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# El Niño, global $CO_2$ and forest growth

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An idea about the El Niño effect on global climate and, consequently, on forest vegetation has appeared regularly during the last decade. Though El Niño nature is still discussed, it is supposed that the atmospheric carbon dioxide driven by El Niño is the most important factor, controlling growth of forests not only in near-equator latitudes, but also worldwide [see, for example, L.R. Welp et al., Nature, Vol. 477, 2011].

To check this hypothesis we have analysed yearly mean velocity of green biomass growth derived from 25 years long NDVI time-series for evergreen and deciduous forests, which cover respectively 4785994 x $10^3$ $km^2$ and 8032392 x $10^3$ $km^2$ of the North Eurasia.

It was found out that in spite of some similarity, it is impossible to explain 2-2.5 year periodicity in forest growth by El Niño effect. Moreover, analysis of the cross-correlation function shows that changes in trees growth usually occur 1-3 years earlier El Niño. This means that there is no direct and expected "El Niño $\rightarrow$ increased $CO_2$ $\rightarrow$ intensification of vegetation" tie. The paradoxical result is that, most possibly, climate conditions in the Northern Eurasia (determining observed forests growth in rather high latitudes) influence global temperature and then impacts low-latitudes water temperature that trigger El Niño. It seems that there is $\sim$2 years floating time delay in this process.

Therefore, "El Niño $\rightarrow$ global vegetation increase" connection is not so obvious and direct as it was supposed before; the clarifiaction of this tie demands further extended interdisciplinary investigations.