

# KENNETH HUGHES

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## PROFILE

A post-doctoral research scientist 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 AND POSTIONS

Postdoctoral research scientist	Oregon State University, USA	July 2018–present
PhD student in Physical Oceanography	University of Victoria, Canada	2018
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

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

Hughes, K.G. and J. M. Klymak

*J. Phys. Oceanogr.*, doi: 10.1175/JPO-D-18-0132.1

### 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.*, 123, 5210–5229, 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

## THESES

### **Tidal flows, sill dynamics, and mixing in the Canadian Arctic Archipelago**

PhD Thesis: <https://dspace.library.uvic.ca/handle/1828/10367>

### **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

Ten oral and three poster presentations at conferences in New Zealand, USA, and Canada

## PAST EMPLOYMENT

<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, and Inkscape

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

**Observational Datasets:** Brooke Ocean Moving Vessel Profiler, Seabird and RBR CTD Profilers, RDI ADCPs, Simrad Echosounder, and various turbulence sensors developed by the Oregon State University Ocean Mixing Group

## PEER REVIEW EXPERIENCE

Peer reviewer for the Journal of Physical Oceanography, Journal of Glaciology, Journal of Geophysical Research, and The Cryosphere Discussions

## FIELD WORK EXPERIENCE

<b>Western Pacific</b>	August–October 2018
Two month cruise involving several specially built turbulence profilers and platforms	
<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 and measuring sea ice and deploying a CTD profiler while working in approximately $-10^{\circ}\text{C}$ conditions	

## OTHER INTERESTS

Blog about presenting science: <a href="http://brushingupscience.com">brushingupscience.com</a>	2015–present
Secretary and Instructor for the University of Victoria Kayak Club	2015–2018
Lead organiser of Blissfest 2013: whitewater kayaking competition in Dunedin, New Zealand	2013
President of Otago University Canoe Club	2010–2012