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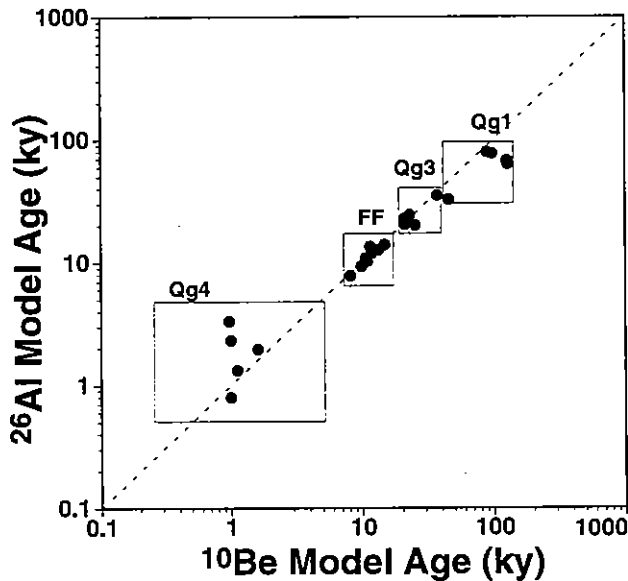
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No 12909

FIRST ^{10}Be , ^{26}Al AND ^{36}Cl AGE-ESTIMATES FOR EARTHQUAKE RECURRENCE INTERVALS AND DEBRIS-FLOW FAN DEPOSITION, OWENS VALLEY, CALIFORNIA.

BIERMAN, Paul R., Dept. of Geology, University of Vermont, Burlington, VT 05405; GILLESPIE, Alan, Dept. of Geological Sciences, University of Washington, Seattle, WA 98195; CAFFEE, Marc, Lawrence Livermore National Laboratory, Livermore, CA 94550.

Cosmogenic ^{10}Be and ^{26}Al age estimates for three debris-flow fan surfaces (Qg1, Qg3, Qg4) flanking the eastern slope of the Sierra Nevada in Owens Valley are consistent with their stratigraphic relationships, suggesting that, (1) these fan surfaces aggrade and stabilize episodically, (2) ^{10}Be and ^{26}Al chronometers can now be used to date successfully some fan deposits as young as 1-2 ky, and (3) bouldery debris flows may be



an under-appreciated geologic hazard in Owens Valley. Measurements of thermal-neutron-produced ^{36}Cl in these same boulders show greater variability and appear to overestimate exposure ages. We have used model ^{10}Be and ^{26}Al exposure ages from an offset debris-flow fan surface (FF), to calculate a recurrence interval of about 6 ky for the Lone Pine Fault, a strand of the Owens Valley Fault, which last ruptured in 1872 generating a moment-magnitude >7.5 earthquake. Isotopic data show that fan surfaces > 50 ky (Qg1) are less amenable to dating because boulder erosion and fan surface lowering, in addition to fan surface age, also control isotope abundances.

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