Global warming: New study challenges carbon benchmark

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Picture of the rainforest on the Costa Rican Pacific coast in 2005. The ability of forests, plants and soil to suck carbon dioxide (CO2) from the air has been under-estimated, according to a study on Wednesday that challenges a benchmark for calculating the greenhouse-gas problem.

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Like the sea, the land is a carbon "sink", or sponge, helping to absorb heat-trapping CO2 disgorged by the burning of fossil fuels.

A conventional estimate is that soil and vegetation take in roughly 120 billion tonnes, or gigatonnes, of carbon each year through the natural process of photosynthesis.

The new study, published in the science journal *Nature*, says the uptake could be 25-45 percent higher, to 150-175 gigatonnes per year.

But relatively little of this extra carbon is likely to be stored permanently in the plant, say the researchers. Instead, it is likely to re-enter the atmosphere through plant respiration.

This will be a disappointment for those looking for some good news in the fight against climate change.

The more carbon is sequestered in the land, the less carbon enters the atmosphere, where it helps to trap heat from the Sun.

Lead researcher Lisa Welp, of the Scripps Institution of Oceanography in the University of California at San Diego, said figuring out the annual carbon uptake from the terrestrial biosphere had been one of the biggest problems in the emissions equation.

Scientists, though, were confident about current estimates for carbon sequestration in land and this was unlikely to change much in the light of the new findings, she said.

"More CO2 is passing through plants (than thought), not that it actually stays there very long," she said in email exchange with AFP.

"The extra CO2 taken up as photosynthesis is most likely returned right back to the atmosphere via respiration."

The research looked at isotopes, or variations, in the oxygen component of CO2, using a databank of atmospheric sampling going back three decades.

These isotopes are a chemical tag, indicating the kind of water the

molecule has come into contact with.

The researchers looked at isotopes whose concentrations are linked to rainfall.

They were struck by a clear association between these isotopes and El Nino, the weather cycle which occurs in pendulum swings every few years or so.

The implication from this is that CO2 is swiftly cycled through land ecosystems, the researchers suggest. From that assumption comes the far higher estimate of annual carbon uptake.

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