# Impact of the 2008 Wenchuan earthquake on river organic carbon provenance: Insight from biomarkers

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Large earthquakes can trigger widespread landslides in active mountain belts, which can mobilize biospheric organic carbon (OC) from the soil and vegetation. Rivers can erode and export biospheric particulate organic carbon (POC), which is an export of ecosystem productivity and may result in a $CO_2$ sink if buried in sedimentary deposits. Our previous work showed that the 2008 $M_w$ 7.9 Wenchuan earthquake increased the discharge of biospheric OC by rivers, due to the increased supply by earthquake triggered landslides (Wang et al., 2016). However, while the OC derived from sedimentary rocks could be accounted for, the source of biospheric OC in rivers before and after the earthquake remains poorly constrained. Here we use suspended sediment samples collected from the Zagunao River before and after the Wenchuan earthquake and measured the specific compounds of OC, including fatty acids, lignin phenols and glycerol dialkyl glycerol tetraether (GDGT) lipids. In combination with the analysis of bulk elemental concentration (C and N) and carbon isotopic ratio, the new data shows differential export patterns for OC components derived from varied terrestrial sources. A high frequency sampling enabled us to explore how the biospheric OC source changes following the earthquake, helping to better understand the link between active tectonics and the carbon cycle. Our results are also important in revealing how sedimentary biomarker records may record past earthquakes.