Suborbital Ballistic Emplacement

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Introduction: A large, enigmatic North America (N.A.) sand blanket bears signatures of secondary partitioning from an oblique cosmic impact. Recent lunar data, tektite source composition analysis, high resolution LiDAR, Suborbital Analysis and impact modeling are reviewed and considered.

Discussion: Indication of large recent impacts in the terrestrial neighborhood include lunar swirls [1], volatiles H_2O & CO_2, light hydrocarbons and sulfur-bearing species on the moon [2]. Tagel et al. suggest traces of chondrite within the Australasian (AA) tektites [3], but that Cr/Ir mix line is not from Upper Continental Crust (UCC), rather from a more mafic CC source shown in Ni/Ir and Cr/Ir ratios per Shirai et al. [4]. Overall, the 786 ka Australasian (AA) tektite REE signature compares to UCC. The recent AA tektite event has no known impact structure [3], possibly due to an unusual imprint from oblique impact into a low impedence layered target, per Stickle and Schultz [5] and others.

Analytical Methods: Ongoing LiDAR Survey analysis by M. E. Davias [6-9], continuing Suborbital Analysis by T.H.S. Harris [10-14] and Harris & Davias [15,16] characterize an implied ejecta blanket from a large, low density oblique bolide impact into the continental ice sheet over the N.A. Great Lakes region at MIS 20, at once creating the 400,000 sq. km. Carolina bays depositional blanket and the nearly antipodal AA tektite strewn field with laterite bed.

Question: Is Michigan's "lost interval" [17] actually impact excavation, with ice sheet shocked to steam plasma as the motive engine for the AA tektites, their highly acidic Indochina laterite bed and the Carolina bays? The latter expresses 45,000+ suborbital ballistic emplacements of only 6 archetype shapes in a blanket of highly fractured angular depositional sand having no biotic detritus, no local source, and seeping H_2 [18]. AA zircons match Michigan [15].…

References: [1] M.B. Syal & P.H. Schultz (2015) *Icarus* v257, 194–206. [2] A. Colaprete et al. (2010) *Science* v330, 463. [3] Tagel et al. (2014) *LPSC XLV,* 2222. [4] N. Shirai et al. (2016), *LPSC XLVII,* 1847. [5] Stickle and Schultz (2011), *LPSC XLII*, 2698. [6] M. Davias (2011), *GSA Ann. Mtg., P#165-9* [7] M. Davias (2012), *GSA Annual Mtg.,* S28 P#14 [8] M. E. Davias (2013), *GSA Annual Mtg., S314 P#2* [9] M. Davias (2015), *GSA Annual Mtg.,* P214-1 [10] T.H.S. Harris and H. Povenmire (2015), *LPSC XLVI, 1291* [11] T.H.S. Harris (2015), Bridging the Gap III, 1021 [12] T.H.S. Harris (2015), Bridging the Gap III, 1042 [13] T.H.S. Harris (2015), *LPSC XLVII,* S305 P#90 abs. 1214 [14] T.H.S. Harris (2016), *LPSC XLVII,* S306 P#119, abs. 1033 [15] M. Davias and T.H.S. Harris (2015), GSA N. Central Section Mtg., S3 P#1 [16] T.H.S. Harris and M. Davias (2015), *AGU Fall Mtg*., ED31C-0906 [17] Dorr & Eschman 1970, *U Michigan Press* [18] V. Zgonnik et al. (2015), *Progress in Earth Sci*.