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The Cretaceous/Tertiary Extinction Event and Clues Regarding the Existence of Wildfires: A Carbon Study

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THE CRETACEOUS/TERTIARY EXTINCTION EVENT AND CLUES REGARDING THE EXISTENCE OF WILDFIRES: A CARBON STUDY.

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The theory that a giant meteorite impacted with the Earth 65 million years ago (Alvarez et al., 1980), causing the world-wide mass extinction at the Cretaceous/Tertiary (K/T) boundary, was supported by the discovery of major wildfires by Wolbach et al. (1985). Samples collected in Haiti, near the proposed location of the impact crater in the Yucatan Peninsula, may yield clues which will further support the impact/wildfire cause of the extinctions at the K/T boundary.

Alternating rock demineralization treatments of HCl and HF were used to isolate elemental and organic carbon from sedimentary rock samples spanning the K/T boundary at the deep sea Beloc site in Haiti. After determining the mass abundance of reduced carbon in each sample, half of the resulting residue was removed and carbon isotopes ($^{13}C/^{12}C$) measured using mass spectrometry. The remaining portion is currently being oxidized with $Cr_2O_7^{2-}$ to remove organic carbon and kerogen, leaving elemental carbon. Elemental carbon will be analyzed isotopically and imaged using a scanning electron microscope to determine its morphology. If the carbon has the characteristic morphology of soot ("bunch of grapes"), the soot content of that sample can be determined. A discovery of soot would support the existence of wildfires 65 million years ago. The results of mass abundance, isotopic composition and scanning electron microscope studies may thus yield information to indicate the global environmental stresses which contributed to the Cretaceous/Tertiary mass extinctions.