

THE STRATIGRAPHIC AND HISTORIC RECORD OF METEORITIC IMPACT EVENTS IN ALABAMA. D. T. King, Jr.¹ and L. W. Petruny². ¹Dept. Geology, Auburn U., AL 36849 USA [kingdat@auburn.edu]. ²AstraTerra Research, Auburn AL 36831-3323 USA.

Commencing with the Wetumpka impact event ~83 m.y. ago and continuing to present, Alabama has had its fair share of meteoritic impact events, both large and small. Alabama's "heavy bombardment" era occurred during Cretaceous. Cosmic impact at Wetumpka (Elmore County) concerned a ~350-m diameter chondritic (?) asteroid, which struck in ~50 m of sea water covering the Mooreville shelf [1]. Both crystalline bedrock and overlying Upper Cretaceous sediments were involved in local deformation during this impact, which is marked by a deeply eroded, 7.6-km diameter, semi-circular rimmed impact structure. Effects of the 65-Ma Chicxulub (KT) impact event (~1250 km across the Gulf of Mexico) are well recorded in western Alabama's stratigraphic record where KT boundary tsunami sands (basal Clayton Formation) are deposited upon scoured and fractured late Maastrichtian marls [2, 3]. Alabama's "light bombardment" era of historic impacts was ushered in by the great Leonid meteor shower of November 12-13, 1833. Carl Carver's 1934 book *Stars Fell on Alabama* recounts how this meteor shower was so spectacular in



Alabama's skies that – even a century afterward – ‘memories of the oldest ones’ marked time from “the year the stars fell.” This phrase found its way into popular song and now adorns Alabama's current automobile license tags. The historic era commences in earnest in late 1868 when two bolides, one over (Morgan County (on November 27) and the other over Franklin County (on December 5) were seen and the respective fallen bodies recovered. In 1900, a fiery bolide was seen and a fallen mass

recovered in Perry County (May 15). In 1907, a bright bolide was seen over Colbert County (January 12) and the fall recovered. The 1933 Athens bolide fell in Limestone County (July 11). The 1954 Sylacauga bolide (Talladega County, November 30) is celebrated for the stone having penetrated a house roof and causing a human injury. On December 5, 1999, the Trans-Alabama superbolide illuminated almost all of Alabama and parts of four adjacent states as it crossed the state on a fiery southeasterly trajectory [4]. This potentially large meteoritic mass has not been recovered. It is interesting to note that 4 of the 7 Alabama historic bolide events occurred within 8 calendar days of one another (November 27-December 5), and two on the same day (December 5, 1868 and 1999)!

References: [1] King Jr. et al. 2002. *Earth and Planet. Sci. Let.* 202:541-549. [2] Smit J. et al. 1996. *Geol. Soc. Amer. Spec. Publ.* 307:151-182. [3] King Jr. D.T. and Petruny L.W. 2005. *Gulf Coast Trans. Geol. Soc.* 55. [4] King Jr. D.T. and Petruny L.W. 2003. *Eos, Trans. Amer. Geophys. Union* 84:253, 257.