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United Nations
Educational, Scientific and
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IAEA
International Atomic Energy Agency

2464-8

Earthquake Tectonics and Hazards on the Continents

17 - 28 June 2013

Recognizing and characterizing thrust faults and earthquakes in Iran

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Research Inst. for Earth Sciences
Tehran
Iran

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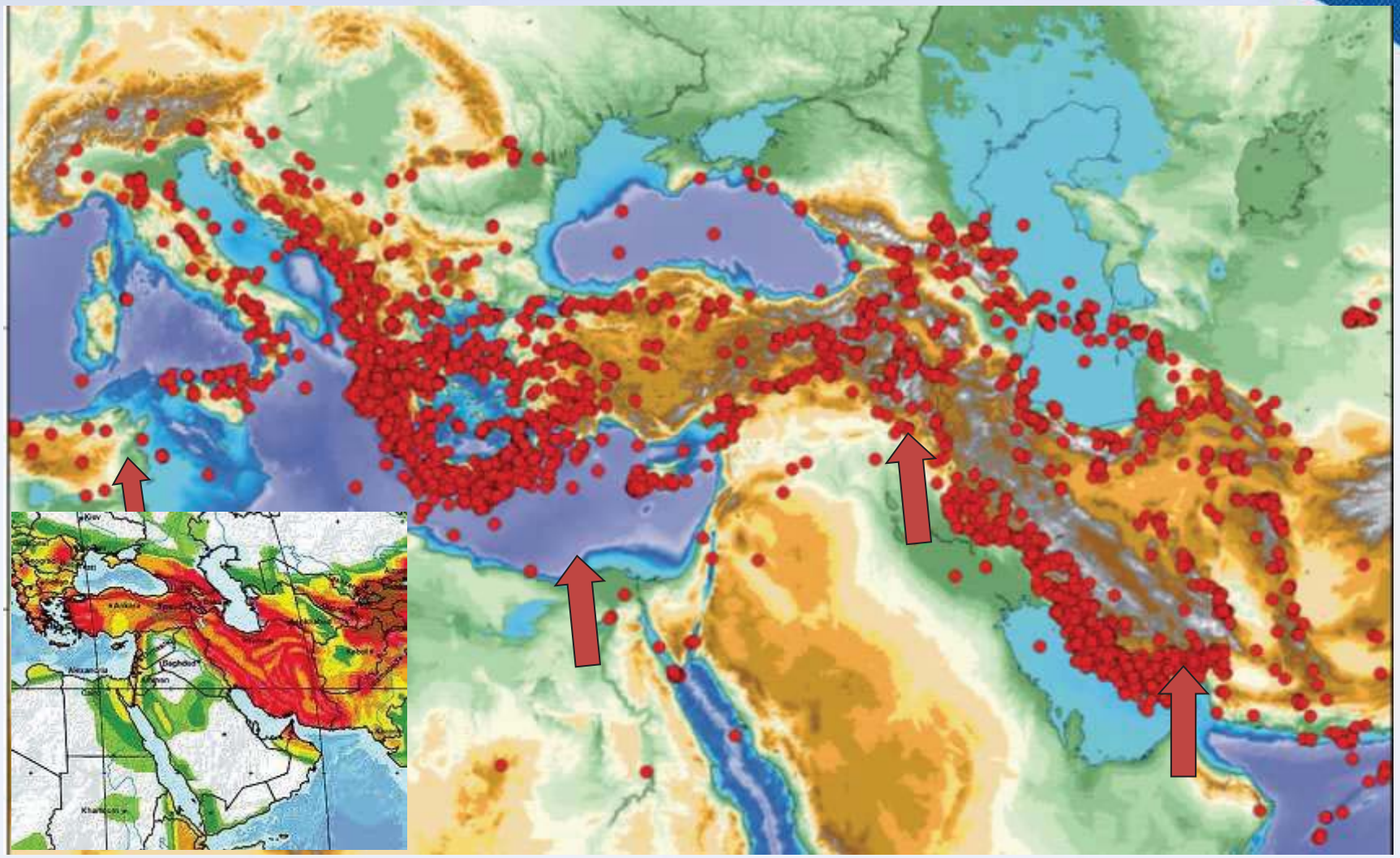
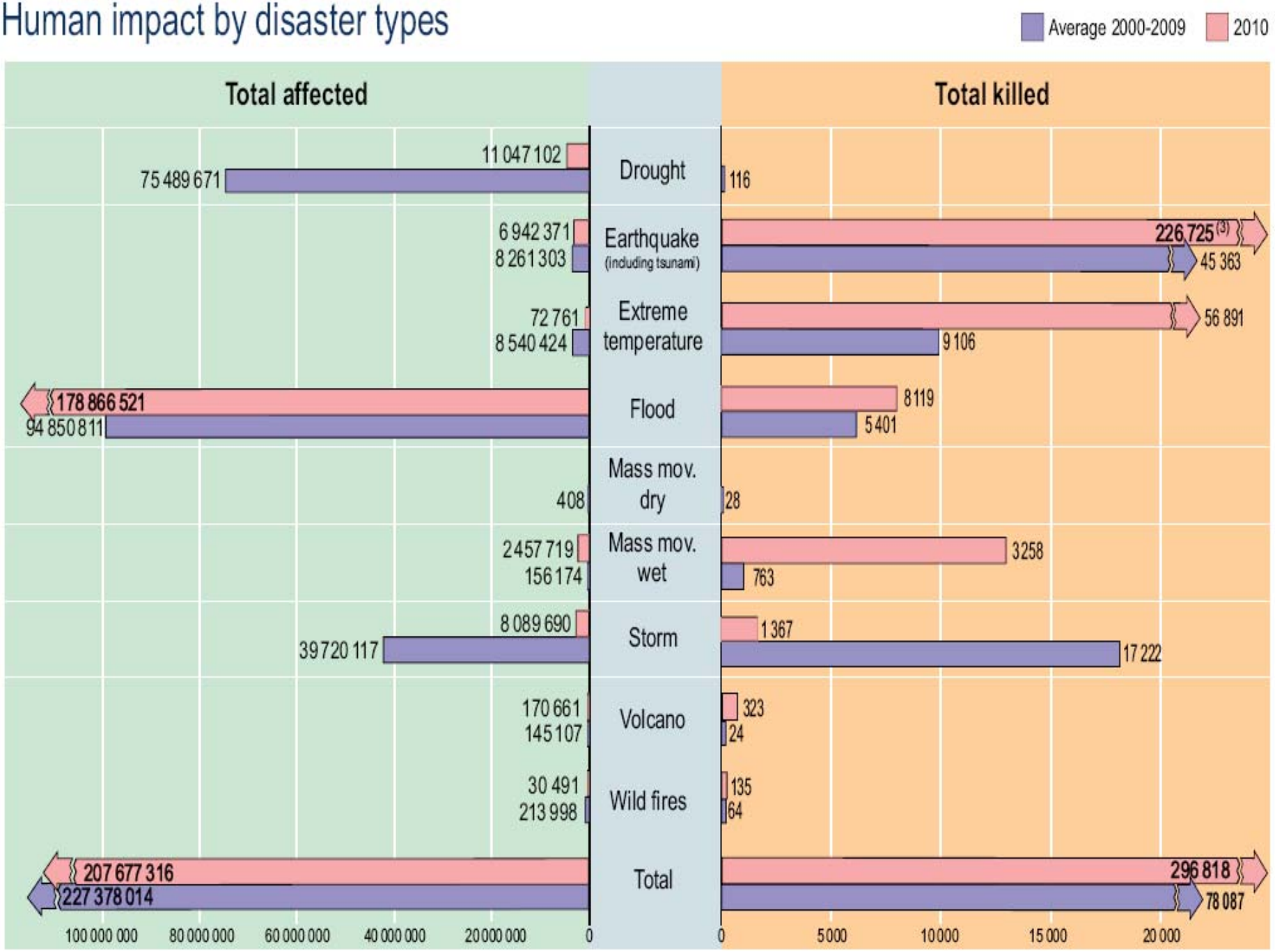
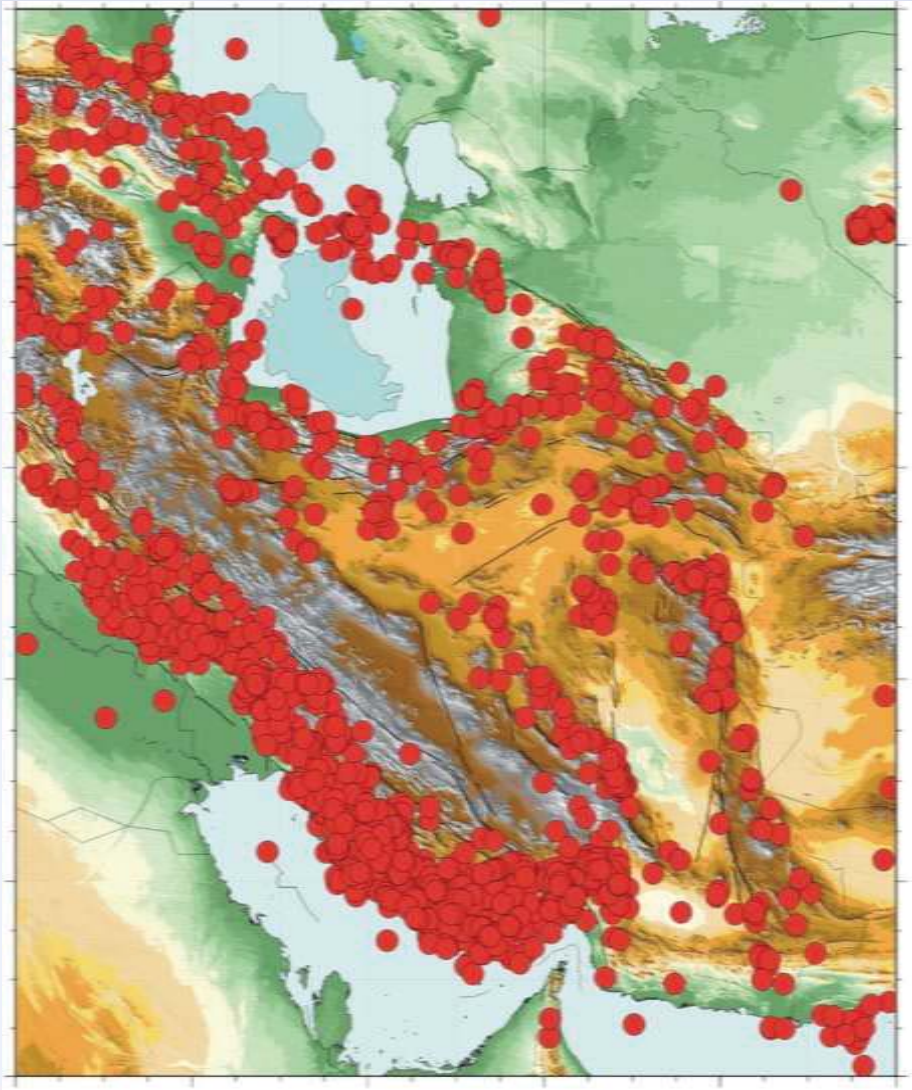
Blind faulting in Tehran

Morteza Talebian and Hamid Nazari
Research Institute for Earth Sciences, Geological Survey of Iran

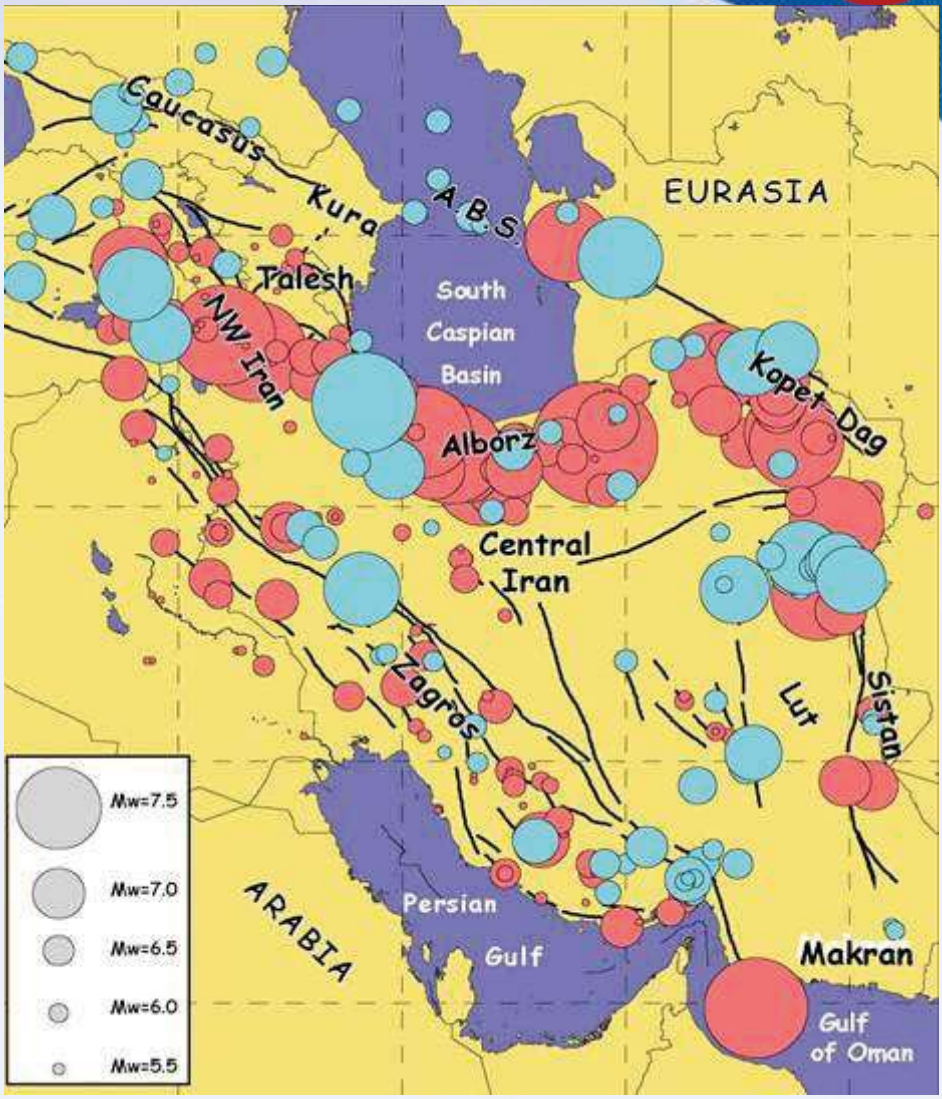

Kiev
Ankara
Alexandria
Baghdad
Khartoum

Human impact by disaster types





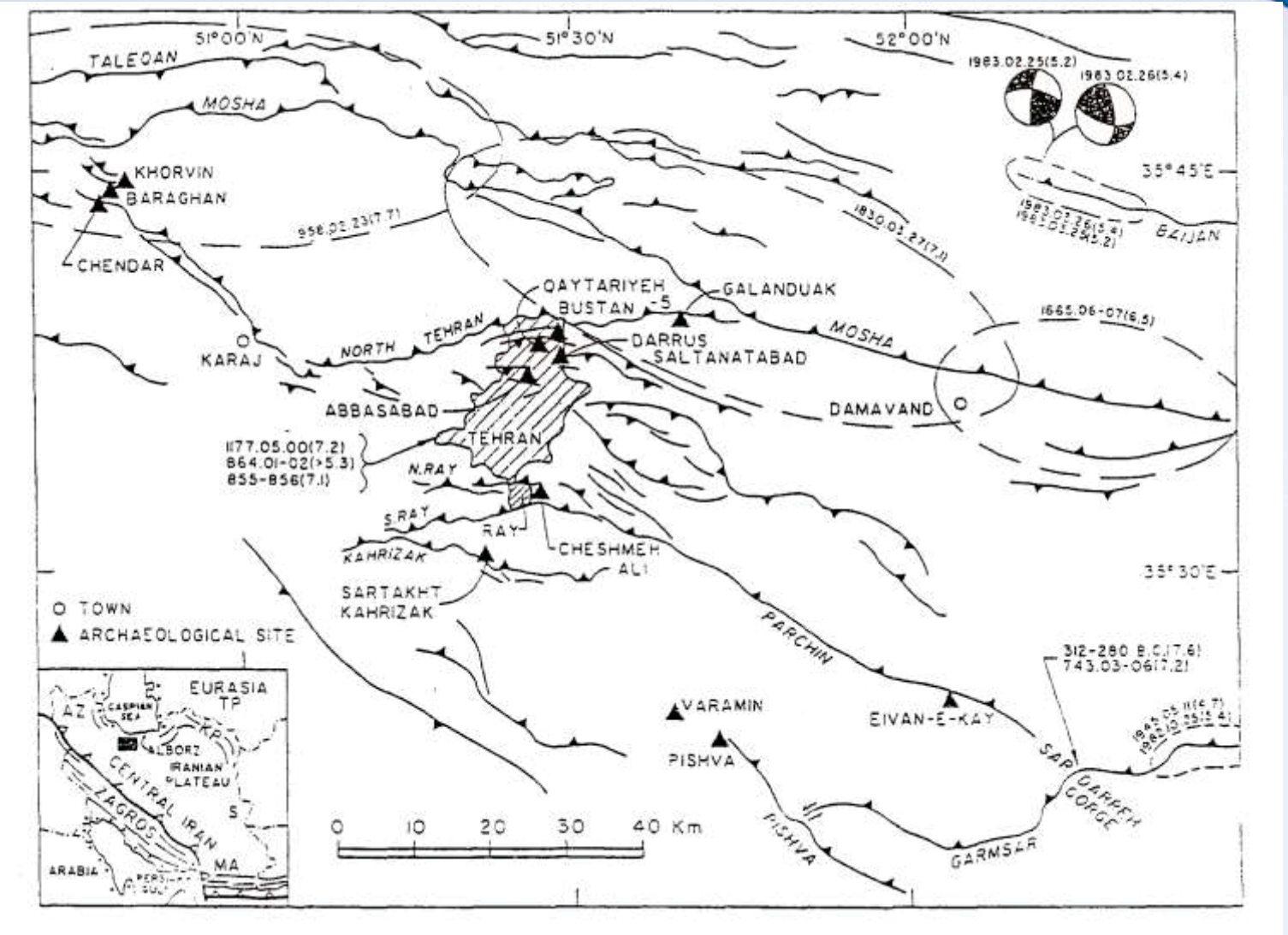
Masson et al 2005



Earthquakes 1900-2000

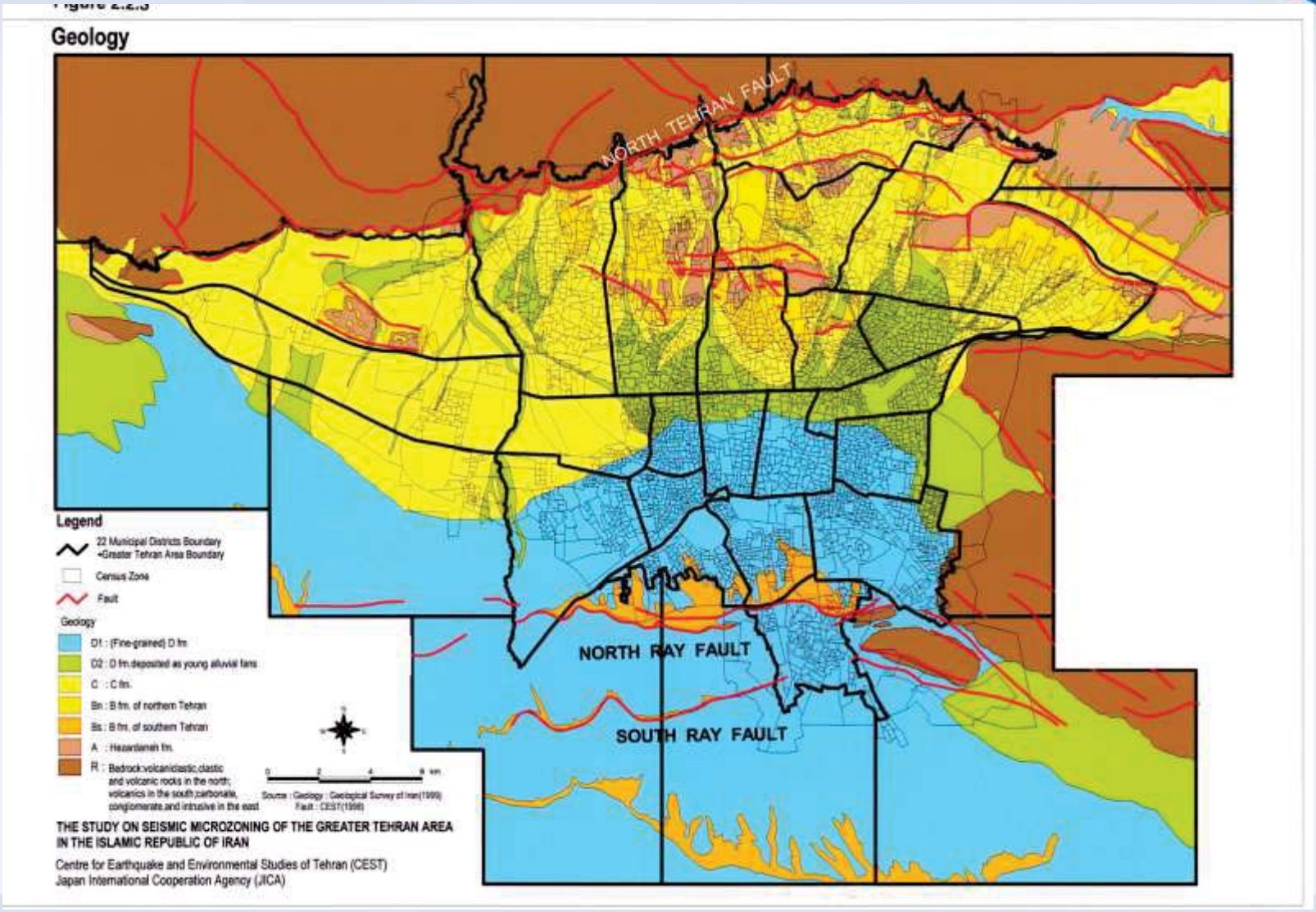
(red before 1960; blue after 1960)

Active faults and historical seismicity around Tehran



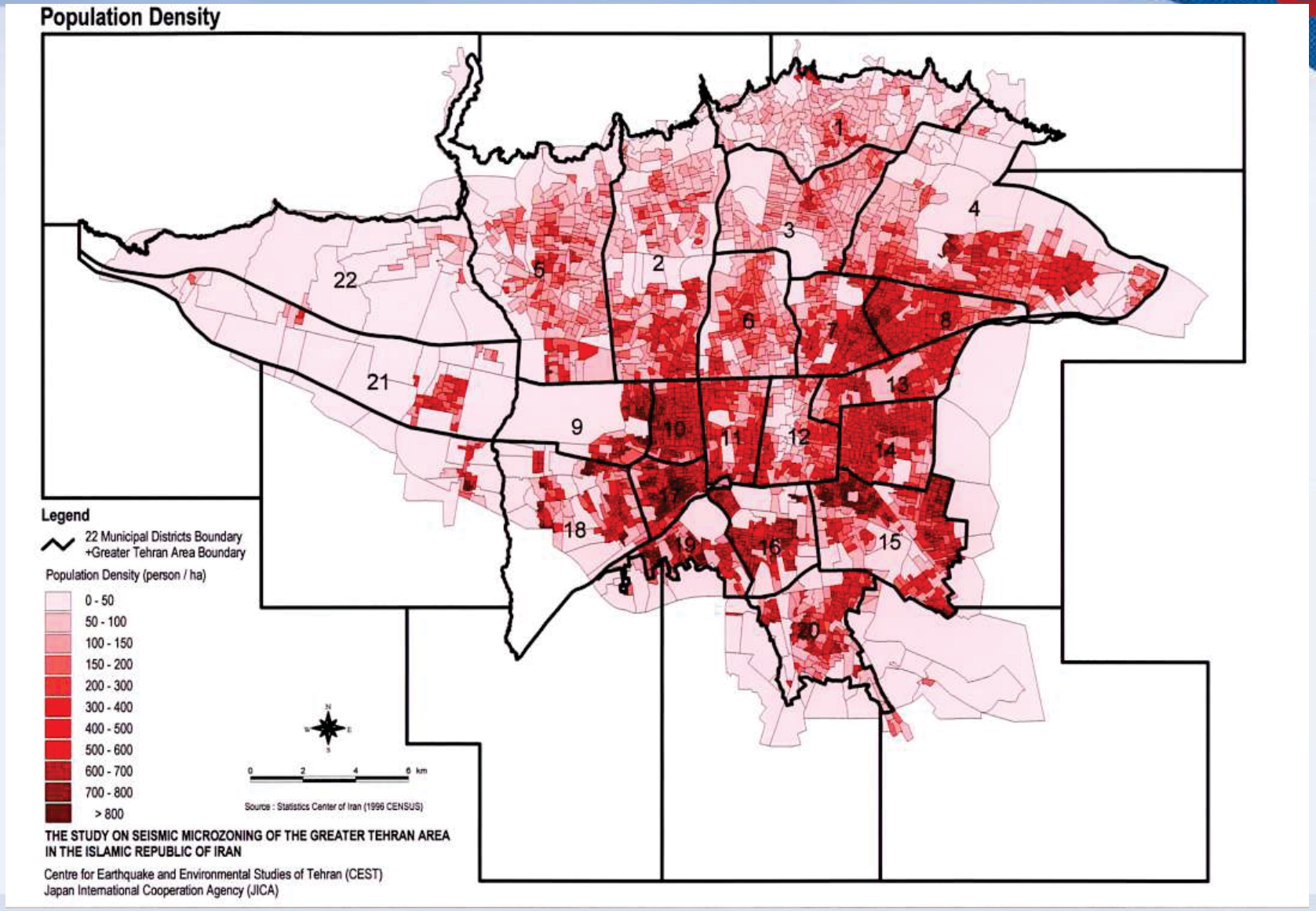
Berberian and Yeats (2001)

Geology of Tehran



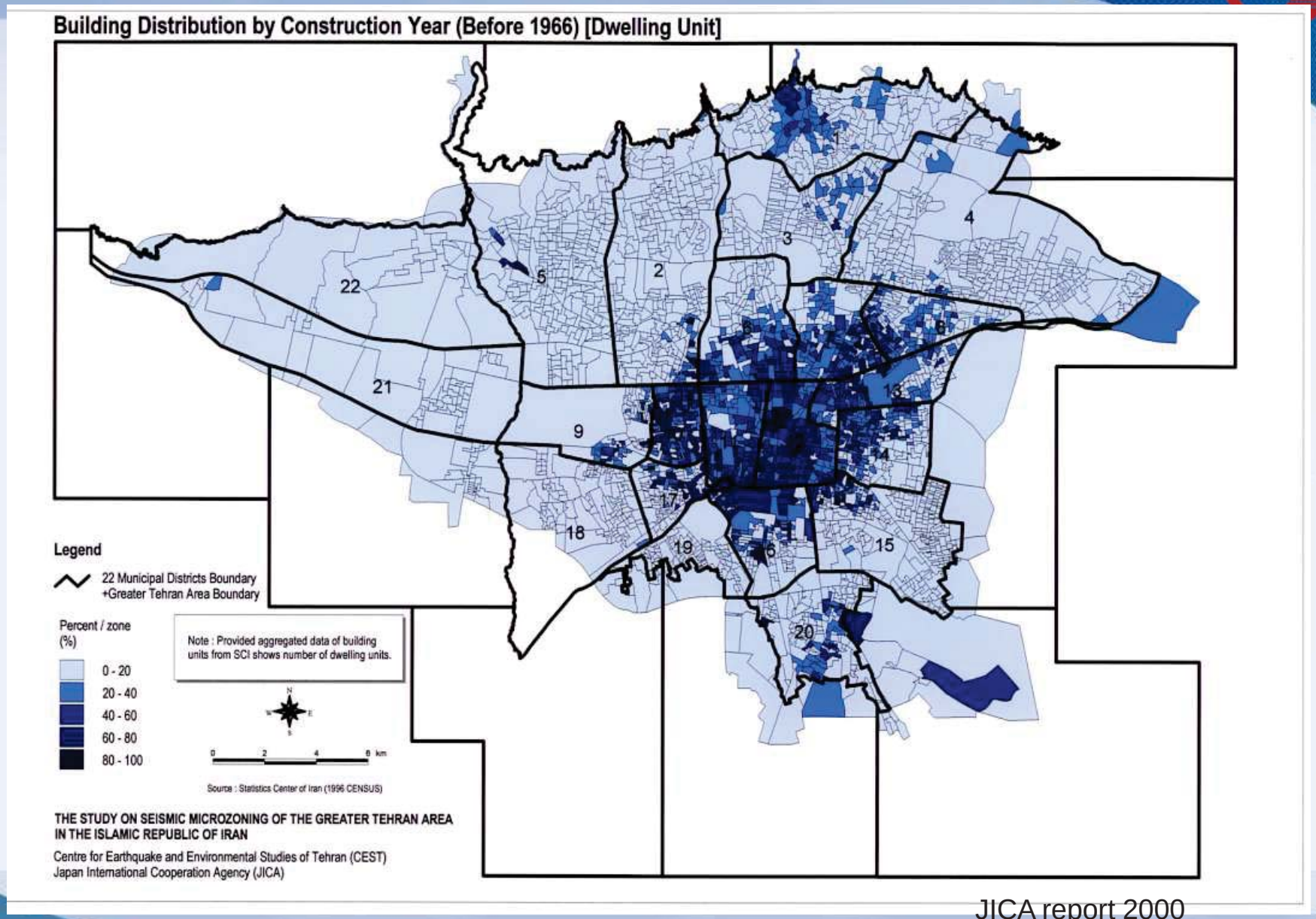
JICA report 2000

Population density of Tehran

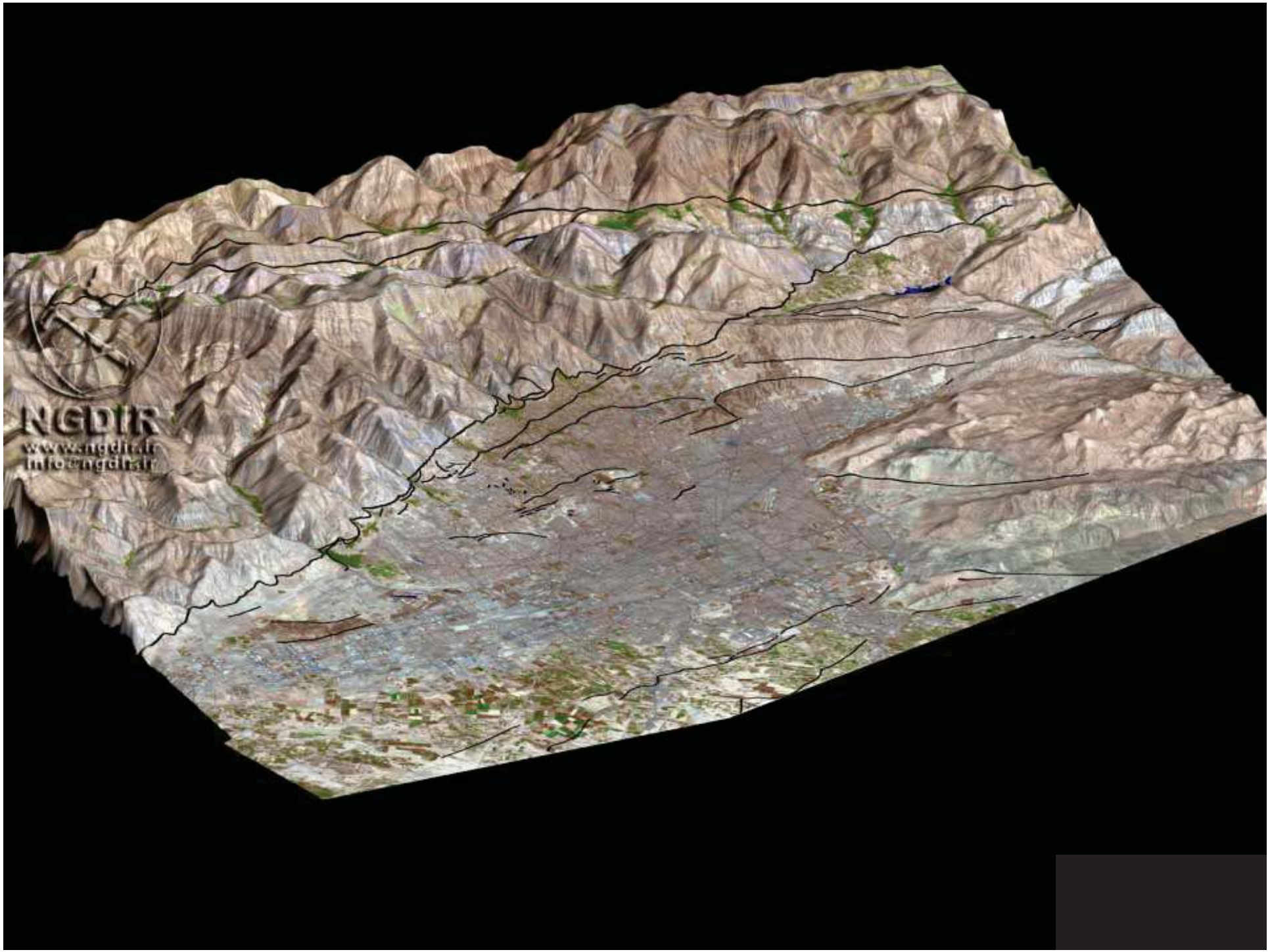


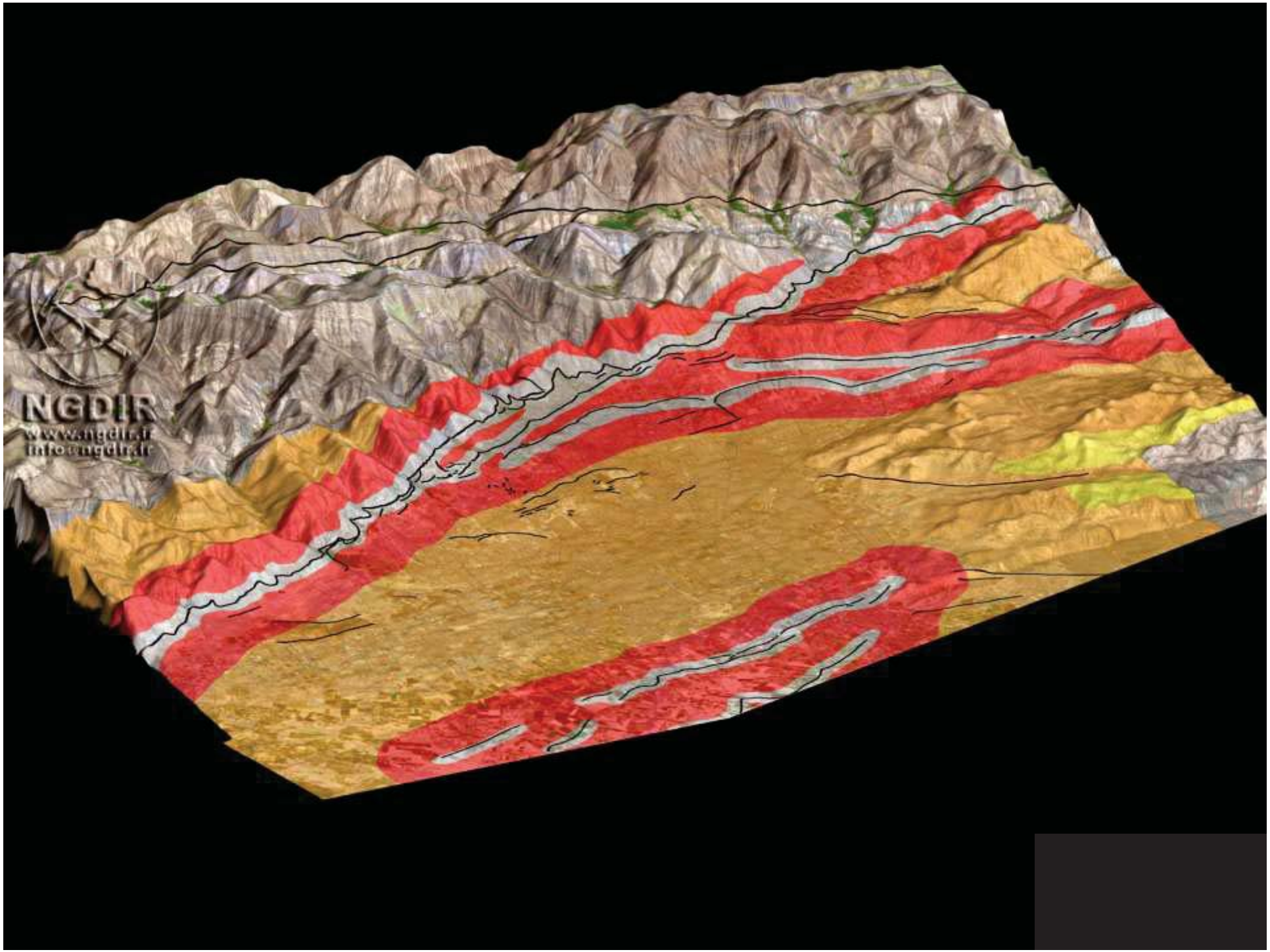
JICA report 2000

Age of buildings in Tehran



JICA report 2000


NGDIR
www.ngdir.ir
info@ngdir.ir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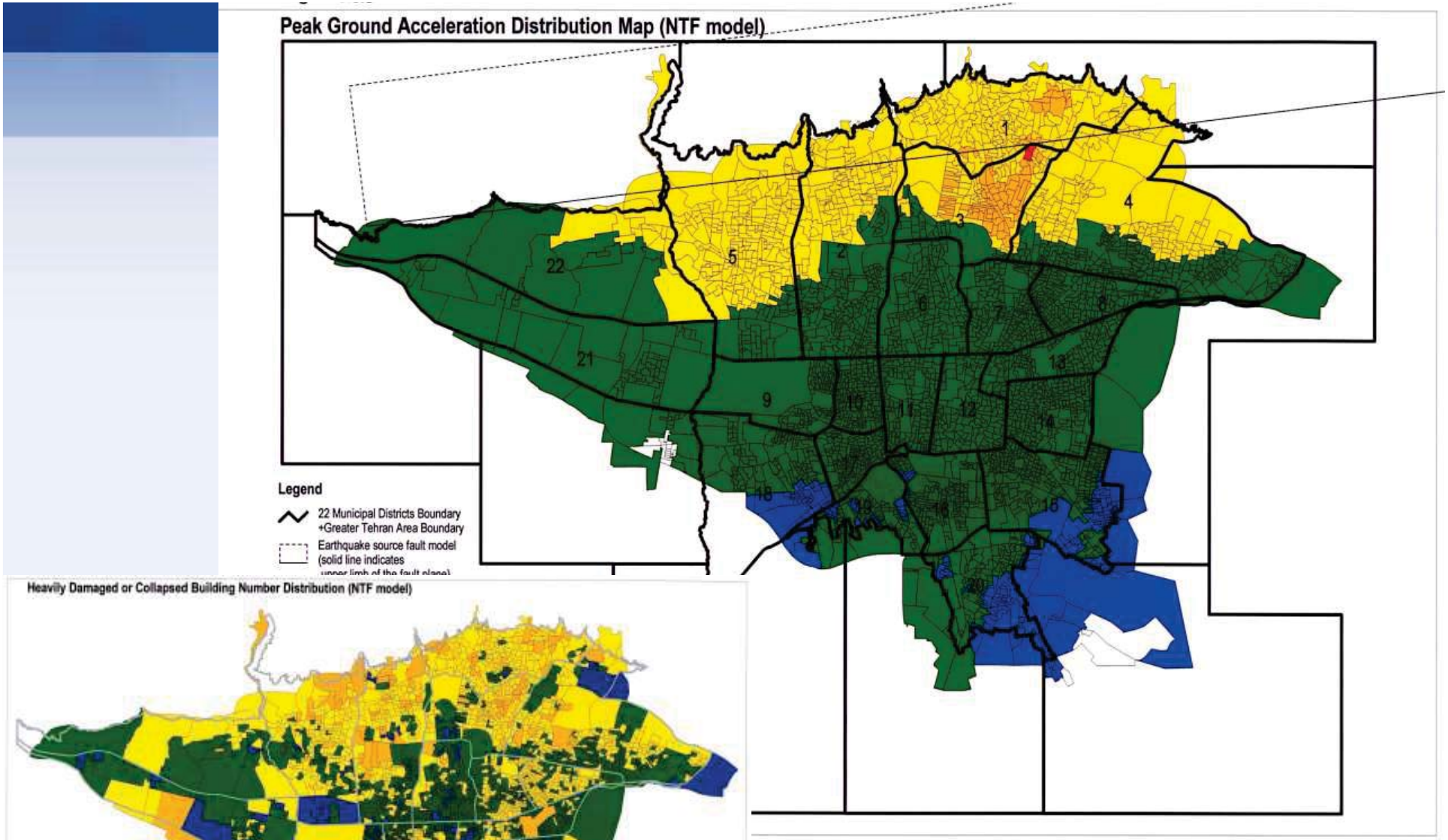
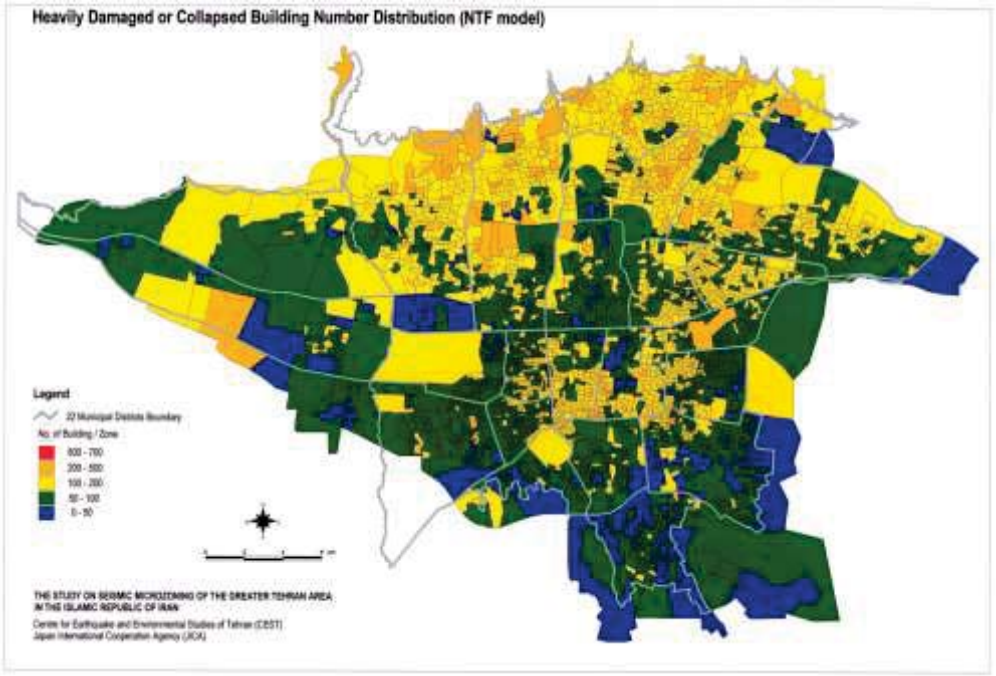
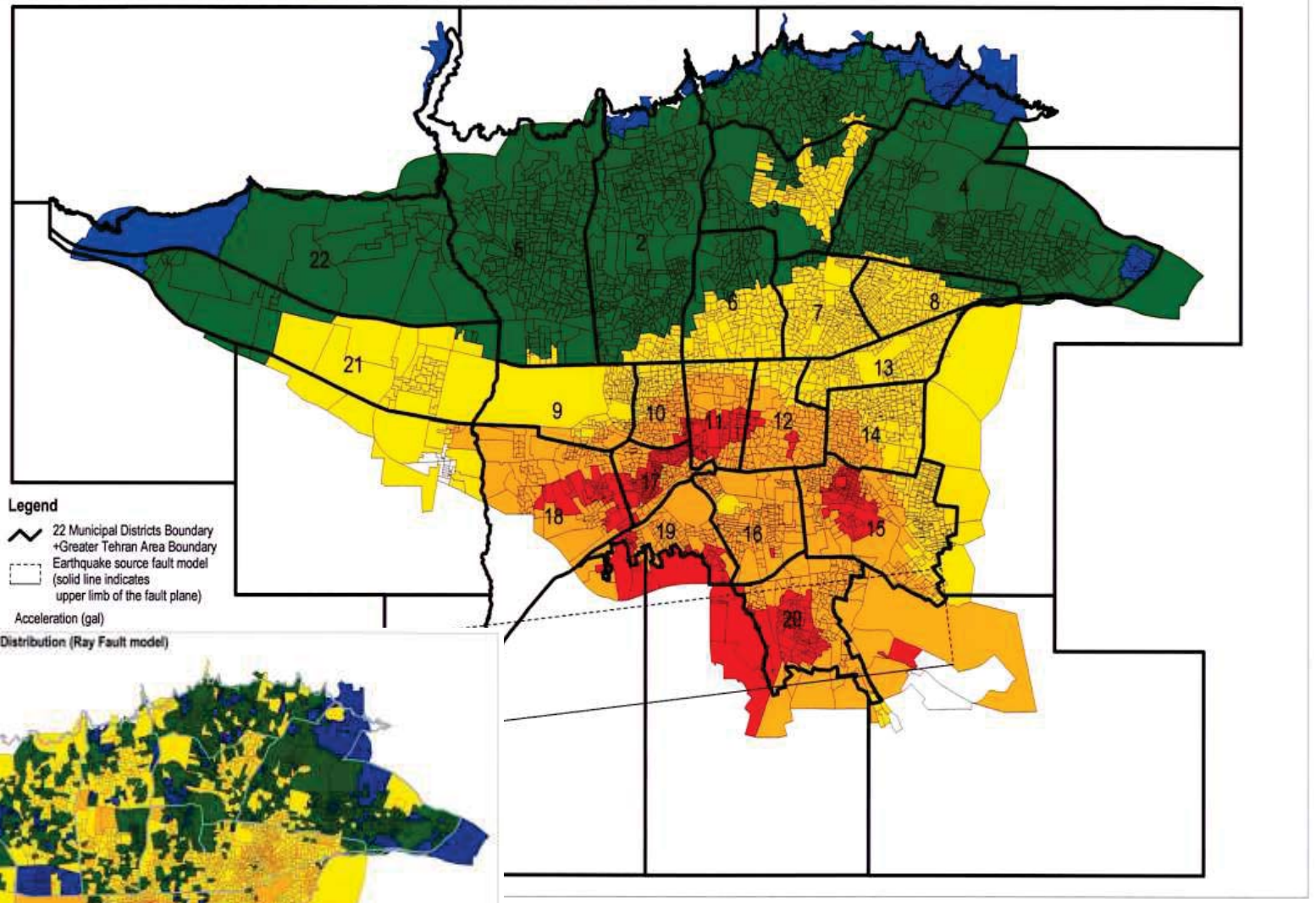




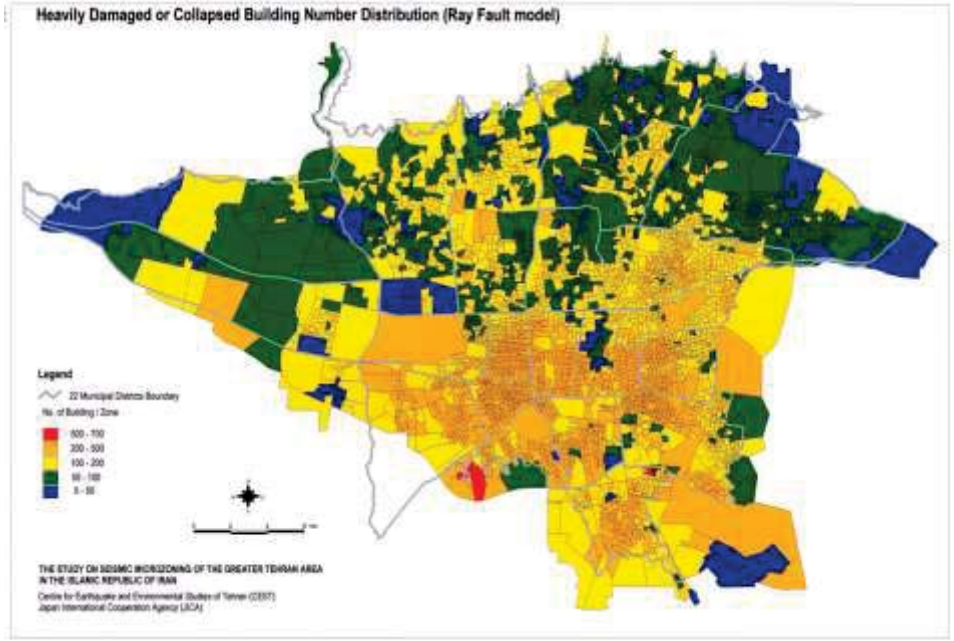
JICA report 2000

Figure 3.5.2

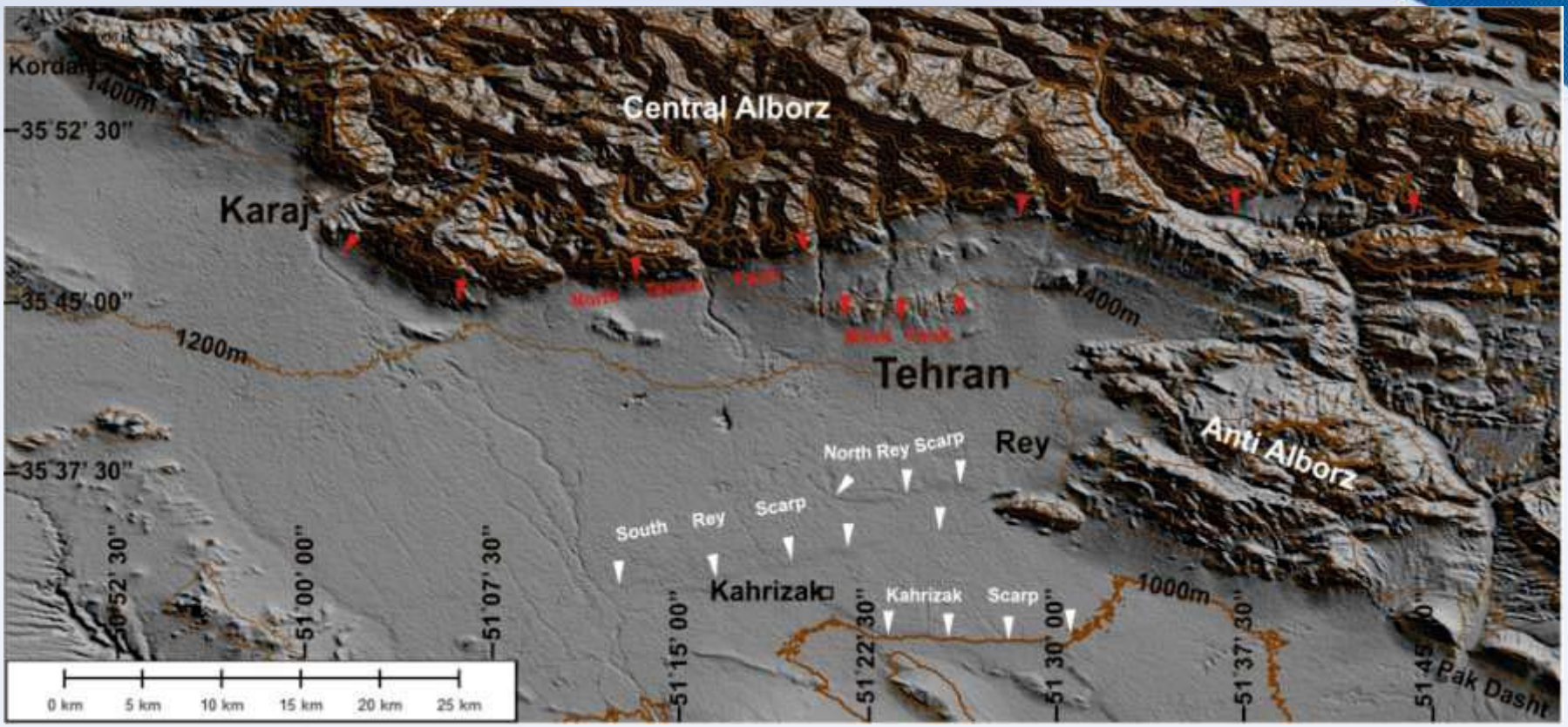
Peak Ground Acceleration Distribution Map (Ray Fault model)



Heavily Damaged or Collapsed Building Number Distribution (Ray Fault model)



JICA report 2000

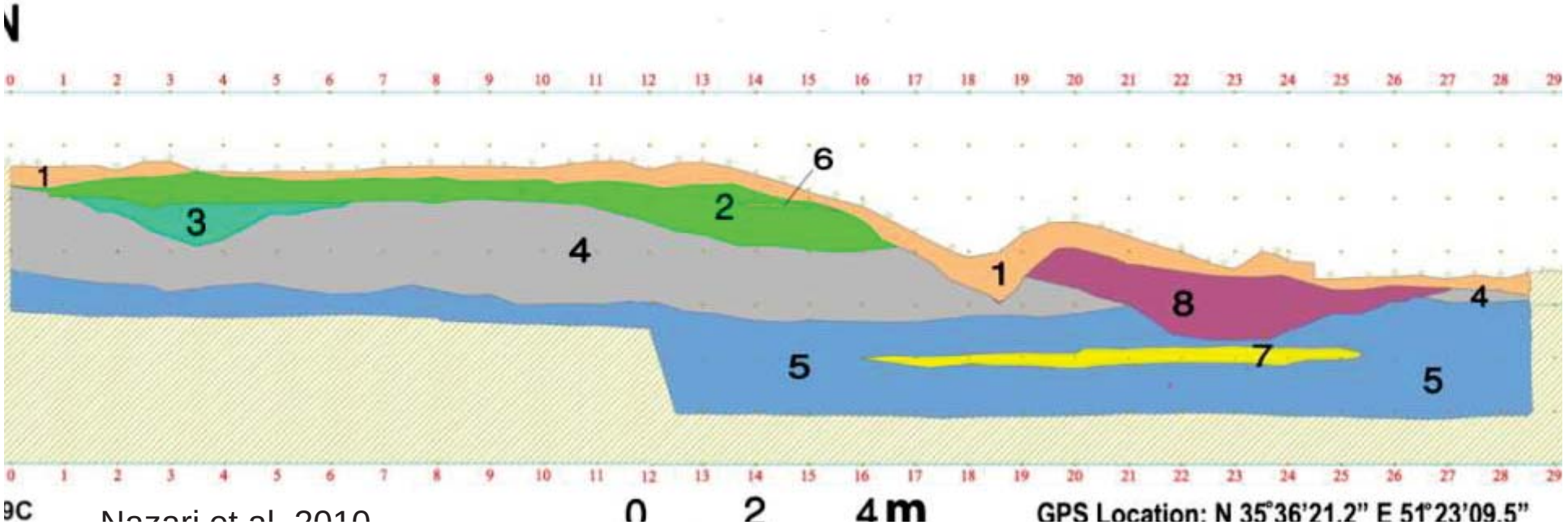


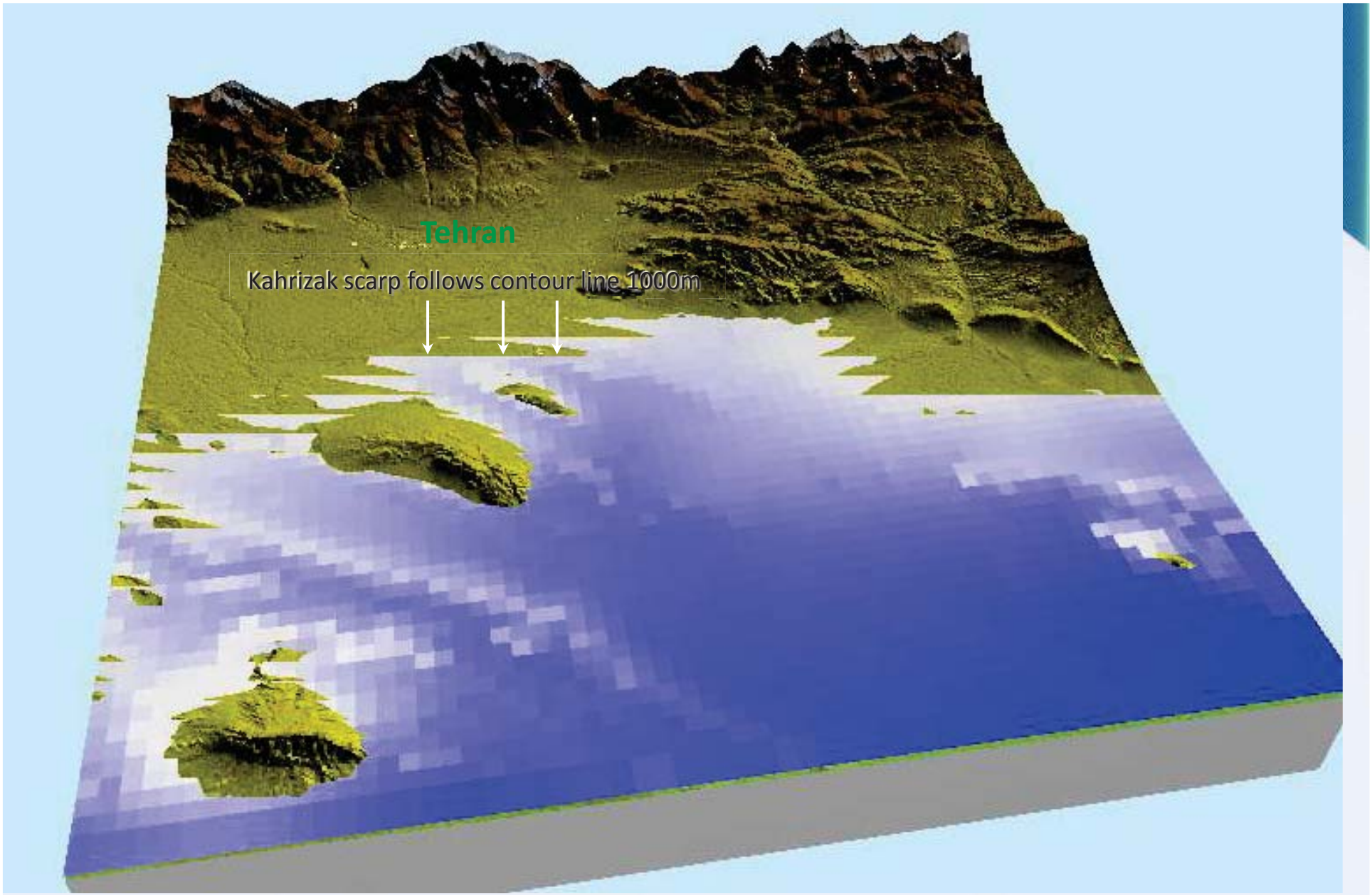
SRTM image of the Tehran plain. Red triangles indicate the location of the North Tehran fault at the southern foothills of the Central Alborz and the Milad blind thrust fault (Nazari and Ritz, 2008). White triangles point out the North Rey, South Rey and Kahrizak scarps in the southern Tehran plain.
Brown curves are topographic contour lines.

Nazari et al.,2010


V
E
9A

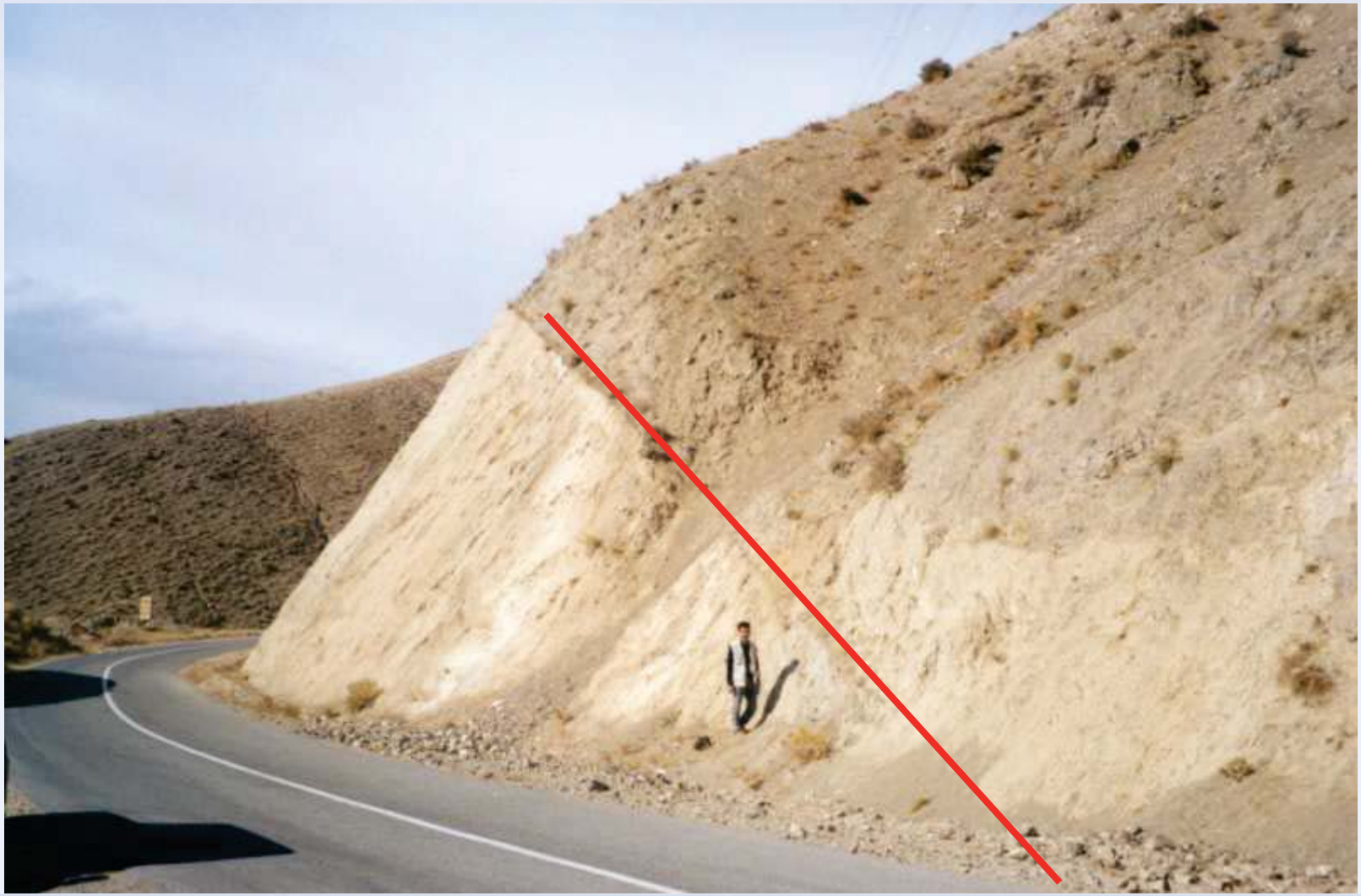

N
Fig 9B


N
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
1
2
3
4
5
6
7
8
1
4
5
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
9C
Nazari et al. 2010
0 2 4 m
GPS Location: N 35°36'21.2" E 51°23'09.5"

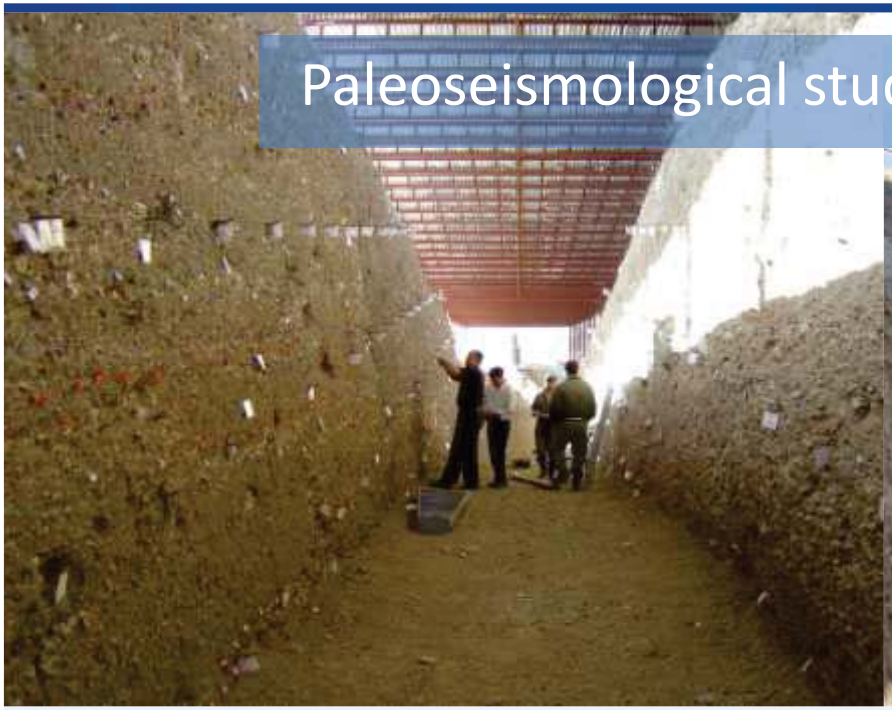


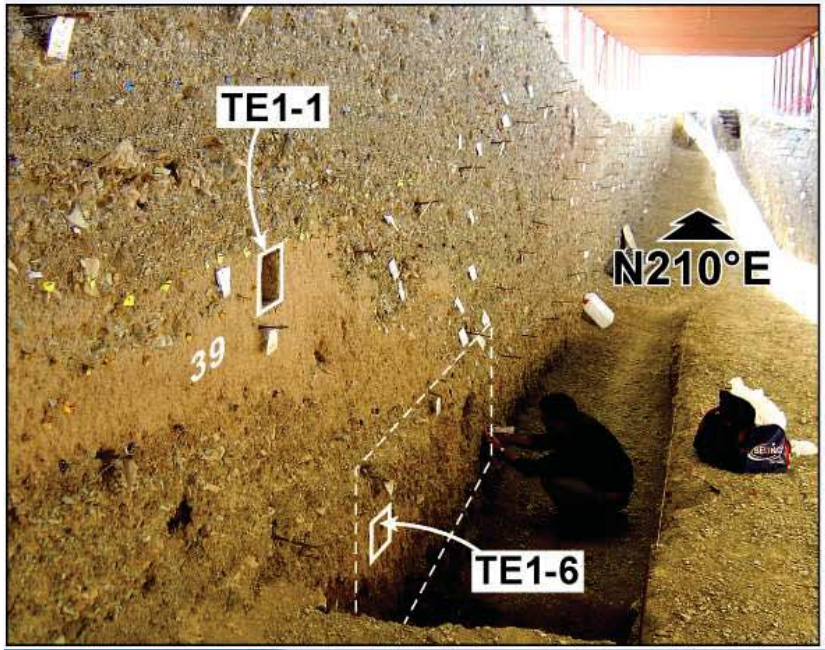
HYPOTHETICAL VIEW OF NORTHERN COASTAL MARGIN OF THE ANCIENT LAKE IN SOUTH OF ALBORZ MOUNTAIN ABOVE TOPOGRAPHIC LEVEL **1000M** THAT CORRESPONDS TO PRESENT TOPOGRAPHIC LEVEL ALONG **KAHRIZAK SCARP**.

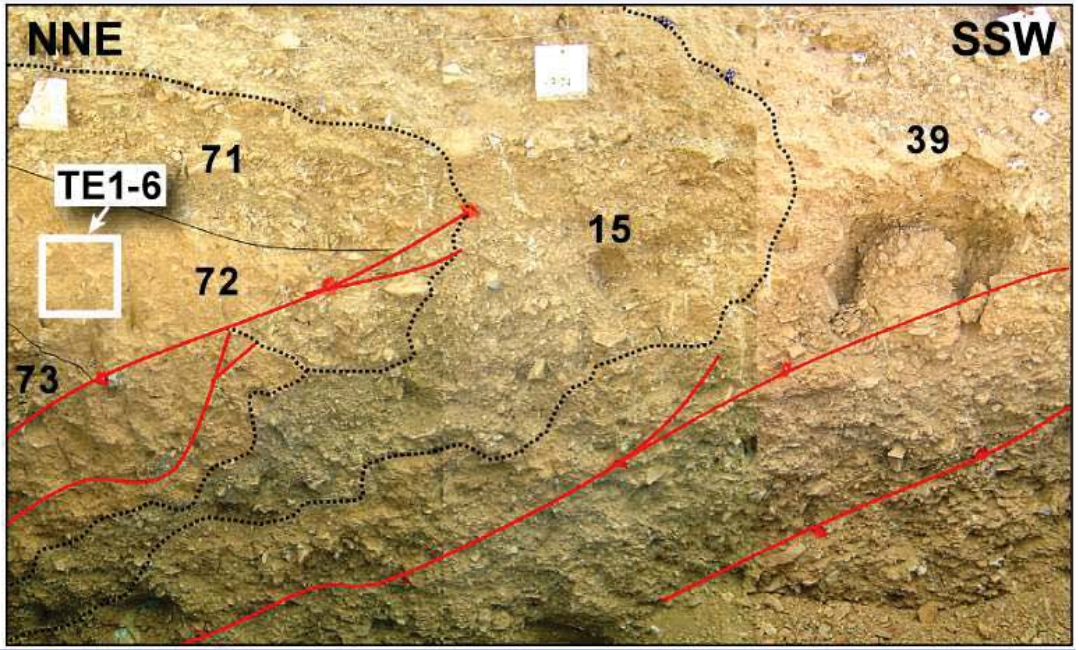
The North Tehran Fault

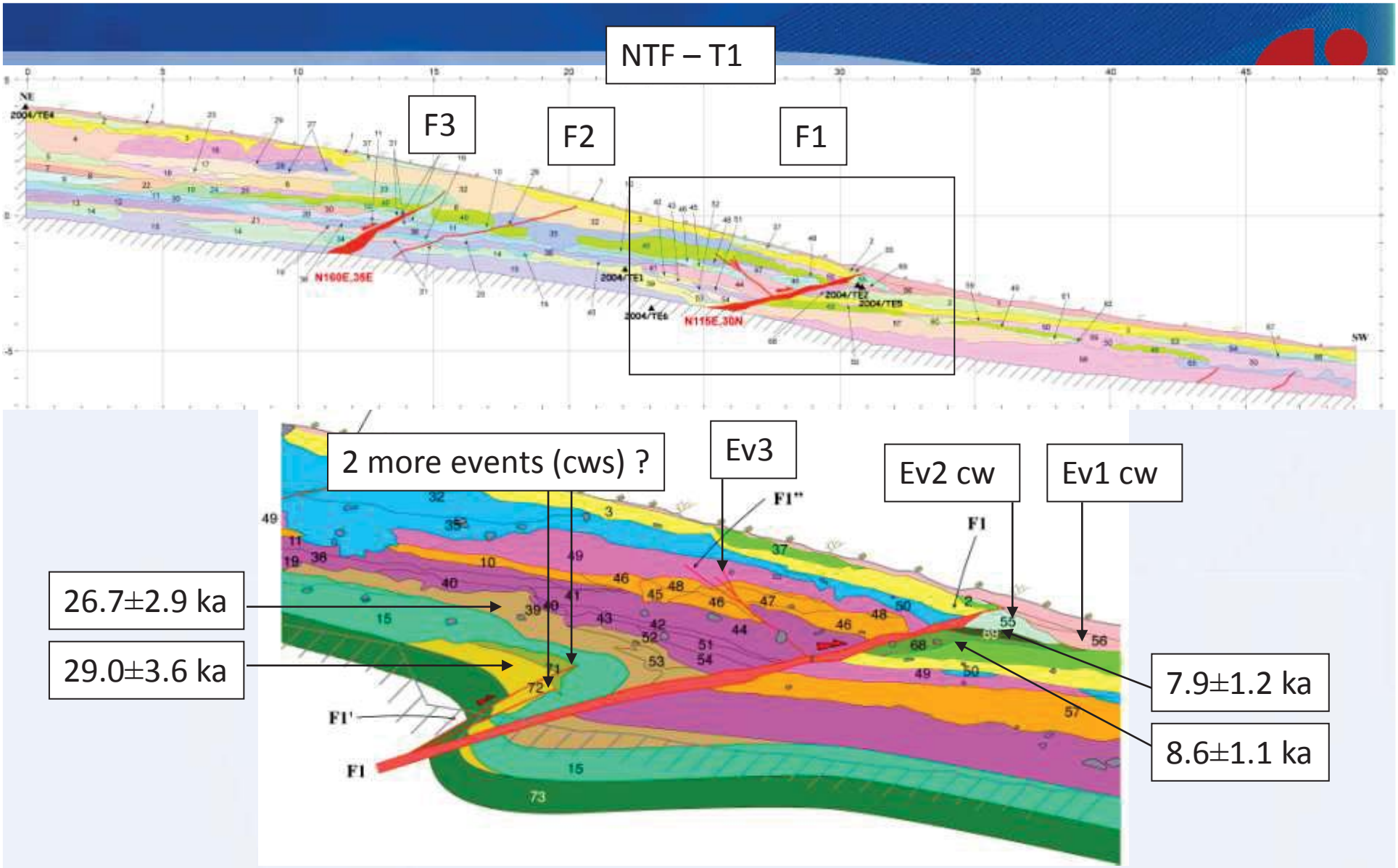


Paleoseismological study on the North Tehran Fault



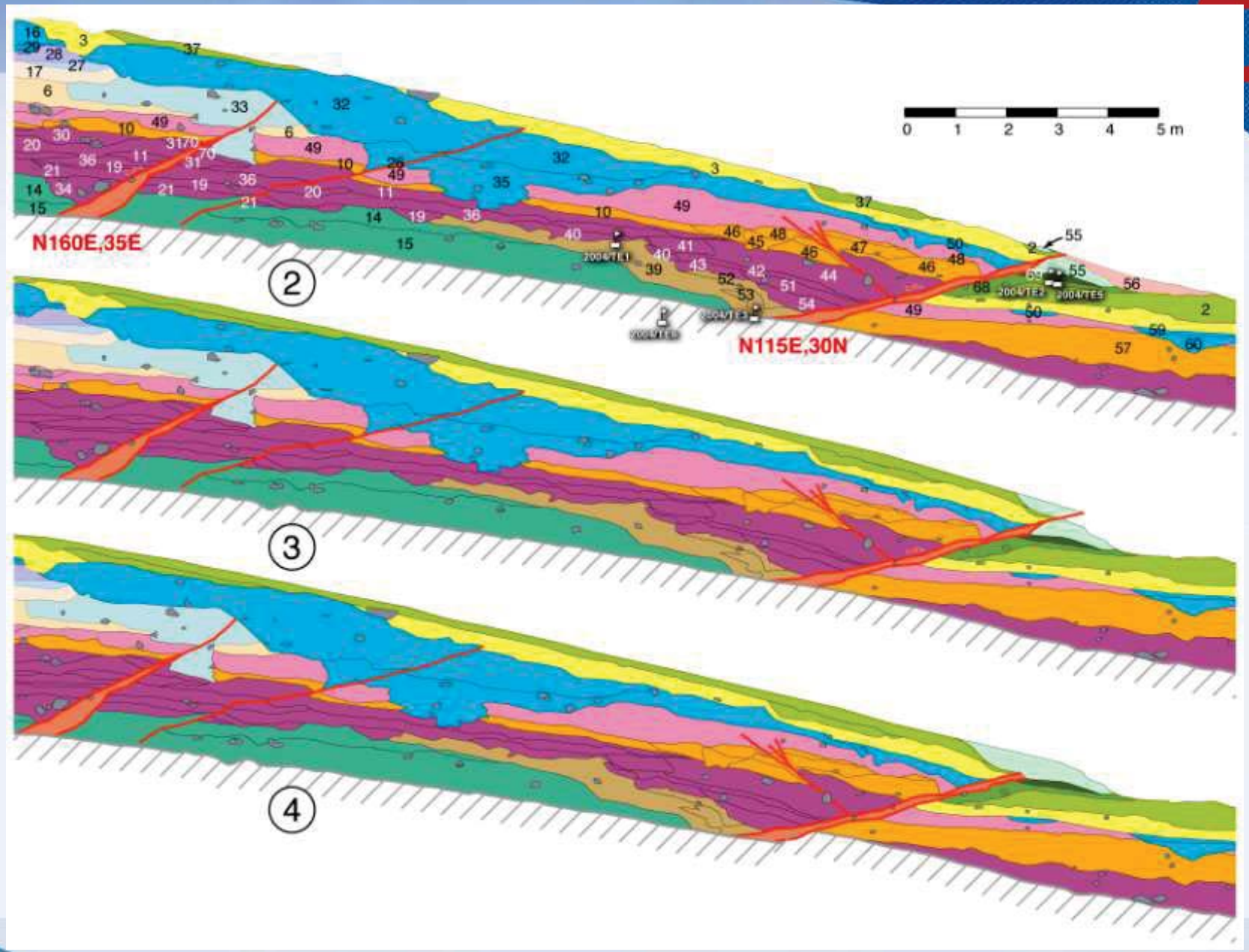




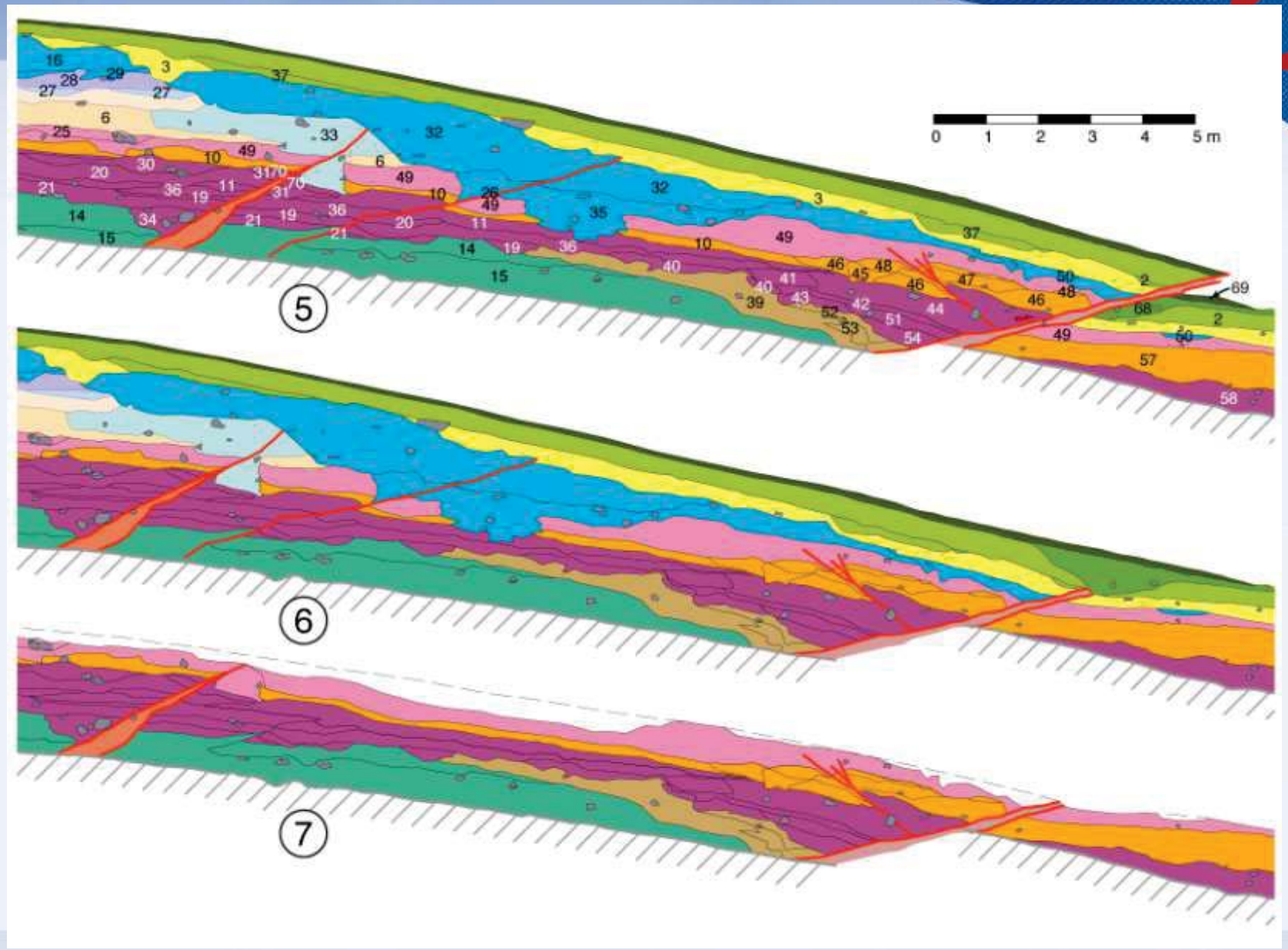


5 events on F1/F1'' (+ 3 on F2/F3 ?): 5 - 8 events during the past ~30 ka
(2 last events occurred during the past 8 ka)
Mw > 6.5 (Mw max 7.1)

Ritz et al. 2012

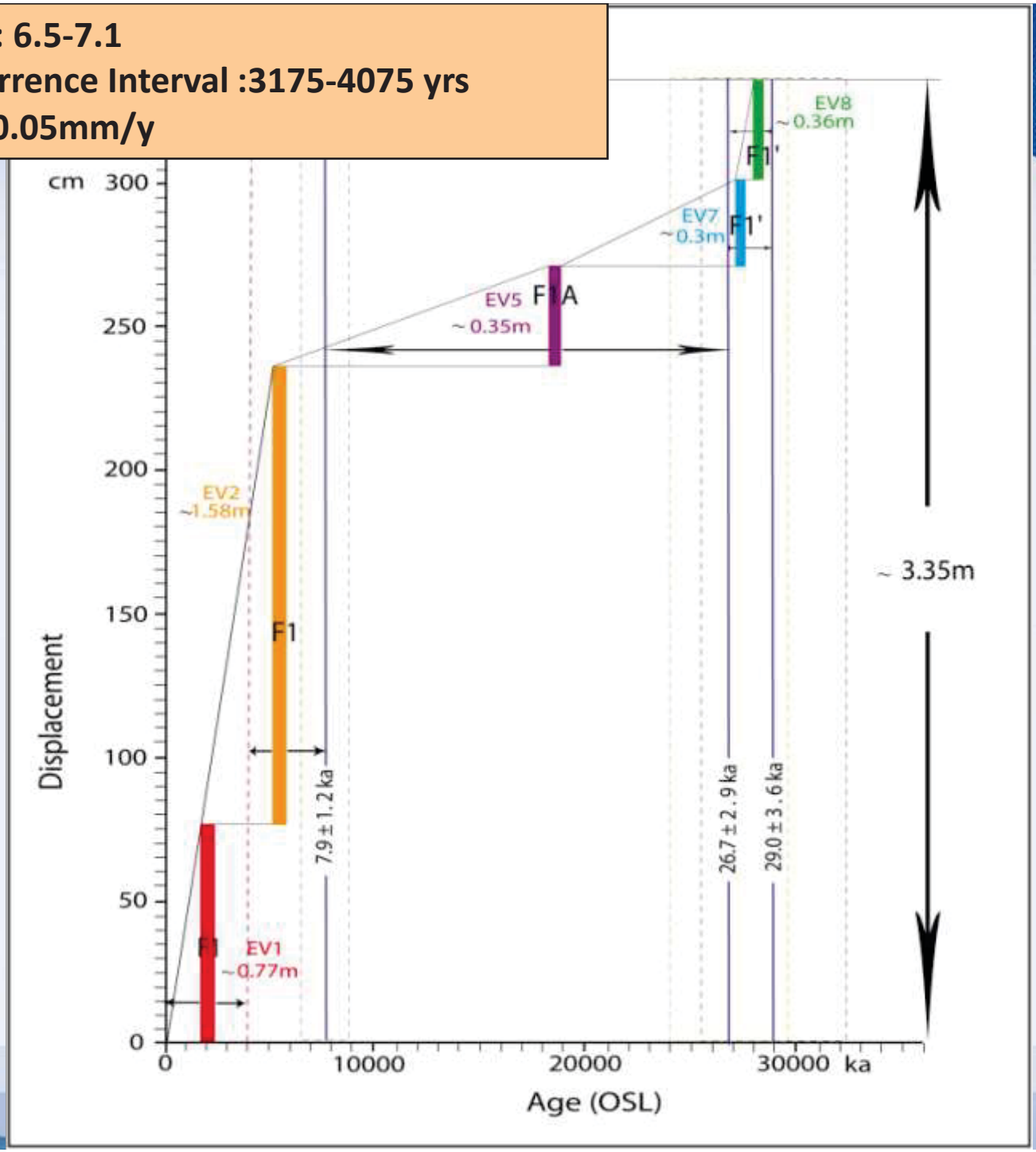


Ritz et al. 2012

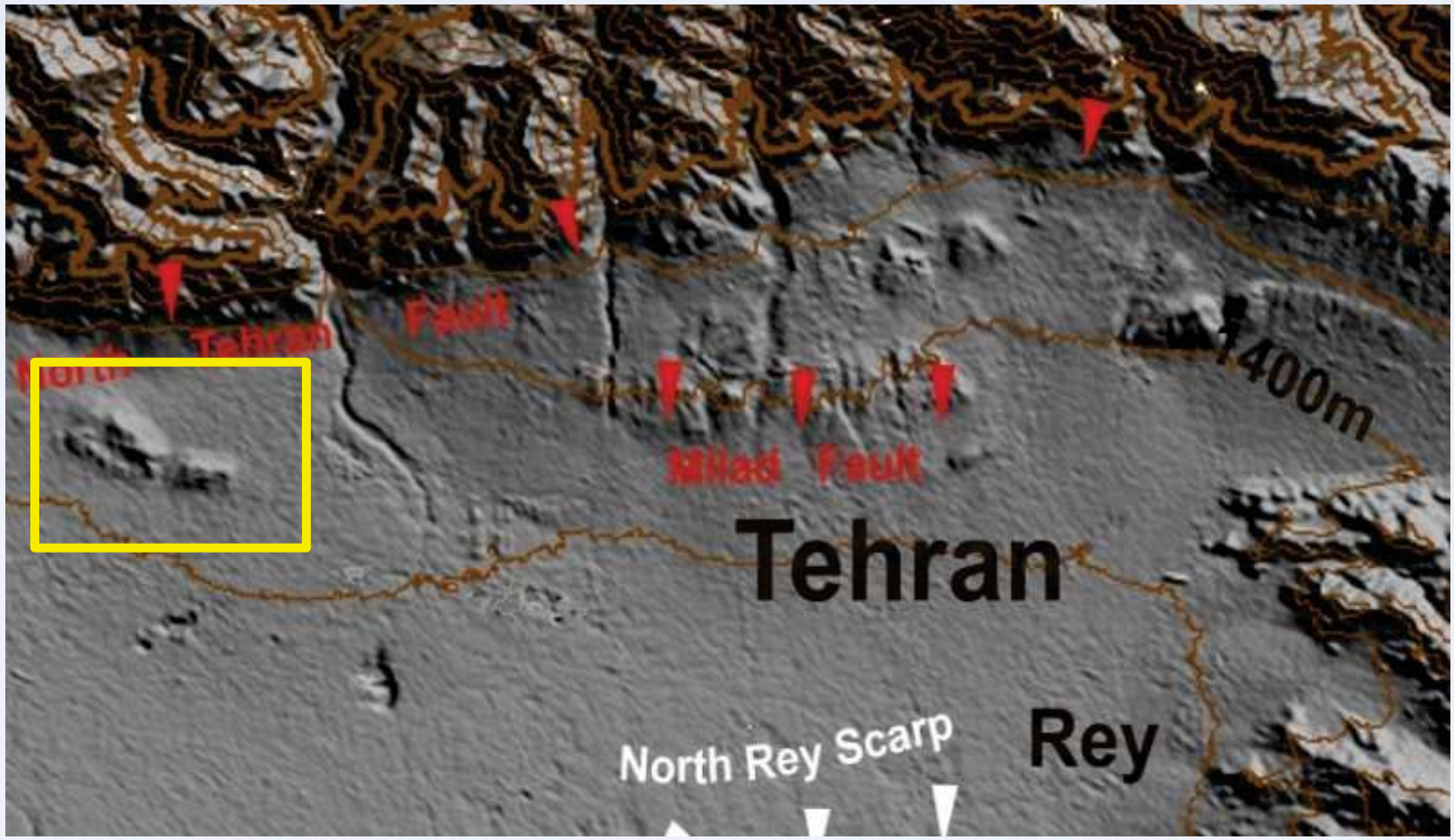


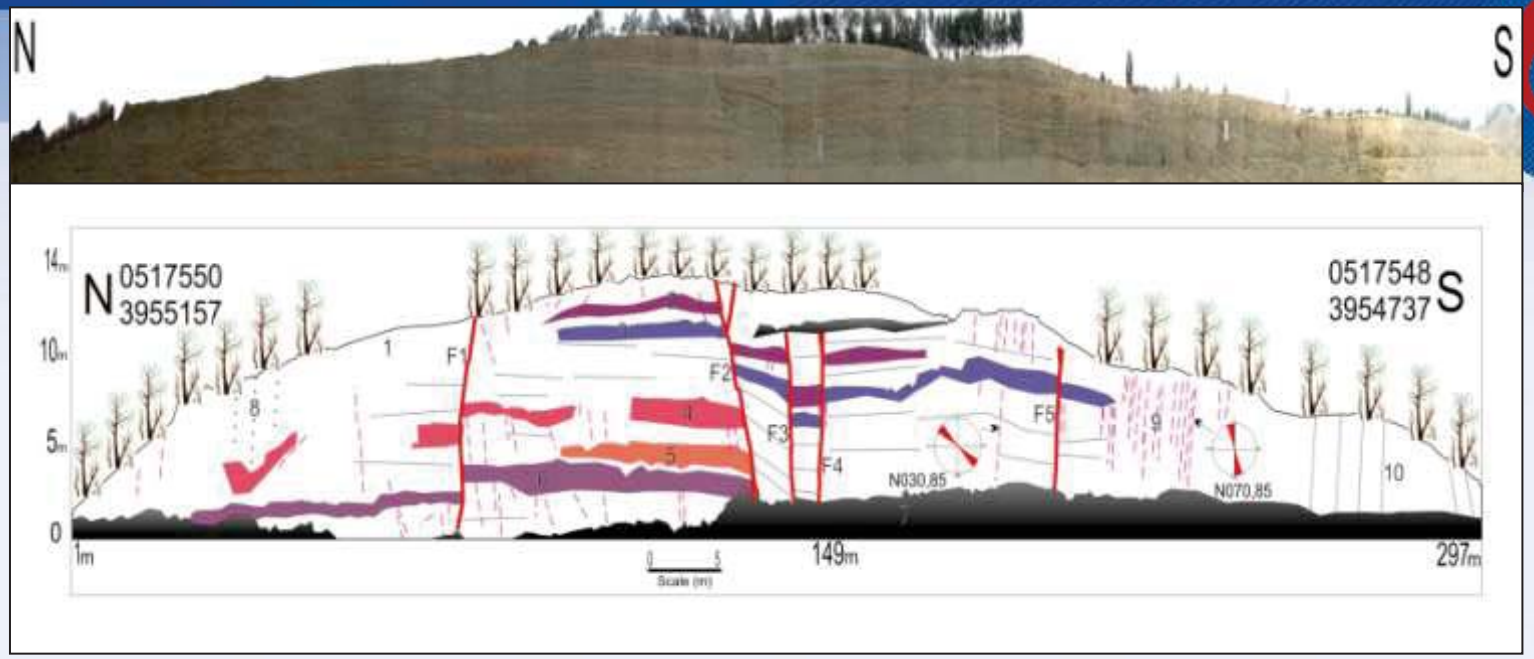
Ritz et al. 2012

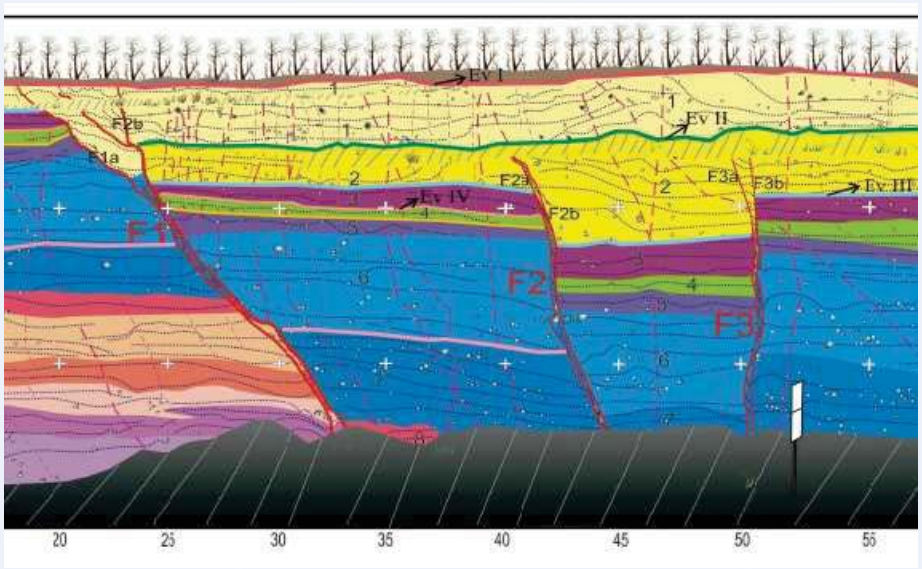
Magnitudes Mw : 6.5-7.1
Average of Recurrence Interval :3175-4075 yrs
Slip rate : 0.30 ± 0.05mm/y



The Chitgar blind fault in Tehran

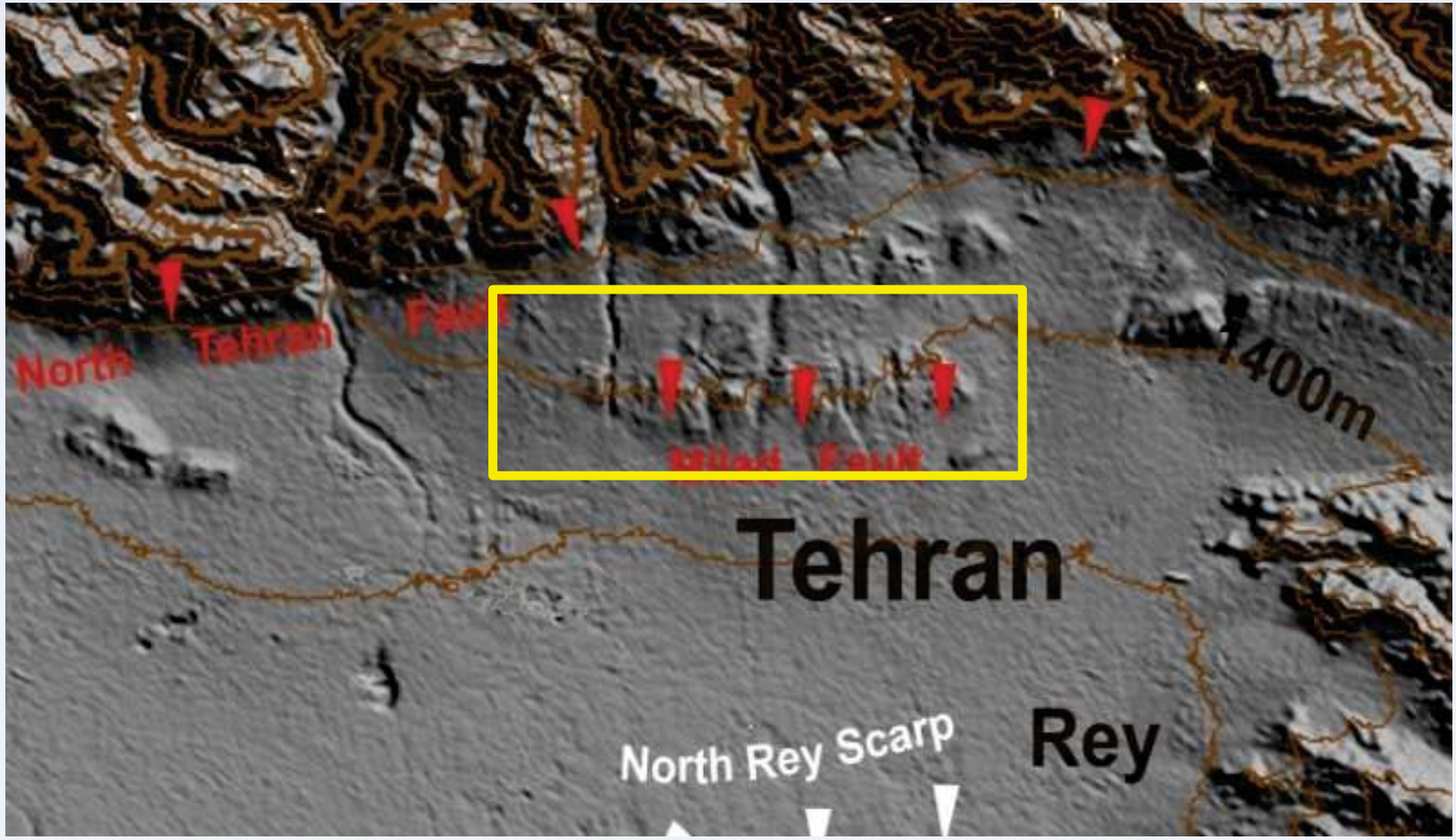






Kaveh et al., 2013

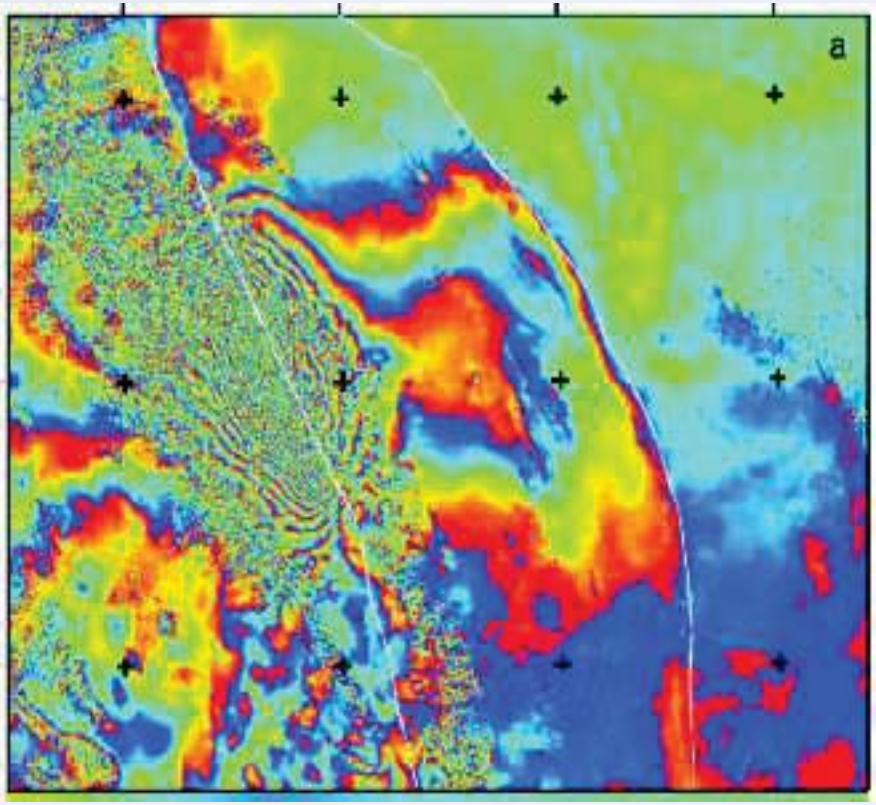
The Pardisan blind fault in Tehran

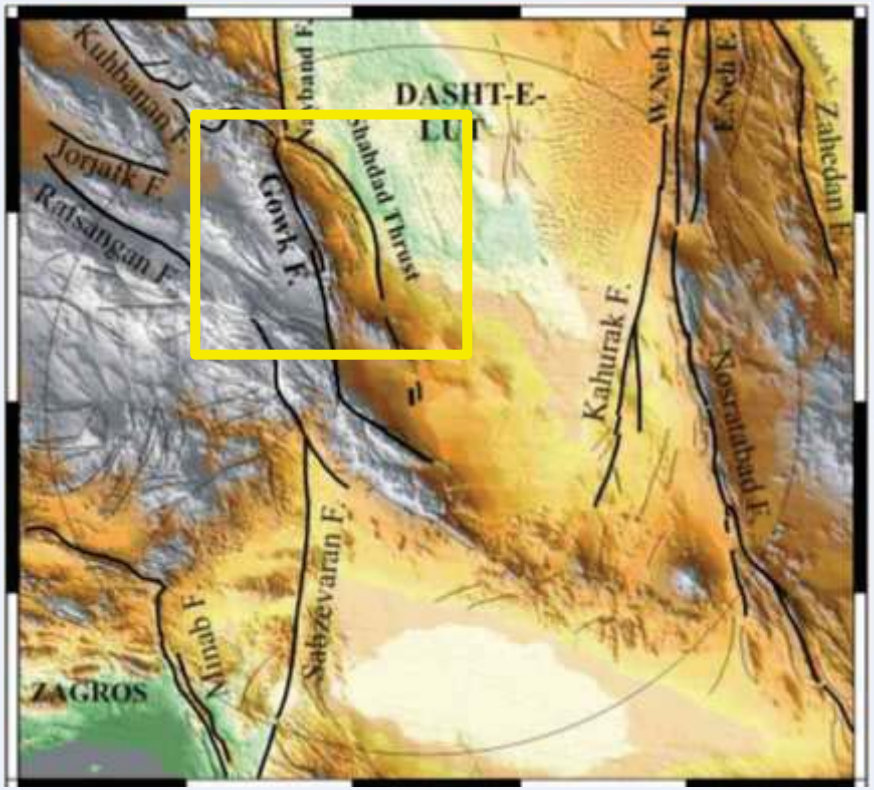


Incision on the hanging wall of the the Pardisan blind fault

Dating site for the Pardisan blind fault in Tehran

Talebian et al. In preparation

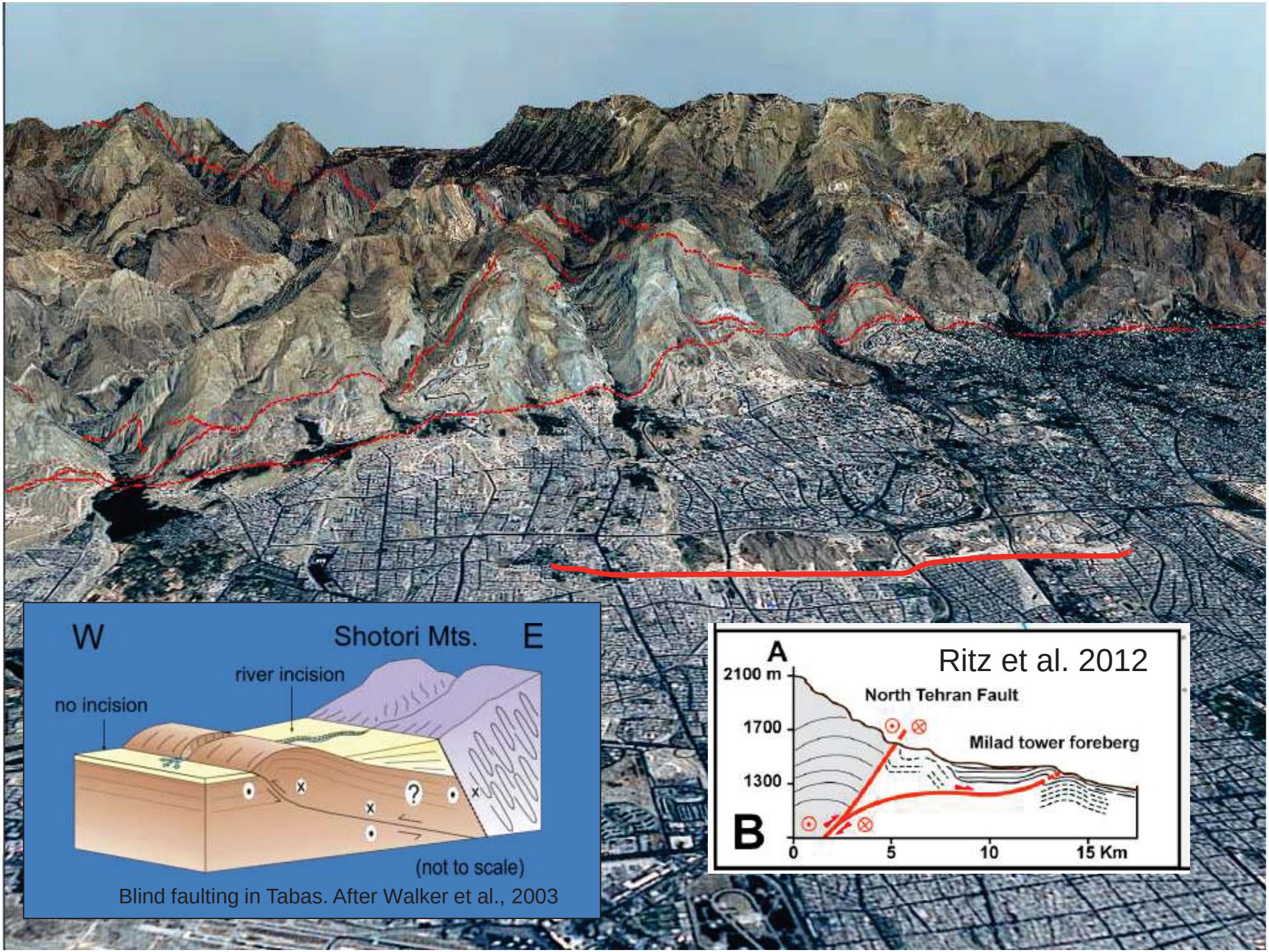




Berberian et al., (Golbaf)

Incision on the hanging wall of the the Sahdad thrust- Eastern Iran

Jackson 2001


W
Shotori Mts.
E
river incision
no incision
?
(not to scale)
Blind faulting in Tabas. After Walker et al., 2003
A
2100 m
1700
1300
B
North Tehran Fault
Milad tower foreberg
0
5
10
15 Km
Ritz et al. 2012

The end