



Extreme events and the terrestrial carbon cycle - mechanisms, processes and impacts on different ecosystem types-

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Severe droughts, heat waves, extreme precipitation or storms can impact the structure, composition, and functioning of terrestrial ecosystems and thus their carbon cycling and carbon sequestration potential. Besides direct impacts on the carbon fluxes of photosynthesis and respiration, extreme events may also trigger further partially lagged phenomena such as heat wave and drought related fires, pest and pathogen outbreaks following heavy storm caused windthrow or drought stress reduced plant health. Extreme events have the potential to cause rapid carbon losses from accumulated stocks, as well as long-lasting impacts on the carbon cycle due to direct and lagged effects on plant growth and mortality, going often beyond the duration of the extreme event itself. Extreme events have the potential to impact the terrestrial ecosystem carbon balance through a single factor or as a combination of factors, and forests, grassland and croplands are differently affected by the various types of extremes.