

Curriculum Vitae

(1) RANA A. FINE

Rosenstiel School of Marine and Atmospheric Science
Division of Marine and Atmospheric Chemistry
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(2) Education

B.A. Mathematics New York University, 1965
M.A. Mathematics University of Miami, 1973
Ph.D. Marine Science University of Miami, 1975

(3) Positions Held

Systems Analyst for the Service Bureau Corporation of Miami, a subsidiary of IBM Corporation, 1965-69
Postdoctoral Research Associate, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 1976-77
Research Assistant Professor, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 1977-80
Research Associate Professor, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 1980-84
Associate Program Director, Ocean Dynamics, National Science Foundation, 1981-83
Associate Professor, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 1984-90
Chairperson, Division of Marine and Atmospheric Chemistry, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 1990-94
Professor, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 1990-present

(4) Editorial Service

Associate Editor of *Journal of Geophysical Research-Oceans* 1983-89

(5) Committee Service External to the University of Miami

American Association for the Advancement of Science, Atmospheric and Hydrospheric Sciences Section Executive Committee, 2001-04
American Geophysical Union:
Union Special Committee on Section Structure, 2001-02
Program Chairperson, Ocean Sciences Section, Spring Meetings, 1982, 1987;
Fall Meeting, 1986; Ocean Sciences Meeting, 1988
Macelwane Award Committee, 1985-86
Publications Committee Member, 1994-96
Ocean Sciences Section Fellows Committee, 1994-00
Chair, Search Committee, *Journal of Geophysical Research-Oceans*, 1998-00
Ocean Sciences Section Executive Committee, 1994-present
Ocean Sciences Section Awards Committee, 2000-present
Revelle Medal Committee, 2002-04
Bowie Medal Committee, 2004-06
Chair, Bowie Medal Committee, 2006-present
American Meteorological Society:
Governing Council, 2001-04
Fellows Committee, 2004-06

Nominating Committee, 2006-present
CLIVAR Co-Chair Repeat Hydrography Panel, 2001-03
Inter-American Institute for Global Change Research, Scientific Advisory Committee, 2004-present
International Association of Physical Sciences of the Ocean (IAPSO), Albert Medal Committee, 2006-present
Mentoring Physical Oceanography Women to Increase Retention, 2004-present.
National Oceanic and Atmospheric Administration:
 Atlantic Climate Change Program Scientific Working Group, 1994-97
 Climate and Global Change Advisory Panel, 2000-04
National Research Council:
 Geophysics Study Committee, 1989-92
 Tropical Ocean Global Atmosphere Oversight Panel, 1990-93
 Ocean Studies Board (OSB), 1992-98
 Chair, Major Ocean Programs Committee – OSB, 1996-98
 Decadal-to-Century Climate Change Panel – Climate Board, 1995-98
 Review Panel for Department of Energy Methane Hydrate Program – OSB, 2003-04
National Science Foundation:
 Division of Polar Programs Advisory Committee, 1987-90
 GEO Directorate Vision 2000 Planning, 1998-00
 Search Committee for Assistant Director of GEO, 1999
 Committee of Visitors for OCE Division, 2006
World Ocean Circulation Experiment:
 Hydrographic Program Implementation Panel, 1988-94
 Indian Ocean Scientific Steering Committee, 1993-96
 Scientific Steering Committee, 1992-02
The Oceanography Society Program Chairperson for Inaugural Meeting, August 1989
University Corporation for Atmospheric Research, Board of Trustees, 2005-present
 Audit and Finance Committee, 2005-present
 Nominating Committee, 2006-present
US National Committee for International Oceanographic Commission, Chair, 2007-present

(6) Committee Service within the University of Miami

Rosenstiel School of Marine and Atmospheric Science-School Council, 1984-87
Cooperative Institute of Marine and Atmospheric Studies, Fellow 1987-present; Member 1986-present
Marine and Atmospheric Chemistry Divisional Academic Committee, 1987-90; 1999-present
Rosenstiel School Research Advisory Council, 1995-2000
Search Committee for University of Miami President, 2000
Provost's Committee on Women and Minorities, 2000-05
University of Miami Graduate Faculty, 2001-present

(7) Research Interests

Ocean circulation processes and their role in climate using chemical tracers.

(8) Memberships

American Association for the Advancement of Science, 1973-present
American Geophysical Union, 1973-present
American Meteorological Society, 1984-present
The Oceanography Society, 1988-present

(9) Awards and Honors

Orange Key Leadership Honorary, 1962
Fellow in American Geophysical Union, 1993
Fellow in American Association for the Advancement of Science, 1996
Fellow in American Meteorological Society, 2001
American Geophysical Union:

Elected Secretary of the Ocean Sciences Section, 1986-88
President-elect of the Ocean Sciences Section, 1994-96
Elected President of the Ocean Sciences Section, 1996-98.
American Association for the Advancement of Science:
Elected to the Nominating Committee of Atmospheric and Hydrospheric Sciences Section, 1994-97
Section on Atmospheric and Hydrospheric Sciences, Chair-Elect, 2001-02; Chair, 2002-03;
Retiring Chair, 2003-04
Editors' Citation for Excellence in Refereeing from Journal of Geophysical Research-Oceans, 1989
Ludwig Lecturer at Old Dominion University, March 2001
NOAA Outstanding Scientific paper award (for Molinari *et al.*, *Geophys. Res. Letts.*, 25, 2249-2252, 1998), 2001
Provost's Award for Scholarly Activity, University of Miami, March 2005
Iron Arrow Honor Society, University of Miami, 2006

(10) Military Service

None

(11) Teaching Experience

Undergraduate Introduction to Chemical and Physical Oceanography, 1981-83
Marine and Atmospheric Chemistry Core Course 502, 1984-86, 1990-93
Global Geochemical Cycles MAC 640, 1990
Special Topics Course on Indian Ocean MAC 660, 1996-97
Introduction to Marine Science, MSC 111, Lab Section, 1998-99, 2006
Marine and Atmospheric Chemistry Seminar MAC 670, 1994-present
Survey of Oceanography, MSC 101, 1999-present
Chemical Oceanography, MAC 605, 2006-present

(12) Masters and PhD Committees

Masters

MS Committee Member for Leslie Connaughton, 1984-87
MS Committee Member for Michael Guzakowski, 1984-87
MS Committee Member for Kevin Maillet, 1988-90
MS Chair for Kathleen Prunier, 1987-91
MS Chair for Evan Howell, 1995-97
MS Chair for Bridgette O'Connor, 1996-98
MS Committee Member for Jason Masters, 1997-98
MS Committee for Mary Roche, 1998-99
MA Chair for Debra Willey, 1995-02

PhD

PhD Committee Member for Eric Chassignet, 1984-88
PhD Co-Chair for Kim Van Scoy, 1986-91
PhD Committee Member for Horacio Figueroa, 1988-91
PhD Committee Member for Mark Stephens, 1990-96
PhD Committee Member for Kitack Lee, 1993-96
PhD Committee Member for Victoria Coles, 1993-97
PhD Committee Member for Murat Aydin, 1994-99
PhD Co-Chair for Jorina Waworuntu, 1994-99
PhD Committee Member for Ashwanth Srinivasan, 1995-99
PhD Co-Chair for Bridgette O'Connor, 1998-01
PhD Committee Member for Derrick Snowden, 2004-present
PhD Committee Member for Hector Bustos-Serrano, 2005-present
PhD Committee Member for Tania Casal, 2006-present
PhD Committee Member for Silvia Gremes-Cordero, 2006-present
PhD co-Chair for Corinne Hartin, 2006-present

PhD Committee Member for Mareva Chanson, 2006-present

(13) Other

Review panels for the National Science Foundation

Participate in planning and Principal Investigator meetings for numerous multi-university projects for which I am funded.

Visiting Scholar, University of Washington, School of Oceanography, 1981

Visiting Scholar, Woods Hole Oceanographic Institution, 1991

Distinguished Visiting Scholar, Scripps Institution of Oceanography, 1999

(14) Publications in Refereed Journals

1973

R.A. Fine and F.J. Millero. The compressibility of water as a function of temperature and pressure. *Journal of Chemical Physics*, 59: 5529-5536.

1974

R.A. Fine, D.P. Wang and F.J. Millero. The equation of state of seawater. *Journal of Marine Research*, 32: 433-456.

1975

R.A. Fine and F.J. Millero. The high pressure P-V-T properties of deuterium oxide. *Journal of Chemical Physics*, 63: 89-95.

1977

C.T. Chen, R.A. Fine and F.J. Millero. The equation of state of pure water determined from sound speeds. *Journal of Chemical Physics*, 66: 2142-2144.

R.A. Fine and H.G. Ostlund. Source function for tritium transport models in the Pacific. *Geophysical Research Letters*, 4: 461-464.

1978

R.A. Fine, C.N.K. Mooers and F.J. Millero. Effects of nonlinear P-V-T properties on the potential energy distribution in the Atlantic Ocean. *Deep-Sea Research*, 25: 15-22.

C.T. Chen, R.A. Fine and F.J. Millero. Comment on "A new density relation for pure and saline water", by B. Gebhart and J.C. Mollendorf. *Deep-Sea Research*, 25: 499-501.

1980

R.A. Fine and H.G. Ostlund. Exchange times in the Pacific equatorial current system. *Earth and Planetary Science Letters*, 49: 447-452.

1981

R.A. Fine, J.L. Reid and H.G. Ostlund. Circulation of tritium in the Pacific Ocean. *Journal of Physical Oceanography*, 11: 3-14.

1982

R.G. Zika and R.A. Fine. The marine micronutrients of nitrogen, phosphorus, and silicon. In Mitsui, A. and Black, C.B., eds., *Biosolar Resources 1 Pt. 2, Fundamental Principles*. CRC Press, Inc. Boca Raton, FL 33431.

1983

R.A. Fine, W.H. Peterson, C.G. Rooth and H.G. Ostlund. Cross-equatorial tracer transport in the upper waters of the Pacific Ocean. *Journal of Geophysical Research*, 88: 763-769.

1985

R.A. Fine. Direct evidence using tritium data for the throughflow from the Pacific to the Indian Ocean. *Nature*, 315: 478-480.

1987

R.A. Fine, W.H. Peterson and H.G. Ostlund. The penetration of tritium into the tropical Pacific. *Journal of Physical Oceanography*, 17: 553-564.

E. Lindstrom, R. Lukas, R. Fine, E. Firing, S. Godfrey, G. Meyers and M. Tsuchiya. The Western Equatorial Pacific Ocean circulation study. *Nature*, 330: 533-537.

1988

R.A. Fine, M.J. Warner and R.F. Weiss. Water mass modification at the Agulhas Retroflection: Chlorofluoromethane Studies. *Deep-Sea Research*, 35: 311-332.

M.J. McPhaden and R.A. Fine. A Dynamical interpretation of the tritium maximum in the Central Equatorial Pacific. *Journal of Physical Oceanography*, 18: 1454-1457.

R.A. Fine and R. Molinari. A continuous Deep Western Boundary Current between Abaco (26.5°N) and Barbados (13°N). A Rapid Response paper in *Deep-Sea Research*, 35: 1441-1450.

1989

M. Tsuchiya, R. Lukas, R.A. Fine, E. Firing and E. Lindstrom. Source waters of the Pacific Equatorial Undercurrent. *Progress in Oceanography*, 23: 101-147.

1991

K.A. Van Scoy, R.A. Fine and H.G. Ostlund. Two decades of mixing tritium into the North Pacific Ocean. *Deep-Sea Research*, 38: Suppl., 5191-5219.

R. Lukas, E. Firing, P. Hacker, P.L. Richardson, C.A. Collins, R.A. Fine, R. Gammon. Observations of the Mindanao Current during the Western Equatorial Pacific Ocean Circulation Study (WEPOCS). *Journal of Geophysical Research-Oceans*, 96: 7089-7104.

K.A. Van Scoy, D.B. Olson, R.A. Fine. Ventilation of North Pacific Intermediate Water: The role of the Alaskan Gyre. *Journal of Geophysical Research-Oceans*, 96: 16801-16810.

1992

D.B. Olson, R.A. Fine and A.L. Gordon. Convective modifications of water masses in the Agulhas. *Deep-Sea Research*, 39: S163-S181.

R.L. Molinari, R.A. Fine, and E. Johns. The Deep Western Boundary Current in the tropical North Atlantic. *Deep-Sea Research*, 39: 1967-1984.

1993

D.B. Olson, G.L. Hitchcock, R.A. Fine, B.A. Warren. Maintenance of the low-oxygen layer in the central Arabian Sea. *Deep-Sea Research*, 40: 673-685.

R.A. Fine. Circulation of Antarctic Intermediate Water in the Indian Ocean. *Deep-Sea Research*, 40: 2021-2042.

1994

R.A. Fine, R. Lukas, F.M. Bingham, M.J. Warner and R.H. Gammon. The Western Equatorial Pacific: A water mass crossroads. *Journal of Geophysical Research*, 99: 25063-25080.

1995

R.A. Fine. Tracers, time scales, and the thermohaline circulation: The lower limb in the North Atlantic Ocean. *Reviews of Geophysics*, 33: 1353-1365.

M.P. Stephens, G. Samuels, D.B. Olson, R.A. Fine and T. Takahashi. Sea-Air flux of CO₂ in the North Pacific using satellite data. *Journal of Geophysical Research*, 100: 13571-13583.

1996

A.L. Gordon and R.A. Fine. Pathways of water between the Pacific and Indian Oceans in the Indonesian Seas. *Nature*, 379: 146-149.

S.E. Wijffels, J.M. Toole, H.L. Bryden, R.A. Fine, W.J. Jenkins and J.L. Bullister, 1996. The water masses and circulation at 10°N in the Pacific. *Deep-Sea Research*, 43: 501-544.

1997

E. Johns, R.A. Fine and R.L. Molinari. Deep Flow along the Western Boundary south of the Blake Bahama Outer Ridge. *Journal of Physical Oceanography*, 27: 2187-2208.

E.A. Howell, S.C. Doney, R.A. Fine and D.B. Olson. Geochemical estimates of denitrification in the Arabian Sea and the Bay of Bengal during WOCE. *Geophysical Research Letters*, 24: 2549-2552.

M.A. Haines, M.E. Luther and R.A. Fine. Model-validated parametrization for air-sea gas transfer in the north Indian Ocean. *Geophysical Research Letters*, 24: 2545-2548.

1998

R.L. Molinari, R.A. Fine, W.D. Wilson, R.G. Curry, J. Abell, and M.S. McCartney. The arrival of recently formed Labrador Sea Water in the Deep Western Boundary Current at 26.5°N. *Geophysical Research Letters*, 25: 2249-2252.

M. Aydin, Z Top, R.A. Fine and D.B. Olson. Modification of waters in the northeastern subpolar Pacific. *Journal of Geophysical Research*, 103: 30,923-30,940.

1999

O. Plähn, M. Rhein, R.A. Fine and K.F. Sullivan. Pollutants from the Gulf War serve as water mass tracer in the Arabian Sea. *Geophysical Research Letters*, 26: 71-74.

M.A. Haines, R. A. Fine, M.E. Luther, and Z. Ji. Particle trajectories in an Indian Ocean model and sensitivity to seasonal forcing. *Journal of Physical Oceanography*, 29(4): 584-598.

2000

W.M. Smethie, R.A. Fine, A. Putzka, E.P. Jones. Tracing the flow of North Atlantic Deep Water using chlorofluorocarbons. *Journal of Geophysical Research*, 105: 14,297-14,234.

J.M. Waworuntu, R.A. Fine, D.B. Olson, and A.L. Gordon. Recipe for the Banda Sea Water. *Journal of Marine Research*, 42: 1-25.

2001

W.M. Smethie, Jr., and R.A. Fine. Rates of North Atlantic Deep Water formation calculated from chlorofluorocarbon inventories. *Deep-Sea Research*, 48: 189-215.

P. Schlosser, J.L. Bullister, R. Fine, W.J. Jenkins, R. Key, J. Lupton, W. Roether, and W. M. Smethie, Jr. Transformation and Age of Water Masses. In: *Ocean Circulation and Climate. Observing and Modelling the Global Ocean*, edited by Gerold Siedler, John Church and John Gould, International Geophysics Series, Vol. 77, pp 431-454, Academic Press, London.

R.A. Fine, K.A. Maillet, K.F. Sullivan, and D. Willey. Circulation and ventilation flux of the Pacific Ocean. *Journal of Geophysical Research-Oceans*, 106(10): 22,159-22,178.

R.A. Fine. CFCs in the Ocean. In: *Encyclopedia of Ocean Sciences*, edited by John Steele, Steve Thorpe and Karl Turekian, Academic Press, London, pp. 441-450.

R.A. Fine, L. Merlivat, W. Roether, P. Schlosser, W.M. Smethie, Jr., and R. Wanninkhof. Observing Tracers and the Carbon Cycle, Chapter 4.2. In: *Observing the Ocean in the 21st Century*, C.J. Koblinsky and N.R. Smith (eds), GODAE Project Office and Bureau of Meteorology, Melbourne, Australia, pp. 361-375.

2002

B.M. O'Connor, R.A. Fine, K.A. Maillet and D.B. Olson. Formation rates of subtropical underwater in the Pacific Ocean. *Deep-Sea Research I*, 49 (9), 1571-1590.

R.A. Fine, M. Rhein and C. Andrié. Using a CFC effective age to estimate propagation and storage of climate anomalies in the Deep Western North Atlantic Ocean. *Geophys. Res. Letts.*, 29(24), 2227, 10.1029/2002GL015618, 2002.

2004

D.A. Willey, R.A. Fine, R.E. Sonnerup, J.L. Bullister, W.M. Smethie, Jr., and M.J. Warner. Global oceanic chlorofluorocarbon inventory. *Geophys. Res. Letts.*, 31, L01303, doi: 10.1029/2003GL018816, 2004.

2005

B.M. O'Connor, R.A. Fine, and D.B. Olson. A global comparison of subtropical underwater formation rates, *Deep-Sea Res. I*, 52, 1569-1590, 2005.

2006

R.A. Fine, W.M. Smethie, Jr., J.L. Bullister, D-H. Min, M.J. Warner, M. Rhein, and R.F. Weiss. Decadal Ventilation and Mixing of Indian Ocean Waters, *Deep-Sea Research*, submitted.

D.A., LeBel, W.M. Smethie, Jr., M. Rhein, D. Kieke, R.A. Fine, J.L. Bullister, D-H. Min, W. Roether, R.F. Weiss, C. Andrie, D. Smythe-Wright, and P. Jones. The Distribution of CFC-11 in the North Atlantic During WOCE: Inventories and Calculated Water Mass Formation Rates, *Prog. Oc.*, submitted.

2007

Smethie, W.M., Jr., D.A. LeBel, R.A. Fine, M. Rhein, and D. Kieke, Strength and variability of the deep limb of the North Atlantic Meridional Circulation from chlorofluorocarbon inventories, AGU Monograph on Past and Future Changes of the Ocean's Meridional Overturning Circulation, submitted, 2007.

(15) Other Publications

1979

H.G. Ostlund and R.A. Fine. Oceanic distribution and transport of tritium. Proceedings of the IAEA/NEA International Symposium on the Behavior of Tritium in the Environment, 16-20 October 1978, San Francisco, CA., USA, IAEA-SM-232/67. International Atomic Energy Agency, Vienna, Austria 1979, 711 pp.

1980

C.G.H. Rooth, R.A. Fine and H.G. Ostlund. Abyssal mixing and circulation in the North Pacific from radiocarbon data. RSMAS Technical Report TR-80-2.

1981

R.A. Fine and H.G. Ostlund. Equatorial exchange from tritium data. Proceedings SCOR Working Group 47, Venice, Italy, 26 April-1 May, 1981.

1984

R.A. Fine, D. Moore and J. Morrison. Indo/U.S. Science and Technology Initiative: Monsoon Research. *EOS, Transactions American Geophysical Union* 65: 762-763 (Report)

1985

R.A. Fine, W. H. Peterson and H. G. Ostlund. Upwelling in the equatorial Pacific using tritium data. Proceedings Symposium on vertical motion in the equatorial upper ocean and its effects upon living resources and the atmosphere, SCOR working Group 56, Paris, France, 6-10 May.

1991

M.F. Cook, J.M. Toole, G. P. Knapp, R.A. Fine, Z. Top and J.C. Jennings. A Trans-Indian Ocean hydrographic section at Latitude 32°S. Data Report of *RRS Charles Darwin Cruise #29*. WHOI Technical Report.

1997

R.A. Fine and D. Walker. The impact of major oceanographic research programs: Community input requested. *EOS, Transactions American Geophysical Union July 15 issue.*

1998

B.M. O'Connor, R.A. Fine, K.A. Maillet, and D.B. Olson. The rate of formation of the Subtropical Underwater (STUW) in the North and South Pacific from Drifter and Tracer Data. *International WOCE Newsletter*, Vol. 31, pp. 18-20, June 1998.

B.M. O'Connor, R.A. Fine, K.A. Maillet, and D.B. Olson, Formation rates of subtropical underwater in the Pacific by synthesis of multiple data types, *U.S. WOCE Implementation Report Number 10*, 1998 U.S. WOCE Report, p 30-33, August, 1998.

B.M. O'Connor, R.A. Fine, K.A. Maillet, and D.B. Olson. Estimating water mass formation rates using a multi-data approach. *US WOCE Annual Report.*

1999

J.M. Waworuntu, R.A. Fine, D.B. Olson, and A.L. Gordon. Spreading and velocity patterns of the Indonesian throughflow, *International WOCE Newsletter*, Vol. 35, pp. 26-28, June 1999.

R.A. Fine and Committee. *Global Ocean Science: Toward an Integrated Approach*, National Academy Press, Washington, DC, 1999.

R.A. Fine. A Case Study: Report Recognizes the Need for Organization and Cooperation in Ocean Science. Invited Abstract. Joint IOC/SCOR/SCOPE Assessment of the state of Marine Science and its contribution to sustainable development, Potsdam, Federal Republic of Germany, October 1999.

2001

R.A. Fine, Tracers of Ocean Water Masses. Article Code 281, in *Water Sciences*, M. Scott, D. Nelson, and F. Anderson (eds), Macmillan Reference USA/Gale Group, Michigan.

2002

R.A. Fine, The Need for Organization and Cooperation in Ocean Science. In: *Oceans 2020. Science, Trends, and the Challenge of Sustainability*, edited by John G. Field, Gotthilf Hempel, and Colin P. Summerhayes, Chapter 10, Box 10.1, p. 260, Island Press, Washington, DC.

(16) Oral Presentations

1973

R.A. Fine, D.P. Wang and F.J. Millero. The equation of state of seawater. Abstract, 1973 Spring Meeting AGU, Washington, DC. *EOS, Transactions American Geophysical Union 54(4): 301.*

1974

R.A. Fine and F.J. Millero. High pressure apparent molal properties of seawater. Abstract, 1974 Spring Meeting AGU, Washington DC. *EOS, Transactions American Geophysical Union 55(4): 310.*

1975

R.A. Fine. High pressure thermodynamics of seawater. Abstract, IAPSO Symposium on Thermodynamics of the Sea, IUGG XVI General Assembly, Grenoble, France, September 1975. Proceedings p. 46 (Invited paper).

1977

R.A. Fine and C. Rooth. Vertical mixing in Pacific central waters. Abstract, 1977 Spring Meeting AGU, Washington, DC. *EOS, Transactions American Geophysical Union* 58(6): 419.

R.A. Fine and H.G. Ostlund. Tritium front at 6°N in the Pacific. Abstract, 1977 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 58(12): 1155.

1978

R.A. Fine, J.L. Reid and H.G. Ostlund. Penetration of tritium into the Pacific thermocline. Abstract, 1978 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 59(12): 1105.

1979

R.A. Fine, C.G. Rooth and H.G. Ostlund. Abyssal Mixing and circulation in the North Pacific from Radiocarbon Data. Abstract, 1979 Spring Meeting AGU, Washington, D.C. *EOS, Transactions American Geophysical Union* 60(18): 296.

R.A. Fine, C.G. Rooth and H.G. Ostlund. Circulation in Abyssal North Pacific. Abstract, IAPSO Symposium on Large Scale Motion and Experiments in the Ocean, Proceedings IUGG XVII General Assembly, Canberra Australia, 2-15 December 1979.

1980

R.A. Fine, W.H. Peterson, H.G. Ostlund and C.G. Rooth. Equatorial Pacific exchange processes implied by water mass analysis using tritium data. Abstract, 1980 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 61(46): 997.

1981

R.A. Fine, W.H. Peterson, C.G. Rooth and H.G. Ostlund. Evidence for cross-equatorial tracer transport of the upper waters of the Pacific Ocean. Abstract, 1981 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 62(45): 897.

1982

W.H. Peterson, C.G.H. Rooth and R.A. Fine. An estimate of the depth of equatorial upwelling using tracer data. Abstract, 1982 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 63(45): 968.

R.A. Fine, W.H. Peterson and H.G. Ostlund. Meridional exchange in the North Pacific thermocline from tritium data. Abstract, 1982 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 63(45): 974.

1984

R.A. Fine, M.J. Warner and R.F. Weiss. Role of SAMW in thermocline ventilation using ARC freon data.

Abstract, 1984 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 65(45): 963.

M.J. Warner, R.A. Fine and R.F. Weiss. Interocean exchange of AAIW in The Agulhas region based on chlorofluoromethane measurements. Abstract, 1984 Fall Meeting AGU, San Francisco, CA. *EOS, Transactions American Geophysical Union* 65(45): 963.

1986

R.A. Fine, M.J. Warner and R.F. Weiss. Modification of Thermocline and Intermediate Water Masses in the Agulhas Retroflection Region. Abstract, AGU/ASLO Ocean Sciences Meeting, New Orleans, LA. *EOS, Transactions American Geophysical Union* 66(51): 1300.

1987

R.A. Fine and R. Molinari. Observations of the Deep Western Boundary Current in the Subtropical North Atlantic Ocean. Abstract, 1987 Spring Meeting AGU, Baltimore, MD. *EOS, Transactions American Geophysical Union* 68: 338.

R. Molinari, E. Johns, G.A. Maul, D. Mayer, J.C. Larsen, R.A. Fine, K.D. Leaman, T.N. Lee, W.E. Johns and F.A. Schott. Subtropical Atlantic climate studies (STACS). Abstract, IUGG XVIV General Assembly, Vancouver, Canada, August 1987. Proceedings.

1988

D.B. Olson, G. Hitchcock, R.A. Fine and B. Warren. Anoxic layers in the Arabian Sea and their relationship to mixed layer processes. Abstract, AGU/ASLO Ocean Sciences Meeting, New Orleans, LA. *EOS, Transactions American Geophysical Union* 68(50): 1693.

K.A. Van Scoy, R.A. Fine and H.G. Ostlund. A regional mixing model for North Pacific Intermediate Water. Abstract, AGU/ASLO Ocean Sciences Meeting, New Orleans, LA. *EOS, Transactions American Geophysical Union* 68(50): 1746.

K.A. Van Scoy, R.A. Fine and H.G. Ostlund. The penetration of tritium into the North Pacific Ocean. Abstract, AGU Fall Meeting, San Francisco, CA. *EOS, Transactions American Geophysical Union* 69(44): 1246.

1989

K. Prunier and R.A. Fine. Mixing and spreading of intermediate waters in the Arabian Sea. Abstract, Inaugural Meeting of The Oceanography Society, Monterey, CA.

K. A. Van Scoy and R.A. Fine. Is the Alaskan Gyre a site for ventilation of North Pacific intermediate waters? Abstract, Inaugural Meeting of The Oceanography Society, Monterey, CA.

1990

R. A. Fine. Tracer Properties of Bottom and Intermediate Waters along Transindian Sector at 32° S. Abstract, AGU Fall Meeting, San Francisco, CA. *EOS, Transactions American Geophysical Union*, 71:1380.

1991

M. Stephens, T. Takahashi, D. B. Olson and R.A. Fine. Air-Sea CO₂ Exchange from Satellite Platform. Abstract, The Oceanography Society Second Scientific Meeting, St. Petersburg, FL.

R.A. Fine, R.L. Molinari and E. Johns. Deep Western Boundary Current in the western tropical North Atlantic: I. Water Mass Properties. Abstract. Proceedings IAPSO Symposium IUGG, XXV General Assembly, Vienna Austria.

R.L. Molinari, E. Johns, R.A. Fine. Deep Western Boundary Current in the western tropical North Atlantic: II, Geostrophic transports. Abstract. Proceedings IAPSO Symposium IUGG, XXV General Assembly, Vienna Austria.

1992

R.A. Fine, E. Johns and R.L. Molinari. Deep Western Boundary Current Structure in the region of the Blake-Bahama Outer Ridge. Abstract, Ocean Sciences Meeting, New Orleans, LA. *EOS, Transactions American Geophysical Union* 72:32.

R.A. Fine, E. Johns and R.L. Molinari. Deep Western Boundary Current Structure in the region of the Blake Bahama Outer Ridge. Invited Abstract, Atlantic Climate Change Program, Miami, FL.

R.A. Fine, R. Lukas, M. Warner and R. Gammon. The Western Equatorial Pacific as a Water Mass Cross Roads. Abstract, Western Pacific Geophysics Meeting, Hong Kong. *EOS, Transactions American Geophysical Union* 73:42.

1993

K.A. Maillet and R.A. Fine. Model Simulation to investigate the link between the subtropical gyre interior and tracer distributions in the EUC. Abstract, The Oceanography Society, Seattle, WA.

1994

R.A. Fine and K.A. Maillet. Maintenance of the oxygen minimum zone in the eastern tropical Pacific. Invited Abstract, The Oceanography Society, Honolulu, HI.

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