

Nedeljko Todorović

Republic Hydrometeorological Service of Serbia

Dragana Vujović

Department of Meteorology, Faculty of Physics, University of Belgrade

SCIENTIFIC VIEWS ON CLIMATE CHANGE AS PRESENTED IN PRINT MEDIA

Abstract. Digitizing old physical newspapers, including content discussing various scientific fields, makes it easier to find articles from various periods and enables access to a significant quantity of varied studies, opinions that would otherwise prove difficult to track down in hard copy. Do newspaper articles objectively reflect, or accurately depict, ongoing dialogs in a given scientific field? If a certain scientific opinion is continually represented by a number of articles in a number of different media outlets, this gives the general public the impression that there is a consensus in that scientific community. When mainstream scientific views change, then popular news articles expressing these newly established opinions prevail. Typically, opinions that run contrary to the dominant narrative are rarely ever published in popular newspapers and magazines. However, this omission of alternative views is not due to alternative perspectives not existing. The numerous articles on rapid climate change and global warming written in the last three decades are a good example to take note of. Unlike today, half a century ago the majority of meteorological articles and studies were focused on the topic of global cooling. The authors of these newspaper and magazine articles were likely not climate experts, but journalists who merely conveyed the opinions of meteorologists and climatologists.

1. Introduction

Today's world opinion is shaped by the media. Anything omitted from the media is assumed to be, if upon learning of it from an alternate source, very likely false. If repeatedly on television the claim is made that ordinary, intense summer showers are a consequence of climate change – then so it is. As the average media consumer typically has little meteorological knowledge, they typically trust the headlines of their preferred news outlets. For most media outlets, catastrophizing and hyperbolic article titles are prevalent: “Never before has such a flood occurred!”; “This season's koshava winds are unprecedented in their strength!”; “This summer's temperatures are the highest on record!” ... usually, these omit any historical meteorological data to provide as, for example, evidence. Interestingly, people who work in popular media frame their conclusions as being entirely in accordance with the opinions of almost all meteorologists. What is the role of politics and the media in creating the present state of collective awareness regarding the impact of man on the climate, and in particular, man's role in the popular concept of global warming? Are we really completely doomed? In looking at media headlines, fearmongering seems to be overwhelmingly prevalent, while, to a great extent, there is also an inaccurate clustering together of ecology with climatology in service to said fearmongering. It appears that the more bombastic the title, the better. Even weather forecasts on television are, in some ways, slowly beginning to resemble reality TV. The media affords copious airtime to popular

climate protests, during which children repeating learned mantras are positioned as spokespersons for the future. These learned mantras center on the idea that everything, including last night's downpour, is the result of the combustion of fossil fuels releasing carbon dioxide, a greenhouse gas, into the atmosphere. Those that push such views do not bother to teach these frightened children that the most important greenhouse gas is actually water vapor, which contributes a 92–98% increase in air temperature, depending on the source [1]. Namely, if there was no natural greenhouse effect, the average annual air temperature on Earth would be around -18°C , instead of 15°C . Therefore, the natural greenhouse effect contributes an approximately 33°C increase to the Earth's mean annual air temperature. Of this, about $31\text{--}32^{\circ}\text{C}$ is due to water vapor.

In the last three decades, popular opinion within professional circles is that there exists a scientific consensus regarding the link between industrial activity and climate change: namely the global rise in temperature and the release of greenhouse gases, primarily carbon dioxide, CO_2 . This is an opinion largely cultivated by TV news forecasts and televised discourse around the changing climate. Similar expert opinions are also presented to the general public through electronic and print media. What is customarily omitted is that human carbon dioxide emissions represent only 3% of carbon dioxide flux [2]. Any opposing theories are branded as pseudoscientific and are rarely presented in popular media outlets. With this, no one asks the question – why do the sciences need such a rigid, absolute consensus? In all scientific fields, there tend to exist differing hypotheses, typically supported by differing sets of data all sourced from scientific data collection and analysis. Science should strive for truth via point-counterpoint debate. Eco World, as part of the commentary at the 2008 International Conference on Climate Change, organized by the Heartland Institute in New York, states: “Science – if we remove the bribes and opportunism that have plagued much of the scientific community on the alleged global warming epidemic – has no ideology, no hidden motives, and is extremely impartial. Science relies on skepticism and is ultimately based on truth.”

In popular newspapers, the prevailing opinion is that the rapid warming of the last decade or two has never happened in the history of mankind, and especially not in the Arctic. Along comes a picture of a sad white polar bear, whose numbers, according to the media, are being drastically reduced due to the melting of Arctic ice. Specialists who monitor their status as a threatened species actually claim that their numbers are now growing, according to [3]: “stable or increasing polar bear populations are now the norm across the Arctic”. However, this is seldom mentioned in popular news outlets. It is also typically omitted that the greatest warming of the Arctic that occurred in the 20th century was between 1920–1940, as a result of internal climate modes and solar activity [4]. The total was even higher in 1940–1960 when the Arctic became colder than even the 1920–1940 warming period. Therefore, the idea that anthropogenic activity had caused this warming was rejected [4]. According to the Greenland Ice Cap, “around 14,000 years ago, rapid global warming and the humidifying of the climate began, perhaps occurring within an interval of only a few years or decades” [5]. The majority of Arctic sites in the late 20th century have experienced a cooling trend or have been variable [5].

The media should be playing an educational role, the role of bringing real scientific discourse closer to those who are not scientists. Newspapers should convey the message that the climate of our Earth, in a very complex way, is influenced by solar variable activity, volcanic activity, internal variability of the climate system, *as well as* the influence of human activity. The human activity factor should be elaborated on and include, first and foremost, land-use change and urbanization, as these factors increase

air temperature locally. The mean annual air temperature in Vračar (data from measurements taken in Karadjordje Park) is higher than the average annual air temperature in Surčin by 1.4 to almost 2°C, for the data series 1988–2014 [6], and the distance between them is a mere 13 km. Future generations of children will grow up convinced that carbon dioxide is a dangerous polluting gas, when in fact, carbon dioxide is vital to Earth's biosphere, for the growth of plants and for their ability to utilize moisture. "Contrary to the IPCC predictions, global temperature has not risen appreciably in the last 20 years. Most surface temperatures are free from the influence of surrounding buildings and roads and show no evidence of warming. Data from satellites support this. Sea levels have been rising since the end of the last ice age, long before industrialization, yet historical records show no acceleration in the rise of sea levels during the twentieth century. Increases in carbon dioxide appears to pose no immediate danger to the planet. This gas is not a pollutant." [7]. Increases in CO₂ concentration was found alongside a lag in rising temperatures in Antarctica during interglacial periods ([2]; [8]; [9]), i.e., an increase in CO₂ is an effect, and not a cause of rising temperatures. All the research to support these statements exists in the scientific literature and is known by many scientists. However, the media repeatedly chooses to omit that data.

Cited uncritically in the newspapers, the claims that the 20th century is the warmest yet, at least in the northern hemisphere, and that the 90s were the warmest decade of the 20th century, and that 1998 was the hottest year in the last millennium are "unfounded, specious, and more political than scientific." [5]. The latest phrase circulating in the media is "climate crisis" – and the accompanying rhetoric has evolved to a new dimension.

This paper will not discuss the details of the existing arguments regarding the popular "climate change" hypothesis, and will instead address how the topic is presented in print media, depending on the assumed "prevailing" opinion in the professional community.

2. News Articles on Climate Change in the Last Few Decades

In both print and electronic media in Serbia, over the course of the last three decades, there has been an increasing number of articles that convey the opinion of a few experts that climate change is primarily caused by human activity. This anthropogenic focus is centered on the emission of greenhouse gases and in particular carbon dioxide. Popular media outlets announce significant climate change and its potential side effects involving the day-to-day lives of people as well as all other life on earth. Figure captions, subheadings, and sections of sample texts are shown (see Figures 1, 2, and 3).

Gajićemo limun umesto pasulja: Klimatske promene od Srbije prave sever Afrike

Miljana Leskovic | 27. 01. 2015. - 20:09h | Foto: J. Vučetić | [Komentara: 74](#)

„Клима у Србији за пола века биће као на северу Африке: температуре ће ићи и до узаврелих 50 степени, а кише и снега биће упола мање него сада. Србија већ сада поприма одлике медитеранске климе“.

Figure 1. “The lemon instead of beans: Climate change creates northern Africa in Serbia”. Daily newspaper “Blic” (01/27/2015).

**Ако се обистини
најгори
сценарио,
суше ће бити
страшније,
пожари
незаустављиви,
биљке и
животиње ће
страдати, чека
нас несташница
хране и воде за
пиће, плодно
земљиште ће
бити поплављено**

Figure 2 “If the worst-case scenario comes true, droughts will be more terrible, fires unstoppable, plants and animals will starve...” “Politika” daily (10/28/2018), the Sunday supplement.

Večernje novosti

I golim okom se vidi da se s klimom nešto čudno dešava

Tanjug | 24. jul 2017. 18:42 | [Komentara: 2](#)

Velike vrućine, požari i poplave koji "teraju" turiste iz letovališta ove sezone, posledica su klimatskih promena koje su postale vidljive i običnim ljudima, kaže stručnjak za meteorologiju

Figure 3. "It can see with the naked eye that something going on climate." "Tanjug" news agency (07/24/2017, downloaded from the daily newspaper "Večernje Novosti").

Figure 2 mentions a scenario, but the article does not elaborate, and only gives a disastrous forecast of the future. How are the results obtained? It starts with a set of initial conditions for a numerical model, which, by processing the calculations for a long time series produces results considered to be projections, not forecasts, which are then combined with socio-economic scenarios. Along with these catastrophizing announcements, nowhere is there a statement about the potentially significant uncertainty of numerical models to be found. Scenarios and models differ in their projections of future temperatures on Earth in the long term: for duplicate concentrations of CO₂, models project a temperature rise between 1.8–5.6°C [10]. Some models also reflect a cooling trend, but they are typically a priori rejected as erroneous and do not enter any further analysis [10]. Everywhere a future tense is used instead of a conditional: i.e., if there were this much CO₂ – then the temperature would be..., not – the temperature will be... So, readers tend to consistently be presented with partial information.

In addition to meteorologists (climatologists) who advocate for the "prevention" of climate change, comments and warnings about "unprecedented consequences for humanity" are provided by sociologists, futurologists (Figure 4) and experts in other fields and professions. A large majority of news agencies worldwide relay news reflecting the views of a few politicians, comparing and correlating the threat of climate change to social and political events (Figure 5).



Figure 4. "Methane hundred times more dangerous than CO₂, there will be a deluge." Newspaper "24 Hours", September 2019.

Guverner Kalifornije: Klimatske promene opasnije od fašizma

Tanjug | 06. jun 2017. 23:07 | Komentara: 1

Guverner Kalifornije Džeri Braun upozorio je danas da bi opasnost od klimatskih promena mogla da bude veća nego što je bila opasnost od fašizma za vreme Drugog svetskog rata

Figure 5. “The governor of California: The climate change is more dangerous than fascism.” News agency “Tanjug“ (06/06/2017).

Although they are published at significantly lower rate, there are comments from climate change experts denying that global warming is caused solely by human CO₂ emissions. The geologist Robert Carter observes “the proponents of the global warming thesis does not at all deal with scientifically proven facts, but with phrases and fabrications that are shaped to sound as scientific facts.” (Figure 6).



Figure 6. “Using the theory of chaos to make a profit”, “Tabloid”, No. 197 (07.01.2010).

IZVOR MONDO/Srna / 04.01.2018. / 11:33 13

Za 12 godina, na Zemlji će početi novo "mini-ledeno doba", koje će nakratko prekinuti globalno zagrevanje, tvrde britanski i ruski naučnici.

Figure 7. “A new “mini ice age” on Earth will begin for 12 years.” “Mondo”, portal (04/01/2018).

FENOMENI: VREMENSKE PRILIKE

Ne treba se plašiti promena klime

Taj prirodni proces oduvek je bio karakteristika naše planete, a uloga čoveka u tome je precenjena, tvrdi prof. dr Dragana Vujović iz Instituta za meteorologiju Fizičkog fakulteta

Autor: Branka Jakšić | utorak, 20.08.2019. u 15:10

Figure 8. “There is no need to fear climate change”. Daily newspaper “Politika” (08/20/2019), the Sunday supplement.

There are voices in the community that express that there is instead an imminent global *cooling*. This is referred to in professional circles as the “mini ice age” phenomenon (Figure 7), and that climate change is an entirely natural process that has always been a feature of our planet (Figure 8).

Politics (both domestic and global) has also become involved in the debate on climate change. At many international conferences, binding decisions are made for signatories, which reflects that political decisions, with regards to the scientific debate on climate change, are supported and pushed by specific political parties (Figure 9). However, there are also critical reviews of certain politically-distorted policy decisions in media articles (Figure 10), which state that “reputable climatologists, many of whom are members of the Intergovernmental Panel on Climate Change, the main body of the UN for this area,” were altering data, as well as highlighting specific statistics and hiding others, to fit into the carefully crafted theory that global warming is primarily the result of human activity, and that if something is not done, humanity is in catastrophic danger.”

Pariz: Usvojen sporazum o ograničavanju globalnog zagrevanja

Tanjug | 12. decembar 2015. 20:00 > 20:37 | Komentara: 6

Ministri zemalja učesnica Međunarodne konferencije o klimi, koja se održava u Parizu, danas su usvojili sporazum o ograničavanju globalnog zagrevanja, a odobrilo ga je gotovo 200 nacija

Figure 9. “An agreement on limiting global warming adopted.” News agency “Tanjug” (12/12/2015).

Da li klimatolozi zamajavaju svet?

Autor: Milan Mišić ponedjeljak, 23.11.2009. u 22:00

Нараћања или научни докази: клима се мења, али колико?

Od našeg stalnog dopisnika

Vašington, 23. novembra – Uoči klimatskog samita u Kopenhagenu idućeg meseca, gde će predstavnici 192 države i mnogobrojne stručne i nevladine organizacije nastojati da se isposluje novi globalni sporazum o ograničavanju emitovanja u atmosferu štetnih gasova koji izazivaju povećanje temperature na zemlji, efekat bačene bombe imala je hakerska provala u centralni kompjuter (server) Katedre za izučavanje klimatskih promena britanskog Univerziteta Istočna Anglija, jednog od centara za studije globalnog zagrevanja, i obelodanjivanje oko 3.000 dokumenata koji su odande nelegalno preuzeti. Od toga, 1.073 su i-mejlovi, prepiska između britanskih naučnika i njihovih američkih kolega tokom poslednje 134 godine, od 1996. do prošlog meseca.

Figure 10. “Whether climatologists cheat the world?” The daily newspaper “Politika” (11/23/2009).

3. Mid-Century Climate Change News Articles

In the mid-20th century, at most meteorological stations across the world, climatological analyses showed that a decrease in temperature had occurred, and this two-decade declining trend was immediately coined by experts as “global cooling.” Accordingly, relevant texts in support of that narrative [11] are starting to appear in print media.

In addition to measuring data on the Earth's surface, new satellite technology has also indicated a trend of falling temperatures. In newspaper headlines, this was announced as the arrival of a “new ice age” (Figure 11). The texts provide forecasts of a climate change to arrive by the end of the 20th century, indicating that increasingly cold weather is to come and that this cooling will be periodically interrupted by short-term thaws (Figure 12). A dramatic increase in ice cover and snowfall was observed (Figure 13). Scientists agreed that significant changes in weather were ahead, but could not agree on the cause of this drop in temperature (Figure 14). There were claims that such climate changes were the result of our activity (Figure 15).

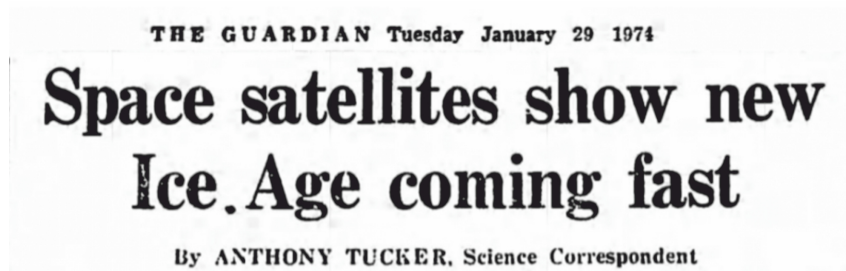


Figure 11. 29 Jan 1974, 5 – The Guardian at Newspapers.com

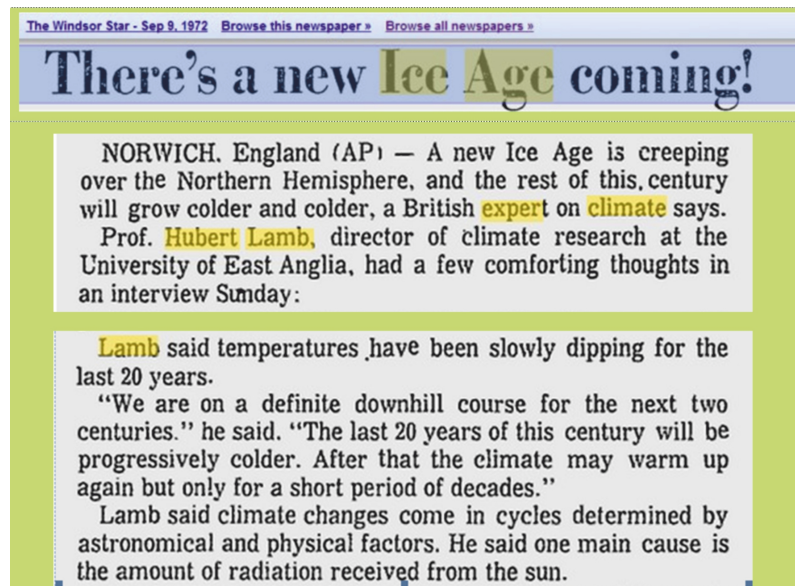


Figure 12. The last 20 years of this century will be getting colder. The “Windsor Star” (01/29/1974).

The Milwaukee Journal - May 14, 1974

New York, N. Y. -AP-
Weather satellites sweeping across the Northern Hemisphere have come up with a surprise — the permanent snow and ice cap has increased dramatically.
The finding is cited as one more indication of what some climatologists believe to be a cooling trend in the world's climate.

Figure 13. A dramatic increase in snowfall and ice cover.

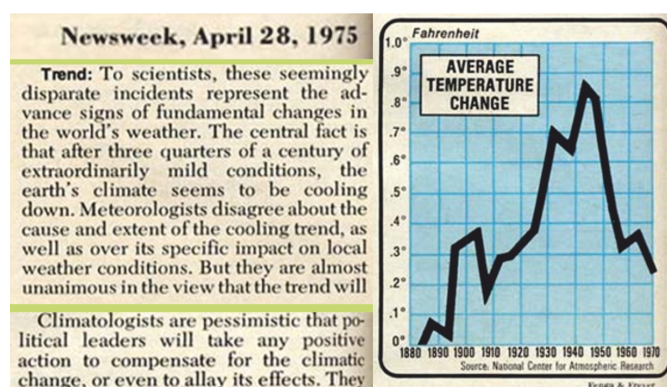


Figure 14. "Newsweek" (04/28/1975). Meteorologists' disagreement over the causes of climate change (global cooling).

Scientists Ask Why World Climate Is Changing; Major Cooling May Be Ahead

By WALTER SULLIVAN New York Times (1857-Current file); May 21, 1975; ProQuest Historical Newspapers The New York Times (1851 - 2001) pg. 92

The world's climate is changing. Of that scientists are firmly convinced. But in what direction and why are subjects of deepening debate. There are specialists who say that a new ice age is on the way—the inevitable consequence of a natural cyclic process, or as a result of man-made pollution of the atmosphere. And there are those who say that such pollution may actually head off an ice age.

Vulnerability to climate change, it says, is "all the more serious when we recognize that our present climate is in fact highly abnormal, and that we may already be producing climatic changes as a result of our own activities."

The implication was that a change in solar input that was slight, but sufficient to increase autumn snow and ice cover substantially, could eventually lead to a major climate change.

Figure 15. Climate change is caused by our activity or as a result of natural variability? New York Times, May 21, 1975.

4. Conclusion

Popular media articles in newspapers dealing with scientific views on climate change, over time, give more and more space to a dominant narrative, which then becomes the prevailing stance in society. Here, we have not investigated whether

similar opinions are prevalent in scientific journals as well. Usually, dissenting opinions are “muted” and are afforded significantly less media exposure.

When the paradigm shifted, and the theory of global cooling, the prevailing narrative, became the theory of global warming, newspaper articles were adjusted accordingly, and skeptical and dissenting opinions become significantly less visible in popular media articles.

Most popularly cited meteorologists and climatologists have been either vague or hyperbolic regarding estimates of climate change, and tend not to clearly state the fact that the climate is, in actuality, changing across significantly longer time scales.

In both cases, the general audience is made to believe that there is a solid and absolute consensus in the scientific field, which is not the case. However, we are not analyzing whether this is a result of the editorial policy of certain newspapers or the covert influence of the political sphere. In agreement with many other voices worldwide, the political scientist Miša Đurković claims that behind the theory of anthropogenically-centered global warming reside “abnormal, hidden, and hardly transparent powers.” The theory’s public media presentation is an “instrumental manifestation of power” and its imposition on the public is an integral part of other social (and political) phenomena that act as “tools of control, manipulation, subjugation, and the reduction of entire civilizations, nations, and cultures” [12].

When new scientific arguments confirm or refute earlier scientific views over time, and the public has access to the evolution and history of these changes in popular public opinion, crucially having access to the accompanying historical measurements and data, then the value of popular newspaper articles and the views of the scholars presented in them will be a more accurate source to be taken into account in the discussion on climate.

This analysis has shown that popular media and newspaper articles are neither an entirely reliable indicator nor an entirely accurate source for the nuanced conversation surrounding scientific views on climate change.

References

- [1] Sondergard, S. E., 2009: *Climate Balance: A Balanced and Realistic View of Climate Change*. Tate Publishing, 400, ISBN-10: 1607995980, ISBN-13: 978-1607995982.
- [2] Carter, R. M., 2007: *The Myth of Dangerous Human-Caused Climate Change*. The AusIMM New Leaders’ Conference, Brisbane, QLD, 2–3 May 2007.
- [3] Crockford, S. J., 2019: *State of the polar bear report 2018*. The Global Warming Policy Foundation, GWPF Report 32, ISBN 978-0-9931190-7-1.
- [4] Bengtsson, E., Semenov, V. A., Johannessen, O. M., 2004: The Early Twentieth-Century Warming in the Arctic – A Possible Mechanism. *Journal of Climate*, 17, 4045–4057.
- [5] Rapp, D., 2008: *Assessing Climate Change: Temperatures, Solar Radiation, and Heat Balance*. Praxis Publishing Ltd, Chichester, UK, 374 pp.
- [6] Vujović, D., Todorović, N., 2018: Urban/rural fog differences in the Belgrade area, Serbia. *Theoretical and Applied Climatology*, 132(1–2), 103–114.
- [7] de Freitas, C. R., 2002: Are observed changes in the concentration of carbon dioxide in the atmosphere really dangerous? *Bulletin of Canadian Petroleum Geology* 50(2): 297–327.
- [8] Caillon, N., Severinghaus, J. P., Jouzel, J., Barnola, J. M., Kang, J., Lipenkov, V. Y., 2003: Timing of atmospheric CO₂ and Antarctic temperature changes across Termination III. *Science*, 299, 1728–1747.
- [9] Mudelsee, M., 2001: The phase relations among atmospheric CO₂ content, temperature and global ice volume over the past 420 ka. *Quaternary Science Reviews*, 20, 583–589.
- [10] Stainforth, D. A., Aina, T., Christensen, C., Collins, M., Faull, N., Frame, D. J., Kettleborough, J. A., Knight, S., Martin, A., Murphy, J. M., Piani, C., Sexton, D., Smith, L.

A., Spicer, R. A., Thorpe, A. J., and Allen, M. R., 2005: Uncertainty in predictions of the climate response to rising levels of greenhouse gases. *Nature*, 433:403–406.

[11] <https://realclimatescience.com>

[12] Đurković, M., 2013: Dark corridors of power – the paths of contemporary political theory. Ukronija, Belgrade, 246. (in Serbian).

The sources of the Figures are:

Daily newspaper “Blic” (27.01.2015).

Daily newspaper “Politika” (23.11.2009).

Daily newspaper “Politika” (28.10.2018), the Sunday supplement.

Daily newspaper “Politika” (20.08.2019), the Sunday supplement.

“Mondo” portal (04.01.2018).

Daily newspaper “24 Hours,” September 2019.

Newspaper “Tabloid,” No. 197 (07.01.2010).

News agency “Tanjug” (06.06.2017).

News agency “Tanjug” (24.07.2017). Taken from the daily “Večernje Novosti.”

nedeljko52@yahoo.com

dvujovic@ff.bg.ac.rs