

# EERI VERT Chiapas Earthquake

Topic: Highways, Landslides-Settlements, Earth Cracks, Rock Falls, Energy

By Manny Hakhamaneshi, Yolanda Alberto, & Keshab Sharma

# Overview of topic and how it affected various regions

- **Extent of damage:**
- Several highways suffered from landslides, combination of landslides and settlement, rock falls, and land separation.  
<http://expansion.mx/empresas/2017/09/08/afectaciones-a-infraestructura-por-sismo>
- “The federal highway network operates throughout the country. The states of Chiapas, Oaxaca and Tabasco register some damage without affecting connectivity.”
- “The private natural gas transportation infrastructure is undamaged throughout the country, so no cuts were made to the service, reported the Mexican Natural Gas Association.”
- “The Salina Cruz refining complex in Oaxaca is in safe state after the earthquake, with no affectations, and in the process of restarting operations.”

# Overview of topic and how it affected various regions

- **Key areas affected:**

1. Municipality of Chiapas (landslide, landslide-settlement, rock falls): Cintalapa-Tuxtla highway, the Arriaga-Ocozocuaula and Tuxtla-San Cristóbal highways
2. Copoya-Tuxtla highway (land separation)
3. Municipality of Oaxaca (landslide): Oaxaca-Tehuantepec highway
4. Municipality of Tabasco (settlement): Libramiento de Villahermosa at the intersection of Tierra Amarilla

# Overview of topic and how it affected various regions

- **Key areas affected:**

5. In km. 99 + 00 to 100 + 000, of the Tapanatepec - Tuxtla Gutiérrez highway continues to close due to landslide collapse.
6. In km. 23 + 000, from the Tapanatepec-Tuxtla Gutierrez highway in the section: Tapanatepec-Ocozocoautla, total blockade due to slope collapse.
7. In km. 023 + 000, from the Tapanatepec-Tuxtla Gutierrez highway in the section: Tapanatepec-Ocozocoautla, total blockade due to slope collapse
8. In the municipality of Sola de Vega, state police reported that landslides were generated between kilometers 123 to 125, at the height of Los Limones

# Overview of topic and how it affected various regions

- Key areas affected:

9. *The giant earth fissure divided the city of Jaltipan, Veracruz, in half! The cracks are expected to become worst due to the tropical storm Katia.*



**Jaltipan, Veracruz**

Source:

<http://strangesounds.org/2017/09/giant-earth-cracks-split-in-half-jaltipan-mexico-after-m8-1-earthquake-and-tropical-storm->

# Overview of topic and how it affected various regions

- Key areas affected:

Copoya-Tuxtla



Cintalapa-Tuxtla



Simojovel, Chiapas



# Overview of topic and how it affected various regions

- Key areas affected:



Arriaga-Ocozocuaula, km 73



Tuxtla Malpaso, kilometer 168

Sources:

Tweeter Account of Alerta Chiapas (@ AlertaChiapas)

<http://t21.com.mx/terrestre/2017/09/08/danos-carreteras-oaxaca-chiapas-veracruz-previenen-katia>

<http://yucatan.com.mx/mexico/cierran-carreteras-por-danos-tras-el-sismo-y-huracan-katia>

# Overview of topic and how it affected various regions

- Key areas affected:



**Oaxaca-Juchitan Highway in Zaragoza**



**Oaxaca-Chiapas, Veracruz**

Sources:

<http://t21.com.mx/terrestre/2017/09/08/danos-carreteras-oaxaca-chiapas-veracruz-previenen-katia>

<http://yucatan.com.mx/mexico/cierran-carreteras-por-danos-tras-el-sismo-y-huracan-katia>



# Questions that a reconnaissance team could look into

- Recent rainfall induced landslides and how they behaved during the earthquake?
- What are the soil conditions where the land separation and landslides occurred?
- What is the amount of landslide induced settlements?
- Is there any reinforced slopes that performed well during the earthquake? If so, how was it reinforced?
- What protocols are in place for retrofitting highways or bridges with land separation?
- What are the impacts on community due to earthquake induced landslides?

# Questions that a reconnaissance team could look into

- What controls are in place for avoiding rock falls in the highway?
- How soon is a highway expected to reopen upon closure? What happens to emergency vehicle transport?
- Foundation performance of various structures i.e. building, bridge, tower etc.

# Links to media articles discussing the topic

- <http://expansion.mx/empresas/2017/09/08/afectaciones-a-infraestructura-por-sismo>
- @AlertaChiapas Tweeter Account
- <http://t21.com.mx/terrestre/2017/09/08/danos-carreteras-oaxaca-chiapas-veracruz-previenenen-katia>
- <http://yucatan.com.mx/mexico/cierran-carreteras-por-danos-tras-el-sismo-y-huracan-katia>
- <http://strangesounds.org/2017/09/giant-earth-cracks-split-in-half-jaltipan-mexico-after-m8-1-earthquake-and-tropical-storm-katia-hit-veracruz.html>