

ROBERT W. IZETT

Postdoctoral Researcher
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1. Employment and Research Experience

- Ocean Frontiers Institute Postdoctoral Fellow**, Dalhousie University 2021-present
Advisors: Dr. Katja Fennel, Dr. David Nicholson (Woods Hole Oceanographic Institution)
- Biogeochemical sensor performance analyst**, Ocean Networks Canada 2015
- Marine acoustics data analyst**, Institute of Ocean Sciences, DFO Canada 2014
- Directed studies and research in coral reef ecology**, University of Victoria 2014
Supervisor: Dr. Julia Baum
- NSERC undergraduate research in phytoplankton physiology**, University of Victoria 2013-2015
Supervisor: Dr. Diana Varela

2. Education

- PhD, Oceanography**, University of British Columbia, Vancouver, BC 2015-2021
Thesis: *Improved estimates of net community production in the Subarctic Pacific and Canadian Arctic Ocean using ship-based autonomous measurements and computational approaches*
Advisor: Dr. Philippe Tortell
- BSc, Biology (Hons.), Oceanography (Minor)**, University of Victoria, Victoria, BC 2010-2014
Thesis: *Ecophysiological responses of marine phytoplankton communities and cultured diatoms to induced ocean acidification* (Honours thesis)
Advisor: Dr. Diana Varela

3. Contributions

A. Peer-reviewed Manuscripts

10. **Izett, R. W.**, Chanona, M., Myers, P. G., Castro de la Guardia, L., Waterman, S. and Tortell, P. D. 2022. Impact of Vertical Mixing on Summertime Net Community Production in Canadian Arctic and Subarctic Waters: Insights From In Situ Measurements and Numerical Simulations. *J. Geophys. Res.: Oceans*. 127(8): e2021JC01821. <https://doi.org/10.1029/2021JC018215>.
9. Manning, C. C. M., Zheng, Z., Fenwick, L., McCulloch, R., Damm, E., **Izett, R. W.**, Williams, W., Zimmerman, S., Vagle, S., and Tortell, P. D. 2022. Interannual variability in methane and nitrous oxide concentrations and sea-air fluxes across the North American Arctic Ocean (2015-2019). *Glob. Biogeochem. Cycles*. 36(4): e2021GB007185. doi.org/10.1029/2021GB007185.
8. Sezginer, Y., Suggett, D. J., **Izett, R. W.**, and Tortell, P. D. 2021. Chlorophyll fluorescence-based estimates of photosynthetic electron transport in Arctic phytoplankton assemblages. *PLoS ONE*. 16(12): e0256410. doi.org/10.1371/journal.pone.0256410.
7. **Izett, R. W.**, Hamme, R. C., McNeil, C., Manning, C. C., Bourbonnais, A., and Tortell, P. D. 2021. $\Delta\text{O}_2/\text{N}_2'$ as a new tracer of marine net community production: Application and evaluation in the Subarctic Northeast Pacific and Canadian Arctic Ocean. *Front. Mar. Sci.* 8. doi.org/10.3389/fmars.2021.718625.
6. **Izett, R. W.**, and Tortell, P. D. 2021. $\Delta\text{O}_2/\text{N}_2'$ as a tracer of mixed layer net community production: Theoretical considerations and proof-of-concept. *Limnol. Oceanogr. Methods*. 19(8). doi.org/10.1002/lom3.10440.
5. **Izett, R. W.** and Tortell, P. D. 2020. The Pressure of In-situ Gases Instrument (PIGI) for autonomous ship-board measurement of dissolved O_2 and N_2 in surface ocean waters.

Oceanography. 33(2). doi.org/10.5670/oceanog.2020.214. (Open-access DIY software and technical designs linked below).

4. Rosengard, S. Z., **Izett, R. W.**, Burt, W. J., Schuback, N. and Tortell, P. D. 2020. Decoupling of $\Delta O_2/Ar$ and particulate organic carbon dynamics in near shore surface ocean waters. *Biogeosciences*. 17. doi.org/10.5194/bg-17-3277-2020.
3. **Izett, R. W.**, Manning, C. C., Hamme, R. C., and Tortell, P. D. 2018. Refined estimates of net community production in the Subarctic Pacific derived from $\Delta O_2/Ar$ measurements with N_2O -based corrections for vertical mixing. *Global Biogeochem. Cycles*. 32. 326-350. doi.org/10.1002/2017GB005792.
2. Burt, W. J., Westberry, T. K., Behrenfeld, M. J., Zeng, C., **Izett, R. W.**, and Tortell, P. D. 2018. Carbon:Chlorophyll ratios and net primary productivity of Subarctic Pacific surface waters derived from autonomous shipboard sensors. *Global Biogeochem. Cycles*. 32. doi.org/10.1002/2017GB005783.
1. Bosma, J., and **Izett, R.** 2016. Challenges with collecting data for measured pH and dissolved inorganic carbon (DIC) in coastal waters. *Oceans 2016 MTS/IEEE International Conference Proceedings*: 1-5. doi.org/10.1109/OCEANS.2016.7761421.

B. Conference and Seminar Presentations (*only contributions as presenting author shown*)

16. AGU Ocean Sciences Meeting, 2022, Virtual. **Izett, R.**, Hamme, R. C., McNeil, C., Manning, C. C., Bourbonnais, A., and Tortell, P. D. A new approach to estimate mixed layer net community production from autonomous O_2 and N_2 observations and simple numerical computations.
15. MEOPAR Annual Science Meeting, 2022, Virtual. **Izett, R.**, Hamme, R. C., McNeil, C., Manning, C. C., Bourbonnais, A., and Tortell, P. D. A new approach to estimate mixed layer net community production from autonomous O_2 and N_2 observations and simple numerical computations. (Poster)
14. CMOS Congress, 2021, Virtual. **Izett, R.**, Chanona, M., Castro de la Guardia, C., Myers, P. G., Waterman, S. and Tortell, P. D. Mixing dynamics and net community production in Canadian Arctic and Subarctic waters: Insights derived from in situ measurements and numerical simulations.
13. Arctic Change, 2020, Virtual. **Izett, R.**, Chanona, M., Castro de la Guardia, C., Myers, P. G., Waterman, S. and Tortell, P. D. Mixing dynamics and net community production in Canadian Arctic and Subarctic waters: Insights derived from in situ measurements and numerical simulations.
12. UBC EOAS Oceanography Seminar, 2020, Vancouver, BC. **Izett, R.** Evaluating $\Delta O_2/N_2$ as a tracer of mixed layer net community production: Theoretical considerations and field validation.
11. OceanObs19 Conference, 2019, Honolulu, HI. **Izett, R.**, and Tortell, P. An autonomous, ship-based system for high-resolution net community production estimates derived from O_2 and N_2 measurements. (Poster)
10. Line P Workshop, 2019, Sidney, BC. **Izett, R.**, and Tortell, P. Net community production: Results from 2018 and an empirical algorithm for estimating it from Line P data.
9. State of the Pacific Ocean Meeting, 2019, Sidney, BC. **Izett, R.**, and Tortell, P. A regionally-defined empirical algorithm for estimating net community production in the Subarctic NE Pacific. (Poster)
8. Line P Workshop, 2018, Sidney, BC. **Izett, R.**, and Tortell, P. Net community production: New Instrument Development and Results from 2017.

7. State of the Pacific Ocean Meeting, 2018, Nanaimo, BC. **Izett, R.**, Burt, W., Rosengard, S., Zeng, C. and Tortell, P. NSERC Strategic SPEAR Project Overview: Net Primary Production, Net Community Production, and Phytoplankton Community Composition in the NE Pacific.
6. AGU Ocean Sciences Meeting, 2018, Portland, OR. **Izett, R.**, Hamme, R. C., Manning, C. C., Tortell, P. Refined estimates of net community production in the Subarctic Pacific derived from $\Delta O_2/Ar$ measurements with N_2O -based corrections for vertical mixing.
5. Line P Workshop, 2017, Sidney, BC. **Izett, R.**, and Tortell, P. Refined estimates of net community production and development of a new instrument platform for underway ship-based primary productivity measurements.
4. Line P 60th Anniversary Symposium, 2016, Sidney, BC. **Izett, R.**, and Tortell, P. Refined estimates of net community production in the Subarctic Pacific derived from $\Delta O_2/Ar$ measurements with N_2O -based corrections for vertical mixing. (Poster)
3. NSERC Strategic SPEAR Project Meeting, 2016, Sidney, BC. **Izett, R.**, and Tortell, P. Primary productivity and surface gases: Results from Line P, 2016.
2. State of the Pacific Ocean Meeting, 2016, Nanaimo, BC. **Izett, R.**, Tortell, P., Francois, R., Pakhomov, E., Dower, J., Dowd, M., and Cheung, W. Quantifying climate-dependent and anthropogenic impacts on ecosystem services in the Subarctic Pacific Ocean. (Poster)
1. Line P Workshop, 2016, Sidney, BC. **Izett, R.**, and Tortell, P. Autonomous high-resolution measurement of primary productivity during the Line P and La Perouse survey cruises.

C. Technical Reports

2. Bosma, J., and **Izett, R.** 2015. Satlantic SeaFET Ocean pH Sensor Verification Report. Satlantic technical report. 1-73. Verification Report #3021 submitted to Sea-Bird Scientific, Halifax, NS.
1. Vagle, S., Allen, A., **Izett, R.**, Gemmrich, J., and Mosayyebpour, S. 2015. Development and use of tools to determine seasonal baseline underwater noise levels along BC's south coast and in parts of the Canadian Arctic. Department of Fisheries and Oceans Canada Technical Assessment Report. 1-46.

D. Original Open-Source Software and Technology-Transfer

3. **Izett, R.** 2021. O2N2 NCP Toolbox – Matlab software and data. *Zenodo*. doi:10.5281/zenodo.4024925.
2. **Izett, R.** 2020. PIGI_system: The Pressure of In-situ Gases Instrument (PIGI) – Software, Manuals and Hardware designs for an autonomous O_2/N_2 measurement system. *Zenodo*. doi:10.5281/zenodo.4024951.
1. **Izett, R.** 2021. RI_download_functions: Repository for Matlab codes to automatically download gridded observatory data. *Github*. github.com/rizett/RI_download_functions.

4. Professional Development and Experience

Certificate, Reconciliation Education: Four Seasons of Reconciliation 2021

First Nations University of Canada (online)

OCB EarthCube Ocean Time Series Workshop, Honolulu, HI 2019

Research Expeditions and Deployments: 14 expeditions, totalling >42 weeks

Chilean Antarctic Institution (INACH) Expedition, Base Prat, Antarctica	2020 (4-weeks)
Hakai Institute Quadra Island Field Station	2019-2022 (continuous)
ArcticNet CCGS Amundsen Arctic Research Cruise	2018 (6-weeks); 2019 (3-weeks)
Line P Research Cruise	2016 (x3); 2017 (x2); 2019 (3-weeks each)

La Perouse Research Cruise	2015 (x2); 2016, 2017 (2-weeks each)
Distributed Biological Observatory Research Cruise	2013 (3-weeks)
Saanich Inlet Monthly Surveys	2013-2014 (x6) (1-day each)

Main Activities:

- Deploy and calibrate autonomous instrumentation for measurements of seawater properties
- Organize and lead biogeochemical rosette and river sampling (via helicopter)
- Install CTD mooring and underway seawater sampling infrastructure

5. Teaching, Service & Outreach

A. Teaching, Mentoring

Advisor and mentor: BGC-Argo Adopt-A-Float, High-school summer internship	2022
Course design and lead instructor: Introduction to LabVIEW (graduate-level, UBC)	2020-2021
Teaching assistant and guest lecturer: Biological Oceanography (undergraduate-level, UBC)	2017

B. Student Committees

Adam Stoer (MSs student), Dalhousie (<i>Ex officio</i>)	2021-present
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C. Professional Service and Committees

Postdoctoral Fellow Representative, Department of Oceanography, Dalhousie	2022-present
Ad-hoc Reviewer	2020-present
Department Graduate Student Council Member, UBC	2016-2021
BC SPCA Dog Wellness Volunteer	2017-2021
Great Canadian Shoreline Cleanup Participant and Coordinator	2015-2021

D. Outreach and Media

Adopt-a-float program coordinator	2022-present
Visualizing Science: 2021 Canadian Science Publishing Cover Images	2021
First Prize, Amundsen Three Minute Thesis Competition	2019
First Prize, ArcticNet Photo Contest (seawize.weebly.com/ANI8-Photo-Contest)	2019
CCGS Amundsen Science & Instrumentation Tour for Members of Gris Fjord Community	2019
Vancouver Aquarium Youth Summer Camp Volunteer Instructor	2015

6. Notable Grants, Scholarships and Awards

Ocean Frontier Institute Seed Fund (\$23,000)	2022
Ocean Frontier Institute International Postdoctoral Fellowship (\$120,000)	2021-2023
NSERC Postdoctoral Fellowship (\$90,000; declined)	2021
11 Graduate Student Academic Awards (institution & department level)	2015-2020
MEOPAR Training Award (\$2,500)	2019
Polar Knowledge Canada Northern Studies Training Program Grant (\$2,500 each) (declined in 2020 due to Covid-19)	2019, 2020
NSERC Alexander Graham Bell Canada Graduate Scholarship-Doctoral (\$105,000)	2018-2021
NSERC Canada Graduate Scholarship-Masters (\$17,000)	2015-2016
NSERC Undergraduate Student Research Award (\$4,500)	2013, 2015
8 Undergraduate Student Academic Awards (institution & department level)	2010-2014
University of Victoria Dean's List	2011-2014

7. Unique Technical Expertise

- Matlab: Compilation, processing, and analysis of 'big data' (satellite, Argo, high-resolution surface surveys)
- LabVIEW: Software script and package development for data acquisition and visualization
- Instrumentation: Develop/construct portable autonomous seawater measurement systems
- Drone piloting: Transport-Canada certified for operation of small remotely piloted aircraft systems (RPAS)