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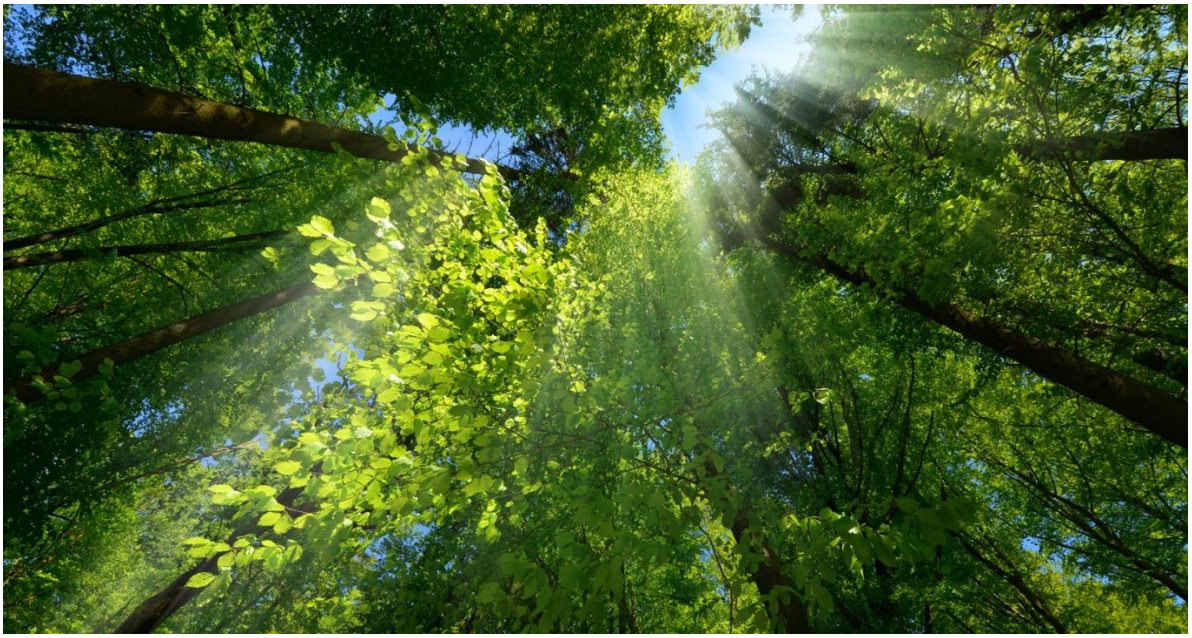
"Clock is running on our reliance on vegetation as a steady 'carbon sink'"

New study finds the rate of capturing CO2 is increasing at a lower rate.

By Kristen Pope | Thursday, March 18, 2021

LINK: https://environment.yale.edu/centers/ycec



Trees and other plants have been critical in helping to remove carbon dioxide (CO2) from the atmosphere. But newly published scientific findings suggest the clock may be running on vegetation's forever continuing at the same carbon sink efficiency rate currently taken for granted.

An international team of researchers published their findings in Science. "The enhanced vegetation productivity driven by increased concentrations of carbon dioxide (CO2) [i.e. the CO2 fertilization effect (CFE)] sustains an important negative feedback on climate warming," they noted in the paper, but "the temporal dynamics of CFE remain unclear."

This "CO2 fertilization effect" (CFE) describes plants using CO2 to increase their photosynthesis rate to help them grow and thrive. The authors found that "global CFE has declined across most terrestrial regions of the globe from 1982 to 2015, correlating well with changing nutrient concentrations and availability of soil water."

Plants sequester CO2 in their roots, trunks, and branches and other parts. For decades, the extra CO2 in the atmosphere was a "bonus" for the plants, allowing plant growth to increase as the plants sequestered CO2, leading to more photosynthesis and growth. This process is helpful also to humans in that it reduces the volume of CO2 in the atmosphere. However, as atmospheric CO2 levels keep rising (reaching more than 415 parts per million as of January 2021), water and nutrient levels in the environment – two other essential elements plants need to grow – are not rising in sync with the soaring CO2 levels.

Rate of increasing greenness 'steadily increasing,' but at a lower rate

"What we are seeing here is that the pace, the rate of this increasing greening, is decreasing. This is what makes this study special," says study coauthor and Professor Josep Peñuelas, an ecologist with the Centre de Recerca Ecològica i Aplicacions Forestals (CREAF) in Spain. "It says to us that the rate of increasing of greenness seems to [be] steadily increasing, but with a lower rate."

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