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

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 AND PAPERS UNDER REVIEW

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

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

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

Teaching assistant — University of Victoria — 2014, 2016, 2017
Independently lead weekly first-year labs and mark lab tests and exams

Substitute lecturer — Universities of Otago and Victoria — 2014, 2016, 2017
Lecture second-, third-, and fourth-year physical oceanography, time series analysis, and environmental physics courses

Research assistant — University of Otago — August 2013–May 2014
Collect and reduce data and prepare figures and reports

Laboratory demonstrator — University of Otago — 2012, 2014
Demonstrate practical science methods and explain various software for second-year physics course

Study coach — 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 Journal of Physical Oceanography, Journal of Glaciology, and The Cryosphere Discussions

FIELD WORK EXPERIENCE

Western Pacific — August–October 2018
Two month cruise involving several specially built turbulence profilers and platforms

Canadian Arctic Archipelago — September 2015
Two weeks as a scientist aboard a Canadian Coastguard ship

McMurdo Sound, Antarctica — November 2011
Drilling and measuring sea ice and deploying a CTD profiler while working in approximately −10°C conditions

OTHER INTERESTS

Blog about presenting science: brushingupscience.com — 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