

# KENNETH HUGHES

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## PROFILE

A PhD student with an interest in environmental applications of physics, specifically combining observations with numerical modelling to best understand smaller-scale ocean processes. Sound academic background with strengths in mathematics and scientific computing.

## EDUCATION

PhD student in Physical Oceanography	University of Victoria, Canada	September 2014–present
MSc in Physics (with Distinction)	University of Otago, New Zealand	2013
BSc in Physics (Honours – 1st class)	University of Otago, New Zealand	2011

## PEER-REVIEWED PUBLICATIONS

### **Tidally modulated internal hydraulic flow and energetics in the central Canadian Arctic Archipelago**

Hughes, K.G., J. M. Klymak, W. J. Williams and H. Melling (2018)

*J. Geophys. Res.*, doi:10.1029/2018JC013770

### **Water mass modification and mixing rates in a 1/12° simulation of the Canadian Arctic Archipelago**

Hughes, K. G., J. M. Klymak, X. Hu and P. G. Myers (2017)

*J. Geophys. Res.* 122, 803–820, doi:10.1002/2016JC012235

### **Extension of an Ice Shelf Water plume model beneath sea ice with application in McMurdo Sound, Antarctica**

Hughes, K. G., P. J. Langhorne, G. H. Leonard and C. L. Stevens (2014)

*J. Geophys. Res.* 119, 8662–8687, doi:10.1002/2013JC009411

### **Estimates of the refreezing rate in an ice-shelf borehole**

Hughes, K. G., P. J. Langhorne and M. J. M. Williams (2013)

*J. Glaciol.* 59, 938–948, doi:10.3189/2013JoG12J117

### **Observed platelet ice distributions in Antarctic sea ice: an index for ocean–ice shelf heat flux**

Langhorne, P. J., K. G. Hughes, A. J. Gough and 10 others (2015)

*Geophys. Res. Lett.* 42, 5442–5451, doi:10.1002/2015GL064508

### **Brine convection, temperature fluctuations and permeability in winter Antarctic land-fast sea ice**

Wongpan, P., K. G. Hughes, P. J. Langhorne and I. J. Smith (2018)

*J. Geophys. Res.*, 123, 216–230, doi:10.1002/2017JC012999

### **Towards a process model for predicting potential anchor ice formation sites in coastal Antarctic waters**

Leonard, G. H., S. M. Mager, A. G. Pauling, K. G. Hughes and I. J. Smith (2014)

*J. Spat. Sci.* 59, 297–312, doi:10.1080/14498596.2014.913271

### **Measurements of Ice Shelf Water beneath the front of the Ross Ice Shelf using gliders**

Nelson, M. J. S., B. Y. Queste, I. J. Smith, G. H. Leonard, B. G. M. Webber and K. G. Hughes (2017)

*Ann. Glaciol.* 58, 41–50, doi:10.1017/aog.2017.34

## CONFERENCE PROCEEDINGS

### **Crystal orientation in ice frozen from fresh and brackish water.**

Grothe, S., K.G. Hughes, and P. J. Langhorne (2014)

In *Proceedings of the 22nd IAHR International Symposium on Ice*, 743–750, doi:10.13140/RG.2.1.4390.3206

## SUBMITTED

### **Tidal conversion and dissipation at steep topography in a channel poleward of the critical latitude**

Hughes, K.G. and J. M. Klymak (submitted to *J. Phys. Oceanogr.*)

## THESES

### **Propagation of an Ice Shelf Water Plume beneath Sea Ice in McMurdo Sound, Antarctica**

Master's Thesis: <http://hdl.handle.net/10523/4325> (awarded A+)

### **On the Rate of Refreezing in a Bore Hole in an Ice Shelf**

Honours Dissertation: (awarded A+)

## CONFERENCE PRESENTATIONS

Thirteen presentations (ten oral and three poster) at conferences in New Zealand, USA, and Canada

## EMPLOYMENT HISTORY

<b>Teaching assistant</b>	University of Victoria	2014, 2016, 2017
Independently lead weekly first-year labs and mark lab tests and exams		
<b>Substitute lecturer</b>	Universities of Otago and Victoria	2014, 2016, 2017
Lecture second-, third-, and fourth-year physical oceanography, time series analysis, and environmental physics courses		
<b>Research assistant</b>	University of Otago	August 2013–May 2014
Collect and reduce data and prepare figures and reports		
<b>Laboratory demonstrator</b>	University of Otago	2012, 2014
Demonstrate practical science methods and explain various software for second-year physics course		
<b>Study coach</b>	Big Picture Learning, Dunedin	2009–2012
Tutor science and study skills for high school students and help develop an interactive, online learning tool		

## SOFTWARE EXPERIENCE

**Extensive experience:** Python, Matlab, Linux, Numerical ocean modelling (MITgcm), LaTeX, Inkscape

**Other:** Mathematica, Bash, Git, NetCDF tools

**Observational Datasets:** Brooke Ocean Moving Vessel Profiler, Seabird CTD Profiler, Teledyne ADCP, Simrad Echosounder

## FIELD WORK EXPERIENCE

<b>Haro Strait, British Columbia</b>	October 2016
One day deploying microstructure profilers (part of week-long microstructure workshop)	
<b>Canadian Arctic Archipelago</b>	September 2015
Two weeks as a scientist aboard a Canadian Coastguard ship	
<b>McMurdo Sound, Antarctica</b>	November 2011
Drilling sea ice and deploying CTD profiler while working in approximately $-10^{\circ}\text{C}$ conditions	

## OTHER INTERESTS AND OUTREACH

Four presentations to 8–10 year olds at University of Victoria's Science Venture about oceanography	2016
Blog about presenting science: <a href="http://brushingupscience.com">brushingupscience.com</a>	2015–present
Secretary and Instructor for University of Victoria Kayak Club	2015–present
Lead organiser of Blissfest 2013: whitewater kayaking competition in Dunedin, New Zealand	2013
President of Otago University Canoe Club	2010–2012