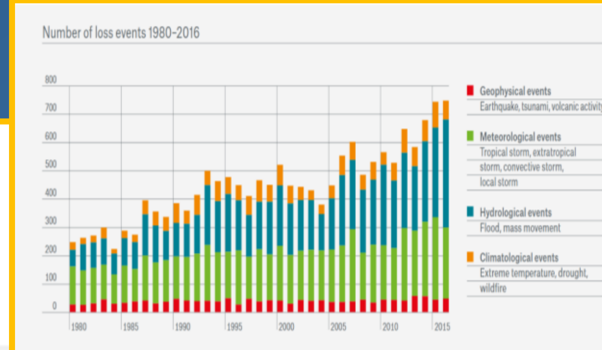
NATIONAL & KAPODISTRIAN UNIVERSITY OF ATHENS

POST GRADUATE PROGRAM

ENVIRONMENTAL, DISASTER AND CRISES MANAGEMENT

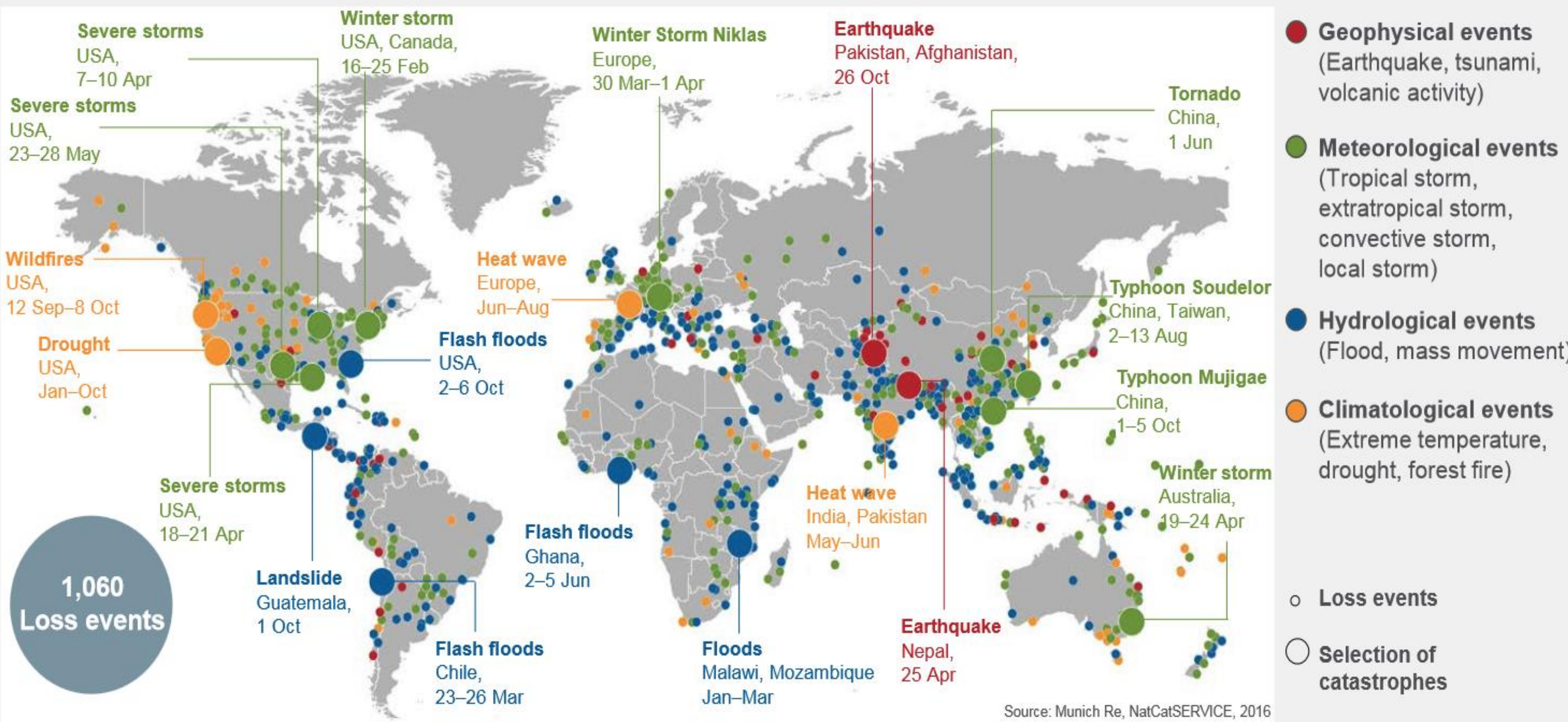
SABAH
ACI ALLAHIM
17 Ağustos'un yaralarını sarmaya çalışırken yeni bir depremle can evimizden vurulduk
7.2
Bolu-İstanbul yolunun yarısı uçuruma düştü
EL PAÍS
La desesperación da paso a la ira en Haití por la falta de ayuda
Newsweek
WHY HAITI MATTERS
BY BARACK OBAMA
渴望生命
star
KIYAMET KULELERİ
Público
CAOS, SAQUEOS Y RESCATES
TA NEA
Κατακραυγή
BHMagazino
Η κραυγή των αρνών
stern
Stolz, diszipliniert, leidensfähig, selbstlos
Das unglaubliche Volk
Wie Kultur und Katastrophen die Mentalität der Japaner prägen
DER SPIEGEL
FUKUSHIMA
WAS WIRKLICH GESCHAH
855
ΕΓΙΝΑΝ ΣΤΑΧΤΗ
2008.5.12
LIBYE LA GRANDE PEUR DES REBELLES
Le Point
Quand le destin s'acharne sur les Japonais
La chute d'un géant
Facebook Enquête sur Mark Zuckerberg
PLUS: HOW IGNORANT IS AMERICA?
Newsweek
Apocalypse Now
Tsunamis. Earthquakes. Nuclear Meltdowns. Revolutions.
Μετά τη φωτιά
IN SEARCH OF NEW PLANETS A MERCEDES COMEBACK?
TIME
The Agony of KASHMIR
TIME
SPECIAL REPORT
Haiti's Tragedy
アサヒグラフ
東北関東大震災
2011.3.11
TA NEA
Σκληρό παζάρι έως τις 25
Βιβλική καταστροφή
AKŞAM
Sanki kıyamet
Donanma matemde
Σμέρνα Ηλείας, 26-8-2007
BHMagazino

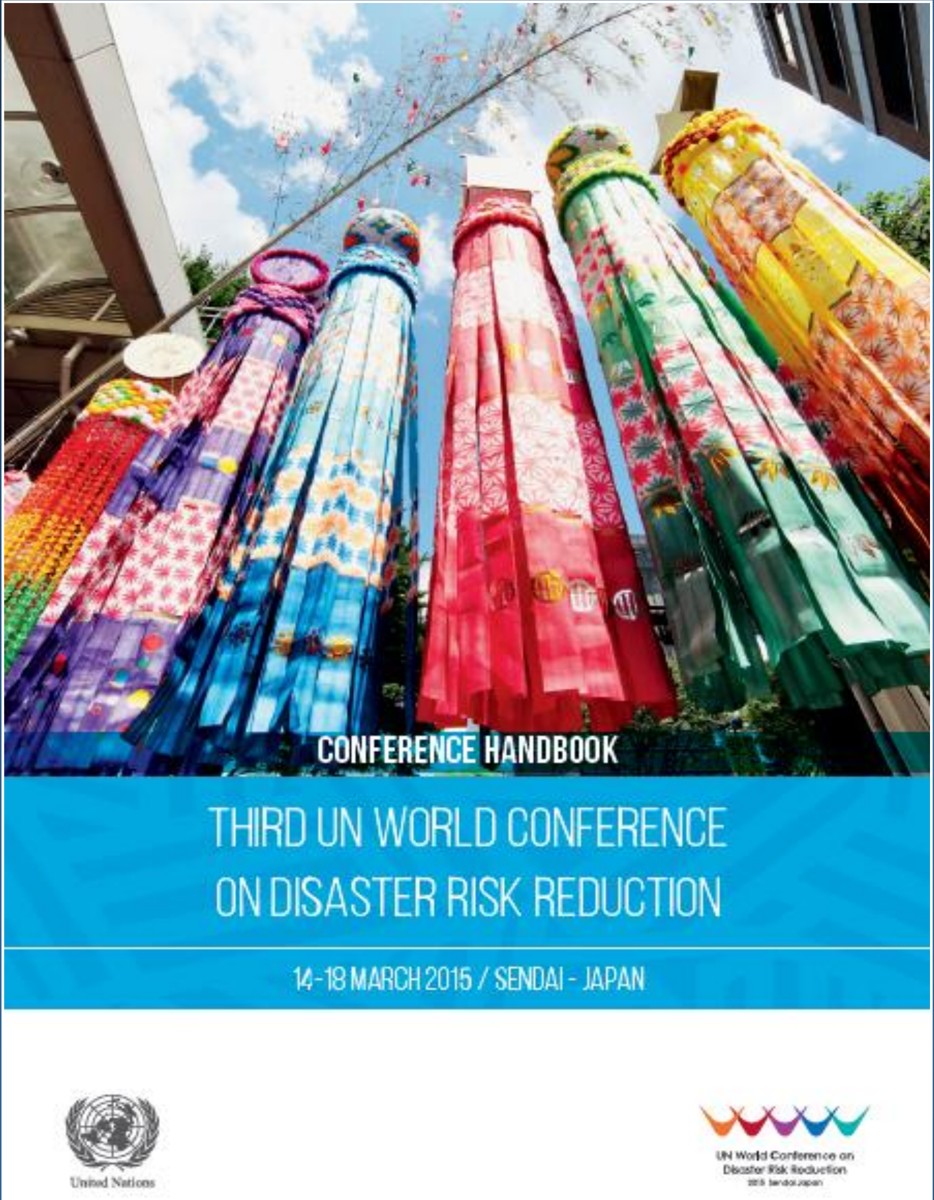


NatCatSERVICE

Natural loss events worldwide 2015

Geographical overview





Το νέο Παγκόσμιο Πλαίσιο του ΟΗΕ για τη Μείωση Κινδύνου Καταστροφής 2015-2030 του Sendai (Japan 2015)

UN World Conference on
Disaster Risk Reduction
14-18 March 2015, Sendai, Japan

Σκοπός
του Πλαισίου του Sendai

Η δραστική μείωση του κινδύνου καταστροφής και των απωλειών ανθρώπων, υγείας, καθώς και οικονομικών, φυσικών, κοινωνικών και περιβαλλοντικών αγαθών των ατόμων, των επιχειρήσεων, και των χωρών.

UN World Conference on
Disaster Risk Reduction
14-18 March 2015, Sendai, Japan

ΠΑΓΚΟΣΜΙΟΙ ΣΤΟΧΟΙ ΜΕΧΡΙ ΤΟ 2030

- Να μειωθούν δραστικά οι ανθρώπινες απώλειες και ο αριθμός των πληγέντων, οι βλάβες σε κρίσιμες υποδομές και η διακοπή βασικών υπηρεσιών όπως η υγεία, η παιδεία, καθώς και οι οικονομικές απώλειες .

- Να έχει αυξηθεί μέχρι το 2020 ο αριθμός των χωρών που έχουν στρατηγική για μείωση του κινδύνου καταστροφής, σε τοπικό και εθνικό επίπεδο.

- Να προαχθεί η διεθνής συνεργασία για τη μείωση του κινδύνου καταστροφής στις αναπτυσσόμενες χώρες μέσω επαρκούς και βιώσιμης υποστήριξης προς αυτές προκειμένου να υλοποιήσουν το Πλαίσιο Δράσης.

- Να αυξηθεί η διαθεσιμότητα πολυκινδυνικών συστημάτων έγκαιρης προειδοποίησης και πληροφόρησης για θέματα καταστροφών.

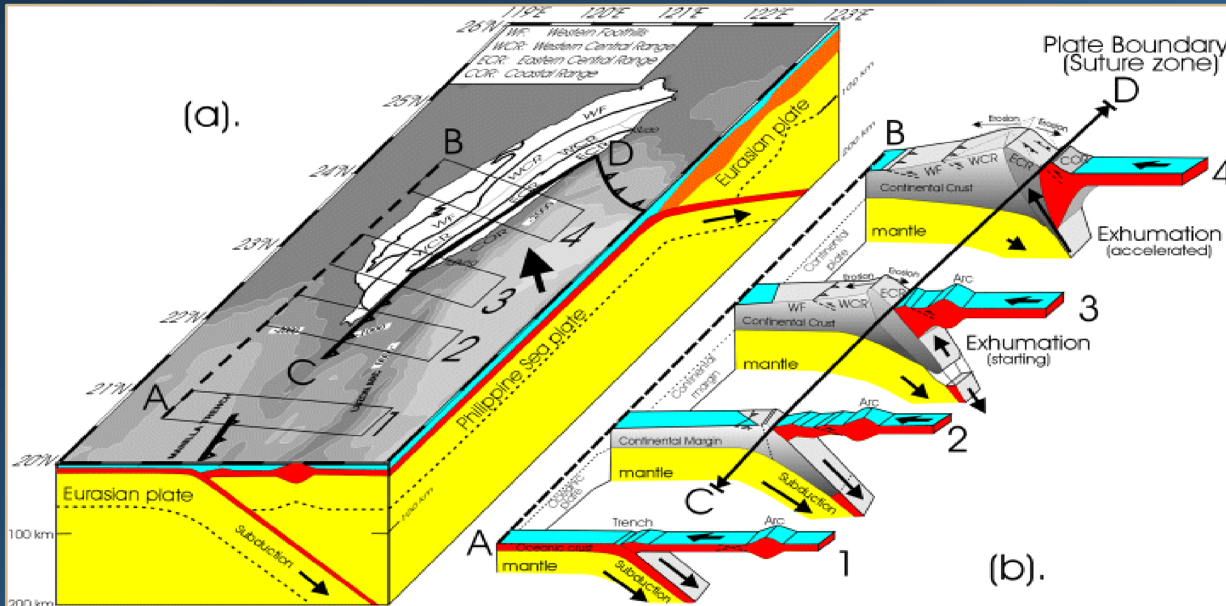
UN World Conference on Disaster Risk Reduction
14-18 March 2015, Sendai, Japan

Μετακινούμενοι πληθυσμοί

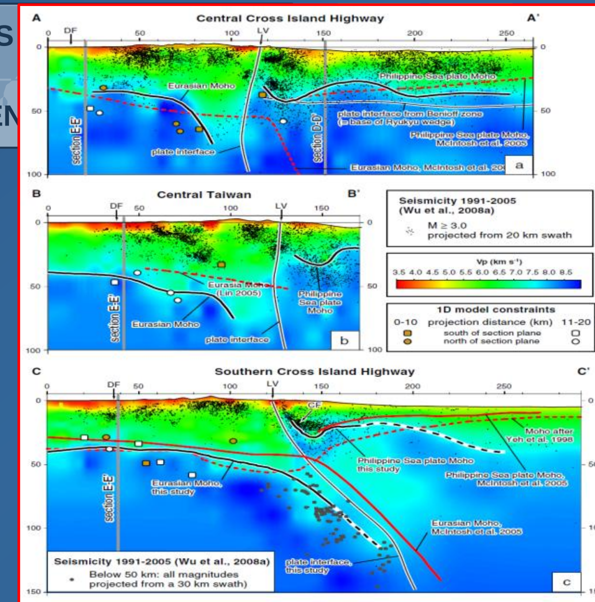
Το Πλαίσιο Δράσης του Sendai, υπογραμμίζει ότι 255 εκατομμύρια άνθρωποι θα μετακινηθούν και προτρέπει για την υιοθέτηση αποτελεσματικών πολιτικών για να αντιμετωπιστεί η κατάσταση .

UN World Conference on Disaster Risk Reduction
14-18 March 2015, Sendai, Japan

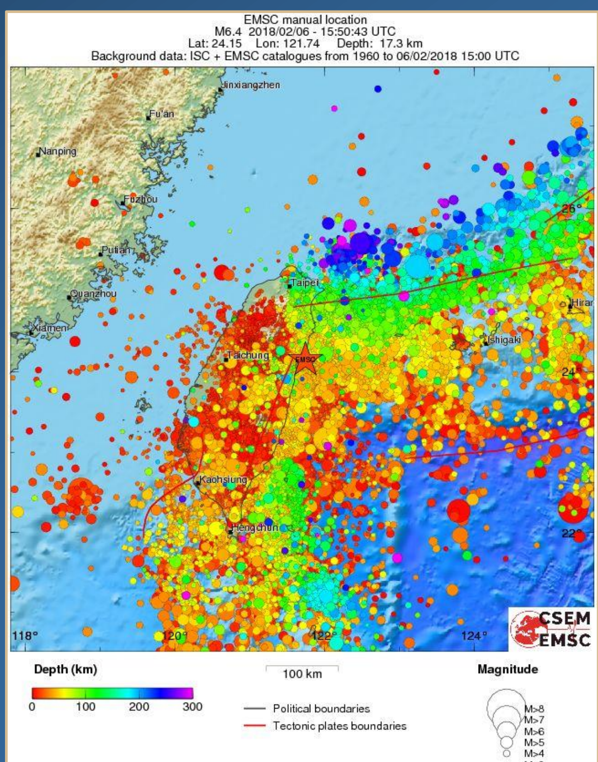
THE FEBRUARY 6, 2018 Mw 6.4 HUALIEN (EASTERN TAIWAN) EARTHQUAKE



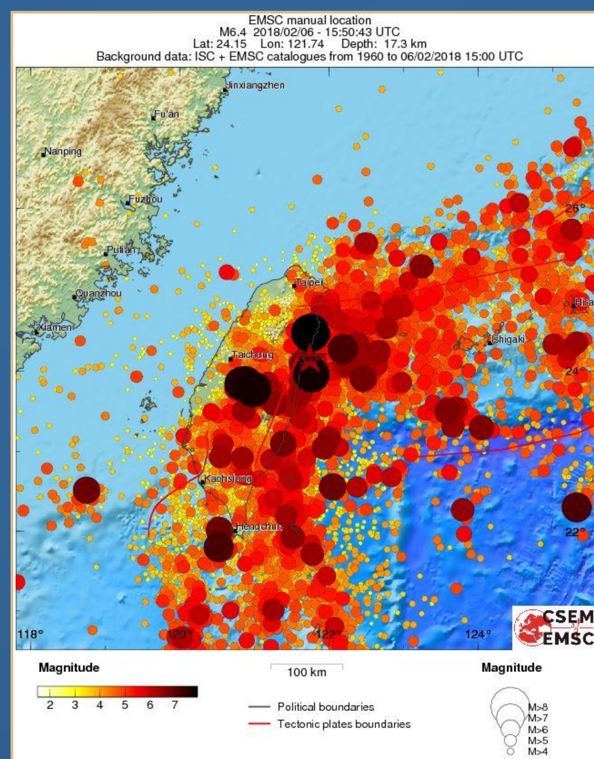
(a).
(b).
WF: Western Foothills
WCR: Western Central Range
ECR: Eastern Central Range
COR: Coastal Range
119E
120E
121E
122E
123E
26°N
25°N
24°N
23°N
22°N
21°N
20°N
Eurasian plate
Philippine Sea plate
Subduction
100 km
200 km
Plate Boundary
(Suture zone)
Exhumation
(accelerated)
Exhumation
(starting)
Continental Crust
Continental Margin
mantle
Oceanic crust
Trench
Arc
Erosion
Subduction



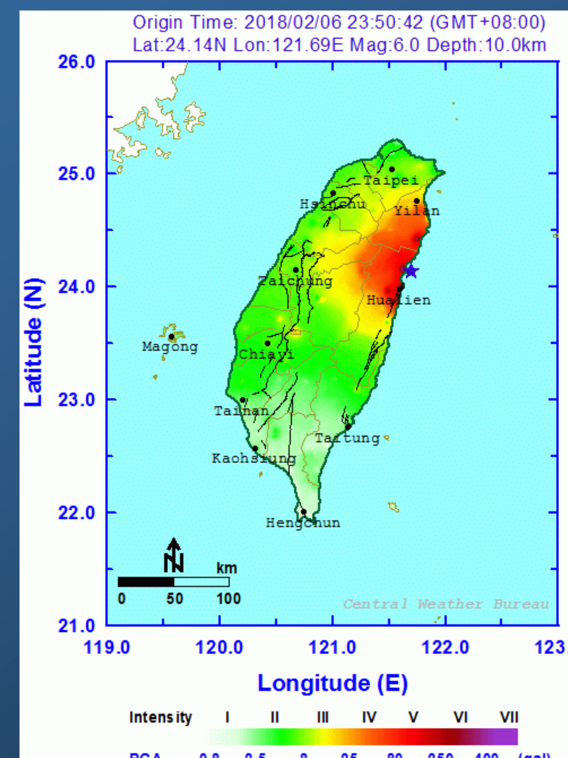
Central Cross Island Highway
Eurasian Moho
Philippine Sea plate Moho
plate interface
Central Taiwan
Seismicity 1991-2005
(Wu et al., 2008a)
M ≥ 3.0
projected from 20 km swath
Vp (km s⁻¹)
1D model constraints
projection distance (km)
south of section plane
north of section plane
Eurasian Moho
Southern Cross Island Highway
Philippine Sea plate Moho
this study
Eurasian Moho,
this study
Seismicity 1991-2005 (Wu et al., 2008a)
Below 50 km: all magnitudes
projected from a 30 km swath)



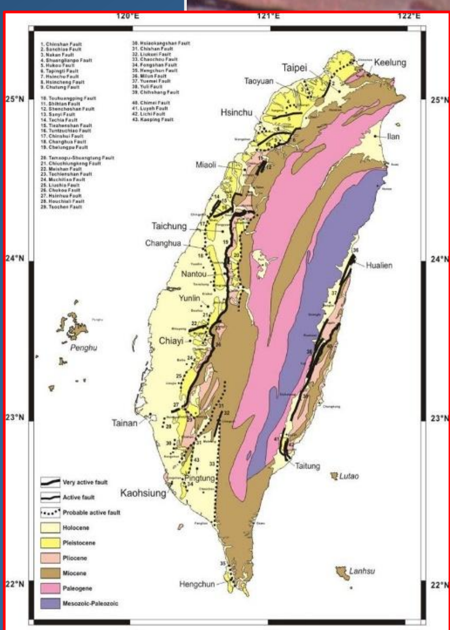
EMSC manual location
M6.4 2018/02/06 - 15:50:43 UTC
Lat: 24.15 Lon: 121.74 Depth: 17.3 km
Background data: ISC + EMSC catalogues from 1960 to 06/02/2018 15:00 UTC
Depth (km)
0
100
200
300
100 km
Political boundaries
Tectonic plates boundaries
Magnitude
M>8
M>7
M>6
M>5
M>4
M>3
CSEM
EMSC



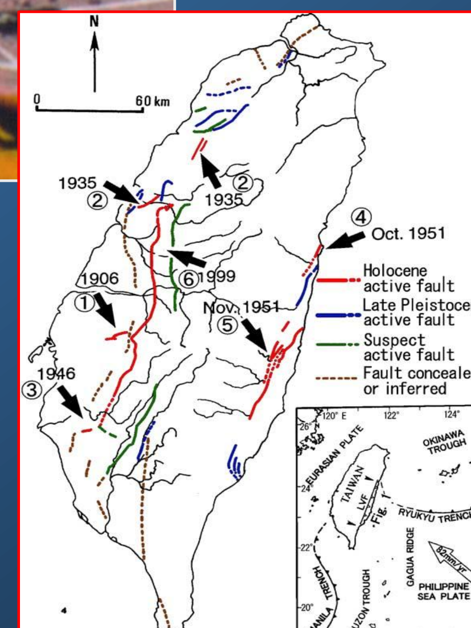
EMSC manual location
M6.4 2018/02/06 - 15:50:43 UTC
Lat: 24.15 Lon: 121.74 Depth: 17.3 km
Background data: ISC + EMSC catalogues from 1960 to 06/02/2018 15:00 UTC
Magnitude
2
3
4
5
6
7
100 km
Political boundaries
Tectonic plates boundaries
Magnitude
M>8
M>7
M>6
M>5
M>4
M>3
CSEM
EMSC



Origin Time: 2018/02/06 23:50:42 (GMT+08:00)
Lat:24.14N Lon:121.69E Mag:6.0 Depth:10.0km
Latitude (N)
Longitude (E)
Taipei
Hsinchu
Yilan
Taichung
Hualien
Magong
Chiayi
Tainan
Taitung
Kaohsiung
Hengchun
km
0
50
100
Central Weather Bureau
Intensity
I
II
III
IV
V
VI
VII
PGA
0.8
2.5
8
25
80
250
400
(gal)



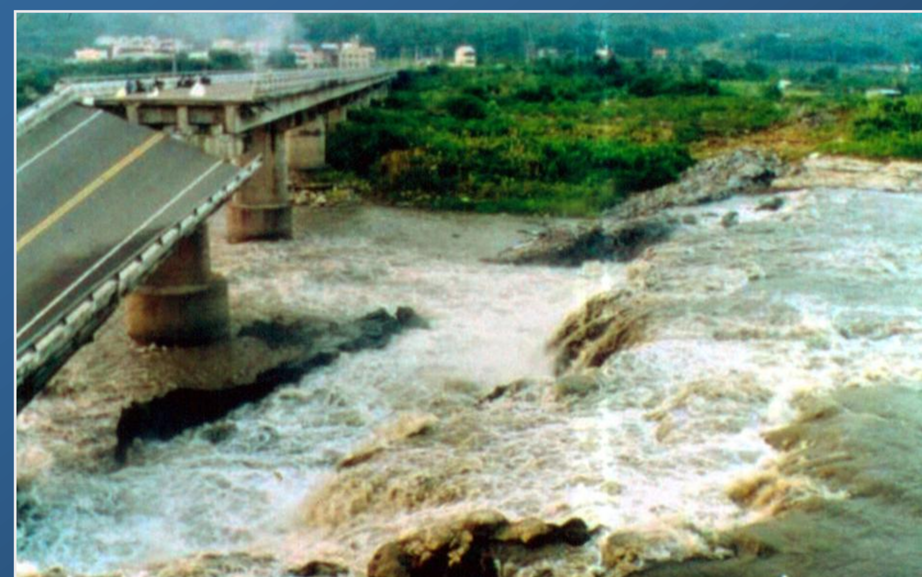
Ng et al. (2009), Geophys. J. Int.,
doi: 10.1111/j.1365-246X.2009.04164.x



Ota et al. (2005), Tectonophysics,
doi:10.1016/j.tecto.2005.05.040

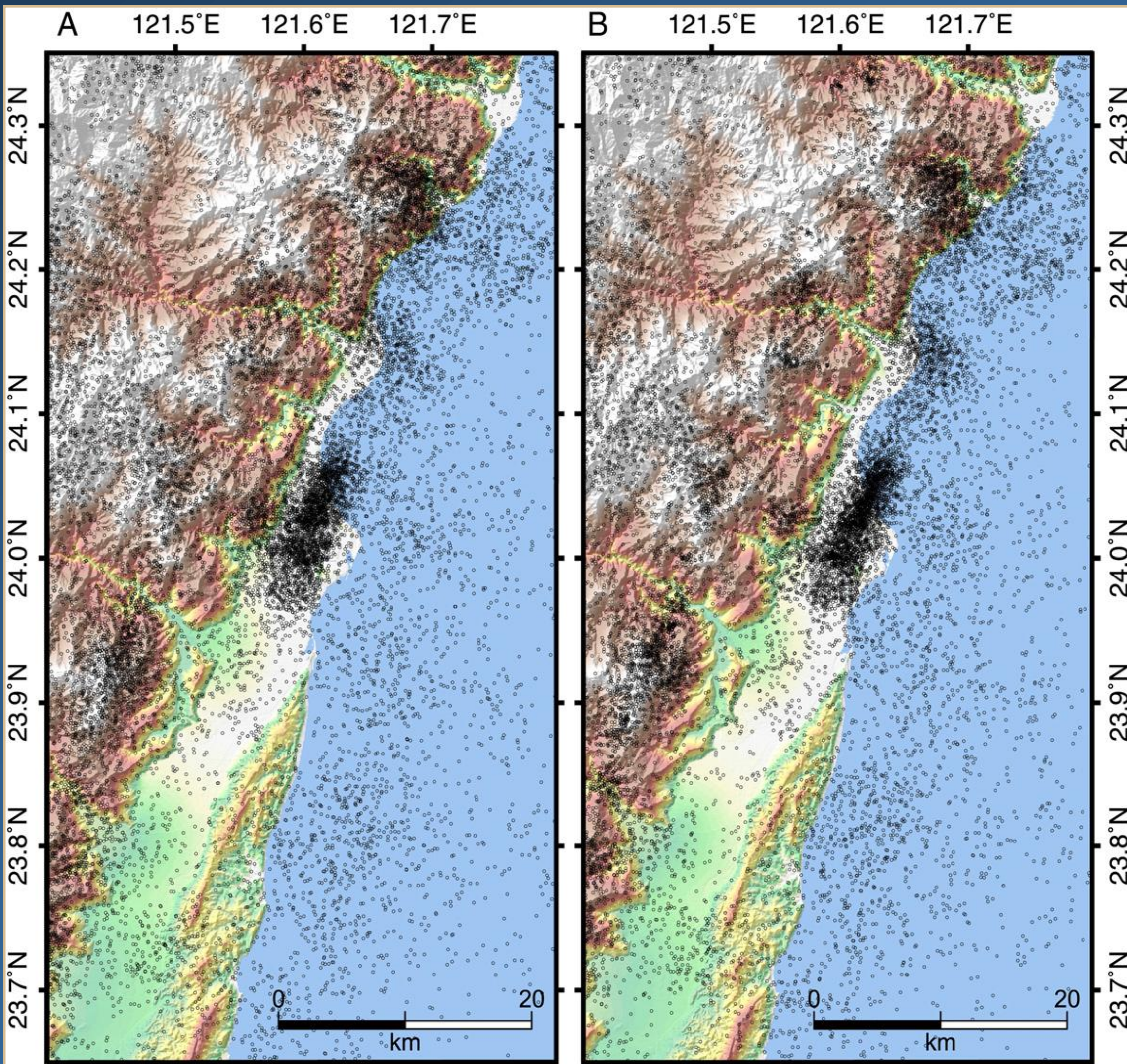


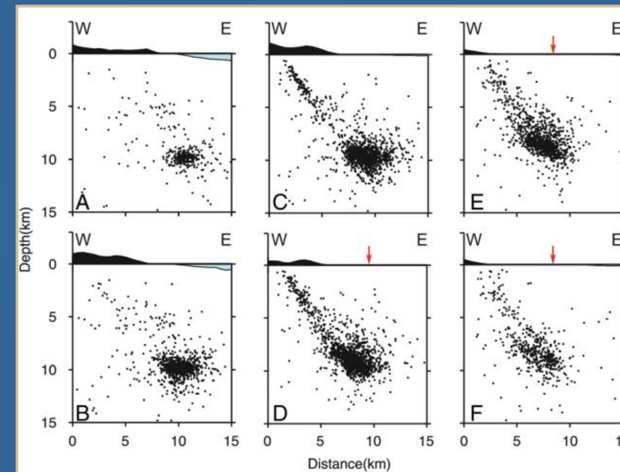


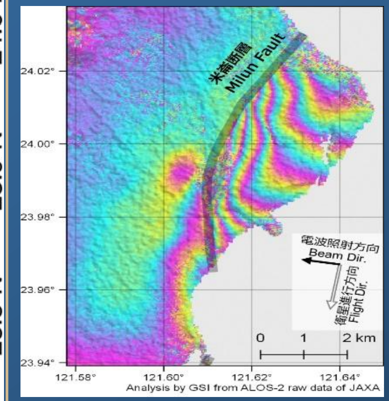


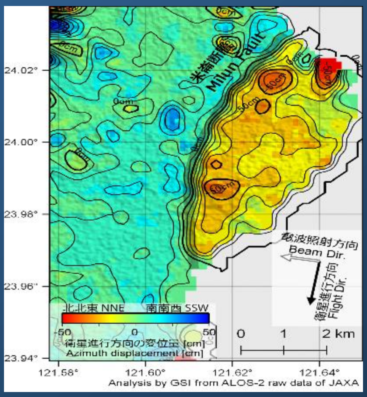

松山
HOTEL

Distribution of seismicity in Hua-Tung area (eastern Taiwan)



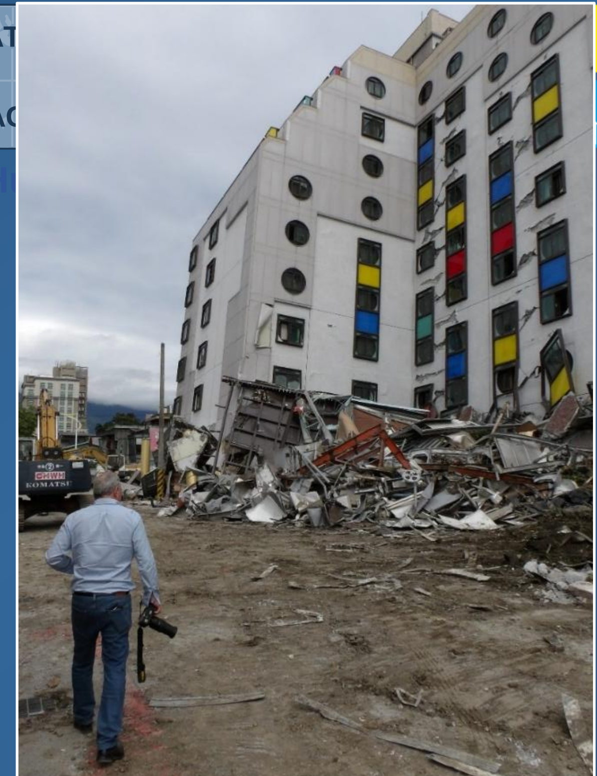






Shyu et al. (2016), Tectonophysics, http://dx.doi.org/10.1016/j.tecto.2015.12.026

(*http://www.gsi.go.jp/cais/topic180209-index-e.html*)


MARSHAL
統帥大飯店
193 花蓮港 Hualien Port
193 花蓮文化中心 Hualien County Cultural Center

KOMATSU

MARSHAL
統帥大飯店

統帥大飯店

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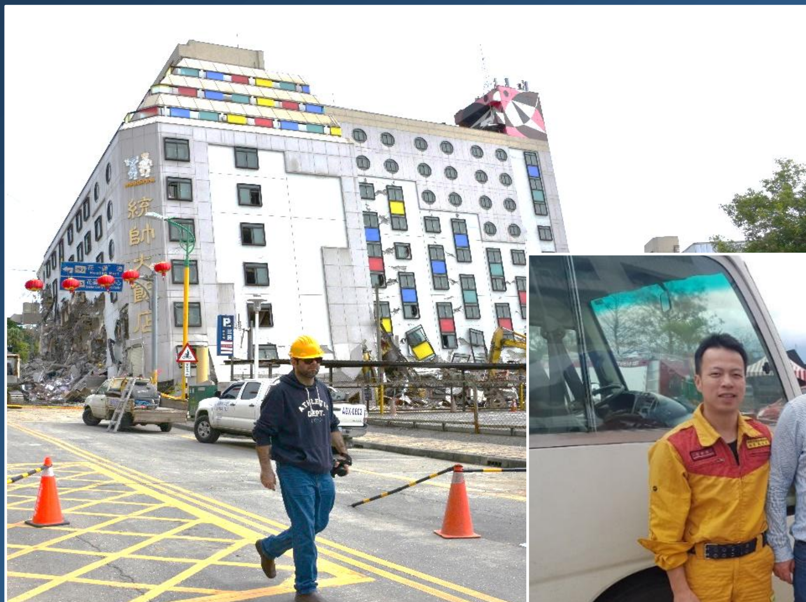
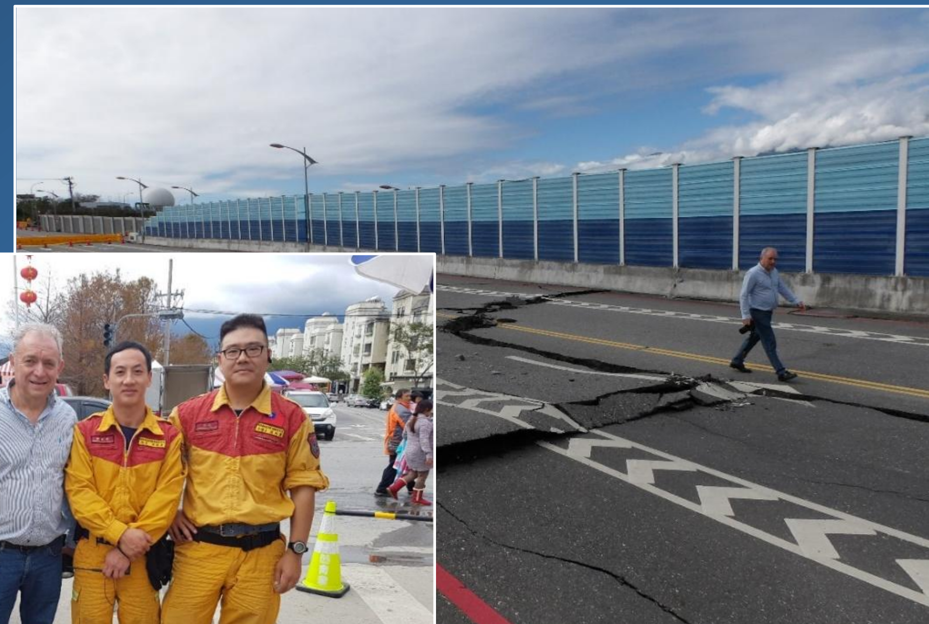
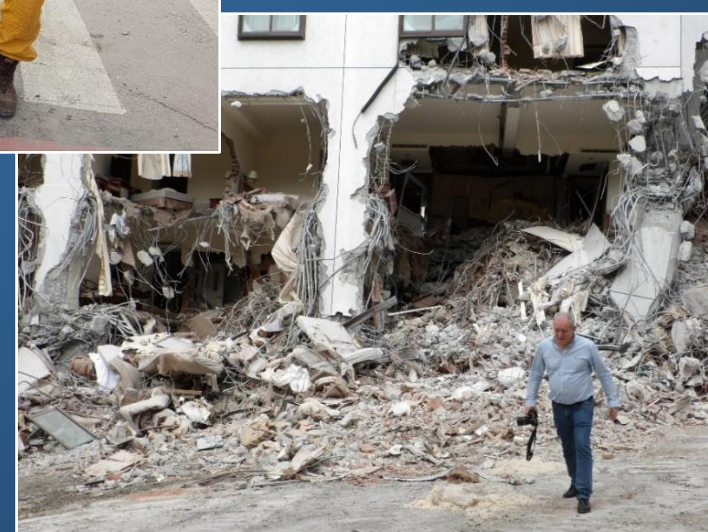
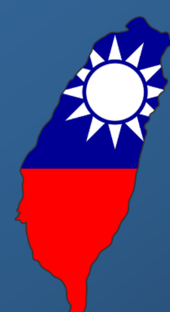








Δρ. ΕΥΘΥΜΗΣ ΛΕΚΚΑΣ
ΚΑΘΗΓΗΤΗΣ
ΔΥΝΑΜΙΚΗΣ ΤΕΚΤΟΝΙΚΗΣ ΕΦΑΡΜΟΣΜΕΝΗΣ ΓΕΩΛΟΓΙΑΣ &
ΔΙΑΧΕΙΡΙΣΗΣ ΦΥΣΙΚΩΝ ΚΑΤΑΣΤΡΟΦΩΝ
ΠΡΟΕΔΡΟΣ
ΟΡΓΑΝΙΣΜΟΥ ΑΝΤΙΣΕΙΣΜΙΚΟΥ ΣΧΕΔΙΑΣΜΟΥ & ΠΡΟΣΤΑΣΙΑΣ
π. ΠΡΟΕΔΡΟΣ
ΕΛΛΗΝΙΚΗΣ ΓΕΩΛΟΓΙΚΗΣ ΕΤΑΙΡΙΑΣ
ΔΙΕΥΘΥΝΤΗΣ
ΠΜΣ ΣΤΡΑΤΙΓΙΚΕΣ ΔΙΑΧΕΙΡΙΣΗΣ ΠΕΡΙΒΑΛΛΟΝΤΟΣ ΚΑΤΑΣΤΡΟΦΩΝ ΚΑΙ ΚΡΙΣΕΩΝ

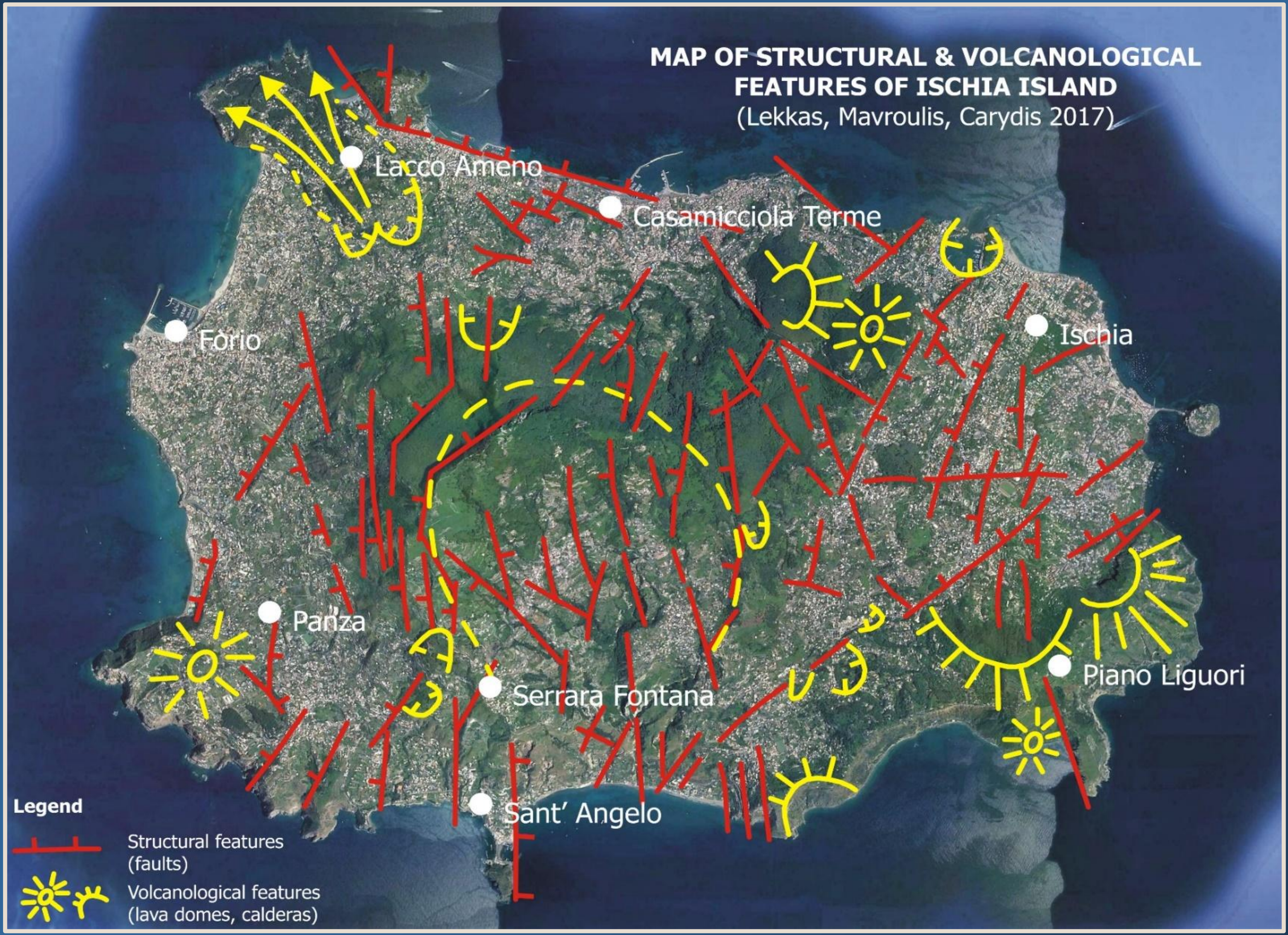
ΕΘΝΙΚΟ ΚΑΙ ΚΑΠΟΔΙΣΤΡΙΑΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ

ΑΠΟΣΤΟΛΗ ΣΤΗΝ ΚΕΝΤΡΙΚΗ ΙΤΑΛΙΑ
(ΣΕΙΣΜΙΚΗ ΑΚΟΛΟΥΘΙΑ ΑΥΓΟΥΣΤΟΥ - ΝΟΕΜΒΡΙΟΥ 2016)

ΑΘΗΝΑ 2016


AMATRICE
Photos taken on 2016.08.26

The Mw 4.0, August 21, 2017 Ischia (Italy) Earthquake: A minor earthquake with high intensities


MAP OF STRUCTURAL & VOLCANOLOGICAL FEATURES OF ISCHIA ISLAND
(Lekkas, Mavroulis, Carydis 2017)
Lacco Ameno
Casamicciola Terme
Forio
Ischia
Panza
Serrara Fontana
Piano Liguori
Sant' Angelo
Legend
Structural features (faults)
Volcanological features (lava domes, calderas)

Distribution of heavy damage induced by the 2017 Ischia earthquake

The eastern part of the area most affected by the 2017 Ischia earthquake

Photo taken on August 25, 2017

Near total or total collapses of masonry buildings

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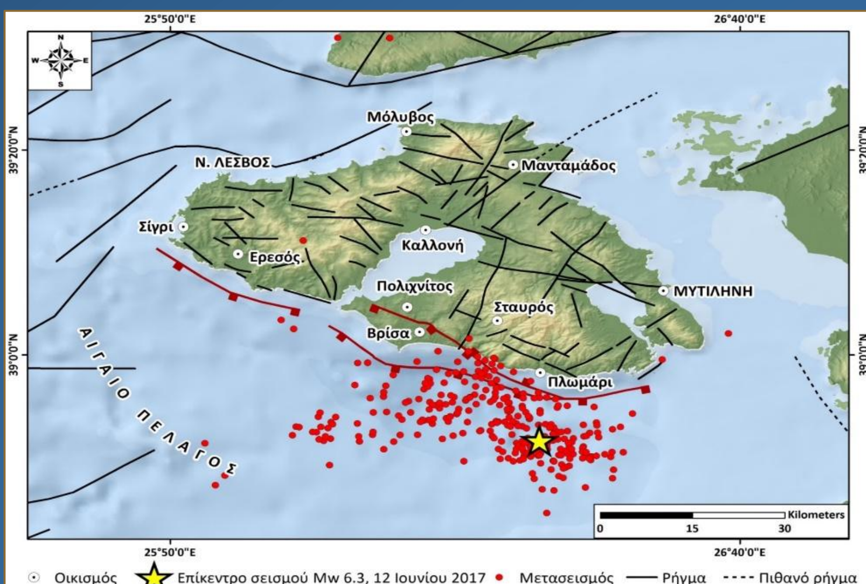
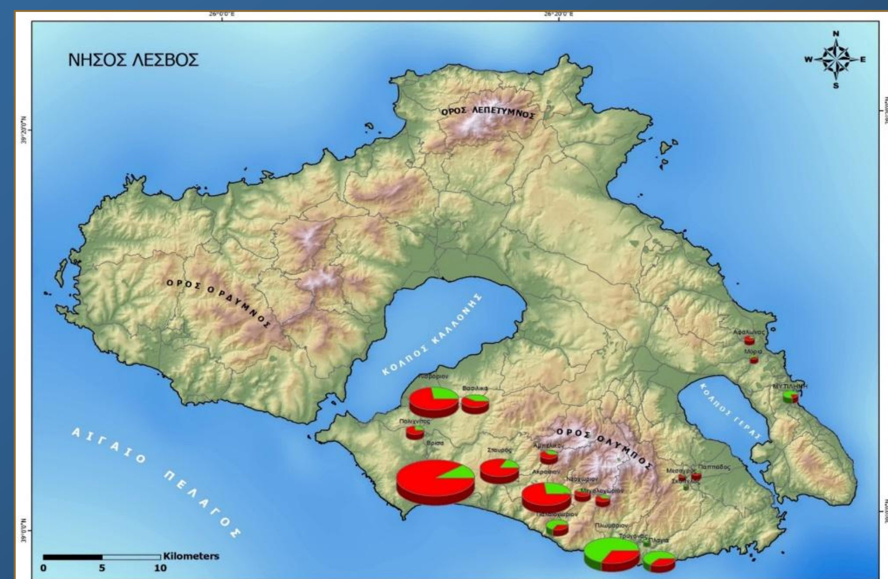
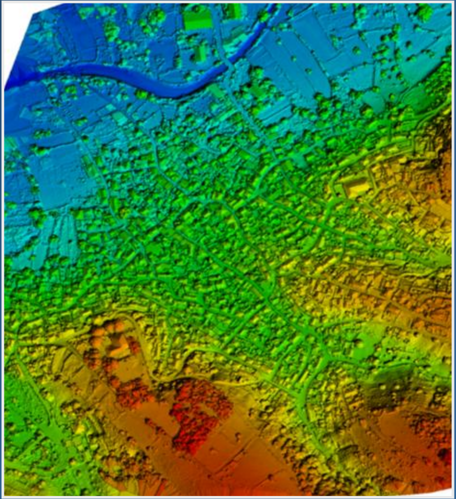
ΠΥΡΟΣΒΕΣΤΙΚΟ ΣΩΜΑ

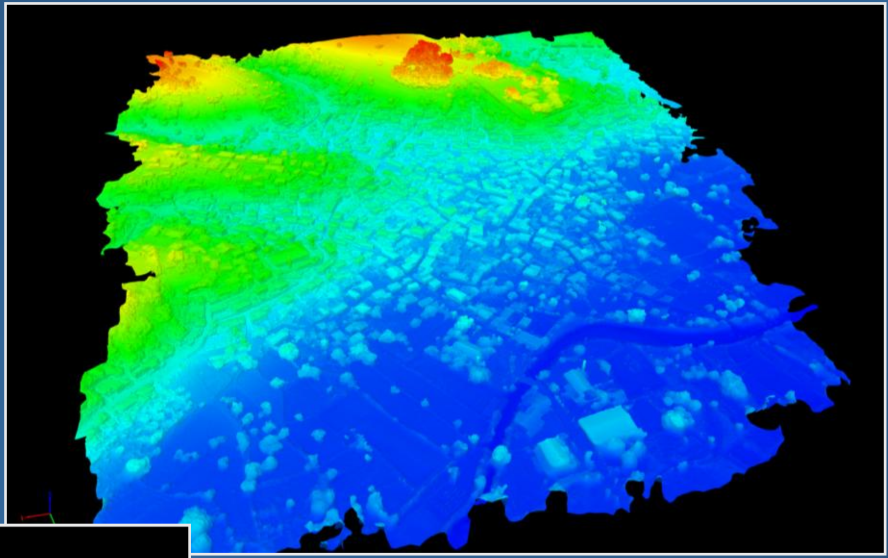

RESCUE

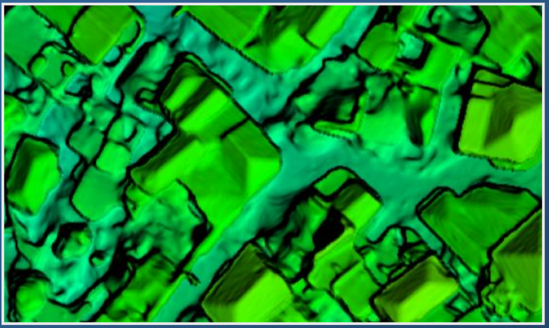

ΠΥΡ

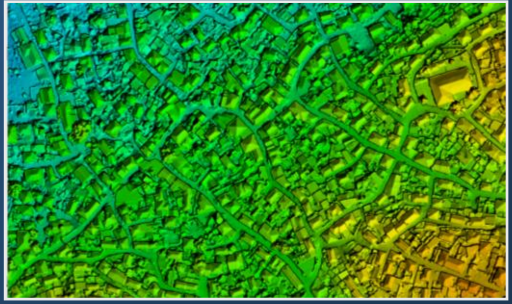

25°50'0"E
26°40'0"E
39°20'0"N
39°0'0"N
Μόλυβος
Ν. ΛΕΣΒΟΣ
Μανταμάδος
Σίγρι
Ερεσός
Καλλονή
Πολιχνίτος
Σταυρός
ΜΥΤΙΛΗΝΗ
Βρίσα
Πλωμάρι
ΑΙΓΑΙΟ ΠΕΛΑΓΟΣ
Kilometers
0 15 30
Οικισμός
Επίκεντρο σεισμού Mw 6.3, 12 Ιουνίου 2017
Μετασεισμός
Ρήγμα
Πιθανό ρήγμα


ΝΗΣΟΣ ΛΕΣΒΟΣ
ΟΡΟΣ ΛΕΠΕΤΥΜΝΟΣ
ΟΡΟΣ ΟΡΔΥΜΝΟΣ
ΚΟΛΠΟΣ ΚΑΛΛΟΝΗΣ
ΟΡΟΣ ΟΛΥΜΠΟΣ
ΚΟΛΠΟΣ ΓΕΡΑΣ
ΑΙΓΑΙΟ ΠΕΛΑΓΟΣ
Kilometers
0 5 10









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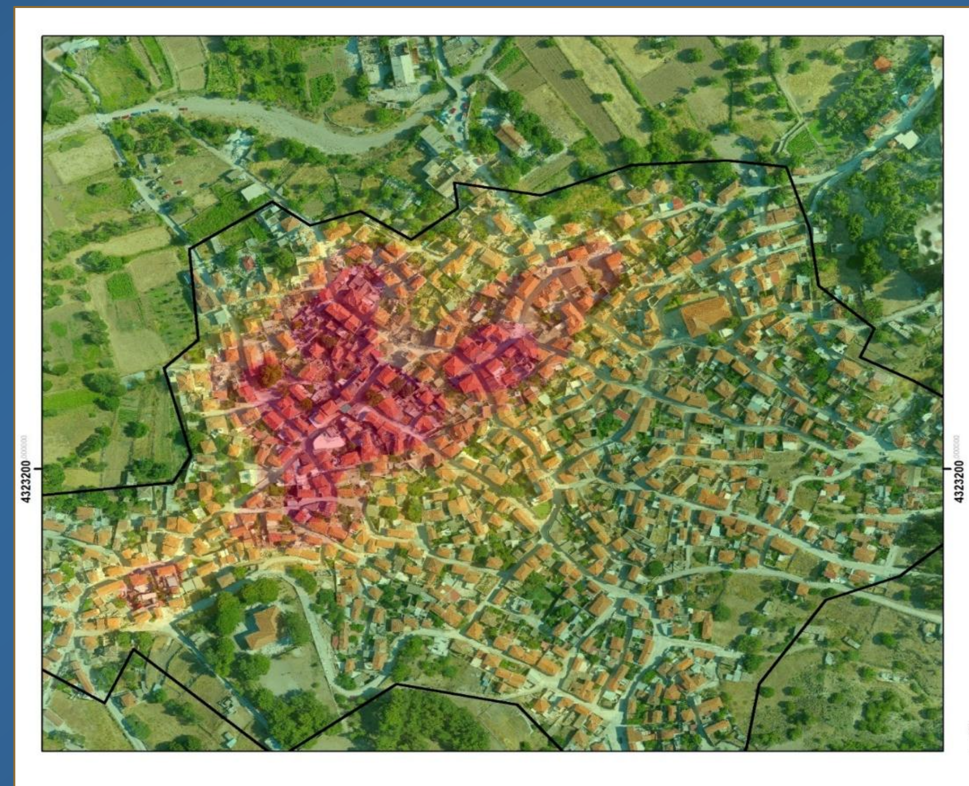
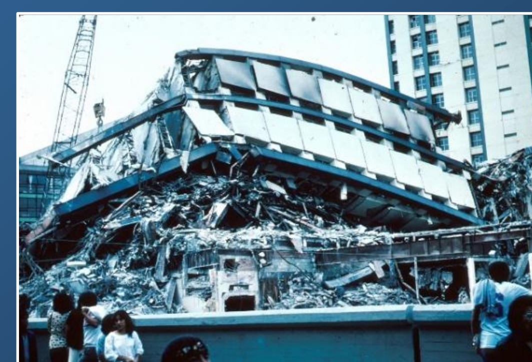
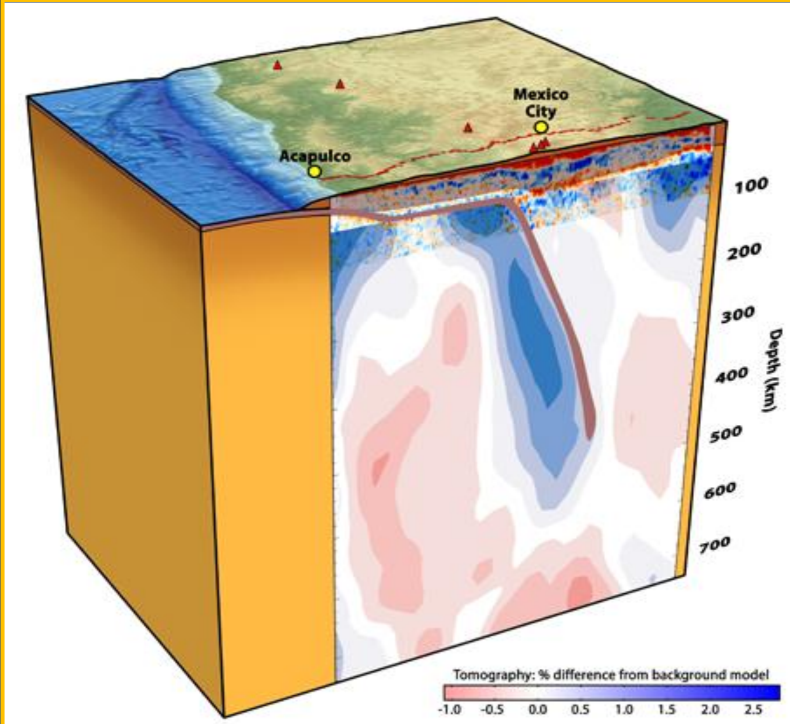
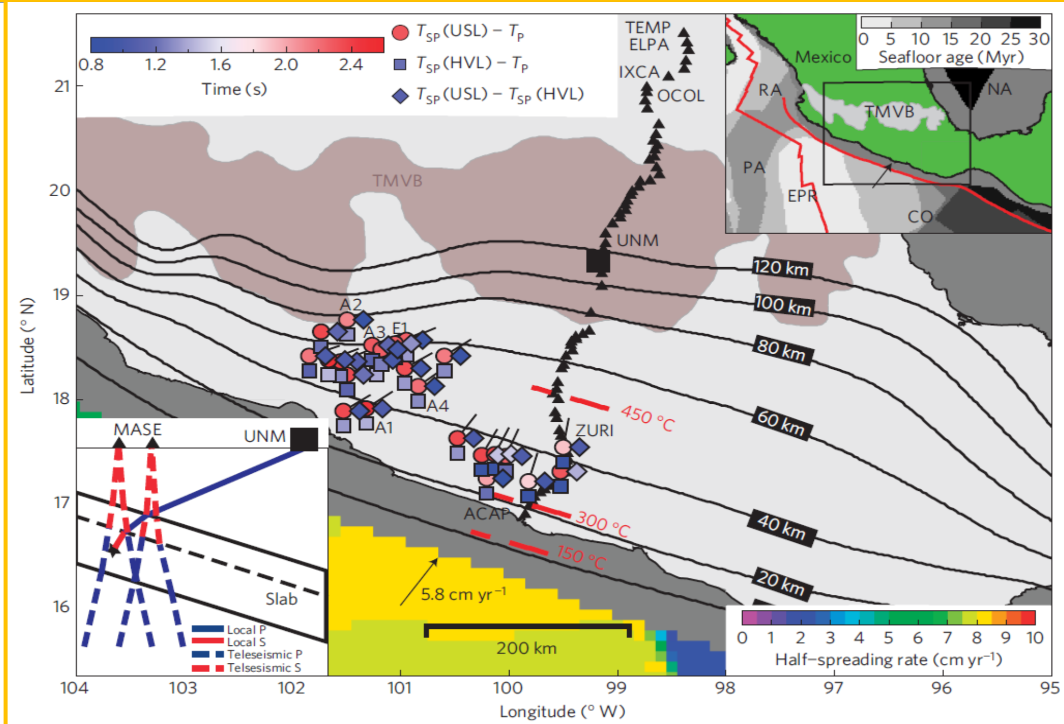


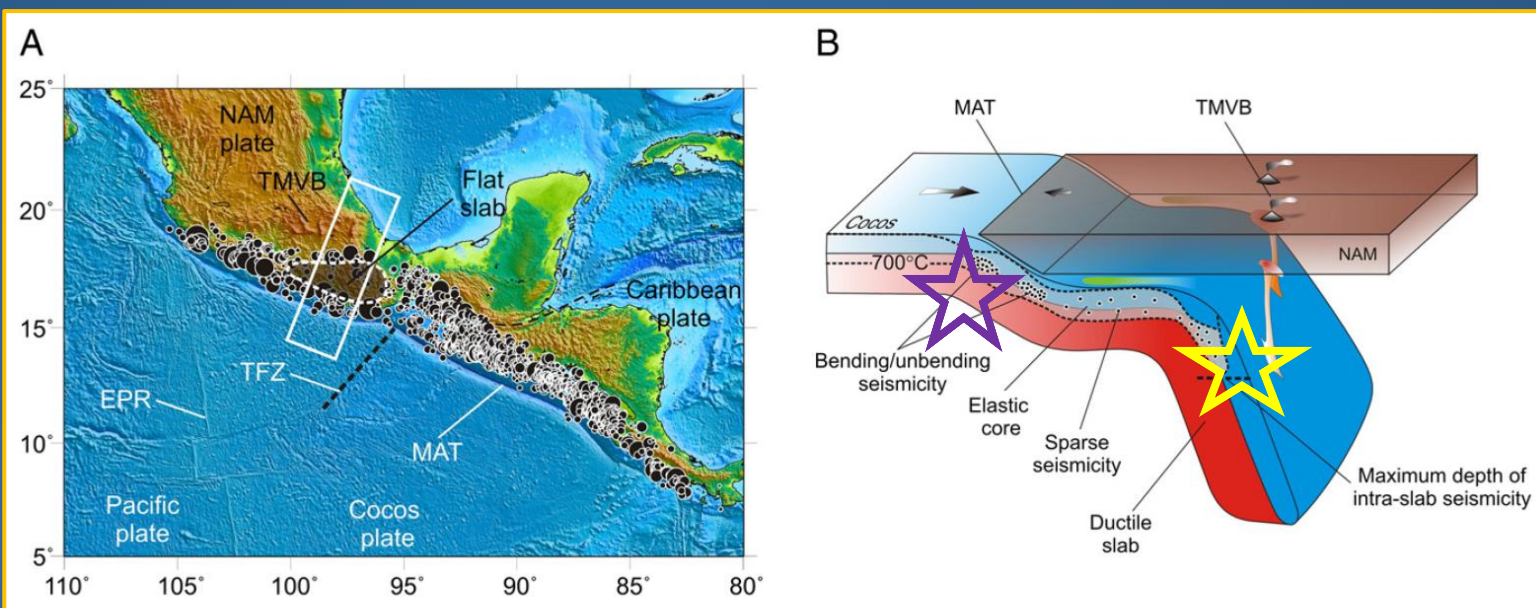

The September 2017 M 8.2 Chiapas and M 7.1 Puebla-Morelos earthquakes in Mexico

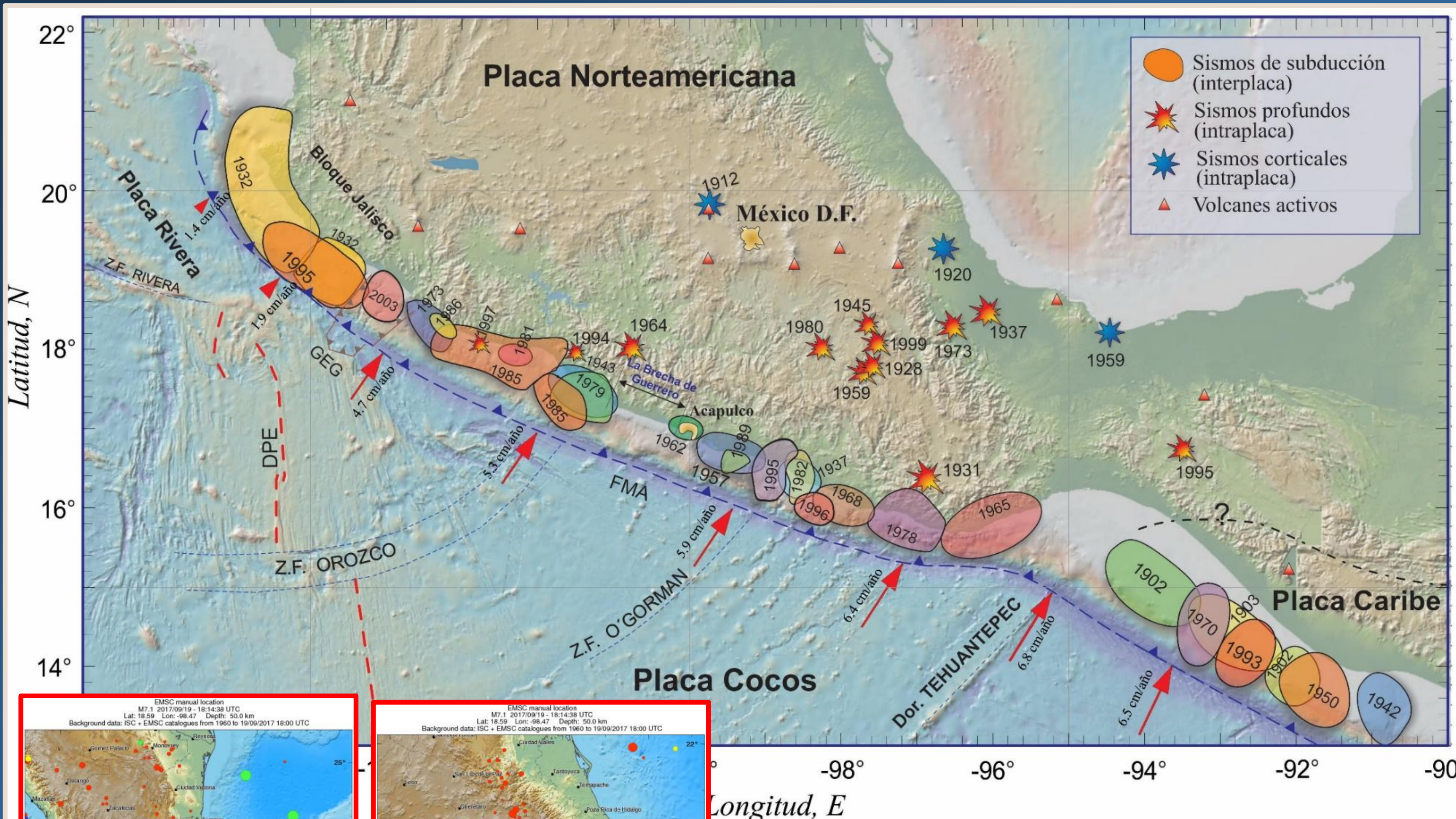
BRIGADA DE RESCATE TOPOS TLALTELOLCO, A.C. MEXICO

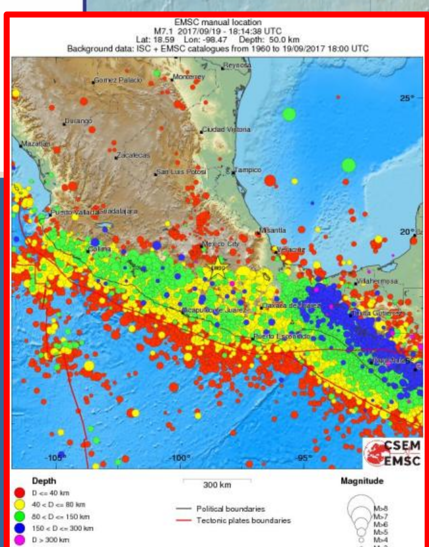


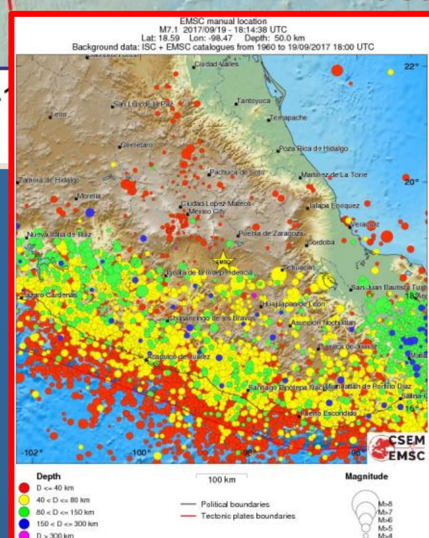

Mexico City
Acapulco
100
200
300
400
500
600
700
Depth (km)
Tomography: % difference from background model
-1.0 -0.5 0.0 0.5 1.0 1.5 2.0 2.5


0.8 1.2 1.6 2.0 2.4
Time (s)
T_{SP}(USL) − T_P
T_{SP}(HVL) − T_P
T_{SP}(USL) − T_{SP}(HVL)
TEMP
ELPA
IXCA
OCOL
UNM
ZURI
ACAP
TMVB
A1
A2
A3
A4
E1
120 km
100 km
80 km
60 km
40 km
20 km
450 °C
300 °C
150 °C
5.8 cm yr^{-1}
200 km
MASE
Slab
Local P
Local S
Teleseismic P
Telseismic S
Mexico
RA
PA
EPR
NA
CO
0 5 10 15 20 25 30
Seafloor age (Myr)
0 1 2 3 4 5 6 7 8 9 10
Half-spreading rate (cm yr^{-1})
Latitude (° N)
Longitude (° W)
104 103 102 101 100 99 98 97 96 95
16 17 18 19 20 21

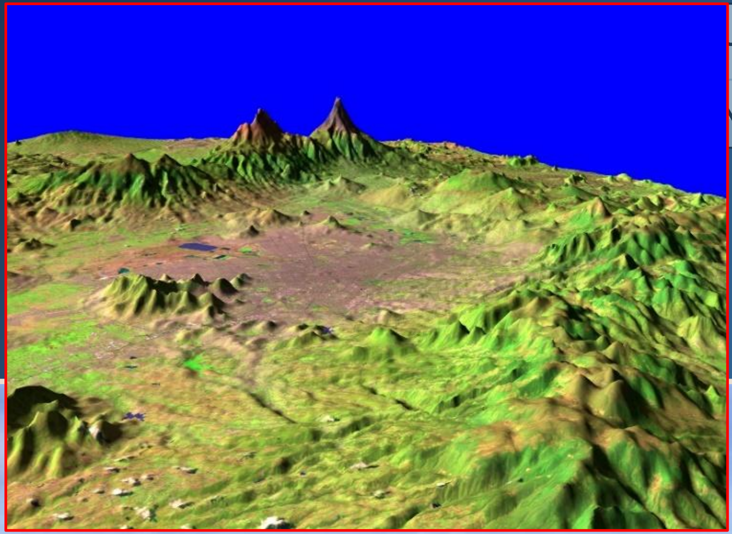

A
B
NAM plate
TMVB
Flat slab
Caribbean plate
TFZ
EPR
MAT
Pacific plate
Cocos plate
25° 20° 15° 10° 5°
110° 105° 100° 95° 90° 85° 80°
MAT
TMVB
Cocos
700°C
NAM
Bending/unbending seismicity
Elastic core
Sparse seismicity
Ductile slab
Maximum depth of intra-slab seismicity

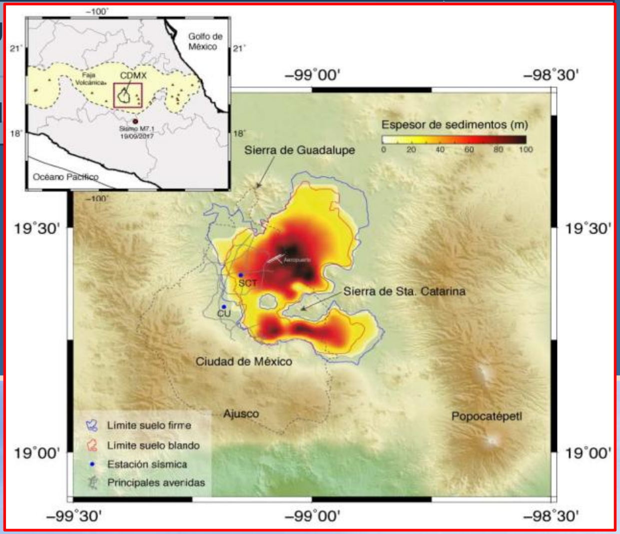

Placa Norteamericana
Sismos de subducción (interplaca)
Sismos profundos (intraplaca)
Sismos corticales (intraplaca)
Volcanes activos
México D.F.
Acapulco
Placa Rivera
Bloque Jalisco
Z.F. RIVERA
GEG
DPE
Z.F. OROZCO
Z.F. O´GORMAN
FMA
Dor. TEHUANTEPEC
La Brecha de Guerrero
Placa Cocos
Placa Caribe
1.4 cm/año
1.9 cm/año
4.7 cm/año
5.3 cm/año
5.9 cm/año
6.4 cm/año
6.8 cm/año
6.5 cm/año
Latitud, N
Longitud, E
22°
20°
18°
16°
14°
-98°
-96°
-94°
-92°
-90°


EMSC manual location
M7.1 2017/09/19 - 18:14:38 UTC
Lat: 18.59 Lon: -98.47 Depth: 50.0 km
Background data: ISC + EMSC catalogues from 1960 to 19/09/2017 18:00 UTC
CSEM EMSC
Depth
D <= 40 km
40 < D <= 80 km
80 < D <= 150 km
150 < D <= 300 km
D > 300 km
300 km
Political boundaries
Tectonic plates boundaries
Magnitude


EMSC manual location
M7.1 2017/09/19 - 18:14:38 UTC
Lat: 18.59 Lon: -98.47 Depth: 50.0 km
Background data: ISC + EMSC catalogues from 1960 to 19/09/2017 18:00 UTC
CSEM EMSC
Depth
D <= 40 km
40 < D <= 80 km
80 < D <= 150 km
150 < D <= 300 km
D > 300 km
100 km
Political boundaries
Tectonic plates boundaries
Magnitude


Zonas Sísmicas en México
Zona A. Escasa actividad sísmica y de baja magnitud.
Zona B y C. Zonas de intensidad intermedia con sismos pocos frecuentes.
Zona D. Sismos muy frecuentes donde han ocurrido los de mayor magnitud y generado daños.





Golfo de México
Faja Volcánica
CDMX
Sismo M7.1 19/09/2017
Océano Pacífico
−100°
21°
18°
−99°00'
−98°30'
−99°30'
19°30'
19°00'
Espesor de sedimentos (m)
0 20 40 60 80 100
Sierra de Guadalupe
Sierra de Sta. Catarina
SCT
CU
Ciudad de México
Ajusco
Popocatépetl
Límite suelo firme
Límite suelo blando
Estación sísmica
Principales averidas

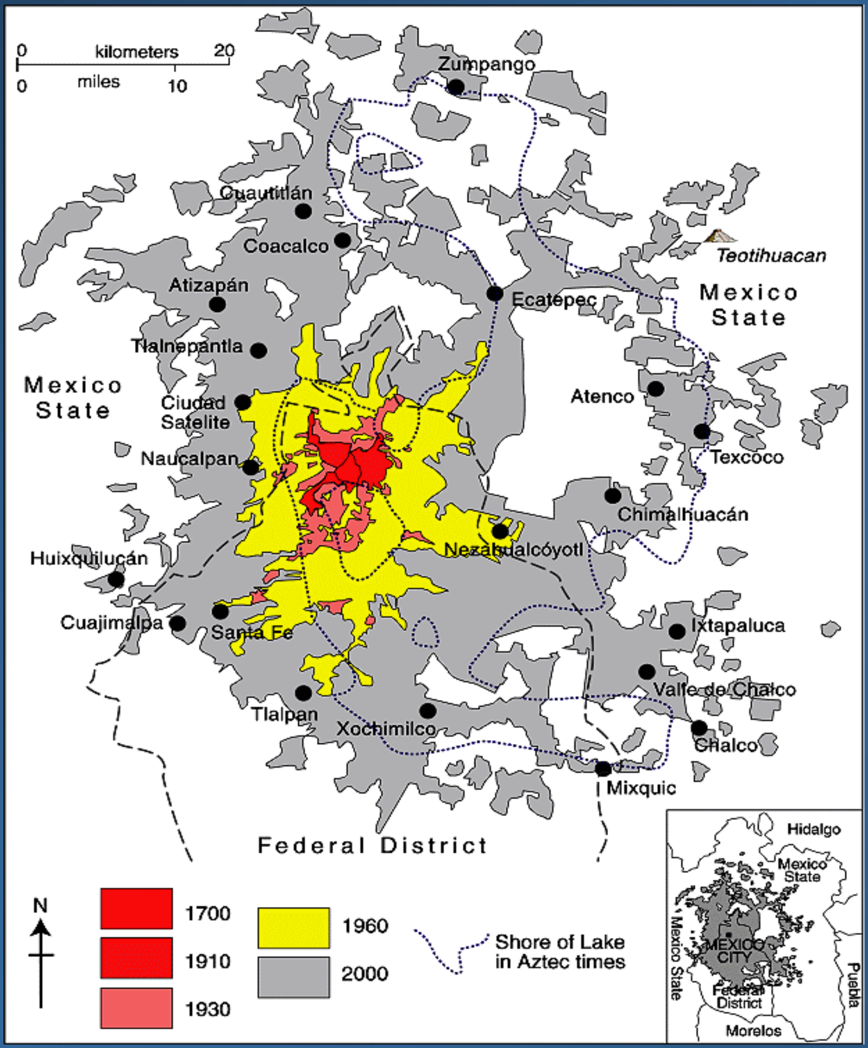
Sierra de Las Cruces
Volcán de Guadalupe
Sierra de Santa Catarina
Cerro del Elefante
La Caldera
Mexico Basin
MEXICO 150 D

Tenochtitlan, the Capital of the Aztec Empire

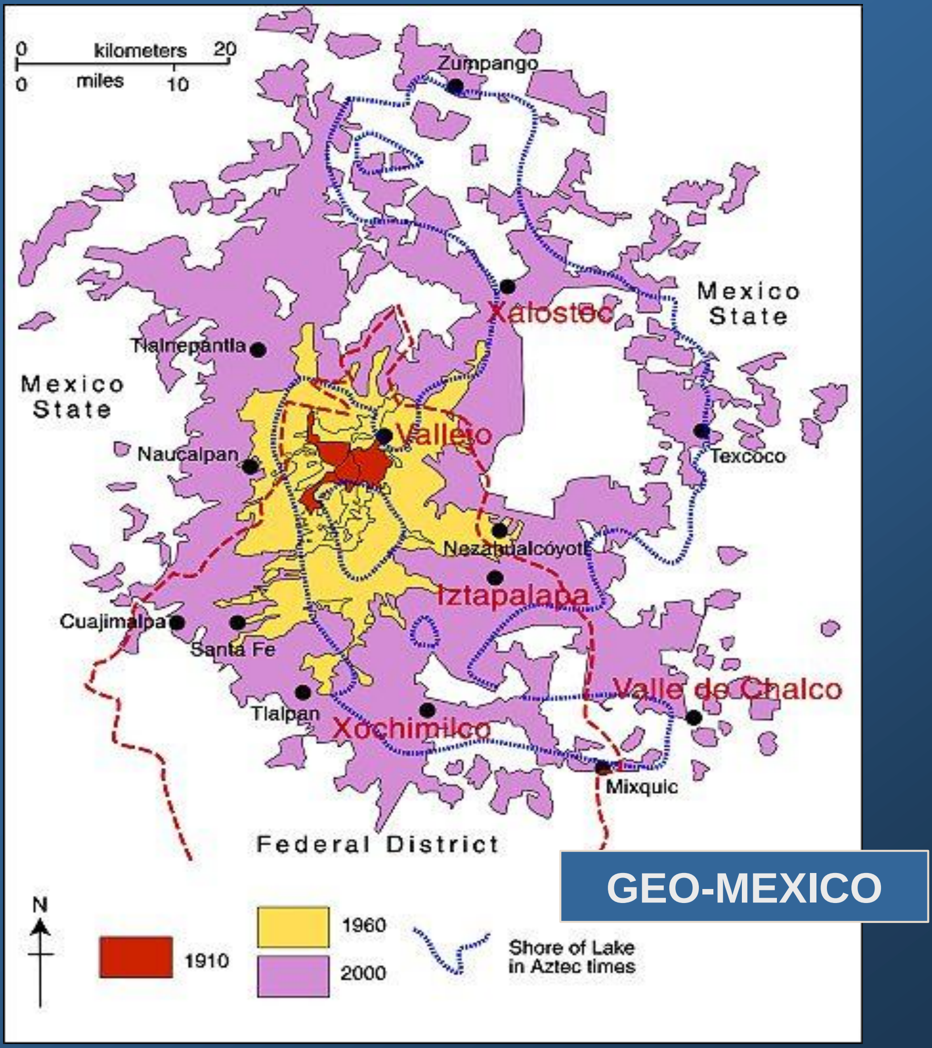
Unknown creator, the foundation of Tenochtitlan, Codex Mendoza, 1542. © Bodleian Libraries, University of Oxford

Unknown creator, map of Tenochtitlan (at right) and schema of the Gulf Coast (at left), from Hernando Cortés's Second Letter, Praeclara Fernandi Cortesii de Noua Maris Oceani Hyspania Narratio . . . (Nuremberg, 1524). Courtesy of the Newberry Library, Chicago, Ayer 655.51.C8 1524d.

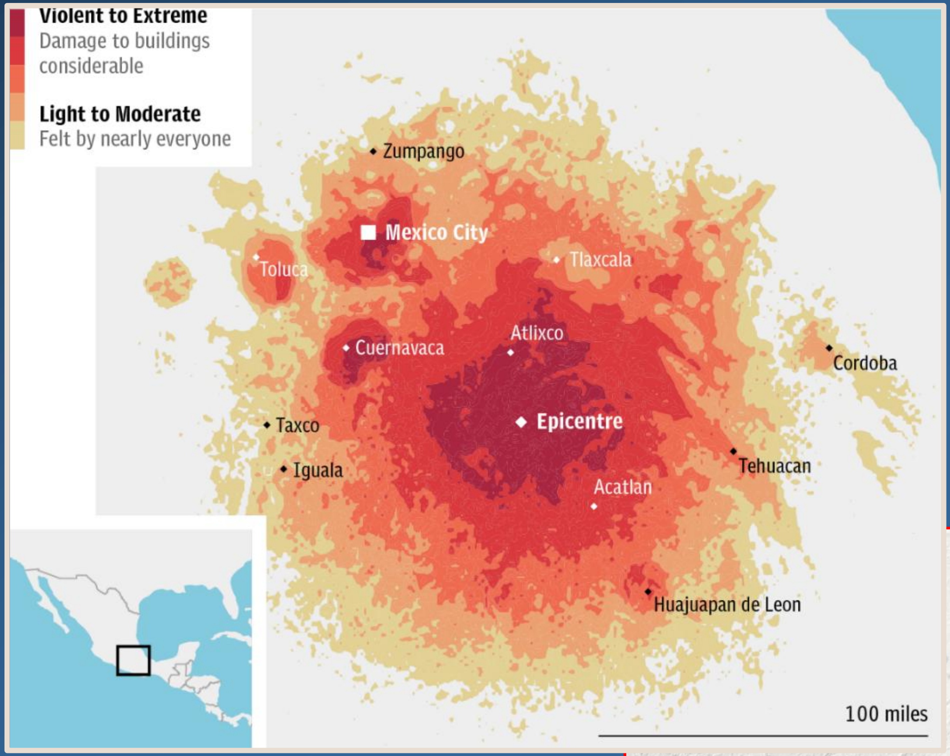
Spatial growth of Mexico City Metropolitan Area



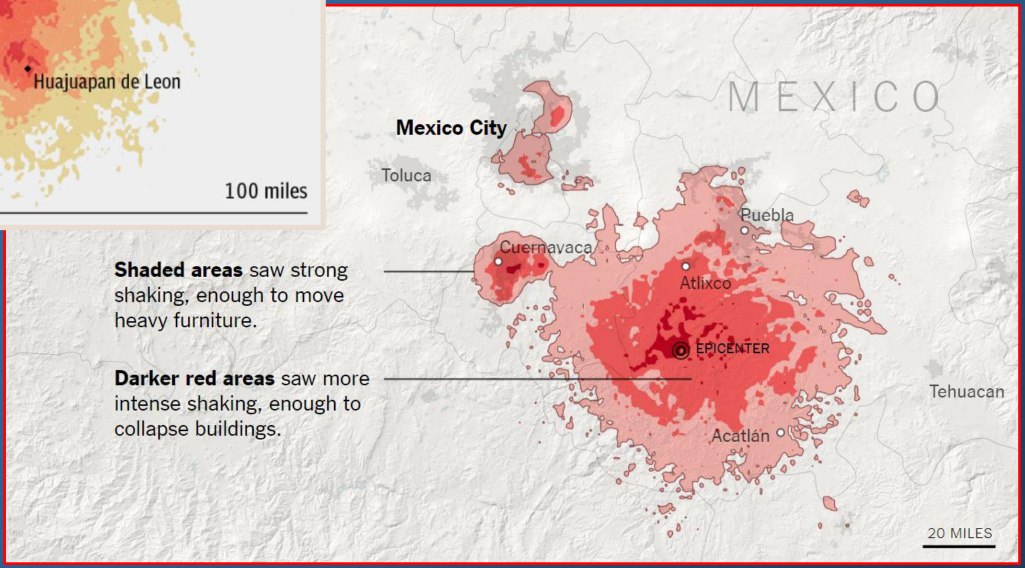
Sites in Mexico Valley with high incidence of ground cracks



Shake intensity of the September 19, 2017 M 7.1 earthquake

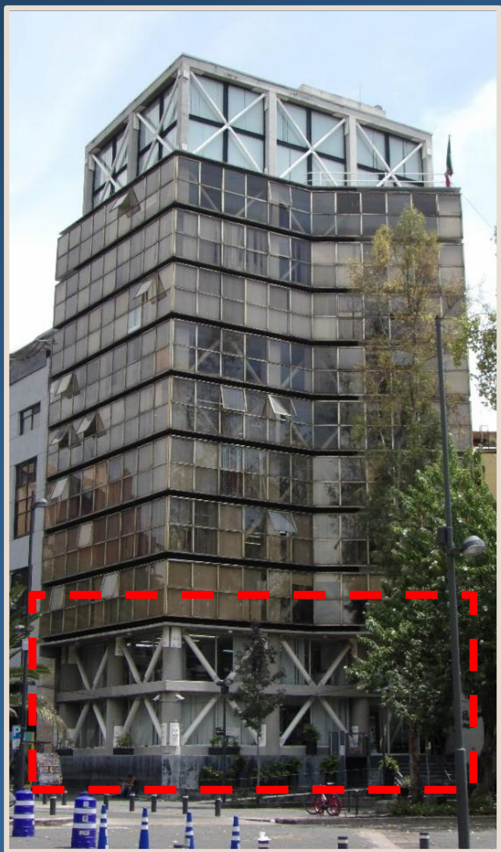


USGS
science for a changing world

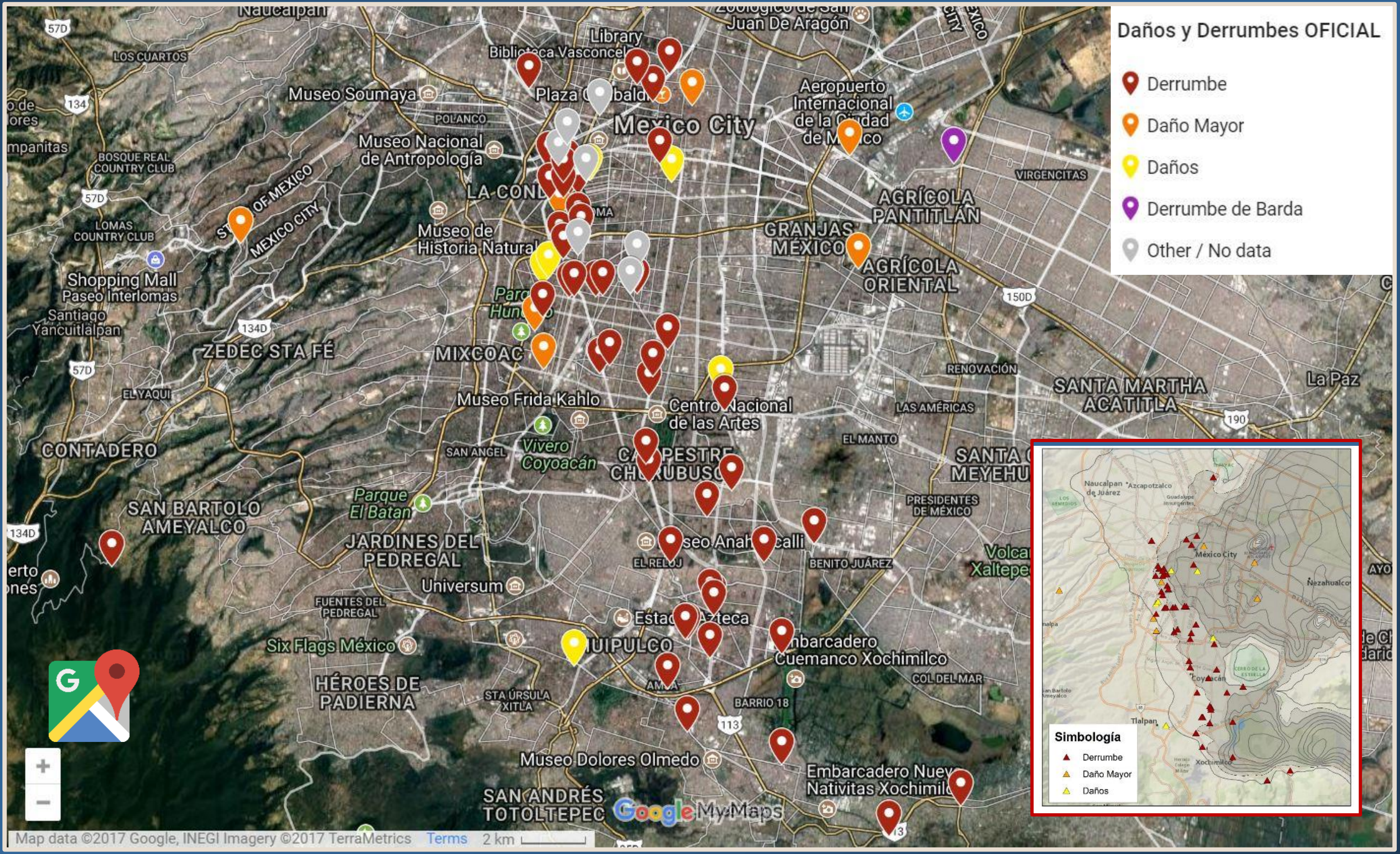


Photos credit to Lekkas, Mavroulis, Carydis

Reinforcement of buildings in the city of Mexico after the September 19, 1985 M 8.1 Michoacán earthquake (1/3)



Spatial distribution of building collapses and damage induced by the M 7.1 Puebla-Morelos earthquake in Mexico City in correlation with the lake bed zone limit



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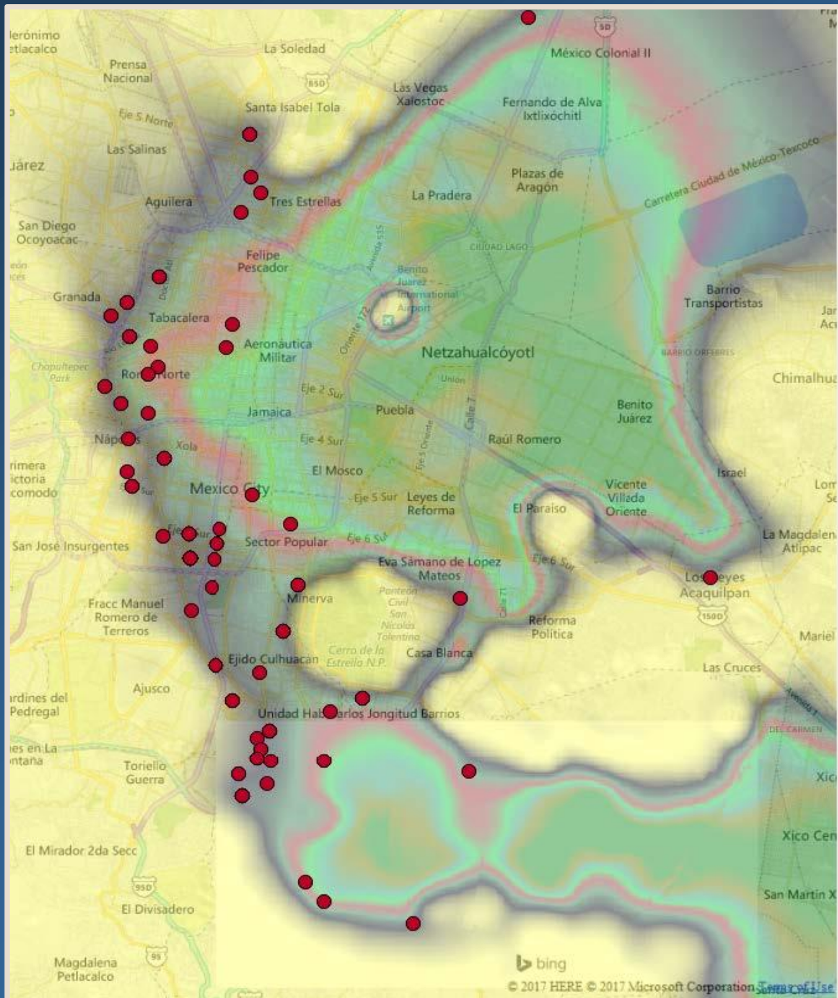

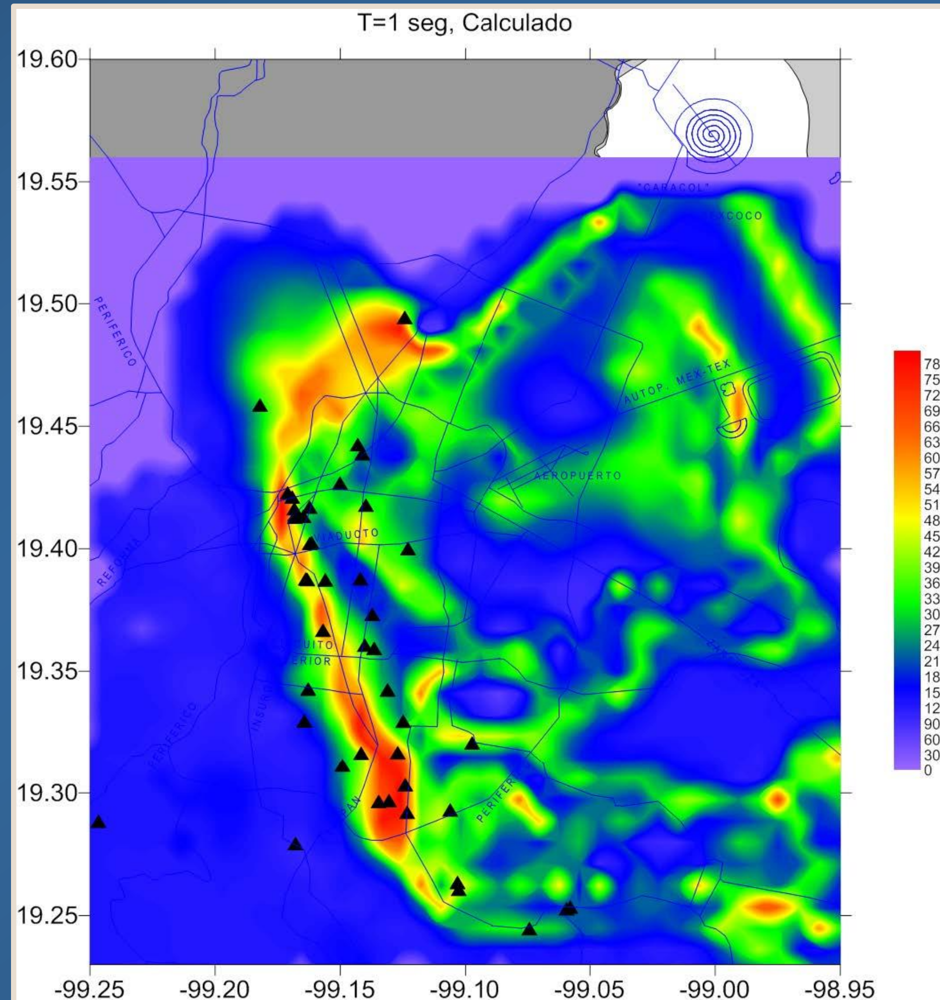

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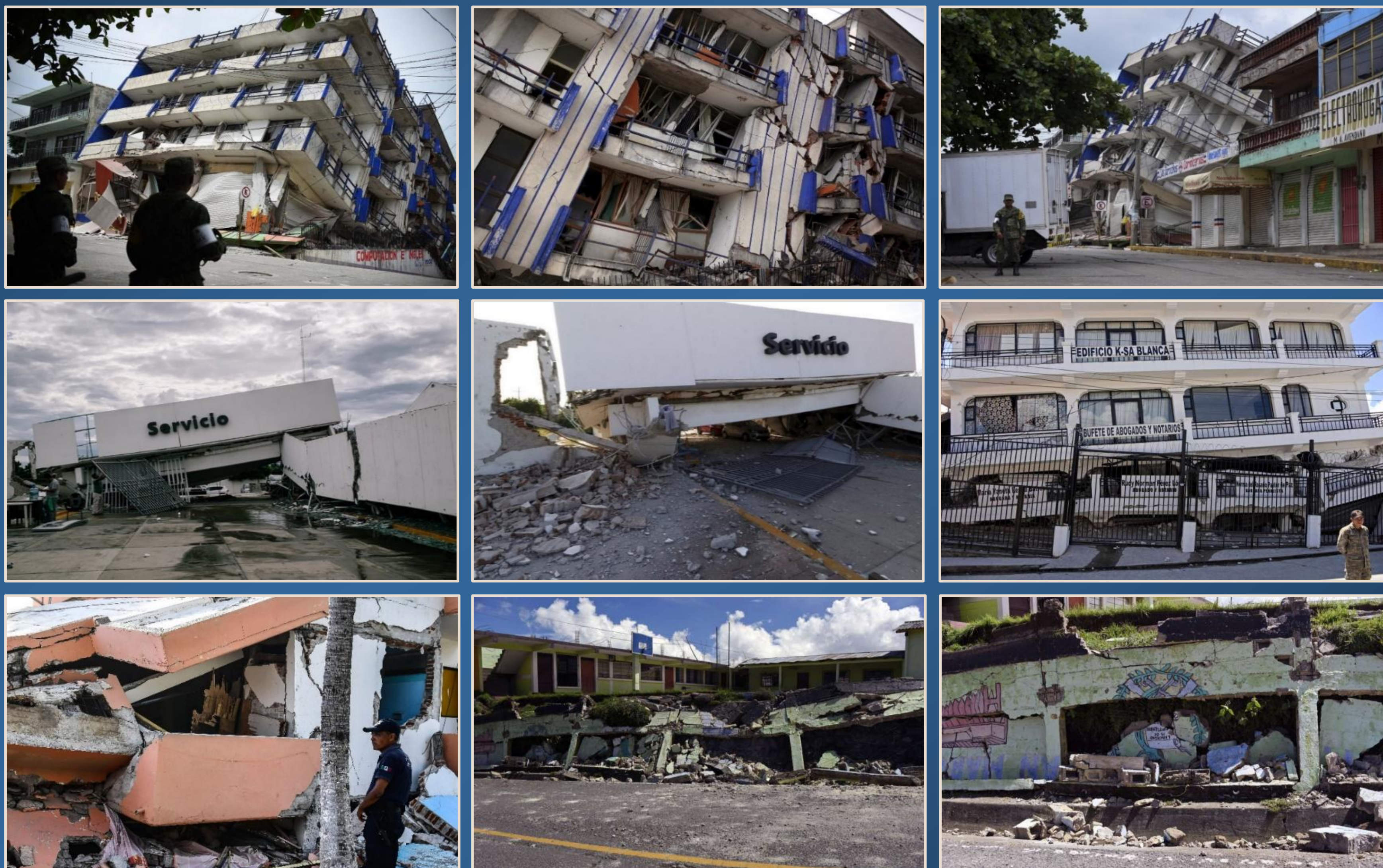
Universidad Nacional Autónoma de México

geofisica UNAM

INSTITUTO DE INGENIERÍA UNAM

Damage to reinforced concrete buildings due to the M 8.2 Chiapas earthquake



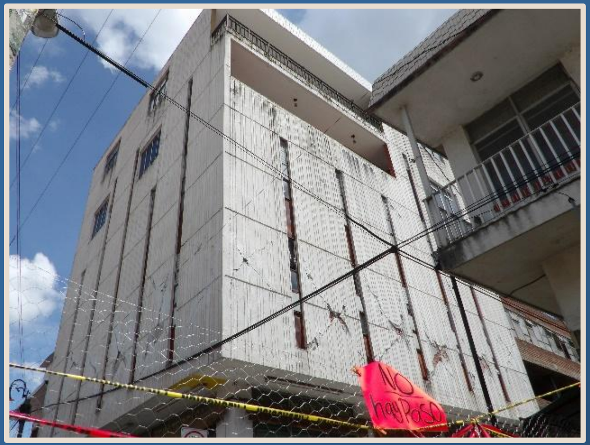
Damage to masonry buildings due to the M 8.2 Chiapas earthquake

Photos credit to Lekkas, Mavroulis, Carydis

Non-structural damage to R/C buildings in Mexico City and Cuautla due to the M 7.1 earthquake
Cracks, detachment of the infill walls from the surrounding R/C frame and partial collapse of walls

CDMX

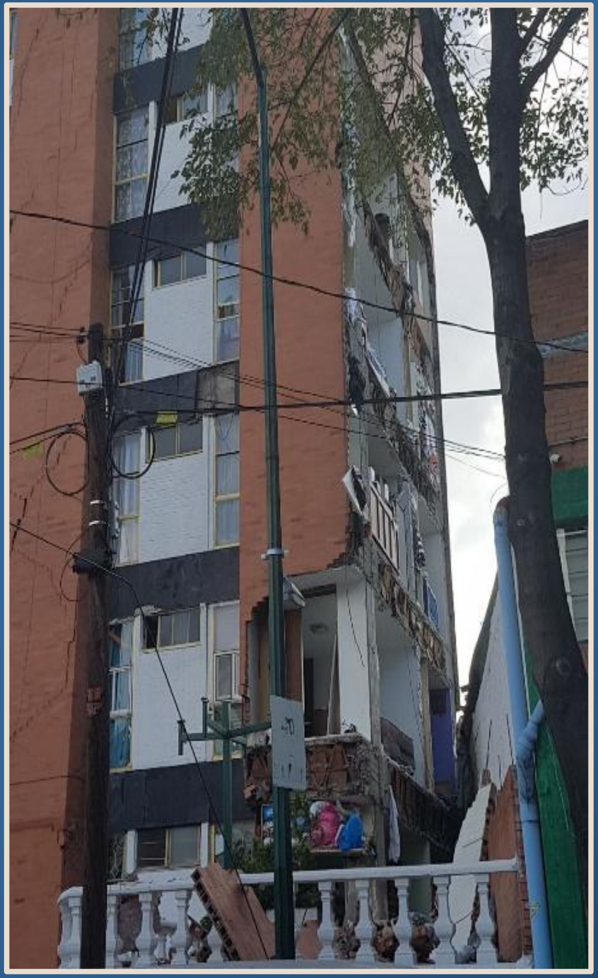
CDMX



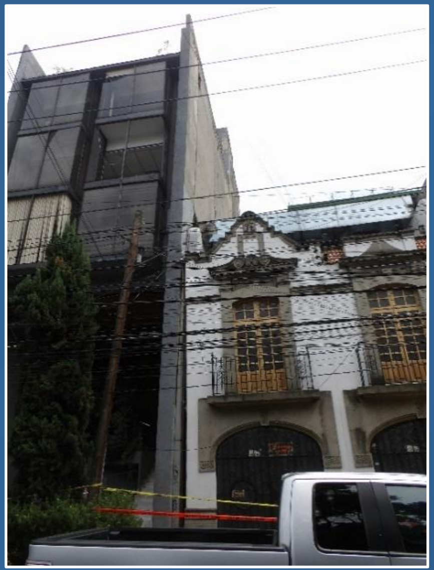
Cuautla

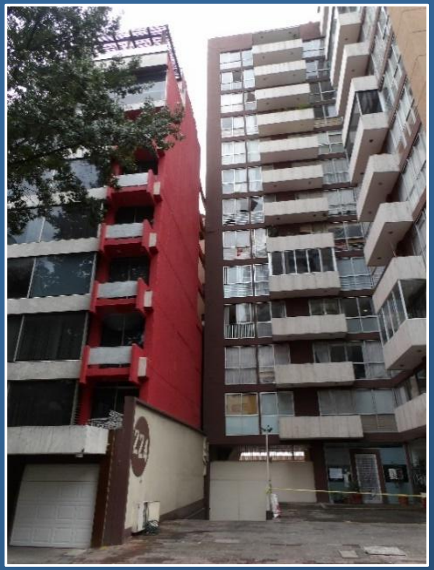
CDMX

Non-structural damage to R/C buildings in Mexico City due to the M 7.1 earthquake
Diagonal cracks and detachment of pieces of plaster from the infill walls



Building pounding damage due to the M 7.1 earthquake





Photos credit to Lekkas, Mavroulis, Carydis

Heavy structural damage to reinforced buildings in Mexico City due to the M 7.1 earthquake

Photos credit to Lekkas, Mavroulis, Carydis





Photo credit: Francisco Caballero Gout via AP

SISTEMA NACIONAL DE PROTECCIÓN CIVIL MÉXICO

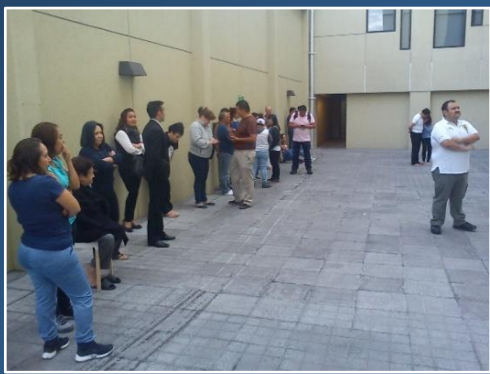
centro de instrumentación y registro sísmico a.c.

Sistema de Alerta Sísmica Mexicano – Mexican Seismic Warning System

ALERTA SÍSMICA

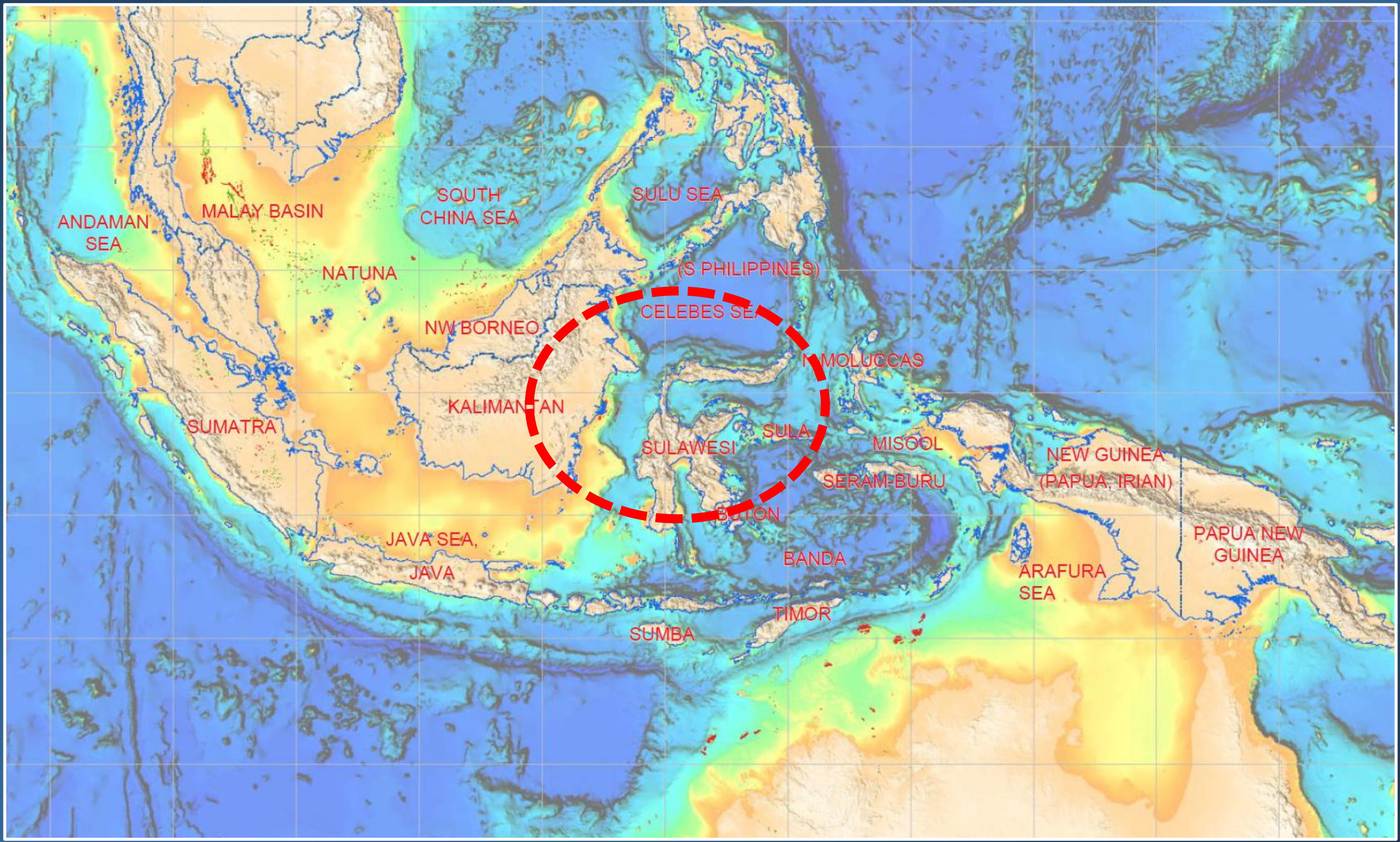
Photos credit to Lekkas, Mavroulis, Carydis

CIVIL PROTECTION IN MEXICO – Following the evacuation route to the "Punto de Reunion" after the seismic alert for the M 6.1 Oaxaca aftershock on September 23, 2017 in Mexico City

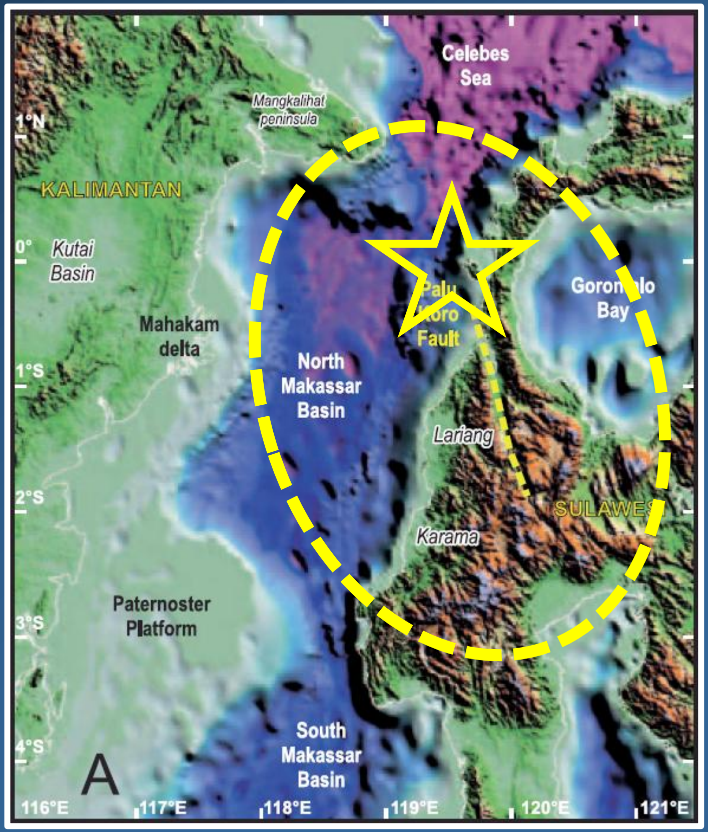


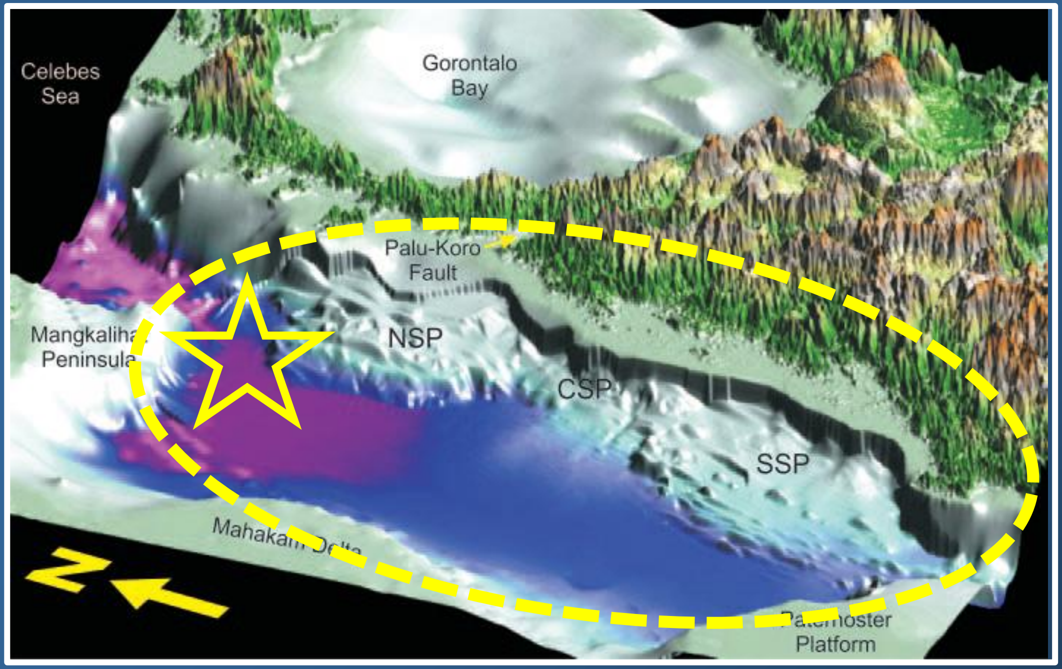

The September 2018 Mw 7.5 Palu (Sulawesi Island, Indonesia) earthquake and tsunami disaster

Physical setting and bathymetry



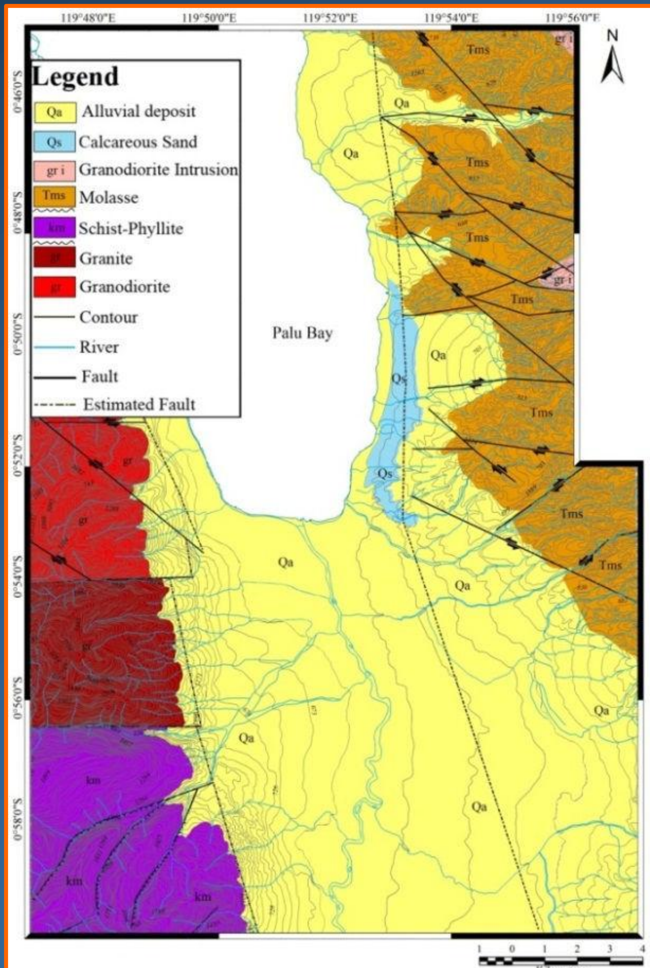
Bathymetry of the North Makassar Straits and topography of Western Sulawesi

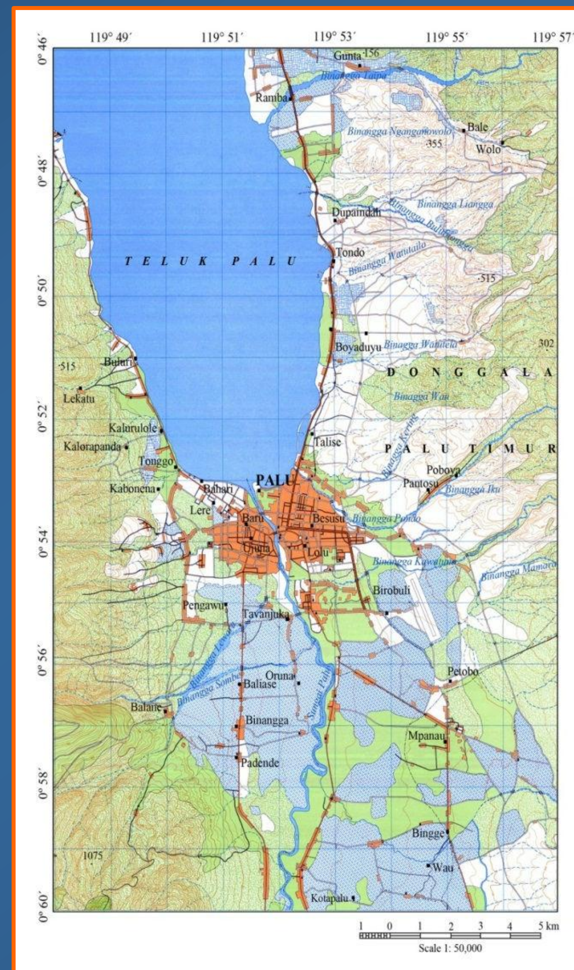


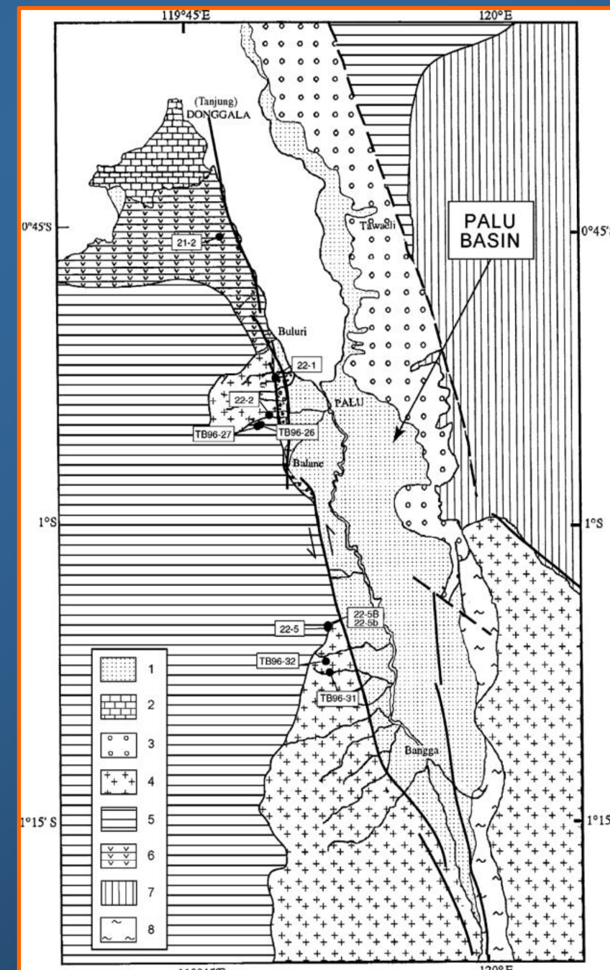


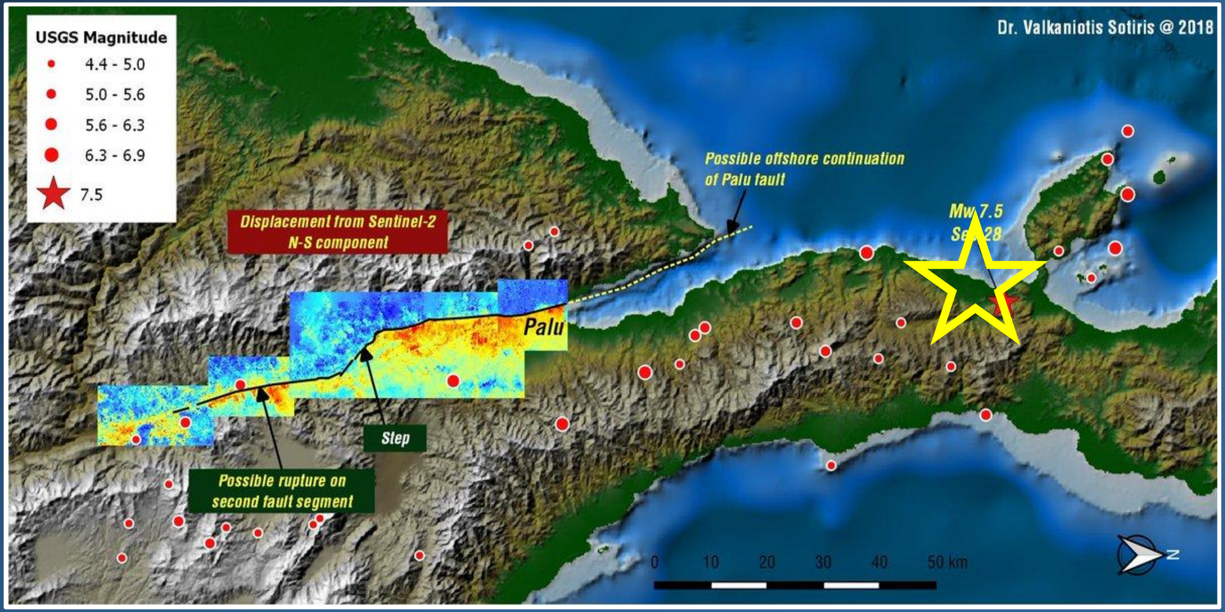
Three-dimensional view of bathymetry of the North Makassar Straits and topography of Western Sulawesi produced by merging bathymetric data from seismic data with the global bathymetry of Smith and Sandwell (1997) and SRTM topographic data for onshore Sulawesi. SSP: Southern Structural Province; CSP: Central Structural Province; NSP: Northern Structural Province. [From *Hall et al. (2009)*, Petroleum Geoscience]

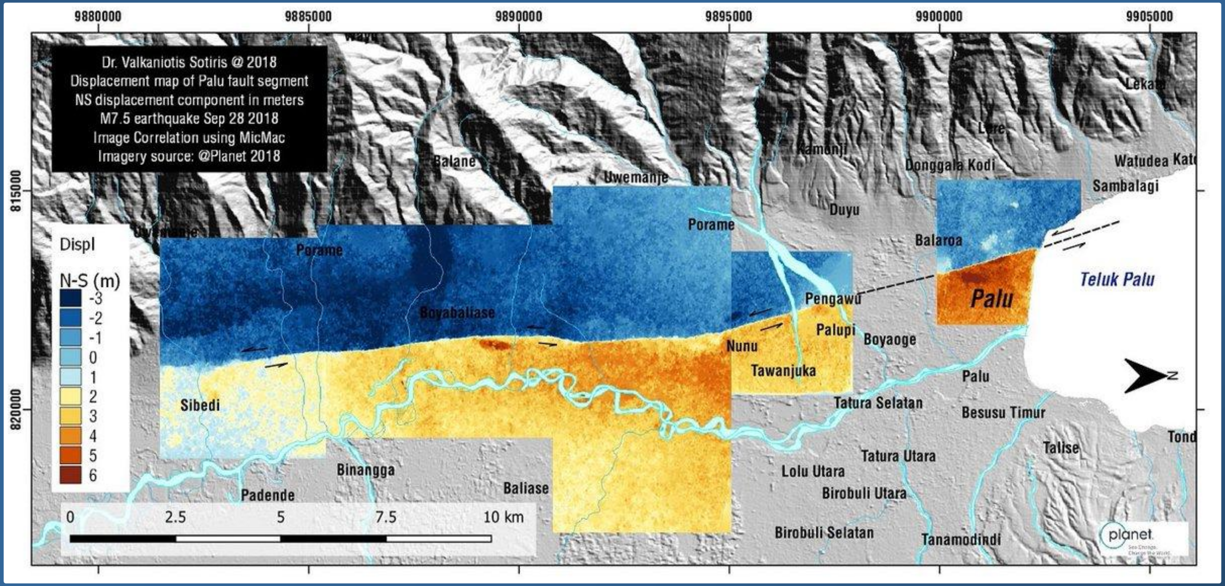
Geology of Palu Basin and surrounding area











Displacement maps of Palu fault segment

Displacement maps
of Palu fault segment

https://twitter.com/SotisValkan/status/1047165698542383104

https://twitter.com/SotisValkan/status/1046818189349462016

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Coseismic surface rupture in Palu City

photos by Lekkas, Carydis, Mavroulis

The deformed asphalt pavement as well as the adjacent damaged buildings along with the perimeter walls and railings reveal left lateral offset which is in coincidence with the causative Palu-Koro strike-slip fault

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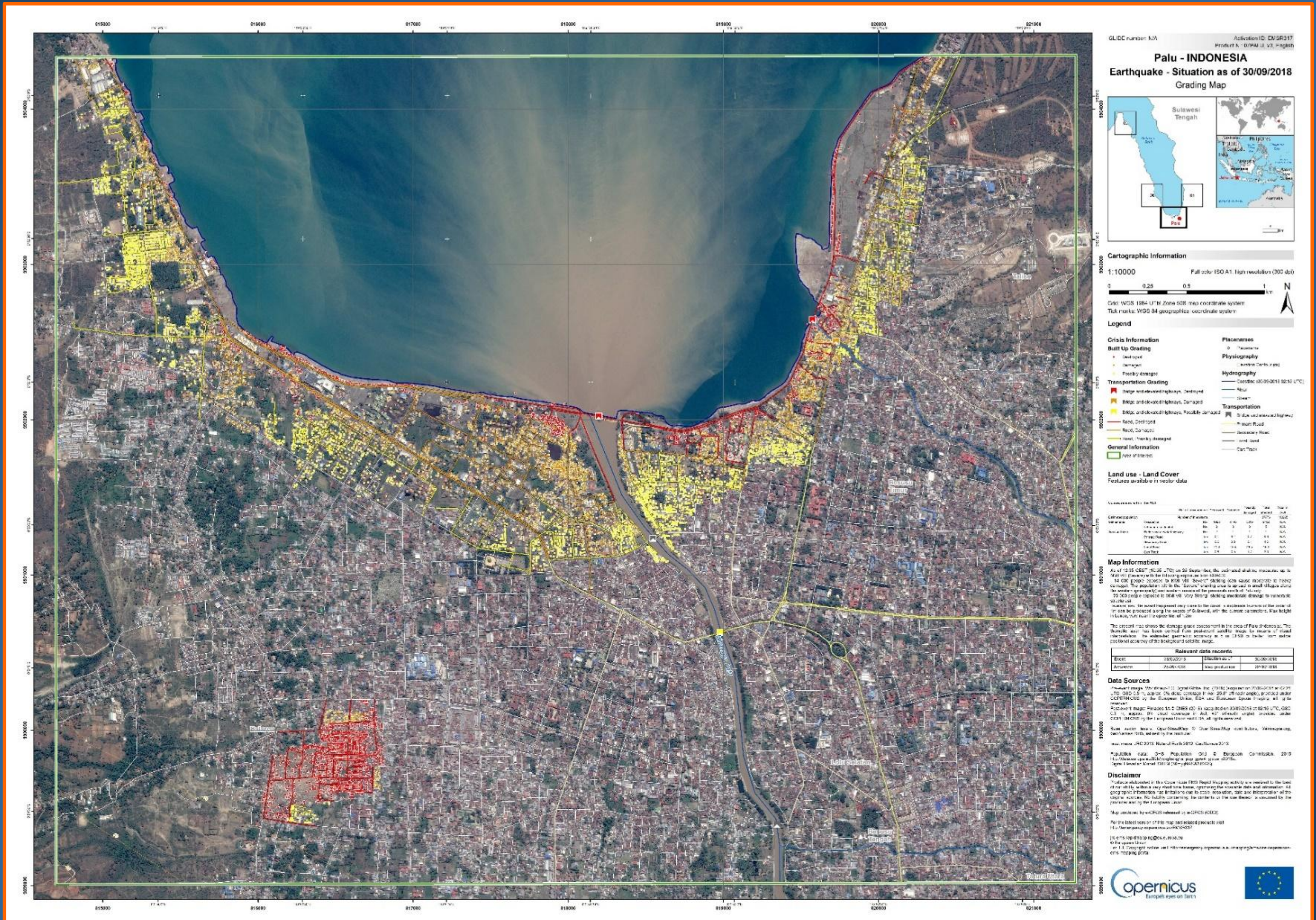
Damage assessment of 2018 Sulawesi Island Earthquake and Tsunami Palu as of 30/09/2018

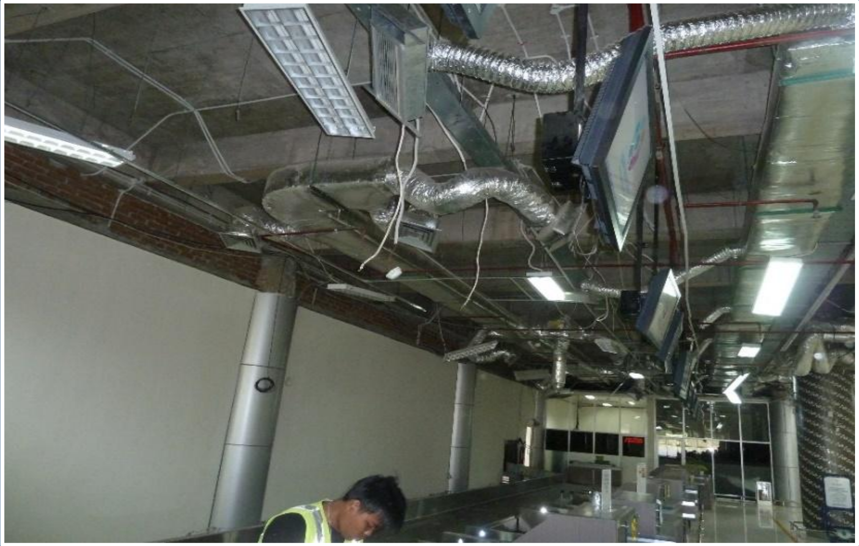


Earthquake-induced building damage
photos by Lekkas, Carydis, Mavroulis

Heavy structural damage (leaning columns) in reinforced concrete buildings in North Birobuli area located in South Palu

Earthquake-induced building damage

photos by Lekkas, Carydis, Mavroulis

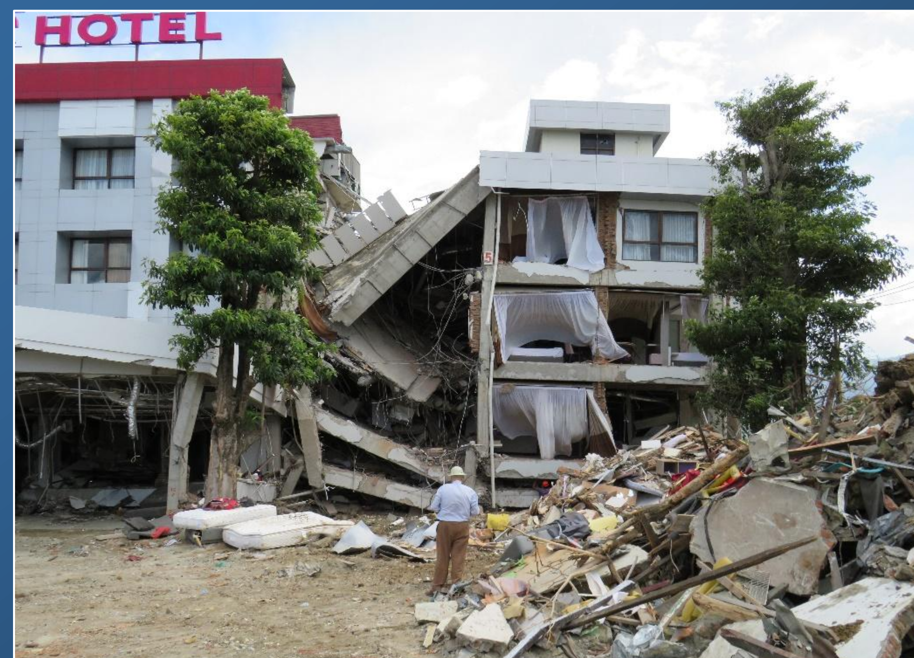


Mosque in Balaroa neighborhood

Arkham Babu Rahmat Mosque

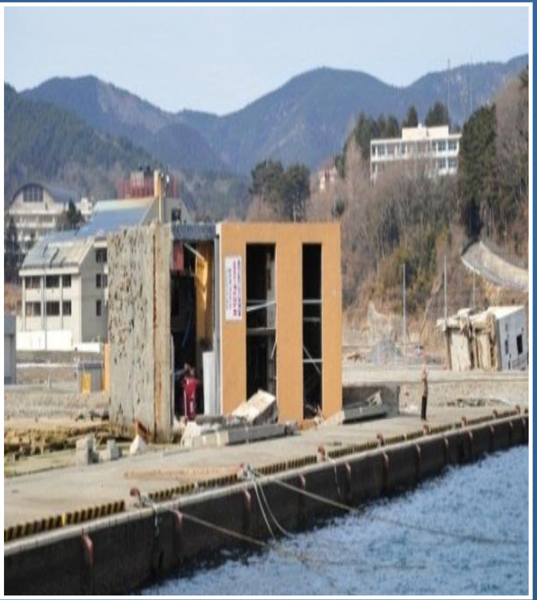
Damage to monuments

Building damage induced by soil liquefaction and lateral spreading


HOTEL


TOLONG
Kami PAK
Presiden




Grade 5 – Destruction.

Extensive load bearing structure deformation. Buildings detached and carried away at great distances.


ΝΕΑ ΔΕΔΟΜΕΝΑ - ΝΕΕΣ ΠΡΟΚΛΗΣΕΙΣ

Α. ΠΟΛΥΠΛΟΚΟΤΗΤΑ - ΣΥΝΘΕΤΟΤΗΤΑ ΚΙΝΔΥΝΩΝ - ΚΑΤΑΣΤΡΟΦΩΝ ΚΑΙ ΚΡΙΣΕΩΝ

Β. ΕΜΦΑΝΗΣΗ ΝΕΩΝ ΜΟΡΦΩΝ ΚΙΝΔΥΝΩΝ ΚΑΙ ΚΑΤΑΣΤΡΟΦΩΝ (NAT TECH)

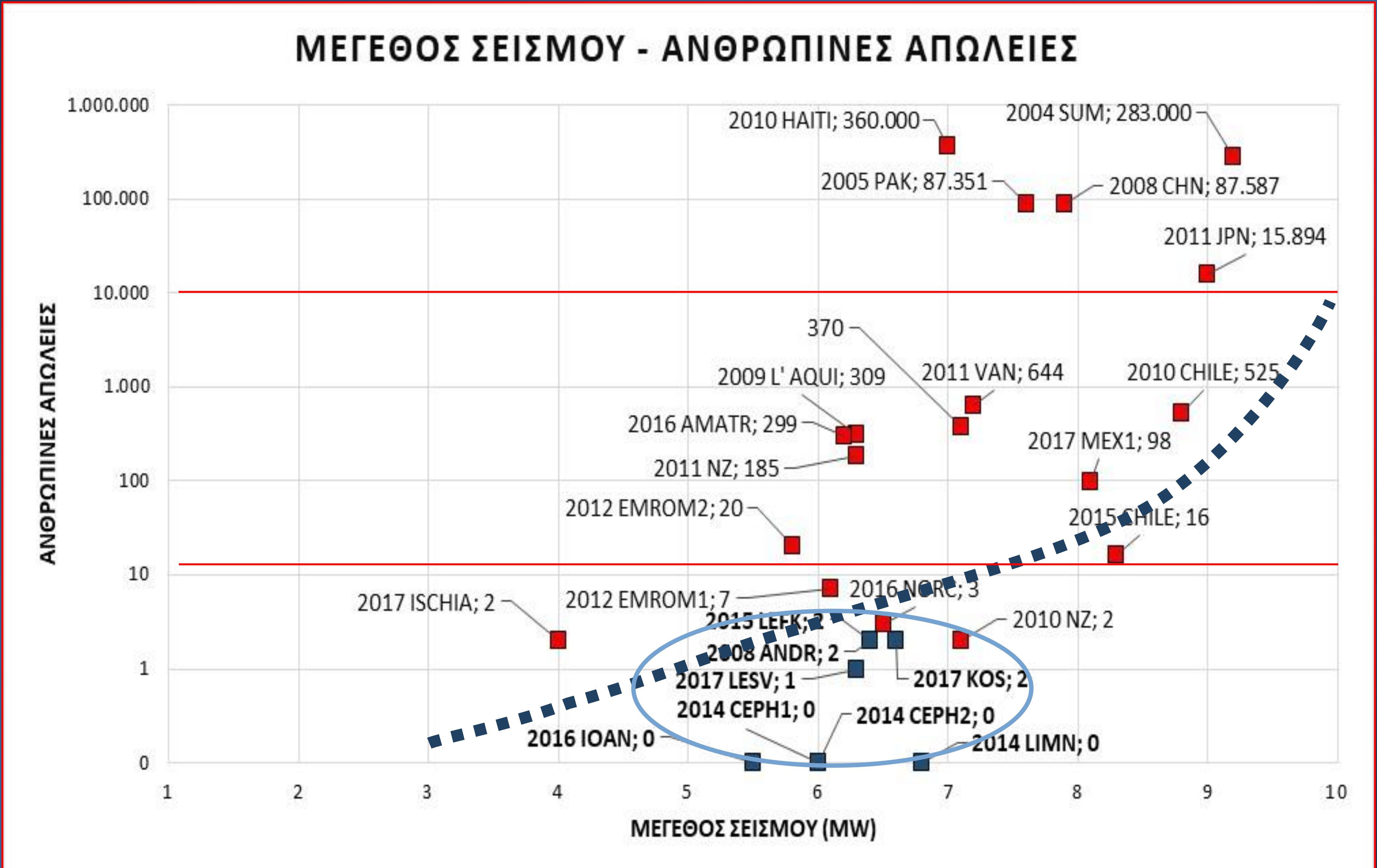
Γ. ΣΥΝΕΧΩΣ ΕΞΕΛΙΣΣΟΜΕΝΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΓΝΩΣΗ - ΤΕΧΝΟΛΟΓΙΑ

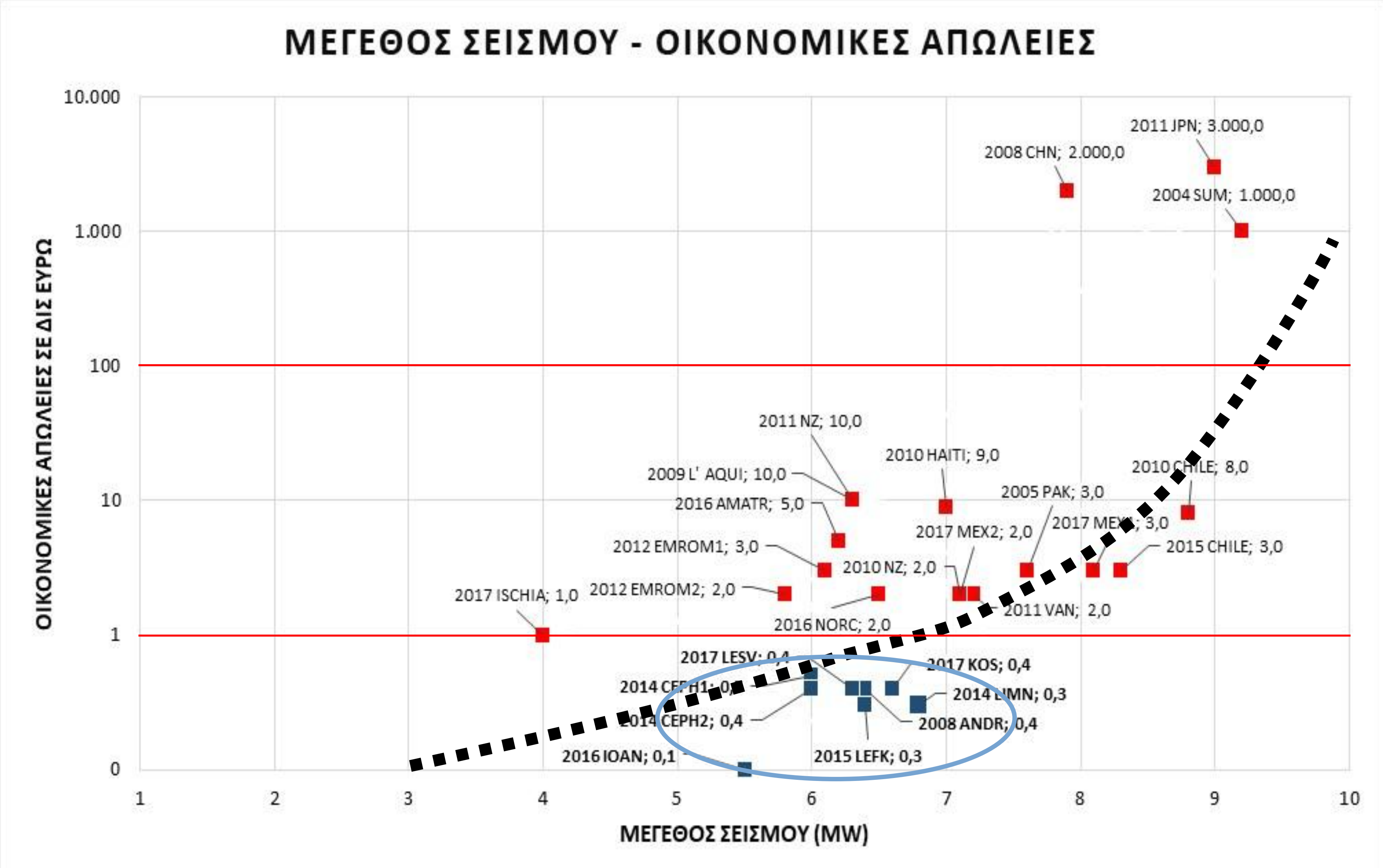
Δ. ΚΛΙΜΑΚΑ ΤΩΝ ΚΑΤΑΣΤΡΟΦΩΝ - ΠΑΓΚΟΣΜΙΟΙ ΚΙΝΔΥΝΟΙ ΚΑΙ ΚΡΙΣΕΙΣ

Ε. ΚΑΤΑΣΤΡΟΦΕΣ ΚΑΙ ΚΡΙΣΕΙΣ ΣΕ ΕΙΔΙΚΕΣ ΓΕΩΓΡΑΦΙΚΕΣ ΠΕΡΙΟΧΕΣ

ΣΤ. ΠΕΡΙΒΑΛΛΟΝΤΙΚΕΣ ΕΠΙΠΤΩΣΕΙΣ ΑΠΟ ΚΑΤΑΣΤΡΟΦΕΣ ΚΑΙ ΚΡΙΣΕΙΣ

Ζ. ΚΑΤΑΣΤΡΟΦΕΣ ΚΑΙ ΓΕΩΠΟΛΙΤΙΚΕΣ ΚΡΙΣΕΙΣ


ΜΕΓΕΘΟΣ ΣΕΙΣΜΟΥ - ΑΝΘΡΩΠΙΝΕΣ ΑΠΩΛΕΙΕΣ
ΑΝΘΡΩΠΙΝΕΣ ΑΠΩΛΕΙΕΣ
1.000.000
100.000
10.000
1.000
100
10
1
0
1
2
3
4
5
6
7
8
9
10
ΜΕΓΕΘΟΣ ΣΕΙΣΜΟΥ (MW)
2010 HAITI; 360.000
2004 SUM; 283.000
2005 PAK; 87.351
2008 CHN; 87.587
2011 JPN; 15.894
370
2009 L' AQUI; 309
2011 VAN; 644
2010 CHILE; 525
2016 AMATR; 299
2011 NZ; 185
2017 MEX1; 98
2012 EMROM2; 20
2015 CHILE; 16
2017 ISCHIA; 2
2012 EMROM1; 7
2016 NORC; 3
2015 LEFK; 2
2010 NZ; 2
2008 ANDR; 2
2017 LESV; 1
2017 KOS; 2
2014 CEPH1; 0
2014 CEPH2; 0
2016 IOAN; 0
2014 LIMN; 0


ΜΕΓΕΘΟΣ ΣΕΙΣΜΟΥ - ΟΙΚΟΝΟΜΙΚΕΣ ΑΠΩΛΕΙΕΣ
ΟΙΚΟΝΟΜΙΚΕΣ ΑΠΩΛΕΙΕΣ ΣΕ ΔΙΣ ΕΥΡΩ
10.000
1.000
100
10
1
0
1
2
3
4
5
6
7
8
9
10
ΜΕΓΕΘΟΣ ΣΕΙΣΜΟΥ (MW)
2011 JPN; 3.000,0
2008 CHN; 2.000,0
2004 SUM; 1.000,0
2011 NZ; 10,0
2010 HAITI; 9,0
2009 L' AQUI; 10,0
2010 CHILE; 8,0
2005 PAK; 3,0
2016 AMATR; 5,0
2017 MEX2; 2,0
2012 EMROM1; 3,0
2015 CHILE; 3,0
2010 NZ; 2,0
2017 ISCHIA; 1,0
2012 EMROM2; 2,0
2011 VAN; 2,0
2016 NORC; 2,0
2017 KOS; 0,4
2014 CEPH2; 0,4
2008 ANDR; 0,4
2016 IOAN; 0,1
2015 LEFK; 0,3

ΝΕΕΣ ΠΡΟΣΕΓΓΙΣΕΙΣ
ΣΤΗΝ ΔΙΑΧΕΙΡΙΣΗ

Α. ΕΙΔΙΚΑ ΕΠΙΧΕΙΡΗΣΙΑΚΑ ΣΧΕΔΙΑ ΑΝΑ ΚΙΝΔΥΝΟ ΚΑΙ ΠΕΡΙΟΧΗ

Β. ΕΞΕΙΔΙΚΕΥΜΕΝΑ ΕΠΙΧΕΙΡΗΣΙΑΚΑ ΣΧΕΔΙΑ ΓΙΑ ΠΟΛΑΠΛΟΥΣ ΚΙΝΥΝΟΥΣ

Γ. ΑΜΕΣΗ ΕΠΕΜΒΑΣΗ ΜΕ ΚΑΙΝΟΤΟΜΕΣ ΤΕΧΝΙΚΕΣ

Δ. ΑΝΑΓΚΑΙΟΤΗΤΑ ΔΙΕΘΝΟΥΣ ΣΥΝΕΡΓΑΣΙΑΣ ΑΜΕΣΗΣ ΕΠΕΜΒΑΣΗΣ

Ε. ΔΙΕΘΝΗΣ ΟΙΚΟΝΟΜΙΚΗ ΚΑΙ ΤΕΧΝΙΚΗ ΣΥΝΔΡΟΜΗ

ΣΤ. ΑΝΑΚΟΥΦΙΣΗ ΠΛΗΓΕΝΤΩΝ

Ζ. ΑΝΑΚΑΜΨΗ - ΑΠΟΚΑΤΑΣΤΑΣΗ ΔΟΜΩΝ - ΥΠΟΔΟΜΩΝ

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ΣΤΡΑΤΗΓΙΚΕΣ ΔΙΑΧΕΙΡΙΣΗΣ

ΠΕΡΙΒΑΛΛΟΝΤΟΣ, ΚΑΤΑΣΤΡΟΦΩΝ & ΚΡΙΣΕΩΝ

ΕΘΝΙΚΟ & ΚΑΠΟΔΙΣΤΡΙΑΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ

ΠΡΟΓΡΑΜΜΑ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ