

ISOTOPIC COMPOSITIONS OF TEKTITES FROM BELIZE.

Christian Koeberl^{1,2}, Wencke Wegner², and Billy P. Glass³.
¹Natural History Museum, 1010 Vienna, Austria; E-mail: christian.koeberl@univie.ac.at. ²Department of Lithospheric Research, University of Vienna, Althanstrasse 14, 1090 Vienna, Austria; ³Dept. Geology, University of Delaware, Newark, DE 19716, USA.

Tektites – glasses that form during hypervelocity impact events on Earth – occur on Earth primarily in four geographically extended strewn fields, which are (with increasing age): Australasian, Ivory Coast, Central European, and North American. Their composition is identical to terrestrial surface rocks, with no or only very minor meteoritic admixture. Tektites were derived from the very surface of the target area and may have formed and ejected before the main crater excavation phase even begun (see, e.g., [1]). Within the past 20 years, tektite-like glasses have reported from western Belize, possibly indicating a new strewn field in Central America. These glasses were dated by the ⁴⁰Ar-³⁹Ar method, giving total fusion ages of 820±40 ka (2σ) [2], or a plateau age 769±16 ka [3].

Recently, we analyzed the petrographic and geochemical composition of 18 Belize samples that were found and donated by J. Cornec (Denver) [5]. The samples have appearances similar to normal splash-form tektites, although there are many irregular forms as well. Compared to Australasian splash form tektites, the Belize samples are more heterogeneous, both in terms of petrography and geochemistry. The major element composition shows much higher intra-sample variations as “normal” tektites. The petrography supports an impact origin. We now analyzed the Rb-Sr and Sm-Nd isotopic composition of 12 of these samples, and the results (Fig. 1) show a composition unlike any other tektites and similar to that of terrestrial mantle rocks. This means that either these are volcanic glasses or the impact occurred in a volcanic target. Despite the similar age the glasses are unrelated to the Australasian strewn field.

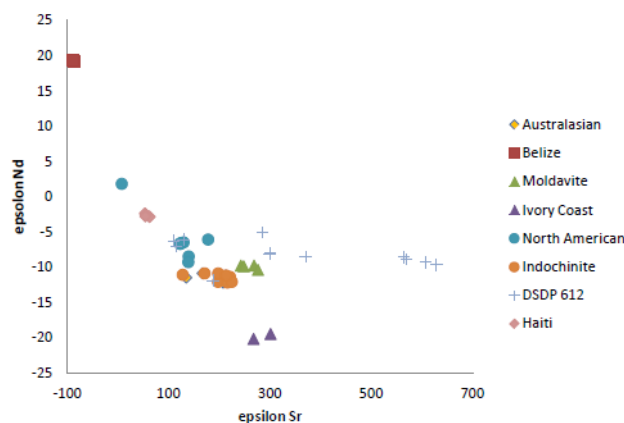


Fig. 1. Rb-Sr and Sm-Nd isotope data for Belize tektites.

References: [1] Koeberl C. 1994. *GSA Special Paper* 293:133-152. [2] Izett G.A. and Meeker G. 1995. *GSA Abstr. w. Progr.* 24(6): 207. [3] Schwarz W.H. et al. 2013. *LPSC* 44:1888. [4] Koeberl C. and Glass B.P. 2014. 77th Annual Meteoritical Society Meeting, abs. #5034.