MÉXICO

GOBIERNO DE LA REPÚBLICA

COORDINACIÓN NACIONAL DE PROTECCIÓN CIVIL

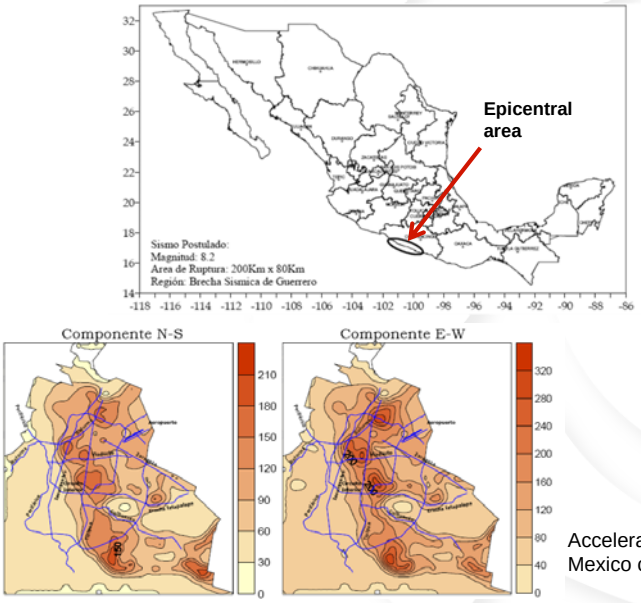
MÉXICO

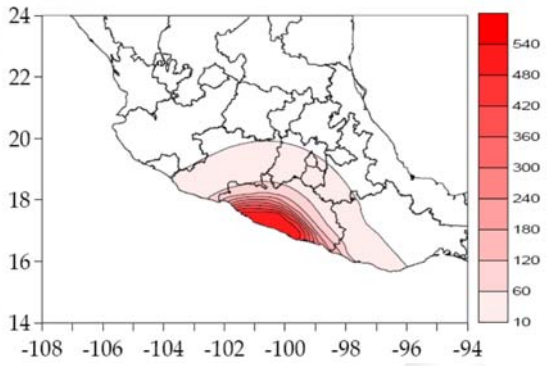
Earthquake and tsunami disaster mitigation research in Mexico

MARCH -2014

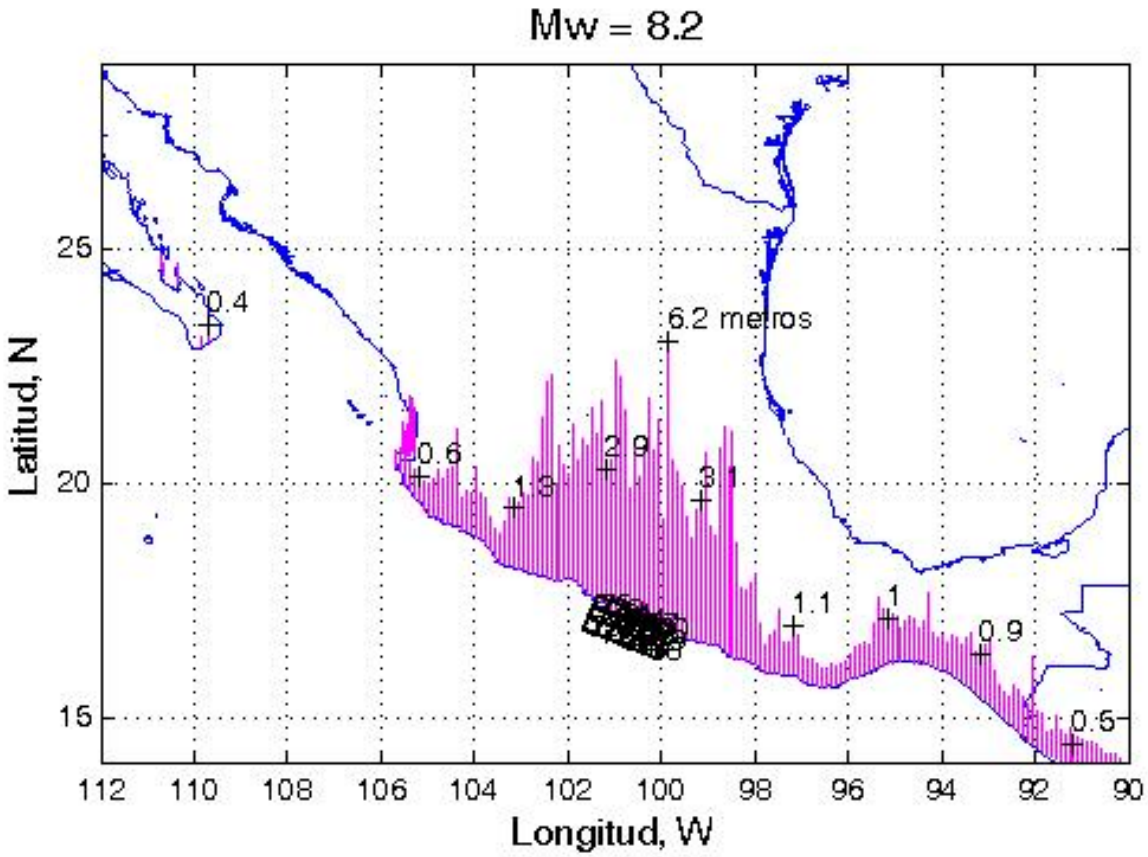
Development of a master plan to prevent and mitigate seismic risk

- Felt in 16 - 18 states, strong effects in 5 or 6
- Local tsunami affecting Pacific urban and turistic infrastructure
- Sand liquefaction, landslides
- Losses could reach 30,000 MUSD

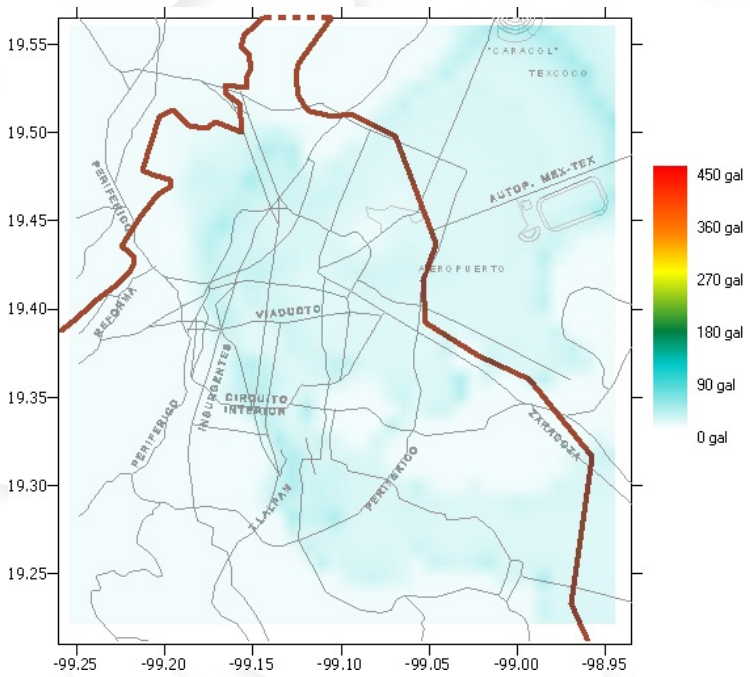


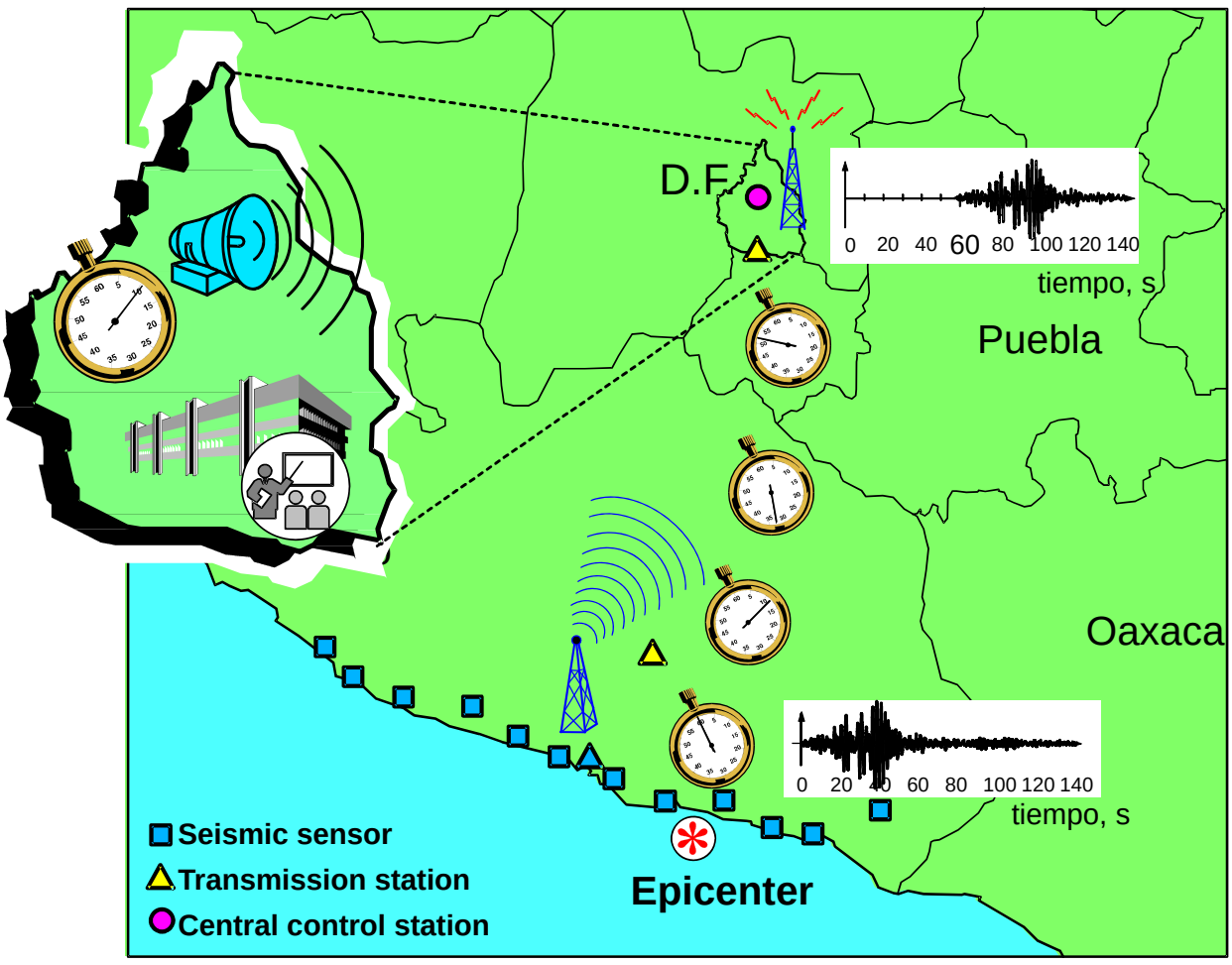


Acceleration maps
Mexico city



ACCELERATION DISTRIBUTION IN MEXICO CITY GENERATED 15 MINUTES AFTER A M 5.7 EQ IN THE WESTERN COAST (300 KM)





MEXICAN SEISMIC NETWORK

The main objective is to provide timely and accurate information about earthquakes and tsunamis for decision making and risk management

Main actions

- Integration of all the seismographic and strong motion networks in the country. To have nation wide coverage. 600 stations from 25 institutions.
- Real time data availability
- 45 MUSD
- Incorporate a tsunami warning system (45 MUSD)

SEGOB SEMAR SCT

UNAM
SSN SERVICIO SISMOLÓGICO NACIONAL
Servicio Mareográfico Nacional Geofísica - UNAM
GEOFISICA UNAM
INSTITUTO DE INGENIERÍA UNAM
CIRES, A. C.
CICESE
INSTITUTO MEXICANO DEL TRANSPORTE

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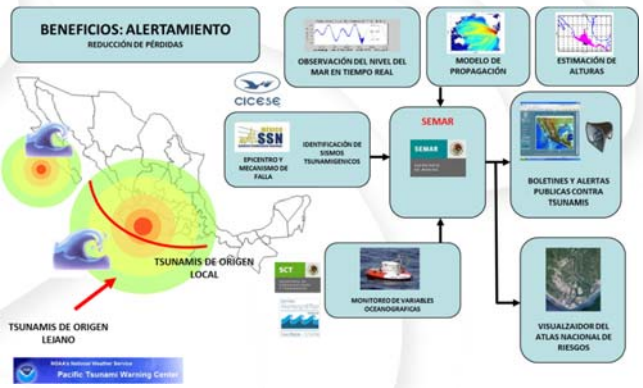
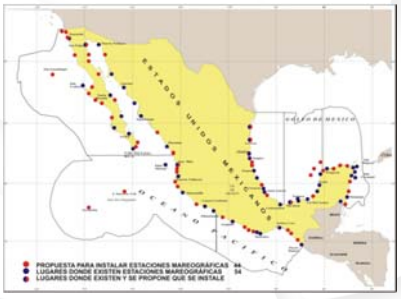
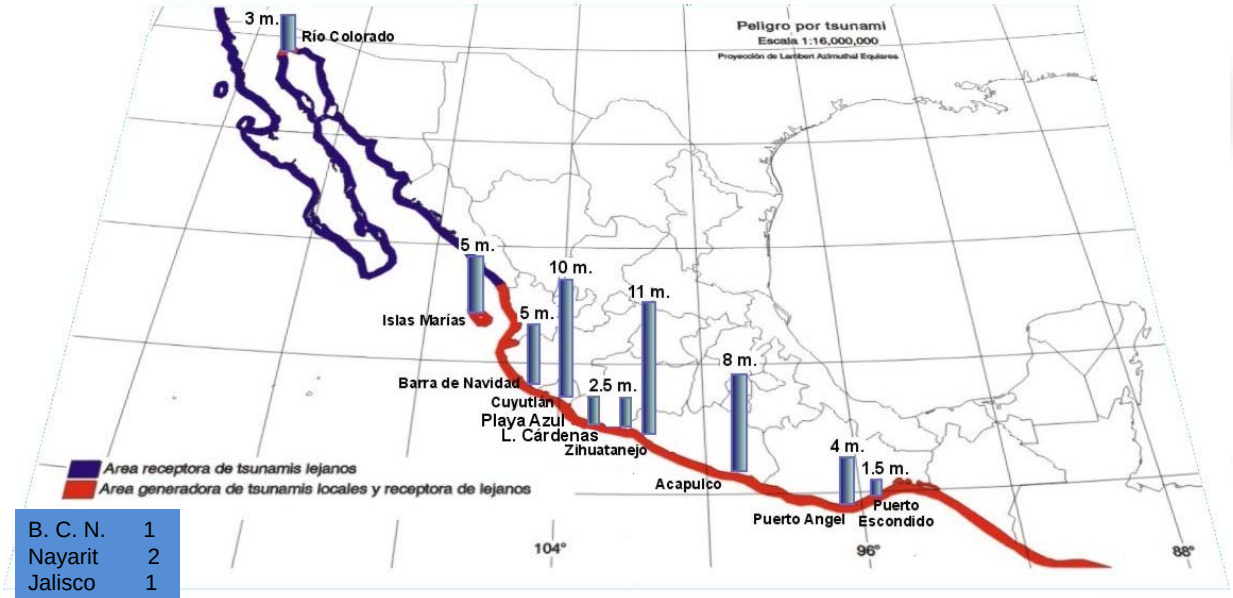
National Tsunami Early Warning System (SINAT)

- Based on the agreement with SEMAR (Mexican Navy) and UNAM
- Initial investment ~45 MUSD
- Necessary to upgrade monitoring and mareographic systems to integrate them to the SINAT
- Strong campaign to disseminate information about hazard and civil protection measures along the coast





Tsunami – Maximum wave height since 1732



B. C. N.	1
Nayarit	2
Jalisco	1
Colima	9
Michoacán	2
Guerrero	16
Oaxaca	5

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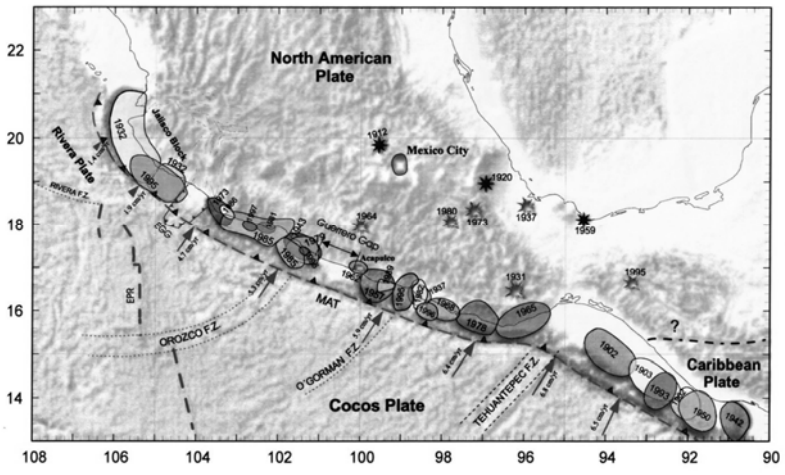
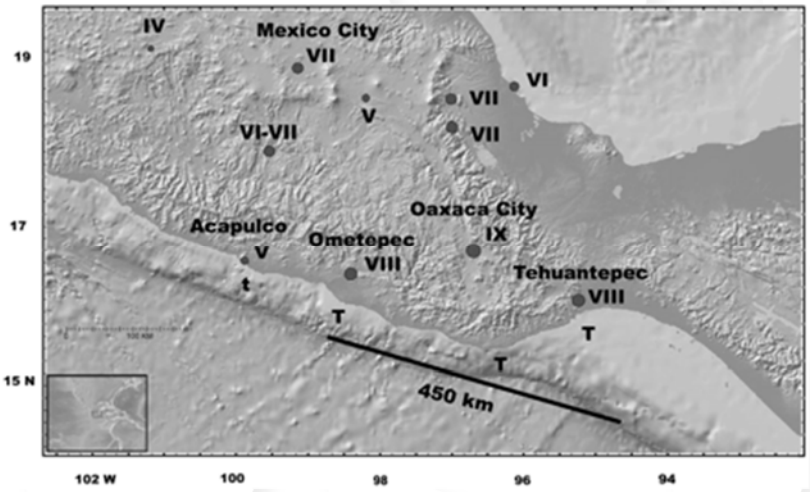
Maximum expected magnitude in Mexico could exceed 8.2 (Jalisco 1932)

Although an EQ with M 9.0 is not likely to occur, an event with M 8.5 is possible along the western coast , based on recent investigation





March 28, 1787 (Suárez and Albini; 2009)

Sea retreated ~ 4 km. A large wave invaded land ~ 6.2 km
Estimated rupture lenght 400-450 km. M 8.5

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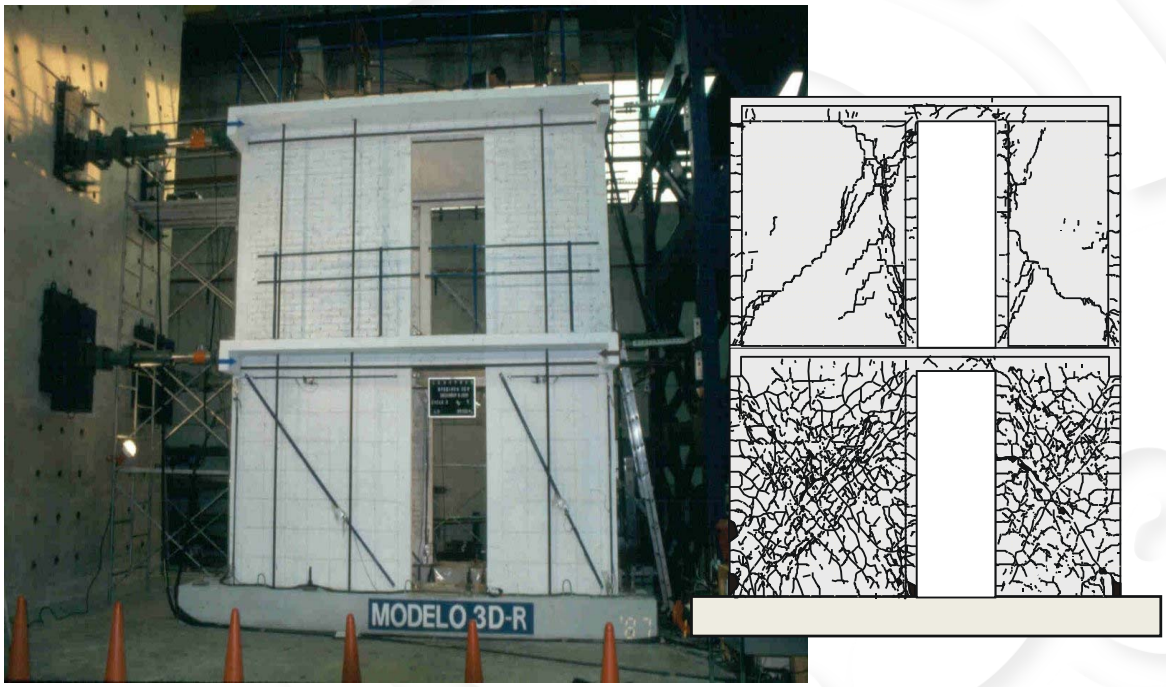
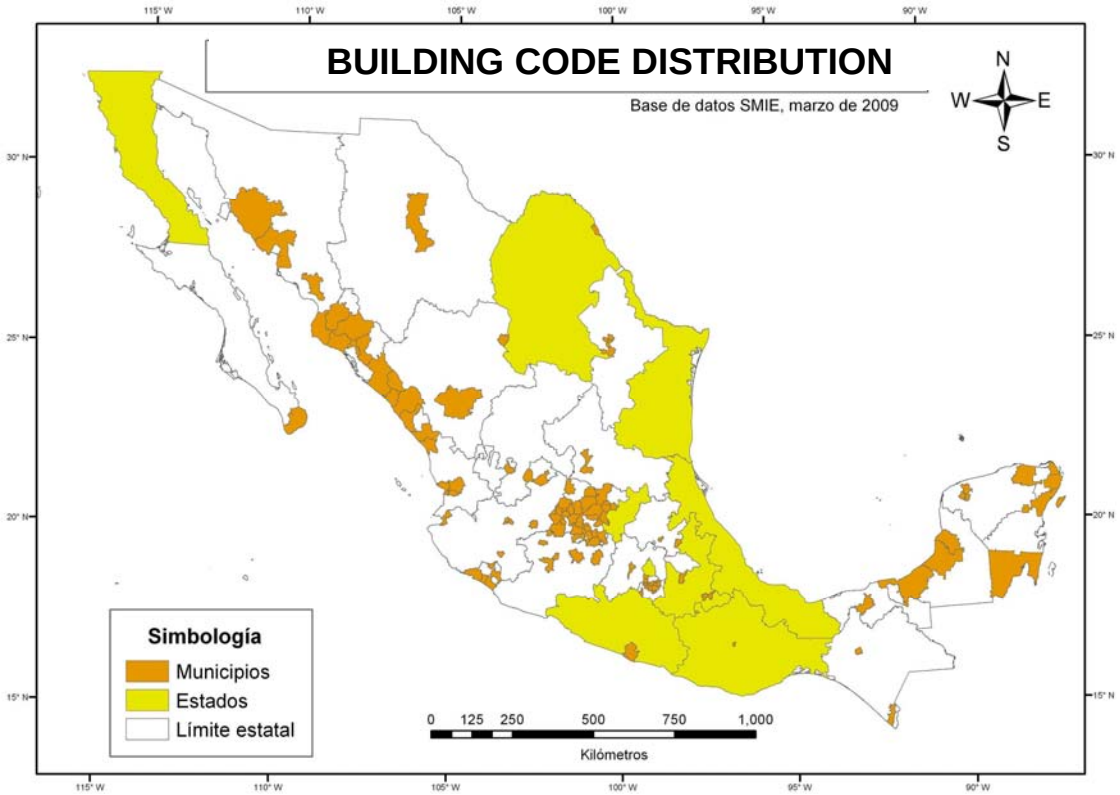
Cracking pattern



Study on the seismic behavior of a typical school building in Mexico (Reinforced concrete and masonry)



Purpose of the Standard (DISASTER PREVENTION)

The Standard sets out in detail the minimum requirements for structural design and construction, to be met by new buildings to adequately respond to strong **earthquakes** as well as to **wind and rain** effects, observed in great part of the country, and to prevent accidents caused by **fires**.

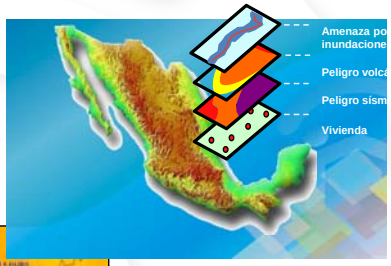
The Standard is based on the Mexico City code, considered complete and updated. Also, other specific aspects are considered:

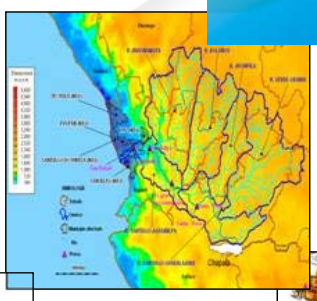
- Requirements for site selection
- Supervision by owner and authorities throughout the entire building process
- Maintenance and periodic evaluation
- Operation and maintenance manual

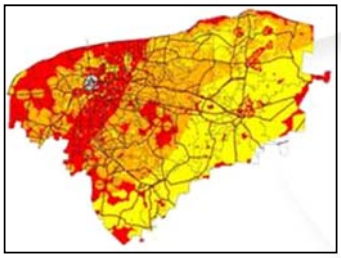
National Risk Atlas

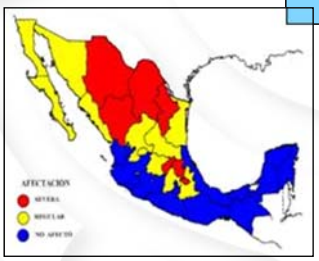
Integral Information System on Disasters Risk

- Simulate disaster scenarios
- Give recommendations for a timely decision taking
- Establish effective prevention and mitigation measures
- Support development with safety and welfare









Development of methodologies to create hazard and risk maps

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