



MEXICO, A MEGA(GEO)DIVERSE COUNTRY: LEARNED LESSONS FROM THE COMARCA MINERA UGG



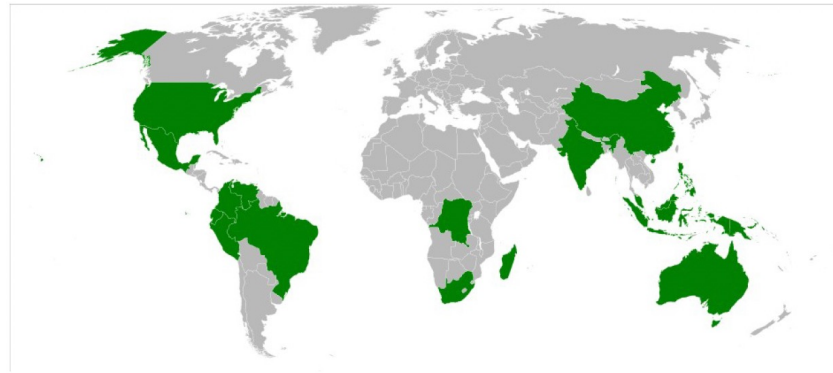
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1810 map of Mexico and part of the United States by the French cartographer Ambrose Tardieu

MEXICO, A MEGADIVERSE COUNTRY



Outstanding biodiversity





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LANGUAGE AND ETHNIC DIVERSITY



<https://www.gob.mx/cultura/articulos/lenguas-indigenas>

6th country with more native languages

<https://www.ethnologue.com/>

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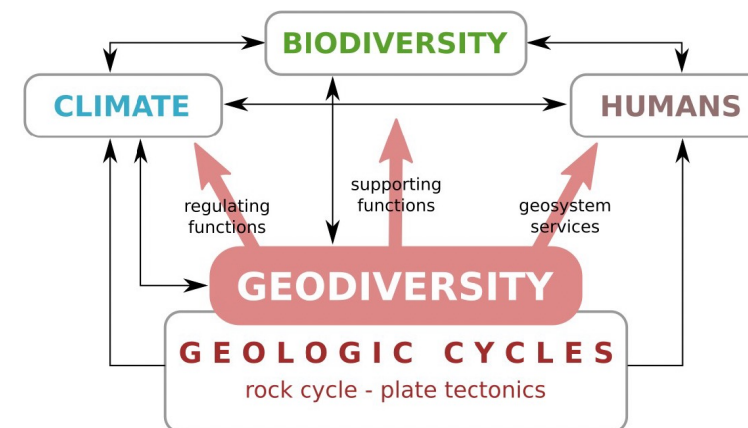
**Interesting, but...
Is so much diversity by chance?**



<https://www.geodiversityday.org/>

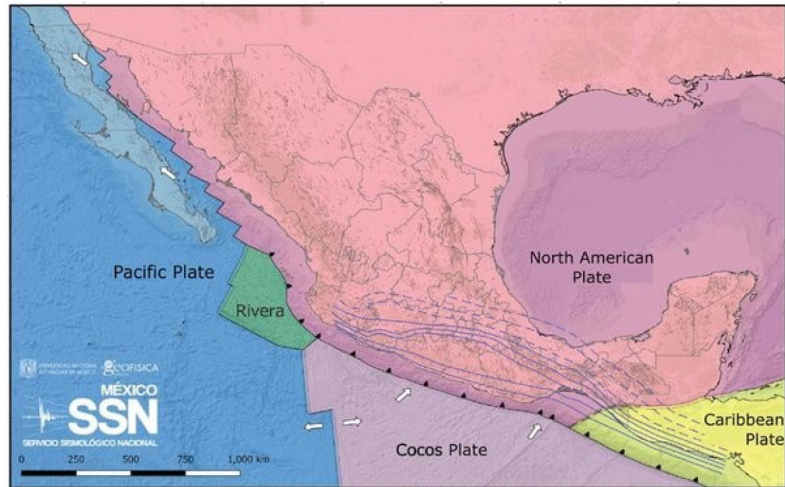
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GEODIVERSITY is the basis



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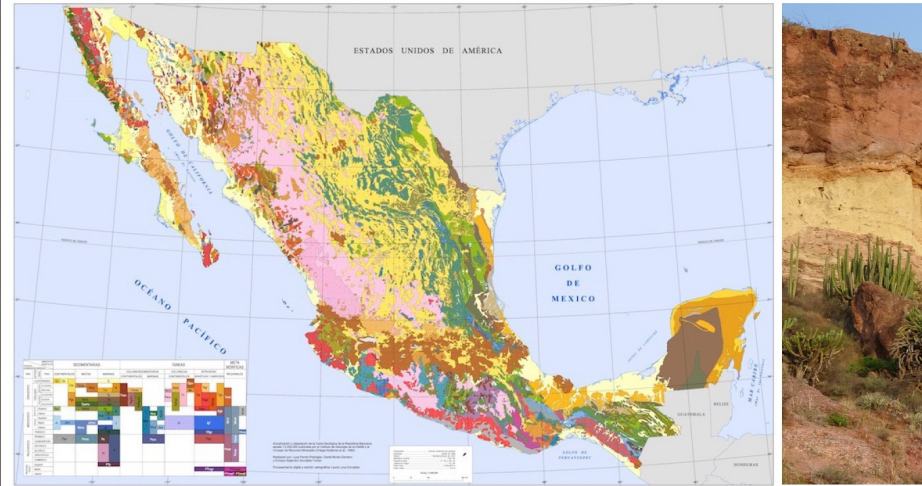
TECTONIC SETTING of Mexico



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Five tectonic plates on the stage

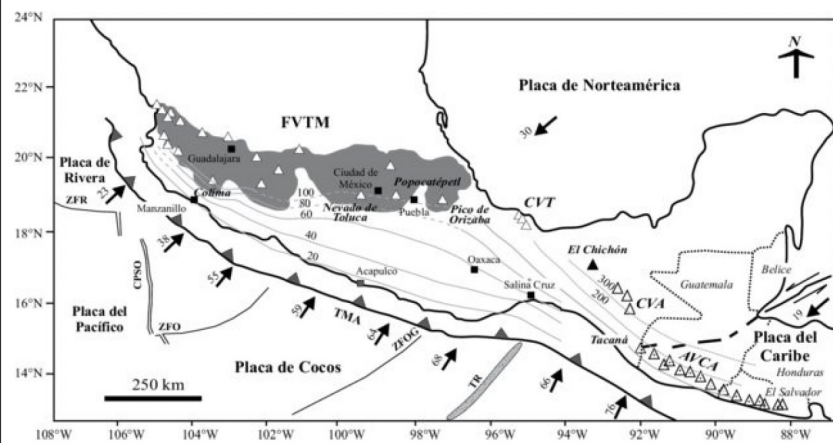
Complex and diverse GEOLOGY



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Instituto de Geología de la UNAM y Consejo de Recursos Minerales (1992)

Volcanism



Macías, J.L. (2005)

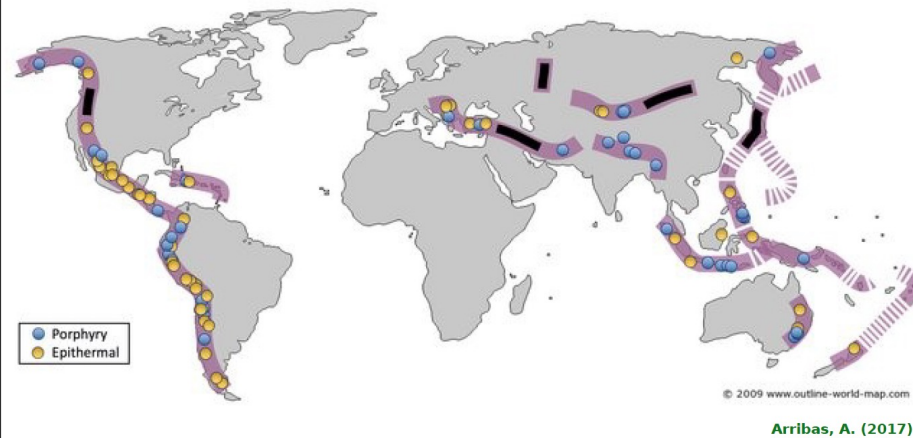
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<https://volcanesdemexico.org/>

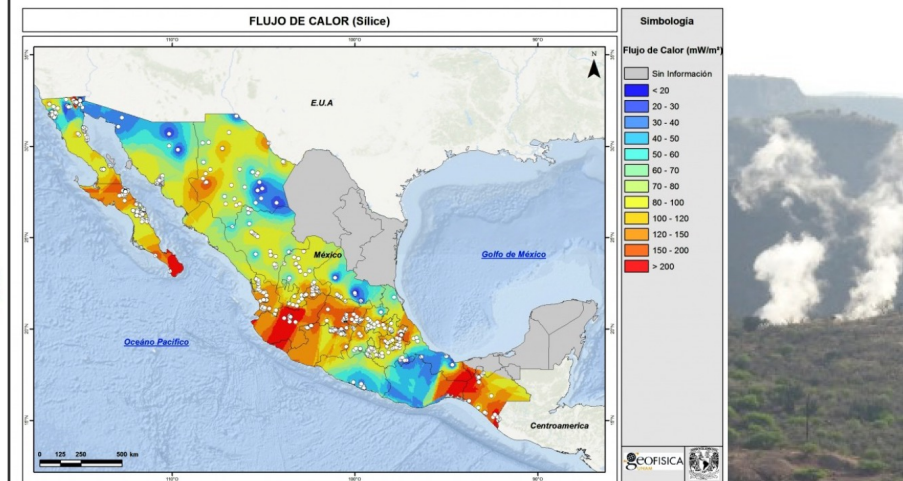
MINERAL WEALTH



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With above 5500 tons Ag, Mexico was the 1st world producer of silver in 2021

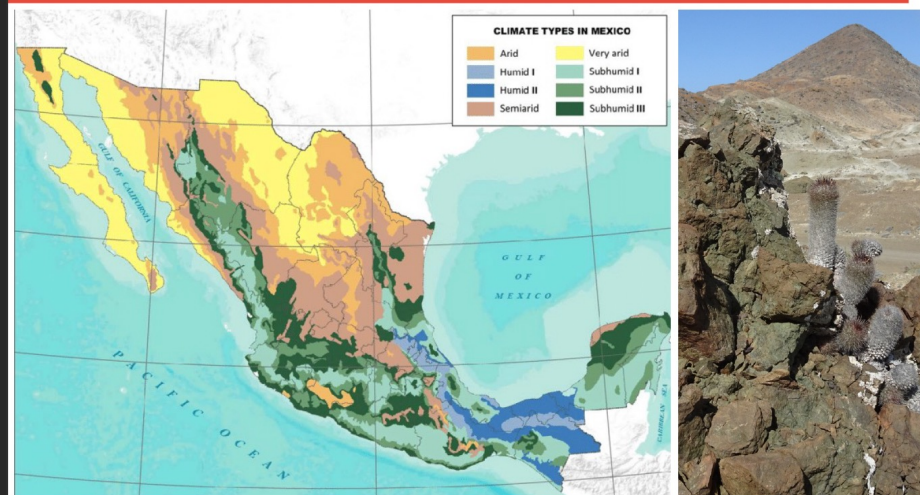
GEOHERMAL activity



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With 963 MW in 2021, Mexico is the 6th geothermal energy producer (source: www.thinkgeoenergy.com/)

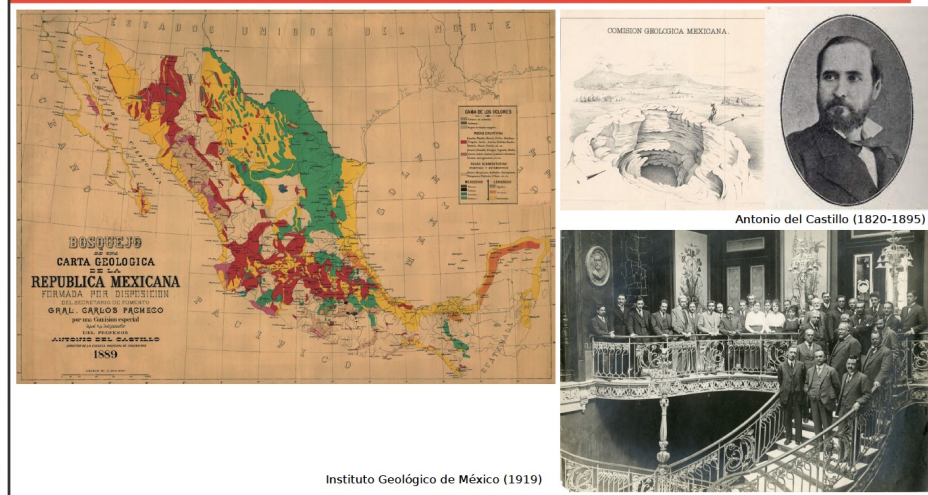
CLIMATES and exposure conditions



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Instituto de Geografía, UNAM (2000)

Deep-rooted research in geology



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Morelos Rodríguez, L., Moncada Maya, J.O. (2015)

WORLD ICONIC GEOSITES



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Naica Cave of Crystals, Chihuahua

UNESCO GLOBAL GEOPARKS

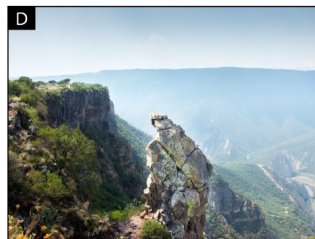
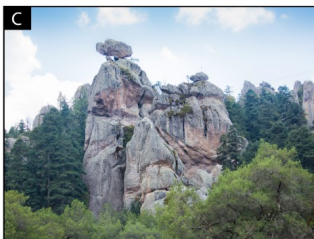
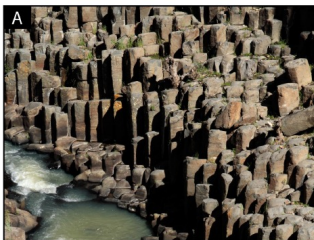


Comarca Minera UNESCO Global Geopark
Hidalgo – México



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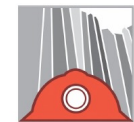
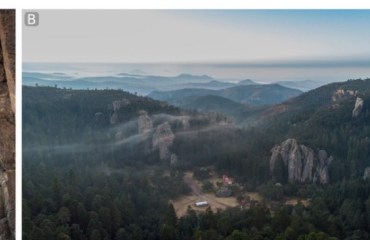
Geosites



COMARCA MINERA
GEOPARQUE MUNDIAL

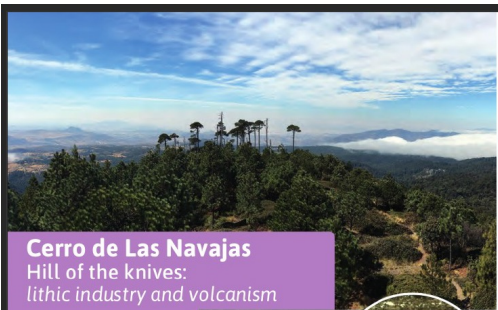
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GEO-Landscapes



COMARCA MINERA
GEOPARQUE MUNDIAL

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Cerro de las Navajas

Hill of the knives: lithic industry and volcanism

Location
Epazoyucan

Geological province
Trans-Mexican Volcanic Belt

Geological elements of interest
Volcanic rocks: obsidian, pumice, rhyolite

Geological age
Pliocene-Quaternary

Services and features
Trails, parking lot, access fee, lookout

The Cerro de las Navajas (Hill of the Knives in English) was a pre-Columbian mining center of great importance for Mesoamerica. This place was one of the main obsidian deposits in central Mexico, which supplied this precious raw material to the Teotihuacan (100 BC – 650 AD), Toltec (950-1100 AD) and Mexica (1325-1521 AD) cultures.

In this geosite you can see old underground mine constructions (small shafts and short mine galleries) as well as an adjacent area of pre-Columbian workshops in which the extracted obsidian was performed and carved. As a result of this activity, carried out for many centuries, we can

see an area of considerable extension, partially hidden by the pine forests, where thousands of tons of obsidian chips accumulate forming small mounds.

The remains of a Franciscan chapel, built on the site shortly after the conquest of Tenochtitlán, between 1524 and 1532, show us the concern of the Spanish conquerors to control this site and manufacturing center, given the enormous strategic value it had for the conquered. On the other hand, it is known that the last miners and obsidian carvers, already evangelized, were the first miners and workers dedicated to the extraction, transport and mineral processing of precious metals.

Obsidian was a crucial raw material for prehispanic industries, since it was necessary for the manufacture of many items, weapons and magical-religious objects. After the Spanish conquest—and the consequent generalization of the use of iron and steel—the use of obsidian was transferred to the artisan manufacture of domestic or agricultural utensils, such as the traditional scrapers for maguey plant and pulque production. Today, it is used mainly for carving statuettes, souvenirs and jewelry.

Photomicrograph of peralkaline rhyolite with obsidian.

21 (Global Geosite candidate)
«Cerro de Las Navajas obsidian deposit, Mexico»

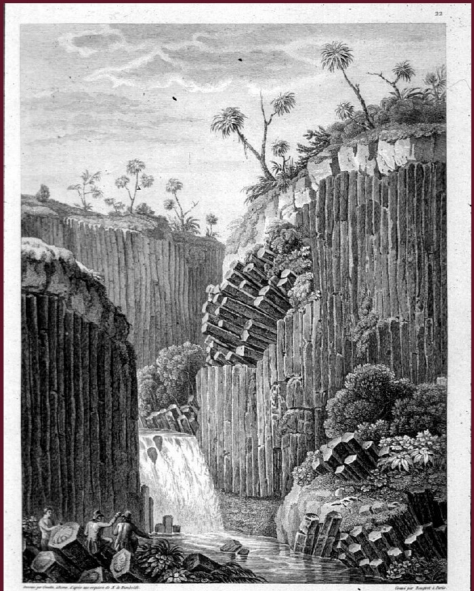


CONCLUSIONS

- Although a quantitative approach could present great difficulties, *intrinsic* and *extrinsic* factors support a label of **megaGEOdiverse** for Mexico.
- However, promotion at the highest levels is required to succeed as a destiny for geotourism and science-based geology tourism.
- On the other hand, a commitment for geoconservation is mandatory, as well as an adequate legal framework.

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THANKS FOR YOUR ATTENTION



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