

## **Inter-annual variability of the global land carbon cycle**

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The natural carbon reservoirs – the terrestrial biosphere and the oceans – absorb more than half of the CO<sub>2</sub> emitted to the atmosphere by human activities on average, thus slowing down the rate of global warming. However, the strength of this sink is very sensitive to climate conditions, showing high year-to-year variation. This is evident in the dynamics of annual growth rate of atmospheric CO<sub>2</sub>, which has varied with the amplitude of 5 Pg C yr<sup>-1</sup> over the last three decades. Understanding the inter-annual variability of global carbon sink and its driving mechanisms is one of the essential ingredients for predicting future atmospheric CO<sub>2</sub> concentration, and future response of the global carbon cycle to climate change. Here, I use a combination of observations and bottom-up (carbon cycle models) and top-down (atmospheric inversion models) approaches to gain insight into the process underlying inter-annual variability of carbon fluxes over the past three decades.