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

Heat transport through diurnal warm layers
Hughes, K.G., J. N. Moum, and E. L. Shroyer (2020)
J. Phys. Oceanogr., 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

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, 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 (awarded A+)

On the Rate of Refreezing in a Bore Hole in an Ice Shelf
  Honours Dissertation: (awarded A+)

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 Physical Oceanography (×2), Journal of Glaciology, Journal of Geophysical Research (×3), Journal of Climate, Ocean Modelling, and The Cryosphere Discussions

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