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Volcanism drove enhanced chemical weathering during the Late Triassic Carnian Pluvial Event

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The Carnian Pluvial Episode (Late Triassic) was a time of global climatic and environmental changes, biotic turnover and carbon-cycle disturbances. The Wrangellia Large Igneous Province (WLIP) eruptions are thought to be a primal driver given a general temporal coincidence between the two. The impacts of enhanced volcanism have been widely identified in marine sediments, but direct evidence of terrestrial impacts remains rare. Here, we measured organic carbon isotopes ($\delta^{13}C_{org}$), mercury (Hg) concentrations and isotopes, chemical index of alteration (CIA), and clay minerals at a terrestrial CPE section (namely Luojiagou) in South China. Enhanced Hg loading (evidenced by elevated Hg concentrations), coupled with negative shift in $\delta^{13}C_{org}$ at the onset of the CPE are interpreted to be fingerprints of enhanced volcanism, as corroborated by synchronous positive shift in $\Delta^{199}Hg$ and negative shift in $\delta^{202}Hg$ values that is a signature of enhanced atmospheric Hg^{2+} deposition. Climate warming induced by enhanced volcanism could have caused intensification of chemical weathering on land, as evidenced by progressively raised CIA values and gradual disappearance of chlorite gradual increase in kaolinite contents during and soon after the CPE. Our results provide robust evidence of a prime driver of enhanced volcanism on the CPE event and intensification of continental chemical weathering during and in the aftermath of CPE.