



## **Paleomagnetism and magnetic fabric of Miocene plutons of the Tonalá shear zone, Chiapas, Mexico: evidence of rotation of the remanence vector**

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The Late Miocene plutons of coastal Chiapas are elongated parallel to the Tonalá mylonite belt, and some plutons show asymmetric outcrop patterns with sheared tails that trail behind the intrusions. Plutons were emplaced within a transpressional sinistral shear zone. Magnetic fabrics in the plutons are well-developed, and are subparallel to the structural trend of the Tonalá mylonitic belt, but locally magmatic fabrics are preserved. Magnetic fabrics in undeformed granites with igneous textures are also subparallel to the shear zone axis. Strongly deformed plutons have  $P'$  values as high as 1.7. Fabric ellipsoids are predominantly oblate, but they are triaxial in sites with igneous textures. Characteristic magnetizations reside in a cubic phase, such as low-Ti magnetite, but abundant particles in the MD range prevent isolating a stable magnetization in many of the sites. Site means are NW to NE directed, and of moderate positive inclination (or its antipodal), but locally they are very discordant in declination. The overall mean, discarding highly discordant sites is of  $D=359.5$  and  $I=41.9$  ( $k=14.2$ ,  $\alpha_{95}=8.1$ ), which is nearly concordant with the NA reference direction indicating gentle northward tilt of less than about  $10^\circ$ . We explain the highly discordant directions as caused by continuing, progressive, deformation in the transpressive shear zone of a thermochemical remanence acquired during deformation. Deformation resulted in rotations, both in a clockwise and an anticlockwise sense. These results are interpreted as paleomagnetic vectors affected by distortional strain, which based on AMS exceed 40% shortening and accommodate shape and volume change in the rock.