

MeCCO

Media and Climate Change Observatory

2018 YEAR END RETROSPECTIVE

SPECIAL ISSUE 2018



Office for Outreach and Engagement
UNIVERSITY OF COLORADO BOULDER



CENTER & FOR
SCIENCE & TECHNOLOGY
POLICY RESEARCH



MeCCO monitors 74 sources (across newspapers, radio and TV) in 38 countries in seven different regions around the world. MeCCO assembles the data by accessing archives through the Lexis Nexis, Proquest and Factiva databases via the University of Colorado libraries. These sources are selected through a decision processes involving weighting of three main factors:



Geographical Diversity

favoring a greater geographical range



Circulation

favoring higher circulating publications



Reliable Access to Archives Over Time

**favoring those accessible consistently
for longer periods of time**

Media and Climate Change Observatory, University of Colorado Boulder
http://sciencepolicy.colorado.edu/media_coverage

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At the global level, October was the high water mark for coverage of climate change or global warming among the sources tracked by our MeCCO team. This trend of highest levels of coverage in October was also the case at the national level in Australia, Canada, Spain, the US and the UK in 2018. This coverage was attributed primarily to attention paid to the UN's IPCC Special Report on impacts of 1.5°C warming. It was also bolstered by media coverage of continued impacts and reverberations from Hurricane Michael (coming on land in the US Florida panhandle) and Typhoon Yutu (tearing through the US Northern Marianas Islands) in October along with continued cleanup efforts from September's Typhoon Mangkhut (damaging the Philippines) and Hurricane Florence (making landfall in the Carolinas).



Rescue workers clear a road of debris due to super Typhoon Mangkhut as they try to reach Baggao town, north of Manila, Philippines (Ted Aljibe/AFP via Getty Images).

2018 saw media attention to climate change and global warming ebb and flow, amid competing interests in other political, social, environmental, economic, and cultural issues around the globe. In the context of media attention paid to issues from Australian national elections to Yemeni conflict, climate change and global warming garnered coverage through stories manifesting through primary, yet often intersecting, *political*, *economic*, *scientific*, *cultural* and *ecological/meteorological* themes.

Figure 1 shows media coverage of climate change or global warming month to month over the last 180 months – organized into seven geographical regions around the world – from January through December 2018.

In January 2018, we at MeCCO expanded coverage to sixty-two newspaper sources,

six radio sources and six television sources. These now span across thirty-eight countries, monitoring segments and articles in English, Spanish, German and Portuguese. In addition to English-language searches of 'climate change' or 'global warming', we began additional searches of Spanish-language sources through the terms 'cambio climático' or 'calentamiento global', and commenced with searches of German-language sources through the terms 'Klimawandel' or 'globale Erwärmung' as well as Portuguese-language sources through the terms 'mudanças climáticas' or 'aquecimento global'.

In the aggregate across the newspaper sources, coverage was down 26% in 2018 compared to 2017. However, at the country level, coverage increased most notably in the UK (up 22%), New Zealand (up 22%) and US (up 20%) in 2018. Meanwhile, coverage held relatively steady in Australia (up 1%), Canada (down 2%), Germany (down 1%), India (up 2%) and Spain (down 1%). As such, the overall decrease in coverage

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was detected through sources outside these key countries. By comparison, coverage in Central American and South American sources monitored by MeCCO were down 23%. This may be a warning sign of possible limited capacity to cover climate change in global sources that do not generally have the comparable resources of these other country's outlets.

Our broadened monitoring involved the expansion into regional monitoring of Latin American newspaper coverage, beginning in January 2005. This also included new monitoring of climate change or global warming in US television coverage – ABC, CBS, CNN, Fox News Network, MSNBC, and NBC – from January 2000 through the present. And our 2018 monitoring expanded to representative radio coverage in six main sources – *American Public Media* (US), *National Public Radio* (NPR) (US), *British Broadcasting Corporation* (BBC) (UK), *SW Radio Africa* (Zimbabwe), *Radio Balad* (Jordan), and *Radio France Internationale* (RFI) (France) – also from January 2000 through the present.

In the aggregate across US television sources, coverage in 2018 went down 30% compared to 2017. Across global radio sources we at MeCCO have monitored, coverage in 2018 was down 8% from 2017.

At the US country level, Figure 2 illustrates these trends month to month in US press accounts

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across five newspaper publications in 2018 – *The Washington Post*, *The Wall Street Journal*, *The New York Times*, *USA Today*, and the *Los Angeles Times*. Figure 3 shows trends across US television news – ABC, CBS, CNN, Fox News Network, MSNBC, and NBC.

Throughout the year (as in 2017) there has been continued prominence of news from US outlets on climate change or global warming associated with Donald J. Trump. We at MeCCO have referred to this as a 'Trump Dump', where media attention that would have focused on other climate-related events and issues instead was placed on Trump-related actions, leaving

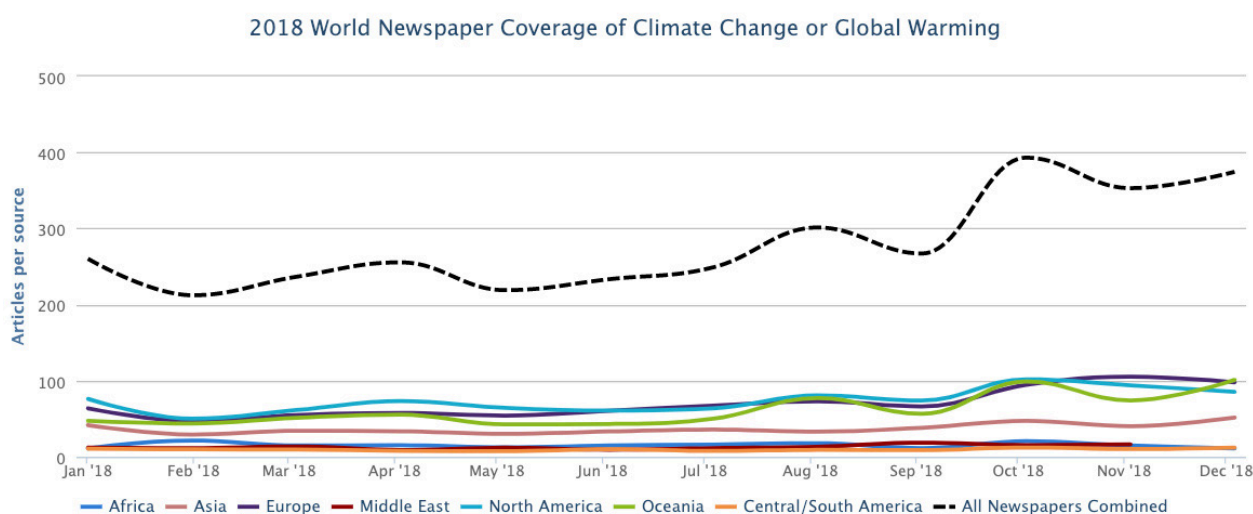


Figure 1. Media coverage of climate change or global warming in sixty-two sources across thirty-six countries in seven different regions around the world, from January through December 2018.

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2018 United States Newspaper Coverage of Climate Change or Global Warming

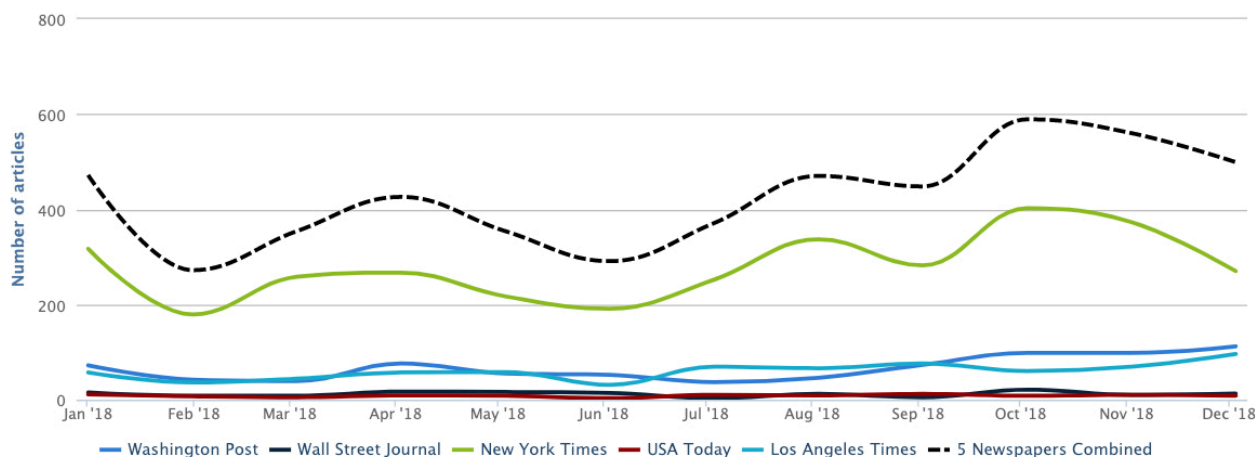


Figure 2. Media coverage of climate change or global warming month to month in the *Los Angeles Times*, *The New York Times*, *USA Today*, *The Washington Post*, and *The Wall Street Journal* in the US from January through December 2018.

2018 United States Television Coverage of Climate Change or Global Warming

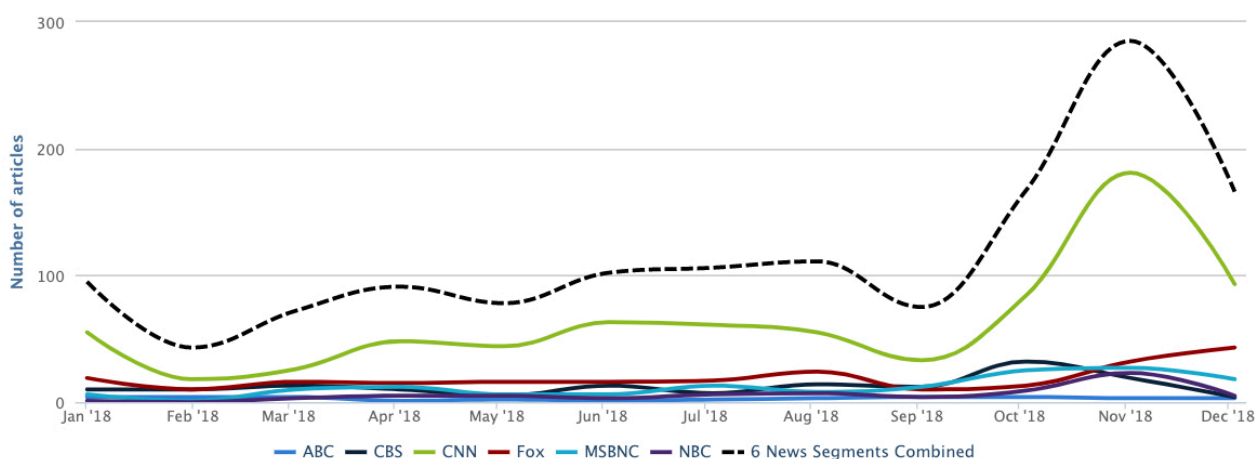


Figure 3. Media coverage of climate change or global warming month to month on ABC, CBS, CNN, Fox News Network, MSNBC, and NBC in the US from January through December 2018.

many other stories untold. Throughout the year 2018, in terms of the frequency of words in US news articles, 'Trump' was invoked 22,942 times through 5,106 stories in *The Washington Post*, *The Wall Street Journal*, *The New York Times*, *USA Today*, and the *Los Angeles Times* in 2018. In fact, 'Trump' was mentioned more than twice as frequently as 'science', 'scientific', 'scientists' and 'scientist' combined (a ratio of 2.2 times more frequent). These abundant mentions of Trump were a remarkable ratio of nearly 4.5 times per article on average. However, this is down slightly from a ratio of nearly 4.7 times per article on average in 2017.

Meanwhile, 'Trump' was invoked 41,172 times through 980 stories on US network television news outlets ABC, CBS, CNN, Fox News Network, MSNBC, and NBC in 2018 (a ratio of approximately 42 times per segment on average). Even though the *NBC Meet the Press* December 30 special report on climate change was seen to be an encouraging new media approach, the show nonetheless mentioned or quoted Trump fourteen times during the hour-long program (see December section and conclusion for more).

This was illustrated in a number of ways throughout the year. For example, media copiously covered

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Throughout the year (as in 2017) there has been continued prominence of news from US outlets on climate change or global warming associated with Donald J. Trump. We at MeCCO have referred to this as a 'Trump Dump', where media attention that would have focused on other climate-related events and issues instead was placed on Trump-related actions, leaving many other stories untold.

comments about “beautiful and clean coal” as the President set carbon-based industry preferences in his January State of the Union address and throughout the year, factual challenges and all. As a second instance, Trump reactions to the November release of the Fourth US National Climate Assessment (NCA 4) generated media attention where journalists like Rebecca Ballhaus from the Wall Street Journal reported, “President Trump said Monday that he doesn’t believe the central finding of a report released last week by his administration ... Mr. Trump said of the report, “I’ve seen it. I’ve read some of it. And it’s fine”. Further elaborations and additional examples can be found in the month-to-month accounts that follow in this 2018 retrospective.

Among others analyzing media representational practices, Lisa Hymas from *Media Matters* picked up on this in 2018. She astutely commented, “The media should be chasing down stories on climate science, the people being affected by climate change, responses and solutions to the problem. Instead, even when they report on climate change, they’re still chasing Trump”.¹

Figure 4 depicts word frequencies in US newspaper accounts across the calendar year 2018.

1 <https://grist.org/article/climate-what-media-kept-on-chasing-trump-not-climate-change-in-2018/>



Figure 4. The word cloud shows the frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in the *Los Angeles Times*, *The New York Times*, *USA Today*, *The Washington Post*, and *The Wall Street Journal* in the US in 2018.

This report is an aggregation and reprise of monthly summaries that our MeCCO team has compiled and posted each month on our website.² It is our second annual review of coverage. The project is currently based in the Center for Science and Technology Policy Research (CSTPR) in the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder. However, contributions are made through collaborations and partnerships with MeCCO members at the University of New England (USA), Babson College (USA), Universidad de Sevilla (Spain) and the National Institute for Environmental Studies (NIES) in Japan.

As 2019 begins, it is a time for important reflection on how the past year 2018 shapes the one to come. It is also a critical time to ponder how our histories up to the present shape those that will follow. Australian drought, Sub-Saharan African human displacements, Central and South American biodiversity losses, Asian commercial fishing woes, Brazilian presidential elections, IPCC and NCA reports, US federal (in)

2 http://sciencepolicy.colorado.edu/media_coverage/

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action mixed with rollbacks and wildfires across North America and Scandinavia punctuated more general trends across the 2018 media and climate change landscape. Consequently, the month-to-month summaries (below) highlight key events, stories and developments through *political*, *scientific*, *cultural* and *ecological/meteorological* themes.

JANUARY

January ushered in a slight uptick in media attention to climate change and global warming from the previous month of December 2017. Coverage was up 8% throughout the world and increases were detected in Asia (up 15%), Africa (up 43%), Europe (up 7%), Oceania (up 11%), and North America (up 9%), while holding relatively steady in the Middle East. MeCCO detected a decrease in coverage in Central/South America (down 14%). At the country level, coverage went up from the previous month in Australia (+25%), India (+16%), Spain (+7%), the United Kingdom (UK) (+8%), and the United States (+13%), while it went down in Canada (-5%), Germany (-28%), and New Zealand (-13%). Figure 5 shows word frequency data at the country levels in US newspapers, US television, UK newspapers, and Indian newspapers in January 2018.

The five representative US sources showed continuing signs of a 'Trump Dump', extending from last year (see the 2017 recap for more details)³. This pattern of news reporting continued to be limited to the US context. For instance, in January US news articles related to climate change or global warming, Trump was invoked 4145 times through the 472 stories this month (a ratio of 8.8 times per article on average) in *The Washington Post*, *The Wall Street Journal*, *The New York Times*, *USA Today*, and the *Los Angeles Times*. In US television sources of ABC, CBS, CNN, Fox News Network, MSNBC, and NBC, Trump was mentioned 4108 times through just 95 news segments (43 mentions per segment). However, in contrast in the UK press, Trump was mentioned in the *Daily Mail & Mail on* 3 https://sciencepolicy.colorado.edu/icecaps/research/media_coverage/summaries/special_issue_2017.html

Sunday, *The Guardian & The Observer*, *The Sun*, *The Daily Telegraph & Sunday Telegraph*, *Daily Mirror & Sunday Mirror*, *The Scotsman & Scotland on Sunday*, and *The Times & Sunday Times* 1265 times in 589 January articles (approximately 2.1 mentions per article on average). In the Indian press (*Indian Express*, *The Hindu*, *Hindustan Times*, and *The Times of India*), Trump was mentioned just 75 times in 353 articles in January (approximately 0.2 times per article on average).

This can also be illustrated through a remarkable Washington Post opinion from the Editorial Board on January 20, entitled 'The shutdown brouhaha has covered up far bigger news'.⁴ Noting that 2017 was determined by the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA) to be one of the warmest years on record, they wrote, "One byproduct of the day-to-day chaos of the Trump presidency is that the nation's biggest, long-term challenges are often forgotten. While Washington spent this week agonizing over the prospect of a totally unnecessary government shutdown, what should have been far bigger news went nearly unremarked." They went on to boldly write, "Last year also marked a recent low in the federal government's response to climate change. President Trump installed a climate-change denier, Scott Pruitt, at the Environmental Protection Agency, signaling the end of landmark climate rules on power companies. Mr. Trump's energy secretary, Rick Perry, pushed for a pro-coal policy so absurd that the independent Federal Energy Regulatory Commission (FERC) rejected it out of hand. The president also announced he would pull out of the Paris climate agreement, an accord that the United States spent years fine-tuning to ensure it was a fair deal."

These stories were examples of attention paid primarily to *political* content of coverage during the month. In this space, China continued in

4 https://www.washingtonpost.com/opinions/the-shutdown-brouhaha-has-covered-up-far-bigger-news/2018/01/20/641bfc9c-fc97-11e7-a46b-a3614530bd87_story.html?utm_term=.6be2c66191a9

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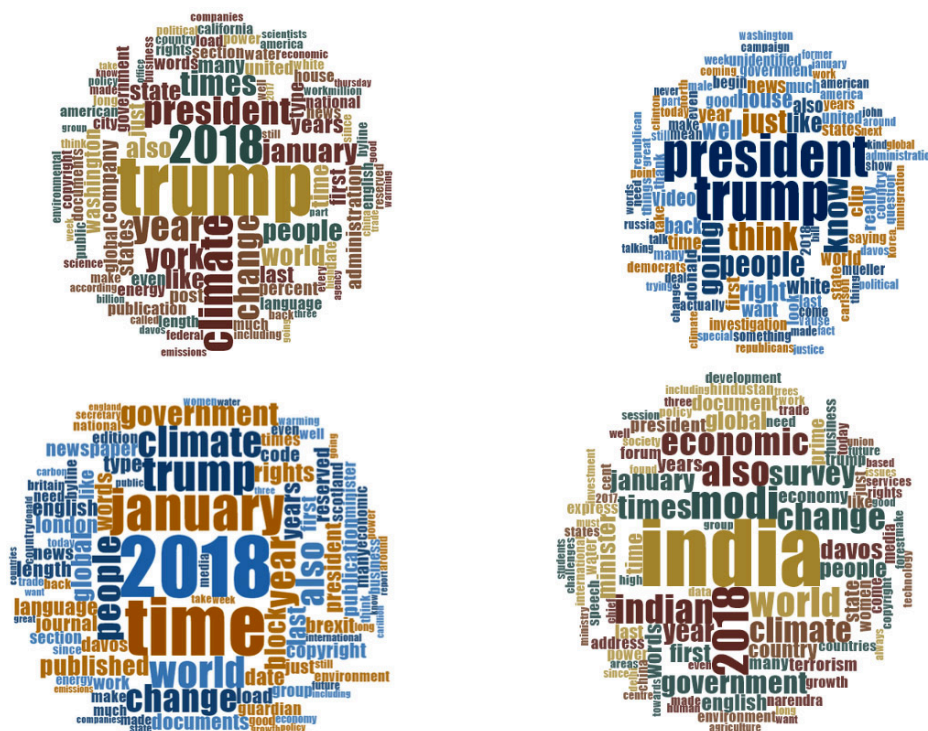


Figure 5. Word clouds showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in US newspapers (top left), and US television (top right), the United Kingdom newspapers (bottom left), and Indian newspapers (bottom right) in January 2018.

its path to take up a leadership position on decarbonization in the void left by the United States. Journalist Hiroko Tabuchi of *The New York Times* reported that China continued to cut its greenhouse gas emissions by banning the ongoing production of over 500 car models – from both foreign and domestic companies – that don't meet new Chinese fuel economy standards.⁵ Also, preceding the World Economic Forum (WEF) in Davos, where climate change was a much discussed topic by all world leaders besides US President Donald Trump, the WEF Global Risks Report – a survey of 1,000 international business, government, education and service leaders – was released. Reporter Kim Hjelmgaard from *USA Today* wrote “Mother Nature topped the most significant risks facing the world for a second year in a row ... that includes natural disasters and extreme weather events that human-caused climate change may be abetting”.⁶

5 <https://www.nytimes.com/2018/01/02/climate/china-cars-pollution.html>

6 <https://www.usatoday.com/story/news/world/2018/01/17/risk-nuclear-weapons-extreme-weather-top-risks-2018-report/1035252001/>

Across the globe in January, there was a range of stories that intersected with the *cultural* arena. For example, at the end of January the Doomsday Clock was advanced closer to midnight due primarily to concerns of climate change and nuclear war. Journalist Doyle Rice from *USA Today* quoted Rachel Bronson, president of the Bulletin of the Atomic Scientists, who said “Because of the extraordinary danger of the current moment, [we] move the minute hand of the Doomsday Clock thirty seconds closer to catastrophe. This is the closest the Clock has ever been to Doomsday, and as close as it was in 1953 at the height of the Cold War”.⁷

Intersecting *political* and *cultural* dimensions, coal was anthropomorphized and championed throughout the month in media accounts, mainly focused on actions in the US Trump Administration. While market forces (e.g. competition with natural gas and renewables) work against coal, numerous media reports mentioned coal mine closings. For example, the

7 <https://www.usatoday.com/story/tech/science/2018/01/25/doomsday-clock-ticks-closer-midnight/1064911001/>

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Associated Press reported on 400 jobs lost at a Pennsylvania coal mine closing announcement in early January.⁸ Yet as part of the FERC rebuff of a pro-coal policy put forward in mid-January (mentioned in *The Washington Post* editorial above), journalist Joanna Walters from *The Guardian* wrote that the decision was “a blow to the president’s high-profile mission to revive the struggling US coal industry”.⁹ At the end the month, Kenneth Vogel and Rachel Shorey in *The New York Times* outlined shadowy carbon-based industry donations to the Trump Administration that may help explain these against-the-grain pro-coal stances.¹⁰ Nonetheless, in the US State of the Union address by the President on January 30, Trump championed “beautiful and clean coal” in energy priorities going forward in 2018, despite some factual challenges mentioned by the editorial team in *The Australian*.¹¹

In January, coverage relating primarily to **ecological** and **meteorological** issues garnered attention. There were a number of stories about extreme weather events around the world. For example, a ‘bomb cyclone’ in the Northeast began the month¹². Also, James Queally, Melissa Etehad, and Brittny Mejia reported in the *Los Angeles Times* on how the southern California mudslides related to preceding wildfires and flood events across the state.¹³

Media accounts also focused on primarily **scientific** dimensions of climate change and global warming. The most media attention in the month focused on the temperature records set in

2017. For example, journalist Damian Carrington at *The Guardian* was one of many reporters and outlets that covered news that 2017 was the warmest year on record without an El Niño, and the third warmest year after 2016 and 2015.¹⁴

FEBRUARY

February saw media attention to climate change and global warming go down 23% throughout the world from the previous month of January 2018. This was the case across most regions: Asia was down 30%, Central/South America dropped 9%, Europe decreased 26%, Oceania dropped 7%, and North America was down 34%. The exceptions were Africa and in the Middle East. Global numbers were about half those (58% less) from counts the year before (February 2017). The high levels of coverage in February 2017 were attributed to coverage of movements of the newly anointed Donald J. Trump Administration in the United States (US). At the country level in February 2018, coverage also went down in most countries compared to the previous month: Germany (-5%), Canada (-13%), Australia (-13%), the United Kingdom (UK) (-17%), India (-25%), Spain (-34%), and the United States (-42%). It was just up slightly in New Zealand (+6%). Radio coverage in February 2018 compared to the previous month was also down (-62%).

Moving to considerations of content, Figure 6 shows word frequency data at the country levels in global newspapers and radio, juxtaposed with US newspapers and US television in February 2018.

Many media accounts in February focused on primarily **scientific** dimensions of climate change and global warming. For example, early in February a new study in *Science magazine* by Anthony Pagano and colleagues – perhaps primed by wintry weather in the Northern Hemisphere – found that consumption of high-fat prey by polar bears is becoming scarcer in ice-free conditions, and they therefore are having to work harder to find their calories¹⁵. Journalist Amina Khan in the

8 <https://www.usnews.com/news/best-states/west-virginia/articles/2018-01-03/pennsylvania-coal-mine-to-close-laying-off-nearly-400>

9 <https://www.theguardian.com/environment/2018/jan/08/donald-trump-coal-industry-plan-rejected-rick-perry>

10 <https://www.nytimes.com/2018/01/24/us/politics/pro-trump-fundraising-trump-hotel.html>

11 <https://www.theaustralian.com.au/news/world/us-politics/donald-trump-looks-to-hit-reset-in-first-state-of-the-union-address/news-story/1a0f1fc9995c13bfeb560ae867caa5b>

12 <http://thehill.com/policy/energy-environment/370313-trump-admin-uses-bomb-cyclone-to-push-coal-energy>

13 <http://www.latimes.com/local/lanow/la-me-ln-montecito-storm-mudflow-20180110.htmlstory.html>

14 <https://www.theguardian.com/environment/2018/jan/18/2017-was-the-hottest-year-on-record-without-el-nino-boost>

15 <http://science.sciencemag.org/content/359/6375/568>

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Figure 6. Word clouds showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in global radio (left), along with US newspapers (center), and US television (right) in February 2018.

Los Angeles Times reported that this research into free-ranging Arctic polar bear behavior and metabolism over a two year period confirmed suspicions that the loss of sea ice detrimentally impacts their health and survival, writing, “they burn calories at a faster rate than previously thought”.¹⁶ Later in February, a considerable amount of media attention focused in on a scientific article in *Proceedings of the National Academy of Sciences* by Steve Nerem (from CIRES at CU Boulder (also where MeCCO is based)) and colleagues. They found through examinations of twenty-five years of sea level data that the pace of sea level rise has increased.¹⁷ From the research, *Associated Press* journalist Seth Borenstein and many others wrote about how the researchers then projected that there would now be a global sea level rise higher than previously expected, of approximately two feet (0.6 meters) by 2100.¹⁸

Attention paid to **political** content of coverage during the month was often tethered to decarbonization trends. As one example, a report on increasing wind capacity in Europe garnered widespread media attention. Among stories, journalist Adam Vaughan from *The Guardian* wrote, “Britain accounted for more than half of the new offshore wind power capacity built in Europe last year, as the sector broke installation records across the continent”.¹⁹ As a second example, the

16 <http://www.latimes.com/science/sciencenow/la-sci-sn-polar-bears-metabolism-20180201-story.html>

17 <http://www.pnas.org/content/early/2018/02/06/1717312115>

18 <https://apnews.com/cf2f9386c024449aae126351d6c67cde/Satellites-show-warming-is-accelerating-sea-level-rise>

19 <https://www.theguardian.com/environment/2018/feb/06/uk-built-half-of-europes-offshore-wind-power-in-2017>

fate of coal generated a number of stories as well. While a study from the US Appalachian Regional Commission noted that coal production in that region has fallen precipitously²⁰, other stories covered how US Trump Administration policy action has reversed these trends in the short term. For instance, Journalist Kris Maher from *The Wall Street Journal* wrote, “Miners in Indiana and other states are getting a small lift from global markets: American companies are shipping more coal to Europe and Asia, helping to stop the years long drop in the number of U.S. mining jobs. The latest job increase runs counter to the long-term decline in coal used to generate electricity in the U.S., as coal-fired power plants are closed in favor of plants that burn cheap, abundant and cleaner natural gas ...The stronger export market is translating into a bump in coal-mining jobs”²¹.

Across the globe in February, stories also intersected with the **cultural** dimensions. For example, a *New York Times* piece by Maggie Astor entitled ‘No children because of climate change? Some people are considering it’ focused on how an uncertain climate future has played a role in childbearing decisions among interviewees ages 18 to 43 in the US.²²

Meanwhile in February, coverage relating primarily to **ecological** and **meteorological** issues continued to draw attention. To illustrate, continued impacts from hurricane damage – particularly hurricanes Irma and Maria – whipped up media attention.

20 https://www.arc.gov/research/researchreportdetails.asp?REPORT_ID=141

21 <https://www.wsj.com/articles/coal-jobs-get-a-boost-from-exports-1519473600>

22 <https://www.nytimes.com/2018/02/05/climate/climate-change-children.html>

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One representative story by writer Tim Craig and photojournalist Bonnie Jo Mount called 'Shredded roofs, shattered lives' in *The Washington Post*²³ was emblematic of coverage that touched on cultural and societal dimensions and reverberations as they related to ecological/meteorological facets of climate change. In addition, record temperatures in the Arctic in late February generated further coverage. For example, in a piece entitled 'North Pole surges above freezing in the dead of winter, stunning scientists', *Washington Post* journalist Jason Samenow wrote, "The Arctic's temperatures are soaring, with one analysis estimating the North Pole edged above freezing temperatures last weekend even as polar winter continues without sunlight. Although there are no direct temperature measurements at the North Pole, the U.S. Global Forecast System model pegged the temperature as high as 35 degrees Fahrenheit (2 degrees Celsius) – more than 50°F (30°C) above normal".²⁴

These **cultural** and **ecological/meteorological** infused stories wove back into **political** dimensions of disaster relief responses now five months since the tragedies struck in the Caribbean Basin. For instance, *US National Public Radio's* Greg Allen reported on the weak state of health care services in the US Virgin Islands.²⁵

MARCH

Media attention to climate change and global warming in March was up 20% throughout the world from the previous month of February 2018. Coverage in Asia was up 44%, Europe increased 17%, Oceania went up 17%, and North America was up 23%. Central/South America dropped 10%, while coverage in Africa decreased 31%. In the Middle East, numbers remained relatively on par with February 2018 counts. Global numbers were

23 <https://www.washingtonpost.com/news/national/wp/2018/02/06/feature/as-tourism-returns-hurricane-recovery-in-the-virgin-islands-is-leaving-some-residents-behind>

24 <https://www.washingtonpost.com/news/capital-weather-gang/wp/2018/02/26/north-pole-surges-above-freezing-in-the-dead-of-winter-stunning-scientists>

25 <https://www.npr.org/2018/02/04/582256476/in-the-u-s-virgin-islands-health-care-remains-in-a-critical-state>

about a third though of those (66% less) from counts a year previously (March 2017) when a great deal of global media attention was focused on US President Donald J. Trump's plans to dismantle former US President Barack Obama's Climate Action Plan along with high winter temperatures in northern locations like the Arctic circle. At the country level in March 2018, coverage went down compared to February only in Germany (-29%). It was up in all other countries monitored: the United Kingdom (UK) (+17%), Canada (+7%), Australia (+4%), India (+59%), Spain (+26%), New Zealand (+42%) and the United States (+30%). Coverage in six world radio sources went up from the previous month by 44%. Figure 7 shows word frequency data at the country levels in global newspapers and radio, juxtaposed with US newspapers and US television in March 2018.

Many media accounts in March focused on primarily **political** content associated with climate change and global warming. For example, at the start of March, it was revealed through leaked emails to *The New York Times* that the location and accessibility of oil and natural gas drove decision-making by the Trump Administration to open up Bears Ears National Monument in southeastern Utah. In email exchanges with the US Department of Energy, top US elected officials like Utah Republican Senator Orrin Hatch is credited with pushing for the shrinking of the protected space by 85% in order to help resolve commercial mineral rights disputes (specifically coal deposits in the Kaiparowits plateau).²⁶ As another example, journalists William Boston and Max Bernhard from *The Wall Street Journal* reported that the German automakers Volkswagen (who had been previously found guilty in an emissions test cheating scandal) announced plans to produce up to 3 million electric vehicles each year through 2025.²⁷ And in later March, journalist Chris Mooney from *The Washington Post* ran one of many stories in media outlets

26 <https://www.nytimes.com/2018/03/02/climate/bears-ears-national-monument.html>

27 <https://www.wsj.com/articles/volkswagen-vows-to-overtake-tesla-with-worlds-largest-electric-car-fleet-1520955348>

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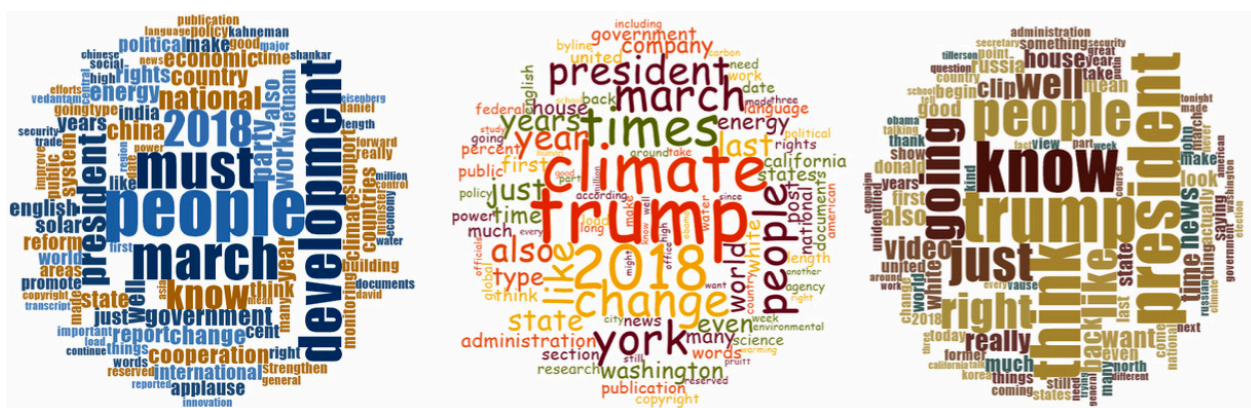


Figure 7. Word clouds showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in global radio (left), along with US newspapers (center), and US television (right) in March 2018.

around the globe of a conscious re-coupling of carbon dioxide (CO₂) emissions and GDP. Departing from a trend in the last three years of flat CO₂ emissions amid growing economies, a released International Energy Agency report announced a 1.4% CO₂ increase in 2017, saying “if the world wants to cut emissions quickly and meet climate goals laid out in the Paris climate agreement, clean energy needs to grow about five times faster each year between now and 2040”.²⁸ As a final example of political content in March, the *Financial Times* reported on new plans afoot in Saudi Arabia (by a Japanese investment company called SoftBank) to build what would become the world’s largest solar-power-generation-project, bringing along approximately 100,000 clean energy jobs to the Middle East.²⁹

Meanwhile in March, coverage relating primarily to the **cultural** dimensions continued to draw attention. To illustrate, journalist Fiona Harvey wrote in *The Guardian* about a new World Bank report that forecasts as many as 143 million displaced people by 2050 (mainly from South Asia, Latin America and Sub-Saharan Africa) due to the impacts of climate change.³⁰ On the consumption side of the equation, journalist

28 <https://www.washingtonpost.com/news/energy-environment/wp/2018/03/21/bad-news-for-the-climate-coal-burning-and-carbon-emissions-are-on-the-rise-again>

29 <https://www.ft.com/content/66277e50-324b-11e8-b5bf-23cb17fd1498>

30 <https://www.theguardian.com/environment/2018/mar/19/climate-change-soon-to-cause-mass-movement-world-bank-warns>

Zlati Meyer from *USA Today* reported on a mid-March announcement from global food chain McDonald’s that they would be cutting their CO₂ emissions from their supply chain (e.g. beef production practices) by approximately 31% by 2030.³¹

Media stories also intersected with **ecological** and **meteorological** issues across the globe in March 2018. For example, the multiple winter storms that hit the Northeastern US (called ‘Nor’easters’) garnered media attention. For example, Christopher Joyce from *US National Public Radio* reported on flooding dimensions of these storms becoming a new normal in future years, according to research from NOAA. Joyce quoted NOAA’s Dr. William Sweet who said, “The numbers are staggering...The problem is going to become chronic rather quickly. It’s not going to be a slow, gradual change”.³²

Attention was also paid to **scientific** dimensions of climate change and global warming. For instance, journalist Jonathan Watts from *The Guardian* covered a new report from the United Nations-sponsored Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. It stated that the world’s biodiversity has been shrinking at an alarming rate, and human activities like climate change are responsible.

31 <https://www.usatoday.com/story/money/2018/03/20/mcdonalds-plans-cut-its-greenhouse-gas-emissions-36-2030/439755002/>

32 <https://www.npr.org/sections/thetwo-way/2018/03/05/590901652/new-report-predicts-rising-tides-more-flooding>

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The report outlined stark predictions such as Africa losing half of bird and mammal species by 2100, Asia losing all of its commercial fishing by mid-century, and a 15% reduction in plant and animal species in the Americas by 2050.³³ Also, journalists Kendra Pierre-Louis, Nadja Popvich and Adam Piece at *The New York Times* reported on satellite measurements from the National Snow and Ice Data Center (NSIDC) (a center within the Cooperative Institute for Research in Environmental Sciences where MeCCO is also housed) showed the second-lowest annual Arctic ice cover maximum ever recorded. NSIDC Director Mark Serreze lamented, "it's a case where we hate to say we told you so, but we told you so ... we've probably known for 100 years that as the climate warms up in response to loading the atmosphere with greenhouse gases, we would see the changes first in the Arctic".³⁴

APRIL

April coverage of climate change or global warming across all sources showed media attention to climate change and global warming up 6% throughout the world from the previous month of March 2018. Newspaper coverage in Oceania went up 8%, and North America increased 19%. Central/South America dropped 19%, while coverage in Africa, Asia, Europe and the Middle East held relatively steady. At the country level in April 2018, newspaper coverage went down compared to March in Spain (-4%), India (-7%) and Germany (-6%). It was up in the other countries monitored: Canada (+17%), the United Kingdom (UK) (+7%), Australia (+4%), New Zealand (+14%) and the United States (+20%). Meanwhile, US television coverage increased 26% from the previous month, while the six world radio sources monitored more than doubled from coverage in the previous month.

Global newspaper counts were about a quarter though of those (73% less) from counts a year ago (April 2017), when a great deal of

33 <https://www.theguardian.com/environment/2018/mar/23/destruction-of-nature-as-dangerous-as-climate-change-scientists-warn>

34 <https://www.nytimes.com/interactive/2018/03/23/climate/arctic-ice-maximum.html>

global media attention was focused on the Trump Administration's dispositions towards the Paris Climate Agreement. For example, journalist Coral Davenport of *The New York Times* reported that Mr. Trump intends to make a decision before the Group of Seven (G7) meeting in May 2017 on whether or not the US will follow through with its commitments under the Agreement.³⁵ Davenport suggested that President Trump's policy advisors are urging him to keep the US committed, while journalists Chris Mooney and Brady Dennis at *The Washington Post* reported that US Environmental Protection Agency (EPA) Administrator Scott Pruitt was lobbying for withdrawal.³⁶ Meanwhile, both the 'March for Science' and the 'People's Climate March' garnered significant coverage in April 2017. The 'March for Science' included a large demonstration in Washington D.C., but similar protests took place in hundreds of cities across the U.S. and around the world.³⁷ *The Bangkok Post* reported that Australia, New Zealand, and Germany also saw large turnouts as part of the 'March for Science'.³⁸

Figure 8 shows word frequency data at the country levels in global newspapers and radio, juxtaposed with US newspapers and US television in April 2018.

Many media accounts in April focused on primarily *political* content associated with climate change and global warming. For example, US EPA Administrator Scott Pruitt earned a great deal of media attention (and scrutiny) for a range of accusations of inappropriate conduct and reckless spending of tax dollars. Among a number of outlets covering these stories in April, journalist Jacqueline Alemany from *CBS News* reported that "EPA chief Scott Pruitt met with lobbyist Steven Hart, who rented Pruitt a condo in Washington, D.C., for \$50 a night...Hart's

35 <https://www.nytimes.com/2017/04/18/us/politics/trump-advisers-paris-climate-accord.html>

36 <https://www.washingtonpost.com/news/energy-environment/wp/2017/04/14/trumps-epa-chief-scott-pruitt-calls-for-an-exit-to-the-paris-climate-agreement/>

37 <https://www.nytimes.com/2017/04/22/science/march-for-science.html>

38 <http://www.bangkokpost.com/news/general/1236594/scientists-speak-out-worldwide>

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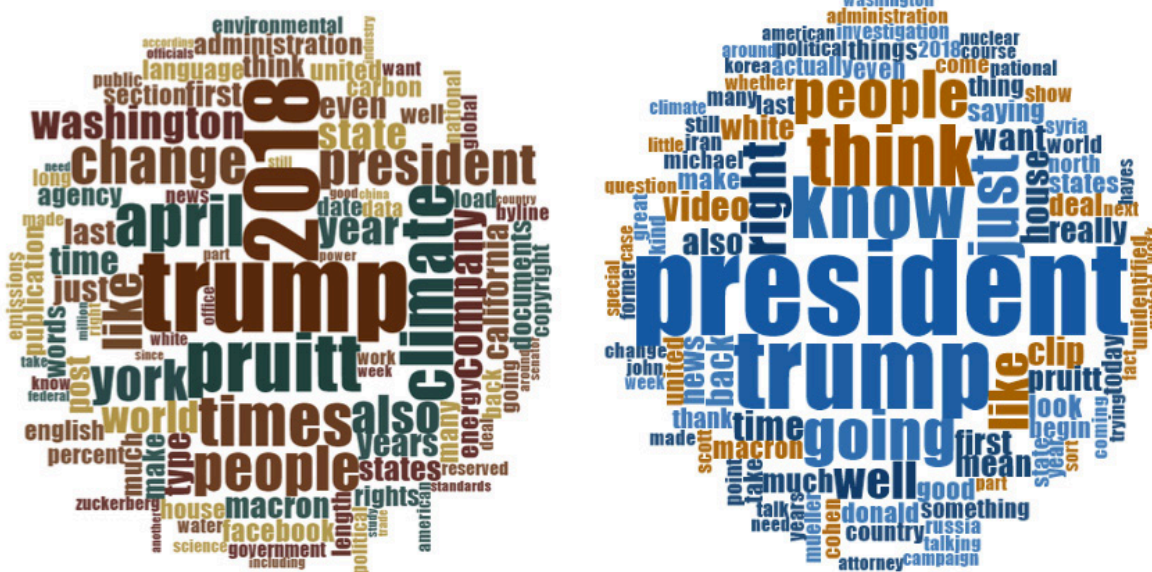


Figure 8. Word clouds showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in US newspapers (left) and US television (right) in April 2018.

lobbying firm, Williams & Jensen, revealed in a filing that Hart was a registered lobbyist for Smithfield Foods in the first quarter of 2018. According to emails obtained by CBS News, Hart and Smithfield Foods executive Dennis Treacy met with Pruitt in July 2017.”³⁹ This and other allegations earned him a series of hearings in the US Congress later in the month, as reported by Louise Radnovsky and Heidi Vogt of *The Wall Street Journal*.⁴⁰

As another example of *political* content, though outside the US, *BBC* journalist David Shukman reported on the landmark agreement made at the International Maritime Organization talks, to cut emissions of greenhouse gases in the global shipping industry. Shukman noted that “shipping generates roughly the same quantity of greenhouse gas as Germany and, if it were accounted for as a nation, would rank as the world’s sixth biggest emitter. Like aviation, it had been excluded from climate negotiations because it is an international activity while both the Kyoto Protocol and the Paris Agreement involved national pledges to reduce greenhouse gases”.⁴¹

39 <https://www.cbsnews.com/news/scott-pruitt-epa-met-with-steven-hart-lobbyist-who-rented-him-condo/>

40 <https://www.wsj.com/articles/epa-administrator-faces-grilling-on-capitol-hill-1524699106>

41 <http://www.bbc.com/news/science-environment-43759923>

Meanwhile in April, coverage relating primarily to the **cultural** dimensions continued to draw attention. To illustrate, journalist Ryan Miller from *USA Today* reported on marches for science around the world, commencing April 14th. The article characterized the second annual gatherings as “500 marches worldwide to send one clear message to public officials: that evidence-based policy decisions are critical and science should not be ignored”.⁴² Journalist Susan Svrluga from *The Washington Post* profiled a number of marchers and their motivations, while also noting that the “March for Science’s evolution over the past year has included transforming into a nonprofit with a broader mission: to support science and research policy through campaigns, outreach and marches”.⁴³

Media stories also intersected with *scientific* as well as *ecological* and *meteorological* issues across the globe in April 2018. For example, journalist Ben Smee from *The Guardian* reported on a new study in *Nature*⁴⁴ that found that nearly a third of coral in the Great Barrier Reef in

42 <https://www.usatoday.com/story/news/nation/2018/04/14/march-science-2018/517294002/>

43 https://www.washingtonpost.com/local/march-for-science-returns-to-the-district-on-saturday-for-a-second-year/2018/04/13/40113f00-3f23-11e8-974f-aacd97698cef_story.html

44 <https://www.nature.com/articles/s41586-018-0041-2>

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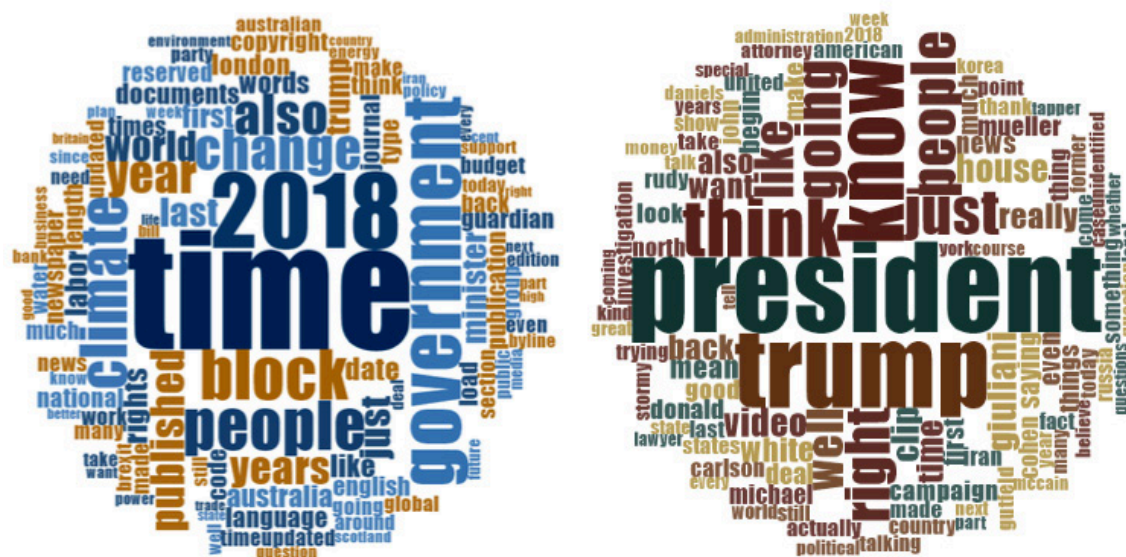


Figure 9. Word clouds showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in UK newspapers (left) and US television (right) in May 2018.

Australia died during a marine heatwave in 2016 associated with climate change.⁴⁵ The study's lead author Dr. Terry Hughes nonetheless offered a hopeful comment in saying that "the Great Barrier Reef is certainly threatened by climate change, but it is not doomed if we deal very quickly with greenhouse gas emissions. Our study shows that coral reefs are already shifting radically in response to unprecedented heatwaves."

MAY

Media coverage of climate change and global warming went down 13% throughout the world from the previous month of April 2018. Newspaper coverage in the Middle East and Oceania went down 35% and 23% respectively, while Asia dipped 10%, Europe diminished 6%, North America decreased 12% and African coverage was 18% lower than in April. Central/South America dropped 8%, while coverage in Africa held relatively steady. At the country level in May 2018, newspaper coverage went down compared to April in Australia (-13%), New Zealand (-37%), India (-7%), the United Kingdom (UK) (-8%), Germany (-11%), and the United States (-17%). It held steady in Canada. Meanwhile, US television coverage decreased 14% from the previous month, while the six

45 <https://www.theguardian.com/environment/2018/apr/19/great-barrier-reef-30-of-coral-died-in-catastrophic-2016-heatwave>

world radio sources monitored diminished 37% from coverage in the previous month. Global newspaper coverage was about 10% lower than counts the previous year (May 2017).

Figure 9 shows word frequency data in UK newspapers, juxtaposed with US television in May 2018.

Many media accounts in May focused on primarily *political* – often tinged with *economic* – content associated with climate change and global warming. For example, a report called the 'Global Electric Vehicles Outlook' from the Paris-based International Energy Agency (IEA) at the end of May noted a record year for electric cars where "electric and plug-in hybrid cars on the world's roads exceeded 3 million in 2017, a 54% increase compared with 2016" while "China remained by far the largest electric car market in the world, accounting for half sold" in 2017. The report noted, "The uptake of electric vehicles is still largely driven by the policy environment. The ten leading countries in electric vehicle adoption all have a range of policies in place to promote the uptake of electric cars".⁴⁶ NBC journalist Tom DiChristopher reported that the IEA "sees a pathway to 220 million electric vehicles by 2030, provided the world takes a more aggressive

46 <https://www.iea.org/newsroom/news/2018/may/strong-policy-and-falling-battery-costs-drive-another-record-year-for-electric-ca.html>

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approach to fighting climate change and cutting emissions than currently planned"⁴⁷.

Meanwhile in May, journalist Tom Embury-Dennis from *The Independent* in the UK reported that Costa Rica's new president – Carlos Alvarado – has promised to begin a process to ban fossil fuels in the country, making it the first decarbonized nation on planet Earth. He said, "Decarbonisation is the great task of our generation and Costa Rica must be one of the first countries in the world to accomplish it, if not the first".⁴⁸ Bridging *political* with the *cultural* dimensions of climate change, in mid-May the *Financial Times* printed an open letter where global investors put pressure on multi-national oil and gas companies to take urgent action on climate change. Journalists Attracta Mooney, Andrew Ward and Leslie Cook wrote "big investors have demanded oil and gas companies intensify their efforts on climate change, in the clearest sign yet that asset managers and pension funds are increasingly concerned about the financial impact of global warming".⁴⁹ The open letter was co-authored by sixty investors accounting for US\$10.5 trillion in assets, before upcoming annual shareholder meetings. They included Amundi (Europe's largest asset manager), Aberdeen Standard Investments, Axa Investment Managers, BNP Paribas Asset Management, Fidelity International, Newton Investment Management and Legal & General Investment Management.⁵⁰

Meanwhile in May, coverage relating primarily to the *cultural* dimensions continued to draw attention. To illustrate, at the start of the month, Alaskan NBC affiliate KTUU noted that the 101st edition of the Nenana Ice Classic came to an end. This is an annual cultural sensation where participants pay a \$2.50 entry fee to guess the correct date and time of the ice break in the

47 <https://www.cnbc.com/2018/05/30/electric-vehicles-will-grow-from-3-million-to-125-million-by-2030-iea.html>

48 <https://www.independent.co.uk/environment/costa-rica-fossil-fuels-ban-president-carlos-alvarado-climate-change-global-warming-a8344541.html>

49 <https://www.ft.com/content/959d985c-59e4-11e8-bdb7-f6677d2e1ce8>

50 <https://www.ft.com/content/fda63c26-5906-11e8-b8b2-d6ceb45fa9d0>

Tanana River near Fairbanks. This year's winners split the \$225,000 jackpot.⁵¹ As an example of a cross-cutting *scientific* and *cultural* story, a study in *Nature Climate Change* by Manfred Lenzen and colleagues calculated that the carbon footprint of global tourism currently accounts for approximately 8% of global greenhouse gas emissions (attributed primarily to tourism-related emissions associated with transport, shopping and food consumption/production/distribution). Moreover, the study authors predicted this contribution may grow about 4% per year.⁵² Journalist Deborah Netburn from the *Los Angeles Times* summed it up when she wrote, "The people of Earth are traveling more often and farther than they ever have before, and it's taking a toll on the environment. For the first time, researchers have measured the carbon footprint of all aspects of global tourism, including air flights, car rentals, lodging and even the souvenirs travelers buy once they reach their destination".⁵³

Media stories also intersected with *scientific* stories about climate change or global warming in May 2018. For example, a study in *Science Advances* by Sebastian Bathiany, Vasilis Dakos, Marten Scheffer and Timothy M. Lenton found that poorer countries will soon face increased swings between temperature extremes as a result of climate change.⁵⁴ Journalist Christopher Joyce from *US National Public Radio* reported that the study also found that "temperature variability will be especially pronounced in the Amazon Basin and parts of Africa and Southeast Asia – wet places where a warming climate is drying things out".⁵⁵ As another example, a study by Dr. Chunwu Zhu and colleagues published a study entitled 'Carbon dioxide (CO₂) levels this century will alter the protein, micronutrients, and vitamin content of rice grains with potential health consequences

51 <http://www.ktuu.com/content/news/Nenana-Ice-Classic-2018-481430421.html>

52 <https://www.nature.com/articles/s41558-018-0141-x>

53 <http://www.latimes.com/science/sciencenow/la-sci-sn-global-tourism-carbon-footprint-20180507-story.html>

54 <http://advances.sciencemag.org/content/4/5/eaar5809>

55 <https://www.npr.org/sections/goatsandsoda/2018/05/02/607800921/a-temperature-roller-coaster-could-be-coming>

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for the poorest rice-dependent countries' where they found that increased CO₂ is connected with declining levels of key vitamins including iron and zinc.⁵⁶ Journalist Nicola Davis from *The Guardian* quoted United States Department of Agriculture scientist (and study co-author) Dr. Lewis Ziska who said, "About two billion people rely on rice as a primary food source and among those that are the poorest, often the consumption of rice in terms of their daily calories is over 50%. Anything that impacts rice in terms of its nutritional quality is going to have an impact."⁵⁷

Finally, media accounts delved into **ecological** and **meteorological** issues across the globe in May 2018. For example, news broke that changing climate conditions have contributed to a tripling of the number of vector-borne illnesses from mosquito, tick and flea bites in the US between 2004 and 2016.⁵⁸ Reporter Jacqueline Howard from CNN noted that this is "a growing public health problem".⁵⁹ Also in May, a heat wave centered in Karachi, Pakistan stressed emergency services as many dozens of residents have died from the heat. Journalist Salman Masood from *The New York Times* reported that "the Karachi authorities have urged people to stay indoors this week and keep themselves hydrated. Frequent power failures have compounded the misery. The heat wave coincides with Ramadan, the Muslim holy month, when Muslims fast from sunrise to sunset."⁶⁰

JUNE

June saw media attention to climate change and global warming up 6% throughout the world from the previous month of May. There were upticks in Asia (up 10%), the Middle East (up 34%), Africa (up 19%), Central/South America (up 38%), and Europe (up 12%), while holding relatively steady in Oceania. The Media and Climate Change Observatory

56 <http://advances.sciencemag.org/content/4/5/eaq1012>

57 <https://www.theguardian.com/environment/2018/may/23/climate-change-will-make-rice-less-nutritious>

58 https://www.cdc.gov/mmwr/volumes/67/wr/mm6717e1.htm?s_cid=mm6717e1_x

59 <https://www.cnn.com/2018/05/01/health/ticks-mosquito-borne-diseases-cdc-study/index.html>

60 <https://www.nytimes.com/2018/05/21/world/karachi-heat-dead.html>

(MeCCO) detected a decrease in coverage in North America (down 6%). However, the global numbers were down about 35% from counts a year ago (June 2017), when the high levels of coverage in June 2017 were largely attributed to reactions to United States (US) President Donald J. Trump's withdrawal from the Paris Climate Agreement. At the country level, coverage held relatively steady from the previous month in Australia and New Zealand. Meanwhile, it went up from the previous month in India (+15%), Spain (+40%), the United Kingdom (UK) (+12%), Canada (+21%), and Germany (+56%), while it went down in the United States (-18%).

Figure 10 shows word frequency data at the country levels in Indian newspapers in June 2018. The four representative national level English language sources in India – *The Times of India*, *Hindustan Times*, *The Indian Express*, and *The Hindu* – was an illustration of a wider trend of the waning Trump influence over media coverage outside US borders. This is one indication that the influence of the 'Trump Dump' was weakening outside the 'walls' of the US. Overall, in the Indian press, Trump was only mentioned once in the June 2018 media coverage. In May 2018, Trump was invoked 75 times in 353 articles in June (approximately 0.2 times per article on average). At first glance, Indian media attention paid to the climate-water nexus, to multi-scale governance in the face of climate challenges, and to issues around climate change impacts on humans, ecosystems and wildlife appears to be a promising trend toward sustained and substantive engagement on climate change in the public arena.

In June 2018, there were many stories that focused primarily on **political** dimensions of climate change. For example, asset managers have taken up strong stances in Europe to vote against reappointing leadership at firms that have not taken action on climate change. Journalist Katherine Griffin from *The Times* (UK) reported that Legal & General Investment Management "has taken action against companies worldwide that it believes are not fighting climate change, in one of the most interventionist policies by an

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Figure 10. A word cloud showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in Indian newspapers in June 2018.

investment house".⁶¹ This manager of people's savings and investments announced plans to sell shares from eight offending firms, including Dominion Energy and Occidental Petroleum. Across the globe in June, there was a range of stories that intersected with the **cultural** arena. For example, in mid-June Pope Francis convened a meeting of oil and gas titans - including chairmen and chief executives of ExxonMobil and British Petroleum - for a two-day conference where he urged these leaders to become advocates for the emergent global energy transition. Coverage was widespread, including reporting by Bradley Olson and Francis X. Rocca at *The Wall Street Journal* who wrote that Pope Francis exclaimed, "Civilization requires energy, but energy use must not destroy civilization!"⁶²

In June, coverage relating primarily to *ecological* and *meteorological* issues garnered attention. There were a number of stories about extreme weather events around the world. For example, Northern Hemisphere wildfires captured a great deal of media attention in June. *The New York Times* opinion writer Sarah Vowell commented from Bozeman, Montana in the US that "there

61 <https://www.thetimes.co.uk/article/l-g-dumps-firms-over-green-issues-hkvbdpcnn>

62 <https://www.wsj.com/articles/pope-francis-criticizes-continued-search-for-fossil-fuels-at-meeting-with-oil-executives-1528547509>

are no longer four seasons, only two: winter and wildfire".⁶³ In typically colder climates, many media accounts covered how the rate of Antarctic ice melt has tripled over the past decade and is now raising sea levels half a millimeter each year. This **ecological/meteorological** issue was documented by a study by a team of researchers from the ice sheet mass balance inter-comparison exercise (IMBIE)⁶⁴ published in the journal *Nature*.⁶⁵ These researchers found that 40% of the Antarctic ice loss since 1992 actually melted between 2012 and 2017, and this translates to approximately 6 inches of average global sea-level rise by 2100. Journalist Doyle Rice from *USA Today* reported that "the total is equivalent to over 4 quintillion gallons of water added to the world's oceans, making Antarctica's melting ice sheets one of the largest contributors to rising sea levels. That amount of water is enough to fill over a billion swimming pools and cover Texas to a depth of nearly 13 feet."⁶⁶ Journalist Kendra Pierre-Louis from *The New York Times* noted that "between 60% and 90% of the world's freshwater is frozen in the ice sheets of Antarctica, a continent roughly the size of the United States and Mexico combined".⁶⁷

Media accounts also focused on primarily *scientific* dimensions of climate change and global warming. For instance, an influential study by Jean-Francois Mercure and colleagues in the journal *Nature Climate Change* found that the threat of obsolete carbon assets held by carbon-based industry entities has reached a crisis point.⁶⁸ The authors attribute these acute threats to burgeoning mode-switching to renewable energy sources along with increasing investments in low-carbon technologies. This somewhat quiet crisis to date has been dubbed as a 'carbon bubble' in the market, where

63 <https://www.nytimes.com/2018/06/13/opinion/wildfire-west-yellowstone.html>

64 <http://imbie.org>

65 <https://www.nature.com/articles/s41586-018-0179-y.epdf>

66 <https://www.usatoday.com/story/news/2018/06/13/global-warming-melted-over-3->

trillion-tons-antarctic-ice-since-1992/698291002/
67 [https://www.nytimes.com/2018/06/13/climate/
antarctica-ice-melting-faster.html](https://www.nytimes.com/2018/06/13/climate/antarctica-ice-melting-faster.html)

68 <https://buff.ly/2JmlaTj>

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carbon-based energy prices exceed their value because actual demand for fossil fuels could quickly diminish and carbon-based companies would then be forced to strand their assets and face crippling costs without returns. *The Guardian* journalist Fiona Harvey reported that, "Plunging prices for renewable energy and rapidly increasing investment in low-carbon technologies could leave fossil fuel companies with trillions in stranded assets and spark a global financial crisis".⁶⁹ Another study in June that garnered considerable media attention came from the journal *Nature* by James Kossin from the National Oceanic and Atmospheric Administration (NOAA).⁷⁰ He found that hurricanes and typhoons are moving 10% more slowly between 1949 and 2016, allowing them to do more damage over a given area. In one media report by journalist Amin Khan at the *Los Angeles Times*, she wrote that the findings "describe a clear link between global warming and the behavior of these severe storms - with potentially devastating consequences for the people that live near them".⁷¹ At the end of June, a data release from the World Resources Institute revealed that rates of tropical deforestation jeopardized the achievement of climate mitigation and adaptation goals. Using satellite data to survey forest cover around the world, their analyses found that in 2017 tropical forests lost an area the size of Bangladesh, and this rate of deforestation is the equivalent of approximately forty soccer pitches worth of trees disappearing each minute. Journalist Sasha Ingber from *US National Public Radio* reported that "The report presents a bleak picture: Some areas are experiencing prolonged loss of lush forest, while new areas are becoming hot spots".⁷²

72

69 <https://www.theguardian.com/environment/2018/jun/04/carbon-bubble-could-spark-global-financial-crisis-study-warns>

70 <https://www.nature.com/articles/s41586-018-0158-3.epdf>

71 <http://www.latimes.com/science/sciencenow/la-sci-sn-slower-hurricanes-cyclones-20180606-story.html>

72 <https://www.npr.org/2018/06/27/623895283/tropical-forests-suffered-second-worst-loss-of-trees-on-record-last-year>

JULY

July coverage of climate change and global warming was up 7% throughout the world from the previous month of June 2018, but down about 2% from July last year. Increases were detected in Asia (up 7%), Africa (up 9%), Europe (up 11%), Oceania (up 16%), and North America (up 5%), while going down in the Middle East and Central/South America (-23% in each). At the country level, coverage went up from the previous month in Australia (+20%), Germany (+28%), New Zealand (+9%), the United Kingdom (UK) (+13%), and the United States (+27%), while it went down in Canada (-29%), India (-7%), and Spain (-31%). Figure 11 shows word frequency data at the Latin American newspapers in July 2018.

In July, considerable coverage related to **ecological** and **meteorological** issues, and this spun into a meta-analysis of the extent to which media connected extreme events (e.g. heat waves) with a changing climate. Beginning the month, there were a number of stories about extreme weather events around the world. For examples, in July heat records were set in many northern hemispheric countries. In particular, record setting high temperatures in cities like Montreal, Quebec in Canada and Los Angeles, California in the US threatened vulnerable populations with unprecedented heat. While Alanne Orjoux from *CNN* reported on 17 heat-related deaths in Quebec at the time of reporting⁷³ (raised a few days later to 33, according to *ABC News* (Australia)⁷⁴), over in the UK, the *BBC* reported record-setting heat across England and Wales.⁷⁵ Meanwhile, southern California baked in many all-time temperature records. Journalist Shelby Grad from *Los Angeles Times* wrote that "the heat brought a big surge in power use – and power outages ... Peak energy demand climbed to 6,256 megawatts Friday, knocking down the previous July record of 6,165 megawatts set in 2006 and making it the fifth-highest peak demand recorded in the

73 <https://www.cnn.com/2018/07/04/americas/quebec-heat-deaths/index.html>

74 <http://www.abc.net.au/news/2018-07-06/canada-record-breaking-heat-wave-kills-33-people-in-quebec/9947370>

75 <https://www.bbc.com/news/uk-wales-44704958>

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Figure 11. Word cloud showing frequency of words (4 letters or more) invoked in media coverage of 'cambio climático' or 'calentamiento global' in Spanish or 'mudanças climáticas' or 'aquecimento global' in Portuguese (climate change or global warming) in Latin American newspapers in July 2018. The sources are *El Universal* (México), *Reforma* (México), *La Nación* (Costa Rica), *El Comercio* (Perú), *El Comercio* (Ecuador), *El País* (Uruguay), *La República* (Uruguay), *El Tiempo* (Colombia), *La Razón* (Bolivia), *O'Globo* (Brasil), *La Nación* (Argentina), *El Nacional* (Venezuela), and *El Mercurio* (Chile).

city's history ... Consumers were urged to reduce their electricity usage from 2 p.m. to 9 p.m. Saturday, the hours when high use is typical. (Air conditioners pull much of that power, but other appliances such as washing machines, dryers and dishwashers also contribute).⁷⁶ In mid-July, *The Guardian* journalist Jonathan Watts reported that "Record high temperatures have been set across much of the world this week as an unusually prolonged and broad heatwave intensifies concerns about climate change" and a "concern is that weather fronts - hot and cold - are being blocked more frequently due to climate change. This causes droughts and storms to linger, amplifying the damage they cause. This was a factor in the recent devastating floods in Japan, where at least 150 people died after rainfall up to four times the normal level".⁷⁷

⁷⁶ <http://www.latimes.com/local/lanow/la-me-record-heat-20180707-story.html>

⁷⁷ <https://amp.theguardian.com/environment/2018/jul/13/heatwave-sees-record-high-temperatures-set-around-world-this-week>

On the heels of the flooding in Japan, a heat wave then swept over the country where many without power due to the flooding were vulnerable to the high daytime and nighttime temperatures. Journalist Elaine Lies from *The Sydney Morning Herald* wrote, "An intense heat wave has killed at least 14 people over a three-day long weekend in Japan, media reported on Tuesday, as high temperatures hampered recovery efforts in flood-hit areas where more than 200 people died last week".⁷⁸ At the end of July, journalists Saw Nang and Richard C. Paddock of *The New York Times* reported on Myanmar flooding that had displaced over 16,000 people by July 31. For the story they interviewed Myanmar's minister of social welfare, relief and resettlement, Win Myat Aye, who blamed heavy monsoon rains and climate change for the recent flooding. He said, "I just want to alert the people that climate is changing all over the world and we all have to be careful about it".⁷⁹ However, while these particular stories made connections between weather and climate change, they were exceptions rather than the norm.

In fact, as the stories of summer heat and other extremes (e.g. flooding, wildfires) unfolded in July, analyses of media links (or lack thereof) between weather and climate change emerged in media sources themselves. A *Los Angeles Times* opinion piece on July 15 titled 'Climate change is behind the global heat wave; why won't the media say it?' appeared to catalyze this set of reflections. Author Leah Stokes wrote "Although [media] reports (sic) on each fresh disaster - every fire, every hurricane, every flood - it tends to stop short of linking extreme weather events to global warming, as though the subject were the exclusive province of reporters on the climate beat".⁸⁰ Then on July 25, Emily Aitkin of *The New Republic* called out 'the media's failure to connect the dots on climate change, asking "why are some major news outlets still covering extreme weather like

⁷⁸ <https://www.smh.com.au/world/asia/killer-heat-wave-blankets-flood-ravaged-japan-20180717-p4zrxz.html>

⁷⁹ <https://www.nytimes.com/2018/07/30/world/asia/myanmar-floods-evacuate.html>

⁸⁰ <http://www.latimes.com/opinion/op-ed/la-oe-stokes-heat-wave-media-climate-change-20180715-story.html>

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it's an act of God?".⁸¹ From a UK perspective, on July 27 researcher Adam Corner drew out a lack of these connections when he wrote an opinion piece in *The New York Times* entitled 'Britain, Can We – Really – Talk About This Weather We're Having?'.⁸² Then on July 29, journalist Laurel Wamsley from *US National Public Radio* asked the question 'when the weather is extreme, is climate change to blame?'.⁸³ Following all these stories, at the end of the month, Daisy Dunne and Robert McSweeney from *Carbon Brief* catalogued "how the media has reported the extreme weather and how the coverage has – or has not – referenced climate change".⁸⁴ And at the end of the month, in a *New York Times* story entitled 'The Heat Is Coming in Waves and Surges', journalists Somini Sengupta, Tiffany May and Zia ur-Rehman wrote, "Is it because of climate change? Scientists with the World Weather Attribution project concluded in a study released Friday⁸⁵ that the likelihood of the heat wave currently baking Northern Europe is "more than two times higher today than if human activities had not altered climate." While attribution studies are not yet available for other record-heat episodes this year, scientists say there's little doubt that the ratcheting up of global greenhouse gases makes heat waves more frequent and more intense".⁸⁶

In July, attention was also paid to *political* content of coverage during the month. For example, in early July in the US the resignation of embattled and scandal-plagued Environmental Protection Agency (EPA) Administrator Scott Pruitt generated media attention. *Wall Street Journal* reporter Timothy Puko then followed up with coverage of incoming Administrator Andrew Wheeler who promised to be a 'stabilizing force'. However, Puko also pointed out that this stabilization was to be

⁸¹ <https://newrepublic.com/article/150124/media-failure-connect-dots-climate-change>

⁸² <https://www.nytimes.com/2018/07/27/opinion/britain-heatwave-climate-change.html>

⁸³ <https://www.npr.org/2018/07/29/633203732/when-the-weather-is-extreme-is-climate-change-to-blame>

⁸⁴ <https://www.carbonbrief.org/media-reaction-2018-summer-heatwaves-and-climate-change>

⁸⁵ <https://www.worldweatherattribution.org/analyses/attribution-of-the-2018-heat-in-northern-europe/>

⁸⁶ <https://www.nytimes.com/2018/07/30/climate/record-heat-waves.html>

engineered by someone who, before joining the EPA, spent "the last nine years as a lobbyist, often for energy companies, including the coal miner Murray Energy Corp., whose owner has been a major donor to Mr. Trump's campaign."⁸⁷

Across the planet in July there was a range of stories that intersected with the *cultural* arena. For example, journalist David Reid from *CNBC* reported that The Church of England will divest from companies that do not clearly strive over the next five years to meet the goals of the Paris Agreement. He wrote, "Polluting firms that fail to tackle climate change could be removed from The Church of England's £12 billion (\$16 billion) investment portfolio within five years. After a meeting of high level officials at the weekend, the church agreed to sell stakes in fossil-fuel companies by 2023 unless they can prove they are serious about tackling climate change".⁸⁸ As another example, over the weekend of July 21-22, young people from around the globe took to the streets for a march called 'Zero Hour'. This was stated as the beginning of an effort to pressure governments to more urgently confront climate change with intergenerational equity in mind. These marches took place in over twenty-four cities including Washington D.C. in the United States, London, England, and Butere, Kenya. Covering these events, journalist Stephanie Ebbs from *ABC News* reported that the organizing behind this emerging 'Zero Hour' social movement can be attributed in part from youth who met at a summer program at Princeton University last summer.⁸⁹ In the US at the end of July, young people scored a 'win' in the Supreme Court where media reported that the court turned down a Trump Administration request to dismiss a case from 2015 by twenty-one youth plaintiffs regarding climate damages.⁹⁰

⁸⁷ <https://www.wsj.com/articles/new-epa-head-andrew-wheeler-vows-to-be-stabilizing-force-after-pruitt-turmoil-1531656001>

⁸⁸ <https://www.cnbc.com/2018/07/09/church-of-england-could-pull-energy-stocks-from-16-billion-portfolio.html>

⁸⁹ <https://abcnews.go.com/Politics/18-18-young-people-vote-call-change-climate/story?id=56645176>

⁹⁰ <https://www.reuters.com/article/us-usa-court-climate/supreme-court-rejects-trump-bid-to-halt-climate-change-case-idUSKBN1KK2FY>

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Media accounts also focused on primarily *scientific* dimensions of climate change and global warming. For example, a new study by Ramakrishnan Durairajan, Carol Barford and Paul Barford warned that US internet access was a risk due to sea level rise. They found that over 4,000 miles of critical electric cable could be under water within the next decade and a half.⁹¹ Reporter Josh Gabatiss from The Independent (London) wrote, "Underground internet cables criss-crossing coastal regions will be inundated by rising seas within the next 15 years, according to a new study. Thousands of miles of fiber optic cables are under threat in US cities like New York, Seattle and Miami, and could soon be out of action unless steps are taken to protect them."⁹²

AUGUST

August media attention to climate change and global warming was up 17% throughout the world from the previous month of July 2018, and up about 42% from August last year. An increase was most pronounced in Oceania (up 55%), where Australian Prime Minister Malcolm Turnbull was replaced by Scott Morrison. Turnbull's downfall was widely attributed by media reports to internal party rejection of his stance on climate change emissions reductions. Figure 12 shows word frequency data in the dynamic spaces of Australian media coverage in August 2018.

In addition, North American coverage was up 27% in August, due primarily to media attention paid to the mid-month proposal by the US Trump Administration to replace the Clean Power Plan with what was dubbed the 'Affordable Clean Energy rule'. Elsewhere, moderate increases were also detected in Central/South America (up 18%), Africa (up 10%) and Europe (up 8%), while going down only in Asia (down 7%) this month compared to the previous month of July.

As these driving influences indicated,

91 <https://www.documentcloud.org/documents/4600140-Durairajan-ANRW-2018.html>

92 <https://www.independent.co.uk/environment/sea-levels-rise-internet-cables-climate-change-underground-new-york-miami-a8449716.html>



Figure 12. Word cloud showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in *The Sydney Morning Herald*, *The Courier Mail* and *Sunday Mail*, *The Australian*, *The Age*, and *The Daily Telegraph* and *Sunday Telegraph* in Australia.

considerable attention was paid to *political* content of coverage during the month of August. Frequent stories from the Southern Hemisphere involved the replacement of Australian Prime Minister Malcolm Turnbull with Scott Morrison. While Morrison was invoked 571 times across 495 articles in August, the focus was on the departure of Prime Minister Turnbull, mentioned 2311 times in the month. Stories like 'Energy industry anger as PM splits climate from power policy' by journalists Ben Packham and Greg Brown in *The Australian* described the fallout from this leadership changeover on energy policy in the country.⁹³ Another article appearing in *The Sydney Morning Herald* by journalists Nicole Hasham and Peter Hannam discussed how this change of power would impact Australia's ongoing adherence or abandonment of the Paris climate treaty.⁹⁴ And an opinion piece by former Liberal opposition leader John Hewson in *The Age* discussed how "climate

93 <https://www.theaustralian.com.au/national-affairs/energy-industry-anger-as-pm-splits-climate-from-power-policy/news-story/660d8962b7a5ce268cb1ff5d72988069>

94 <https://www.smh.com.au/politics/federal/our-word-is-our-bond-senior-mps-say-exiting-paris-deal-would-hurt-australia-20180828-p500a3.html>

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change has now proved a defining element in a run of Australian political leaders, from John Howard through to Malcolm Turnbull".⁹⁵

Meanwhile, in the United States, the Trump administration's proposed replacement for the Clean Power Plan an 'Affordable Clean Energy rule' generated media coverage in August. For example, journalist Lisa Friedman wrote in an article in *The New York Times*, "the Trump administration has hailed its overhaul of federal pollution restrictions on coal-burning power plants as creating new jobs, eliminating burdensome government regulations and ending what President Trump has long described as a "war on coal." The administration's own analysis, however, revealed on Tuesday that the new rules could also lead to as many as 1,400 premature deaths annually by 2030 from an increase in the extremely fine particulate matter that is linked to heart and lung disease, up to 15,000 new cases of upper respiratory problems, a rise in bronchitis, and tens of thousands of missed school days."⁹⁶

Also this month, as was the case in July there was significant coverage crossing *ecological* and *meteorological* themes. July's focus on heat gave way also to coverage of wildfires with links to climate change. For example, an *Associated Press* article made links between the summer wildfires in the Northern Hemisphere and warming temperature that lead to drier conditions and increased changes of fire ignition.⁹⁷ In India, severe flooding during the monsoon season in the state of Kerala – the worst in many decades – forced a million people from their homes, and killed nearly 500 people. Amid coverage in Indian media in August, journalist Badri Chatterjee from the *Hindustan Times* reported that State Environment Impact Assessment Authority chairperson Johny Joseph said "climate change, overflowing dams and...manmade causes such as deforestation

95 <https://www.theage.com.au/politics/federal/one-policy-behind-fall-of-a-run-of-australian-leaders-20180829-p500g7.html>

96 <https://www.nytimes.com/2018/08/21/climate/epa-coal-pollution-deaths.html>

97 https://www.cleveland.com/nation/index.ssf/2018/08/glacier_national_park_in_monta.html

and illegal mining resulted in Kerala floods".⁹⁸ Journalist Liz Mathew from *The Indian Express*, quoted State Finance Minister Thomas Isaac who said, "the social cost is unimaginable, the trauma is heavy".⁹⁹

Across planet Earth in August there was a range of stories that intersected with the *cultural* arena. For example, a citizens' ballot initiative in the US state of Colorado regarding a proposal to increase the 'setback' distance between homes and businesses and oil and gas wells drew media consideration. Dan Elliott from the *Associated Press* called the proposal – that could put 85% of non-federal land off-limits – 'contentious'¹⁰⁰; Rebecca Elliott from *The Wall Street Journal* claimed that if approved, this potential precedent-setting ballot measure "would make most of the State off limits to drillers"¹⁰¹. As a second example, television media stories surfaced of a crowdfunding campaign by residents in a community near Madison, Wisconsin to raise funds to purchase and install air monitors to detect pollution from a nearby coal-fired power plant. This novel way to take matters into citizen's own hands was seen as a new turn in citizen science meeting public health concerns relating to climate change. Journalist Shirley Descorbeth from *CBS* quoted Miranda Erlich with the 'Clean Power Coalition' citizen action group who said, "For residents who have breathing issues, and want to know what the air is like on a daily basis, those monitoring reports are not helpful, so we are putting up these...monitors because it'll give us a sense of what's in the air on a daily basis"¹⁰². Reporter Madeline Anderson from a *Fox News* affiliate quoted industry representative 'We Energies'

98 <http://www.htdscontent.com/htsportal/ht-mumbai/article/will-extreme-rainfall-turn-konkan-into-kerala-experts-beg-to-differ/29371281>

99 <https://indianexpress.com/article/india/kerala-floods-relief-work-financial-aid-crores-cess-thomas-issac-5316638/>

100 <https://www.coloradoan.com/story/news/local/colorado/2018/08/30/proposal-limit-oil-gas-drilling-gets-colorado-ballot/1147913002/>

101 <https://www.wsj.com/articles/colorado-voters-to-weigh-sharp-limits-on-drilling-1535574912>

102 <https://www.cbs58.com/news/concerned-oak-creek-residents-install-air-monitors-around-we-energies-plant>

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spokesperson Brian Manthey, who dismissed residents' concerns, stating "We have made great strides...to keep the coal and coal dust from leaving the [coal plant] property"¹⁰³.

Media accounts also focused on primarily *scientific* dimensions of climate change and global warming. For example, a study dubbed 'Hothouse Earth' was published in the Proceedings of the National Academy of Sciences (PNAS) describing how runaway global warming could result from a positive climate feedback loop in the climate system. In describing the study, journalist Doyle Rice from *USA Today* wrote "we have been warned".¹⁰⁴ As a second example, a study by Andrew J. Kondash, Nancy E. Lauer and Avner Vengosh published in *Science Advances*¹⁰⁵ found that water use for and toxic wastewater produced from hydraulic fracturing ('fracking') has increased dramatically over the past five years. Science correspondent Josh Gabbatiss from *The Independent* in London reported that "the amount of water used at fracking wells in parts of the US has increased by up to 770%, sparking fears the industry could cause water shortages in arid regions. There was also a massive increase of up to 1440% in the amount of toxic wastewater generated in the first year of operation at fracked oil and gas wells over the same period."¹⁰⁶

SEPTEMBER

September remained a busy month for media stories on climate change and global warming. However, quantity of coverage across the globe decreased 8.5% from the previous month of August 2018, and was also down slightly (2%) from September last year. An increase was most pronounced in Asia (up 15%) and the Middle East (up 15%) in September.

¹⁰³ [https://fox6now.com/2018/08/24/](https://fox6now.com/2018/08/24/neighborhood-near-we-energies-power-plant-bands-together-to-improve-air-quality/)

[neighborhood-near-we-energies-power-plant-bands-together-to-improve-air-quality/](https://fox6now.com/2018/08/24/neighborhood-near-we-energies-power-plant-bands-together-to-improve-air-quality/)

¹⁰⁴ [https://www.usatoday.com/story/tech/](https://www.usatoday.com/story/tech/science/2018/08/06/hothouse-earth-runaway-global-warming-threatens-habitability-planet/916521002/)

[science/2018/08/06/hothouse-earth-runaway-global-warming-threatens-habitability-planet/916521002/](https://www.usatoday.com/story/tech/science/2018/08/06/hothouse-earth-runaway-global-warming-threatens-habitability-planet/916521002/)

¹⁰⁵ <http://advances.sciencemag.org/content/4/8/eaar5982>

¹⁰⁶ <https://www.independent.co.uk/environment/fracking-water-shortage-drought-fossil-fuels-oil-gas-duke-university-a8493451.html>

Elsewhere, decreases were detected in North America (down 8%), Oceania (down 39%), Central/South America (down 3%), Africa (down 36%) and Europe (down 9%) compared to the previous month of August.

Considerable attention was paid to *political* content of coverage during the month of September, as was also the case in August. Also in September, the ongoing 'Trump Dump' was evident. For example, media attention was paid to Trump Administration announcements of rollbacks on regulations on methane emissions from oil and gas production. Journalist Timothy Puko from *The Wall Street Journal* reported on the proposed rollback of Obama-era climate rules, "moving to ease requirements for oil and gas companies that were designed to limit leaks of the heat-trapping gas methane".¹⁰⁷ Journalist Coral Davenport from *The New York Times* observed, "The new rules follow two regulatory rollbacks this year that, taken together, represent the foundation of the United States' effort to rein in global warming. In July, the E.P.A. proposed weakening a rule on carbon dioxide pollution from vehicle tailpipes. And in August, the agency proposed replacing the rule on carbon dioxide pollution from coal-fired power plants with a weaker one that would allow far more global-warming emissions to flow unchecked from the nation's smokestacks".¹⁰⁸

Washington Post journalist Juliet Eilperin reported that "in the fourth rollback of a major federal climate rule in less than two months, the Interior Department eased requirements Tuesday that oil and gas firms operating on federal and tribal land capture the release of methane, a potent greenhouse gas. Officials said that the rule, adopted in 2016, was duplicative, given state laws, and imposed too heavy a burden on the private sector. Environmentalists and Democrats vowed to fight the reversal in court, saying that it would lead to greater air pollution and boost emissions linked to climate change. The 2016 regulation required operators

¹⁰⁷ <https://www.wsj.com/articles/epa-to-roll-back-obama-era-methane-rules-1536628368>

¹⁰⁸ <https://www.nytimes.com/2018/09/10/climate/methane-emissions-epa.html>

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to capture methane leaks, install more modern controls and develop a plan to reduce the release of the heat-trapping gas, which, for the first 20 years after being released into the atmosphere, is roughly 86 times more powerful than carbon dioxide. The new rule largely eliminates those requirements, including limits on how much methane can be released and burned off. Experts said the previous standards would have prevented the release of nearly 180,000 tons of methane into the atmosphere each year... According to Interior's analysis, the reduction in compliance costs would outweigh the royalties taxpayers would otherwise have received on the captured oil and gas, for a net saving of \$734 million to \$1.01 billion over a decade".¹⁰⁹

There was media coverage of the mid-September 'tweetstorm' by US President Donald J. Trump, just before Hurricane Florence made landfall less than 24 hours later. Figure 13 shows particularly notable tweets during this September 13 storm. *Washington Post* journalists Philip Rucker, Robert Costa and Josh Dawsey wrote, "As Hurricane Florence churned toward the Carolinas, President Trump on Thursday diverted attention from the government's preparations for the monster storm to his personal grievances over last year's Hurricane Maria by falsely claiming a conspiracy to inflate the death toll in Puerto Rico. Trump drew immediate rebukes from Democrats as well as some Republicans for denying a sweeping study, which was accepted by Puerto Rican authorities".¹¹⁰

109 https://www.washingtonpost.com/national/health-science/more-methane-interior-eases-rules-curbing-leaks-from-oil-and-gas-leases-on-federal-land/2018/09/18/892e80f6-bb76-11e8-a8aa-860695e7f3fc_story.html

110 https://www.washingtonpost.com/politics/trump-creates-political-storm-with-false-claim-on-puerto-rico-hurricane-death-toll/2018/09/13/151a6572-b76b-11e8-a2c5-3187f427e253_story.html

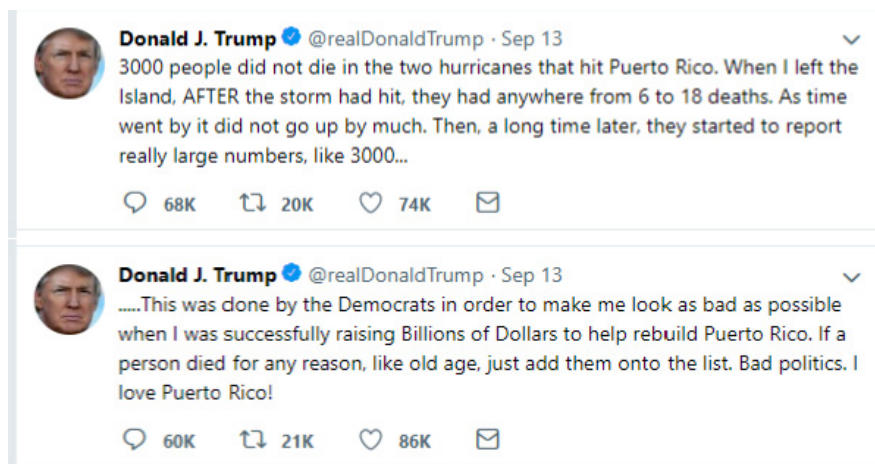


Figure 12. @realDonaldTrump tweets in mid-September like these above were picked up in many media accounts of hurricane and typhoon activity.

At the subnational level, the Global Climate Action Summit hosted by Governor Jerry Brown also garnered attention in media accounts. Journalist James Rainey from *NBC News* reported, "Seeking to cement California's reputation as a global leader in combatting climate change, Gov. Jerry Brown on Monday signed two measures designed to push the state to 100 percent renewable electricity and so-called carbon neutrality by 2045. Senate Bill 100 raises the state's already ambitious goals for producing electricity from wind, solar and other green sources. The aim is to ensure greenhouse gas emissions are low enough that they can be absorbed by forests, oceans, soil and other natural systems...Brown also issued an executive order pushing the state to reduce its net output of greenhouse gases into the atmosphere – including from the single largest source, cars and trucks – to zero by the same 2045 deadline. Meeting the 100 percent carbon-neutral goal in just 27 years and potentially becoming "net negative" on carbon, gives California the most ambitious such target of any government in the world, the governor's office said".¹¹¹ Reporter Liam Dillon from the *Los Angeles Times* called this "the latest in a series of ambitious goals set by the state to combat the effects of climate change".¹¹²

111 <https://www.nbcnews.com/news/us-news/california-aims-entirely-green-power-2045-gov-jerry-brown-signs-n908281>

112 <http://www.latimes.com/politics/la-pol-ca-renewable-energy-law-signed-20180910-story.html>

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Media accounts also focused on *scientific* dimensions of climate change and global warming during the month of September. For example, journalist Chris Mooney from *The Washington Post* covered how research teams from the Center for Research and Advanced Studies at the National Polytechnic Institute in Mexico and the University of Alaska Fairbanks were working to understand how methane releases from freshwater lakes contribute to global warming.¹¹³

Also this month, relating to the political ‘tweetstorm’ and other items, there was significant coverage crossing *ecological* and *meteorological* themes. For example, Typhoon Mangkhut (locally called ‘Ompong’) in the Philippines and Hurricane Florence in the US earned media attention as the storms related to climate change or global warming. On September 14, journalists Bard Wilkinson and James Masters from *CNN* reported, “The Philippines is evacuating thousands of people, deploying soldiers and positioning emergency provisions as Super Typhoon Mangkhut threatens more than four million people in the north of the country. Mangkhut -- stronger than Hurricane Florence, which is currently lashing the US East Coast -- is expected to make landfall on the Philippines island of Luzon island early on Saturday. Current wind speeds are up to 285 kilometers per hour (180 mph). The massive storm, the equivalent of a Category 5 hurricane, has prompted alerts across east and southeast Asia”.¹¹⁴ Meanwhile, on September 16, *Washington Post* journalist Kate Zezima reported that “tropical depression Florence continued its march through the Carolinas on Sunday, dumping torrential and historic amounts of rain. Floodwaters are expected to push many rivers to all-time highs and could spur life-threatening landslides as the storm’s remnants move into the mountains in the middle of the states and then up into southwestern Virginia”.¹¹⁵

113 <https://www.washingtonpost.com/graphics/2018/national/arctic-lakes-are-bubbling-and-hissing-with-dangerous-greenhouse-gases>

114 <https://www.cnn.com/2018/09/14/asia/typhoon-mangkhut-philippines-intl/index.html>

115 <https://www.washingtonpost.com/news/post-nation/wp/2018/09/16/florence-several-deaths-reported-as-storm-swamps-carolinas>

Covering Typhoon Mangkhut on September 17, *Guardian* journalists Carmela Fonbuena and Hannah Ellis-Petersen reported that “at least 34 bodies have been recovered and another 30 people are still missing after a landslide caused by Typhoon Mangkhut buried a miners’ bunkhouse in the Philippines where dozens of people had taken shelter. The landslide struck a remote town in Itogon in the mountain province of Benguet, about 125 miles north of Manila. Benguet was one of the worst affected areas after a category five typhoon swept through the Philippine region of Luzon on Saturday, wreaking destruction on homes and crops, and causing massive flooding”.¹¹⁶ On September 18, *New York Times* journalist Hannah Beech reported that “Typhoon Mangkhut churned the rich earth of the Cordilleras, and floods of mud inundated mining bunkhouses and mountain homes...all told in the Philippines, more than 100 people are thought to have perished as a result of Mangkhut, the strongest storm the world has seen this year”.¹¹⁷

Meanwhile, covering Hurricane Florence on September 18, *Associated Press* journalist Claire Galofaro reported that “the storm has claimed more than 30 lives and an untold number of homes on its slow march across North Carolina, inundating city after city: Wilmington, New Bern, Lumberton. Now authorities are warning that by the time the Cape Fear River in Cumberland County crests Tuesday at 62 feet (19 meters) – 27 feet (8 meters) over its flood stage – it will threaten to swamp anything within a mile on either side of it. Its tributary, the Little River, is expected to flood, too. More than 7,000 people were ordered to evacuate by Sunday afternoon. But many, weary of a storm that’s lingered on and on, did their own rough calculus of the odds and decided to stay”.¹¹⁸ That same day, *Washington Post* journalists Patrick Sullivan, Rachel Siegel, Mark Berman and Joel Achenbach reported

116 <https://www.theguardian.com/world/2018/sep/17/mangkhut-leaves-death-destruction-and-chaos-from-philippines-to-china>

117 <https://www.nytimes.com/2018/09/17/world/asia/philippines-landslide-typhoon-mangkhut.html>

118 <https://apnews.com/9547f82b265043db8c2bf52d0ecfe165/The-rivers-keep-rising-but-some-in-flood-zones-won't-leave>

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that “the death toll from Hurricane Florence rose Monday to 32, and the misery in the Carolinas might be many days from cresting. The historic storm has disrupted life for millions of people, and the surging floodwaters have spawned an environmental calamity across a vast region pocked with manure ponds and coal ash pits”.

¹¹⁹Meanwhile, Wall Street Journal journalists Valerie Bauerlein and Russell Gold reported that some of the coal-ash (a byproduct of burning coal for energy) from a Duke Energy-owned landfill washed into a nearby lake. They wrote, “Part of the earthen top of the 20-foot tall landfill was gone, exposing the deep gray ash beneath, and an undetermined amount of the coal ash washed into nearby Lake Sutton, which feeds into the Cape Fear River”.¹²⁰

In the aftermath of Hurricane Florence – and intersecting with *cultural* themes – journalists Adam Gabbott and Oliver Laughland from *The Guardian* explored impacts through the lens of climate justice in a piece entitled, ‘In North Carolina, It’s the Poorest Who Bear the Brunt of Flooding’. They wrote, “Greenleaf [North Carolina] is home to national civil rights leader the Rev William Barber, who left the city briefly to evacuate his elderly mother. On the phone, Barber argued that Florence should mark a moment to discuss the state’s various forms of structural racism and economic inequality... Barber held nothing back. “The storms are not going to stop coming,” he said. “We are in the path of hurricanes. And the more this climate warms, the stronger the winds are going to get, the more erratic the storms are going to get. We’re going to get pummeled over and over again”.¹²¹ Also in the aftermath of the storm, journalist Michael Biesecker from the *Associated Press* reported that “Duke Energy activated a high-level emergency alert at a retired coal-fired

119 https://www.washingtonpost.com/national/florence-rivers-death-toll-and-environmental-hazards-still-rising-in-carolinas-as-flooding-sets-records/2018/09/17/c178cfb2-ba8f-11e8-bdc0-90f81cc58c5d_story.html

120 <https://www.wsj.com/articles/florence-washes-away-portion-of-coal-ash-landfill-in-north-carolina-1537137771>

121 <https://www.theguardian.com/world/2018/sep/17/north-carolina-florence-flooding>

power plant in North Carolina as floodwaters from the nearby Cape Fear River overtopped an earthen dike there and inundated a large lake, raising concerns of a potential breach”.¹²²

On September 24, *CBS News* reported that the death toll had risen to 42 people. The piece also noted, “Rivers swelling with the floodwaters of former Hurricane Florence are threatening to swamp communities near the South Carolina coast, leaving thousands ready to evacuate. More than a week after Florence crashed into the Carolinas, dumping heavy rains, all that water is nearing the coast. Authorities in Georgetown County, South Carolina, said they have put as many as 8,000 people on alert for possible evacuations starting Monday in expectation of a “record event” of up to 10 foot floodwaters this week”.¹²³ Meanwhile, stories from Asia covered the aftermath of Typhoon Mangkhut. For example, journalists Jeanette Andrade and Melvin Gascon from *The Philippines Daily Inquirer* wrote about differential impacts on storm surges and crop damages.¹²⁴

Across the globe in September, there was a range of stories that intersected with the *cultural* arena. For example, coverage in early September included news of a burgeoning protest movement in Germany against coal mine development. Energy company RWE faced human resistance in the Hambach forest as they sought to develop the land for lignite strip mining.^{125, 126} Surrounding activities at the Global Climate Action Forum in San Francisco, news stories emerged on mobilizations of support for climate action. For examples, Elaine Ganley and Chris den Hond in Paris and Christopher Weber in Los Angeles reported, “more than 18,000 people marched Saturday in Paris as

122 <https://www.cbsnews.com/news/former-hurricane-florence-south-carolina-braces-for-possible-record-flooding-today-2018-09-24/>

123 <https://www.inquirer.net/1031558/typhoon-ompong-takes-aim-at-northern-luzon>

124 <https://www.nytimes.com/aponline/2018/09/05/world/europe/ap-eu-germany-coal-mine.html>

125 <https://www.dw.com/en/police-clear-protesters-from-hambach-forest/a-45357153>

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part of an international mobilization to show popular support for urgent measures to combat climate change in advance of a San Francisco summit. Crowds overflowed a plaza in front of City Hall before marching east to the Place de la Republique, carrying an urgent message that it's up to the public to put global warming at the top of the political agenda."¹²⁷ NBC journalist Kiki Intarasuwan reported, "Thousands of activists marched Saturday morning in San Francisco in what organizers call "the largest climate march the West Coast has ever seen" to demand action against climate change from elected officials. Supporters with "Rise for Climate, Jobs & Justice" walked from Embarcadero Plaza on Market Street to Civic Center where organizers held a rally with resource centers and music".¹²⁸ Meanwhile, journalist Matt McGrath from BBC reported on an assessment of city-level engagement with climate mitigation actions in the face of country inaction. He wrote, "Twenty-seven cities, including Warsaw, Barcelona and Sydney, saw CO2 peak in 2012 and then go into decline...Emissions declined by 2% every year on average, while their economies expanded by 3% annually".¹²⁹ And journalist Brad Plumer from the New York Times reflected on the Summit, commenting that "there was no shortage of announcements at the meeting. Cities like Tokyo, Rotterdam and West Hollywood signed joint pledges to only buy zero-emissions buses after 2025. Companies like Walmart and Unilever rolled out new programs to limit deforestation in their huge supply chains. Dozens of philanthropic groups committed \$4 billion over the next five years to fight climate change. But it will take time to tell whether these local actions can scale up quickly enough to make a significant dent in global emissions. And scientists are warning that time is short if we want to avoid the worst effects of climate change".¹³⁰

127 <https://apnews.com/864b92585b184149b87baede1e8c8b16/Global-marches-seek-urgent-action-on-climate-change>

128 <https://www.nbcbayarea.com/news/local/Rise-for-Climate-Jobs-Justice-in-San-Francisco-492769111.html>

129 <https://www.bbc.co.uk/news/science-environment-45515216>

130 <https://www.nytimes.com/2018/09/15/climate/california-climate-summit.html>

OCTOBER

October media attention to climate change and global warming was up 43% throughout the world from the previous month of September 2018, and more than doubled (up 51%) from October last year. Upticks were detected across all regions of the world in October. Increased media coverage in October was attributed to attention paid to the UN IPCC Special Report on impacts of 1.5°C warming, and to continued impacts and reverberations from hurricane and typhoon activity. An increase was most pronounced in Africa (up 79%) and Oceania (up 76%). Elsewhere, increases were also detected in Central/South America (up 40%), North America (up 37%), Asia (up 24%) and Europe (up 43%), compared to the previous month of September.

In October, considerable attention was paid to *political* content of coverage. The lead up to the 2018 US elections on November 6 have had some bearing on coverage. For example, in an article titled 'As climate change becomes more visible, its weight as a campaign issue is growing' journalist Evan Halper from the *Los Angeles Times* wrote, "For years, conventional wisdom among political strategists has labeled climate change as a politically weak issue, a concern of environmental activists but not the mass of voters. That's still the case in many areas. But in districts around the country where warming is exacerbating natural disasters and disrupting regional economies, the anxiety of voters like Hardwick has started to shift how candidates campaign".¹³¹ Meanwhile, in Canada in October, the government announced that they will impose carbon taxes on provinces that fail to create their own policies. The Prime Minister announced that the funds generated in Ontario, Manitoba, Saskatchewan and New Brunswick, will go back to the taxpayers. *Reuters* journalist David Rjunggren reported on this effort at the Canadian federal level, and this story ran in many other outlets throughout the country and beyond. He wrote, "Canadian Prime Minister Justin Trudeau on Tuesday said he

131 <http://www.latimes.com/politics/la-na-pol-climate-politics-20181022-story.html>

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would fulfill a promise to impose a carbon tax on provinces unwilling to combat climate change, prompting instant protests from a voter-rich part of the country. Trudeau, whose ruling Liberals face an election in October 2019, told a news conference that all the money collected would be returned directly to taxpayers in the four provinces without plans to curb the emission of greenhouse gases. Starting in April 2019 carbon pollution will initially cost C\$20 (\$15.27) a tonne, rising by C\$10 a year until it reaches C\$50 in 2022. Ottawa unveiled the proposal in 2016”.¹³²

At the science-policy interface, an early October UN IPCC meeting in South Korea – and consequent Special Report on impacts of 1.5°C warming – garnered a great deal of media attention. Media coverage focus on the IPCC Special Report warning that to avoid passing 1.5°C, emissions must drop 45% from 2010 levels by 2030, and must reach ‘net zero’ by 2050. These pronouncements also harkened back to a slogan promoted by vulnerable countries at the Paris talks in 2015: ‘1.5 to stay alive’. This was a reference to the bold emissions reductions needed to avoid the worst impacts of climate change. BBC journalist Matt McGrath reported on how delegates gathered in Incheon, South Korea “to hammer out a plan in co-operation with government delegates, on the actions that would need to be taken to meet this [1.5°C] goal”.¹³³ Amid considerable coverage of this report, *Wall Street Journal* reporter Timothy Puko wrote, “Rapid, far-reaching changes to almost every facet of society are needed to avoid catastrophic climate change, reforms far beyond anything governments are currently either doing or planning to do, according to a report from a United Nations-led scientific panel”.¹³⁴ Journalist Doyle Rice from *USA Today* reported, “The world’s economies must quickly reduce fossil fuel use while at the same time

dramatically increasing use of clean, efficient energy. These transitions must start now and be well underway in the next 20 years”.¹³⁵

Moving to media accounts focused on primarily *scientific* dimensions of climate change and global warming, the National Academies of Sciences published a report on October 24 called ‘Negative Emissions Technologies and Reliable Sequestration: A Research Agenda’.¹³⁶ The report picked up on the ‘negative emissions technologies’ portion of the IPCC special report. It plainly stated that there needs to be strong leadership to support the scaling up of carbon removal technologies to remove about 10 billion tons (10 Gigatons/Petagrams) of carbon from the atmosphere by mid-century to avoid the worst impacts of climate change. *Associated Press* reporter Seth Borenstein wrote that the National Academy of Sciences report says that the scale of aggressive action by 2050 is akin to removing “the equivalent of about twice the yearly emissions of the US”.¹³⁷

Later in the month, the World Health Organization (WHO) released a report on ambient outdoor air quality, climate change and public health.¹³⁸ Among their findings, they reported that 93% of the world’s children are exposed to fine particulate matter levels above WHO air quality guidelines, and ambient and household air pollution caused 7 million deaths (600,000 children) globally in 2016. Journalist Matthew Taylor from *The Guardian* wrote, “The study found that more than ...1.8 billion children are breathing toxic air, storing up a public health time bomb for the next generation. The WHO said medical experts in almost every field of children’s health are uncovering new evidence of the scale of the crisis in both rich and poor countries – from low birth weight to poor

132 <https://www.reuters.com/article/us-canada-environment/canadas-trudeau-vows-to-impose-carbon-tax-despite-resistance-idUSKCN1MX2CR>

133 <https://www.bbc.com/news/science-environment-45678338>

134 <https://www.wsj.com/articles/u-n-panel-warns-drastic-action-needed-to-stave-off-climate-change-1538960400>

135 <https://www.usatoday.com/story/news/2018/10/07/global-warming-earth-nears-tipping-point-climate-change/1562253002/>

136 <http://nas-sites.org/dels/studies/cdr/>

137 <https://apnews.com/44e5cbe99231497593e5b6e0e310d33c>

138 [http://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](http://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

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neurodevelopment, asthma to heart disease".¹³⁹ *CNN* journalist Mary McDougall reported, "Air pollution is one of the leading threats to health in children under 5, accounting for almost one in 10 deaths among this age group".¹⁴⁰

Also in late October, the World Wildlife Fund released its biannual report tracking climate and environmental impacts on more than 4,000 species of mammals, birds, fish, reptiles and amphibians. Among their findings, they noted that 60% of wildlife on planet Earth has disappeared since 1970. They attribute this to over-harvesting of natural resources and contributions to climate change.¹⁴¹ The report has calculated that wildlife extinction rates are now up to 1,000 times higher than they were before human involvement in ecosystems, and predicts that the amount of habitat in the world uninfluenced by human activity will shrink from 25 percent today to just 10 percent in 2050. Journalist Ashley May from *USA Today* wrote, "The Living Planet Report, which publishes every two years, tracked more than 4,000 species of mammals, birds, fish, reptiles and amphibians. Declines are worst in the tropics, according to the data, as South and Central America saw an 89 percent decrease. Also, freshwater species saw an 83 percent drop, threatened by factors including overfishing, pollution and climate change...The report estimates that only a quarter of the world's land is untouched by humans, who are increasing food production and use of natural resources. America is among the countries using the most natural resources, according to a WWF map showing North America and Canada consuming more than seven global hectares per person".¹⁴²

To help illustrate what was covered in the US, Figure 14 shows word frequency data in the

139 [https://amp.theguardian.com/
environment/2018/oct/29/air-pollution-worlds-
children-breathing-toxic-air-who-study-finds](https://amp.theguardian.com/environment/2018/oct/29/air-pollution-worlds-children-breathing-toxic-air-who-study-finds)

140 <https://www.cnn.com/2018/10/29/health/air-pollution-children-health-who-india-intl/index.html>

141 https://c402277.ssl.cf1.rackcdn.com/publications/1187/files/original/LPR2018_Full_Report_Spreads.pdf

142 <https://www.usatoday.com/story/news/nation-now/2018/10/30/living-planet-report-60-percent-animal-populations-gone-wwf/1817210002/>

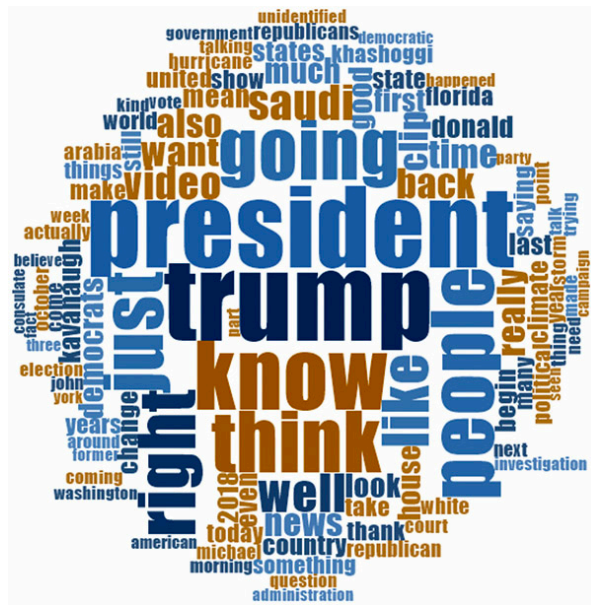


Figure 14. Word cloud showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in the United States television sources.

dynamic spaces of US television media coverage
in October 2018.

Also this month (as was the case in September), there was coverage crossing *ecological* and *meteorological* themes that discussed hurricane activity and climate change. While many have continued to critique media in that there isn't enough...hurricane Michael did generate connections in some media accounts. For example, on October 10 as the hurricane came on land in the US Florida panhandle, *CNN* journalists Susannah Cullinane, Jason Hanna and Faith Karimi reported, "A terrifyingly powerful Category 4 Hurricane Michael was poised to become the strongest hurricane to hit the Florida Panhandle in recorded history Wednesday, its rapid strengthening catching some by surprise and leaving anxious officials telling those who didn't evacuate: It's time to hunker down".¹⁴³ A day later on October 11, *Reuters* journalist John Herskovitz wrote, "Michael was not the only tropical cyclone in recent years to undergo what scientists refer to as "rapid intensification," defined as an acceleration of wind speeds of at least 35 mph (56 kph) in 24 hours or less. The phenomenon has become more serious as sea

143 <https://www.cnn.com/2018/10/10/us/hurricane-michael-wxc/index.html>

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waters have warmed with climate change".¹⁴⁴ Meanwhile, *Guardian* journalists Daniel Levitt and Niko Kommenda posed the question 'is climate change making hurricanes worse?'¹⁴⁵ and CNN journalist John D. Sutter reported, "Hurricane Michael isn't a truly 'natural disaster'. Neither was Harvey in Houston. Nor Maria in Puerto Rico. Yet we continue to use that term. Doing so -- especially in the era of climate change -- is misleading if not dangerous, according to several disaster experts and climate scientists..."¹⁴⁶ On October 12, as residents and authorities began to assess the damage of the powerful Category 4 strength storm upon landfall, in a *New York Times* article by journalists Chris Dixon and Campbell Robertson titled 'They Were Still Recovering from Hurricane Florence. Then Michael Came.', they quoted a local resident who commented "The county and state can sweep it under the rug...but it's only going to get worse. This is going to continue".¹⁴⁷

Later in October, Typhoon Yutu struck the US Northern Marianas island territories of Saipan and Tinian in the Pacific Ocean. The category 5 storm was reported by outlets like *US National Public Radio* to be the strongest storm this hurricane season and the most powerful system to hit the US since 1935.¹⁴⁸ While numerous stories covering the Typhoon failed to make links between weather and climate change,¹⁴⁹ journalists Chris Mooney, Juliet Eilperin and Allyson Chiu from *The Washington Post* explicitly connected the behavior of the storm to larger changes in the climate. They wrote, "Overall, the escalating impacts on U.S. island territories

144 <https://www.reuters.com/article/us-storm-michael-intensity/warm-gulf-waters-spawned-hurricane-michaels-intensity-scientists-idUSKCN1MK2TO>

145 <https://www.theguardian.com/weather/ng-interactive/2018/sep/11/atlantic-hurricanes-are-storms-getting-worse>

146 <https://www.cnn.com/2018/10/10/health/sutter-natural-disaster-hurricane-michael/index.html>

147 <https://www.nytimes.com/2018/10/11/us/carolinas-hurricane-florence-michael.html>

148 <https://www.npr.org/2018/10/24/660224741/super-typhoon-yutu-strongest-storm-of-2018-slams-u-s-pacific-territory>

149 For example: <http://news.trust.org/item/20181026053631-i7f5f>

in the Pacific and Caribbean underscore that as seas rise and storms worsen with climate change, small islands face some of the most extreme risks on Earth. Many have organized into the Alliance of Small Island States to push for strong action to curb global warming. Puerto Rico, the U.S. Virgin Islands, Guam and American Samoa are affiliated with the organization".¹⁵⁰

Some news stories in October sought to plainly make the connection for others. For example, journalist Henry Fountain from *The New York Times* wrote a piece entitled 'The Hurricanes, and Climate-Change Questions, Keep Coming. Yes, They're Linked'.¹⁵¹ Here he discussed how hurricanes are getting stronger and intensifying faster through human contributions to climate change, as well as how they have more rain associated with them and they are moving more slowly.¹⁵² As another example, in an article entitled 'The planet is on a fast path to destruction. The media must cover this like it's the only story that matters', Margaret Sullivan in *The Washington Post* commented, "In short, when it comes to climate change, we – the media, the public, the world – need radical transformation, and we need it now. Just as the smartest minds in earth science have issued their warning, the best minds in media should be giving sustained attention to how to tell this most important story in a way that will creates change. We may be doomed even if that happens. But we're surely doomed if it doesn't".¹⁵³

Across the planet in October, there was a range of stories that intersected with the **cultural** arena. For example, stories circulated about how Yale

150 <https://www.washingtonpost.com/energy-environment/2018/10/25/category-typhoon-devastates-northern-marianas-worst-storm-hit-us-since>

151 <https://www.nytimes.com/2018/10/10/climate/hurricane-michael-climate-change.html>

152 These four elements plus stronger storm surge due to sea level rise incidentally comprise the 'five fingers of f#&k' that connect hurricanes and climate change.

153 https://www.washingtonpost.com/lifestyle/style/the-planet-is-on-a-fast-path-to-destruction-the-media-must-cover-this-like-its-the-only-story-that-matters/2018/10/08/f806a7f0-caea-11e8-a3e6-44daa3d35ede_story.html

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University economist William Nordhaus was awarded a Nobel Prize for his work on climate change economics and carbon taxation. Journalist Binyamin Applebaum of *The New York Times* wrote that “the Yale economist William D. Nordhaus has spent the better part of four decades trying to persuade governments to address climate change, preferably by imposing a tax on carbon emissions...But Professor Nordhaus sadly noted that he hadn’t convinced the government of his own country.” *Washington Post* journalist Taylor Telford noted,¹⁵⁴ “Two American economists, William Nordhaus and Paul Romer, received the Nobel Memorial Prize in Economic Sciences for their work on the relationship of climate change and technological innovation to economics, which has profoundly shaped policy around the world.”¹⁵⁵

Other news coverage was generated from a report that nearly fifty UNESCO World Heritage sites in the Mediterranean were vulnerable to climate change-related impacts such as sea level rise and storm, storm surge and coastal erosion. *Washington Post* reporters Chris Mooney and Brady Dennis quoted lead study author Lena Reimann, who said, “What surprised me the most is that actually even under current conditions, there are so many World Heritage sites that are at risk”.¹⁵⁶

NOVEMBER

November media attention to climate change and global warming was down 8% throughout the world from October 2018, and up about 33% from November 2017. Radio coverage held steady from October 2018 but was up 27% from November 2017. Across all sources, regionally an increase was detected in Europe (up 11%). Elsewhere, moderate decreases from October to November 2018

154 <https://www.nytimes.com/2018/10/08/business/economic-science-nobel-prize.html>

155 <https://www.washingtonpost.com/business/2018/10/08/two-americans-win-nobel-prize-economics/>

156 <https://www.washingtonpost.com/energy-environment/2018/10/16/rising-seas-could-devastate-historical-sites-across-mediterranean-study-finds>



Figure 15. Word cloud showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in United States television sources.

were found in North America (down 8%), Asia (down 14%) and Central/South America (down 17%), while more substantial downturns in the quantity of coverage were found in the Middle East (down 21%), Oceania (down 34%) and Africa (down 39%). At the country level counts held steady or decreased from October to November 2018, except for in Spain where coverage was up 22%. In the United States, print coverage was down 5% in November compared to October, though still up considerably from the previous November 2017. However, US television coverage of climate change spiked in November 2018, as it was up 71% from October 2018 and also up considerably from coverage a year previously (November 2017).

Moving to considerations of content within these searches, Figure 15 shows word frequency data in the US television media coverage in November 2018. While coverage was up to its highest levels since December 2016, television media attention appeared to be driven by stories relating to President Trump rather than other stories like the US National Climate Assessment (NCA4) released on November 23 (see below for more). In US television coverage of climate change or global warming in November 2018,

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'Trump' was explicitly invoked over fourteen times more frequently than the words 'science' or 'scientists' and nearly four times more frequently than the word 'climate' itself, for examples.

In November, considerable attention was paid to *scientific* dimensions of climate change and global warming. For example, a new study published in *Nature* found that global oceans have been absorbing more heat than previously understood. This buffer to atmospheric warming was then noted, as oceans have warmed more than the IPCC previously estimated over the past twenty-five years. Journalist Matt McGrath from the *BBC* reported, "This new study says that every year, for the past 25 years, we have put about 150 times the amount of energy used to generate electricity globally into the seas - 60% more than previous estimates".¹⁵⁷

A second example arose in early November through media coverage of the simultaneous release of two studies in *Nature* examining interactions between human activities and hurricane impacts. While one study noted increased rainfall by hurricanes Katrina, Maria and Irma through anthropogenic climate change,¹⁵⁸ the second study predicted that future hurricanes will increase in intensity due to human contributions to climate change.¹⁵⁹ Journalist Seth Borenstein from the Associated Press wrote, "Hurricane Harvey snagged on the skyscrapers of Houston, causing it to slow and dump more rain than it normally would, one study found. The city's massive amounts of paving had an even bigger impact by reducing drainage. Land development in the metro area, on average, increased the chances of extreme flooding by 21 times, study authors said. A second study looked at last year's major Hurricanes Maria and Irma and 2005's deadly Katrina and used computer simulations to see what would have happened if there had been no human-caused global warming. The study found that climate change significantly

157 <https://www.bbc.com/news/science-environment-46046067>

158 <https://www.nature.com/articles/s41586-018-0673-2.epdf>

159 <https://www.nature.com/articles/s41586-018-0676-z.epdf>

increased rainfall from those three storms, but did not boost their wind speed."¹⁶⁰ Meanwhile, journalist Rebecca Hersher from *National Public Radio* reported, "A pair of studies published today in the journal *Nature* find that hurricanes are already causing more rain than they used to, and that cities themselves may be making the rainfall from those storms even worse".¹⁶¹

As a third example, in mid-November a new study published in *Nature Climate Change* found "traceable evidence for 467 pathways by which human health, water, food, economy, infrastructure and security have been recently impacted by climate hazards such as warming, heatwaves, precipitation, drought, floods, fires, storms, sea-level rise and changes in natural land cover and ocean chemistry".¹⁶² Journalist Maggie Fox from *NBC News* reported that lead author Camilo Mora and team "combed through more than 3,200 studies to try to paint a broad picture of what climate change is going to do to people over the coming century. They cross-referenced their findings against known disasters".¹⁶³ *USA Today* journalist Doyle Rice wrote, "Don't say we weren't warned. From human health to the world's food supply, from water scarcity to widespread migration and violence, the threats from climate change are much larger than previously thought, a study released Monday suggests. And in many places, several threats will be happening at once".¹⁶⁴

As a fourth example, a new University of Chicago report released in mid-November articulated that particulate pollution from fossil fuel burning effectively has shortened life spans by over four years for an average Indian and nearly three years

160 <https://www.apnews.com/0dbeb3f8af7d4352a57d61e922ddcf2d>

161 <https://www.npr.org/2018/11/14/666946363/houston-got-hammered-by-hurricane-harvey-and-its-buildings-are-partly-to-blame>

162 <https://www.nature.com/articles/s41558-018-0315-6.epdf>

163 <https://www.nbcnews.com/health/health-news/climate-change-going-make-life-earth-whole-lot-worse-report-n938101>

164 <https://www.usatoday.com/story/news/nation/2018/11/19/climate-change-trigger-widespread-hazards-earth-and-humanity/2059370002/>

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for a typical denizen in China.¹⁶⁵ *Washington Post* journalists Bonnie Berkowitz, John Muyskens, Manas Sharma and Monica Ulmanu reported that lead author Michael Greenstone credited the 1970 US Clean Air Act for many avoided deaths from air pollution in the United States, and noted that it was why “wildfires in California triggered air quality alerts and forced school closings many miles away”.¹⁶⁶

But the most prominent example in November 2018 was the Fourth US National Climate Assessment (NCA4) that was released the day after Thanksgiving, colloquially dubbed ‘black Friday’ and a decidedly slow news day when many citizens are busy expressing their identity as consumers. This peer-reviewed report co-authored by 300 relevant expert researchers noted that climate change will continue to impact millions of people across the US and cost billions of dollars in damage. Journalist Tony Barbosa from the *Los Angeles Times* wrote, “The congressionally mandated report by 13 federal agencies, the first of its kind under the Trump administration, found that climate change is already being felt in communities across the United States. It projects widespread and growing devastation as increasing temperatures, rising sea levels, worsening wildfires, more intense storms and other cascading effects harm our ecosystems, infrastructure and society”.¹⁶⁷ Meanwhile, journalist Steve Frank from CBS News reported, “Earth’s climate is now changing faster than at any point in the history of modern civilization, primarily as a result of human activities, according to a long-awaited report released Friday by the federal government”.¹⁶⁸ And a significant amount of news organizations – such as *The Associated Press*, *Reuters*, *USA Today*, *The Guardian*, *BBC* and *The Washington Post* – covered US President Trump’s reaction

to the report. For example, journalist Rebecca Ballhaus from *The Wall Street Journal* reported, “President Trump said Monday that he doesn’t believe the central finding of a report released last week by his administration that global climate change could cause U.S. economic losses of hundreds of billions of dollars a year by the end of the century. Speaking to reporters before leaving Washington for Mississippi, Mr. Trump said of the report, “I’ve seen it. I’ve read some of it. And it’s fine.” Asked if he agreed with the report’s assessment of a large economic impact, he responded: “I don’t believe it”.¹⁶⁹

Also piling onto a busy month for coverage of **scientific** dimensions of climate change, in the final days of the month media attention was paid to the UN Environment Emissions Gap Report and a Lancet Countdown on climate change and public health. The findings of the UN Environment Emissions Gap Report stated that mitigation efforts must increase dramatically in order to avoid the worst impacts of climate change. For example, Elaine Kurtenbach from *The Associated Press* wrote, “Feeding a hungry planet is growing increasingly difficult as climate change and depletion of land and other resources undermine food systems, the U.N. Food and Agricultural Organization said Wednesday as it renewed appeals for better policies and technologies to reach ‘zero hunger’. Population growth requires supplies of more nutritious food at affordable prices, but increasing farm output is hard given the “fragility of the natural resource base” since humans have outstripped Earth’s carrying capacity in terms of land, water and climate change, the report said”.¹⁷⁰ *CNN* reporter Brandon Miller noted, “If there is one consistent message about climate change that has been made abundantly clear in a flurry of recent major assessments on the topic, it is that our planet’s climate is already changing, and now is the time to act to avoid devastating impacts”.¹⁷¹

165 <https://aqli.epic.uchicago.edu/wp-content/uploads/2018/11/AQLI-Report.111918-2.pdf>

166 <https://www.washingtonpost.com/graphics/2018/national/health-science/lost-years>

167 <https://www.latimes.com/nation/la-na-climate-report-federal-government-20181123-story.html>

168 <https://www.cbsnews.com/news/climate-change-report-national-climate-assessment-released-today-reveals-economic-health-toll-climate-change-2018-11-23/>

169 <https://www.wsj.com/articles/trump-says-he-doesnt-believe-climate-change-reports-economic-predictions-1543269363>

170 <https://www.apnews.com/d2db95c64c604f628128a5cf9ec347>

171 <https://www.cnn.com/2018/11/27/world/climate-change-un-emission-report-2018-wxc/index.html>

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Coverage of the Lancet Countdown report on climate change and public health was detected across the globe.¹⁷² For instance, journalist Damian Carrington from *The Guardian* reported, "People's health is being damaged today by climate change through effects ranging from deadly heatwaves in Europe to rising dengue fever in the tropics, according to [the] report. Billions of hours of farm work has [sic] been lost during high temperatures and global warming has damaged the ability to grow crops. The world must triple its efforts to curb emissions over the next few years to avoid the worst impacts of climate change".¹⁷³

Moving to media accounts focused on primarily **political** and **economic** content, some selected issues generated attention in November. For example, a new World Energy Outlook report released by the International Energy Agency documented that renewable energy sources will provide about 40% of electricity on planet Earth by 2040 and that petroleum demand for automobiles will begin to decrease after 2020 due to regulatory interventions along with electric vehicle technology breakthroughs. However, the report noted that energy infrastructure investments and policy action in the next years will be critical to determining how climate change unfolds in the next decades. Focusing on that latter caution, journalist Adam Vaughan from *The Guardian* reported, "the world has so many existing fossil fuel projects that it cannot afford to build any more polluting infrastructure without busting international climate change goals, the global energy watchdog has warned".¹⁷⁴ Meanwhile, *Reuters* journalist Nina Chestney noted, "Natural gas is expected to overtake coal as the world's second largest energy source after oil by 2030 due to a drive to cut air pollution and the rise in liquefied

natural gas (LNG) use".¹⁷⁵

In this political realm relating to the NCA4 report mentioned above, a number of stories paid attention to the US Federal Administration's reactions to findings and recommendations. For example, *Washington Post* reporters Josh Dawsey, Philip Rucker, Brady Dennis and Chris Mooney covered US President Trump's reaction. They wrote, "President Trump on Tuesday dismissed a landmark report compiled by 13 federal agencies detailing how damage from global warming is intensifying throughout the country, saying he is not among the 'believers' who see climate change as a pressing problem. The comments marked the president's most extensive yet on why he disagrees with his own government's analysis, which found that climate change poses a severe threat to the health of Americans, as well as to the country's infrastructure, economy and natural resources. The findings - unequivocal, urgent and alarming - are at odds with the Trump administration's rollback of environmental regulations and absence of any climate action policy. "One of the problems that a lot of people like myself, we have very high levels of intelligence but we're not necessarily such believers," Trump said during a freewheeling 20-minute Oval Office interview with *The Washington Post* in which he was asked why he was skeptical of the dire National Climate Assessment his administration released Friday. "As to whether or not it's man-made and whether or not the effects that you're talking about are there, I don't see it," he added".¹⁷⁶

November media coverage also covered **ecological** and **meteorological** themes. Most prominently, stories discussed connections between (California) wildfires and climate change. The Camp Fire in Northern California led to dozens of deaths and many hundreds missing, while also warranting a visit from the
¹⁷⁵ <https://www.cnn.com/2018/11/12/reuters-america-gas-to-overtake-coal-as-worlds-second-largest-energy-source-by-2030-ia.html>
¹⁷⁶ https://www.washingtonpost.com/politics/trump-on-climate-change-people-like-myself-we-have-very-high-levels-of-intelligence-but-were-not-necessarily-such-believers/2018/11/27/722f0184-f27e-11e8-aeaa-b85fd4449f5_story.html

172 Among the 150 report co-authors were MeCCO team members Olivia Pearman, Lucy McAllister, Meaghan Daly and Max Boykoff.

173 <https://www.theguardian.com/environment/2018/nov/28/climate-change-already-a-health-emergency-say-experts>

174 <https://www.theguardian.com/business/2018/nov/13/world-has-no-capacity-to-absorb-new-fossil-fuel-plants-warns-ia>

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US President. Meanwhile, the Woolsey Fire in Southern California has led to a handful of deaths but widespread evacuations and property as well as air quality damages. Journalist Tim Stelloh from *NBC News* reported, "The fires occurred after years of drought and increasingly deadly and destructive fire seasons. Fire officials and climate scientists have, in part, attributed those fires to climate change, saying the state's fire season may now be year-round. California Gov. Jerry Brown stressed this during a news conference on Sunday night, calling this extended period of fire danger a 'new abnormal'".¹⁷⁷ *CNN* journalists Dakin Andone, Nicole Chavez, and Emanuella Grinberg noted how winds and climate change were 'provoking' the fires.¹⁷⁸

Across the globe in November, there were also stories that intersected with the *cultural* arena. For example, *The Associated Press* reported in mid-November that London protesters representing a group called 'Extinction Rebellion' "blocked off the capital's main bridges to demand the government take climate change seriously... about two dozen people were arrested after protesters blocked traffic and glued themselves to gates outside the Department for Business, Energy and Industrial Strategy".¹⁷⁹ Later in the month, thousands of Australian youth across twenty cities skipped out of school in protest of the Australian government's inaction on climate change. Reporting by Frances Mao from the *BBC* noted, "The idea started with Milou Albrect and Harriet O'Shea Carre, both 14, in the state of Victoria. "The climate change emergency is something we have been thinking about for a long time," Harriet said. "We wrote letters and did different things but they never seemed to make a difference. Really, education, is our only power. By sacrificing that [on Friday], it's making a big point"."¹⁸⁰

177 <https://www.nbcnews.com/storyline/western-wildfires/firefighters-battle-deadly-california-blazes-powerful-winds-return-n934996>

178 <https://www.cnn.com/2018/11/11/us/california-wildfires-camp-woolsey/index.html>

179 <https://www.apnews.com/964844614d0b4a088956f58e79a6c0f8>

180 <https://www.bbc.com/news/world-australia-46380418>

DECEMBER

December media attention to climate change and global warming was up nearly 8% throughout the world from the previous month of November 2018, and up about 54% from December last year. Increase were detected in Asia (up 28%), Central/South America (up 19%), the Middle East (up 7%), North America (up 10%), Oceania (up 37%) and Europe (up 8%), while going down only in Africa (down 25%) this month compared to the previous month of November. Considering content of these news representations, Figure 16 shows word frequency data in the dynamic spaces of Australian and New Zealand newspaper media coverage in December 2018.

In December, considerable attention was paid to *political* and *economic* content. Prominently, the 24th Conference of Parties meeting to the United Nations Framework Convention on Climate Change (COP24) took place in Katowice, Poland. Driven by a journalistic penchant for conflict, media attention was paid to COP24 debates regarding whether to 'welcome' or 'note' the October UN IPCC Special Report on impacts of 1.5°C warming. For example, an *Associated Press* article entitled 'U.S., Russia, Kuwait and Saudis block key climate study at COP24' described that "almost all 200 countries present in Katowice, Poland, had wanted to "welcome" the IPCC report, making it the benchmark for future action. But the U.S. and three other delegations objected...Russia, Saudi Arabia and Kuwait also called for the study to be 'noted' but not 'welcomed'".¹⁸¹ In addition, media stories covered efforts to agree on a Paris Agreement rulebook, and discussions regarding how to establish and sustain financial support from countries of the 'global north' to countries of the 'global south'. For example, journalist Megan Rowling from *Reuters* reported, "More than 190 countries are meeting in the coal-mining town of Katowice through Dec. 14 to hammer out rules that will enable the Paris accord to be put into practice from 2020, and spur countries to strengthen their current climate action plans."

181 <https://www.cbc.ca/news/technology/un-climate-welcome-study-report-objections-cop24-1.4938765>

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Figure 16. Word cloud showing frequency of words (4 letters or more) invoked in media coverage of climate change or global warming in Australian (left) and New Zealand (right) newspaper sources. Data are from five Australian sources – *The Sydney Morning Herald*, *Courier Mail & Sunday Mail*, *The Australian*, *The Daily Telegraph & Sunday Telegraph*, and *The Age* – from three New Zealand sources – *The New Zealand Herald*, *The Dominion Post*, and *The Press*.

Current pledges to cut emissions would lead to global warming of about 3 degrees Celsius this century...under the Paris deal, governments have pledged to hold temperature rise to “well below” 2 degrees C above pre-industrial times, and ideally to 1.5 degrees C. The world has already warmed about 1 degree C.”¹⁸²

In concert with these talks, in a strongly worded letter hundreds of investors with approximately \$32 trillion in assets-under-management demanded that world governments increase their ambition on climate change through policy interventions that assist with progress along decarbonization pathways. They recommended putting a price on carbon and a phasing out of coal power in order to meet the terms of the Paris Agreement. This generated media attention. For examples, journalist Simon Jessop from *Reuters* reported, "A total of 415 investors from across the world including UBS Asset Management and Aberdeen Standard Investments signed the 2018 Global Investor Statement to Governments on Climate Change

182 <https://www.reuters.com/article/us-climatechange-accord-talks/developing-nations-say-swifter-climate-action-depends-on-cash-to-pay-for-it-idUSKBN1O5240>

demanding urgent action".¹⁸³ Journalist Damian Carrington from *The Guardian* noted, "The investors include some of the world's biggest pension funds, insurers and asset managers and marks the largest such intervention to date. They say fossil fuel subsidies must end and substantial taxes on carbon be introduced".¹⁸⁴

Many sub-global issues also percolated in media accounts. For example, on the domestic US front in December, the Andrew Wheeler-led Environmental Protection Agency (EPA) rolled out a plan to reduce restrictions on coal production. Journalist Stephanie Ebbs from ABC News reported “The Trump administration wants to make it easier for energy companies to open new coal-fired power plants, even as government data shows the U.S. is at the lowest level of coal use in decades”.¹⁸⁵ Meanwhile, Nicole Gaouette

183 <https://www.reuters.com/article/us-climatechange-investors/investors-managing-32-trillion-in-assets-call-for-action-on-climate-change-idUSKBN1O80TR>

184 [https://www.theguardian.com/
environment/2018/dec/10/tackle-climate-or-face-
financial-crash-say-worlds-biggest-investors](https://www.theguardian.com/environment/2018/dec/10/tackle-climate-or-face-financial-crash-say-worlds-biggest-investors)

185 <https://abcnews.go.com/Politics/trump-administrations-proposal-aimed-helping-coal-industry/story?id=59628929>

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and Rene Marsh from *CNN* noted, “The Trump administration will reverse an Obama-era coal emissions rule as part of its effort to loosen restrictions on the coal industry, just days after a US government report warned that aggressive action is needed to curb greenhouse gases and ease the impact of global warming. The reversal won’t lead to the immediate construction of new coal-fired power plants, but it does send an immediate political signal that the Trump administration is intent on shoring up the coal industry and other energy interests”.¹⁸⁶

Ecological and *meteorological* dimensions of climate change were featured in a special report from *NBC’s Sunday show Meet the Press*. Host Chuck Todd devoted the full program to examining various connected dimensions of climate change, with touchpoints through the year’s hurricane and flood devastation in the Carolinas and the Florida panhandle, along with wildfires in California.¹⁸⁷ The show featured a panel of experts: Dr. Kate Marvel from Columbia University and NASA Goddard Institute for Space Studies; Craig Fugate, President Obama’s FEMA administrator; Michèle Flournoy, undersecretary of defense under President Obama; Anne Thompson, chief environmental correspondent at *NBC News*; and Florida Republican Congressman Carlos Curbelo. The program also included conversations with former New York City Mayor Michael Bloomberg and California governor Jerry Brown. Chuck Todd framed out the special report stating, “Good Sunday morning, and a happy New Year’s weekend to everyone. This morning, we’re going to do something that we don’t often get to do, dive in on one topic. It’s obviously extraordinarily difficult to do this, as the end of this year has proven, in the era of Trump. But we’re going to take an in-depth look, regardless of that, at a literally Earth-changing subject that doesn’t get talked about this thoroughly on television news, at least, climate change. But just as important as what we are going to do this hour is what we’re not going to do. We’re not going to debate

186 <https://www.cnn.com/2018/12/06/politics/epa-coal-announcement/index.html>

187 <https://www.nbcnews.com/meet-the-press/meet-press-december-30-2018-n951406>

climate change, the existence of it. The Earth is getting hotter. And human activity is a major cause, period. We’re not going to give time to climate deniers. The science is settled, even if political opinion is not. And we’re not going to confuse weather with climate. A heat wave is no more evidence that climate change exists than a blizzard means that it doesn’t, unless the blizzard hits Miami...But we’re going to begin with a look at a crisis that’s been ignored for too long.” As such, the show also featured *political, economic, cultural* and *scientific* themes as well.

Moving to media accounts focused on primarily *scientific* dimensions of climate change and global warming, many new studies relating to climate change garnered attention. For example, findings from the Global Carbon Project¹⁸⁸ – published concurrently in three peer-reviewed journal articles – pointed to a newfound increase in greenhouse gas (GHG) emissions in 2018. From ‘conscious de-coupling’ to a ‘troubling re-coupling’, after a plateau from 2014 through 2016, signs indicate emissions increases once again (up 1.6% in 2017 and up 2.7% in 2018). Journalist Christopher Joyce from *US National Public Radio* reported, “For three years – 2014 through 2016 – the amount of atmospheric CO₂ had leveled off. But it started to climb again in 2017, and is still rising...the CO₂ increase in 2017 over the previous year was 1.6 percent, and in 2018 it’s looking like emissions will have grown a further 2.7 percent. With the economy strong throughout most of the world, 2019 looks to be headed in the same direction, in terms of carbon emissions”.¹⁸⁹ Meanwhile, journalist Seth Borenstein from *The Associated Press* noted that this was a ‘climate reality check’, writing, “After several years of little growth, global emissions of heat-trapping carbon dioxide experienced their largest jump in seven years, discouraging scientists”.¹⁹⁰ More directly, Damian Carrington from *The Guardian* quoted David Reay from the

188 <https://www.earth-syst-sci-data.net/10/2141/2018/>

189 <https://www.npr.org/2018/12/05/673821051/carbon-dioxide-emissions-are-up-again-what-now-climate>

190 <https://apnews.com/17fa2a7bf70b4bec844d836c795d5a57>

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University of Edinburgh who said of the report, "its message is more brutal than ever: we are deep in the red and heading still deeper. For all our sakes, world leaders must now do what is required".¹⁹¹

Also, in December a World Health Organization report¹⁹² came forward with findings that costs of inaction on climate change would be felt particularly in area of public health. The report noted that substantive and sustained GHG emissions cuts could prevent millions of lives lost each year from air pollution-related threats. News media covered this report in the lead up to COP24. For instance, journalist Jacqueline Howard from *CNN* reported, "Meeting the commitments of the 2015 Paris climate agreement could save millions of lives and hundreds of billions of dollars by the middle of the century, according to the report. Meeting the goals put forth in the Paris agreement would be expected to save more than 1 million lives a year from air pollution alone by 2050, it says. Drivers of climate change, principally fossil fuel combustion, contribute to about 7 million deaths worldwide from outdoor and indoor air pollution annually, according to the report".¹⁹³

Across planet Earth in December there was a raft of stories that intersected with the *cultural* arena. For example, *Reuters* reported on a 65,000 person march through the streets of Brussels, Belgium in early December to 'claim the climate'.¹⁹⁴ And the 'Extinction Rebellion' movement for climate action warranted coverage in December. On December 21, journalist Jim Waterson from *The Guardian* reported, "The BBC's central London headquarters has been put on lockdown due to a protest by climate change campaigners who are demanding it uses its status as national broadcaster to declare a "climate and ecological emergency". Extinction Rebellion, a direct

191 <https://www.theguardian.com/environment/2018/dec/05/brutal-news-global-carbon-emissions-jump-to-all-time-high-in-2018>

192 <http://apps.who.int/iris/bitstream/handle/10665/276405/9789241514972-eng.pdf>

193 <https://www.cnn.com/2018/12/05/health/climate-change-cop24-who-study/index.html>

194 <http://news.trust.org/item/20181202174402-fu4e5/>



Figure 17. A tweet from Naomi Oreskes, with responses from Michael Mann and Max Boykoff, discussing the December 30 'Meet the Press' special report (see the December section of the summary for more) along with hopes for improved communications in 2019.

action group that has recently shut down key London roads, has demanded that the BBC makes the environment its "top editorial issue". Broadcasting House was locked down early on Friday afternoon, with BBC staff and guests unable to enter or leave the building while security kept the peaceful but noisy protesters away from the entrance. Extinction Rebellion

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activists, who are demanding a meeting with the BBC director general, Tony Hall, said the corporation had a duty to broadcast about climate change with “the level of urgency placed on informing the public about the second world war”.¹⁹⁵

While the scale of media attention – in terms of both quantity and quality – in 2018 may still pale in comparison to the scale of the challenges faced, we nonetheless still look to 2019 with (involuntary) optimism.

We at the Media and Climate Change Observatory (MeCCO) will continue to monitor and analyze media coverage of climate change throughout the next year, based at the University of Colorado and in partnership with University of New England (USA), Babson College (USA), Universidad de Sevilla (Spain) and the National Institute for Environmental Studies (NIES) in Japan. Over this past calendar year, our team has included contributions from Max Boykoff, Kevin Andrews, Midori Aoyagi Usui, Andrew Benham, Patrick Chandler, Meaghan Daly, Rogelio

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¹⁹⁵ <https://www.theguardian.com/media/2018/dec/21/bbc-london-headquarters-put-on-lockdown-over-protest-by-climate-change-campaigners-extinction-rebellion>

Fernández-Reyes, Lauren Gifford, Jennifer Katzung, Celeste Maldonado, Lucy McAllister, Marisa McNatt, Ami Nacu-Schmidt, David Oonk, Olivia Pearman, and Shoko Yamaguchi.

So stay tuned for our monthly summaries in the coming months, along with new additions of further expansion of monitoring along with analyses of content along scientific, political, economic, ecological, meteorological and cultural dimensions.

Happy New Year! Onward we go.

Report citation: Boykoff, M., Katzung, J., and Nacu-Schmidt, A. (2019) A Review of Media Coverage of Climate Change and Global Warming in 2018, Media and Climate Change Observatory, Center for Science and Technology Policy Research, Cooperative Institute for Research in Environmental Sciences, University of Colorado [http://sciencepolicy.colorado.edu/icecaps/research/media_coverage/summaries/special_issue_2018.html]