^{10}BE CONTENT IN CLASTS FROM FALLOUT SUEVITIC BRECCIA IN DRILL CORES FROM THE BOSUMTWI IMPACT CRATER, GHANA: CLUES TO PRE-IMPACT TARGET DISTRIBUTION.

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Aim: We investigated if surface-derived material is present in the suevitic breccia of the Bosumtwi crater so that the extent of mixing of target rocks during crater formation in respect to the fallback breccia can be determined. We also analyzed the uppermost fallback impactites to see if seepage of meteoritic water into the crater floor caused elevated ^{10}Be contents.

Samples: The Bosumtwi crater was chosen as study site because of its relatively large size (10.5 km diameter) and young age (1.07 Ma), good preservation, and availability of core samples [1]. Clasts and matrix of suevitic breccia for this study were taken from the LB-07A and LB-08A cores that are located within the crater and represent fallback breccia (e.g., [2,3]). In total, 29 samples were analyzed: 17 single clasts and 11 breccia samples.

Methods: ^{10}Be is a cosmogenic radionuclide with a half-life of 1.386±0.016 Ma [4]. It is produced in the atmosphere and *in situ* primary by interaction of ^{16}O, ^{28}Si, and ^{9}Be with cosmic rays. As a result, the ^{10}Be content is highly enriched in the top few meters of surface rocks [5], and could, therefore, be used to trace the near-surface origin of clasts displaced during the impact process.

Samples were acid-dissolved and a carrier (0.6 or 1 mg, ^{10}Be/^{9}Be ratio: $2.7*10^{-15}$ with the data scattering between $4.8*10^{-15}$ and $1.9*10^{-15}$ (2σ)) was added to the sample, and then Be was chemically separated from the sample solution [6]. ^{10}Be/^{9}Be ratios were measured at the Vienna Environmental Research Accelerator in Vienna. The ^{10}Be/^{9}Be ratio of the process blank was $(8.79\pm1.62)*10^{-15}$.

Results: Two greywacke clasts (AL25, AL41) have ^{10}Be/^{9}Be ratios significantly (>3σ) above the process blank. Two additional samples (AL22, AL45) have ^{10}Be/^{9}Be ratios different than the process blank above the 2σ level (and sample AL14 is very close to this level with the 1.6σ value). This indicates that these samples were derived from near the pre-impact surface. However, ^{10}Be/^{9}Be ratios for all other samples are below process blank, indicating that the majority of the material that makes up the suevites comes from deeper target layers.

Discussion: The results suggest that in-crater breccias were well mixed during the impact cratering process. This finding has implications for development of features such as pitted materials on Mars [7]. Additionally, the lack of a ^{10}Be signal within rocks very close to the lake sediments-impactites boundary suggests limited infiltration of meteoric water within the crater floor.

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