**EXTENSION RELATED RHYOLITIC LAVAS OF MID-TERTIARY AGE IN THE SIERRA MADRE OCCIDENTAL, MEXICO.**

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The cenozoic volcanism of the Sierra Madre Occidental Volcanic Province represents the most voluminous explosive volcanic event of the world. In Central Mexico the expression of the mid-Tertiary volcanism presents distinctive characteristics. In the Mesa Central a huge volume of rhyolitic lavas with minor pyroclastic deposits was emplaced between 27 and 31 Ma. The rhyolitic magmas are predominantly emplaced as domes, frecuently aligned along fractures. We estimated a conservative volume of ~ 3000 km3 of rhyolitic lavas. The extrusion of the rhyolites was contemporaneous with documented three-dimensional strain. The principal extension occurred in east-west direction at high strain rates.In the Mesa Central, the rhyolitic lavas adjacent to a major structure (Graben de Villa de Reyes) show a distinctive mineralogy and geochemistry. Topaz, fluorite, wood tin and garnet are present in some domes and lava flows. The lavas are characterized as high-silica (SiO272 wt%), high-K rhyolites, with trace element and isotopic compositions similar to that of Topaz-Rhyolites reported for the western United States. The observed characteristics of volcanism and deformation style in the Mesa Central are clearly different to that observed in the Sierra Madre Occidental Volcanic Province to the west. The evidences show that an extensional tectonic event affected the whole province since Oligocene, but in the Mesa Central the crust was deformed under a high strain rate, leading to partial fusion of the granulitic lower crust and favouring the rapid ascent of the magmas. This deformation field inhibited the generation of large magma chambers.