

## CURRICULUM VITAE

November 2, 2009

### Michael James McPhaden

NOAA/Pacific Marine Environmental Laboratory  
7600 Sand Point Way NE  
Seattle, Washington 98115  
P: 206-526-6783; F: 206-526-6744  
E-mail: Michael.J.Mcphaden@noaa.gov

### PROFESSIONAL EXPERIENCE

1998–present Senior Scientist  
Pacific Marine Environmental Laboratory, Seattle, Washington  
1993–present Affiliate Professor, School of Oceanography, University of Washington  
1992–present Director, TAO Project Office  
Pacific Marine Environmental Laboratory, Seattle, Washington  
1992–1998 Supervisory Oceanographer GM-15, Pacific Marine Environmental  
Laboratory, Seattle, Washington  
1991–1992 Oceanographer, GS-15, Pacific Marine Environmental Laboratory, Seattle,  
Washington  
1990–present Senior Fellow, Joint Institute for the Study of the Atmosphere and Ocean,  
University of Washington  
1990–1993 Affiliate Associate Professor, School of Oceanography, University of  
Washington  
1988–1990 Affiliate Assistant Professor, School of Oceanography, University of  
Washington  
1987–present Senior Fellow, Joint Institute for Marine and Atmospheric Research,  
University of Hawaii  
1986–1991 Oceanographer GS-14, Pacific Marine Environmental Laboratory, Seattle,  
Washington  
1984–1986 Research Assistant Professor, School of Oceanography, University of  
Washington  
1982–1984 Visiting Research Scientist, Joint Institute for the Study of the Atmosphere  
and Ocean, University of Washington  
1980–1982 Research Scientist, Oceanography Section, National Center for Atmospheric  
Research

### EDUCATION

1980 Scripps Institution of Oceanography, Ph.D., Physical Oceanography: Dissertation  
title: “Models of the Equatorial Ocean Circulation”  
1973 State University of New York at Buffalo, B.S., Physics, magna cum laude

### HONORS AND AWARDS

Fellow, American Meteorological Society, 2007  
Guest Professor, Ocean University of China, 2006  
Fellow, the Oceanography Society, 2005  
Scientific American “Science & Technology Web Awards” for El Niño Theme Page, 2005  
Presidential Rank Award for Meritorious Federal Service, 2004  
Listed in Thomson ISI Highly Cited Researchers in Geosciences, 2004  
Grace Hopper Government Technology Award (“Gracie Award”), given to the TAO project for  
Leadership in the Innovative Application of Information Technology, 2003  
American Geophysical Union, Frontiers of Geophysics Lecturer, 2002 Western Pacific  
Geophysics Meeting  
American Meteorological Society, Walter Orr Roberts Lecturer, 2002  
American Meteorological Society, Special Award for Completing and Maintaining the TAO  
Array, 1999  
Public Service Award, Federal Executive Board, Seattle, 1999  
American Geophysical Union, Sverdrup Lecturer, Fall 1998 Meeting

Department of Commerce, Gold Medal, 1997  
Editor's Citation for Excellence in Refereeing, *Journal of Geophysical Research*, 1995  
NOAA/OAR Outstanding Publication Award, 1999, 2000, 2002, 2004  
NOAA/PMEL Outstanding Publication Award, 1989–1993, 1995, 1997, 1998, 2007  
Who's Who in America  
Who's Who in Science and Engineering  
Who's Who in the World  
Who's Who in the West  
Phi Beta Kappa

### **PROFESSIONAL SOCIETIES**

Marine Technology Society/IEEE, 1990  
The Oceanography Society, 1988–present  
American Geophysical Union, 1979–present  
The American Meteorological Society, 1978–present  
The European Geosciences Union, 2005–present

### **PROFESSIONAL SERVICE ACTIVITIES**

Member, MIT/WHOI Joint Program Review Committee, 2009  
President-elect, American Geophysical Union, 2008–present  
Member, RAPID-WATCH Program Advisory Committee, 2008–present  
Contributing author, IPCC Fourth Assessment Report, 2007  
Convener, IUGG Symposium on Interannual to Interdecadal Climate Variability, 2007  
Member, RAPID (Rapid Climate Change) Review Committee, February 2007  
Member, Review Committee, Cooperative Institute for Climate and Ocean Research (CICOR),  
June 2005  
President, Ocean Sciences Section, American Geophysical Union, 2002–2004  
Member, Executive Committee, AGU Ocean Sciences Section, 2000–2008  
Member, IOC/WMO Joint Commission on Oceanography and Marine Meteorology, observations  
Coordination Group, 2001–present  
Member, International CLIVAR Global Synthesis and Observations Panel, 2004–present  
Member, International CLIVAR Indian Ocean Panel, 2003–present  
Member, International CLIVAR Pacific Ocean Panel, 2001–present  
Chairman, Tropical Moored Buoy Implementation Panel, 2001–present  
Member, International CLIVAR/OOPC OceanSITES Working Group, 2000–present  
Editorial Board, Bulletin of the American Meteorological Society, 2001–present  
Member, PIRATA Steering Group, 1995–present  
Member, International CLIVAR Ocean Observations Panel, 2000–2003  
Member, OCEANOBS99 Conference Steering Committee, 1999  
Member, AMS Committee on the Interaction of the Sea and the Atmosphere, 1999–2002  
Member, O-CLIVAR Steering Group, 1996–1997  
Member, Nominations Committee, The Oceanography Society, 1994–1996  
Chairman, Pan American Climate Studies Subcommittee on Observations, 1994–1996  
Member, Organizing Committee, Final TOGA Conference, 1994–1995  
Chairman, TAO Implementation Panel, 1992–2001  
Member, Ocean Observing System Development Panel, 1992–1994  
Member, International TOGA Scientific Steering Group, 1992–1994  
Member, National Academy of Science Advisory Panel on Near-term Development of  
Operational Ocean Observations, 1991–1993  
Member, WCRP Pacific Panel, 1990–1994  
Member, International TOGA Scientific Steering Group Ad Hoc Committee on Moored current  
Measurements, 1989  
Member, WOCE Moored Measurements Implementation Panel, 1988–1991  
Member, EPOCS Council, 1987–1994  
Convener, The ENSO Event of 1986–1987 Fall AGU, San Francisco, 1987  
Member, US/PRC bilateral air-sea interaction planning committee, 1986–1992  
Member, WOCE Committee on Surface Layer Observations, 1986–1988

Convener, Equatorial Undercurrent Centennial Conference, Fall AGU, San Francisco, 1986  
Co-Convener, Second International TOGA Workshop on Thermal Sampling, Hobart, Australia,  
November 1986  
Convener, TOGA Thermal Data Center Workshop, Monterey, California, July 1985  
Consultant, CCCO Pacific, Atlantic, and Indian Ocean Panels, 1984–1990  
Co-Chairman, Pacific Subsurface Thermal Field Monitoring Steering Group 1984–1987  
Member, U.S. Delegation to India, Indo-U.S. bilateral on monsoon variability, Bangalore, India,  
1984  
Co-Convener, Pacific Subsurface Thermal Field Monitoring Workshop, Seattle, 1984  
Member, TOGA Pacific Drafting Workshop, Miami, 1983  
Convener, Special Ocean/Atmospheric Sciences session on El Niño 1982–1983, Fall AGU  
Meeting, San Francisco, 1983  
Member, Navy/NOAA Committee on Observational Strategies for Ocean Monitoring, Miami,  
1983  
Consultant, FOCAL/SEQUAL Programs, 1982–1986  
Member, Tropic Heat Experiment Executive Committee, 1981–1982  
Consultant, CAGE Feasibility Study Committee, 1981–1982  
Member, Equatorial Theoretical Panel, 1978–1984

### **STUDENT RESEARCH SUPPORT**

Natalia Stefanova	2005–2008
Xuebin Zhang	2002–2007
Weimin Wang	1994–2000
Xuri Yu	1991–1999
Rusty Brainard	1991–1994
Ken Duvall	1987
Scott Springer	1986–1989
Mary Landsteiner	1985–1987
Jeff Proehl	1984–1988

### **STUDENT COMMITTEES**

University of Washington

Jeff Proehl, Ph.D. (Chairman)  
Mary Landsteiner, M.S. (Chairman)  
Scott Springer, M.S. (Chairman), Ph.D.  
Xuri Yu, Ph.D. (Chairman)  
Weimin Wang, Ph.D. (Chairman)  
Xuebin Zhang, Ph.D. (Chairman)  
Natalia Stefanova, Ph.D. (Chairman)  
William Kessler, Ph.D.  
David Battisti, Ph.D.  
Keith Brainard, Ph.D.  
Joanna Meunch, Ph.D.  
Chuanli Jiang, Ph.D.

Naval Postgraduate School  
Rusty Brainard, Ph.D.

University of Paris - VI  
Christophe Menkes, Ph.D.  
Lucia Bunge, Ph.D.

University of Toulouse - III  
Sophie Cravatte, Ph.D.  
Takeshi Izumo, Ph.D.  
Christelle Bosc, Ph.D.

University of Maryland

Gregory Foltz, Ph.D.

Macquarie University  
Shayne McGregor, PhD

### **POSTDOC SUPPORT AND SUPERVISION**

Xuebin Zhang	2008
Regina Rodrigues	2005–2007
Greg Foltz	2003–2006
Dongxiao Zhang	1999–2001
Weimin Wang	2000
Xuri Yu	1999
Chris Meinen	1998–2000
Kenong Bi	1995–1996
Meghan Cronin	1993–1995
Janet Sprintall	1992–1993
Eric Johnson	1990–1992

### **OCEANOGRAPHIC RESEARCH CRUISES**

RV *Fridtjof Nansen*, 18-27 November 2008, Mahe, Seychelles to Pemba, Mozambique.  
NOAA Ship *Ka'imimoana*, 10-23 September 2006, Nuku Hiva, French Polynesia to Honolulu, Hawaii (Chief Scientist)  
NOAA Ship *Ka'imimoana*, 5-27 April 2005, San Diego, CA to Galapagos Islands, Ecuador  
NOAA Ship *Ka'imimoana*, 1-23 March 2002, Honolulu, HI to Galapagos Islands, Ecuador (Chief Scientist)  
NOAA Ship *Ka'imimoana*, 27 September-15 October 1997, San Diego, CA to Nuku Hiva, French Polynesia (Chief Scientist)  
RV *Le Noroit*, 2-18 February 1992, Kwajalein, Marshall Islands to Noumea, New Caledonia  
RV *Le Noroit*, 26 March-4 April 1991, Kwajalein, Marshall Islands to Noumea, New Caledonia  
NOAA Ship *Malcolm Baldrige*, 20 April-22 May 1990, Honolulu, HI to Rodman, Panama (Chief Scientist)  
*Xiangyanghong #14*, 12-28 October 1987, Pohnpei, Micronesia to Republic of Nauru  
NOAA Ship *Oceanographer*, 17 October-10 November 1986, Seattle, WA to Manzanillo, Mexico (Chief Scientist)  
RV *Marion Dufresne*, May-July 1983, Dakar, Senegal to La Reunion.

### **REFEREED PUBLICATIONS**

Clarke, C., et al, 2009: An overview of global ocean observing Systems relevant to GODAE. *Oceanography*, 22, 22-33.

Cravatte, S.E., T. Delcroix, D. Zhang, M.J McPhaden, and J. Leloup, 2009: Observed freshening of the warming western tropical Pacific and extension of the Warm/Fresh Pool in recent decades. *Clim. Dyn.*, 33, 565-589.

Foltz, G.R., and M.J. McPhaden, 2009: Impact of barrier layer thickness on SST in the central tropical North Atlantic. *J. Climate*, 22, 285-299.

Foltz, G. R., J. Vialard, P. Kumar, and M. J. McPhaden, 2009: Seasonal mixed layer heat balance of the southwestern tropical Indian Ocean. *J. Climate*, submitted.

- McPhaden, M.J., G.R. Foltz, T. Lee, V.S.N. Murty, M. Ravichandran, G.A. Vecchi, J. Vialard, J.D. Wiggert, L. Yu, 2009: Ocean-Atmosphere Interactions During Cyclone Nargis. *EOS, Trans. Am. Geophys. Union*, 90, 53-54.
- McPhaden, M.J., G. Meyers, K. Ando, Y. Masumoto, V.S.N. Murty, M. Ravichandran, F. Syamsudin, J. Vialard, L. Yu, and W. Yu, 2009: RAMA: The Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction. *Bull. Am. Meteorol. Soc.*, 90, 459-480.
- McPhaden, M. J., and X. Zhang, 2009: Asymmetry in zonal phase propagation of ENSO sea surface temperature anomalies, *Geophys. Res. Lett.*, 36, L13703, doi:10.1029/2009GL038774.
- Vialard, J., J.P. Duvel, M. McPhaden, P. Bouruet-Aubertot, B. Ward, E. Key, D. Bourras, R. Weller, P. Minnett, A. Weill, C. Cassou, L. Eymard, T. Fristedt, C. Basdevant, Y. Dandoneau, O. Duteil, T. Izumo, C. de Boyer Montégut, S. Masson, and F. Marsac, 2009: Cirene: Air-sea interactions in the Seychelles-Chagos thermocline ridge region. *Bull. Am. Meteorol. Soc.*, 90, 45-61.
- Bourlès, B., R. Lumpkin, M.J. McPhaden, F. Hernandez, P. Nobre, E. Campos, L. Yu, S. Planton, A. Busalacchi, A.D. Moura, J. Servain, and J. Trotte, 2008: The PIRATA Program: History, Accomplishments, and Future Directions. *Bull. Amer. Meteor. Soc.*, 89, 1111-1125.
- Foltz, G.R., and M.J. McPhaden, 2008: Impact of Saharan dust on tropical North Atlantic SST. *J. Climate*, 21, 5048-5060.
- Foltz, G.R., and M.J. McPhaden, 2008: Trends in Saharan dust and tropical Atlantic climate during 1980-2006. *Geophys. Res. Lett.*, 35, L20706, DOI 10.1029/2008GL035042.
- Foltz, G.R. and M.J. McPhaden, 2008: Seasonal mixed layer salinity balance of the tropical North Atlantic Ocean. *J. Geophys. Res.* 113, C02013, doi:10.1029/2007JC004178.
- Lee, T. and M.J. McPhaden, 2008: Decadal phase change in large-scale sea level and winds in the Indo-Pacific region at the end of the 20th century. *Geophys. Res. Lett.*, 35, L01605, doi:10.1029/2007GL032419.
- McPhaden, M.J., 2008: Evolution of the 2006-07 El Niño: The Role of Intraseasonal to Interannual Time Scale Dynamics. *Adv. Geosci.*, 14, 219-230.
- McPhaden, M.J., M.F. Cronin, and D.C. McClurg, 2008: Meridional structure of the surface mixed layer temperature balance on seasonal time scales in the eastern tropical Pacific. *J. Climate*, 21, 3240-3260.
- Nagura, M. and M.J. McPhaden, 2008: The dynamics of zonal current variations in the central equatorial Indian Ocean. *Geophys. Res. Lett.*, 35, K23603, doi:10.1029/2008GL035961.
- Vialard, J., G. Foltz, M.J. McPhaden, J.P. Duvel and C. de Boyer Montégut, 2008: Strong Indian Ocean sea surface temperature signals associated with the Madden-Julian oscillation in late 2007 and early 2008. *Geophys. Res. Lett.*, 35, L19608, doi:10.1029/2008GL035238.

- Yoneyama, K., et al, 2008: MISMO field experiment in the tropical Indian Ocean. *Bull. Am. Meteor. Soc.*, 89, 1889-1903.
- Zhang, X. and M.J. McPhaden, 2008: Eastern equatorial Pacific forcing of ENSO sea surface temperature anomalies. *J. Climate*, 21, 6070-6079.
- Cheng, W., M.J. McPhaden, D. Zhang, and E.J. Metzger, 2007: Recent changes in the Pacific subtropical cells inferred from an eddy resolving ocean circulation model. *J. Phys. Oceanogr.*, 37, 1340-1356.
- Delcroix, T., S. Cravatte, and M.J. McPhaden, 2007: Decadal variations and trends in tropical Pacific sea surface salinity since 1970. *J. Geophys. Res.*, 112(C3), C03012, doi:10.1029/2006JC003801.
- Behrenfeld, M.J., K. Worthington, R.M. Sherrell, F.P. Chavez, P. Strutton, M.J. McPhaden, and D.M. Shea, 2006: Controls on tropical Pacific Ocean productivity revealed through nutrient stress diagnostics. *Nature*, 442, 1025-1028.
- Bennett, A.F., B.S. Chua, H.-E. Ngodock, D.E. Harrison, and M.J. McPhaden, 2006: Generalized inversion of the Gent-Cane model of the Tropical Pacific with Tropical Atmosphere-Ocean (TAO) data. *J. Mar. Res.*, 64, 1-42.
- Cronin, M.F., C. Fairall, and M.J. McPhaden, 2006: An assessment of buoy derived and numerical weather prediction surface heat fluxes in the tropical Pacific. *J. Geophys. Res.*, 111, C06038, doi:10.1029/2005JC003324.
- Feely, R.A., T. Takahashi, R. Wanninkhof, M.J. McPhaden, C.E. Cosca, S.C. Sutherland and M.-E. Carr, 2006: Decadal Variability of the Air-Sea CO<sub>2</sub> Fluxes in the Equatorial Pacific Ocean. *J. Geophys. Res.*, 111., C08S90, doi:101029/2005JC003129.
- Foltz, G.R. and M.J. McPhaden, 2006: Unusually warm sea surface temperatures in the tropical North Atlantic during 2005. *Geophys. Res. Lett.*, 33, L19703, doi:10.1029/2006GL027394.
- Foltz, G.R. and M.J. McPhaden, 2006: The role of oceanic heat advection in the evolution of tropical North and South Atlantic SST anomalies. *J. Climate*, 19, 6122-6138.
- Maes, C., K. Ando, T. Delcroix, W.S. Kessler, M.J. McPhaden, and D. Roemmich, 2006: Observed correlation of surface salinity, temperature and barrier layer at the eastern edge of the western Pacific warm pool. *Geophys. Res. Lett.*, 33, L06601, doi:10.1029/2005GL024772.
- McPhaden, M.J., S.E. Zebiak, and M.H. Glantz, 2006: ENSO as an integrating concept in Earth science. *Science*, 314, 1740-1745.
- McPhaden, M.J., X. Zhang, H.H. Hendon, and M.C. Wheeler, 2006: Large Scale Dynamics and MJO Forcing of ENSO Variability. *Geophys. Res. Lett.*, 33(16), L16702, doi:10.1029/2006GL026786.
- Schein, K.A. et al, 2006: The state of the climate 2005. *Bull. Am. Meteorol. Soc.*, 87, S1-S102.
- Zhang, D., and M.J. McPhaden, 2006: Decadal variability of the shallow Pacific meridional overturning circulation: relation to tropical sea surface temperatures in observations and climate change models. *Ocean Modelling*, 15, 250-273.
- Zhang, X. and M.J. McPhaden, 2006: Wind stress variations and interannual sea surface temperature anomalies in the eastern equatorial Pacific. *J. Climate*, 19, 226-241.

- Capotondi, A., M.A. Alexander, C. Deser, and M.J. McPhaden, 2005: Anatomy and Decadal Evolution of the Pacific Subtropical-Tropical Cells (STCs). *J. Climate*, *18*, 3739-3758.
- Delcroix, T., M.J. McPhaden, A. Dessier, and Y. Gouriou, 2005: Time and space scales for sea surface salinity in the tropical oceans. *Deep-Sea Res.*, *52*, 787-813.
- Foltz, G.R. and M.J. McPhaden, 2005: Mixed layer heat balance on intraseasonal time scales in the northwestern tropical Atlantic Ocean. *J. Climate*, *18*, 4168-4184.
- Grodsky, S.A., J.A. Carton, C. Provost, J. Servain, J. A. Lorenzetti, and M.J. McPhaden, 2005: Tropical instability waves at 0°N, 23°W in the Atlantic: A case study using Pilot Research Moored Array in the Tropical Atlantic (PIRATA) mooring data. *J. Geophys. Res.*, *110*, C08010, doi:10.1029/2005JC002941.
- Levinson, D.H. et al, 2005: State of the Climate in 2004. *Bull. Am. Meteor. Soc.*, *86*(6), S1-S86.
- Cai, W. M.J. McPhaden, and M.A. Collier, 2004: Multidecadal fluctuations in the relationship between equatorial Pacific heat content anomalies and ENSO amplitude. *Geophys. Res. Lett.*, *31*, L01201, doi:10.1029/2003GL018714.
- Foltz, G.R., S.A. Grodsky, J.A. Carton, and M.J. McPhaden, 2004: Seasonal salt budget of the northwestern tropical Atlantic Ocean along 38°W. *J. Geophys. Res.*, *109*(C3), C03052, doi:10.1029/2003JC002111.
- Foltz, G.R. and M.J. McPhaden, 2004: 30-70 day oscillations in the tropical Atlantic. *Geophys. Res. Lett.*, *31*, L15205, doi:10.1029/2004GL020023.
- McPhaden, M.J., 2004: Evolution of the 2002–03 El Niño. *Bull. Am. Meteor. Soc.*, *85*, 677–695.
- McPhaden, M.J. and D. Zhang, 2004: Pacific Ocean circulation rebounds. *Geophys. Res. Lett.*, *31*, L18301, doi:10.1029/2004GL020727.
- Rajeevan, M. and M.J. McPhaden, 2004: Tropical Pacific upper ocean heat content variations and Indian summer monsoon rainfall. *Geophys. Res. Lett.*, *31*, L18203, doi:10.1029/2004GL020631.
- Serra, Y. and M.J. McPhaden, 2004: In situ observations of the diurnal variability in rainfall over the tropical Atlantic and Pacific Oceans. *J. Climate*, *17*, 3496–3509.
- Cosca, C.E., R.A. Feely, R. Wanninkhof, J. Boutin, J. Etcheto, and M.J. McPhaden, 2003: Seasonal and interannual variations of fCO<sub>2</sub>-SST relationships for the central and eastern equatorial Pacific. *J. Geophys. Res.*, *108*(C8), 3278, doi:10.1029/2000JC000677.
- Foltz, G.R., S.A. Grodsky, J.A. Carton, and M.J. McPhaden, 2003: Seasonal mixed layer heat budget of the tropical Atlantic Ocean. *J. Geophys. Res.*, *108*(C5), 3146, doi:10.1029/2002JC001584.
- McPhaden, M.J., 2003: Tropical Pacific Ocean heat content variations and ENSO persistence barriers. *Geophys. Res. Lett.*, *30*(9), 1480, doi:10.1029/2003GL016872.
- Scavia, D., M.P. Sissenwine, H.L. Dantzler, M.J. McPhaden, P.F. Moersdorf, 2003: NOAA's ocean observing programs. *Oceanography*, *16*, 61–67.
- Serra, Y.L and M.J. McPhaden, 2003: Multiple time space comparisons of ATLAS buoy rain gauge measurements to TRMM satellite precipitation measurements. *J. Appl. Meteorol.*, *42*, 1045–1059.

- Zhang, D., M.J. McPhaden, and W.E. Johns, 2003: Observational evidence for flow between the subtropical and tropical Atlantic: The Atlantic subtropical cells. *J. Phys. Oceanogr.*, *33*, 1783–1797.
- Cronin, M.F. and M.J. McPhaden, 2002: Barrier layer formation during westerly wind bursts. *J. Geophys. Res.*, *107*(C12), 8020, doi:10.1029/2001JC001171.
- Cronin, M.F., N. Bond, C. Fairall, J. Hare, M.J. McPhaden, and R.A. Weller, 2002: Enhanced Oceanic and Atmospheric Monitoring for the Eastern Pacific. *Eos Trans. AGU*, *83*, 205.
- Delcroix, T. and M.J. McPhaden, 2002: Interannual sea surface salinity and temperature changes in the western Pacific warm pool during 1992–2000. *J. Geophys. Res.*, *107*(C12), 8002, doi:10.1029/2001JC000862.
- Feely, R.A., J. Boutin, C.E. Cosca, Y. Dandonneau, J. Etcheto, H.Y. Inoue, M. Ishii, C.L. Quééré, D. Mackey, M.J. McPhaden, N. Metzl, A. Poisson, and R. Wanninkhof, 2002: Seasonal and interannual variability of CO<sub>2</sub> in the equatorial Pacific. *Deep-Sea Res.*, *49*, 2443–2469.
- Kutsuwada, K. and M.J. McPhaden, 2002: Intraseasonal variations in the upper equatorial Pacific Ocean prior to and during the 1997–98 El Niño. *J. Phys. Oceanogr.*, *32*, 1133–1149.
- Lien, R.-C., E.D. D'Asaro, and M.J. McPhaden, 2002: Internal waves and turbulence in the upper central equatorial Pacific: Lagrangian and Eulerian observations. *J. Phys. Oceanogr.*, *32*, 2619–2639.
- Maes, C., M.J. McPhaden, and D. Behringer, 2002: Signatures of salinity variability in tropical Pacific Ocean dynamic height anomalies. *J. Geophys. Res.*, *107*(C12), 8012, doi:10.1029/2000JC000737.
- McPhaden, M.J., 2002: Mixed layer temperature balance on intraseasonal time scales in the equatorial Pacific Ocean. *J. Climate*, *15*(18), 2632–2647.
- McPhaden, M.J. and D. Zhang, 2002: Slowdown of the meridional overturning circulation in the upper Pacific Ocean. *Nature*, *415*, 603–608.
- Medavaya, M., D.E. Waliser, R.A. Weller, and M.J. McPhaden, 2002: Assessing ocean buoy shortwave observations using clear-sky model calculations. *J. Geophys. Res.*, *107*(C2), 3014, doi:10.1029/2000JC000558.
- Thum, N., S.K. Esbensen, D.B. Chelton, and M.J. McPhaden, 2002: Air-sea heat exchange along the Northern Sea surface temperature front in the eastern tropical Pacific. *J. Climate*, *15*(23), 3361–3378.
- Chelton, D.B., S.K. Esbensen, M.G. Schlax, N. Thum, M.H. Freilich, F.J. Wentz, C.L. Gentemann, M.J. McPhaden, and P.S. Schopf, 2001: Observations of coupling between surface wind stress and sea surface temperature in the eastern tropical Pacific. *J. Climate*, *14*, 1479–1498.
- Dickinson, S., K.A. Kelly, M.J. Caruso, and M.J. McPhaden, 2001: A note on comparisons between TAO buoy and NASA scatterometer wind vectors. *J. Atmos. Oceanic Technol.*, *18*, 799–806.
- Godfrey, J.S., G.C. Johnson, M.J. McPhaden, G. Reverdin, and S. Wijffels, 2001: The Tropical Ocean Circulation. In: *Ocean Circulation and Climate - Observing and Modelling the Global Ocean*, G. Siedler, J. Church, and W.J. Gould, eds., *Academic Press*, 215–246.

- Johnson, G.C., M.J. McPhaden, and E. Firing, 2001: Equatorial Pacific Ocean horizontal velocity, divergence, and upwelling. *J. Phys. Oceanogr.*, *31*, 839–849.
- Kelly, K.A., S. Dickinson, M.J. McPhaden, and G.C. Johnson, 2001: Ocean currents evident in satellite wind data. *Geophys. Res. Lett.*, *28*, 2469–2472.
- McPhaden, M.J., T. Delcroix, K. Hanawa, Y. Kuroda, G. Meyers, J. Picaut, and M. Swenson, 2001: The El Niño/Southern Oscillation (ENSO) Observing System. In: *Observing the Ocean in the 21st Century*. Australian Bureau of Meteorology, Melbourne, Australia, 231–246.
- Meinen, C.S. and M.J. McPhaden, 2001: Interannual variability in warm water volume transports in the equatorial Pacific during 1993–1999. *J. Phys. Oceanogr.*, *31*, 1324–1345.
- Meinen, C.S., M.J. McPhaden, and G.C. Johnson, 2001: Vertical velocities and transports in the equatorial Pacific during 1993–1999. *J. Phys. Oceanogr.*, *31*, 3230–3248.
- Nowlin, Jr., M. Briscoe, W.D., N. Smith, M.J. McPhaden, D. Roemmich, P. Chapman, and J.F. Grassle, 2001: Evolution of a sustained ocean observing system. *Bull. Am. Meteorol. Soc.*, *82*, 1368–1376.
- Serra, Y.L., P.A'Hearn, H.P. Freitag, and M.J. McPhaden, 2001: ATLAS self-siphoning rain gauge error estimates. *J. Atmos. Oceanic Technol.*, *18*, 1989–2002.
- Turk, D., M.J. McPhaden, M.R. Lewis, and A.J. Busalacchi, 2001: Remotely-sensed biological production in the Tropical Pacific during 1992–1999. *Science*, *293*, 471–474.
- Vialard, J., C. Menkes, J.-P. Boulanger, P. Delecluse, E. Guilyardi, M.J. McPhaden, and G. Madec, 2001: A model study of oceanic mechanisms affecting equatorial Pacific sea surface temperature during the 1997–98 El Niño. *J. Phys. Oceanogr.*, *31*, 1649–1675.
- Wang, W. and M. J. McPhaden, 2001: Surface layer heat balance in the equatorial Pacific Ocean during the 1997–98 El Niño and the 1998–99 La Niña. *J. Climate*, *14*, 3393–3407.
- Wang, W. and M.J. McPhaden, 2001: What is the mean seasonal cycle of surface heat flux in the equatorial Pacific?. *J. Geophys. Res.*, *106*, 837–857.
- Bennett, A.F., B.S. Chua, D.E. Harrison, and M.J. McPhaden, 2000: Generalized inversion of Tropical Atmosphere-Ocean (TAO) data and a coupled model of the tropical Pacific, II: La Niña, error statistics, and array assessment. *J. Climate*, *13*, 2770–2785.
- Cronin, M.F., M.J. McPhaden, and R.H. Weisberg, 2000: Wind forced reversing currents in the western equatorial Pacific. *J. Phys. Oceanogr.*, *30*, 657–676.
- Johnson, G.C., M.J. McPhaden, G.D. Rowe, and K.E. McTaggart, 2000: Upper equatorial Pacific ocean current and salinity variability during the 1996–98 El Niño-La Niña cycle. *J. Geophys. Res.*, *105*, 1037–1053.
- Meinen, C.S. and M.J. McPhaden, 2000: Observations of warm water volume changes in the equatorial Pacific and their relationship to El Niño and La Niña. *J. Climate*, *13*, 3551–3559.
- Nystuen, J.A., M.J. McPhaden, and H.P. Freitag, 2000: Surface measurements of precipitation from an ocean mooring: The underwater acoustic log from the South China Sea. *J. Appl. Meteorol.*, *39*, 2182–2197.
- Wang, W. and M.J. McPhaden, 2000: The surface layer heat balance in the equatorial Pacific Ocean. Part II: Interannual variability. *J. Phys. Oceanogr.*, *30*, 2989–3008.

- Zhang C. and M.J. McPhaden, 2000: Intraseasonal surface cooling in the equatorial western Pacific. *J. Climate*, *13*, 2261–2276.
- Chavez, F.P., P.G. Strutton, G.E. Friederich, R.A. Feely, G.C. Feldman, D.G. Foley, and M.J. McPhaden, 1999: Biological and chemical response of the equatorial Pacific Ocean to the 1997–1998 El Niño. *Science*, *286*, 2126–2131.
- Cronin, M.F. and M.J. McPhaden, 1999: Diurnal cycle of rainfall and sea surface salinity in the western Pacific warm pool. *Geophys. Res. Lett.*, *26*, 3465–3468.
- Johnson, G.C. and M.J. McPhaden, 1999: Interior pycnocline flow from the subtropical to the equatorial Pacific Ocean. *J. Phys. Oceanogr.*, *29*, 3073–3089.
- McPhaden, M.J., 1999: Genesis and evolution of the 1997–98 El Niño. *Science*, *283*, 950–954.
- McPhaden, M.J. and X. Yu, 1999: Equatorial waves and the 1997–98 El Niño. *Geophys. Res. Lett.*, *26*, 2961–2964.
- Wang, W. and M.J. McPhaden, 1999: The surface layer heat balance in the equatorial Pacific Ocean, Part I: Mean seasonal cycle. *J. Phys. Oceanogr.*, *29*, 1812–1831.
- Yu, X. and M.J. McPhaden, 1999: Seasonal variability in the equatorial Pacific. *J. Phys. Oceanogr.*, *29*, 925–947.
- Yu, X. and M.J. McPhaden, 1999: Dynamical analysis of seasonal and interannual variability in the equatorial Pacific. *J. Phys. Oceanogr.*, *29*, 2350–2369.
- Bennett, A.F., B.S. Chua, D.E. Harrison, and M.J. McPhaden, 1998: Generalized inversion of Tropical Atmosphere-Ocean data and a coupled model of the tropical Pacific. *J. Climate*, *11*, 1768–1792.
- Chavez, F.P., P.G. Strutton, and M.J. McPhaden, 1998: Biological-physical coupling the central equatorial Pacific during the onset of the 1997–98 El Niño. *Geophys. Res. Lett.*, *25*, 3543–3546.
- Cronin, M.F. and M.J. McPhaden, 1998: Upper ocean salinity balance in the western equatorial Pacific. *J. Geophys. Res.*, *103*, 27,567–27,589.
- McPhaden, M.J., A.J. Busalacchi, R. Cheney, J.R. Donguy, K.S. Gage, D. Halpern, M. Ji, P. Julian, G. Meyers, G.T. Mitchum, P.P. Niiler, J. Picaut, R.W. Reynolds, N. Smith, and K. Takeuchi, 1998: The Tropical Ocean-Global Atmosphere (TOGA) observing system: A decade of progress. *J. Geophys. Res.*, *103*, 14,169–14,240.
- Servain, J., A.J. Busalacchi, M.J. McPhaden, A.D. Moura, G. Reverdin, M. Vianna, and S.E. Zebiak, 1998: A Pilot Research Moored Array in the Tropical Atlantic (PIRATA). *Bull. Am. Meteorol. Soc.*, *79*(10), 2019–2031.
- Ando, K. and M.J. McPhaden, 1997: Variability of surface layer hydrography in the tropical Pacific Ocean. *J. Geophys. Res.*, *102*, 23,063–23,078.
- Archer, D., J. Aiken, W. Balch, R. Barber, J. Dunne, P. Flament, W. Gardner, C. Garside, C. Goyet, E. Johnson, D. Kirchman, M. McPhaden, J. Newton, E. Peltzer, L. Welling, J. White, and J. Yoder, 1997: A Meeting Place of Great Ocean Currents: Shipboard Observations of a Convergent Front at 2°N in the Pacific. *Deep-Sea Res.*, *44*, 1827–1850.
- Cronin, M.F. and M.J. McPhaden, 1997: The upper ocean heat balance in the western equatorial Pacific warm pool during September–December 1992. *J. Geophys. Res.*, *102*, 8533–8553.

- Foley, D.G., T.D. Dickey, M.J. McPhaden, R.R. Bidigare, M.R. Lewis, R.T. Batber, S.T. Lindley, C. Garside, D.V. Manov, and J.D. McNeil, 1997: Time series of physical, bio-optical, and geochemical properties in the central equatorial Pacific Ocean at 0°, 140°W February 1992–March 1993. *Deep-Sea Res.*, 44, 1801–1826.
- Gu, D., S.G.H. Philander, and M.J. McPhaden 1997: The seasonal cycle and its modulation in the eastern tropical Pacific Ocean. *J. Phys. Oceanogr.*, 27, 2209–2218.
- Pinkel, R., M. Merrifield, M.J. McPhaden, J. Picaut, S. Rutledge, D. Siegel, and L. Washburn, 1997: Solitary waves in the western equatorial Pacific Ocean. *Geophys. Res. Lett.*, 24, 1603–1606.
- Plimpton, P.E., H.P. Freitag, and M.J. McPhaden, 1997: ADCP velocity errors from pelagic fish schooling around equatorial moorings. *J. Atmos. Oceanic Technol.*, 14, 1212–1223.
- Esbensen, S.K. and M.J. McPhaden, 1996: Enhancement of tropical ocean evaporation and sensible heat flux by atmospheric mesoscale systems. *J. Climate*, 9, 2307–2325.
- Kessler, W.S., M.C. Spillane, M.J. McPhaden, and D.E. Harrison, 1996: Scales of variability in the equatorial Pacific inferred from the Tropical Atmosphere-Ocean (TAO) Array. *J. Climate*, 9, 2999–3024.
- Lien, R.-C., M.J. McPhaden, and M.C. Gregg, 1996: High-frequency internal waves in the upper central equatorial Pacific and their possible relationship to deep-cycle turbulence. *J. Phys. Oceanogr.*, 26, 581–600.
- McPhaden, M.J., 1996: Monthly Period Oscillation in the Pacific North Equatorial Countercurrent. *J. Geophys. Res.*, 101, 6337–6359.
- Nowlin, W.D., N. Smith, G. Needler, P.K. Taylor, R. Weller, R. Schmitt, L. Merlivat, A. Vézina, A. Alexiou, M.J. McPhaden, and M. Wakatsuchi, 1996: An Ocean Observing System for climate. *Bull. Am. Meteorol. Soc.*, 77, 2243–2273.
- Picaut, J., M. Ioualalen, C. Menkes, T. Delcroix and M.J. McPhaden, 1996: Mechanism of the zonal displacements of the Pacific warm pool: Implications for ENSO. *Science*, 274, 1486–1489.
- Bond, N.A. and M.J. McPhaden, 1995: An indirect estimate of the diurnal cycle in upper ocean turbulent heat fluxes at the equator, 140°W. *J. Geophys. Res.*, 100, 18,369–18,378.
- Katz, E.J., A. Busalacchi, M. Bushnell, Frank González, L. Gourdeau, M.J. McPhaden, and J. Picaut, 1995: A comparison of coincidental time series of the ocean surface height by satellite altimeter, mooring, and inverted echo sounder. *J. Geophys. Res.*, 100, 25,101–25,108.
- Kessler, W.S. and M.J. McPhaden, 1995: The 1991–93 El Niño in the Central Pacific. *Deep-Sea Res., Part II*, 42, 295–333.
- Kessler, W.S. and M.J. McPhaden, 1995: Oceanic equatorial waves and the 1991–93 El Niño. *J. Climate*, 8, 1757–1774.
- Kessler, W.S., M.J. McPhaden, and K.M. Weickmann, 1995: Forcing of intraseasonal Kelvin Waves in the equatorial Pacific. *J. Geophys. Res.*, 100, 10,613–10,631.
- Picaut, J., A.J. Busalacchi, M.J. McPhaden, L. Gourdeau, F.I. Gonzalez, and E.C. Hackert, 1995: Open-ocean validation of TOPEX/POSEIDON sea level in the western equatorial Pacific. *J. Geophys. Res.*, 100, 25,109–25,127.

- Smith, N.R., G.T. Needler, and the Ocean Observing System Development Panel, 1995: An Ocean Observing System for Climate: the Conceptual Design. *Climatic Change*, 31, 475–494.
- Zhang, G.J. and M.J. McPhaden, 1995: On the relationship between sea surface temperature and latent heat flux in the equatorial Pacific. *J. Climate*, 8, 589–605.
- Zhang, G. J., V. Ramanathan, and M.J. McPhaden, 1995: Convection-Evaporation Feedback in the Equatorial Pacific. *J. Climate*, 8, 3040–3051.
- Busalacchi, A.J., M.J. McPhaden, and J. Picaut, 1994: Variability in equatorial Pacific sea surface topography during the verification phase of the TOPEX/Poseidon mission. *J. Geophys. Res.*, 99, 24,725–24,738.
- Feely, R.A., R. Wanninkhof, C.E. Cosca, M.J. McPhaden, R.H. Byrne, F.J. Millero, F.P. Chavez, T. Clayton, D.M. Campbell, and P.P. Murphy, 1994: The effect of tropical instability waves on CO<sub>2</sub> species distributions along the equator in the eastern equatorial Pacific during the 1992 ENSO event. *Geophys. Res. Lett.*, 21, 277–280.
- Lien, R.-C., M.J. McPhaden, and D. Hebert, 1994: Intercomparison of ADCP Measurements at 0°, 140°W. *J. Atmos. Oceanic Technol.*, 11, 1334–1349.
- McPhaden, M.J., 1994: The eleven-year El Niño? *Nature*, 370, 326–327.
- Morrissey, M., W.F. Krawjeski, and M.J. McPhaden, 1994: Estimating rainfall in the tropics using the fractional time raining. *J. Appl. Meteorol.*, 33, 387–393.
- Reverdin, G., C. Frankignoul, E. Kestenare, and M.J. McPhaden, 1994: Seasonal variability in the surface currents of the equatorial Pacific. *J. Geophys. Res.*, 99, 20,323–20,344.
- Sprintall, J. and M.J. McPhaden, 1994: Surface layer variations observed in multi-year time series measurements from the western equatorial Pacific. *J. Geophys. Res.*, 99, 963–979.
- Delcroix, T., G. Eldin, M.J. McPhaden, and A. Morliere, 1993: Effects of westerly wind bursts upon the western equatorial Pacific Ocean, February–April 1991. *J. Geophys. Res.*, 98, 16,379–16,386.
- Johnson, E.S. and M.J. McPhaden, 1993: Effects of a three-dimensional mean flow on intraseasonal Kelvin waves in the equatorial Pacific Ocean. *J. Geophys. Res.*, 98, 10,185–10,194.
- Johnson, E.S. and M.J. McPhaden, 1993: On the structure of intraseasonal Kelvin waves in the equatorial Pacific Ocean. *J. Phys. Oceanogr.*, 23, 608–625.
- Kuroda, Y. and M.J. McPhaden, 1993: Variability in the western equatorial Pacific Ocean during JAPACS cruises in 1989 and 1990. *J. Geophys. Res.*, 98, 4747–4759.
- McPhaden, M.J., 1993: TOGA-TAO and the 1991–92 ENSO event. *Oceanogr.*, 6, 36–44.
- McPhaden, M.J., 1993: Tradewind fetch-related variations in equatorial undercurrent depth, speed and transport. *J. Geophys. Res.*, 98, 2555–2559.
- McPhaden, M.J., F. Bahr, Y. du Penhoat, E. Firing, S.P. Hayes, P.P. Niiler, P.L. Richardson, and J.M. Toole, 1992: The response of the western equatorial Pacific Ocean to westerly wind bursts during November 1989–January 1990. *J. Geophys. Res.*, 97, 14,289–14,303.
- McPhaden, M.J. and H. Peters, 1992: On the diurnal cycle of near surface temperature variability in the eastern equatorial Pacific. *J. Phys. Oceanogr.*, 22, 1317–1329.

- Moum, J.N., M.J. McPhaden, D. Hebert, H. Peters, C.A. Paulson, and D.R. Caldwell, 1992: Internal waves, dynamic instabilities and turbulence in the equatorial thermocline. *J. Phys. Oceanogr.*, 22, 1357–1359.
- Hayes, S.P., P. Chang, and M.J. McPhaden, 1991: Variability of the sea surface temperature in the eastern equatorial Pacific during 1986–88. *J. Geophys. Res.*, 96, 10,553–10,566.
- Hebert, D., J.N. Moum, C.A. Paulson, D.R. Caldwell, T.K. Chereskin, and M.J. McPhaden, 1991: Detailed structure of the upper ocean in the central equatorial Pacific during April 1987. *J. Geophys. Res.*, 96, 7127–7136.
- McPhaden, M.J., D.V. Hansen, and P.L. Richardson, 1991: A comparison of ship drift, drifting buoy and current meter mooring velocities in the Pacific South Equatorial Current. *J. Geophys. Res.*, 96, 775–782.
- McPhaden, M.J. and S.P. Hayes, 1991: On the variability of winds, sea surface temperature, and surface layer heat content in the western equatorial Pacific. *J. Geophys. Res.*, 96(Suppl.), 3331–3342.
- Busalacchi, A.J., M.J. McPhaden, J. Picaut, and S. Springer, 1990: Sensitivity of wind-driven tropical Pacific ocean simulations on seasonal and interannual time-scale. *J. Mar. Sys.*, 1, 119–154.
- Bender, M. and M.J. McPhaden, 1990: Anomalous nutrient distribution in the equatorial Pacific in April 1988: evidence for rapid biological uptake. *Deep-Sea Res.*, 37, 1075–1084.
- Landsteiner, M., M.J. McPhaden, and J. Picaut, 1990: On the sensitivity of Sverdrup transport estimates to the specification of wind stress forcing in the tropical Pacific. *J. Geophys. Res.*, 95, 1681–1691.
- Latif, M., J. Biercamp, H. von Storch, M.J. McPhaden, and E. Kirk, 1990: Simulation of ENSO related surface wind anomalies with an atmospheric GCM forced by observed SST. *J. Climate*, 3, 509–521.
- McPhaden, M.J., 1990: Comment on Chiswell and Lukas “Rossby-gravity waves in the central equatorial Pacific during the NORPAX Hawaii-to-Tahiti Shuttle Experiment.” *J. Geophys. Res.*, 95, 805–806.
- McPhaden, M.J., H.P. Freitag, and A.J. Shepherd, 1990: Moored salinity times series measurements in the equatorial Pacific Ocean. *J. Atmos. Oceanic Technol.*, 7, 568–575.
- McPhaden, M.J. and S.P. Hayes, 1990: Variability in the eastern equatorial Pacific during 1986–1988. *J. Geophys. Res.*, 95, 13,195–13,208.
- McPhaden, M.J., S.P. Hayes, L.J. Mangum, and J. Toole, 1990: Variability in the western equatorial Pacific during the 1986-87 El Niño/Southern Oscillation event. *J. Phys. Oceanogr.*, 20, 190–208.
- McPhaden, M.J. and J. Picaut, 1990: El Niño-Southern Oscillation displacements of the western equatorial Pacific warm pool. *Science*, 250, 1385–1388.
- McPhaden, M.J. and P. Ripa (1990): Wave-mean flow interactions in the equatorial ocean. *Ann. Rev. Fluid Mech.*, 22, 167–205.
- Picaut, J., A.J. Busalacchi, M.J. McPhaden, and B. Camusat, 1990: Validation of the geostrophic method for estimating zonal currents at the equator from GEOSAT altimeter data. *J. Geophys. Res.*, 95, 3015–3024.

- Springer, S., M.J. McPhaden, and A.J. Busalacchi, 1990: Oceanic heat content variability in the tropical Pacific during the 1982–83 El Niño. *J. Geophys. Res.*, *95*, 22,089–22,102.
- Freitag, H.P., M.J. McPhaden, and A.J. Shepherd, 1989: Comparison of equatorial winds as measured by cup vs. propellor anemometers. *J. Atmos. Oceanic Technol.*, *6*, 327–332.
- Hayes, S.P., M.J. McPhaden, and A. Leetmaa, 1989: Observational verification of a quasi-real-time simulation of the tropical Pacific Ocean. *J. Geophys. Res.*, *94*, 2147–2157.
- Hayes, S.P., M.J. McPhaden, and J.M. Wallace, 1989: The influence of sea surface temperature upon surface wind in the eastern equatorial Pacific: weekly to monthly variability. *J. Climate*, *2*, 1500–1506.
- Picaut, J., S.P. Hayes, and M.J. McPhaden, 1989: Use of the geostrophic approximation to estimate time varying zonal currents at the equator. *J. Geophys. Res.*, *94*, 3228–3236.
- Reynolds, R.W., K. Arpe, C. Gordon, S.P. Hayes, A. Leetmaa, and M.J. McPhaden, 1989: A comparison of tropical Pacific surface winds. *J. Climate*, *2*, 105–111.
- McPhaden, M.J., A.J. Busalacchi, and J. Picaut, 1988: Observations and wind-forced model simulations of the mean seasonal cycle in tropical Pacific sea surface topography. *J. Geophys. Res.*, *93*, 8131–8146.
- McPhaden, M.J., A.J. Busalacchi, J. Picaut, and G. Raymond, 1988: A model study of potential sampling errors due to data scatter around XBT transects in the tropical Pacific. *J. Geophys. Res.*, *93*, 8119–8130.
- McPhaden, M.J. and R.A. Fine, 1988: A dynamical interpretation of the tritium maximum in the central equatorial Pacific. *J. Phys. Oceanogr.*, *18*, 1454–1457.
- McPhaden, M.J., H.P. Freitag, S.P. Hayes, B.A. Taft, Z. Chen, and K. Wyrtki, 1988: The response of the equatorial Pacific Ocean to a westerly wind burst in May 1986. *J. Geophys. Res.*, *93*, 10,589–10,603.
- McPhaden, M.J., H.P. Freitag, S.P. Hayes, B.A. Taft, Z. Chen, and K. Wyrtki, 1988: Reply to comment by Harrison and Giese. *J. Geophys. Res.*, *94*, 5027–5028.
- McPhaden, M.J. and B.A. Taft, 1988: On the dynamics of seasonal and intraseasonal variability in the eastern equatorial Pacific. *J. Phys. Oceanogr.*, *18*, 1713–1732.
- Rothstein, L.M., M.J. McPhaden, and J.A. Proehl, 1988: Wind forced wave-mean flow interactions in the equatorial waveguide, I: The Kelvin wave. *J. Phys. Oceanogr.*, *18*, 1435–1447.
- McPhaden, M.J. and A.E. Gill, 1987: Topographic scattering of equatorial Kelvin waves. *J. Phys. Oceanogr.*, *17*, 82–96.
- McPhaden, M.J., J.A. Proehl, and L.M. Rothstein, 1987: Note on the structure of equatorial waves. *J. Phys. Oceanogr.*, *17*, 1555–1559.
- McPhaden, M.J., 1986: The Equatorial Undercurrent: 100 years of discovery. *Eos Trans. AGU*, *67*, 762–765.
- McPhaden, M.J., J.A. Proehl, and L.M. Rothstein, 1986: The interaction of equatorial Kelvin waves with realistically sheared zonal currents. *J. Phys. Oceanogr.*, *16*, 1499–1516.

- Reverdin, G. and M.J. McPhaden, 1986: Near surface current and temperature variability observed in the equatorial Atlantic from drifting buoys. *J. Geophys. Res.*, *91*, 6569–6581.
- McPhaden, M.J., 1985: Finestructure variability observed in CTD measurements from the central equatorial Pacific. *J. Geophys. Res.*, *90*, 11,726–11,740.
- Bretherton, F.P., M.J. McPhaden, and E.B. Kraus, 1984: Design studies for climatological measurements of heat storage. *J. Phys. Oceanogr.*, *14*, 318–337.
- McPhaden, M.J., 1984: On the dynamics of equatorial subsurface counter currents. *J. Phys. Oceanogr.*, *14*, 1216–1225.
- McPhaden, M.J., M. Fieux, and J. Gonella, 1984: Meanders observed in surface currents and hydrography during an equatorial Atlantic transect. *Geophys. Res. Lett.*, *11*, 757–760.
- McPhaden, M.J., G. Reverdin, J. Merle, Y. du Penhoat, and A. Kartavtseff, 1984: Objective analysis of simulated equatorial Atlantic Ocean data on seasonal time scales. *Deep-Sea Res.*, *31*, 551–569.
- Reverdin, G., J. Gonella, M. Fieux, and M.J. McPhaden, 1984: Temperature variations in the equatorial Atlantic as revealed by drifting buoys. *Geophys. Res. Lett.*, *11*, 791–794.
- McPhaden, M.J., 1982: Variability in the central equatorial Indian Ocean, Part I: Ocean dynamics. *J. Mar. Res.*, *40*, 157–176.
- McPhaden, M.J., 1982: Variability in the central equatorial Indian Ocean, Part II: Oceanic heat and turbulent energy balance. *J. Mar. Res.*, *40*, 403–419.
- McPhaden, M.J. and A.J. Semtner, 1982: The effects of zonal shear flow on equatorial basin modes. *J. Phys. Oceanogr.*, *12*, 795–804.
- McPhaden, M.J., 1981: Continuously stratified models of the steady state equatorial ocean. *J. Phys. Oceanogr.*, *11*, 337–354.
- McPhaden, M.J. and R.A. Knox, 1979: Equatorial Kelvin and inertio-gravity waves in zonal shear flow. *J. Phys. Oceanogr.*, *9*, 263–277.

**OTHER PUBLICATIONS** (Meeting Proceedings, Book Chapters, Technical Reports, Newsletters, Commentaries)

- McPhaden, M.J., 2007: El Niño and La Niña: Physical Mechanisms and Climate Impacts. In: *The Impact of Environmental Variability on Ecological Systems*. D.A. Vasseur and K.S. McCann (Eds.). Springer, New York, p. 1–16.
- Smithsonian Institution, 2007: *Hidden Depths: Atlas of the Oceans*. Harper Collins, New York, 256pp.
- Freitag, H.P., M.J. McPhaden, M.F. Cronin, C.L. Sabine, D.C. McClurg, and P.D. McLain, 2006: PMEL Contributions to the OceanSITES Program. In *Oceans 2006: Revolutionizing Marine Science and Technology*, MTS/IEEE, Boston, MA, 18–21 September 2006, 6 pp.
- McPhaden, M.J., 2006: An Indian Ocean moored buoy array for climate. In: *Annual Report on The State of the Ocean and the Ocean Observing System for Climate*, Annual Report, Fiscal Year 2005, J.M. Levy (ed.), NOAA/Climate Program Office/Office of Climate Observation, 130–133.

- McPhaden, M.J., 2006: El Niño and Ocean Observations: A personal history. In: *Physical Oceanography, Developments Since 1950*. M. Jochum and R. Murtugudde (Eds.), Springer, New York, p. 79-99.
- McPhaden, M.J., 2006: Equatorial Pacific Ocean variability (El Niño). In: *Annual Report on The State of the Ocean and the Ocean Observing System for Climate*, Annual Report, Fiscal Year 2005, J.M. Levy (ed.), NOAA/Climate Program Office/Office of Climate Observation, 85–87.
- McPhaden, M.J., 2006: Pilot Research Moored Array in the Tropical Atlantic. In: *Annual Report on The State of the Ocean and the Ocean Observing System for Climate*, Annual Report, Fiscal Year 2005, J.M. Levy (ed.), NOAA/Climate Program Office/Office of Climate Observation, 133–135.
- McPhaden, M.J., Y. Kuroda, and V.S.N. Murty, 2006: Development of an Indian Ocean moored buoy array for climate studies. *CLIVAR Exchanges*, Vol. 11, No. 4, International CLIVAR Office, Southampton, UK, p. 3–5.
- Molinari, R.L., R. Lumpkin, C. Schmid, and M.J. McPhaden, 2006: NOAA’s PIRATA northeast extension. In: *Annual Report on The State of the Ocean and the Ocean Observing System for Climate*, Annual Report, Fiscal Year 2005, J.M. Levy (ed.), NOAA/Climate Program Office/Office of Climate Observation, 136–137.
- Freitag, H.P, T.A. Sawatzky, K.B. Ronnholm, and M.J. McPhaden, 2005: Calibration procedures and instrumental accuracy estimates of next generation water temperature and pressure measurements. NOAA Tech. Memo OAR PMEL-128, NOAA/Pacific Marine Environmental Laboratory, Seattle, WA, 22 pp.
- McPhaden, M.J. (2005): An Indian Ocean moored buoy array for climate. In: *The State of the Ocean and the Ocean Observing System for Climate*, Annual Report, Fiscal Year 2004, NOAA/OGP/Office of Climate Observation, Section 3.22a, 197–200.
- McPhaden, M.J. (2005): Evolution of the 2004 El Niño. In: *The State of the Ocean and the Ocean Observing System for Climate*, Annual Report, Fiscal Year 2004, NOAA/OGP/Office of Climate Observation, Section 2.4, 39–41.
- McPhaden, M.J. (2005): Pilot Research Moored Array in the Tropical Atlantic (PIRATA). In: *The State of the Ocean and the Ocean Observing System for Climate*, Annual Report, Fiscal Year 2004, NOAA/OGP/Office of Climate Observation, Section 3.23a, 201–203.
- McPhaden, M.J., 2004: Book review of “Our Affair with El Niño” by S. George Philander, Princeton University Press, 2004. *Nature*, 429, 605–606.
- McPhaden, M.J., A. Hollingsworth, B.P. Kirtman, R.W. Reynolds, F. Vossepoel, and S.E. Wijffels, 2004: Evolution of the observing system for seasonal-to-interannual climate prediction. In: *Conference Program, CLIVAR 2004*, 21–25 June 2004, Baltimore, MD. World Climate Research Program, Geneva, Switzerland, p. 36.
- Plimpton, P.E., H.P. Freitag, and M.J. McPhaden, 2004: Processing of subsurface ADCP data in the equatorial Pacific. NOAA Tech. Memo. OAR PMEL-125, Pacific Marine Environmental Laboratory, Seattle, WA. 41pp.
- Freitag, H.P., M.J. McPhaden, C. Meinig, and P. Plimpton, 2003: Mooring motion bias of point Doppler current meter measurements. In: *Proceedings of the IEEE Seventh Working*

*Conference on Current Measurement Technology*, San Diego, CA, 13–15 March 2003, IEEE, Piscataway, NJ, 155–160.

- Lake, B.J., S.M. Noor, H.P. Freitag, and M.J. McPhaden (2003): Calibration procedures and instrumental accuracy estimates of ATLAS air temperature and relative humidity measurements. NOAA Tech. Memo. OAR PMEL-123, NTIS: PB2003-104619, NOAA/Pacific Marine Environmental Laboratory, Seattle, WA, 23 pp.
- A'Hearn, P.N., H.P. Freitag, and M.J. McPhaden, 2002: ATLAS module temperature bias due to solar heating. NOAA Tech. Memo OAR PMEL-121, 24 pp.
- Ando, K., D. Behringer, M.J. McPhaden, J. Picaut, and J. Sudre, 2002: Vertical salinity estimates and derived parameters in the equatorial Pacific for GODAE. In: *En Route to GODAE*, 13–15 June 2002, Biarritz, France, CNES, Toulouse, France, 275–276.
- Delcroix, T., Y. Gouriou, and M.J. McPhaden, 2002: Monitoring and analysing sea surface salinity changes in the tropical Pacific. In: *En Route to GODAE*, 13–15 June 2002, Biarritz, France, CNES, Toulouse, France, 217–218.
- McPhaden, M.J., 2002: El Niño, La Niña, and the Climate Swings of 1997–98. In: *La Niña and its Impacts*, M. Glantz (Editor). United Nations University Press, Tokyo, Japan, 25–30.
- McPhaden, M.J., 2002: Ocean Sciences After September 11. *Eos Trans. AGU*, 83, 209.
- McPhaden, M.J., 2002: TAO/TRITON tracks Pacific Ocean warming in early 2002. CLIVAR Exchanges, 7(2), International CLIVAR Project Office, Southampton Oceanography Centre, Southampton, UK, p. 7–9.
- McPhaden, M.J., 2002: El Niño and La Niña: Causes and Global Consequences. In: *Encyclopedia of Global Environmental Change*, Vol 1, John Wiley and Sons, Ltd., Chichester, UK, 353–370.
- Payne, R.E., K. Huang, R.A. Weller, H.P. Freitag, M.F. Cronin, M.J. McPhaden, C. Meinig, Y. Kuroda, N. Ushijima, R.M. Reynolds, 2002: A comparison of buoy meteorological systems. WHOI Technical Report WHOI-2002-10. Woods Hole Oceanographic Institution, December 2002, 67 pp.
- Busalacchi, A.J., J. Picaut, R. Murtugudde, M.J. McPhaden, T. Delcroix, L. Gourdeau, Y. Du Penhoat, and J. Verron, 2001: Application of altimetry measurements to observations and modeling studies of low-frequency upper ocean mass and heat circulation in the tropical Pacific. In: *AVISO Altimetry Newsletter*, No. 8, October 2001. CNES, Toulouse, France, p. 24.
- Freitag, H.P., M. O'Haleck, G.C. Thomas, and M.J. McPhaden, 2001: Calibration procedures and instrumental accuracies for ATLAS wind measurements. NOAA Tech. Memo. OAR PMEL-119, 20 pp.
- Kuroda, Y., K. Sono, K. Ando, H.P. Freitag, and M.J. McPhaden, 2001: In-situ buoy data intercomparison between TRITON and TAO in the western tropical Pacific Ocean. Report of Japan Marine Science and Technology Center (JAMSTEC), 43, 93–105.
- McPhaden, M.J., 2001: Moored buoy observations for seasonal-to-interannual climate prediction. In: *Proceedings of the Symposium on Climate Variability, the Oceans, and Societal Impacts*, 14–18 January 2001, Albuquerque, NM. Am. Meteorol. Soc., Boston, MA, p.94.
- Nystuen, J.A. and M.J. McPhaden, 2001: The beginnings of operational marine weather observations using underwater ambient sound. In: *Proceedings of the Institute of Acoustics*. 9–12 April 2001, University of Southampton, Southampton, England, 23, 135–141.

- Picaut, J., A.J. Busalacchi, T. Delcroix, L. Gourdeau, M.J. McPhaden, R. Murtugudde, Y. Du Penhoat, and J. Verron, 2001: Testing a theory of El Niño with altimetry data: Recharge/discharge of the upper layer of the tropical Pacific Ocean. In: *AVISO Altimetry Newsletter*, No. 8, October 2001. CNES, Toulouse, France, p. 99–100.
- Davis, R.E., W.S. Kessler, R. Lukas, R.A. Weller, D.W. Behringer, D.R. Cayan, D.B. Chelton, C. Eriksen, S. Esbensen, R.A. Fine, I. Fukumori, M.C. Gregg, E. Harrison, G.C. Johnson, T. Lee, N.J. Mantua, J.P. McCreary, M.J. McPhaden, J.C. McWilliams, A.J. Miller, H. Mitsudera, P.P. Niiler, B. Qiu, D. Raymond, D. Roemmich, D.L. Rudnick, N. Schneider, P.S. Schopf, D. Stammer, L. Thompson, and W.B. White, 2000: Implementing the Pacific Basin Extended Climate Study (PBECS). U.S. CLIVAR Office Report, Version 2000.2, 123 pp.
- Delcroix, T., C. Henin, M. Ioualalen, M. McPhaden, J. Picaut, K. Ando, and L. Gourdeau, 2000: Monitoring and understanding sea surface salinity changes in the tropical Pacific during the 1992–99 ENSO period. In: *Proceedings of the International Conference on the Ocean Observing System for Climate*, 18–22 October 1999, Saint-Raphael, France, Poster Session A, 4 pp.
- Feely, R.A., F.P. Chavez, G. Friedrich, M.J. McPhaden, and R. Wanninkhof, 2000: The effect of El Niño events on variability of CO<sub>2</sub> fluxes in the equatorial Pacific. *US JGOFS Newsletter*, 10(3), 1–4.
- Freitag, H.P. and M.J. McPhaden, 2000: TAO and PIRATA buoy networks in the tropical Pacific and Atlantic. In: *Proceedings of the 16th International Conference on IIPS for Meteorology, Oceanography, and Hydrology*, 9–14 January 2000, Long Beach, CA, 225–226.
- Freitag, H.P., N.N. Soreide, D.W. Denbo, and M.J. McPhaden, 2000: Data and information management for the TAO and PIRATA moored buoy arrays. In: *Proceedings of the International Conference on The Ocean Observing System for Climate*, 18–22 October 1999, Saint-Raphael, France, Poster Session B, 2 pp.
- McPhaden, M.J., 2000: El Niño. McGraw-Hill 2000 Yearbook of Science and Technology Encyclopedia, McGraw-Hill, New York, 131–135.
- McPhaden, M.J., 2000: Monitoring the North Pacific for improved ocean, weather, and climate forecasts. In: *Proceedings of the International Symposium TRIANGLE '98*, Kyoto, Japan, 29 September–2 October 1998, 8–9.
- McPhaden, M.J., 2000: Getting the Science Right. In *Sources*, No. 127, October 2000. UNESCO, Paris, France, p. 5.
- McPhaden, M.J., T. Delcroix, K. Hanawa, Y. Kuroda, G. Meyers, J. Picaut, and M. Swanson, 2000: The ENSO observing system. In: *Proceedings of the International Conference on the Ocean Observing System for Climate*, 18–22 October 1999, Saint-Raphael, France, Session 2A, 14 pp.
- McPhaden, M.J., H.P. Freitag, J. Servain, and E. Josse, 2000: Effects of fishing activity on tropical moored buoy arrays. In: *Peche Thoniere et Dispostifs de Concentration de Possions*, J.-Y. Gall, P. Cayre, and M. Taquet (eds.), IFREMER, Plouzane, France, p. 683.
- Plimpton, P.E., H.P. Freitag, and M.J. McPhaden, 2000: Correcting moored ADCP data for fish-bias errors at 0°, 110° W and 0°, 140° W from 1993–1995. NOAA Tech. Memo. OAR PMEL-117 (NTIS PB2000-106363), 35 pp.
- Fairall, C.W., P. Hacker, E.F. Bradley, S. Anderson, Y. du Penhoat, C. Eriksen, K.S. Gage, S. Kennan, M. LeMone, M. McPhaden, C. Ohlmann, D. Parsons, C. Paulson, R. Pinkel, S. Rutledge, A. Soloviev, R. Weller, E. Westwater, and E. Zipser, 1999: The legacy of COARE

- for technology and ocean-atmosphere observing capability. COARE98. In: *Proceedings of a Conference on the TOGA Coupled Ocean-Atmosphere Response Experiment*, Boulder, CO, 7–14 July 1998, WCRP-107, WMO/TD-No. 940, 116–138.
- Freitag, H.P., M.E. McCarty, C. Nosse, R. Lukas, M.J. McPhaden, and M.F. Cronin, 1999: COARE Seacat data: Calibrations and quality control procedures. NOAA Tech. Memo. ERL PMEL-115, 89 pp.
- McPhaden, M.J., 1999: El Niño: The child prodigy of 1997–98. *Nature*, 398, 559–562.
- McPhaden, M.J., 1999: The ENSO Observing System. In: *Proceedings of the Second Hayes Symposium on Seasonal to Interannual Variability - the 1997/1998 ENSO Cycle*. Am Met. Soc., Annual Meeting, 10–15 January 1999, Dallas, TX, 1.
- McPhaden, M. J., 1999: TAO Implementation Panel-Report of the 7th Session. CLIVAR Exchanges, Vol. 4, No. 1, March 1999, International CLIVAR Project Office, Southampton, UK, 10–11.
- McPhaden, M.J., 1999: The 1997–98 El Niño. In *The Twenty-Third Annual Climate Diagnostics and Prediction Workshop*, Miami, FL, 26–30 October, NCEP, NOAA, Washington, DC, 4–7.
- McPhaden, M.J. and X. Yu, 1999: Genesis and evolution of the 1997–98 El Niño. In: *Proceedings of the International Symposium TRIANGLE '98*, Kyoto, Japan, 29 September–2 October 1998, JAMSTEC, Yokosuka, Japan, 3–8.
- McPhaden, M.J. and X. Yu, 1999: Genesis and evolution of the 1997-98 El Niño. In: *Proceedings of the Second Hayes Symposium on Seasonal to Interannual Climate Variability - The 1997/1998 ENSO Cycle*, AMS, Dallas, TX, 10–15 January 1999, 38–42.
- Cronin, M.F. and M.J. McPhaden, 1998: Comparison of the upper ocean heat and freshwater balances in the western Pacific warm-fresh pool. In: *Proceedings of the Ninth Conference of the Interaction of the Sea and Atmosphere*. January 11–16, 1998, Phoenix, AZ. Am. Met. Soc., Boston, MA, 157–158.
- Dickinson, S., S. Singh, K.A. Kelly, M. Spillane, and M.J. McPhaden, 1998: Establishing a mapping methodology for NSCAT winds. Technical Report, APL-UW TR 9801, 23 pp.
- Intergovernmental Oceanographic Commission., 1998: *Proceedings of the Sixth Workshop of the TAO Implementation Panel*, Reading, England, 4–6 November 1997. Intergov. Oceanogr. Comm., Paris, France, GOOS Report No. 36, 35 pp.
- McPhaden, M.J., 1998: The 1997–98 El Niño. In: *Proceedings of the Twenty-Third Annual Climate Diagnostics and Prediction Workshop*, Miami, FL, 26–30 October 1998, NCEP, NOAA, Washington, DC, 4–7.
- Soreide, N.N., D.C. McClurg, W.H. Zhu, D.W. Denbo, and M.J. McPhaden, 1998: Web access to realtime data from the TAO buoy network in the Tropical Pacific Ocean. In: *Proceedings of the Ocean Community Conference '98*, Marine Technology Society, 16–19 November 1998, Baltimore, MD, published on CD-ROM by the Marine Technology Society.
- Howe, B. and M.J. McPhaden, 1997: The tropical Pacific and ENSO: The TAO Array and tomography. In: *Proceedings of International Workshop on Ocean Acoustic Tomography*, JAMSTEC, Yokosuka, Japan, 13–14 March 1997, 76–83.
- Mangum, L.J., T.B. Wright, and M.J. McPhaden, (Editors), 1997: *Proceedings of the Fifth Workshop of the TAO Implementation Panel*. Goa, India, November 18-21, 1996. GCOS Report No. 31, ICPO Publication Series No. 5, and GOOS Report No. 97/1. Published on behalf of the directorates of the Global Climate Observing System, the Global Ocean

Observing System, and the Climate Variability and Predictability Program by NOAA/Pacific Marine Environmental Laboratory, Seattle, WA, 52 pp.

McCarty, M.E., L.J. Mangum, and M.J. McPhaden, 1997: Temperature errors in TAO data induced by mooring motion. NOAA Tech. Memo. ERL PMEL-108, (NTIS PB97-146492), Pacific Marine Environmental Laboratory, Seattle, WA, 68 pp.

McClurg, D.C., W.H. Zhu, S. Zube, N.N. Soreide, and M.J. McPhaden, 1997: World Wide Web access to data from the TAO buoy network expanded to include sensor time series. In: Proceedings of the 13th International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography and Hydrology, AMS, 2–7 February 1997, Long Beach, CA, 178–181.

Plimpton, P.E., H.P. Freitag, M.J. McPhaden, and R.H. Weisberg, 1997: Using echo intensity to correct moored ADCP data for fish-bias errors at 0°, 170°W. NOAA Tech. Memo. ERL PMEL-111 (NTIS PB97-20137), 163 pp.

Freitag, H.P., L.J. Mangum, and M.J. McPhaden, 1996: The Tropical Atmosphere Ocean Array provides real-time monitoring of the tropical ocean. Argos Newsletter, 50, 5–7.

Koehn, M.P., L.J. Mangum, and M.J. McPhaden, (Editors), 1996: *Proceedings of the Fourth Workshop of the TAO Implementation Panel*. Fortaleza, Brazil, September 12–14, 1995. WCRP Informal Report 1/1996. Published on behalf of the directorates of the Global Climate Observing System, the Global Ocean Observing System, and the Climate Variability and Predictability Program by NOAA/Pacific Marine Environmental Laboratory, Seattle, WA, 61 pp.

McPhaden, M.J., 1996: Moored time series measurements in support of climate studies. In: *Proceedings of the International Workshop on Ocean Climate variations from Seasons to Decades with Special Emphasis on Pacific Ocean Buoy Network*. Mutsu, Japan, May 29–31, 1996. JAMSTEC, Yokosuka, Japan, 18–21.

Smull, B.F. and M.J. McPhaden, 1996: Comparison of NCEP/NCAR reanalyzed fields and surface observations over the TOGA-TAO Array. In: *Proceedings of the 21<sup>st</sup> Annual NOAA Climate Diagnostics Workshop*, Huntsville, Alabama, 28 October–1 November 1996, 57–60.

Soreide, N.N. and M.J. McPhaden, 1996: Real-time distribution of data from the TAO moored buoy array in the tropical Pacific. In: *Proceedings of the ECO-INFORMA 96*, Global Networks for Environmental Information, Lake Buena Vista, FL, November 4–7, 1996, 359–365.

Soreide, N.N., D.C. McClurg, W.H. Zhu, M.J. McPhaden, D.W. Denbo, and M.W. Renton, 1996: World Wide Web access to real-time and historical data from the TAO array of moored buoys in the tropical Pacific Ocean: Updates for 1996. In: *Proceedings of the OCEANS 96 MTS/IEEE*, Ft. Lauderdale, FL, September 23–26, 1996, 1354–1359.

Freitag, H.P., Y. Feng, L.J. Mangum, M.J. McPhaden, J. Neander, and L.D. Stratton, 1995: Calibration procedures and instrumental accuracy estimates of TAO temperature, relative humidity, and radiation measurements. NOAA Tech. Memo., ERL PMEL-104, U.S. Dept. of Commerce, Washington, D.C., 32 pp.

Freitag, H.P., L.J. Mangum, and M.J. McPhaden, 1995: Tropical Atmosphere Ocean Array - Update. *Sea Technol.*, 36(10), 47–50.

- Gourdeau, L., J. Picaut, M.-J. Langlade, A. Busalacchi, M.J. McPhaden, P. Freitag, F. González, M. Eble, and R. Weller, 1995: Data preparation for the open-ocean validation of TOPEX/POSEIDON sea level in the western equatorial Pacific. *Notes Techniques, Sciences de la Mer, Océanographie Physique, ORSTOM*, No. 12, 43 pp.
- Kessler, W.S. and M.J. McPhaden, 1995: Oceanic equatorial waves and the 1991–93 El Niño. In: *Proceedings of the TOGA95 Symposium*, 2–7 April 1995, Melbourne, Australia, WCRP-91, WMO/TD No. 717, December 1995, 333–337.
- Kessler, W.S., M.C. Spillane, D.E. Harrison, and M.J. McPhaden, 1995: Scales of variability in the equatorial Pacific inferred from the TOGA-TAO buoy array. In: *Proceedings of the TOGA95 Symposium*, 2–7 April 1995, Melbourne, Australia, WCRP-91, WMO/TD No. 717, December 1995, 210–214.
- Koehn, M.P., L.J. Mangum, and M.J. McPhaden, (Editors), 1995: In: *Proceedings of the Third Workshop of the TOGA-TAO Implementation Panel*. Seoul, South Korea, October 18–20, 1994. ITPO Publication, No. 12. Published on behalf of the International TOGA Project Office by NOAA/Pacific Marine Environmental Laboratory, Seattle, WA, 61 pp.
- Mangum, L.J., H.P. Freitag, and M.J. McPhaden, 1995: TOGA TAO array sampling schemes and sensor evaluations. In: *Proceedings, Oceans '94 OSATES*, 13–16 September 1994, Parc de Penfeld, Brest, France, II-402–II-406.
- McPhaden, M.J., 1995: Moored buoys used for El Niño prediction. *Fisheries Newsletter*, 74, 38–40.
- McPhaden, M.J., 1995: Report of TOGA-TAO Implementation Panel Meeting. Seoul, Korea, October 18–20, 1994. TOGA Notes, No 18, p. 19.
- McPhaden, M.J., 1995: Ocean-atmosphere variability observed from the TOGA-TAO Array. In: *Proceedings of the TOGA95 Symposium*, 2–7 April 1995, Melbourne, Australia, 181–185.
- McPhaden, M.J., 1995: The Tropical Atmosphere-Ocean Array is completed. *Bull. Am. Meteorol. Soc.*, 76, 739–741.
- McPhaden, M.J., W.S. Kessler, N.N. Soreide, and D.C. McClurg, 1995: What is an El Niño? *Mariner Weather Log*, 39(2), 34–37.
- McPhaden, M.J., L. Merlivat, G. Needler, W.D., Jr. Nowlin, R.W. Schmitt, N. Smith, P.K. Taylor, A.F. Vézina, M. Wakatsuchi, R. Weller, and A. Alexiou, 1995: Scientific design for the common module of the Global Ocean Observing System and the Global Climate Observing System: An ocean observing system for climate. Final Report of the Ocean Observing System Development Panel, Department of Oceanography, Texas A&M University, College Station, TX, 265 pp.
- McPhaden, M.J., W. Wang, and C. Zhang, 1995: On the relationship between sea surface temperature, pressure, and zonal winds in the equatorial Pacific. In: *Proceedings of the 20<sup>th</sup> Annual Climate Diagnostics Workshop*, University of Washington, Seattle, Washington, 23–27 October 1995. Climate Prediction Center, Washington, D.C., 97–100.
- Picaut, J. J.-P. Boulanger, A.J. Busalacchi, T. Delcroix, L. Gourdeau, M.J. McPhaden, C. Menkes, and Y. Du Penhoat, 1995: ENSO and altimetry. In: *Proceedings of the TOGA95 Symposium*, 2–7 April 1995, Melbourne, Australia, 74–78.
- Picaut, J., A.J. Busalacchi, M.J. McPhaden, E.J. Katz, L. Gourdeau, F.I. Gonzalez, E.C. Hackert, and M. Bushnell, 1995: Open-ocean validation of TOPEX/POSEIDON sea level in the western equatorial Pacific. L'Institut Français de Recherche Scientifique pour le

Developpement en Cooperation, Centre de Nouméa. Conventions Sciences de la mer, Océanographie Physique No. 5, 76 pp.

- Plimpton, P.E., H.P. Freitag, and M.J. McPhaden, 1995: Correcting moored ADCP data for fish-bias errors at 0°, 110°W and 0°, 140°W from 1990–1993. NOAA Tech. Memo. ERL PMEL-107, 49 pp.
- Soreide, N.N., D.C. McClurg, W.H. Zhu, D.W. Denbo, and M.J. McPhaden, 1995: TAO display software for TOGA-TAO buoy data. In: *Proceedings of the 11th International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology*, Dallas, TX, January 15–20, 1995, 322–326.
- Soreide, N.N., D.C. McClurg, W.H. Zhu, M.J. McPhaden, L.J. Mangum, and D.W. Denbo, 1995: Distribution and display of TOGA-TAO buoy data. In: *Proceedings, Oceans '94 OSATES*, 13–16 September 1994, Parc de Penfeld, Brest, France, I-444–I-448.
- Soreide, N.N., W.H. Zhu, D.C. McClurg, M.J. McPhaden, and M.W. Renton, 1995: Access to realtime data from the TAO array of moored buoys via UNIX/X-WINDOWS or the World Wide Web and Mosaic. In: *Proceedings of OCEANS '95*, San Diego, CA, October 9–12, 1995, Vol. 1, 360–365.
- Thiele, O.W., M.J. McPhaden, and D.A. Short, 1995: *Optical Rain Gauge Performance: Proceedings of the Second Workshop on Optical Rain Gauge Measurements*, held at NASA Goddard Space Flight Center, Greenbelt, Maryland April 21–22, 1994. NASA Conference Publication 3288, 76 pp.
- Freitag, H.P., Y. Feng, L.J. Mangum, M.J. McPhaden, J. Neander, and L.D. Stratton, 1994: Calibration procedures and instrumental accuracy estimates of TAO temperature, relative humidity and radiation measurements. NOAA Tech. Memo. ERL PMEL-104 (PB95-174827), 32 pp.
- Brainard, R.E., 1994: The diurnal cycle of high-frequency temperature variability at 0°, 140°W on seasonal and interannual time scales. Naval Postgraduate School, Monterey, CA, June 1994. Ph.D. Dissertation, 156 pp.
- McPhaden, M.J. (Editor), 1994: *Proceedings of the Second Workshop of the TOGA-TAO Implementation Panel*. Bali, Indonesia, October 18–20, 1993. ITPO Publication, No. 10. Published on behalf of the International TOGA Project Office by NOAA/Pacific Marine Environmental Laboratory, Seattle, WA, 53 pp.
- Soreide, N.N., D.C. McClurg, W.H. Zhu, D.W. Denbo, and M.J. McPhaden, 1994: TAO software for real-time and historical TOGA-TAO data display and analysis. In: *Proceedings of the Tenth International Conference on Interactive Information and Processing Systems for Meteorology, Oceanography, and Hydrology*, Nashville, TN, January 23–28, 1994, 285–290.
- Thiele, O.W., D.A. Short, J.C. Gerlach, D.B. Wolff, M.J. McPhaden, and J.C. Wilkerson, 1994: TOGA-COARE ocean precipitation morphology. In: *Proceedings of the Sixth Conference on Climate Variations; 74th AMS Annual Meeting*, Nashville, TN, January 23–28, 1994, 96–100.
- Freitag, H.P., P.E. Plimpton, and M.J. McPhaden, 1993: Evaluation of an ADCP Fish-Bias Rejection Algorithm. In: *Proceedings of the Oceans '93*, October 18–21, 1993, Victoria B.C. Canada, II-394–397.

- Kessler, W.S., D.E. Harrison, and M.J. McPhaden, 1993: Design and assessment of the Tropical Pacific Thermal Monitoring System using the GFDL OGCM. In: *Proceedings of the Workshop on the Use of Sub-Surface Thermal Data for Climate Studies*, Brest, France, 13–16 September 1993. ITPO Report No. 9, WOCE Report No. 110/93, 47–49.
- McCarty, M.E. and M.J. McPhaden, 1993: Mean seasonal cycles and interannual variations at 0°, 165° during 1986–1992. NOAA Tech. Memo. ERL PMEL-98 (PB93-186195), 64 pp.
- McPhaden, M.J., 1993: Stanley P. Hayes (1944–1992), in memoriam. *Bull. Am. Meteorol. Soc.*, 74, 1396–1398.
- McPhaden, M.J., 1993: TOGA-COARE Optical Rain Gauge Measurements. Workshop Report, Seattle, Washington, 31 March–1 April 1993, TOGA Notes, No. 13, 18–19.
- McPhaden, M.J. (Editor), 1993: Proceedings of the First Workshop of the TOGA-TAO Implementation Panel. Joint Institute for Marine and Atmospheric Research, East-West Center, University of Hawaii, Honolulu, HI, November 9–10, 1992, JIMAR Tech. Rep., 26 pp.
- McPhaden, M.J., H.B. Milburn, P.A. Arkin, O.W. Thiele, J. Wilkerson, and W.F. Krajewski, 1993: Moored optical rain gage measurements from the equatorial Pacific Ocean. In: *Proceedings of the Fourth International Conference on Precipitation*, Iowa City, Iowa, April 26–28, 1993, Iowa Institute for Hydraulic Research, Iowa City, 32–33.
- The Ocean Observing System Development Panel, 1993: Interim design for the ocean component of a global climate observing system. Department of Oceanography, Texas A&M, College Station, Texas, 105 pp.
- Soreide, N.N. and M.J. McPhaden, 1993: The TAO workstation software: Display real-time data from the TOGA-TAO array. *Earth System Monitor*, No. 3, 4ff.
- Soreide, N.N., D.C. McClurg, W.H. Zhu, D.W. Denbo, and M.J. McPhaden, 1993: The TAO workstation display software for real-time data from the TOGA-TAO array of moored buoys. Oceans '93, Engineering in Harmony with the Ocean, Proceedings, Vol. III, 18–21 October 1993, Victoria, Canada, 340–343.
- Soreide, N.N. and M.J. McPhaden, 1993: The TAO workstation display software for real-time data from the TOGA TAO array. In: *Proceedings, Fourth International Conference on Southern Hemisphere Meteorology and Oceanography*, 29 March–2 April 1993, Hobart, Australia, 422–423.
- Sprintall, J. and M.J. McPhaden (1993): Hydrodynamic regimes in the western equatorial Pacific warm pool. In: *Proceedings of the Fourth International Conference on Southern Hemisphere Meteorology and Oceanography*, Hobart, Australia, March 29–April 2, 1993, 390–391.
- Freitag, H.P., M.J. McPhaden, and P.E. Pullen, 1992: Fish-induced bias in acoustic Doppler current profiler data. In: *Proceedings of the Oceans '92 Conference*, Newport, R.I., 26–29 October 1992, p. 712–717.
- Hayes, S.P. and M.J. McPhaden, 1992: ENSO Update: winds, temperature and currents in the equatorial Pacific. U.S. JGOFS News, No. 3, p. 4.
- Hayes, S.P. and M.J. McPhaden, 1992: Temporal sampling requirements for low frequency temperature variability in the eastern equatorial Pacific Ocean. NOAA Tech. Memo. ERL PMEL-96, 17 pp.

- Kuroda, Y., K. Ando, K. Muneyama, and M.J. McPhaden, 1992: Current structures in the western equatorial Pacific during JAPACS cruises. In: *Proceedings of the PORSEC '92 Conference*, 25–31 August 1992, Okinawa, Japan, Vol 1, 100–105.
- McPhaden, M.J., 1992: Stan Hayes, in memoriam. TOGA-NOTES, No. 9, p. 21–22.
- McPhaden, M.J. and M.E. McCarty, 1992: Mean seasonal cycles and interannual variations at 0°,110°W and 0°,140°W during 1980–1991. NOAA Tech. Memo. ERL PMEL-95 (PB93-114726), 118 pp.
- McPhaden, M.J. and H.B. Milburn, 1992: Moored precipitation measurements for TOGA. TOGA Notes, No. 7, p. 1-5.
- Picaut, J., A.J. Busalacchi, T. Delcroix, and M.J. McPhaden, 1992: Rigorous open-ocean validation of TOPEX/POSEIDON sea level in the western equatorial Pacific. TOPEX/POSEIDON Joint Verification Plan, NASA, Jet Propulsion Laboratory. *JPL*, 92-2, V14–V16.
- Pullen, P.E., McPhaden, M.J., H.P. Freitag, and J. Gast, 1992: Skew errors in acoustic Doppler current profiler data from near-surface high vertical shear flow regimes. In: *Proceedings of the Oceans '92 Conference*, Newport, R.I., 26–29 October 1992, 706–711.
- Steffin, O. and M.J. McPhaden, 1992: The TOGA-TAO Array. Argos Newsletter, Special Issue on Operational Program, pp. 8–11.
- Freitag, H.P., M.J. McPhaden, C.S. Coho, and A.J. Shepherd, 1991: Equatorial wind, current, and temperature data: 108°W to 140°W; April 1983–October 1987. NOAA Data Report ERL PMEL-35 (PB92-119817), 116 pp.
- McPhaden, M.J., H.B. Milburn, A.I. Nakamura, and A.J. Shepherd, 1991: PROTEUS - Profile Telemetry of Upper Ocean Currents. *Sea Technol. Mag.*, 32, February 1991, 10–19.
- McPhaden, M.J., A.J. Shepherd, W.G. Large, and P.P. Niiler, 1991: A TOGA array of drifting thermistor chains in the western equatorial Pacific Ocean: October 1989–January 1990. NOAA Data Report ERL PMEL-34 (PB91-224535), 171 pp.
- Picaut, J., T. Delcroix, Y. du Penhoat, A.J. Busalacchi, Jr., G. Gautier, S.P. Hayes, and M.J. McPhaden, 1991: Application of TOPEX/POSEIDON altimetry measurements to observational and modeling studies of the low-frequency upper ocean mass and heat circulation in the tropical Pacific. TOPEX/POSEIDON Science Investigations Plan, NASA, Jet Propulsion Laboratory, *JPL*, 91-27, 114–117.
- Yue, F., H.P. Freitag, M.J. McPhaden, and A.J. Shepherd, 1991: Wind, current, and temperature data at 0°,165°E; January 1986–March 1991. NOAA Data Report ERL PMEL-36, 54 pp.
- Hayes, S.P., L.J. Mangum, M.J. McPhaden, and J. Picaut, 1990: Thermal structure variability along 165°E. In: *Proceedings of the Symposium on US/PRC Bilateral Air-Sea Interaction Program*, Beijing, PRC, 101–111.
- McPhaden, M.J., 1990: Moored time series measurements. *Eos Trans. AGU*, 71, p. 760.
- McPhaden, M.J., 1990: A TOGA moored observing array for equatorial currents, 1990–1994. In: *Proceedings of the 9th Session of the JSC/CCCO TOGA Scientific Steering Group*, Kona, HI, July 23–25, 1990, World Climate Research Programme Publication, WCRP-47, 23 pp.
- McPhaden, M.J. and S.P. Hayes, 1990: Moored velocity, temperature and wind measurements in the equatorial Pacific Ocean: A review of scientific results, 1985–1990. In: *Proceedings of*

*the International TOGA Scientific Conference*, Honolulu, HI, July 16–20, 1990. Report WCRP-43, World Meteorological Organization, Geneva, Switzerland, 59–69.

- McPhaden, M.J., S.P. Hayes, L.J. Mangum, and J. Toole (1990): Variability in the western equatorial Pacific Ocean during the 1986–87 El Niño/Southern Oscillation event. Air-Sea Interaction in Tropical Western Pacific. In: *Proceedings of the US-PRC International TOGA Symposium*. 1988, Beijing, PRC, 41–58.
- McPhaden, M.J., H.B. Milburn, A.I. Nakamura, and A.J. Shepherd, 1990: PROTEUS--Profile Telemetry of Upper Ocean Currents. In: *Proceedings of the Marine Tech. Soc. Conference*, 25–28 September 1990, The Marine Technology Society, Washington, D.C., 353–357.
- Shuzhen, P., Y. Huiling, J. Toole, B. Millard, M.J. McPhaden, and L.J. Mangum, 1990: Comparison among autoregression models for forecasting El Niño events. Air-Sea Interaction in Tropical Western Pacific, In: *Proceedings of the US-PRC International TOGA Symposium*, 1988, Beijing, China Ocean Press, 59–66.
- Taft, B.A. and M.J. McPhaden, 1990: Diurnal cycle of sea-surface temperature in the western tropical Pacific. In: *Proceedings of the Symposium on US-PRC Bilateral Air-Sea Interaction Program*, Beijing, PRC, 343–352.
- Busalacchi, A.J., M.J. McPhaden, J. Picaut, and S. Springer, 1989: Uncertainties in tropical Pacific Ocean simulations: the seasonal and interannual sea level response to three analyses of the surface wind field. In: *Proceedings of the TOGA-COARE Workshop*, May 24–30, 1989, Noumea, New Caledonia, 367–377.
- Freitag, H.P., L.J. Mangum, M.J. McPhaden, and S.P. Hayes, 1989: Tropical ocean climate studies. *Argos Newsletter*, 37, 3–7.
- Freitag, H.P., M.J. McPhaden, and A.J. Shepherd, 1989: Real-time surface currents from moored buoys. In: *Proceedings of the North American Argos User's Conference*, May 15–17, 1989, San Diego, Service Argos Inc., Landover, MD, 85–100.
- Hayes, S.P., M.J. McPhaden, J.M. Wallace, and J. Picaut, 1989: The influence of sea-surface temperature on the surface wind in the equatorial Pacific Ocean. In: *Proceedings of the TOGA-COARE Workshop*, May 24–30, 1989, Noumea, New Caledonia, 543–547.
- Latif, M., J. Biercamp, H. von Storch, M.J. McPhaden, and E. Kirk, 1989: Analyses of tropical anomalies simulated by an AGCM. Max-Planck-Institut für Meteorologie, Hamburg, Germany, No. 27.
- McPhaden, M.J., 1989: On the relationship between winds and upper ocean temperature variability in the western equatorial Pacific. In: *Proceedings of the TOGA-COARE Workshop*, May 24–30, 1989, Noumea, New Caledonia, 283–290.
- McPhaden, M.J., 1989: Moored equatorial current measurements in the Pacific Ocean. In: *Proceedings of the International Symposium on Japanese Pacific Climate Studies (JAPACS)*, October 19–20, 1989, Tsukuba Center for Institutes, Tsukuba Science City, Japan, 57:1–57:5.
- Picaut, J., B. Camusat, T. Delcroix, M.J. McPhaden, and A.J. Busalacchi, 1989: Surface equatorial flow anomalies in the Pacific Ocean during the 1986–87 ENSO using GEOSAT altimeter data. In: *Proceedings of the TOGA-COARE Workshop*, May 24–30, 1989, Noumea, New Caledonia, 301–309.
- Freitag, H.P. and M.J. McPhaden, 1988: EPOCS moored temperature, current and wind measurements at 0°, 140°W: May–June, 1987. NOAA Data Report ERL PMEL-23 (B88-19415), 31 pp.

- McPhaden, M.J., 1988: PMEL current meter mooring program in the tropical Pacific. In U.S. Global Ocean Flux Study Pacific Planning Report, U.S. GOFS Planning Report No. 9, Woods Hole Oceanographic Institution, Woods Hole, MA, 91–94.
- Hayes, S.P., L.J. Mangum, M.J. McPhaden, and J. Picaut, 1988: Thermal structure variability along 165°E. In: *Proceedings of the Symposium on Western Tropical Pacific Air-Sea Interactions*, Beijing, PRC, November 1988.
- Picaut, J., S.P. Hayes, M.J. McPhaden, G. Eldin, J. Grelet, and Y. Montel, 1988: Amelioration des systemes d'observations pour la surveillance en temps reel de la structure thermique du Pacifique Tropical. *Compte rendu d'une recherche finnee par le MRES, ORSTOM-Noumea*, 83 pp.
- Von Storch, H., M. Latif, J. Biercamp, M.J. McPhaden, and E. Kirk, 1988: Simulation of the Southern Oscillation. *Meteorologisches Institut der Universitat Hamburg, Technical Report #2*, G. Fischer (editor), 169–189.
- Freitag, H.P., M.J. McPhaden, and A.J. Shepherd, 1987: Equatorial current and temperature data: 108°W to 110°W; October, 1979–November 1983. *NOAA Data Report, ERL PMEL-17 (PB87-204004)*, 99 pp.
- Picaut, J., M.J. McPhaden, A.J. Busalacchi, S.P. Hayes, G. Raymond, R. Tournier, and J. Marchand, 1987: Validation d'un modele du Pacifique tropical a l'aide de donnees XBT mouillages chaines a thermistance. *Rapport Scientifique PNEDC ASP 19.84.132, ORSTOM-Noumea*, 117 pp.
- McPhaden, M.J., 1986: The Equatorial Undercurrent: 100 years of discovery. *Eos Trans. AGU*, 67(40), 762–765.
- Proehl, J.A., M.J. McPhaden, and L.M. Rothstein, 1986: A numerical approach to equatorial oceanic wave-mean flow interactions. *Advanced Physical Oceanographic Numerical Modelling*, J. O'Brien, editor, Reidel Press, 111–126.
- Kessler, W.S., B.A. Taft, and M.J. McPhaden, 1985: An assessment of the XBT sampling network in the central Pacific. *UCAR Tech. Rept., USTOGA4*, 62 pp.
- McPhaden, M.J. and G. Meyers, 1985: *Proceedings of a TOGA Workshop on Ocean Thermal Data Management. UCAR Tech. Rept., USTOGA6*.
- McPhaden, M.J., B.A. Taft (ed.), 1984: In: *Proceedings of the First International TOGA Workshop on Thermal Sampling. UCAR Tech. Rept., USTOGA 3*, 53 pp.
- McPhaden, M.J., 1983: Equatorial sea surface temperature variations on seasonal time scales. In: *Marine Hydrodynamics of the Equatorial Ocean*, J.C.J. Nihoul, editor, Elsevier Scientific Publishing Company, Amsterdam, Holland, pp. 1–15.
- McPhaden, M.J., G. Reverdin, Y. du Penhoat, and A. Kartavtseff, 1982: Analyse optimale du champ de temperature pour le Programme FOCAL. *Laboratoire d'Oceanographie Physique, Museum National d'Histoire Naturelle, Rapport Interne no. 82-03*.
- Knox, R.A. and M.J. McPhaden, 1979: Vertical profiles of temperature, salinity and density from NORPAX POLE experiment. *Scripps Institution of Oceanography Technical Reference #79-6*.
- Knox, R.A. and M.J. McPhaden, 1976: Profiles of velocity and temperature near the Indian Ocean equator. *Scripps Institution of Oceanography Technical Reference #76-11*.

McPhaden, M.J., 1976: Monthly averaged current and temperature profiles near Gan. INDEX Occasional Note, No. 6, Nova University, Ft. Lauderdale, Florida.

## **PUBLISHED ABSTRACTS**

Delcroix, T., S. Cravatte, and M.J. McPhaden, 2005: Observed changes in sea surface salinity of the tropical Pacific over the last three decades. In: *Dynamic Planet 2005 Program and Abstract book*, 22-26 August 2005, Cairns, Australia. CSIRO, p. 179.

McPhaden, M.J., 2005: Intraseasonal variations in the equatorial Pacific and Atlantic Oceans. In: *Dynamic Planet 2005 Program and Abstract book*, 22-26 August 2005, Cairns, Australia. CSIRO, p. 121.

Capotondi, A., M.A. Alexander, C. Deser, and M.J. McPhaden, 2004: Anatomy of the Subtropical-Tropical Cells (STCs). *Eos Trans. AGU*, 84(52) Ocean Sci. Meet. Suppl., Abstract OS41M-08.

Foltz, G.R. and M.J. McPhaden, 2004: Tropical Atlantic variability based on PIRATA buoy data. *Eos Trans. AGU*, 84(52) Ocean Sci. Meet. Suppl., Abstract OS52D-07.

McPhaden, M.J. and D. Zhang, 2004: Changes in ocean circulation linked to Pacific decadal variability. *Eos Trans. AGU*, 84(52) Ocean Sci. Meet. Suppl., Abstract OS42L-02.

Serra, Y.L. and M.J. McPhaden, 2004: Understanding diurnal variations in observed surface salinities from the equatorial Pacific and Atlantic Oceans. *Eos Trans. AGU*, 84(52) Ocean Sci. Meet. Suppl., Abstract OS31I-02.

Zhang, D. and M.J. McPhaden, 2004: Decadal variations of the tropical Pacific Pycnocline water mass properties. *Eos Trans. AGU*, 84(52) Ocean Sci. Meet. Suppl., Abstract OS52K-06.

Zhang, X. and M.J. McPhaden, 2004: Equatorial waves and the 2002–2003 El Niño. *Eos Trans. AGU*, 84(52) Ocean Sci. Meet. Suppl., Abstract OS52D-15.

Zhang, X. and M.J. McPhaden, 2004: Equatorial waves and the 2002–2003 El Niño. In: *Conference Program, CLIVAR 2004*, 21–25 June 2004, Baltimore, MD. World Climate Research Program, Geneva, Switzerland, p. 88.

Feely, R.A., F. Chai, F. Chavez, M.J. McPhaden, and R. Wanninkhof, 2003: The role of the equatorial Pacific on interannual and interdecadal variations of ocean-atmosphere CO<sub>2</sub> fluxes. In: *Abstract Volume, 83<sup>rd</sup> AMS Annual Meeting*, 9–13 February 2003, Long Beach, CA., Am. Meteorol. Soc., Boston, MA, p. 215.

McPhaden, M.J., 2003: Evolution of the 2002–03 El Niño. In: *Abstracts of the EGS-AGU-EUG Joint Assembly*, 6–11 April, Nice, France. European Geophysical Society, Abstract EAE03-A-04668.

McPhaden, M.J., 2003: Evolution of the 2002–03 El Niño. UCLA Tropical Meteorology and Climate Newsletter, No. 57 (21 April 2003)  
[http://www.atmos.ucla.edu/web/tropical\\_newsletter/](http://www.atmos.ucla.edu/web/tropical_newsletter/)

McPhaden, M.J., 2003: Evolution of El Niño conditions in the tropical Pacific during 2002–03. In: *Abstract Volume, 83<sup>rd</sup> AMS Annual Meeting*, 9–13 February 2003, Long Beach, CA., Am. Meteorol. Soc., Boston, MA, p.306.

- Serra, Y. and M.J. McPhaden, 2003: Diurnal variability in rainfall, surface meteorological parameters, and sea surface temperature and salinity in the tropical Pacific and Atlantic Oceans. In: *Abstracts of the EGS-AGU-EUG Joint Assembly*, 6–11 April, Nice, France. European Geophysical Society, Abstract EAE03-A-07523.
- Serra, Y.L. and M.J. McPhaden, 2003: Observed regional and temporal variability of rainfall over the tropical Pacific and Atlantic Oceans. In: *Abstract Volume, 83rd AMS Annual Meeting*, 9–13 February 2003, Long Beach, CA., Am. Meteorol. Soc., Boston, MA, p.165.
- Turk, D., T. Mudge, D. Antoine, M.J. McPhaden, and M.R. Lewis, 2003: Biological production and f-ratio in the equatorial Pacific. In: *Abstracts of the EGS-AGU-EUG Joint Assembly*, 6-11 April, Nice, France. European Geophysical Society, Abstract EAE03-A-06281.
- Waliser, D.E., M. Medovaya, R.A. Weller, and M.J. McPhaden, 2003: Assessing ocean buoy shortwave observations using clear-sky model calculations. In: *Abstract Volume, 83rd AMS Annual Meeting*, 9–13 February 2003, Long Beach, CA., Am. Meteorol. Soc., Boston, MA, p. 323.
- Cronin, M.F., N. Bond, C. Fairall, J. Hare, M.J. McPhaden, and R. Weller, 2002: Enhanced monitoring for the eastern Pacific Investigation of Climate Processes (EPIC) Experiment. *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract AS22A-0055.
- Cronin, M.F. and M.J. McPhaden, 2002: Barrier layer formation during westerly wind bursts. *Eos Trans. AGU*, 83(4), Ocean Sciences Meet. Suppl. Abstract OS42M-04.
- Delcroix, T., A. Dessier, Y. Gouriou, and M.J. McPhaden, 2002: Space time scales for sea surface salinity in the equatorial Pacific. *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract OS22A-0226.
- Delcroix, T. and M.J. McPhaden, 2002: Interannual sea surface salinity and temperature changes in the western Pacific warm pool during 1992–2000. *Eos Trans. AGU*, 83(4), Ocean Sciences Meet. Suppl. Abstract OS42M-02.
- Foltz, G., S. Grodsky, J. Carton, and M.J. McPhaden, 2002: Mixed layer heat budget in the near-equatorial Atlantic based on the PIRATA buoy data. *Eos Trans. AGU*, 83(13), Spring Meet. Suppl., Abstract GC51B-03.
- McPhaden, M.J., 2002: Evolution of El Niño conditions in the tropical Pacific during 2002: *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract OS12D-08.
- McPhaden, M.J., 2002: IGY and the origins of ENSO research. *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract U21B-03.
- McPhaden, M.J., 2002: Mixed layer temperature balance on intraseasonal time scales in the equatorial Pacific Ocean. *Eos Trans. AGU*, 83(4), Ocean Sciences Meet. Suppl. Abstract OS42M-07.
- McPhaden, M.J., 2002: The 2002 El Niño: What's happening and what can we expect? *Eos Trans. AGU*, 83(22), West. Pac. Geophys. Meet. Suppl., Abstract U32A-01.
- McPhaden, M.J., 2002: Mixed layer temperature balance on intraseasonal time scales in the equatorial Pacific Ocean. *Eos Trans. AGU*, 83(22), West. Pac. Geophys. Meet. Suppl., Abstract A32B-01.
- McPhaden, M.J. and D. Zhang, 2002: Decadal changes in temperature and salinity in the pycnocline of the tropical Atlantic. *Eos Trans. AGU*, 83(13), Spring Meet. Suppl., Abstract GC51B-04.

- Nystuen, J.A., B. Ma, and M.J. McPhaden, 2002: Acoustic measurements of precipitation from deep ocean moorings. *Eos Trans. AGU*, 83(13), Spring Meet. Suppl., Abstract H22A-04.
- Serra, Y.L. and M.J. McPhaden, 2002: Multiple time and space scale comparisons of ATLAS buoy rain gauge measurements and TRMM satellite precipitation measurements. *Eos Trans. AGU*, 83(13), Spring Meet. Suppl., Abstract H22A-03.
- Serra, Y. and M.J. McPhaden, 2002: Diurnal variations in rainfall, surface buoyancy flux, and surface salinity in the tropical Pacific and Atlantic Oceans. *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract OS52D-0256.
- Thum, N., S.K. Esbensen, D. Chelton, and M.J. McPhaden, 2002: Air-sea heat exchanges along the northern SST front in the eastern tropical Pacific. *Eos Trans. AGU*, 83(47), Fall Meet. Suppl., Abstract AS22A-0071.
- Zhang, D. and M. J. McPhaden, 2002: Tropical-subtropical water mass exchanges in the Atlantic Ocean. In: Abstracts from the WOCE and Beyond Conference, San Antonio TX, 18–22 November 2002. US WOCE Office, Texas A&M Univ., College Station, TX, p. 156.
- McPhaden, M.J., 2001: Moored buoy observations for seasonal-to-interannual climate prediction. In: *Proceedings of the Symposium on Climate Variability, the Oceans, and Societal Impacts*. 14–18 January 2001, Albuquerque, NM. Am. Meteorol. Soc., Boston, MA, p.94.
- McPhaden, M. J. and D. Zhang, 2001: Interior pycnocline flow between the subtropical and tropical Atlantic. *Eos Trans. AGU*, 82, Fall Meet. Suppl., Abstract OS51C-0488.
- McPhaden, M.J. and D. Zhang, 2000: Observations of decadal variations in the shallow tropical/subtropical overturning circulation of the Pacific Ocean. *Eos Trans. AGU*, 81(Suppl.), No. 48, F648.
- Meinen, C.S., M.J. McPhaden, and G.C. Johnson, 2000: Vertical velocities and transports in the equatorial Pacific during 1993–1999. *Eos Trans. AGU*, 81(Suppl.), No. 48, F670.
- Serra, Y.L. and M.J. McPhaden, 2000: Assessment of the diurnal cycle in rainfall and surface salinity for the tropical Atlantic and Pacific using data from moored buoy arrays. *Eos Trans. AGU*, 81(Suppl.), No. 48, F160–F161.
- Wang, W. and M.J. McPhaden, 2000: Surface layer temperature balance in the equatorial Pacific during the 1997–98 El Niño and 1998–99 La Niña. *Eos Trans. AGU*, 81(Suppl.), No. 48, 670.
- Cosca, C.E., R.A. Feely, R. Wanninkhof, K. Boutin, J. Etcheto, and M.J. McPhaden, 1999: Seasonal and interannual variations in fCO<sub>2</sub>-SST relationships in the equatorial Pacific. Ocean Sciences Meeting, 24–28 January 2000, San Antonio, TX. *Eos Trans. AGU*, 80(Suppl.), 28.
- Feely, R.A., et al, 1999: The role of ENSO on the phasing of the CO<sub>2</sub> signal in the equatorial Pacific. Ocean Sciences Meeting, 24–28 January 2000, San Antonio, TX. *Eos Trans. AGU*, 80(Suppl.), 279.
- Johnson, G.C., M.J. McPhaden, D. Rowe, and K. McTaggart, 1999: Upper equatorial Pacific Ocean current and salinity variability during the 1997–98 El Niño. Ocean Sciences Meeting, 24–28 January 2000, San Antonio, TX. *Eos Trans. AGU*, 80(Suppl.), 131.
- Kutsuwada, K. and M.J. McPhaden, 1999: Intraseasonal current variations in the upper equatorial Pacific Ocean during the onset of 1997–98 El Niño. Ocean Sciences Meeting, 24–28 January 2000, San Antonio, TX. *Eos Trans. AGU*, 80(Suppl.), 131.

- McPhaden, M.J., 1999: The ENSO Observing System. In: *Proceedings of the Third Symposium on Integrated Observing Systems*. 10–15 January 1999, Dallas, TX. Am. Met. Soc., Boston, MA, 130.
- Meinen, C.S. and M.J. McPhaden, 1999: Observations of warm water volume changes in the equatorial Pacific and their relationship with El Niño and La Niña. Ocean Sciences Meeting, 24–28 January 2000, San Antonio, TX. *Eos Trans. AGU*, 80(Suppl.), 132.
- Wang, W. and M.J. McPhaden, 1999: The surface layer heat balance in the central equatorial Pacific during the 1997–98 El Niño. Ocean Sciences Meeting, 24–28 January 2000, San Antonio, TX. *Eos Trans. AGU*, 80(Suppl.), 84.
- Turk, D., M. Lewis, and M.J. McPhaden, 1999: Heat, nitrate, and carbon budgets in the western Pacific warm pool during El Niño and non-El Niño conditions. Ocean Sciences Meeting, 24–28 January 2000, San Antonio, TX. *Eos Trans. AGU*, 80(Suppl.), 132.
- Brainard, R.E., M.J. McPhaden, and R.W. Garwood, 1998: The diurnal cycle of high-frequency temperature variability at 0°, 140°W on seasonal and interannual time scales. COARE98 Conference Handbook and Abstract Volume, Joint Office for Science Support, Univ. Corp. for Atmos. Res., Boulder, CO, 69.
- Cronin, M.F. and M.J. McPhaden, 1998: Diurnal cycle of rainfall and surface salinity in the western equatorial Pacific. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F480.
- Cronin, M.F. and M.J. McPhaden, 1998: Comparison of the upper ocean heat and freshwater Balances at 0°, 156°E. COARE98 Conference Handbook and Abstract Volume, Joint Office for Science Support, Univ. Corp. for Atmos. Res., Boulder, CO, 62.
- Cronin, M.F., M.J. McPhaden, and R.H. Weisberg, 1998: Upper ocean reversing jets in the western equatorial Pacific. COARE98 Conference Handbook and Abstract Volume, Joint Office for Science Support, Univ. Corp. for Atmos. Res., Boulder, CO, 61.
- Johnson, G.C. and M.J. McPhaden, 1998: Interior pycnocline flow from the subtropical to the equatorial Pacific Ocean. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F484.
- McPhaden, M.J., 1998: The 1997–98 El Niño as observed by the Tropical Atmosphere–Ocean (TAO) Array. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F27.
- McPhaden, M.J., 1998: The 1997–98 El Niño in review: Lessons and challenges for climate research. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F492.
- Meinen, C.S. and M.J. McPhaden, 1998: Warm water volume changes and transports in the Tropical Pacific during the 1997–98 El Niño. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F506.
- Pinkel, R., M. Merrifield, M. McPhaden, J. Picaut, S. Rutledge, D. Siegel, and L. Washburn, 1998: Solitary waves in the western equatorial Pacific Ocean. COARE98 Conference Handbook and Abstract Volume, Joint Office for Science Support, Univ. Corp. for Atmos. Res., Boulder, CO, 57.
- Strutton P.G., F.P. Chavez, and M.J. McPhaden, 1998: In situ measurements of primary productivity in the equatorial Pacific during the 1997–98 El Niño. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F507.

- Strutton, P.G., F.P. Chavez, and M.J. McPhaden, 1998: Impact of the 1997 El Niño on the Phytoplankton Community of the Central Equatorial Pacific. *Abstract for the 1998 Ocean Sciences Meeting*, February 9–13, 1998, San Diego, CA. *Eos Trans. AGU*, 79, OS46.
- Wang W. and M.J. McPhaden, 1998: ENSO time scale variability in the surface layer heat balance of the equatorial Pacific, 1982–98. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F486.
- Wang, W. and M.J. McPhaden, 1998: Seasonal variations in the surface layer heat balance of the equatorial Pacific Ocean. *Abstract for the 1998 Ocean Sciences Meeting*, February 9–13, 1998, San Diego, CA. *Eos Trans. AGU*, 79, OS50.
- Weisberg, R.H., R.W. Helber, M.F. Cronin, and M.J. McPhaden, 1998: Large-scale variability during COARE. COARE98 Conference Handbook and Abstract Volume, Joint Office for Science Support, Univ. Corp. for Atmos. Res., Boulder, CO, 19.
- Yu, X. and M.J. McPhaden, 1998: Wave dynamics and the 1997–98 El Niño. AGU 1998 Fall Meeting, San Francisco, CA, December 6–10, 1998. *Eos Trans. AGU*, 79(Suppl.), F29.
- Yu, Z., W.S. Kessler, K.A. Kelly, and M.J. McPhaden, 1998: Modeling the onset of the 1997 El Niño: NSCAT wind map validation and its application. In: *Proceedings of the Ninth Conference of the Interaction of the Sea and Atmosphere*. January 11–16, 1998, Phoenix, AZ. Am. Met. Soc., Boston, MA, p. 44.
- Zhang, C. and M.J. McPhaden, 1998: Surface heat budget of the western Pacific warm pool. COARE98 Conference Handbook and Abstract Volume, Joint Office for Science Support, Univ. Corp. for Atmos. Res., Boulder, CO, 52.
- Cronin, M.F. and M.J. McPhaden, 1996: The surface layer salinity balance at 0°, 156°E. In: *Abstracts of the AGU Western Pacific Geophysics Meeting*, Brisbane, Australia, July 23–27, 1996. *Eos Trans. AGU*, 77(Suppl.), W65.
- Picaut, J., M. Ioualalen, C. Menkes, T. Delcroix, and M.J. McPhaden, 1996: Maintenance and ENSO displacements of the warm pool. In: *Abstracts of the AGU Western Pacific Geophysics Meeting*, Brisbane, Australia, July 23–27, 1996. *Eos Trans. AGU*, 77(Suppl.), W57.
- Ando, K. and M.J. McPhaden, 1995: Variation of surface ocean hydrography in the tropical Pacific. In: *Abstracts of the TOGA95 International Scientific Conference*, 2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, p. 4.
- Bi, K. and M.J. McPhaden, 1995: A diagnostic model of the momentum balance in the surface layer of the equatorial Pacific. *Eos Trans. Am., Geophys. Union*, 76(Suppl.), F153.
- Busalacchi, A.J., M.J. McPhaden, and J. Picaut, 1995: Variability in equatorial Pacific sea surface topography during the verification phase of the TOPEX/Poseidon Mission. In: *Summary Report of the TOGA COARE International Data Workshop*, Toulouse, France, 2–11 August 1994, University Corporation for Atmospheric Research, Boulder, CO, p. 93.
- Cronin, M. and M.J. McPhaden, 1995: The upper ocean heat balance in the warm pool at 0°N, 156°E during the October 1992 westerly wind burst. In: *Summary Report of the TOGA COARE International Data Workshop*, Toulouse, France, 2–11 August 1994, University Corporation for Atmospheric Research, Boulder, CO, p. 97.
- Cronin, M., M.J. McPhaden, O. Tsukamoto, and C. Fairall, 1995: Comparison of surface meteorological observations and fluxes at 0°N, 156°E from PROTEUS buoys, the R/V *Hakuho-Maru* and the R/V *Moana Wave*. In: *Summary Report of the TOGA COARE*

*International Data Workshop*, Toulouse, France, 2–11 August 1994, University Corporation for Atmospheric Research, Boulder, CO, p. 98.

Cronin, M. and M.J. McPhaden, 1995: The upper ocean heat balance in the warm pool at 0°N, 156°E during the October 1992 westerly wind burst. In: *Abstracts of the TOGA95 International Scientific Conference*, 2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, p. 213.

Kessler, W.S., M.C. Spillane, D.E. Harrison, and M.J. McPhaden, 1995: Assessment of the tropical Pacific thermal monitoring system using the TOGA-TAO array. In: *Abstracts of the TOGA95 International Scientific Conference*, 2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, p. 49.

Kessler, W.S. and M.J. McPhaden, 1995: The buildup, the delayed oscillator and the extended El Niño of 1991–93. In: *Abstracts of the TOGA95 International Scientific Conference*, 2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, p. 160.

McPhaden, M.J., 1995: TOGA-TAO measurements during TOGA COARE. In: *Summary Report of the TOGA COARE International Data Workshop*, Toulouse, France, 2–11 August 1994, University Corporation for Atmospheric Research, Boulder, CO, p. 133.

McPhaden, M.J., 1995: Moored rainfall measurements during TOGA COARE. In: *Summary Report of the TOGA COARE International Data Workshop*, Toulouse, France, 2–11 August 1994, University Corporation for Atmospheric Research, Boulder, CO, p. 133.

McPhaden, M.J., 1995: Ocean-atmosphere variability observed from the TOGA-TAO Array. In: *Abstracts of the TOGA95 International Scientific Conference*, 2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, p. 70.

Picaut, J., L. Gourdeau, A.J. Busalacchi, F.I. González, and M.J. McPhaden, 1995: Evidence of surface-to-bottom internal tide in the COARE domain. *Summary Report of the TOGA COARE International Data Workshop*, Toulouse, France, 2–11 August 1994, University Corporation for Atmospheric Research, Boulder, CO, p. 140.

Picaut, J., J.-P. Boulanger, A.J. Busalacchi, C. Menkes, T. Delcroix, L. Gourdeau, Y. du Penhoat, and M.J. McPhaden, 1995: ENSO and altimetry. In: *Abstracts of the TOGA95 International Scientific Conference*, 2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, 90–91.

Picaut, J., M. Ioualalen, C. Menkes, T. Delcroix, and M.J. McPhaden, 1995: Zonal displacement of the western Pacific warm pool associated with a series of ENSO events. *Eos Trans. AGU*, 76(Suppl.), F153.

Soreide, N. and M.J. McPhaden, 1995: TAO display software. *Summary Report of the TOGA COARE International Data Workshop*, Toulouse, France, 2–11 August 1994, University Corporation for Atmospheric Research, Boulder, CO, p. 149.

Soreide, N.N., D.C. McClurg, W.H. Zhu, M.J. McPhaden, and D.W. Denbo, 1995: Real-time and historical TAO temperature and current meter data access. In: *Abstracts of the TOGA95 International Scientific Conference*, 2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, 112–113.

Yu, X. and M.J. McPhaden, 1995: On the dynamics of seasonal and interannual variability in the equatorial Pacific Ocean. In: *Abstracts of the TOGA95 International Scientific Conference*,

2–7 April 1995, Melbourne, Australia, D. Jasper and N. Smith, editors. Bureau of Meteorology Research Center, Melbourne, Australia, p. 132.

- Ando, K. and M.J. McPhaden, 1994: Variation of surface layer hydrography in the tropical Pacific Ocean. In: *Abstracts of the 1994 AGU Fall Meeting*, December 5–9, 1994, San Francisco, CA. *Eos Trans. AGU*, 75(Suppl.), p. 361.
- Bond, N.A. and M.J. McPhaden, 1994: The diurnal cycle in the upper ocean heat content in the East-Central Equatorial Pacific. In: *Abstracts of the 1994 Ocean Sciences Meeting*, San Diego, CA, February 21–25, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 131.
- Brainard, R.E. and M.J. McPhaden, 1994: Observations of the diurnal cycle of high frequency internal waves and their relationship to mixing in the central equatorial Pacific. In: *Abstracts of the 1994 Ocean Sciences Meeting*, San Diego, CA, February 21–25, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 121.
- Busalacchi, A.J., M.J. McPhaden, and J. Picaut, 1994: Variability in equatorial Pacific sea surface topography during the verification phase of the TOPEX/Poseidon Mission. In: *Abstracts of the 1994 AGU Fall Meeting*, December 5–9, 1994, San Francisco, CA. *Eos Trans. AGU*, 75(Suppl.), p. 54
- Cronin, M. and M.J. McPhaden, 1994: The upper ocean response to the Oct 1992 westerly wind burst in the western equatorial Pacific warm pool at 0°N, 156°E. In: *Abstracts of the 1994 AGU Fall Meeting*, December 5–9, 1994, San Francisco, CA. *Eos Trans. AGU*, 75(Suppl.), p. 361.
- Feely, R.A., R. Wanninkhof, C.E. Cosca, M.J. McPhaden, R.H. Byrne, F.J. Millero, F.P. Chavez, T. Clayton, D.M. Campbell, and P.P. Murphy, 1994: The effect of tropical instability waves on CO<sub>2</sub> species distributions along the equator in the eastern equatorial Pacific during the 1992 ENSO event. In: *Abstracts of the Pacific Basin Meeting*, 19–22 July 1994, Honolulu, HI. The Oceanography Society, Virginia Beach, VA, p. 21.
- Foley, D.G., T.D. Dickey, R.R. Bidigare, R. Barber, and M.J. McPhaden, 1994: The influence of tropical instability waves on primary production in the equatorial Pacific. In: *Abstracts of the 1994 Ocean Sciences Meeting*, San Diego, CA, February 21–25, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 29.
- Gourdeau, L., J. Picaut, T.J. Busalacchi, M.J. McPhaden, F. Gonzales, and E. Hackert, 1994: Open-ocean validation of TOPEX/Poseidon sea level in the western equatorial Pacific. In: *Abstracts of the 1994 AGU Fall Meeting*, December 5–9, 1994, San Francisco, CA. *Eos Trans. AGU*, 75(Suppl.), p. 59.
- Gu, D., S.G.H. Philander, and M.J. McPhaden, 1994: Seasonal cycle and its interannual variation in the eastern tropical Pacific. In: *Abstracts of the 1994 AGU Fall Meeting*, December 5–9, 1994, San Francisco, CA. *Eos Trans. AGU*, 75(Suppl.), p. 361.
- Kessler, W.S. and M.J. McPhaden, 1994: The heat balance at 0°, 140°W during the El Niño of 1991–93. In: *Abstracts of the Pacific Basin Meeting*, 19–22 July 1994, Honolulu, HI. The Oceanography Society, Virginia Beach, VA, p. 26.
- Kessler, W.S. and M.J. McPhaden, 1994: Equatorial waves and the dynamics of the El Niño of 1991–93. In: *Abstracts of the Pacific Basin Meeting*, July 19–22, 1994, Honolulu, HI. The Oceanography Society, p. 107.
- Kessler, W.S., M.J. McPhaden, and K.M. Weickmann, 1994: Forcing of intraseasonal Kelvin Waves in the equatorial Pacific. In: *Abstracts of the 1994 Ocean Sciences Meeting*, San Diego, CA, February 21–25, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 141.

- Kessler, W.S., M.J. McPhaden, and K.M. Weickmann, 1994: A simple model of intraseasonal ocean-atmosphere feedback via Kelvin wave-SST coupling: the onset of El Niño. In: *Abstracts of the 1994 AGU Western Pacific Geophysics Meeting*, Hong Kong, July 25–29, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 42.
- Lien, R.-C., M.J. McPhaden, and M.C. Gregg, 1994: High-frequency internal waves in the central equatorial Pacific: Their properties and possible relationship to deep-cycle turbulence. In: *Abstracts of the Pacific Basin Meeting*, 19–22 July 1994, Honolulu, HI. The Oceanography Society, Virginia Beach, VA, p. 106.
- McPhaden, M.J., 1994: Low-frequency equatorial waves: Detection, dynamics, and climate impacts. In: *Abstracts of the 1994 Ocean Sciences Meeting*, San Diego, CA, February 21–25, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 141.
- McPhaden, M.J., 1994: TOGA-TAO: Large scale tropical Pacific Ocean measurements in support of climate studies. In: *Abstracts of the Pacific Basin Meeting*, 19–22 July 1994, Honolulu, HI. The Oceanography Society, Virginia Beach, VA, p. 30.
- McPhaden, M.J., R.-C. Lien, and M.C. Gregg, 1994: High frequency wave variability below the surface mixed layer at the equatorial 140°W. In: *Abstracts of the 1994 Ocean Sciences Meeting*, San Diego, CA, February 21–25, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 131.
- McPhaden, M.J. and M.J. Mangum, 1994: The TOGA-TAO Array. In: *Abstracts of the 1994 AGU Fall Meeting*, December 5–9, 1994, San Francisco, CA. *Eos Trans. AGU*, 75(Suppl.), p. 369.
- McPhaden, M.J., L.J. Mangum, and W.S. Kessler, 1994: The TOGA-TAO Array. In: *Abstracts of the 1994 AGU Western Pacific Geophysics Meeting*, Hong Kong, July 25–29, 1994. *Eos Trans. AGU*, 75(Suppl.), 47–48.
- Soreide, N.N., D.C. McClurg, W.H. Zhu, D.W. Denbo, and M.J. McPhaden, 1994: Distribution, display and Analysis of TOGA-TAO data. In: *Abstracts of the 1994 Ocean Sciences Meeting*, San Diego, CA, February 21–25, 1994. *Eos Trans. AGU*, 75(Suppl.), p. 44.
- Soreide, N.N., D.C. McClurg, W.H. Zhu, M.J. McPhaden, and D.W. Denbo, 1994: Historical TOGA-TAO data access with the TAO display software. In: *Abstracts of the Pacific Basin Meeting*, 19–22 July 1994, Honolulu, HI. The Oceanography Society, Virginia Beach, VA, p. 99.
- Yu. X. and M.J. McPhaden, 1994: On the dynamics of seasonal and interannual variability in the Eastern Equatorial Pacific Ocean. In: *Abstracts of the Pacific Basin Meeting*, July 19–22, 1994, Honolulu, HI. The Oceanography Society, p. 108.
- Bond, N.A. and M.J. McPhaden, 1993: Observations of the diurnal cycle in the upper ocean in the eastern equatorial Pacific. In: *Proceedings of the Third Scientific Meeting of the Oceanographic Society*, April 13–16, 1993, Seattle, WA., p. 102.
- Brainard, R.E. and M.J. McPhaden, 1993: Diurnal Variability of High-Frequency Internal Waves in the Upper Equatorial Pacific Ocean. In: *Eos Trans. AGU*, 73(Suppl.), p. 320–321.
- Cronin, M. and M.J. McPhaden, 1993: Analysis of the surface layer heat balance from moored time series measurements during COARE. AGU 1993 Fall Meeting, San Francisco, CA, December 6–10, 1993. *Eos Trans. AGU*, 74, p. 148.
- Fairall, C.W. and M.J. McPhaden, 1993: A ship-buoy comparison of bulk meteorological measurements and implications for surface heat flux estimates. In: *Proceedings of the Third Scientific Meeting of the Oceanographic Society*, April 13–16, 1993, Seattle, WA., p. 104.

- Foley, D.G., T.D. Dickey, R.R. Bidigare, and M.J. McPhaden, 1993: Physical forcing of productivity in the equatorial Pacific. In: *Proceedings of the Third Scientific Meeting of the Oceanography Society*, April 13–16, 1993, Seattle, WA., p. 69.
- Kessler, W.S. and M.J. McPhaden, 1993: The Evolution of the 1992–92 El Niño Event as Observed by the TOGA/TAO Buoy Network. *Eos Trans. AGU*, 73(Suppl.), p. 280.
- McPhaden, M.J., H.B. Milburn, H.P. Freitag, O. Thiele, D. Short, and J. Wilkerson, 1993: Moored Optical Rain gauge Measurements during COARE. AGU 1993 Fall Meeting, San Francisco, CA, December 6–10, 1993. *Eos Trans. AGU*, 74, p.125.
- Soreide, N.N., and M.J. McPhaden, 1993: The TAO Workstation Display Software for Real-time Data from the TOGA-TAO Array. In: *Proceedings of the Fourth International Conference on Southern Hemisphere Meteorology and Oceanography*, March 29–April 2, 1993, Hobart, Australia, pp. 422–423.
- Soreide, N.N. and M.J. McPhaden, 1993: “TAO Display Software for Real-time Data from the TOGA-TAO Array.” In: *Proceedings of the Third Scientific Meeting of the Oceanography Society*, April 13–16, 1993, Seattle, WA, p.53.
- Sprintall, J. and M.J. McPhaden, 1993: Hydrodynamic regimes in the western equatorial Pacific warm pool. In: *Proceedings of the Fourth International Conference on Southern Hemisphere Meteorology and Oceanography*, Hobart, Australia, March 29–April 2, 1993, 390–391.
- Weller, R.A., J.B. Edson, S.P. Anderson, E.F. Bradley, L. Dewitt, C.W. Fairall, C.A. Friehe, R.L. Grossman, D. Hagan, R.B. Lukas, M.J. McPhaden, C.A. Paulson, D. Roger, and E. Walsh, 1993: Overview of air-sea flux studies during TOGA COARE. AGU 1993 Fall Meeting, San Francisco, CA, December 6–10, 1993. *Eos Trans. AGU*, 74, p. 125.
- Zhang, G.J., M.J. McPhaden, T.P. Barnett, and V. Ramanathan, 1993: Sea surface temperature and latent heat flux in the equatorial Pacific. *Eos Trans. AGU*, 74(Suppl.), p. 107.
- Brainard, R.E. and M.J. McPhaden, 1992: Diurnal variability of high-frequency internal waves in the upper equatorial Pacific ocean. *Eos Trans. AGU*, 73(Suppl.), 320–321.
- Kessler, W.S. and M.J. McPhaden, 1992: The evolution of the 1991-1992 El Niño event as observed by the TOGA-TAO buoy network. *Eos Trans. AGU*, 73(Suppl.), p. 280.
- McPhaden, M.J., 1991: Variability in the western equatorial Pacific warm pool. In: *Proceedings of the International Association for the Physical Sciences of the Oceans of the International Union of Geodesy and Geophysics*, XX General Assembly, Vienna, Austria, August 1991, No. 18.
- McPhaden, M.J. and S.P. Hayes, 1991: An analysis of monthly period fluctuations in the heat balance of the Pacific North Equatorial Countercurrent. *Eos Trans. AGU*, 72(Suppl.), p. 274.
- Hayes, S.P., P. Chang, and M.J. McPhaden, 1990: The upper ocean heat content in the eastern equatorial Pacific. *Eos Trans. AGU*, 71, p. 1231.
- McPhaden, M.J., P.P. Niiler, and P.L. Richardson, 1990: The response of the western equatorial Pacific Ocean to westerly wind burst forcing in November 1989–January 1990. *Eos Trans. AGU*, 71, p. 1231.
- Weisberg, R.H., S.P. Hayes, and M.J. McPhaden, 1990: The evolution along the equator of winter-time zonal momentum pulses. *Eos Trans. AGU*, 71, p. 1231.
- Hayes, S.P., M.J. McPhaden, A. Leetmaa, and R. Reynolds, 1989: Real-time monitoring of the tropical Pacific Ocean. *Eos Trans. AGU*, 71, p. 1149.

McPhaden, M.J. and S.P. Hayes, 1989: Moored observations of the Pacific north equatorial countercurrent. *Eos Trans. AGU*, 70, p. 1148.