

LOCATION





UNITED STATES OF AMERICA

MEXICO

MEXICO

Gulf of Mexico

North Pacific Ocean

San Salvador

Tegucigalpa

Puerto Barrios

San Pedro Sula

Belize City

Belmopan

Chetumal

Campeche

Progreso

Merida

Cancun

Isia Cozumel

Bahia de Campeche

Veracruz

Jalapa

Texcoco

Puebla

Orizaba

Gordoba

Coahuila

Coahuila

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Coahuila

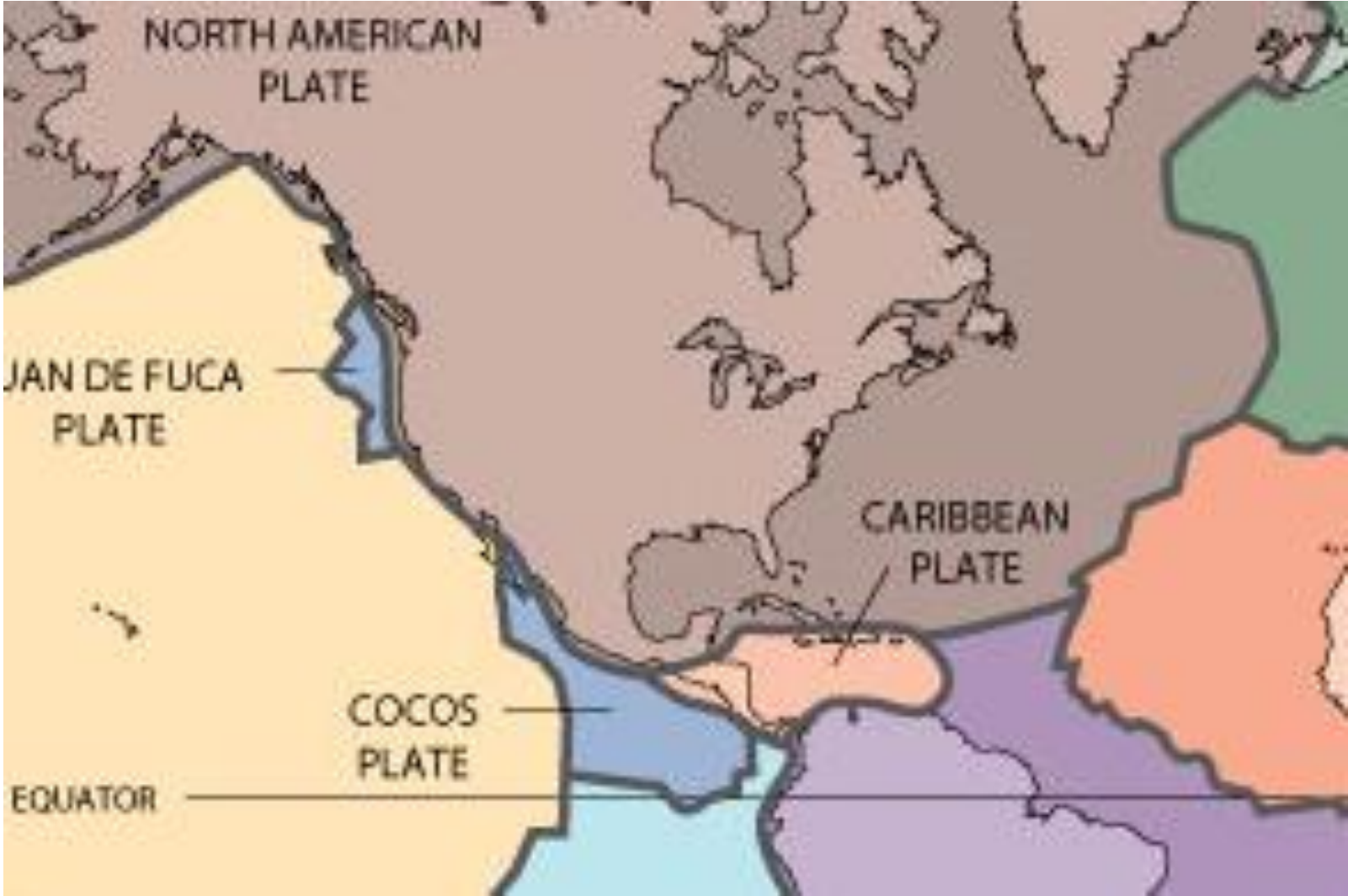
Coahuila

GEOGRAFIA DE MEXICO

INTRODUCCIÓN

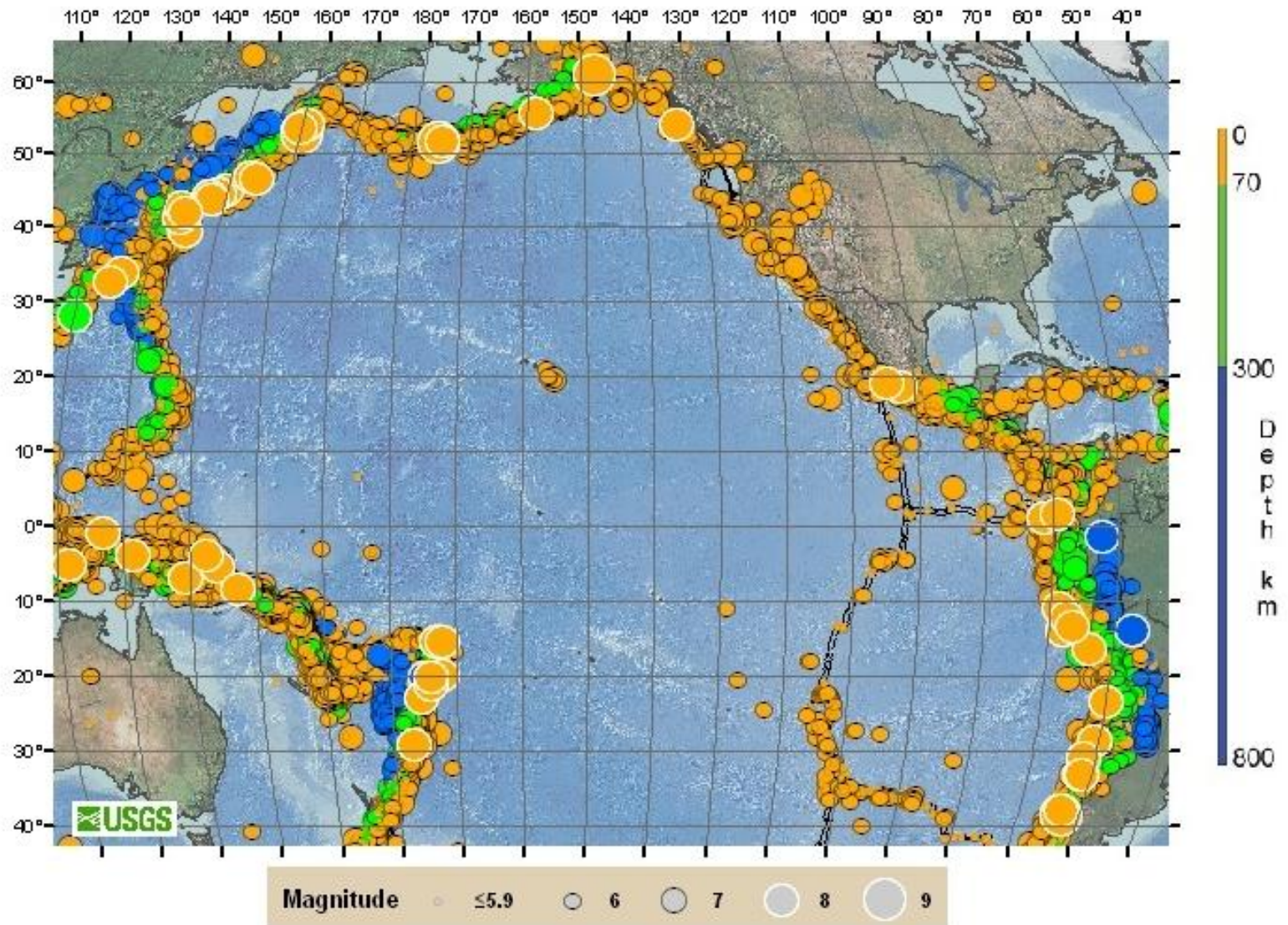
- Mexico's total area covers 1,972,550 square kilometers, including approximately 6,000 square kilometers of islands in the Pacific Ocean, Gulf of Mexico, Caribbean Sea, and Gulf of California (see fig. 3).
- On its north, Mexico shares a 3,326-kilometer border with the United States. The meandering Río Bravo del Norte (known as the Rio Grande in the United States) defines the border from Ciudad Juárez east to the Gulf of Mexico.
- A series of natural and artificial markers delineate the United States-Mexican border west from Ciudad Juárez to the Pacific Ocean. On its south, Mexico shares an 871-kilometer border with Guatemala and a 251-kilometer border with Belize.
- Mexico has a 10,143-kilometer coastline, of which 7,338 kilometers face the Pacific Ocean and the Gulf of California, and the remaining 2,805 kilometers front the Gulf of Mexico and the Caribbean Sea. Mexico's exclusive economic zone (EEZ), which extends 200 nautical miles off each coast, covers approximately 2.7 million square kilometers.





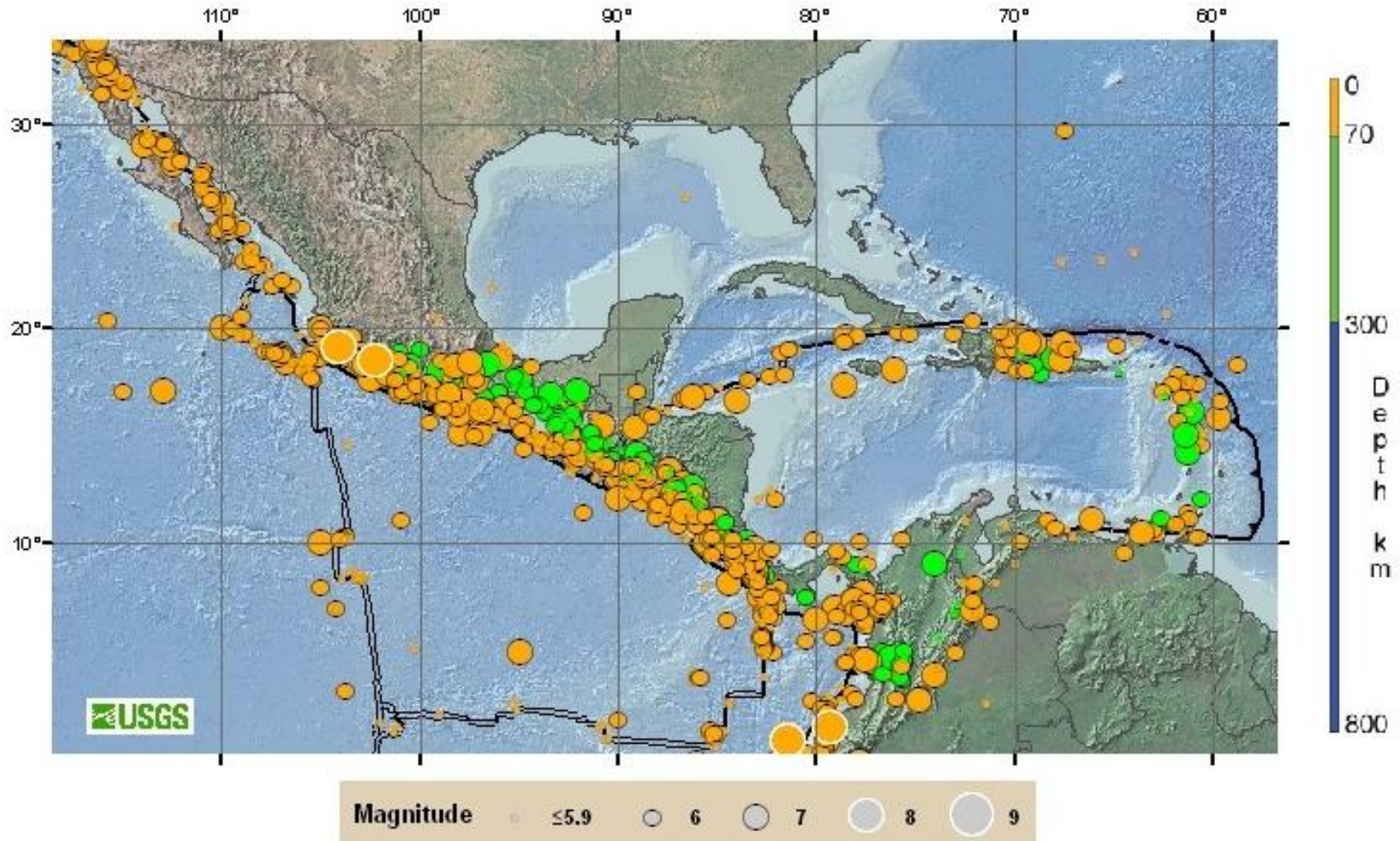
PACIFIC RIM

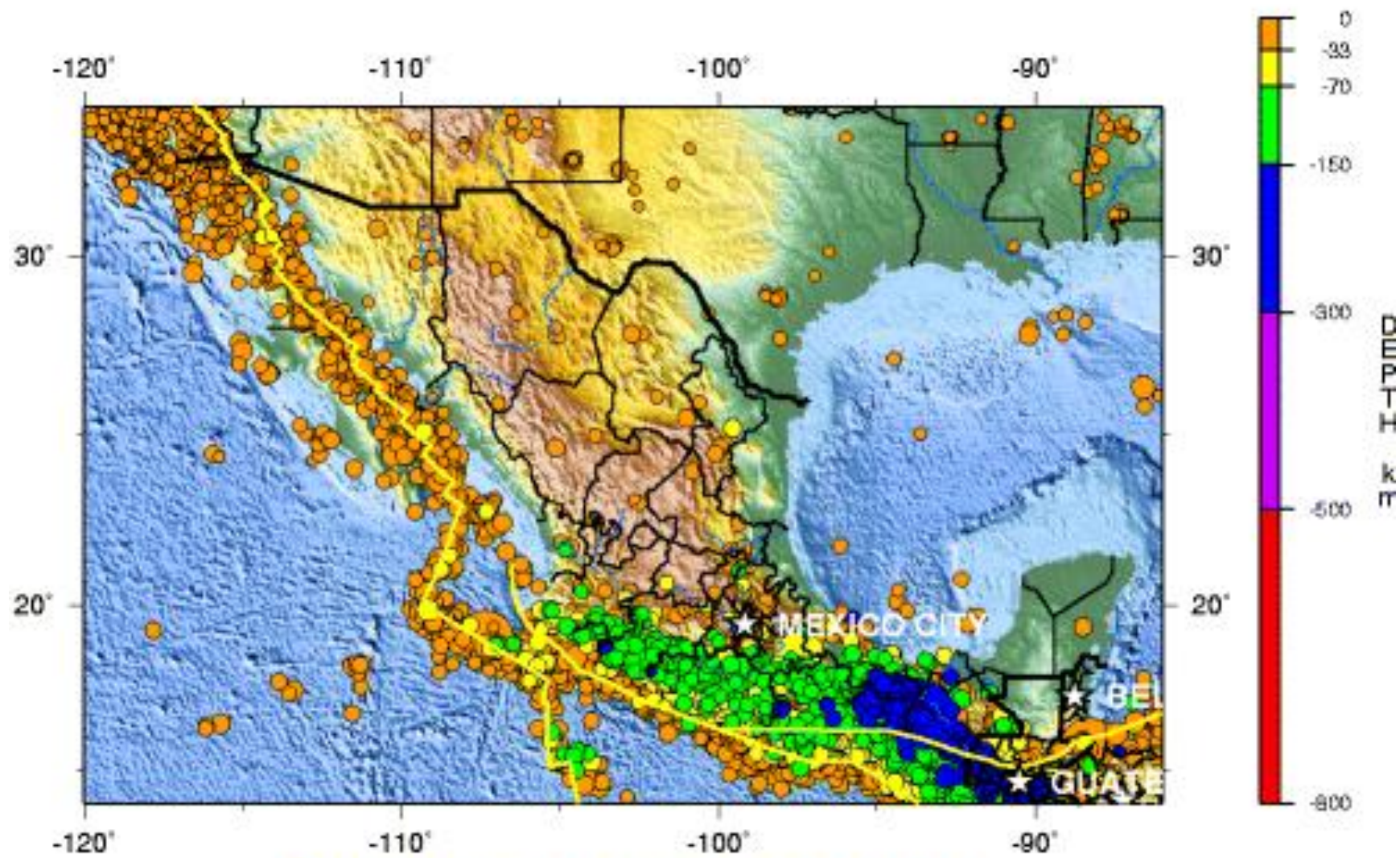
TERREMOTOS REGISTRADOS 1990 - 2002



SISMICIDAD EN MÉXICO Y CENTRO AMÉRICA

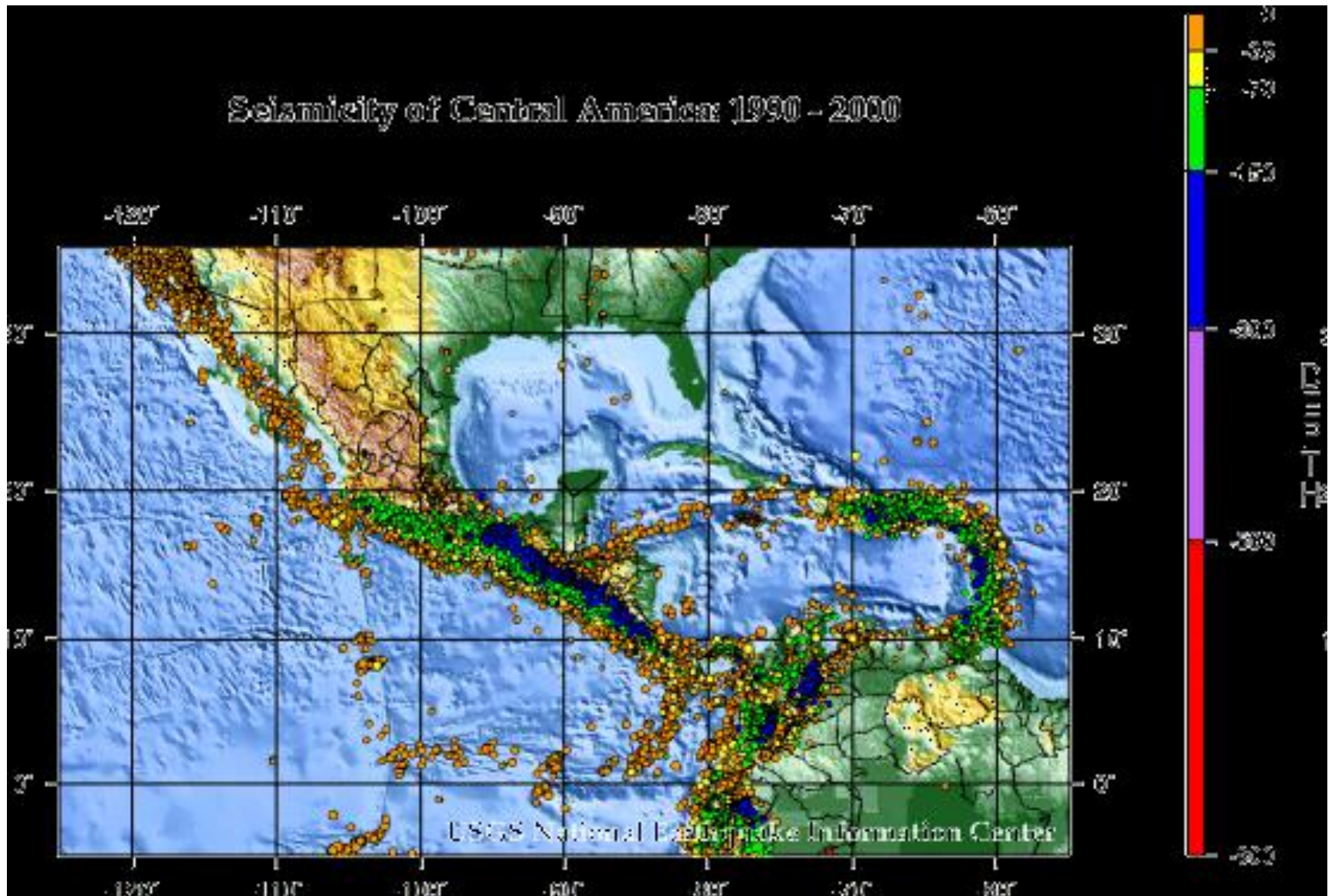
1900-2002





Seismicity of Mexico, 1990 - 2006

SISMICIDAD ENTRE EL 1990 Y EL 2000



Sismicidad y vulcanismo en México



TERREMOTOS Y VOLCANES EN MÉXICO

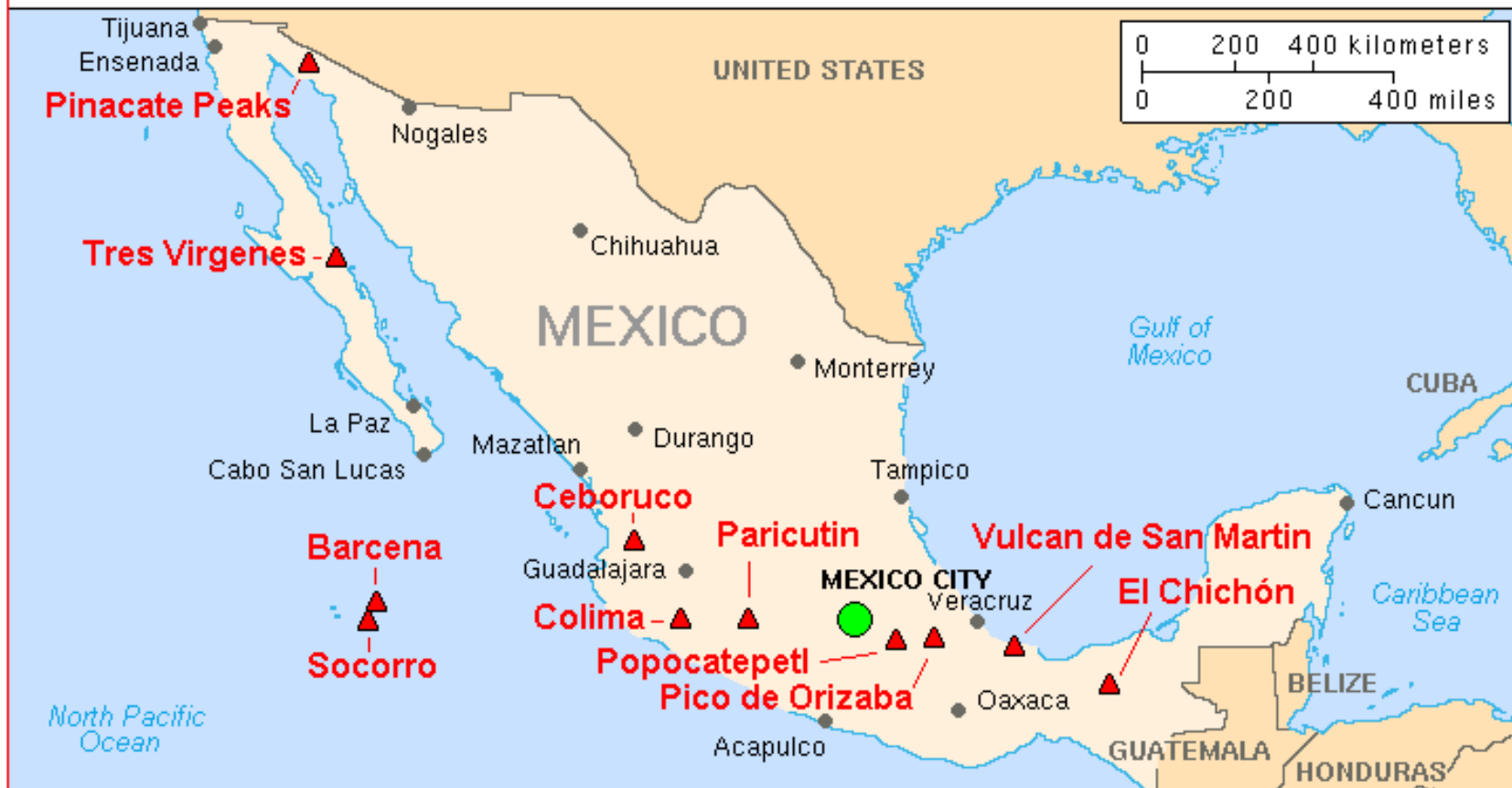
http://www.photius.com/countries/mexico/geography/mexico_geography_topography_and_drain~464.html

- Mexico has a long history of destructive earthquakes and volcanic eruptions.
- In September 1985, an earthquake measuring 8.1 on the Richter scale and centered in the subduction zone off Acapulco killed more than 4,000 people in Mexico City, more than 300 kilometers away.
- Volcán de Colima, south of Guadalajara, erupted in 1994, and El Chichón, in southern Mexico, underwent a violent eruption in 1983.
- Paricutín in northwest Mexico began as puffs of smoke in a cornfield in 1943; a decade later the volcano was 2,700 meters high. Although dormant for decades, Popocatépetl and Ixtaccíhuatl ("smoking warrior" and "white lady," respectively, in Náhuatl) occasionally send out puffs of smoke clearly visible in Mexico City, a reminder to the capital's inhabitants that volcanic activity is near.
- Popocatépetl showed renewed activity in 1995 and 1996, forcing the evacuation of several nearby villages and causing concern by seismologists and government officials about the effect that a large-scale eruption might have on the heavily populated region nearby.

VOLCAN POPOCATEPELL

- **Popocatépetl** is a steep-sided volcanic cone located 55 kilometers east of Mexico City, Mexico, and 45 kilometers west of the Puebla metropolitan area. More than 30 million people live within view of the volcano and hundreds of thousands of people would be endangered by hazards associated with a large explosive eruption of the volcano.
- A major eruption would have serious consequences for people living in communities on the flanks of the volcano, and ash from such an eruption could also endanger aircraft using Mexico City international airport. About 30 eruptions have been reported in historical time, although documentation is poor.
- Most historical eruptions were apparently restricted to mild-to-moderate Vulcanian steam and ash emission. The latest significant activity took place from 1920-22. Popocatépetl is known to have produced a number of Plinian eruptions since the beginning of the Holocene.

Major Volcanoes of Mexico



Topinka, USGS/CVO, 2003, basemap modified from CIA 2003, volcanoes from Simkin and Siebert, 1994

VOLCAN DE ORIZABA





Sierra Madre Occidental

Sierra Madre Oriental

Eje Neovolcanico

TOPOGRAPHY



Source: Compiled by the Bureau of Business Research from various sources.

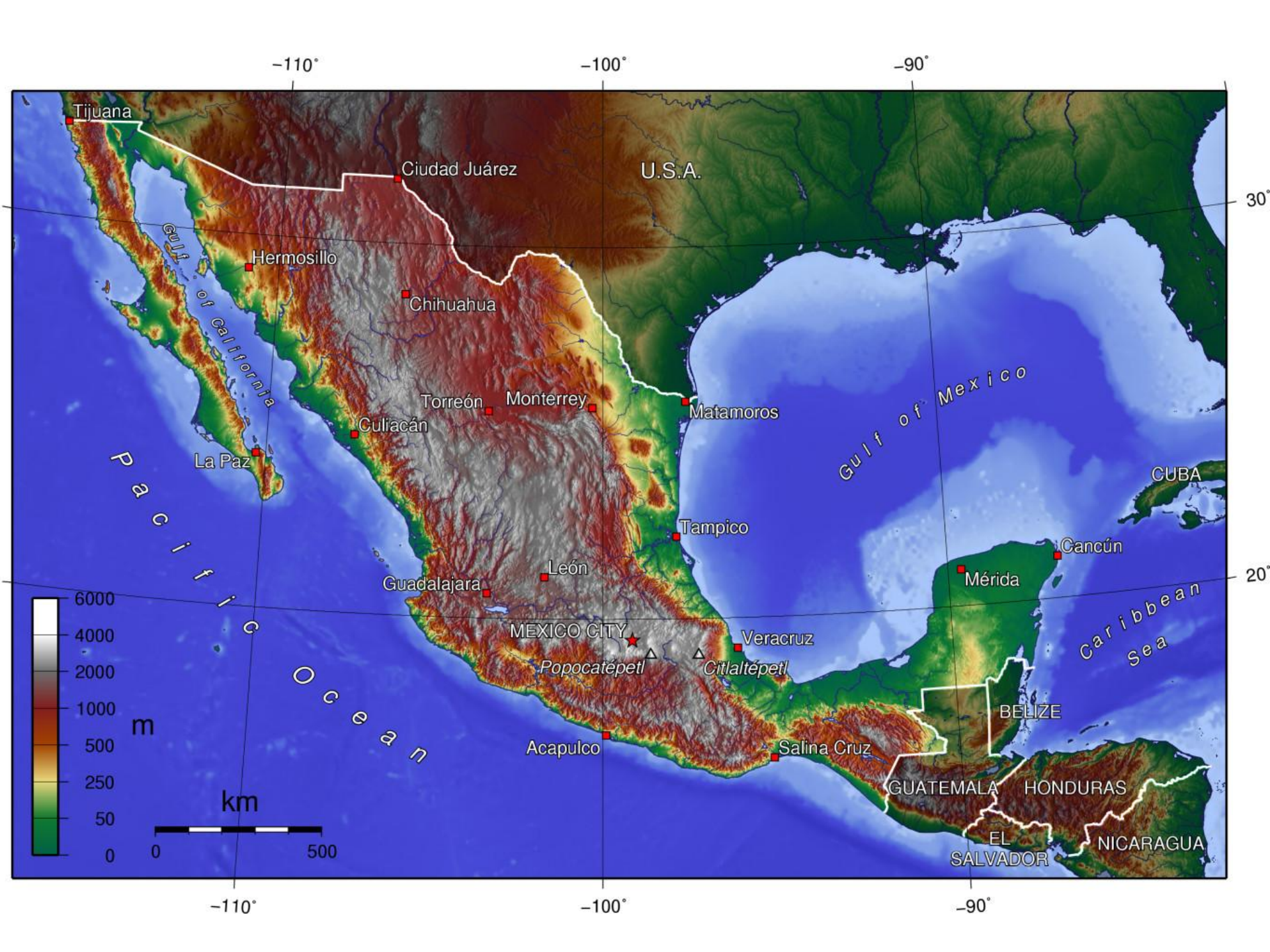
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OROGRAFIA MEXICANA I

- Two prominent mountain ranges--the Sierra Madre Occidental and the Sierra Madre Oriental--define northern Mexico. Both are extensions of ranges found in the United States.
- The Sierra Madre Occidental on the west is a continuation of California's Sierra Nevada (with a break in southeastern California and extreme northern Mexico), and the Sierra Madre Oriental on the east is a southward extension of the Rocky Mountains of New Mexico and Texas.
- Between these two ranges lies the Mexican altiplano (high plain), a southern continuation of the Great Basin and high deserts that spread over much of the western United States.

OROGRAFIA MEXICANA II

- Beginning approximately fifty kilometers from the United States border, the Sierra Madre Occidental extends 1,250 kilometers south to the Río Santiago, where it merges with the Cordillera Neovolcánica range that runs east-west across central Mexico.
- The Sierra Madre Occidental lies approximately 300 kilometers inland from the west coast of Mexico at its northern end but approaches to within fifty kilometers of the coast near the Cordillera Neovolcánica.
- The northwest coastal plain is the name given the lowland area between the Sierra Madre Occidental and the Gulf of California. The Sierra Madre Occidental averages 2,250 meters in elevation, with peaks reaching 3,000 meters.



OROGRAFIA MEXICANA III

- The Sierra Madre Oriental starts at the Big Bend region of the Texas-Mexico border and continues 1,350 kilometers until reaching Cofre de Perote, one of the major peaks of the Cordillera Neovolcánica. As is the case with the Sierra Madre Occidental, the Sierra Madre Oriental comes progressively closer to the coastline as it approaches its southern terminus, reaching to within seventy-five kilometers of the Gulf of Mexico.
- The northeast coastal plain extends from the eastern slope of the Sierra Madre Oriental to the Gulf of Mexico. The median elevation of the Sierra Madre Oriental is 2,200 meters, with some peaks at 3,000 meters.

ALTIPLANO MEXICANO

- The Mexican altiplano, stretching from the United States border to the Cordillera Neovolcánica, occupies the vast expanse of land between the eastern and western sierra madres. A low east-west range divides the altiplano into northern and southern sections. These two sections, previously called the Mesa del Norte and Mesa Central, are now regarded by geographers as sections of one altiplano.
- The northern altiplano averages 1,100 meters in elevation and continues south from the Río Bravo del Norte through the states of Zacatecas and San Luis Potosí. Various narrow, isolated ridges cross the plateaus of the northern altiplano. Numerous depressions dot the region, the largest of which is the Bolsón de Mapimí.
- The southern altiplano is higher than its northern counterpart, averaging 2,000 meters in elevation. The southern altiplano contains numerous valleys originally formed by ancient lakes. Several of Mexico's most prominent cities, including Mexico City and Guadalajara, are located in the valleys of the southern altiplano.

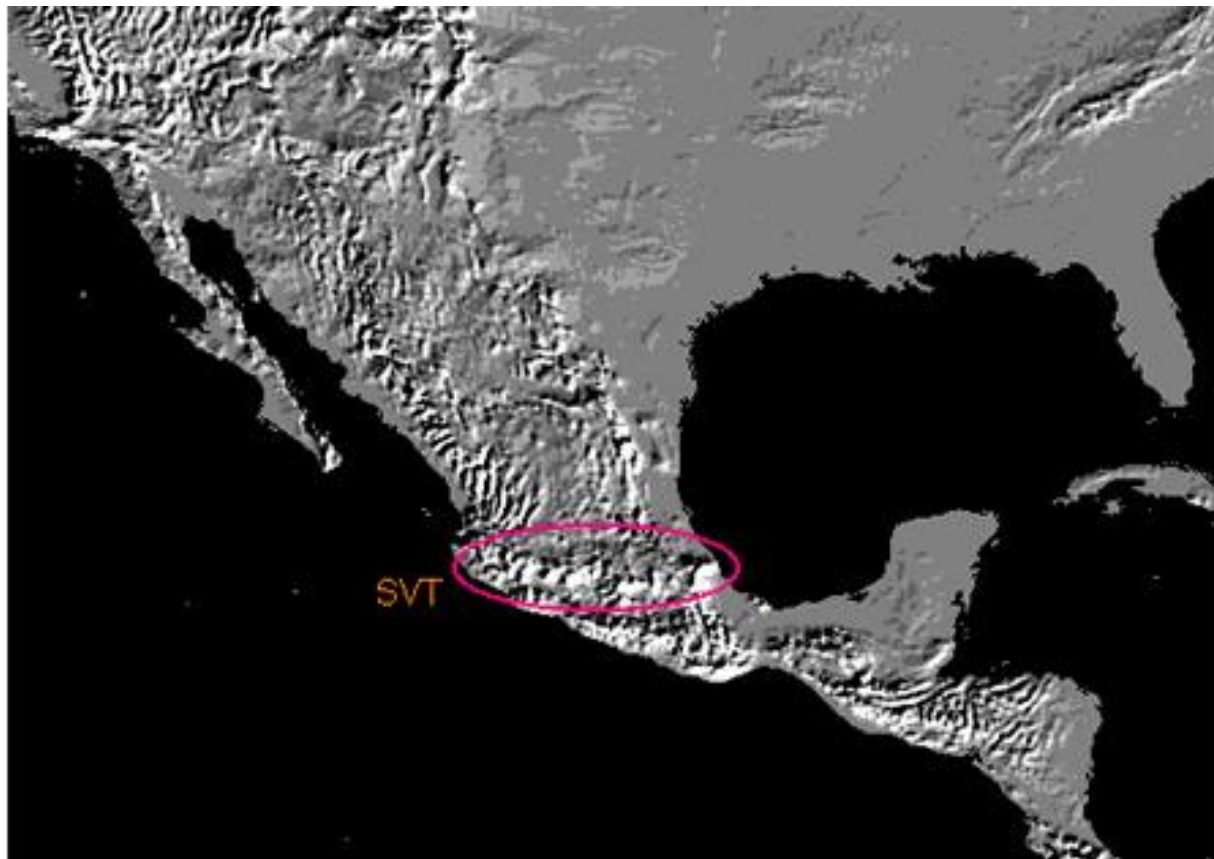
CORDILLERA DE CALIFORNIA

- One other significant mountain range, the California system, cuts across the landscape of the northern half of Mexico. A southern extension of the California coastal ranges that parallel California's coast, the Mexican portion of the California system extends from the United States border to the southern tip of the Baja Peninsula, a distance of 1,430 kilometers.
- Peaks in the California system range in altitude from 2,200 meters in the north to only 250 meters near La Paz in the south. Narrow lowlands are found on the Pacific Ocean and the Gulf of California sides of the mountains.

EJE NEOVOLCÁNICO

- The Cordillera Neovolcánica is a belt 900 kilometers long and 130 kilometers wide, extending from the Pacific Ocean to the Gulf of Mexico. The Cordillera Neovolcánica begins at the Río Grande de Santiago and continues south to Colima, where it turns east along the nineteenth parallel to the central portion of the state of Veracruz.
- The region is distinguished by considerable seismic activity and contains Mexico's highest volcanic peaks. This range contains three peaks exceeding 5,000 meters: Pico de Orizaba (Citlaltépetl)--the third highest mountain in North America--and Popocatepetl and Iztaccíhuatl near Mexico City. The Cordillera Neovolcánica is regarded as the geological dividing line between North America and Central America.

EJE NEOVOLCÁNICO MEXICANO



CORDILLERAS DEL SUR DE MÉXICO

- The Sierra Madre del Sur extends 1,200 kilometers along Mexico's southern coast from the southwestern part of the Cordillera Neovolcánica to the nearly flat isthmus of Tehuantepec. Mountains in this range average 2,000 meters in elevation. The range averages 100 kilometers in width
- The narrow southwest coastal plain extends from the Sierra Madre del Sur to the Pacific Ocean.
- The Sierra Madre de Oaxaca begins at Pico de Orizaba and extends in a southeasterly direction for 300 kilometers until reaching the isthmus of Tehuantepec. Peaks in the Sierra Madre de Oaxaca average 2,500 meters in elevation, with some peaks exceeding 3,000 meters. South of the isthmus of Tehuantepec, the Sierra Madre de Chiapas runs 280 kilometers along the Pacific Coast from the Oaxaca-Chiapas border to Mexico's border with Guatemala. Although average elevation is only 1,500 meters, one peak--Volcán de Tacuma--exceeds 4,000 meters in elevation.
- Finally, the Meseta Central de Chiapas extends 250 kilometers through the central part of Chiapas to Guatemala. The average height of peaks of the Meseta Central de Chiapas is 2,000 meters. The Chiapas central valley separates the Meseta Central de Chiapas and the Sierra Madre de Chiapas.

RED FLUVIAL MEXICANA

- Mexico has nearly 150 rivers, two-thirds of which empty into the Pacific Ocean and the remainder of which flow into the Gulf of Mexico or the Caribbean Sea.
- Despite this apparent abundance of water, water volume is unevenly distributed throughout the country. Indeed, five rivers--the Usumacinta, Grijalva, Papaloapán, Coatzacoalcos, and Pánuco--account for 52 percent of Mexico's average annual volume of surface water.
- All five rivers flow into the Gulf of Mexico; only the Río Pánuco is outside southeastern Mexico, which contains approximately 15 percent of national territory and 12 percent of the national population. In contrast, northern and central Mexico, with 47 percent of the national area and almost 60 percent of Mexico's population, have less than 10 percent of the country's water resources.

RIOS MEXICANOS. CARACTERÍSTICAS GENERALES

- El característico relieve de México, con grandes cadenas montañosas muy cerca de la costa y grandes cuencas endorreicas (que en México se llaman bolsones), hace que los ríos mexicanos sean, en general, cortos. Su caudal varía enormemente entre un norte que tiende al desierto, donde los cauces son esporádicos, y el sur tropical con abundantes lluvias y caudales importantes. Este panorama describe muy bien, sobre todo, los ríos de la vertiente del Pacífico, y sin embargo alguno de los ríos más largos de México vierten en este océano.

CUENCAS HIDROGRÁFICAS MEXICANAS

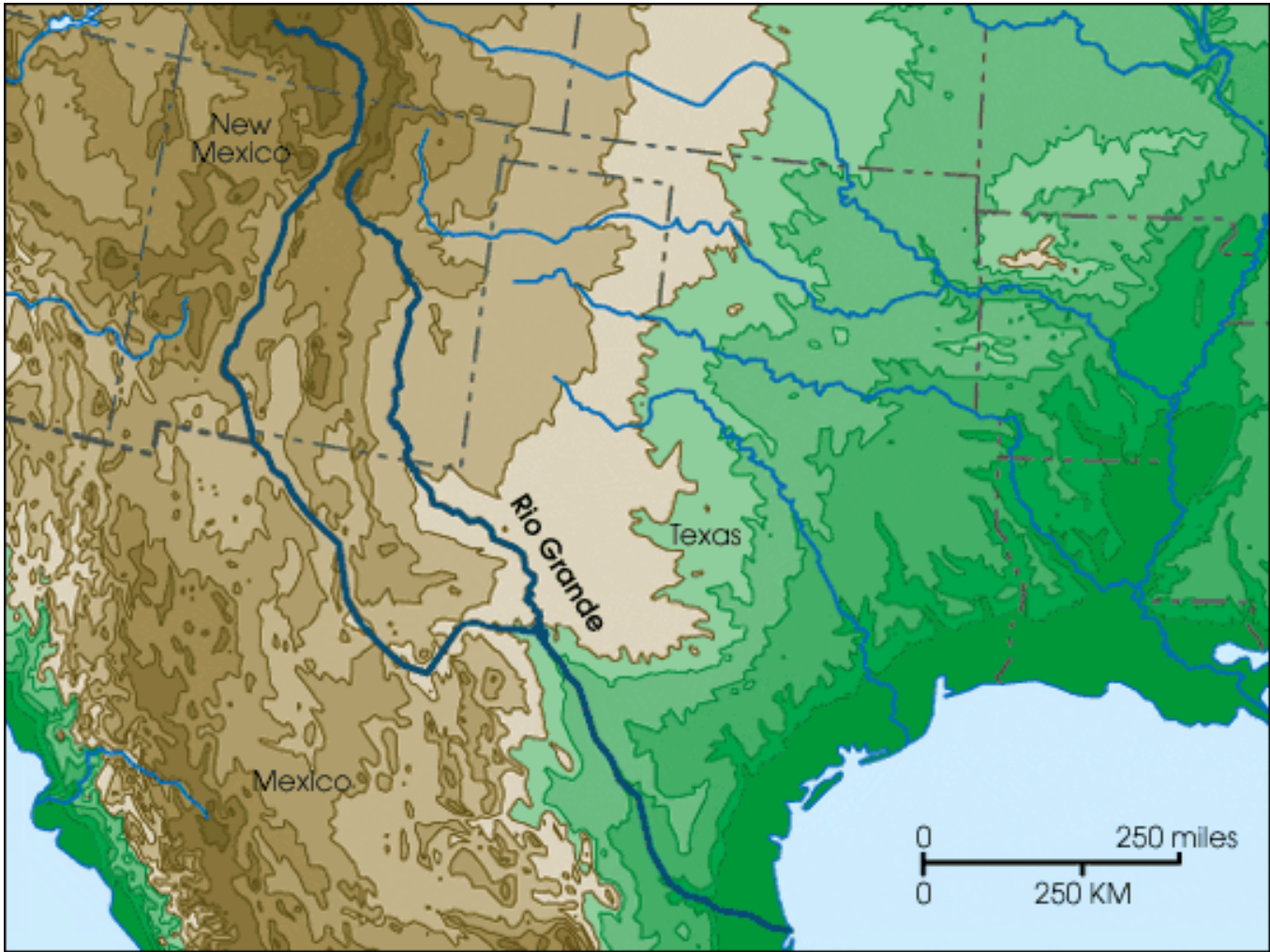
EL RÍO BRAVO

- En México se pueden diferenciar tres grandes vertientes la del Pacífico, la del Golfo y la del Caribe, pero existen también una «vertiente interior» que desembocan en los bolsones del Altiplano.
- El río más largo es el *río Bravo* (llamado en EE UU río Grande), que nace en en los montes San Juan, en el centro de la meseta de Colorado (EE UU). Tiene una longitud de 3.034 km, de los que 1.700 hacen de frontera entre México y EE UU. Desemboca en el golfo de México, formando un pequeño delta. Es un río de escaso caudal.

RIO BRAVO

http://www.oas.org/dsd/WaterResources/projects/RioBravo_esp.asp

- El Río Bravo, que se extiende por 3.000-km, es el quinto río más grande de Norteamérica y el vigésimo cuarto río más grande del mundo. También el Río Bravo es una frontera principal entre México y los Estados Unidos. Es central al patrimonio cultural y la historia de la frontera de ambos países, con una cuenca de 467.000 km² que se ensancha por cinco estados de México (Chihuahua, Coahuila, Nuevo León, Tamaulipas, Durango) y tres estados de los EEUU (Colorado, Nuevo México, Texas).
- El Río atraviesa tres regiones ecológicas (Las Montañas Rocosas del sur, el Desierto de Chihuahua y el ThornScrub de Tamaulipas), exhibiendo un mosaico de hábitats, incluyendo bosques ribereños, marismas, pantanos de sal, fuentes de agua dulce y scrubland en las regiones de las montañas, desierto y costa. El valle del Bajo Río Bravo es considerado uno de las regiones más diversas en términos de biodiversidad en el mundo, con millones de pájaros migratorios que vistan para alimentar y descansar ahí durante la migración estacional.





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#bibe20788

Rio Grande and cliffs in Santa Elena Canyon. Big Bend National Park, Texas,
USA.

RIO GRANDE EN SANTA HELENA CANYON



RIO LERMA

- El *río Lerma* o Grande de Santiago, es el segundo río más largo de México (1.270 km). Nace en los manantiales de Almoloya del Río, en el estado de México. Atraviesa el Valle de Toluca, y desemboca en el océano Pacífico. Se un río intensamente utilizado, ya que proporciona agua potable a la [ciudad](#) de México por medio de un acueducto que atraviesa la Sierra de las Cruces, así como de energía eólica y agua para riego. Este uso intensivo hace de él un río muy contaminado.

MEXICO CUENCAS ENDORREICAS

- Las vertiente interior está formada por bolsones que impiden la salida de sus aguas al mar. Los ríos más importantes que desembocan en estos sistemas son los ríos *Nazas* y *Aguanaval*, en los estados de Zacatecas, Durango y Coahuila. Sus aguas se aprovechan para dotar de agua las ciudades del entrono (que acumula más de un millón de personas) y riego para los cultivos de la Comarca Lagunera. No obstante, son ríos de escaso caudal. Otros ríos interiores importantes son: el río *Casas Grandes* en Chihuahua, y el *Nazas*, en Durango.
- México alberga numerosos lagos y lagunas en su territorio, aunque de tamaño modesto. El más importante es el lago de *Chapala*, en el estado de Jalisco, que forma parte del sistema de abastecimiento del río Lerma. Otros lagos importantes son el *Pátzcuaro*, el *Zirahuén* y el *Cuitzeo*, en Michoacán de Ocampo. Por otro lado la mayoría de los ríos de México tienen en su curso algún pantano.