

Geospatial Information for disaster risk reduction and natural resources management

Rolando Ocampo Alcántar



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Background



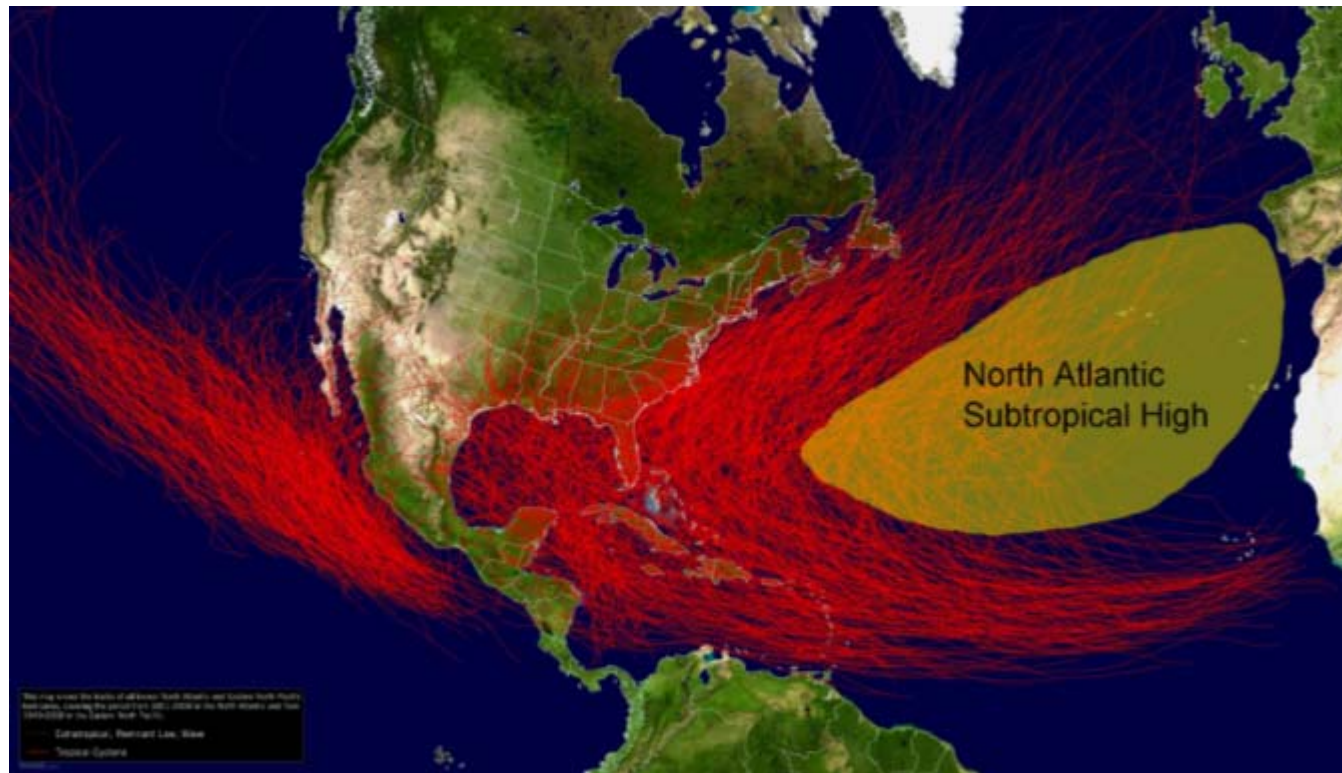
Given its geographic location, and as being part of the Ring of Fire, Mexico is subject to a huge variety of hydro-meteorological, seismic and volcanic phenomena.

SAN ANDREAS FAULT SYSTEM



The territory is often affected by **hurricanes** that are generated in both Pacific and Atlantic Oceans.

On average, 25 hurricanes arrive yearly to the nearby seas. 4 to 5 of these penetrate the territory and often cause severe damage.



Hurricanes and tropical storms (1949-2008)



Geospatial Information for Disaster Management



The National Institute of Statistics and Geography (INEGI) offers to Federal Government, Entities and Society, statistical and geographical information in order to prevent disasters and mitigate the effects caused on population and infrastructure.

These information include:

- Basic geographic information
- Remote sensing imagery
- Digital Elevation Models
- Natural Resources Datasets



NATIONAL BASE MAP

Integration of Geostatistical framework and Topographic Maps

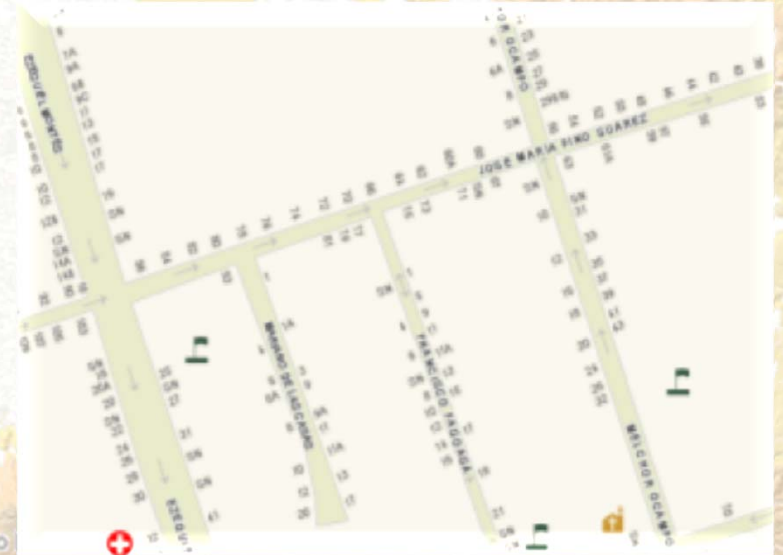
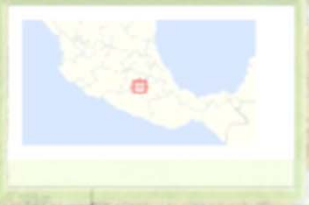
➤ **32 STATE AREAS**

➤ **2, 457 MUNICIPAL AREAS**

➤ **299, 662 LOCALITIES**

- 4, 547 Urban
- 295, 115 Rural

Mapa de referencia



➤ **30.3 MILLIONS ADDRESSES:**

➤ **1.3 MILLIONS ROADS**

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V31000-21001

RELIEF DATA



Mexican Elevation Data Set Version 3.0

- Downloadable at INEGI's web page
- 15 meters spatial resolution



INSTITUTO NACIONAL
DE ESTADÍSTICA Y GEOGRAFÍA



SATELLITE IMAGERY



AERIAL PHOTOGRAPHY

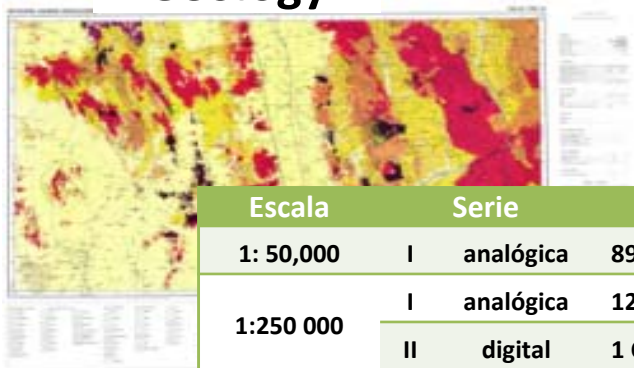


INEGI, headquarters, Aguascalientes, México.



NATURAL RESOURCES INFORMATION

Geology



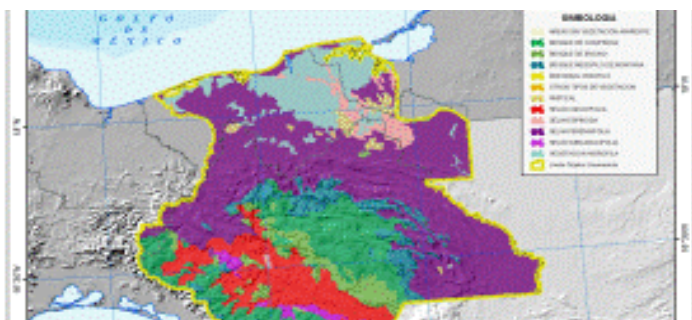
| Escala | Serie | Avance |
|-------------|-------------|---------------------|
| 1: 50,000 | I analógica | 899 cartas impresas |
| 1:250 000 | I analógica | 121 cartas impresas |
| | II digital | 1 Continuo Nacional |
| 1:1 000 000 | I analógica | 8 Cartas Impresas |
| | II digital | 1 Continuo Nacional |

Soils



| Escala | Serie | Avance |
|-------------|-------------|---------------------|
| 1: 50,000 | I analógica | 640 cartas impresas |
| 1:250 000 | I analógica | 121 cartas impresas |
| | II digital | 1 Continuo Nacional |
| 1:1 000 000 | I analógica | 8 Cartas Impresas |
| | II digital | 1 Continuo Nacional |

Land Use and Vegetation



| Escala | Serie | Avance |
|-------------|-------------|--|
| 1: 50 000 | I analógica | 806 cartas impresas |
| | II digital | 216 conjuntos vectoriales (zona costera) |
| 1:250 000 | I analógica | 121 cartas impresas |
| | II | |
| | III | |
| | IV digital | 1 Continuo Nacional por serie |
| | V | |
| 1:1 000 000 | I analógica | 8 Cartas Impresas |
| | II digital | 1 Continuo Nacional |

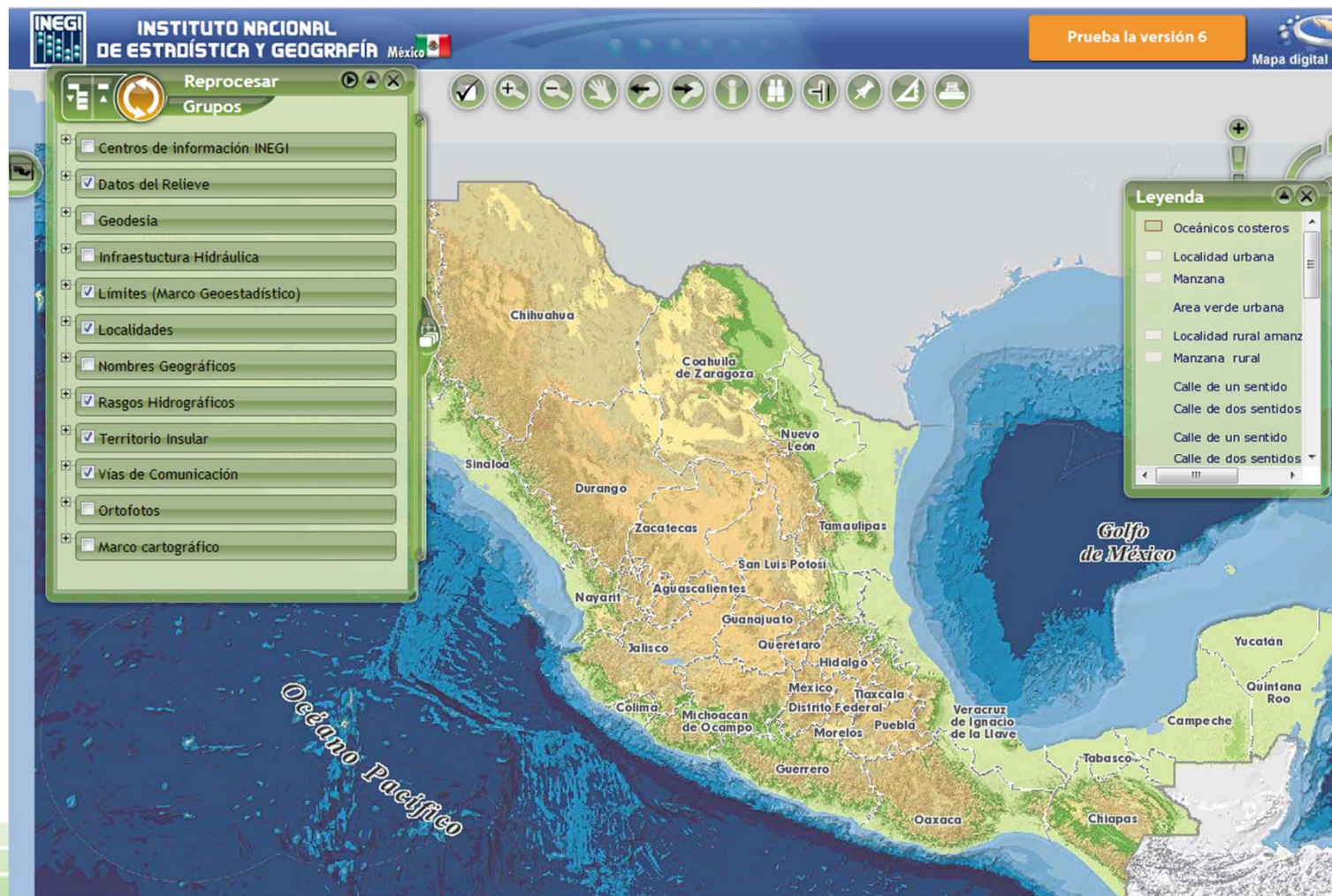
Hydrology: Ground and surface water



| Escala | Serie | Avance |
|-------------|-------------|------------------------------|
| 1:250 000 | I analógica | 121 cartas impresas por tema |
| | II digital | 1 Continuo Nacional por tema |
| 1:1 000 000 | I analógica | 8 Cartas Impresas |
| | II digital | 1 Continuo Nacional |

Digital Map of Mexico

The Digital Map is a technological platform that allows the visualization and analysis of geographic and georeferenced statistical information. It offers 158 vector data layers, with more than 66 million geographic objects and 4 raster layers covering the whole country.

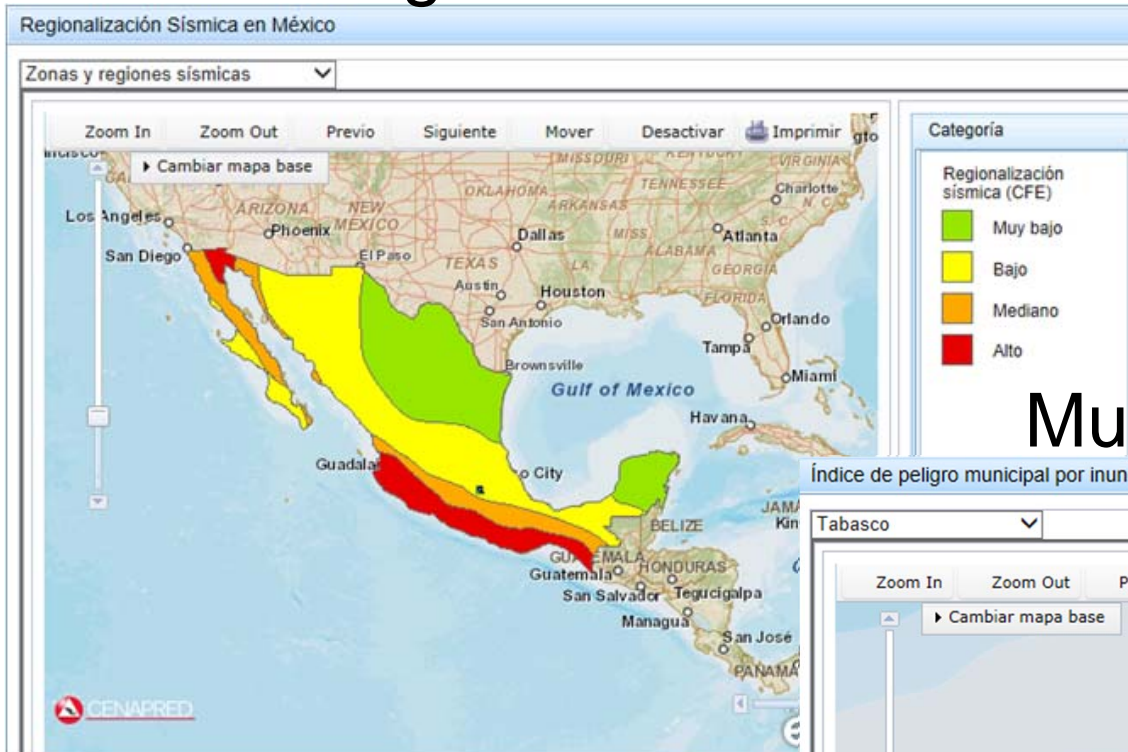


Risk Atlas

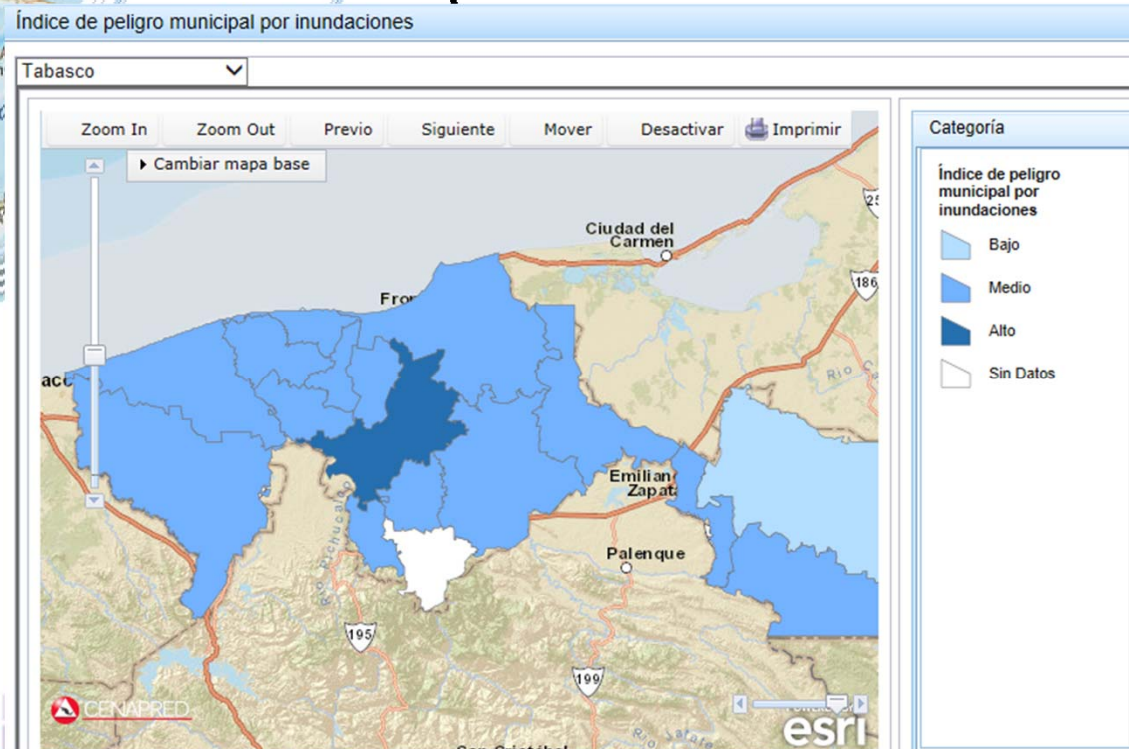


<http://www.atlasnacionalderiesgos.gov.mx/>

Seismic Regionalization

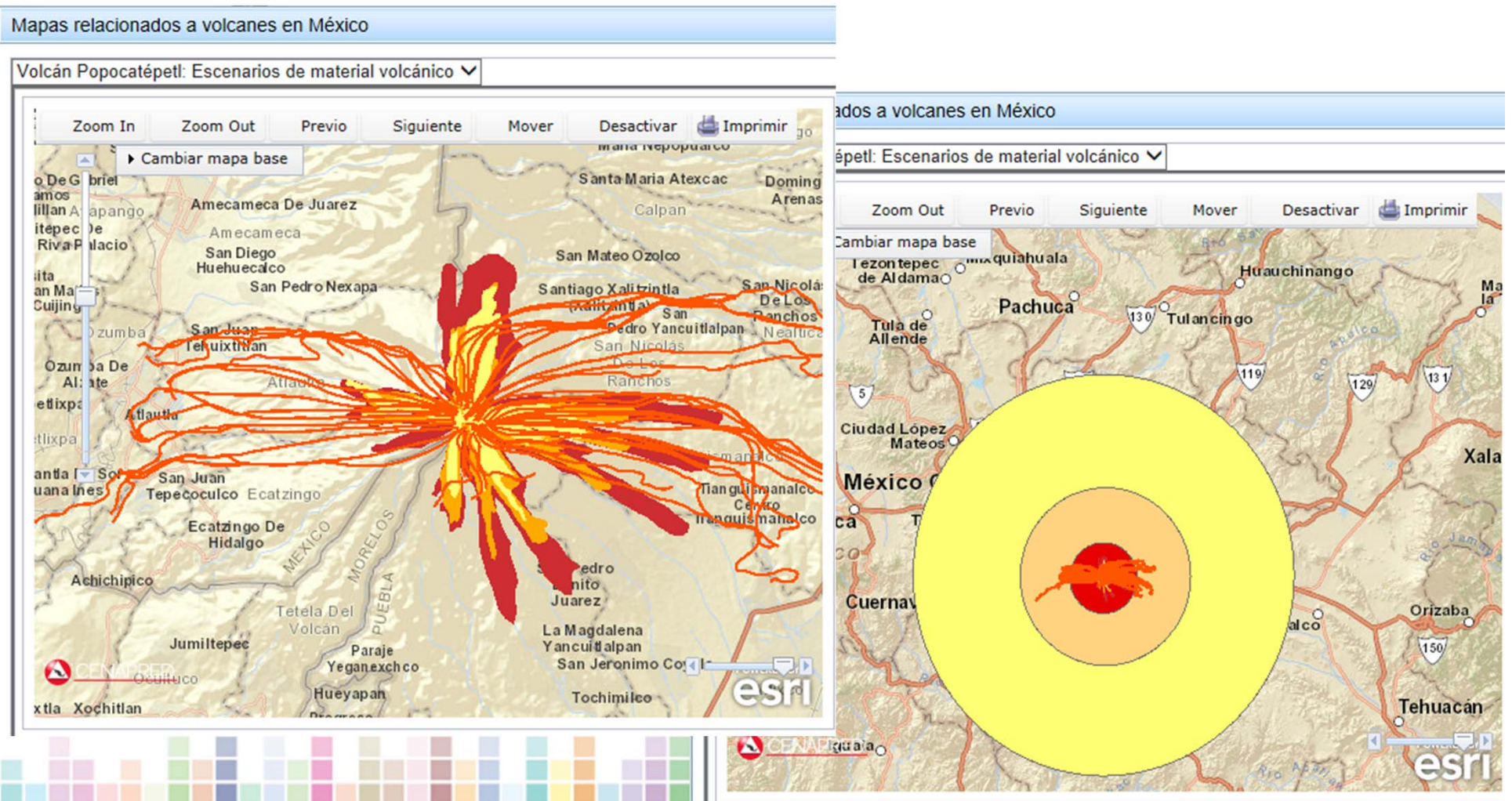


Municipal Flood Risk Index



<http://www.atlasnacionalderiesgos.gov.mx/>

Popocatepetl Volcano: escenarios de material volcánico y zona de peligro



Information Exchange Web site



Main users of the Geospatial Information for Disaster Management: National Disaster Prevention Centre, Water Commission, Energy Ministry, Marine Ministry, Environment and Natural Resources Ministry.

Sitio Colaborativo

geoweb.inegi.org.mx/SitioIntercambioDesastres/login.login

Google

Sitio de Intercambio de Información para la Atención de Desastres

Bienvenido
José Luis Ornelas de Anda
[Cerrar sesión](#)
viernes 22 de noviembre de 2013

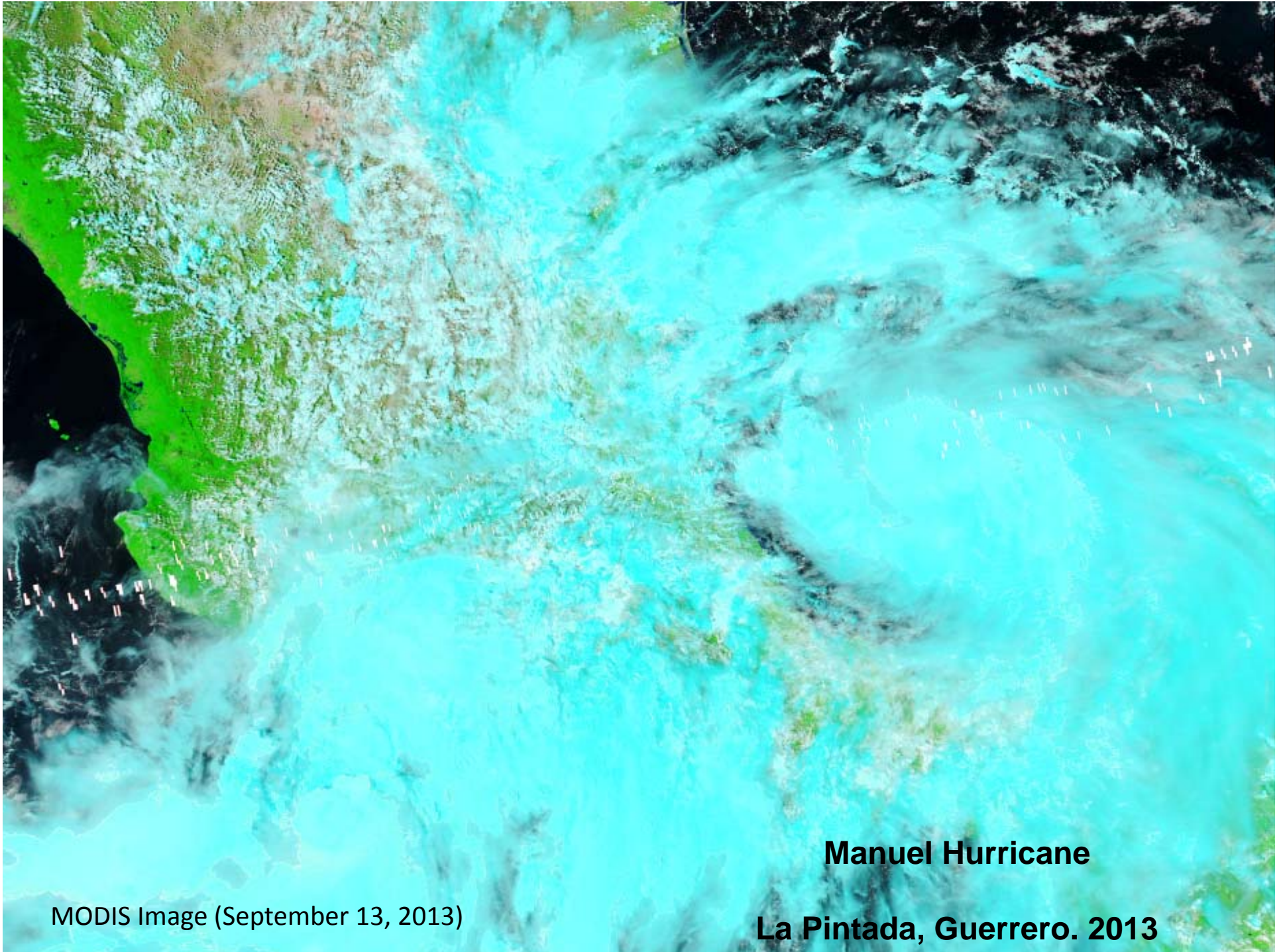
Seleccione el sitio colaborativo al que desea acceder:

Huracán Raymond 2013
(mensajes: 1, respuestas: 0, archivos: 13) [Ingresar a este sitio](#)

Ingrid y Manuel 2013
(mensajes: 0, respuestas: 0, archivos: 46) [Ingresar a este sitio](#)

Inundación Coatzacoalcos 2013
(mensajes: 0, respuestas: 0, archivos: 8) [Ingresar a este sitio](#)

Sitio Colaborativo, ver. 2013.09.25



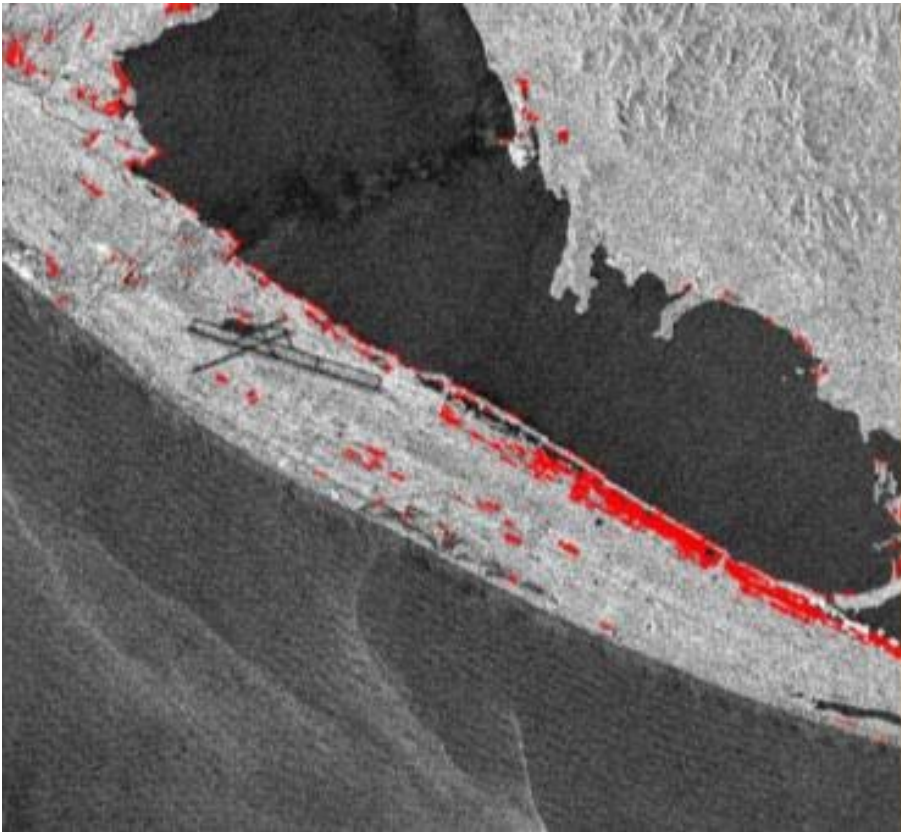
MODIS Image (September 13, 2013)

Manuel Hurricane

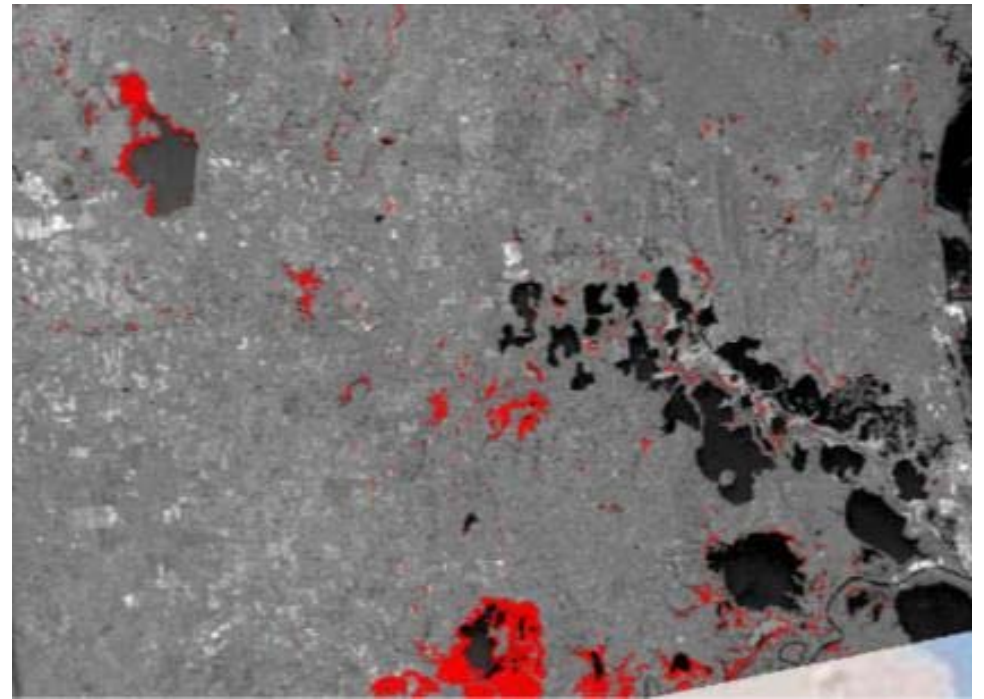
La Pintada, Guerrero. 2013

Radar Images

September 2013



Acapulco, Guerrero



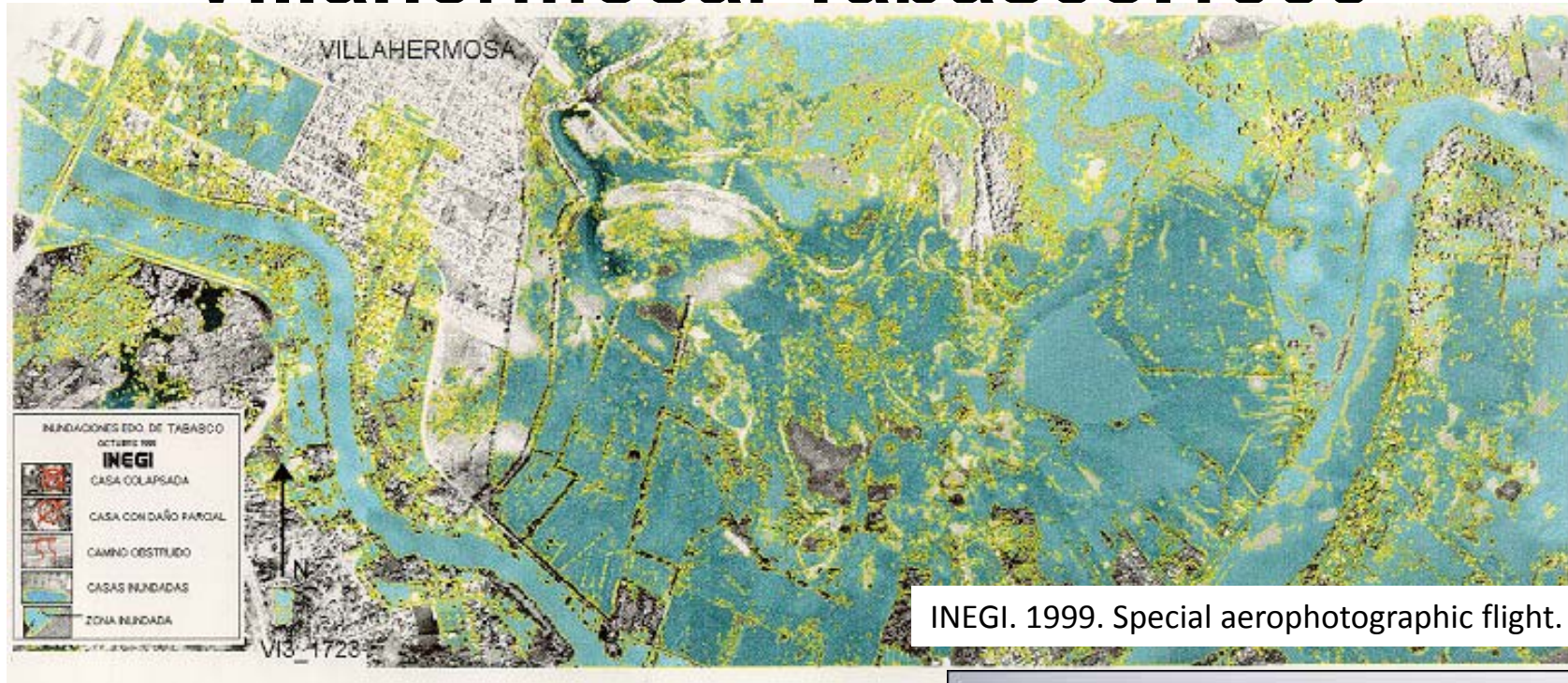
Ciudad Valles, San Luis Potosí



Examples of the use of Geospatial Information for Disaster Management



Villahermosa. Tabasco. 1999



INEGI. 1999. Special aerophotographic flight.

In October 1999, the interaction of a Cold Front with Tropical Depression N° 2 caused heavy rains. The situation worsened when three heavy rains made the Government take the decision of opening Peñitas' spillway. 40% of Villahermosa was flooded. 20,000 people were evacuated and 702 shelters were enabled for 56,411 people. There were a total of 62,300 homes affected and 1,007 schools damaged.



Chalco, Estado de México. 2000

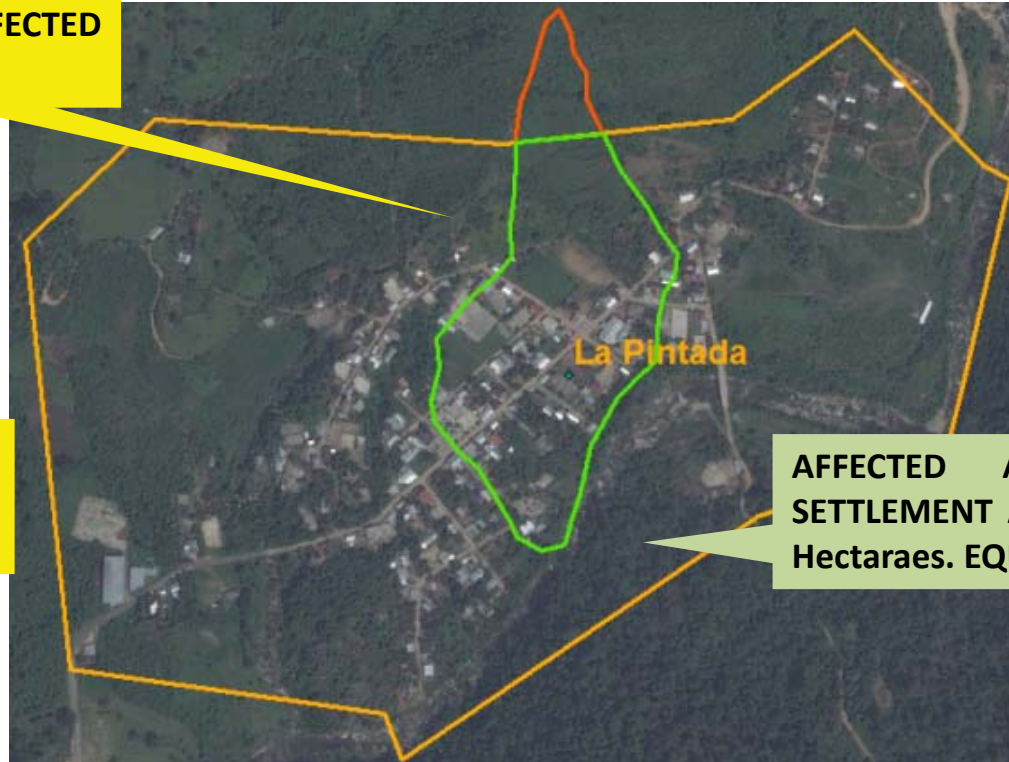


The levee break of Canal de la Compañía, caused a flood that hit over 12 thousand people. The flooded area was of 444,504 m².



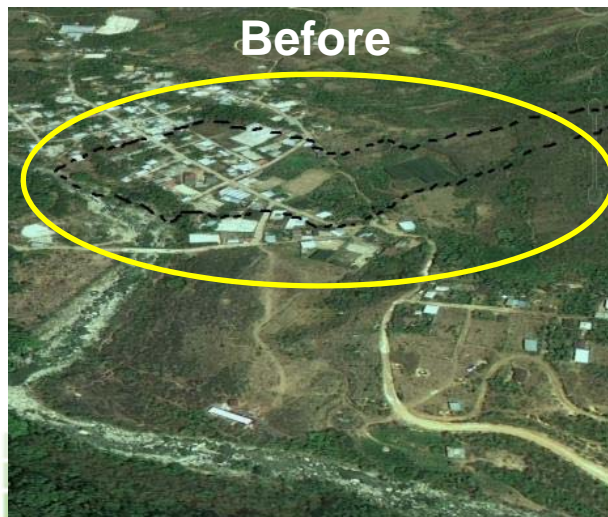
La Pintada, Guerrero. 2013

TOTAL AREA AFFECTED
7.6 hectares.



HUMAN SETTLEMENT
AREA OF LA PINTADA
53.7 hectares.

AFFECTED AREA INSIDE HUMAN
SETTLEMENT AREA OF LA PINTADA 6.9
Hectaraes. EQUAL TO 12.8%



Ensenada – Tijuana Highway, Baja California. 2013



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