Apr 25th, 10:30 AM - 4:30 PM

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ANALYSIS OF CARBON ACROSS THE CENOMANIAN-TURONIAN BOUNDARY

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Soot from wildfires has been discovered in sedimentary rocks at the 66 Ma-old Cretacous-Tertiary (K-T) boundary, a time of mass extinctions which included those of the dinosaurs. This extinction was presumably caused by the impact of a giant meteorite. The question at hand is whether other extinctions have been caused by meteorite impacts as well. Discovery of impact-related evidence at a smaller extinction event that occurred during the Cenomanian-Turonian boundary (C-T) 92 Ma ago, where plankton were the chief casualty, could lend support to the impact theory. Analysis of sedimentary rocks spanning this extinction horizon for possible changes in abundance, morphology, and isotopic composition of reduced organic and inorganic carbon (soot) may yield such information. In the absence of soot, the isotopic study of the organic carbon could yield important clues regarding changes in the environment at that time.

Currently two sample sites are being analyzed for reduced carbon content: Red Wash, New Mexico and Chipsa Summit, Texas. Both sample sites are from the Western Interior Basin. During the time of the extinctions 92 million years ago, the basin was an inland sea. The preliminary data suggests a decrease in the amount of reduced carbon at both sample sites. This would indicate that the extinction that took place was not rapid. Lower amounts of reduced carbon are generally more characteristic of extinctions caused by changes in climate conditions, compared with those caused by meteorite impacts. Climate changes would allow microorganisms time to digest (oxidize) the plankton before sedimentation could occur, thus reducing the amount of reduced carbon preserved in the rock.