Supplemental Material for:

**Correlation of paleoearthquake records at multiple sites along the southern Yangsan Fault, Korea: Insights into rupture scenario of intraplate strike-slip earthquakes**

Taehyung Kim, Jin-Hyuck Choi, Youngbeom Cheon\*, Tae-Ho Lee, Namgwon Kim, Hoil Lee, Chang-Min Kim, Yire Choi, Hankyung Bae, Young-Seog Kim, Chung-Ryul Ryoo, Yann Klinger

\*E-mail: cheonyb[@kigam.re.kr](mailto:moonson@pusan.ac.kr)

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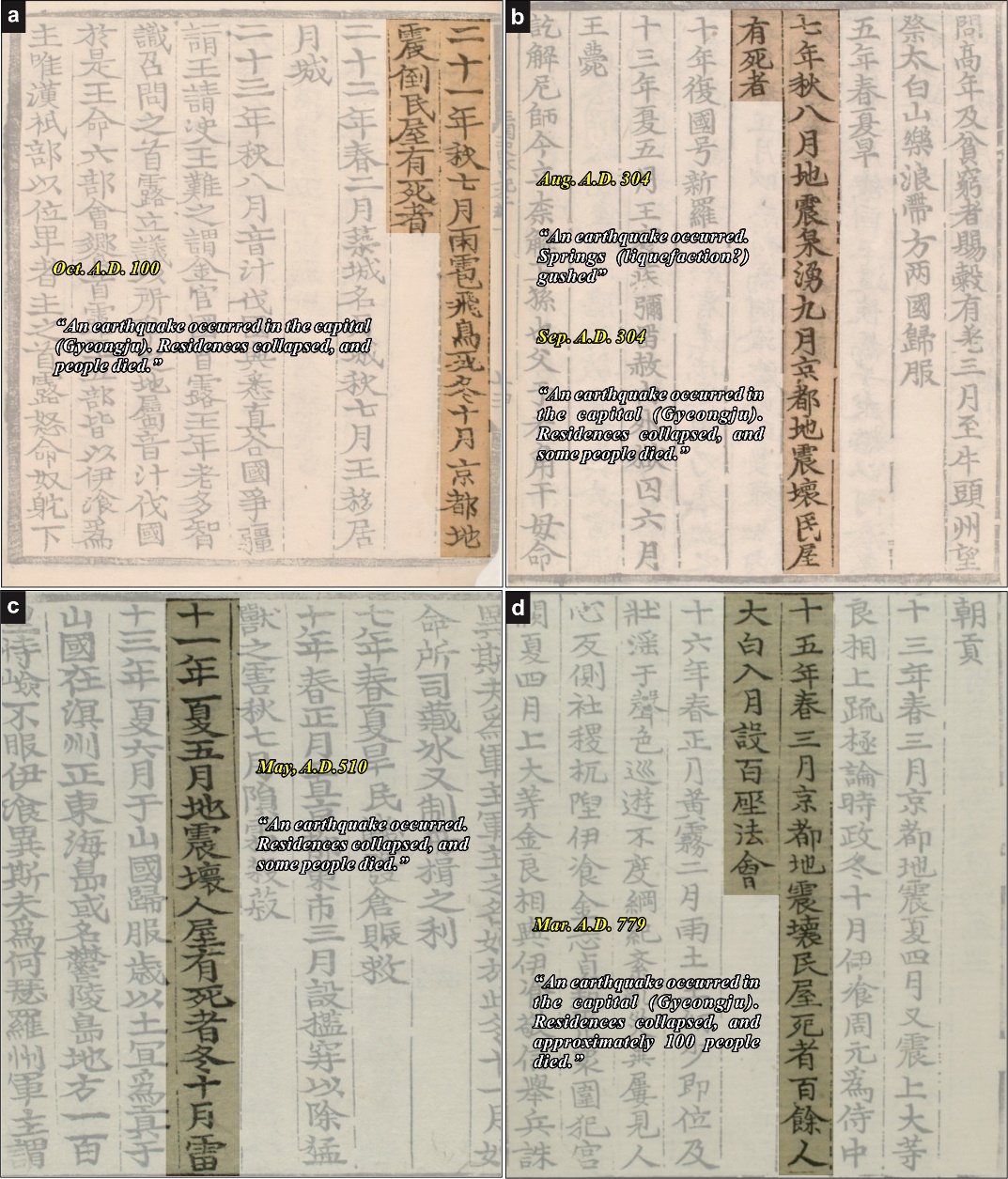


Figure S1 Historical earthquake records around the Gyeongju city from the ‘*Samgukyusa* (History of the Three Kingdoms)’

[Historical earthquake record]

**October, AD100**: An earthquake occurred in the capital (Gyeongju). Residences collapsed, and people died. [*Samgukyusa (History of the Three Kingdoms)]*

**August, AD304**: An earthquake occurred. Springs gushed. [*Samgukyusa (History of the Three Kingdoms)*]

**September, AD304**: An earthquake occurred in the capital (Gyeongju). Residences collapsed, and some people died. [*Samgukyusa (History of the Three Kingdoms)*]

**May, AD510**: An earthquake occurred. Residences collapsed, and some people died. [*Samgukyusa (History of the Three Kingdoms)]*

**March, AD779**: An earthquake occurred in the capital (Gyeongju). Residences collapsed, and approximately 100 people died. [*Samgukyusa (History of the Three Kingdoms)]*

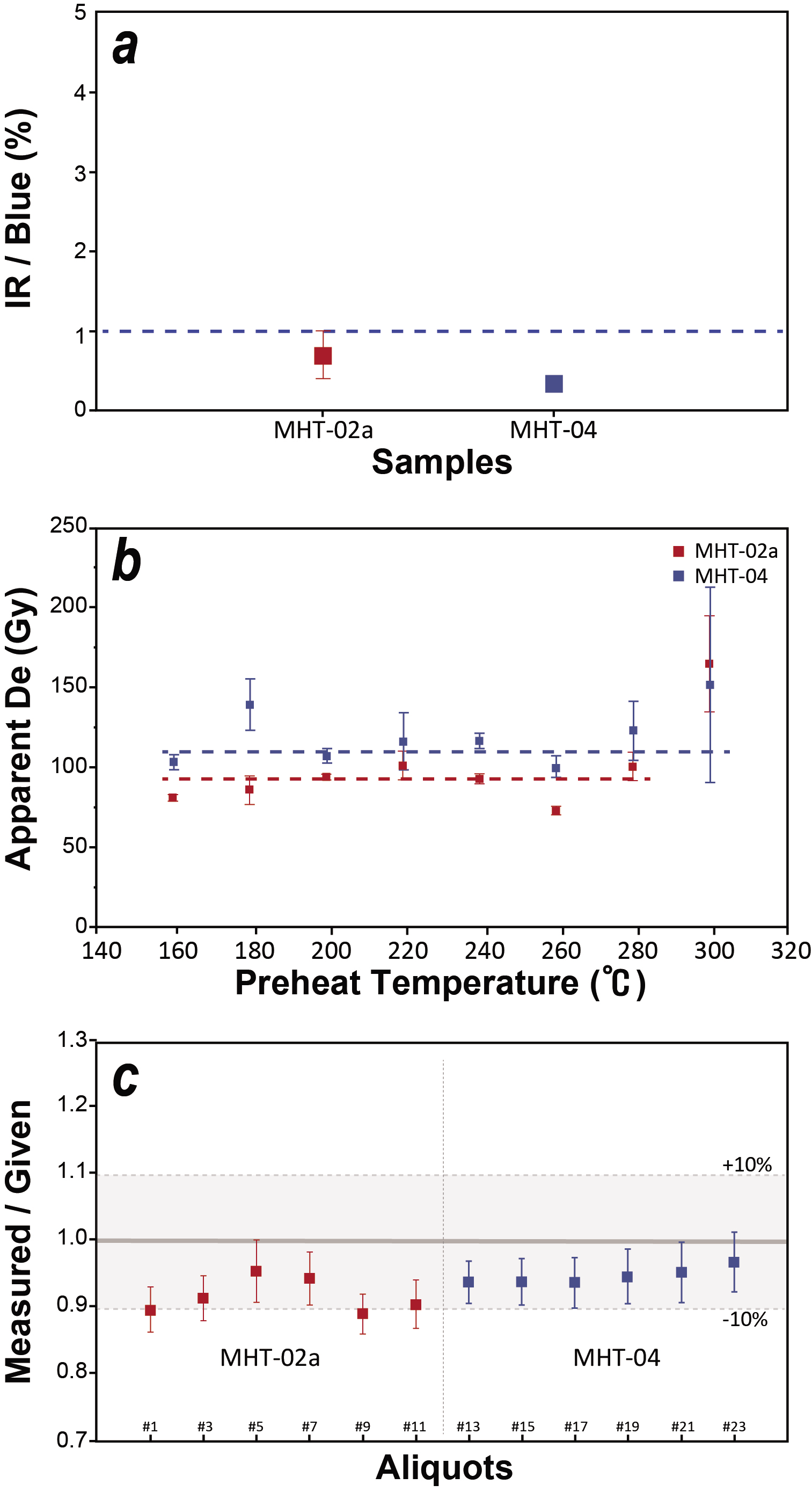
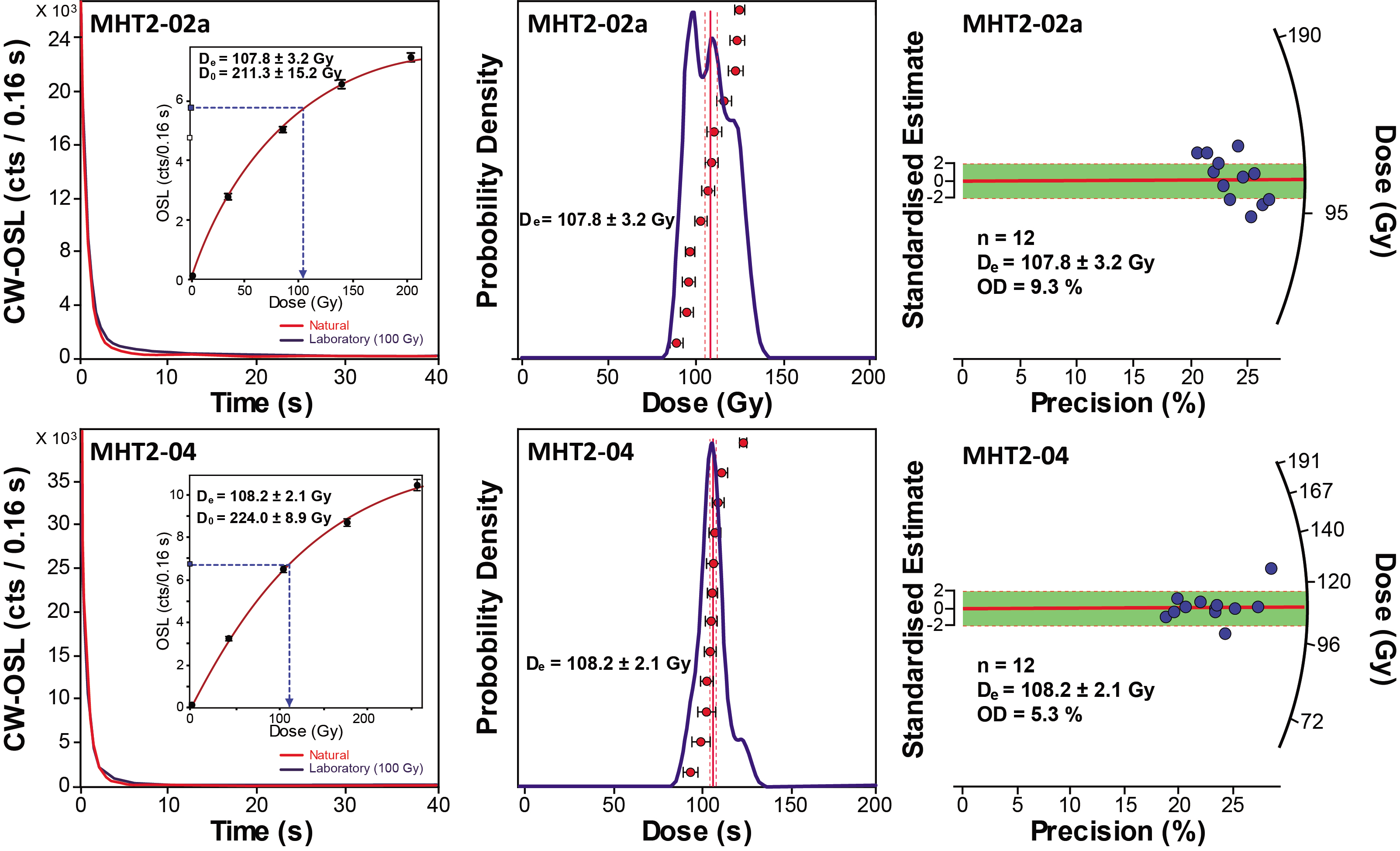


Figure S2 The results of IRSL (a), preheat plateau (b) and dose recovery tests (c) for two samples. IR/Blue ratio of most aliquots is less than 10%. The preheat plateau tests were conducted from 200 to 280 ℃ and 220 ℃ was chosen for De estimation. The dose recovery tests have been carried out on six aliquots per sample. All aliquots show dose-recovery ratios within 1.0 ± 10%.



**Figure S3** The natural OSL decay curves with dose response growth curves, dose distribution diagrams and radial plot of the analyzed samples. De values of two samples were using the CAM model.

[YF and UF references]

**Table S1** Most recent earthquake timing information for Figure 11.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | aFault | bX (°) | bY (°) | MRE range (ka) | Dating methods | Reference |
| Y1 | YSF | 129.30450 | 36.20144 | 1.5–present | 14C | Kyung, 2010 |
| Y2 | YSF | 129.25551 | 36.06917 | 3.2–present | OSL | Song et al., 2020 |
| Y3 | YSF | 129.25406 | 36.06005 | 2.1–present | 14C | Cho et al., 2016 |
| U1 | USF | 129.29050 | 35.89347 | 2.9–1.3 | 14C | Inoue and Choi, 2006 |
| U2 | USF | 129.28875 | 35.89075 | 27.5–present | 14C | Okada et al., 1999 |
| U3 | USF | 129.28751 | 35.88706 | 16.7–present | 14C | Kyung, 2010 |
| U4 | USF | 129.32764 | 35.87869 | 47.3–present | 14C | Choi et al., 2012 |
| U5 | USF | 129.33177 | 35.78299 | 51–present | OSL | Choi et al., 2014 |
| U6 | USF | 129.33193 | 35.78333 | 35–present | OSL | Choi et al., 2014 |
| U7 | USF | 129.33703 | 35.75498 | –5.8 | OSL & 14C | Kim et al., 2020 |
| U8 | USF | 129.33703 | 35.74741 | 34.6–present | 14C | Okada et al., 1998 |
| U9 | USF | 129.33419 | 35.73392 | 8.3–2.3 | 14C | Inoue and Choi, 2006 |
| U10 | USF | 129.34318 | 35.72046 | 92.3–present | OSL | Choi et al., 2012 |
| U11 | USF | 129.35111 | 35.72158 | 44.0–present | 14C | Choi et al., 2012 |
| U12 | USF | 129.35101 | 35.69804 | 3.6–present | OSL & 14C | Kim et al., 2021 |
| WS | YSF | 129.19459 | 35.72313 | 35.0–present | OSL | this study |
| MH | YSF | 129.17875 | 35.67687 | 28.0–15.0 (35-30) | OSL & 14C | this study |
| IBN | YSF | 129.16653 | 35.64760 | 37.0–17.0 | OSL | this study |
| IB | YSF | 129.16435 | 35.64260 | 29.0–present | OSL & 14C | Cheon et al., 2020a |

aYSF: Yangsan Fault, USF: Ulsan Fault

bcoordinates system: WGS1984(degree)