

Thomas W. N. Haine Publications

July 2007

Publications

- Haine, T. W. N. An experiment to investigate mechanical resonance. *Physics Education*, 25, 221–223, 1990.
- Haine, T. W. N. CFC measurements on Vivaldi '91. *Sigma, The UK WOCE newsletter*, 5, 6, 1991.
- Griffiths, G., S. Cunningham, M. Griffiths, R. T. Pollard, H. Leach, S. Holley, R. Paylor, T. W. N. Haine, A. Rios, S. G. Alderson, R. K. Lowry, P. Smith, M. Preston, T. J. P. Gwilliam, J. Smithers, S. Keene, J. Hemmings, and T. R. Anderson. CTD oxygen, tracer and nutrient data from RRS Charles Darwin cruises 58/59 in the NE Atlantic as part of Vivaldi '91. Technical report, IOSDL Rep. 296, Available from Library, SOC, Empress Dock, Southampton, SO14 3ZH, U.K. 51 pp., 1992.
- Haine, T. W. N. *The use of transient tracers to study upper ocean processes*. Ph.D. thesis, University of Southampton. 123 pages, 1992.
- Cunningham, S. A., and T. W. N. Haine. On Labrador Sea Water in the Eastern North Atlantic. Part I: A synoptic circulation inferred from a minimum in potential vorticity. *J. Phys. Oceanogr.*, 25, 649–665, 1995a.
- Cunningham, S. A., and T. W. N. Haine. On Labrador Sea Water in the Eastern North Atlantic. Part II: Mixing dynamics and the advective-diffusive balance. *J. Phys. Oceanogr.*, 25, 666–678, 1995b.
- Haine, T. W. N., and K. J. Richards. The influence of the seasonal mixed layer on oceanic uptake of CFCs. *J. Geophys. Res.*, 100, 10,727–10,744, 1995.
- Haine, T. W. N., A. J. Watson, and M. I. Liddicoat. Chlorofluorocarbon-113 in the northeast Atlantic. *J. Geophys. Res.*, 100, 10,745–10,753, 1995.
- Cunningham, S. A., and T. W. N. Haine. Circulation of Labrador Sea Water from potential vorticity. Technical report. In *Understanding ocean circulation: UK WOCE: the first six years...*, (eds. R. T. Pollard & D. Smythe-Wright), 1996.
- Dickson, R., E. McDonagh, T. Haine, and A. Watson. The antarctic water outflow to the indian ocean. Technical report. In *Understanding ocean circulation: UK WOCE: the first six years...*, (eds. R. T. Pollard & D. Smythe-Wright), 1996.
- Haine, T. W. N. Combining passive tracer observations with ocean circulation models. *Int. WOCE Newsl.*, 23, 3–5, 1996.
- Visbeck, M., J. Marshall, T. Haine, and M. Spall. Specification of eddy transfer coefficients in coarse-resolution ocean circulation models. *J. Phys. Oceanogr.*, 27, 381–402, 1997.
- Haine, T. W. N., and J. C. Marshall. Gravitational, symmetric and baroclinic instability of the ocean mixed layer. *J. Phys. Oceanogr.*, 28, 634–658, 1998.

- Haine, T. W. N., A. J. Watson, M. I. Liddicoat, and R. R. Dickson. The flow of Antarctic bottom water in the southwest Indian ocean estimated using CFCs. *J. Geophys. Res.*, *103*, 27,637–27,653, 1998.
- Haine, T. W. N., and S. L. Gray. North Atlantic ventilation constrained by CFC observations. *Int. WOCE Newsl.*, *35*, 15–17, 1999.
- Lea, D. J., M. R. Allen, and T. W. N. Haine. Sensitivity analysis of the climate of a chaotic system. *Tellus, Ser. A*, *52A*, 523–532, 2000.
- Gray, S. L., and T. W. N. Haine. Constraining a North Atlantic ocean general circulation model with chlorofluorocarbon observations. *J. Phys. Oceanogr.*, *31*, 1157–1181, 2001.
- Haine, T. W. N. How far have we come in determining the large-scale transport capacity for passive tracers in the ocean? Technical report, U.S. WOCE Office, 2001.
- Haine, T. W. N., and S. L. Gray. Quantifying mesoscale variability in ocean transient tracer fields. *J. Geophys. Res.*, *106*, 13,861–13,878, 2001.
- Junge, M. M., and T. W. N. Haine. Mechanisms of North Atlantic wintertime sea surface temperature anomalies. *J. Climate*, *14*, 4560–4572, 2001.
- Meredith, M. P., A. J. Watson, K. A. Van Scoy, and T. W. N. Haine. Chlorofluorocarbon-derived fluxes of Antarctic Bottom Water from the Weddell Sea into the South Atlantic and Southern Indian oceans. *J. Geophys. Res.*, *106*, 2899–2919, 2001.
- Thuburn, J., and T. W. N. Haine. Adjoints of nonoscillatory advection schemes. *J. Comput. Phys.*, *171*, 616–631, 2001a.
- Thuburn, J., and T. W. N. Haine. Nonoscillatory advection schemes with well-behaved adjoints. In P. F. Hodnett, editor, *IUTAM Symposium on Advances in Mathematical Modelling of Atmosphere and Ocean Dynamics*, pages 265–270, 2001b.
- Haine, T. W. N., and T. M. Hall. A generalized transport theory: Water-mass composition and age. *J. Phys. Oceanogr.*, *32*, 1932–1946, 2002.
- Haine, T. W. N., and P. D. Williams. The role of nonhydrostatic dynamics in controlling development of a surface ocean front. *Ocean Modelling*, *4*, 121–135, 2002.
- Hall, T. M., and T. W. N. Haine. On ocean transport diagnostics: The idealized age tracer and the age spectrum. *J. Phys. Oceanogr.*, *32*, 1987–1991, 2002.
- Hall, T. M., T. W. N. Haine, and D. W. Waugh. Inferring anthropogenic carbon inventories in the ocean from tracers. *Glob. Biogeochem. Cycles*, *16*, 10.1029/2001GBC001,835, 2002.
- Lea, D. J., T. W. N. Haine, M. R. Allen, and J. Hansen. Sensitivity analysis of the climate of a chaotic ocean circulation model. *Q. J. R. Meteorol. Soc.*, *128*, 2587–2606, 2002.
- Waugh, D. W., M. K. Vollmer, R. F. Weiss, T. W. N. Haine, and T. M. Hall. Transit time distributions in Lake Issyk-Kul. *Geophys. Res. Lett.*, *29*, 10.1029/2002GL016,201, 2002.
- Haine, T. W. N., and R. S. Pickart. ASOF in the subpolar gyre: Recent results and future plans. *ASOF Newsletter*, *1*, 17–19, 2003.
- Haine, T. W. N., K. J. Richards, and Y. Jia. Chlorofluorocarbon constraints on North Atlantic ocean ventilation. *J. Phys. Oceanogr.*, *33*, 1798–1814, 2003a.
- Haine, T. W. N., K. J. Richards, and Y. Jia. Absorption of gases into the ocean. *Bull. Amer. Meteor. Soc.*, *84*, 889. NOWCAST: Papers of note, 2003b.

- Waugh, D. W., T. M. Hall, and T. W. N. Haine. Relationship among tracer ages. *J. Geophys. Res.*, *108*, 10.1029/2002JC001,325, 2003.
- Williams, P. D., P. L. Read, and T. W. N. Haine. Spontaneous generation and impact of inertia-gravity waves in a stratified, two-layer shear flow. *Geophys. Res. Lett.*, *30*, 10.1029/2003GL018,498, 2003.
- Eyink, G. L., T. W. N. Haine, and D. J. Lea. Ruelle’s linear response formula, ensemble adjoint schemes, and Lévy flights. *Nonlinearity*, *17*, 1867–1889, 2004.
- Haine, T. W. N. ASOF Status and Prospects in the Subpolar Gyre: A report on ASOF Task 5, Overflows and Storage Basins to Deep Western Boundary Current. Technical report. Available at <http://www.npolar.no/asof>, 2004.
- Hall, T. M., and T. W. N. Haine. Tracer age symmetry in advective-diffusive flows. *J. Mar. Sys.*, *48*, 51–59. Doi:10.1016/j.jmarsys.2003.01.001, 2004.
- Hall, T. M., D. W. Waugh, T. W. N. Haine, P. E. Robbins, and S. Khatiwala. Estimates of anthropogenic carbon in the Indian Ocean with allowance for mixing and time-varying air-sea CO₂ disequilibrium. *Glob. Biogeochem. Cycles*, *18*, 10.1029/2003GB002,120, 2004.
- Waugh, D. W., T. W. N. Haine, and T. M. Hall. Transport times and anthropogenic carbon in the subpolar North Atlantic. *Deep Sea Res., Part I*, *51*, 1475–1491, 2004.
- Williams, P. D., T. W. N. Haine, and P. L. Read. Stochastic resonance in a nonlinear model of a rotating, stratified shear flow, and a simple stochastic inertia-gravity wave parametrization. *Nonlinear Proc. Geophys.*, *11*, 127–135, 2004a.
- Williams, P. D., T. W. N. Haine, P. L. Read, S. R. Lewis, and Y. Yamazaki. Quasi-geostrophic model for investigating rotating fluids experiments (QUAGMIRE): reference manual. Technical report, Department of Physics, University of Oxford, 2004b.
- Williams, P. D., P. L. Read, and T. W. N. Haine. A calibrated, non-invasive method for measuring the internal interface height field at high resolution in the rotating, two-layer annulus. *Geophys. Astrophys. Fluid Dyn.*, *98(6)*, 453–471, 2004c.
- Williams, P. D., T. W. N. Haine, and P. L. Read. On the generation mechanisms of short-scale, unbalanced modes in rotating, two-layer flows with vertical shear. *J. Fluid Mech.*, *528*, 1–22, 2005.
- Zhang, H., T. W. N. Haine, and D. W. Waugh. Relationships between tracer age and dynamical fields in double gyre circulation. *J. Phys. Oceanogr.*, *35*, 2250–2267, 2005.
- Zhao, B., and T. W. N. Haine. On processes controlling seasonal North Atlantic sea surface temperature anomalies in ocean models. *Ocean Modelling*, *9*, 211–229, 2005.
- Eccles, F. J. R., P. L. Read, and T. W. N. Haine. Synchronization and chaos control in a periodically forced quasi-geostrophic two-layer model. *Nonlinear Proc. Geophys.*, *13*, 23–39, 2006.
- Haine, T. W. N. On tracer boundary conditions for geophysical reservoirs: How to find the boundary concentration from a mixed condition. *J. Geophys. Res.*, *111*, C05,003, doi:10.1029/2005JC003,215, 2006.
- Kvaleberg, E., and T. W. N. Haine. Labrador Sea Water transport rates and pathways in the subpolar North Atlantic ocean. *ASOF Newsletter*, *5*, 25–27, 2006.
- Lea, D. J., T. W. N. Haine, and R. F. Gasparovic. Observability of the Irminger Sea circulation using variational data assimilation. *Q. J. R. Meteorol. Soc.*, *132*, 1545–1576, 2006.

- Haine, T., C. Böning, P. Brandt, J. Fischer, A. Funk, D. Kieke, E. Kvaleberg, M. Rhein, and M. Visbeck. *North Atlantic Deep Water Formation in the Labrador Sea, Recirculation through the Subpolar Gyre, and Discharge to the Subtropics*, in: *The ASOF Science Book*. Springer, 2007a.
- Haine, T. W. N. What did the Viking discoverers of America know of the North Atlantic environment? *Weather*, *submitted*, 2007.
- Haine, T. W. N., H. Zhang, D. W. Waugh, and M. Holzer. On transit-time distributions in unsteady circulation models. *Ocean Modelling*, *submitted*, 2007b.
- Hall, T. M., T. W. N. Haine, M. Holzer, D. A. LeBel, F. Terenzi, and D. W. Waugh. Ventilation rates estimated from tracers in the presence of mixing. *J. Phys. Oceanogr.*, *in press*, 2007.
- Kvaleberg, E., and T. W. N. Haine. Recirculating flow in the Labrador and Irminger seas: Impact of bathymetry. *J. Phys. Oceanogr.*, *submitted*, 2007.
- Kvaleberg, E., T. W. N. Haine, and D. W. Waugh. Labrador Sea Water transport rates and pathways in the subpolar North Atlantic ocean. *J. Geophys. Res.*, *submitted*, 2007.
- Williams, P. D., T. W. N. Haine, G. L. Eyink, P. L. Read, and D. Ring. Inertia-gravity waves emitted from quasi-balanced flow: origins, properties and consequences. *J. Atmos. Sci.*, *submitted*, 2007.

Abstracts

- Cunningham, S. A., and T. W. N. Haine. Distribution and identification of source variations in Labrador Sea water in the Eastern North Atlantic. In *XVII General Assembly of EGS*, 1992a.
- Cunningham, S. A., and T. W. N. Haine. Distribution and identification of source variations in Labrador Sea water in the Eastern North Atlantic. In *U.K. Oceanography '92*, 1992b.
- Haine, T. W. N. An investigation of the potential of CFC-113 as an oceanographic tracer. In *XVII General Assembly of EGS*, 1992a.
- Haine, T. W. N. A modelling investigation of the effect of the seasonally mixed ocean on the uptake of CFC tracers. In *U.K. Oceanography '92*, 1992b.
- Haine, T. W. N. Using deliberate tracers as part of an open-ocean deep convection experiment. In *Workshop on oceanic convection, Seattle*, 1993.
- Haine, T. W. N., and J. C. Marshall. Baroclinic instability of the ocean mixed layer. In *AGU Fall meeting*, 1994.
- Haine, T. W. N., A. J. Watson, and R. R. Dickson. CFC results from the Antarctic Deep Outflow Experiment. In *XIX General Assembly of EGS*, 1994.
- Dickson, R. R., T. W. N. Haine, J. Brown, A. J. Watson, M. J. Griffiths, R. D. Frew, N. P. Holliday, and S. M. Boswell. Measuring the transport of deep and bottom water into the southwest Indian Ocean. In *IAPSO XXI General Assembly*, 1995.
- Haine, T. W. N., and J. C. Marshall. Upright, slantwise and baroclinic instability of the ocean mixed layer. In *10th AMS Conference on atmospheric and oceanic waves and stability*, pages 105–106, 1995a.

- Haine, T. W. N., and J. C. Marshall. Baroclinic instability of the oceanic mixed layer. In *ACCP PI's meeting, Miami*, 1995b.
- Haine, T. W. N., and J. C. Marshall. Baroclinic instability of the oceanic mixed layer. In *Proceedings of the GFD summer school on rotating convection, WHOI*, 1995c.
- Haine, T. W. N., A. J. Watson, and R. R. Dickson. The flow of Antarctic bottom water in the southwest Indian Ocean using CFCs. In *IAPSO XXI General Assembly*, 1995.
- Haine, T. W. N. How do transient tracer observations constrain the North Atlantic general circulation? In *U.K. Oceanography '96*, 1996.
- Haine, T. W. N., and J. C. Marshall. Symmetric instability of the ocean mixed layer. In *XXI General Assembly of EGS*, 1996.
- Gray, S. L., and T. W. N. Haine. Quantifying mesoscale variability in transient tracer fields. In *AGU 1998 Ocean Sciences Meeting*, 1998a.
- Gray, S. L., and T. W. N. Haine. Water mass composition and age: A Green's function perspective. In *U.K. Oceanography '98*, 1998b.
- Haine, T. W. N., R. R. Dickson, and A. J. Watson. Antarctic bottom water transport and dilution in the southwest Indian Ocean. In *U.K. Oceanography '98*, 1998.
- Haine, T. W. N., and S. L. Gray. How do transient tracer observations constrain the North Atlantic general circulation? In *Ocean Circulation and Climate, WOCE conference*, 1998.
- Gray, S. L., and T. W. N. Haine. Constraining ocean circulation models using CFC observations. In *IAPSO General Assembly '99*, 1999.
- Haine, T. W. N. Deep and intermediate water formation in the open North Atlantic. In *ACA-CIA/ESIG Thermohaline circulation workshop, Boulder*, 1999.
- Haine, T. W. N., and S. L. Gray. Constraining a North Atlantic ocean general circulation model using CFC observations. In *WOCE-AIMS tracer workshop, Bremen*, 1999.
- Haine, T. W. N., and Y.-L. Jia. Mediterranean influence on north Atlantic ventilation. In *WOCE North Atlantic Workshop, Kiel*, 1999.
- Lea, D. J., M. R. Allen, and T. W. N. Haine. Sensitivity analysis of the climate of a chaotic system. In *XXIV General Assembly of EGS*, 1999a.
- Lea, D. J., T. W. N. Haine, and M. R. Allen. Combined assimilation of SST and SSH. In *XXIV General Assembly of EGS*, 1999b.
- Haine, T., and S. Gray. Constraining a North Atlantic ocean general circulation model using chlorofluorocarbon observations. In *AGU 2000 Ocean Sciences Meeting*, 2000.
- Haine, T. W. N. Looking ahead 100 years: Outlook on Arctic freshwater fluxes and thermohaline shutdown. In *Strawman: Discussion meeting on the sustained monitoring of Arctic fluxes*. Arctic science summit, Cambridge, U.K., 2000.
- Haine, T. W. N., and J. Thuburn. Nonoscillatory advection schemes with well-behaved adjoints. In *Adjoint applications in dynamic meteorology*, 2000.
- Junge, M., and T. Haine. Sensitivity of SST in the North Atlantic to atmospheric fluxes and subsurface temperature: an adjoint approach. In *XXV General Assembly of EGS*, 2000a.

- Junge, M., and T. Haine. Mechanisms of low-frequency variability in the North Atlantic ocean. In *AGU 2000 Ocean Sciences Meeting*, 2000b.
- Lea, D. J., M. R. Allen, and T. W. N. Haine. Sensitivity analysis of the climate of a chaotic ocean circulation model. In *U.K. Marine Science 2000*, 2000.
- Thuburn, J., and T. Haine. Nonoscillatory advection schemes with well-behaved adjoints. In *Advances in mathematical modelling of atmosphere and ocean dynamics, IUTAM*, 2000.
- Eccles, F. J. R., P. L. Read, and T. W. N. Haine. Baroclinic chaos with a seasonal cycle. In *XXVI General Assembly of EGS*, 2001.
- Haine, T. W. N., and T. M. Hall. Water-mass composition and transit-time distribution in the North Atlantic. In *XXVI General Assembly of EGS*, 2001a.
- Haine, T. W. N., and T. M. Hall. Diagnosing ocean transport: Water-mass composition and age. In *AGU Spring Meeting*, 2001b.
- Haine, T. W. N., D. J. Lea, and M. R. Allen. What are the limits of adjoint sensitivity analysis? In *AGU Spring Meeting*, 2001a.
- Haine, T. W. N., P. D. Williams, and J. C. Marshall. The role of nonhydrostatic dynamics in controlling exchange across a surface ocean front. In *XXVI General Assembly of EGS*, 2001b.
- Hall, T. M., and T. W. N. Haine. Transit-time distributions in geophysical flows and applications to ocean tracers. In *AGU Spring Meeting*, 2001.
- Richards, K. J., T. W. N. Haine, and Y. Jia. Constraining ocean models with tracers. In *XXVI General Assembly of EGS*, 2001.
- Waugh, D. W., H. Zhang, and T. W. N. Haine. Inferring the age spectrum from transient tracers. In *AGU Spring Meeting*, 2001.
- Williams, P. D., P. L. Read, and T. W. N. Haine. Interactions of ‘fast’ and ‘slow’ modes in rotating, stratified flows. In *XXVI General Assembly of EGS*, 2001.
- Eccles, F. J. R., P. L. Read, I. M. Moroz, and T. W. N. Haine. Oscillations and chaos in a periodically forced two-layer quasi-geostrophic model. In *XXVII General Assembly of EGS*, 2002.
- Haine, T. W. N., K. Richards, and Y. Jia. Chlorofluorocarbon constraints on North Atlantic ocean ventilation. In *AGU 2002 Ocean Sciences Meeting*, 2002a.
- Haine, T. W. N., K. J. Richards, and Y. Jia. Chlorofluorocarbon constraints on North Atlantic ventilation. In *WOCE and Beyond Meeting*, 2002b.
- Hall, T. M., T. W. N. Haine, and D. W. Waugh. Inferring the concentration of anthropogenic carbon in the ocean from tracers. In *AGU 2002 Ocean Sciences Meeting*, 2002a.
- Hall, T. M., T. W. N. Haine, D. W. Waugh, and P. E. Robbins. Concentrations of anthropogenic carbon in the Indian Ocean inferred from WOCE CFC12 data using transit time distributions. In *WOCE and Beyond Meeting*, 2002b.
- Lea, D. J., T. W. N. Haine, D. L. Porter, and R. F. Gasparovic. Monitoring variability in the meridional overturning circulation in the Irminger Sea. In *AGU Fall Meeting*, 2002.
- Waugh, D. W., T. W. N. Haine, T. M. Hall, M. K. Vollmer, and R. F. Weiss. Inferring transit time distributions from multiple transient tracers. In *WOCE and Beyond Meeting*, 2002a.

- Waugh, D. W., T. M. Hall, and T. W. N. Haine. Relationship among tracer ages. In *AGU 2002 Ocean Sciences Meeting*, 2002b.
- Haine, T. W. N., G. L. Eyink, and D. L. Lea. Linear response formalism and ensemble adjoint methods for climate sensitivity. In *EGS-AGU-EUG Joint Assembly 2003*, 2003a.
- Haine, T. W. N., T. M. Hall, and D. W. Waugh. Diagnosing ocean transport pathways and timescales from tracers. In *EGS-AGU-EUG Joint Assembly 2003 (invited)*, 2003b.
- Lea, D. L., T. W. N. Haine, D. L. Porter, and R. Gasparovic. Monitoring the Irminger Sea overturning circulation. In *EGS-AGU-EUG Joint Assembly 2003*, 2003a.
- Lea, D. L., T. W. N. Haine, D. L. Porter, and R. Gasparovic. First steps toward high-resolution data assimilation in the Irminger Sea. In *NSF/ONR Workshop on Progress and Prospects of data assimilation in ocean research, Williamsburg, VA*, 2003b.
- Williams, P. D., T. W. N. Haine, and P. L. Read. A joint experimental/numerical study of the baroclinic/inertia-gravity wave interaction. In *EGS-AGU-EUG Joint Assembly 2003*, 2003.
- Zhang, H., T. W. N. Haine, and D. W. Waugh. Diagnosing transport and mixing in unsteady flows using transit-time distributions. In *EGS-AGU-EUG Joint Assembly 2003*, 2003.
- Haine, T., P. Williams, and P. Read. Nonlinear interactions of inertia-gravity modes and planetary waves in rotating fluid flows. In *The 25th IUGG Conference on Mathematical Geophysics*, 2004.
- Hall, T. M., D. W. Waugh, T. W. N. Haine, P. E. Robbins, and S. Khatiwala. Estimates of anthropogenic carbon in the Indian Ocean with allowance for mixing and time-varying air-sea CO₂ disequilibrium. In *EOS Trans. AGU 84(52) Ocean Sci. Meet. Suppl.*, 2004.
- Kvaleberg, E., and T. W. Haine. Bathymetric recirculations in the Labrador Sea. In *AGU 2004 Fall Meeting*, 2004.
- Lea, D. L., T. W. N. Haine, and R. F. Gasparovic. Eddy-resolving data assimilation in the Irminger Sea: Controllability and observability. In *36th International Liege Colloquium on Ocean Dynamics, Liege, Belgium*, 2004a.
- Lea, D. L., T. W. N. Haine, and R. F. Gasparovic. Eddy-resolving data assimilation in the Irminger Sea: Controllability and observability. In *1st International CLIVAR Science conference*, 2004b.
- Lea, D. L., T. W. N. Haine, and R. F. Gasparovic. Monitoring meridional overturning circulation in the Irminger Sea: Data assimilation twin experiments. In *CLIVAR workshop on North Atlantic Thermohaline Circulation Variability*. Available at: <http://www.ifm.uni-kiel.de/allgemein/naw2004.htm>, 2004c.
- Waugh, D. W., T. W. N. Haine, and T. M. Hall. Transport timescales and anthropogenic carbon in the subpolar North Atlantic. In *EOS Trans. AGU 84(52) Ocean Sci. Meet. Suppl.*, 2004.
- Zhao, B., and T. W. N. Haine. A simple model of North Atlantic sea surface temperature anomaly persistence. In *EOS Trans. AGU 84(52) Ocean Sci. Meet. Suppl.*, 2004.
- Haine, T. W. N. On tracer boundary conditions for geophysical reservoirs. In *EGU General Assembly*, 2005.
- Zhang, H., T. W. N. Haine, and D. W. Waugh. Transit time distributions in chaotic flow. In *EGU General Assembly*, 2005.
- Zhao, B., and T. W. N. Haine. Mechanisms of interannual thermal variability in the North Atlantic during 1950–1999: An ocean GCM study. In *U.S. CLIVAR Atlantic Science Conference*, 2005a.

- Zhao, B., and T. W. N. Haine. Heat content and sea-surface height variability in a North Atlantic model: Mechanical versus thermal forcing. In *EGU General Assembly*, 2005b.
- Dewar, W. K., T. W. N. Haine, and D. Ring. Slow nonhydrostatic flow and balanced energetics. In *Eos Trans. AGU, Ocean Sci. Meet. Suppl. abstract OS16I-09*, volume 87(36), 2006.
- Haine, T. W. N., P. Williams, D. Ring, and P. Read. Spontaneous emission of inertia-gravity waves from rotating stratified flow. In *Eos Trans. AGU, Ocean Sci. Meet. Suppl. abstract OS26L-08*, volume 87(36), 2006.
- Hall, T. M., T. W. N. Haine, M. Holzer, D. A. LeBel, F. Terenzi, and D. W. Waugh. Ventilation rates estimated from tracers in the presence of mixing. In *Eos Trans. AGU, Ocean Sci. Meet. Suppl. abstract OS54K-06*, volume 87(36), 2006.
- Kvaleberg, E., and T. W. N. Haine. Recirculating flow in the Labrador and Irminger Seas: Impact of bathymetry. In *EGU General Assembly*, 2006.
- Kvaleberg, E., T. W. N. Haine, and D. Waugh. Transport timescales and pathways in the western subpolar Atlantic. In *Eos Trans. AGU, Ocean Sci. Meet. Suppl. abstract OS25Q-16*, volume 87(36), 2006a.
- Kvaleberg, E., T. W. N. Haine, and D. W. Waugh. Labrador Sea Water transport rates and pathways in the subpolar North Atlantic ocean. In *EGU General Assembly*, 2006b.
- Zhao, B., and T. W. N. Haine. Impact of mesoscale eddies on North Atlantic SST variability. In *Eos Trans. AGU, Ocean Sci. Meet. Suppl. abstract OS25O-15*, volume 87(36), 2006.
- Haine, T. W. N. Labrador sea water formation rates and variability since 1950. In *North Atlantic Subpolar Gyre Workshop*, 2007a.
- Haine, T. W. N. High-Frequency Fluctuations in Denmark Strait Overflow Transport. In *North Atlantic Subpolar Gyre Workshop*, 2007b.
- Haine, T. W. N., G. Eyink, P. Williams, D. Ring, and P. Read. On the origin of inertia-gravity waves emitted by quasi-balanced flow. In *EGU General Assembly*, 2007a.
- Haine, T. W. N., P. Williams, G. Eyink, and D. Ring. On the loss of energy from the ocean mesoscale flow via slaved inertia-gravity waves. In *16th Conference on Atmospheric and Oceanic Fluid Dynamics*, 2007b.
- Haine, T. W. N., H. Zhang, and D. W. Waugh. On transit-time distributions in unsteady circulation models. In *EGU General Assembly*, 2007c.
- Kvaleberg, E., T. W. N. Haine, and D. W. Waugh. Spreading of CFC-11 in the subpolar North Atlantic Ocean. In *EGU General Assembly*, 2007.

Student Theses

- Chesher, J. *A theoretical and numerical investigation of the Rayleigh-Bénard problem*. Master's thesis, University of Oxford. Departmental prize winner, 1997.
- Eccles, F. *Dynamics of ocean circulation: Point vortex systems*. Master's thesis, University of Oxford. Departmental prize winner, 1998.
- Hall, O. M. *An investigation of ocean eddy parametrization schemes*. Master's thesis, University of Oxford, 1998.

- Moussavi, H. *Tracer analytical model for deep water study: Application to Antarctic Bottom Water flow*. Master's thesis, Ecole Polytechnique. Intern at University of Oxford, 1998.
- Williams, P. D. *Comparison of the non-hydrostatic, hydrostatic, and convectively-adjusted Navier-Stokes equations in physical oceanography*. Master's thesis, University of Oxford, 1998.
- Brooks, J. *Modelling atmospheric and oceanic waves*. Master's thesis, University of Oxford, 1999.
- Ehrhardt, G. *Cellular automaton models and turbulent flows*. Master's thesis, University of Oxford, 1999.
- Lea, D. J. *Joint assimilation of sea surface temperature and sea surface height*. Ph.D. thesis, University of Oxford, 2001.
- Williams, P. D. *Nonlinear interactions of fast and slow modes in rotating, stratified fluid flows*. Ph.D. thesis, University of Oxford. Winner of the Royal Astronomical Society Blackwell Prize, 2003.
- Eccles, F. J. R. *A laboratory and numerical study of periodically forced, nonlinear, baroclinic systems*. Ph.D. thesis, University of Oxford, 2004.
- Jeev, K. *Sensitivity analysis of a chaotic system using ensemble adjoint algorithms*. Master's thesis, Johns Hopkins University, 2005.
- Zhang, H. *Transport Timescales in Ocean double-gyre circulations*. Ph.D. thesis, Johns Hopkins University, 2005.
- Zhao, B. *North Atlantic climate variability in a hierarchy of ocean models*. Ph.D. thesis, Johns Hopkins University, 2005.