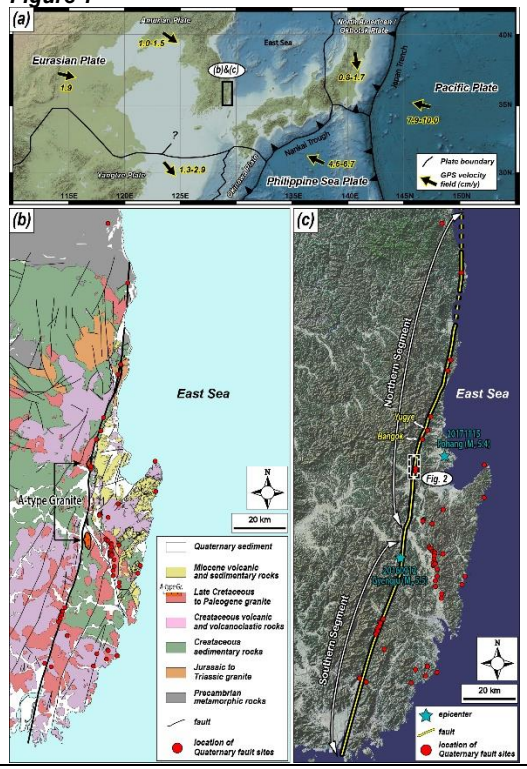
Egusphere-2024-1696

Quaternary surface ruptures of the inherited mature Yangsan Fault: implications for intraplate earthquakes in Southeastern Korea

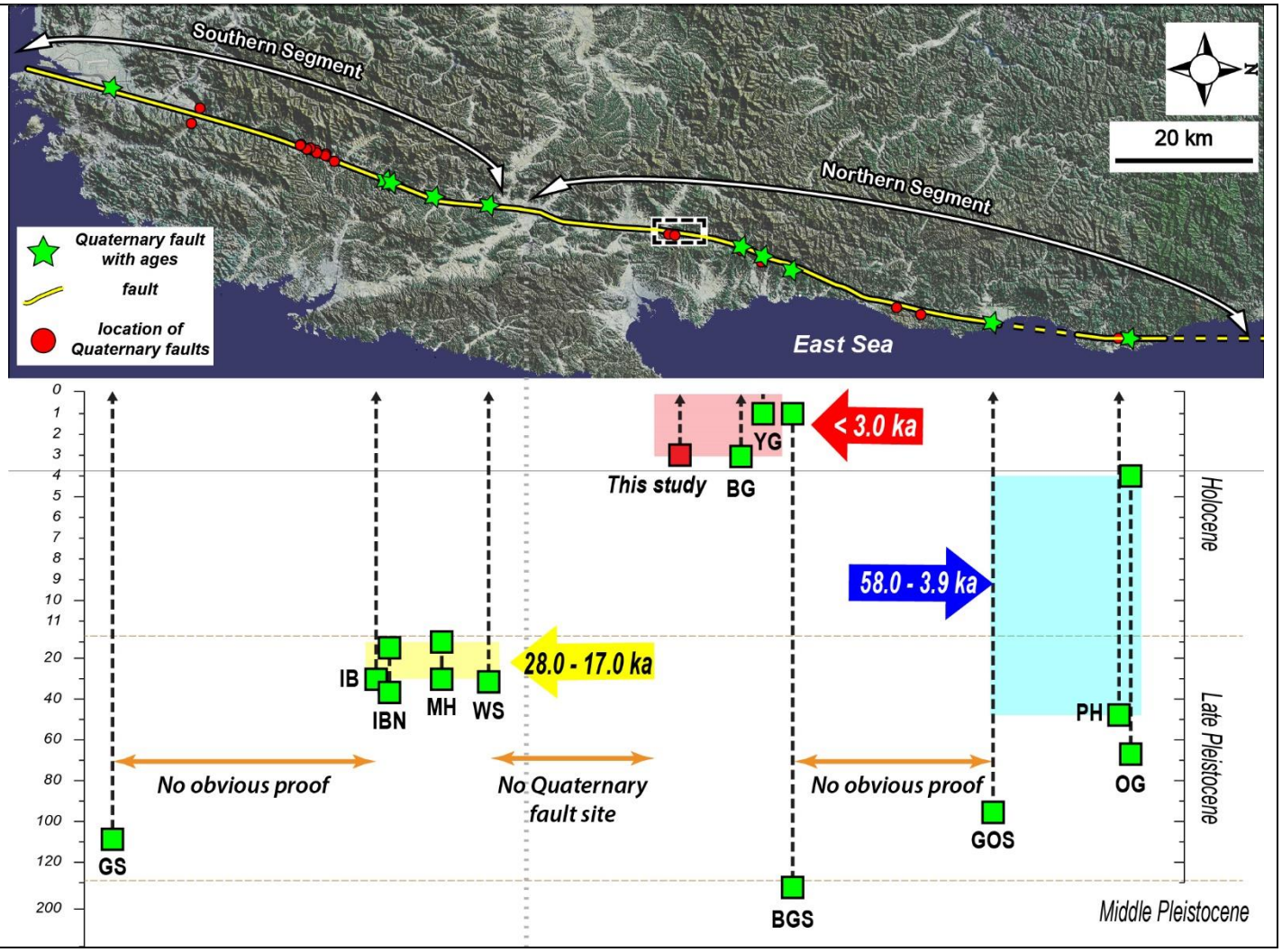
Comment	Change made
Reviewer 1	
	We sincerely appreciate your efforts in carefully checking our manuscript and have tried our best to accept your good suggestions. We are sure that our manuscript has been improved enough to be ready for publication.
88: repeatedly - occasionally	We modified the sentence. ***Line 88*** "have been occasionally"
114: Faults - faults	We modified the sentence. ***Line 114*** "Ulsan and Yangsan faults"
119: Yugye and Bangok sites - The names of locations and faults mentioned in the text should be marked in the figures. These locations cannot be found in figure 1.	We modified the Figure 1. ***Figure 1*** 

<table>
<tr><td>125-126: normal to dextral transfer faults
- normal faults and dextral transfer faults</td><td>We modified the sentence.
Line 125-126
“normal faults and dextral transfer faults”</td></tr>
<tr><td>140: paleoseismological
- paleoseismic</td><td>We modified the sentence.
Line 140
“paleoseismic”</td></tr>
<tr><td>191: 5.0-0.2 Ma
- Please clarify the use of "dash" and "en dash". Use em dashes specifically to indicate ranges.</td><td>We carefully checked the entire manuscript and revised it to distinguish between “dash” and “en dash” as you suggested.</td></tr>
<tr><td>214: ;
-,</td><td>We modified the sentence.
Line 214
“Kim and Lee, 2020, 2023”</td></tr>
<tr><td>221: is
- was</td><td>We modified the sentence.
Line 221
“rupturing was carried out”</td></tr>
<tr><td>290: >
- <
; please check the direction of the inequality sign.</td><td>We modified the sentence.
Line 290
“unit B is <3.2±0.2 ka”</td></tr>
<tr><td>Table 1: &
- and</td><td>We modified the sentence.
Table 1, Trench 1-unit E
“sand and brown”</td></tr>
<tr><td>Table 2: 33440
- 33,440</td><td rowspan="2">We modified the Table 2.
Table 2</td></tr>
<tr><td>Table 2: 38420
- 38,420</td></tr>
</table>

Sample name	Material dated	$\delta^{13}C$ (‰)	^{14}C age (yr)	Calibrated age (cal yr BP)[a]	Probability (%)[b]
1803BYG-01-C	Charcoal	-25.1	33,400±220	38,420–36,897	95.4
1803BYG-02-C	Charcoal	-27.4	41,250±500	45,670–43,802	95.4
1803BYG-03-C	Sediment	-24.7	6,910±30	7,821–7,675	95.4
1803BYG-04-C	Charcoal	Not analyzed	38,560±480	43,293–41,955	95.4
1810NSR-01-C	Charcoal	-27.8	170±30	291–0	95.4
1810NSR-02-C	Charcoal	-26.3	210±30	304–0	95.4
2009UGR-01-C	Sediment	-24.2	25,230±100	29,576–28,966	95.4
2009UGR-02-C	Charcoal	-26.9	160±30	286–0	95.4
2009UGR-03-C	Sediment	-22.5	540±30	634–513	95.4

327: Figs 5b and 5d - Fig. 5b, 5d	We modified the sentence. ***Line 327*** "(Fig. 5b, 5d)"
338: are - were	We modified the sentence. ***Line 338*** "sediments were sampled"
389: a continuous dextrally deflected stream - Only one stream? Is it right?	We modified the sentence. ***Line 389*** "three continuous dextrally deflected streams follow the branching"
416: quaternary - Quaternary	We modified the sentence. ***Line 416*** "Quaternary sedimentary units,"
417: consisted - consists	We modified the sentence. ***Line 417*** "sediments consists of"
441: WNW -WSW	We modified the sentence. ***Line 441*** "ENE-WSW direction"
442: Kim et al., 2016 - add more reference	We added the reference. ***Line 442*** "(Park et al., 2007; Kim et al., 2016; Soh et al., 2018; Kuwahara et al., 2021)"
443: ENE-WSW strike-slip stress regime - rewrite	We modified the sentence. ***Line 443-444*** "occurred under an ENE-WSW oriented σ_{Hmax} with vertical σ_2 (strike-slip regime)"
474: based on each trench site, - remove	We removed the sentence.
497-499: In Trench 1, we derived a slip rate of 0.12-0.14 mm/yr based on the horizontal displacement of event 3 (MRE) of 1.72 m and the 13.8±1.2 ka time interval between events 3 and 2 (time gap between units B and C; Table 1). - Clearly state the assumption included here because the timing of displacement (MRE) does not match the time interval (between PE and AE)	We calculated the slip rate using the displacement of the MRE and the time between the MRE (event 3) and the AE (event 2) (not the time interval between the PE and the AE). To avoid confusion, we have changed the notation to MRE, PE, and AE rather than events 1,2,3. ***Line 498-500*** "In Trench 1, we derived a slip rate of 0.12–0.14 mm/yr based on the horizontal displacement of MRE of 1.72 m and the 13.8±1.2 ka time interval between MRE and PE (time gap between units B and C; Table 1)."
508: relatively coarse-grained 509-510: relatively coarse-grained - compared to what	We modified the sentence. ***Line 509-511*** "(1) light brown, sediments of mid-to-late Pleistocene age, which tend to be tilted in the vicinity of the surface rupture, and (2) dark brown, nearly horizontal Holocene sediments (Table 1, Figs. 3-7)."
510: absolute - remove	We removed the word.

520-523: The recurrence interval inversely calculated using the slip rate (RI=event per displacement/slip rate; Wallace, 1970) is approximately 13 ka using the slip rate of the MRE (average 0.13 mm/yr) and the event per displacement (1.72 m in Trench 1) and approximately 49 ka using the long-term slip rate (0.02 mm/yr) and the displacement per event (average 0.98 m) of the PE and AE. - rewrite	We modified the reference. ***Line 521-524*** "The recurrence interval (RI) can be calculated using the slip rate and event per displacement (RI=event per displacement/slip rate; Wallace, 1970). For MRE, using the slip rate (average 0.13 mm/yr) and event per displacement (1.72 m in Trench 1), the RI is approximately 13 ka. Using the displacement per event (average 0.98 m) and long-term slip rate (0.02 mm/yr) for PE and AE, the RI is roughly 49 ka. "
556-559: However, the Quaternary fault sites south of Inbo-N site show different deformation patterns from those to the north. In the Inbo site (IB in Fig.10), which is closest to the IBN trench, surface rupture developed between unconsolidated sediments (Cheon et al., 2020a), these features are also present in other fault sites of the southern Yangsan Fault (Choi et al., 2012; Lim et al., 2022). - The presence of Q-Q contact depends on the thickness of the unconsolidated layers at the time of earthquake surface rupture. Additionally, the features in these sites may be due to the fact that they are not located on the main fault strand. Please delete or modify this sentence.	We removed and modified the sentence. ***Line 555-557*** "The deformation pattern of the Quaternary faulting of the Yangsan Fault is top to the west, with the main fault core and unconsolidated sedimentary layers abutting the main surface rupture."
575: 3,000 years age - However, MRE of Yugye site is after AD 646... This sentence does not reflect the results of the Yugye site.	We modified the sentence and figure 10. ***Line 570*** "approximately <3.0 ka"


Southern Segment
Northern Segment
20 km
N
Quaternary fault with ages
fault
location of Quaternary faults
East Sea
0
1
2
3
4
5
6
7
8
9
10
11
20
40
60
80
100
120
200
< 3.0 ka
YG
This study
BG
58.0 - 3.9 ka
28.0 - 17.0 ka
IB
IBN
MH
WS
PH
OG
GOS
BGS
GS
No obvious proof
No Quaternary fault site
No obvious proof
Holocene
Late Pleistocene
Middle Pleistocene