

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	Jul 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

Stratified shear instabilities in diurnal warm layers

Hughes, K.G., J. N. Moum, E. L. Shroyer, and W. D. Smyth

Submitted to *J. Phys. Oceanogr.*

Heat transport through diurnal warm layers

Hughes, K.G., J. N. Moum, and E. L. Shroyer (2020)

J. Phys. Oceanogr., 50, 2885–2905, doi:10.1175/JPO-D-20-0079.1

Evolution of the velocity structure in the diurnal warm layer

Hughes, K.G., J. N. Moum, and E. L. Shroyer (2020)

J. Phys. Oceanogr., 50, 615–631, doi:10.1175/JPO-D-19-0207.1

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

Hughes, K.G. and J. M. Klymak (2019)

J. Phys. Oceanogr., 49, 1269–1291, 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

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

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

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

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

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

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

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

CONFERENCE PROCEEDINGS, THESES, AND PRESENTATIONS

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 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>

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

Honours Dissertation

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

Aug 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

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/SERVICE

Peer reviewer for the Journal of Geophysical Research (×4), Journal of Physical Oceanography (×2), Geophysical Research Letters, Journal of Glaciology, Journal of Climate, Ocean Modelling, The Cryosphere, and the National Science Foundation

Named in AGU's 2019 list of outstanding reviewers

Chair of weekly physical oceanography and atmospheric science seminars at Oregon State University (September 2019–present)

FIELD WORK

Western Pacific

Aug–Oct 2018, Sep 2019

Three cumulative months undertaking research involving several specially built turbulence profilers and platforms

Oregon Coast

May 2019

Week-long cruise testing a new free-rising turbulence profiler

Canadian Arctic Archipelago

Sep 2015

Two weeks as a scientist aboard a Canadian Coastguard ship

McMurdo Sound, Antarctica

Nov 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