

## Canadian news media and the cultural dynamics of multilevel climate governance

Mark C.J. Stoddart<sup>a\*</sup> and David B. Tindall<sup>b</sup>

<sup>a</sup>*Department of Sociology, Memorial University, St. John's, Canada;* <sup>b</sup>*Department of Sociology, University of British Columbia, Vancouver, Canada*

Links between national news outlets (*Globe and Mail* and *National Post*) and climate-change discourse are examined in order better to understand the cultural politics of Canadian involvement in climate governance. National news media use a narrow range of issue categories to interpret climate change to the public. Both news outlets also privilege national and international political spheres, with less attention to climate governance at the sub-national level. However, there are important differences between them. The *Globe and Mail* tends to focus on government responsibility, while the *National Post* tends to focus on climate science and the economic costs of addressing climate change. Four key periods (1999, 2002, 2006, and 2010) are examined in order to trace shifts in climate-change discourse. There has been a shift towards greater issue complexity over time, coupled with a growing polarisation of climate discourse across the two national news outlets.

**Keywords:** climate change; mass media; Canada; discourse network analysis

### Introduction

We apply policy discourse network analysis to national newspaper coverage of climate-change issues in Canada. Our work integrates several significant lines of investigation in environmental politics, including media coverage of environmental issues (Gavin 2009), environmental discourse (Jóhannesson 2005), policy networks (Compston 2009, Bailey *et al.* 2012), and climate-change policy (Fletcher 2009). Canadian climate-change policymaking involves a range of social actors, including members of governments, political parties, businesses, social/environmental movements, and research institutions (Compston 2009, Broadbent 2010, Bailey *et al.* 2012). Policy responses also operate at multiple political levels, from local and provincial initiatives to national and international policy debates. These characteristics lead many researchers to use terms such as ‘multilevel governance’ or ‘multi-scale’ governance to analyse climate-change

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\*Corresponding author. Email: [mstoddart@mun.ca](mailto:mstoddart@mun.ca)

politics (Bulkeley and Betsill 2005, 2013, Brunner 2008, Francesch-Huidobro 2012, Rootes *et al.* 2012, Stoett 2012). Multilevel climate governance is not limited to action in formal political settings. It is also shaped by environmental movements and climate skeptic countermovements, and public perceptions about climate change. These interrelated dimensions of climate governance also connect to media representations of the issue, which have been examined in detail by Boykoff and his co-authors, as well as several other researchers (Grundmann 2007, Anderson 2009, Gavin 2009, Boykoff and Smith 2010, Boykoff 2011, 2013, Crow and Boykoff 2014, Schäfer and Schlichting 2014). Mass media offer publicly visible sites for conflict over appropriate policy responses and approaches to climate governance. Social actors who want to influence climate governance also do the ‘cultural work’ of using media to communicate to various audiences and engage each other in public debate; these social groups use media access to engage in the ‘cultural politics of climate change’, which Crow and Boykoff describe as the ‘dynamic and contested spaces where various “actors” battle to shape public understanding and engagement with decision-making’ (Crow and Boykoff 2014, p. 2). We similarly use the phrase ‘the cultural dynamics of multilevel climate governance’ to refer to mass-mediated struggles to define the meaning of climate change and the corollary political responses to this issue. By selecting issues and news sources, news media work as key organisational actors in climate governance as they circulate representations of climate-change impacts and solutions and define for audiences who can ‘authoritatively “speak for climate”’ (Boykoff 2011, p. 107). We adopt a discourse network approach (Leifeld and Haunss 2012) to examine links between the national Canadian newspapers – the *Globe and Mail* and the *National Post* – and shifting discourses about climate change during the period 1999–2010. These outlets are ‘legacy media’ with a national scope (Lester and Hutchins 2012). Both have wide distribution in Canada, with average weekly circulations of 2,139,363 (*Globe and Mail*) and 982,555 (*National Post*) for combined digital and print editions (Canadian Newspaper Association 2013). The *Globe and Mail* is generally viewed as centrist, while the *National Post* is viewed as more conservative, thereby providing coverage from different political standpoints (Halpin *et al.* 2009). The *Globe and Mail* plays a similar role to that of the *New York Times* in the United States as a newspaper of record. In this context, the *National Post* might be said to parallel the role of the *Wall Street Journal* in the US, providing an ideologically right-wing, business orientation.

Due to the proliferation of online news and social media, large national print newspapers are not as central to shaping public perceptions as they once were. While digital access to newspaper content makes up for some of the decline of print newspaper circulation, overall readership has fallen in recent years. Nevertheless, particular newspapers of record continue to be important (Myers and Caniglia 2004). While readership amongst the general public has decreased, politicians, academics, NGO leaders, business leaders, policymakers, and other opinion leaders continue to attend to these media. Further, articles from particular

outlets such as the *New York Times* or *Guardian* still have significant readership via new media access points, such as Facebook and Twitter. As Castells notes, 'when the Internet is cited as a key source of news, the most visited web sites are those of mainstream media' (2009, p. 196). This process is evident in the outlets we analyse. According to the Canadian Newspaper Association (2013), weekly digital circulation of the *Globe and Mail* is 730,142 (or 34.13% of total weekly circulation) and weekly digital circulation of the *National Post* is 237,415 (or 24.16% of total weekly circulation). As such, we maintain that large national newspapers remain important as publicly visible spaces for engagement among policymakers, social movements, and other social groups, and as sources of information for bystander publics and other media (Castells 2009, Lester 2010, Lester and Hutchins 2012).

Our research is guided by three questions. First, how do the *National Post* and the *Globe and Mail* define the key issues surrounding climate change and multilevel climate governance? Second, how do the *National Post* and the *Globe and Mail* represent climate change in terms of issue scale? In other words, does Canadian news media coverage locate climate governance at the local, provincial, national, or international scale? Third, how has national news media coverage of climate change shifted during the period 1999–2010? To answer this last question, we focus on four key periods. We examine 1999 because it offers the first full year of data for both the *Globe and Mail* and the *National Post* (which began publication in October 1998) following the establishment of the Kyoto Protocol in 1997. This was a pivotal event in international climate governance and set the tone for debate about the issue for several years afterwards. We examine 2002, which is the year that the Canadian government, under Liberal Prime Minister Jean Chrétien, ratified the Kyoto Protocol, committing Canada to a 6% reduction of carbon emissions by 2012 compared to a 1990 baseline. We examine 2006, when the Conservative Party, led by Stephen Harper, took power with a record of opposing Canada's involvement in the Kyoto Protocol and questioning the validity of climate change. We examine 2010, which is the period following the December 2009 Conference of the Parties meetings in Copenhagen (COP 15), which generated a high level of coverage among Canadian media, partly because Canada was singled out by environmentalists for its poor environmental performance (Tegelberg *et al.* 2014). These four periods represent key moments in Canadian national climate-policy debate.

The Canadian case is important for several reasons. Canada is a member of the G7 and, as such, has the potential to be a significant diplomatic power vis-à-vis the most powerful nation states. Indeed, in the past, Canada has fulfilled important roles in international environmental politics. For example, some observers have argued that Canada played a key role in the development of the Montreal Protocol, an international agreement to deal with chemicals that harm the global atmospheric ozone layer. Although Canada ratified the Kyoto Protocol, in 2012 it became the first country to withdraw from the accord post-ratification. Canada has one of the highest per capita carbon footprints in the

world, coupled with a poor record of performance on greenhouse-gas reductions (Murphy and Murphy 2012, Hayden 2014, MacNeil 2014). The country is increasingly singled out for protest at international climate-change meetings, including COP 15, where it was given the “Colossal Fossil” award from environmental NGOs for doing the most to obstruct global climate efforts’ (Hayden 2014, p. 103). Finally, as the Arctic Ocean becomes increasingly ice-free during the summer months, Canada is central to growing debates over Arctic sovereignty among circumpolar nations (Dolata 2012). An analysis of national news coverage, and how it has shifted through time, helps us understand the cultural work done by key social actors as they negotiate Canadian involvement in multilevel climate governance.

### Literature review

Environmental governance research demonstrates that policymaking is undergoing shifts in the ‘horizontal’ and ‘vertical’ dimensions of environmental politics (Francesch-Huidobro 2012). In the horizontal dimension, environmental policy emerges from interactions among an increasing variety of competing and allied social actors, including governments, corporations, civil society organisations, experts, and citizens (Bailey *et al.* 2012, Compas 2012, Rootes *et al.* 2012, Stoett 2012, Hobson 2013, Spaargaren and Mol 2013). Research on the horizontal dimensions of environmental governance focuses on how inclusive or exclusive governance processes are, and how narrowly governments limit the potential for participants to influence policy outcomes (Parkins and Davidson 2008, Van Alstine *et al.* 2013).

In the vertical dimension, environmental governance increasingly involves negotiation, cooperation, and conflict among political actors at local, regional, national, and international levels. Approaching climate change from the vertical dimension is useful because mitigation and adaptation are ‘multilevel’ problems, where responses are formulated at municipal, provincial or state, national, and international levels (Bulkeley and Betsill 2005, 2013, Stoett 2012). Political responses at any single jurisdiction inevitably overlap and often conflict with others, creating barriers to effective responses for mitigation and adaptation (Fisher 2004, Carlane 2008). The multilevel, multi-actor character of climate governance creates points of tension and conflict among jurisdictions, and can create a state of paralysis where actors at one political level refuse to take action, while asserting that responsibility belongs to those at another political level (Harrison 1996). More optimistically, Urry argues that this complexity promises a more ‘cosmopolitan’ form of environmental governance that requires key actors to connect ‘nations and localities, in systems of norms, in institutions, as well as within global politics’ (Urry 2011, p. 101).

Similarly, research on environmental policy networks asserts that policymaking is the outcome of cooperation and conflict among politicians, scientists, social movements, and other interest groups (Montpetit 2003, Bailey

*et al.* 2012, Fisher *et al.* 2013a). By contrast with the environmental governance perspective, environmental policy network research draws on the tools of social network analysis. From this perspective, climate-change policy takes shape as policy network actors broker alliances to form coalitions, share information and resources, or exercise power against rival groups (Compston 2009, Broadbent 2010). In their analysis of Australian climate-policy formation, which plays out against the backdrop of a major coal industry, Bailey *et al.* conclude that the policy network approach is valuable because it circumvents the ‘The temptation ... to view structural factors, such as nations’ levels of fossil-fuel dependency ... as overwhelming constraints and, consequently, to under-emphasize the capacity for political innovation to bring about substantive policy change’ (Bailey *et al.* 2012, p. 706). Jost and Jacob’s (2004) research on climate-change policy in Germany illustrates that while government actors are the most central within policy networks, environmental NGOs are also influential, though their participation is often constrained by a relative lack of resources. At the same time, environmental organisations influence policy networks indirectly through mass-media coverage that amplifies their claims.

Analyses of mass-media accounts of climate change help us better to understand the cultural dimensions of climate governance and policy networks. This is important because mass-media coverage is the ‘main source of information about the issue for “lay” people as well as for stakeholders and decision-makers’ (Schäfer and Schlichting 2014, p. 143). Interaction between news media outlets and climate-policy networks allows groups with a stake in climate policy to engage in conflict in publicly visible media space (Boykoff 2011). This allows policy actors to communicate the issue to news audiences and to speak to government indirectly, thereby generating pressure for political responses to the issue.

The amount and style of coverage given to climate change varies significantly across different countries (Anderson 2009, Boykoff 2011). Research on American media coverage finds that journalistic norms of providing space for opposing positions results in coverage for climate skeptics disproportionate to their standing among climate scientists (Freudenburg and Muselli 2010, Boykoff 2013). McCright and Dunlap (2011) further note that, at least in the US, public opinion regarding climate change has become increasingly polarised since 2001. During the early stages of media visibility of climate change, perceptions of the seriousness of the issue were not strongly linked to political affiliation. However, as climate change gained visibility, public opinion has become aligned with political-party affiliation, with Democrats more likely to be climate-change ‘believers’ and Republicans more likely to be climate ‘skeptics’ (McCright and Dunlap 2011). Comparative research on media coverage finds that climate skeptics are given more coverage in the United States than in other countries, American media coverage is more event-driven and cyclical than elsewhere, and media in countries such as New Zealand, Finland, or Germany

reflect the scientific consensus on climate change to a greater degree (Dispensa and Brulle 2003, Brossard *et al.* 2004, Grundmann 2007).

Within the Canadian context, Good (2008) uses content analysis to examine the volume of climate-change coverage and the keywords used to frame the issue. She finds that Canadian news media provide greater visibility and ascribe greater significance to climate change than American media. Young and Dugas (2011) also examine the two Canadian national newspapers (the *Globe and Mail* and the *National Post*) during three peak periods between 1988 and 2008. They find that news hooks (the core message of the story) oriented around ecological events or scientific discoveries have declined over time, with a corollary increase in news hooks oriented around policy debate and proposed solutions. They also find that (as in many countries outside the US) media in Canada have not attempted to balance voices representing the scientific consensus against skeptic voices (Young and Dugas 2011). Canadian media have not reproduced the 'conflict among experts narrative' that dominates US media coverage (Young and Dugas 2011, p. 17). However, news sources from the US played a significant role in shaping Canadian climate discourse.

We focus on the *Globe and Mail* and *National Post* as key organisational actors that articulate the cultural meanings of climate governance. Our analysis incorporates news articles, as well as columns, letters to the editor, and editorials. One challenge of including both news stories and op-ed content is that columnists, editors, and individual letter writers are different types of social actors from representatives from government, industry, environmental organisations, and other news sources (though the latter also occasionally appear as authors of op-ed content). News workers, after all, are not typically directly involved in climate governance. However, media workers play a role in translating and performing conflict about climate-change policy for audiences as they select and emphasise particular perspectives and opinions. As such, we treat Canadian national news outlets as a focal point in our discourse network analysis.

Research on media and climate change emerged in the 1990s and has expanded since the mid-2000s (Schäfer and Schlichting 2014). Our findings contribute to this body of research by answering three questions. First, what key issues are picked up and circulated as news hooks by the *National Post* and the *Globe and Mail*? Second, how do the *National Post* and the *Globe and Mail* represent climate change in terms of issue scale? Third, how has Canadian national news coverage of climate change shifted over the period 1999–2010?

## Methodology

While our analysis of Canadian national media coverage of climate-policy debate stands on its own, this work is also part of the Canadian case study of the broader COMPON (Comparing Climate Change Policy Networks) research project (Broadbent *et al.* 2013; also see <http://compon.org>). COMPON involves case

study teams working in 19 societies, including the United States, Brazil, Japan, India, Germany, the United Kingdom, and Sweden, among others. All teams used a common set of research protocols to produce comparable results (Broadbent *et al.* 2013).

We focused on the only two Canadian newspapers with national scope and distribution: the *Globe and Mail* and the *National Post*. We used the Factiva online database to conduct keyword searches for ‘climate change’ and/or ‘global warming’ between 1997 (when the Kyoto Protocol was negotiated) to 2010 for the *Globe and Mail*, and from 27 October 1988 (its date of first publication) through 2010 for the *National Post*. We also searched ‘IPCC’ and ‘Intergovernmental Panel on Climate Change’. The number of articles containing one or more of the keywords was 15,021. Prior to coding and analysis, the first author manually scanned and cleaned the data set by removing duplicate articles or articles that mentioned the keyword(s) ‘global warming’ and/or ‘climate change’ without providing any substantive information. The final cleaned data set for 1997–2010 consisted of 8960 articles. We used manual coding, rather than computer-generated automated coding, in order to retain flexibility in our coding and to allow for the inductive creation of new coding categories. Due to the size of the full media data and resource constraints, we selected a 20% sample (1792 articles) for manual coding and analysis. This subsample was constructed by using a randomised start date and selecting every fifth article thereafter.

News-article data were entered into a spreadsheet for analysis using Excel and Visone (Brandes and Wagner 2004) visualisation software for network analysis. Coding included basic publication information on each article, such as date of publication, news outlet, page number, and word count. The content coding used in this analysis focused on a set of ‘issue categories’ that captured the articles’ main subjects. This coding scheme was developed inductively and iteratively. To begin, issue categories were developed freehand during coding for the first two years of articles from the *Globe and Mail* (1997–1998; 79 articles in total). This freehand list was then revised into a set of standardised issue categories that captured the main themes used throughout this set of articles. As in other COMPOS cases, these issue categories were designed to be precise enough to be able to discriminate among meaningfully different themes that characterise the Canadian media landscape, while remaining abstract enough to produce a workable and comparable set of categories (15–30). The initial list contained 15 categories, including ‘government responsibility’, ‘reliability of climate-change science’, ‘ecological/meteorological impacts of climate change’, ‘economic impact of responding to climate change’, ‘corporate responsibility’, ‘extreme weather’, and ‘international negotiations’. After the initial list of categories was formulated, coding remained semi-structured, so that new categories could be added as deemed necessary. Throughout the coding process, the list of categories was periodically reviewed and revised. This iterative approach produced a final list that included 29 issue categories. The whole media data set was coded for up to three issue categories that best represented each article, in order

of importance, according to the judgement of the coder. Where an article contained more than three issue categories, it was coded to the three deemed most significant (judging by headline, lead paragraph, and/or amount of the article dedicated to a particular theme).

Each article was also coded for issue scale, or the scale of the political system that was the main focus of the article. We used seven coding categories: local, provincial, national, foreign national (focusing on a single non-Canadian country), regional-multinational (focusing on at least two countries), Antarctica (a unique case, which appears occasionally), and international (focusing on global climate politics).

Other studies have used content analysis and other approaches to textual analysis to examine Canadian news media coverage of climate change (Good 2008, Young and Dugas 2011, 2012). By contrast to more traditional approaches to textual analysis, we draw on the tools of social network analysis to examine the connections between news outlets and article content. This discourse network approach to media analysis follows other efforts to link network analysis and discourse analysis (Mohr 1998, Leifeld and Haunss 2012, Fisher *et al.* 2013b, Leifeld 2013). Whereas social network analysis typically focuses on ties between individuals or organisations, a discourse network approach treats media themes as components of discourse networks that link cultural frames and social actors (individuals or organisations). A discourse network approach is valuable because it provides a visual image of multiple connections between cultural discourses and social actors that emphasises a sense of complexity and relationality, which may be reduced when data are presented in a linear narrative or in two-dimensional tabular form. Discourse network analysis is also productive because it blends qualitative and quantitative modes of thinking about and analysing relationships between discourse, actors and organisations. This helps generate insights that may be less obvious when working from either a purely qualitative or quantitative perspective (Plano Clark *et al.* 2008). It also has the potential of making indirect relationships more obvious (e.g. compared to tabular data analysis).

In the series of network analysis sociograms that structure our presentation of results, news outlets are one mode of network data, represented by square nodes. Issue categories are treated as a second mode of network data, represented by circular nodes that are linked to the two news outlets. Ties between nodes indicate that the theme appeared in the news outlet. Tie thickness is weighted to reflect the frequency that issue categories appear in each news outlet.<sup>1</sup> Another series of two-mode network diagrams visualises links between news outlets, again represented by square nodes, and issue scale, represented by circular nodes. Line thickness is weighted to reflect the frequency that issues scales are used by each news outlet. In order to examine changes over time, we present these results through a series of two-mode network diagrams focusing on four key periods: 1999 (36 articles), 2002 (178 articles), 2006 (161 articles), and 2010 (137 articles).



**Results**

*Issue categories*

Figure 1 is a network diagram that illustrates the key issue categories within the Canadian national media discourse network during 1999, the first year of full media coverage for both newspapers following the establishment of the Kyoto Protocol. The main issue categories in the *Globe and Mail* are the ecological and meteorological impacts of climate change, the social impact of responding to climate change, and the reliability of climate science. The most frequent issue category in the *National Post* is international negotiation. Less prevalent issue categories include corporate responsibility for addressing climate change, government responsibility for addressing climate change, citizen responsibility, technological solutions, and extreme weather. There is a much lower volume of coverage in 1999 than in later years. Also, there is little overlap in issue categories across the two media outlets.

Figure 2 illustrates the connections between news outlets and key issue categories during 2002, the year in which the Canadian government ratified the Kyoto Protocol and committed to reduce greenhouse-gas emissions by 6% below 1990 levels. The most striking aspect of Figure 2, in comparison to that for 1999, is the greater overlap of issue categories across the two news outlets. This is particularly the case around the dominant issue categories of government responsibility for addressing climate change and the economic impacts of responding to climate change, both of which are marginal themes in the 1999 discourse network. Figure 2 also illustrates an emphasis on different key issue categories in each of the two news outlets. Government responsibility for addressing climate change appears somewhat more often in the *Globe and Mail*, while the economic

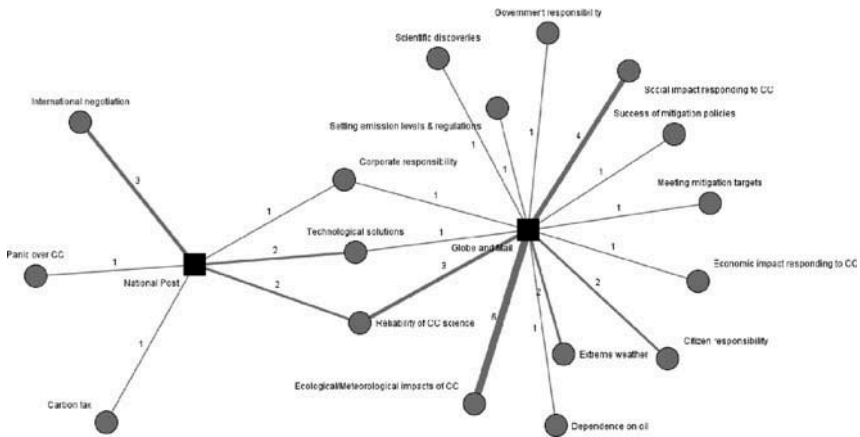


Figure 1. Discourse network linking primary issue categories to news outlet, 1999 (links showing frequency of articles with theme).



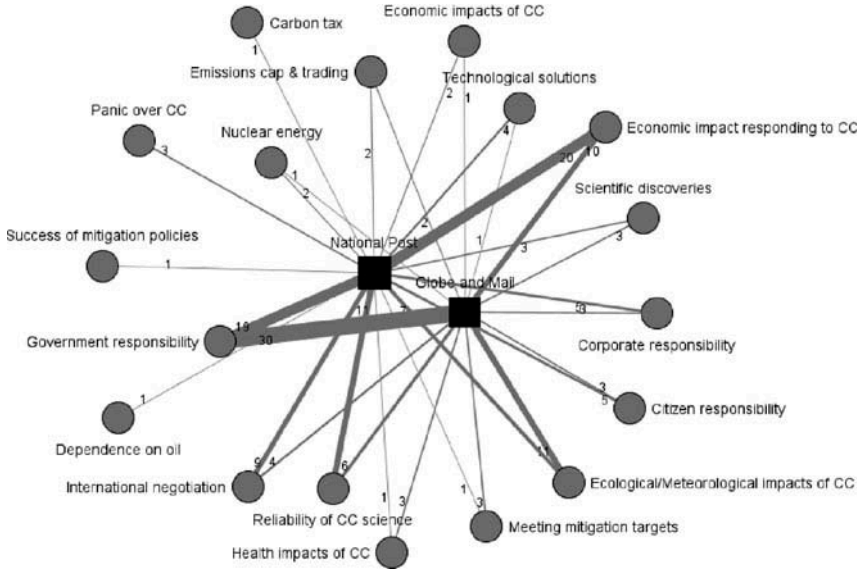


Figure 2. Discourse network linking primary issue categories to news outlet, 2002 (links showing frequency of articles with theme).

impact of responding to climate change is accentuated in the *National Post*. Discussion of the ecological and meteorological impacts of climate change is more visible in the *Globe and Mail*, while discussions of the reliability of climate science and international negotiations are more visible in the *National Post*.

Figure 3 illustrates the national news media discourse network during 2006, the year Stephen Harper and the Conservative Party took power. The discourse

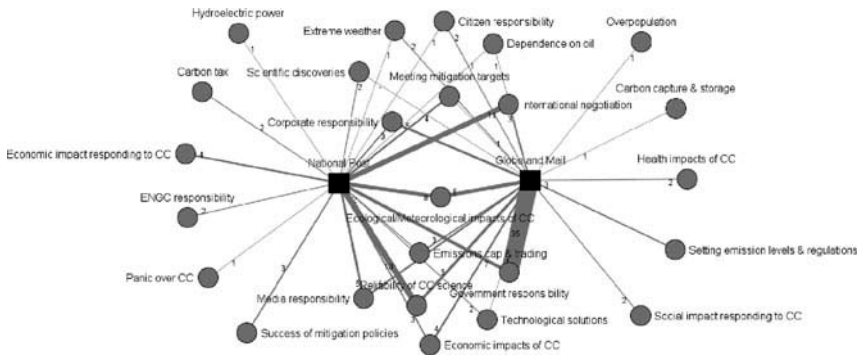


Figure 3. Discourse network linking primary issue categories to news outlet, 2006 (links showing frequency of articles with theme).

network is more complex than in earlier periods, measured by the number of distinct issue categories used. While there were different levels of emphasis on shared issue categories in 2002, in 2006 the two national news outlets offer quite different interpretive frameworks for making sense of climate impacts and governance. The *Globe and Mail* focuses predominantly on debates about government responsibility for responding to climate change. Other prevalent issue categories include ecological and meteorological impacts, and corporate responsibility. By contrast, no single issue category is as dominant in the *National Post*. Rather, this outlet draws on a set of categories that includes the reliability of climate science, international negotiation, and the ecological and meteorological impacts of climate change. If the *Globe and Mail* during this period is primarily concerned with issues of climate governance, the *National Post* provides more space for questions about whether climate change is a significant environmental problem.

Figure 4 visualises the national news media discourse network during 2010, which follows the Copenhagen COP 15 meetings, where Canada was singled out as a target by protesters and international environmental organisations. Coverage in the *National Post* and *Globe and Mail* became increasingly complex between 1999 and 2006, in terms of the range of issue categories used. However, there is no evidence of increasing issue complexity in 2010. As in 2006, the two news outlets emphasise different elements of climate discourse, producing divergent interpretive frameworks for readers. The *National Post* continues to focus on debate over the reliability of climate science. Other key issue categories that figure prominently are international negotiations, negative economic impacts of responding to climate change, and ecological and meteorological impacts. In

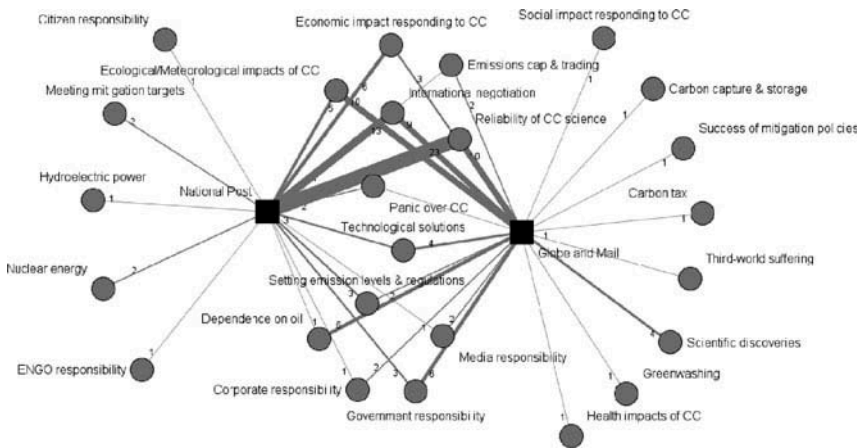


Figure 4. Discourse network linking primary issue categories to news outlet, 2010 (links showing frequency of articles with theme).

previous periods, the *Globe and Mail* focused primarily on government responsibility. In 2010, by contrast, this news outlet draws on a wide range of issue categories, including ecological and meteorological impacts, the reliability of climate science, international policy negotiations, government responsibility, and Canada's dependence on oil. Coverage that treats Canadian dependence on oil as a barrier to effective action on climate change is more visible in the *Globe and Mail* than in the *National Post*, which focuses more on the negative economic impacts of responding to climate change for industries such as the Alberta oil sands.

### Issue scale

The issue scale of articles published in the *Globe and Mail* and *National Post* during 1999 is depicted by Figure 5. Two years after the Kyoto Protocol was established, both Canadian national news outlets position climate governance at the international and national scales, suggesting cultural interpretation of climate change as both a global and national environmental issue. By contrast, both outlets pay little attention to climate-change impacts or policy responses at the provincial or local levels.

In the 2002 discourse network, as illustrated in Figure 6, media coverage focuses predominantly on the national issue scale, with secondary attention to the international scale. This is the year that Canada ratified the Kyoto Protocol, so the focus on the national issue scale is not surprising. However, the secondary focus on the international political arena suggests a shift towards national politics

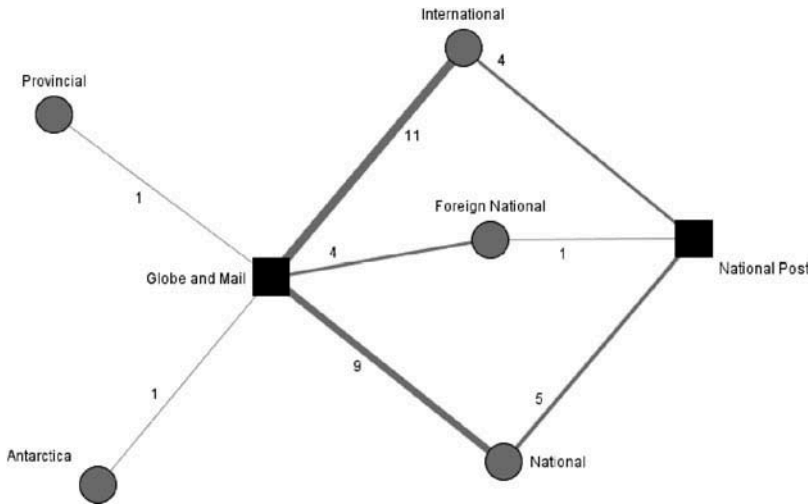


Figure 5. Discourse network linking issue scale to news outlet, 1999 (links showing frequency of articles with primary or secondary issue scale).

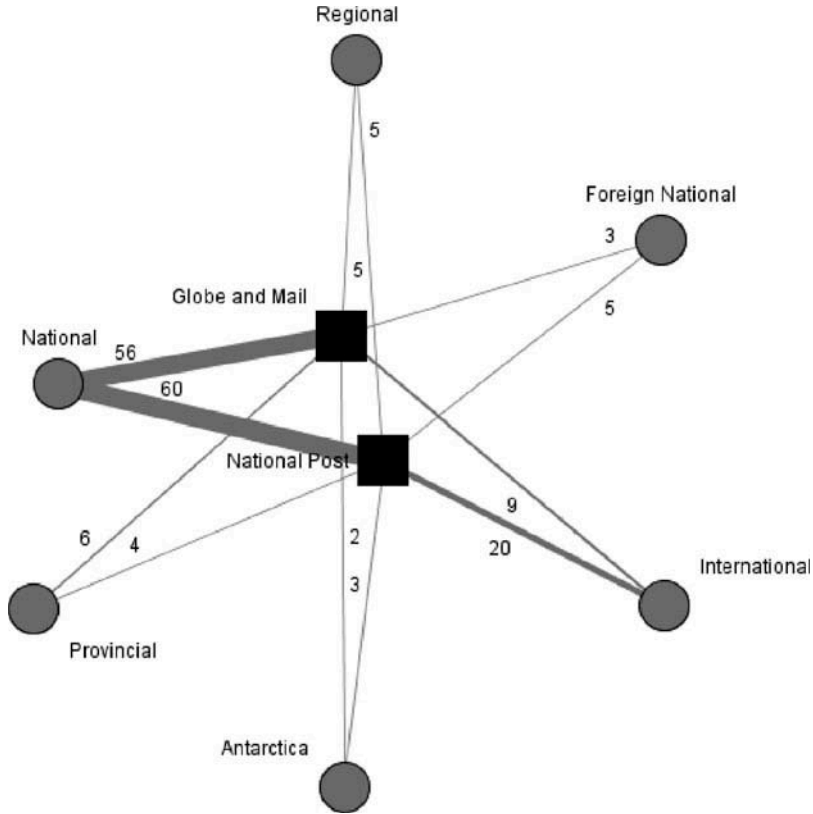


Figure 6. Discourse network linking issue scale to news outlet, 2002 (links showing frequency of articles with primary or secondary issue scale).

in news media representations of climate governance, although this is more visible in the *Globe and Mail* than in the *National Post*. While there is more coverage of the provincial political scale compared to 1999, media discussion of climate change at the sub-national levels is modest.

The issue scale at which climate change is discussed in 2006 has a binary focus on national and international impacts and politics, which is similar to the treatment of issue scale in 1999 (see Figure 7). The national issue scale receives moderately more attention from the *Globe and Mail*, while the international issue scale receives slightly more attention from the *National Post*. As in previous years, the provincial and local issue scales are much less visible as frameworks for structuring discussions of climate governance. The federal government and international policymaking processes continue to be defined as the central arenas for climate-change mitigation and adaptation.

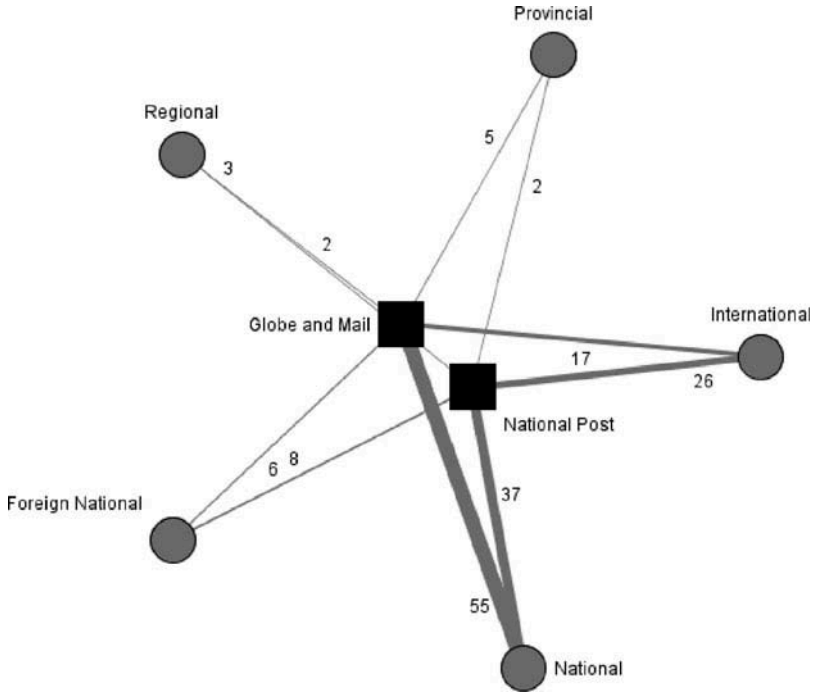


Figure 7. Discourse network linking issue scale to news outlet, 2006 (links showing frequency of articles with primary or secondary issue scale).

Finally, during 2010, both the *Globe and Mail* and the *National Post* divide their coverage between the national and the international scale, with international coverage receiving slightly greater attention in both outlets (see Figure 8). This is consistent with the bipolar framing of issue scale throughout these peak periods. Yet, this discourse network contrasts slightly with the previous discourse networks that focused more on the national political scale. As in the 2002 and 2006 figures, the *Globe and Mail* pays moderate attention to climate-change impacts and policymaking at the provincial scale, while the *National Post* gives some attention to climate impacts and policymaking at the local issue scale. By 2010, these media outlets are paying slightly more attention to climate change as an issue involving multiple political scales, though coverage continues to be framed primarily through the lenses of national and international politics.

**Discussion and conclusions**

Although there is a wide range of possible news hooks for discussing climate change, a relatively small group of issue categories is used throughout the key periods we examined. These include government responsibility, reliability of

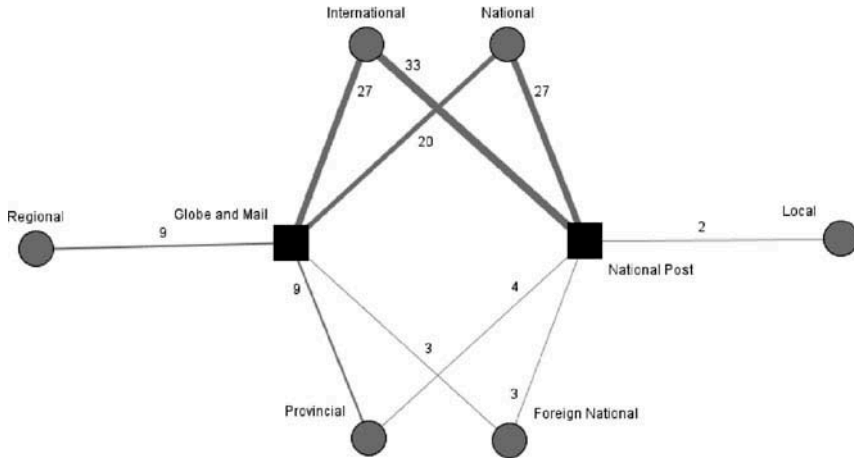


Figure 8. Discourse network linking issue scale to news outlet, 2010 (links showing frequency of articles with primary or secondary issue scale).

climate science, economic costs and impacts of responding to climate change, ecological and meteorological impacts of climate change, and international policy negotiations. Taken together, these categories constitute the core of Canadian national newspaper discourse on climate change. Other issue categories used focus on policy solutions (carbon tax, emissions cap and trade systems), technological fixes (carbon capture and storage and nuclear power) and issues of economic power and inequality (corporate responsibility, Canadian dependence on oil and third-world suffering). However, they are less prevalent as discourses for making sense of climate-change impacts and political responses. Substantial media debate about addressing attachments to high-carbon lifestyles oriented around regular meat consumption or air travel is less visible still, a pattern of invisibility Hayden (2014) argues is characteristic of Canadian climate-change discourse more broadly.

As Lidskog (2014) notes, media coverage is an important forum for constructing ‘lay understandings’ of the ‘science–policy interface’ for the general public. Each of these news outlets emphasises different elements of the climate-change science–policy interface. The *Globe and Mail* more often frames climate change through debates over government responsibility, while the *National Post* is more likely to focus on debates over the reliability of climate science and the economic impacts of responding to climate change. As such, the *National Post* is more aligned with the US model of climate-change media coverage that positions climate change ‘believers’ against ‘skeptics’ (Freudenburg and Muselli 2010, Boykoff 2013). By contrast, the *Globe and Mail* constructs an interpretive framework that more often accepts the legitimacy of climate change as a serious environmental problem and focuses debate on how it should be addressed. This

is more consistent with media coverage in societies outside the US, such as New Zealand, Finland or Germany (Dispensa and Brulle 2003, Brossard *et al.* 2004, Grundmann 2007). In the US, since 2001, public opinion about climate change has become increasingly polarised and defined by Democratic or Republican political affiliation (McCright and Dunlap 2011, Fisher *et al.* 2013b). Similarly, the discourse networks articulated by the *National Post* and the *Globe and Mail* shift from being relatively similar in 2002 to orienting around divergent discourses in 2006 and 2010. This suggests that parallel, mutually reinforcing processes of political polarisation and media polarisation around climate change have unfolded over the past 10–15 years in North America. At a time when media consumption is increasingly individualised through the use of Facebook, Twitter and other customisable Web 2.0 applications, the media polarisation of climate discourse makes it easier for audiences to expose themselves to news stories that mesh with their ideological standpoints. This risks bolstering trends towards the political polarisation of climate change, which may make it increasingly difficult to construct policy solutions to this issue.

Examining key periods in the Canadian climate-policy debate allows us to trace shifts in news discourse. Media discourse networks grew increasingly complex from 1999 through 2006, using a range of issue categories as a measure of complexity, indicating that news coverage evolved to encompass more dimensions of this issue. However, issue complexity does not change between 2006 and 2010. Also, the key issue categories used to represent climate change are characterised by a mix of stability and change. Government responsibility and the reliability of climate science are dominant themes throughout the analysis, while other issue categories assume greater or lesser importance over time. For example, the economic impact of responding to climate change is most visible during 2002, the year in which the Chrétien Liberal government ratified the Kyoto Protocol. By contrast, discussion of international negotiation is more prevalent in 2006 and 2010, following the transition to the Conservative government of Stephen Harper.

Our findings demonstrate that there is not a single Canadian climate-change media discourse network. Rather, the discourse network evolves over time, and different interpretive frameworks are constructed by different news outlets. As a qualification, our period of analysis (1999–2010) encompasses a time of dramatic change in terms of media technology. It is possible that some of the change we observed might be related to changes in news production practices and the economic imperative to retain audiences in era of declining readership. Adequately addressing this issue would require additional research with news workers (journalists, editors, columnists) involved in the production of climate-change news. The question of how much the shifting social and economic systems of news work influences climate change (and other) news is outside the scope of the present analysis, although it offers a promising line of further inquiry.



Our findings indicate that the *Globe and Mail* and the *National Post* persistently interpret climate change through a focus on national and international policy scales, with somewhat more attention paid to the national issue scale. Canadian media discourse can be described as inward looking and bound by the nation state as a political arena, at least as much as it is outward looking and 'cosmopolitan' in orientation (Urry 2011). At the same time, considerably less attention is paid to sub-national climate impacts or policy responses by provincial or local governments. This inattention to climate governance at the sub-national level may be more pronounced in the two national newspapers than in provincial or municipal newspapers. Elsewhere, Young and Dugas explore regional differences between media in Quebec and the rest of Canada (Young and Dugas 2012). An analysis of Canadian provincial or municipal newspapers is beyond the scope of this project. Rather, our research is one case of the cross-national COMPON project, and any comparative work that follows from the present analysis will have a cross-national focus, rather than focussing on differences between national and sub-national media outlets.

Climate policy is developed through the social interaction of complex policy networks involving national, sub-national and local governments, international bodies such as the UN, corporations and industry lobbying, scientific experts, environmental groups and other non-governmental organisations (Compston 2009, Broadbent 2010, Bailey *et al.* 2012). Similarly, climate change is a multilevel environmental issue, where the impacts are felt and political responses operate at the local, provincial or state, national, and international levels (Bulkeley and Betsill 2005, 2013, Stoett 2012). Canadian national news discourse networks focus on the national government, international political negotiation and the construction of scientific knowledge as major sites for discussions of climate-change responsibility and solutions. These media pay less attention to the role of non-state actors in climate-policy networks, including corporations and environmental organisations. They also pay less attention to climate impacts and policy responses at the local or provincial levels. Canadian national newspaper discourse networks do not enact the complexity of multilevel climate governance and policy networks. This treatment of issue scale parallels results from a separate study of how Canadian environmentalists interpret climate-change responsibility and solutions. Our results from that project indicate that environmentalists tend to view climate change through the dual lens of government responsibility and individual responsibility (Stoddart *et al.* 2012). The bipolar interpretive frameworks articulated by the media and adopted by environmentalists both work to reduce the complexities of multilevel climate governance.

While our analysis provides insight into the cultural dimensions of climate governance, it also has several limitations. First, we have focused on the 'vertical' dimension of climate governance, or the political scale at which the problem is addressed, but have focused less on the 'horizontal' dimension of climate governance, or the range of actors involved in climate-policy networks

(Francesch-Huidobro 2012). Further research is being carried out to examine the networks of actors who gain access to national news media coverage of climate-policy debate, and how different organisations align with each other in ‘discourse coalitions’ around shared agreement and disagreement over policy responses to climate change (Gregorio 2012, Leifeld and Haunss 2012).

Second, we have focused on news media outlets as organisational actors in climate governance. This risks giving an overly unified impression of the different interests and opinions of news workers. There is a large body of research on media representations of climate change, to which our results contribute, but work on the social processes of climate-change news production is less well developed (Lester 2010, Berglez 2011, Boykoff 2011). As such, we are undertaking follow-up research with key journalists in order better to understand the work they do to actively construct climate-change news narratives.

Finally, a media-focused approach, by itself, cannot tell us about the interplay of the media sphere and the political sphere as sites for negotiating and contesting climate governance. In order to address this limitation, we are currently carrying out research with participants from government, environmental organisations, think tanks and other key organisations involved in climate-policy networks, with a focus on which organisations serve as important sources of information and political influence within climate-policy networks. In their study of Peru, Takahashi and Meisner (2014) note that national newspapers are seen by politicians as particularly influential sources of information. Similarly, by bridging the results of media analysis and policy network analysis, we will gain additional insight into the ways in which media coverage influences climate governance in Canada.

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## Note

1. For the purposes of this analysis, issue category coding does not account for where issue categories appear within articles (headlines or lead paragraphs versus further into the articles).

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