

# Graig Sutherland

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## Research Interests

Observational oceanography, instrument and sensor development, boundary layer physics, turbulence, mixing, waves, wave-ice and wave-current interactions, air-sea interaction, tidal dynamics.

## Education

- 2014 PhD in Ocean Physics, National University of Ireland, Galway.  
Dissertation: *Observations of Turbulent Dissipation in the Ocean Surface Boundary Layer*
- 2009 MSc in Physical Oceanography, Memorial University of Newfoundland and Labrador.  
Dissertation: *Inferred Boundary Mixing Rates from Density Inversions in the St. Lawrence Estuary*
- 2003 BSc in Physics and Ocean Sciences (Physical Oceanography) with a minor in Mathematics, University of Victoria.

## Professional Experience

- 2014- Postdoctoral Fellow, Department of Mathematics and Natural Sciences, University of Oslo, Norway
- 2009-2010 Physical Oceanographer, Oceans Ltd. St. John's, Canada.
- 2005-2006 Research Assistant, Korean Ocean Research and Development Institute, Ansan, South Korea
- 2003-2005 Research Assistant, Ocean Sciences and Productivity, Institute of Ocean Sciences, Patricia Bay, Canada.
- 2002-2006 Research Assistant, Ocean Physics Group, University of Victoria.
- 2001-2002 Research Assistant, School of Earth and Ocean Sciences, University of Victoria.

## Awards

- 2011 National Science and Engineering Research Council, Canada, Postgraduate Scholarship (PGS-D): \$63000 CAD.
- 2009 Memorial University of Newfoundland and Labrador, Recognition of Excellence.
- 2008 National Science and Engineering Research Council, Canada, Alexander Graham Bell Award (CGS-M): \$17500 CAD.
- 2008 Memorial University of Newfoundland and Labrador, SGS Merit Award: \$5000 CAD.

## Mentoring, Teaching and Outreach

### Mentoring

- 2014-2015 Trygve Halsne, MSc co-supervisor, Department of Mathematics, University of Oslo.
- 2015-2018 Jean Rabault, PhD co-supervisor, Department of Mathematics, University of Oslo.

## Teaching

- 2011-2013 Lab instructor for first year Physics at National University of Ireland, Galway.
- 2007-2009 Lab instructor for first and second year Physics courses at Memorial University of Newfoundland and Labrador.
- 2002-2003 Lab assistant in Astronomy Department at University of Victoria.

## Outreach

- 2011-2014 Public demonstration during annual Sea2Sky event in Galway, Ireland.
- 2011-2014 Tyndall Lecture (annually): Introduction to oceanography for secondary school students.
- 2013 Youth Academy: Fluid dynamics lecture to secondary school students.
- 2008-2009 Judge in the provincial Newfoundland and Labrador science fair.

## Field Work

- 2015 Svea and Tempelfjorden, Svalbard. Responsible for sampling strategy and development of instrumentation to measure wave motion in the ice. 14 days.
- 2013 B/O *Sarmiento de Gamboa*, Jordi Font (CSIC), subtropical Atlantic, SPURS project, operated the Air-Sea Interaction Profiler (ASIP), which is a prototype microstructure profiler which is semi-autonomous and vertically rising, 28 days.
- 2012 N/O *Thalassa*, Gilles Reverdin (LOCEAN), subtropical Atlantic, SPURS project, operated ASIP, 37 days.
- 2011 R/V *Knorr*, Scott Miller (SUNY Albany), north Atlantic, gas exchange study, operated ASIP, 30 days.  
R/V *Johan Hjort*, Göran Broström (Met. No.), Vestfjorden, Norway, operated ASIP, 10 days.
- 2008 CCGS *Amundsen*, Tim Paparyiakou (U. of Manitoba), western Canadian Arctic, Canadian Flaw lead IPY project, operated the Vertical Microstructure Profiler, 42 days.
- 2003 R/V *Seiyo Maru*, Hidekatsu Yamazaki (Tok. U. of Fish.), Sea of Japan, collected microstructure TurboMap profiles, 7 days.
- 2002 CCGS *JP Tully*, Michael Riedel (UVIC), seismic reflection survey in Queen Charlotte Basin, acquisition of seismic reflection data, 28 days.

## Conference Presentations

- 2014 · Sutherland, G., et al. Diurnal evolution of turbulence in the ocean surface boundary layer. *EGU/ESA/SOLAS joint Conference, Earth Observation for Ocean-Atmosphere Interactions Science*, Frascati, Italy (oral).
- Sutherland, G., B. Ward and K.H. Christensen. Evaluating turbulence regimes in the ocean surface boundary layer: Measurements from a vertically rising microstructure profiler. *AGU/TOS/ASLO Ocean Sciences Meeting*, Honolulu, USA (oral).
- 2012 · Sutherland, G. et al. Scaling Turbulence in the Upper Ocean. *AGU/TOS/ASLO Ocean Sciences Meeting*, Salt Lake City, USA (poster).
- 2011 · Sutherland, G. et al. Scaling Turbulence in the Upper Ocean. *EGU/ESA/SOLAS joint Conference, Earth Observation for Ocean-Atmosphere Interactions Science*, Frascati, Italy (poster).
- 2005 · Sutherland, G., C. Garrett and M.G.G. Foreman. Tidal resonance in Juan de Fuca Strait and the Strait of Georgia. *Korean Ocean Sciences Meeting*, Ansan, Korea (oral).
- 2004 · Sutherland, G. and J. Cherniawsky. Estimating error covariance in satellite altimetry. *AGU WPG Meeting*, Honolulu, USA (oral).
- Sutherland, G. and J. Cherniawsky. Quantifying measurement errors in ERS and ENVISAT altimetry. *Canadian Meteo. and Oceanographic Soc. Annual Congress*, Edmonton, Canada (oral).

- Sutherland, G., C. Garrett and M.G.G. Foreman. Tidal resonance in Juan de Fuca Strait and the Strait of Georgia. *AGU Ocean Sciences Meeting*, Portland, USA (poster).
- 2001 · Sutherland, G., K. Rohr and N.R. Chapman. 2001. A reconnaissance AVO analysis of the Queen Charlotte Basin. *Canadian Society of Petroleum Geologists Conference*, Calgary, Canada (poster).

## Publications

### Refereed

- 2015 · Reverdin, G., S. Morisset, L. Marié, D. Bourras, **G. Sutherland**, B. Ward, J. Salvador, J. Font, Y. Cuypers, L. Centurioni, V. Hormann, N. Koldziejczyk, J. Boutin, F. D'Ovidio, F. Nencioli, N. Martin, D. Diverres, G. Alory and R. Lumpkin. Surface salinity in the North Atlantic subtropical gyre during the Strasse/SPURS summer 2012 cruise. *Oceanography*. 28(1):114-123.
- 2014 · **Sutherland G.**, G. Reverdin, L. Marié and B. Ward. Mixed and Mixing Layer Depths in the Ocean Surface Boundary Layer under Conditions of Diurnal Stratification. *Geophysical Research Letters*. doi:10.1002/2014GL061939.
- Ward B., T. Fristedt, A.H. Callaghan, **G. Sutherland**, X. Sanchez, J. Vialard and A. ten Doeschate. The Air-Sea Interaction Profiler (ASIP): An autonomous upwardly-rising profiler for microstructure measurements in the upper ocean. *Journal of Atmospheric and Oceanic Technology*. doi:10.1175/JTECH-D-14-00010.1.
- **Sutherland G.**, K.H. Christensen and B. Ward. Evaluating Langmuir turbulence parameterizations in the ocean surface boundary layer. *Journal of Geophysical Research: Oceans*. 119, doi:10.1002/2013JC009537.
- 2013 · **Sutherland G.**, K.H. Christensen and B. Ward. Wave-turbulence scaling in the ocean mixed layer. *Ocean Science*. 9, 597-608.
- 2008 · Cherniawsky J.Y. and **G. Sutherland**. Large-scale errors in ERS altimeter data. *Marine Geodesy*. 31(1):2-16, doi:10.1080/014904107018122.
- 2007 · Arbic B.K., P. St-Laurent, **G. Sutherland** and C. Garrett. On the resonance and influence of the tides in Ungava Bay and Hudson Strait. *Geophysical Research Letters*. 34, L17606, doi:10.1029/2007GL030845.
- **Sutherland G.**, M.G.G. Foreman and C. Garrett. Tidal current energy assessment for Johnstone Strait, Vancouver Island. *Proceedings of the Institution of Mechanical Engineers Part A: Journal of Power and Energy*. 221(2):147-157.
- 2005 · **Sutherland G.**, C. Garrett, M.G.G. Foreman. Tidal resonance in Juan de Fuca Strait and the Strait of Georgia. *Journal of Physical Oceanography*, 35, 1279-1286.
- 2004 · Foreman M.G.G., **G. Sutherland**, P.F. Cummins. M2 tidal dissipation around Vancouver Island: an inverse approach. *Continental Shelf Research*, 24(18):2167-2185.

### Non-Refereed

- 2005 · Foreman, M.G.G., L. Beauchemin, J.Y. Cherniawsky, M. A. Peña, P. F. Cummins, and **G. Sutherland**. A review of models in support of oil and gas exploration off the north coast of British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 2712: v + 58p.
- 2002 · Rohr K.M.M. and **G. Sutherland**. A Reconnaissance AVO Study of the Queen Charlotte Basin. *CEOR Report 2002-3*.