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Ian J. Walker, B.Sc., Ph.D.

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Name: WALKER, Ian James                      DOB: 19 June 1971  
Nationality: Canadian                            Profession: Professor  
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**EDUCATION**

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- **B.Sc. (honours), Geography, University of Toronto, 1995.**
  - Thesis title: “Floodplain formation processes on the Grand River, Southern Ontario, Canada.” Supervisor: Dr. Joseph Desloges
- **Ph.D., Geography, University of Guelph, 2000.**
  - Dissertation title, “Secondary airflow and sediment transport in the lee of transverse dunes.” Supervisor: Dr. William G. Nickling

**AREAS OF EXPERTISE:** *geomorphology, aeolian, coastal, sedimentary environments, sand dunes, beaches, dune restoration, environmental fluid dynamics, sediment transport, wind erosion, coastal erosion, terrestrial laser scanning (TLS), unmanned aerial systems (UAS), Quaternary landscape reconstruction, Holocene sea-level changes, sea-level rise, climate change impacts in the coastal zone.*

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**ACADEMIC POSITIONS**

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- Professor (08/2016-present), School of Geographical Sciences & Urban Planning, School of Earth & Space Exploration, Arizona State University, Tempe, AZ, USA
- Professor (07/2015-08/2016), Dept. of Geography, University of Victoria, BC, Canada
- Associate Professor (07/2005-08/2015), Dept. of Geography, University of Victoria, Canada
- Assistant Professor (07/2000-08/2005), Dept. of Geography, University of Victoria, Canada
- Adjunct Professorships:
  - Faculty of Graduate Studies & Dept. of Geography, University of Victoria, BC, Canada (08/2016-08/2019)
  - Graduate Faculty & Dept. of Geography, University of Alabama, Tuscaloosa, AL, USA (06/2017-08/2020)
  - Graduate Faculty & Dept. of Geography and Anthropology, Louisiana State University, Baton Rouge, LA, USA (12/2010-09/2014)

**FUNDING, FELLOWSHIP & AWARD HISTORY\***

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- 2018-21 U.S. Army Research Office – white paper/pre-proposal, “Assessing capabilities and applications of a novel particle imaging velocimetry (PIV) system for modelling aeolian sand transport and erosion/deposition patterns in complex terrain.” (PI, submitted 4 April 2018, invited for full proposal, pending resubmission Aug 2018, \$319,945)
- 2018-21 SeaGrant USC, California Ocean Protection Council – pre-proposal, “Humboldt Coastal Resilience Project: Analyzing beach dune morphodynamics and vegetation controls on coastal resiliency to develop decision support tools and adaptation measures for sea-level rise adaptation and coastal resilience along the Eureka Littoral Cell, northern California” (PI with A. Pickart – US Fish & Wildlife Service, submitted 14 March 2018, invited for full proposal, pending resubmission Aug 2018, \$250,000).
- 2018-21 National Science Foundation, Geomorphology & Landuse Dynamics (GLD) Program, “Dune Migration and Environmental Change in Cape Cod National Seashore” (co-PI with Gares, PA, Hesp, PA, submitted 7 Dec 2017, not funded, \$602,472).
- 2018-19<sup>A</sup> ASU-BGU Projects in Environmental Sciences, e Global Drylands Center at ASU, “Detecting dryland coastal dune dynamics and landscape changes for restoration in the Nizzanim Nature Reserve, Israel” (co-PI with S. Maman – BGU, funded 12 Mar. to 1 March 2018, \$45,000)
- 2017-19<sup>A</sup> Joshua Tree National Park, Robert Lee Graduate Student Research Grant. “Morphodynamics and sedimentation patterns in the Oasis of Mara bajada complex, Joshua Tree National Park” Awarded 9 Jan. 2017 (\$4000, co-PI with J. Edmunds).
- 2016-18<sup>A</sup> U.S. Dept. of the Interior - Fish & Wildlife Service and Bureau of Land Management “Coastal dune restoration for adaptation to climatic variability and change” (PI, \$31,250 USD, awarded August 2016).
- 2016-18 National Science Foundation, GP-IMPACT Program, “Bridge into Geosciences Graduate Studies (BiGGS) project” (co-PI with Sailor, D, PI, not funded, March 2017).
- 2016-18 U.S. Dept. of the Army - Corps of Engineers, Environmental Research & Development Centre (ERDC), “Estimating Coastal Dune Vulnerability to Storm Sequences: A Pilot Study” Proposal #16-0008 funded under topic CHL-15 (General Coastal Engineering, Coastal Geology and Dredging Investigations), Broad Agency Announcement (BAA), Contracting Office Vicksburg, MI. (Co-PI, \$39,498 USD, awarded 27 Sept. 2016 to 31 Jul. 2018, with D. Sherman and H. Springer, U. Alabama).
- 2016-21 National Science & Engineering Research Council (NSERC) of Canada, Discovery Grant. “Assessing impacts of anthropogenic large woody debris and dynamic restoration on beach-dune morphodynamics and resilience in Pacific North America.” (\$175,000, approved, Apr. 2016, declined Aug. 2016).

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\* total: ~\$2.9M CAD since 2000.

<sup>A</sup> funds awarded to ASU.

- 2015-19 California Coastal Conservancy (CCC) Climate Ready Grant, “Coastal Dune Vulnerability and Adaptation” (Co-PI with A. Pickart - US Fish & Wildlife Service and P. Hesp - Flinders U., \$250,000, awarded June 2015).
- 2014-17 U.S. Dept. of the Interior - Fish & Wildlife Service, “Effects of invasive plant removal and native plant revegetation on foredune morphology” (PI, \$USD 10,000, awarded Oct. 2014).
- 2015 Ireland-Canada University Foundation, Dobbin Scholarship, “Implementation of a low cost remote sensing techniques to measure post-storm recovery of beach-dune systems” (Co-applicant with E. Farrell, National University of Ireland – Galway, \$3,500, awarded Sept. 2014).
- 2014-18 Hakai Beach Institute and Tula Foundation, “Coastal Sand Ecosystems Research Program” (PI, \$394,032, awarded Aug. 2014 to Apr. 2018).
- 2013-15 Canada Foundation for Innovation (CFI) Institutional Operating Funds (IOF) Allocation Grant, UVic internal (PI, \$16,000, awarded Apr. 2013).
- 2012-15 CFI Leaders Opportunity Fund (LOF) and British Columbia Knowledge Development Fund (BCKDF). “Coastal erosion and dune dynamics (CEDD) laboratory and field research unit.” (PI, \$202,735, awarded Nov. 2012).
- 2012 National University of Ireland – Galway (NUIG), Visiting Fellowship, Environment, Development & Sustainability Program, Institute for Business, Social Sciences & Public Policy. “Coastal erosion, restoration & climate change impacts”. (€2500 or ~\$CAD 3,080, awarded Aug. 2012).
- 2011 M.J. Kirkby Award for Excellence in Reviewing, *Earth Surface Processes & Landforms*, British Geomorphology Research Group (BGS). (Recipient, May 2011).
- 2011-15 Hakai Beach Institute and Tula Foundation, “Study of past sea levels and coastal landscape change, Calvert Island, BC” (PI, \$544,800, awarded June 2011).
- 2011-13 Mathematics of Information Technology & Complex Systems (MITACS), Elevate Industrial Postdoctoral Fellowship, “Holocene sea-level history and environmental change, Calvert Island, BC” (Co-applicant with D. Shugar, \$70,000, awarded Dec. 2011).
- 2011-12 MITACS, Accelerate BC Research Internship. Dune restoration at Wickaninnish Dunes, Pacific Rim National Park Reserve. (Co-applicant with I. Darke, \$15,000, awarded May 2011).
- 2010-14 U.S. National Science Foundation (NSF) Collaborative Research Grant, “Blowout dynamics at Cape Cod National Seashore.” (Co-investigator, PI: P. Hesp, \$USD 345,725 awarded Oct. 2010).
- 2011-16 NSERC Discovery Grant. “Morphodynamic and sediment budget impacts of large woody debris and mechanical restoration on coastal dunes in British Columbia.” (PI, \$110,000, awarded Mar. 2011).

*Curriculum Vitae - Ian J. Walker*

- 2010-11 MITACS, Accelerate BC Research Internship Grant. Dune restoration at Wickaninnish Dunes, Pacific Rim National Park Reserve. (Co-applicant with I. Darke, \$15,000 awarded June 2010).
- 2008-09 MITACS, Accelerate BC Research Internship Program Grant in collaboration with Parks Canada-Pacific Rim National Park Reserve (Co-applicant with H. Beaugrand, \$15,000, awarded Aug. 2008).
- 2008 Clayoquot Biosphere Trust "Public outreach on dune restoration in Pacific Rim National Park" (Co-applicant with H. Beaugrand, \$5,820, awarded May 2008).
- 2007 J. Ross Mackay Award, Significant contribution by a young Canadian geomorphologist. Canadian Geomorphology Research Group (CGRG) (Recipient, \$500, awarded May 2009).
- 2007-08 MITACS, Accelerate BC Research Internship Program Grant in collaboration with Parks Canada-Gulf Islands National Park Reserve (Co-applicant with B. Cumming, \$15,000, awarded June 2007).
- 2006-11 NSERC Discovery Grant, "Morphodynamics of dune erosion and rebuilding on macrotidal beaches of British Columbia" (PI, \$111,500, awarded Mar. 2006).
- 2006-11 Parks Canada Agency (PCA) Research Grant, Projects GWA-2006-640 and PCH-861, "Coastal erosion monitoring in BC's coastal parks" (PI, \$25,000, awarded Sept. 2006).
- 2006-08 Social Sciences & Humanities Research Council (SSHRC) Strategic Research Clusters, "Climate change vulnerability and adaptation in Canadian coastal communities" (Co-Inv., PI: B. Smit, Guelph, \$25,000, awarded Apr. 2006).
- 2005-07 Natural Resources Canada (NRCan), Climate Change Impacts & Adaptations Directorate (CCIAD), National Assessment Report on Climate Change Impacts & Adaptations – BC Chapter (Co-PI, \$106,000 shared with R. Sydneysmith, C-CIARN UBC, awarded Sept. 2005).
- 2005-06 NSERC Special Opportunities Research Grant, "Field measurement of the interaction between the three-dimensional wind flow field, foredune morphology and aeolian sediment transport across the beach and foredune" (Co-investigator, PI: R. Davidson-Arnott, Guelph, \$21,196, awarded Sept. 2005).
- 2004-06 NSERC Top Up Grant - UVic internal (Recipient, \$4,500, awarded Mar. 2004)
- 2003-09 CFI Institutional Operating Funds (IOF), Institutional Allocation Grant (PI, \$53,445, received Apr. 2003).
- 2003-07 NRCan, Climate Change Impacts & Adaptations Program (CCIAP), Coastal Zone, Project A580, "Coastal vulnerability to climate change and sea-level rise, Northeast Graham Island, Haida Gwaii (Queen Charlotte Islands), BC" (PI, \$182,300, awarded Sept. 2003).
- 2002-05 PCA Ecosystem Science Fund (ESF) Research Grant, Project No. 45186440 "Annual Variations in the Beach and Foredune system, Greenwich Dunes, PEI National Park.) (Co-investigator, PI: R. Davidson-Arnott, Guelph, \$19,200, awarded Mar. 2002)
- 2002-06 NSERC Discovery Grant, "Airflow and sediment transport dynamics in coastal dune systems" (PI, \$87,680, received Mar. 2002)

- 2001 SSHRC-UVic Internal Research Grant (PI, \$3,255, awarded Mar. 2001)
- 2001 CFI New Opportunity Research Infrastructure Grant and British Columbia Knowledge Development Fund (BCKDF). "Boundary Layer Airflow and Sediment Transport (BLAST) Research Unit" (PI, \$299,949, awarded Sept. 2001).

#### PEER-REVIEWED PUBLICATIONS<sup>†</sup>

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- 1) 2018 Jeong, A, Cheung, SY, **Walker, IJ**, Dorn, R. Urban Geomorphology of an Arid City: Case Study of Phoenix, Arizona. Ch. 10, Section 4: Developing Geomorphological Hazards During the Anthropocene. In: Thornbush, M, Allen, C. (eds) *Urban Geomorphology*, pp. 175-199. Elsevier, ISBN: 9780128119518, (<http://dx.doi.org/10.1016/B978-0-12-811951-8.00010-2>). In press for Aug 2018.
- 2) 2018 Rader, AM, Pickart, A, **Walker, IJ**, Hesp, PA, Bauer, BO. Foredune morphodynamics and sediment budgets at seasonal to decadal scales: Humboldt Bay National Wildlife Refuge, California, USA. *Geomorphology* 318: 69-87 (<https://doi.org/10.1016/j.geomorph.2018.06.003>).
- 3) 2018 Grilliot, MJ, **Walker, IJ**, Bauer, BO. Airflow dynamics over a beach and foredune system with large woody debris. *Geosciences* 8(5): 147; (<http://dx.doi.org/10.3390/geosciences8050147>). Invited for special issue on *Aeolian Processes and Geomorphology* by E Partelli (ed).
- 4) 2018 Davidson-Arnott, RGD, Hesp, PA, Ollerhead, JO, **Walker, IJ**, Bauer, BO, Delgado-Fernandez, I, Smyth, TAG. Sediment Budget Controls on Foredune Height: a Comparison of Simulation Model Results and Field Data. *Earth Surface Processes & Landforms* 43(9): 1798-1810. (<http://dx.doi.org/10.1002/esp.4354>).
- 5) 2018 Roskopf, CM, Di Paola, G, Atkinson, DE, Rodríguez, G, **Walker, IJ**. Recent shoreline evolution and beach erosion along the Central Adriatic coast of Italy: the case of Molise region. *Journal of Coastal Conservation* 22(5): 879-895. (<http://dx.doi.org/10.1007/s11852-017-0550-4>).
- 6) 2017 Eamer, JBR; Shugar, D; **Walker, IJ**; Neudorf, C; Lian, O; Eamer, J; Bryce, J; Biln, L. Late Quaternary landscape evolution in a region of stable postglacial relative sea-levels, British Columbia central coast. *Boreas*: 1-16. (<https://doi.org/10.1111/bor.12297>).
- 7) 2017 Smith, A, Gares, P, Wasklewicz, T, Hesp, PA, **Walker, IJ**. Three years of morphologic changes at a bowl blowout, Cape Cod, USA. *Geomorphology* 295: 452-466. (<https://doi.org/10.1016/j.geomorph.2017.07.012>).
- 8) 2017 **Walker, IJ**, Davidson-Arnott, RGD, Bauer, BO, Hesp, PA, Ollerhead, J, Delgado-Fernandez, I, Smyth, TAG. Scale-dependent perspectives on the geomorphology of beach-dune systems. *Earth Science Reviews*, 171: 220-253. (<http://dx.doi.org/10.1016/j.earscirev.2017.04.011>). Invited.
- 9) 2017 Eamer, JBR, Shugar, DH, **Walker, IJ**, Lian, OB, Neudorf, C, Telka, A. A unique late Pleistocene glacial re-advance during retreat of the Cordilleran Ice Sheet. *Quaternary Research*, 87(3): 468-481. (<http://dx.doi.org/10.1017/qua.2017.16>)

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<sup>†</sup> As of July 2018:  $n = 71$ , Google Scholar  $h$  index = 30,  $i_{10}$  index = 51, citations = 2759, invited = 13.

- 10) 2017 Eamer, JBR, Shugar, DH, **Walker, IJ**, Lian, O, Neudorf, CM. Distinguishing depositional setting for sandy deposits in coastal landscapes using grain shape. *Journal of Sedimentary Research* 87: 1-11. (<http://dx.doi.org/10.2110/jsr.2016.92>)
- 11) 2017 Bevington, A, Clague, JJ, Millard, T, **Walker, IJ**, Geertsma, M. The Diverse Landscapes of Haida Gwaii. Chapter 21 in Slamaker, O (ed). *Landscapes and Landforms of Western Canada*. Springer International, New York. 12p. ISBN: 978-3-319-44593-9 (<http://dx.doi.org/10.1007/978-3-319-44593-3>) Invited.
- 12) 2016 Darke, IB, **Walker, IJ**, Hesp, PA. Beach-dune sediment budgets and dune morphodynamics following coastal dune restoration, Wickaninnish Dunes, Canada. *Earth Surface Processes & Landforms*, 41(10): 1370-1385 (<http://dx.doi.org/10.1002/esp.3910>)
- 13) 2016 Hesp, PA, Smyth, TAG, **Walker, IJ**, Gares, PA, Wasklewicz, T. Flow within a trough blowout at Cape Cod. *Journal of Coastal Research*, S175: 288-292. (<http://www.jcronline.org/doi/abs/10.2112/S175-058.1>)
- 14) 2016 Elko, N, Brodie, K, Stockdon, H, Nordstrom, K, Houser, C, McKenna, K, Moore, L, Rosati, J, Ruggiero, P, Thuman, R, **Walker, IJ**. Dune management challenges on developed coasts. *Shore & Beach*, 84(1), Winter 2016: 1-14. Invited
- 15) 2015 Barnard P, Short A, Harley M, Splinter K, Vitousek S, Turner I, Allan J, Banno M, Bryan K, Doria A, Hansen J, Kato S, Kuriyama Y, Randall-Goodwin E, Ruggiero P, **Walker IJ**, Heathfield D. Coastal vulnerability across the Pacific dominated by El Niño/Southern Oscillation. *Nature Geoscience* 8: 801–807. (<http://dx.doi.org/10.1038/NNGEO2539>).
- 16) 2015 Heathfield, DK, **Walker, IJ**. Evolution of a foredune and backshore river complex on a high-energy, drift-aligned beach. *Geomorphology* 248: 440-451. (<http://dx.doi.org/10.1016/j.geomorph.2015.08.006>)
- 17) 2015 Neudorf, CM, Lian, OB, **Walker, IJ**, Shugar, DH, Eamer, JB, Griffin, LC. Toward a luminescence chronology for coastal dune and beach deposits on Calvert Island, British Columbia central coast, Canada. *Quaternary Geochronology* 30: 275-281. (<http://dx.doi.org/10.1016/j.quageo.2014.12.004>).
- 18) 2015 Bauer, BO, Hesp, PA, **Walker, IJ**, Davidson-Arnott, RGD. Sediment transport (dis)continuity across a beach-dune profile during an offshore wind event. *Geomorphology* 245: 135-148 (<http://dx.doi.org/10.1016/j.geomorph.2015.05.004>)
- 19) 2015 Abhar, KA, **Walker, IJ**, Hesp, PA, Gares, P. Spatial-Temporal Evolution of Blowout Dunes at Cape Cod National Seashore, Massachusetts, USA. *Geomorphology* 236: 148–162 (DOI: [10.1016/j.geomorph.2015.02.015](https://doi.org/10.1016/j.geomorph.2015.02.015)).
- 20) 2015 Hesp, PA, Smyth, TA, Nielsen, P, **Walker, IJ**, Bauer, BO. Flow deflection over a foredune. *Geomorphology* 230: 64-74 (DOI:[10.1016/j.geomorph.2014.11.005](https://doi.org/10.1016/j.geomorph.2014.11.005)).
- 21) 2014 Shugar, DH, **Walker, IJ**, Lian, OB, Eamer, JBR, Neudorf, C, McLaren, D, Fedje, D. Post-glacial sea-level change along the Pacific coast of North America. *Quaternary Science Reviews* 97: 170-192 (DOI: [10.1016/j.quascirev.2014.05.022](https://doi.org/10.1016/j.quascirev.2014.05.022))
- 22) 2014 McLaren, D, Fedje, D, Hay, M, Mackie, Q, **Walker, IJ**, Shugar, DH, Eamer, JBR, Lian, OB, Neudorf, C. A post-glacial sea level hinge on the central Pacific coast of Canada. *Quaternary Science Reviews* 97: 148–169 (DOI: [10.1016/j.quascirev.2014.05.023](https://doi.org/10.1016/j.quascirev.2014.05.023))

- 23) 2013 **Walker, IJ**, Eamer, JBR, Darke, IB. Assessing significant geomorphic changes and effectiveness of dynamic restoration in a coastal dune ecosystem. *Geomorphology* 199: 192-204 ([DOI: 10.1016/j.geomorph.2013.04.023](https://doi.org/10.1016/j.geomorph.2013.04.023)). *Invited for the 2013 Binghamton Geomorphology Symposium on Coastal Restoration.*
- 24) 2013 **Walker, IJ**, Shugar, D. Secondary flow deflection in the lee of transverse dunes with implications for dune morphodynamics and migration. *Earth Surface Processes & Landforms* 38(14): 1642-1654 ([DOI: 10.1002/esp.3398](https://doi.org/10.1002/esp.3398))
- 25) 2013 Bauer, BO, **Walker, IJ**, Baas, ACW, Jackson, DWT, McKenna Neuman, C, Wiggs, GFS, Hesp, PA. Critical Reflections on the Coherent Flow Structures Paradigm in Aeolian Geomorphology. Ch. 8 in: Venditti, J, Best, JL, Church, M, Hardy, RJ (eds), *Coherent Flow Structures at Earth's Surface*. pp. 111-134. Wiley-Blackwell. ISBN: 978-1-119-96277-9. *Invited*
- 26) 2013 **Walker, IJ**, Hesp, PA. Fundamentals of Aeolian Sediment Transport: Airflow Over Dunes. Ch. 11.7. In: Lancaster, N, Sherman, DJ, Baas, ACW (eds.), Vol. 11: *Aeolian Geomorphology*. pp 109-133. In: Shroder, JF (ed.) *Treatise on Geomorphology*. Elsevier: Oxford. ([DOI: 10.1016/B978-0-12-374739-6.00300-6](https://doi.org/10.1016/B978-0-12-374739-6.00300-6)). *Invited*
- 27) 2013 Hesp, PA, **Walker, IJ**. Fundamentals of Aeolian Sediment Transport: Coastal dunes. Ch. 11.17. In: Lancaster, N, Sherman, DJ, Baas, ACW (eds.), Vol. 11: *Aeolian Geomorphology*. pp 328-355. In: Shroder, JF (ed.) *Treatise on Geomorphology*. Elsevier: Oxford. ([DOI: 10.1016/B978-0-12-374739-6.00310-9](https://doi.org/10.1016/B978-0-12-374739-6.00310-9)). *Invited*
- 28) 2013 Eamer, JBR, **Walker, IJ**. Quantifying spatial and temporal trends in beach-dune volumetric changes using spatial statistics. *Geomorphology* 191: 94-108 ([DOI: 10.1016/j.geomorph.2013.03.005](https://doi.org/10.1016/j.geomorph.2013.03.005))
- 29) 2013 Eamer, JBR, Darke, IB, **Walker, IJ**. Geomorphic and sediment volume responses of a coastal dune complex following invasive vegetation removal. *Earth Surface Processes & Landforms* 38(10): 1148-1159 ([DOI: 10.1002/esp.3403](https://doi.org/10.1002/esp.3403))
- 30) 2013 Chapman, C, **Walker, IJ**, Bauer, BO, Hesp, P, Davidson-Arnott, RGD, Ollerhead, J. Reynolds stress and sand transport over a vegetated foredune. *Earth Surface Processes & Landforms* 38(14): 1735-1747 ([DOI: 10.1002/esp.3428](https://doi.org/10.1002/esp.3428))
- 31) 2013 Darke, IB, Eamer, JBR, Beaugrand, HER, **Walker, IJ**. Monitoring considerations for a dynamic dune restoration project: Pacific Rim National Park Reserve, British Columbia, Canada. *Earth Surface Processes & Landforms* 38(9): 983-993 ([DOI: 10.1002/esp.3380](https://doi.org/10.1002/esp.3380))
- 32) 2013 Hesp, PA, **Walker, IJ**, Chapman, C, Davidson-Arnott, RGD, Bauer, BO. Aeolian dynamics over a foredune, Prince Edward Island, Canada. *Earth Surface Processes & Landforms* 38(13): 1566-1575 ([DOI: 10.1002/esp.3444](https://doi.org/10.1002/esp.3444))
- 33) 2013 Heathfield, DK, **Walker, IJ**, Atkinson, D. Erosive water level regime and climate variability forcing on southwestern Vancouver Island, British Columbia, Canada. *Earth Surface Processes & Landforms* 38(7): 751-762 ([DOI: 10.1002/esp.3350](https://doi.org/10.1002/esp.3350))
- 34) 2013 Ollerhead, J, Davidson-Arnott, RGD, **Walker, IJ**, Mathew, S. Annual to Decadal Morphodynamics of the Beach-Foredune System at Greenwich Dunes, Prince



- Edward Island, Canada. *Earth Surface Processes & Landforms* 38(3): 284-298 ([DOI: 10.1002/esp.3327](https://doi.org/10.1002/esp.3327))
- 35) 2013 Delgado-Fernandez, I, Davidson-Arnott, RGD, Bauer, BO, **Walker, IJ**, Ollerhead, J. Evaluation of the optimal resolution for characterizing the effect of beach surface moisture derived from remote sensing on aeolian transport. *J. Coastal Research* SI65: 1277-1282 (<http://dx.doi.org/10.2112/SI65-216.1>).
- 36) 2012 Davidson-Arnott, RGD, Bauer, BO, **Walker, IJ**, Hesp, PA, Ollerhead, J, Chapman, C. High-frequency sediment transport responses on a vegetated foredune. *Earth Surface Processes & Landforms* 37(11): 1227-1241 ([DOI: 10.1002/esp.3275](https://doi.org/10.1002/esp.3275))
- 37) 2012 Delgado-Fernandez, I, Davidson-Arnott, RGD, Bauer, BO, **Walker, IJ**, Ollerhead, J, Rhew, H. Assessing aeolian beach-surface dynamics using a remote sensing approach. *Earth Surface Processes & Landforms* 37(15): 1651–1660 ([DOI: 10.1002/esp.3301](https://doi.org/10.1002/esp.3301))
- 38) 2012 Hesp, PA, **Walker, IJ**. Three-dimensional aeolian dynamics within a bowl blowout during offshore winds: Greenwich Dunes, Prince Edward Island, Canada. *Aeolian Research* 3(4): 389–399 ([DOI: 10.1016/j.aeolia.2011.09.002](https://doi.org/10.1016/j.aeolia.2011.09.002))
- 39) 2012 Chapman, C, **Walker, IJ**, Hesp, PA, Bauer, BO, Davidson-Arnott, RGD. Turbulent Reynolds stress and quadrant event activity in wind flow over a foredune. *Geomorphology* 151-152: 1-12 ([DOI: 10.1016/j.geomorph.2011.11.015](https://doi.org/10.1016/j.geomorph.2011.11.015))
- 40) 2012 Bauer, BO, Davidson-Arnott, RGD, **Walker, IJ**, Hesp, PA, Ollerhead, J. Wind direction and complex sediment transport response across a beach-dune system. *Earth Surface Processes & Landforms* 37(15): 1661-1677 ([DOI: 10.1002/esp.3306](https://doi.org/10.1002/esp.3306))
- 41) 2012 Martínez, ML, Feagin, RA, Yeager, KM, Day, J, Costanza, R, Harris, JA, Hobbs, RJ, López-Portillo, J, **Walker, IJ**, Higgs, E, Moreno-Casasola, P, Sheinbaum, J, Yáñez-Arancibia, A. Artificial modifications of the coast in response to the Deepwater Horizon oil spill: quick solutions or long-term liabilities? *Frontiers in Ecology & Environment* 10: 44-49. ([www.esajournals.org/doi/abs/10.1890/100151](http://www.esajournals.org/doi/abs/10.1890/100151))
- 42) 2011 Heathfield, DK, **Walker, IJ**. Analysis of coastal dune dynamics, shoreline position, and large woody debris at Wickaninnish Bay, Pacific Rim National Park, British Columbia. *Canadian Journal of Earth Sciences* 48(7): 1185-1198 ([DOI: 10.1139/e11-043](https://doi.org/10.1139/e11-043))
- 43) 2010 **Walker, IJ**. Changing views in Canadian geomorphology: are we seeing the landscape for the processes? *The Canadian Geographer*, 54(3): 261-276. ([DOI: 10.1111/j.1541-0064.2010.00307.x](https://doi.org/10.1111/j.1541-0064.2010.00307.x)). *Invited for Early Career Scholars series.*
- 44) 2010 Eamer, JBR, **Walker, IJ**. Quantifying sand storage capacity of large woody debris on beaches using LiDAR. *Geomorphology* 118: 33-47. ([DOI: 10.1016/j.geomorph.2009.12.006](https://doi.org/10.1016/j.geomorph.2009.12.006))
- 45) 2009 **Walker, IJ**, Davidson-Arnott, RGD, Hesp, PA, Bauer, BO, Ollerhead, J. Mean flow and turbulence responses in airflow over foredunes: new insights from recent research. *J. Coastal Research* SI56: 366-370. (<http://www.jstor.org/stable/25737599>)
- 46) 2009 **Walker, IJ**, Hesp, PA, Davidson-Arnott, RGD, Bauer, BO, Namikas, SL, Ollerhead, J. Responses of three-dimensional flow to variations in the angle of incident wind and



- profile form of dunes: Greenwich Dunes, Prince Edward Island, Canada. *Geomorphology* 105(1-2):127-138. (DOI: [10.1016/j.geomorph.2007.12.019](https://doi.org/10.1016/j.geomorph.2007.12.019))
- 47) 2009 Bauer, BO, Davidson-Arnott, RGD, Hesp, PA, Namikas, SL, Ollerhead, J, **Walker, IJ**. Aeolian sediment transport conditions on a beach: Surface moisture, wind fetch, and mean transport rates. *Geomorphology* 105: 106-116. (DOI: [10.1016/j.geomorph.2008.02.016](https://doi.org/10.1016/j.geomorph.2008.02.016))
- 48) 2009 Hesp, PA, **Walker, IJ**, Namikas, SL, Davidson-Arnott, RGD, Bauer, BO, Ollerhead, J (2009). Storm wind flow over a foredune, Prince Edward Island, Canada. *J. Coastal Research* SI56: 312-316. (<http://www.jstor.org/stable/25737588>)
- 49) 2009 Hugenholtz, CH, Wolfe, SA, **Walker, IJ**, Moorman, BJ. Spatial and temporal patterns of sediment transport within a parabolic dune, Bigstick Sand Hills, Saskatchewan, Canada. *Geomorphology* 105: 158-170. (DOI: [10.1016/j.geomorph.2007.12.017](https://doi.org/10.1016/j.geomorph.2007.12.017))
- 50) 2009 Davidson-Arnott, RGD, Bauer, BO, **Walker, IJ**, Hesp, PA, Ollerhead, J, Delgado-Fernandez, I. Instantaneous and mean aeolian sediment transport rate on beaches: an intercomparison of measurements from two sensor types. *J. Coastal Research* SI56: 297-301. (<http://www.jstor.org/stable/25737585>)
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- 53) 2007 Davidson-Arnott, RG, Yang, Y, Ollerhead, J, Hesp, PA, **Walker, IJ**. The effects of surface moisture on aeolian sediment transport threshold and mass flux on a beach. *Earth Surface Processes & Landforms* 33(1): 55-74. (DOI: [10.1002/esp.1527](https://doi.org/10.1002/esp.1527))
- 54) 2007 **Walker, IJ**, Sydneysmith, R. Ch. 8: British Columbia. In: Lemmen, D.S., Warren, F., Bush, E. and Lacroix, J. (editors). *From Impacts to Adaptation: Canada in a Changing Climate*. Government of Canada, Ottawa. 56 p. *Invited*
- 55) 2006 Anderson, JL, **Walker, IJ**. Airflow and sand transport variations within a backshore-parabolic dune plain complex: NE Graham Island, British Columbia, Canada. *Geomorphology* 77: 17-34. (DOI: [10.1016/j.geomorph.2005.12.008](https://doi.org/10.1016/j.geomorph.2005.12.008))
- 56) 2006 **Walker, IJ**, Hesp, PA, Davidson-Arnott, RGD, Ollerhead, J. Topographic steering of alongshore airflow over a vegetated foredune: Greenwich Dunes, Prince Edward Island, Canada. *J. Coastal Research* 22(5): 1278-1291. (<http://www.jstor.org/stable/4300394>)
- 57) 2006 **Walker, IJ**, Barrie, JV. Geomorphology and sea-level rise on one of Canada's most 'sensitive' coasts: Northeast Graham Island, British Columbia. *J. Coastal Research*, SI 39: 220-226. (<http://www.jstor.org/stable/25741565>)
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- 60) 2006 **Walker, IJ.** Ch. 4.5: Sea-level. In: Sloan, NA (ed), Living Marine Legacy of Gwaii Haanas V: Coastal zone values and management around Haida Gwaii. Parks Canada Technical Reports in Ecosystem Science, Report 042. Parks Canada, Agency: Ottawa. pp. 166-172. ISBN: 0662435893. *Invited*
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- 65) 2005 Hesp, P, Davidson-Arnott, RG, **Walker, IJ,** Ollerhead, J. Flow dynamics over a foredune at Prince Edward Island, Canada. *Geomorphology* 65: 71-84. (DOI: [10.1016/j.geomorph.2004.08.001](https://doi.org/10.1016/j.geomorph.2004.08.001))
- 66) 2004 Parsons, DR, **Walker, IJ,** Wiggs, GFS. Numerical modelling of flow structures over idealised transverse aeolian dunes of varying geometry. *Geomorphology* 59: 149-164. (DOI: [10.1016/j.geomorph.2003.09.012](https://doi.org/10.1016/j.geomorph.2003.09.012))
- 67) 2004 Parsons, DR, Wiggs, GFS, **Walker, IJ,** Ferguson, RI, Garvey, BG. Numerical modelling of airflow over an idealised transverse dune. *Environmental Modelling & Software* 19: 153-162. (DOI: [10.1016/S1364-8152\(03\)00117-8](https://doi.org/10.1016/S1364-8152(03)00117-8))
- 68) 2003 **Walker, IJ,** Nickling, WG. Simulation and measurement of surface shear stress over isolated and closely spaced transverse dunes. *Earth Surface Processes and Landforms*, 28: 1111-1124. (DOI: [10.1002/esp.520](https://doi.org/10.1002/esp.520))
- 69) 2002 **Walker, IJ,** Nickling, WG. Dynamics of secondary airflow and sediment transport over and in the lee of transverse dunes. *Progress in Physical Geography*, 26(1): 47-75. (DOI: [10.1191/0309133302pp325ra](https://doi.org/10.1191/0309133302pp325ra))
- 70) 1999 **Walker, IJ.** Secondary airflow and sediment transport in the lee of reversing dunes. *Earth Surface Processes and Landforms* 24(5): 437-448. (DOI: [10.1002/\(SICI\)1096-9837\(199905\)24:5<437::AID-ESP999>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1096-9837(199905)24:5<437::AID-ESP999>3.0.CO;2-Z))
- 71) 1997 **Walker, IJ,** Desloges, JR, Crawford, G, Smith, D. Floodplain formation processes and archaeological implications at the Grand Banks site, Lower Grand River, Southern

Ontario . *Geoarchaeology* 12(8): 865-887. ([DOI: 10.1002/\(SICI\)1520-6548\(199712\)12:8<865::AID-GEA3>3.0.CO;2-3](https://doi.org/10.1002/(SICI)1520-6548(199712)12:8<865::AID-GEA3>3.0.CO;2-3))

#### PAPERS IN REVIEW OR REVISION:

- In revision Smyth, TA, Hesp, PA, Walker, IJ, Wasklewicz, T, Gares, P, Smith, AB. Topographic change and numerically modelled near surface wind flow in a bowl blowout. *Earth Surface Processes & Landforms*. Submission ID: ESP-18-0372, re-submitted 14 September 2018.
- In review Grilliot, M, Walker, IJ, Bauer, BO. Title: Sand transport over a beach and foredune system with large woody debris. *Geomorphology*. Submission ID: GEOMOR-8020, submitted 1 October 2018.
- In review Lausanne, A, Fedje, D, Mackie, Q, Walker, IJ. Identifying potential geoarchaeological sites with high prospecting potential using aerial LIDAR imaging and GIS on Quadra Island, Canada. *Journal of Island & Coastal Archaeology*. Submission ID: UICA-2018-0042, submitted 9 September 2018.
- In review Mullan, S, Foreman, MG, Barrie, JV, Pospelova, V, Hill, PR, Walker, IJ. Tidally driven sediment transport pathways in the central Salish Sea: Lagrangian particle simulation results. *Continental Shelf Research*. ID: CSR\_2017\_413, submitted 19 Nov 2017.
- In revision Mullan, S, Foreman, MG, Barrie, JV, Pospelova, V, Hill, PR, Walker, IJ. Bathymetric change detection and volumetric differencing to describe long-term (2001-2011) dune-complex (banner bank) morphodynamics with repeat multibeam sonar surveys: Boundary Passage, Salish Sea, British Columbia and Washington State. *Marine Geology*. Submission ID: MARGO\_2018\_60, submitted 8 May 2018.

#### OTHER PUBLICATIONS & REPORTS

- 1) 2018 Walker, IJ, Sherman, DG, Springer, H. "Estimating Potential Dune Vulnerability to Storm Sequences: A Pilot Study." Fact Sheet for the US Coastal Research Program (USCRP) DUNE Research & Development. Sponsored by the US Army Corps of Engineers, US Geological Survey and the American Shore and Beach Protection Association (ASBPA). May 2018. 3p.
- 2) 2017 Pickart, A, Reynolds, C, Walker, IJ. "Dunes Climate Ready Vulnerability and Adaptation Study Phase 1: Preliminary Beach-Dune Transect Profiles." A project report submitted to the California State Coastal Conservancy Climate Ready Program for project "Coastal Dune Vulnerability and Adaptation in the Eureka Littoral Cell". Produced in collaboration with the US Fish & Wildlife Service, Humboldt Bay National Wildlife Refuge, Arcata, California. 82p.
- 3) 2011 Page, N., Lilley, P., Walker, I.J., Vennesland, R.G. Status report on coastal sand ecosystems in British Columbia. Report prepared for the Coastal Sand Ecosystems Recovery Team of British Columbia. Available online at: <http://www.raincoastappliedecology.ca/wp-content/uploads/2010/09/2011-Coastal-Sand-Ecosystem-Status-Report.pdf>. vii + 83 pp.

## CONFERENCE PRESENTATIONS & PUBLIC ADDRESSES

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- 1) 2018 CANQUA with Olav and Libby
- 2) 2018 AGU Fall meeting w/ Fateme
- 3) 2018 AGU Fall meeting w/ Alana(?)
- 4) 2018 **Walker, IJ**, Pickart, AJ, Rader, A. “Foredune erosion, rebuilding & restoration at Lanphere Dunes, Humboldt Bay National Wildlife Refuge.” Invited public address, hosted by U.S. Fish & Wildlife Service – Humboldt Bay National Wildlife Refuge and Humboldt State University, 23 May 2018.
- 5) 2018 Grilliot, MJ, **Walker, IJ**, Heathfield, DK. “Evaluating the recovery of beach-dune systems from the 2016 El Niño using unmanned aerial systems (UAS) and terrestrial laser scanning (TLS)” Poster presentation CD34B-0124, American Geophysical Union (AGU) Ocean Sciences Meeting, Portland, OR, 14 February 2018.
- 6) 2017 **Walker, IJ**, Grilliot, MJ, Bauer, BO. “Airflow Dynamics and Sand Transport over a Coastal Fore dune with Large Woody Debris”. Poster presentation EP21G-06, Session EP31B: Coastal Geomorphology & Morphodynamics: Observations, Modeling, and Sensing Techniques V - Posters. 2017 American Geophysical Union (AGU) Fall Meeting, New Orleans, LA, 12-16 Dec. 2017.
- 7) 2017 **Walker, IJ**, Sherman, DG, Springer, H, “Estimating Coastal Dune Vulnerability to Storm Sequences: A Pilot Study.” Invited presentation for Session 4B: Dune Management Challenges on Developed Coasts. 2017 American Shore and Beach Protection Association (ASBPA) National Coastal Conference, Fort Lauderdale, Florida. 25-27 October 2017.
- 8) 2017 **Walker, IJ**, “Willful winds and shifting sands: challenges & advances in aeolian research” Invited presentation, US Army Research Office Workshop on Dust Emission, Chemistry and Transport. Notre Dame University, Chicago Campus, 26-27 Sept. 2017, Chicago IL.
- 9) 2017 **Walker, IJ**, Grilliot, M, “Coastal sand ecosystems of BC: Holocene history to modern dynamics” Invited presentation, Hakai Research Institute, Calvert Island Research Station, British Columbia, Canada. 28 August 2017.
- 10) 2017 Bauer, BO, **Walker, IJ**, Davidson-Arnott, RGD, Hesp, PA, Delgado-Fernandez, I, Ollerhead, J, “Scale-dependent perspectives on beach-dune dynamics: A decade of field research at Greenwich Dunes, Prince Edward Island”. Session ES12: Coastal sediment dynamics and morphological response. Canadian Geophysical Union (CGU) Annual Meeting, Vancouver, BC. 29-31 May 2017.
- 11) 2017 Grilliot, M, **Walker, IJ**, Bauer, BO, “Airflow dynamics and sand transport over a coastal fore dune with large woody debris”. Session ES12: Coastal sediment dynamics and morphological response. Canadian Geophysical Union (CGU) Annual Meeting, Vancouver, BC. 29-31 May 2017.
- 12) 2017 Gares, P, Hesp, PA, **Walker, IJ**, “Development of pothole blowouts and their role in dune field evolution.” AAG 2017 Annual Meeting, Boston, MA. 5-9 April, 2017.

- 13) 2017 Bauer, BO, Davidson-Arnott, RGD, **Walker, IJ**, Grilliot, M, "On the use of high-frequency particle counters in aeolian field experiments: challenges, opportunities, and a call to action." AAG 2017 Annual Meeting, Boston, MA. 5-9 April, 2017.
- 14) 2016 **Walker, IJ**, Grilliot, M, Heathfield, D, "Seasonal Beach-dune Morphodynamics and Sediment Budget Responses to Erosive Events Derived Using Terrestrial Laser Scanning (TLS) and Unmanned Aerial Systems (UAS)." Session EP14A: Coastal Geomorphology and Morphodynamics III. 2016 American Geophysical Union (AGU) Fall Meeting, 12-16 Dec. 2016.
- 15) 2016 Rader, AM, **Walker, IJ**, Pickart, A, "Dune Morphology and Sediment Budget Responses to Varying Vegetation Cover and Restoration: Humboldt Bay National Wildlife Refuge, Northern California." Poster EP11A-0970: Coastal Geomorphology and Morphodynamics I. 2016 American Geophysical Union (AGU) Fall Meeting, San Francisco, CA. 12-16 Dec. 2016.
- 16) 2016 Heathfield, D, **Walker, IJ**, Grilliot, M, "Comparison of Terrestrial Laser Scanning (TLS) and Structure from Motion (SfM) photogrammetry from unmanned aerial systems (UAS) for geomorphic change detection in beach-dune systems." Poster EP11A-0970: Coastal Geomorphology and Morphodynamics I. 2016 American Geophysical Union (AGU) Fall Meeting, San Francisco, CA. 12-16 Dec. 2016.
- 17) 2016 Grilliot, M, **Walker, IJ**, Bauer, BO, "Airflow Dynamics and Sand Transport over a Coastal Fore-dune with Large Woody Debris." Poster EP21A-0861: Aeolian Research at the Interface of Biophysical, Sedimentary, and Atmospheric Processes I. 2016 American Geophysical Union (AGU) Fall Meeting, San Francisco, CA. 12-16 Dec. 2016.
- 18) 2016 **Walker, IJ**, "Quantifying coastal erosion & dune restoration impacts using unmanned aerial systems (UAS) & terrestrial laser scanning (TLS)." Invited presentation, United States Geological Survey (USGS), Santa Cruz, CA, 3 May 2016.
- 19) 2015 **Walker, IJ**, "A tale of two siblings: Impacts of El Niño & La Niña in coastal British Columbia" Invited presentation at the Vancouver Island Chapter, Air & Waste Management Association bi-monthly meeting, 24 Nov. 2015, Victoria, BC.
- 20) 2015 **Walker, IJ**, "Methods & technologies for quantifying beach-dune morphodynamics & sediment budgets" Invited presentation at "Dune Management Challenges on Developed Coasts" a workshop sponsored by the American Shore & Beach Protection Association (ASPBA) and the U.S. Army Corps of Engineers, Environmental Research & Development Centre (ERDC), Hilton Garden Inn, 26-28 Oct. 2015, Kitty Hawk, NC.
- 21) 2015 **Walker, IJ**, Grilliot, M, Eamer, JBR. "Examining interactions between large woody debris, beach-dune morphodynamics and shoreline positions using remotely sensed data." Paper presented at the 2015 Joint Assembly of the AGU-CGU-GAC-MAC, 3-7 May 2015.
- 22) 2014 **Walker, IJ**, Abhar, K, Hesp, PA, Gares, P. "Spatial-temporal morphodynamics and evolution of coastal blowout dunes." Paper presented at Geological Society of America 2014 Meeting, 19-22 Oct. 2014, Vancouver, BC.

- 23) 2014 Eamer, JBR, Shugar, DH, **Walker, IJ**, Lian, OB, Neudorf, C, Telka, AM. "A significant late Pleistocene glacial readvance during retreat of the Cordilleran Ice Sheet on the central coast of British Columbia. Poster presented at Geological Society of America 2014 Meeting, 19-22 Oct. 2014, Vancouver, BC.
- 24) 2014 Shugar, DH, McLaren, D, **Walker, IJ**, Lian, OB, Eamer, JBR, Neudorf, CM, Fedje, D. "Post-glacial sea levels in Pacific North America – hinge zones and human occupation." Poster presented at American Quaternary Association Meeting, 7-10 Aug. 2014, University of Washington, Seattle, WA.
- 25) 2014 **Walker, IJ**, "Assessing geomorphic effectiveness of dynamic restoration on coastal dunes." Invited public talk, Humboldt Bay National Wildlife Refuge, US National Fish and Wildlife Service, Arcata, California, 23 April 2014.
- 26) 2014 **Walker, IJ**, Davidson-Arnott, RGD, Hesp, PA, Bauer, BO, Ollerhead, J, Delgado-Fernandez, I. "A decade of beach-dune morphodynamics research at Greenwich Dunes, Prince Edward Island, Canada." Paper presented at GAC-MAC/CGRG Joint Annual Meeting, 21-23 May 2014, University of New Brunswick, Fredericton, NB.
- 27) 2014 **Walker, IJ**, Shugar, DH, Lian, OB, Eamer, JBR, Neudorf, CM, McLaren, D, Fedje, D. "The past 18,000 years of sea-level change in Pacific North America." Paper presented at Canadian Assn. of Geographers, Western Division Meeting, 7-8 Mar. 2014, Victoria, BC.
- 28) 2013 **Walker, IJ**. "Assessing morphodynamic effectiveness of invasive vegetation removal on coastal dunes" Presentation, CANQUA-CGRG Biannual Meeting, Edmonton, AB, 18-22 Aug. 2013.
- 29) 2013 **Walker, IJ**, Heathfield, DK. "Historic evolution of an extending foredune, backshore river, eroding bluff complex: Wickaninnish Bay, Vancouver Island, BC" Poster, CANQUA-CGRG Biannual Meeting, Edmonton, AB, 18-22 Aug. 2013.
- 30) 2013 Abhar, K, **Walker, IJ**, Hesp, PA, Gares, P. "Historical Spatial-Temporal Morphodynamics of Blowouts in Cape Cod National Seashore, MA, USA" Presentation, CANQUA-CGRG Biannual Meeting, Edmonton, AB, 18-22 Aug. 2013.
- 31) 2013 **Walker, IJ**, "Assessing morphodynamic effectiveness of invasive vegetation removal on coastal dunes" Invited plenary, 44<sup>th</sup> Binghamton Geomorphology Symposium on Coastal Barriers & Restoration. 18-20 Oct. 2013, NJIT, Newark, NJ.
- 32) 2013 Darke, IB, **Walker, IJ**, Hesp, PA. "Restoration & monitoring of coastal dune dynamics: Pacific Rim National Park Reserve, BC, Canada" Poster, 44<sup>th</sup> Binghamton Geomorphology Symposium on Coastal Barriers & Restoration. 18-20 Oct. 2013, NJIT, Newark, NJ.
- 33) 2013 Davidson-Arnott, RGD, Bauer, BO, **Walker, IJ**, Chapman, C, Hesp, PA. "Temporal & spatial scale of aeolian flux on a vegetated foredune during a high-energy event" Poster, 44<sup>th</sup> Binghamton Geomorphology Symposium on Coastal Barriers & Restoration. 18-20 Oct. 2013, NJIT, Newark, NJ.
- 34) 2013 Abhar, K, **Walker, IJ**, Hesp, PA, Gares, P. "Historical spatial-temporal morphodynamics of erosional blowout dunes in Cape Cod National Seashore, MA,

- USA” Poster, 44<sup>th</sup> Binghamton Geomorphology Symposium on Coastal Barriers & Restoration. 18-20 Oct. 2013, NJIT, Newark, NJ.
- 35) 2013 **Walker, IJ**, “Coastal Landscapes & Biodiversity in British Columbia”. Invited public presentation, Let’s Talk Science Symposium on Coastal Biodiversity, UVic, Victoria, BC.
- 36) 2012 **Walker, IJ**, Davidson-Arnott, RGD, Hesp, PA, Bauer, BO, Ollerhead, J, Delgado-Fernandez, I “A decade of beach-dune morphodynamics research at Greenwich Dunes, Prince Edward Island, Canada (2002-2012).” Invited presentation, 2012 Geological Society of America Annual Meeting, 4-7 Nov. 2012, Charlotte, NC.
- 37) 2012 **Walker, IJ**. “Climate change, coastal erosion and the restoration of beach-dune systems.” Invited presentation, Centre de Recherche et d’Enseignement de Géosciences de l’Environnement (CEREGE), 18 Sept. 2012, Aix en Provence, France.
- 38) 2012 **Walker, IJ**. “Shifting sands & dynamic shorelines: Climate change, coastal erosion, and the restoration of beach-dune systems.” Invited presentation as Visiting Fellow at the Environment, Development & Sustainability Program, Institute for Business, Social Science & Public Policy (IBSSPP), 23 Aug. 2012, National University of Ireland, Galway, Ireland.
- 39) 2012 **Walker, IJ**, Lian, O, Shugar, D, Eamer, JBR, Mackovic, B, Huesken, D. “Exploring the prehistory of Calvert Island with grains of sand”. Public presentation, Hakai Beach Institute, British Columbia. 30 May 2012.
- 40) 2012 **Walker, IJ**. “Coastal erosion & climate change impacts in British Columbia”. Invited public presentation to joint meeting on coastal erosion in local First Nations landscapes, Parks Canada - Gulf Islands National Park Reserve, Hul’qumi’num Treaty Group, and Tseycum Council. 14 May 2012. Ladysmith, BC.
- 41) 2011 **Walker, IJ**, Chapman, C, Hesp, PA, Davidson-Arnott, RGD, Bauer, BO, Ollerhead, J. “Three-dimensional airflow behaviour and sand transport responses over a vegetated foredune, PEI National Park, Canada.” Paper presented at the 2011 Meeting of the American Association of Geographers, April 12-16 2011, Seattle, WA.
- 42) 2011 **Walker, IJ**, Chapman, C, Hesp, PA, Bauer, BO, Davidson-Arnott, RGD. “Topographic forcing, quadrant event distributions, and sand transport responses in near-surface flow over coastal foredunes” Invited plenary at Coherent Flow Structures in Geophysical Flows at the Earth’s Surface, 2-4 August 2011, SFU, Vancouver, BC.
- 43) 2010 **Walker, IJ**, Beaugrand, HER, Darke, IB, Eamer, JBR. “Coastal Foredune Restoration at Wickaninnish Dunes, Pacific Rim National Park.” Invited plenary, UVic Restoration Institute 2010, Coastal Ecosystem Restoration & Management, 26-29 May 2010, Victoria BC.
- 44) 2010 **Walker, IJ**, Chapman, C, Hesp, PA, Davidson-Arnott, RGD, Bauer, BO, Namikas, S. “Turbulent Reynolds stress and quadrant events in wind flow over a vegetated foredune.” Poster, International Conference on Aeolian Research (ICAR-VII), Santa Rosa, Argentina, 5-9 July 2010.



- 45) 2010 **Walker, IJ.** "Shifting sands & dynamic shorelines: Climate change, coastal erosion & restoration of beach-dune systems in Tofino-Ucluelet" Invited presentation, Marine & Aquatic Speaker Series, Clayoquot Biosphere Trust, Tofino, 8 December 2010.
- 46) 2009 **Walker, IJ,** Davidson-Arnott, RGD, Hesp, PA, Bauer, BO, Ollerhead, J "Mean Flow and Turbulence Responses in Airflow over Foredunes: New Insights from Recent Research. Paper presented at 10<sup>th</sup> International Coastal Symposium (ICS2009), 13-18 April 2009, Lisboa, Portugal.
- 47) 2009 **Walker, IJ.** "Are we seeing the dunes for the processes? Progress in the measuring and modeling of aeolian dune systems." Invited keynote for J.R. Mackay Award CANQUA-CGRG Biennial Meeting, Simon Fraser University, Burnaby, BC, 3-8 May 2009.
- 48) 2009 **Walker, IJ.** "Reconstructing past sea-levels and landscapes of Haida Gwaii: new evidence from the past 10000 years." Invited presentation, Gwaii Haanas National Park Reserve & Haida Heritage Site, Haida Heritage Centre, Skidegate, BC, 26 May 2009.
- 49) 2008 **Walker, IJ.** "Climate change impacts and adaptations in British Columbia: Results from a recent national assessment. Invited presentation at Environment Canada – AIRD workshop "Researcher and Practitioner Partnerships for Action on Climate Change: Developing Guidance for Communities" Richmond, BC, 6-7 March 2008.
- 50) 2008 **Walker, IJ.** "Climate change impacts and adaptations in coastal British Columbia." Invited presentation at Pacific Geosciences Centre Earth Day Symposium on Climate Change, Sidney, BC, 22 April 2008.
- 51) 2008 **Walker, IJ,** Sidneysmith, R. "Climate change impacts and adaptations in British Columbia: Policy relevant implications". Invited presentation to the BC Government Climate Action Secretariat, Government of British Columbia, Victoria, BC, 1 May 2008.
- 52) 2008 **Walker, IJ.** "Climate change impacts and adaptations in British Columbia: Next steps". Invited presentation at NRCan Workshop on Regional Climate Change Adaptations Collaborative Initiative, Victoria, BC, 10 June 2008.
- 53) 2008 **Walker, IJ.** "Climate change impacts and adaptations in British Columbia: Policy relevant implications". Invited presentation at Pacific Forestry Centre Workshop on Climate Change, 17 June 2008, Victoria, BC.
- 54) 2008 **Walker, IJ.** "Climate Change Impacts Monitoring In Pacific Rim NPR". Invited presentation at Pacific Rim National Park, 1 August 2008, Ucluelet, BC.
- 55) 2008 **Walker, IJ.** "Climate Change Impacts and Adaptations in British Columbia". Invited presentation at Climate Impacts Group (CIG), 3 Nov. 2008, University of Washington, Seattle, WA.
- 56) 2007 **Walker, IJ,** Wolfe, SA. "6500 years of sea level history and coastal evolution from LIDAR mapping and OSL dating, NE Haida Gwaii (Queen Charlotte Islands), British Columbia." Paper presented at the Annual Meeting, Western Division of the Canadian Association of Geographers, March 8-10, 2007. University of the Fraser Valley, Abbotsford, BC.

- 57) 2007 **Walker, IJ**, Cumming, B. "Airflow behaviour over a driftwood-laden macrotidal beach-dune system: NE Graham Island, British Columbia, Canada." Paper presented at the 2007 Meeting of the AAG, April 17-21 2007, San Francisco, CA.
- 58) 2007 Harris, K, **Walker, IJ**. "Estimating beach sand storage capacity of drift log jams using LIDAR: East Beach, Haida Gwaii, British Columbia." Paper presented at the Annual Meeting, Western Division, CAG, March 8-10, 2007. University of the Fraser Valley, Abbotsford, BC.
- 59) 2007 **Walker, IJ**. "Climate change and sea-level rise research in Haida Gwaii." Invited public talk sponsored by Gwaii Haanas National Park & Haida Heritage Site, Haida Heritage Centre Museum, 28 May 2007, Skidegate, BC.
- 60) 2007 **Walker, IJ**. "Integrating climate change and coastal geomorphology research for geoinicator monitoring in BC NPRs" Invited presentation to Pacific Rim National Park Reserve workshop on monitoring coastal erosion and climate change. 26 Nov 2007, Ucluelet, BC.
- 61) 2006 **Walker, IJ**. "Climate change impacts monitoring research on the North coast of BC". Invited presentation on research strategies in coastal BC at the Parks Canada - NRCan Workshop on Climate Change Research Initiatives, 12-13 January 2006, Ottawa, ON.
- 62) 2006 **Walker, IJ**. "Climate change signals and impacts on the south coast of BC", Invited presentation to the Esquimalt Lagoon Land Stewardship Initiative (CRD & City of Colwood Planning Dept), 9 Feb 2006.
- 63) 2006 **Walker, IJ**, Wolfe, SA, Huntley, DJ. "Preliminary reconstruction of Holocene sea level and coastal geomorphic changes: NE Haida Gwaii (Queen Charlotte Islands), BC." Paper presented at the Annual Meeting, Western Division of the Canadian Association of Geographers, March 10-11, 2006. Thompson Rivers University, Kamloops, BC.
- 64) 2006 Cumming, B, **Walker, IJ**. "Fetch length and driftwood-induced roughness effects on airflow dynamics over a macro-tidal beach: NE Graham Island, British Columbia, Canada." Paper presented at the Annual Meeting WDCAG, 10-11 March 2006, Thompson Rivers University, Kamloops, BC.
- 65) 2006 **Walker, IJ**. "Past, present & future of NE Graham Island: a story of changing sea-levels and climates", Invited public presentation, Graham Island Planning Commission (GIAPC), Tlell Fire Hall, Tlell BC, 18 May 2006.
- 66) 2006 **Walker, IJ**, Hesp, PA, Namikas, SL, Bauer, BO, Davidson-Arnott, RGD, Ollerhead, J. "Wind Flow and Aeolian Sediment Transport Across a Beach-foredune System During a Fall Storm, Greenwich Dunes, Prince Edward Island, Canada". Paper presented at the 6th International Conference on Aeolian Research (ICAR VI), 24-28 July 2006, Guelph, ON.
- 67) 2006 **Walker, IJ**. "Making Sense of the Science: climate change impacts & adaptations research in coastal BC." UVic Department of Geography Research Colloquium Series, 29 Sep. 2006.

- 68) 2006 **Walker, IJ.** "Integrating climate change & coastal geomorphology research for geoinicators monitoring". Paper presented at the BC Protected Areas Research Forum (BC-PARF), Royal Roads University, 4-6 Dec. 2006, Victoria, BC.
- 69) 2005 **Walker, IJ.** "Climate change & rising sea levels: risks & impacts in Haida Gwaii" Public presentation for CCIAP Project A580, 15 Feb. 2005, Skidegate, BC.
- 70) 2005 **Walker, IJ.** "Climate change & rising sea levels: risks & impacts in Haida Gwaii" Public presentation for CCIAP Project A580, 18 Feb. 2005, Queen Charlotte City, BC.
- 71) 2005 **Walker, IJ.** "Climate change & rising sea levels: risks & impacts of concern for the Haida Nation" Presentation to the Council of the Haida Nation for CCIAP Project A580, Skidegate, Haida Gwaii, 16 Feb. 2005.
- 72) 2005 **Walker, IJ.** "Climate variability & change impacts on the North coast of British Columbia." Paper presented at the Western Division Canadian Association of Geographers (WDCAG05), 12-13 Mar 2005, University of Lethbridge, Lethbridge, AB.
- 73) 2005 Pearce, KI, **Walker, IJ.** "Morphologic and volumetric change of a foredune-trough blowout complex, East Beach, Haida Gwaii (Queen Charlotte Islands), BC." Paper presented at the Western Division Canadian Association of Geographers (WDCAG05), 12-13 Mar. 2005, University of Lethbridge, Lethbridge, AB.
- 74) 2005 **Walker, IJ.** "Modelling dune airflow and sand transport dynamics" Invited plenary, First Brazilian Symposium on Coastal Dune Systems, 24-28 Aug. 2005. Institute of Marine Sciences & Labomar - Federal University of Ceará (UFC), Fortaleza, Brazil.
- 75) 2005 **Walker, IJ.** "Climate Change in Coastal BC." Invited public presentation, UVic Speakers Bureau, Fairfield New Horizons Centre, 27 Oct. 2005, Victoria, BC.
- 76) 2005 **Walker, IJ,** Abeyirigunawardena, D. "Whither the weather & waters? Climate variability and change signals on the North Coast of BC." Paper presented at the 12th Canadian Coastal Conference, 6-9 Nov. 2005, sponsored by the Canadian Coastal Science and Engineering Association and the Geological Survey of Canada – Atlantic Division, Dartmouth, NS.
- 77) 2005 Wolfe, SA, **Walker, IJ,** Huntley, DJ. "Holocene sea level & coastal geomorphic change, NE Graham Island, BC." Poster presented at the 12th Canadian Coastal Conference, 6-9 Nov., sponsored by the Canadian Coastal Science and Engineering Association and the Geological Survey of Canada – Atlantic Division, Dartmouth, NS.
- 78) 2005 **Walker, IJ.** "Coastal vulnerability to climate change and sea-level rise: NE Graham Island, Queen Charlotte Islands (Haida Gwaii), BC". Annual progress report for CCIAP project A580 at NRCan-CCIAD project leader's meeting: 24-25 Nov. 2005, Richmond, BC.
- 79) 2004 **Walker, IJ.** "Geomorphology and sea-level rise on one of Canada's most 'sensitive' coasts: NE Graham Island, British Columbia." Invited lecture for UVic Centre for Earth & Ocean Research Seminar Series, 14 Jan. 2004.
- 80) 2004 **Walker, IJ.** "Climate variability, change & rising sea levels on Graham Island" Public information lecture for CCIAD A580 Sea-level Rise Impacts Study, 19 Feb. 2004, Masset, Haida Gwaii, BC.

- 81) 2004 **Walker, IJ.** "Climate variability, change & rising sea levels on Graham Island Public information lecture for CCIAD A580 Sea-level Rise Impacts Study, 20 Feb. 2004, Queen Charlotte City, Haida Gwaii, BC.
- 82) 2004 **Walker, IJ,** Barrie, VJ. "Geomorphology and sea-level rise on one of Canada's most 'sensitive' coasts: Northeast Graham Island, British Columbia." Paper presented at the 8th International Coastal Symposium, 14-19 Mar. 2004, UNIVALI-CTTMar, Itajaí, Santa Catarina, Brazil.
- 83) 2004 **Walker, IJ.** "Climate variability and change impacts on one of Canada's most 'sensitive' coasts: northeast Graham Island, British Columbia." Paper presented at the Association of Washington Geographers 2004 Meeting, 23-24 April 2004, University College of the Fraser Valley, Abbotsford, BC.
- 84) 2004 **Walker, IJ,** Abeysirigunawarabena, D. "Sea level response to climate change on the northern coast of British Columbia." Paper presented at the Association of Washington Geographers 2004 Meeting, 23-24 Apr. 2004, University College of the Fraser Valley, Abbotsford, BC.
- 85) 2004 **Walker, IJ,** Dolan, AH, Barrie, JV. "Assessing impacts and susceptibilities of climate change related risks in remote coastal communities: Haida Gwaii (Queen Charlotte Islands), British Columbia." Paper presented at Coastal Zone Canada 2004 - All Within One Ocean: Co-operation in Sustainable Coastal and Ocean Management, June 27-30 2004, Delta Hotel & Conference Centre, St. John's Newfoundland & Labrador.
- 86) 2004 **Walker, IJ.** "Assessing climate change related risks & impacts in remote coastal communities: Graham Island, Queen Charlotte Islands (Haida Gwaii), BC." Presentation at Canadian Climate Impacts & Adaptations Program (CCIAP) Project Leader's Meeting, 26 Nov. 2004, Casino Nova Scotia, Halifax.
- 87) 2003 **Walker, IJ,** Hesp, PA, Davidson-Arnott, RGD, Ollerhead, J. "Topographic effects on airflow over a vegetated foredune - Greenwich Dunes, PEI National Park, Canada." Paper presented at Coastal Sediments '03, May 18-23, 2003, Clearwater Beach, Florida.
- 88) 2003 **Walker, IJ.** "Advances and limitations of using ultrasonic anemometry in aeolian sediment transport research." Paper presented at 'On the Edge', Joint Meeting of the ACMLA, CAG, CCA and CRSA. 27-31 May 2003, UVic, Victoria, BC.
- 89) 2003 **Walker, IJ.** "Fluid flow and sediment transport processes in Geomorphology: Instrumentation Workshop" Opening plenary for workshop organized at 'On the Edge', Joint Meeting of the ACMLA, CAG, CCA & CRSA. 27-31 May 2003, UVic, Victoria, BC.
- 90) 2003 **Walker, IJ,** Wiggs, GFS, Parsons, D. "Computational fluid dynamics (CFD) modelling of flow structures over idealised transverse aeolian dunes of varying geometry." Paper presented at 'On the Edge', Joint Meeting of the ACMLA, CAG, CCA & CRSA. 27-31 May 2003, UVic, Victoria, BC.

- 91) 2003 **Walker, IJ.** "Climate change & rising sea levels on Graham Island: what are the local impacts and implications?" Public meeting presentation for CCAF Sea-level Rise Impacts Study (CCIAD Project A580) 22 June 2003, Masset, Haida Gwaii, BC.
- 92) 2003 **Walker, IJ.** "Climate change & rising sea levels on Graham Island: what are the local impacts and implications?" Public meeting presentation for CCAF Sea-level Rise Impacts Study (CCIAD Project A580) 23 June 2003, Old Massett, Haida Gwaii, BC.
- 93) 2003 **Walker, IJ.** "Climate change & rising sea levels on Graham Island: what are the local impacts and implications?" Public meeting presentation for CCAF Sea-level Rise Impacts Study (CCIAD Project A580) 25 June 2003, Queen Charlotte City, Haida Gwaii, BC.
- 94) 2003 **Walker, IJ.** "Geomorphology of one of Canada's most 'sensitive' coasts: North East Graham Island, British Columbia." Paper presented at the Canadian Coastal Conference 2003. Queen's University. Kingston, Ontario, Canada. 15-17 October 2003.
- 95) 2003 **Walker, IJ.** "Geomorphology of the Coburg Peninsula: A legacy of ice, sand and surf." Invited public lecture to the Esquimalt Lagoon Stewardship Initiative (ELSI) Recreational Uses Sub-Committee, 17 December 2003.
- 96) 2002 **Walker, IJ.** "Recent advances in research on dune-airflow-sediment transport interactions." Paper presented at the CGRG Session GS2, Annual Meeting of the Geological Association of Canada, University of Saskatchewan, Saskatoon, SK, May 27-29, 2002.
- 97) 2002 **Walker, IJ.** "Advances in Research on Dune-Airflow-Sand Transport Dynamics: incorporating lee-side flow and transport processes." Invited plenary, International Conference on Wind Erosion & Aeolian Processes: A joint meeting of the International Conference on Aeolian Research (ICAR-5) and the Global Change & Terrestrial Ecosystem-Soil Erosion Network, 22-25 July 2002, Texas Tech University, Lubbock, TX.
- 98) 2002 Parsons, D, **Walker, IJ**, Wiggs, GFS. "Numerical modelling of flow structures over idealised transverse aeolian dunes of varying geometry." Paper presented at the International Conference on Wind Erosion & Aeolian Processes: A joint meeting of the International Conference on Aeolian Research (ICAR-5) and the Global Change & Terrestrial Ecosystem-Soil Erosion Network, 22-25 July 2002, Texas Tech University, Lubbock, TX.
- 99) 2001 **Walker, IJ.** "Lee-side flow deflection and implications for migration of transverse aeolian dunes." Paper presented at the Annual General Meeting of the Canadian Association of Geographers, McGill University, Montréal, Quebec, June 2-3, 2001.
- 100) 2001 **Walker, IJ.** "Lee-side flow deflection over transverse aeolian dunes." Paper presented at the Annual General Meeting of the Western Division of the Canadian Association of Geographers, University of Calgary, Calgary, Alberta. March 8-9, 2001.
- 101) 2001 **Walker, IJ.** "Mean flow, turbulence & surface shear stress over isolated and closely spaced transverse dunes." Paper presented at the Annual General Meeting,

- Canadian Assn. of Geographers, Brock University, St. Catharines, ON, May 31 – June 3, 2001.
- 102) 2000 **Walker, IJ.** “A wind tunnel investigation of mean flow, turbulence, and surface shear stress patterns over isolated and closely spaced transverse dunes.” Paper presented at the Annual Meeting of the Association of American Geographers, 4-8 April 2000, Pittsburg, PA.

## MEDIA INTERVIEWS

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- 2016 Erosion hazards in Greater Victoria, CBC Radio Victoria – On the Island with Gregor Cragie. Air date: 18 February 2016, 7:10am.
- 2015 Interviews with multiple media outlets on the Barnard et al. (2015) *Nature Geoscience* paper “Coastal vulnerability across the Pacific dominated by El Niño/Southern Oscillation.” (<http://dx.doi.org/10.1038/NGEO2539>) on 20-23 Sept., including:
- CBC All Points West, CBC Early Edition/Vancouver, CBC Daybreak North Prince George/Rupert, Global BC-Victoria, Global BC-Vancouver/BCOne, CFX Radio, Victoria Times Colonist, Peninsula News Review, The News Group Victoria, Canadian Press (stories in Globe and Mail, Vancouver Sun, Observer, National Papers), Yahoo News, Huffington Post Canada, Western Mariner Magazine, City of Richmond BC engineer (Carli Edwards)
  - see also Storify link compiled by L. Gordon, USGS at: <https://storify.com/lgordon/el-nino-and-la-nina-exacerbate-pacific-coastal-haz>
- Love Nature Channel: Beaches and dunes of Tofino, Undiscovered Vistas. Filming date: 15 July 2015, Airing date: Fall 2015.
- 2013 The Weather Network: Weathering climate change and coastal erosion, for Earth Action Week 2013 series with Ian Jacobs (25-29 March, 2013)
- 2009 CBC “Quirks and Quarks” (Toronto) with Jim Lebens on climate change and sea-level rise impacts in Canada (5 Dec 09)
- 2008 CBC “On the Island” (Victoria) with Gregor Cragie on sand castle construction, 5 August 2008.
- Vancouver Sun (front page) “BC Forecast: drought, forest fires, storms...” Tuesday, 11 March 2008.
- Victoria Times Colonist, Tuesday, 11 March 2008. Climate change impacts in coastal British Columbia.
- CBC National Radio (Ottawa) with Greg Rasmussen on Climate change impacts and adaptations in Canada & British Columbia, Thursday, 6 March 2008.
- 2007 Queen Charlotte Islands Observer, “Major coastal erosion study now completed”, Alex Rinfret, Wednesday, December 19, 2007.
- CBC “Day Break North” (Prince Rupert) with Russel Bowers on climate change and sea-level rise impacts on the North coast of BC, 5 April, 745 am.
- Vancouver Sun “Climate change chaos closer” by Scott Simpson, Sat 31 March 2007.
- CHTV with Hudson Mack re: climate change and water shortages for Greater Victoria Thurs. 5 April.
- A-Channel News re: climate change impacts for southern BC, Thurs. 5 April.
- CBC Radio National News with Greg Rasmussen on climate change impacts for British Columbia, Fri. 6 April, 6pm.



- 2006 CBC "On the Island" (Victoria) with Paul Vasey re: climate change and sea-level rise impacts in southern BC, 21 November 2006.  
CBC "Daybreak North" (Prince Rupert) with James Evans re: climate change and extreme weather impacts on the North coast of BC, 25 May 2006.
- 2005 Queen Charlotte Islands Observer, "Climate change a threat to islanders, says geographer" by Mariah McCooey, Friday, 18 February, 2005
- 2004 Prince Rupert Daily News, "Geomorphologist explores Haida Gwaii" by Hilary Burghardt, Tuesday, 19 June 2004.  
Queen Charlotte Islands Observer, "Erosion threatens highway: professor" by Alex Rinfret, Thursday, 10 June 2004.  
CBC "Day Break North" (Prince Rupert), "What happened during the Christmas Eve Storm in the Queen Charlotte Islands?" with Russel Bowers, 7:55am Wednesday, 14 January, 2004.  
Queen Charlotte Islands Observer article, "Storm Cleanup" by Alex Rinfret - Thursday, 8 January, 2004
- 2003 NSERC Web Features, "Canada's Sahara?" by Cathy Allison, July 2003.  
Times Colonist, "Stories In The Sand: A little dune time yields clues to climate change" by Richard Watts - Saturday, 26 July, 2003.
- 2002 CHBC-TV News, "Causes of mass wasting along the Malahat highway", 8 November 2002.

## TEACHING EXPERIENCE

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- **GPH111: Introduction to Physical Geography** (n = ~90)
  - Introduces students to the study of Physical Geography using an applied, earth-systems approach. Examines processes within, and interrelations between, the atmosphere, biosphere, hydrosphere, and lithosphere that result in patterns of weather and climate, landforms, soils and ecosystems. Content structured around 4 key themes: i) Global Climates & Climatic Change, ii) Global Water Resources, iii) Natural Hazards, and iv) Biogeography. Each lecture includes 'real-world' example modules and/or samples of faculty research related to the topic.
  - I developed and have taught a version of GPH111 (as GEOG103/120 at UVic) continuously since 2000.
  - In Spring 2018, I developed an online 'hybrid' version of GPH111, which offers traditional in class lectures (Monday, Wednesday) with an online activity, quiz, or test on Fridays.
  
- **GPH/SES 494/598: Aeolian Geomorphology** (n = 5)
  - This course offers an advanced, seminar- and project-based experience for seniors and graduate students in aeolian (windblown) geomorphology. The course will involve on-campus lectures, student-led seminars, a multi-day field trip, and an independent research project. Seminars are designed to involve students in reviewing key theories, concepts, and research literature about aeolian processes and landforms of interest. The research project involves student groups in fieldwork &/or data analyses on a specific aeolian process or landforms of interest, which could include: *sediment transport mechanics, sand transport prediction and measurement, wind flow dynamics, coastal or desert dunes, wind erosion and sand drift management, dust emissions, Martian aeolian bedforms, etc.* The field trip provides an opportunity to learn experientially about aeolian processes and landscapes and, as time permits, conduct work relevant to projects.
  - I developed and offered this as a new course at ASU for Spring 2017.
  
- **GCU 585: Research Design and Proposal Writing** (n = 4)
  - This required graduate seminar assists students in developing and presenting their research proposals. To accomplish this, instruction stresses a research framework and the generation of an original research proposal inclusive of a problem statement, novel research questions, objectives/hypotheses, a literature review, and appropriate and feasible methods of implementation. Specific learning objectives include:
    - effectively communicating your research ideas and plans in written, visual, and oral formats;
    - producing assignments and presentations that will help guide and document your research development, program of study, and related outcomes, including:

- a curriculum vitae (CV) that articulates your training, research experience, interests, skills, service contributions, awards/funding and other accolades;
- an Area of Specialization (AOS) statement that details the expertise, literature, and methods from which you will build your research and degree program;
- a Research Opportunity Statement (ROS) that identifies a research opportunity (gap) based on a literature review, justifies your proposed research, and explains how the research is important from a societal standpoint;
- a Research Proposal that situates your research in existing scholarship (i.e., literature review); b) identifies gaps within this scholarship (i.e., research opportunities or problem statement(s)); c) reviews important methods and approaches that could be used to address those gaps (i.e., research design); and d) presents a program of study or 'workplan'.
  - developing and articulating professional critiques about research and technical writing through peer-review processes and a writing workshop;
  - learning about funding sources and various proposal formats; and,
  - understanding and engaging in professional dialogue and ethical practices in research design and related professional activities.
- I developed and offered this as a new course at ASU for Spring 2018.
- **GEOG376 (UVic): Process Geomorphology** (n = 40-75)
  - Introduces students to the study of earth surface processes and landforms. Expands on principles introduced in GEOG103 and provides a foundation for advanced courses in GEOG & SEOS BSc programs. Fundamental geomorphic concepts are introduced (landscape evolution, frequency-magnitude relations, spatial & temporal scales, systems theory, quantities & dimensions) and general landform environments are examined (aeolian, coastal, fluvial, glacial, hillslopes). Content emphasizes geomorphology as an applied science that examines processes and dynamics of landscape change.
  - I developed and have taught GEOG376 since 2000.
  - Content includes lectures, a local field-trip, and hands-on or spreadsheet-based labs.
  - This course is a requirement for students obtaining accreditation with the Association of Professional Engineers & Geoscientists of British Columbia (APEG-BC).
- **GEOG370 (UVic): Physical Hydrology** (n = 40-75)
  - Introduces students to the study of physical hydrology, or the movement of water via various key processes in the global water cycle (interception, infiltration, throughflow, groundwater flow, overland flow, open channel flow hydraulics). Content emphasizes hydrology as an applied science with relevance for water resources management and provides science fundamentals for upper level hydrology and resource management courses.

- I developed and taught GEOG370 from 2000-04 when an Environment Canada's Water & Climate Impacts Research Centre (W-CIRC) joined the Department.
- Content includes lectures, a field-trip to the local water supply reservoir, and hands-on or spreadsheet-based labs.
- This course is a requirement for students obtaining accreditation with the Association of Professional Engineers & Geoscientists of British Columbia (APEG-BC).
  
- **GEOG424 (UVic): Field Studies in Coastal Geomorphology (n = 12-15)**
  - An advanced, project-based experience for senior students that involves a combination of on-campus seminars, a multi-day field trip to several different sites on Vancouver Island, and an independent research project. Seminars are designed to engage students directly in reviewing key theories and literature about coastal processes & landforms of interest. The research project involves student groups in fieldwork &/or data analyses on a specific geomorphic process &/or site of interest.
  - I developed the course in 2011 and have taught it 3 times since. It is very popular and usually has a wait list.
  
- **GEOG500 (UVic): Geographical Research Approaches & Design (n = 25-32)**
  - A full year (2 semester) offering for all incoming graduate students that reviews current research paradigms and approaches in Geography and assists students in developing research proposals. Expose students to various research services and resources, and gain important skills in communication and professional presentations.
  - I developed this course in 2009 as part of a wholesale graduate program and curriculum review that I lead as Chair of the Graduate Affairs Committee (GAC). I taught the course from 2009-11.
  - Content includes lectures, guest lectures from faculty and researchers in different thematic areas in Geography, student-led seminars and conference-style presentations.
  
- **GEOG537 (UVic): Seminar in Physical Geography (n = 8-20)**
  - Involves MSc and PhD students in a participatory, seminar-style course that critically examines key scholarship in physical geography as an interdisciplinary science. Thematic examples (e.g., geomorphology, hydrology, biogeography, remote sensing & GIS) and others directly relevant to student research interests are explored. Review progression of thought and key concepts in physical geography. Refine abilities in scientific writing and peer-review.
  - I developed this seminar course for MSc and PhD students in 2002 and have taught it 7 times since.

**GRADUATE STUDENT SUPERVISION<sup>‡</sup>**

<i>Year</i>	<i>Student</i>	<i>Degree Program</i>	<i>Type of Supervision</i>
2018-present	Zach Hilgendorf	Ph.D. (ASU SGSUP)	1
2018-present	Madeline Kelley	Ph.D. (ASU SGSUP)	1
2017-present	Hayley Springer	M.Sc. (U. Alabama)	2
2017-present	Sam Alter	M.Sc. (ASU SESE)	2
2017-present	Ara Jeong	Ph.D. (ASU SGSUP)	2
2017-2018	Kate Leary	Ph.D. (ASU SESE)	2
2017-present	Jason Edmunds	Ph.D. (ASU SGSUP)	1
2017-present	Suetyi (Joey) Cheung	M.A. (ASU SGSUP)	1
2015-present	Felipe Gomez	Ph.D. (UVic GEOG)	1
2016-present	Jordan Bryce	M.Sc. (SFU GEOG)	2
2015-2017	Alana Rader	M.Sc. (UVic GEOG)	1
2015-present	Leanne Nelson	M.Sc. (UNBC GEOG)	2
2014-present	Alexandra Lausanne	M.Sc. (UVic GEOG)	1
2013-present	Micheal Grilliot	Ph.D. (UVic GEOG)	1
2012-2017	Jordan Eamer	Ph.D. (UVic GEOG)	1
2010-present	Ian Darke	Ph.D. (UVic GEOG)	1
2013-2017	Sean Mullan	Ph.D. (UVic SEOS)	2
2013-2016	Jesse Hutchinson	Ph.D. (UVic SEOS)	2
2013-2016	Majid Soleimaninia	Ph.D. (UVic Engineering)	2
2013	Ali Erati	Ph.D. (UVic Engineering)	3
2014-15	Adam Wicks	M.Sc.	2
2013	Scott Hatcher	M.Sc. (Memorial U.)	3
2012	Brendan Smoker	M.ASc(UVic Engineering)	3
2011-14	Kimia Abhar	M.Sc.	1
2010-12	Jordan Eamer	M.Sc.	1
2010	Wichai Pattanapol	Ph.D. (U. Otago)	3
2010-13	Derek Heathfield	M.Sc.	1
2010-12	Mandy Green	Ph.D. (LSU, co-supervisor)	1
2009-11	Constance Chapman	M.Sc.	1
2009	Jesse Sinclair	M.Sc. (UVic Biology)	3
2008-10	Hawley Beaugrand	M.Sc.	1
2007	Frances Mowling	Ph.D. (U. Tasmania)	3
2006-11	Sookuk Park	Ph.D.	2
2005-07	Becs Cumming	M.Sc.	1
2005-14	Miho Matsuda	M.Sc.	2
2004-06	Sarah Laxton	M.Sc.	2
2004-06	Katrina Bennett	M.Sc.	2
2004-07	Ranjan Dash	Ph.D.	2
2004	Tom Good	M.Sc. (UVic SEOS)	3
2004-10	David Laporte	M.Sc.	2

<sup>‡</sup> 1: Supervisor/co-supervisor, 2: Member of supervisory committee, 3: External examiner

2004-09	Jeffrey Anderson	M.Sc.	1
2003-05	Sandy Allen	M.Sc.	2
2003-05	Laurent deRham	M.Sc.	2
2003-08	Willem Zantvoort	M.Sc.	1
2003-05	Teresa Conner	M.A.	1
2003	Bart Stockdill	M.Sc (UVic Engineering)	3
2002-03	Alexis Johnson	M.Sc.	2
2002-04	Martina Szabova	M.Sc.	2
2002	Matthew Skinner	M.Sc. (UVic SEOS)	3
2002-05	Moraia Grau Lopez	M.Sc. (UVic Biology)	2
2002-04	Kim Pearce	M.Sc.	1
2001-03	Sonya Laroque	Ph.D.	2

\* 1: Supervisor/co-supervisor, 2: Member of supervisory committee, 3: External examiner

## SERVICE & ADMINISTRATIVE ACTIVITIES

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### Service to the Discipline:

#### *Executive Roles in Professional Societies*

- President (2013-14) and Past President (2015-17), Canadian Geomorphology Research Group (CGRG), a national association of over 300 professional, academic, student, and government members that forms a membership body within larger geoscience associations including: *Canadian Association of Geographers (CAG)*, *Geological Association of Canada (GAC)*, *Canadian Geophysical Union (CGU)*, and *Canadian Quaternary Association (CANQUA)*. Major initiatives during my term included:
  - created a new Earth Surface Processes Section (ESPS) of CGU with CGU President Brian Branfireun and VP Brett Eaton to bring together process geomorphologists (who tend to reside in CGU), quaternary geomorphologists (in CANQUA), and other physical geographers (in CAG or GAC).
  - organized our national AGM at U. New Brunswick with GAC-MAC.
  - increased the social media profile of CGRG via a new website, Facebook & Twitter accounts.
  - lead adjudication committee for our prestigious JR MacKay Award for junior scholars (as Past President).
- Vice-President, CGRG Executive (2012-13)
- Member at Large, CGRG Executive (2008-11)
- Member at Large, Western Division, Canadian Association of Geographers (2002-04)

#### *Editorial Boards*

- 2017-present: *Annals of the American Association of Geographers*
- 2014-present: International Advisory Board, *Earth Surface Processes & Landforms*, Wiley.

- 2004-present: *J. Coastal Research*, Coastal Education & Research Foundation (CERF), USA.
- 2007: *Geography Compass*, Wiley & Sons.

*Advisory Panel member*

- 2014-16 Science Advisor, Victoria Capital Regional District (CRD) Parks, Island View Beach Management Plan Team, Victoria, BC.
- 2011 Scientific Advisory Panel, Coherent flow structures in Geophysical flows at the Earth's surface. 3-5 August 2011, Simon Fraser University, Vancouver, British Columbia, Canada.
- 2009-13 Founding Member & Science Advisor, Coastal Sand Ecosystems Recovery Team (CSERT), Parks Canada, BC Ministry of Environment, Province of British Columbia.
- 2007 Science Advisor, "Shorelines and Islets Monitoring Program Workshop", Gulf Islands National Park Reserve, Sidney BC, 10 May 2007.
- 2007 Science Advisor, "Coastal erosion and Climate Change Monitoring Program Workshop", Pacific Rim National Park Reserve, Ucluelet BC, 26-27 Nov. 2007.
- 2006 Science Advisor & Invited Speaker, Parks Canada - NRCAN Workshop on Climate Change Research Initiatives, 12-13 Jan. 2006, Ottawa, ON.
- 2003-07 Advisory Panel member (coastal), C-CIARN BC Region, UBC, Vancouver, BC.
- 2003-12 Advisory Panel, Esquimalt Lagoon Stewardship Initiative (ELSI) Committee, City of Colwood and Greater Victoria Capital Regional District (CRD), Victoria, BC.
- 2002-07 Advisory Panel, Canadian Climate Change Impacts & Adaptation Research Network (C-CIARN), Landscape Hazards Program, NRCAN – Ottawa, ON.

*Manuscript Reviewer:* over 60 submissions to the following peer-reviewed journals: *Nature Geoscience, Geomorphology, Aeolian Research, Earth Surface Processes & Landforms, Sedimentology, J. Coastal Research, J. Sedimentary Research, J. Arid Environments, Canadian Geographer, J. Wind Engineering & Industrial Aeronautics, Geological Society of America, J. Geophysical Research (JGR) – Atmospheres, JGR – Earth Surface.*

Recent reviews:

- Marine Geology May 2018.
- Nature – Scientific Reports, Nov. 2016
- Journal of Geophysical Research – Earth Surface; Mar. 2017.
- Aeolian research: July 2017.
- Earth Surface Processes & Landforms: Sept and Dec 2018.

*Research Grant Reviewer:* for over 40 grant applications to international agencies including: *Netherlands Organization for Scientific Research (NWO), Australian Academy of*



*Science, American Chemical Society, NSERC Discovery, NSERC CREATE, NSF, National Geographic Society, IdEx Bordeaux (Excellence Initiative, University of Bordeaux)*

*Expert reviewer:* International Union for Conservation of Nature (IUCN), World Heritage Site Designation Program, 2009.

*Conference Organization*

- 2018 Co-convenor, 2018 AGU-Ocean Sciences Meeting, Portland, OR, 11-16 Feb. 2018. Three sessions on, "Close-Range Remote Sensing of Nearshore Processes and Coastal Morphology I-III" (CD34B, 41A, 42A).
- 2017 Co-convenor, 2017 AGU Fall Meeting, New Orleans, LA, 12-16 Dec. 2017. Four oral sessions and a poster session on, "Coastal Geomorphology & Morphodynamics: Observations, Modeling & Sensing Techniques I-IV" (EP21G, 22B, 23D, 24A), V Posters (EP31B).
- 2014 Topical Session Organizer & Chair, T.39 "Aeolian Processes and Landscapes: From Dust to Dunes I & II" at the Geological Society of America 2014 Meeting, 19-22 Oct. 2014, Vancouver, BC. Co-sponsored by GSA Quaternary Geology & Geomorphology Division; Canadian Geomorphology Research Group; International Society for Aeolian Research.
- Topical Session Organizer, T.178 "Relative Sea-Level Changes since the Last Glacial Maximum" at the Geological Society of America 2014 Meeting, 19-22 Oct. 2014, Vancouver, BC. Co-sponsored by GSA Quaternary Geology & Geomorphology Division; Canadian Geomorphology Research Group.
- Special Session Organizer & Chair, SS22 "20 Years of the Canadian Geomorphology Research Group (CGRG): Trends, Advances, and Opportunities in Canadian Geomorphology" at the GAC-MAC/CGRG Joint Annual Meeting, 21-23 May 2014, University of New Brunswick, Fredericton, NB.
- Session Chair, "Geographies of the Central Coast of British Columbia" at the Canadian Assn. of Geographers, Western Division (WDCAG) Meeting, 7-8 Mar. 2014, UVic, Victoria, BC.
- 2013 Session Organizer & Chair, "Aeolian & coastal geomorphology" at the CANQUA-CGRG Biannual Meeting, Edmonton, AB, 18-22 Aug. 2013.
- 2011 Organizing committee, Coherent flow structures in Geophysical flows at the Earth's surface. 3-5 August 2011, Simon Fraser University, Vancouver, British Columbia, Canada.
- Session Chair, "Session 3445: Tribute to Robin Davidson-Arnott IV: Coastal Systems" at the 2011 Meeting of the American Association of Geographers, 12-16 Apr. 2011, Seattle, WA. Co-sponsored by AAG-Coastal & Marine Specialty Group and Geomorphology Specialty Group.
- 2006 Organizing committee & Special Session organizer (Dune Systems), 6<sup>th</sup> International Conference on Aeolian Research (ICAR-VI), 24-28 July 2006, Guelph, ON.
- Session Chair, "Dune systems", 6<sup>th</sup> International Conference on Aeolian Research (ICAR VI), 24-28 July 2006, Guelph, ON.

- 2004 Session Chair, “Quaternary Evolution & Modern Coastal Dynamics”, 8<sup>th</sup> International Coastal Symposium (ICS-04), 14-19 March 2004, UNIVALI-CTTMar, Itajaí, Santa Catarina, Brazil.
- 2003 Organizing committee & Special Sessions Co-ordinator for the 'On the Edge' Conference. Joint Meeting of the ACMLA, CAG, CCA and CRSA. May 27-31, 2003. UVic, Victoria, BC.
- Workshop organizer, “Fluid Flow & Sediment Transport Processes in Geomorphology Instrumentation workshop”, at the 'On the Edge' Conference, Joint Meeting of the ACMLA, CAG, CCA and CRSA. May 27-31, 2003. UVic, Victoria, BC.
- Special sessions organizer, “Fluid Flow & Sediment Transport Processes in Geomorphology (sessions I, II & III)”, 'On the Edge' Conference, Joint Meeting of the ACMLA, CAG, CCA and CRSA. May 27-31, 2003. UVic, Victoria, BC.
- Session chair, Geomorphology Paper Session, 2003 Annual General Meeting of the Western Division of the Canadian Association of Geographers, March 15, 2003. University of Northern British Columbia, Prince George, BC.

*Outreach activities*

- I have developed outreach and interpretive materials on sand dune ecosystems, coastal erosion, landscape evolution, impacts of climate change, and beach-dune ecosystems for BC Parks, Clayoquot Biosphere Trust, Parks Canada, US-National Parks Service (Cape Cod National Seashore) and the US-Fish & Wildlife Service (Lanphere Dunes, Arcata, California).

**Memberships in Professional Societies:**

- 2016-present Member, American Geophysical Union (AGU)
- 2015-present Member, Canadian Geophysical Union (CGU)
- 2012-2015 Member, Geological Society of America (GSA)
- 1995-2015 Member, Canadian Association of Geographers (CAG)
- 1998-2015 Member, Association of American Geographers (AAG): Geomorphology Specialty Group (GSG), Coastal & Marine Research Group (COMA)
- 2004-present Member, Coastal Zone Canada Association (CZCA)
- 2004-2015 Member, Coastal Education & Research Foundation (CERF), USA
- 2002-07 Member, C-CIARN Coastal Zone, NRCan, Bedford Institute of Oceanography, Dartmouth, NS
- 2001-03, 06, 14 Fellow, Geological Association of Canada (GAC)
- 2002-05 Member at Large, Western Division – CAG Executive

**Professional Practice:**

- development of a remote-offering Advanced Geomorphology course (2010) for the Association of Professional Engineers & Geoscientists of British Columbia (APEGBC).

- Co-founder, [Coastal Sand Ecosystems Recovery Team \(CSERT-BC\)](#) with members from Parks Canada, BC Ministry of Environment, Victoria CRD, and local consultants.
  - The purpose of CSERT-BC is to identify and assess rare CSE in BC and provide inventory of key species at risk in response to new federal and provincial regulations that require enhanced ecosystem protection &/or restoration.
  - Our report provides a fundamental resource for municipalities, parks agencies, and land owners/managers in BC who own/manage CSE and may need to initiate restoration plans.
- over 25 reports to government agencies (PCA, GSC, NRCan, BCParks) that share research results &/or monitoring activities; compile state-of-the-science reviews; aid in important management decisions (e.g., infrastructure repair/replacement/removal, habitat restoration, cultural site protection/preservation, tourism management, climate change impacts & adaptations).
- pro bono consultation service to Pacific Rim National Park and the Department of National Defense UXO (Unexploded Ordnances) Legacy Sites Program,
  - DND were called in to assess and mitigate a UXO hazard at a research site (Wickaninnish Dunes) with Parks Canada in 2013 that was used as a bombing test range during WWII. A UXO found by a Parks staff led to closure of the site and halted our research & related dune restoration activities.
  - Our research provided the contractor with geomorphic change detection maps showing areas of significant erosion & deposition to guide their removal campaign. The site was eventually re-opened in 2014.
- pro bono consultations to several First Nations in BC (*Haida, Heiltsuk, Hul'qumi'num Treaty Group, Tseycum, Tsawout, Wuikinuxv*) to inform decision-making on pre-historic site preservation or protection and erosion issues.
- contracted services to larger consulting firms and government agencies on coastal erosion, dune dynamics, climate change impacts mitigation with *RPS Energy* (Halifax, NS, 2007), *Archipelago Marine Research Ltd.* (Sidney, BC, 2008), *Raincoast Applied Ecology* (Vancouver, BC, 2010), *Parks Canada Agency* (2004-06, 2008, 2010, 2011).

#### **University & Faculty Committees:**

- 2014-15 Chair, Dean's Research Advisory Committee (RAC), Faculty of Social Sciences, UVic.
- 2014-15 Member, Dean's Undergraduate Curriculum Committee (UCC), Faculty of Social Sciences, UVic.
- 2013-15 Member, Program Committee, Human Dimensions of Climate Change (HDCC) Interdisciplinary Minor Program, Faculty of Social Sciences, UVic.
- 2006, 2013-14 Member, Geography Chair Search Committee, Faculty of Social Sciences
- 2008-11 Faculty Senator, Faculty of Social Sciences representative, UVic.
- 2008-12 Member, Committee on Appeals

- 2010-12 Member, Committee on Agenda & Procedures
- 2009-11 Member, Committee on Nominations & Committee Governance

2002-04, 09-11 Departmental Representative, NSERC Scholarship Adjudication Committee, Faculty of Graduate Studies, UVic.

2008 Member, Program Development Team, Human Dimensions of Climate Change (HDCC) Minor, Faculty of Social Sciences, UVic.

2006 Member, Internal Research Grant Review Committee, Office of Research Services

**Departmental Committees & Responsibilities:**

2017-18 Member, Personnel Committee, School of Geographical Sciences & Urban Planning, ASU.

2016-18 Member, Graduate Program Policy Committee, School of Geographical Sciences & Urban Planning, ASU.

2014-15 Chair, Undergraduate Affairs Committee (UAC) responsible for curriculum review, revision, undergraduate scholarship adjudication, student counseling, liaising with Society of Geography Students (SOGS), program promotion.

2014-15 Faculty Advisor, Geography Honours Program (GEOG499A/B) responsible for supervising all Geography honours students (n = 12) through two semesters of project design (with academic supervisors), implementation, writing/revision and final presentations.

2009-11 Chair, Graduate Affairs Committee (GAC) responsible for curriculum review, revision, development & instruction of core GEOG500 course, admissions & enrolment management, scholarship adjudication, program promotion.

2002-05, 08-13 Member, GAC

2008-10 Team leader, Geography Graduate Program Review Team

2008 Member, Geography Undergraduate Program Review Team

2004-15 Acting Chair of Department (13/2-7/3/2004, 10-22/4/4004, 17-28/5/2010, 8-15/6/2011, 15-22/2/2013, 9-13/9/2013, 7-8/12/2015)

2001-04, 10-11, 13 Member, Merit Evaluation Committee (MEC)

2006 Member, NSERC University Faculty Award (UFA) Search Committee

2006-08 Member, Coastal Studies Minor Program Development Team