

ORGANIC GEOCHEMISTRY OF THE KT BOUNDARY

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We have used, carbon and nitrogen isotope measurements together with molecular level isotope analysis of biomarker molecules to assess changes in environmental conditions at K-T boundary sites in the Western Interior of North America and Europe. Both marine and terrestrial sites show similarities in the variations in carbon and nitrogen isotope signatures of organic matter. Carbon isotope compositions of total organic carbon at marine and terrestrial sites become more carbon-13 depleted in the lowermost Tertiary layers. These changes are concomitant with carbon-13 depletions in higher plant biomarker molecules from terrestrial sites. Such shifts may indicate a major disruption of the carbon cycle immediately following the impact. Highly carbon-13 depleted hopanes from methanogenic and methanotrophic bacteria, and less carbon-13 depleted hopanes from other bacterial sources were also found in the earliest Tertiary layers of terrestrial sites. These results are indicative of the onset of anoxic conditions in freshwater ecosystems following the impact. These changes are consistent with a major disruption of marine and terrestrial ecosystems following the