Tectonic Interpretation of Active Fault Extending in Myanmar, Laos and China by Relief Map of ASTER GDEM and Harmonized Geological Map

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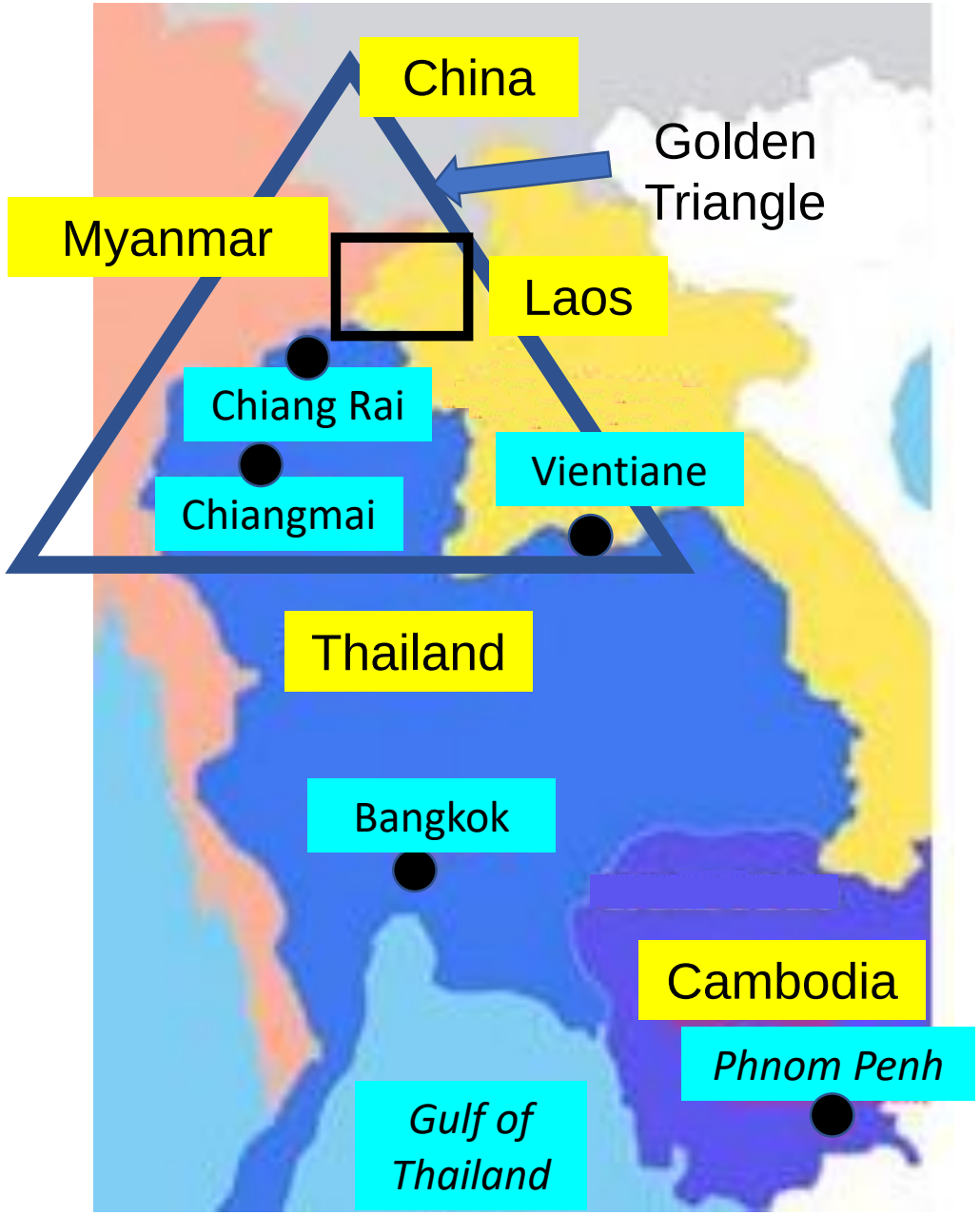
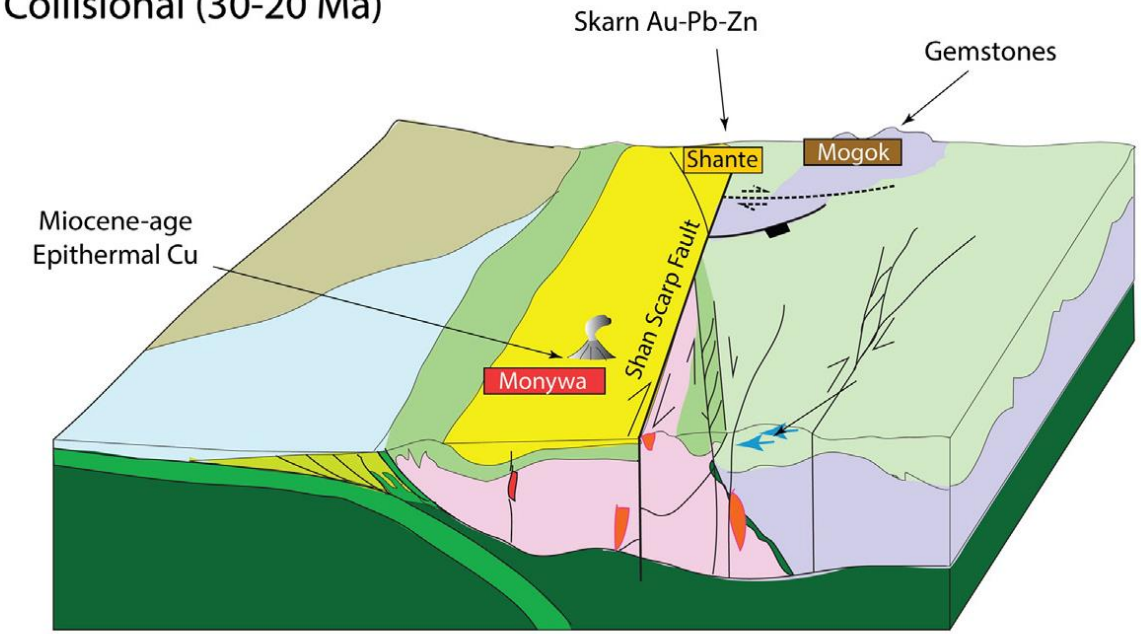
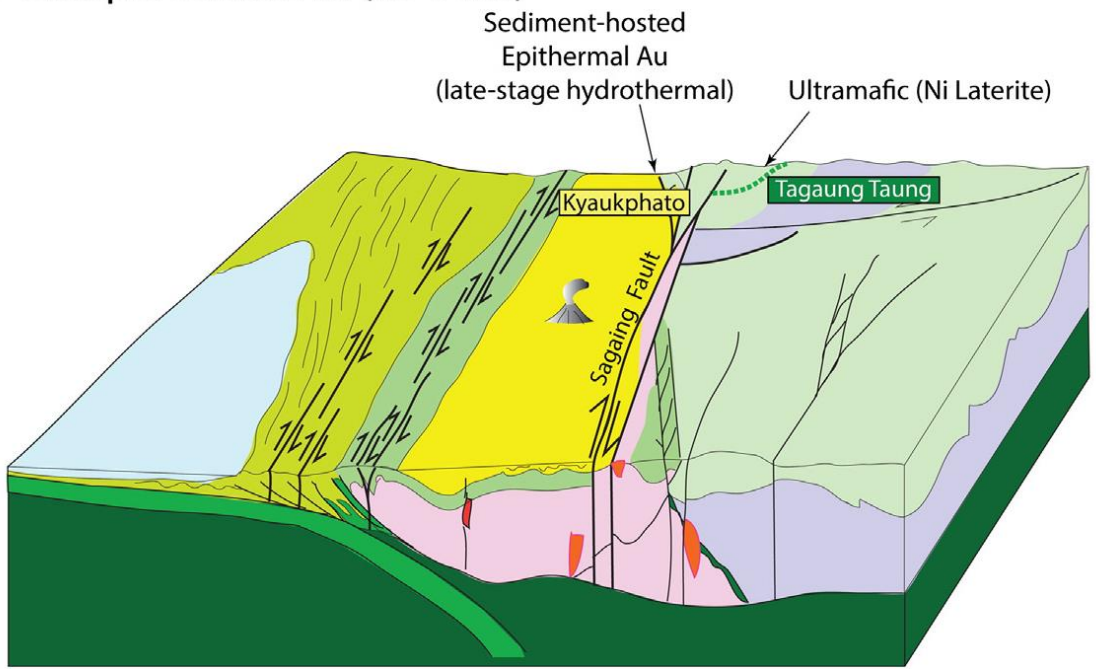
Beijing International Convention Center, CHINA


China
Golden
Triangle
Myanmar
Laos
Chiang Rai
Vientiane
Chiangmai
Thailand
Bangkok
Cambodia
Phnom Penh
Gulf of
Thailand

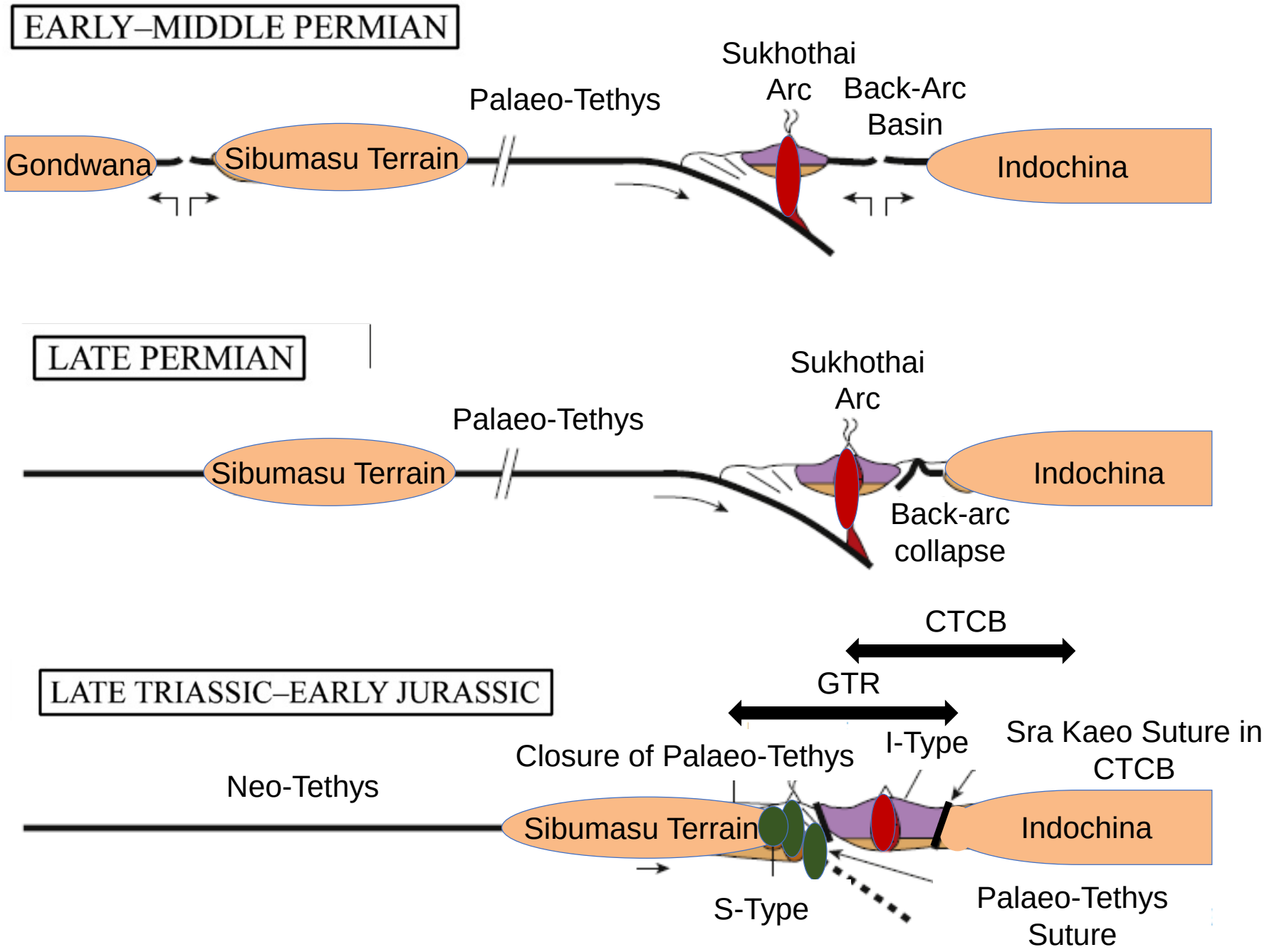
c) Late Collisional (30-20 Ma)



d) Highly-Oblique Collisional (15-0 Ma)



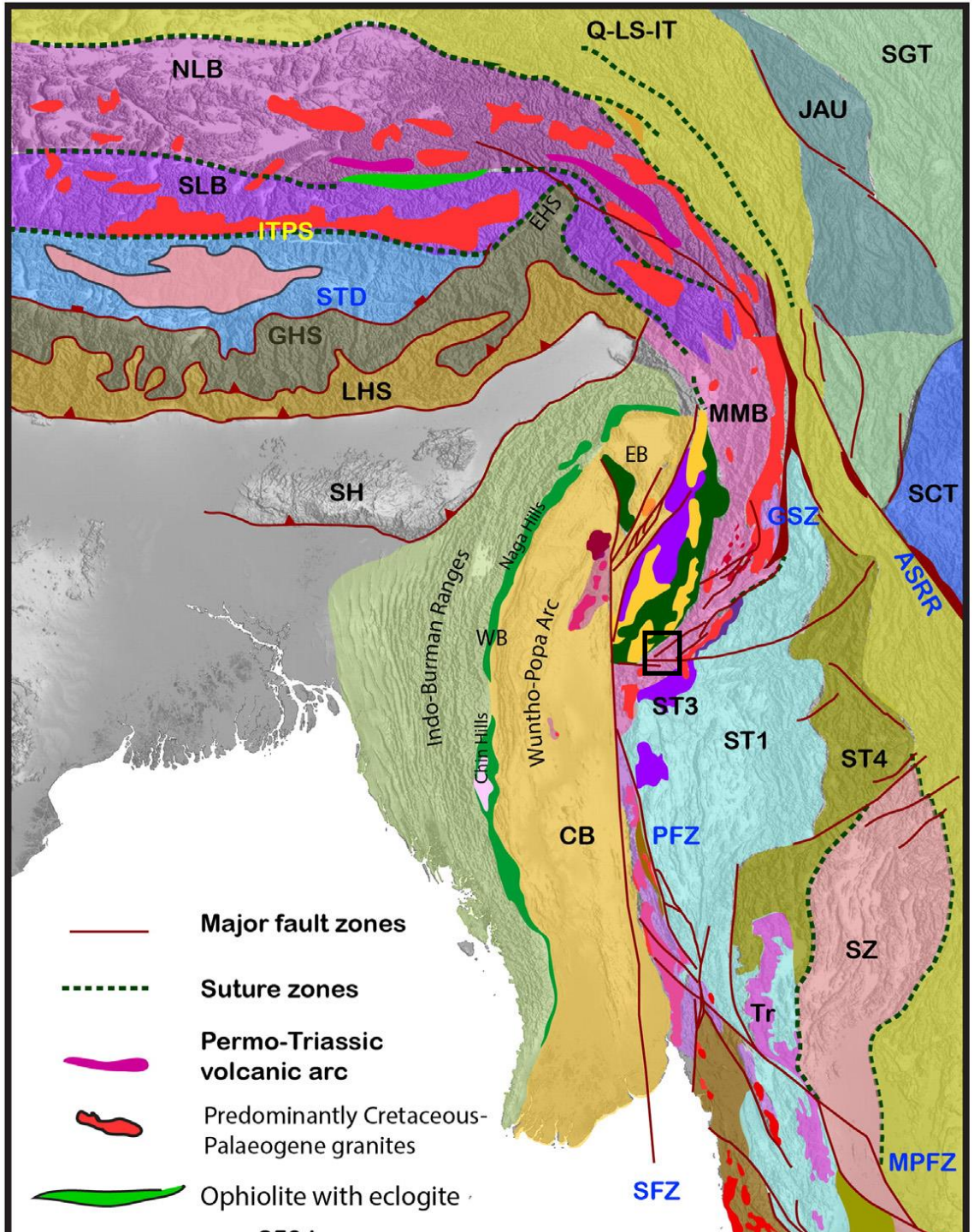
Nicholas et al. (2016)

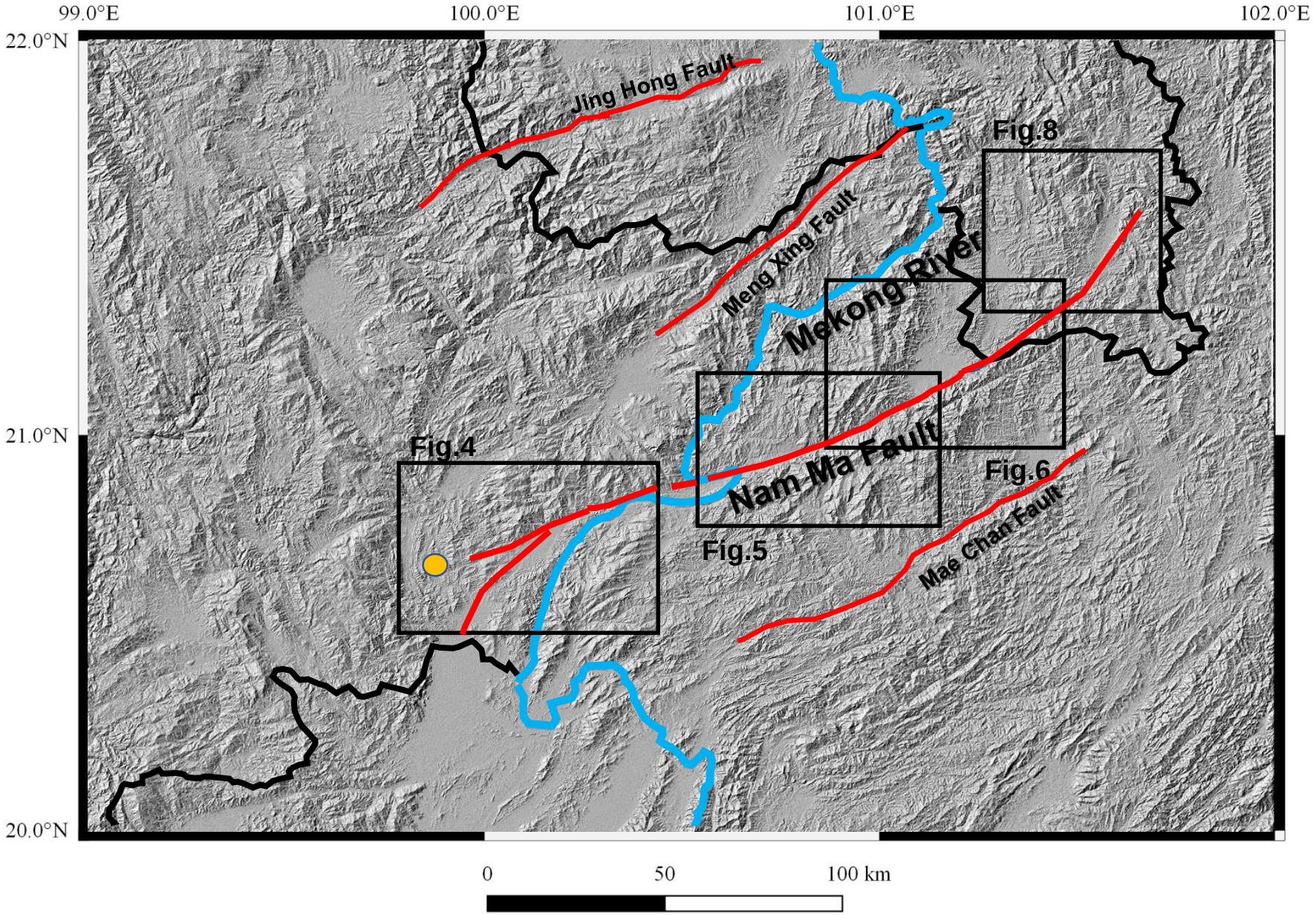

EARLY–MIDDLE PERMIAN
Sukhothai
Arc
Back-Arc
Basin
Palaeo-Tethys
Gondwana
Sibumasu Terrain
Indochina
LATE PERMIAN
Sukhothai
Arc
Palaeo-Tethys
Sibumasu Terrain
Indochina
Back-arc
collapse
CTCB
GTR
LATE TRIASSIC–EARLY JURASSIC
I-Type
Sra Kaeo Suture in
CTCB
Closure of Palaeo-Tethys
Neo-Tethys
Sibumasu Terrain
Indochina
S-Type
Palaeo-Tethys
Suture

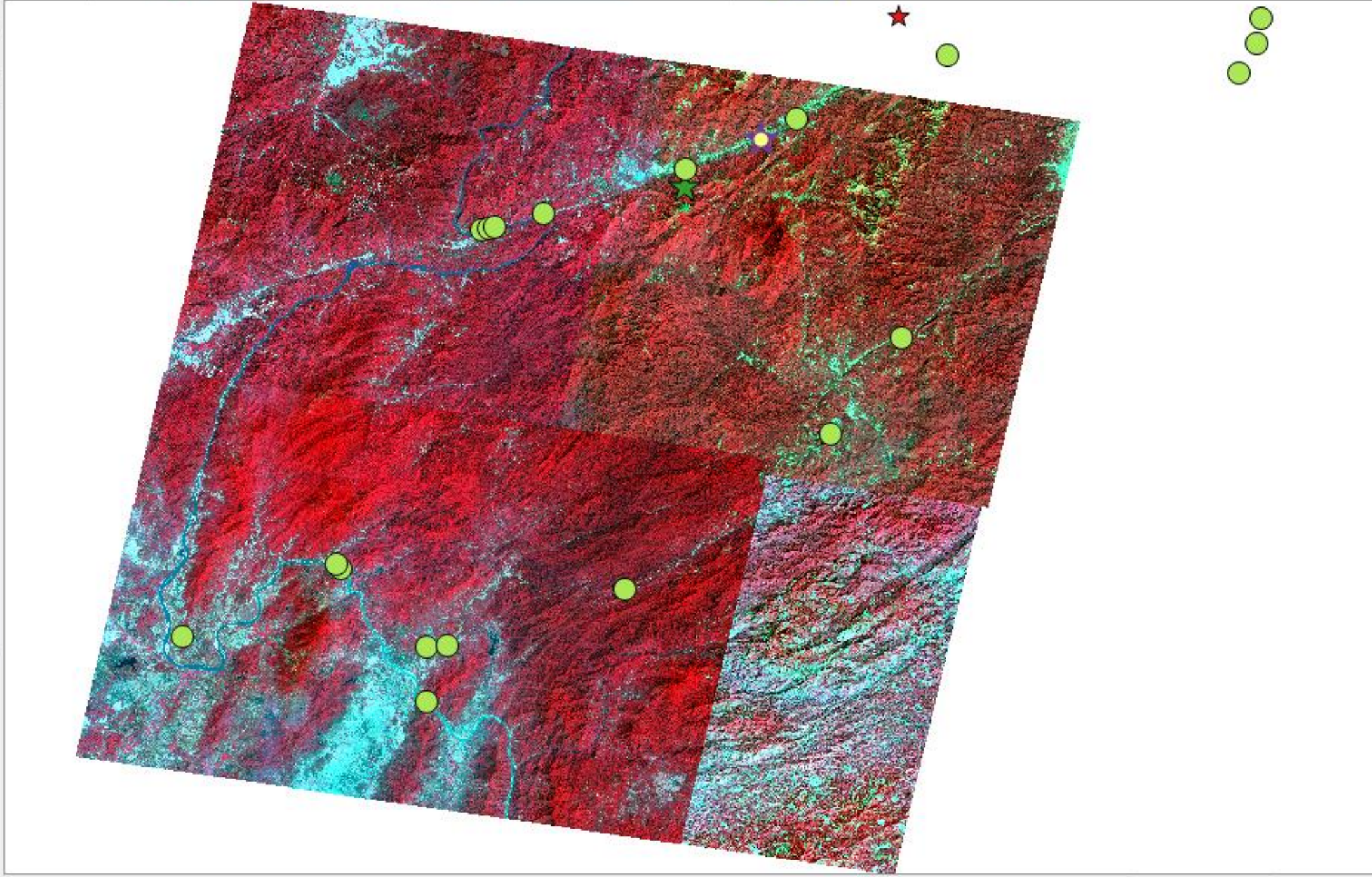
The tectonic and metallogenic framework of Myanmar: A Tethyan
mineral system

Nicholas J. Gardiner a,*, Laurence J. Robb a, Christopher K. Morley b,c, Michael P. Searle a, Peter A. Cawood d, Martin J. Whitehouse e, Christopher L. Kirkland f, Nick M.W. Roberts g, Tin Aung Myint

Ore Geology Reviews 79 (2016) 26–45




99.0°E
100.0°E
101.0°E
102.0°E
22.0°N
21.0°N
20.0°N
Jing Hong Fault
Meng Xing Fault
Mekong River
Nam Ma Fault
Mae Chan Fault
Fig.4
Fig.5
Fig.6
Fig.8
0
50
100 km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71002080316. tracks
71003074813. tracks [1]
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per1
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549
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Scale
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Rotation
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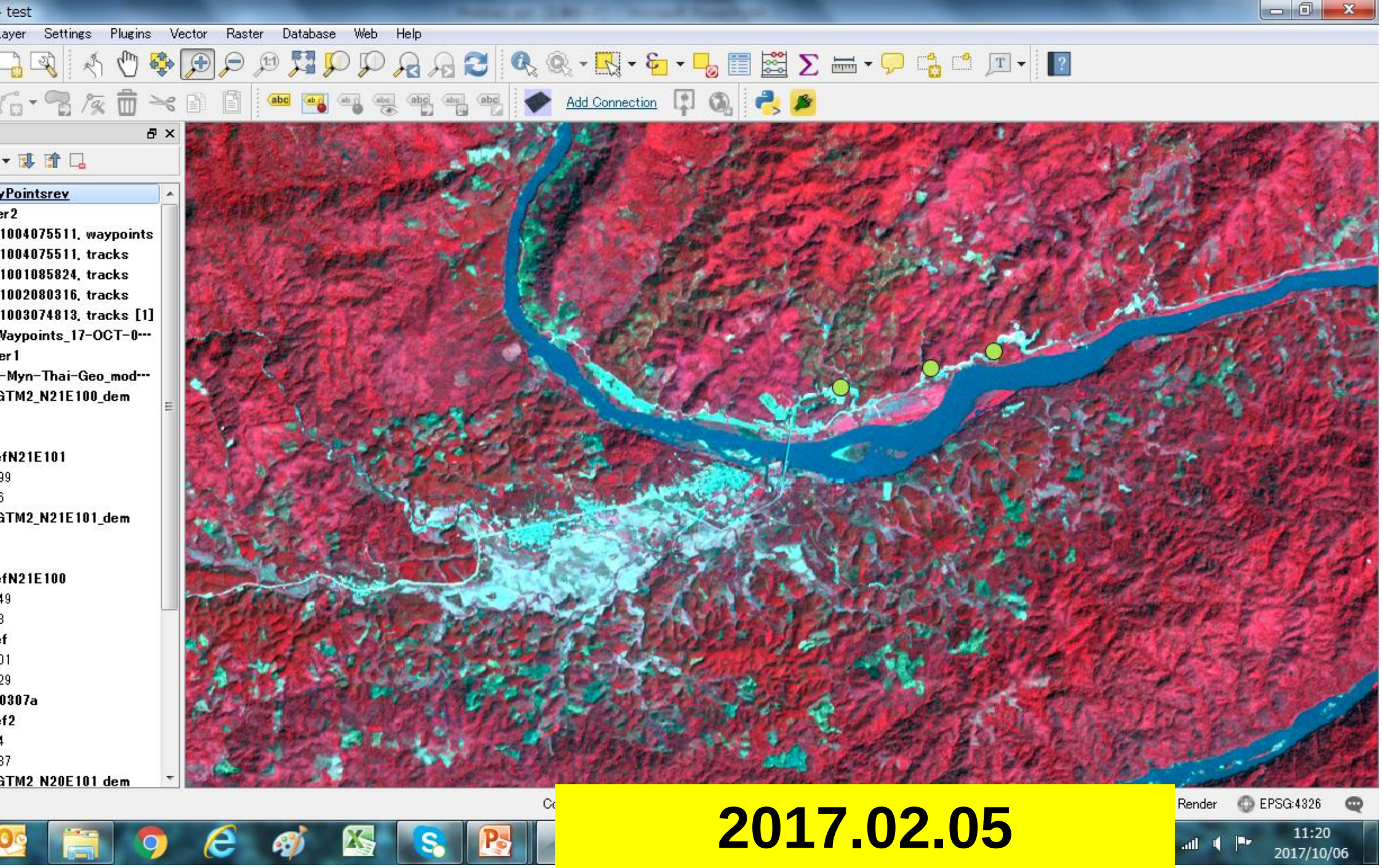
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f2
GTM2_N20E101_dem
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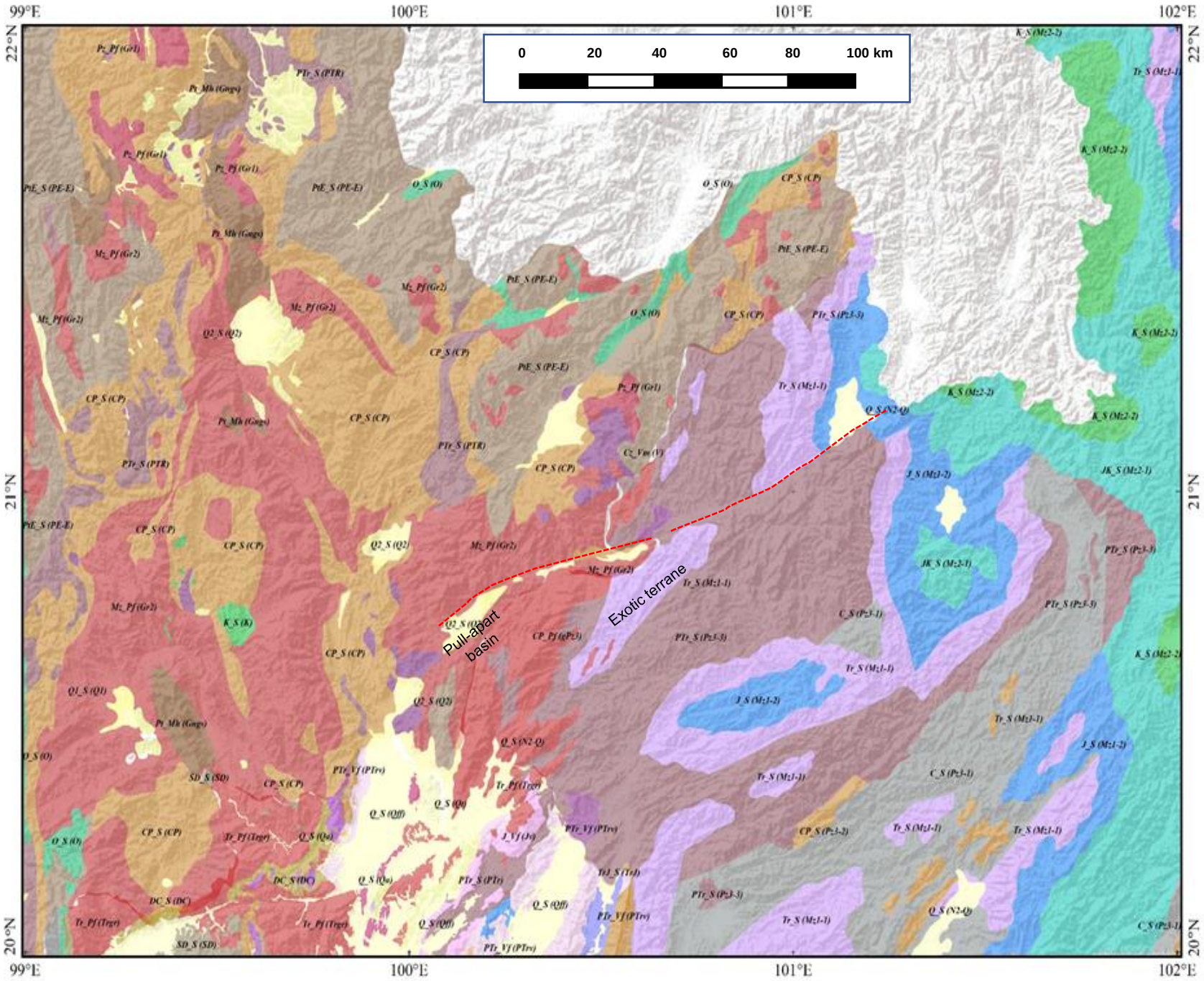
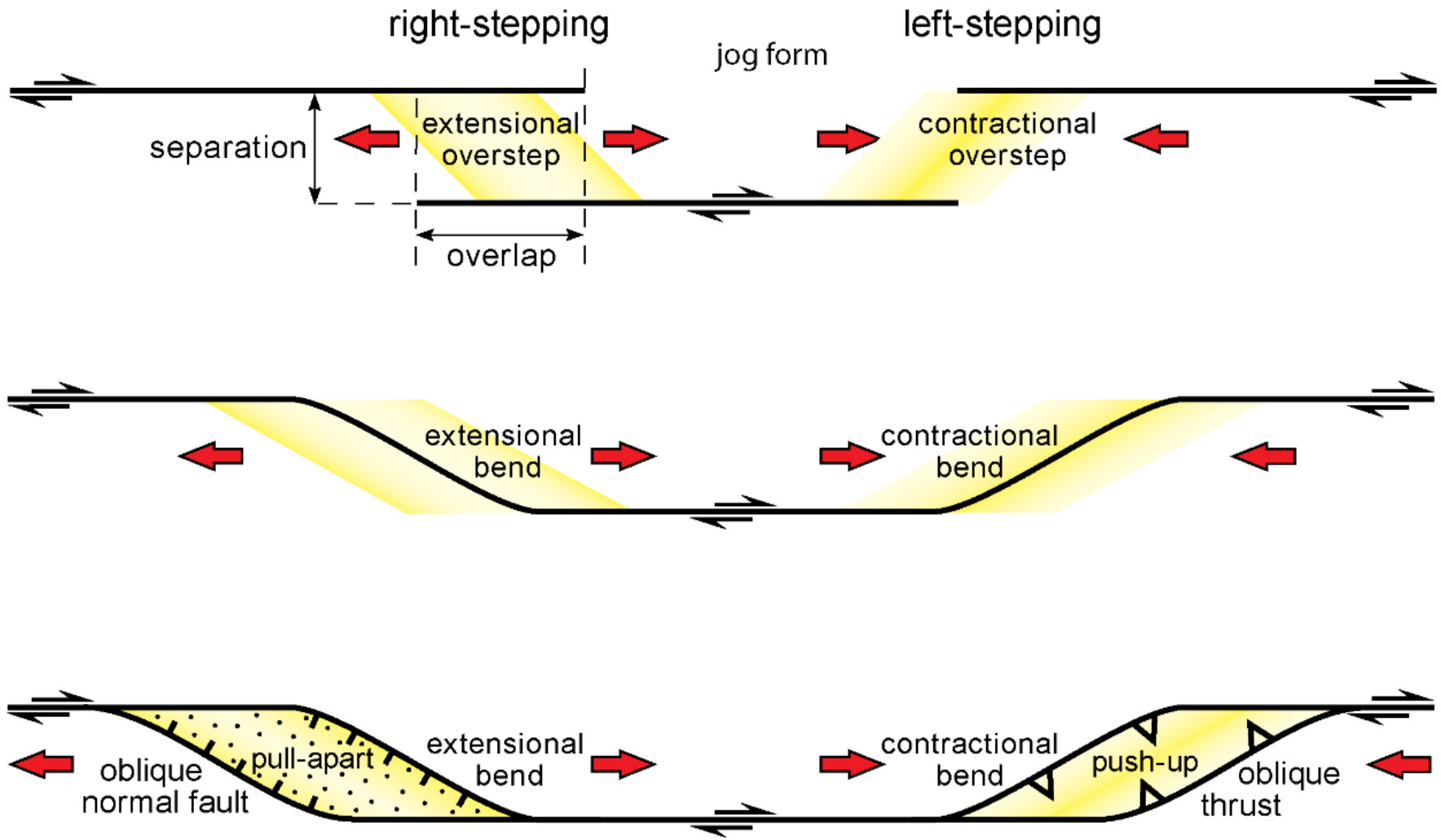
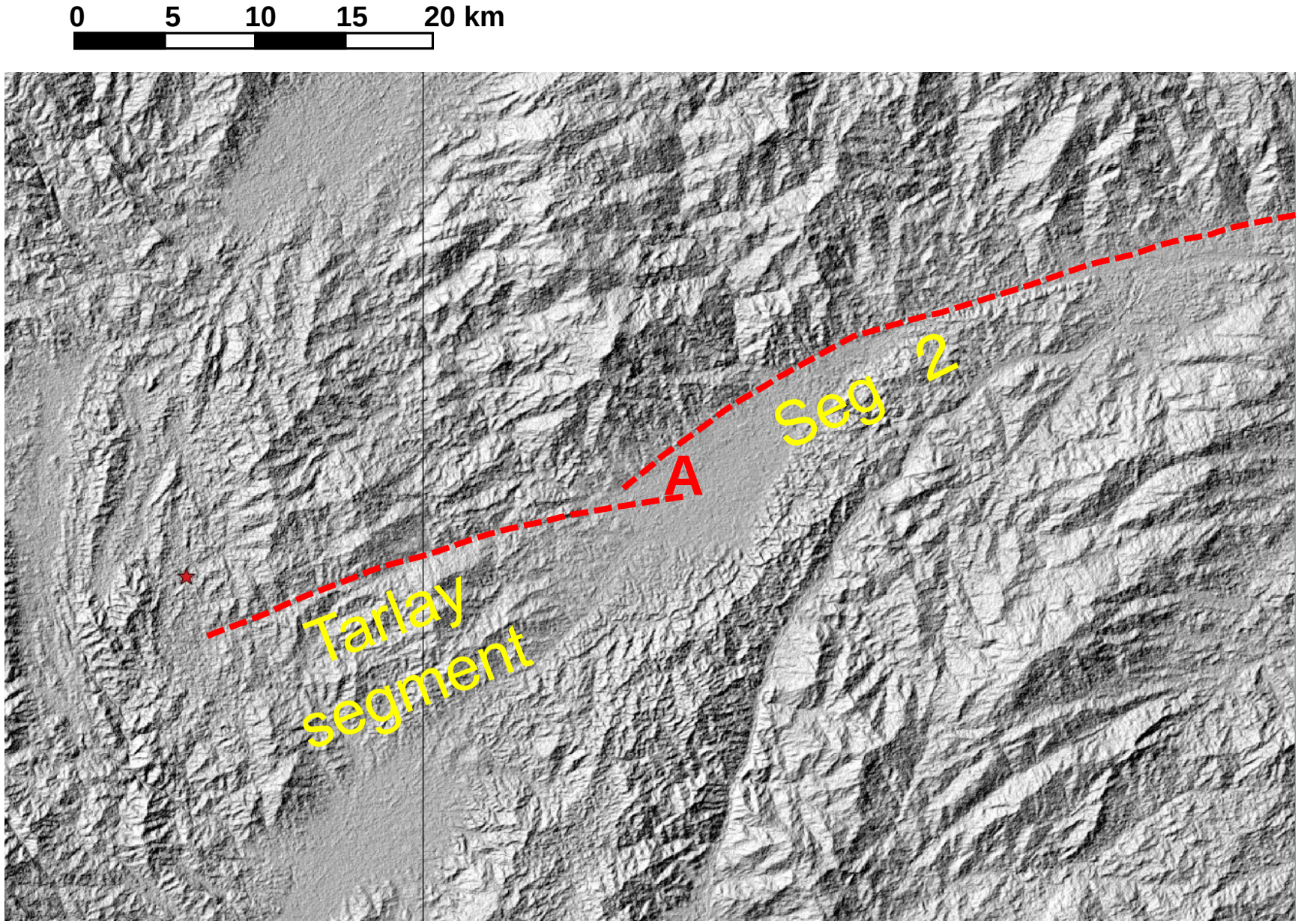
2017.02.05

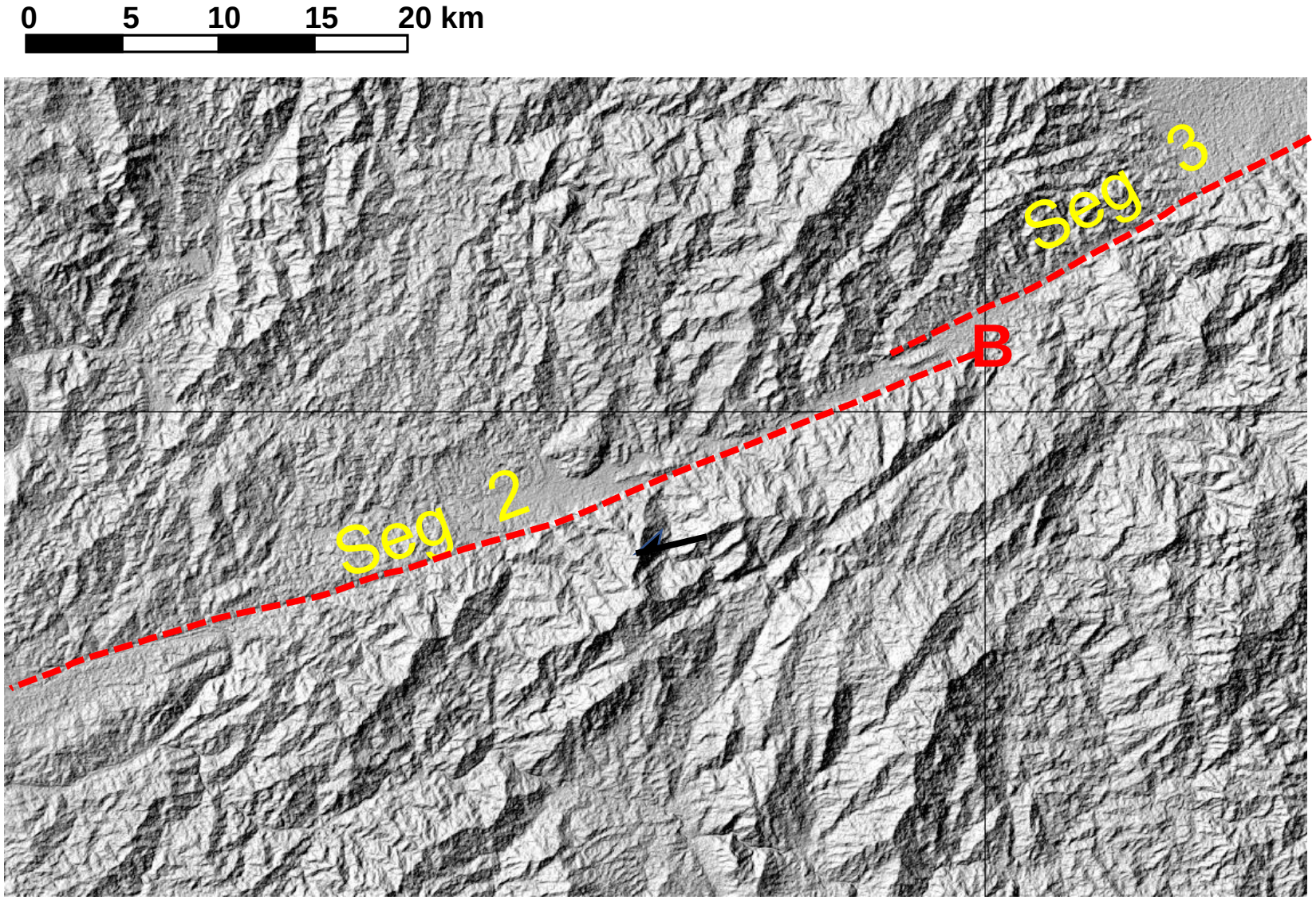

မြန်မာ-လာအို ချစ်ကြည်ရေးတံတား
MYANMAR-LAO FRIENDSHIP BRIDGE

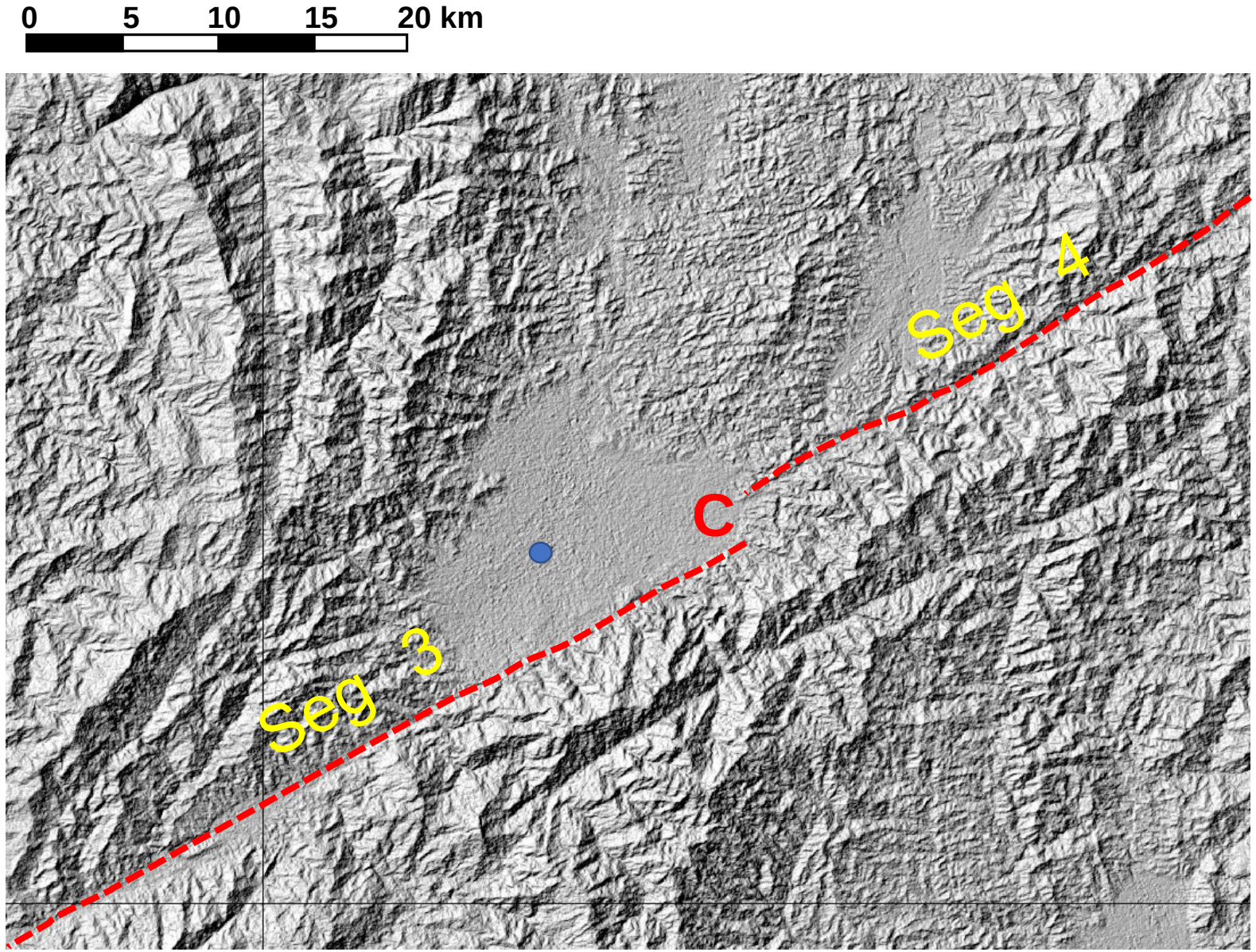

99°E
100°E
101°E
102°E
22°N
21°N
20°N
0
20
40
60
80
100 km
Exotic terrane
Pull-apart basin

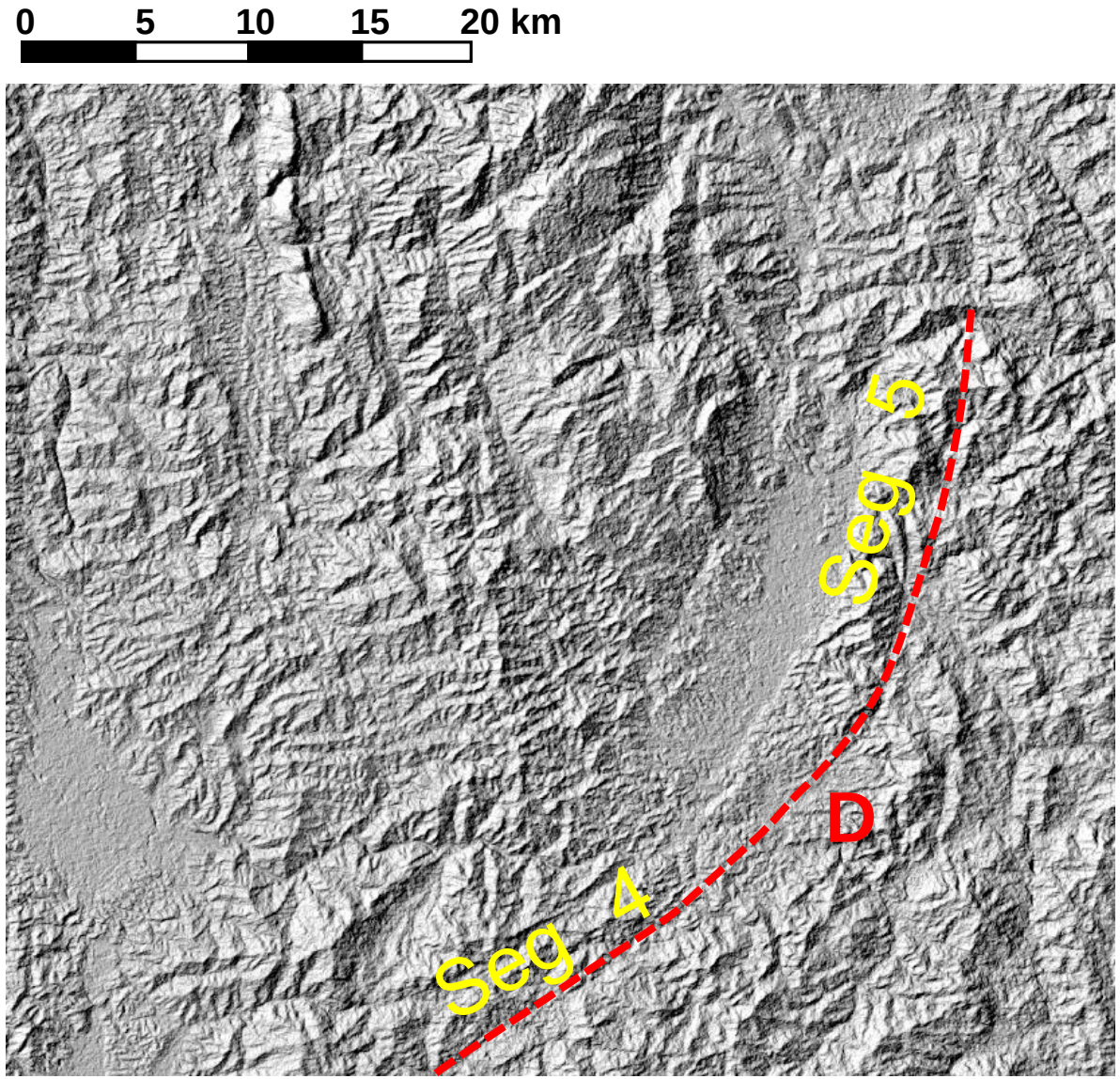
Terminology of restraining (contractional) and releasing (extensional) stepovers and bends along a dextral strike-slip fault

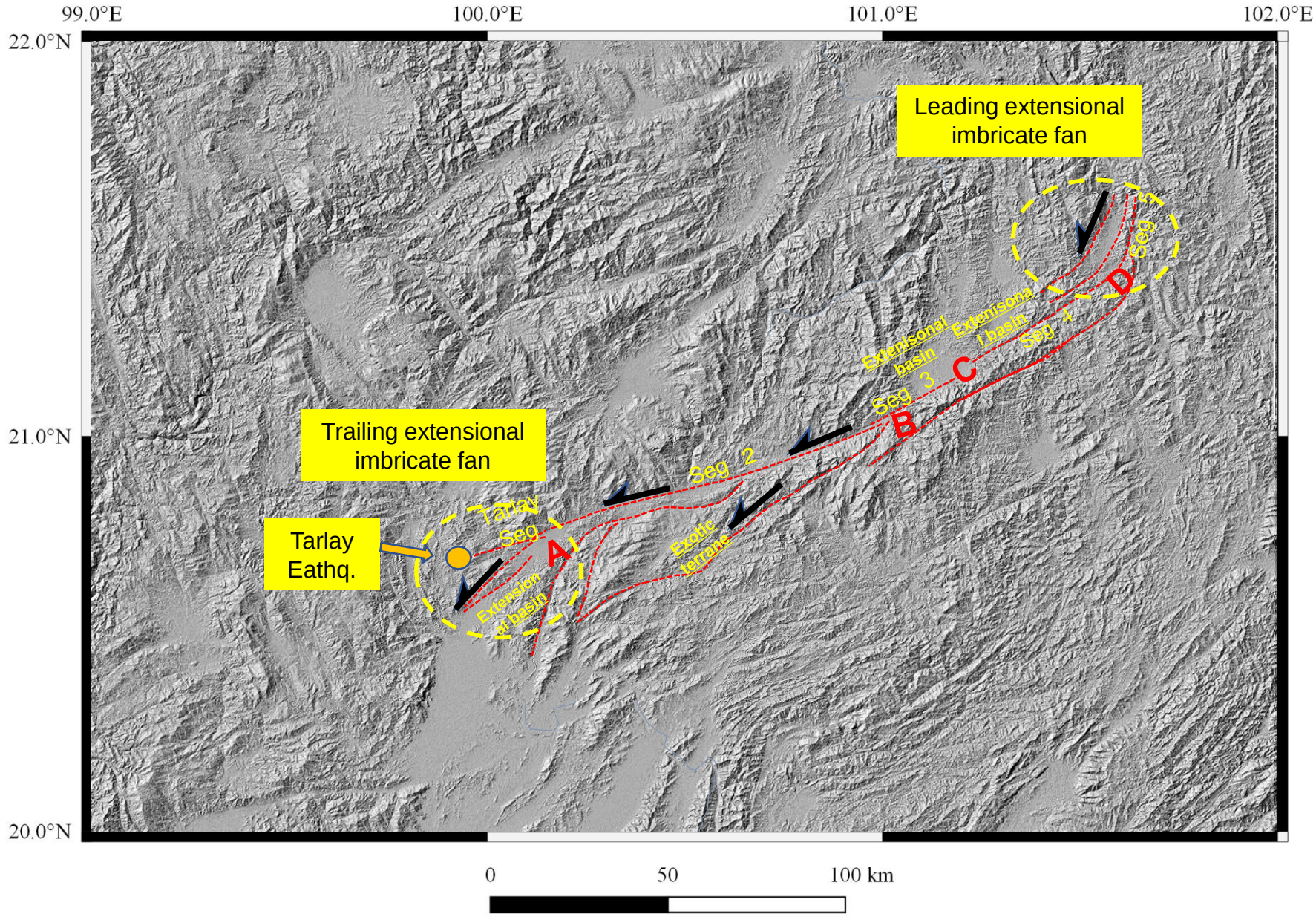



0 5 10 15 20 km
Seg 2
A
Tarlay
segment


0 5 10 15 20 km
Seg 3
B
Seg 2


0
5
10
15
20 km
Seg 4
C
Seg 3


0
5
10
15
20 km
Seg 5
Seg 4
D


99.0°E
100.0°E
101.0°E
102.0°E
22.0°N
21.0°N
20.0°N
Leading extensional imbricate fan
Trailing extensional imbricate fan
Tarlay Eathq.
Tarlay Seg
Seg 2
Seg 3
Seg 4
Seg 5
A
B
C
D
Extensional basin
Extensional basin
Extension wf basin
Exotic terrane
0
50
100 km

$\text{Log } M_0 = 1.5\, M_w + 9.1$

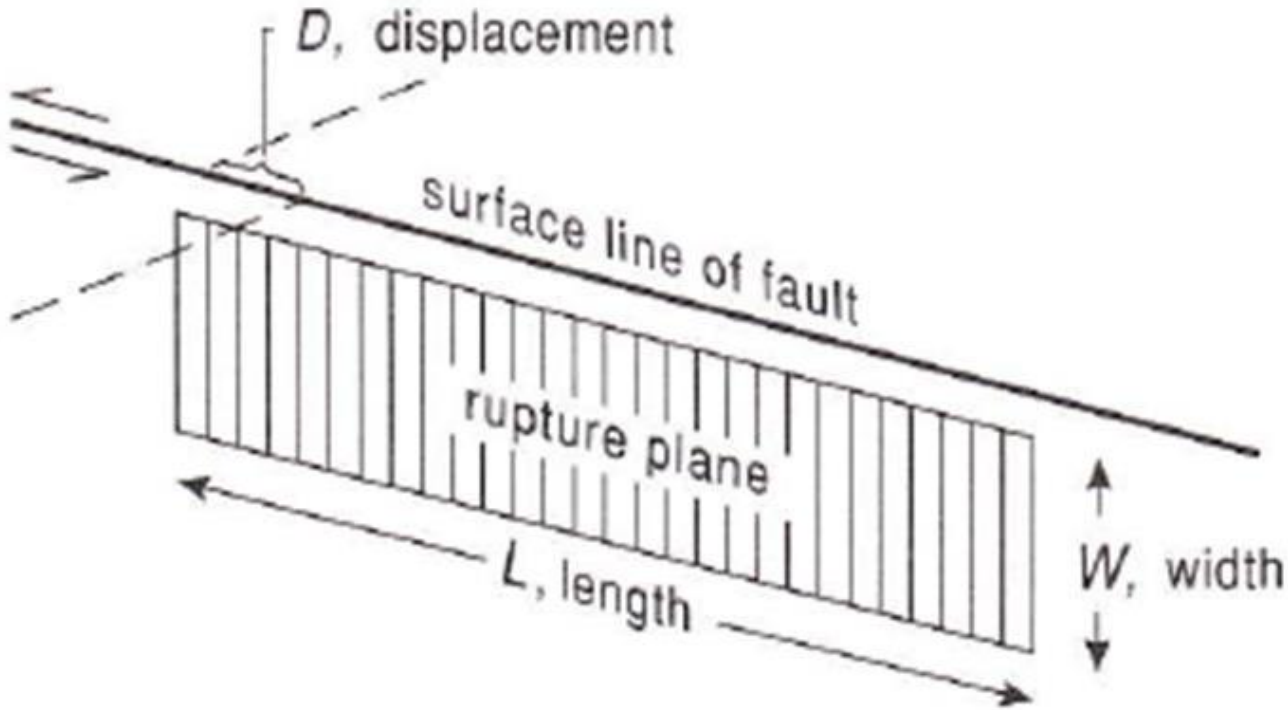
M_W : Magnitude of earthquake

M_0; Nm : Seismic moment of earthquake

$M_0 = (S / 4.24\times10^{11})^2\times10^{-7}$

S; km^2 : Slip-plane area

$S = L \times W$



Segment name	Country	Length (km)	Magnitude (Mw)	M_0 (N · m)	S (km^2)	W (km)
Tarlay segment	Myanmar	30	6.8	2.0×10^{19}	598.916	19.96386
Seg2	Myanmar-Laos	100	7.5	2.22×10^{20}	1996.386	19.96386
Seg3	Laos	30	6.8	2.00×10^{19}	598.386	19.96386
Seg4	Laos-China	45	7	4.49×10^{19}	898.374	19.96386
Seg5	China	20	6.6	8.87×10^{18}	399.277	19.96386
Nam Ma fault	Myanmar-Laos-China	215	7.9	1.02×10^{21}	4292.231	19.96386

Conclusions

- The ASTER GDEM with 30 m spatial resolution accessible from the open site illustrates linear features suggesting active faults
- The harmonized geological maps show continuous tectonics including displacement lines and exotic terranes
- Segments of the Nam Ma fault was mapped by the relief map of ASTER GDEM and the harmonized geological map
- The greatest magnitude of possible earthquakes is 7.5 to be caused by rupture of 100 km long segment which crosses Myanmar and Laos
- In conclusion, the harmonized geological maps show continuous tectonics over cross-border areas and the remote sensing data provide regional information over data vacant areas.


Thank you for your attention!