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Have We Passed the Tipping Point for Climate Change? Charts Tell the Story!

March 18, 2024 - Updated Chart Data on May 2, 2024

By William Strauss, PhD

The question asked in the title of this brief paper is critical.

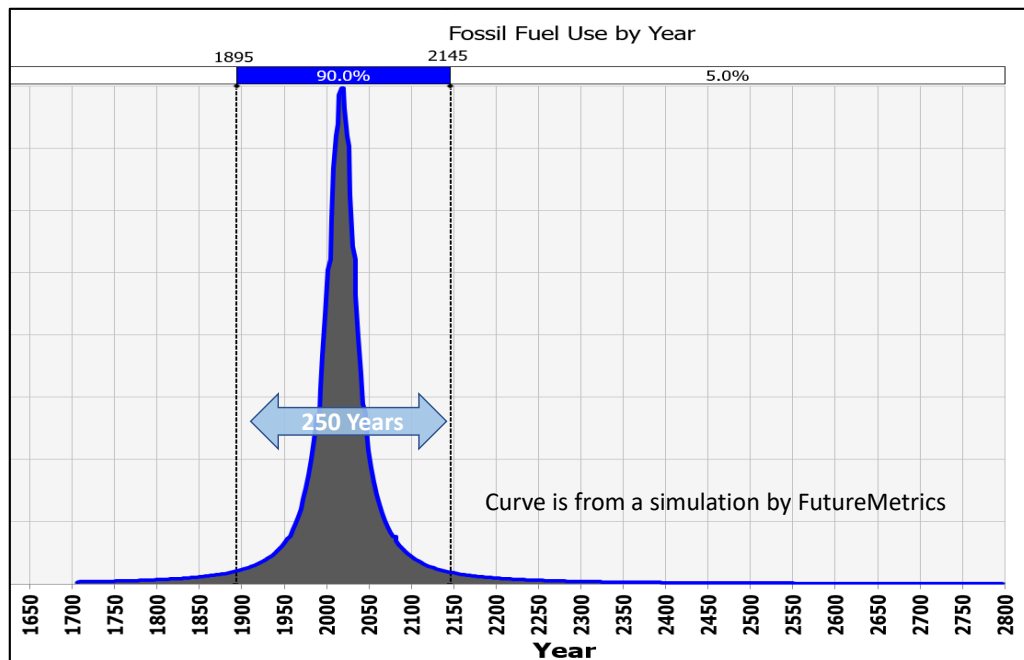
The world is filled with challenges from geopolitical tensions, economic disparities, resource depletion, and many other forces that have the potential to make the future not what it is supposed to be.

Yet underlying everything is an expectation that the planet we all live on will continue to have the capacity to provide a stable platform for the fundamentals of life.

This expectation, that what has worked for eons for life on earth will remain stable now and into the future, can no longer be presumed.

The concentrated energy contained in fossil fuels has been the foundation of a great economic leap forward that has made living on earth what it is today. But using that concentrated carbon-based energy has a cost.

We will release most of the geologic carbon sequestered over hundreds of millions of years over a span of about 250 years.

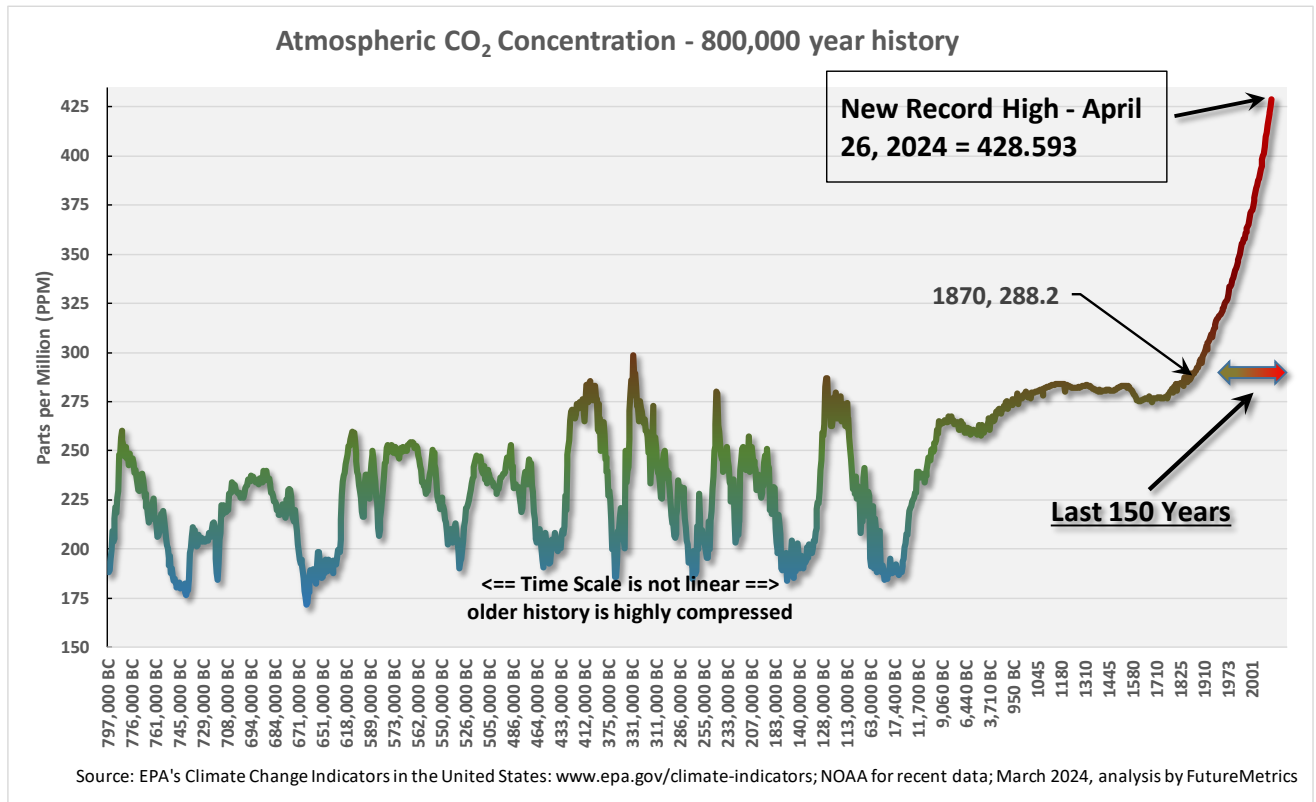




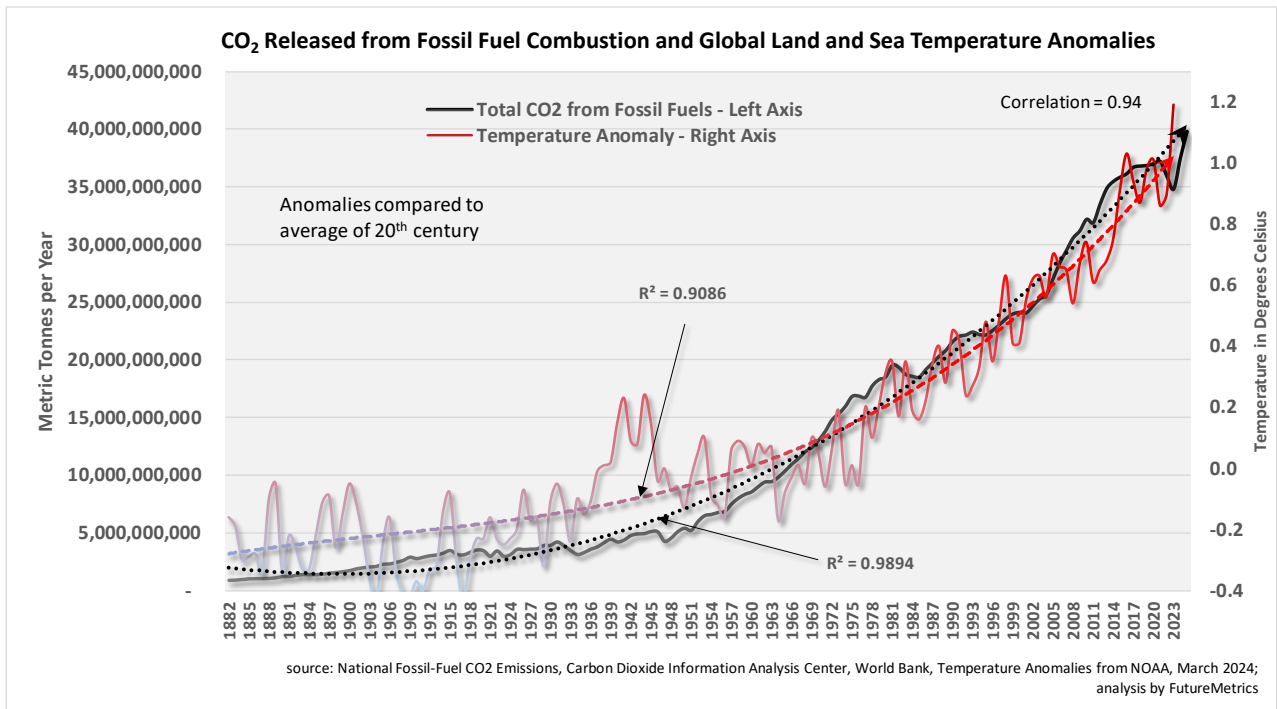
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On March 15, 2024, the earth's atmosphere hit a new record high concentration of carbon dioxide (CO₂).

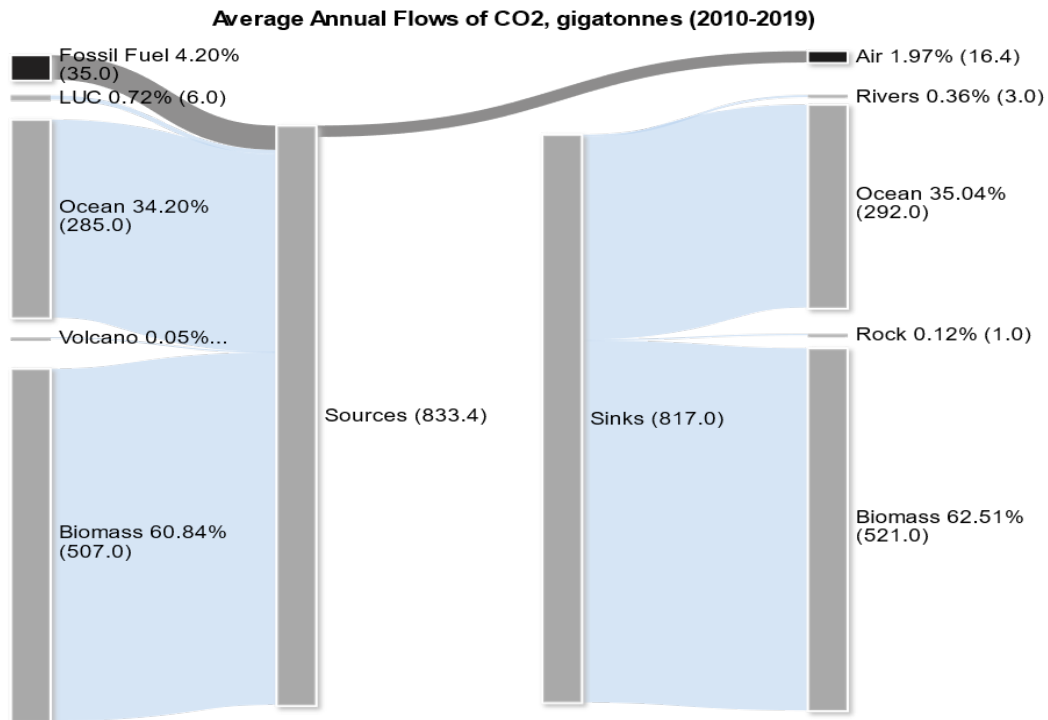


The higher the CO₂ levels in the atmosphere the more heat is trapped on earth.





As a result, the earth's systems are out of balance.



Source: IPCC AR6, Analysis by FutureMetrics

Sources are greater than sinks.

Earth's systems are out of balance.

CO₂ is a natural part of the cycles of life and geology. Over geological time that balance has been maintained. But now, in what is a blink of the eye in geologic time, the earth's systems are being exposed to an unprecedented surge in CO₂ that is changing the climate. And it cannot be reversed in short order; geologic time will be needed.

Fossil fuels will be depleted ... perhaps in 50 or 150 years... who knows for sure. But their supply will end. However, the massive and rapid release of CO₂ from the combustion of those fuels and the out-of-balance condition that has resulted will take much longer to correct. But we cannot wait hundreds of thousands of years.

Unlike other pollutants that cause acid rain and smog, CO₂ is invisible and cannot be seen, smelled, or tasted. Therefore, it is easy to defer on the urgency of decarbonizing our energy sources.

The last chart in this paper (next page) suggests that deferring should not be an option! Climate is produced by complex interactions between atmosphere and oceans. The last few years have shown a rapidly increasing acceleration in global ocean temperature. Such rapid change suggests that the consequences of climate change will be increasingly frequent and severe and more difficult to predict. Complex "[chaotic](#)" climate systems can suddenly no longer be the foundation for well-being but can become the foundation for social and economic chaos.

Could the data be signaling that we have passed the climate change tipping point?



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