

Have You Seen the Economic Recession in the Atmospheric CO₂ Record?

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Many times during 2008 and 2009, we have been asked the question whether we have detected a slowing growth rate or even a decrease in atmospheric CO₂. Although in many cases the question is based on a misconception about the relation between emissions and atmospheric CO₂, historical emissions inventories do show the effect of events like the Great Depression and World War II. Year to year variations of the growth rate of CO₂ are dominated by natural variations of terrestrial sources/sinks responding to variations of climate. The number of years required to detect with confidence, a change in global emissions of a given magnitude is estimated. The most important factor is our degree of quantitative understanding of natural exchange of carbon between the atmosphere and terrestrial biosphere and oceans. The latter also permits an estimate of future atmospheric CO₂ excess as a result of all emissions until the present, on a country by country basis.

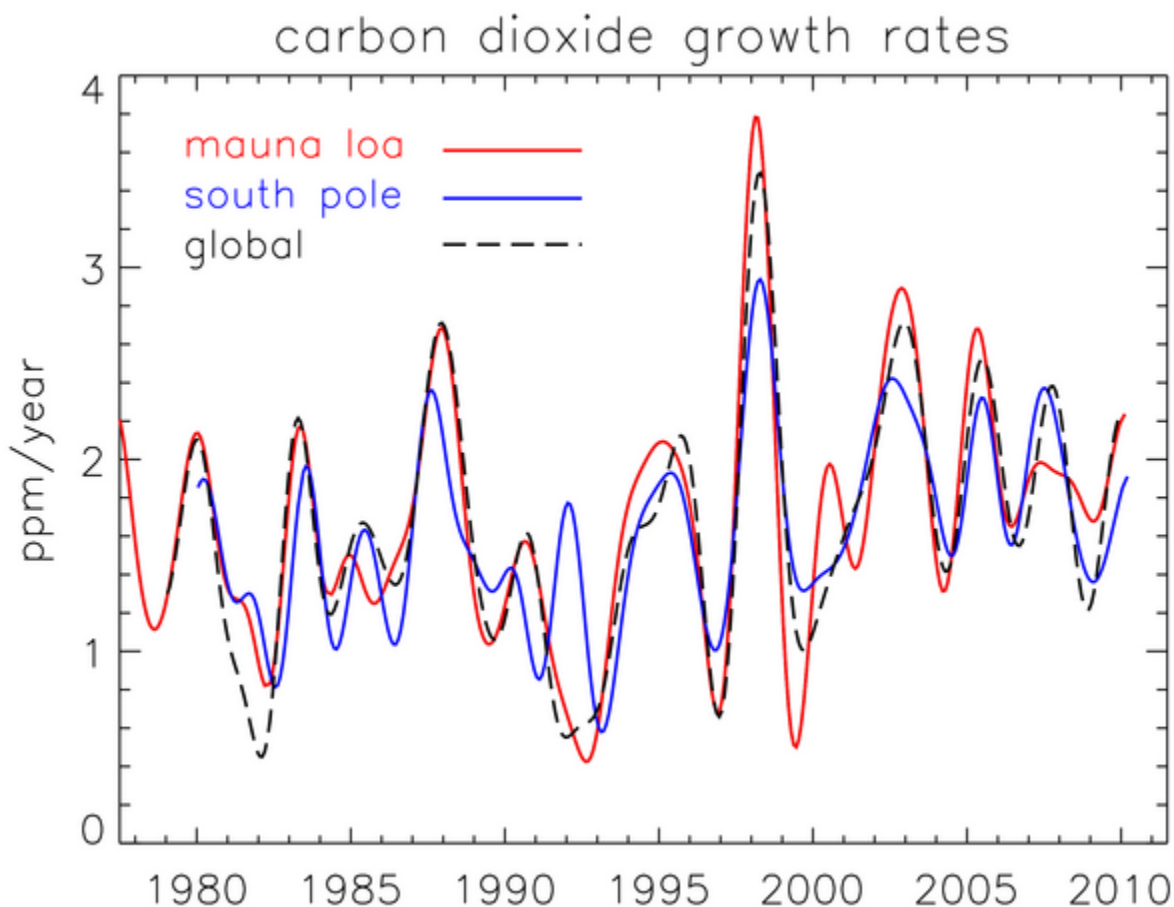


Figure 1. Comparison of the observed rate of increase of atmospheric CO₂ at two background stations with the global average estimated from marine boundary layer sites. The rate of increase expressed in ppm/yr can be turned into billion metric tons of carbon in the global atmosphere through multiplying by 2.124.