaska and their influence on the ocean circulation. *J. Phys. Ocean.* 10:753-764.
- Royer, T. C., D. V. Hansen, and D. J. Pashinski. 1979. Coastal flow in the northern Gulf of Alaska as observed by dynamic topography and satellite-tracked drogued drift buoys. *J. Phys. Ocean.* 9:785-801.
- Royer, T. C. 1979. On the effect of precipitation and runoff on coastal circulation in the Gulf of Alaska. *J. Phys. Ocean.* 9:555-563.
- Royer, T. C. 1978. Ocean eddies generated by seamounts in the North Pacific. *Science* 199:1,063-1,064.
- Roberts, J. and T. C. Royer. 1977. Comparison of storm wave spectra from the Gulf of Alaska. *Dt. Hydrogr. Z.* 30:9-19.
- Royer, T. C. and R. D. Muench. 1977. On the ocean temperature distribution in the Gulf of Alaska, 1974-1975. *J. Phys. Ocean.* 7:92-99.
- Royer, T. C. 1976. A note comparing historical sea surface temperature observations at Ocean Station P. *J. Phys. Ocean.* 6:969-971.
- Royer, T. C. 1975. Seasonal variations of waters in the northern Gulf of Alaska. *Deep-Sea Res.* 22:403-416.
- Royer, T. C. and R. O. Reid. 1971. The detection of secondary tsunamis. *Tellus* 23(2):136-142.
- Royer, T. C. 1969. The detection of a multiple tsunami phenomenon, Ph.D. Dissertation, Texas A&M University.

Royer, T. C. and R. O. Reid. 1966. Gravity waves in a rotating basin normal modes, Tech. Report 6627T, Texas A&M University.

National Reports:

- Roman, M. et al. 2002. A Century of Ecosystem Science: Planning for Long-term Research in the Gulf of Alaska, Polar Research Board, National Research Council, National Academy Press, Washington, D. C. 205 pp.
- Boesch, D. F., J. C. Field, D. Scavia, R. W. Buddemeier, V. Burkett, D. R. Cayan, M. Fogarty, M. A. Harwell, R. W. Howarth, C. Mason, R. Park, L. Pietrafesa, D. J. Reed, T. C. Royer, A. H. Salienger, M. Spanger, and J. G. Titus. 2000. The Potential Consequences of Climate Variability and Change on Coastal Areas and Marine Resources Sector Team, U.S. National Assessment of the Potential Consequences of Climate Variability and Change, U. S. Global Climate Research Program, NOAA Coastal Ocean Program Decision Analysis Series No. #21, NOAA Coastal Ocean Program, Silver Spring, MD. 163 pp.
- Woody, C., E. Shih, J. Miller, T. Royer, L. Atkinson and R. Moody. 1999. Salinity Measurements in the Coastal Ocean, Workshop Review, September 1998, CCPO Technical Report No. 99-01, Old Dominion University, Norfolk, VA.
- Fine, R. *et al.* 1998. Global Ocean Science, Toward an Integrated Approach, Ocean Studies Board, National Research Council, National Academy Press, Washington, DC, 165 pp.
- Royer, T. C. and W. R. Young. The Future of Physical Oceanography; Report of the APROPOS Workshop, Monterey, CA, 15-17 December 1997, 255 pp.
- Francis, R. *et al.* 1996. The Bering Sea Ecosystem. Polar Research Board, National Research Council, 307 pp.
- Boesch, D. *et al.* 1994. Priorities for Coastal Ecosystem Science. Ocean Studies Board, National Research Council, 106 pp.
- Vincent, C.L., T. C. Royer and K. H. Brink. 1993. Long Time Series Measurements in the Coastal Ocean: A Workshop. Coastal Ocean Processes (CoOP) Report #3, WHOI-93-49, 96 pp.

Research Grants:

- National Science Foundation, Major Research Instrumentation (MRI), Equipment for R/V Fay Slover, 2002-2005.
- National Oceanic and Atmospheric Administration, Climate Variability as a Potential Influence on Steller's Sea Lion Populations. 2001-2003.
- National Science Foundation, Development and Testing of an Antifouling Method for the Measurement of Salinity, 2000-2003.
- National Science Foundation, GLOBEC: Gulf of Alaska Long Term Monitoring Program, 2000-2005.
- National Science Foundation/National Oceanic and Atmospheric Administration, GLOBEC Studies in the NE Pacific, subcontract from the University of Alaska, 1997-2001.
- National Oceanic and Atmospheric Administration, Oceanographic Time Series in the Subarctic North Pacific Ocean, 1994-1997.
- National Science Foundation, P17N: A WOCE Hydrographic section in the Northeast Pacific Ocean, 1992-1997.
- National Oceanic and Atmospheric Administration, Oceanographic Time Series in the Subarctic North Pacific Ocean, NA90AA-D-AC805 (1990-1994).
- National Aeronautics and Space Administration, Application of SAR and AVHRR imagery to polynyas of the Bering and Chukchi Seas (1991-1993).
- National Science Foundation, Gulf of Alaska Recirculation Study GARS, ABR, OCE9012866 (1990-1992).
- National Science Foundation, Gulf of Alaska Recirculation Study GARS, OCE8608125 (1986-1990).
- National Science Foundation, Creativity Extension of OCE8208306 (1986-1988).
- National Science Foundation, Alaska Coastal Current Study, ABR, OCE8614549 (1986-1988).
- National Aeronautics and Space Administration, Coastal and Alaska Gyre Circulation as Determined by Thematic Mapper Data NAS5-28762 (1985-1988).
- National Science Foundation, Meteor Burst Communication of Meteorological Data OCE8305739 (1983-1985).
- National Science Foundation, Alaska Coastal Current Study OCE 8208306 (1982-1986).
- National Science Foundation, Recirculation in the North Pacific Subarctic Gyre OCE8018386 (1981-1983).
- National Oceanic and Atmospheric Administration Contract for environmental assessment of the continental shelf of the Gulf of Alaska (1974-1981).
- National Science Foundation, IDOE Grant OCE76-80046, NORPAX, Circulation and heat content fluctuations in the North Pacific subarctic gyre and their atmospheric coupling (1976-1979).

National Science Foundation - Office of Naval Research, IDOE Grant GX-42354 (NORPAX), Large Scale Air-Sea Interaction in the Gulf of Alaska and Bering Sea (1974-1977).
National Science Foundation Grant GA-31534, Evaluation of Long Period Surface Waves in the Gulf of Alaska (1971-1975).
Office of Naval Research Grant N00014-67-A-0314-0002, Studies of the water of the Gulf of Alaska (1969-1973).

Presentations: (since 1996)

Advances in physical oceanography in the past decade. Ocean Studies Board 10th Anniversary Meeting, Woods Hole, MA, June 1996.
Opening remarks and charge to workshop. NSF workshop on the future of physical oceanography, APPROPOS, Monterey, CA Dec.1997. Co-Chair of workshop
Interannual hydrographic variability in the Gulf of Alaska, presented at the Ocean Sciences Meeting, AGU San Diego, Feb. 1998.
North Pacific getting less salty, Arctic Science Journeys, Alaska Public Radio, 17 August 1998.
Salinity - Why Bother?, Presented at the NOAA Workshop on Salinity Measurements in the Coastal Ocean, Hampton, VA September, 1998.
Coastal Hydrographic Responses in the northern Gulf of Alaska to the 1997-98 ENSO Event, Presented at the PICES Seventh Annual Meeting, Fairbanks, October 1998.
GLOBEC Studies in the Northern Gulf of Alaska, CCPO Seminar, November 1998
Seasonal, decadal, and ENSO responses of the upper layers in the northern Gulf of Alaska. Presented at the International Union of Geodesy and Geophysics, Birmingham, England, July 1999
North Pacific Less Salty, radio interview, contribution to the Ocean Report, an education outreach effort sponsored by the Pew Charitable Trusts that airs daily on more than 200 radio stations. The program with Peter Benchley aired on 28 August 1999.
Decadal and ENSO variability in the North Pacific, Eighth Annual PICES meeting, Valdivostok, Russia, October 1999
Introductory remarks and welcome, DESCEND Workshop, NSF, Arlington, VA 25 October 1999
Low Frequency Coastal Processes in the Gulf of Alaska, seminar at the University of Maryland, Horn Point Labs, 17 November 1999.
Atkinson, L.P., T.C. Royer, C.E. Grosch, T. Sugimoto and T.B. Curtin. Continental Runoff and Ocean Margin Fluxes. American Geophysical Union Ocean Sciences Meeting, San Antonio, TX, January 2000.
Coyle, K. O., A. J. Paul, T. J. Weingartner, T. C. Royer, A. I. Pinchuk, D. A. Stockwell, T. E. Whitlege, L. J. Halderson, J. L. Boldt, and R. H. Day. The Distribution of Zooplankton, Nutrients, Chlorophyll, Fish, and Seabirds Relative to Major Water Masses and Current Regimes on the Shelf of the Northern Gulf of Alaska During 1998 and 1999. American Geophysical Union Ocean Sciences Meeting, San Antonio, TX, January 2000.
Danielson, S.L., T. J. Weingartner and T. C. Royer. Structure and Seasonal Variability of the Alaska Coastal Current. American Geophysical Union Ocean Sciences Meeting, San Antonio, TX, January 2000.
Irving, G. O., T. J. Weingartner, T. C. Royer, S. R. Okkonen and D. L. Musgrave. Freshwater Variability on the Gulf of Alaska Shelf. American Geophysical Union Ocean Sciences Meeting, San Antonio, TX, January 2000.
Schroeder, I. D., B. L. Lipphardt, T. C. Royer, A. D. Kirwan and C. E. Grosch. Normal Mode Analysis of North Pacific Sea Surface Temperatures. American Geophysical Union Ocean Sciences Meeting, San Antonio, TX, January 2000.
Sarkar, N. and T. C. Royer. Decadal Mixed Layer Variability in the northern Gulf of Alaska. American Geophysical Union Ocean Sciences Meeting, San Antonio, TX, January 2000.
Royer, T.C. Forcing of temperature and salinity in the northern Gulf of Alaska on ENSO, decadal, and interdecadal time scales. Beyond El Nino: A conference on Pacific climate variability and marine ecosystem impacts from the tropics to the Arctic. San Diego, CA 23-26 March 2000
Royer, T.C. Low frequency coastal processes in the Gulf of Alaska. Seminar presented at SUNY Stony Brook, 31 March 2000.
Craig Lingle, Wendell Tangborn, Keith Echelmeyer, and T. C. Royer. Do Negative Glacier Mass Balances Affect the Alaska Coastal Current? at the AAAS Arctic Science Conference, 21-24 Sept. '00, in Whitehorse, Yukon, Canada.
Royer, T.C. "GLOBEC Studies in the Northeast Pacific: Is it time to begin trading in Salmon futures?" CCPO Seminar, October 2, 2000.
Royer, T. C. and C. E. Grosch. Analysis of Low Frequency Signals in the Northeast Pacific Coastal Freshwater

- Discharge, Salinity, Temperature and Salmon Production Using Wavelet Techniques. Presented at the Ninth Annual Meeting of PICES, North Pacific Marine Science Organization, Hakodate, Japan, 25 October 2000.
- Royer, T.C. "The Development and Testing of an Antibiofouling Method for the Measurement of Salinity" at the Virginia Marine Science Museum, Virginia Beach, Virginia, November 13, 2000.
- Royer, T.C. Presentation to Virginia Beach City Council on the Importance of Research for the Phase III addition to the Virginia Marine Science Museum, February 7, 2001.
- Royer, T. C. and C. E. Grosch. Long Period Signals in the Alaskan Salmon Catch, Northeast Pacific Coastal Freshwater Discharge, Salinity, Temperature, Northern Oscillation Index (NOI_x) and Pacific Decadal Oscillation (PDO). Presented at the 10th Annual Meeting of PICES, North Pacific Marine Science Organization, Victoria, Canada, 11 October 2001.
- Sarkar, N., T.C. Royer, C.E. Grosch. Mixed Layer Depth Variability on Decadal and Interdecadal Scales in the Northern Gulf of Alaska (# OS110-01) Presented at the Ocean Sciences Meeting, Honolulu, Hawaii, February 2002.
- Royer, T.C. Background of R/V Fay Slover. Presented at the R/V Fay Slover christening, Norfolk, VA, October 1, 2002
- Royer, T.C. Review of the GEM program. Presented to the US Global Change Scientific steering Committee Meeting VII, Ann Arbor, Michigan October 9, 2002 (Invited).
- Royer, T. C., C. E. Grosch and N. Sarkar, Ocean Climate Conditions during GLOBEC Northeast Pacific Program (NEP) Long Term Observation Program (LTOP), (Paper 17P115) presented at the GLOBEC 2nd Open Science Meeting, 15-18 October 2002, Qingdao, China.
- Royer, T.C., Chester E. Grosch and Nandita Sarkar, Ocean Climate Conditions during GLOBEC Northeast Pacific Program (NEP) Long Term Observation Program (LTOP), (Paper S10-257) presented at the 11th Annual PICES meeting, 18-26 October 2002, Qingdao, China.
- Royer, T. C., Coastal Processes in the Northeast Pacific Ocean and their Potential Impacts on Global Water Budgets, Department of Ocean, Earth and Atmospheric Sciences, Old Dominion University seminar, 14 November 2002.
- Sarkar, N. C.E. Grosch and T.C. Royer .Mixed layer depth variability in the Gulf of Alaska. Presented at the Marine Science in the Northeast Pacific Meeting, Anchorage, Alaska, January 2003
- Schroeder, I, C.E. Grosch and T.C. Royer. Annual spatial variability of the hydrographic structure along the Seward Line. Presented at the Marine Science in the Northeast Pacific Meeting, Anchorage, Alaska, January 2003.
- Royer, T.C., C.E. Grosch and I. Schroeder. Validation of Climate Variability in the Northeast Pacific and Bering Sea. Presented at the Marine Science in the Northeast Pacific Meeting, Anchorage, Alaska, January 2003.
- Royer, T.C., C.E. Grosch, and N. Sarkar. Ocean Climate Conditions during GLOBEC Northeast Pacific Program (NEP) Long Term Observation Program (LTOP), Presented at the Marine Science in the Northeast Pacific Meeting, Anchorage, Alaska, January 2003.
- Royer, T.C. R/V Fay Slover, Presented to ODU Board of Visitors, January 2003.
- Royer, T.C. Oceanography of the North Pacific, Invited presentation to the North Pacific Research Board (NPRB), Anchorage, Alaska. 28 March 2003.

Long Range Objectives:

The measurement, description and understanding of mechanisms influencing the circulation of the sub-polar gyres with immediate attention directed to the North Pacific. The interactions of this circulation with its boundaries; the atmosphere and coast.

14 July 2003