

**Impact conclusions are a restatement of assumptions with literature misinterpretations**

Mark Boslough

Sandia National Laboratories, Albuquerque, NM 87185

The conclusions of Wu *et al.* (1)--that spherules and magnetic grains at the Younger Dryas Boundary (YDB) are derived from an impact--are restatements of two assumptions: 1) spherules and magnetic grains are impact indicators, and 2) the presumed impact indicators are stratigraphic markers that define the YDB.

First, the authors acknowledge that glass spherules like those they studied can be produced in blast furnaces, but argue against this source because they have not found historical evidence of a blast furnace within 50 km of the site. However, evidence is also lacking for an impact crater of the correct age. Their conclusion is based on an implicit but dubious assumption that an undocumented blast furnace--or unknown transport efficiency of anthropogenic spherules--is less likely than an undiscovered fresh impact crater.

Second, the authors did not actually date the spherules, magnetic grains, or the layer in which they were collected. The claimed YDB age appears to be based primarily on the assumption that there should be an increased concentration of assumed impact markers at the boundary, and then using those markers to define the location of the YDB.

The discussion of Wu *et al.* (1) also reveals several misunderstandings of cited literature. For example they cited Higgins *et al.* (2) as giving a provisional date of 12.9 ka for the Corossal Crater. The cited abstract in fact gives no provisional age. It only proposes that the crater could be as young as Pleistocene and uses a crude estimate for the age of sediments to suggest 12.9 ka as the youngest possible age. However, it does not rule out an impact nearly as old as the Ordovician target limestone. The range of uncertainty therefore exceeds 440 million years.

Wu *et al.* (1) also propagates misunderstandings of airburst physics by members of the YDB impact group by citing their papers instead of the original sources of the suggestion that layered tektites and Libyan Desert Glass are products of airbursts. The first physics-based model for a glass-producing non-crater-forming cluster of airbursts was that of Boslough (3). This idea was superseded by a more widely accepted (but probably crater-forming)

radiation/conduction/ablation mechanism of Boslough and Crawford (4). The YDB impact hypothesis is not consistent with the physics of either mechanism.

Finally, Wu *et al.* (1) inexplicably cited LeCompte *et al.* (5) as providing additional supporting evidence for the impact of a fragmented comet at the YDB. In fact LeCompte *et al.* (5) took an explicitly neutral stance on the YDB impact hypothesis, stating only that their results were “consistent” with an impact while making no mention of a comet at all, either fragmented or otherwise. This mis-citation is particularly troubling in light of the fact that M. LeCompte--who is also coauthor of Wu *et al.* (1)--has refused to make his samples available to independent researchers, withheld the details of his experimental protocol, and failed to reveal the identity of all the contributors associated with the cited study.

#### LITERATURE CITED

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