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THE BOULDERS OF MADISON COUNTY

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Large, quartz-bearing, gneissic boulders, both in clusters and sitting alone, are common on the surface of numerous ($> \text{km}^2$) debris fans at the base of Virginia's Blue Ridge Mountains. Widespread debris flows, triggered by extraordinarily heavy rains in 1995, were a dramatic reminder that these fans are active landforms. Debris flow events, particularly those large enough to transport the greater than car-size boulders we sampled, can be a significant geologic hazard to those living on the fans; thus, it is important to know the age and recurrence interval of boulder deposition.

We measured 10-Be and 26-Al in samples collected from the top of 21 boulders on the General's Fan, a complex landform adjacent to Kinsey Run in western Madison County, VA. Model exposure ages (SL, $> 60^\circ$, 10-Be PR=5.17 atoms/g) for these samples range from about 7 to 140 ky. There is no relation between boulder size or boulder height and age; nor is there strong spatial patterning of boulder ages on the fan surface. We do not know the nuclide activity that the boulders contained when they were deposited; nor do we know how much they have eroded since deposition. Large inventories of meteoric 10-Be, measured in soil profiles underlying the boulders, suggest that the fan surfaces on which the boulders sit are old and stable, the oldest exceeding 500 ky.

An exceedance probability plot of boulder ages shows a non-random distribution through the last 150 ka. Boulder ages cluster in times known to be cold (18, 30, 67, 105, and 140 ky), consistent with periglacial processes supplying more boulders at high elevation and/or more moisture effective conditions catalyzing increased debris flow activity and boulder transport.

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