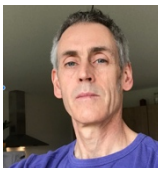
Robert B. Scott

B.Sc. Eng. Physics, M.Sc. Eng.,

Ph.D. Atmospheric and Oceanic Sciences

(publications start on p. 10)

Biographical Data



Citizenship: Canadian.
Status: Separated with two children.
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Education

February 1999: **Ph.D.**, **McGill University**, Department of Atmospheric and Oceanic Sciences, Montreal, Quebec, Canada.
Thesis: *Geostrophic energetics and the small viscosity behaviour of an idealized ocean circulation model.*
March 1995: **M. Sc. Eng., Queen's University at Kingston**, Department of Chemical Engineering, Kingston, Ontario, Canada.
Thesis: *Narrow-Band Statistical Modelling of Combustion Gas Radiative Properties.*
May 1988: **B. Sc. Eng, Queen's University at Kingston**, Eng. Physics, Kingston, Ontario, Canada.

Current Research Interests

Mathematical Biology	Mathematical methods applied to biology, especially computational methods in protein physics, atomic resolution molecular dynamics simulations, biogerontology, ionizing radiation, comparisons across species.
Mathematical Physics	General relativity and cosmology; visualization of curved spacetime, quantum gravity, dark matter detection.
Fluid Mechanics	Large-scale turbulence in geophysical flows, global realistic ocean circulation modelling with tidal and atmospheric forcing, model verification with large observational datasets.

Scholarships and Awards

2010 – 2015:	CNRS Chair of Excellence, salary supplement and reduced teaching load.
2007:	Jackson School of Geosciences Young Investigator Award, $20,000.
2000:	Natural Science and Engineering Research Council (NSERC) Post-doctoral Research Fellowship in UK, $5,000.
1999:	Natural Science and Engineering Research Council (NSERC) Post-doctoral Research Fellowship, $70,000.
1998:	Bourse de CERCA, awarded through the Centre de Recherche en Calcul Applique, $4200. FCAR scholarship, awarded through the Centre for Climate and Global Change Research, $4000. Travel Award, Alma Mater Society, McGill University, $500.
1997:	Keith Runcorn Travel Award, European Geophysical Society, $500. Travel Award, Alma Mater Society, McGill University, $500.
1996 – 97:	FCAR scholarship, awarded through the Centre for Climate and Global Change Research, $4000.
1995 – 96:	FCAR scholarship, awarded through the Centre for Climate and Global Change Research, $2000.
1994 – 95:	Entrance Scholarship, McGill University, Department of Atmospheric and Oceanic Sciences $12,500.
1993 – 94:	Queen's Graduate Award, Queen's University at Kingston, $2800.
1992 – 93:	Queen's Graduate Award, Queen's University at Kingston, $3000.
1986:	NSERC work term scholarship.
1984 – 85:	Entrance Scholarship, Queen's University at Kingston, $1300. Entrance Scholarship, University of Western Ontario, $1100, declined. Letter of recognition for achievement in integral/differential calculus, Queen's University at Kingston.

Professional Positions held

Sept 2015 – present:	Lecturer-researcher (*enseignement-chercher)* in the physics department at the Université de Bretagne Occidentale, Brest, France.

	My research affiliation is now in mathematics (Laboratoire de Mathématiques de Bretagne Atlantique).
Sept 2010 – Aug 2015:	*Enseignement-chercher avec chaire d'excellence* at the Université de Bretagne Occidentale, Brest, France. (Reader/Associate professor with chair.).
Oct 2008 – Sept 2010:	Visiting Senior Researcher, National Oceanography Centre, Southampton.
July 2007 – Sept 2014:	Research Scientist, Institute for Geophysics, The Jackson School of Geosciences, University of Texas at Austin.
June 2002 – July 2007:	Research Associate, Institute for Geophysics, The Jackson School of Geosciences, University of Texas at Austin.
June 2000 – May 2002:	Visiting Scientist, Princeton University and the Geophysical Fluid Dynamics Lab (GFDL).
Jan. – June 2000:	Post-doctoral research fellow, Applied Mathematics, Keele University.
March – Dec. 1999:	Post-doctoral research fellow, Applied Mathematics, University College London.
1991 – 92:	Engineer and Technical Writer, Solar Calorimetry Laboratory, Department of Mechanical Engineering, Queen's University.
1988 – 90:	Research Assistant, Positron Emission Tomography Imaging Group, Department of Physics, Queen's University.
May – Sept. 1988:	Research Assistant, Low temperature solid state physics, Don Taylor's Lab, Department of Physics, Queen's University.

Teaching Experience (see table next 2 pages)

Other teaching experience

Winter 2009:	Guest lecturer, NOC Southampton, UK, Coastal Oceanography
Winter 2000:	Teaching Assistant, Maths at Keele University, Calculus for Economics.
Winter 1997:	Assistant Lecturer, McGill University, Introduction to Atmospheric Science, teaching 13 lectures per term.
Winter 1996:	Teaching Assistant, McGill University, Introduction to Oceanic Science.
1995 – 96:	Teaching Assistant, McGill University, Introduction to Atmospheric Science.
1993 – 94:	Teaching Assistant, Queen's University, Transport Phenomena.
1992 – 93:	Teaching Assistant, Queen's University, Turbomachinery.
1991 – 92:	Teaching Assistant, Queen's University, Instrumentation and Measurement.
1987 – 88:	Teaching Assistant, Queen's University, Mechanics and Special Relativity.

I have worked as a private tutor for many undergraduate courses in calculus, linear algebra, statistics, physics, logic.

Area	Level (degree)	Title	Material	Year
Math. physics	Master 2 (pure math students, U. Rennes)	Principle of Least Action in Theoretical Physics	Covered calculus of variations, invariance of functionals and Noether's Theorem, variational principles for classical field theory.	2017, 2018
Math. physics	Master 2 (pure math students)	Relativistic cosmology	Einstein's theory of gravity, in which spacetime is modelled as a curved semi-Riemannian manifold with Lorentzian metric, applications to cosmology.	2012
Applied maths	Master 1 (marine physics)	Data analysis	Spectral methods, confidence intervals, bootstrapping. Hands on examples using MatLab™.	2012
Applied maths	BSc yr 3	Data analysis/ machine learning	Application of k-means clustering algorithm to automatic transcription of music.	2022, 2023, 2024
Applied maths	BSc yr 2 (phys and chem students)	Mathematics	Linear Algebra: Eucliean and Hermitian spaces; Analysis: Line, surface, volume integrals, vector calculus, PDEs.	2018, 2019, 2020
Applied maths	BSc yr 1 (biology and chem)	Mathematical tools	Linear Algebra, functions, inverse functions, differential calculus, ODEs.	2016, 2017
Applied maths	BSc yr 1 (biology	Probability theory and Statistics	Statistical inference, hypothesis testing, confidence intervals.	2018
Applied maths	Eng. yr 2	Parameterized curves	Curves in two dimensional Euclidean space, path length, tangent vectors, singular points, applications to engineering problems.	2016,2017
Applied maths	BSc all years (general elective)	Mathematics of games	I taught two lectures on group theory and Rubic's cube.	2018
Physics	Master 1 (marine physics)	Geophysical Fluid Dynamics	Fluid dynamics theory on the rotating Earth, applications to oceanography.	2011,2012, 2018
Physics	Master 1 (marine physics)	Ocean general circulation	The time mean circulation in the ocean, theory supported with observations.	2011,2012
Physics	Master 2 (marine physics)	Turbulence	Quasi-geostrophic turbulence theory.	2014
Physics	Master 1 (renewable energy, Eng. School "ENSTA")	Fluid mechanics	The fundamental equations of viscous incompressible fluid flow.	2018 to 2024
Physics	Master 1 (renewable energy, Eng. School "ENSTA")	Renewable marine energy	Thermal structure of the ocean, with a focus on understanding the tropical upper ocean.	2018 to 2024
Physics	BSc yr 3 (physics)	Astrophysics and Cosmology	Einstein's theory of gravity, cosmology. Basic differential geometry and calculus on manifolds to introduce physics students to the basics of general relativity. Applications included the static spherically symmetric black hole and expanding universe spacetimes.	2011, 2012, 2013, 2015, thro. 2024
Physics	BSc yr 1 (physics, chemistry)	Special Relativity	Waves phenomena, doppler shift. Einstein's theory of special relativity. Minkowski spacetime, 4-vectors, flat spacetime metric tensor, relativistic energy equation.	2013, thro. 2025
Physics	BSc yr 3 (phyics)	Reading course	Supervised groups of students in reading projects in Dark Matter and Quantum Entanglement.	2017 to 2024

Physics	BSc yr 3 (physics)	Experimental physics	Supervised groups of students in computational and experimental physics projects: topics include acoustics of musical instruments, machine learning, dark matter detection.	2018 to 2025
Physics	BSc yr 3 (phy and Eng phy) Queen's University at Kingston	Dynamics	Lagrangian mechanics, Hamiltonian mechanics, continuum mechanics.	2019
History	Masters 1 and 2	History of Science in English.	History of science, mostly 20th century. Emphasized the explosion of interest, involvement, importance of science in the last 120 years.	2018 to 2025
History	Masters 2	History of Science in English.	CRISPR-Cas9, the genetics revolution, AI and the information technology revolution, their impacts on society	2021 to 2025

Courses taught at Université Bretagne Occidentale (unless indicated otherwise):

Postgraduate Student Supervision

- C. Devallez, Licence (B.Sc.) student, 2025, University of Brest, intern supervisor (biophysics).
- R. Ayachi, M.Sc. student, 2024, University of Brest, intern supervisor (Biophysics).
- M. Herviou, M.Sc. student, 2023, University of Brest, intern supervisor (Microscopic fluid dynamics using molecular dynamics).
- M. Laviec, M.Sc. student, 2022, University of Brest, intern supervisor (Dark matter astrophysics).
- M. Niang, M.Sc. student, 2021, University of Brest, intern supervisor (Dark matter astrophysics).
- Co-supervised with Jean-Philippe Nicolas, a Masters in Mathematics student, on their research project. (Visualization of curved spacetime.) 2016, University of Brest.
- M. Antoine Hochet, Ph.D. 2011-- 2015, University of Brest, co-supervisor.
- M. Loïc Marzin, M.Sc. student, 2010/2012, University of Brest, intern supervisor.
- Ms. Harriet Cole, M. Ocean student, 2009/10, University of Southampton, supervisor.
- Mr. Ben Loveday, M.Sc. Oceanography, 2008/09, University of Southampton, co-supervisor.

Postdoctoral Fellow Supervision

- Dr. Jose-Luis Jaramillo January 2014 –April 2015.
- Dr. Dhouha Ferjani, June 1 2013 – July 2014.
- Dr. Corwin Wright, June 2011 – July 2012.
- Dr. Darran Furnival, March 2009 – Sept. 2013.
- Dr. Yongsheng Xu, Oct. 2006 – Sept. 2007.

- Dr. Christina Holland, Oct. 2004 – Aug. 2008.
- Dr. Faming Wang, Aug. 2003 – July 2005.

Ph.D. thesis committee memberships

- Dr. Clemence Vic, successfully defended May 28, 2014.
- Dr. Dhouha Ferjani, successfully defended June 2013.
- Dr. Ben King, The University of Texas at Austin, Dept. of Physics (Advisor Prof. Harry Swinney), graduated summer 2010, Ph.D. in Physics.
- Dr. Wei Wu, who successfully graduated Aug. 2005 from TAMU with Ph.D. in Oceanography. (Advisors were Prof. Ping Chang and Prof. G. North).

Other Student Supervising Experience

- Summer intern, Hugo Aime, Summer 2009.
- High-school student Anson Varghese, full-time, Summer 2008.
- M.Sc. student Swetha Bakaraju, UT Aerospace Eng. student, Summer 2008.
- High-school student, Ayon Sen, Summer 2006, 2007. Ayon won 4th place in the nation, and over $33,000 in scholarships, in the Siemens Competition in Math, Science and Technology, based upon a project I suggested and helped supervise with colleague Brian Arbic. This is a prestigious U.S.A. wide competition.
- Freshman, Sophomore, Columbia University Physics student, Liz Logan, Summer 2006, 2007.

Reviewing and other duties

- Reviewed several textbook proposals for different publishers including Cambridge University Press and Chapman and Hall/CRC.
- Regular reviewer for the following top journals: Journal of Fluid Mechanics, Journal of Climate, Geophysical Research Letters, Journal of Physical Oceanography.
- Regular reviewer of NSF and NOAA grant proposals.
- Sat on NSF panel in May 2006.

Other Interests

- African percussion music, especially polyrhythmic music from West Africa (*musique mandingue*). I play the djembé and accompanging percussion instruments and give free courses with the association *Amicale Laïque*.
- Volunteer with UT's Faculty/Staff Mentor program.
- Volunteer with Princeton Young Achievers.
- Started GFD journal club with UT physics professor Harry Swinney and his group.
- Re-initiated the GFDL journal club.
- Founder of the Atmospheric and Ocean Dynamics Journal Club at McGill.
- I enjoy learning languages, can speak, read and write French and read some Mandarin Chinese, understand simple Flemish.
- I have published many book reviews in the Kingston Whig Standard Magazine.

Leadership role

- Developed global database of ocean *in situ* bservations, shared with community.
- Planned a Community White Paper for the OceanObs'09 conference, organizing a team of 18 authors. The proposed CWP was published in 2010.
- Reviewed Peter Muller's book "The Equations of Oceanic Motions" for BAMS.
- Participated in a NASA planning meeting for the SWOT altimeter mission (wide swath satellite altimeter), April 2008.

Oral Presentations (Biophysics and biology)

Why do more massive mammalian species live longer?

- UBO Departemental seminar for the ORPHY Laboratory, Optimisation des Régulations PHYsiologiques, October 2021.

- Stockholm University, Department of Biochemistry and Biophysics, June 2022.
- First Interdisciplinary Workshop of the Society for Fractones, Kerlouan, France, October, 2023.

Oral Presentations (Theoretical Physics)

Quantum gravity and the ammonia molecule,

- Theory Canada, Antigonish, Nova Scotia, June 2018.
- CAP annual Congress, Halifax, Nova Scotia, June 2018.
- WE-Heraeus-Seminar on Gravitational Decoherence, Physikzentrum Bad Honnef, Germany, June 2017.

Visualizing curved spacetime for teaching/interpreting GR

- Royal Military College, Ontario Canada, January 17, 2019.
- Atlantic Relativity Meeting, Antigonish, Nova Scotia, June 2018.

L'espace-temps courbe ?! ça veut dire quoi ? D'où vient cette notion tordue? (Curved space-time?! What does that mean? Where did this idea come from?)

- Public Lecture, Université de Bretagne Occidentale, December 2016.

What is curved spacetime? What is all the excitement about gravitational waves?

- Physics and Astronomy Colloquium, University of Western Ontario, November 2016.
- Université du Temps Libre, March 2018.

Time dilation in the curved spacetime of general relativity

- Physics and Astronomy Colloquium, University of Western Ontario, October 2015.
- Geometry and Topology Seminar, Université de Bretagne Occidentale, November 2015.
- Laboratoire de Mathématiques Bretagne Occidentale, Quimper, December, 2015.

Interstellar: La science derière le film (Interstallar: the science behind the film)

- Public Lecture, Université de Bretagne Occidentale, January 2015.

The consistency between the equivalence principle and gravitational time dilation: Do clocks really slow down?

- Groupe de Physique théorique et mathématique, Université Libre de Bruxelles, April 2015.

Teaching the general relativity: lessons from the history and philosophy of science.

- Spanish Relativity Meeting, Sept 2014.
- Department of Physics, University of Guelph, April 2014.
- Laboratoire de Mathématiques de Bretagne Atlantique, Université de Bretagne Occidentale, December 2015.

Interchanging the roles of space and time in the development of special relativity

- Department of Mathematics, Université de Bretagne Occidentale, Sept 2013.

Oral Presentations (Ocean and Climate Physics)

Eddy-modulated, super-inertial turbulence

- The Fields Institute, Workshop on sub-mesoscale ocean processes, Toronto, June 2013.

The state of the art of ocean state estimation assessed with surface drifters

- National Oceanography Centre, Southampton, UK, March, 2010, *invited talk.*

Developments in Theory and Observations of Oceanic Mesoscale Energy Cascades

- AGU Ocean Sciences, Portland OR, Feb, 2010, *invited talk.*

Is the real ocean in a regime of geostrophic turbulence?

- IMS and Aeronautics Dept., Imperial College London, UK, Dec. 2009, *invited talk.*
- Proudman Oceanographic Laboratory, Liverpool, UK, Oct, 2009, *invited talk.*
- University of East Anglia, Norwich, UK, Oct., 2009, *invited talk.*

Vertical structure of horizontal currents in global eddying OGCMs

- European Geosciences Union, Austria, April, 2009, *invited talk.*
- Naval Research Laboratory, Stennis Space Center, MS, *invited talk.*

What phenomena of geostrophic turbulence exist in the real ocean?

- National Oceanography Centre, Southampton, UK, May, 2009, *invited talk.*

Recent progress in quantifying the rate of mechanical energy forcing and pathways to energy dissipation in the World Ocean

- Florida State University, FL, March, 2009, *invited talk.*

Zonal vs. meridional velocity variance: order in the chaotic ocean

- The University of Oxford, Oxford, UK, Feb. 2009, *invited talk.*
- University of South Florida, FL, Jan. 2009, *invited talk.*

What Would High-Resolution Altimetry Tell Us About Geostrophic Currents: Results From A 1/48th Degree Resolution Primitive Equation Simulation

- NASA/Scripps wide-swath altimeter workshop, April 2008, *invited talk*.

Anisostropic inverse cascade and zonal jet formation in the surface geostrophic flow of the World Ocean

- Liquid Helium workshop, St-Petersberg, FL, Feb. 2008, *invited talk.*

World Ocean mechanical energy budget: observing the wind power input, energy cascades, and bottom dissipation

- Florida State University, March, 2009*, invited talk.*
- Imperial College London, April 2008, *invited talk.*
- MIT, Jan. 2008, *invited talk.*
- National Oceanography Centre, Southampton, UK, Jan 2008, *invited talk.*
- Center for Environmental and Applied Fluid Mechanics, John Hopkins, Oct. 2007, *invited talk.*

Large-scale oceanic turbulence explored with satellite observations and numerical models

- Center for Atmospheric and Oceanic Sciences, Courant Institute of Mathematical Science, NYU, Oct. 2007, *invited talk*.
- Department of Applied Mathematics, University of Waterloo, July 2007, *invited talk*.

What sets the baroclinic kinetic energy cascade direction in quasi-geostrophic turbulence?

- UCLA, Los Angeles, May 2006, *invited talk.*
- LMD a l'Ecole Normale Superieure, France, March 2006, *invited talk.*
- College of Marine Science, University of South Florida, Sept. 2005, *invited talk*.
- Depart.of Mechanical Eng., University of California Berkeley, Sept. 2005, *invited talk*.

Propagating Decadal Signal in Modern Proxy Climate Records of the Tropical Pacific

- International Pacific Research Center, University of Hawaii, Feb. 2005, *invited talk.*
- Department of Oceanography, Texas A&M University, Sept. 2005, *invited talk*.

Estimates of the energy flux between length scales of oceanic mesoscale eddies

- Scripps, UCSD, March 2005, *invited talk.*
- SOEST, University of Hawaii, Feb. 2005, *invited talk*.

SST predictbaility: Results from stochastic climate models

- Courant Institute of Mathematics, New York City, Sept. 2001, *invited talk*.

Mechanisms and predictability of SST anomalies in the extratropics

- UTIG, University of Texas at Austin, Feb. 2002, *invited talk*.
- SOEST, University of Hawaii, Feb. 2002, *invited talk*.

Mechanical energy flux from the wind to the surface geostrophic flow using TOPEX/POSEIDON data

- Lamont-Doherty Earth Observatory, Columbia University, Oct. 1998, *invited talk*.

Numerical modelling of flow around a peninsula

- Keele University, UK, Dec. 1999, *invited talk*.

Mechanical energy flux from the wind to the geostrophic flow and inertial runaway

- DAMTP, Cambridge University, UK, March 2000, *invited talk.*
- MIT, Friday noon seminar, March 1998, *invited talk.*

Books

1. A Student's Manual for A First Course in GENERAL RELATIVITY, Cambridge University Press, published January 2016. (New edition submitted June, 2025.)
2. Problems and solutions on vector spaces for physicists: From part 1 in MATHEMATICAL PHYSICS-- a modern introduction to its foundations , Springer-Verlag, published August, 2023.

Book Chapters

Arbic, B.K., et al., 2018: A primer on global internal tide and internal gravity wave continuum modeling in HYCOM and MITgcm. In "New Frontiers in Operational Oceanography", E. Chassignet, A. Pascual, J. Tintoré, and J. Verron, Eds., GODAE OceanView, 307-392, doi:10.17125/gov2018.ch13.

Refereed Journal Publications

1. Scott, R.B. (2025): "A rigorous derivation of hyperviscosity", Journal of Fluid Mechanics, to be submitted.
2. Mondal, A., A.J. Morten, B.K. Arbic, G.R. Flierl, R.B. Scott, J. Skitka (2025): "Spatio-temporal spectral transfers in fluid dynamics", Physical Review Fluids, accepted for publication April, 2025.
3. von Appen, Wilken-Jon et al. (2022): "Eddies and the distribution of eddy kinetic energy in the Arctic Ocean", Oceanography, Vol. 35 , Issue 2 (special issue on the new arctic ocean), doi.org/10.5670/oceanog.2022.122
4. Scott, RB (2020): "Visualization of flat and curved spacetimes with simple cartography tools", European Journal of Physics, Vol 41.
5. Bharatbhai N.H. , Deshmukh P.C., Scott R.B., Roberts K. , Valluri S.R. (2020): " Lambert W function methods in double square well and waveguide problems", Journal of Physics Communications, Vol 4, No.6, p. 065001.
6. Luecke, CA, BK Arbic , JG. Richman, JF. Shriver , MH Alford, JK Ansong, SL Bassette , MC Buijsman, D Menemenlis, RB Scott, PG Timko, G Voet, AJ Wallcraft, L Zamudio (2020): "Statistical Comparisons of Temperature Variance and Kinetic Energy in Global Ocean Models and Observations: Results from Mesoscale to Internal Wave Frequencies", J. Geo. Res. Oceans., Vol 125, No. 5, https://doi.org/10.1029/2019JC015306.
7. Müller, M, B. K. Arbic, J. G. Richman, J. F. Shriver, E.L. Kunze, R. B. Scott, A. J. Wallcraft and L. Zamudio (2015): "Towards an internal gravity wave spectrum in global ocean models", *GRL*, Vol. 42, Issue 9, pp. 3474-3481.

8. Scott, R.B. (2015):`` Teaching the gravitational redshift: lessons from the history and philosophy of physics", *Journal of Physics: Conference Series*., Vol. 600, issue 1, p. 012055, DOI: 10.1088/1742-6596/600/1/012055.
9. Hochet, Antoine, Alain Colin de Verdière, and Robert B Scott (2015): "The vertical structure of large-scale unsteady currents", *J. Phys. Oceanogr.*, **45**, 755–777.
10. Arbic, B.K., Malte Mueller, James Richman, Jay Shriver, Andrew Morten, Robert B Scott (2014): "Geostrophic turbulence in the frequency-wavenumber domain: Eddy-driven low-frequency variability", *J. Phys. Oceanogr.*, **44**, 2050–2069. doi: http://dx.doi.org/10.1175/JPO-D-13-054.1
11. Wright, Corwin J., Robert B. Scott, Pierre Ailliot and DarranFurnival (2014): "Lee wave generation rates in the deep ocean", Geophys. Res. Lett., Vol. 41, Issue 7, pp. 2434--2440, doi :10.1002/2013GL059087.
12. Timko, Patrick G., Brian K. Arbic, James G. Richman, Robert B. Scott, E. Joseph Metzger, and Alan J. Wallcraft (2013): " Skill testing a three-dimensional global tide model to historical current meter records", J. Geophys. Res., Vol. 118, pp. 6914--6933, doi:10.1002/2013JC009071.
13. Turnewitsch, Robert, Saeed Falahat, Jonas Nycander, Andrew Dale, Robert B. Scott, Darran Furnival (2013): "Deep-sea fluid and sediment dynamics: Influence of hill to seamount-scale seafloor topography", Earth-Science Reviews, Vol. 127, pp. 203--241, doi: 10.1016/j.earscirev.2013.10.005.
14. Naveira Garabato, Alberto, A.J. George Nurser, Robert B. Scott and John A. Goff (2013): The impact of small-scale topography on the dynamical balance of the ocean, J. Phys. Oceangr., Vol. 43, doi: 10.1175/JPO-D-12-056.1.
15. Wright, Corwin, Robert B. Scott, Darran G. Furnival, Pierre Ailliot, and Frank Vermet (2013): Global Observations of Ocean-Bottom Subinertial Current Dissipation, J. Phys. Oceangr., Vol. 43, doi: 10.1175/JPO-D-12-082.1.
16. Arbic, B.K., Polzin, K., Scott, R.B. et al. (2013): "On eddy viscosity, energy cascades, and the horizontal resolution of gridded satellite altimeter products", J. Phys. Oceangr., Vol. 43, doi: 10.1175/JPO-D-11-0240.1.
17. Arbic, B.K., Scott, R.B., Flierl, G.R., Morten, A.J., Richman, J.G., Shriver, J.F. (2012b): Nonlinear cascades of surface oceanic geostrophic kinetic energy in the frequency domain, J. Phys. Oceangr., Vol. 42, pp 1577—1600 doi: 10.1175/JPO-D-11-0151.1.
18. Arbic, B. K., Scott, R. B., D.B. Chelton, J.G. Richman, J.F. Shriver (2012a): Effects of stencil width on surface ocean geostrophic velocity and vorticity estimation from gridded satellite altimeter data, J. Geophys. Res. Oceans, Vol. 117, C03029, doi:10.1029/2011JC007367.
19. Timko, Patrick G., Brian K. Arbic, James G. Richman, Robert B. Scott, E. Joseph Metzger, and Alan J. Wallcraft (2012): Skill tests of three-dimensional tidal currents in a global ocean model: A look at the North Atlantic, J. Geophys. Res. Oceans, Vol. 117, C08014, doi:10.1029/2011JC007617.

20. Wright, Corwin and Robert B. Scott and Brian K. Arbic, and Darran G. Furnival (2012): Bottom dissipation of subinertial currents at the Atlantic zonal boundaries, J. Geophys. Res. Oceans, Vol. 117/C3, doi:10.1029/2011JC007702.

21. King, Benjamin and Mark Stone, H. P. Zhang, Theo Gerkema, M. Marder, Robert B. Scott, and Harry L. Swinney (2012): Buoyancy frequency profiles and internal semidiurnal wave turning depths in the oceans, J. Geophys. Res. Oceans, Vol. 117, C04008, doi:10.1029/2011JC007681.

22. Scott, R.B., Nicolas Ferry, Marie Drevillon, Charlie N. Barron, Nicolas C. Jourdain, Jean-Michel Lellouche, E. Joseph Metzger, Marie-Hélène Rio, Ole Martin Smedstad, (2012): Estimates of surface drifter trajectories in the Equatorial Atlantic: a multi-model ensemble approach, OCEAN DYNAMICS, DOI 10.1007/s10236-012-0548-2, Volume 62, Issue 7, pp. 1091—1109.

23. Scott, R.B. and Darran Furnival (2012): Assessment of traditional and new eigenfunction bases applied to extrapolation of surface geostrophic current time series to below the surface in an idealized primitive equation simulation, J. Phys. Oceanogr., Vol 42, No. 1, pp. 165—178.

24. Scott, R.B., John A. Goff, Alberto Naveira Garabato, A.J. George Nurser (2011): Global rate and spectral characteristics of internal gravity wave generation by geostrophic flow over topography, J. Geophys. Res. Oceans, doi:10.1029/2011JC007005.

25. Scott, R.B., Brian K. Arbic, Eric P. Chassignet, Andrew C. Coward, Mathew Maltrud, Ashwanth Srinivasan and Anson Varghese (2010): Total kinetic energy in three global eddying ocean circulation models and over 5000 current meter records, Ocean Modelling, Vol. 32, doi:10.1016/j.ocemod.2010.01.005.

26. Scott, R.B., M. Bourassa, D. Chelton, P. Cipollini, R. Ferrari, L.L. Fu, B. Galperin, S. Gille, H.-P. Huang, P. Klein, N. Maximenko, R. Morrow, B. Qiu, E. Rodriguez, D. Stammer, R. Tailleux, C. Wunsch (2010): Integrating satellite altimetry and key observations: what we've learned, and what's possible with new technologies, in Proceedings of the "OceanObs'09: Sustained Ocean Observations and Information for Society" Conference (Vol. 2), Venice, Italy, 21-25 September 2009, Hall, J., Harrison D.E. and Stammer, D., Eds., ESA Publication WPP-306, 2010.

27. Scott, R.B., Holland, C.L, and T. Quinn (2010): A Coral Proxy Context for Recent Warming Trends, *J. Clim*, Vol. 23, No. 5, pp. 1017--1033.

28. Arbic, B.K., J.F. Shriver, et al. (2009): Estimates of bottom flows and bottom boundary layer dissipation of the oceanic general circulation from global high resolution models, J. Geophys. Res., 114, C02024, doi:10.1029/2008JC005072.

29. Scott, R.B. and Y. Xu (2009): An update on the wind power input to the surface geostrophic flow, *Deep-Sea Research I*, Vol 56, pp. 295—304.

30. Scott, R.B., B.K. Arbic, C.L. Holland, B. Qiu, A. Sen (2008): Zonal versus meridional velocity variance in satellite observations and realistic and idealized ocean circulation models, *Ocean Modelling*, Volume 23, Issues 3-4, pp. 102-112.

31. Sen, A, R.B. Scott and B.K. Arbic (2008): Global energy dissipation rate of deep-ocean low-frequency flows by quadratic bottom boundary layer drag: Computations from current-meter data, *Geophys. Res. Lett.*, Volume 35, Article Number: L09606.

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Contracts and Grants Received

Title:	Amino acid racemization and isomerization and Alzheimer's disease
Principal Investigator:	Rob Scott
Funding Agency:	GENCI (Grand Equipement National de Calcul Intensif).
Funding start date:	April, 2025
Funding end date:	April, 2026

Title:	**Optimization of radiation hormesis in yeast cultures**
Principal Investigators:	Prof. Marc Blondel, Dr. Rob Scott
Funding Agency:	Institut Brestois Santé, Agro, Matière (UBO)
Funding start date:	July, 2022
Funding end data:	June, 2023

Title:	**The protein aggregation processes relevant for Alzheimer's disease**
Principal Investigator:	Rob Scott
Funding Agency:	l'Institut Français de Suède, Programme TOR.
Funding start date:	5 May, 2022
Funding end date:	29 June, 2022

Title:	**The protein aggregation processes relevant for Alzheimer's disease (same as above)**
Principal Investigator:	Rob Scott
Funding Agency:	Institut Brestois du Numérique et des Mathématiques (UBO).
Funding start date:	5 May, 2022
Funding end date:	29 June, 2022

Title:	**Optimization of hormesis in yeast cultures**
Principal Investigator:	Rob Scott
Funding Agency:	Institut Brestois du Numérique et des Mathématiques (UBO)
Funding start date:	December, 2021
Funding end data:	January, 2022

Title:	**Observations of the Energy Budget of the North Atlantic**
Principal Investigator:	Rob Scott

Funding Agency: Region Bretagne (Brittany, France)
Amount: 50,000. Euro
Funding start date: January, 2011
Funding end data: June, 2012

Title: **Globals Statistics of Ocean Currents**

Principal Investigator: Rob Scott
Funding Agency: Europe, FP7
Amount: 100,000. Euro
Funding start date: September, 2011
Funding end data: August, 2015

Over $2,339,000 in external funding for research was obtained as a research scientist at the University of Texas at Austin. Only projects for which I was lead PI are listed below (total funding $1,665,000).

Title: **Collaborative Research: Quantifying the kinetic energy pathways to dissipation in the World Ocean**

Principal Investigator: Robert Scott
Co-PI: Rafaelle Ferrari
Funding Agency: NSF

Title: **Quantifying the World Ocean mechanical energy budget and pathways to dissipation**

Principal Investigator: Robert Scott
Contracting Agency: National Oceanography Centre, Southampton

Title: **How well do numerical ocean circulation model simulations compare to the real ocean?**

Principal Investigator: Robert Scott
Funding Agency: KAUST

Title: **Quantifying the Oceanic Kinetic Energy Cascade with Altimeter Data and Ocean Circulation Models**

Principal Investigator: Robert Scott
Funding Agency: NSF OCE, Award #0526412

Title: **Numerical modeling of the climate system: comparison of sea surface temperature anomaly generation mechanisms with observed data**

Principal Investigator: Robert Scott

Collaborators:	Bo Qiu, Bill Merryfield
Funding Agency:	John A. and Katherine G. Jackson School of Geosciences

Title:	**CMG: Advancement of Parameterization of Eddy-Topography Effects in Ocean Circulation Models**
Funding Agency:	NSF OCE, Award #0327520
Principal Investigator:	Robert Scott
Collaborators:	Bill Merryfield (Canadian Centre for Modelling and Analysis, Victoria, BC)

Title:	**Quantifying the Contribution of Ocean Dynamics to SST Anomaly Formation**
Principal Investigator:	Robert Scott
Collaborators:	Don P. Chambers (Co-PI, UT Center for Space Research) Bo Qiu (Collaborating Investigator, SOEST, U. Hawaii)
Funding Agency:	NSF OCE, Award #0326515

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