ACADEMIC CURRICULUM VITAE

NAME: **Christopher Hopkinson**

ACADEMIC QUALIFICATIONS:

2002-04	Postdoctoral Fellow	Queen's University
1998-2002	Ph.D. Geography	Wilfrid Laurier University
1995-97	M.E.S Geography (Distinction)	Wilfrid Laurier University
1992-95	B.Sc. Geography (Honours)	Manchester University
1991-92	B.Eng. Civil Eng. (1st yr)	Manchester University

EMPLOYMENT HISTORY:

2004 – Present	Research Scientist (tenured) at the *Applied Geomatics Research Group*, researching watershed processes and natural resources assessment techniques. Also developing post-graduate lidar curriculum, managing the AGRG lidar lab and coordinator of international field research logistics.
2004	Lecturer at *Queen's University*
2001 – Present	Owner of *Otterburn Geographic*. (Hydrometeorological field data collection and analysis; lidar applications/operations consultancy. Mostly university and government contract research).
2001	Lecturer at *McMaster University*
2001	Lecturer at *Wilfrid Laurier University*
2000 – 2001	Field manager *for Optech Inc*. (Airborne Laser Mapping)
1997 – 1999	Assistant to the Secretary General of the *Intl. Assoc. of Hydrological Sciences*
1995 – 1999	Research assistant, *Wilfrid Laurier University* (alpine water resources).
1990 – 1991	Engineering technician, *Birmingham City Engineers*

THESES:

Ph.D. *Investigating spatio-temporal variability of hydrological components in the Canadian Rockies*
M.E.S. *The impact of glacier recession upon the discharge of the Bow River above Banff, Alberta. 1951 – 1993*
B.Sc.*Investigations into the summer melt water drainage system of Findelen Gletscher*

ADDITIONAL POST-SECONDARY VOCATIONAL TRAINING:

Royal Academy of Engineering Undergraduate Engineering internship with Birmingham City (1 year)
Optech laser safety, lidar operations and data processing (1 month)
Mountain Leadership Training (1 week)
Wilderness survival and Red Cross first aid (3 days)
Innovmetric Polyworks software (3 days)
SkillPath seminars personnel management and supervision (2 days)
SkillPath seminars project management (1 day)
SkillPath seminars basic accounting (1 day)
Avalanche search and rescue (1 day)
WHMMIS (1 day)
ESRI Arc Hydro tools (1 day)
NSCC management *Strengths* training (2 days)
NSCC Organizational Learning Mentoring Workshop (1 day)
Transport Canada flight ground school (8 weeks)

REASEARCH FUNDING (only projects > $5,000):

Year	Source & Purpose	Investigator Status	Amount
2010-2013	NSERC *Maximizing Newfoundland Forest values at tree to landscape scales*	CI (PI = Dr. Joan Luther)	(Submitted)
2010-2011	NERC *Analyzing variability of CO_2 & H_2O fluxes using LiDAR & footprint data in Europe*	CI (PI = Dr. Natascha Kljun)	(Submitted)
2009-2010	NSPI *Estimating the volume and distribution of sustainable biomass in Nova Scotia*	CI (PI = Dr. Bob Maher)	$216,000
2009-2010	NERC *Analyzing variability of CO_2 & H_2O fluxes using LiDAR & footprint data in Australia*	CI (PI = Dr. Natascha Kljun)	$18,000
2009	City Halifax Modeling flood water levels and potential trail system in Cole Harbour	PI	$7,000
2009	EC / CWS Lidar watershed mapping in Kejimikujik National Park, Nova Scotia	PI	$20,000
2008 - 2010	NRCAN / Env Can - Mackenzie Delta lidar hydrological mapping and assessment	PI	$55,000
2008 – 2009	Halifax Regional Municipality – Halifax Harbour flood impact delineation from a lidar DEM	PI	$14,000
2008-2009	NERC (UK) – *Analyzing variability of CO_2 & H_2O fluxes using LiDAR & footprint data*	CI (PI = Dr. Natascha Kljun)	$30,000
2008-2009	City of Calgary – *Mapping snowpack water resources in the Elbow watershed*	PI	$20,000
2008-2009	Govt. Alberta (SRD, AEP) – *Mapping snowpack water resources using lidar*	PI	$20,000
2008 – 2012	ACOA AIF - *Geomatics science and technology integration for watershed management tool*	CI (PI = Dr. Robert Maher)	$3,000,000
2007 - 2008	Université du Québec à Montréal - *Collection, processing and analyzing lidar waveform data for canopy radiative transfer modeling*	CI (CI = Dr. Benoît St-Onge)	$14,000
2007 - 2008	Canadian Forest Service – *Evaluate & characterize ICESat GLAS spaceborne lidar using airborne lidar for estimation of forest structure, volume & biomass*	CI (CI = Dr. Ron Hall)	$15,000
2007 - 2008	NB Emergency Measures Organization – St John River floodplain mapping and digitization. Partnership with UNB	PI	$55,000
2007 - 2008	Institut Québécois d'Aménagement de la Forêt Feuillue – *Collection, processing and analyzing lidar data for forest plot structural characterization*	PI	$15,000
2006 - 2008	Geological Survey of Canada – *The influence of terrain-based reverse error propagation in lidar estimates of glacial mass balance* (M.Sc. project)	PI	$25,000
2006 - 2010	NASA (USA) – *Base line studies of glacial volumes in the Cordillera Blanca, Peru using airborne lidar*	Collaborator (PI = Dr. Bryan Mark, Ohio State University)	US$100,000
2006 - 2007	Oxford Frozen Foods Inc. – *Town of Oxford flood risk assessment modeling and mapping* (grant for data and student support through NSERC CCIP)	PI	$25,000

2007	GeoNet Inc. – *City of St John flood set back zone assessment from lidar DEM* (grant to support an industry research internship through NSERC CCIP)	PI	$15,000
2006	Nova Ski Ltd. – Snowpack and ski hill 3D animation from lidar (grant to support industry research internship through NSERC CCIP)	PI	$10,000
2006	NSCC – *Lidar curriculum research and development*	PI	$25,000
2006	CARIS Inc. – *Modeling lidar total propagated error* (grant to support a 6 month industry research internship through NSERC CCIP)	PI	$15,000
2005 - 2008	NSERC – *Integrating environmental and geomatics technologies for landscape monitoring, assessment and restoration*	CI (PI = Dr. Robert Maher)	$200,000
2004 - 2008	Canadian Foundation of Innovation – *Environmental Health Applications of Geomatics* (a grant to obtain airborne lidar sensor infrastructure)	CI (AGRG and C-CLEAR)	$2,080,000
2003 - 2004	CRYSYS, Climate Research Branch – *Influence of scale on modeling radiation melt over a glacier surface*	PI	$16,500
2002-2006	Alberta Provincial Govt. and the Water Research Users Group – *Glacial water resource predictions in Alberta*	Proponent (CIs = Dr. Alain Pietroniro, Mike Demuth)	$230,000
2002 - 2005	European Space Agency, CRYOSAT program – *CRYOSAT validation and algorithm development for applications in the Canadian Rockies/Arctic*	CI (PI = Mike Demuth)	Satellite failure! Project cancelled.
2000-2002	Optech Inc. – *Lidar forest and snowpack structure research*	PI	$15,000 (in-kind – data)
1999-2000	CRYSYS, Climate Research Branch – *geochemical runoff model evaluation/validation*	CI (PI = Dr. Mike English)	$20,000
1998-1999	CRYSYS, Climate Research Branch – *glacial hydrology and runoff geochemistry*	CI (PI = Dr. Mike English)	$7,000
1997-1998	CRYSYS, Climate Research Branch – *photogrammetric/satellite glacier/climate studies*	CI (PI = Dr. Gordon Young)	$27,500
1996-1997	CRYSYS, Climate Research Branch – *photogrammetric glacier/climate studies*	CI (PI = Dr. Gordon Young)	$26,000

ONGOING RESEARCH NETWORK AND GOVT. COLLABORATION:

IP3 (*Improved processes and parameterization for prediction in cold regions)*. I am assisting IP3 PIs with lidar data collections and watershed parameterization research. Particularly, DEM creation, canopy radiative transfer and snowpack distribution modeling in high elevation and high latitude watersheds.

FLUXNET – I have recently coordinated field and airborne data collections at various Fluxnet tower sites across Canada (Ontario, Saskatchewan, British Columbia) to assist with forest canopy and hydrometeorological parameterization research. I am also assisting with biomass and flux research in partnership with CSIRO in Australia, and have partnered on a project proposal to study flux sites across Europe.

WC2N (*Western Canadian Cryospheric Network)* – coordinated several airborne and ground based field campaigns to investigate long term mass balance, glacier downwasting and moraine dynamics for climate change and water resources research in the Canadian Rockies and Coast Mountains.

GSC (*Geological Survey of Canada*) – I am working primarily with the National Glaciology Program to assist with the development of new remote sensing monitoring methodologies to assist with glacial and periglacial change detection in alpine and northern environments.

CFS *(Canadian Forest Service)* – I am collaborating with CFS (and other forest researchers) on lidar-based forest mensuration and biomass assessment techniques.

GoA – I recently worked with with Alberta Environmental Protection and the Sustainable Resources Development branches of the Govt. of Alberta in collaboration with the City of Calgary to develop new remote sensing and GIS based snowpack resource assessment / prediction techniques for the motane and alpine regions of the front ranges of the Canadian Rocky Mountains.

PROFESSIONAL AFFILIATIONS/DUTIES:

National:

Canadian Water Resources Association:
- National director
- Past-President of the Nova Scotia branch
- Conference organizer

Canadian Society for Hydrological Sciences
- Active member
- Workshop host

Canadian Remote Sensing Society:
- Professional Remote Sensing Scientist certification
- Associate Editor *Canadian Journal of Remote Sensing*
- Guest Editor of *Canadian Journal of Remote Sensing* 2005 Special Conference Issue
- Chair, Atlantic Region

Canadian Geophysical Union:
- Active member

Canadian Consortium for Lidar Environmental Applications Research:
- National coordinator 2002 to present

Acadia University:
- Adjunct faculty, Department of Geology

Dalhousie University:
- Adjunct faculty, Department of Process Engineering and Applied Science

International:

International Association of Hydrological Sciences:
- Active member
- Assistant to the Secretary General, 1997 - 1999

American Society of Photogrammetry and Remote Sensing:
- Active member
- LiDAR committee chair 2008-09
- LiDAR committee vice chair 2006-08

International Society for Photogrammetry and Remote Sensing:
- Active member of Terrestrial LiDAR working group
- Conference technical committee – Silvilaser, 2008 and 2009

Geosciences and Remote Sensing Society
- Past member

Royal Academy of Engineering
- *Sainsbury club* secretary, Manchester region, 1991

LECTURE COURSES DESIGNED & DIRECTED:

Graduate Level:
1. LiDAR remote sensing: from theory to applications *Centre of Geographic Sciences*, advanced diploma course.
2. Several independent post-graduate lidar directed studies courses on variety of remote sensing topics. *Centre of Geographic Sciences*, advanced diploma course.
3. Extraction of scale information from Remote Sensing imagery. Post-graduate directed studies course designed and directed at *Saint Mary's University*, Department of Geography.
4. Terrestrial LiDAR Systems. Post-graduate directed studies course designed and directed at *Acadia University*, Department of Geology

Undergraduate Level:
5. Earth Systems Science (4th yr). *Queen's University*, Department of Geography.
6. Principles of Hydrology (2nd yr). *McMaster University*, Department of Geography & Geology.
7. Drainage Basin Ecosystems (3rd yr). *Wilfrid Laurier University*, Department of Geography
8. Meteorology (3rd yr). *Wilfrid Laurier University*, Department of Geography

POST-GRADUATE SUPERVISION:

Advanced diploma projects: 20+
Post-graduate industry internships: 10
Master's thesis students: 7
Ph.D. students: 1

Ph.D. thesis students co-supervised:

Tristan Goulden, Ph.D. 2009 +. Biological Engineering, Dalhousie University.
Title: *Developing geointergation solutions and calibration routines to support inland applications of airborne laser induced fluorescence.*

Masters thesis students supervised:

Tristan Goulden, M.Eng. 2006-2008. Geomatics Engineering, University of New Brunswick.
Title: *Modeling the system and terrain components of airborne lidar positional uncertainty.*

Tim Collins, MSc.AG. 2008-2009. Geology, Acadia University.
Title: *Mapping snowpack depth in a mountainous forested environment using airborne lidar*

Neville Crasto MSc.AG. 2009-2010. Geology, Acadia University.
Title: G*eomorphometric applications of lidar to determine water levels in the Mackenzie Delta*

Masters thesis students co-supervised:

Koreen Millard, MSc.AG, 2006-2008. Biology, Acadia University.
Title: *The development and application of geomatics techniques to assist in salt marsh restoration*

planning at Beausejour Marsh, New Brunswick.

Doug Stiff, MSc. 2006-2008. Geology, Acadia University.
Title: *Flood Risk in Oxford, Nova Scotia: Determining flood risk in an ungauged basin*

Kevin Garroway. M.Eng. 2007-2009. Environmental Engineering, Dalhousie University.
Title: *Developing new techniques for mapping surface soil saturation in a heavily modified agricultural watershed*

Peter Horne, M.A.Sc. 2008-2009. Geography, Saint Mary's University.
Title: *Characterization of geomorphic landscapes using multiscale analysis.*

PUBLICATIONS & PRESENTATIONS:

Summary:

• Books edited:	1
• Book chapters:	11
• Peer reviewed journal papers:	25 (+11 submitted)
• Peer reviewed proceedings papers:	14
• Non-refereed conference proceedings:	20+
• Technical reports:	50+
• Academic conference presentations:	100+
• Workshops and public consultations:	30+

Books:

Hopkinson, C., Pietroniro, A. and Pomeroy, J. (eds), 2008. *HYDROSCAN: Airborne laser mapping of hydrological features and resources*. Canadian Water Resources Association, Saskatoon. 376PP.

Book Chapters:

Hopkinson, C., "An overview of airborne laser scanning technology" *Hydroscan,* CWRA.CH 1

Hopkinson C. and Pietroniro, A., "Hydrological applications of airborne laser scanning technology" *Hydroscan,* CWRA.CH 2

Goulden T. and **Hopkinson C.,** "The forward propagation of system related errors within lidar data" *Hydroscan,* CWRA.CH 3

Stiff, D., **Hopkinson, C.,** and Webster, T., "Preparing lidar data for river flood impact assessment in a GIS environment: a practical approach" *Hydroscan,* CWRA.CH 6

Garroway, K., **Hopkinson, C.,** Jamieson, R., and Gordon, R., "Mapping soil surface saturation using lidar intensity data and a DEM topographic wetness index in an agricultural watershed" *Hydroscan,* CWRA.CH 7

Millard, K., **Hopkinson, C.,** Redden, A., Webster, T., and Stewart, H., "Mapping Vegetation Friction Indicators in a Tidal Salt Marsh Environment" *Hydroscan,* CWRA.CH 8

Goodale, R., **Hopkinson, C.,** Colville, D., and Amirault, D., "Coastal habitat mapping using airborne lidar" *Hydroscan,* CWRA.CH 9

Hopkinson, C. and Demuth, M., "Using airborne lidar to assess the influence of glacier downwasting to water resources in the Canadian Rocky Mountains" *Hydroscan,* CWRA.CH 10

Hopkinson, C., Chasmer, L., Munro, D.S. and Demuth, M., "Terrain resolution bias in GIS energy

balance model estimates of glacial melt" *Hydroscan,* CWRA.CH 11

Hopkinson, C., Sitar, M., Chasmer, L., and Treitz, P., "Mapping snowpack depth beneath forest canopies using airborne lidar" *Hydroscan,* CWRA.CH 12

Chasmer, L. and **Hopkinson, C.,** "Evaluating the use of airborne lidar for quantifying high and medium-resolution terrestrial ecosystem structure and landscape heterogeneity" *Hydroscan,* CWRA.CH 13

Peer reviewed journal papers:

Submitted:

Chasmer, L., **Hopkinson, C**., Quinton, W., Quantifying errors in historical permafrost plateau change in the Canadian sub Arctic from aerial photography and airborne lidar from 1947 to 2008. Submitted to: *Canadian Journal of Remote Sensing*

Chasmer, L., Kljun, N. **Hopkinson**, **C.** Milne, T. Petrone, R. A methodological approach for extracting spatially explicit canopy structure and topographical influences on CO_2 fluxes measured by eddy covariance. Submitted to: *Agricultural and Forest Meteorology.*

Chasmer, L., Petrone, R. Brown, S. **Hopkinson**, **C.** Kljun, N. Mendoza, C. Creed, I. Devito, K. Partitioning of CO_2 fluxes based on canopy structure and wind direction within a heterogeneous boreal wetland ecosystem, Alberta. Submitted to: *Journal of Geophysical Research.*

Chasmer, L., Whittington, P. **Hopkinson**, **C.** Petrone, R. Quinton, W. The influence of vegetation canopy structure on the spatial pattern of active layer thaw within the sub-arctic - boreal transition discontinuous zone. Submitted to: *Permafrost and Periglacial Processes.*

Collins, T., **Hopkinson, C.,** Anderson, A., Spooner, I. Simulating snow depth distribution in a high relief watershed using LiDAR and GIS. Submitted to: *Canadian Journal of Remote Sensing*

Garroway, K., **Hopkinson**, **C.,** Jamieson, R. Investigating the influence of surface moisture and vegetation cover on airborne lidar intensity data. Submitted to: *Canadian Journal of Remote Sensing*

Goulden, T. and **Hopkinson**, **C**. The effect of the deflection of the vertical on lidar observations. Submitted to: *Canadian Journal of Remote Sensing*

Hopkinson, C., Barlow, J., Demuth,. M., Pomeroy, J. Mapping changing temperature patterns over a glacial moraine using oblique thermal imagery and lidar. Submitted to: *Canadian Journal of Remote Sensing*

Hopkinson, C., Collins, T., Pomeroy. J., Anderson, A., DeBeer, C. Investigating terrain and canopy cover controls on snowpack depth in a mountainous environment using airborne lidar. Submitted to: *Hydrology and Earth Systems Science*.

Hopkinson, C., Demuth,. M., Sitar, M., Young, G. Combining long term in situ climatic mass balance with geodetic surface observations from aerial photos and lidar to infer volumetric and dynamic rates of glacial change. Submitted to: *Journal of Glaciology.*

Quinton, W., Hayashi, M. Chasmer, L. and **Hopkinson**, **C.** Permafrost melt and landscape change in the wetland-dominated zone of discontinuous permafrost. Submitted to: *Geophysical Research Letters.*

Published:

Hopkinson, C., Chasmer, L.E. Munro, D.S. Demuth, M.N. "The influence of DEM resolution on simulated solar radiation-induced glacier melt" *Hydrological Processes* (In Press).

Goulden, T. and **Hopkinson. C.,** "The forward propagation of integrated system components within airborne LiDAR data." *Photogrammetric Engineering and Remote Sensing* (In Press).

Hopkinson, C. and Chasmer, L.E., 2009. "Testing lidar models of fractional cover across multiple forest ecozones." *Remote Sensing of Environment*. Vol. 113: 275-288.

Chasmer, L., Barr A., **Hopkinson, C.,** McCaughey, H., Treitz, P., Black, A., Shashkov, A. 2009. Scaling and assessment of GPP from MODIS using a combination of airborne lidar and eddy covariance measurements over jack pine forests. *Remote Sensing of Environment* Vol. 113: 82-93.

Hopkinson, C., Hayashi, M., Peddle, D. 2009. "Comparing alpine watershed attributes from LiDAR, Photogrammetric, and Contour-based Digital Elevation Models." *Hydrological Processes*. Vol. 23: 451-463.

Lipovsky, P.S. ,Evans, S.G., Clague J.J., **Hopkinson, C.,** Couture, R., Bobrowsky, P., Ekström, G., Demuth, M.N., Delaney, K.B., Roberts, N.J., Clarke, G., Schaeffer. A. 2008. "The July 2007 rock and ice avalanches at Mount Steele, St. Elias Mountains, Yukon, Canada". *Landslides.* Vol. 5: 445-455 (DOI 10.1007/s10346-008-0133-4)

Lim, K., **Hopkinson, C.,** Treitz, P. 2008. "Examining the effects of sampling point densities on laser canopy height and density metrics at the forest plot level". Forestry Chronicle. Vol. 84, No. 6. pp.

Chasmer, L., **Hopkinson, C.,** Treitz, P., McCaughey, H., Barr, A., and Black, A. 2008 "A lidar-based hierarchical approach for assessing MODIS fPAR." *Remote Sensing of Environment* Vol. 112, No. 12. pp. 4344-4357.

Hopkinson, C. Chasmer, L.E., Hall, R.J. 2008. "The uncertainty in conifer plantation growth prediction from multitemporal lidar datasets." *Remote Sensing of Environment.* Vol. 112, No. 3. pp.

Chasmer, L., Kljun, N., Barr, A., Black, A., **Hopkinson, C.,** McCaughey, H., and Treitz, P. 2008. Influences of vegetation structure and elevation on CO_2 uptake in a mature jack pine forest in Saskatchewan, Canada. *Canadian Journal of Forest Research* Vol. 38: 2746-2761.

Demuth, M.N., Pinard, V., Pietroniro, A., Luckman, B.H., **Hopkinson, C.,** Dornes, P., Comeau, L. 2008. "Recent and past-century variations in the glacier resources of the Canadian Rocky Mountains – Nelson River system." *Terra Glacialis* 11 (248): 27-52.

Hopkinson, C. and Chasmer, L.E. 2007. "Using discrete laser pulse return intensity to model canopy transmittance." *Photogrammetric Journal of Finland.* Vol. 20, No. 2, pp. 16-26.

Goodale, R., **Hopkinson, C**., Colville, D., Amirault. D. 2007. "Mapping Piping Plover habitat in coastal areas using airborne lidar data". *Canadian Journal of Remote Sensing.* Vol. 33, No. 6, pp.519-533.

Hopkinson, C. 2007. "The influence of flying altitude and beam divergence on canopy penetration and laser pulse return distribution characteristics". *Canadian Journal of Remote Sensing* Vol. 33, No. 4, pp. 312-324.

Hopkinson, C., Popescu, S., Flood, M., Maher, R. 2007. "A survey on the need for LiDAR training", *Photogrammetric Engineering and Remote Sensing*, 73 (5). PP 537 – 546.

Chasmer, L.E., **Hopkinson, C.**, Smith, B., Treitz, P. 2006. "Examining the influence of changing laser pulse repetition frequencies on conifer forest canopy returns". *Photogrammetric Engineering and Remote Sensing*. 72 (12) pp. 1359-1367

Chasmer, L.E., **Hopkinson, C.**, Treitz, P. 2006. "Investigating Laser Pulse Penetration through a Conifer Canopy by Integrating Airborne and Terrestrial Lidar" *Canadian Journal of Remote Sensing*, 32 (2) pp. 116-125.

Hopkinson, C., Demuth, M.N. 2006. "Using airborne lidar to assess the influence of glacier downwasting to water resources in the Canadian Rocky Mountains", *Canadian Journal of*

Remote Sensing, 32 (2) pp. 212-222.

Hopkinson, C., Chasmer, L., Lim, K. Treitz, P., Creed, I. 2006. "Towards a universal LiDAR canopy height indicator", *Canadian Journal of Remote Sensing,* 32 (2) pp. 139-153.

Hopkinson, C., Chasmer, L.E., Zsigovics, G., Creed, I., Sitar, M., Kalbfleisch, W., Treitz, P. 2005. "Vegetation class dependent errors in LiDAR ground elevation and canopy height estimates in a Boreal wetland environment" *Can. Jnl of Remote Sensing,* 31 (2) pp. 191–206

Hopkinson, C., Chasmer, L.E., Young-Pow, C., Treitz, P. 2004. "Assessing Plot-level Forest Metrics with a Ground-based Scanning LiDAR." *Canadian Journal of Forest Research,* 34 pp. 573-583

Hopkinson, C., Sitar, M., Chasmer, L.E., Treitz, P. 2004. "Mapping Snowpack Depth Beneath Forest Canopies Using Airborne LiDAR." *Photogrammetric Engineering and Remote Sensing,* 70 (3) pp. 323-330

Töyrä, J., Pietroniro, A., **Hopkinson, C.,** Kalbfleisch, W., 2003. "Assessment of Airborne Scanning Laser Altimetry (LiDAR) in a Deltaic Wetland Environment." *Canadian Journal of Remote Sensing,* 29 (6): pp718-729

Hopkinson, C. and Young, G.J. 1998. "The Effect of Glacier Wastage on the Flow of the Bow River". *Hydrological Processes,* 12, (10-11), pp1745-1763.

Hopkinson, C. and 11 others, 1997, "An Integrated Approach to the Planning and Management of an Urban Wetland." *Canadian Water Resources Journal*. 22 (1) pp45-56.

Peer Reviewed Conference Proceedings

Marsh, P. Lesack, L. Hicks, F. Roberts, A. **Hopkinson**, **C.** Solomon, S. Forbes, D.L. Russell, M. Haywood. H. 2009. *Hydrology of the Mackenzie Delta: off-channel water storage and delta interaction with the Beaufort Sea.* Proceedings of the 17th International Northern Research Basins Symposium and Workshop Iqaluit- Pangnirtung-Kuujjuaq, Canada, August 12 to 18, 2009

Hopkinson, C. and Maher, R. 2009. *Meeting LiDAR industry and end-user needs: best practice guidelines, skills training and efficient project design.* Proceedings of the 9th International lidar mapping forum, New Orleans, February, 2009. Published on CROM.

Kljun, N., L. Chasmer, A. Barr, A. Black, **C. Hopkinson**, H. McCaughey, M.W. Rotach, and H.P. Schmid, 2009. Footprint application to long-term CO_2 flux observations. *NCAS Special Issue In Memory of Tony Slingo.*

Lipovsky, P.S. ,Evans, S.G., Clague J.J., **Hopkinson, C.,** Couture, R., Bobrowsky, P., Ekström, G., Demuth, M.N., Delaney, K.B., Roberts, N.J., Clarke, G., Schaeffer. A. "Reconnaissance observations of the July 2007 rock and ice avalanche at Mount Steele, St Elias Mountains, Yukon, Canada." *Proceedings of the Geohazards Conference,* Quebec City, May 2008.

Hopkinson, C. and Chasmer, L.E. 2007. "Using discrete laser pulse return intensity to model canopy gap fraction." *ISPRS Silvilaser workshop proceedings in ESPOO, Finland*

Chasmer, L., Barr, A., Black, A., **Hopkinson, C.,** Kljun, N., McCaughey, H., and Treitz, P. 2007. "Using airborne lidar for the assessment of canopy structure influences on CO^2 fluxes." *ISPRS Silvilaser workshop proceedings in ESPOO, Finland*

Hopkinson, C., K. Lim, L. E. Chasmer, P. Treitz, I. F. Creed, C. Gynan. 2004, *Wetland grass to plantation forest - estimating vegetation height from the standard deviation of lidar frequency distributions*. Proceedings of the ISPRS working group VIII/2,'Laser-Scanners for Forest and Landscape Assessment' Freiburg, Germany 03-06 October 2004 ISPRS 36, 8/W2

Hopkinson, C., L. E. Chasmer, Gabor Zsigovics, I. F. Creed, Michael Sitar, P. Treitz and Robert, V. Maher. 2004, *Errors in LiDAR ground elevation and wetland vegetation height estimates.*

Proceedings of the ISPRS working group VIII/2,'Laser-Scanners for Forest and Landscape Assessment' Freiburg, Germany 03-06 October 2004 ISPRS 36, PART 8/W2

Chasmer, L.E., **Hopkinson, C.,** Treitz, P., 2004, *Assessing the 3D-Frequency Distribution of Airborne and Ground-Based LIDAR Data for Red Pine and Mixed Deciduous Forest Plots*. Proceedings of the ISPRS working group VIII/2,'Laser-Scanners for Forest and Landscape Assessment' Freiburg, Germany 03-06 October 2004 ISPRS 36, PART 8/W2

Hopkinson, C. and English, M.C. 2001. Spatio-temporal Variations of $\delta^{18}O$ Isotope Signatures of Hydrological Components within a Glacierised Mountainous Basin. *Proceedings of the 58th Eastern Snow Conference*. Ottawa, Ontario, Canada. May 14 – 18, 2001.

Hopkinson, C., Lowe, A., Zawadzki, A., English, M., 2001. Using Oxygen Isotope Tracers to Evaluate and Optimize Flow Components Generated by the UBC Watershed Model in a Mountainous Basin. *Proceedings of the 58th Eastern Snow Conference*. Ottawa, Ontario, Canada. May 14 – 18, 2001.

Hopkinson, C., and 10 others. 2001. Mapping the spatial distribution of snowpack depth beneath a variable forest canopy using airborne laser altimetry. *Proceedings of the Eastern Snow Conference*, Ottawa, May 14-18.

Chasmer, L. and **Hopkinson, C**. 2001. Using airborne Laser Altimetry and GIS to assess scale induced radiation-loading errors in a glacierised basin. *Proceedings of the 58th Eastern Snow Conference.*

Hopkinson, C. 1997, "The Net Volumetric Loss of Glacier Cover within the Bow Valley above Banff, Alberta, 1951 - 1993" J*oint ESC/WSC proceedings of the Banff meeting, May 1997*.

Hopkinson, C. and Young, G.J. 1997. "The Impact of Glacier Recession to the Bow River above Banff, Alberta, 1951 - 1993" *Joint ESC/WSC proceedings of the Banff meeting, May 1997*.

Select Non Refereed Conference Proceeding Publications (incomplete list):

Whalen, D. Forbes, D.L. **Hopkinson, C.** Lavergne, J.C. Manson, G.K. Marsh, P. Solomon. S.M. 2009. *Topographic LiDAR – providing a new perspective in the Mackenzie Delta* Proceedings of the 30th Canadian Symposium on Remote Sensing, Lethbridge, Alberta, June 2009.

Kljun, N., L. Chasmer, A. Barr, A. Black, C. **Hopkinson**, H. McCaughey, M.W. Rotach, and H. P. Schmid, 2008. Footprint application to long-term CO_2 flux observations. Proceedings of the *American Meteorological Society Boundary Layers and Turbulence Conference*. Stockholm Sweden, June.

Chasmer, L., A. Barr, A. Black, C. **Hopkinson**, H. McCaughey, P. Treitz, A. Shashkov, and T. Zha, 2006. "Lidar derived canopy structural influences on light use efficiency at a chronosequence of Fluxnet-Canada jack pine forest sites for MODIS product validation." *Proceedings of the IGARSS Symposium*. Denver Colorado. July 2006.

Hopkinson, C. 2006. *The Influence of Lidar Acquisition Settings on Canopy Penetration and Laser Pulse Return Characteristics.* Proceedings of the joint IGARSS and CSRS meeting held in Denver, Colorado, July 2006. Published on CDROM by GRSS (unpaginated).

Barlow J. and **Hopkinson** C., 2005, *Assessing Rotation in Detached Blocks Along the Niagara Escarpment Using Ground-based LiDAR*, Proceedings: 26th Canadian Remote Sensing Symposium, June 14-16, Wolfville, Nova Scotia.

Beasy, C., **Hopkinson, C.,** Webster, T., 2005, *Classification of Nearshore Materials on the Bay of Fundy Coast Using LiDAR Intensity Data,* Proceedings of the Canadian Symposium for Remote Sensing, Wolfville, June 2005. Published on CDROM.

Maher, R.V. and **Hopkinson, C.,** 2004, *From mission to data integration: developing a new LiDAR curriculum at the Applied Geomatics Research Group, Nova Scotia Community*

College. Proc. of the American Society Photogrammetry and Remote Sensing conference, Denver, USA. May 22 – 26.

Hopkinson, C., M. Demuth, M. Sitar, and L. Chasmer, 2001: *Applications of LiDAR mapping in a glacierised mountainous terrain*. Proceedings of the International Geoscience and Remote Sensing Symposium, Sydney, Australia. July 9 – 14.

Example technical Reports (old and incomplete/ too many to list):

Hopkinson, C., 2003, *"Meteorological station and stream gauge installations in the Peyto Glacier and Mosquito Creek basins, December 2002."* Submitted to Dr. Alain Pietroniro, National Water Research Institute. 40pp.

Hopkinson, C., 2002, "*Evaluating the use of Optech's ILRIS-3D Laser imaging system for forest metric assessment in a managed pine plantation and an unmanaged mixed deciduous stand."* Submitted to Dr. Paul Treitz of LaRSEES. 58pp.

Hopkinson, C, 2002, *"The Peyto, Yoho and Ram Glaciers airborne LiDAR survey, August 2002: data collection report"* submitted to the National Glaciology Program, Geological Survey of Canada. 46pp.

Hopkinson, C. and Chasmer, L.E., 2002, *"The Utikama airborne LiDAR survey, August 2002: data collection and error analysis report"* submitted to Dr. Irena Creed of U. Western. 38pp.

Hopkinson, C., 2002, **"***Meteorological relationships on Cornwallis Island, Nunavut, Canada."* Report submitted to Dr. Hok Woo, McMaster University.

Hopkinson, C., A. Lowe, M. Sitar, A. Zawadzki, M.C. English and G.J. Young, 2000, **"***Hydrological Model Validation Using Satellite Imagery and Geochemical Tracers***"** Report to the CRYSYS committee of the AES.

Hopkinson, C. "*Evaluating Hydrological Models using Satellite Imagery, Photogrammetry and Geochemical Tracers in Glacierised Basins of the Canadian Rockies"* Progress report to the Atmospheric Environment Service CRYSYS committee, April 2000.

Hopkinson, C., English, M. C., 1999, *"State of the Coppermine River Basin Hydrogeochemsitry; interim report"*, Report to the NWT Ministry of Environment.

Hopkinson, C., M. Sitar, A. Zawadzki, M.C. English and G.J. Young, 1999, "*The Impact of Glacial Wastage to River Flow in the Bow Valley; Photogrammetric and Geochemical Tracer Analyses"* Report to the CRYSYS committee of the AES.

Sitar, M., **Hopkinson, C.,** Young, G.J., 1998, *"Photogrammetrically Derived DEMs for Volumetric Change Measurement of Peyto Glacier, 1948-1993"*. Report to the CRYSYS committee of the AES.

Hopkinson, C., English, M.C., Young, G.J., 1998, *"The seasonal variability of hydrological components and flow routing within the Bow River above Banff, Alberta: A combined mass balance and chemical tracer approach."* Report to the CRYSYS committee of the Atmospheric Environments Service.

Young, G.J., English, M.C., **Hopkinson, C.,** 1997, "*The impact of glacier recession upon the discharge of the Bow River above Banff, Alberta, 1951-1993: Stereo aerial photogrammetry and hydrological isotope analysis."* Report to the CRYSYS committee of the Atmospheric Environments Service.

Young, G.J., English, M.C., **Hopkinson, C.**, 1996, "*Changes in glacier dimensions 1951-1994 in the Bow River Basin above Banff."* Report to the CRYSYS committee of the AES.

Plus several lidar data collection, processing and analysis reports to various research partners.

Papers Read At Scholarly Meetings:

AFWBS, New Brunswick, 2009	
CSRS, Lethbridge, 2009	(sess chair + 7 pprs + wrkshop)
Canadian Geophysical Union/ AGU, Toronto, 2009	(6 papers)
ILMF, New Orleans, 2009	(1 paper + forum host)
Canadian Geophysical Union, Banff, 2008	(9 papers)
ASPRS, Portland, Oregon, 2008	(Session chair + 3 papers)
CWRA, Halifax, 2008	(Conf organizer + 4 papers)
ASPRS/CSRS, Ottawa, 2007	(session chair + 3 papers)
Silvilaser, Espoo, Finland, 2007	(expert panel + 2 papers)
Canadian Water Resources Association, 2007	(2 papers)
Canadian Geophysical Union, St John's, 2007	(5 papers)
GeoTec, Calgary, 2007	
Atlantic region CAG, Halifax, 2006	
IGARSS, Denver, Colorado, 2006	(session chair + 4 papers)
ASPRS, Reno, Nevada, 2006	(session chair + 1 paper)
3D Forest Remote Sensing Conference, Vienna, 2006	
Canadian Remote Sensing Symposium, Nova Scotia, 2005	(session chair + 6 papers)
Silviscan, Blacksburg, VA, 2005	(2 papers)
Natscan, Freiburg, 2004	(2 papers)
American Society Photogrammetry and Remote Sensing, 2004	
Forest Research Partnership, Timmins, 2004	
Canadian Association of Geographers, Kingston, 2003	
Great Lakes Forest Alliance Summit, Sault Ste Marie, 2003	
Forest Research Partnership, Mattawa, 2003	
International Geoscience and Remote Sensing Symposium, 2002	
Canadian Geophysical Union, 2002	(3 papers)
International Geoscience and Remote Sensing Symposium, 2001	
International Glaciological Society, 2001	
Canadian Geophysical Union/Eastern Snow Conference, 2001	(5 papers)
Cold Region's Graduate Geographers Colloquium, 2001	
Canadian Geophysical Union, Hydrology Section, 1999	
CAGONT 1999	
Cold Regions Landscapes Symposium, 1998	
Canadian Geophysical Union, Hydrology Section, 1998	
York Graduate Symposium, 1997	
International Snow Hydrology Conference, 1997	
Canadian Geophysical Union, 1997	(2 papers)
Cold Region's Graduate Geographers Colloquium, 1997	(2 papers)
Trent Polar Colloquium, 1997	
Canadian Geophysical Union, Hydrology Section, 1996	
Processes in Glaciated Catchments Colloquium, 1996	
Trent Polar Colloquium, 1996	

Plus co authorship on several paper presentations at meetings that I have not attended.

Selected workshops and public consultation meetings (incomplete list):

Hopkinson, Fox, Webster, Milne, Chasmer. "*AGRG Lidar Summer Institute*". One week comprehensive lidar training school. Middleton, Nova Scotia, July 2009

Hopkinson, Fox, Goulden, Vorobiev *"Introduction to LiDAR and developing a national research consortium for efficient access to community remote sensing resources*". One day workshop hosted at the Canadian Symposium for Remote Sensing, Lethbridge, Alberta June 20009

Hopkinson. "*Lidar industry hot topics and ASPRS best practice guidelines*". A half day open forum discussion hosted at the International Lidar mapping Forum, New Orleans, February, 2009

Hopkinson, C., "*Watershed Health, Planning and Management: Advanced and Emerging Technologies*". Breakout discussion session chair hosted at Maritime Water Resources Symposium, Dartmouth, August, 2008

Hopkinson, C., Fox, A., Milne, T. "*Introduction to lidar data processing"*, Halifax, February 2008

Hopkinson, C. "*Canadian Society of Hydrological Sciences: a practical introduction to airborne laser scanning and its application to water resources"*, Saskatoon, June 2007

Hopkinson, C. "*Airborne lidar and its applications to forest and water resources assessment"* GeoTec conference, Calgary, May 2007

Hopkinson, C. and Hennigar, T. *Canadian Water Resources Association: Inaugural Nova Scotia Branch public meeting*, Halifax, October, 2006

Hopkinson, C. and Pietroniro, A. "*Hydroscan"*, Saskatoon, September, 2006.

Hopkinson, C. and Kearns, T, "*Introduction to LiDAR technology, operations and data manipulation."* Half day special workshop hosted at ESRI Users' Conference, San Diego, August 2006

Hopkinson, C. and Chasmer, L.E., "*LiDAR technology and vegetation assessment applications"*. Half day special workshop hosted at *IGARSS*, Denver, USA, July 2006.

Webster, T. and **Hopkinson, C.,** "*Introduction to airborne lidar applications in GIS"*. Half day workshop co hosted at the *Geomatics Atlantic Meeting* in Wolfville, June, 2006.

Hopkinson, C., and Webster, T., "*Introduction to airborne lidar applications in urban planning and flood impact assessment"*. Special seminar presentation to Halifax regional Municipality, February 2006.

Hopkinson, C., Webster, T., Chasmer, L., Kalbfleisch, W., *"An introduction to airborne LiDAR: from mission planning to data integration"*. Hosted at the Canadian Symposium for Remote Sensing, Wolfville, June 2005

Hopkinson, C., Webster, T., Chasmer, L., Maher, R., Liberty, E., *"The first Canadian LiDAR applied research and training workshop"*. Halifax, February 2005

Hopkinson, C., *The Canadian Consortium for LiDAR Environmental Applications Research*. Various seminar venues (U. Western, 2002 and 2005; Wilfrid Laurier U., 2002; Annual CRYSYS Meetings, 2003, 2004 and 2005; Ottawa CCRS/GSC Quaternary Discussion Group, 2003).

Hopkinson, C. and Green, J., *"An introduction to Airborne LiDAR: technology and applications"* workshop hosted at Canadian Remote Sensing Symposium, Victoria, August 2000.

Hopkinson, C. "*The Canadian Graduate Geographers' Network."* Two workshops to discuss the idea and implementation of a national graduate student network. Cold Regions Graduate Colloquium, 1997 and CAGONT, 1998

Hopkinson, C., Mullamootil, G. and 10 others "*An Integrated Approach to the Planning & Management of an Urban Wetland: The Case of Bechtel Park Wetland."* Public Consultation Meeting, Waterloo, February, 1996.

Plus frequent guest seminars at various academic, public and industrial events, and experience chairing several society meetings and conference sessions.

ACTIVITIES & INTERESTS

Mountaineering and all associated activities (MLTB Mountain leader certificate)
Navigation
Sailing (CYA Basic Cruise certificate)
Horse riding
Photography
Mountain biking
Aviation (RAF Air cadets + TC ground school)