Geochronologic studies of ignimbrite-caldera systems in the Southern Rocky Mountains indicate significant eruptive hiatuses prior to the onset of caldera collapse-related volcanism. Detailed mapping, combined with hundreds of \(^{40}\text{Ar}/^{39}\text{Ar}\) dates, in the Southern Rocky Mountain volcanic field (SRMVF), indicates that precaldera volcanic edifices were largely constructed several hundred ka to a few Ma prior to caldera collapse. For example, near complete growth of the precaldera edifice is documented to have finished ~700 to 400 ka prior to the 33.4 Ma eruption of the Bonanza caldera in the northeastern SRMVF. In the central SRMVF, the 5,000 km\(^3\) Fish Canyon Tuff, sourced from the 28.2 Ma La Garita caldera, was preceded by precaldera andesites and dacites, exposed on the caldera rim, that yield ages from 34.5 Ma to as young as 30.5 Ma. Likewise, in the southeastern SRMVF the pre-ignimbrite volcanic edifice was constructed 3.7 to 2.4 Ma prior to the 30.2 Ma onset of polycyclic collapse at the Platoro caldera complex. During this hiatus, multiple dikes were emplaced indicating continued magmatism with little preserved eruptive activity. Prior and ongoing dating of Quaternary caldera-related rocks in the Jemez Mountains volcanic field provides additional constraints on the timing of precaldera activity. Published studies indicate that precaldera volcanic activity of predominantly intermediate composition began perhaps as early as ca. 25 Ma in this field and continued to 2.93 Ma. New ages for the La Cueva Tuff, an initial ignimbrite of at least 1-4 km\(^3\) that may have triggered a small-scale caldera collapse, are 1.90 Ma, documenting the onset of rhyolite volcanism after an apparent ca. 1 Ma pause in activity. The field appears to have sat in repose for another 300 ka before eruption of the Otowi Member of the Bandelier Tuff and collapse of the Toledo caldera at 1.61 Ma. Extensive new dating of Cerro Toledo lavas and tephras that were emplaced following the Otowi Member event indicate a ca. 120 to 160 ka eruption hiatus prior to a brief 9 ka period of volcanism before collapse of Valles caldera at 1.23 Ma. In these four examples, minor eruptions may have occurred within the subsided area, but the absence of deposits on caldera rims and flanks suggest that volumes were limited compared to peak growth. These examples suggest that some volcanic fields may transition from extended periods of producing small-volume eruptions to protracted durations (e.g., 0.5 to > 2 Ma) of magma storage and incubation that culminates in large-volume ignimbrites and caldera collapse. This work supports initiatives to closely monitor Quaternary caldera systems, even those that are currently in moderate to long periods of repose.

**Keywords:**

Geochronology, volcanism, hazards, calderas

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