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10Be CONTENT IN SUEVITE BRECCIA FROM THE BOSUMTWI IMPACT CRATER

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Introduction: According to the current understanding of meteorite impact processes, surface target material is transported from a crater in the form of ejecta or is vaporized/melted (e.g., [1]). The formation model of tektites from the surface of the target rocks has been established using the ^{10}Be content of tektites (e.g., [2]), and chemical comparison with the possible target surface material (e.g., [3]); it was also reproduced by computer modeling (e.g., [4]). On the other hand, some observations ([5, 6]) suggest that part of the surface material may be incorporated into the crater-fill. The aim of this study is to check if surface-derived material is present in suevitic breccias to better understand formation mechanisms of fallback breccias. Also, ^{10}Be can be used to trace contamination of rocks in the top layer of the suevitic layer by meteoric (lake) water. This abstract is an update (based on more data now available) of the previous report presented during the Metsoc75 conference.

Samples: The Bosumtwi crater was chosen as study site because of its relatively large size (10.5 km in diameter), young age of 1.07 Ma [7], good state of preservation, and availability of core samples. Clasts from suevitic breccia selected for this study come from the LB-07A and LB-08A cores that are located within the crater and represent fallback breccia (e.g., [7]). Of 41 analyzed samples (22 single clasts and 21 matrix samples – 11 of those being monomictic breccia), 36 came from core LB-07A (in the zone outside the central uplift) and represent depths of 333.7 – 407.9 m and 5 are from core LB-08A (on the flank of the central uplift) from depths 239.5 – 264.9 m.

Methods: For each sample, 0.8 g of finely grounded material from clasts containing in situ produced and meteoric ^{10}Be was dissolved in a mixture of HF and HNO_3 by microwave digestion. A ^{9}Be carrier (1 mg or 0.6 mg, ^{10}Be/^{9}Be ratio: $2.82\pm0.31*10^{-15}$ [2σ uncertainty]) was added to the sample, and then Be was chemically separated from the sample solution. ^{10}Be/^{9}Be ratios were measured at the Vienna Environmental Research Accelerator Facility (VERA) at the University of Vienna.

Results: Most samples have ^{10}Be/^{9}Be ratios indistinguishable from the blank value within 2σ uncertainty. Samples located just below the boundary between impactites and lake deposits have slightly elevated (1 σ significant) ^{10}Be/^{9}Be ratios.

Discussion: The data suggest that none of the analyzed samples present in the suevitic breccia of the Bosumtwi crater come from the surficial layer (0-20 m) of the target.

A very small amount of the ^{10}Be present in the layer directly underneath the lake sediments suggests that those two deposits were very efficiently separated from each other. Possibly, this separation was caused by the uppermost impact fallback layer described by Koeberl et al. (2007).

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