

Reflections on Data Science 2023

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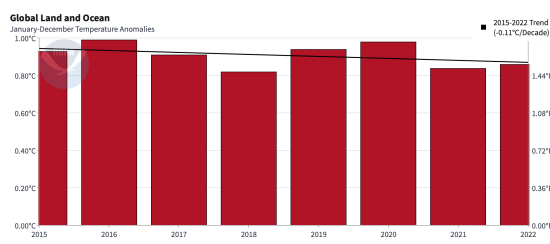
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#3. Lead author: [Lukas Rasocha], Calling BS on "Steve Milloy's tweet claiming that global warming due to CO2 emission is a hoax." (January, 2023)

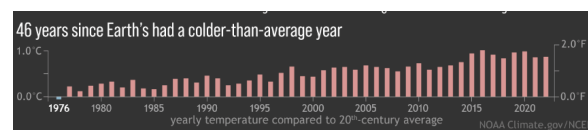
Steve Milloy, the author of the [tweet](#), argues that global warming caused by CO2 emissions is a hoax, based on a figure comparing yearly temperature to the 20th-century average. He includes a regression line to support his claim of a cooling trend and a declining temperature rate. However, Milloy is **lying with his visualization**. Figure 1 presents both Milloy's figure and the original figure from the [NOAA's press release](#), contradicting his assertions.

First, the original figure clearly demonstrates that it has been 46 years since the average yearly temperature was cooler than the 20th-century average. Furthermore, it highlights that the years 2014 to 2022 rank among the ten warmest years. Finally, Professor of geosciences at Princeton University Gabriel Vecchi explains in one of the [articles](#) that climate patterns such as [El Niño and La Niña](#) can cause temporary surface warming and cooling, resulting in fluctuations in the warming rate over short periods. Consequently, cherry-picking specific timeframes to portray a trend in warming/cooling is an invalid approach. Thus, Milloy's distortion of the visualization by selectively zooming in on a small portion of the original figure, is obscuring the overall long-term warming trend. Finally, another visualization technique that distorts reader's perception is the regression line which human brain naturally extends further and consequently can lead the reader to the wrong conclusion that subsequent years will follow the same trajectory.

Global warming is an ongoing and significant issue, with substantial efforts already undertaken. However, much work remains, and politicians play a critical role in driving change to mitigate global warming. To facilitate the implementation of measures by politicians, it is essential to ensure the public is well-informed. Unfortunately, tweets like the one by Steve Milloy only deepen divisions among people's opinions instead of fostering unity. As a consequence, progress towards achieving zero CO2 emissions is hindered, slowing down potential advancements.



(a) Steve Milloy's figure used in his [tweet](#).



(b) Original figure from [NOAA's press release](#).

Figure 1: For both figures, the x-axis captures time in years and the y-axis captures the difference between average temperature in the given year and average temperature of the whole 20th century. The only difference between the two figures is the time span which was selectively chosen by Milloy to be the years between 2015 and 2022. From such perspective, one can see a cooling trend which is further supported by the regression line. However, as argued above, the original NOAA's visualization shows the long term warming trend and as such disputes Milloy's claim.

#4. Lead author: [Lukas Rasocha], Calling BS on "Dr. Simone Gold's tweet claiming 'The same number of athletes died in the last TWO years as compared to a prior 38 years.'" (January, 2023)

In her Twitter thread, Dr. Simone Gold, an experienced emergency physician, begins by stating that prior to 2020, athletes being incapacitated or dropping dead was not a common occurrence. However, she expresses concern that such incidents are now happening with alarming frequency. To support her claim, Dr. Gold backs her claim by two statistics coming from the [letter](#) to the editor of an immunology journal. The first statistic ([source](#)) states that between 1966 and 2004 (a span of 38 years), a total of 1101 athletes died due to various heart conditions. The second statistic, sourced from another article ([source](#)), indicates that from 2021 until the beginning of 2023, the same number of athletes died. To summarise, I call BS on Dr. Gold claim that *The same number of athletes died in the last TWO years as compared to a prior 38 years* due to **unfair comparison** being made since the data collection methodology of the two statistics sources differs in several aspects.

Firstly, the first source focuses specifically on athletes under the age of 35, whereas the second source encompasses athletes of all age groups. Secondly, there are disparities in how the two sources define an athlete. The definition provided in the second source is more ambiguous and encompasses a broader spectrum of individuals who engage in athletic activities. Thirdly, it is important to note that the first source only includes athletes who died from various heart conditions, while the second source takes into account all types of deaths among athletes. Consequently, the two number of the athletes are not the same, contrary to what Dr. Gold wrote. As a result, drawing any meaningful conclusions based on the comparison of these two numbers is not valid due to the inherent unfairness in the comparison. Although Dr. Gold does not explicitly state it in her tweet, the context, such as the year range for the second statistic starting in 2021, suggests that she is attempting to link the increased death rate among athletes to vaccination. Such a tweet supports the opinion that vaccines are dangerous and advocates for avoiding them. However, promoting vaccine hesitancy in this manner can hinder the progress of recovering from the global pandemic and returning to the "normal world".