Visualising Coastal Erosion & Sea-level Rise

Integrating art and design within a community engagement process.

This project is an extension of previous research into the role of visualisation material in adaptation planning.
This ongoing research highlights the valuable role that a comprehensive communication strategy plays when engaging the public in adaptation planning activity.

I would like to acknowledge the important contribution of the Nova Scotia Department of Environment, who provided funds for this project through the Climate Change Adaptation Fund.

I would also like to thank the Ecology Action Centre for acting as project partners, particularly to Veronika Brzeski for her invaluable help in recruiting collaborators and event coordination.

Paul Maher, 2014

NOVA SCOTIA
Environment

Ecology Action Centre

1.0 Introduction


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Coastal areas are highly dynamic environments particularly in the face of climate change. Climate change is expected to result in an increase in extreme weather events causing larger than normal storm surges and a greater frequency of intense precipitation amounts. This, in conjunction with a rise of local sea levels will exacerbate erosion patterns already occurring along Nova Scotian coastlines. It is expected that significant amounts of land along this coastline will be lost or irrevocably changed as a result. Communities throughout the Atlantic region will need to adapt accordingly.

The coastline around the community of Baddeck, along with other coastal areas within the Bras D'Or lakes system, is vulnerable to land loss. If historical trends of rising water levels and erosion continue, the degree of land loss will be significant. Low lying and fragile coastal and river valley systems are already under considerable threat. Climate change effects are expected to exacerbate these rates.

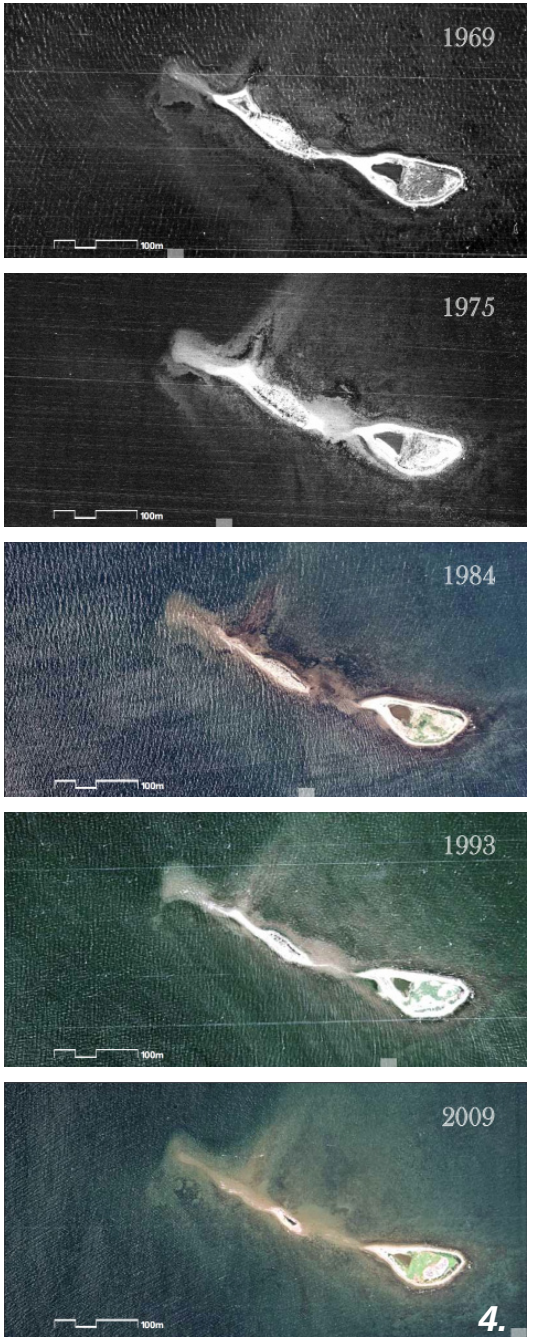
Adaptive action may be required for the local community to respond to the anticipated impacts of climate change. Adaptive solutions can include policy and/or cultural change. To foster such change it is important to engage the public in decision-making. Yet the degree of complexity and scale of these issues provides challenges when engaging such a broad audience. A comprehensive communication strategy assists the engagement process by educating and facilitating dialogue between decision makers, environmental experts and local stakeholders.

A number of key features are present in effective communication. Visualisation material has long been known to convert the complexity of scientific jargon into readily understood information. Recent research (Maher, et al, 2012) established two additional salient features within a good communication approach: that a range of different visualizations caters to different cognitive styles present within any audience; and that visualization forms that are interactive and/or participatory are effective aids for learning.

The following range of materials were produced for this project; each relies on a degree of interaction to enhance audience engagement.

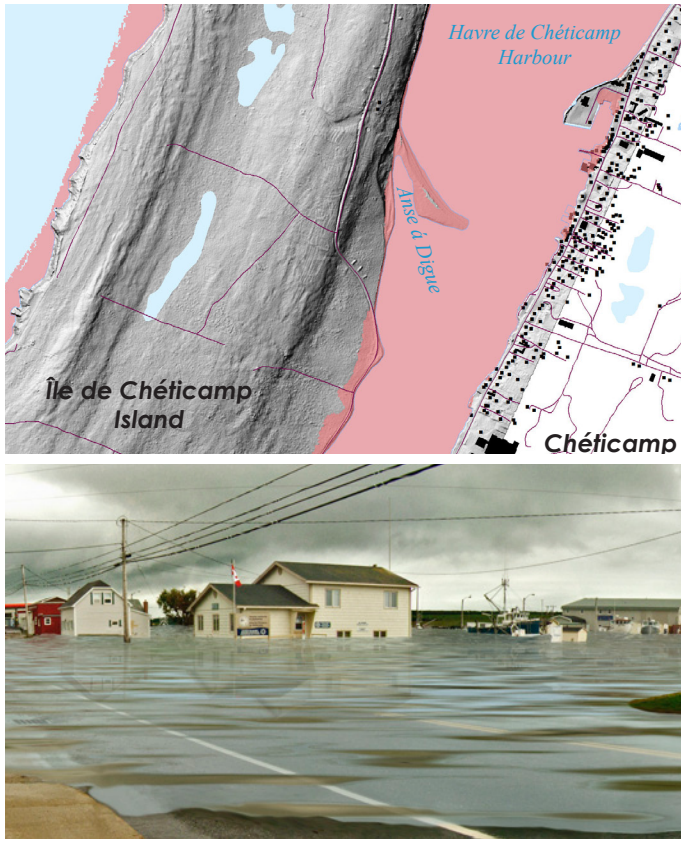
- Erosion Book - a series of scaled aerial photographs, which depict coastal changes sequentially from 1969 to 2009. Interspersed are a series of 'years' facilitating a pseudo-animated effect when rapidly flicking from page to page.
- Print Lines - a participatory art event, which involves letterpress printed sandbags that the audience uses to mark a line on the ground to indicate the degree of change the environmental effect will produce.
- An Interactive Digital Document - designed to be viewed in-situ via a tablet.
- Mouldable models - physical models of eroding coastlines, which allow the audience to predict the degree of erosion over time
- Posters that visualise precipitation data as recorded by Cape Breton Rainfall Network.

This range of communication materials fosters opportunities for discussion and deliberation between different stakeholder groups. Involving a broader audience means greater awareness of the complex issues involved thereby encouraging a deeper engagement with adaptation planning. This will hopefully increase the likelihood of action both in terms of behavior and policy change in the local community.



Examples of visualisation materials developed for the current project:
1. Flood map depicting sea-level rise + storm surge for the year 2100 (5.0m)
2. Print Lines participatory art event
3. Photo simulation depicting a flood event involving storm surge + sea-level rise
4. Pages from the Erosion Book

2.0 Background



Examples of visulaisation materials developed for the Cheticamp project 2012
Top. Flood map depicting sea-level rise + storm surge
Bottom. Photo simulation depicting a flood event involving storm surge + sea-level rise

Recent research on communicating climate change suggests that visualisation materials are highly effective tools for educating the public. They also enhance the potential for better decision-making (Nicholson-Cole, 2005) and provide an effective tool for bridging the gap between capacity and action in relation to climate change (Burch, et al. 2010). Visual imagery and visualisation can communicate complex messages quickly and powerfully (Nicholson-Cole, 2005; Sheppard, 2005), and help to motivate audiences to engage in issues of environmental change (Nicholson-Cole, 2005). Other benefits of visualisations include their capacity to engage lay people in the planning process, present a range of possible scenarios, integrate science and intuition/ sense perception, (Sheppard, 2005). By incorporating images of locally relevant and iconic locations, visualisations can provide compelling information at the community level (Shaw, 2009; Nicholson-Cole, 2005; Tumbro, 2000; Al-Khodmany, 1999). Thus, visualisation material has great potential to involve the public in adaptation planning activity.

In other words, using visual communication tools better enables lay audiences to comprehend and integrate scientific information, especially when compared to conventional, written methods of communication that employ expert terminology (Tumbro, 2000; Nicholson-Cole, 2005). Visual communication tools are also better able to engage different community groups who might have different responses, histories and relationships, not only to levels of information but also to particular communication forms (Nicholson-Cole, 2005).

A recent Atlantic Climate Adaptation Solutions (ACAS) study found that providing a range of visualisation material is beneficial as a result of individual demographic and cognitive preferences (Maher et al, 2012). This project identified that individuals responded differently to particular visualisation forms and in some cases, had very powerful positive and negative responses to this material. The project also identified that interactive visualisation forms, like a floodable model or an interactive map, were more likely to be popular with audiences. These findings reinforced other research that found that scientific learning is enhanced through participatory activity (Tumbro, 2000). Effective communication is more likely if a range of visualisation material is provided, enabling engagement amongst the broad audiences found within contemporary communities. In addition Barone & Eisner (2011) suggest that art can communicate in ways that accommodate complexity. When at its best art can inform in nuanced ways that allow for multiple perspectives providing opportunities for debate and discussion to occur.

In 2011/2012 I was involved in an ACAS - funded research project as part of my Master's of Planning at Dalhousie University. The project created a number of different communication forms which visualised the same climate change effect using six different methods. The climate change effect was the anticipated impacts of storm surge and sea-level rise on a community in the Halifax Regional Municipality (HRM). The different visualizations included: maps; digitally altered photos (photo-simulations); an interactive digital model and two physical models—both with different opportunities to invite audience participation. By testing the responses of different stakeholders (including community stakeholders, decision makers and municipal staff), this research 'discovered' that there is no one form of data visualisation that is most effective. Rather, different visualisations combine to effectively communicate the anticipated environmental changes likely to occur in coastal areas as a result of climate change.

Subsequent to this research project, I became involved in the Ecology Action Centre's (EAC) Engaging Coastal Communities towards Climate Change initiative (coordinated by Jennifer Graham and Veronika Brezski). My role was to visualise sea-level rise and storm surge in Chéticamp, by developing maps and photo simulations. While working in Chéticamp, it became clear that erosion rates will increase as a result of sea-level rise and storm surge. This awareness challenged my previous attitude towards visualization, which focused solely on a partial aspect of coastal dynamics in the light of climate change effects.

Conveying the dynamic interplay between erosion, sea-level rise, storm surges and other effects is complex in nature and difficult to predict. These factors make the process of visualizing these combined dynamics difficult. Rather than project a future value for the combined effects of these complex dynamics I have chosen to communicate the anticipated effects of erosion, sea-level rise and storm surges through narrative. Therefore in this project rather than concretely depict a specific value the visualization material seeks to convey an idea to generate discussion on possible futures.

3.0 Project Objectives

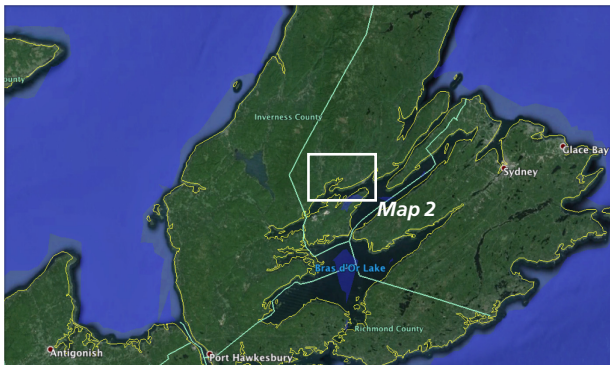
The aim of this project is to further develop previous research in developing communication materials for the purposes of public engagement on adaptation planning. Taking into account this prior research my approach has been to combine static and interactive communication methods. I am also seeking to integrate contemporary art practices to deepen audience participation. As such I have integrated outdoor participatroy experiences when developing the visualisation material.

These nuanced forms of communication are more open to interpretation and act as prompts for deliberation and discussion. My intention is that by bringing together a broad audience and fostering debate, adaptation-planning action will result. Therefore this project has two key objectives:

3.1 To bring together a number of collaborators to fully understand the effect on a Nova Scotian coastal community the dynamic combination of sea-level rise, storm surge and coastal erosion.

3.2 To incorporate art practices as a means to communicate climate change data in a way that engages and educates community stakeholders on coastal management issues.

4.0 Deliverables



Map 1: Cape Breton NS. Google maps

Map 2: North Western Bras D'or Lake. Google maps

Presentation to BLBRA 2/2014.

4.1 To identify a NS coastal community vulnerable to the effects of climate change particularly sea-level rise and erosion.

The Bras D'or Lakes has been identified as a unique ecosystem and as a result has been awarded the status as a UN Biosphere Reserve. Despite its name the Bras D'or Lake is more accurately classified as a estuary in that it is connected to the sea with a connection to the Atlantic Ocean that is open year around. This connection provides a dynamic mix of saltwater mixing with freshwater ground water and surface run-off that enters the Bras D'or Lake from the watershed.

This project is centred on the area surrounding Baddeck located on the north western shore of the Bra D'or Lake in Cape Breton, N.S.. Baddeck is a rural township of just under 2,000 people and has the largest standing population in the region. This population has been on the decline for the past decade Baddeck is the administrative centre of the Municipality of Victoria, providing services to the broader region. This includes a school, the Baddeck Academy, a library and other government services.

In relative proximity to Baddeck lie two significant rivers that drain into the lake system; the Middle and the Baddeck Rivers. Between these two systems a clustering of human centred land use occurs, including agricultural, residential, industrial, forestry, recreational and residential. Tourism is traditionally drawn to this area as result of abundant natural amenities with visitors arriving by vehicle or recreational boat. The geography of Baddeck provides a safe harbour and is the location for a significant number of mooring opportunities for recreational and commercial boats on a temporary and long term basis.

Mi'kmaq, Arcadian, Celtic communities all reside around the Bra D'or lakes. Each cultural group may posses differing relationships to and perspectives on the natural ecology. These different ideologies may significantly influence the ways in which land use decision-making will occur.

4.2 In consultation with local stakeholders and climate change expertise identify the implications of sea-level rise, storm surge and erosion in that location.

To determine the anticipated climate change effects within the study area I have sought extensive input from a range of different experts and local stakeholders. Throughout this stage of the project many people have been generous in providing in-kind support; providing personal insights, observations and professional assessments of environmental and climate change effects likely to occur within the region.

4.2.1 People and Organisations

The different organizations are outlined below with a description of the people and the capacity in which they provided support to the project. [names are provided in chronological order of engaging with project]

Ecology Action Centre, Veronika Brzeski - Project Partner. Veronika coordinated the majority of the recruitment of local partners including: the Baddeck Library; the Baddeck Academy; the Bras D'or Lakes Stewardsip Association. In addition Veronika coordinated the community outreach events in Baddeck. Veronika also presented a primer on climate change to the Oceans 11 class and attended the presentation to the Bras D'or Lakes Biosphere Reserve Association.

Bras D'or lakes Stewardship Association. Henry Fuller and Jim O'Brien. The steward ship association are an active community organization with a vision to provide guidance and leadership on sustainable development within the Bras D'or Lakes Stewardship. While the association has members who reside throughout the watershed Henry and Jim are both located within the Baddeck township.

Badeck Library, Kate Oland. The library will providing additional outreach opportunity to the local community in providing exhibition space and a location for a series of information sessions.

Baddeck Academy, Barb MacDonald, Vice Principal. One of two P-12 school catering to the southwestern population of Victoria County. Barb MacDonald is currently teaching a grade 11 class – Oceans 11. This class is currently studying the effects of coastal erosion in the local area.

Fred Baechler, Chief Hydrologist – EXP Services. Based in Sydney Cape Breton Fred Baechler is active both in a professional capacity and as a community member on environmental issues relating to the Bras D'or Lakes watershed. He provided much of the information on the impacts of climate change on the Bras D'or Lakes watershed.

GIS Centre, Killam Library Dalhousie University, Jennifer Strange and James Boxall. The GIS centre provides mapping and GIS resources to the Dalhousie community. The GIS centre provided guidance whilst producing the geo-rectified imagery used within the erosion book. This support was provided in kind.

Bras D'or Lakes Biospheres Reserve Association (BLBRA). Jim Foulds, Shelly Porter (CEPI), Bruce Batchler (Cape Breton University), etc.. The members of this association include research scientists, academic elected officials and environmental consultants. I was invited to formally present information on this project to their meeting [27th Feb 2014]. In response to this presentation the board has offered support to the project in promotion, recruitment and coordination for the outreach events.

Bras D'or Lake CEPI, Shelley Porter. Shelly Porter was interviewed in the background stage of the report and provided much of the knowledge about the possible impacts on the Barachois ponds.

Cape Breton Rainfall Network Bill Danielson Meteorologist. This network was established in 2011 in response to a severe storm occurring in the northern tip of Cape Breton (Meat Cove), which went unrecorded by Environment Canada. The network's mandate is to fill gaps in the formal data collection network.

4.2.2 Relevant local Climate Change effects

An increase in severe storm activity.
There is a global prediction of an increase in severe storm events. Unlike other regions the way this is expected to occur locally will be in an increase in frequency of significant but less intense storm events. This phenomena has already occurred according to a credible local expert wherein these storm events will occur in sequence over a period of some weeks. a one-in-five year storm occurs followed closely by a one-in-two year storm followed by a one-in-ten year storm over a period of 20-30 days.

This increase in severe weather activities will produce changes to the local environment as a result of combining with other factors.

The expected changes include:

- surface run-off
- sea-level rise and storm surge activity
- coastal erosion

The local community has already observed an increase in surface run-off after these precipitation events. One indicator is observable soil plumes leaching into the Baddeck harbour during and after an intense storm. The fact that the storms occur in quick succession

Map of Baddeck indicating effects of storm run-off.

will increase the volumes of surface run-off. The first event produces the volume of run-off normal associated with the severity of the storm. In subsequent events, however, these volumes will be will be magnified as the precipitation will occur on ground that is already saturated. Overall the surface run-off and inundation levels will be significantly higher than normally associated with each of these severe weather events.

In addition to precipitation severe weather events typically feature strong winds. These winds create significant wave action, which will impact on the coastline. Storm surge is a combination of these waves with a rise in water levels as a result of the lot atmospheric pressure associated with the storm. When it reaches the coast this highly energetic volume of water will damage and inundate coastal areas. Damage includes impacts to the built environment and land loss due to coastal erosion. The Baddeck Harbour foreshore has already seen significant inundation and wave overtopping during past storm events.

Sea-level rise and storm surge.
Global sea levels are expected to rise. This feature has been identified through historical recording for the past century where levels have been rising exponentially. Projections expect this to continue increasing on an exponential level and include threshold effects associated with increase air temperature levels. These effects including ice sheet melt in the polar regions.

Increases in air temperature will foster a greater increase in severe or intense storm activity. With a greater volume of water storm surges are expected to also increase in volume and regularity. Unlike sea-level rise these water levels will recede after the storm event but may cause, flooding and therefore damage infrastructure. Storm surges may impact on the relationship between the estuary and the watershed systems, by rising water levels up the river systems and altering existing salinity levels.

While sea-level projections are predominately concerned with the worlds oceans. The Bra D'or Lake estuary has direct connection to the Atlantic Ocean, therefore any rise in sea-level will directly correspond with a rise in water levels within the estuary. Storm surge however is a different story and the anticipated changes are largely un-researched at present time. Factors that will precipitate an increase in storm surge in the coast will also occur within the estuary system including:

- An increase in severe storm with the associated low pressure system that is one factor of surging water levels.

- The estuary has areas of open expanse (fetch) which will allow the wind to form significant waves creating storm surge onto the land.

- The estuary is also a closed system so any waves will rock back and forwards amplifying wave activity through a phenomena known as seche.

Storm surge is anticipated to impact on areas around the Bra D'or lake shoreline as a result of these factors. Due to the uncertainty more research needs to be done to determine how much will occur and which locations will be most affected. At present a precautionary figure has been suggested that inundation levels may rise by as much as 5 or 6m as a result of sea-level rise and storm surge. Should flooding events occur, infrastructure and houses will be inundated and may sustain damage.

With an increase in water volume coastal erosion rates will increase around the bras D'or lakes coastline. The rise in estuary water levels will migrate up the watershed causing flooding and exacerbating existing erosion rates in the river delta. Already erosion is occurring in these locations causing loss of valuable agricultural land. This flooding may also increase the salinity levels rendering arable land unfertile.

4.2.2 Land-use development effects

These factors are not necessarily climate change related but will combine with climate change effects to create changes within the local environment.

Deforestation in Cape Breton Highlands
Forestry practices currently in the Cape Breton highlands in the upper reaches of the Middle River catchment. The removal of forests in this location impacts on surface runoff reaching the head water of the Middle river. This increase in water volume increases sedimentation levels along the river system causing a myriad of environmental effects through a combination of complex relationships. It has been suggested that this sedimentation is not being completely flushed out of the river and is causing the river to be less deep in some areas. This has the effect that volumes of water that previously would have been accommodated within the river bathymmetry are now causing inundation and erosion along river banks. This is resulting in observed land loss of some significance within farming communities within the areas. This land is considered valuable agricultural land and provides opportunity for community resilience and sustainability.

Development and De-vegetation of shorelines
There are established patterns of residential development in close proximity to the lake shoreline. Of particular concern sensitive areas within the lagoon systems and barrier beaches associated with the Barachois ponds. Such development ofte invovles significant amounts of de-vegetation.

At present there are minimal regulations that guide this form of development. If development continues in the vulnerable location these development patterns are expected to continue unless policy frameworks are developed.

Barachois Ponds and Biodiversity
Barachois ponds occur throughout the lake and provide an important ecological function by providing vital marine and migratory bird breeding grounds. These ponds are separated from the lakes system by a low-lying sand bar. At times these ponds may have a small opening to the larger water system of the Bras D'or Lake and other times may be closed off. The temperature and salinity levels in these shallow ponds is generally different than the surrounding water thus providing a delicate ecosystem well suited to being a bio-diversity nursery. These ponds are especially susceptible to sea-level rise and storm surge. This inherent susceptibility is further compromised by development, which has occurred in these fragile environments.

Image of Barachoise Pond prepared for residential development as featured in a real estate advertisement.
Reti rived March 2014 from http://wolterland.com/property/297/Oceanfront-for-Sale—Lot-24-Cape-Breton,-Nova-Scotia

4.3 [Objective cont.] To create new data visualisation techniques that communicate the dynamic combination of sea-level rise, storm surge and erosion and present that material back to the community.

The visualization strategy developed for this project combines walking with art/design installations to provide a heuristic, or a problem solving framework, in response to the predicted effects of sea-level rise, storm surge and coastal erosion. These two components are further explored below:

• Guided walks with community members, environmental groups, environmental researchers and local decision makers along vulnerable coastline.

Walking provides a steady pace that is sympathetic to an enhanced comprehension of the complex issues and an embodied awareness of the conflicting needs that arise in coastal management. The nature of these walks allows for observation and knowledge sharing to occur.

• A range of Art/Design objects and experiences, which visualise the anticipated effects as they are expected to occur in a single particular location.

While walking through spaces identified as being vulnerable to climate change effects a number of objects and experiences (or visualisations) will augment and focus the discussion on adaptation planning and coastal management. These visualisations will visualise data including historical, observed and anticipated knowledge (including scientific projections) at opportune locations. In addition they provide visual representation of how these coastal environments are expected to change over time.

4.3.1 *Visualisation materials*

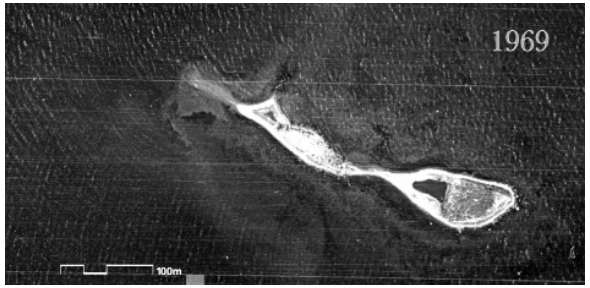
Erosion Book

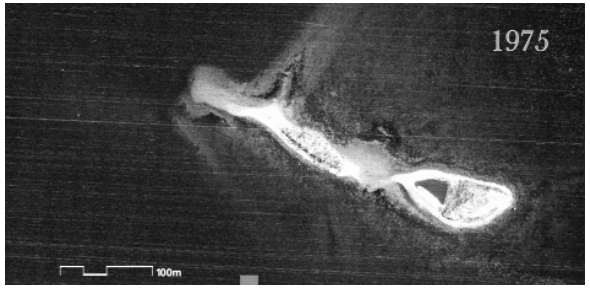
Is a visualisation in the form of a book featuring a series of scaled aerial photographs. The focus of the imagery are the coastal changes experienced by a small island in the Bras D'or Lakes off the coast of Baddeck, Spectacle Island. The aerial photographs used in this visualisation was commisioned by the Nova Scotia government in the years 1969, 1975, 1984, 1993 & 2009. While earlier imagery is available there is a substantial gap between that and 1969. I therefore chose this range as it provides a good combination of breadth and frequency.

While the Spectacle Island is uninhabited the erosion which occurs here was identified by all residents when discussing the prevalence of erosion in the local area. The high visibility of this island from Baddeck and the rapid degree of erosion are two reasons that this location is front of mind. I suggest that local residents consider Spectacle Island as symbollic of coastal changes which are occuring throughout the region - including more critical areas.

To visualise the degree of erosion, I decided to use aerial photography as it is often a analytical tool used to determine historic rates of erosion. This imagery provides a horizontal dimension of the changing coastline. I conceived the idea of a book which can show the different aerial photographs on top of each other in scale so that the changes can be viewed in sequence. The original photographs have been geo-rectified and scaled to enable a direct comparison. Interspersed are a series of 'years' allowing the viewer to witness the coastal changes occuring over time. Flicking rapidly through the pages facilitates a pseudo-animated effect provides the viewer an interactive experience.

An except of an essay written by local resident, Jocelyn Bethune provides a narrative account of how a portion of Spectacle Island's erosion occured during an intense storm in 2010.

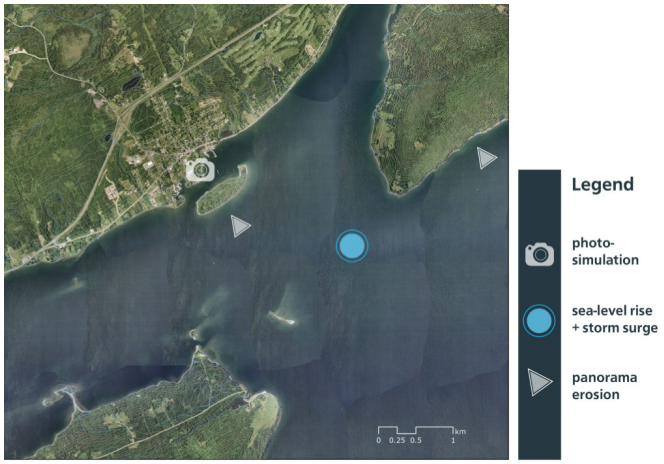




Print Lines
This visualization is a participatory art event, which takes an abstract mapping convention into a real world context. Lines, which indicate the anticipated effects of climate change, such as coastal erosion or flooding, are taken off the map and enacted in real space. To mark out this line a series of sandbags are placed along a piece of ground in the location of an established scenario. These sandbags have been letterpress printed with words associated with adaptation planning.

An interactive digital document

This visualization involves material designed to be viewed in-situ via a tablet allowing the audience to see the predicted climate change effects in the location where the effect will occur. In this visualisation inundation levels are depicted according to a future scenario, a series of photo simulations are provided as well as panoramic photographs, which document sections of coastline experiencing extreme levels of erosion.

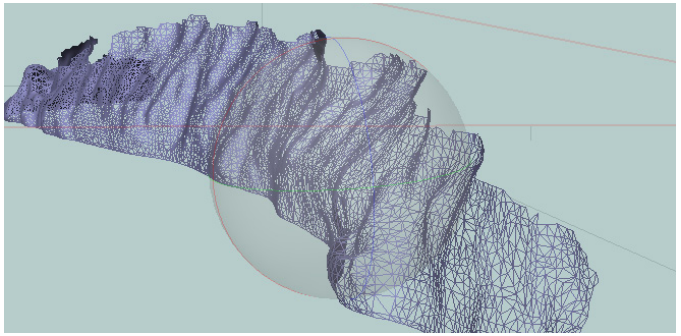


Mouldable Models

This visualization involves physical models of eroding coastlines, which allow the audience to predict the degree of erosion over time. This project involves a class of grade 11 students at the Baddeck Academy. This class has been studying a unit on coastal erosion as part of their coursework.

This visualization involves the students to model possible future erosion by using mouldable 3D models of coastal areas already experiencing extensive erosion. This exercise will draw on and extend their learning on this topic by asking them to predict future erosion rates. To provide context large panoramic photographs and maps will provide context for these models. Students will be asked to draw on knowledge learned to date on erosion patterns in specific geological location. Students will also discuss whether this form of visualization is useful to better understand the long-term dynamics of coastal erosion.

To generate a digital model of the different coastline photogrammetry was used which relies on a volume of sequential photographs to develop a 3D mesh from a point cloud. The module was then produced using 3D modelling software and printed using a 3D printer.



Images show the process of developing the digital file used in producing the mouldable model for the Big Harbour location.
1. Stage one - taking photographs on boat
2. Removing extraneous information
3. Using photgrammetry software

5.0 Innovation

While there are many projects that use art to communicate climate change this project is unique in the following ways:

By combining walking tours with environmental art/design installations two different psychological states will be engaged, both of which will support each other. By including walking the project has an active component. This will foster an active rather than passive response to the information provided. A sense of connection between participants as well as to the environment will be established in the walking tour. Opening the participants up to discussing the implications that arise from the climate change data.

It will educate a broad audience on the anticipated effects on climate change to a specific location using the principles of critical pedagogy and placed based learning. It will also seek to predict the degree of erosion likely to occur in that location

When combined with the connections formed between stakeholders this enables participant's strength of purpose to respond and adapt to the anticipated changes.

6.0 Benefits

Educating stakeholders more deeply about climate change issues means that they are more likely to see the problem as being a broad rather than a local one. Solving the issues of sea-level rise and erosion does not occur on a property-by-property basis, however many local stakeholders currently see the problem in this way.

Many participants in previous visualisation projects complain about not being able to contribute meaningful on the data on how climate change will affect their community. Yet they often have witnessed and/or documented how the coastal environments have changed over time. One feature of this project will be to collect and synthesise information from a range of sources. Providing stakeholders the opportunity to contribute their direct experiences to the knowledge available on how climate change is likely to affect their coastal environment.

Land loss is a highly emotional issue for many landowners and there is the possibility that some participants may get upset in response to the information provided. Accuracy of the data provided or clearly articulating any uncertainty around that data is paramount in this project. Despite this potential disadvantage during previous projects many residents still respond positively to the visualisation material even if the information contained within them caused distress. Participants 'enjoyed' being able to better comprehend the anticipated effects of climate change.

6.0 Project Stages

3.1 Research
Collect Aerial maps and Ortho-photographs (2009, 1993 and 1969). Attain topographical and GIS data. Completed by October 2013. Source and synthesize relevant Climate Change projections for area. Completed November 2013).

3.2 Recruit participants and collaborators.

3.3 Visit community. Meet local stakeholders and prospective participant groups including Baddeck Academy, the youth groups, Baddeck Bra D'OR lake Stewardship Association, municipal officials and staff. Conduct field analysis. Nov 2013

3.4 Data collection and Field research.
Information provided by community stakeholders and experts. Jan/Feb 2014.

3.5 Production of artworks. Process includes develop project ideas, permits associated with temporary outdoor installation of works/ visualisation materials. Create pieces. Install and document. Jan - March 2014.

Note: stage 3.4 and 3.5 may occur in tandem with some of the art/design materials produced (stage 3.5) will be used in data collection (Stage 3.4)

3.6 Community Outreach events

Presentation – Baddeck Academy [5th May 2014].
Coordinated with Barb MacDonald and Veronika Brzeski.

Outdoor event – Baddeck Boardwalk [3rd May 2014].
Veronika Brzeski, Bras D'or Lakes Stewardsip Society and the Bras D'or Lakes Biosphere Reserve Association will coordinate this event. These partners will promote event amongst the local community and provide a range of 'experts' to provide informed discussion throughout the event. Along with a guided walk the range of visualisation materials will be used to generate and focus discussion between attendees. The range will include Print Lines, the Erosion Book, the interactive digital document.

Exhibition - Baddeck Library [2 – 16 May 2014].
Exhibition features visualisation material from the project alongside posters developed by NSCAD design students. These posters will engage with the topic of intense precipitation events and will utilize data generated from the Cape Breton Rainfall network group.

NSCAD design Studio 2 class viewing a presentation from Bill Danielson from the Cape Breton Rainfall Network. March 2014

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