New mapping and U-Pb geochronology revise two prior interpretations of the Proterozoic tectonic history of the Manzano-Los Pinos uplift of central New Mexico: 1) A new 1601 ±4/-3 Ma zircon age for the uppermost Blue Springs rhyolite of the Manzano Group indicates deposition lasted from approximately 1662-1600 Ma. The maximum age of the metasedimentary sequence is constrained by the Sevilleta Metarhyolite (1662 ± 1 Ma; Shastri, 1992). 2) New facing information in quartzites indicates that these rocks are folded into a megascopic, NW-trending syncline, rather than a homocline as had been previously suggested (Myers et al., 1981)

These data and observations suggest that the Mazatzal Orogeny in New Mexico involved syntectonic deposition of sediments and bimodal volcanics, intrusions of plutons, NW shortening and pluton-enhanced metamorphism. Field evidence indicates that Sevilleta Metarhyolite and interlayered basalts were deposited, subsequently deformed and then intruded by syntectonic granitoids, such as the Los Pinos pluton. Arenite, quartzite, schist and the Blue Springs Rhyolite were then deposited on top and deformed, suggesting temporal interplay between deposition and tectonism lasting until 1600 Ma. Variably intense 1350-1430 Ma movements took place on S2 (the dominant regional fabric) and in the mylonitic Monte Largo shear zone based on new microprobe monazite ages. Deformation during this time reactivated and intensified existing fabrics as evidenced by 1) truncation of S2 at the northern 1427 Ma Priest pluton contact 2) presence of strong S2 in ~1650 Ma suite of pluton aureoles and foliated xenoliths within these plutons.

Keywords:
geochronology, U-Pb zircon geochronology, uranium lead dating, U-Pb dating, metamorphism, Precambrian, Mazatzal Orogeny

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