SE06-17

Resumen número: 0472 | Resumen aceptado ✔

Presentación oral

Título:

GEOLOGY OF THE LATE PLIOCENE - PLEISTOCENE ACOCULCO CALDERA COMPLEX, NORTH OF PUEBLA (MÉXICO)

Autores:

[1] Denis Ramón Avellán ← Ponente
Cátedras CONACYT - Instituto de Geofísica Unidad Michoacán, UNAM Campus Morelia
denisavellan@gmail.com

[2] José Luis Macías
Instituto de Geofísica Unidad Michoacán, UNAM Campus Morelia
jlmv63@gmail.com

[3] Giovanni Sosa-Ceballos
Instituto de Geofísica Unidad Michoacán, UNAM Campus Morelia
gsosaceballos@gmail.com

[4] Martha Gabriela Gómez-Vasconcelos
Instituto de Geofísica Unidad Michoacán, UNAM Campus Morelia
ga8ygomez@gmail.com

[5] Guillermo Cisneros-Máximo
Instituto de Geofísica Unidad Michoacán, UNAM Campus Morelia
geo_cis_max@hotmail.com

[6] Juan Manuel Sanchez
Instituto Politécnico Nacional - CIIEMAD
sanchez0120@gmail.com

[7] Héctor López-Loera
División de Geociencias Aplicadas, Instituto Potosino de Investigación Científica y Tecnológica A.C.
hlopezl@ipicyt.edu.mx

[8] Paul W. Layer
College of Natural Science, Mathematics and Geophysical Institute, University of Alaska Fairbanks
pwlayer@alaska.edu

[9] Joan Marti
Instituto de Ciencias de la Tierra Jaume Almera, Barcelona Spain
mailto:jcanmartimollist@gmail.com

[10] Antonio Pola
Escuela Nacional de Estudios Superiores, UNAM Campus Morelia
antoniopolavilla@gmail.com

Sesión:

SE06 Geotermia: resultados y avances logrados en los proyectos mexicanos Sesión especial

Resumen:

The Acoculco Caldera Complex (ACC) is located in the eastern part of the Trans-Mexican Volcanic Belt in the north of Puebla State. It is a potential source of geothermal energy cataloged as a high-dry rock reservoir. The complex is located at the intersection of NE-SW and NW-SE fault systems. These fault systems have controlled the caldera collapse and exerted the main control on the location of post-caldera vents. The complex was built upon a basement formed by Cretaceous limestones, the Zacatlán basaltic plateau and the Miocene pre-caldera domes and lavas (~12.7-~3.9 Ma). The caldera-forming eruption occurred ~2.7 Ma ago with an explosive event that dispersed the Acoculco andesitic ignimbrite with a volume of 127 km3. A caldera structure of 20×18 km in diameter formed, followed by the establishment of an intracalderic lake and sedimentary deposition. Early post-caldera activity (2.6-2.2 Ma) was constraint within the caldera ring fault producing 27 km3 of lava flows and domes dominantly of basaltic trachyandesite to basaltic composition. This activity caused bulging of the central part of the caldera. Late post-caldera activity (2.0-1.0 Ma) migrated dominantly to the periphery of the caldera, emplacing 77 km3 of rhyolitic domes, lavas, and the Encimadas ignimbrite (26 km3). Finally, extra-caldera activity (0.9-0.06 Ma) vented scoria cones, and lava flows of basaltic trachyandesite to basaltic andesitic composition, and the rhyolitic Tecoloquillo ignimbrite (11 km3) with a total volume of 14 km3. Effusive eruptions dominated the evolution of the complex with ca. 79% of the eruptive products. Aeromagnetic data revealed the presence of at least four intrusive bodies at depths of >2 km hosted in the Cretaceous limestones. These bodies might represent a series of horizontal mafic intrusions that besides heating and mixing with the Acoculco magma reservoirs, provides the energy that maintain active the Acoculco geothermal system.

← Regresar