



'Hot' Earth in the mass media: the reliability of news reports on global warming

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Abstract

Research into the reliability of news reports on 'global warming' published by the UOL media group, *Folha.com* and *Folha de S. Paulo* reveals a tendency for positions to be polarized between complete agreement with the assertion that the causes are entirely anthropogenic (the dominant position) and complete denial. The sample comprised 676 news items from more than 3,000 published on the topic between October 2007 and October 2008. The study tested the hypothesis that the news output of the three media outlets is dominated by the positions of the Intergovernmental Panel on Climate Change. In absolute terms, the panel is the most frequently cited source, since just seven news items comprised exceptions to the 'consensus.' These contrary opinions made up 1.03% of the sample.

Keywords: Global warming; mass media; controversies; geosciences; Brazil.

It is difficult to imagine a natural system more complicated than the climate system. With its extraterrestrial forcing, as well as various terrestrial components in the atmosphere, the cryosphere, the biosphere, the solid Earth, the ocean, and countless feedbacks among them, the climate system almost defies description. Who among us could master all those subjects? Understanding, mitigating, and preparing for climate change is one of the great challenges facing humanity this century, but how can we present all the issues and uncertainties to the general public? (Keigwin, 2004)

The consequences of the climate in the future being significantly warmer than the present, a possibility widely publicized in the communications media, has provoked consternation among many. In Brazil's national mass media over the last three or four years, the topic of 'anthropogenic global warming' has appeared with such frequency that many believe the threat to be real and inevitable. The issue has been widely debated by specialists, but on the contrary to what the mass media suggests, a consensus has yet to be reached on the issue. The media outlets seldom contain dissonant voices questioning any element of the discussion.

Understanding the determinant factors in global climate patterns is a challenge to specialized researchers and the general public alike, especially given the recent conclusions of the Intergovernmental Panel on Climate Change (IPCC, 2007).¹ The IPCC projects a radical scenario that will affect the entire planet, based on the polemical hypothesis that carbon dioxide (CO₂) is the main cause of global warming. There will be extreme climatic events, ecosystem changes, sea level rises, population migrations, the disappearance of high-altitude glaciers, reduction of the polar ice caps and alterations to the availability of resources. Although high-quality scientific research is crucial in order to develop prudent and pro-active plans of action, the most dangerous aspect of the current climate change is related to the uncertainties over the predicted rates of climate change and the precise nature of the changes (Robinson, Dowsett, April 2010).

The communications media play a fundamental role in informing the general public of these issues since they decide whether to publicize or omit specific topics. In effect the press performs a core function in terms of establishing or selecting issues that may be considered the most urgent by the general public and, more specifically, by decision makers (Vivarta, 2010). The role of science journalism in this context is to explore and evaluate as well as possible the scientific community's output concerning climate change. There is always a risk of science producing merely for its own consumption, "without any intervention from the social world" (Bourdieu, 2004).

Notable in this debate is the absence of information on the geological history of the planet, perhaps because of a certain lack of awareness concerning the topic. Modern knowledge of historical geology reveals that the Earth is not unfamiliar with climate change. The very history of the planet is a series of more or less radical changes. During part of the Pliocene, for example, approximately 3.3-3.0 million years ago, the Earth's temperature was similar to those predicted for the planet as a whole by the end of this

century, an average of 2 to 3°C warmer than today. The warmest interval from the past preceded the Pleistocene glacial periods, but from the geological viewpoint is sufficiently recent to be compared to the present in terms of “ocean circulation and the position of the continents” (Robinson, Dowsett, April, 2010). Since the plant and animal populations were similar to those of today, geologists can use fossils to estimate past environmental conditions, including temperature and sea level.

Earlier research (Toniolo, 2008; Toniolo, Carneiro, 2010), in which we recovered and summarized data on geological processes that fix CO₂ on Earth, showed that many press reports use the IPCC as their source. The same happens with other kinds of media outlet. Based on these findings, we produced a summary of the main views concerning the warming of the planet. In evaluating the media's approaches to the topic, we identified a significant divergence on various critical questions: these range from scientists who provide proof against global warming, such as Molion (1995, 2008) to specialists who question whether humans are primarily responsible for warming, as the IPCC asserts (Monckton, Nov. 5, 2006; Nov. 15, 2006; Soares 2010). The issue has profound educational implications (Carneiro, Toniolo, Gonçalves, no prelo [in press]).

Accordingly, more than familiar with the constant reference to the IPCC in the mainstream media and the scientific world, who appear to have reached a consensus on the issue, the following questions emerged:

1. Have the communications media played an efficient role in reporting the facts in the way in which they are interpreted by different specialists?
2. Are those arguing positions for and against global warming both being at least reasonably well publicized?

Concerned with the theme, we decided to embark on a critical evaluation of how and how accurately some of the main media outlets in Brazil have reported what researchers in general have produced, and whether they have taken into account the different positions on the issue. Given the very large quantity of news items to be analyzed, we decided to focus on an influential communications group in the digital and printed media, the Folha Group. The research therefore includes news reports from the UOL website, the *Folha.com* site and the *Folha de S. Paulo* newspaper, in the period from October 31st 2007 to October 31st 2008.

This article results, therefore, from research whose working methodology involved the analytic consultation of news reports from the Folha Group over a one-year period with the following objectives: (a) assessing the reliability of how news reports on global warming are treated in terms of precision, impartiality and basis in scientific grounding, in order to then (b) compare the data obtained with those from other sources, both national and international.

Study restrictions and limitations

One of the difficulties faced in research on media news items is the large quantity of material produced: inevitably a time span for the data has to be determined, as we have

done in this case. Another major difficulty is identifying the actors involved in the debate on anthropogenic global warming. Taking the scenario as a whole, we looked to assess the degree of reliability of the reported 'news' because it seemed to us unviable to assess the reliability of the sources. Is there some kind of 'biased' view expressed by the mainstream media, or does the higher frequency with which a particular line of argument appears in the news reflect, at least partially, the dominant opinion in the scientific community? In the latter there is no balance in the number of voices found on the two 'sides' of the question. It is pertinent to ask, therefore, whether some voices within the scientific community are more emphatic than others. As well as substantial resources to maintain research facilities in universities and research institutions, it is worth remembering that also the scientists' desire to excel is also at stake, since the "scholars are interested in being the best, they want to arrive first and to shine" (Bourdieu, 2004).

Research into how climate change is presented and discussed in the communications media forms part of the field of investigations into the role of science journalism in society. There are no surveys or statistical data on the positions of scientists concerning the issue to suggest a balance of voices exists (for and against the existence of anthropogenic global warming). It is not our intention to lead the reader to believe that the difference in the weight of these voices results from some kind of distortion caused by the journalists themselves in selecting the sources with which they dialogue.

The duality between the role of the media and politics is underlined by Grohmann (2010, p.8-10): "Politics is increasingly embedded in the communications media and it is inconceivable to understand politics today without the media. ... The relations between the press and power should be the core of research into journalism in Brazil, without being confined, however, to the domain of politics."²

Vivarta (2010) evaluates the editorial approach of fifty Brazilian newspapers in the debate on climate change over a 42-month period (July 2005 to December 2008). The authors, linked to the Brazilian News Agency for Children's Rights (Andi, Agência de Notícias dos Direitos da Infância), use data generated from monitoring news output during the selected period and from comparative analysis between two different sub-periods comprising the research time interval. Although Vivarta rightly indicates that the theme involves diverse social sectors, such as politicians, business leaders, environmentalists, civil society and other actors "willing to foster dialogue on the causes and impacts that the phenomenon may bring for future generations" (2010, p.63), the author fails to consider, at least in part, the problem of dissonant voices and sets out from the – in our view mistaken – premise that it is possible "limit the advance of climate change" (p.63). He assumes that this challenge is today one of the biggest "to be faced by contemporary societies" (p.63).

Results of the data survey

The Folha group and anthropogenic global warming [título nível 2]

The first stage of research was to collate the news reports published between October 31, 2007 and October 31, 2008 via the media outlets the UOL portal, the *Folha.com* portal

and the *Folha de S. Paulo* newspaper. The method used to compile news items was based on two statistical sample calculations with a 5% error margin, shown below, in which 'N' is the size of the sample, which corresponds to the total number of news items from one of the portals from the period under study; 'E₀' is the tolerable error; 'n₀' is the first approximation and 'n' is the sample size. Hence,

$$n_0 = 1/E_0^2 \text{ and } n = N.n_0 / N+n_0$$

The total number of news items extracted from the samples was 676, comprising 183 from the UOL portal, 251 from the *Folha.com* portal and 242 from the *Folha de S. Paulo* newspaper. The total number of news items from these sources during the studied period was almost 3,000. The news samples, compiled in Word using Times New Roman font, 12 point, with 1.5 line spacing, come to a little over 1,000 pages.

The second stage of the work involved reading the news samples, looking for answers that would supply a panorama of the reliability of news published by the three outlets. The questions were as follows:

1) Does the information contained in the news item make the existence of the phenomenon of global warming implicit or explicit?

Possible responses: (a) yes; (b) no; (c) not possible to identify.

2) If the phenomenon is admitted, does the text refer to some cause or leave some cause(s) implicit?

Possible responses: (a) does not refer to any cause; (b) the cause is anthropogenic; (c) the cause is natural; (d) both anthropogenic and natural; (e) the cause is uncertain.

3) What are the reference sources, keywords, etc., for the text?

Possible responses: the sources of various kinds (institutions, researchers, etc.) relating to the set of information that we sought in the text.

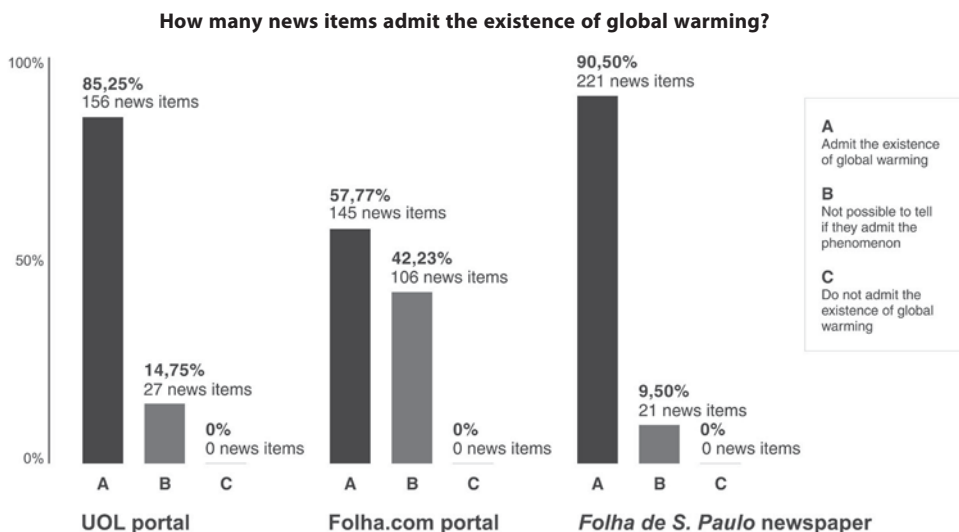
As responses to these questions were obtained, we became aware that the academic and business research worlds are increasingly occupied by critics of the 'scientific consensus' that 'emerges from the IPCC' and by 'skeptics,' which is how scientists contrary to the dominant position have been labeled. Many foreign media outlets and some national ones have followed this movement attentively and have detected important trends in the clash of data, ideas and models, whose outcome is still unpredictable. After the news items were gathered and systemized, we produced graphs to summarize the different findings (Graphs 1 and 2).

From the data obtained in the research, it was perceived that almost no space is granted to news reports that contradict the 'scientific consensus' suggested by the IPCC. However the phenomenon of global warming has not achieved a consensus among scientists in general (Sowell, 13 mar. 2008; Toniolo, Carneiro, 2010).

When people speak of an IPCC consensus, it is more or less presumed to derive from the fact that the entity is composed of a panel of scientists from around the world, which does not imply a 'worldwide' consensus. For example, in the period covered by the data collection, the first International Conference on Climate Change was held in New York from March 2 to 4, 2008, entitled "Global warming: truth or swindle?"³, promoted by The

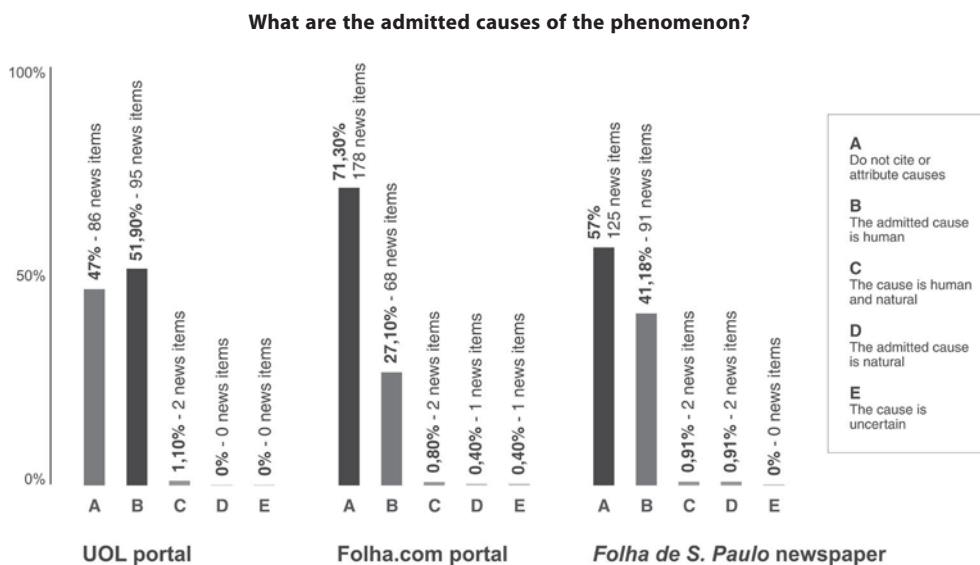
Heartland Institute. The theme (Sowell, 13 mar. 2008) was that “there is no scientific consensus on the causes or the possible consequences of global warming.” In none of the 676 news items of the studied portals is this conference mentioned. However it was reported, at least, on the Terra portal under the headline “Specialists question alarmism on climate change” (EFE, 4 mar. 2008).

Graph 1: Percentage of news items that implicitly or explicitly recognizing global warming



Graph developed by João Toniolo.

Graph 2: Percentage of causes cited for the phenomenon of global warming in the analyzed news items



Graph developed by João Toniolo.

The sample allowed us to conclude that the reliability of the news items published by the portals and newspaper is doubtful, since the research found no items or reports mentioning the international conference in New York, a prominent event and not simply the isolated discourse of a skeptical scientist. Furthermore a series of scientific works and events was equally ignored.

The third stage of the work was to verify which references were most cited in the text overall, ranging from institutions to individuals.

In this stage the principal hypothesis of the work was confirmed: namely that the IPCC is the major source for the communications media, since it is the institution most cited in the news reports. Moreover, very often the IPCC is not directly cited, but only people or institutions related to it, such as the UN itself. The data from these reference sources are presented in Tables 1 to 3.

Analyzing the data from Tables 1, 2 and 3, we can note the predominance of direct or indirect references to the IPCC. We can take the case of Table 1, referring to the *Folha de S. Paulo*. In the item 'Institutions, events, agreements, etc.', the first four positions are linked to the IPCC. In first place is the IPCC itself with thirty references. In second appears the Kyoto Protocol, which resulted from the United Nations Framework Convention on Climate Change, with 26 occurrences. In third place was the UN (the IPCC is one of its organizations), with 25 occurrences. And in fourth, the Bali Conference, which is closely associated with the Kyoto Protocol. These four organizations are in agreement on the question of anthropogenic global warming, the official position of the IPCC. Later on we draw a number of conclusions concerning the predominance of positions affiliated to the IPCC.

In terms of Tables 2 and 3, in relation to 'Institutions, events, agreements, etc.', there is no substantial variation in terms of the scientific position divulged, since the first three items are organizations linked to each other: the UN occupies the first position in both tables with 23 and 36 occurrences respectively; the IPCC occupies second position in Table 2 (number of occurrences [n]=17), and third position in Table 3 (n=21); the Kyoto Protocol, third position in Table 2 (n=16); and the Bali Conference, second position in Table 3 (n=29).

The fourth item of Table 3, the Kyoto Protocol, is in agreement with the IPCC, as previously mentioned. The fourth item of Table 2 is Greenpeace, whose position is more radical than that of the IPCC (AFP-UOL, 9 jul. 2008), and therefore does not deviate from the standard line "global warming exists and is caused by humans." The main underlying reference on the issue is the United Nations, which becomes clear when we analyze the most frequently cited names in Tables 1 and 2, for example: Al Gore (11 occurrences), Ban Ki-moon (6) and Rajendra Pachauri (4).⁴ Below we provide a short description of them.

Albert Arnold Gore Jr. (Al Gore) is perhaps the most well-known media figure when it comes to global warming today. The 2006 film which he narrates and presents, "An inconvenient truth," disseminates the idea that global warming exists, its main cause is anthropogenic, and something must be done by the world's governments and people to avoid the impending catastrophe. In 2007 he won the Nobel Peace Prize along with the UN's IPCC.

Ban Ki-Moon is the eighth and current UN General Secretary. In the hundreds of researched news items, he appears from time to time combating the phenomenon. On July 7th 2008, for example, he asked the USA to “assume a lead role in the fight against global warming” (AFP-UOL, 7 jul. 2008).

Rajendra Pachauri is the president of the IPCC and represented the Panel, alongside Al Gore, to receive the Nobel Peace Prize in 2007. If we examine the three people most cited in the research, we can note that they possess the same institutional connection and defend an identical position.

As we can note, there is little difference in terms of the cited people appearing in Tables 1 and 2 and Table 3. The names change, but not the scientific positions that they back. José Manuel Durão Barroso, for instance, is the President of the European Commission (the executive body of the European Union), agrees with the IPCC position and considers the Bali Conference, hosted by the United Nations, “of crucial importance” (EFE-UOL, 12 nov. 2007), while Yvo de Boer was the director of the UN Framework Convention on Climate Change.

If we then compare the most cited references, such as the IPCC and UN, with other references not connected to these bodies and which could, therefore, present findings different to those presented by the IPCC, at least in theory, we can observe a notable difference in numbers. This shows that the UN, the IPCC and associated people and entities are the main references in news reports. This is evident, for example, if we compare the category ‘Institutions, events, agreements, etc.’ with the category ‘Newspapers, journals, news agencies, etc.’ In Tables 1, 2 and 3.

Table 1 shows the IPCC with thirty occurrences versus nine for the journal *Nature*, six for the journal *National Geographic* and five for the journal *Science*. These are journals with different readerships in the scientific world. In Table 2, the UN appears with 23 occurrences versus four for the journal *Nature*, four for the journal *Science* and two for the *National Geographic*. In Table 3 there are 36 occurrences for UN versus two for the magazine *Time*, two for the journal *Science* and just one for the journal *Geophysical Research Letters*.

The most important finding that can be extracted from this data is not the disproportion in reference sources on climate change, but the ‘absence’ of positions effectively different from or contrary to the IPCC. In the three tables, under the category ‘People,’ we can find a few names that basically comprise the isolated exceptions to the huge tide of anthropogenic global warming. It is worth analyzing who these people are.

On *Folha.com* (Table 2), we can highlight Bjorn Lomborg and Pat Michaels (with just one occurrence of the same news story). Both are labeled as skeptics, though neither goes as far as to deny the phenomenon completely. Lomborg, for example, claims that the warming is real and caused by humans, but argues that its consequences are presented in a unilateral and exaggerated form (Angelo 2008). However the skeptics themselves are criticized in the newspaper by the science editor of the *Folha de S. Paulo*, Claudio Angelo (August 24, 2008), in a report under the provocative headline “Lomborg’s litany.” Since the two media outlets are closely related (*Folha de S. Paulo* and *Folha.com*), this type of skepticism is in some sense neutralized since as well as receiving little space, it is also criticized.

Table 1: Most cited references in *Folha de S. Paulo*

Institutions, events, agreements, etc.		Universities	
IPCC	30	University of California	5
Kyoto Protocol	26	Universidade Federal do Rio de Janeiro	5
UN	25	Universidade Federal do Rio Grande do Sul	3
Bali Conference	21	Københavns Universitet	2
Greenpeace	14	Stanford University	2
World Wildlife Fund (WWF)	5	Universidad Católica de Chile	1
UN Climate Convention	4	Cornell University	1
American Association for the Advancement of Science (AAAS)	3	Universidade de Brasília	1
National Oceanic and Atmospheric Administration (NOAA)	2	University of Calgary	1
Clean Development Mechanism (CDM)	2	University of Cambridge	1
		University of Chicago	1
		Columbia University	1
		Christian-Albrechts-Universität zu Kiel	1
		Newcastle University	1
		University of Oxford	1
		Plymouth University	1
		Princeton University	1
		Universidade de São Paulo	1
		University of Southampton	1
		Trent University	1
		DePauw University	1
		Florida State University	1
		University of Hawaii	1
		Emory University	1
		Pennsylvania State University	1
		Universidade Estadual de São Paulo	1
		Universidade Federal da Bahia	1
		Universidade Estadual da Bahia	1
		Universidade Federal do Mato Grosso do Sul	1
		Universidade Federal do Paraná	1
		Universidade Nacional Central	1
		Universidade Nova de Lisboa	1
		Purdue University	1
		Laboratories	
		Laboratório de Estudo dos Recursos de Florestas e Bosques	1
		Dauphin Island Sea Lab	1
		Laboratório Nacional de Computação Científica	1
		Laboratório Nacional de Testemunhos de Gelo	1
People			
Al Gore	11		
Ban Ki-moon	6		
Rajendra Pachauri	4		
Yvo de Boer	2		
<i>Exceptions</i>			
Bjorn Lomborg	1		
Helga Szmuk	1		
José Eli da Veiga	1		
Lorde Mockton	1		
Newspapers, agencies, etc.			
The New York Times	5		
Reuters	2		
Journals			
Nature	9		
National Geographic	6		
Science	5		
Time	3		
Proceedings of the National Academy of Sciences	3		
Esquire	1		
BioScience	1		
EOS Climate	1		
Nature Geoscience	1		
Institutes and foundations			
Instituto Nacional de Pesquisas Espaciais	9		
Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis	2		
Instituto Akatu	1		
TNS Infratest	1		
Instituto AMR International	1		
Instituto Brasileiro de Feiras de Negócios	1		
Instituto C&A	1		
Instituto Cato	1		
Leibniz-Institut für Meereswissenschaften	1		
Instituto de Estudos de Política	1		
Instituto de Estudos Econômicos e Internacionais	1		
Instituto de Física Teórica da Universidade Estadual Paulista	1		
Environmental Change Institute - Oxford University	1		
Woods Hole Oceanographic Institution	1		
SRBI Institute	1		
Instituto de Política Progressiva do Conselho de Liderança Democrática	1		
Nasa Goddard Institute for Space Studies	1		
Instituto Nacional de Meteorologia	1		
Instituto Nacional de Pesquisas da Amazônia	1		
Biennale di VeneziaFundação Biodiversitas Fundação de Amparo à Pesquisa do Estado de São Paulo Fundação Getulio Vargas			

Table 2: Most cited references on *Folha.com*

Institutions, events, agreements, etc.		Universities	
UN	23	University of California	3
IPCC	17	Harvard University	2
Kyoto Protocol	16	Berkeley University	1
Greenpeace	7	University of Bristol	1
United Nations Development Programme	5	Columbia University	1
WWF	4	University of Connecticut	1
Bali Conference	4	University of East Anglia	1
UN Climate Convention	4	Christian-Albrechts-Universität zu Kiel	1
Clean Development Mechanism	2	University of Leicester	1
		Newcastle University	1
		University of Nottingham	1
People		Plymouth University	1
Yvo de Boer	7	University of Sydney	1
Ban Ki-moon	5	Tufts University	1
Al Gore	3	Universiteit Utrecht	1
Claudio Angelo	3	Washington University in St. Louis	1
Bjorn Lomborg	1	Yale University	1
Fernando Mendonça	1	University of Missouri	1
José Carlos Azevedo	1	Florida State University	1
Luis Carlos Molion	1	Universidade Estadual de Campinas	1
Mark Lund	1	Colorado State University	1
Pat Michaels	1	Universidade Estadual de São Paulo	1
		Universidade Federal de Alagoas	1
Newspapers, journals, news agencies, etc.		Universidade Federal do Rio Grande do Sul	1
BBC	11	Universidade Federal Rural do Rio de Janeiro	1
France Presse	7		
Reuters	6	Laboratories	
EFE	5	Jet Propulsion Laboratory	1
The New York Times	5		
Associated Press	4		
Folha de S. Paulo	3		
CNN	2		
Itar-Tass	1		
Nature	4		
Science	4		
National Geographic Magazine	2		
Time	1		
Proceedings of the Royal Society	1		
New Scientist	1		
Nature Geoscience	1		
PNAS	1		
Itar-Tass	1		
Institutes and foundations			
Instituto Nacional de Pesquisas Espaciais	6		
Instituto Akatu	1		
Instituto Argentino de Nieves, Glaciares y Ciencias Ambientales de Mendoza	1		
Instituto de Ciências Atmosféricas da Universidade Federal de Alagoas	1		
Instituto de Defesa do Consumidor	1		
Instituto de Física Teórica da Unesp	1		
Potsdam Institute for Climate Impact Research	1		
Zentrum für Marine und Atmosphärische Wissenschaften, Universität Utrecht	1		
Woods Hole Oceanographic Institution	1		
California Institute of Technology	1		
KNMI - Koninklijk Nederlands Meteorologisch Instituut	1		
Institut Pluridisciplinaire Hubert Curien	1		
Fundação Armando Álvares Penteado	1		
Fundação Escola de Sociologia e Política de São Paulo	1		
Cuban American National Foundation	1		

Table 3: Most cited references on the UOL portal

Institutions, events, agreements, etc.		Institutes and foundations	
UN	36	Instituto Nacional de Pesquisas Espaciais	2
Bali Conference	29	Instituto Brasileiro de Petróleo, Gás e Biocombustíveis	1
IPCC	21	Virginia Institute of Marine Science	1
Kyoto Protocol	12	Instituto Nacional de Pesquisas da Amazônia	1
Greenpeace	8	Instituto de Pesquisa Ambiental da Amazônia	1
UN Climate Convention	7	Potsdam Institute for Climate Impact Research	1
NOAA	2		
UN Development Programme	2		
WWF	6		
People		Universities	
Ban Ki-moon	17	University of California	2
José Manuel Durão Barroso	9	University of East Anglia	2
Al Gore	6	James Cook University	2
Yvo de Boer	5	Bristol University	1
Sarah Palin	2	University of Colorado	1
		University of Connecticut	1
		Christian-Albrechts-Universität zu Kiel	1
		University of Minnesota	1
		University of Nottingham	1
		Universidade de São Paulo	1
		University of Washington	1
		Friedrich-Schiller-Universität Jena	1
		Purdue University	1
Newspapers, journals, news agencies, etc.		Laboratories	
AFP	10	Jet Propulsion Laboratory	1
Reuters	10	Applied Physics Laboratory-University of Washington	1
BBC	5	NOAA's Pacific Marine Environmental Laboratory	1
EFE	5		
CNN	3		
CBS	2		
Deutsche Welle	2		
The New York Times	2		
Time	2		
Science	2		
Geophysical Research Letters	1		
Environmental Science & Technology	1		

The other names cited, Luiz Carlos Molion, Mark Lund, José Carlos Azevedo and Fernando Mendonça (with just one occurrence in the same news report), represent an ‘effective exception’ to the ‘general consensus’ since these researchers argue against the existence of global warming. The news item in which they are cited mentions their plan to hand the Minister of Science and Technology at the time, Sérgio Rezende, a document that “questions the influence of human action on the phenomena of global climate change” (Dantas, 15 fev. 2008).

On the *Folha de S. Paulo* (Table 1) portal, the cited names appear just once. Lord Monckton is one of those arguing that anthropic action is not the main cause of the phenomenon. Bjorn Lomborg has been mentioned earlier. José Eli da Veiga is the author of two texts cited by the *Folha de S. Paulo* (Veiga, 2008 and 19 fev. 2008) which question the consensus on global warming, as well as the unfair treatment of the so-called skeptics; they are not exactly representative exceptional cases. Nowadays, Veiga supports the idea that global warming exists. Finally, Helga Szmuk, in a message published in the “Readers’ Column” of June 23rd 2008, asserted the following: “I fully agree with Mark Lund (“Readers’ Column,” June 22nd 2008) about the need to hear more from those who question the IPCC consensus. We are once again placing humans at the centre of the world. I do not believe we have such force and importance to be able to change the climate.”

On the UOL portal we found at least two news reports referring to Sarah Palin. Palin is one of those to ponder the climate question. According to the UOL portal, on September 30TH 2008, the then “Republican candidate for the vice-presidency of the United States, Sarah Palin, said... that global warming is not caused only by human activity, but this

discussion is not important since the main thing is ‘to do something’” (AFP-UOL, 30 nov. 2008).

Other views on global warming [

Having completed the work of collating data and news items from the web portals in question, the next stage of the research was to look for sources that suggested positions different from or critical to those of the IPCC and the like. We searched for these sources over a period matching the study period for the news reports from the Folha Group. Our aim was to verify what was being produced of relevance in Brazil and the world that had not received attention from the Folha Group. Our findings were highly significant.

The already cited International Conference on Climate Change, an event uniting hundreds of scientists, economists and public policy specialists from around the world to discuss the question “Global warming: truth or swindle” (Bast 2008; Sowell 2007; Tse, 11 mar. 2008), practically received no attention at all from the communications media under study. Given the nature of the event and its scale, it is surprising that it was ignored or forgotten by the media outlets. We reproduce in full the declaration made by the participants at the end of the conference:

Manhattan Declaration on Climate Change

We, the scientists and researchers in climate and related fields, economists, policymakers, and business leaders, assembled at Times Square, New York City, participating in the 2008 International Conference on Climate Change,

Resolving that scientific questions should be evaluated solely by the scientific method;

Affirming that global climate has always changed and always will, independent of the actions of humans, and that *carbon dioxide (CO₂) is not a pollutant but rather a necessity for all life;*

Recognising that the causes and extent of recently observed climatic change are the subject of intense debates in the climate science community and that *oft-repeated assertions of a supposed ‘consensus’ among climate experts are false;*

Affirming that attempts by governments to legislate costly regulations on industry and individual citizens to encourage CO₂ emission reduction will slow development while having no appreciable impact on the future trajectory of global climate change. Such policies will markedly diminish future prosperity and so reduce the ability of societies to adapt to inevitable climate change, thereby increasing, not decreasing, human suffering;

Noting that warmer weather is generally less harmful to life on Earth than colder:

Hereby declare:

That current plans to restrict anthropogenic CO₂ emissions are a dangerous misallocation of intellectual capital and resources that should be dedicated to solving humanity’s real and serious problems.

That there is no convincing evidence that CO₂ emissions from modern industrial activity has in the past, is now, or will in the future cause catastrophic climate change.

That attempts by governments to inflict taxes and costly regulations on industry and individual citizens with the aim of reducing emissions of CO₂ will pointlessly curtail the prosperity of the West and progress of developing nations without affecting climate.

That adaptation as needed is massively more cost-effective than any attempted mitigation and that a focus on such mitigation will divert the attention and resources of governments away from addressing the real problems of their peoples.

That human-caused climate change is not a global crisis.

Now, therefore, we recommend:

That world leaders reject the views expressed by the United Nations Intergovernmental Panel on Climate Change as well as popular, but misguided works such as "An Inconvenient Truth."

That all taxes, regulations, and other interventions intended to reduce emissions of CO₂ be abandoned forthwith.

Agreed at New York, 4 March 2008.

New York Conference of the Heartland Institute.
(The Heartland Institute, 2008; our italics).⁵

The phrases in italics are assertions that contradict the IPCC's thesis.

Other works produced by scientists, or even intellectuals from other areas that study or have studied the theme, as well as related events, also failed to receive any attention during the period. In Box 1 we list some texts originally published on the internet or in a printed journal and later made available on-line, especially by the press outlet *Mídia Sem Máscara* and the Instituto Liberdade, in the period studied during the research.

Box 1: Some texts published on global warming during the period

Some texts published on global warming during the period researched
Hunger is more important than the warming of the planet (Ely, Mattos, 1 abr. 2008)
The Forum still: Molion contests global warming (Casagrande, 9 abr. 2008)
Global warming: reality and fantasy (Soares, 7 jul. 2008)
The Marxist roots of the global warming paranoia (Vernon, 2 jul. 2008)
Heat and a lot of confusion in global regulation (Stotts, 10 jun. 2008)
Science or clowning about? (Carvalho, 21 maio 2007)
Delusions and catastrophisms (Castilhos, 12 mar. 2007)
Study by NASA and Ohio University indicates that the Arctic underwent melting similar to today in the 1920s (Aguar, dez. 2007)
Deceiving the public (Azevedo, 1 jul. 2008)
Environment and free market (Tse, 8 set. 2008)
New studies put in doubt the effects of 'global warming' (Casagrande, 18 abr. 2008)
The true climate disaster: restricting the growth of poor countries is a crime (Coalisão..., 03 abr. 2008).
Fourth panel opposes global warming and cooling (Instituto..., 8 abr. 2008)
On the Bali Conference in December: climate convention (Tse, 11 dez. 2007)

The cited texts directly or indirectly question and criticize the scientific 'consensus' promoted by the IPCC. There are contributions from university professors, such as the text "Deceiving the public," by José Carlos de Azevedo, and from meteorologists like Eugenio Hackbart, director general of the company MetSul, "Global cooling." The authors also include journalists, writers and authorities who, though not specifically dedicated to studying climate phenomena, cite well-founded sources on the subject, such as Margaret Tse, who

publicizes works by various scientists. Although some of them are of international origin, translations into Portuguese exist, based on the original work.

As well as the Manhattan Declaration, another important document was published during the period under study, a text which directly concerns the IPCC, but which failed to receive any attention whatsoever in the communications media under study. This was an open letter to the UN Secretary General, Ban Ki-moon, in which many scientists from around the world question the findings presented by the IPCC: “the IPCC’s conclusions are quite inadequate as justification for implementing policies that will markedly diminish future prosperity” (Carta aberta..., 13 dez. 2007). The list of signatories is longer than the message to the Secretary General.

Discussion of the findings

The data gathered in the research are, at the very least, worrying.

As well as transmitting information to society, many scientists look to the media (in this case in a wide sense: TV, newspapers, journals and communications outlets in general) to increase the visibility of the research findings. This attitude should be welcomed by science journalists and communicators, but prior to assuming that a particular discovery is the uncontested truth, “it is necessary to ascertain the interests at stake,” as Barata warns (2010). The author cites precisely the example of the IPCC reports, which only began to be contested in 2010, due to errors committed by some researchers, and emphasizes that “blind trust in the discourse of the scientist and science is one of the main weaknesses of scientific divulgation” (Barata, 2010, p.56-57).

Naturally issues closer to the everyday life of the common citizen gain preference in the printed media. To inform readers properly, the aim should be to reflect amply, impartially and diversely as many of the existing positions as possible concerning a given subject. It is wrong to consider just a few of them on the premise that one source is more reliable than another, or a similar alternative. Not always is it possible to assess the reliability of sources since confidentiality forms part of the journalist’s work. Even in the innumerable situations when research has reached the frontiers of scientific knowledge and, consequently, has still as yet to present a stage of maturity capable of deciphering the complex patterns detected by the researchers in their inquiries, the media outlets must take care to explain to the interested reader both the existing problems and the degree of uncertainty present in each of the publicized models or proposals.

It is very easy to understand global warming if we compare the models provided with the multiple complexities of real science. This is attractive to the lay public “as well as politicians and other influential people, who can talk as though they understand the topic” (Moura, 12 dez. 2008). A little less subtlety, the designation of the phenomena is altered: “these days, marked by an intense cold, the alarmists hide the terminology of ‘global warming’ and replace it with ‘climate changes,’ which can cover anything” (Moura, 12 dez. 2008):

The very definition of ‘climate change’ (in the singular, we should note) given by the IPCC is illustrative. It serves to blame Nature, by itself, but also allows the inclusion of

Man. ... In fact this 'proof'; of Man's culpability results from the conviction of thousands of scientists specialized in climate modeling. No more than this. They have never conducted a real experiment that other scientists could replicate. Apparently they do not even make the effort to study other hypotheses.

In terms of the media group analyzed here, the comprehensive discussion of these elements was publicized in an editorial from the *Folha de S. Paulo* (15 fev. 2010). The newspaper claims that the Intergovernmental Panel on Climate Change is experiencing a "credibility crisis" due to the "blatant errors in interpretation and misconduct" of its members. Changes demanded by the international scientific community affect the very composition of the Panel, a model created two decades ago that now seems spent: the selection of members based on lists provided by governments. Worse: they do not always select 'scientists,' in the strict sense of the term.

The undesirable "tendency towards unilaterality" is the worst scenario for an entity of this magnitude, "responsible for providing relevant – though not prescriptive – scientific information for decision making" (*Folha de S. Paulo*, 15 fev. 2010). The editorial adds: "for some critics there is also a perceptible anti-capitalist undercurrent to some of the postulations announced by the panel as scientific truths." But if the credibility of the predictions formulated by this important entity are being placed in doubt, what can be said of the countless news items in which voice and prominence were granted to just one of the sides, without allowing margin for contradictions and without making apparent the uncertainties and alternate views?

It is not enough to assess the news output by the frequency with which a given topic remains on the agenda, we also have to consider the degree of consistency of the published reports and editorials and the "capacity to monitor and demand answers" shown by the media outlet (Vivarta, 2010).

The vulgarization of science by the media, which prevents the citizen's access to specialized knowledge and to creative and critical thought free of ties makes it even more pressing to introduce a 'cognitive democracy'. In Brazil science journalism courses are appearing at postgraduate level. Is this not the moment to introduce 'courses offering a geoscientific content and reflection on geological themes' to undergraduate courses in journalism? The credibility of a media outlet is directly related to the quality of its main product: precise, reliable and properly checked information. If journalists lack the qualities and knowledge base indispensable to filtering what they receive daily from the world of science, how can they be expected to be able to separate "the wheat from the chaff" and perform their job adequately?

It is essential to recognize the role of scientists when tackling scientific topics, but it is also unwise to overvalorize the role that they play, whether attributing them with the exclusive power to apply scientific methods, or accepting any claim as scientific just because "it is emitted by a scientist" (Moura, 12 dez. 2008). Indeed the role of the specialist has been heavily debated. Edgar Morin (2003, p.19) emphasizes that:

There is an increasing democratic deficit due to the appropriation of a growing number of vital problems by experts, specialists and technicians. Knowledge has become ever more esoteric (accessible only to specialists) and anonymous (quantitative and formalized).

Technical knowledge is likewise reserved to the experts whose competence in their narrow field is matched by their incompetence when that field is disturbed by outside influences or modified by a new event. In these conditions the citizen loses the right to knowledge. The citizen has the right to acquire specialized knowledge through ad hoc studies but is divested of any globalizing or pertinent viewpoint.

This reflection has the merit of highlighting dangers faced by democratic societies, one of which is the immense power exerted by specialists from every field of knowledge to influence the decisions made by governments and large corporations. Morin continues (2003, p.19):

The continuation of the contemporary technical-scientific process – a blind process, in fact, that escapes the conscience and will of the scientists themselves – is leading to an enormous regression of democracy. Thus when the expert loses the ability to conceive the global and the fundamental, the citizen loses the right to knowledge. Consequently, the loss of knowledge, poorly compensated by the vulgarization [of science] in the media, raises the now overriding historical problem of the need for a cognitive democracy.

The authoritarian and intimidatory aspect of some of the decisions propagated by the IPCC and its followers causes disquiet. Ollier (2009) compares it to the movement known as ‘Lysenkoism’ in the former Soviet Union, in the 1940s, when Trofim Lysenko was head of the Lenin All-Union Academy of Agricultural Sciences: numerous geneticists were killed and others exiled to Siberia. His promises to triple or quadruple cereal production were never achieved. Ollier (2009, p.200) emphasizes that computer simulations have an important role to play in science, but they “do not substitute observation, testing hypotheses and falsification.” Fortunately there is no equivalent to Siberia to deal with the scientists out of tune with the general chorus, Ollier concludes.

These positions are complemented by hundreds of books already published containing different views to those spread by the IPCC. To cite just a few: in Brazil, *Aquecimento global: frias contendas científicas*, edited by José Eli da Veiga, which combines contributions favorable (Sônia Maria Barros de Oliveira) and unfavorable (Luiz Carlos Molion) to the positions of the IPCC, as well as economic themes (José Eli da Veiga and Petterson Molina Vale). Internationally: *Shattered consensus: the true state of global warming*, by Patrick J. Michaels; *The deniers, fully revised: the world-renowned scientists who stood up against Global warming hysteria, political persecution and fraud*, by Lawrence Solomon; and also *Climate change reconsidered*, edited by S. Fred Singer and Craig Idso.

The data collected in our survey reveal a high degree of journalistic ‘bias’ among the Folha Group in treating the issue of global warming. We assume that a more balanced treatment would be more desirable, yet this will not occur if the main reference source is limited to one, and just one, among so many others, divulged by different communications outlets in Brazil and internationally. Although we set out from the sample to reach the IPCC, it was very simple for us to identify a dangerous circular argument, functioning as follows: “the IPCC is the only authority that can express an opinion on the subject whose power was attributed by the IPCC itself.”

Inadequately discussed positions and unheard opposition voices demonstrate some serious problems in the Folha Group’s coverage: errors in the scientific work are obscured,

deeper questioning is avoided and predictions are left unquestioned. Any readers limiting themselves to this communications group would be left without access to a rich debate.

Fortunately the internet increasingly serves as an independent channel for divulging data, information and opinions out of tune with the so-called 'mainstream' media. An even more fundamental thus emerges: the communications outlets seem to be more attracted to the 'negative aspects' of the internet than to the "ways in which the interconnected society offers solutions to contemporary problems" (Spyer, 2007, p.200).

In fact a documentary shown by BBC TV, *The great global warming swindle* (2007), was available in its original version on the internet, but today there is only a message, "This video is no longer available due to a copyright claim by Wag TV, Ltd." without any explanation as to which organism, company or NGO acquired the film's copyright. A version with Portuguese subtitles remains available at another address and similar copies have sprung up on independent sites.

Spyer (2007) highlights two tendencies that currently enter into conflict to define the future of the internet: on one side, the banks, the financial system and governments interested in controlling access to the global network to deter "on-line criminality, delegating their power of intervention to a political representative, a market agent or any other organization" (Spyer, 2007, p.212) and, on the other side, the entities, organizations and people who are trying to preserve the freedom inherent to that "which comprises the first successful experience in the field of artificial intelligence in the history of humanity" (Benkler, 2006): the internet accessible to all people without distinction or restriction. The result of this clash is still to be determined.

Final considerations

This article has summarized the results of systematic research on news items published during a twelve-month period by the UOL, *Folha.com* and *Folha de S. Paulo* business group, and on the reliability of these news reports.

The research on scientific positions concerning 'global warming' revealed a huge diversity, spanning from complete agreement with the interpretation of a purely anthropogenic cause, to complete denial or questioning of this thesis. The denial that warming has a direct connection to atmospheric carbon dioxide levels is more consistent with the 'geological' perspective of the planet's evolution since much warmer and much cooler periods than the present were experienced before the appearance of the human species on Earth.

In the sample, formed by 676 news items, just seven comprise exceptions to the 'consensus,' that is, just 1.03% of the total. Among these, some provide space for other views, although they agree with the existence of the phenomenon and its anthropogenic cause. Although references exist to some skeptics, their number is very small. Some comments even treat them in a deprecatory or jocular way. We conclude that researchers contrary to the model established by the IPCC receive almost no attention. The term 'skeptic' has become a synonym for 'heretic,' as if the debate has abandoned the field of science to enter the domain of faith.

The majority of those responsible for writing the studied news items seem to assume that the causes are exclusively anthropic; they seem to ignore the uncertainties inherent to scientific work and above all the serious economic implications, political interests and even the possibility of perpetuating the status quo. The idea persists that for a country to develop, it needs to have free reign to pollute, contaminate and waste resources... but the developed nations do not want any new 'partners.' These are outmoded habits and postures, as well as unacceptable from the viewpoint of the Earth Sciences. The current inequality between peoples and nations tends to be permanent.

When the skeptics are criticized by the editor of a media outlet, it is clear that the newspaper has assumed a definite position on global warming and makes no commitment to summarize the scientific divergence inherent to the issue. Impartial journalism is perhaps impossible, but the unilaterality distances the public from reality, which should be able to rely on the media as an agent working to its benefit, not to restrict its access or deliberately mislead it. Finally we argue that journalism, and even the important function as science communicators performed by many university researchers, cannot ignore or forget the nuances and sometimes sharp differences involved in the current scientific debate, particularly since the modern geological sciences emphasizes the need to take into account 'all' the factors involved, not only temperature measurements, many of which point in the opposite direction to the claims of the polemical IPCC.

Within the Earth Sciences, Geology has comprehensively shown that the Earth's climate changed in the past and will continue to change in the future. Human interference can intensify the transitory effects of certain changes but we will never reach a scenario of global warming whose causes are solely anthropogenic, an idea that the media outlets analyzed herein try to promulgate.

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NOTES

¹ Entity created by the United Nations and the World Meteorological Organization.

² In this and other citations of texts from Portuguese, a free translation has been provided.

³ This conference has been held annually since 2008. The most recent at the time of this article was the seventh, held in Chicago, in the United States, between 21 and 23 May 2012 (The Heartland Institute).

⁴ In our analysis we ignored names that appeared less than two or three times because this occurs frequently with other names and is not relevant in terms of comparisons.

⁵ Audio recordings available at <http://www.heartland.org/NewYork08/audio.cfm> and PowerPoint presentations at <http://www.heartland.org/NewYork08/proceedings.cfm>. Accessed on: Jul. 9, 2009.

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