Geothink

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Geothink at the halfway mark

As a way of marking our halfway point in the grant, I interviewed Professor Renée Sieber and collected some reflections regarding progress in the first half of Geothink. As this is also the start of a new academic year, we welcome a number of new students and say farewell to a few who have graduated.

This newsletter will also be seeing some minor changes. As we move into the second half of the grant, the Geothink Newsletter will now be focusing much more heavily on presented research from our researchers and students. This will include series such as the Research Profile, where we highlight a co-applicant and give a holistic overview of their research. Students have also begun to graduate, so the Student Spotlights will now give way to in-depth articles about projects from students who have recently graduated or are in the process of doing so. Updates on projects, including writing projects (such as academic books) will also appear here when available. Previous series such as the Student Spotlight and Partner Spotlight will now be moving to the Geothink website in some form. Even though the newsletter is shifting towards presenting research and output from the grant, we still welcome your feedback and ideas on content for all our media output.

Recently, we announced the finalised dates for next year's Summer Institute and Annual General Meeting. Both will take place in Toronto in May 2016. We look forward to meeting you at the AGM next year and will be providing updates on the events as the planning progresses.

Summer Institute 2016: **9-11 May 2016** at **Ryerson University**

Annual General Meeting 2016: **11-13 May 2016** at the **University of Toronto**

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Reflections from the Principal Investigator

To mark our halfway point for the grant, I interviewed Professor Renée Sieber (McGill University), our Principal Investigator for the project and asked for her feedback on the grant and what her expectations are for the future.

How has the first half of the grant progressed? Have there been any surprises along the way?

One of the pleasures of this sort of grant is that you get to combine quite different disciplines together and work collectively towards a series of research questions. That is incredibly rewarding and challenging at the same time. The outside world might not think that law professors are that different from geographers and urban planners, or that geographers and urban planners are that different from each other, but we live in academic silos where we learn how to talk to others in our own disciplines far better than to others or to the outside world. Add to that communicating with our partners, many of whom are in government. We have the usual challenges of learning to communicate with each other and come together around common themes, but a joy of being at the halfway point is that we are seeing these very different disciplines come together.

One concrete example is Professor Teresa Scassa's (University of Ottawa) work on intellectual property (IP) and privacy related to the General Transit Feed Specification (GTFS). GTFS is an open data standard, originally developed by Google, that organises data coming from public transit. GTFS is widely used in apps and maps to make our lives easier, for example, letting us know when if we can make the next bus. But it also is useful in organising the collection of data about us (e.g., when we get on and off the bus). One can talk about this from a legal issue, about who owns the right to the data. But to fully cover the impacts of GTFS you also should account for how public transit data around the world is being transformed from regional data silos, homogenised, and displayed on large corporate platforms such as Google Maps. There is huge incentive for the private sector to get into the business of collecting data in these data standards to build third party apps and hardware. One could talk about GTFS from a purely legal point of view but working on a grant like this allows people who can see from different perspectives such as what an open data standard looks like, what is gained or lost in terms of geography and geometry when a data standard is employed, what happens to the political economy of a public sector transit organisation whose data flows to a company in another country and bounces to various other companies before it gets to the end user. Approaching GTFS from information science, law, geography, planning, and political science perspectives: this is how we are seeing real synergy occur in the grant.

The second aspect of this grant that is both challenging and rewarding is working with our partner cities. We are starting to address *real urban needs* as our partner cities come to us with requests related to their particular problems. We are able to deliver because we have amassed skill sets, expertise, and students. We are finding deep meaningful collaborations with our partners and *new* questions arising from those collaborations. We have completed projects with the Cities of Ottawa, Toronto, and Vancouver and are looking to engage more cities as we progress.

One challenge in collaborating with our partner cities is the potential for successful civil servants to be promoted. As soon as one of our contact people gets good at open data (and good at working with us), he or she moves up. Retaining institutional knowledge in a partner city has become a huge challenge, but we have started to develop skills to maintain that institutional knowledge, for instance, with best practices guides that are coming out of this grant.

The third aspect are the opportunities and challenges of “doing research in real -time”. When we started this grant we thought we would be working on a set of problems and that we would be preparing our partners for the ‘next big thing’ in five years. In fact, we are confronted with the ‘next big thing’ almost daily, with the emergence of new trends such as smart cities, the Internet of Things (IoT), and the sharing or 'on-demand' economy. We have built a skills base and expertise so that we can start addressing

technologies as they emerge but it's still quite difficult when your object of study is constantly shifting under your feet. We are planning some interesting articles that reflect on the methodological issues of researching in real-time with real constituents.

The technologies and trends associated with the grant are constantly shifting. What will Geothink look like at the end of the grant?

When Geothink was first proposed, we almost exclusively focused on the Geospatial Web (Geoweb). That focus will not change. In fact, emerging technologies and companies, including those in the sharing economy of Uber and AirBnB, survive and flourish because they leverage geospatial technologies. In the time that we progressed from the Letter of Intent to the full grant application, open data suddenly became an opportunity for cities across Canada and across the world. Canada is one of the lead international voices on open data, particularly in developing countries, and we are poised to answer some of the socio and technological questions that emerge from open data. That is one of the things that shifted at the beginning of the grant that changed Geothink. Another area that emerged quite quickly in the grant was the importance of crowdsourcing. While open data suggests a flow of data from cities to citizens, crowdsourcing offers an opportunity for citizens to supply data to cities and could result in changing citizen perceptions of government. Most crowdsourced data has some sort of geographic component that is mapped.

The sharing economy is another area that has recently become a hot topic both academically and politically, and it raises even more questions on what a paradigm shift towards on-demand services could result in. We argue that regulations still matter in the economy, whether those regulations guarantee a right to participate in city governance or control who gets picked up by a taxicab. A gig economy does away with many regulations, jobs, and social safety nets. Cities 'work' through social, person-to-person interactions, and if service apps become ubiquitous, we may see a reduction in the varied interactions that create the 'social fabric' of society.

How do you expect the Summer Institute to evolve and continue involving Geothink partners?

We developed a model for our Summer Institute that worked very well. We decided on the theme of crowdsourcing and we solicited projects on that theme from our partners. We received an excellent project from the City of Ottawa. We then brought in experts on various aspects of crowdsourcing and crowdfunding to train and engage students. Students created actual proposals for the City to assess and potentially incorporate into its own plans. This proved quite successful and agile in the face of student groups that had a mixture of technical expertise and disciplines (e.g., programming, law). This is one of the strengths of the grant, that we are able to approach problems from many disciplinary angles. It is also a challenge and opportunity to bring small groups together in a high-pressure environment with limited time to address a question and provide *meaningful* deliverables to a Geothink partner.

> *"Regulations still matter in the [sharing] economy"*

In addition to participating, our students also deserve credit for being actively engaged in designing the Summer Institute. They contributed in many ways to ensure the Summer Institute was successful.

We are currently working on ideas for the Summer Institute 2016 in Toronto, perhaps on open data or data analytics. We welcome our partners to collaborate once again in supplying projects, describing their approaches to the chosen topic, and adjudicating the students' work.

What about the Annual General Meeting (AGM)? What can we hope to see from Geothink as a direct result of this in the near future?

Let me offer some context first and emphasise the need for *physicality*. We are a very dispersed grant, with co-applicants across Canada and one co-applicant in the USA. Our collaborators are around the world. Since we have digital communication media at our disposal, one would think that we would never need to meet. However, some of the most exciting parts of this grant is when we are all in a room together, whether it is at the conferences or our AGM. At these meetings, we can see each other and work out thorny issues such as "what does it mean to be a citizen when you view your city through an app?" Our most recent AGM was exciting because some of the initial research has been completed. We now have content that we can roll out to our partners and the public. We are increasing our media presence through podcasts and the website, but we are now looking to convey more written content through white papers, popular press books, magazine articles, and peer-reviewed books. Partners will be able to see the fruits of their interactions with scholars play out in actual written material.

> *"if service apps become ubiquitous, we may see a reduction in the varied interactions that create the 'social fabric' of society"*

As you mentioned, the technological ecosystem is constantly changing. What key research or methodological issues might we be seeing in the next half of Geothink?

When people used to do mapping, for example with geographic information systems software, we never thought about it as an ecosystem. A multi-layered and worldwide private sector of mapping firms, apps, data handlers, and data visualisers now exists. That fact is a dramatic emergent property of the world in which we live. We will have to spend time unpacking what the emerging ecosystem looks like and how it will change over time. One change is that a lot of the smaller players, unsurprisingly, are being pushed out. After a while the ecosystem may vanish and we might return to an environment once again dominated by a few large firms.

We also have numerous existing questions for which we have yet to scratch the surface. For example, what is "the nature of governance", that is how do we understand the implications of city employees having no connection or knowledge of residents with whom they are interacting. Recall that Web 2.0 allows anyone to communicate from anywhere and at anytime. There are a whole host of jurisdictional issues that are not easily afforded by an app and still need to be addressed. We can make proclamations about the disruptive potential of a Government 2.0, but Government 1.0 (the current paradigm) has not gone away nor should we allow it. There are many reasons we should respect government for the way it currently operates and not dismantle it simply because a new buzzword has captured the public's attention.

We have many lingering and profound, questions about the nature of public participation and governance. Looking simply at the effects of something like open data on government, the internal workings of the civil service, is not enough. We have to look at issues of governance, which are brought about by new actors in the ecosystem that affect the way that public services are delivered or the way cities interact with citizens.

In terms of emerging issues, we have one student working on the concept of 'frictionless participation'. What happens when citizens do not want to be encumbered by government and governance, and they increasingly demand the ability to effortlessly report problems to government and obtain immediate responses? Essentially citizens want cities to act with the efficiency of e-commerce sites. Maybe government wants these same sorts of efficiencies when dealing with the public. What is the impact of government harvesting online public sentiment and arguing that they no longer need to talk to "the people"? They already know the authentic needs of the public. These are the sorts of questions we will attempt to address and I am certain more will emerge as we move forward and create synergies in the partnership.

Final thoughts?

I would like to thank the team and the students for their input over this first half of the grant. This is not a top-down process and the collaboration *only* works when it is truly bottom up. You really have to be there to see how questions and answers are fully realised when people come together and get past their institutional barriers.

"we are confronted with the 'next big thing' almost daily"

"what does it mean to be a citizen when you view your city through an app?

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Key challenges:

- *Interdisciplinarity in research*
- *Doing research in real-time*
- *Addressing partner needs*
- *Maintaining institutional knowledge*

Research Profile: Peter Johnson, University of Waterloo

Our first co-applicant for the Research Profile feature series is Professor Peter Johnson. Peter is an Assistant Professor in the Department of Geography and Environmental Management (GEM) at the University of Waterloo.

Peter's research revolves around two main streams. The first is focused on open data and is situated in Geothink Research Theme 4, Open Everything, which is about open data, governance, and best practices. He examines how people (citizens, government and others) share information and interact with each other and the environment via geospatial platforms and technologies. His research covers interactions, not just through geospatial web and open data, but also includes social media, mobile devices, and spheres such as open government, crowdsourcing and volunteered geographic information (VGI). As Research Theme 4 suggests, Peter's research seeks to identify what works best. In collaboration with fellow Geothink co-applicant Prof. Pamela Robinson (Ryerson University), recent work frames civic hackathons as a form of citizen engagement or even public service procurement. Prof. Johnson has also collaborated with other co-applicants in Geothink, having published a paper on models of open data, with Prof. Renée Sieber this past June.

This past winter he supported a co-op student, Mavis Chan, working at the now defunct Nova Scotia Community Counts program, which was under the Nova Scotia Department of Finance. At the time, Nova Scotia Community Counts was a portal for open data and information, combining data from various government sources and presenting it to the public in visualisations. Mavis undertook her co-op term there to understand who was using the data and how they were using it. An article detailing her research can be found in Issue 6 of the newsletter, which can be found on our website or in the newsletter archive in the shared Google Drive folder.

Peter's more recent open data value project, *Measuring the Value of Open Data*, was funded through an Early Researcher Award from the Government of Ontario. The project looks to build partnerships to help assess economic and social benefits of open data use. He will be hiring student researchers to develop profiles of open data end users, establishing metrics to measure open data value, as well as developing an outreach program to promote civic data use in high schools.

In the (Geo)Web 2.0 era, multiple avenues have emerged through which citizens can provide input to their governments such as social media and mobile apps. Even though technology is advancing and becoming much easier to use, there are still adoption challenges when it comes to integrating 'new' media and technologies with citizen-government interactions and governance. Peter's research aims to assess the effectiveness of these forms of engagement. This can come in the form of building and testing tools, such as his student Andrea Minano's Masters research on climate change adaptation in Nova Scotia. Her project involved creating a web mapping platform to collect VGI on areas vulnerable to sea level rise. A full summary of her project is below. Another of Peter's students, Sara Harrison, is developing a framework for government adoption of VGI to improve crisis response services. This involves looking at reasons for and barriers to government adoption of crowdsourcing and VGI as sources of information for crisis response. At the municipal level there are different requirements and constraints when attempting to implement VGI. A framework or set of protocols is being developed. A second Masters (Lucy Lu) is looking at citizen input to government from a different angle – municipal adoption of 311-style reporting apps. She is looking at 'who', 'what' and 'why' 311 reporting apps are used and how this kind of technology is being used as a conduit between citizen and government.

Finally, a third Masters student, Chen Chen, is looking at another potential avenue for citizen engagement – the use of gamification to promote participation. Location-based massive multiplayer online (MMO) games such as Ingress (formerly under Google), have created communities of gamers connected by common goals and objectives, but also (importantly) connected to the geography around them. Peter sees this as another opportunity for government to have citizens engage with the world

around them (their local environment) and their own communities.

While they may initially seem very different in scope, these projects all revolve around the idea of finding best practices for government, whether it be producing and distributing data (open data) or collecting data and creating dialogue (geoweb technologies). Peter is excited to continue his work with Geothink co-applicants and partners as we move into the second half of the grant.

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Taking aerial photos with balloons for a geomatics class at the University of Waterloo

Sieber, R. E., & Johnson, P. A. (2015). Civic open data at a crossroads: Dominant models and current challenges. Government Information Quarterly, 32(3), 308–315. doi:10.1016/j.giq.2015.05.003

As open data becomes more widely provided by government, it is important to ask questions about the future possibilities and forms that government open data may take. We present four models of open data as they relate to changing relations between citizens and government. These models include; a status quo 'data over the wall' form of government data publishing, a form of 'code exchange', with government acting as an open data activist, open data as a civic issue tracker, and participatory open data. These models represent multiple end points that can be currently viewed from the unfolding landscape of government open data. We position open data at a crossroads, with significant concerns of the conflicting motivations driving open data, the shifting role of government as a service provider, and the fragile nature of open data within the government space. We emphasize that the future of open data will be driven by the negotiation of the ethical-economic tension that exists between provisioning governments, citizens, and private sector data users.

Johnson, P., & Robinson, P. (2014). Civic Hackathons: Innovation, Procurement, or Civic Engagement? Review of Policy Research, 31(4), 349–357. doi:10.1111/ropr.12074

At all levels, governments around the world are moving toward the provision of open data, that is, the direct provision to citizens, the private sector, and other third parties, of raw government datasets, controlled by a relatively permissible license. In tandem with this distribution of open data is the promotion of civic hackathons, or "app contests" by government. The civic hackathon is designed to offer prize money to developers as a way to spur innovative use of open data, more specifically the creation of commercial software applications that deliver services to citizens. Within this context, we propose that the civic hackathon has the potential to act in multiple ways, possibly as a backdoor to the traditional government procurement process, and as a form of civic engagement. We move beyond much of the hype of civic hackathons, critically framing an approach to understanding civic hackathons through these two lenses. Key questions for future research emphasize the emerging, and important, nature of this research path.

Using the Geoweb to visualise flood risk and support climate change adaptation: A case study of coastal Nova Scotia

By Andrea Minano, MSc

Andrea Minano recently completed her Masters degree at the University of Waterloo, under the supervision of Prof. Peter Johnson. Her work here is an example of the key ideas that Prof. Johnson's research revolves around—getting citizens connected with their local government and improving decision making based on the information shared.

In collaboration with Dr. Peter Johnson, I pursued a Master's degree in Geography with a concentration in Geomatics at the University of Waterloo. My Master's research primarily focused on the development of a Geoweb tool for visualising coastal flood risk and understanding how this technology supports climate change adaptation in Nova Scotia. In this context, "adapting" to climate change refers to any action that is taken by a government, stakeholder or household for addressing, lessening or better managing climate change risks.

Currently, there is a lot of support and interest in community-based efforts in the adaptation planning and decision-making process. Much of this interest is a result of research that highlights the importance of community involvement to allow citizens, local governments and stakeholders to identify adaptations to climate change that are feasible and overlap with current community needs. Nevertheless, there continue to be questions about how to promote ongoing adaptation discussions, linking local needs with national priorities, integrating climate science with local perspectives, as well as a lack of locally-relevant climate change data necessary for informing decisions.

Conceptually speaking, there are many aspects of Geoweb tools that could support climate change adaptation. Particularly in terms of delivering climate change-related information to many citizen groups, raising awareness of risks, integrating citizen perspectives, and potentially encouraging adaptation discussions in the long-term since the information is online. Yet, prior to my research, Geoweb tools and VGI had not been used or explored for this purpose in Atlantic Canada. As a result, the research question that I focused on was:

How does the Geoweb support climate change adaptation in coastal communities in Nova Scotia?

Explicitly, coastal communities in Shelburne County, Nova Scotia were chosen to conduct this research (Figure 1). Shelburne County is located approximately a 3 hour drive south from Halifax, and most of its population lives in small, rural communities along its coastline.

Researchers and Shelburne County municipalities have been actively studying and talking about climate change for the past few years and have produced a series of reports that guided my research. These reports offered insight of current climate change impacts that communities have experienced thus far. For example, places that have historically never been affected by storm events, such as an electrical substation, are now being flooded (Figure 2). These present efforts also helped me focus on one aspect of climate change that communities are primarily concerned about and that had not been studied before: coastal flood risk. Communities in this region are very concerned about their vulnerability to coastal flooding and coastal flood changes in the future. However, at the beginning of my research, there was little information on this topic for Shelburne County. I saw this gap as an opportunity to not only address my research question, but also as a means to create a Geoweb tool that integrates coastal flood information that could be valuable to these communities.

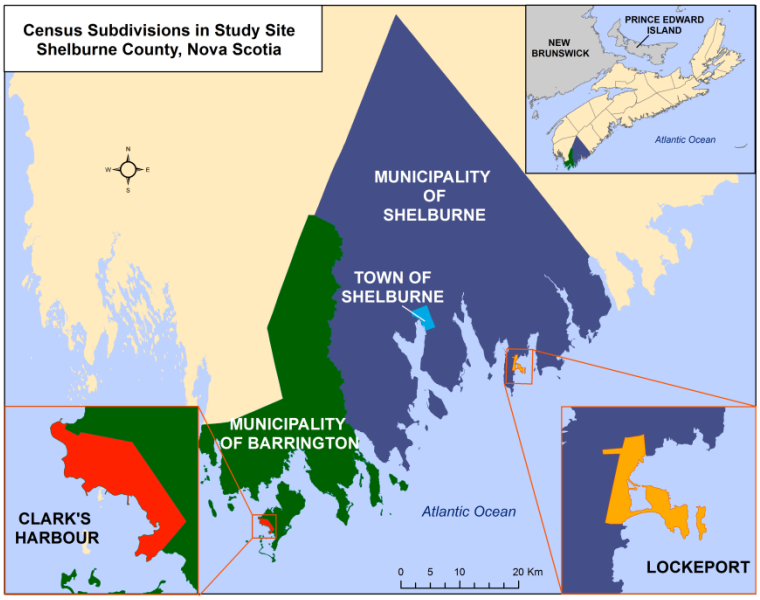

Fig. 1 Research study site

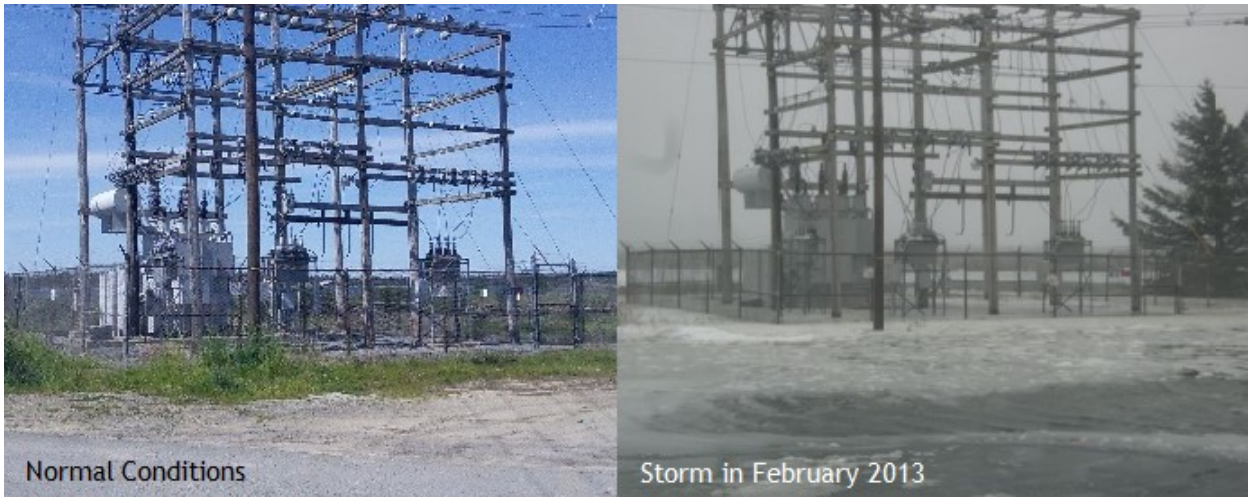

Fig. 2 New storm surge impacts on an electrical substation in the Town of Lockeport

During my Master's, I developed a Geoweb tool (labelled "AdaptNS") that is currently accessible via adaptns.ca for visualising coastal flood impacts in 9 communities. These visualisations were produced by referencing water level projections provided by the Province of Nova Scotia and high-resolution topography datasets. The coastal flood visuals are available online for 5 time frames: past, present, 2020s, 2050s, 2080s and 2100 (Figure 3).

AdaptNS.ca

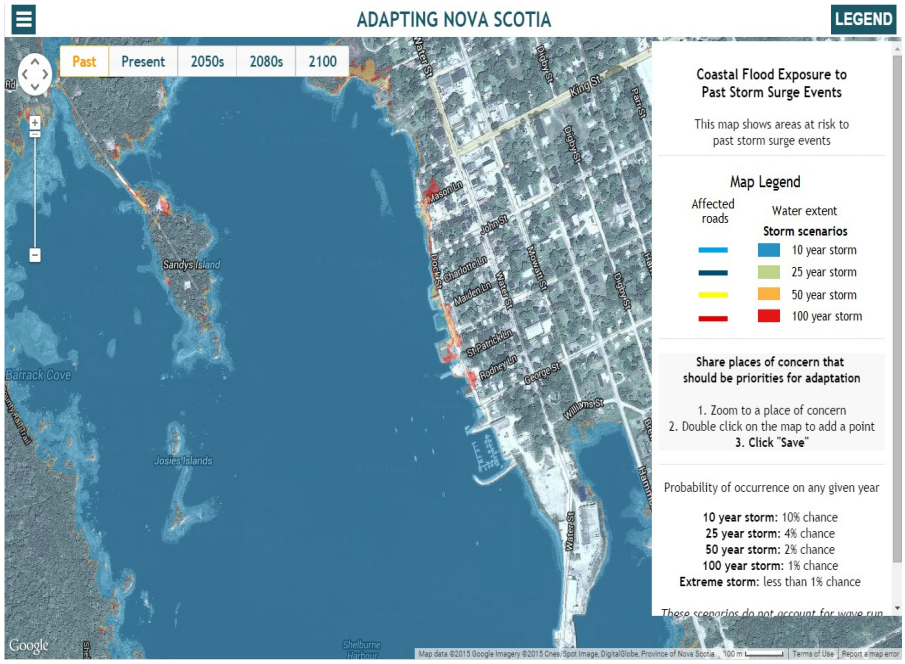

Fig. 3a Past coastal flood impacts in the Town of Shelburne

Fig. 3b Expected coastal flood impacts in the Town of Shelburne by 2100

As a means to move forward from understanding local climate change impacts to identifying adaptation needs, AdaptNS offers users the ability to share their concerns online via VGI methods (Figure 4). By using AdaptNS, a user has the opportunity to browse the coastal flood information and share locations that concerns them. Essentially, the VGI capability of the tool aims to aggregate specific places that concern citizens within a large region that is exposed to coastal flood impacts. Through this approach, I envisioned the VGI to complement the coastal flood visuals with specific locations that could become priorities in climate change adaptation planning and decision-making.

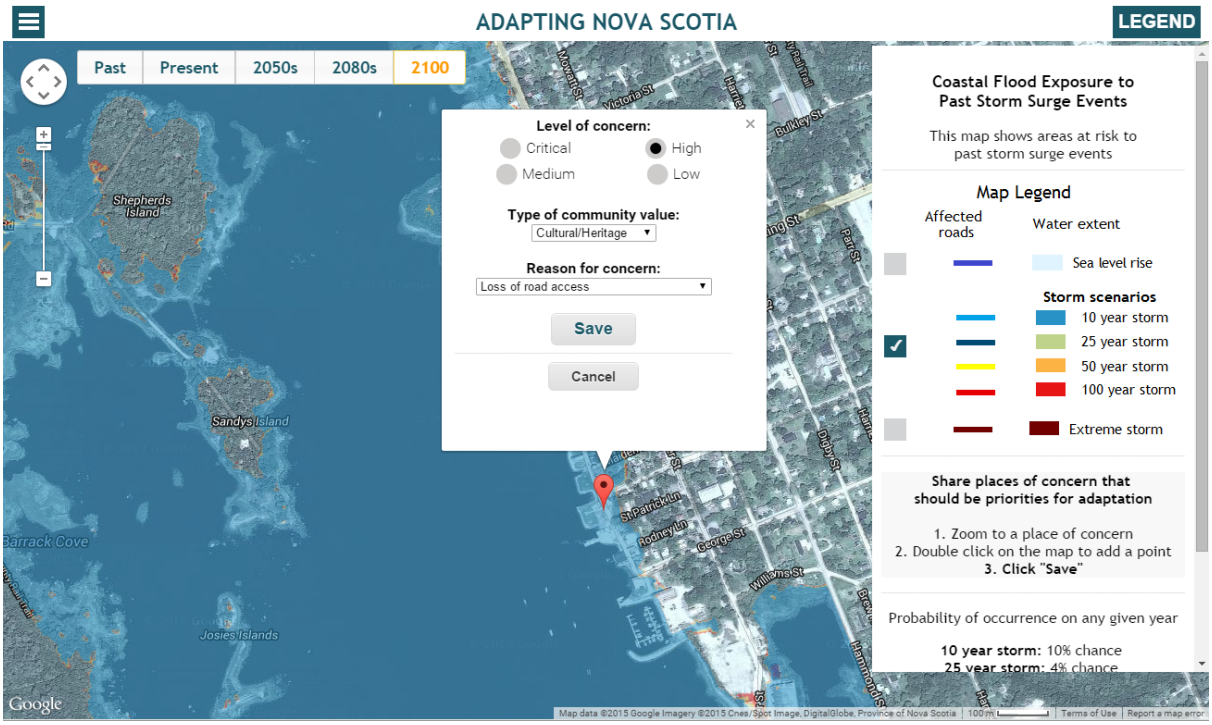

Fig. 4 Citizen concern reporting in AdaptNS

To test AdaptNS, I travelled to Nova Scotia with a finalised Geoweb product to host a workshop with citizens, stakeholders and municipal entities. The purpose of this workshop was to evaluate the tool's communication capabilities, and to identify if/how it could be used for local climate change adaptation. By using Android tablets and a laptop, citizens had a hands-on opportunity to handle the tool, populate it with their concerns, browse detailed coastal flood information, and engage in adaptation-related discussions with others.

How does the Geoweb support climate change adaptation in coastal communities in Nova Scotia?

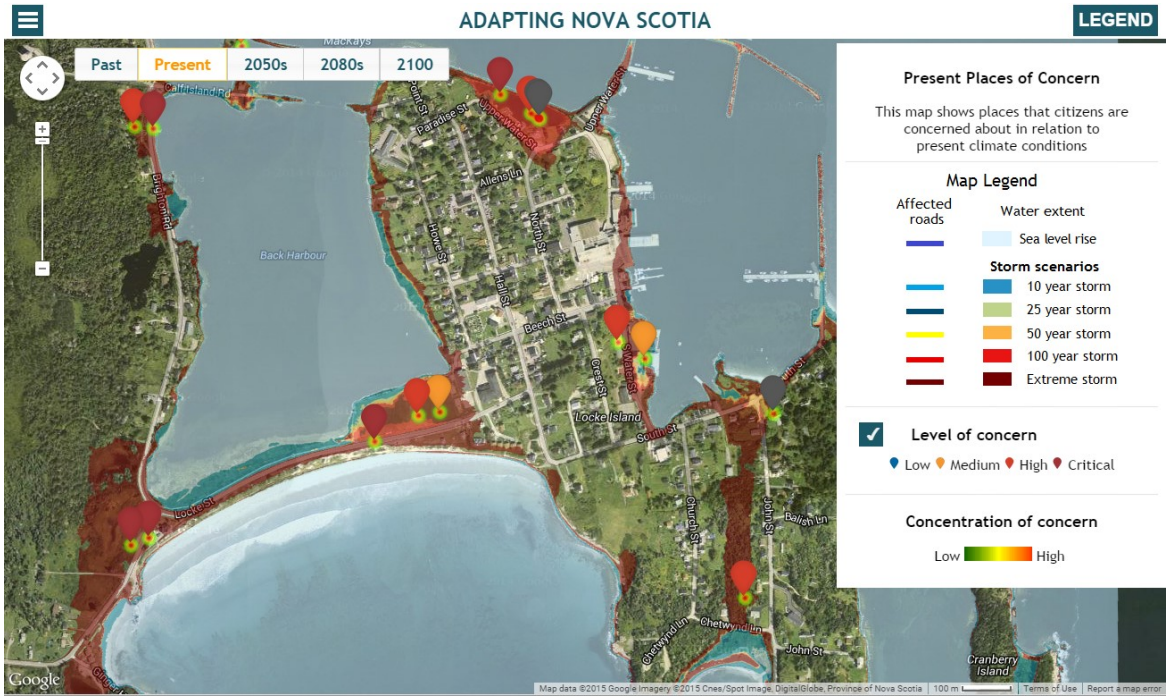

Fig. 5 Areas of concern as identified by Town of Lockeport residents. The causeway is highlighted in white.

In terms of VGI collection, workshop attendees were able to share their specific locations of concern in relation to present and future coastal flood impacts (Figure 5). For example, in the image below, it is possible to see that there is one location that citizens were primarily concerned about: losing causeway accessibility to and off an island community during a storm event. By defining this as an issue, citizens engaged in in-depth adaptation discussions and began to reflect on potential strategies for lessening that risk. Two options that were discussed involved raising the causeway by 15-20 ft. and building a second access road on the north side of the island.

Overall, workshop participants saw many benefits associated to AdaptNS, including:

- Increased understanding of local climate change impacts due to coastal flood visuals
- A useful tool for municipal planning/decision-making since it highlights specific areas of concern and a timetable
- Identified key priorities and urgency for lessening public exposure during severe storms
- Identified the online component of the tool as useful for promoting ongoing climate change conversations, educating the public about climate change, and communicating local issues to upper scales of government and businesses

My Master's experience showed me both the value of climate change visualisations, but also the importance to integrate scientific information with public views for identifying realistic adaptation responses. In addition, my findings showed that Geoweb tools can support climate change adaptation; however, they are complementary to other discussion avenues and forums, such as in-person workshops.

Currently, AdaptNS has influenced one municipality to strengthen sand dunes along their coastline for protecting critical infrastructure. This is a finding of one of my research colleagues, who travelled to Nova Scotia this past spring to speak with municipal councillors about the tool and its impact on their perceptions of climate change. Other researchers have also shown interest in the tool as a means to identify long-term climate change impacts on property insurance.

There continue to be questions about the longevity and long-term use of AdaptNS, but I believe that it currently serves as a platform that can be critiqued by other researchers and can be used as an informational foundation for other research, such as water security and land use management.

I would like to take this opportunity to thank the Geothink partnership for their constant support. Hopefully this research serves as a case study of how Geoweb tools offer governments and citizens a novel way to learn about complex issues and encourage proactive decision-making.

Andrea Minano is a researcher at the University of Waterloo and the Interdisciplinary Centre on Climate Change. She specialises in computer programming, geospatial analysis, web development and climate change linkages to government and industry.

A copy of her Master's thesis can be found online here:

http://hdl.handle.net/10012/9383

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Andrea Minano (centre) and her research colleagues in Shelburne County, Nova Scotia

R2T2: Open Data Standards

Rachel Bloom is currently an undergraduate student at McGill University, Majoring in Geography and International Development Studies. Her R2T2 project is supervised by Prof. Renée Sieber.

Standards are sets of rules that govern the way people interact or perform tasks. However, different stakeholders may have different needs or requirements and the domain the standard covers may be very large or new. As such, this can be an area of contest and result in multiple standards appearing. This is especially apparent in the tech sector, where business interests are fought at the ecosystem level in addition to in traditional retail and marketing fields. A newer domain where standards are developing is open data. Rachel Bloom has been creating an inventory of open data standards and their metrics. Open standards themselves are meant to be examples of participatory democracy, where openness in the formulation and maintenance of the standard promotes public participation in the governing process. This could also potentially be extended to governance of ecosystems in general. In general, standards provide the benefits of interoperability across systems and for technological development that is more easily embraced by the current generation of a particular domain. However, especially in the case of open data it is important to look at the background information behind standards. Who created the standard? Was it developed in conjunction with the public or restricted to a specific organisation? Is this standard easily adopted by other departments or entities within government? Can the standard be spread to other governments? These are the questions that an inventory of open data standards can help address and differentiates it studies with purely technical or utilitarian views of standards.

Basing her search from a list of high-value open datasets, two outputs were created. The first is a table of open data standards. These range in domains such as budgeting to transit and land zoning. For each of these standards, information on the standard and its background was documented. Looking at each standard, it was determined whether or not it was 'easy' to adopt across jurisdictions (either within or across governments and nations). This classification was justified by looking at the characteristics of the standard, such as file formats, fields, and the software needed to access the data. The openness of the standard's formation and maintenance was also looked at. This involved looking at the history and governance structure of each standard. Some standards were found to be quite open, with stakeholder participation and consensus-based governance, whereas others either had more top-down management or a mixture of different levels of participation and consensus. Clear patterns of governance and adoption have yet to emerge amongst open data standards, especially as most are quite new and their uptake is quite low.

This resulted in two tables being created. The first was a comparison of 23 open data standards for the following content domains:

- Annual Budgets
- Building Permits
- Crime
- Election Results
- Public Facilities
- Road Construction
- Service Requests
- Transit
- Zoning
- Procurement and Expenditure
- Food Safety
- Addresses

Name	Domain	Publisher(s)	Publisher Reputation	*Is it an open standard? (Yes/No/Unsure)	Description/Purpose	Easy to Adopt Across Jurisdictions? (Yes/No/Unsure)	Easy to Adopt Across Jurisdictions? (Rationale)	Stage in Development?	Date Last Updated?
Budget Data Package	Annual Budget	Open Knowledge - with technical advice from the International Budget Partnership, Omidyar Network, and Google - Taken from: http://community.openspending.org/2014/07/a-specification-for-budget-data-introducing-the-budget-data-package/#sthash.jprcFOeF.dpuf	Partnership among private sector and nonprofit organizations. Open Knowledge has published the Open Knowledge Definition and has developed open data projects such as CKAN.	Yes - Creative Commons Attribution-Share Alike 4.0 International License.	Standardizes annual government budget by revenue and expenditure. These categories exist at the transactional or aggregated levels.	Yes	Specification is an extension of the Tabular Data Package. It consists of CSV data files and metadata descriptor file in JSON format Standard utilizes universal components so everyone may access it. The aggregated expense category requires classification according to the United Nations' Statistics Division's Classification of the Functions of Government (COFOG). Aggregated revenue data requires classification according to the IMF's Government Finance Statistic Manual 2001 (GFSFM). Classifications according to these institutions are widely implemented and broad enough to be applied across national governments.	Completed	2014

Sample from the open data standards inventory

It was found that some of these standards had multiple groups contributing to the initial creation of the standard, with one even having eight contributing organisations. Other standards had fewer and many had just one publisher with no evidence found of collaboration with other organisations. The type of governance was also noted, such as whether it was consensus-based and the level of participation afforded to stakeholder groups. This allows us to see who the largest contributors are and whether there are any stakeholders that are potentially marginalised in the process. It is already clear that some standards for open data only give the public the ability to give feedback, without any decision making power. Apps and APIs are also beginning to take at least some of these open data standards into account in their development. 'Appification' makes data much easier to access by the public, and the spread of certain standards could further this process, as well as being self reinforcing.

A second inventory was created, based on a set of 10 high-value datasets in the domains of: transit, building permits, annual budgets, public facilities, crime, service requests, road construction, election results, zoning, and expenditure. These domains formed the base for the inventory of open data standards above. The G4 network of cities in Canada (Vancouver, Toronto, Edmonton, Ottawa) and the City of Surrey were surveyed for a total of 5 Canadian cities. The 10 high-value datasets were then compared across cities. For example, service request data was compared across all cities. This was often found as a 311 dataset. The format of the data was recorded and other details such as structuration (how the data is organised?) and metadata (is this data scrapable? How is it tagged?) were noted. This allows us to compare the way each city distributes that particular dataset. Most cities offered each dataset and in most cases they were available in at least two different formats, the most popular being xml and csv. Another observation of note was that these high-value datasets were often not formatted in domain-specific open data standards. This decoupling of open data standards and some of the (potentially) most valuable datasets in an open data catalogue suggests that standards still need more time to proliferate and penetrate within layers of government.

Understanding exactly what groups are and are not involved in creating standards is important when viewed in the context of the citizen participation goals of open data and open government. With a continuation of this type of research, we can begin to understand the full context behind standardisation and identify power flows and relationships among actors.

A full report from this project will be completed soon.

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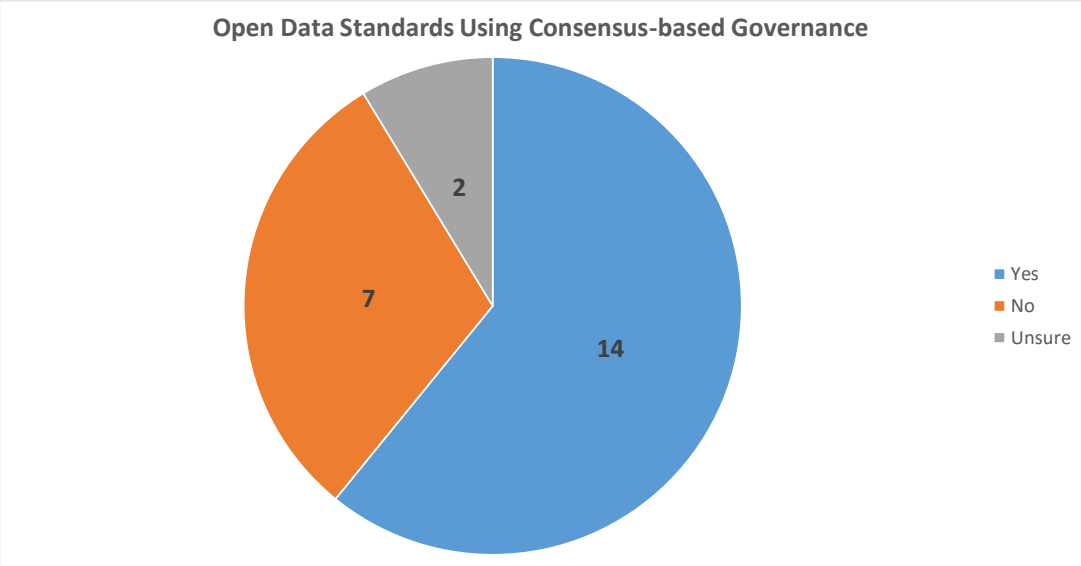

Current Projects

To increase awareness of the work happening at Geothink, we are reproducing calls for papers as well as announcements of new knowledge mobilisation projects such as books and journal special issues. This lets everyone know when work on a planned book or paper is started. Partners are also invited to collaborate in writing. Not only are we including calls for papers or chapters for Geothink-specific output, we are also including related calls for papers from Geothink researchers.

The Citizen's Guide to Open Data

The Citizen's Guide to Open Data project is now under way. Two students at the University of Toronto, Dawn Walker and Curtis McCord, are working under the supervision of Prof. Leslie Shade (U. Toronto) to create a guide for the general public on open data concepts in the Canadian context. They will be using case studies and interactive modules to form the guide, which is designed to help improve open data literacy. In this case, open data literacy can encompass a range of activities, from obtaining and utilising data (extracting data and visualising/analysing it) to issues such as what licensing clauses to be aware of when downloading data. Eventually, the completed product will be a comprehensive toolkit which the general public can draw upon to understand exactly what open data is and what to be aware of when using it. The Guide is set to be completed over the course of this academic year.

New Staff: Naomi Bloch

Take note: If you see an e-mail from Naomi Bloch in your inbox, it's a good bet that she's looking for your professional insights.

Naomi is replacing Drew Bush as Geothink's Digital Journalist. She will be continuing to report on Geothink research and partner activities, so keep an eye on the Geothink website and the Twitter feed for timely updates, feature stories, podcasts, and more.

Naomi is a Ph.D. candidate at the Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign, where she will be defending her dissertation, "Deliberating Environmental Policy: Information Seeking and Use in Canada's House of Commons Standing Committees" at the end of October.

Naomi's dissertation research relies on open government data including the federal lobbyist registry as well as the structured open data behind Michael Mulley's openparliament.ca website. Her work compares the deliberative practices of four standing committees that studied environmental issues over three parliamentary sessions. It analyses the patterns and nature of sources consulted and begins to ascertain the place of scientific expertise within this mix. Problem structure and framing typologies are applied as a means of examining the role of political context and values.

Generally, research regarding the role of science in decision-making or public deliberation has turned primarily to self-reporting via surveys or interviews. Naomi's research is in part a proof of concept, demonstrating how today's sources of open data can help shed new light not just on what policy makers claim they are doing, but what their observable actions demonstrate.

A professional writer and editor since graduating from Concordia University's journalism program in the early 1990s, Naomi's return to university life was largely inspired by the sweeping 21st-century transformations to how public information is produced, distributed, and consumed. At the University of Illinois, Naomi was a graduate research assistant for two civic engagement grant projects—Youth Community Informatics and the Community Informatics Initiative. She has supported youth asset mapping projects, and conducted research with older adults to better understand their uses of digital technologies as information sources, communication tools, and creation tools.

In her other life, Naomi provides tech support for her husband's software start-up, VoxCommando—a speech recognition and command program that was once alone in its class, but now has the pleasure of competing against the likes of OK Google, Siri, and Cortana.

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Geothink Research Themes

Theme 1: Anywhere, Anyone, Anytime

We believe that the Web 2.0 and its associated technologies will dramatically shift the way cities talk to their constituents and others. People can communicate with cities from anywhere, outside of a jurisdiction, and at any time, for example, which means outside formal venues like city council meetings. Anonymity implies that you do not know the identity of the contributor. This challenges traditional definitions of community, citizen, and participation. We will evaluate the processes of technology development and that impact on its city and the citizen.

Theme 2: Spatial Authenticity, Accuracy, and Standards

The moment you bring up volunteered geographic information (VGI) (e.g., with Open 311), you worry about the quality of data. This theme considers questions of data structures, standards, and documentation practices used by public agencies. The research produced also aims to develop consensus on terminology, data standards, and dissemination regarding the opening up of government data and acceptance of VGI .

Theme 3: Laws, Norms, Rights and Code

Data related to governance is not simply a technical matter. Issues that are policy-related and legal in nature will be a primary focus as we try to understand the way Geoweb 1) fits within existing laws and policy, and 2) shapes new policies and law. Specific legal domains of interest are privacy, intellectual property, access to information, access to justice, and the interplay between norms, codes and technology with regards to governance.

Theme 4: Open Everything

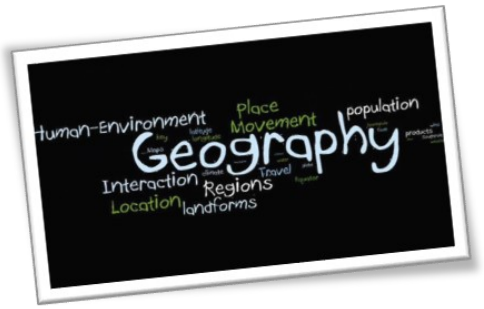
We will track municipal open data engagement over time, theorize about the impacts of open data on governance, and understand and develop best practices. We also have the opportunity to document these approaches and track the evolution of open data practices over time.

Theme 5: Social Justice

We will explore aspects of Geoweb – Society relationships as they pertain to social justice. We will identify the success and failures of Geoweb for community development. Using a case study approach we will employ participatory research to identify emerging concepts of place, the intersection of community, engagement and social justice, and accessibility to the Geoweb.

Theme 6: Geoweb Political Economy

This theme will focus on understanding the political economy of the Geoweb as it concerns ownership structures, institutions, and policies. Power relationships between actors and processes of inclusion and exclusion among social media owners and users also will be our focus.



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Your participation in Geothink

For us to have the broadest impact with Geothink, we would greatly appreciate your input. This can mean providing monthly contributions to our social media outlets, writing blog posts, research updates, and being involved in future events. If you wish to be involved in our media output, please contact the editor or our digital journalist.

Summer Institute 2016: 9-11 May 2016 @ Ryerson University

AGM 2016: 11-13 May 2016 @ University of Toronto

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Geothink