

REBECCA ANNE WOODGATE

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QUALIFICATIONS

1990-1994 D.Phil. in Oceanography - Thesis: 'Data assimilation using ocean models'
University of Oxford, Department of Atmospheric, Oceanic and Planetary Physics

- Theoretical & computational study of combining data with a geophysical fluid dynamical model
- Courses in atmospheric, oceanic & geophysics, rotating fluid dynamics, numerical modelling
- Practical experience (CTD & CFC analysis) on two 6-week southern ocean research cruises

1987-1990 BA Hons in Natural Sciences: Physics and Theoretical Physics First Class
University of Cambridge, Christ's College

- Part IA '88 Maths, Physics, Chemistry, Geology First Class
- Part IB '89 Maths, Advanced Physics First Class
- Part II '90 Physics & Theoretical Physics including experimental project First Class

Scholarships and Prizes during University Education

- 1990-1994 - Senior Scholarship from Lincoln College, Oxford
- Heaps Prize for best presentation by young scientist at UK Oceanography '92
- Winner of a DEC workstation for most innovative idea for new Alpha technology
- 1987-1990 - BP Chemicals Prize for first place in Advanced Physics Tripos examinations '89
- Christ's College Scholarships and prizes in all 3 years at Cambridge

EMPLOYMENT

2004- Senior Oceanographer, Affiliate Asst. Prof. University of Washington, Seattle, U.S.A.
2001-2004 Research Assistant Professor University of Washington, Seattle, U.S.A.
1999-2001 Acting Assistant Professor University of Washington, Seattle, U.S.A.

Physical oceanographic research, especially collection and analysis of *in situ* time-series
Research includes Arctic Ocean circulation, polar oceanography, shelf-basin interactions

Focus areas – Atlantic and Pacific waters in the Arctic Ocean; the Western Arctic Ocean,
the Bering Strait, the Chukchi Sea, the Bering Sea.

1994-1998 Post-doctoral Researcher Alfred Wegener Institute, Bremerhaven, Germany
Physical oceanographic research combining scientific interpretation and data analysis and collection, including deployment and recovery of moorings in the polar regions, north and south

Main projects: Exchanges with the Arctic Ocean via Fram Strait; the East Greenland Current
Sub-projects: Outflow from Filchner-Ronne Ice-Shelves; Watermasses of the Weddell Sea

1990-1994 Graduate Studentship University of Oxford, U.K.

Theoretical & computational study of combining data with a geophysical fluid dynamical model
Studies in atmospheric, oceanic & geo-physics, rotating fluid dynamics, numerical modelling
Field experience (CTD & CFC analysis) on two 6-week southern ocean research cruises

1991-1992 part-time Physics Tutor Keble & Lincoln Colleges, Oxford, U.K.

First year undergraduate teaching, including interviewing and examinations

TEACHING EXPERIENCE

2007 UW Interdisciplinary course The Changing Arctic Ocean 506A (team taught with J.Deming)
<http://psc.apl.washington.edu/HLD/ArcticChange07/ArcticChange07.html>

Students: Graduate committee for Marcela Sarmiento

2002 -04 Students: MSc committee for Kellie Balster; 499B Supervisor for Gail Grimes
Co-supervisor (with P.Rhines) for WUN student, Liz Hawker
Supervisor for MATE training of students at sea

2002 UW Undergraduate Oceanography 480 (team taught with K.Aagaard)

1999-2000 UW Oceanography and Arctic Oceanography (500 and part of 401) classes

1991-92 University of Oxford Undergraduate Physics Tutor for Keble and Lincoln Colleges

OUTREACH and COMMUNITY SERVICE

- 2007/8** APL College Council Representative (on-going)
Mooring Exhibit for Polar Science Weekend at Seattle's major science museum
Public lecture in COFS Alumni 3-lecture series "Arctic Adventure: Tales of Currents and Creatures"
- 2006-** Board member of UW's Program on Climate Change (on-going)
Organizer for Polar Brown Bag Lunch Meetings, for Polar researchers in Seattle (on-going)
- 2004-** Arctic Ice-breaker Coordination Committee (on-going)
Arctic Panel of Clic/WCRP (on-going);
- 2002-03** Invited panelist for W.I.S.E. events
Educational outreach and Community cruise planning in Barrow Alaska
Teacher-at-Sea program for Chukchi Borderland Cruise

FIELD EXPERIENCE

RUSALCA 07, *Bering Strait Cruise (2 weeks)*, 2007, Russian vessel Sever, Mooring leader.
IOS2006-01, *St Lawrence & Bering Strait Cruise (3 weeks)* 2006, CCGS Laurier, UW mooring leader
IOS2005-05, *St Lawrence & Bering Strait Cruise (2 weeks)* 2005, CCGS Laurier, UW mooring leader
HX290, *Bering Strait Cruise, (1.5 weeks)* 2004, RVA Alpha Helix, Chief Scientist, mooring team leader
SBI2003, *SBI Mooring Cruise, (5 weeks)* 2003, USCGC Healy, Chief Scientist
HX274, *Bering Strait Cruise, (1.5 weeks)* 2003, RVA Alpha Helix, Chief Scientist, mooring team leader
CBL2002, *Chukchi Borderland Cruise, (5 weeks)* 2002, USCGC Polar Star, Chief Scientist
HX260, *Bering Strait Cruise, (1.5 weeks)* 2002, RVA Alpha Helix, Chief Scientist, mooring team leader
HX250, *Bering Strait Cruise, (2 weeks)* 2001, RVA Alpha Helix, Chief Scientist, mooring team leader
North Pole-Environmental Observatory, *Ice camp (1 week)* 2001, through-ice mooring deployment
HX235, *Bering Strait Cruise, (2 weeks)* 2000, RVA Alpha Helix, Chief Scientist, mooring team leader
Bears and Ice (1 week) 2000, Resolute, Physical oceanographer for marine biology project
KITES *Keweenaw Interdisciplinary Transport Experiment, (1 week)* 1999, RV Blue Heron, moorings
ARK XIV/2a *Arctic Expedition XIV/2a, (3 weeks)* 1998, FS Polarstern, mooring team leader
ENDURANCE '98 *Antarctic ROPEX Cruise, (6 weeks)* 1998, HMS Endurance, mooring team leader
LANCE '97 *Arctic VEINS Cruise, (4 weeks)* 1997, RS Lance, mooring team leader
ANT XIII/4 *Antarctic Weddell Sea Expedition, (9.5 weeks)* 1996, FS Polarstern, mooring and CTD work
ARK XI/2 *Arctic Expedition, (5.5 weeks)* 1995, FS Polarstern, mooring work
ARK X/1 *Arctic Expedition, (6 weeks)* 1994, FS Polarstern, mooring work
ADOX 2 *Atlantic Deep Outflow Expedition (6 weeks)* 1994, RRS Discovery, CFC sampling and analysis
SWINDEX *SouthWest Indian Ocean Experiment (6 weeks)* 1993, RRS Discovery, CTD work

PEER-REVIEWED JOURNAL ARTICLES (see below/attached for complete list)

- Mizobata, K., K.Shimada, R.Woodgate, S-I. Saitoh and J. Wang, submitted 2008, Estimation of heat flux through the eastern Bering Strait, *Journal of Oceanography*.
- Dmitrenko, I., S.A. Kirillov, V.V.Ivanov, R.A.Woodgate, 2008, Eddy off the Laptev Sea continental slope carries the signature of interactions between the Fram Strait and the Barents Sea branches of the Atlantic water inflow into the Arctic Ocean, *J. Geophys. Res.*, doi: 10.1029/ 2007JC00449, in press.
- Melling, H., K.K.Falkner, R.A.Woodgate, S.Prinsenberg, A.Muenchow, D.Greenberg, T.Agnew, R.Samelson, C.Lee, B.Petrie, *Freshwater Fluxes via Pacific and Arctic Outflows across the Canadian Polar Shelf*, 2008, ASOF (Arctic Subarctic Ocean Fluxes) special volume, Springer Verlag
- Woodgate, R.A., K.Aagaard, J.H.Swift, W.M.Smethie, K.K.Falkner, 2007, Atlantic Water Circulation over the Mendeleev Ridge and Chukchi Borderland from Thermohaline Intrusions and Water Mass Properties, *J. Geophys. Res.*, 112, C02005, doi:10.1029/2005JC003416.
- White, D., L. Hinzman, L. Alessa, J. Cassano, M. Chambers, K. Falkner, J. Francis, B. Gutowski, M. Holland, M. Holmes, H. Huntington, D. Kane, A. Kliskey, C. Lee, J. McClelland, B.Peterson, F. Straneo, M. Steele, R. Woodgate, D. Yang, K. Yoshikawa, T. Zhang, 2007, The Arctic Freshwater System: changes and impacts, *J. Geophys. Res.*, 112, G04S54, doi:10.1029/2006JG000353..
- Woodgate, R.A., K.Aagaard, T.J. Weingartner, 2006, Interannual changes in the Bering Strait fluxes of Volume, Heat and Freshwater between 1991 and 2004, *Geophys. Res. Lett.*, 33, L15609, 10.1029/2006GL026931
- Bitz, C., P. Gent, R.A. Woodgate, A. Hall, M. Holland, R. Lindsay, 2006, The Influence of sea-ice on ocean heat

- uptake in response to increasing CO₂, *J. Climate*, 19, 2437 – 2450.
- Aagaard, K., T.J.Weingartner, S.L. Danielson, R.A. Woodgate, G.C.Johnson, T.E.Whitledge, 2006, Some controls on flow and salinity in Bering Strait, *Geophys. Res. Lett.*, 33, L19602, doi:10.1029/2006GL026612.
- Serreze, M.C., A.P. Barrett, A.G.Slater, R.A.Woodgate K.Aagaard, R.Lammers, M.Steele, R.Moritz, M.Meredith, C.Lee, 2006, The Large-scale Freshwater Cycle of the Arctic, *J. Geophys. Res.*, 111 C11010, doi:10.1029/2005JC003424.
- Woodgate, R.A., K.Aagaard, J.H.Swift, K.K.Falkner, W.M.Smethie, 2005, Pacific Ventilation of the Arctic Ocean's lower halocline by upwelling and diapycnal mixing over the continental margin, *Geophysical Research Letters*, 32, L18609, doi:10.1029/2005GL023999.
- Woodgate, R.A., K.Aagaard, T.Weingartner, 2005, A year in the Physical Oceanography of the Chukchi Sea. Moored measurements from Autumn 1990-1991, *Deep Sea Research Part II*, 52, 3116-3149.
- Weingartner, T., K.Aagaard, R.Woodgate, S. Danielson, Y.Sasaki, D.Cavalieri, 2005, Circulation on the North Central Chukchi Sea Shelf, *Deep Sea Research Part II*, 52, 3150-3174, doi:10.1016/j.dsr2.2005.10.015.
- Falkner, K.K., M.Steele, R.A.Woodgate, J.Swift, K.Aagaard, J.Morison, 2005, Dissolved oxygen extrema in the Arctic ocean halocline from the North Pole to the Lincoln Sea, *Deep-Sea Res. I*, 52 (7), 1138--1154
- Woodgate, R.A., K. Aagaard, T. Weingartner, 2005, Monthly temperature, salinity and transport variability for the Bering Strait throughflow, *Geophys. Res. Lett.*, 32, L04601, doi:10.1029/2004GL021880
- Woodgate, R.A., K. Aagaard, 2005, Revising the Bering Strait Freshwater flux into the Arctic Ocean, *Geophys. Res. Lett.*, 32, L02602, doi:10.1029/2004GL021747
- Lindsay, R.W. D.M.Holland, R.A.Woodgate, 2004, Halo of Low Ice Concentration Observed over the Maud Rise Seamount, *Geophys. Res. Lett.*, L13302, doi:10.1029/2004GL019831
- Foldvik, A., T. Gammelsrod, S. Østerhus, E. Fahrbach, G. Rohardt, M. Schröder, K.W. Nicholls, L. Padman, R.A. Woodgate, 2004, Ice Shelf Water Overflow and Bottom Water Formation in the Southern Weddell Sea., *J. Geophys. Res.*, 109, doi:10.1029/2003JC002008
- Nicholls, K.W., L.Padman, M.Schröder, R.A.Woodgate, A.Jenkins, S. Østerhus, 2003, Water mass modification over the continental shelf north of Ronne Ice Shelf, Antarctica, *J. Geophys. Res.*, 108 (C8), 3260.
- Morison, J.H., K.Aagaard, K.K.Falkner, K. Hatakeyama, R. Moritz, J.E. Overland, D.Perovich, K. Shimada, M. Steele, T.Takizawa, R. Woodgate, 2002, North Pole Environmental Observatory delivers early results, *EOS*, 83, 357-361
- Woodgate, R.A., K.Aagaard, R.D.Muench, J.Gunn, G.Björk, B.Rudels, A.T.Roach, U.Schauer, 2001, The Arctic Ocean Boundary Current along the Eurasian slope and the adjacent Lomonosov Ridge: Water mass properties, transports and transformations from moored instruments, *Deep-Sea Res. I*. 48,8, 1757-1792
- Aagaard K., R.A.Woodgate, 2001, Some thoughts on the freezing and melting of sea ice and their effects on the ocean., *Ocean Modelling*, 3, 127-135
- Fahrbach, E., S.Harms, G.Rohardt, M.Schröder, R.A.Woodgate, 2001, Flow of bottom water in the northwestern Weddell Sea., *J. Geophys. Res.*, 106, C2, 2761-2778
- Rudels, B., R.Meyer, E.Fahrbach, V.Ivanov, S.Østerhus, D.Quadfasel, U.Schauer, V.Tverburg, R.A.Woodgate, 2000, The water mass distribution in Fram Strait and over the Yermak Plateau in summer 1997, *Ann. Geophys.*, 18, 687-705.
- Woodgate, R.A., E.Fahrbach, G.Rohardt, 1999, Transports and structure of the East Greenland Current at 75N from moored current meters, *J. Geophys. Res.*, 104 (C8), 18,059-18,072.
- Woodgate, R.A., E.Fahrbach, 1999, Benthic storms in the Greenland Sea, *Deep-Sea Res. I*, 46, 2109-2127.
- Woodgate, R.A., M.Schröder, S.Østerhus, 1998, Moorings from the Filchner Trough and the Ronne Ice Shelf Front: Preliminary results, *FRISP Report No.12*, Ed.H.Oerter, AWI., Bremerhaven, Germany, 85-90.
- Woodgate, R.A., 1997, The effects of assimilation on the physics of an ocean model. Part 2: Baroclinic identical twin experiments, *J. Atmos. Ocean. Tech.*, 14, 910-924.
- Woodgate, R.A., P.D.Killworth, 1997, The Effects of Assimilation on the Physics of an Ocean Model. Part 1: Theoretical model and barotropic results, *J.Atmos. Ocean. Tech.*, 14, No.4, 897-909.
- Woodgate, R.A., P.D.Killworth, 1996, The Problem of the Barotropic Mode in Deriving Pressure from Density using Vertical Normal Modes, *J.Geophys.Res.*, 101, 3765--3768.
- Woodgate, R.A., P.D.Killworth, 1993, Can we derive pressure from density using vertical normal modes?, *Ocean Modelling*, 100, 5-6.
- Woodgate, R.A., 1993, Something for (almost) Nothing: the Quest of Data Assimilation, *Ocean Challenge*, (the Magazine of the Challenger Society for Marine Science), Vol 4, No 3, 28-32.

REBECCA WOODGATE: PUBLICATIONS (*=peer-reviewed)

CAMBRIDGE

Woodgate, R.A., Segment Finding Algorithm for Zeus Central Tracking Detector, 1989, Rutherford Internal Report, ZEUS-RAL-89-13

Woodgate, R.A., Fast Circle Fit Algorithm for Segment Finding - TCRRPH, 1989, Rutherford Internal Report, ZEUS-RAL-89-14

* Woodgate, R.A., Thermal Infrared Detection of Buried Structures, 1990, University of Cambridge, Third Year Project, 67pp.

Dyce, N. *et al* (8th author), Track Reconstruction Methodology in the Zeus Central Tracking Detector, 1990, AIP Conf Proc (Santa Fe, New Mexico), 209(1), 639-46

OXFORD

Woodgate, R.A., Aug 1992, Getting a closer look at the oceans, & Where the satellite cannot see, Digital Competition Entry - Prize winning

Woodgate, R.A., 1992, Data Assimilation using the Free Surface Cox Code, presented at UK Oceanography '92 Conference, Liverpool University (awarded Heaps Prize for best presentation by young scientist)

* Woodgate, R.A., 1993, Something for (almost) Nothing: the Quest of Data Assimilation, Ocean Challenge, (the Magazine of the Challenger Society for Marine Science), Vol 4, No 3, 28-32.

Woodgate, R.A., Sept 1993, Data Assimilation - a normal mode solution?, talk at Ocean Modelling Meeting, UCL London,

Woodgate, R.A. & P.D.Killworth, 1993, Can we derive pressure from density using vertical normal modes?, Ocean Modelling, 100, 5-6.

* Woodgate, R.A., 1994, Data Assimilation in Ocean Models, D.Phil Thesis, University of Oxford, 237pp.

Woodgate, R.A., 1994, Oxygen Isotope Ratios, in RRS Discovery Cruise 201 Report, R.T.Pollard, IOS Cruise Report, 240, 96pp.

Woodgate, R.A., 1994, On Fluid Dynamics in Confined Spaces, JASS (Journal of the Ashford Spelaeological Society), 64, 8-10.

Haine, T.W.N., M.I.Liddicoat, E.L.McDonagh, R.A.Woodgate, M.F. da Costa & A.R.Child, 1995, CFCs, in RRS Discovery Cruise 207 Report, R.R.Dickson, MAFF Cruise Report, 79pp.

AWI, BREMERHAVEN

Fahrbach, E., Ch.Heinze, G.Rohardt & R.A.Woodgate, 1994, Moored Current Meter Measurements in the East Greenland Current, Poster at ACSYS Meeting in Gothenburg.

Woodgate, R.A., 1994, World Passages - the Nordic Seas, with a view to verification of a Global Model, AWI internal report and talk, 3pp.

Woodgate, R.A., 1995, To assimilate altimeter (and other) data - studies using a free surface primitive equation model with nudging assimilation, Oral presentation at IUGG Hawaii, 7-12 August, 1995.

Woodgate, R.A., 1995, Data assimilation as applied to a 1 degree Atlantic model - some cautionary tales, Poster presentation at IUGG Hawaii, 7-12 August, 1995.

Fahrbach, E., Ch.Heinze, G.Rohardt & R.A.Woodgate, 1995, Moored Current Meter Measurements in the East Greenland Current, Extended abstract from Nordic Seas symposium, Hamburg, March 7-9, Arctic Ocean Sciences Board and Sonderforschungsbereich "Processes relevant to climate", 57--60.

Darnall, C., E.Fahrbach, N.Nordlund & R.Woodgate, 1995, Der Massen-, Wärme- und Süßwassertransport des Ostgrönlandstromes, in Reports on Polar Research, The Expedition ARKTIS X/1 of the Research Vessel "Polarstern" in 1994., Vol 181, 79pp.

* Woodgate, R.A. & P.D.Killworth, 1996, The Problem of the Barotropic Mode in Deriving Pressure from Density using Vertical Normal Modes, J.Geophys.Res., 101, 3765--3768.

Darnall, C. & R.A.Woodgate, 1996, Transport of Mass, Heat and Fresh Water in the East Greenland Current, in Reports on Polar Research, The Expedition ARKTIS X1/2 of the Research Vessel "Polarstern" in 1995., Vol 197.

Fahrbach E., R.Meyer, G.Rohardt, M.Schroeder, A.Wisotski and R.Woodgate, June 1996, Gradual Warming of the Weddell Sea Deep and Bottom Water, Poster at the Oceanography Society Meeting in Amsterdam, 1996.

Woodgate, R.A., E.Fahrbach and G.Rohardt, Sept 1996, The East Greenland Current - Results from current meter moorings at 75N from 1987-1995, talk at UK Oceanography Conference in Bangor.

Fahrbach, E., J. Gorny, A.Hansjosten, M.Heras, U.Horstmann, M.Jochum, L.Kolb, R.Meyer, G.Rohardt, H.Rohr, M.Schröder, G.Tan, T.Winterrath, A.Wisotzki, H.Witte and R.A.Woodgate, 1997 Deep and Bottom Water Formation in the Weddell Sea., in Reports on Polar Research, The Expedition ANTARKTIS XIII/4-5 of the Research Vessel "Polarstern" in 1996., Vol 239.

Woodgate, R.A., E.Fahrbach and G.Rohardt, 1997, The East Greenland Current at 75N - annual and interannual variation from moored current meters., Annales Geophysicae, E.G.S., 15, suppl II, C374.

Woodgate, R.A., E.Fahrbach and U.Schauer, 1997, Benthic Storms in the Greenland Sea?, Annales Geophysicae, E.G.S., 15, suppl II, C373

Fahrbach, E., G.Rohardt, M.Schröder and R.Woodgate, 1997, Gradual warming of the Weddell Sea Deep and Bottom Water., Annales Geophysicae, E.G.S., 15, suppl II, C363

* Woodgate, R.A. & P.D.Killworth, 1997, The Effects of Assimilation on the Physics of an Ocean Model. Part 1: Theoretical model and barotropic results, J.Atmos. Ocean. Tech., 14, No.4, 897-909.

* Woodgate, R.A., 1997, The Effects of Assimilation on the Physics of an Ocean Model. Part 2:Baroclinic

identical twin experiments, *J.Atmos. Ocean. Tech.*, 14, No.4, 910-924.

Schauer U. and S.Østerhus, 1997, VEINS Lance-6-97 Fram Strait 23rd August to 17th September 97 Cruise Report, *Berichte aus dem Fachbereich Physik*, 82.

Woodgate, R.A., 1997, Book review of *The Ocean Circulation Inverse Problem*, C.Wunsch., *Ocean Challenge*, Vol 7, No.2, p40.

Woodgate, R.A., 1997, Can we Assimilate Temperature Data Alone into a Full Equation of State Model??. *Ocean Modelling*, 114, (Sept 97), 4-5.

Nicholls, K., S.Ackley, E.Hunke, B.Moat and R.Woodgate, 1998, Cruise Report for ROPEX 1997/1998, BAS Internal Report (ref GEN/1997/S2), 30pp.

Woodgate, R., 1998, CTD work and LADCP work in E.Fahrbach, P.Haugan, M.Lipizer, A.Luchetta, M.Meredith, U.Schauer, V.Tverberg, W.Walczowski & R.Woodgate, Work package 1.3 Fram Strait, European Commission MAST III Programme, Contract MAS3-CT96-0070 VEINS., Report of the 1st Workpackages Workshop, Nov 24th 1997.

Fahrbach, E., R.Meyer, G.Rohardt, M.Schröder & R.A.Woodgate, 1998, Gradual warming of the Weddell Sea deep and bottom water., *FRISP Report No.12*, Ed. H. Oerter, Alfred-Wegener-Institute, Bremerhaven, Germany. p24-34.

Woodgate, R.A., M.Schröder & S.Østerhus, 1998, Moorings from the Filchner Trough and the Ronne Ice Shelf Front: Preliminary Results., *FRISP Report No.12*, Ed. H. Oerter, Alfred-Wegener-Institute, Bremerhaven, Germany. p85-90.

Fohrmann, H., J.O.Bachhaus, B.J.Haupt, J.Kämpf, W.Ritzran, J.Rumohr & R.A.Woodgate, 1998, Sediment Transport in the Greenland -Norwegian Sea., review article in book, in prep

European Commission MAST III Programme, Contract MAS3-CT96-0070 VEINS. Report of the 2nd Workpackages Workshop, Nov 22th 1998. - Work package 1.3 Fram Strait E.Fahrbach, P.Haugan, M.Lipizer, A.Luchetta, M.Meredith, U.Schauer, V.Tverberg, W.Walczowski & R.Woodgate - Mooring work, R A.Woodgate

Woodgate, R.A., U.Schauer & E.Fahrbach, Moored Current Meters in the Fram Strait at 79N: Preliminary Results with special emphasis on the West Spitsbergen Current., *Berichte aus dem Fachbereich Physik*, AWI, No.91, 150pp.

Meyer, R., R.A. Woodgate, B.Rudels, E.Fahrbach, U.Schauer, S Osterhus, V.Tverberg, 1998, Circulation in the Fram Strait, Poster presentation at AGU

Padmann L., K.Nicholls & R.A.Woodgate, 1998, Oceanographic Results from the Ronne Polynya Experiment in the Southern Weddell Sea.,Poster presentation at AGU 1998

Jonsson, S., R.A.Woodgate and E.Fahrbach, 1999, The East Greenland Current from Fram Strait to Denmark Strait, oral presentation, EGS 1999

APL, SEATTLE

- * Woodgate, R.A. and E.Fahrbach, 1999, Benthic Storms in the Greenland Sea., *Deep-Sea Research I*, 46, 2109-2127.
- * Woodgate, R.A., E.Fahrbach and G.Rohardt, 1999, Transports and Structure of the East Greenland Current at 75N from Moored Current Meters, *J.Geophys.Res.*, 104 (C8), 18,059-18,072.
- Jonsson, S., R.A.Woodgate and E.Fahrbach, 1999, The East Greenland Current from Fram Strait to Denmark Strait, abstract for EGS 1999.
- Verduin, J., R.Woodgate, E.Fahrbach, J.Meinke, S Østerhus, U.Schauer and V.Tverberg, 1999, Direct Measurements of volume transports across Fram Strait and their variability., ICES extended abstract, ICES CM 1999/L:17.
- Woodgate, R.A., K.Aagaard, R.D.Muench, J.Gunn, G.Björk, B.Rudels, A.T.Roach and U.Schauer, 1999, Effects of Barents Sea Outflow on the Upper Waters of the Eastern Arctic Ocean., poster at OAI Meeting, Virginia Beach.
- Woodgate, R.A., K.Aagaard, R.D.Muench, J.Gunn, G.Björk, B.Rudels, A.T.Roach and U.Schauer, 2000, Circulation and Transports in the Vicinity of the South-eastern Lomonosov Ridge., abstract for talk at Ocean Sciences Meeting, San Antonio, Texas.
- Ralph, E.A., K.Aagaard, A.T.Roach, J.Johnson, R.Woodgate, A.Cates, 2000, The Keweenaw Current: Surprises in annual time series., abstract for Ocean Sciences Meeting, San Antonio, Texas.
- Fahrbach, E., S.Harms, K.Nicholls, S Østerhus, G.Rohardt, M.Schröder and R.Woodgate, 2000, Bottom Water Formation and Sea ice Transport in the Weddell Sea., abstract for EGS 2000.
- Woodgate, R.A. and K.Aagaard, 2000, A Synthesis of Arctic Ocean Time Series, with application to Shelf-Basin Interactions., abstract and talk for SBI Planning Meeting, Baltimore
- * Rudels, B., R.Meyer, E.Fahrbach, V.Ivanov, S.Østerhus, D.Quadfasel, U.Schauer, V.Tverburg and R.A.Woodgate, 2000, The Water Mass Distribution in Fram Strait and over the Yermak Plateau in Summer 1997., *Ann. Geophys.*, 18, 687-705.
- Padman, L., K.Nicholls and R.A.Woodgate, 2000, The 1998 Ronne Polynya Experiment (ROPEX)., in press *Antarctic Journal of the US*.
- Fahrbach, E., S.Harms, H.Hellmer, K.Nicholls, A.Jenkins, S.Osterhus, L.Padman, G.Rohardt, M.Schroeder and R.Woodgate, 2000, The fieldwork during the "Polarstern" cruise ANT XVI/2 as a contribution to the study of bottom water formation and sea ice transport in the Weddell Sea., FRISP report, in press
- BBC, 2000, Vets in the Wild, special 1hr television documentary on polar bears and sea ice in the Canadian Archipelago.
- Woodgate R.A. and K.Aagaard, 2000, ONR proposal An extended analysis of time-series and hydrographic data with reference to shelf-basin interaction., funded by ONR
- Aagaard K. and R.A.Woodgate, ONR proposal, Time Series Measurements in Bering Strait 2001-2002, An interim contribution to SBI, funded by ONR
- Woodgate, R.A., Cruise report for Alpha Helix Cruise HX235 to the Bering Strait, August-September, 2000.,

Woodgate, R.A., 2000, The Arctic Ocean Boundary Current - Facts and Fiction, Physical Oceanography Lunch Seminar, University of Washington.

Woodgate, R.A. and K.Aagaard, 2000, Arctic Ocean Inflow and Boundary Currents from Moored Time Series Measurements, invited talk at SBI meeting in Atlanta

* Woodgate, R.A., K.Aagaard, R.D.Muench, J.Gunn, G.Björk, B.Rudels, A.T.Roach and U.Schauer, 2001, The Arctic Ocean Boundary Current along the Eurasian slope and the adjacent Lomonosov Ridge: Water mass properties, transports and transformations from moored instruments.. , *Deep-Sea Res. I.* 48,8, 1757-1792.

* Fahrbach, E., S.Harms, G.Rohardt, M.Schröder & R.A.Woodgate, 2001, Flow of bottom water in the northwestern Weddell Sea., *J. Geophys. Res.*, 106, C2, 2761-2778.

* Aagaard K., & R.A.Woodgate, 2001, Some thoughts on the freezing and melting of sea ice and their effects on the ocean., *Ocean Modelling*, 3, 127-135.

Woodgate, R.A. & K.Aagaard, 2001, High Latitude Dynamics web site, <http://psc.apl.washington.edu/HLD>

* Woodgate, R.A., K.Aagaard, J.Swift, W.M.Smethie, and K.Falkner, 2001, NSF Arctic Natural Sciences proposal, Collaborative Research: The Influence of the Mendeleev Ridge and Chukchi Borderland on the Large-scale Circulation of the Arctic Ocean.

Woodgate, R.A, and K.Aagaard, 2001, The Circulation in the Chukchi Sea from 1990 to 1991: Results from Moored Instrumentation., talk at SBI meeting in Albuquerque

Aagaard, K. and R.A.Woodgate, 2001. ONR proposal, Extended Measurements in Bering Strait., funded by ONR

* Weingartner, T., K.Aagaard, R.A.Woodgate and T.Whitledge, 2001, NSF Shelf Basin Interaction proposal, Collaborative Research: The Fate of a Large and Strongly Forced Arctic Shelf Outflow: Physical and Biochemical Process Studies.

Arntz, W.E., T.Brey, J-M. Gili, K. Beyer, A. Mackensen, R. Woodgate, H-J. Urban, Message from a Mooring: Ecology of the Antarctic Barnacle *Bathylasma corolliforme*. poster at SCAR Biology Symposium, Sept 2001.

Woodgate, R.A., 2001, Cruise report for Alpha Helix Cruise HX250 to the Bering Strait, September, 2001.

Woodgate, R.A., The Arctic Ocean Boundary Current - Facts and fiction, invited talk at Oregon State University, December 2001

Woodgate, R.A., K.Aagaard, J.Swift, W.M.Smethie, and K.Falkner, 2002, Atlantic meets Pacific at an Arctic Crossroads, invited article for *Witness the Arctic*

Witze, A., 2002, Arctic Adventure helps expand data on climate change., *interview for article in Dallas Morning News, May 2002*

Woodgate, R.A., K.Aagaard, J.Swift, W.M.Smethie, and K.Falkner, 2002, The Arctic Crossroads, presentation to the community in Barrow (given by Tom Weingartner)

Nof, D., and R.A Woodgate, 2002, The Role of Bering Strait in the Global and Local Circulation, ONR planning letter and proposal

Woodgate, R.A., 2002, Cruise report for Alpha Helix Cruise HX260 to the Bering Strait, July, 2002.

* Morison, J.H., K.Aagaard, K.K.Falkner, K. Hatakeyama, R. Moritz, J.E. Overland, D.Perovich, K. Shimada, M. Steele, T.Takizawa and R. Woodgate, 2002, North Pole Environmental Observatory delivers early results, *EOS*, 83, 357-361

Woodgate, R.A., K.Aagaard, J.Swift, W.M.Smethie, K.Falkner, E. Hawker, and T.Weingartner, 2003, Exits and Entrances – Large-scale Arctic Ocean Circulation as a neighbour for the Beaufort Sea. invited talk at MMS Beaufort Sea conference in Fairbanks, Feb 2003

Woodgate, R.A., K.Aagaard and T.Weingartner, 2003, A Year in the Physical Oceanography of the Chukchi Sea: 1990-1991, talk at SBI PI Meeting in Miami, March 2003.

Woodgate, R.A., K.Aagaard, J.Swift, W.M.Smethie, and K.Falkner, 2003, The Chukchi Borderland Cruise 2002, talk at SBI PI Meeting in Miami, March 2003.

McPhee, M, E. D'Asaro, P.Guest, R. Harcourt, D. Holland, R.Lindsay, J. Morison, R. Muench, L. Padman, T. Stanton, R.Woodgate, June 2003 NSF proposal, Collaborative Research: The Maud Rise Nonlinear Equation of State Study (MaudNESS)

* Nicholls, K.W., L.Padman, M.Schröder, R.A.Woodgate, A.Jenkins, and S. Østerhus, 2003, Water mass modification over the continental shelf north of Ronne Ice Shelf, Antarctica, *J. Geophys. Res.*, 108 (C8), 3260, doi:10.1029/2002JC001713.

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Woodgate, R.A , 2003, Journey to the Arctic Crossroads, invited article for *APL Biennial report*

Woodgate, R.A., 2003, Cruise report for Alpha Helix Cruise HX274 to the Bering Strait, July, 2003.

* Foldvik, A., T. Gammelsrod, S. Østerhus, E. Fahrbach, G. Rohardt, M. Schröder, K.W. Nicholls, L. Padman, R.A. Woodgate, 2004, Ice Shelf Water Overflow and Bottom Water Formation in the Southern Weddell Sea., *J. Geophys. Res.*, 109, doi:10.1029/2003JC002008.

Muenchow, A., R. Pickart and R. Woodgate, 2004, Evolution of a "Poleward Undercurrent" Over the Continental Slope off Arctic Alaska *Eos Trans. AGU*, 84(52), Ocean Sci. Meet. Suppl., 2003

Aagaard, K, R. Woodgate, R and T. Weingartner, 2004, The Pacific Inflow through Bering Strait 1990-2002, invited talk at ASLO/TOS Ocean Research Conference 2004, Honolulu

Pickart, R, T. Weingartner, R. Woodgate and K. Aagaard, 2004, The Chukchi-Beaufort Shelf/Slope Boundary, talk at ASLO/TOS Ocean Research Conference 2004, Honolulu.

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Woodgate, R.A., et al., 2005, Bering Strait IPY Project, oral presentation to AOSB board, Kunming, China, April 2005

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Woodgate, R.A., K.Aagaard, T.Weingartner, T.Whitley, J.Calder, K.Crane, I.Lavrenov, 2005, Bering Strait: Pacific Gateway to the Arctic Ocean, invited speaker for ASSW (Arctic Science Summit Week). Kunming, China, April 2005, sponsored by Chinese Government.

Woodgate, R.A., 2005, The Arctic Climate Panel of CliC, invited talk for PAG (Pacific Arctic Group) in Kunming, China, April 2005.

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Woodgate, R.A. and K.Aagaard, 2005, Bering Strait's Contribution to Arctic Freshwater, invited talk at FWI (Freshwater Initiative) Meeting, Seattle, USA, June 2005

Woodgate, R.A., 2005, Mooring cruise report for CCGS Sir Wilfrid Laurier cruise to the Bering Strait, July 2005, <http://psc.apl.washington.edu/SWL2005.html>

- * Falkner, K.K., M.Steele, R.A.Woodgate, J.Swift, K.Aagaard & J.Morison, 2005, Dissolved oxygen extrema in the Arctic ocean halocline from the North Pole to the Lincoln Sea. *Deep Sea Research I*, 52 (7), 1138--1154
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 - * Zhang, J., and R.A Woodgate, 2005, BEST: The Impact of Changes in Sea Ice on the Physical Forcings of the Eastern Bering Ecosystem - Retrospective Investigation and Future Projection, NSF Proposal to ANS- BEST announcement.
 - * Bitz, C., P. Gent, R.A. Woodgate, A. Hall, M. Holland and R. Lindsay, 2006, The Influence of sea-ice on ocean heat uptake in response to increasing CO₂, *Journal of Climate*, 19, 2437 - 2450.
- Aagaard, K., R.A. Woodgate, T.J. Weingartner, 2006, Control of the Bering Strait Throughflow and its Salinity, *Eos Trans. AGU*, 87 (36), *Ocean Sci. Meet. Suppl.*, Abstract OS32P-06, - presentation
- Woodgate, R.A., K. Aagaard, J.H. Swift, W.M. Smethie, K.K. Falkner, 2006, Boundary Current Circulation in the Mendeleev Ridge and Chukchi Borderland Region of the Arctic Ocean – Atlantic Water Zigzags and the Influence of Shelf Processes at the Arctic Crossroads, *Eos Trans. AGU*, 87 (36), *Ocean Sci. Meet. Suppl.*, Abstract OS33N-02, - presentation
- Muenchow, A., R.S. Pickart, T. Weingartner, R.A. Woodgate, D. Kadko, 2006, Arctic Boundary Currents Over the Chukchi and Beaufort Slope Seas: Observational Snapshots, Transports, Scales and Spatial Variability from ADCP Surveys, *Eos Trans. AGU*, 87 (36), *Ocean Sci. Meet. Suppl.*, Abstract OS33N-03, - presentation
- Woodgate, R.A., K. Aagaard and T.J. Weingartner, 2006, Pacific Ventilation of the Arctic, talk at SBI PI meeting, Kauai.
- * Woodgate, R.A., K.Aagaard and T.J. Weingartner, 2006, Interannual changes in the Bering Strait fluxes of Volume, Heat and Freshwater between 1991 and 2004, *Geophysical Research Letters*, 33, L15609, doi:10.1029/2006GL026931, available at <http://psc.apl.washington.edu/HLD/Bstrait/BSFluxpaper.html>
 - * Woodgate, R.A., R. Lindsay, T. Weingartner and T.Whitledge, 2006, IPY: Collaborative Research: The Pacific Gateway to the Arctic – Quantifying and Understanding Bering Strait Oceanic Fluxes, submitted to RUSALCA NOAA AO and NSF-IPY AO.

Woodgate, R.A., 2006, Mooring cruise report for CCGS Sir Wilfrid Laurier cruise to the Bering Strait, July 2006, <http://psc.apl.washington.edu/SWL2006.html>

Woodgate, R.A., K.Aagaard, J.H. Swift, W. Smethie, K.K. Falkner, T.Weingartner, Zigzagging in the Arctic, invited talk at Magic of Modelling conference in honour of Peter Killworth's 60th Birthday, Southampton, UK, Sept 2006.

* Aagaard, K., T.J.Weingartner, S.L. Danielson, R.A. Woodgate, G.C.Johnson, T.E.Whitledge, 2006, Some controls on flow and salinity in Bering Strait, *Geophysical Research Letters*, 33, L19602, doi:10.1029/2006GL026612.

Woodgate, R.A., K. Aagaard, T. Weingartner, T.Whitledge, J.Calder, K.Crane, I.Lavrenov, 2006, Bering Strait: Pacific Gateway to the Arctic, invited talk at CATS conference at OSU.

* Serreze, M.C., A.P. Barrett, A.G.Slater, R.A.Woodgate K.Aagaard, R.Lammers, M.Steele, R.Moritz, M.Meredith, and C.Lee, 2006, The Large-scale Freshwater Cycle of the Arctic, *Journal of Geophysical Research*, 111 C11010, doi:10.1029/2005JC003424.

* Goes, J.I., H.Gomes, E.J. D'Sa, J.Wang, R.A.Woodgate, 2006, Assessing the Bio-optical Response of Coastal Arctic Ecosystems to Diminished Sea-Ice, NOPP proposal.

* Woodgate, R.A., and M. Steele, 2006, Atlantic Water in the Western Arctic Ocean – pathways, driving mechanisms, and impacts, NSF-OPP (ANS) proposal

Panteleev, G, V.Luchin, R.Woodgate, D.Nechaev, P.Stabeno, 2006,Variational reconstruction of the quasi-stationary Bering Sea circulation and reanalysis of the fall 1990 circulation in the Chukchi Sea. abstract for NPRB Alaska Symposium

Woodgate, R.A., K.Aagaard, T.Weingartner, T.Whitledge, R.Lindsay, The Pacific Gateway to the Arctic – change and implications of the Bering Strait Throughflow. 2007, invited talk at ONR site visit.

Woodgate R.A., and J.Johnson, Ocean WatchDogs – how to measure the ocean when you're not there, North Pole Mooring, - working exhibits and posters on mooring work in ice covered waters at Polar Science Weekend at the Polar Science Center, Seattle, Mar 8 – 11th, 2007.

* Woodgate, R.A., K.Aagaard, J.H.Swift, W.M.Smethie and K.K.Falkner, 2007, Atlantic Water Circulation over the Mendeleev Ridge and Chukchi Borderland from Thermohaline Intrusions and Water Mass Properties, *Journal of Geophysical Research*, 112, C02005, doi:10.1029/2005JC003416. <http://psc.apl.washington.edu/HLD/CBL/Atlanticwaterzigzagpaper.html>

Woodgate, R., K.Aagaard, J.Swift, B.Smethie and K.Falkner, Temperature-salinity Zigzags: Tracing Atlantic Water through the Arctic using Double-Diffusive Intrusions, 2007, Poster at Gordon Conference.

Deming, J., and R.A Woodgate, The Changing Arctic Ocean – UW interdisciplinary graduate course (Ocean 506A), Spring Quarter 2007, <http://psc.apl.washington.edu/HLD/ArcticChange07/ArcticChange07.html>

Woodgate, R.A., K.Aagaard and T.Weingartner, 2007, First steps in calibrating the Bering Strait Throughflow, APL internal report, 20pp, <http://psc.apl.washington.edu/BeringStrait.html>

* Woodgate, R.A., R. Lindsay, T. Weingartner and T.Whitledge, 2007, RUSALCA: The Pacific Gateway to the Arctic – Quantifying and Understanding Bering Strait Oceanic Fluxes, NOAA-RUSALCA proposal.

* Woodgate, R.A., 2007, Atlantic Waters in the Western Arctic Ocean – pathways, properties and processes of

exchange, NSF-OPP (ANS) proposal

- * White, D., L. Hinzman, L. Alessa, J. Cassano, M. Chambers, K. Falkner, J. Francis, B. Gutowski, M. Holland, M. Holmes, H. Huntington, D. Kane, A. Kliskey, C. Lee, J. McClelland, B. Peterson, F. Straneo, M. Steele, R. Woodgate, D. Yang, K. Yoshikawa, T. Zhang, 2007, The Arctic Freshwater System: changes and impacts, *Journal of Geophysical Research*, 112, G04S54, doi:10.1029/2006JG000353..

Woodgate, R.A., T. Weingartner, T. Whitley, I. Lavrenov, K. Aagaard, R. Lindsay, Pacific Gateway to the Arctic: Recent measurements of the Bering Strait Throughflow, 2007, invited talk at RUSALCA planning meeting in Moscow.

Nechaev, D., G. Panteleev, R. Woodgate, 2007, Variational reconstruction of the Chukchi Sea circulation in October-December 1990. abstract for AGU Dec 2007.

Gieger B., "Our Changing Climate – The Poles", 2008, outreach book from Sally Ride Science, includes feature on Woodgate and polar research.

Woodgate, R.A., The Arctic Ocean and "Scaling", invited talk at Scaling meeting, Seattle, Jan 2008

Woodgate, R.A., The Changing Arctic Ocean, First in a 3 part UW Alumni Public Lecture Series entitled 'Arctic Adventure: Tales of Currents and Creatures', organized by UW-COFS (College of Ocean and Fisheries Science), February 2008

Woodgate R.A., and J. Johnson, Ocean WatchDogs – how to measure the ocean when you're not there, North Pole Mooring, - working exhibits and posters on mooring work in ice covered waters at Polar Science Weekend at the Polar Science Center, Seattle, Mar 6-9th, 2008.

Woodgate, R.A., 2008, Mooring cruise report for RUSALCA Sever to the Bering Strait, August/Sept 2007, <http://psc.apl.washington.edu/BeringStrait.html>

- * Melling, H., K.K. Falkner, R.A. Woodgate, S. Prinsenberg, A. Muenchow, D. Greenberg, T. Agnew, R. Samelson, C. Lee, B. Petrie, Freshwater Fluxes via Pacific and Arctic Outflows across the Canadian Polar Shelf, 2008, ASOF (Arctic Subarctic Ocean Fluxes) special volume, Springer-Verlag.

Woodgate, R.A., Roles for the Ocean in the 2007 Arctic Sea-ice retreat, Polar Science Brown Bag Lunch talk, March 2008

- * Dmitrenko, I. A., S. A. Kirillov, V.V. Ivanov, and R. A. Woodgate, 2008, Mesoscale Atlantic Water Eddy off the Laptev Sea continental slope carries the signature of upstream interaction, *J. Geophys. Res.*, doi: 10.1029/2007JC00449, in press.

Woodgate, R.A., T. Weingartner, R. Lindsay, T. Whitley, Bering Strait AON project, invited talk at AON meeting at Palisades, New York, April 2008

Woodgate, R.A., The Ocean's role in the 2007 Arctic Sea-ice Minimum, invited talk at NY Sea-ice retreat workshop, Palisades, New York, April 2008

- * Mizobata, K., K. Shimada, R. Woodgate, S-I. Saitoh and J. Wang, submitted 2008, Estimation of heat flux through the eastern Bering Strait, *Journal of Oceanography*.

Papers In Preparation

- * Zhang, J., M. Steele, R.A. Woodgate, in prep 2008. The role of Pacific Water in the dramatic retreat of arctic sea-ice during summer 2007, *Journal of Polar Science*.

- * Woodgate, R. A., R. Lindsay, K. Aagaard and T. Weingartner, On the Bering Strait Heat Flux and its influence on Arctic Sea ice., for GRL or JGR
- * Dmitrenko, I.A., S.A.Kirillov, V.V.Ivanov, and R.A.Woodgate, On the disappearance of Atlantic water from the Siberian junction of the Lomonosov Ridge.
- * Rawlins et al., Intensification of the Arctic Hydrologic Cycle: The Marine Component, Journal of Geophysical Research or Global and Planetary Change
- * Woodgate, R.A., and T. Weingartner, Defining a “climate site” for the Bering Strait throughflow.
- * Woodgate, R.A., K.Aagaard, J.H. Swift, W. Smethie and K.K. Falkner, Stagnation zones and deep waters in the Mendeleev Ridge and Chukchi Borderland region, for DSR.
- * Woodgate, R.A. and ???, An overview of the Arctic Ocean Boundary Current,

EXPEDITIONS

SWINDEX, Easter 1993, RRS Discovery,
South West Indian Ocean Experiment, Cruise Leader: Dr R.T.Pollard,
6 weeks, Salinity Sampling & analysis, Oxygen measurements, Oxygen Isotopes.

ADOX 2, February-March 1994, RRS Discovery,
Atlantic Deep Outflow Experiment, Cruise Leader: Dr R.R.Dickson,
6 weeks, CFC sampling and analysis.

ARK X/1, July-August, 1994, FS Polarstern,
Arctic Expedition X/1, Cruise Leader: Dr E.Fahrbach,
6 weeks, Mooring deployment and recovery, data preparation (AWI-team leader)

ARK XI/2 Sept-October, 1995, FS Polarstern,
Arctic Expedition XI/2, Cruise Leader: Professor G.Krause,
5 1/2 weeks, Mooring deployment and recovery, data preparation (AWI-team leader)

ANT XIII/4 March-May, 1996, FS Polarstern,
Antarctic Weddell Sea Expedition XIII/4, Cruise Leader: Dr E.Fahrbach,
9 1/2 weeks, CTD & mooring work (CTD watch leader)

LANCE '97, August-September 1997, RS Lance,
Arctic VEINS Cruise, Cruise Leader: Dr S.Østerhus & Dr U.Schauer,
4 weeks, Deployment of 10 Fram Strait and 5 Storfjord moorings (Mooring-Team leader)

ENDURANCE '98, January-February 1998, HMS Endurance,
Antarctic ROPEX Cruise, Cruise Leader: Dr K.Nicholls, British Antarctic Survey,
6 weeks, Deployment of 4 OVERFLOW moorings and recovery of 5 ROPEX moorings (Mooring-team leader)

ARK XIV/2a, August-September 1998, FS Polarstern,
Arctic VEINS Cruise, Cruise Leader: Dr E.Fahrbach,
3 weeks, Recovery & redeployment of 14 Fram Strait and 5 Storfjord moorings (Mooring-team leader)

KITES, May/June 1999, RV Blue Heron,
Lake Superior Cruise, Cruise Leader: Dr E.Ralph,
1 week, Recovery & redeployment of 9 KITES moorings (Mooring-team)

May 2000, Physical oceanography component of marine biology project:
Ephemeral Resource Exploitation by Polar Bears as a Result of Sea Ice Dynamics in Lancaster Sound/Barrow Strait in the Spring. P.I.: Dr M.Ramsey
1 week, CTD casts through the ice, filming with the BBC, (Physical Oceanographer)

HX235 August/September 2000, RV Alpha Helix,
Bering Strait Cruise, Cruise Leader: Dr R.A.Woodgate
2 weeks, Recovery and deployment of moorings, CTD and ADCP sections (Cruise and Mooring Team Leader)

North Pole Environmental Observatory, 2001,
Ice camp, PI: Prof. K.Aagaard
1 week, Deployment of oceanographic mooring through the ice at the North Pole

HX250 September 2001, RV Alpha Helix,
Bering Strait Cruise, Cruise Leader: Dr R.A.Woodgate
2 weeks, Recovery and deployment of moorings, CTD and ADCP sections (Cruise and Mooring Team Leader)

HX260 June 2002, RV Alpha Helix, Dutch Harbor to Nome
Bering Strait Cruise, Cruise Leader: Dr R.A. Woodgate
1.5 weeks, Recovery and deployment of moorings, CTD and ADCP sections (Cruise and Mooring Team Leader)

CBL02- AWS02-PhaseII August-September 2002, USCGC Polar Star,
Chukchi Borderland Cruise, Cruise Leader: Dr R.A. Woodgate
5 weeks, Hydrographic survey and recovery and deployment of moorings
(Chief Scientist)

HX274 July 2003, RV Alpha Helix, Teller to Nome
Bering Strait Cruise, Cruise Leader: Dr R.A. Woodgate
1.5 weeks, Recovery and deployment of moorings, CTD and ADCP sections (Cruise and Mooring Team Leader)

SBI2003- HLY-03-03 September –October 2003, USCGC Healy,
SBI Mooring Cruise, Cruise Leader: Dr R.A. Woodgate
5 weeks, Recovery and deployment of moorings (UW and WHOI), hydrographic survey
(Chief Scientist)

HX290 Aug/Sept 2004, RV Alpha Helix, Nome to Nome
Bering Strait Cruise, Cruise Leader: Dr R.A. Woodgate
8 days, Recovery and deployment of moorings, CTD and ADCP sections (Cruise and Mooring Team Leader,
supervisor of trainee technician from MATE program)
<http://psc.apl.washington.edu/AlphaHelix2004.html>

IOS 2005-05 July 2005, CCGS Sir Wilfrid Laurier, Kodiak to Barrow
St Lawrence and Bering Strait Cruise, Cruise Leader: Bon Van Hardenberg and Jackie Grebmeier
2 weeks, Recovery and deployment of Bering Strait moorings (UW moorings leader)

IOS 2006-01 July 2006, CCGS Sir Wilfrid Laurier, Victoria to Wainwright
St Lawrence/Bering Strait Cruise, Cruise Leader: Bill Williams, John Nelson, Jackie Grebmeier
3 weeks, Recovery and deployment of Bering Strait moorings (UW moorings leader)

RUSALCA 2007 Aug/Sept 2007, RV Sever (Russian), Nome to Nome
Bering Strait Cruise, Mooring Leader: Dr R.A. Woodgate, Cruise Leader: Prof. T Whitledge
9.5 days, Recovery and deployment of moorings, CTD section