Uncertainty in Climate Change Discourse:
An Examination of Regional Canadian Newspapers

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ABSTRACT

This thesis examines the prevalence and framing of climate change across seven regional Canadian newspapers, with a focus on climate uncertainty, from April 1 to September 30, 2013. Results indicate that climate change and uncertainty are prevalent across Canadian newspapers, and that there is a prevailing discourse. Climate change is primarily framed as a contemporary issue that exists on an international scale. It is often linked to environmental, political, energy, and scientific issues; however, climate change itself is primarily de-contextualized. Climate solutions are especially lacking from the discourse and climate responsibility is either non-existent or related to government. It is thus not surprising that uncertainty within the discourse is primarily about climate action and solutions. Although there are some statistically significant differences between the regional newspapers in regards to spatial framing, climate context, and climate attitude, there does not appear to be any underlying spatial pattern therein.

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I. INTRODUCTION

1.1 Climate Change and Newspapers

The subject of this thesis is climate change discourse in Canadian regional newspapers. Widespread awareness of the term 'climate change', both publicly and in policy, has increased in the last two decades (Ahchong & Dodds, 2012; Pidgeon, 2012a; Poortinga, Spence, Whitmarsh, Capstick, & Pidgeon, 2011). As Lorenzoni and Pidgeon (2006) observe, "Climate change has woven its way into the general consciousness worldwide, with awareness and concern about the issue present among most publics..." (p. 75). Awareness, however, is not understanding, confidence, or concern (Corbett & Durfee, 2004; Sampei & Aoyagi-Usui 2009), which are key to triggering action (Spence, Poortinga, & Pidgeon, 2012).

The Intergovernmental Panel on Climate Change (IPCC) describes anthropogenic climate change¹ as the escalated rate of departures from previous norms, such as temperature, precipitation, and extreme weather events, as a result of human activity (WG1, 2014). This differentiates it from climate change, the natural change in our global climate over geological time. There is a growing scientific consensus on the reality of human-induced climate change and its effects, best represented by the growing collection of research brought together by the IPCC. Some well-documented effects of anthropogenic climate change include sea level rise, melting ice caps, and increases in

¹ IPCC also considers climate change that stems from natural (i.e. non-human) forcing functions and this perspective is beyond the immediate scope of this research.

both intensity and frequency of regional storms, as we approach a potentially dangerous tipping point of a global mean temperature increase of two degrees Celsius² since the Industrial Revolution (IPCC, WG1, 2014).

Climate change³ is more than just an environmental issue; it is also a socio-political issue. Due to fossil fuel contributions to greenhouse gas emissions, there is a strong link between climate action and the issues of energy and development (Demeritt, 2001). However, without sufficient knowledge regarding the societal impacts of climate change, the public is not willing to accept the short-term costs of required remedial action over the long term (Bazerman, 2006; Leiserowitz, 2003; Lorenzoni & Pidgeon, 2006). Although public education has attempted to increase public awareness of the realities of climate change, awareness alone has not triggered sufficient political and public action. Concern about climate change is usually superceded by other societal concerns, since it is often assumed that the choice is between action on climate change and other priorities such as the economy (Powledge, 2012).

Climate change is noted for being extremely complex and controversial, especially in the context of agency and action⁴ (Moss, 2011). It is a multi-dimensional and multi-scalar issue that challenges how we perceive and react to risks. Part of the

² Climate sensitivity has at least two meanings. One is changes in atmospheric systems which result in significant shifts in climate patterns. The other refers to climate changes that lead to major shifts in ecologic and/or socio-economic systems. A 2°C warming in global average temperature is often referenced as a tipping point for climate, ecological and human systems, and is routinely termed as “dangerous”.

³ From this point forward anthropogenic climate change will be referred to as climate change.

⁴ In this thesis agency refers to perceived capability to act on climate change, and action refers to specific acts that to respond to climate change.

problem is that people often perceive the associated risks as spatially and temporally distant, and thus not an immediate matter of concern for themselves (Leiserowitz, 2003; Poortinga et al., 2011). Although few people reject the reality of climate change outright, many express reservations and uncertainty on the issue (Poortinga et al., 2011). Climate change can thus be described as a 'predictable surprise' (Bazerman, 2006). Despite mounting evidence, widespread public awareness, and our ability to anticipate the effects of climate change and prepare for them (Bazerman, 2006), those who have power and means to create change have yet to take significant action to keep the global rise in temperature below 2°C (Moss, 2011; Powledge, 2012), a threshold that, if crossed, will result in severe negative consequences for humans and our environment (IPCC, WG1, 2014).

Newspapers play a vital role in the framing of climate change as they are one of the primary sources of public information and engagement (Sampei & Aoyogi-Usui, 2009; Weathers, 2013). Most people learn about climate change from the news, not from scientific reports (Carvalho, 2000; Corbett & Durfee, 2004; Jones, 2006). Accordingly, newspapers act as an intermediary between experts and citizens and have a strong influence over public perceptions of climate change (Antilla, 2010).

Framing of climate change refers to how the issue is contextualized through discourse⁵, a powerful medium that has the ability to create and manipulate meanings (Antilla, 2005; Jones, 2006; Leiserowitz, 2003). Along with other media, newspaper

⁵ In this thesis the Foucauldian/Hajerian interpretation of discourse is used: discourse is any means in which we engage with reality, and power is placed in the discourse itself as it shapes our social realities.

discourse⁶ affects how an issue is constructed as a public concern (Antilla, 2005; Leiserowitz, 2003). For example, newspapers influence what contextual information is included or excluded in public discourse, which influences how people think about an issue and, subsequently, how they deal with it (Grundmann, 2007; Jones, 2006; Liu, Vedlitz, & Alston, 2008). The ability of newspapers to influence the framing of climate change is then augmented by the intangible and abstract nature of the issue (Antilla, 2010).

In addition to framing, newspaper discourse also influences the salience of an issue (Antilla, 2005; Liu et al., 2008) by determining what is considered 'news-worthy' (Antilla, 2005; Carvalho, 2000; Jones, 2006). When an issue is given substantial coverage it can become more of a public priority (Antilla, 2010). This is important as public concern can then affect policy agendas (Antilla, 2005).

Climate change is not an easy issue for newspapers to cover. Newspapers often have trouble with slow developing issues such as climate change (DiFrancesco & Young, 2010). As well, Jones (2006) found that news articles covering climate change were not very in-depth; only 26.9% of articles had climate change as the main focus and this lack of contextualization can create a lack of understanding. Climate discourse in newspapers can also construct a sense of uncertainty, such as framing the issue as a debate, controversy, or uncertainty, and these discourses have been plentiful (Antilla, 2005). As stated by Jones (2006):

⁶ The medium of discourse in the thesis is newspapers, and thus text based.

The complexities of global warming are not conveyed by news media. Instead, audiences seeking information are presented with dichotomous propositions such as whether global warming is taking place, whether human activity is contributing to the phenomenon, and whether anything should be done to address it as a social/environmental problem. (p. 177)

Newspapers have also reported on the use of uncertainty by climate skeptics to instill doubt and discourage meaningful action (Jones, 2006). Skeptics carefully select data that can be construed without its proper context (Hinrichs, 2008) and use the misconceptions and misunderstandings of the term uncertainty to their benefit (Jones, 2006). Part of the problem is that people still associate science with certainty, and so uncertainty is associated with not knowing rather than probability (Corbett & Durfee, 2004). The ability of researchers to properly convey confidence is then stifled by the lack of context and use of controversy (Corbett & Durfee, 2004), and once trust is lost it is difficult to regain (Poortinga et al., 2011).

It then follows that attitudinal ambivalence towards climate change is partly due to its uncertain and controversial framing in newspapers (Poortinga et al., 2011). When it comes to triggering climate action, even if there is considerable belief in some aspects of climate change itself, the perception of controversy lowers confidence, which is enough for the public to prefer the status quo (Cooper, 2011; Poortinga et al., 2011). This relates to ‘uncertainty transfer’, the concept that if you are uncertain about one aspect of an issue you are more likely to become uncertain of all aspects (Spence et al., 2012; Poortinga et al., 2011).

Public perceptions of climate change affect whether climate policies are supported, which is key to climate action. And although newspapers do not dictate particular responses to climate change, they do, in a non-linear and dynamic way, affect perceptions at multiple levels from the individual to community to international levels (Boykoff, 2008). According to Jones (2006), “For society to be concerned about global warming and advocate action to address it, mass media must frame the issue as being a serious problem worthy of consideration and action” (p. 12).

Given newspapers’ influential role in the framing of climate change, it is not surprising that numerous studies on climate discourse in the news already exist. Nonetheless, gaps in our knowledge remain. To begin, most studies draw on reports on national and other major newspapers. Few studies focus on multiple regional newspapers, and thus in-country regional comparisons in climate discourse are also understudied (Liu et al., 2008). As well, the majority of the literature on climate discourse in newspapers is from the United States, Australia, Europe, and New Zealand (Ahchong & Dodds, 2012). Considering that discourse is fluid, evolving over time, and that the period of study for most analyses is prior to 2010, it is important to get a more recent snap shot of climate discourse in newspapers – as provided in this thesis.

1.2 Research Purpose and Objectives

The overall purpose of this thesis is to explore and examine uncertainty within climate change discourse as presented across regional Canadian newspapers. The

following three objectives are explored individually, and collectively provide insight into the greater context of uncertainty in climate change:

- 1) To uncover and compare the prevalence of climate discourse and how climate change is framed across Canadian regional newspapers via these questions:
 - a. What is the frequency of climate change discourse in news articles?
 - b. What are the issue links and larger themes within which climate change is discussed (economic, energy, environment, etc.)?
 - c. What spatial and temporal scales are used to situate climate change?
 - d. Do articles include climate change causes, effects, solutions, or a combination therein?

Refer to Chapter Five for results.

- 2) To uncover and compare the prevalence of uncertainty in climate discourse and how climate uncertainty is framed across Canadian regions through these questions:
 - a. What is the frequency of uncertainty in news articles on climate change?
 - b. What types of uncertainty are present in news articles on climate change?
 - c. What is the overall attitude towards climate change within the article? Is it supportive or unsupportive of climate change?

Refer to Chapter Six for results

- 3) To uncover and compare the visible actors within climate change discourse across regional Canadian newspapers by asking these questions:
 - a. Who is referenced within articles as a source of information on climate change? Whose voices appear in the discourse?
 - b. Who is portrayed as responsible for addressing climate change in the discourse?

Refer to Chapter Seven for results

This thesis will create a relatively recent pan-Canadian snapshot (April 1 to September 30, 2013) of climate discourse and its depictions of uncertainty, and compare and contrast the regional results. It is important to note, however, that this (con)textual discourse analysis is of a particular time (six months), and is in fact an echo of past discourse, as discourse is in constant flux.

1.3 Types of Uncertainty

This study focuses on climate change discourse in Canadian newspapers and its framing of uncertainty. This presumes that some form of uncertainty is still present in this discourse. The types of uncertainty are based on work by Poortinga et al. (2011)⁷ and categorized as follows:

- I. Trend – not sure climate change is happening
- II. Attribution – climate change is happening, but it is not primarily due to human activity (anthropogenic)
- III. Impact – anthropogenic climate change is happening, but the impacts may not be potential and/or significant
- IV. Action – anthropogenic climate change is happening and impacts are significant, but it may be too late to act, or not worth it when compared to other societal issues
- V. Solution – anthropogenic climate change is happening, the impacts are significant, action is needed, but not sure (or disagree about) what is appropriate action

⁷ Uncertainty types categorized by Poortinga et al. (2011) include trend, attribution, impact, and engaged group. For this thesis the category 'engaged group' was replaced by two new categories – action and solution uncertainty – as people who are uncertain about an aspect of climate change can still be engaged.

1.4 Preview of the Thesis

Chapter Two first defines climate change as a scientific phenomenon and then reviews the literature regarding the role of newspapers in public discussion of climate change. The chapter discusses how newspapers underscore the salience of climate change in public discourse and, through framing an issue, affect public perceptions of it. The chapter also considers how the concept of ‘uncertainty’ is embedded in climate change discourse.

Chapter Three discusses the theoretical underpinnings of the thesis. It defines social constructivism, framing, and discourse – the three key concepts that affect the orientation of the thesis and influence the methodology of the study.

Chapter Four presents the methodology used in the thesis. It is here that the methods employed for collecting and analyzing data are described, and the decision-making process involved.

What follows next are the findings of the thesis. The research objectives, as set out in Chapter One, are addressed sequentially in Chapters Five through Seven. Chapter Five discusses the prevalence and framing of climate change across the seven regional Canadian newspapers examined. Chapter Six considers the prevalence and framing of uncertainty across these seven newspapers. Chapter Seven identifies the visible actors within this newspaper discourse. Chapter Eight concludes the thesis with a summary of key findings from the study and suggested areas for future research.

II. SITUATING CLIMATE CHANGE IN MEDIA RESEARCH

2.1 Introduction

This chapter provides an overview of current literature that discusses climate change in media⁸. Climate change is first defined scientifically, with the remainder of the chapter examining the role of newspapers in climate change discourse. Media is a ‘platform’ (Antilla, 2010) where public discussion and debate takes place, and can greatly influence the public perception of climate change by determining its salience and framing.

Climate change is a difficult topic for media to cover. The spatial and temporal challenges of climate change coverage are thus discussed next in the chapter, followed by a discussion of uncertainty. Uncertainty in climate discourse can mean many different things and the chapter examines its use in media, climate science, and climate skepticism. The final section of the chapter looks at how climate change could be re-contextualized in newspapers to foster much needed action.

2.2 Defining Climate Change

The purpose of this thesis is to uncover how climate change is framed across the discourse of regional Canadian newspapers, and so it is important to first define climate change. The scientific definition of climate change, as stated by the IPCC (2001) is when

⁸ While this thesis specifically examines newspaper discourse, it is important to note that the literature reviewed in this chapter also includes other types of media.

there are “statistically significant variations of the mean state of the climate or of its variability, typically persisting for decades or longer [...]” (TAR, WG1, p. 87). This distinguishes climate change from variability in weather, the latter happening on much shorter temporal scales compared to the former, which usually refers to 30-year averages. In their most recent report, the IPCC (2013, SPM, p. 17) indicated that it is ‘extremely likely’ that current climate change, since the mid-1900s, is primarily anthropogenic. This means that the rise in global mean temperature, sea level rise, increased sea surface temperature, more frequent extreme weather, coral bleaching, and numerous other effects of climate change are driven in a significant way by human activities (IPCC, 2013). These are the results of years of increased greenhouse gas (GHG) emissions from activities such as fossil fuel burning, beginning at the start of the industrial revolution with a rapid rise in the rate of emissions since world war II (Hillerbrand & Ghil, 2008). This is the definition and meaning of climate change the thesis is based on. With mounting evidence, there is little room to scientifically doubt that anthropogenic climate change is occurring and that it will affect us.

The scientific construction of climate change, however, is probably not the most readily available definition that comes to mind for the general populace. Despite the high level of scientific confidence and mounting evidence to support the claim, the issue of climate change is not so simple. It is instead noted for being complex, complicated, and controversial, especially in the context of agency and action (Moss, 2011). Those who have power and means to make change have yet to do so, as the decision stakes are high (Moss, 2011; Powledge, 2012). Climate change is a multi-dimensional and

multi-scalar issue that challenges how we perceive and react to risks; it is a holistic problem in a world where the norm is compartmentalizing issues (Jones, 2006).

2.3 Media as a platform

Newspapers, along with other media, act as a platform between experts and citizens (Antilla, 2010). It is where most people get their information, especially when it comes to science (Antilla, 2010; Carvalho, 2000; Corbett & Durfee, 2004; Jones, 2006; Sampei & Aoyogi-Usui, 2009; Stoddart & Tindall, 2015; Weathers, 2013). Most people, for example, will learn about climate change via mass media, not scientific reports (Corbett & Durfee, 2004). As such, newspapers and other forms of media play a vital role in how climate change information is translated and portrayed for mass consumption (Carvalho, 2000; Jones, 2006). This information, however, tends to get simplified (Jones, 2006), and is subject to public criticism, contestation, and deconstruction (Carvalho, 2000; Zehr, 2000).

Media influences public discourse on climate change via salience, framing, and actors. Media strongly influences salience (Antilla, 2005) as it directly affects what is considered 'news-worthy' and subsequently how frequently the topic is covered (Carvalho, 2000; Jones, 2006). By determining which stories are disseminated, media also affects how climate change is framed. Framing acts as a cognitive window that highlights specific information, which affects how climate change is socially constructed (Antilla, 2010; Olausson, 2009). The language in news articles is not neutral, it reinforces specific perspectives and meanings (Antilla, 2005; Grundmann, 2007), and can influence

how people think about and respond to climate change (Liu et al., 2008; Spence & Pidgeon, 2010; Weathers, 2013). Framing, rather than falsehood, is the most effective tactic used in media to elicit certain perspectives on an issue (Jones, 2006). In addition, media can determine whose voices are given authority regarding climate change depending on which narratives are reproduced (Carvalho, 2000; Stoddart & Tindall, 2015). Journalists' sources, actors in the discourse, are important in shaping climate change (Doulton & Brown, 2009). The power media has in shaping climate discourse, and subsequently climate policies, is well documented (Ahchong & Dodds, 2012; Liu et al., 2008). As such, media is a key arena for different groups to try to assert their particular perspective and fight for discursive hegemony (Jones, 2006; Doulton & Brown, 2009; Sampei & Aoyogi-Usui, 2009). In short, media has the power to shape public awareness, understanding, and engagement of climate change (Antilla, 2010; Liu et al., 2008; Stoddart & Tindall, 2015).

2.3.2 Climate Salience

Media influences salience by giving an issue repeated coverage (Liu et al., 2008), and substantial coverage often increases the issues priority within the public arena (Antilla, 2010). Climate change salience has increased in the last two decades, with widespread awareness of the term both publicly and in policy (Ahchong & Dodds, 2012; Pidgeon, 2012a; Poortinga et al., 2011).

Having heard of climate change is different from understanding it, possessing accurate information, and being certain about it (Corbett & Durfee, 2004). And so,

despite the fact that climate change is a salient issue “the political decision makers are failing to take enough action to mitigate climate change” (Ahchong & Dodds, 2012, p. 52). Interest in climate change and climate action is usually superceded by what is seen as necessary economic action (Powledge, 2012). There is a strong link between climate action and the issues of energy and development due to fossil fuel contributions to greenhouse gas emissions (Demeritt, 2001), which poses one of the main challenges facing climate action. Bazerman (2006) argues “Without being educated about the potentially disastrous long-term effects and costs of climate change, the public is probably not willing to accept these short-term costs” (p. 189). The importance of climate action is secondary in the public’s eye, and thus to policymaker’s, in comparison to socio-political, environmental, and personal issues (Lorenzoni & Pidgeon, 2006). This is in part due to the fact that scientific evidence present in media is usually decontextualized, aside from acknowledgement of historical changes in atmospheric carbon dioxide (Jones, 2006).

2.3.3 Climate Change Framing

Climate change framing in media is just as important as its salience. How climate change is framed affects how the issue is understood, and the more frequent a discourse gets repeated the more that discourse becomes normalized (Esler, 2013). Past studies by Boykoff (2008), Jones (2006), and Liu et al. (2008) show that climate change is often given marginal coverage unless linked to political, economic, environmental, or scientific stories, which affects how climate change is socially defined. As such, it is not

surprising that climate change in the news is primarily driven by political and natural events (Carvalho & Burgess, 2005; Liu et al., 2008). Climate change, however, is not often linked to issues of health, food systems, water security, education, housing and community, climate justice, defense (Boykoff, 2008; Liu et al., 2008; Weathers, 2013), indicating that these issues are not routinely perceived as part of climate discourse. Early in reporting information on climate change primarily came from scientists, but this has since shifted to favour politicians and interests groups, beginning as early as 1990 (Corbett & Durfee, 2004), reflecting the perspective that climate change is mainly a socio-political and environmental issue.

Climate change is not well contextualized in media and its coverage is often lacking unless linked to other news-worthy issues, which means it is often referred to out of context, or with no context at all, as a means of telling other stories (Young, 2011). For example, Jones (2006) found that the level of intensity for stories that covered climate change was not high; about $\frac{3}{4}$ were somewhat related to climate change, and only 26.9% had climate change as the main focus of the story. This lack of contextualization is concerning as it can lead to confusion, controversy, and uncertainty regarding climate change (Corbett & Durfee, 2004). In fact, a study conducted by Corbett and Durfee (2004) found the level of certainty and understanding of climate change was significantly higher among respondents in the group given context-based articles compared to both the controversy-based and control groups. In essence, increased climate contextualization increases understanding, and mitigates misnomers in the media discourse.

Climate solutions have typically not been the focal point of media reports (Liu et al., 2008). When climate solutions are discussed in media the focus is primarily on mitigation strategies (Ahchong & Dodds, 2012; Liu et al., 2008). Adaptation strategies, which are more regional in nature, tend to be missing in climate discourse (Liu et al., 2008), and rarely are both strategies mentioned in the same article (Olausson, 2009). Large segments of media do not discuss moral obligations to mitigate (Hillerbrand & Ghil, 2008), as the focus is primarily on problem-alerting, and less on solutions and policy-making (Liu et al., 2008). Jones (2006) found “The most predominant [paradigm] within the U.S. media is one in which global warming is acknowledged as taking place and requiring a nondescript action to address it” (p. 164). This silence in the discourse is also reflected by the fact that the majority of news articles do not identify any group(s) as responsible for said non-descript climate action (Liu et al., 2008). When a group is identified as responsible for initiating climate solutions half the time it is government (Liu et al., 2008). The widespread framing of climate change as an international issue also affects how the public views solutions and responsibility (Ahchong & Dodds, 2012). Ahchong and Dodds (2012) go on to state, “If more attention is paid by media to regional solutions, it would likely prompt the public and decision makers at the regional level to take action” (p. 56).

Internationally, in terms of content and framing, media does not present a unified singular portrayal of climate change (Jones, 2006). Carvalho and Burges (2005) show that media is responsive to scientific and social learning, values and cultures play an important role in explaining variations in media reinterpretations of scientific

knowledge to the public. For example, Boykoff (2007a) found there were differences in climate coverage between U.S. and U.K. media, which he attributes to differences in domestic social environments, as well as the context and labelling used by journalists and editors within those domestic environments. This shows that journalists and their sources can reconstruct public discourse as they influence how an issue is framed, and subsequently affect social realities (Carvalho, 2007).

2.4 Scalar Challenges of Climate Change

Climate change is a difficult topic for media to cover (Carvalho, 2007). Climate change is slow-developing, long-term issue, whereas news often works on a short-term temporal scale for efficiency and profitability (Boykoff, 2007b; DiFrancesco & Young, 2010). This point is furthered by Jones (2006):

Global warming is a crecive phenomenon (Beamish 2002), meaning that it occurs at an almost indiscernible rate. Changes are gradual enough to go unnoticed by most humans. Given the event-oriented coverage of news by journalists, this presents a problem for covering global warming. (p. 29).

It is easier for media to turn complexities of climate change into distinct points in time and spontaneous events (Weingart, Engels, & Pansegrau, 2000). In media this type of episodic framing is more common than thematic framing, which allows issues to be discussed in a broader social context (Jones, 2006). Episodic framing presents problems as discrete events, diverting attention from societal responsibility as the public fails to make connections between events (Weathers, 2013). Both public and policymakers generally fail to see the immediate relevance of climate change to their daily lives and

are, therefore, less persuaded to make decisions and undertake necessary climate actions (Liu et al., 2008).

The spatial scales in which climate change exists also presents difficulties for news reporting and public understanding. Climate change exists on various spatial scales, from local to international. However, the scientific construction of climate change as a global phenomenon has led to the social construction of a global problem (Demeritt, 2001). The climate change widespread in the news is framed as an international issue, which creates psychological distance. Even during times when climate change reporting was not driven by international events, regional implications were not explored (Liu et al., 2008). Climate change is rarely discussed as a local or regional issue, even though an international framing is a difficult scale for people to relate to.

Due to the spatial and temporal scale imbalances, people often perceive risks associated with climate change as spatially and temporally distant. The risks from climate change are not immediate, and thus are routinely considered not a matter of concern (Leiserowitz, 2003; Poortinga et al., 2011). Being concerned about an issue is important because it is most strongly linked to triggering action, and lower psychological distance is related to higher concern (Spence et al., 2012). This selected global scale produces a lack of connection to the concerns of everyday life, which lowers personal and small scale political agency (Ahchong & Dodds, 2012; Hajer & Versteeg, 2005; Liu et al., 2008). It is difficult to convince people to alter their lifestyle and ultimately make

sacrifices if they do not believe climate change will affect them (Poortinga et al., 2011). By universalizing the issue we have become detached from it culturally (Hulme, 2008).

2.5 Uncertainty and Climate Change

Another challenge of covering climate change in media is the inherent uncertainty of this complex phenomenon, as uncertainty has many definitions and social contexts. Uncertainty is an important aspect of climate discourse as it has been used as a negative frame for delaying meaningful action (Jones, 2006). This section thus discusses uncertainty in media, uncertainty in science, uncertainty framing by climate skeptics, and how uncertainty is part of our everyday lives.

2.5.2 Climate Uncertainty in Media

Climate change uncertainty in newspapers, along with other media, occurs when the issue is framed as a debate, a controversy, or there is a sense of doubt (Antilla, 2005; Zehr, 2000). Often, media will use uncertainty to dramatize news stories (Corbett & Durfee, 2004; Zehr, 2000), tending to sensationalism over the contextualization of scientific uncertainty (Doulton & Brown, 2009). The ability of researchers to convey uncertainty is stifled by this lack of context and over use of controversy by newspapers (Corbett & Durfee, 2004). In addition, this use of uncertainty framing can lead to confusion about climate change risks, promote skepticism, and inspire inaction (Liu et al., 2008). Controversy diverts the discourse away from climate solutions (Gautier, 2012). The public is less willing to solve an uncertain problem than a certain one

(Bazerman, 2006), even though there is a growing consensus by scientists on the existence and significant impacts of climate change (Boykoff, 2007).

2.5.3 Uncertainty in Science

There is considerable uncertainty in climate science. First, there is stochastic uncertainty inherent in the natural environment, climate in and of itself is a chaotic system. Then there is epistemic uncertainty whereby we just do not have the knowledge yet; we admit and accept that our knowledge is incomplete and will thus leave room for error (Patt & Dessai, 2005). This is why scientists always make claims in terms of probability and confidence that leave room for error, for the unknown or unexplainable (Jones, 2006). For scientists, knowledge and uncertainty grow together – the more we now know the more questions we have – this is what moves science and knowledge forward (Corbett & Durfee, 2004; Curry & Webster, 2011; Stehr & Grundmann, 2012).

Criticisms pertaining to scientific uncertainty that occur in media are thus difficult to explain without a wider context. One problem is that people often still associate science with certainty, so when scientists admit they are not sure about something, newspapers and the public interpret this as not knowing anything (Corbett & Durfee, 2004). The result can lead to climate confusion. For instance, 40% of the British public view climate as too complex to model and that data produced is too uncertain to form policy on (Poortinga et al., 2011). Similar conclusions were found by Hinrichs (2008):

Given the popular acceptance of the ideology of scientific authority and the attendant perceptions of certainty, the simple act of engaging in debate over

scientific detail in the public arena confers validity to the broader claims questioning the anthropogenic influence on climate change and undermines the seriousness of the social problem. (p.154)

The concept of certainty in science can thus be a problem (Nerlich, 2010), because when working with large scale and complex systems such as climate change, complete certitude is non-existent (Hinrichs, 2008).

2.5.4 Uncertainty Framing by Climate Skeptics

Skeptics, sometimes referred to as contrarians, are individuals or organizations who deny and discredit climate science in the public sphere (Leiserowitz et al., 2012). Skeptics often use the misconceptions and misunderstandings of uncertainty in their framing of climate change to create further controversy in media (Jones, 2006). They use uncertainty to undermine, minimize, or silence science that might upset the capitalist system (Boykoff & Boykoff, 2004; McCright & Dunlap, 2010). This counter-movement started early in the 1990s, when climate change was established as a legitimate environmental issue, in order to prevent widespread public action and effective policy-making (Jones, 2006).

Skeptics use various strategies to incite controversy and uncertainty into climate discourse. One strategy commonly used is to focus on the science of climate change, thereby diverting discussion from its societal implications (Antilla, 2005; Jones, 2006; Hoffman, 2011). Skeptics use terms such as alarmist, junk science, and bad science to undermine scientists in newspapers and frame climate change as controversial (Antilla, 2005). They frequently select data that can be misleading and skewed without its given

context to instill doubt (Hinrichs, 2008) because once public trust is lost, it is hard to regain (Poortinga et al., 2011). In addition, skeptics call for scientific certitude as a delay tactic for meaningful climate action (Jones, 2006), knowing certitude is an unattainable scientific measure (Hinrichs, 2008). Skeptics use this type of diagnostic discourse to enforce their claim that climate change is not happening (Antilla, 2005; Jones, 2006).

A clear example of skepticism is media in the United States (U.S.) in the early 2000s (Zehr, 2000; Antilla, 2005). During this period, less trusted actors were prevalent in climate discourse and there was an overall sense of distrust by the public (Pidgeon, 2012b). In order to maintain public controversy, industry lobbies and special interest groups in the U.S. manipulated climate science and exploited media (Antilla, 2005). Most U.S. coverage of climate change was dramatic and did not define causes, effects, nor solutions (Weathers, 2013). Then there were events such as ‘climategate’, whereby contrarians leaked emails by the United Kingdom’s Climate Research Unit that indicated climate scientists had erred in their forecast of glacial melting in the fourth IPCC assessment report (Poortinga et al., 2011). Climategate boosted the scandal and controversy skeptics were aiming for (Hoffman, 2011; Nerlich, 2010; Poortinga et al., 2011), and helped legitimize their negative narrative of climate science (Nerlich, 2010). During this period the denier movement in the U.S. was quite successful at creating public confusion and lowering public confidence in climate science, and subsequently the reality and risks associated with climate change.

When skeptics are not using diagnostic frames to define climate change, they often frame climate change as a non-issue, a benefit to society, or a lost cause. Climate

change as a non-problem has been quite successful in comparison to the efforts environmentalists have made in framing climate change as a serious, impending societal issue (Jones, 2006). Jones (2006) states “From a social constructivist standpoint, competition for dominance among the different frame paradigms on global warming is skewed in favor of skeptics and those attempting to downplay the significance of climate change” (p. 38). There is asymmetry in uncertainty, that even if the arguments made by skeptics are not legitimate it is difficult to completely remove the doubt instilled by them no matter how many academics say otherwise (Poortinga et al., 2011). This is particularly the case when taking into consideration the use of cautious language by scientists (Poortinga et al., 2011).

2.5.5 Effects of Uncertainty in Media

Uncertainty in climate discourse has contributed to climate inaction (Baer & Risbey, 2009), as it creates attitudinal ambivalence and lowers overall understanding of the issue (Antilla, 2005; Poortinga et al., 2011). The miscommunication of uncertainty between academics, policymakers, and the public, which takes place in all types of media, thus creates a barrier to productive discussion (Boykoff, 2007b; Gautier, 2012; Poortinga et al., 2011). In accordance with the above, Jones (2006) found that:

The complexities of global warming are not conveyed by news media. Instead, audiences seeking information are presented with dichotomous propositions such as whether global warming is taking place, whether human activity is contributing to the phenomenon, and whether anything should be done to address it as a social/environmental problem. (p. 177)

Recent polls in the U.S., for example, show there is still a sense of uncertainty regarding the reality and seriousness of climate change (Corner, 2012). Comparatively, in Britain attribution skepticism is the most prevalent (Poortinga et al., 2011) – the uncertainty of whether climate change is human-induced. Conflicting frames of climate change also play into the issue of uncertainty as this can create confusion (Liu et al., 2008). Just the perception of controversy is enough for the public to lean towards the status quo over action (Cooper, 2011). This choice of inaction is based on a false negative, whereby people do not want to act on insufficient information (Antilla, 2010). It is important to note, however, that any (in)decision we make affects us, as we are choosing one action, or non-action, over another (Baer & Risbey, 2009).

The concept of uncertainty transfer further exacerbates the issue. Uncertainty transfer is the idea that if you are uncertain of one aspect of an issue you are more likely to become uncertain of all aspects (Spence et al., 2012; Poortinga et al., 2011). In other words, there is a spill-over effect (Poortinga et al., 2011), and just the perception of uncertainty can significantly reduce action to address climate change (Corbett & Durfee, 2004). Although skeptics have often been referred to in climate discourse, very few people outright reject climate change (Poortinga et al., 2011). It is thus also important to distinguish between climate skeptics and people who are just plain skeptical (Hoffman, 2011; Poortinga et al., 2011).

And yet, we live with uncertainty every day, in all aspects of life. Corbett and Durfee (2004) similarly state that “Uncertainty is a certain feature of life; people are immersed in and negotiate uncertainty daily” (p. 143). It is necessary for people to make

decisions with incomplete and/or uncertain information, recognizing that some information is better than none, and we do the best we can with what we have (Moss, 2011). Climate models will always be uncertain, reductionist, and holding only partial knowledge, but as long as we recognize this, they can be effective tools. This is a key point that both Demeritt (2001) and Wainwright (2010) discuss, and relates to Latour's idea of moving from matters of fact to matters of concern. Even if we are unsure how much climate change is a result of human activity, we have still contributed to the problem and we have to live with the coming changes. Similarly, Hulme (2008) says that talking about climate change only in terms of scientific uncertainty distracts from the larger picture, as certitude in climate forecasting will always be out of reach. To move past the use of uncertainty as a paralyzing force that confounds the discourse, we need to acknowledge and accept it as a given, and then factor uncertainty into planning. It is thus encouraging that research by Poortinga et al. (2011) found that climate skepticism in the general public only has a weak hold, and thus people can be swayed if effectively engaged. And indeed, a study by Jones (2006) shows that "The overall trend indicated the consensus frame becoming more prevalent within [international] news media accounts of stories on global warming" (p. 125).

2.6 Re-Framing Climate Change in Media

Many people know the terms climate change and global warming, but few really understand its complex system nor can explain it (Sampei & Aoyagi-Usui, 2009). This is because knowing about climate change is different from comprehending and caring

about it. Information is not enough; climate change needs to be re-contextualized in the public consciousness in a way that is relevant to them (Russill & Nyssa, 2009), it needs to include place and culture (Hulme, 2008). As well, public trust needs to be built to motivate and empower citizens to take action for environmental issues (Cooper, 2011).

Climate change has over the past 15 years routinely been framed as an environmental issue, not as a domestic one (Lorenzoni & Pidgeon, 2006). Media and the public often miss the link between higher temperatures and our vulnerability to urban hot spots, increasing respiratory problems, heat waves, and the like; the link between our environment and our quality of life. So although climate change may be a global phenomenon, for it to have meaning it needs to be nested within the scale of culture, society, and values (Boykoff, 2007b; Jasanoff, 2010). People are more willing to act when something they care about is at risk (Jasanoff, 2010) and the area affected is on a manageable scale (Adger et al., 2009; Etkin & Ho, 2007). A reframing of climate change on regional scales that is tailored to people's corresponding values and concerns is an area that needs to be further explored as public perceptions affect whether climate policies are supported (Bazerman, 2006). And although media does not dictate particular responses to climate change, it does in a non-linear and dynamic way affect individual, community, and international level perceptions of climate change (Boykoff, 2008).

For action to take place media needs to frame climate change as a real anthropogenic issue that is taking place now and requiring immediate action (Jones,

2006). Media needs to provide greater context of climate causes, effects, and solutions (Jones, 2006; Spence et al., 2012). However, Leiserowitz (2003) found that:

First associations to global warming occurred almost exclusively within an impact or problem frame of reference, not a causal nor a solution frame. This suggests that the causes and solutions to climate change did not come 'readily to mind' and were not among the most salient features of American's conceptions of global warming. (p. 179)

Lorenzoni and Pidgeon (2006) and Whitmarsh (2009) also indicate that there is less understanding when it comes to the causes and solutions to climate change. This is a problem as less contextual information leads to less informed decisions, and lower public and policy understanding (Antilla, 2005; Weathers, 2013). And although more information will not engage the most skeptical groups, it will help sway the general public (Whitmarsh, 2011). In fact, one of the best ways to deal with public doubt is to increase transparency and understanding to the processes in which scientific facts are agreed upon (Demeritt, 2001; Spence et al., 2012).

2.7 Chapter Summary

Media is a key arena for public discourse, and climate change is no exception. Studies thus far have indicated that climate change is a salient issue with widespread public awareness of the term. The intensity of climate coverage, however, has been lacking. Climate change is largely used as an auxiliary for other narratives, most often linked with news stories about politics, environment, economics, or science. In short, climate change is not well-contextualized within media, and subsequently not well-understood. Climate salience can only garner so much temporary public concern before

other societal issues take precedence. In addition, climate change is a difficult issue for people to relate to. It is often portrayed as spatially and temporally distant, thereby externalizing and universalizing the issue. This lack of contextualization of and connection to climate change is then exacerbated by the misuse and miscommunication of uncertainty in media. Uncertainty is an important part of science, and a fact of life. Climate skeptics, however, have used a negative framing of uncertainty as a means of creating controversy and confusion in order to divert from meaningful discussion and delay meaningful action.

Based on the reviewed literature, climate change needs to be re-framed in media to garner public concern and decisive action. Climate change presents us with a new kind of environmental challenge as it cannot be easily pigeon-holed as thus. Climate change is a multi-scalar, multi-disciplinary issue that challenges how we perceive and react to risks. It is a global issue that affects us on regional and local scales. And although it is often portrayed as temporally and spatially distant in newspapers, climate change does directly affect humans, our health, and our environment, in the here and now (Weathers, 2013). These aspects of climate change need to be discussed. Climate change and uncertainty need to be better contextualized in new articles, and nested within culture and values for them to have meaning. Climate change needs to be framed in the discourse as a real anthropogenic issue with significant regional impacts that require immediate action.

III. THEORETICAL UNDERPINNINGS

3.1 Introduction

Theory underpins research; it is a way to interpret information for oneself and others. Different theories bring different perspectives to the methodological process. The first theory to be discussed in this chapter is social constructivism, as it encompasses the other two theories – discourse and framing. Social constructivism assumes that social realities and truths are constructed

Next, discourse is defined with particular attention given to Foucauldian discourse, with its emphasis on the power that resides in discourse itself. This is followed by a discussion on framing, a concept which refers to the various perspectives, or societal truths, surrounding an issue. The concepts of discourse and framing are key to the thesis as the overarching objective is to uncover how climate change is framed in published discourses across Canadian newsprint.

3.2 Social Constructivism

Social constructivism takes an epistemological stance whereby the process of knowledge creation, validation, and acceptance is socially constructed. The act of framing an issue is, in fact, an example of social constructivism. Whether climate change is publicly perceived as happening, having significant societal impacts, or even seen as a Canadian issue depends on how the issue is framed. In essence, what we say and how we communicate shapes meaning and truth, and thus our lived realities.

By defining our reality, we construct it, and it exists in a social context (Hajer & Versteeg, 2005; Keaton & Bodie, 2011). It follows that many knowledge claims can exist at once as there are various aspects to social context (Hajer & Versteeg, 2005). As such, it is important to know the historical, cultural, and political context in which a particular 'truth' arises (Hajer & Versteeg, 2005, p. 176). What is important to one region, and subsequently how newspapers frame an issue, will depend on its social and physical landscape. The very thesis of this research – to uncover and compare how climate change is framed across regional Canadian newspapers – is underpinned by social constructivism.

It is important to note that stating knowledge is socially constructed does not deny the existence of the material world. For example, the independent existence of disease is compatible with social constructivism. However, it is the definition of and the shared meaning we attribute to disease that resides within social contexts (Andrews, 2012; Keaton & Bodie, 2011). Similarly, our climate is changing, but how we define, contextualize and give meaning to climate change can differ spatially and temporally. In discourse, lived realities are continually re-contextualized through communication and action.

3.3 Foucauldian Discourse

There are many different definitions of discourse. It is therefore important to be explicit in which meaning is being used. I am employing the Foucauldian interpretation of discourse. I chose this theory to be part of my theoretical framework as it places

power in the discourse itself, and that power resides in all existent discourse, not just dominant ones. This interpretation acknowledges the influence each news article has on the public framing of climate change.

Discourse gives meaning to the world around us. It is any means in which knowledge is generated and disseminated, and in doing so drives how we think and engage with our reality. In this broad Foucauldian and Hajerian understanding of the term discourse there are numerous discourses representing competing truth claims that create a mosaic of fluid frames. Discourses evolve as they vie for power in an ever changing world. The prevalence of specific discourses ebb and flow, with a dominant discourse not necessarily present.

If this discussion sounds similar to section 3.2, it is for good reason. As it stands, we can relate Foucauldian discourse to social constructivism (Hajer & Versteeg, 2005), bolstering the theoretical framework. In Foucault's definition of discourse, agents can actively participate in framing the world to give it meaning (Hajer & Versteeg, 2005), or alternately produce social realities (Pennycook, 1994). Foucauldian discourse thus takes a constructionist perspective on how social realities become normalized. Knowledge, and subsequently power, are socially constructed (Ockwell, 2006). Discourse is not neutral; it is open to discussion and can change, as knowledge creation is a dynamic process (Andrews, 2012; Keaton & Bodie, 2011). This definition of discourse thus emphasizes the importance of how climate change is framed within and across various public discourses.

3.4 Framing

Framing occurs in discourse, and has the ability to direct and promote a specific perspective on how and what we perceive. This happens all the time, every day, through text, images, action, or any other kind of interaction. The simple act of selecting one word over another to describe a situation can help formulate a specific frame. For instance, Whitmarsh (2009) found that using the term global warming instead of climate change when discussing the issue can garner more public concern, despite their obvious relation to each other.

This thesis attempts to uncover the frames used to contextualize climate change across Canada. What are the temporal and spatial scales? What aspects of climate change are focused on – causes, effects, and/or solutions? What types of uncertainties, if any, are present? The frames exist within the discourse, in this case newspaper articles. Discerning what frames are present and prevalent can reveal what perspectives are primarily used to contextualize climate change across regional Canadian newspapers. For example, if climate change is primarily framed as an international issue, as opposed to a regional or local one, this affects how people view and respond to its risks. The ability to select one frame over another, the capacity to manipulate and promote an understanding of an issue, is a powerful tool.

This thesis will thus uncover the various frames used to construct climate change across Canadian newspapers, and, further, identify any dominant frames. A dominant frame is one that is widely accepted, and will exist without question, constructed and portrayed as ‘common sense’ – in essence becoming hegemonic (Olausson, 2009).

3.5 Chapter Summary

The theoretical framework is founded on social constructivism, Foucauldian discourse, and framing. Social constructivism stipulates that our lived-realities are socially constructed, that our perspectives are influenced by how we define our world. Discourse and framing fit into the world of social constructivism as they are a means defining it. Discourse is any form of interaction, made up of a plethora of social phenomena, the ensemble of which is contained, repeated, and reproduced to create our shared understanding of the world (Hajer & Versteeg, 2005; Ockwell, 2006; Sharp, 2001). Foucault argues that knowledge is power because it has the potential to stipulate societal truths, and discourse is its conduit (Hajer & Versteeg, 2005; Ockwell, 2006; Stehr & Grundmann, 2012). Foucauldian discourse thus places power in the discourse itself, where truth claims are made. Framing is a powerful discursive tool that affects the interpretation of truth claims. Framing acts as a filter that can regulate how an issue is contextualized, it has the ability to manipulate meanings, and thus how we think and engage in our reality (Antilla, 2005; Jones, 2006; Leiserowitz, 2003). And so, Foucauldian discourse takes a social constructivism point of view, whereby framing is a means of constructing societal truths within discourses. For example, how climate change is framed within newspaper articles affects how the issue is constructed as a public concern, and subsequently how we respond to it. All these theories, linked together, underpin my research and how it is constructed – the thesis, the objective, the methodology, and resultant interpretation of information.

IV. METHODOLOGY

4.1 Introduction

Methodology, as defined by Greckhamer and Koro-Ljungberg (2005), is the plan of action, or reasoning, for the particular methods employed. The methodology of the thesis is based on Foucauldian Discourse Analysis (FDA) and on Carvalho's (2000) (con)textual approach to discourse analysis. FDA informs the formation of the research objectives of the study and is discussed first. Next, Carvalho's (con)textual approach is described. The following section focuses on my adaptation and application of Carvalho's contextual analysis, explaining the decision-making process behind the selected study period and the choice of newspapers for regional analysis. The textual analysis of the newspaper discourse is then discussed, specifically the method of textual coding and the way that emergent analysis guided the process. Next, the software and statistical tools used to quantitatively analyze the resulting textual data are described. The scope of the thesis is then revisited, and the final section of the chapter discusses my standpoint as the researcher.

The various stages of this research, most of which are discussed in this chapter, are presented in Figure 4.1. Although presented linearly, there were significant recalibrations throughout the decision making process. The recursive element is an integral part of this empirical study, as decisions made at each stage are linked to one another.

Figure 4.1: Research timeline linking theory to procedure.

4.2 Foucauldian Discourse Analysis

Foucauldian Discourse Analysis (FDA) underpins the formation of the three research objectives outlined in Chapter One. Foucault extensively describes his theory on discourse whereby meaning is located in the discourse itself, in the truth claims being made, their role, and how they are interpreted; that knowledge is power because knowledge has the potential to stipulate social truths, and discourse is its conduit (Hajer & Versteeg, 2005; Ockwell, 2006; Stehr & Grundmann, 2012). However, Foucault purposefully leaves the application thereof a little elusive and vague. This is to allow the researcher to interpret what 'knowledge is power' will mean. As a new researcher this seemed to be a large and daunting task. Gordon Waitt's (2012) chapter on how to approach FDA was thus a guiding influence on incorporating it into this research.

Waitt (2012) explains that the production of knowledge itself is important in the analysis as it has the potential power to persuade others. In this regard, the truth of an argument is not as important as the fact that it exists, the reason it exists, and who has attributed truth to it; a rational or irrational argument can become socially accepted as truth. These sentiments are visible in the first two research objectives – to uncover and compare both the prevalence and framing of (1) climate change and (2) uncertainty within climate change news articles across Canadian regions. All the articles are important in their framing of the issue and it is the culmination of these different discourses that will indicate what frames are prevalent within each region. Truths are sustained through successful frames, discourses that are continually repeated indicating a level of social acceptance.

Waitt (2012) then links power to the issues of privilege and voice. What truth claims are made, who proclaims them, and who is denounced as (un)trustworthy in the process? In answering these questions, Waitt (2012) underlines the importance of the medium you are working with, the authors, the intended audience (as they too can be considered co-authors), silences, and ambiguities – to analyze beyond the text itself. This relates to the third research objective - to uncover and compare the visible actors involved in climate change knowledge claims within the discourses. Newspapers play a major role in the dissemination of public discourses, and whose voices are legitimized and those perceived as responsible for climate action reveal insights into the reality of the power-knowledge relationship.

4.3 Carvalho's (Con)textual Approach to Discourse Analysis

The method of discourse analysis for the thesis draws heavily on Carvalho's approach proposed in her 2000 article entitled *Discourse Analysis and Media: a Critical Reading of Analytical Tools*. In the article Carvalho critiques current approaches such as van Dijk, frame analysis, and narrative analysis. They are not, in her opinion, sufficient when handling multi-dimensional and temporal issues such as climate change in newspapers. Instead, she argues for an alternative approach that explicitly includes the elements of time and social actors, due to the role journalists play in (re)constructing and (re)framing reality.

Carvalho's approach is (con)textual. News articles undergo a textual analysis whereby surface descriptors, objects, actors and discursive strategies are considered, as

well as a contextual analysis in which comparative-synchronic and historical-diachronic tools are applied (refer to Table 4.1). The contextual analysis – the main addition to this alternative approach – examines the representations of an issue in various newspapers at a specific time in order to compare frames and facts, and does so repeatedly over a long period of time to uncover any evolutions in the discourse.

Table 4.1: (Con)textual tools used in Carvalho's (2000) alternative approach to discourse analysis

Textual	<i>Examples</i>
Surface Descriptors	date of publication, author, page number, etc.
Objects	topics/themes
Actors	individuals, groups, institutions, etc. referenced
Discursive Strategies	framing via inclusion/exclusion of information, etc.
Contextual	<i>Definitions</i>
Historical-Diachronic	temporal evolution of discourse set within a wider context of events at the time
Comparative-Synchronic	various representations of an issue at a given time; cross-comparison

Similar to Carvalho's approach, this thesis examines the various representations of an issue across space at a given time in order to compare frames. The focus of this (con)textual analysis is the framing of climate change in discourses across Canadian regional newspapers over a six month period (April – September 2013). Noticeably, the historical-diachronic element is not a part of this analysis, and thus the results cannot speak directly to the evolution of climate discourse in Canada. Many research articles describing climate discourse from the 1990s to 2000s already exist, including an article by Carvalho (2007). These past framings of climate change have informed the thesis and

are discussed in the literature review (refer to Chapter Two). The purpose of the selected study period for the thesis is thus to uncover a more contemporary framing of climate discourse, presenting a snap shot of where the discourse has evolved. As such, the (con)textual analysis is primarily comparative-synchronic, and is applied spatially. Instead of comparing representations of climate change at specific times that correspond to news worthy events as Carvalho did, this thesis compares how climate change is framed across Canadian regions overall by expanding the synchronic element to one six month period.

4.4 Contextual Analysis

The comparative-synchronic part of the analysis sets the scope of the thesis; it contextualizes the selected study period and newspapers for regional analysis. This section will thus unpack the decision process behind these two contextual elements.

4.4.2 Study Period

This comparative-synchronic analysis spans from April 1st to September 30th, 2013. This continuous six month study period is the selected time for comparing climate discourse across regions of Canada, and defines the synchronic element of the (con)textual analysis. The study period is short, specific, and relatively recent, rendering a more contemporary snap shot of the discourses.

By restricting the study to a 6-month period, it is reasonable to assume a significant level of stability regarding climate change reporting, and this will in turn

facilitate analyses of regional differences and similarities. Other factors, such as the development and reorientation of the newspapers, are held constant. It can be reasonably assumed that during the study period the newspapers have not undergone major changes through revisioning, repositioning, or change in ownership that may alter the discourse. The study period is also long enough to capture a full range of climate change related news articles from each region, resulting in a more representative snapshot of the discourses.⁹ As indicated by Ahchong and Dodds (2012) international events such as climate conferences create swells in media, dominating the discourse. The specific period between April and September, 2013, was thus partially selected in an attempt to minimize the number of international events that saturate the news, making it easier to uncover regional differences in the framing of climate change. Finally, a relatively recent year, 2013, was selected to act as a more contemporary reflection of where the discourse has evolved.

4.4.3 Newspaper Selection

This comparative-synchronic analysis seeks to uncover any regional differences in climate change discourse across seven Canadian newspapers. The newspapers selected for this analysis are *The Vancouver Sun* (Vancouver, BC), *Calgary Herald* (Calgary, AB), *Winnipeg Free Press* (Winnipeg, MB), *Toronto Star* (Toronto, ON),

⁹It was determined that six months provided a sufficient amount of data for analysis as 1208 news articles were collected between April 1st and September 30th, 2013. A six month time frame also seemed more manageable due to time constraints. If the discourse had varied a lot within a newspaper during the six month time frame the analysis would have been expanded to 12 months, however, this was not the case and the six month time frame remained.

Moncton Times-Transcript (Moncton, NB), *The Telegram* (St. John's, NL) and *The Whitehorse Star* (Whitehorse, YK)¹⁰. The comparative element of this (con)textual analysis is thus applied spatially. Purposefully omitted from this analysis are *The Globe and Mail* and *National Post* as these two newspapers tend to be more national than regional in orientation.

Although the thesis is a regional comparison, there are in fact no regional newspapers. There are only city and national based newspapers. As such, cities in different regions of Canada that have widely distributed newspapers (city and surrounding area) with high readership were selected as proxies for regional newspapers. This fits the definition of regional used by Liu et al. (2008): "...a limited geographical area, one small enough to experience climate change effects in fairly uniform ways, but large enough to include most of the readership of the area's largest newspaper" (p. 397). As well, print newspapers (that are also available online) were the choice medium since it made it easier to determine regionally located readership than with purely online media.

The selection of regional newspapers based on the 2012 daily newspaper circulation report by Newspapers Canada, the most recent report available online at the time. The most widely-read newspaper, determined by highest weekly total readership, was chosen for six provinces and one territory for a pan-Canadian comparison (refer to Table 4.2). All newspapers selected are daily broadsheets.

¹⁰ For convenience and clarity of the written portion of this study the *Times-Transcript* will henceforth be referred to as the *Moncton Times-Transcript*, similarly *The Telegram* will be referred to as *The St. John's Telegram*, so as to include the city in the name of each regional newspaper.

Table 4.2: Characteristics of selected newspapers. M = million(s), K = thousand(s).

Prov./Terr.	City	Newspaper	Owner	Weekly Total	Market Size/ Population
BC	Vancouver	The Vancouver Sun	Postmedia	987 040	1M+
AB	Calgary	Calgary Herald	Postmedia	890 027	1M+
MB	Winnipeg	Winnipeg Free Press	FP Canadian NPLP	679 505	500K-1M
ON	Toronto	Toronto Star	Torstar	2 503 284	1M+
NB	Moncton	Times-Transcript	Brunswick News Inc.	184 485	100K-500K
NL	St. John's	The Telegram	TC Media	179 520	100K-500K
YK	Whitehorse	The Whitehorse Star	Independent	10 471	<50K

*Information from 2012 daily newspaper circulation report by Newspapers Canada

Ownership influenced the selection process. The widely-read English newspapers for Saskatchewan (*StarPhoenix*, *Leader-Post*) and Quebec (*Montreal Gazette*) were considered, however all three newspapers are also owned by Postmedia Network, and other newspapers from other major provincial cities provided more range in this regard. Postmedia appears to have ownership over several widely-read newspapers in Canada, so it is interesting to see if there are any significant differences in the discourse between *The Vancouver Sun* and the *Calgary Herald*. As well, based on the circulation report there does not appear to be any daily broadsheets for either Northwest Territories or Nunavut, and so these territories were not included.

Various databases were used to collect climate change news articles within each regional newspaper. This meant that each selected newspaper had to be cross-referenced with database accessibility. *The Vancouver Sun*, *Calgary Herald*, *Winnipeg*

Free Press, and *Toronto Star* were available in Factiva. The *Moncton Times-Transcript* and *The Whitehorse Star* were available in Canadian Newsstand, and *The St John's Telegram* in Eureka (refer to Table 4.3).

Table 4.3: Number of articles analyzed per newspaper and databases used.

Newspaper ¹¹	Database	Articles
VS	Factiva	290
CH	Factiva	279
WFP	Factiva	91
TS	Factiva	227
MTT	Canadian Newsstand	110
TT	Eureka	70
WS	Canadian Newsstand	140
<i>Total</i>		1207

Accessibility did present some limitations. The selection process was not just about what newspapers were widely-read, but whether those newspapers were available in online databases for the duration of the study period (April 1st to September 30th 2013). For example, originally the *Halifax Chronicle-Herald* in Nova Scotia was going to be used instead of the *Moncton Times-Transcript* in New Brunswick as the former had a higher average weekly readership of 764, 473 (refer to Table 4.2). The *Halifax Chronicle-Herald*, however, was not in any of the available databases. As such, the *Moncton Times-Transcript*, which was available and met the criteria to be a regional newspaper, was included.

¹¹ For tables and figures the following acronyms will be used to refer to the regional newspapers: *The Vancouver Sun* (VS), *Calgary Herald* (CH), *Winnipeg Free Press* (WFP), *Toronto Star* (TS), *Moncton Times-Transcript* (MTT), *The St. John's Telegram* (TT), and *The Whitehorse Star* (WS).

The databases were used to search for climate change news articles. For each newspaper a search was conducted for articles containing the terms 'climate change' and/or 'global warming' for the months of April to September of 2013. The resulting articles, a total of 1207, were then saved as individual documents for textual analysis (refer to Table 4.3). All news articles containing the search terms are included; in other words, editorials, letters to the editor, and opinion pieces are also included.

4.5 Textual Analysis

The textual analysis is based on the information that emerges from surface descriptors, objects, actors and discursive strategies (refer to Table 4.1), and shaped by Foucauldian Discourse Analysis and emergent analysis. Foucauldian Discourse Analysis guides the research questions posed in the introduction, focusing attention to the framing of climate change and uncertainty in Canadian newspapers and the visible actors involved in these knowledge claims. Emergent analysis is an approach to data collection whereby the process is not predetermined but open to revisions (Newman Suter, 2012, Chapter 12). Emergent analysis guides the methodological process of the textual analysis. Thus, this section first discusses how a preliminary study was used to inform the textual analysis, followed by a discussion on the specific method employed – textual coding.

4.5.2 Preliminary Study

A preliminary study was conducted, prior to textual coding, in order to uncover what information emerged from the data and subsequently to inform how best to apply the textual codes. Articles from *The Vancouver Sun* were analyzed for the month of September, 2012. The preliminary study took place outside of the selected study period of the research to avoid repetition and bias. The resulting information was enough to create a first draft of the textual code (V1) and is an example of how emergent analysis guided this method (refer to Figure 4.2).

Figure 4.2: Evolution of textual code. V = version.

The emergent information from the preliminary study set the foundation of the textual analysis and refined the research objectives. For example, it was found that although many news articles contain the terms ‘climate change’ and/or ‘global warming’, climate change was not actually one of the main themes, but only rather mentioned within. As such, it was important that the textual code separate articles that mention climate change from articles that actually discuss the issue. Similarly, some articles where climate change was a main theme did not necessarily convey uncertainty, a central theme to the thesis. As a result, an addendum was made to the first two

research objectives. Originally, the objectives were to uncover and compare how (1) climate change and (2) uncertainty are framed across Canadian regional newspapers, it was then expanded to include the *prevalence*, in addition to the framing, of climate change and uncertainty.

Another example of how the preliminary study informed the research is how uncertainty was framed and subsequently coded. Originally, the types of uncertainty were based entirely on those identified by Poortinga et al. (2011) – trend, attribution, impact, and engaged.¹² The issue, however, was much more complicated than that. An article could express that climate change is happening, that it's primarily human-induced, and that the impacts are significant, but still convey uncertainty as to whether we should take climate action, and if so, what action is appropriate. Based on the preliminary study, two new categories were created for the framing of climate uncertainty – action and solution uncertainty. The category 'engaged group' was removed because people who recognize and discuss uncertainties can still be highly engaged. In fact, a separate category was created in the code to indicate the overall attitude towards climate change in the article, from unsupportive to unclear to supportive, as a means to differentiate the presence of uncertainty from its often negative connotations.

¹² Types of uncertainty (Poortinga et al. 2011): Trend – climate change is not happening, attribution – climate change is not primarily human-induced, impact – impacts of climate change are not significant, engaged group – climate change is happening, it is human induced, and the impacts are significant.

4.5.3 Textual Coding

Due to the large number of news articles to be analyzed (1207), it was decided that coding would be the most efficient and effective method of textual analysis. Again, the purpose of the thesis is to uncover and compare climate discourses across Canada, and this requires a lot of news articles. Each news article has a different combination of surface descriptors, theme(s), actors and discursive strategies (contextualization of information). Coding offers a systematic and thorough manner of organizing all this data with a level of certainty that facilitates subsequent quantitative analysis (refer to Section 4.6).

The coding method used is based on Jones (2006). For each textual element to be analyzed a list of possible results are written out and assigned a number. In other words, the numbers are codes used to represent textual information. For example, if uncertainty is present in the article the type of uncertainty would be recorded as 1 (trend), 2 (attribution), 3 (impact), 4 (action), 5 (solution), 6 (unsure) or 7 (not applicable, no uncertainty present in the article). The coding method resulted in a textual matrix, the final version (V3) of which can be viewed in Appendix 1.

In October, 2013, the process of creating textual codes began, and harkens back to the induction-deduction interplay of Emergent Theory (refer to Figure 4.2). The textual topics chosen to be in the code – climate change and uncertainty framing, actors, themes, etc. – address the research objectives and questions set out in Chapter One. The resulting textual information then needed to be coded. As such, the preliminary study done for September 2012 of *The Vancouver Sun* was used to create

the first draft of code (V1) that organized the emergent information on the topics of interest. In addition to this preliminary study, other research on climate change and newspapers were consulted for ideas on how to best identify and organize textual information – specifically, Ahchong and Dodds (2012), Jones (2006), and Liu et al. (2008).

The draft matrix (V1) was applied to the research data in November 2013, while being fine-tuned throughout the analysis (Figure 4.2). After one month of textual coding, several minor changes were made in the matrix as new information arose. Revisions were sufficient to merit the creation of version 2 (V2) in November. Although V2 was more robust, the matrix was kept flexible so that the end product would best represent the information revealed in the news articles. In essence, V2 was still a working document, again illustrating the influence of Emergent Analysis. At the end of the textual coding in April 2014, alterations on V2 were officially incorporated into version 3 (V3). Most of the changes had to do with redefining, adding or removing coding categories so as to include more precise and pertinent information in the matrix. V3 is thus the static, finalized, end result of coding parameters used that make up the textual matrix.

4.6 Data Analysis

The resultant information from textual coding was analyzed quantitatively. In fact, one of the main reasons for coding the (con)textual data was to facilitate this type of analysis, as it allows trends to emerge from the data while reducing researcher bias.

As described in Section 4.5.3, climate discourse in Canadian regional newspapers was dissected article by article, the resultant code was then recorded in a Microsoft Excel spreadsheet. Once the textual coding was complete, the data was transferred to a SQLite3 database. Data was then queried from the database by SQL to Python, which was used to compute the statistics.¹³ Both descriptive and inferential statistics were generated in Python.

Descriptive statistics were used to graphically compare, side-by-side, the proportion of responses from each newspaper within a coding category. For example, the spatial framing of climate change is a coding category in which there are multiple responses (regional, interprovincial, national, international and not mentioned/not applicable). The proportion of responses was used as a standard measure for comparison because the total number of news articles for each newspaper was different over the six month period.

Inferential statistics, specifically the multinomial exact test, was used to compare whether the proportion of responses from each newspaper differed statistically from one another within a coding category. The multinomial exact test takes the distribution of each newspaper and compares it, pairwise, to the other six newspapers to determine the probability that their responses are different. As such, for each coding category the test was run seven times, once for each newspaper, creating a matrix. For example, within the spatial framing category, the proportion of responses for each newspaper

¹³ The database and programming code created for this research were made possible with the instruction of Henry Hammond.

were compared to the proportionate responses in *The Vancouver Sun*, then all newspapers were compared to the *Calgary Herald*, then the *Winnipeg Free Press*, and so on. Within the resultant matrix ‘1’ indicates that the first newspaper is significantly different from the second newspaper, while ‘0’ indicates that the first newspaper is not significantly different from the second.

Table 4.4: Example Matrix

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	0	0	0	0	0	0
	CH	0	0	0	0	0	0	0
	WFP	1	0	0	0	0	0	0
	TS	0	0	0	0	0	0	0
	MTT	0	0	0	0	0	0	0
	TT	0	0	0	0	0	0	0
	WS	0	0	0	0	0	0	0

The results of this test are asymmetrical because each estimate’s error is dependent on sample size, i.e. the total number of news articles over the study period for each newspaper. As such, a newspaper with fewer articles may appear similar to more newspapers. For example, *The Vancouver Sun*, which has more data to draw upon, can be different from the *Winnipeg Free Press*, but the *Winnipeg Free Press* can be similar to *The Vancouver Sun* in the same coding category, as illustrated by the bolded numbers in Figure 4.4. Again, the multinomial exact test is an inferential statistical tool –

it computes the probability of a significant difference between two newspapers based on the observed sample data.

4.7 Recognizing Research Scope

There are several limitations to the scope of the thesis. Although six out of seven of the selected newspapers are owned by different corporations, addressing issues of newspaper ownership and ideology is not explicitly part of this analysis. This thesis focuses on the contents of the articles, their framing of climate change, and what visible actors are involved – not the influence owners have on journalists and news coverage. Clearly the influence of owners is embedded within each newspaper, but this is not an explicit part of thesis analysis. Alternately, the results of the thesis should not be confused with those of a survey; the analysis is on how newspapers frame truths about climate change for public consumption.

Time was also a limiting factor. Thus, research objectives and questions had to be of a manageable size. This meant conducting the comparison over a shorter study period (six months) and with a limited number of newspapers (seven). As well, time affected the detail and extent of the textual matrix, given the sheer volume of information to code.

It is also important to note that the news articles analyzed are from newspapers, even though most people read their news online. Newspapers are more closely tied to place, making regional inferences easier compared to online media. Given the purpose of the thesis is a regional comparison, it makes sense that newspapers are the chosen

medium. All seven selected newspapers are available online, however, it can be reasonably assumed their online articles would be similar to their print articles. As well, print newspapers were more accessible on the databases used.

4.8 Standpoint of the Researcher

While conducting research, it is important to acknowledge and to be aware of the influence the researcher has over the decisions and interpretations made. Just as it is important to discuss the limitations of this research, it is equally important to discuss any potential bias from the researcher. I have influence over the construction of this research and therefore it is important that I am both open-minded to emerging information, as well as open about my background and positionality. In other words, although I strive to eliminate any personal bias, in reality the best one can do is limit it through awareness and appropriate action. This section, Reflexivity, faces and openly addresses this important concern.

My educational background in physical geography led me to the thesis topic. During my undergraduate degree I took several different courses on climate change ranging from the physical science basis of the phenomenon to its effects on the natural and human environment. I agree with the academic consensus on the existence of human-induced climate change. And given our role in its causation, as well as our knowledge of its impacts and their significance, I believe we have a responsibility to act on this knowledge. This is the truth claim I personally accept, it informs my opinion, and shapes my frame of reference.

The above is my position on climate change, and what the thesis addresses is separate from my own beliefs. My research interest is in uncovering the multitude of discursive frames present across Canadian regions and determining which ones take precedence – whatever they may be. Similarly, I do not try to prove any specific role uncertainty plays in climate change. I only ask if uncertainty is present, and, if so, under what context. The answers to these questions are what will emerge from within the selected range of data.

4.9 Chapter Summary

This chapter has clarified the decision-making process for the various methods employed. Foucauldian Discourse Analysis lays the groundwork by narrowing research objectives and subsequent questions. The plan of action is centered on Carvalho's (con)textual approach, specifically the spatial application of the comparative-synchronic element. As a result, the scope of the thesis is to compare climate discourse across seven Canadian regional newspapers over a six month study period. The seven newspapers were selected for their wide-distribution and high readership within their region, as indicated by the 2012 daily newspaper circulation report, and are as follows: *The Vancouver Sun*, *Calgary Herald*, *Winnipeg Free Press*, *Toronto Star*, *Moncton Times-Transcript*, *The St. John's Telegram*, and *The Whitehorse Star*. The selected study period is short, specific and relatively recent in order to uncover a more contemporary reflection of how the discourse has evolved. The textual part of the analysis, the actual dissection of the discourse, is based on Jones' (2006) method of textual coding and

influenced by Emergent Analysis. The resultant textual data was then quantitatively analyzed in Python, and the use of both descriptive and inferential statistics were employed to enable trends to emerge from the data set. Finally, recognizing the limitations and acknowledging my influence qualify the research and its purpose.

V. FINDINGS: FRAMING OF CLIMATE CHANGE

5.1 Introduction

This chapter addresses the first objective of the thesis – to uncover and compare the prevalence and framing of climate change across regional Canadian newspapers. The first section looks at prevalence, which is important for understanding the salience of climate change across Canadian newspapers. The section also distinguishes between newspaper articles that only mention climate change and those that actually discuss the issue. Framing, which is important for understanding how climate change is portrayed by newspapers for public consumption, is discussed next.

The analysis of regional Canadian newspapers is discussed from two different perspectives. First, descriptive statistics are used to illustrate the proportionate responses of each of the seven newspapers for a given coding category, highlighting which frames are most and least common for each newspaper, and whether there are any prevalent frames across all seven newspapers. While it might not be possible to determine whether the seven regional Canadian newspapers studied in this thesis represent pan-Canadian trends in the regional construction of climate change, the newspapers are sufficiently different (refer to Table 4.2) that it can be argued that the empirical assessments in this study provide insight into the breadth of framing of climate change in Canadian newspapers. Second, inferential statistics were used to determine whether there are any statistically significant differences in the distribution of proportionate responses across regional Canadian newspapers. For further

information on the regional Canadian newspapers used in this study refer to Chapter Four Section 4.4.3.

5.2 Findings: Prevalence of Climate Change

The prevalence of climate change in newspapers is important as increased salience raises awareness and concern in the public. This section looks at the proportion of climate change articles per newspaper.

The terms 'climate change' and/or 'global warming' appear in 1.2% of all articles, henceforth referred to as climate articles (Table 5.1). This indicates on average one in one hundred news articles mentions climate change. This suggests that climate change, overall, is a salient theme in Canadian newspapers as it is likely that people will come across the issue on a regular basis.

How frequent climate change appears in news articles does differ between regional newspapers (Table 5.1). *The Whitehorse Star* has a comparatively higher proportion of climate articles (2.2%), indicating that climate change appears in almost twice as many articles as the Canadian average. Conversely, *The St. John's Telegram* has a comparatively lower proportion of climate articles (0.5%), indicating one in two hundred news articles mention climate change. It can thus be argued that climate change is a more salient issue in the Whitehorse and Vancouver regions compared to the St. John's and Moncton regions (Table 5.1).

Table 5.1: Number of articles, climate articles, and climate-focused articles per newspaper.¹⁴

Newspaper	Articles	CC Articles	% CC Articles	CC Articles w/ Focus	% CC Articles w/ Focus
VS	19 005	290	1.5	168	57.9
CH	22 892	279	1.2	179	64.2
WFP	8 912	91	1.0	42	46.2
TS	20 352	227	1.1	132	57.7
MTT	13 552	110	0.8	49	44.6
TT	13 441	70	0.5	25	35.7
WS	6 336	140	2.2	74	52.9
Total	104 490	1 207	1.2	669	55.4

**The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)*

The proportion of climate articles provide a measure of salience and awareness. In order for there to be an indication of some understanding of the issue, however, climate change needs to actually be discussed in the article, not merely mentioned. Climate articles where the issue is discussed are referred to as climate-focused articles, the average of which is 55.4% (Table 5.1). In other words, climate change is referred to in other narratives almost as often as it is a focus of the narrative. This may imply there is a basic level of understanding of climate change by journalists, and a willingness to routinely include climate change in news articles. However, the framing of climate change in newspapers primarily takes place in climate-focused articles, where the issue

¹⁴ Table 5.1 compares the number of articles that mention climate change (CC articles) to the total number of articles per newspaper over the six month study period to get per cent CC articles. In addition, climate change articles that discuss the issue (CC focused articles) are compared to the total number of CC articles to get per cent CC focused articles.

can be discussed. This may indicate that although climate change is well-known term it may not be well-understood.

Figure 5.1: Proportion of articles per newspaper regarding climate focus¹⁵.

In terms of regional comparison, the proportion of climate-focused articles does appear to differ between regional newspapers (Table 5.1). *The Vancouver Sun*, *Calgary Herald*, *Toronto Star*, and *The Whitehorse Star* have comparatively higher proportion of climate-focused articles (53-64%) than the *Winnipeg Free Press*, *Moncton Times-Transcript*, and *The St. John's Telegram* (35-46%) (Table 5.1). Climate-focused articles can be split into two categories – articles where climate change is the main focus (Type

¹⁵There are three categories under climate focus; articles where climate change is the main focus (Type A), a focus (Type B), and not a focus.

A), and where climate change is a focus (Type B) (Figure 5.1). In other words, Type A articles discuss climate change in more depth, and Type B articles discuss climate change in conjunction with another issue. Considering there does not appear to be large regional differences in the proportion of articles where climate change is the main focus (19-29%), the higher proportions of climate-focused articles for *The Vancouver Sun*, *Calgary Herald*, *Toronto Star*, and *The Whitehorse Star* (Table 5.1) are a result of Type B articles (Figure 5.1). These visible differences in the proportion of climate-focused articles between regional newspapers (Figure 5.1) are in fact statistically significant (Table 5.2).

Table 5.2: Compares each newspaper in regards to climate focus.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	1	0	0	0	0	0
	CH	0	0	0	0	0	0	0
	WFP	1	1	0	1	0	0	1
	TS	1	1	0	0	0	0	0
	MTT	1	1	1	1	0	0	1
	TT	1	1	1	1	1	0	1
	WS	1	1	0	1	0	0	0

**The Vancouver Sun* (VS); *Calgary Herald* (CH); *Winnipeg Free Press* (WFP); *Toronto Star* (TS); *Moncton Times Transcript* (MTT); *The St. John's Telegram* (TT); *The Whitehorse Star* (WS)

*0 = similar, 1 = not similar

The Vancouver Sun, *Calgary Herald*, *Toronto Star*, and *The Whitehorse Star* all have proportionately more climate-focused articles because they discuss climate change

in connection with other issues. Even though climate change is not the main focus, it is news-worthy enough to be a focus in a larger narrative, where the framing of climate change is just as important. As well, based on this information it can be argued that regional newspapers located in larger cities tend to include climate change more readily into public discourse compared to those in smaller cities, excluding *The Whitehorse Star*.

5.3 Findings: Framing of Climate Change

The framing of climate change in newspapers is important to how people think about and respond to climate change. The level of contextualization affects public understanding, concern, and willingness to act. This section looks at terminology, issue links, temporal and spatial scales, climate contexts, and solutions, all key aspects of climate discourse.

Most climate articles use the term climate change (60-74.5%) compared to global warming (11.4-25.3%) and articles where both terms are used are in the minority (11-16.8%) (Table 5.3). This shows that climate change is the popular term used to discuss the issue across Canadian newspapers. This is interesting, and in my opinion good, as the term climate change captures the complex nature of the issue, that there is more to the phenomenon than simply a rising global temperature, which can be inferred by global warming.

Table 5.3: Terminology in climate articles.

Newspaper	% CC	% GW	% Both
VS	74.1	14.8	11.0
CH	70.3	12.9	16.8
WFP	60.4	25.3	14.3
TS	70.9	12.8	16.3
MTT	74.5	13.6	11.8
TT	67.1	20.0	12.9
WS	72.1	11.4	16.4

**The Vancouver Sun* (VS); *Calgary Herald* (CH); *Winnipeg Free Press* (WFP); *Toronto Star* (TS); *Moncton Times Transcript* (MTT); *The St. John's Telegram* (TT); *The Whitehorse Star* (WS)

Issue links are discussed next and refer to the broader themes and issues within articles. Given the analysis is conducted on climate-focused articles, the resulting information illustrates the types of issues that are associated with climate discourse (Figure 5.2). It is important to note that for each article there can be up to three issue links present; as such the data shows the proportion issue links within climate-focused articles of a given newspaper. The themes are categorized as follows: Defense, economy/business, politics/policymaking, energy, science/research/development, environment, water, weather events, food systems, health/safety, education/awareness, and other.

Issue links strongly associated with climate change in climate-focused articles are politics (11-29%), energy (10-24.9%), and environment (11-26%) (Figure 5.2). The top two issue links for *The Vancouver Sun*, *Calgary Herald*, and *The St. John's Telegram* are energy and politics. The top two issue links for the *Winnipeg Free Press* and *The Whitehorse Star* are politics and environment. The top two issue links for the *Moncton Times-Transcript* are environment and energy. The top two issue links for the *Toronto*

Star are politics and science/research. It is interesting to note that one of the two main issue links from larger regions (Vancouver, Calgary, Toronto) is always politics, and that one of the two main issue links from almost all the smaller regions (Whitehorse, Winnipeg, Moncton) is always environment. Science/research (7.3-17%), economy (13-14%), and weather (1.6-11.5%) are also fairly frequent issue links for climate-focused articles (Figure 5.2).

Defense, water, food systems, health and safety, education/awareness, and other, are all issue links not often associated with climate change in climate-focused articles (Figure 5.2). This suggests that climate change is not often situated within culture and values, it is not framed as a domestic issue that affects regional citizens. However, some of the regional newspapers from smaller cities do link climate change to these domestic issues more often than other newspapers. The *Moncton Times-Transcript* and *Winnipeg Free Press* have higher associations to health and safety than other newspapers. As well, *The St. John's Telegram* has a higher association to education/awareness, and the *Winnipeg Free Press* has a higher association to the category 'other'.

Overall, when it comes to issue links most newspapers are similar to each other (Table 5.4). The only two newspapers that show statistical independence are *Moncton Times-Transcript* and *The St. John's Telegram*. Every newspaper, except *The Vancouver Sun* and *The Whitehorse Star*, is different compared to the *Moncton Times-Transcript*. In addition to the *Moncton Times-Transcript*, *The St. John's Telegram* is also different from the *Winnipeg Free Press*.

Figure 5.2: Proportion of issue links in climate-focused articles per newspaper.¹⁶

Issue links are an important part of framing as they uncover how the issue is defined in a broader context. The results of this study indicate when climate change is discussed, across all regional Canadian newspapers, the issue is mainly portrayed as a political, environmental, and energy issue. Climate change is also linked to science, the economy, and weather events in climate-focused articles. Even in non-climate-focused articles, where climate change is only mentioned, the main issue links remain the same.

¹⁶ Issue links are themes within articles, for which there can be up to three per article in this study.

The main difference is that in non-climate-focused articles weather events is no longer a prevalent issue link and there are more articles under the category ‘other’. Issue links that relate climate change to people’s everyday lives and concerns – security, water, health, safety, food, education, community – are not prevalent issue links in climate discourse, and likely do not come readily to mind.

Table 5.4: Compares each newspaper in regards to issue links for climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	-	0	0	0	0	0	0
	CH	0	-	0	0	1	0	0
	WFP	0	0	-	0	1	1	0
	TS	0	0	0	-	1	0	0
	MTT	0	1	1	1	-	1	0
	TT	0	0	1	0	1	-	0
	WS	0	0	0	0	0	0	-

**The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John’s Telegram (TT); The Whitehorse Star (WS)*

**0 = similar, 1 = not similar*

The temporal framing of climate change is a good gauge for how pressing climate change is presented within newspaper discourse and whether climate change portrayed as part of our current social reality. Climate change can be viewed as an urgent, current, or distant issue, or not happening at all. These are the temporal frames used in this research. Climate-focused articles where the temporal frame could not be determined are under ‘unsure’ (Figure 5.3).

In climate-focused articles, across Canadian regional newspapers, the temporal framing is primarily that climate change is happening (77-100%) (Figure 5.3). This strongly suggests that climate change is an accepted part of our social reality. The perspective that climate change is a contemporary issue is repeated throughout the various discourses. Only a handful of articles over the entire study period use contrarian discourse where climate change is framed as not happening; six articles from the *Calgary Herald*, and one each from *The Vancouver Sun* and *Winnipeg Free Press*. And so although contrarian views still appear in Canadian newsprint, their voices are few and far between.

Although climate change is portrayed as a contemporary issue, very few climate-focused articles frame it as an urgent issue (Figure 5.3). Climate change may be accepted as a real and occurring phenomenon, but it has yet to become a matter of concern – it is not framed as a priority. *The Vancouver Sun*, *Toronto Star*, and *Moncton Times-Transcript* have comparatively higher proportions of climate-focused articles with an urgent framing than other regional newspapers (Figure 5.3), however, it is not enough of a difference to be statistically significant (Table 5.5). In fact, there are almost no statistically significant differences. The perspective that climate change is happening appears to be entrenched across these regional Canadian discourses. Even for non-climate-focused articles the prevalent frame is that climate change is a current issue. Perhaps this lack of urgency reflects the fact that climate change is not framed in a way that connects to people's everyday lives, and is therefore not perceived as an immediate concern.

Figure 5.3: Temporal frames for climate change and the proportional response of each newspaper for climate-focused articles.

The spatial framing of climate change is important because it affects the psychological distance people feel towards the issue. A lower psychological distance relates to higher concern for climate change, where concern is vital to triggering action. The spatial frames in climate-focused articles are categorized as international, national, interprovincial, and regional (Figure 5.4). Climate-focused articles where spatial framing could not be determined are listed under 'unsure'.

Table 5.5: Compares each newspaper in regards to temporal framing for climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	0	1	0	0	0	0
	CH	0	0	0	0	0	0	0
	WFP	0	0	0	0	0	0	0
	TS	0	0	0	0	1	0	0
	MTT	0	0	0	0	0	0	0
	TT	0	0	0	0	0	0	0
	WS	0	0	0	1	1	0	0

*The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)

*0 = similar, 1 = not similar

Climate change is largely portrayed as an international issue across regional Canadian newspapers in climate-focused articles (50-80%) (Figure 5.4). Even in non-climate focused articles the largest spatial frame is international. In other words, the perspective that climate change exists on an international scale is the prevalent frame. This suggests that climate change is still a psychologically distant issue; it is not on a scale people can experience, as it is not part of their everyday lives. This international framing removes the sense of local ownership of, agency over, and concern for climate change.

Regional and national framing are the next biggest spatial frames, ranging from 7-31% and 0-22% respectively. Although not as prevalent as international, they represent fairly large proportions of the discourse. There are several statistically significant differences between the distributional responses of regional newspapers

regarding the spatial framing of climate change (Table 5.6) as a result of national, interprovincial, and regional frames. *The Whitehorse Star* and *Winnipeg Free Press* are significantly different from *The Vancouver Sun*, *Calgary Herald*, and *Toronto Star* (Table 5.6). These differences are likely due to the comparatively higher proportion of climate-focused articles under interprovincial framing and lower proportions under national framing (Figure 5.4). In addition to *The Whitehorse Star* and *Winnipeg Free Press*, the *Calgary Herald* is different from *The Vancouver Sun* and *Toronto Star*. Even the *Toronto Star* is different from *The Vancouver Sun* (Table 5.6). This may indicate that *The Vancouver Sun* and *Toronto Star* have a distribution of spatial frames that several other newspapers are not likely to replicate. For *The Vancouver Sun*, this is likely due to its comparatively larger proportion of climate-focused articles that use regional framing. Alternately, the *Toronto Star* appears to have more articles that focus on international and national framings of climate change, with proportionately less that use a regional frame (Figure 5.4). These results indicate that although climate change is primarily framed as an international across Canadian newspapers, there are numerous regional differences in the distribution of spatial frames used within climate discourse.

Climate context refers to the aspects of climate change that are included in the discourse. An article can discuss climate change in terms of its causes, effects, solutions, or any combination thereof. Alternately, there may not be any contextual information about climate change in the article, referred to as 'none' (Figure 5.5). Contextualization is another important part of climate discourse as it affects how the issue is portrayed

and socially defined. As well, increased contextualization leads to a better understanding of climate change and increased certainty, thus mitigating controversies.

Figure 5.4: Spatial frames for climate change and the proportional response of each newspaper for climate-focused articles.

Overall, the most prevalent contextualization of climate change in climate-focused articles across regional Canadian newspapers is none, followed by effects, and then solutions (Figure 5.5). The highest two proportions of climate-focused articles within each newspaper is under one of these three categories. None and climate effects are the two most frequent contextualizations within the *Winnipeg Free Press*, *Toronto Star*, and *Moncton Times-Transcript*. None and solutions are the two most frequent

contextualizations within the *Calgary Herald* and *The St. John's Telegram*. Solutions and effects are the two most frequent contextualizations within *The Whitehorse Star*. *The Vancouver Sun* appears to have a close tie between none, effects, and solutions. This suggests that when climate change is discussed it is often not contextualized at all, or has a very singular perspective, which is not conducive for fostering understanding and confidence in climate change.

Table 5.6: Compares each newspaper in regards to spatial framing for climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	1	1	1	0	0	1
	CH	0	0	1	0	0	0	1
	WFP	0	0	0	0	0	0	1
	TS	0	1	1	0	0	0	1
	MTT	0	0	0	0	0	0	0
	TT	0	0	0	0	0	0	0
	WS	0	0	0	0	0	0	0

**The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)*

**0 = similar, 1 = not similar*

Despite the prevailing frames above, there is a lot of variability between regional newspapers within each category for climate contextualization (Figure 5.5), resulting in numerous statistically significant differences (Table 5.7). The distributional responses for climate context in both *The Whitehorse Star* and *Moncton Times-Transcript* is significantly different from *The Vancouver Sun*, *Calgary Herald*, *Winnipeg Free Press*, and *Toronto Star* (Table 5.7). *The Whitehorse Star* is likely different due to its comparatively

low proportion of climate-focused articles under none and effects-solutions, and higher proportions under causes-effects and causes-solutions (Figure 5.5). The *Moncton Times-Transcript* is likely different due to its comparatively low proportion of climate focused articles under none and causes, and higher proportions under effects and causes-effects-solutions (Table 5.7). *The Vancouver Sun* and *Calgary Herald* are also significantly different from the *Winnipeg Free Press* and *Toronto Star*, indicating that the majority of regional newspapers are unlikely to have similar distributions to the *Winnipeg Free Press* and *Toronto Star* (Table 5.7). The *Winnipeg Free Press* is likely different due to its comparatively higher proportion of climate-focused articles under none and lower proportion under solutions (Figure 5.5). The *Toronto Star* is likely different due to its comparatively higher proportion of climate-focused articles under none and effects, and lower proportions under cause-solution (Figure 5.5). These results indicate that there are regional differences in how climate change is contextualized across Canadian newspapers, however, the level of contextualization in each newspaper remains low.

Climate solutions is the next part of the framing analysis. Based on the contextualization of climate change in climate-focused articles (Figure 5.5), the proportion of articles that include solutions as part of the framing ranges from 23.2-40.2% (Table 5.8). Of the seven regional newspapers, the *Winnipeg Free Press* and *Toronto Star* include solutions in comparatively less of their articles, 23.2 – 27.5% versus 34.7-40.2% (Table 5.8). In my opinion these numbers are important, as less than half of all climate-focused articles mention the need for a climate solution, indicating solutions

are largely missing from the discourse. Given the general acceptance of climate change as a current issue, the focus of climate discourse now needs to be actions and solutions.

Figure 5.5: The contextual framings and the proportional response of each newspaper for climate-focused articles.

When solutions are present in the discourse in climate-focused articles, the majority of solutions are not contextualized (45-69%) (Figure 5.6). This indicates that neither mitigation nor adaptation strategies are discussed; the article merely mentions the need for climate solutions with no real information. If you exclude the *Moncton Times-Transcript* the range narrows to 59-69%. In addition, when climate solutions are contextualized in climate-focused articles mitigation is favoured. The *Moncton Times-Transcript*, however, appears to have a comparatively higher proportion of climate-

focused articles where adaptation is discussed. Very few articles include both mitigation and adaptation strategies (1-10%).

Table 5.7: Compares each newspaper in regards to how climate change is contextualized for climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	0	0	0	1	0	1
	CH	1	0	0	0	1	0	1
	WFP	1	1	0	0	1	0	1
	TS	1	1	0	0	1	0	1
	MTT	0	0	0	0	0	0	0
	TT	0	0	0	0	0	0	0
	WS	0	0	0	0	0	0	0

**The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)*

**0 = similar, 1 = not similar*

There are no statistically significant differences between regional Canadian newspapers when it regards to climate solutions (Table 5.9). The primary framing of climate solutions across Canada is to de-contextualize it, thereby reducing public certainty and agency when it comes to action. And the second largest frame for climate solutions in Canadian newspapers is mitigation. Overall, it can be interpreted that climate solutions are neither an integrative nor well-developed part of climate discourse across Canada.

Table 5.8: The proportion of climate-focused articles that refer to solutions.

Newspaper	% Solution
VS	34.7
CH	39.4
WFP	23.3
TS	27.5
MTT	35.6
TT	40.2
WS	36.2

Figure 5.6: Types of solutions for climate change and the proportional response of each newspaper for climate-focused articles.

Table 5.9: Compares each newspaper in regards to climate solutions for climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	-	0	0	0	0	0	0
	CH	0	-	0	0	0	0	0
	WFP	0	0	-	0	0	0	0
	TS	0	0	0	-	0	0	0
	MTT	0	0	0	0	-	0	0
	TT	0	0	0	0	0	-	0
	WS	0	0	0	0	0	0	-

*The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)

*0 = similar, 1 = not similar

5.4 Chapter Summary

This chapter suggests that climate change is prevalent across regional Canadian newspapers. It is a salient issue, appearing on average one in every 100 news articles (Table 5.1). Despite the numerous articles that refer to climate change and/or global warming, only about half of them on average discuss the issue (Table 5.1). People are consistently reminded of climate change, but this awareness is not enough to trigger action as an understanding and concern are also necessary.

Understanding of and concern for climate change is fostered through framing in the discourse. Within climate-focused articles across Canada there are some prevalent frames that socially define climate change. Climate change across Canada is largely

linked to politics, energy, and the environment, followed by science, economy, and weather events. Rarely is climate change linked to issues such as health, safety, water, and food systems (Figure 5.2), indicating these issues do not come readily to mind.

Climate change across Canada is a contemporary issue that is largely accepted as part of our social reality. The contrarian perspective that climate change is not real is almost non-existent in Canadian discourses. Climate change, however, is also not often portrayed as an urgent issue, it is not yet seen as a pressing matter of concern (Figure 5.3). This is likely influenced by that fact that the prevalent spatial frame of climate change across Canada is international (Figure 5.4), which removes local ownership by universalizing the issue. The risks associated with climate change are psychologically distant, existing externally from our everyday lives. Climate change is largely de-contextualized in the discourse, whereby causes, effects, and/or solutions are often not included in the discussion, leaving the issue open to confusion and unnecessary controversy. When climate change is contextualized, the prevalent frames are effects, and then solutions, both singular perspectives (Figure 5.5). And finally, climate solutions are not a well-developed part of Canadian climate discourse, and likely not well-understood. Only 23-40% of climate-focused articles even mention solutions, most of which are also de-contextualized with no discussion of potential mitigation or adaptation strategies. When solutions are contextualized it is usually mitigation (Figure 5.6). In short, climate change in Canadian newspapers has “...become more voluminous but less complex and contextual” (Young & Dugas, 2011, p. 17).

The above results are similar to those found in other studies. In studies by Boykoff (2008), Carvalho and Burgess (2005), Jones (2006), Liu et al. (2008), and Weathers (2013) the primary issue links were also politics, energy, environment, science, economy, food and water security, health, and the like were not prevalent. Liu et al. (2008) also found the prevalent spatial frame to be international. Leiserowitz (2003), Pidgeon (2006), and Whitmarsh (2009) found that causes and solution did not come readily to mind for most Americans. However, Young and Dugas (2011) argue that causes of climate change are often left out of the discourse at this point in time because causes are assumed to be common knowledge. The lack of understanding regarding climate solutions is, in my opinion, due to the widespread de-contextualization of climate change. Jones (2006) argues that climate change tends to appear in unrelated news articles as a mean of telling other stories, and that when climate change is discussed it is not very intense. Considering only half of all articles are climate-focused, and half of those are where climate change is the main focus (Table 5.1, Figure 5.1), I agree with Jones' (2006) assessment. It can thus be argued that the primary frames used in climate change discourse across Canadian newspapers are similar to those used in other Western newspapers.

Looking beyond dominant discourses, there are some statistically significant regional differences in how climate change is framed across Canada. To begin, Whitehorse, and the more populated regions of Vancouver, Calgary, and Toronto, have significantly higher proportions of climate-focused articles than the smaller cities of Winnipeg, Moncton, and St. John's (Table 5.2). As for issue links, only the *Moncton*

Times-Transcript appears to be consistently significantly different from other newspapers (Table 5.4); all other regional newspapers are likely to have a similar distribution of issue links. Similarly, there are not many significant regional differences regarding the temporal framing of climate change (Table 5.5), as all newspapers primarily portray climate change as happening. There are more significant regional differences in the distribution of spatial frames (Table 5.6). *The Whitehorse Star* and *Winnipeg Free Press* use an interprovincial frame significantly more than other newspapers. As well, *The Vancouver Sun* uses a regional frame more often, whereas the *Toronto Star* tends to focus more on international and national framings with significantly fewer articles that use a regional frame. Despite the prevalent de-contextualization of climate change, there are numerous significant differences regarding the regional distributions of climate contexts (Table 5.7); only *The St. John's Telegram* and *Toronto Star* are not significantly different when compared from or compared to the other newspapers. Finally, there are no significant regional differences regarding climate solutions (Table 5.9), it is either de-contextualized or discussed in terms of mitigation. All in all, I would argue that spatial framing and climate context are the areas that present the most significant regional differences in climate discourse across Canadian newspapers.

VI. FINDINGS: FRAMING OF CLIMATE UNCERTAINTY

6.1 Introduction

This chapter addresses the second objective of the thesis – to uncover and compare the prevalence and framing of climate uncertainty across the seven regional Canadian newspapers. The discussion of results is split into two sections: (1) prevalence and (2) framing of climate uncertainty. Prevalence looks at the frequency in which uncertainty appears across regional Canadian newspapers and is important, as even a small number of uncertainty articles can affect readers' perceptions of climate change. Framing looks at the types of uncertainty present and the attitude towards climate change within newspaper discourse. When uncertainty is present it is important to understand how it is framed in the discourse, as this indicates what aspects of climate change are unclear. For the part of the analysis presented in this chapter, only climate-focused articles are used, since the presence of climate uncertainty can only be determined when climate change is actually discussed in the article (for further information refer to Chapter Five, Section 5.2).

The analysis of regional Canadian newspapers is discussed from two different perspectives. First, descriptive statistics are used to illustrate the proportionate responses of each of the seven newspapers for a given coding category, highlighting which frames are most and least common for each newspaper, and whether there are any prevalent frames across all seven newspapers. While it might not be possible to determine whether the seven regional Canadian newspapers studied in this thesis

represent pan-Canadian trends in the regional construction of climate change, the newspapers are sufficiently different (refer to Table 4.2) that it can be argued that the empirical assessments in this study provide insight into the breadth of framing of climate change in Canadian newspapers. Second, inferential statistics were used to determine whether there are any statistically significant differences in the distribution of proportionate responses across regional Canadian newspapers. For further information on the regional Canadian newspapers used in this study refer to Chapter Four Section 4.4.3.

6.2 Findings: Prevalence of Climate Uncertainty

Uncertainty is a challenging and important part of climate discourse as it can have many different meanings associated with it. There can be uncertainty about the existence of climate change, whether it is human-induced, the significance of its impacts, and even what solutions, if any, should be implemented. Uncertainty in climate-focused articles is discourse that presents the issue as uncertain, controversial, or creates a sense of doubt. And even though uncertainty is an inherent part of climate change, and our everyday lives, its presence in newspapers tends to have negative connotations.

Prevalence is an important way to gauge the extensiveness, or frequency, of uncertainty in climate discourse. This section looks at the proportion of climate-focused articles where uncertainty is present, whether uncertainty is implicit or explicit, and the

presence of uncertainty in the title of articles. Inferential statistics are then used to determine if there are any significant differences between regional Canadian newspapers.

Table 6.1: Number of climate-focused articles and uncertainty articles per newspaper.

Newspaper	CC Articles w/ Focus	w/ UC	% w/ UC
VS	168	89	53.0
CH	179	121	67.6
WFP	42	19	45.2
TS	131	71	54.2
MTT	49	23	46.9
TT	25	17	68.0
WS	74	47	63.5
Total	668	387	57.9

**The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)*

The presence of uncertainty can lower public confidence in climate change. Even a small number of articles with uncertainty present can affect public perception of climate change. The proportion of climate-focused articles where uncertainty is present ranges from 45.2-68% across regional Canadian newspapers, with an average of 57.9% (Table 6.1). This means that controversy, doubt, or a sense of uncertainty about climate change is present, on average, almost two thirds of the time. It can thus be argued that when climate change is discussed across Canadian newspapers uncertainty is still a frequent theme therein.

Figure 6.1: Proportion of climate-focused articles where uncertainty is present per newspaper.

In terms of a regional comparison, *The St. John's Telegram*, *Calgary Herald*, and *The Whitehorse Star* have the highest proportion of climate-focused articles where uncertainty is present (63-68%) (Table 6.1, Figure 6.1). The *Winnipeg Free Press* and *Moncton Times-Transcript* have the lowest (45-47%), and *The Vancouver Sun* and *Toronto Star* are in the middle (53-54%). When the presence of uncertainty is further dissected into explicit and implicit, a similar pattern arises (Figure 6.1). *The St. John's Telegram* and *Calgary Herald* have the two highest proportions of articles under explicit uncertainty. The *Calgary Herald*, *The Whitehorse Star*, and *The Vancouver Sun* have the highest proportions under implicit uncertainty. And so although *The Vancouver Sun* has

a medial proportion of climate-focused articles where uncertainty is present (Table 6.1), when uncertainty is present it is primarily implicit with a comparatively low proportion under explicit uncertainty (Figure 6.1). As well, it is interesting that *The St. John's Telegram* and *Calgary Herald*, the two newspapers situated in regions of oil development in Canada, the oil sands and off-shore oil respectively, have some of the highest proportion of climate-focused articles where uncertainty is present, with a comparatively higher proportion under explicit uncertainty compared to other newspapers.

Table 6.2: Compares each newspaper in regards to the presence of uncertainty in climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	0	0	1	1	1	1
	CH	0	0	1	0	0	0	0
	WFP	0	0	0	0	0	0	0
	TS	0	0	0	0	0	1	1
	MTT	0	0	0	1	0	1	1
	TT	0	0	0	0	0	0	0
	WS	0	0	0	0	0	1	0

**The Vancouver Sun* (VS); *Calgary Herald* (CH); *Winnipeg Free Press* (WFP); *Toronto Star* (TS); *Moncton Times Transcript* (MTT); *The St. John's Telegram* (TT); *The Whitehorse Star* (WS)

*0 = similar, 1 = not similar

Given the above information, it is not surprising that *The St. John's Telegram* and *The Whitehorse Star* are significantly different from most other newspapers (Table 6.2). The *Calgary Herald*, however, is not significantly different from any of the other

newspapers despite its high proportion of uncertainty articles. Only the *Winnipeg Free Press* is different when compared to the *Calgary Herald*. As well, although *The Vancouver Sun* is not significantly different from any of the newspapers, when the distribution of other newspapers are compared to it there are several significant differences; namely the *Toronto Star*, *Moncton Times-Transcript*, *The St. John's Telegram*, and *The Whitehorse Star*. This is likely due to *The Vancouver Sun's* comparatively higher/lower proportion of articles under implicit/explicit uncertainty.

Figure 6.2: Proportion of uncertainty in the title of climate-focused articles per newspaper.

Overall, there are more articles where uncertainty is implied versus explicitly stated in climate-focused articles (Figure 6.1). Implicit uncertainty refers to discourse that frames some aspect of climate change as unclear or doubtful. This suggests that

direct attacks on or criticisms of climate change are not as prevalent in public discourse as they have been in the past decade. This is reinforced by the fact that the majority of climate-focused articles (71-88%) do not have any form of uncertainty present in their titles (Figure 6.2).

6.3 Findings: Framing of Climate Uncertainty

The framing of uncertainty in climate-focused articles uncovers what aspects of climate change are constructed as uncertain. On average 57.9% of climate-focused articles have uncertainty present (Table 6.1); these articles are henceforth referred to as uncertainty articles. The types of uncertainty present in uncertainty articles are defined as trend, attribution, impact, action, and solution (Table 6.3). In addition to the types of uncertainty present, this section looks at the general attitude towards climate change presented within the articles. It is important to include the attitude towards climate as the presence of uncertainty does not necessarily equate to a negative framing of climate change. Inferential statistics are then used to determine if there are any significant differences between regional Canadian newspapers.

Action uncertainty is the prevalent frame across regional Canadian newspapers. The highest proportion of uncertainty articles for each newspaper is under action uncertainty, ranging from 31-59% (Figure 6.3). Solution and impact uncertainty are the next largest frames, respectively. The second highest proportion of articles for each newspaper, except the *Toronto Star* and *The St. John's Telegram*, are under solution uncertainty. The second highest proportion of articles for the *Toronto Star* and *The St.*

John's Telegram are under impact uncertainty. Trend and attribution uncertainty are the least common types of uncertainty across all seven regional Canadian newspapers.

Table 6.3: Types of climate uncertainty and their definitions.¹⁷

Type of uncertainty	Definition
Trend	Not sure if climate change is happening
Attribution	Climate change is happening, but it is not primarily due to human activity
Impact	Anthropogenic climate change is happening, but the impacts may not be potential and/or significant
Action	Anthropogenic climate change is happening and impacts are significant, but it may be too late to act, or not worth it when compared to other societal issues
Solution	Anthropogenic climate change is happening, the impacts are significant, action is needed, but not sure (or disagree about) what is appropriate action

The above information indicates that the discourse has largely moved past discrediting the science of climate change, its existence, and the fact that it is primarily human-induced. Instead anthropogenic climate change is appears to be accepted as part of our lived-realities, but Canadians are not sure what to do about this complex phenomenon. The discourse is unclear as to whether climate action is a priority, or if

¹⁷ Based on types of climate uncertainties by Poortinga et al. (2011).

any action is required at all. In addition, when it is agreed we should take climate action, it is difficult to discern what constitutes an appropriate solution from the discourse. This relates back to the fact that most uncertainty is implied in the discourse – there is more a lack of confidence and agreement on what to do about climate change than an outright denier mentality.

Figure 6.3: Types of climate change uncertainty and proportional response of each newspaper for uncertainty articles.

In terms of a regional comparison, it is interesting that the three newspapers with the highest proportions of uncertainty articles – *The St. John's Telegram*, *Calgary Herald*, and *The Whitehorse Star* – also have slightly higher proportions under trend uncertainty (9-12%) compared to the other newspapers (<5.5%) (Table 6.1, Figure 6.3). As well, the *Calgary Herald* has a slightly higher proportion of uncertainty articles under

attribution uncertainty (8.3%) compared to the other newspapers (Figure 6.3). *The Vancouver Sun* and *Moncton Times-Transcript*, which have lower proportions of articles under explicit uncertainty (Figure 6.1), also have some of the lowest proportions of uncertainty articles under trend, attribution, and impact uncertainty (Figure 6.3).

Table 6.4: *Compares each newspaper in regards to type of uncertainty for uncertainty articles.*

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	1	1	1	0	0	0
	CH	0	0	0	0	0	0	0
	WFP	0	1	0	0	0	0	0
	TS	0	1	1	0	0	0	0
	MTT	0	0	0	0	0	0	0
	TT	0	0	0	0	0	0	0
	WS	0	0	0	0	1	0	0

**The Vancouver Sun* (VS); *Calgary Herald* (CH); *Winnipeg Free Press* (WFP); *Toronto Star* (TS); *Moncton Times Transcript* (MTT); *The St. John's Telegram* (TT); *The Whitehorse Star* (WS)

*0 = similar, 1 = not similar

Overall, there are not many statistically significant differences between newspapers for uncertainty type (Table 6.4). The *Calgary Herald* is different from *The Vancouver Sun*, *Toronto Star*, and *Winnipeg Free Press*. The *Winnipeg Free Press* is also different from *The Vancouver Sun* and *Toronto Star*. Even the *Toronto Star* is different from *The Vancouver Sun*. Then the *Moncton Times-Transcript* is different from *The Whitehorse Star*. The *Calgary Herald* thus has the most significant differences, which could relate to its higher proportions of uncertainty articles under trend, attribution,

and impact uncertainty, leading to a lower proportion under action uncertainty. Another way to interpret these results is that it is difficult for other newspapers, namely the *Calgary Herald*, *Winnipeg Free Press*, and *Toronto Star*, to have a similar distributional response as *The Vancouver Sun*.

For the presence of uncertainty in climate-focused articles it was shown that *The St. John's Telegram* and *The Whitehorse* were significantly different to several newspapers (Table 6.2). Meanwhile the *Calgary Herald*, which also had high proportions of implicit and explicit uncertainty articles present, was not significantly different (Table 6.2). Now that uncertainty type is analyzed, the *Calgary Herald* appears to be significantly different from other newspapers, whereas *The St. John's Telegram* and *The Whitehorse Star* are not significantly different from the other newspapers (Table 6.4). This shows that *The St. John's Telegram* and *The Whitehorse Star* may be more likely to be different when it comes to how uncertainty is embedded in the discourse, and that the *Calgary Herald* may be more likely to be different when it comes to how uncertainty is framed in the discourse. *The Vancouver Sun* is also an interesting case. For both uncertainty presence (Table 6.2) and uncertainty type (Table 6.4) *The Vancouver Sun* can have a similar distribution as other newspapers, however, it is not likely that other newspapers will have similar distribution to *The Vancouver Sun* (refer to Chapter 4, Section 4.6).

As mentioned earlier, the overall attitude towards climate change within the various discourses is important for distinguishing uncertainty from an unsupportive, or negative, framing of climate change. Interestingly, the prevalent attitude within

uncertainty articles is supportive (45.5-76.5%) with only a small proportion unsupportive of the issue (0-15.8%) (Figure 4.6). These results are encouraging as they indicate that the majority of uncertainty present across regional Canadian newspapers are not necessarily negative, but just plain old uncertain.

For the remaining proportion of uncertainty articles the overall attitude towards climate change could not be determined (23.5-43.5%). The attitude presented in an article was marked as unclear when there was no discernable position, or there were both supportive and unsupportive discourses present with no obvious favour given to either positions. In my opinion, given the level of action uncertainty within climate change discourse, it not surprising the attitude of so many articles is unclear as they probably do not want to position themselves on either side of the climate action debate.

In terms of a regional comparison, *The Vancouver Sun*, *Toronto Star*, *The St. John's Telegram*, and *The Whitehorse Star* have the highest proportions of uncertainty articles with a supportive attitude towards climate change (68-76.5%) (Figure 6.4). The *Calgary Herald*, *Winnipeg Free Press*, and *Moncton Times-Transcript* have the lowest proportions of uncertainty articles with a supportive attitude (45.5-53%). The *Calgary Herald* and *Winnipeg Free Press* both have comparatively higher proportions of uncertainty articles with an unsupportive attitude (13-16%) compared to the other newspapers (0-6.5%). The *Calgary Herald* and *Moncton Times-Transcript* have the highest proportions of uncertainty articles under unsure (41-44%). As is evident, newspapers with higher proportions of uncertainty articles, such as *The St. John's Telegram* and *The Whitehorse Star* (Table 6.1, Figure 6.1), do not necessarily have the

lowest proportion of uncertainty articles with a supportive attitude towards climate change (Figure 6.4). Meanwhile, the *Winnipeg Free Press*, which has a lower proportion of uncertainty articles (Table 6.1) has one of the highest proportion of uncertainty articles with an unsupportive attitude. Again, this indicates that the presence of uncertainty does not necessarily relate to a negative attitude towards climate change. Only the *Calgary Herald* has comparatively higher proportion of uncertainty articles as well as comparatively higher proportion of unsupportive articles.

Figure 6.4: Attitude towards climate change within uncertainty articles and the proportionate response for each newspaper.

There are numerous significant differences between the distributional responses of regional Canadian newspapers regarding attitude in uncertainty articles (Table 6.5).

The *Winnipeg Free Press* is different from every newspaper except *The St. John's Telegram*, and the *Calgary Herald* is different from every newspaper except *The St. John's Telegram* and *Winnipeg Free Press*. These significant differences are likely due to the comparatively higher proportions of uncertainty articles that are unsupportive of climate change in these two newspapers (Figure 6.5). In addition, most newspapers are significantly different when compared to *The Vancouver Sun* and *Toronto Star* (Table 6.5). This means that although the distributional responses from these two newspapers can be similar to other newspapers, it is unlikely that other newspaper will have a similar distributional response them.

Table 6.5: Compares each newspaper in regards to attitude towards climate change for uncertainty articles.

	Newspaper compared from						
	VS	CH	WFP	TS	MTT	TT	WS
VS	0	1	1	0	1	0	1
CH	0	0	1	0	0	0	0
WFP	0	0	0	0	0	0	0
TS	1	1	1	0	1	0	1
MTT	0	1	1	0	0	0	1
TT	0	0	0	0	0	0	0
WS	0	1	1	0	0	0	0

**The Vancouver Sun* (VS); *Calgary Herald* (CH); *Winnipeg Free Press* (WFP); *Toronto Star* (TS); *Moncton Times Transcript* (MTT); *The St. John's Telegram* (TT); *The Whitehorse Star* (WS)

*0 = similar, 1 = not similar

When the attitude towards climate change is expanded to include all climate-focused articles, not just those with uncertainty present, the primary attitude remains supportive (Figure 6.5). The proportion of supportive articles is slightly higher for

climate-focused articles (52-80%) (Figure 6.5) than uncertainty articles (45.5-76.5%). For climate-focused articles the *Moncton Times-Transcript* has a higher proportion of articles under supportive, 73.5%, compared to its previous 52.2% for uncertainty articles (Figure 6.4, Figure 6.4). The *Calgary Herald* and *Winnipeg Free Press*, however, remain as the newspapers with the lowest proportion of articles under supportive.

Figure 6.5: Attitude towards climate change in climate-focused articles and the proportionate response for each newspaper.

Due to the slight changes in the distributional responses of each newspaper when all climate-focused articles are included, there are fewer significant differences between newspapers (Table 6.6). The *Calgary Herald* and *The Whitehorse Star* are still

different from most newspapers – *The Vancouver Sun*, *Toronto Star*, and *Moncton Times-Transcript*. However, the *Winnipeg Free Press* and *Moncton Times-Transcript* are now similar to most newspapers (Table 6.5, Table 6.6). This indicates that although the primary attitude towards climate change is always supportive when climate change is discussed, there are more articles where the attitude is unclear and there are more statistically significant differences between newspapers when uncertainty articles are isolated.

Finally, for non-climate-focused articles the primary attitude towards climate change is under unsure (57.8-79.5%). This makes sense as these articles do not discuss the issue, climate change is merely mentioned within. A supportive attitude, however, still out numbers an unsupportive attitude within non-climate-focused articles.

Table 6.6: Compares each newspaper in regards to the attitude towards climate change for climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	0	1	0	0	0	0	1
	CH	0	0	0	0	0	0	0
	WFP	0	0	0	0	0	0	0
	TS	1	1	0	0	1	0	1
	MTT	1	1	0	0	0	0	1
	TT	0	0	0	0	0	0	0
	WS	0	1	0	0	0	0	0

**The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)*

**0 = similar, 1 = not similar*

6.4 Chapter Summary

Uncertainty in climate discourse, which lowers public confidence in climate change, is prevalent across regional Canadian newspapers. On average, almost two-thirds of climate-focused articles have uncertainty present (Table 6.1). Uncertainty can manifest itself explicitly or implicitly in climate-focused articles; in Canada it appears that implicit uncertainty is slightly more prevalent than explicit uncertainty. This relates to the fact that the word ‘uncertainty’ does not need to be present to create doubt or controversy, and signifies that direct attacks on climate change have become less common. It is important to recall, however, that the presence of uncertainty in any form has the ability to lower public action on climate change.

The type of uncertainty that is repeated the most across Canadian climate discourse is action uncertainty (Figure 6.3). This indicates that within newspaper discourse climate change is happening, it is anthropogenic, and its effects are significant, but it is unclear whether action is necessary at this time, or at all. Climate change is generally accepted as a real phenomenon, but it is not yet seen as a priority. The other two most prevalent types of uncertainty are solution and then impact. Solution uncertainty means that people agree that climate action is needed now, but are unsure about or disagree on what are appropriate solutions. Impact uncertainty means that climate change is happening and it is anthropogenic, but it is unclear as to whether the effects are potential and/or significant. It makes sense that trend and attribution uncertainty are not prevalent across Canadian newspapers (Figure 6.3) considering the primary temporal frame of climate change is that it is happening (Figure 5.3). In

addition, given the primary spatial frame of climate change is international (Figure 5.4) and the overall de-contextualization of the issue, especially in regards to climate solutions (Figure 5.5, Figure 5.6), it is not surprising the majority of uncertainty rests on what to do about climate change. Climate change appears to be is a psychologically distant and poorly understood issue across Canadian newspapers requiring non-descript action. Thus, although climate change may be portrayed as a contemporary issue that is part of our lived-realities, it is not yet connected with our everyday lives and is not portrayed as a priority.

The primary attitude towards climate change in uncertainty articles is supportive. Examining the attitude towards climate change within newspaper articles is an important way to distinguish climate uncertainty from a negative framing of climate change. For example, it shows that newspapers with higher proportions of uncertainty articles, such as *The St. John's Telegram* and *The Whitehorse Star*, can also have supportive attitudes towards climate change. Canadian newspaper discourse appears to support the idea of climate change and the idea of climate action, but reservations and doubts are present when discussing them. And of course, when all climate-focused articles are included, not just uncertainty articles, there are even higher proportions of supportive attitudes.

There are some significant differences when comparing climate uncertainty across regional Canadian newspapers. The *Calgary Herald*, *The St. John's Telegram*, and *The Whitehorse Star* have higher proportions of uncertainty articles (Table 6.1). In terms of types of uncertainty, the *Calgary Herald* is significantly different from the *Winnipeg*

Free Press, *The Vancouver Sun*, and *Toronto Star*, likely due to its comparatively higher proportions under trend and attribution uncertainty, and subsequently lower proportion under action uncertainty (Table 6.4). As well, a lot of newspapers are significantly different compared to *The Vancouver Sun*, likely due to its comparatively higher proportions under action and solution uncertainty (Table 6.4). There are actually more significant differences between newspapers regarding the attitude towards climate change than uncertainty types (Table 6.5). The *Winnipeg Free Press* and *Calgary Herald* are significantly different from most newspapers when it comes to climate attitude, likely due to their comparatively higher proportions of uncertainty articles where the attitude is unsupportive. When all climate-focused articles are included, not just uncertainty articles, the *Winnipeg Free Press* is no longer significantly different from other newspapers. This indicates that when uncertainty is present there are likely to be more significant differences between newspapers regarding attitude towards climate change. Overall, it appears that only the *Calgary Herald* is consistently different from other newspapers when it comes to climate uncertainty.

VII. FINDINGS: VISIBLE ACTORS WITHIN CLIMATE DISCOURSE

7.1 Introduction

This chapter addresses the third objective of the study – to uncover and compare the visible actors involved in climate change discourse across regional Canadian newspapers. Actors are individuals or groups actively involved in the discourse, and visible actors are those who are referenced as a source of information within the discourse. It is important to be aware of which actors construct climate discourse as a public concern, and whose voices are legitimized as authorities on the issue, as this reveals insights into the knowledge-power relationship within the discourse. Research has shown that journalists' sources play a key role in the framing of climate change in newspapers (Doulton & Brown, 2009). This part of the analysis thus looks at the visible actors referenced within the discourse, henceforth referred to as issue participants, in addition to the actors portrayed as responsible for dealing with climate change.

The analysis of regional Canadian newspapers is discussed from two different perspectives. First, descriptive statistics are used to illustrate the proportionate responses of each of the seven newspapers for a given coding category, highlighting which frames are most and least common for each newspaper, and whether there are any prevalent frames across all seven newspapers. While it might not be possible to determine whether the seven regional Canadian newspapers studied in this thesis represent pan-Canadian trends in the regional construction of climate change, the

newspapers are sufficiently different (refer to Table 4.2) that it can be argued that the empirical assessments in this study provide insight into the breadth of framing of climate change in Canadian newspapers. Second, inferential statistics were used to determine whether there are any statistically significant differences in the distribution of proportionate responses across regional Canadian newspapers. For further information on the regional Canadian newspapers used in this study refer to Chapter Four Section 4.4.3.

7.2 Findings: Visible Actors within Climate Discourse

The first part of this analysis looks at issue participants for climate-focused articles across regional Canadian newspapers. These are actors whose voices are included directly in newspaper discourse. Issue participants are categorized as researchers, activists, non-profits, politicians, businesses, citizens/journalists, contrarians, and unsure. Since there can be more than one issue participant per article, the following analysis (Figure 7.1) illustrates the proportion of issue participants within climate-focused articles of a given newspaper.

Overall, the issue participants most often referenced in climate-focused articles are researchers, citizens/journalists, and politicians, followed by non-profits (Figure 7.1). For the *Toronto Star*, *Moncton Times-Transcript*, *The St. John's Telegram*, and *The Whitehorse Star* researchers and citizens/journalists are the two groups of issue participants most often referenced in climate-focused articles. Then, for *The Vancouver Sun*, *Calgary Herald*, and *Winnipeg Free Press* the two biggest groups of issue

participants are researchers and politicians. As well, across all regional newspapers there are very few articles, almost 0%, where contrarians are an issue participant. The *Calgary Herald* has two climate-focused articles, and *The Vancouver Sun* and *The Whitehorse Star* each have one, where an issue participant is a contrarian.

Figure 7.1: Proportion of issue participants in climate-focused articles per newspaper.¹⁸

In terms of regional comparison, there are some slight visual differences (Figure 7.1). The *Calgary Herald* has a comparatively higher proportion of articles that refer to

¹⁸ Issue participants are individuals/groups referenced within news articles as a source of information, for which there can be up to three per article in this study.

politicians when discussing climate change, and is also the biggest group of issue participants for this newspaper. As well, the *Calgary Herald* has comparatively lower proportion of climate-focused articles that refer to researchers than the other newspapers. Alternately, *The Whitehorse Star* has comparatively higher proportion of climate-focused articles that refer to researchers in the discourse. Despite these visual differences, there are no statistically significant differences in the distributional responses across newspapers (Table 7.1). All newspapers have a high probability of referencing these groups of issue participants in similar proportions.

Table 7.1: Compares each newspaper in regards to issue participants for climate-focused articles.

	Newspaper compared from						
	VS	CH	WFP	TS	MTT	TT	WS
VS	-	0	0	0	0	0	0
CH	0	-	0	0	0	0	0
WFP	0	0	-	0	0	0	0
TS	0	0	0	-	0	0	0
MTT	0	0	0	0	-	0	0
TT	0	0	0	0	0	-	0
WS	0	0	0	0	0	0	0

**The Vancouver Sun* (VS); *Calgary Herald* (CH); *Winnipeg Free Press* (WFP); *Toronto Star* (TS); *Moncton Times Transcript* (MTT); *The St. John's Telegram* (TT); *The Whitehorse Star* (WS)

*0 = similar, 1 = not similar

This signifies that when climate change is discussed across Canada, it is largely defined by researchers, citizens/journalists, and politicians. First and foremost, climate change is seen as a scientific issue whereby researchers, academics, and professionals

alike hold the most authority on the issue. Given politicians are also prevalent issue participants within the discourse, it can be argued that climate change is seen as a political issue and that the voices of politicians are also legitimized as authorities on the issue. The category citizens/journalists refers to when information on climate change within a news article is not from an outside source. Instead, the author of the article has become one of the issue participants. The fact that citizens/journalists are one of the largest groups of issue participants in the discourse suggests that certain aspects of climate change have become common knowledge and open for the public to repeat and comment on without citing an outside source.

The second part of this section looks at who, if anyone, is portrayed as responsible for climate action within the discourse. Given the prevalence of uncertainty and inaction regarding climate change, it is important to see how responsibility is discussed in climate-focused articles. The categories used to identify groups are government, society as a whole, citizens/individuals, and the private sector. The category 'unsure' represents articles where the group(s) responsible for responding to climate change could not be determined or was not part of the discourse. Since there can be more than one group per article, the following analysis (Figure 7.2) illustrates the proportion of responsible agents within climate-focused articles of a given newspaper.

Overall, in climate-focused articles the parties portrayed as responsible for decision-making is 'unsure', followed by government (Figure 7.2). The *Winnipeg Free Press* and *Moncton Times-Transcript* have lower proportions of articles where government is mentioned as the responsible agent compared to other newspapers. This

is because the *Winnipeg Free Press* has a comparatively higher proportion of articles where a responsible agent could not be determined, and the *Moncton Times-Transcript* has a comparatively higher proportion of articles where society as whole is portrayed as responsible. Despite these visual differences, there are no statistically significant differences in the distributional responses across the newspapers (Table 7.2). All newspapers have a high probability of referencing the same groups in similar proportions.

Figure 7.2: Proportion of responsible agents in climate-focused articles per newspaper.¹⁹

¹⁹ Responsible agents are groups/individuals perceived as responsible for climate action, for which there can be up to two per article in this study.

Based on the results above, it can be argued that climate responsibility is largely missing from the discourse. Most articles do not discuss the concept of responsibility, climate change is an externalized issue with no concrete knowledge on how or who should respond. This lack of responsibility links back the silence in climate discourse regarding specific solution strategies (Figure 5.6). When responsible agents are identified in the discourse, it is primarily government – not individuals, private sector, nor society as a whole. The onus for responding to climate appears to be up to government agencies.

Table 7.2: Compares each newspaper in regards to responsible agents for climate-focused articles.

		Newspaper compared from						
		VS	CH	WFP	TS	MTT	TT	WS
Newspaper compared to	VS	-	0	0	0	0	0	0
	CH	0	-	0	0	0	0	0
	WFP	0	0	-	0	0	0	0
	TS	0	0	0	-	0	0	0
	MTT	0	0	0	0	-	0	0
	TT	0	0	0	0	0	-	0
	WS	0	0	0	0	0	0	0

*The Vancouver Sun (VS); Calgary Herald (CH); Winnipeg Free Press (WFP); Toronto Star (TS); Moncton Times Transcript (MTT); The St. John's Telegram (TT); The Whitehorse Star (WS)

*0 = similar, 1 = not similar

7.3 Chapter Summary

Newspapers, along with other media, define for audiences who can authoritatively speak on climate change (Stoddart & Tindall, 2015, p. 402). Across

Canadian newspapers, the issue participants, or groups, whose voices are given power are researchers/academics, citizens/journalists, and politicians (Figure 7.1). This suggests that climate change is seen as a scientific and policy issue, as scientists and politicians are cited the most in climate discourse. It also indicates that some aspects of climate change are regarded as common knowledge as citizens and journalists can comment on them without citing an outside source, and this speaks to the salience of climate change in Canadian newspapers. Given politicians are one of the main groups of issue participants, and politics is one of the main issue links to climate change, it is not surprising that when the responsibility of responding to climate change is identified it is placed on the government. Most of the time, however, the concept of responsibility is missing from the discourse (Figure 7.2). These results are similar to those by Liu et al. (2008) whereby the majority of news articles did not identify any groups as responsible for climate action, followed by government. This relates back to the findings that action and solution uncertainty are the prevailing types of uncertainty in Canadian climate discourse. Once again, the issue is how to respond to climate change and who will respond to climate change, and these questions are difficult to answer when climate solutions are rarely discussed in detail.

VIII. CONCLUSIONS

8.1 Conclusion

The purpose of the thesis has been to examine a relatively recent snap shot of climate discourse across Canadian newspapers, and to determine whether any significant regional variability exists in the framing of climate change. The results of this (con)textual analysis indicate that climate change and climate uncertainty are prevalent across Canadian regional newspapers.

There is a prevailing discourse across Canadian newspapers that is similar to that of other Western countries. Climate change is largely framed as a contemporary issue that exists on an international scale. It is commonly linked to environmental, political, energy, and scientific issues, however, climate change itself is primarily de-contextualized or fragmented in the discourse. Climate solutions are especially lacking from the discourse. This prevalent framing of discourse is reflected by the visible actors in the discourse; the primary issue participants are academics/professionals, politicians, and citizens, and climate responsibility is either non-existent or relayed to government. This cumulative regional snap shot of Canadian climate discourse aligns with results by Young and Dugas (2011) whereby it was posited that climate change in Canadian national print is salient, yet poorly contextualized, fragmented, and not well understood.

Considering this prevailing discourse, it is not surprising that climate uncertainty across Canada is mainly about climate action and solutions. The discourse reflects a mostly supportive attitude towards climate change, but there are doubts about if and how to respond to this complex phenomenon. This is, however, an improvement from uncertainty on the reality and seriousness of anthropogenic climate change that used to be more prevalent in Western newspaper discourse.

How we frame climate change, how it is socially defined, affects how we deal with it. Currently climate change in Canadian discourse is perceived as part of our lived-reality, but not yet a matter of concern. It is my opinion that climate change needs to be framed as an urgent issue that affects Canadians on a regional scale, and that the contextualization of climate change in news articles needs to be improved, especially in regards to climate solutions. Adaptation in particular needs to become a larger part of climate discourse as these types of solutions create a clear connection between effects of climate change and our daily lives. To trigger climate action, people need to have an understanding of, confidence in, and concern for climate change, not just a general awareness of it.

Moving past dominant discourses, there are several framing categories where statistically significant variability exists across regional Canadian newspapers. Spatial framing, climate contexts, and climate attitude all had numerous differences when comparing the distributional responses of each regional newspaper. For example, despite 'international' being the prevalent spatial frame for all seven newspapers, when the presence of all spatial frames for each newspaper are compared it was found that

The Vancouver Sun had proportionately more regional frames, the *Toronto Star* used regional framing proportionately less, and the *Winnipeg Free Press* and *The Whitehorse Star* both had proportionately more interprovincial frames. These results show that the mosaic of frames that make up a regional discourse are more likely to be significantly different when it comes to spatial framing, climate context, and climate attitude within Canadian newspapers. As such, these framing categories should be targeted in future comparative climate discourse analyses.

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APPENDIX A

Textual Coding: Version 3 (Final)

Acronyms:

CC = Climate change

UC = Uncertainty

Surface Descriptors:

Newspaper = Newspaper that article information is sourced from and the province it is distributed in

- 1 = Vancouver Sun (VS)
- 2 = Calgary Herald (CH)
- 3 = Winnipeg Free Press (WFP)
- 4 = Toronto Star (TS)
- 5 = Moncton Times-Transcript (MTT)
- 6 = The Telegram (TT)
- 7 = Whitehorse Star (WS)

Year = 2013

*All articles were published in 2013

Month = Month the article was published

- 4 = April
- 5 = May
- 6 = June
- 7 = July
- 8 = August
- 9 = September

Day = Day of the month (1-31) article was published

Date = Year/month/day

Section = Section of the newspaper the article appeared

- 1 = Canada and world, news, etc. (national and/or international section)

- 2 = Regional and city, etc. (local news section)
- 3 = Editorial, opinion, letters to the editor
- 4 = Business
- 5 = Issues and ideas, weekend review, special, feature pages
- 6 = Environment, travel, entertainment, lifestyle, arts, fashion, sports, and other
- 7 = NA (information not available)

Page letter = Section of the newspaper as indicated by letter (A-Z) that the article appeared

Page number = Page number the article appeared on within the corresponding section

*If the headline and a blurb of an article appears on the front page of a section it is recorded as page 1

Word count = Number of words in the article

CR = The credited source of an individual news article

- 1 = Bloomberg
- 2 = Financial Post
- 3 = London Daily Telegraph
- 4 = Postmedia
- 5 = The Associated Press
- 6 = The Canadian Press
- 7 = The Vancouver Sun
- 8 = The Victoria Times
- 9 = Calgary Herald
- 10 = Edmonton Journal
- 11 = The Washington Post
- 12 = Troy Media
- 13 = Winnipeg Free Press
- 14 = Global Post
- 15 = Los Angeles Times
- 16 = Reuters
- 17 = San Jose Mercury News
- 18 = The Financial Times
- 19 = The New York Times
- 20 = The Toronto Star
- 21 = Tribute News Service
- 22 = The Times Transcript
- 23 = The Telegram
- 24 = Star Reporter
- 25 = Sun Media

26 = The Daily Star
27 = The Whitehorse Star
28 = New Democratic Party (NDP)

Author = Author of the article as given, or NA if information is not available

Textual Codes for Objective One – Prevalence and Framing of Climate Change:

CC title = Is the term climate change or global warming in the title of the article?

1 = Yes (climate change)
2 = Yes (global warming)
3 = Yes (both climate change and global warming)
4 = No

Terminology = What term(s) are used to describe climate change in the article?

1 = Climate change
2 = Global warming
3 = Both

CC focus = Is climate change discussed in the article?

1 = Yes, it is the main focus
2 = Yes, it is a focus
3 = No, it is only mentioned and not discussed

CC context = How is climate change contextualized in the article – what aspects of the issue are addressed?

1 = Causes, effects and solutions
2 = Causes and effects
3 = Causes and solutions
4 = Effects and solutions
5 = Causes
6 = Effects
7 = Solutions
8 = None

Solutions = What types of climate change solutions are mentioned in the article?

1 = Mitigation

- 2 = Adaptation
- 3 = Mitigation and adaptation
- 4 = Neither

Spatial scale = How is the issue of climate change contextualized spatially?

- 1 = Regional
- 2 = Interprovincial
- 3 = National
- 4 = International
- 5 = Unsure, not mentioned

Temporal scale = How is the issue of climate change contextualized temporally?

- 1 = Urgent issue
- 2 = Happening (but not necessarily urgent)
- 3 = Distant issue
- 4 = Not happening, or 'the climate is always changing'
- 5 = Unsure, not clear

Issue link = What are the main over-arching issues, excluding climate change, in the article?

- 1 = Adventure, exploration, travel, sports, etc.
- 2 = Food systems
- 3 = Economy, business
- 4 = Community, society, cultural, lifestyle, etc.
- 5 = Defense
- 6 = Politics, policymaking
- 7 = Education, awareness
- 8 = Energy
- 9 = Environment
- 10 = Health, safety
- 11 = Water
- 12 = Weather events
- 13 = Science, research, development
- 14 = Other
- 15 = NA (information not applicable)

Textual Codes for Objective Two - Prevalence and Framing of Climate Uncertainty:

UC title: Is uncertainty present in the title of the article?

- 1 = Yes
- 2 = No
- 3 = Unsure

UC article: Is uncertainty present in the article?

- 1 = Yes (explicit)
- 2 = Yes (implicit)
- 3 = Unsure
- 4 = No

UC type: How is uncertainty contextualized in the article – what type of uncertainty is present?

- 1 = Trend – not sure climate change is happening
- 2 = Attribution – climate change is happening, but it is not primarily due to human activity (anthropogenic)
- 3 = Impact – anthropogenic climate change is happening, but the impacts may not be potential and/or significant
- 4 = Action – anthropogenic climate change is happening and impacts are significant, but think it may be too late to act, or not worth it when compared to other societal issues
- 5 = Solution – anthropogenic climate change is happening and impacts are significant, action is needed, but not sure (or disagree about) what is appropriate action
- 6 = Unsure
- 7 = NA (information not applicable)

CC attitude = What is the overall perceived attitude towards climate change in the article?

- 1 = Supportive
- 2 = Unsure or mixed
- 3 = Unsupportive or purposefully confusing
- 4 = NA (information not applicable)

Textual Codes for Objective Three – Visible Actors in Climate Discourse:

Issue participants = Who is/are talking about climate change in the article or reference as a source of knowledge on the topic?

- 1 = Activists, environmentalists

- 2 = Non-profits
- 3 = Citizens, journalists
- 4 = Politicians, policymakers
- 5 = Economists, business representatives
- 6 = Academics, researchers
- 7 = Contrarians
- 8 = Unsure or not mentioned
- 9 = NA (information not applicable)

Responsibility = Who is perceived as responsible for addressing the issue of climate change?

- 1 = Citizens, individuals
- 2 = Government, public sector
- 3 = Corporations, private sector
- 4 = No one
- 5 = Society as a whole
- 6 = Unsure or not mentioned
- 7 = NA (information not available)