PHYSICAL AND CHEMICAL CHARACTERISTICS OF UNWEATHERED PULVERIZED ROCK ALONG THE SAN ANDREAS FAULT, LITTLE ROCK, CA

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Abstract

We present new observations on pulverized granitic rocks recovered from a shallow core adjacent to the San Andreas fault near Little Rock Creek. The site is characterized by extensive outcrops of granitic rocks with varying degrees of damage, at distances of up to a few hundreds of meters from the fault's primary active strand. We used an auger drill-rig to recover a continuous core of pulverized rock to a depth of 42 meters. The core is composed mainly of pulverized Si-rich, Si-intermediate, and Si-poor granitoids. It crosses through several high clay content gouge zones, which correspond to secondary fault cores. Detailed results of particle size distribution (PSD) measured using a laser particle analyzer and standard sieving and pipette methods indicate that medium to coarse silt and fine sand (50-600 microns) are the dominant particle sizes for pulverized Si-rich granitoids recovered in the core. Very little clay size particles were observed in both surface and depth samples. Si-rich granitoid samples are comprised only of quartz, feldspar, white mica, and minor biotite with no pedogenic clay. Geochemical data indicate little if any chemical weathering. We conclude that the signature of pulverization results in shattering to silt and sand sized particles with essentially no component of weathering, which is similar to but slightly coarser than prior studies that were conducted on near surface samples at Tejon Pass and along the Garlock fault where a minor weathering component was observed.