

## Dr. Carson J. Q. Farmer

Assistant Professor  
Geography Department  
University of Colorado Boulder  
Guggenheim 110, 260 UCB  
Boulder, CO 80309-0260, USA  
carson.farmer@colorado.edu

## Professional Preparation

University of Victoria	Victoria, Canada	Geography	BSc (Hons), 2006
University of Victoria	Victoria, Canada	Geography	MSc, 2008
Maynooth University	Maynooth, Ireland	Geocomputation	PhD, 2011
University of St Andrews	St Andrews, Scotland	GeoInformatics	Postdoc, 2012

## Appointments

2015 --	Assistant Prof	Geography Department, CU Boulder
2012 -- 2015	Assistant Prof	Department of Geography, Hunter College, CUNY
2013 -- 2015	Assistant Prof	Earth & Environmental Sciences, CUNY Grad Center
2013 -- 2015	Associate Dir	Center for Advanced Research of Spatial Info, CUNY

## Fellowships

2012 -- 2014	Research Fellowship, University of St Andrews
2008 -- 2012	Doctoral Fellowship, Social Sciences & Humanities Research Council
2008 -- 2011	PhD Fellowship, Irish Social Sciences Platform

## Scholarships

2011	Postgraduate Travel Fund/Collins Kitchin Fund, NUI Maynooth
2007	Derrick Sewell Graduate Scholarship, University of Victoria
2007	Physical Geography Student Paper Presentation Award, CAG
2006	Derrick Sewell Graduate Scholarship, University of Victoria
2006	Student Paper Presentation Award, CCA

## Publications

### Journal Articles

#### In-prep and/or Submitted

- Farmer, Carson J. Q. and Oshan, T. (Submitted) "Spatial Interaction." In GIS&T Body of Knowledge (BoK), edited by University Consortium for Geographic Information Science.
- Farmer, C. J. Q. (In-prep) A Scalable Approximate Classifier for Determining Natural Breaks in Univariate Data-Streams. Planned submission to: *ACM SIGSpatial*.
- Farmer, C. J. Q. and DeCastro, A. L. (In-prep) Implicit Choice-Set Generation for Spatial Interaction Modeling. Planned submission to: *Spatial Economic Analysis*. To be submitted May 2016.
- Hamstead, Z. A., Farmer, C. J. Q., and McPhearson, T. (In-prep) Modeling intra-urban land change as a driver of micro-urban heat island in New York City.

#### Published

- Farmer C.J.Q. and Keßler C. (2016) [Hierarchical Prism Trees for Scalable Time Geographic Analysis](#). In: Miller J., O'Sullivan D., Wiegand N. (eds) Geographic Information Science. GIScience 2016. Lecture Notes in Computer Science, vol 9927. Springer, Cham
- Gittleman, M., Farmer, C. J. Q., Kremer, P., and McPhearson, T. (2016) [Estimating Stormwater Runoff for Community Gardens in New York City](#). *Urban Ecosystems*. 1-11
- Carsten Keßler and Carson J.Q. Farmer. (2015) [Querying and integrating spatial-temporal information on the Web of Data via time geography](#). *Web Semantics: Science, Services and Agents on the World Wide Web*, Volume 35, Part 1, Pages 25-34.
- Oshan, T., Farmer, C. J. Q., and O'Donoghue, E. (2014) Spatial interaction simulation methods for ancient settlement distributions in Central Italy. *42nd Computer Applications and Quantitative Methods in Archaeology Conference (CAA) 2014 Proceedings*.
- Stojanovic T. and Farmer C. J. Q. (2013) [The development of world oceans & coasts and concepts of sustainability](#). *Marine Policy*. 42: 157-165.
- Farmer, C. J. Q. and Pozdnoukhov, A. (2012) Building streaming GIScience from context, theory, and intelligence. *Proceedings of the Workshop on GIScience in the Big Data Age*. Columbus, Ohio.
- Andrew, M. E., Nelson, T. A., Wulder, M. A., Hobart, G. W., Coops, N. C. and Farmer, C. J. Q. (2012) Ecosystem classifications based on summer and winter conditions. *Environmental Monitoring and Assessment*, July 2012: 1-23.
- Comber, A. J., Brunsdon, C. F., and Farmer, C. J. Q. (2012) Community detection in spatial networks: Inferring land use from a planar graph of land cover objects}. *International Journal of Applied Earth Observation and Geoinformation*, 18: 274–282.
- Farmer C. J. Q. and Fotheringham A. S. (2011), Network-based functional regions. *Environment and Planning A*. 43 (11): 2723--2741.

- Kaiser, C., Walsh, F., Farmer, C. J. Q., and Pozdnoukhov, A. (2010) User-Centric Time-Distance Representation of Road Networks. In S. Fabrikant, T. Reichenbacher, M. van Kreveld, and C. Schlieder (Eds.), *Geographic Information Science, Lecture Notes in Computer Science (Vol. 6292), Proceedings of at the 6th International Conference, GIScience 2010*, Zurich, Switzerland: Springer Berlin / Heidelberg, pp. 85--99.
- Farmer, C. J. Q., Nelson, T. A., Wulder, M. A., and Derksen, C. (2010) Identification of snow cover regimes through spatial and temporal clustering of satellite microwave brightness temperatures. *Remote Sensing of Environment*. 114 (1): 199--210.
- Farmer, C. J. Q., Nelson, T. A., Wulder, M. A., and Derksen, C. (2009) Spatial-temporal patterns of snow cover in western Canada. *The Canadian Geographer*, 53 (4): 473--487.
- Robertson, C., Farmer, C. J. Q., Nelson, T. A., Mackenzie, I. K., Wulder, M. A., and White, J. A. (2009) Determination of the compositional change (1999--2006) in the pine forests of British Columbia due to mountain pine beetle infestation}. *Environmental Monitoring and Assessment*, 158(4): 593--608.
- Robertson, C. and Farmer, C. J. Q. (2008) Developing an open-source framework for surveillance and analysis of emerging zoonotic diseases. *Proceedings of the Fifth National Symposium on Geo-Informatics of the Geo-Informatics Society of Sri Lanka*. p. 123--134.

## Book Reviews

- Farmer, C. J. Q. (2016) [Geocomputation: a practical primer](#), by Chris Brunsdon and Alex Singleton. *International Journal of Geographical Information Science*, 30 (4): 819--821.

## Other

- Farmer, C. J. Q. (2011) *Commuting flows & local labour markets: Spatial interaction modelling of travel-to-work*. PhD Thesis, National University of Ireland, Maynooth, Ireland, 251p.
- Farmer, C. J. Q. (2008) *Spatial time-series analysis of satellite derived snow water equivalence*. Masters Thesis, University of Victoria, B.C., Canada, 104p.
- Farmer, C. J. Q. (2006) *Mapping the effects of the modifiable areal unit problem on local measures of spatial autocorrelation*. Honors Thesis, University of Victoria, B.C., Canada, 85p.

## Presentations

### Invited

- Farmer, C. J. Q. (2016) Building a Hub for Earth Analytics. Invited Speaker, Boulder Geo Meetup, Boulder, CO, March 28th, 2016.
- Farmer, C. J. Q. (2015) Exploring a scalable framework for spatially-local regression analysis. Invited Speaker, Spatial Sciences Census Research Node (SSCRN) Meeting, Washington, DC, December 14th, 2015.

- Farmer, C. J. Q. (2015) Exploring a scalable framework for locally weighted regression analysis and clustering. Invited Speaker, School of Geographical Sciences & Urban Planning Colloquium Series. Arizona State University, Tempe, AZ, December 4th, 2015.
- Farmer, C. J. Q. (2015) Multiple perspectives on spatial-temporal processes. Invited Speaker, School of Geographical Sciences & Urban Planning Colloquium Series. Arizona State University, Tempe, AZ, April 17th, 2015.
- Farmer, C. J. Q. (2015) Urban oceans: Exploring the evidence for human impacts on the world's oceans. Invited Expert, program in conjunction with *Washed Up: Transforming a Trashed Landscape, photos by Alejandro Dur{a}n*, New York, NY, January 31st, 2015.
- Farmer, C. J. Q. (2015) Sources and uses of Big Data for urban and regional analysis. Invited Expert, National Academy of Science's (NAS) Transportation Research Board (TRB) Annual Policy Meeting, Washington, D.C., January 14th, 2015.
- Farmer, C. J. Q. (2014) Go with the flow: A research framework for exploring streams of geospatial data. Invited Speaker, Hunter College Geography Research Colloquium. Hunter College, CUNY, December 12th, NY, USA.
- Farmer, C. J. Q. and Keßler, C. (2014) EnviroCar -- A GIS Framework for Citizen-based Environmental Monitoring in NYC. Invited Speaker, New York State GIS Association (NYSGIS) Transportation Professional Affiliation Group (T-PAG) Inaugural Webinar, December 3rd, 2014. [Video](#)
- Farmer, C. J. Q. (2013) Cities as agents of growth: Agent models for population projections. Invited Speaker, Meeting on Global Spatial Population Projections: What Can Be Done Now? September 20th, 2013, New York, NY.
- Farmer, C. J. Q. (2012) Spatial interaction modelling of commuting flows within local labour markets. Invited Speaker, Centre for GeoInformatics Seminar Series, June 21st 2012, St Andrews, Scotland.

## Keynotes

- Farmer, C. J. Q. (2014) [Geospatial data in Python: Database, desktop, and the web](#). Invited Keynote, Interdisciplinary Workshop on Geospatial Computing, Kitchener, Ontario, Canada, November 21st, 2014.
- Farmer, C. J. Q. (2014) Streaming GIScience: Data as flows, flows as data. Invited Keynote, GEOCROWD -- Creating a Geospatial Knowledge World, Summer School II, July 14th--17th, St Andrews, Scotland, UK.
- Farmer, C. J. Q. (2012) Exploring spatio-temporal dynamics of networks. Invited Keynote, EPSRC workshop and launch, June 27th 2012, St Andrews, Scotland.

## Conferences

- Farmer, C. J. Q. (2016) A Computational Framework for Time-Geographic Analytics. AAG Annual General Meeting. March 29th--April 2nd, San Fransisco, California, USA.
- Farmer, C. J. Q. and Keßler, C. (2015) A citizen-science based approach to monitoring CO2 emissions from mobile vehicles. AAG Annual General Meeting. April 20th--25th, Chicago, Illinois, USA.
- Farmer, C. J. Q. (2014) [Light-weight real-time event detection with Python](#). Scientific Computing with Python (SciPy 2014), July 6th--12th, Austin, Texas, USA.

- Farmer, C. J. Q. and Marcotullio, P. (2014) Agent-based models for spatially-explicit population projections. AAG Annual General Meeting. April 8th--12th, Tampa, Florida, USA.
- Farmer, C. J. Q. and Pozdnoukhov, A. (2012) Building streaming GIScience from context, theory, and intelligence. 7th International Conference, GIScience 2012. September 19th--21st, Columbus, Ohio, USA.
- Farmer, C. J. Q. (2012) The Centre for Geoinformatics at St Andrews: Multi-disciplinary opportunities for collaboration. Interaction and Visualisation Technologies in the Library. July 6th 2012, St Andrews, Scotland.
- Farmer, C. J. Q. (2012) Spatial interaction modelling of commuting flows within local labour markets. CAG Annual General Meeting. May 22nd--June 2nd\* Waterloo, Ontario, Canada.
- Farmer, C. J. Q. (2012) Choice-set generation for spatial interaction models. AAG Annual General Meeting. February 22nd-28th, New York, N.Y., USA.
- Farmer, C. J. Q. and Fotheringham, A. S. (2011) Communities in commuting networks. Joint ICA ISPRS Workshop, Our Complex World: Representation, Analysis and Modeling, August 10--12th, Simon Fraser University, Burnaby, B.C., Canada.
- Farmer, C. J. Q. (2011) Why geographers need to take another look at spatial behaviour. AAG Annual General Meeting. April 12th--16th, Seattle, W.A., USA.
- Kaiser, C., Walsh, F., Farmer, C. J. Q., and Pozdnoukhov, A. (2010) User-Centric Time-Distance Representation of Road Networks. 6th International Conference, GIScience 2010. September 14th--18th, University of Zurich, Zurich, Switzerland.
- Farmer, C. J. Q. (2009) Data driven functional regions. Geocomputation 2009. November 30th--December 2nd, University of New South Wales, Sydney, Australia.
- Farmer, C. J. Q., Walsh, F. and Pozdnoukhov, A. (2009) Dynamic ISOMAP embedding for real-time road network visualization. 16th European Colloquium on Quantitative and Theoretical Geography. September 4th--8th, Maynooth, Co. Kildare, Ireland.
- Farmer, C. J. Q., (2009) Why pay to do your own research? An introduction to open source geospatial software. Invited speaker, NCG lecture series. National Centre for Geocomputation, National University of Ireland Maynooth, Ireland.
- Farmer, C. J. Q., Nelson, T., Wulder, M. and Derksen, C. (2008) Identification of snow cover regimes through hierarchical clustering of remotely sensed time series'. Invited speaker, CHICAS lecture series. Department of Medicine, Lancaster University, UK.
- Robertson, C. and Farmer, C. J. Q. (2008) Developing an open-source framework for surveillance and analysis of emerging zoonotic diseases. Fifth National Symposium on Geo-Informatics of the Geo-Informatics Society of Sri Lanka. July 25th, Colombo, Sri Lanka.
- Farmer, C. J. Q., Nelson, T., Derksen, C. and Wulder, M. (2008) Determination of Canadian snow regimes using spatial-temporal analysis methods. AAG Annual General Meeting. April 15th--19th, Boston, M.A., US.
- Farmer, C. J. Q., Nelson, T., Derksen, C. and Wulder, M. (2008) Determination of Canadian snow regimes using passive microwave radiometry. Spatial Knowledge and Information. February 14th--17th, Fernie, B.C., Canada.

- Farmer, C. J. Q., Robertson, C., Nelson, T.A., Mackenzie, I.K., Wulder, M.A., and White, J.A. (2007) Integrating disparate mountain pine beetle datasets for detailed large-area mapping. University of Victoria, Geography Student Conference, Bridging the Gap 2007, November 28th, Victoria, B.C.
- Farmer, C. J. Q., and Nelson, T., Derksen, C. and Wulder, M. (2007) Linking the Spatial-Temporal Interactions of Spatial Association in SWE to\*cover Characteristics. Canadian Association of Geographers Annual General Meeting, May 29th--June 2nd, Saskatoon, S.K. (Winner of the CAG paper presentation award in Physical Geography).
- Farmer, C. J. Q., and Nelson, T., Derksen, C. and Wulder, M. (2007) The Impact of Temporal Resolution on Snow Water Equivalence Monitoring. Western Canadian Association of Geographers. March 8th--10th, Abbotsford, B.C.
- Farmer, C. J. Q., O'Connell, I., and Nelson, T. (2006) Mapping the effects of the modifiable areal unit problem on local measures of spatial autocorrelation. GeoTec Event 2006. June 18th--21th, Ottawa, O.N. (Winner of the CCA best student paper presentation award).
- Farmer, C. J. Q., O'Connell, I., and Nelson, T. (2006) Mapping the effects of the modifiable areal unit problem on local measures of spatial autocorrelation. Western Canadian Association of Geographers. March 10th--11th, Kamloops, B.C.

## Teaching

### Current Courses

Statistics for Geographers	Undergraduate
Quantitative Methods in Geography	Graduate/Undergraduate
Earth Analytics (co-taught)	Graduate/Undergraduate
Space-Time Analytics	Graduate/Undergraduate

### Past Courses

Introduction to GIScience	Hunter College, CUNY	Graduate
Advanced GIS	Hunter College, CUNY	Graduate
Spatial Data Analysis	Hunter College, CUNY	Graduate/Undergraduate
Transportation Geography	Hunter College, CUNY	Undergraduate
Quantitative Methods	Hunter College, CUNY	Undergraduate
Digital Earth (co-taught)	Hunter College, CUNY	Undergraduate

### Short Courses

Jan 2015	FOSS GIS Masterclass	Hunter College, CUNY
Aug 2014	FOSS GIS Masterclass	Hunter College, CUNY
Jul 2014	Geospatial data in Python (1,2,3)	SciPy 14, Austin, TX
Oct 2011	MSc in GIS (Workshop Instructor)	NUI Maynooth, Ireland



2009 -- 2011	MSc in Geocomputation (Guest Lecturer)	NUI Maynooth, Ireland
Jun 2010	SPLINT Geospatial Software Workshop	University of Leicester, UK
Jan 2010	FOSS4G Masterclass	Lancaster University, UK
Nov 2008	FOSS4G Masterclass	Lancaster University, UK

## Student Supervision

Taylor Oshan*	Primary Advisor (Masters)
(Yuan Mei) Joan Lee*	Primary Advisor (Masters)
Mara Gittleman*	Primary Advisor (Masters)
Kathryn Dickerson*	Primary Advisor (Masters)
Kristin Graves*	Secondary Advisor (Masters)
Silvia Lorenzo*	Secondary Advisor (Masters)
Tim Migliore*	Advisor (Undergrad)
Renana Rabinovich*	Advisor (Undergrad)
Youngran Kim*	Advisor (Undergrad)
Rudrasen Persaud*	Secondary Advisor (Masters)
Belinda Archibong*	Committee Member (PhD)
Wallace Murray III*	Secondary Advisor (Masters)
Amy DeCastro	RA Advisor (Undergrad)
Zoé Hamstead*	Committee Member (PhD)
Taylor Oshan	Committee Member (PhD)
Alexander Stum	Committee Member (PhD)
Mehran Ghandehari	Committee Member (PhD)
Sepideh Dadashi	Committee Member (PhD)
Adam Mahood	Committee Member (Masters)
Johannes Uhl	Committee Member (PhD)
William Bredemeyer	Committee Member (PhD)
Becky Davies	Committee Member (Masters)
Angela Boag	Committee Member (PhD)
Shane Grigsby	Committee Member (PhD)
Amy DeCastro	Primary Advisor (BS/MS)
Martha Morrissey	Primary Advisor (Masters)

\* Completed

## Service

### National/International

#### Committees & Boards

- 2016 -- Primary CU Boulder Delegate for University Consortium for GIS
- 2016 -- 2019 Co-Chair and Treasurer (SAM AAG Special Interest Group)
- 2016 -- 2019 Committee Member (William Garrison Award, AAG)
- 2016 Program Committee Member (GIScience 2016)
- 2015 Invited Expert (NAS TRB Policy Meeting)
- 2014 Program Committee Member (SciPy 2014)
- 2013 -- 2014 Committee Member (Public Health Certificate, Hunter College)
- 2009 Conference Scientific Committee (FOSS4G 2009)
- 2008 -- 2011 Graduate Council Member (NUI, Maynooth [now Maynooth University])

#### Reviewer

- 2016 -- Regional Studies (1)
- 2012 -- GIScience - International Conference on GIScience (3)
- 2013 -- SciPy - Scientific Python Conference Series (3)
- 2014 -- Proceedings of the National Academy of Sciences (3)
- 2015 NAS TRB Report on Innovative Mobility Services (1)
- 2014 -- Annals of the Association of American Geographers (2)
- 2014 -- Geographical Analysis (2)
- 2013 -- Spatial Demography (Editorial Board Member and Reviewer)
- 2012 -- Journal of Spatial Science (1+)
- 2012 -- Computers, Environment and Urban Systems (3)
- 2012 -- International Journal of Geographical Information Science (3)
- 2011 -- Journal of Computational Science (1)
- 2009 -- Transactions in GIS (2+)
- 2008 -- Remote Sensing of Environment (2)

\* Counts since 2015

#### Memberships

- 2011 -- 2015 Regional Studies Association
- 2007 -- American Association of Geographers
- 2007 -- 2014 Canadian Association of Geographers



**Other**

- 2014 & 2016      Mentor/administrator in Google's *Summer of Code* program  
 Worked with both 52°North and PySAL/Python organizations
- 2007 -- 2013      Core developer for QGIS Open Source GIS  
 Primary development of *Vector Analysis* menu and all (original core) geoprocessing functionality

**Department****Committees**

- 2015 -- Undergraduate Committee  
 2016 -- Professional Masters Committee

**Campus**

- N/A

**Grants & Proposals****Awarded***UREx SRN: Urban Resilience to Extremes Sustainability Research Network*

Source of Support	National Science Foundation
Total Award Amount	\$70,904 (Sub-award via ASU) \$12mil (Total)
Award Period Covered	07/01/2015 to 06/30/2020
Location of Project	University of Colorado Boulder
Months/Year Committed	0.75 Summer Month(s)/Year for 5 Years
Status	Local Principal Investigator

*Collection & Analysis of Spatial-Temporal Environmental Information Resources for New York City*

Source of Support	PSC-CUNY Research Award Program
Total Award Amount	\$6,000
Award Period Covered	06/01/2014 to 06/01/2015
Location of Project	Hunter College, CUNY
Months/Year Committed	1 Summer Month
Status	Principal Investigator