

Wildfires Linked to Oceanic Anoxic Events in Geological History

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Wildfires have the potential to drastically modify the hydrological patterns of a region. These alterations subsequently influence the quantity and type of nutrients exported from terrestrial to aquatic ecosystems, leading to shifts in water quality and fundamental ecosystem processes. Geological records serve as a window into the past, offering an integrated view over both space and time on how aquatic ecosystems have historically responded to massive wildfires. These records can provide information on the long-term consequences of such events and aid in predicting potential future outcomes. We use the Late Devonian period as an example to show how massive wildfires can contribute to widespread degradation of the marine ecosystem. We compiled evidence that showed wildfire events were increasing on a global scale during the Late Devonian. These events were compared to the records of oceanic anoxic events that have been recognized as a direct trigger for mass extinctions. Our results highlight the severe consequences that wildfires can have on aquatic ecosystems at a global scale, including potentially shifting their evolutionary trajectory.