

# ‘Ye Olde Hot Aire’\*: reporting on human contributions to climate change in the UK tabloid press

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## Abstract

This letter explores daily print media coverage of climate change in four United Kingdom (UK) tabloid newspapers: *The Sun* (and *News of the World*), *Daily Mail* (and *Mail on Sunday*), the *Daily Express* (and *Sunday Express*), and the *Mirror* (and *Sunday Mirror*). Through examinations of content in articles over the last seven years (2000–2006), triangulated with semi-structured interviews of journalists and editors, the study finds that UK tabloid coverage significantly diverged from the scientific consensus that humans contribute to climate change. Moreover, there was no consistent increase in the percentage of accurate coverage throughout the period of analysis and across all tabloid newspapers, and these findings are not consistent with recent trends documented in United States and UK ‘prestige press’ or broadsheet newspaper reporting. Findings from interviews indicate that inaccurate reporting may be linked to the lack of specialist journalists in the tabloid press. This study therefore contributes to wider discussions of socio-economic inequality, media and the environment. Looking to newspapers that are consumed by typically working class readership, this article contributes to ongoing investigations related to what media representations mean for ongoing science–policy interactions as well as potentialities for public engagement.

**Keywords:** climate change, anthropogenic, media, United Kingdom, content analysis, tabloids

## 1. Introduction

Media coverage significantly shapes public understanding of climate science and policy (Wilson 1995). To date, analyses of print media coverage of environment—and more specifically climate change—have confined attention to ‘prestige press’, ‘broadsheet’ or ‘quality’ newspapers (e.g. the *Independent*, *Times*, *Guardian*, *Financial Times*, and *Telegraph* in the United Kingdom (UK)). The rationale behind these tactics have been that ‘quality’ press sources have had a reputation for traditionally higher-quality reporting of ‘hard news’, and that they have more frequently employed specialist

reporters on science and environment ‘beats’ (Doyle 2002). Moreover, they are the primary influences on policy discourse and decision-making at national and international levels (Carvalho and Burgess 2005, Boykoff 2007b). However, when discussing links between media representations and sustainability communications, these approaches have suffered from a massive blind spot in their considerations: large segments of the population simply are reading other newspapers.

In the UK context, many instead read what is commonly referred to as ‘the tabloids’. A cynical view might be that the perceptions of these readers are of secondary relevance when it comes to influencing climate science and policy. But in the issue of climate change where carbon-based activities permeate facets of everyone’s lives, such a stance is problematic.

\* Headline from a *Daily Mail* article analyzed during this study, which claimed to ‘debunk the myth of global warming’ (Hanlon 2003 Ye olde hot aire *Daily Mail* London (8 April) p 17).

**Table 1.** Average daily circulation/circulation per issue for broadsheet and tabloid UK press. (Note: The United Kingdom newspaper circulation information is based on information between 27 November and 31 December 2006 (Audit Bureau of Circulations 2007). The Sunday circulation is weighted (1/7), and the per capita figures are estimated by UK population figures of approximately 60 million residents.)

Newspaper	Average daily circulation/circulation per issue	Average daily circulation/circulation per issue per capita ( $\times 10^3$ )
The Sun (and News of the World)	3300 208	55.0
The Daily Mail (and Sunday Mail)	2373 756	39.6
Daily Mirror (and Sunday Mirror)	1741 740	29.0
Daily Telegraph	904 283	15.1
Daily Express (and Sunday Express)	831 373	13.4
The Times (and Sunday Times)	718 221	12.0
Financial Times	438 538	7.3
The Guardian (and Observer)	375 666	6.3
The Independent (and Sunday Independent)	233 058	3.9

Investigating media representational practices more broadly has the potential to more effectively promote links between public understanding and social change on the issue of climate change (Moser and Dilling 2007, Moser 2006). Thus, analyses of media representations of these news sources—typically considered ‘working class’ newspapers—can tap into associated issues of public engagement and behavioral change.

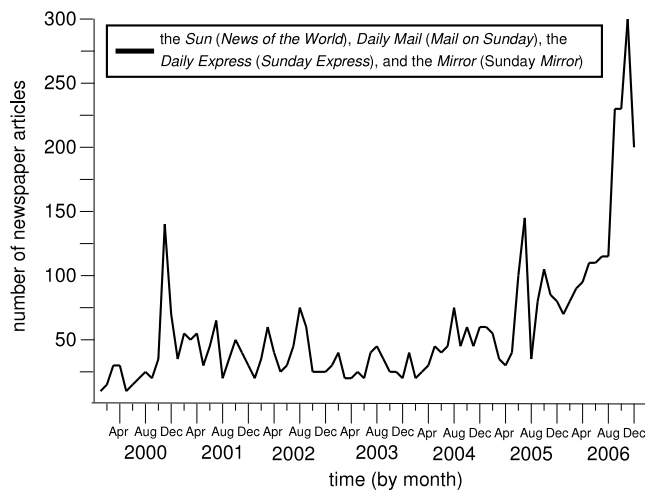
This project is motivated by growing recognition of the need to engage wider constituencies in awareness and behavioral change. To do so, this letter explores daily print media coverage of anthropogenic climate change in four daily ‘popular’ and ‘working class’ newspapers in the UK—*The Sun*, *Daily Mail*, the *Mirror* and *Express* along with their respective Sunday counterparts *News of the World*, the *Mail on Sunday*, the *Sunday Mirror*, and *Sunday Express*. Such a focus is useful for four main reasons. First, UK readership is very distinctly differentiated across socio-economics. Second, UK newspaper coverage of climate change is increasingly abundant, thereby enabling a more robust analysis of content in the tabloid press. Third, past tabloid coverage of other science and environment issues such as MMR vaccines in the *Daily Express* and genetically modified food in *The Sun* influenced public views on these politicized issues; thus it is useful to examine their possible influences in the issue of anthropogenic climate change. Fourth, previous analyses of UK tabloid news in other disciplines provide a foundation for examinations of coverage of environmental issues such as climate change. Through examinations of content in climate change articles over the last seven years (2000–2006), triangulated with two-dozen semi-structured interviews of journalists and editors from these newspapers, this letter addresses questions of a socio-economically differentiated public.

## 2. UK tabloids and climate change

Meanings signified by the phrase ‘the tabloids’ vary. While for some this can spur populist sentiments, for others this can be a denigrating expression. Through previous investigations into tabloid journalism (as well as their relations to ‘quality’ press reporting) (e.g. Uribe and Gunter 2004), three common sets of characteristics emerge: first, the *tenor* of tabloid journalism is more steeped in opinions and commentary as well as

personalized writing. Therefore, ‘straight’ or ‘objective’ news reporting is deemphasized (van Zoonen 1998). Second, there is less *breadth* in the content of tabloid news reporting, under-reporting issues such as international politics and economics. Greater attention instead is paid to domestic stories and those of scandal and conflict, particularly as they related to subjects such as sports and celebrity (Connell 1998, Rooney 2000). Third, there is less *depth* in tabloid reporting, where entertainment and sports reporting routinely forego political economic and societal analyses. Moreover, representations are often more simplistic and sensationalist (Djupsund and Carlson 1998). Political economic pressures have contributed significantly to these characteristics through time. Capacity constraints are prominent, where specialist ‘environment’ and ‘science’ training is sparse, instead relying on a tabloid journalist to ‘work holistically’ and be ‘a jack of all trades’ (Deuze 2005, p 877). Generalist approaches can exacerbate distortions of scientific information when complex scientific material is put in media reports (Anderson 1997). Related to this are increasing pressures on time to deadlines as well as space constraints in the paper itself. Interviewee Emma Morton of *The Sun* commented that, ‘ten stories on the environment get squeezed into five’. These characteristics and pressures hold across various tabloid media (e.g. television: Winston 2002), but the focus is most often on newspapers (Sparks 2000). Despite the fact that these features may diminish the quantity of climate change reporting, there still has been increasing coverage throughout UK tabloid press sources.

Average daily circulations in each of the tabloid newspapers in this study—*The Sun* (and *News of the World*), *Daily Mail* (and *Mail on Sunday*), the *Daily Express*, and the *Mirror* (and *Sunday Mirror*)—are as much as ten times higher than their counterparts in broadsheet newspaper readership (table 1). Moreover, tabloid papers are more traditionally ‘shared’ in public spaces (e.g. on the train or bus) and in the workplace, thus pushing some estimates of daily readership to double that of circulation figures (Newspaper Marketing Agency 2007). Circulation figures aside, it is important to also consider the demographics of tabloid and broadsheet press readership. National Readership Survey (NRS) social grades—a UK demographic classification scheme—show clear socio-economic differences between newspaper readership habits.



**Figure 1.** UK tabloid newspaper coverage of climate change and global warming.

Readers defined as A (upper middle class), or B (middle class) comprise over half of broadsheet press readership, while C (lower middle class/skilled working class), D (working class) and E (underclass) citizens comprise the majority of tabloid readership (Newspaper Marketing Agency 2007). For example, 57% of *Independent* readers are deemed A or B on the NRS social grade, while just 11% of *Sun* readers, 14% of *Daily Mirror* readers, and 29% of *Daily Mail* and *Daily Express* readers occupy these socio-economic spaces. This is not to suggest that readership habits are a function of socio-economic status nor that readers of these newspapers necessarily comprise a coherent and self-acknowledged ‘working class’; rather, habits are formed and perpetuated in this heterogeneous group of readers through complex factors and feedback processes that are part economic (e.g. the price for tabloids is lower than broadsheets), and part cultural (e.g. identities shape what are ‘working class’ newspapers which then further fuel readership habits) (Newton 1999).

During the seven-year span of this study, tabloid media coverage of climate change has increased dramatically (figure 1). Three distinct increases in coverage can be seen in the figure, in 2000, 2005 and 2006. The first rise—in November and December of 2000—was mainly due to coverage of the intense flooding in the northeast of England, with particular devastation centered on Yorkshire. It was deemed at the time ‘the wettest autumn since records began’ (Champkin 2000, p 10). Concatenate political events also garnered coverage, such as the Sixth United Nations Conference of Parties meeting in The Hague, where talks broke down after a standoff between the United States and the European Union on the terms of the discussion regarding forests-as-carbon-sinks for emissions reductions. In 2005, coverage in June and July was focused on the Group of Eight (G8) Summit in Gleneagles, Scotland, and increased scrutiny of greenhouse gas emissions from air travel during European Union Emissions Trading Scheme proposal debates and the coincident UK summer holiday season and school

break. Reports also focused on US President George W Bush’s landmark statement just before the conference where he acknowledged anthropogenic climate change by stating ‘I recognize that the surface of the Earth is warmer and that an increase in greenhouse gases is contributing to the problem’ (Daily Mail 2005, p 22). The third prominent increase in September–November 2006 was primarily due to three interrelated events. First, the Al Gore film ‘An Inconvenient Truth’ was released in the UK in mid-September, and this sparked tabloid coverage and commentary. For instance, *The Sun* solicited readers’ comments on the film, by stating, ‘*The Sun* is urging readers to think green in the debate on global warming. Ex US vice president Al Gore warns we have ten years to save the planet but some, like leading bio-geography professor Philip Stott, say climate change is normal’ (The Sun 2006, p 1). Second, the ‘rebel billionaire’ Richard Branson made a much publicized multi-billion dollar ‘donation’ to renewable energy initiatives and biofuel research. Headlines rang out such as ‘Branson green air blue print’ in the *Mirror*. Third, the ‘Stern Review’ was released at the end of October and this generated intense media coverage in the weeks that followed, through the Twelfth Conference of the Parties to the United Nations Framework Convention on Climate Change meeting in Nairobi. Connections were made between the report and a number of issues, such as carbon taxes. For instance, the *Daily Mail* linked them together in a piece entitled ‘Brown prepares to put up tax on petrol’.

### 3. Methods

The textual representations of tabloid new articles were accessed and compiled through the *Lexis Nexis* searchable archive using the Boolean query ‘climate change or global warming’. The sample set was assembled by random selection of every fifth article as it appeared in the archive chronologically, containing either of these terms. It was initiated by systematically opting in from a random starting point in January of each year. Overall, 4945 articles containing these words were published in these sources from 2000 through 2006. The sample taken from this total population consisted of 974 articles, or 20%. The news articles consisted of 19% ( $N = 184$ ) from *The Sun* (and *News of the World*), 27% ( $N = 264$ ) from the *Daily Mail* (and *Mail on Sunday*), 26% ( $N = 255$ ) from the *Daily Express*, and 28% ( $N = 271$ ) from the *Mirror* (and *Sunday Mirror*). Complementing these analyses, two-dozen semi-structured interviews were conducted.

This research focused on specific analyses of content regarding coverage of human contributions to climate change. It did not assess media coverage of other salient climate science issues such as potential links to hurricane intensity or frequency. Focusing on human attribution and climate change, it has been widely discussed how over the last dozen years, reports and findings have signaled a broad scientific consensus—despite ongoing uncertainty regarding the *extent* of attribution as well as many other aspects of climate change causes and consequences. The February 2007 release of the United Nations-sponsored Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4)

from Working Group I (WGI)—involving scientists considered by their peers as top experts on the physical science of climate change—contains a strong consensus statement on this point. It reads, ‘Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations’ (IPCC 2007, p 8, emphasis added). The term ‘very likely’ means ‘greater than 90% likelihood’, ‘using expert judgment of an outcome or a result’ (IPCC 2007, p 3).

For content analyses specifically of the issue of anthropogenic climate change, codes were assigned for its varying treatment in each article<sup>1</sup>. It interrogated the hypothesis that through adherence to the journalistic norm of ‘balanced reporting’, news coverage of anthropogenic climate change actually perpetrates an informational bias by significantly diverging from the consensus view in climate science that human activities contribute to climate change (IPCC 2007). The coding scheme followed from previous research that assessed how this issue was covered in newspaper and television news (Boykoff and Boykoff 2004, Boykoff 2007a). The measure assigned a code to correspond to assessment of articles that (1) presented the viewpoint that anthropogenic global warming (distinct from natural variations) accounts for *all* climate changes, (2) presented multiple viewpoints, but emphasized that anthropogenic contributions, distinct from yet still in combination with natural variation, significantly contribute to climate changes (most accurately communicating the dominant view from climate science), (3) gave ‘a balanced account’ surrounding existence and non-existence of anthropogenic climate change, and (4) presented multiple viewpoints but emphasized the claim that anthropogenic component contributes *negligently* to changes in the climate.

The third category—‘balanced reporting’—was determined to be coverage that provided roughly equal attention and emphasis to competing viewpoints on anthropogenic climate change, however not necessarily equal time and space (Entman 1989, Dunwoody and Peters 1992). The fourth category also partially captured what has been called ‘contrarian’ or ‘denialist’ accounts and commentaries (McCright 2007). In other words, these are representations that deliberately state the case that humans do not contribute to climate change, despite the aforementioned convergence in the climate science community. Category two is considered accurate coverage while the others are deemed to be inaccurately representing the associated climate science. The coding was determined not simply by tallying up comments or frequencies of words or phrases. Importance was placed on labeling of those quoted, terminology, framing techniques, salience of elements in the text, tone and tenor, and relationships between clusters of messages. This more interpretative approach more capably captures subtle factors that shape representational practices. Multiple stages of pilot testing were undertaken independently on the content analysis measure to evaluate the assessments made. Also accounting for spuriousness, these analyses of sources in the UK across the

seven-year period produced intercoder reliability rates of 90%, 94% and 94%.<sup>2</sup>

The interviews were conducted with twenty-four journalists and editors between October 2006 and October 2007. The interviewees were authors of climate change articles in these news sources, as well as media workers in other sources and arenas connected to climate change. Interviews range in length from 10 min to 1 h. We sought to ascertain their views regarding portrayals of anthropogenic climate change science in their publications as well as in the media more generally, and to validate as well as discuss the content analysis findings in news articles. Questions put to the interviewees covered a range of issues regarding media representations of climate science and connections to climate policy as well as public understanding of anthropogenic climate science research. Further interview content followed on comments made by interviewees therein.

#### 4. Results

Utilizing the coding mentioned above, table 2 shows the percentage coverage by year from 2000 through 2006. Overall, the percentage of coverage that was deemed to accurately represent the scientific consensus on climate change ranged from approximately 67% to 83% over the study period. However, accurate coverage did not consistently increase over time. These findings can be contrasted with content analyses studies of anthropogenic climate change coverage in the US prestige press and UK broadsheets<sup>3</sup>. The study of US newspapers found percentages of divergent coverage to decrease during the same period of study, from nearly half of coverage as divergent in 2000 down to just 8% in 2006 (Boykoff and Boykoff 2004, Boykoff 2007a). The UK tabloid news coverage did not undergo a similar increase in the percentage of accurate coverage. The study examining UK broadsheet coverage from 2003 through 2006 found the per cent of divergent coverage was just around 1% across all four years (Boykoff 2007a). While the per cent of divergent UK tabloid news coverage was also consistent during these years, it remained a much larger per cent of anthropogenic climate change representations.

Looking at percentages of coverage by each newspaper over the seven-year period, the *Mirror* (and *Sunday Mirror*), *the Express*, and *The Sun* (and *News of the World*) exhibited similar trends in reporting. However, the *Daily Mail* (and *Mail on Sunday*) demonstrated a greater percentage of coverage categorized as ‘balanced’ coverage, or that which gave ‘roughly equal attention to competing views regarding human’s role in climate change (table 3). A key element shaping this difference may be the politically conservative

<sup>2</sup> This intercoder reliability was conducted by the two authors in coordination with Michael K Goodman, from King’s College London. In three piloting stages, two reviewers each analyzed fifty articles independently. Therefore, one hundred fifty articles were piloted in total (15.4% of sample). These rates are above established accepted criteria for intercoder reliability (Rubin and Babbie 2005).

<sup>3</sup> The papers under investigation in these studies were the *Los Angeles Times*, the *New York Times*, *USA Today*, the *Wall Street Journal*, and the *Washington Post* in the US, and the *Independent* (and *Sunday Independent*), the *Times* (and *Sunday Times*), and the *Guardian* (and *Observer*) in the UK.

<sup>1</sup> The sample set included news reports, op-eds, and commentaries, but did not include letters to the editor.

**Table 2.** UK tabloid newspaper discourse and scientific discourse regarding anthropogenic climate change: by year, 2000–2006;  $n = 974$ . (Note: the newspapers analyzed here were *The Sun* (and *News of the World*), *Daily Mail* (and *Mail on Sunday*), the *Daily Express*, and the *Mirror* (and *Sunday Mirror*). The numbers represent the percentages of coverage in each year. The first column represents coverage of significant human contributions to climate change that accurately reflects climate science consensus. The second and third columns represent divergent coverage. The significance of the divergence of the UK tabloid newspaper coverage from the climate science consensus regarding anthropogenic climate change was determined through  $z$ -scores. The yes/no represents whether or not the coverage that diverged from scientific consensus regarding anthropogenic climate change met established criteria for significance ( $z$ -scores per year: 2000—2.51; 2001—2.32; 2002—2.43; 2003—3.23; 2004—2.92; 2005—2.88; 2006—5.41).)

Year	Coverage of climate change science depicting significant human contributions (by per cent)	'Balanced' coverage of anthropogenic climate change (by per cent)	Coverage of climate change science depicting negligent human contributions (by per cent)	Was the difference between ALL newspaper coverage and climate science consensus statistically significant?
2000	80	20	0	Yes <sup>a</sup>
2001	83	14	3	Yes <sup>a</sup>
2002	81	9	9	Yes <sup>a</sup>
2003	67	22	11	Yes <sup>b</sup>
2004	77	13	10	Yes <sup>b</sup>
2005	83	10	8	Yes <sup>b</sup>
2006	77	16	7	Yes <sup>c</sup>

<sup>a</sup>  $p < 0.05$ .  
<sup>b</sup>  $p < 0.01$ .  
<sup>c</sup>  $p < 0.001$ .

**Table 3.** Significance of divergence of UK tabloid newspaper discourse from scientific discourse regarding anthropogenic climate change: by newspaper; 2000–2006;  $n = 941$ . (Note: the numbers represent the percentages of coverage in each newspaper. The first column represents coverage of significant human contributions to climate change that accurately reflects climate science consensus. The second and third columns represent divergent coverage. The significance of the divergence of the UK tabloid newspaper coverage from the climate science consensus regarding anthropogenic climate change was determined through  $z$ -scores. The yes/no represents whether or not the coverage that diverged from scientific consensus regarding anthropogenic climate change met established criteria for significance ( $z$ -scores per newspaper: *The Sun* (and *News of the World*)—3.24; the *Daily Mail* (and *Mail on Sunday*)—6.47; the *Daily Express*—4.04; and the *Mirror* (and *Sunday Mirror*)—2.91).)

Newspaper/ 2000–2006	Coverage of climate change science depicting significant human contributions (by per cent)	'Balanced' coverage of anthropogenic climate change (by per cent)	Coverage of climate change science depicting negligent human contributions (by per cent)	Was the difference between newspaper coverage and climate science consensus statistically significant?
Sun (and News of the World)	80	14	6	Yes <sup>b</sup>
Daily Mail (and Mail on Sunday)	67	26	8	Yes <sup>c</sup>
Daily Express	81	11	8	Yes <sup>c</sup>
Mirror (and Sunday Mirror)	87	9	4	Yes <sup>b</sup>

<sup>a</sup>  $p < 0.05$ .  
<sup>b</sup>  $p < 0.01$ .  
<sup>c</sup>  $p < 0.001$ .

stance of the newspaper, where economic status quo and non-regulatory preferences routinely permeate the editorial pages. In a study of UK broadsheet newspapers, Carvalho found that similar ideological constellations indeed shaped media representations of climate science and policy issues (2007). In addition, key contributors to this difference from the other newspapers under study are *Daily Mail* journalists Michael Hanlon and James Chapman, who authored nearly three-dozen news reports and opinion pieces in the sample<sup>4</sup>. Among their work, Michael Hanlon was the author of the article 'Ye Olde Hot Aire' that characterized climate scientists as 'the environmental lobby', and surmised that their findings that global average temperatures are increasing 'do not tally with the facts' (Hanlon 2003, p 17). Another representative example

of Hanlon's comments can be found in a piece entitled 'Global warming? No, just hot air from politicians', where he referred to climate scientists as the 'green lobby'. He wrote '... the bleatings of the green lobby about global warming should be taken with a pinch of salt. Perhaps the hysteria that surrounds the whole subject of global warming is due more to human nature than hard science ... the threat from climate change is still largely unproven' (Hanlon 2004, p 12). Nonetheless, interviewee David Derbyshire, who moved to the *Daily Mail* in February 2007 from the *Daily Telegraph*, did not consider the approach of the newspaper to be less accurate than that of the other newspapers.

We assessed whether this divergent reporting from the aforementioned consensus on anthropogenic climate change was significant through  $z$ -score analyses, which are much

<sup>4</sup> These authors were some of those most frequently appearing in the dataset, along with John Ingham (*The Express*) and Oonagh Blackman (*The Mirror*).

like a *t*-test but comparing ratios<sup>5</sup>. This approach provides the opportunity to test whether reporting that diverges from accurate coverage of anthropogenic climate change meets established criteria for significance. Through this analysis, the study has found that in fact UK tabloid coverage significantly diverged throughout the study period from the scientific consensus that humans contribute to climate change (table 2). This also held in each tabloid press source (table 3). These patterns are remarkable, as they are not consistent with recent trends documented in US and UK 'prestige press' or broadsheet newspaper reporting (Boykoff 2007a); the US 'prestige press' and UK broadsheet began to report accurate coverage in 2005, however UK tabloid reporting remained significantly divergent from scientific consensus until the end of the study. When interviewees were asked to comment on this divergence, many pointed to constraints they faced as journalists and editors deriving from various political economic pressures, such as covering a broad range of news 'beats' with little specialist training and understanding, and indeed in the sample set only 1.8% of the news stories on climate change or global warming were written by a journalist identified as a 'science' or 'environment' correspondent or editor. Consistently interviewees stated that the lack of science and environment correspondents has been a challenge for accurate climate change reporting and the findings in this study would support this view.

For example, throughout the sample set over this period there was colloquial confusion over the usage of the central terms 'global warming' and 'climate change'. There are differences in strict scientific definitions of each term; while 'climate change' is a broader term which accounts for changes in many climate characteristics, such as rainfall, ice extent and sea levels, 'global warming' refers to a more specific facet of climate change: the increase in temperature over time. Neither of these terms in and of themselves signify human attribution, but in the UK tabloid press coverage these terms were quite often used in contrast with one another, where global warming referred to human activity while 'climate change' signified natural variation<sup>6</sup>. For instance, in the *Mirror*, Bob Roberts, deputy political editor, wrote, 'Tony Blair yesterday issued a doomsday warning about the threat from climate change because of global warming' ((Roberts 2004), p 2, emphasis added). Also, in a *News of the World* commentary, the editors wrote, 'Ireland and Britain are set for 100 years of wetter winters because of global warming ... they blame man for the global warming which is causing the climate change' (*News of the World* 2002, p 2, emphasis added). However it remains that temperature, (particularly temperature increases) is seen as the most clear and distinguishable climate characteristic that indicates, rather than causes, more general climate change. Thus, from subtle to obvious shifts in wording within climate change stories—particularly those covering anthropogenic climate change—tabloid news stories can influence reader perceptions. Inaccurate media representations can then adversely influence

public understanding and engagement on this issue (Boykoff 2007b).

## 5. Discussion

Illustrations of persistently divergent comments and reports abounded throughout the years of study as well as the UK tabloid papers under analysis. As a succinct illustration of the utilization of the journalistic norm of 'balance', a 2002 passage from the *Express* read, 'The world is warming but whether due to natural climate fluctuations or to man-made effects is unclear' (Disney 2002, p 13)<sup>7</sup>. In another instance, aforementioned reporter Michael Hanlon of the *Daily Mail* chose to rely upon 'environmentalist' assertions juxtaposed with 'scientist' counterpoints, and thereby confused the consensus issue.

Despite what some environmentalists maintain, evidence that the Earth is warming up as a result of man's activities is mixed and highly controversial. The rise so far—less than 1C since 1900—is small enough possibly to be caused by natural variation. Some scientists, notably a team of Danish physicists headed by Dr Eigil Friis-Christensen, believe that any temperature rises are caused by changes in the sun, not by burning fossil fuels. But if the greenhouse-effect doomsayers are right, we face a difficult future (2002, p 18–19).

As another example, journalist Ivor Key in the *Express* wrote.

Over the past century, the average surface temperature of the Earth has risen by about one degree Fahrenheit and the rate of warming has accelerated in the past 25 years. This, say scientists, is a significant amount, considering that the world is only 5–9 degrees warmer than it was in the last ice age about 20 000 years ago. Experts are still arguing about whether this is a natural phenomenon, or the effect of industrial societies releasing heat-trapping gasses into the atmosphere (2000, p 25).

As the data show, the use of the journalistic norm of balance continued through the end of the study period in 2006. As two representative illustrations, first Peter Hitchens commented in the 5 November 2006 *Mail on Sunday*, 'The Green Thought Police will be after me for daring to say this, but nobody actually knows if global warming is caused by human activity' (2006, p 25). Second, on 8 December 2006 Andrew Alexander wrote in the *Daily Mail*:

<sup>7</sup> For historical reference, IPCC 4AR had not yet been assembled and released. However, the IPCC Third Assessment Report released in 2001 also carried a strong consensus statement. It read, 'most of the warming observed over the last 50 years is attributable to human activities' (Houghton *et al* (2001)). This statement was supported by this consensus has also been supported by top US science organizations such as the American Geophysical Union (AGU), the National Oceanic and Atmospheric Administration (NOAA), Association for the Advancement of Science (AAAS) and the American Meteorological Society (AMS), among others.

<sup>5</sup> The formula for *z*-score analyses is published in Boykoff (2008a), p 6.

<sup>6</sup> This has been anecdotally noted in associated prestige press or broadsheet newspaper accounts as well (Boykoff 2008b).

The past three months have been the warmest since 1731 (records began in 1659). In a mini-poll, I asked a dozen people whether this made them more concerned about global warming. They nearly all missed the point and said yes. Since the 1731 conditions could hardly have been due to excessive air travel or too many  $4 \times 4$ s, it shows how brainwashed people have become. Warming and cooling are natural phenomena. We do not know with any certainty how much difference our pollution makes (2006, p 20).

In the UK tabloid press, almost one third of this divergent coverage was attributed to the view that human contributions are negligible. Such a stance has been characterized partly as ‘contrarian’ accounts and comments. There are many examples of ‘contrarian’ reporting in the data set. For instance, a commentary in *The Mail on Sunday* stated:

In the closed minds of the Green lobby, the theory that man-made pollution is causing global warming is an unquestioned and unquestionable article of faith. In fact there are many reputable scientists who dispute it. It seems that the most significant global warming is caused by the hotheads who are anxious to believe their own propaganda (2002, p 24).

*The Sun* commentator Jeremy Clarkson, in response to a 2004 study documenting methane emissions from cattle, wrote ‘This confirms what I have been saying for years—cars do not cause global warming. Now we learn that all along it was bloody sheep and cows . . .’ (2004, p 25).

Thus, quantitative content analyses of the UK tabloid press found that combined influences of contrarianism and the utilization of the journalistic norm of balance jointly contribute to informationally biased coverage of anthropogenic climate change. It would be a mistake, however, to interpret these findings too broadly. This is an analysis of anthropogenic climate change and should not be conflated with other, related issues<sup>8</sup>. It would also be a mistake to suggest that this research forecloses critical inquiry into consensus or further research in the arena of anthropogenic climate change. In other words, all aspects of climate change should not be treated equally. There are facets of climate change where scientific agreement is strong (such as anthropogenic climate change), whereas for others contentious disagreement garners worthwhile debate and discussion (such as the whether the Kyoto Protocol is a success or not) (Boykoff 2008b). Rather, this analysis contributes to further discussions of an ongoing challenge at the science–practice interface, in that it further refines our understanding of media representations of anthropogenic climate change. Furthermore, while there are arguments that differences between ‘tabloid’ news and ‘quality’ press reporting are disappearing (e.g. Franklin 1997), in this case of coverage of anthropogenic climate change, these differences are seen to remain clear at present.

<sup>8</sup> An example might be the issue as to whether or not humans are facing ‘catastrophe’ due to increased atmospheric carbon dioxide concentrations (see Hulme (2006) for more).

Through content analysis of media representations of anthropogenic climate change in *The Sun*, *Daily Mail*, *Express*, and the *Mirror* as well as interviews with journalists and editors, this project contributes to ongoing investigations related to what media representations mean for ongoing climate science–policy interactions as well as potentialities for public engagement. In terms of greenhouse gas mitigation in the UK context, relatively aggressive emissions reductions commitments have been made by both of the prominent national political parties: members of both New Labour and the Tory Parties have proposed reductions in the range of 60–80% below 1990 levels by 2050. At present, inaccurate coverage in these UK tabloid newspapers do not appear to temper promises for such cuts with distant time horizons. However, at present they remain promises. Problems may emerge when these presently lofty goals have to translate into multi-scale regulatory measures. Divergent UK tabloid newspaper coverage of anthropogenic climate change found in this study may diminish public support for concrete greenhouse gas mitigation programs when the time for behavioral change comes. Amid a number of nonlinear factors, UK tabloid media representations may be an underconsidered element shaping potential future public perceptions. While UK tabloid newspapers may be deemed secondarily influential to current policy discourse and decision-making at national and international levels (as noted above), the success of future climate mitigation policies may depend significantly on these newspaper sources and their many working class readers. Specifically, as ongoing adherence to the journalistic norm of balanced reporting has contributed to a skewed public understanding of human contributions to climate change, it may continue to significantly contribute—along with other factors—to eventual public resistance to climate mitigation and adaptation plans in the UK.

Continued considerations to be pursued further include how various climate change issues are framed in the UK tabloid press, what the tone of coverage has been in both the headlines and text in these newspapers, and how these factors may or may not contribute to UK working class consciousness as well as interactions between neoliberalism and environmental challenges. Examining these dynamic processes and feedbacks can help to expand current explorations of non-nation-state actors—such as mass media workers—involved in dynamically changing climate governance. Moreover, lessons learned here in the UK context seek to illuminate challenges in other contexts. While these segments of the population have been of secondary importance in previous science–policy and science–media–policy analyses, such examinations need to take on a more central role, as these segments of citizenry are critical components of social movements and potential public pressure for improved climate policy action worldwide.

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