Response to referee #1 of the manuscript
"China Active Faults Database (CAFD) and its Web System"

We are very grateful to referee #1 for his constructive comments that greatly improved the manuscript. Below is a point-by-point reply (RC: referee comment; AR: author reply)

RC: Line 12 "Active faults are potential destructive earthquake sources and also the most serious strips of earthquake disasters in the future."
-change "Active faults are potential destructive earthquake sources" to "Active faults are sources for potentially destructive earthquake sources".
-what is the meaning of "strips of earthquake disasters" ?
AR: We changed the sentence "Active faults are potential destructive earthquake sources" to "Active faults serve as potential sources of destructive earthquakes". Because the clause "also the most serious strips of earthquake disasters in the future." has the same meaning of the clause "Active faults are sources for potentially destructive earthquake sources". We deleted the clause "also the most serious strips of earthquake disasters in the future"

RC: Line 13 "earthquake hazard reduction"
you cannot reduce hazard... what do you mean? risk?
AR: We corrected it to "earthquake disaster prevention".

RC: Line 14 "for China"
change "for" to "in".
AR: We corrected "for" to "in".

RC: Line 17-18 "The data update and integration are based on the latest 20-year region-scale active fault survey data (1:250 000 – 1:50 000)."
Change "The data update and integration are based on the latest 20-year region-scale active fault survey data (1:250 000 – 1:50 000)." to "The data update and integration are based on regional-scale studies and surveys on active faults performed in the latest 20 years (1:250 000 – 1:50 000 reference scale)."
AR: We corrected the sentence to "The data update and integration stem from regional-scale studies and surveys conducted over the past two decades (at reference scales from 1:250,000 to 1:50,000)".

RC: Line 18-21 "Those data include geophysical probing, drill logging, offset-landform measuring, and sample dating, as well as geometric and kinematic parameters of exposed and blind faults, paleo-earthquake sequences, and recurrence intervals, and have been obtained and analyzed using the same technical 20 standard framework and reviewed by expert panels in the field and laboratory."
this sentence here is misleading because it seems that those results are included in the database.
AR: We corrected the sentence to "The information amassed from these regional-scale studies and surveys encompasses geophysical probing, drill logging, measurement of offset-landform, sample dating, as well as geometric and kinematic parameters of exposed and blind faults, paleo-earthquake sequences, and recurrence intervals".

RC: Line 22 "analyzing"
why analyzing? I haven't found any analysis tool in the online service.
AR: We deleted the word.

RC: Line 28 delete the sentence "It is downloadable through diverse platforms and clients as introduced in Sections 4.3.2 and 4.4."
AR: We deleted the sentence.

RC: Line 30-31 change the sentence "A close relationship exists between large or great 30 earthquakes and the spatial distribution of an active fault." to "A causative relationship exists between large or great

earthquakes and active faults."

AR: We changed the sentence to "A causative relationship exists between large or great earthquakes and active faults."

RC: Line 32 "active faults" this is somehow obvious. maybe you could explain better the meaning. Can you give the definition of active faults that is currently adopted in China?

AR: The meaning of "active faults" is somehow obscure. We changed it to "Holocene and late Pleistocene active faults".

RC: Line 33 change "rupture parts" to "rupture segment"

AR: We changed it to "rupture segment".

RC: Line 36 "geometris" but the geometry is not included in the database! only the surface trace.

AR: The regional fault databases include the dip angle and inclination of faults near surface. We changed the "geometris" to "traces" and added the sentence "This article introduces a publicly accessible, national-scale database detailing fault traces, latest active ages, and motion modes of active faults in China" at the end of the paragraph.

RC: Line 40 change "constructed" to "compiled".

AR: We changed "constructed" to "compiled".

RC: Line 43 "the Database of Individual Seismogenic Source (DISS)". in Italy there is also the database of Active and Capable Faults. INTHACA. https://www.isprambiente.gov.it/en/projects/soil-and-territory/italy-hazards-from-capable-faulting-1?set_language=en

AR: We added the sentence "and the database of Active and Capable Faults in ITaly HAzard from CApable faults (ITHACA, 2024) project".

RC: Line 56 change "position" to "fault trace" and "slip age" to "age of the latest re-activation".

AR: We change "To determine the 55 accurate position and slip age of active fault" to "To determine the accurate position fault trace and age of the latest re-activation slip age of active fault".

RC: Line 68-69 "A professional panel then reviewed the obtained parameters and rechecked the final results to ensure reliability." here and below: the check from this professional panel is somehow a black box. this procedure is described here and then later in the text below... the manuscript should be shortened and better outlined for the description of the procedure "beyond" the database itself. in any case, the big data is hidden and there is no way to get any information from the CAFD in its present form. No information on the methods adopted for each case study, no information on the reliability of information etc. different dating techniques have different accuracy etc.

AR: We change the sentence to "A professional panel then reviewed the obtained evidences and parameters and rechecked the final results of these four types projects.".

RC: Line 129 delete "references".

AR: We deleted the word "references".

RC: Line 151 "geometric"
no geometry is included.

AR: The fault geometric is usually described as a planner surface across which the relative motion of rock mass occurred during an earthquake. It includes fault shape, fault displacement, length, damage zone width and fault core thickness. The CAFD included the relative motion in the field of "feature". We changed the "geometric" to "motion type".

RC: Line 167 change "motion mode" to "kinematic".

AR: We changed "motion mode" to "kinematic".

RC: Line 168 change "The fault geometry or dipping angle as suggested by seismic data was not included" to "The fault geometry or dip angle, as suggested by seismic data, was not included".

AR: We changed change "The fault geometry or dipping angle as suggested by seismic data was not included" to "The fault geometry or dip angle, as suggested by seismic data, was not included".

RC: Line 171 change "method" to "workflow".

AR: We changed "method" to "workflow".

RC: Line 175-178 "The 175 number of paleo-earthquake events and the motion mode of faults are visualized in the trenches. The age of fault activity is determined by the ages of dislocated strata, measured by dating methods, including radiocarbon (14C), cosmogenic nuclides (10Be), and luminescence techniques." not clear. please, rephrase.

AR: We changed the scentence "The dislocated strata, visualized in the trench, reveal the number of paleo-earthquake events and the kinematics of faults. The ages of the dislocated strata, measured by dating methods, including radiocarbon (14C), cosmogenic nuclides (10Be), and luminescence techniques, determined the age of fault activity. These results were stored in those regional-scale survey databases".

RC: Line 201-203 delete "They are used to identify whether or not a fault is active, to calculate its slip rate during a certain period, to determine when a paleo-earthquake occurred, the paleo-earthquake recurrence interval, and the elapsed time of the last earthquake of the corresponding fault segment."
this statement is not clear: it looks like you derived paleo-earthquakes from cumulated and dated dislocations. these can provide only slip rate... that is not reported in the database. Could you clearly state that paleo-earthquakes were derived from paleoseismology only?

AR: Thank you for this suggestion that the cumulated and dated dislocations can provide slip rate, but not paleo-earthquake. The study of paleo-earthquake events is complicated, which also based on the sediments, dislocation and deformation of strata, biological environment, etc. For the reason that the paleo-earthquake is not reported in the database, we deleted "to determine when a paleo-earthquake occurred, the paleo-earthquake recurrence interval, and the elapsed time of the last earthquake of the corresponding fault segment."

RC: Line 285 "The results are credible" this statement is generic and not scientific strictly speaking.

AR: We changed "systematic method" to "workflow".

RC: Line 337 "A single fault is divided into multiple segments." From figure 2 and 3 "segments" are a few thousand meters long. Those are not segments but fault strands instead. I think that this nomenclature could induce confusion. If the aim is to provide a basemap for SHA you should provide a clear definition of: segments, faults, and systems to allow calculations on single/vs multifault ruptures and on slip segmentation on the same faults. a clear jerarchy of elements should be introduced.

AR: We change the sentence to "A single fault is divided into multiple segments based on geometry". In addition, we add Figure 8 and some sentences to explain it. "Take the Fodongmiao-Hongyazi Fault (FHF) as an example (Huang et al., 2021b)(Fig. 8). It is one fault of the northern margin fault zone of the Qilianshan mountains. Its west and middle segments exhibit divergent geometric patterns: the west segment trace displays linear characteristics, while the middle segment trace resembles jagged teeth. Moreover, the east segment, distinct from the middle segment, is delineated by an anticline and follows a linear trajectory"

RC: Line 356 "maximum amount of reliable" this is a strong statement indeed! do you mean that no further investigations are possible?

AR: This description made misapprehension. We add a clause "in the projects introduced in Section 3.5 launched by China Earthquake Administration" to prescribe a limit to "maximum amount of reliable data".

RC: Line 357 "reducing earthquake hazards" you cannot reduce hazard.

AR: We changed it to "preventing earthquake disasters"

RC: Line 358 "performs well in terms of quantity and quality" too generic… what is benchmark or validation?

AR: We deleted the sentence "It performs well in terms of quantity and quality".

We are very grateful to referee #2 for his constructive comments that greatly improved the manuscript. Below is a point-by-point reply (RC: referee comment; AR: author reply)

RC: Line 12 "strip"
"sources" is better.
AR: We changed it to "sources".

RC: Line 23-24 "The system also publishes the Open Geospatial Consortium (OGC) Web Feature Service and OGC Web Map Service of active fault data." Unclear, who publishes? what system? Maybe: The Open Geospatial Consortium (OGC) Web Feature Service and OGC Web Map Service also publish active fault data.
AR: We changed the sentence to "Our system hosts this nation-scale database accessible through a Web Geographic Information System (GIS) application, enabling browsing, quiring, and downloading functionalities via a web browser. The system we built also publishes the Open Geospatial Consortium (OGC) Web Feature Service and OGC Web Map Service of active fault data".

RC: Line 31-32 change "active faults or overlaps with them" to "active fault or its epicentral zone overlaps such fault"
AR: We changed the sentence to "Typically, earthquakes with magnitude (M) ≥ 7.0 often originate from Holocene or Late Pleistocene active faults or their epicentral zone overlaps such faults".

RC: Line 33 "rupture parts" to "ruptured parts".
AR: We corrected it to "rupture segments" as the referee #1 suggested.

RC: Line 35 change "great" to "large".
high magnitude earthquakes (M> ca. 7.0) are called 'large'. Great can be used for M>8.0 but there are not so many such events in China.
AR: We corrected "great" to "large".

RC: Line 63-64 "The Himalayan Plan: active fault mapping at a scale of 1:50 000 in the north China tectonic region and along the North-South seismic zone" But the Himalayas are not in North China. Check, please.
AR: The Plan's name doesn't relate to the survey region.

RC: Line 104-105 change "seismic fortification criteria" to "seismic design criteria" and "anti-earthquake design" to "seismic-resistant design"
AR: We changed "seismic fortification criteria" to "seismic design criteria" and "anti-earthquake design" to "seismic-resistant design".

RC: Line 118-119 change "The 120 regional project databases" to "All these databases"
AR: We changed "The 120 regional project databases" to "All these databases".

RC: Line 179-180 change "Taking the Fodongmiao-Hongyazi Fault, which is mapped at a scale of 1:50 000 (Yang et al., 2018a, 2018b, 2020; Huang et 180 al., 2021a, 2021b), as an example for" to "The Fodongmiao-Hongyazi Faul mapped at a scale of 1:50 000 (Yang et al., 2018a, 2018b, 2020; Huang et 180 al., 2021a, 2021b), can be taken as an example for"
AR: We changed "Taking the Fodongmiao-Hongyazi Fault, which is mapped at a scale of 1:50 000 (Yang et al., 2018a, 2018b, 2020; Huang et 180 al., 2021a, 2021b), as an example for" to "T The

Fodongmiao-Hongyazi Fault, mapped at a scale of 1:50,000 (Yang et al., 2018a, 2018b, 2020; Huang et
180 al., 2021a, 2021b), serves as an example of the quantitative technical demands outlined in the Chinese
mandatory standard (GB/T 36072-2018)".

RC: Line 181 change "and so on" to "etc.".
AR: We changed "and so on" to "etc.".

RC: Line 182 "SPOT, and so on" As I know such resolution is of the 1 sec. SRTM DEM and ASTER-II
DEM.
AR: We changed it to "SRTM 1 Arc-Second DEM, ARSTER-II DEM, etc.".

RC: Line 183-184 change "fault scarps, dislocated gullies, fault valleys, pull-apart basins, pressure ridges,
terraces, alluvial or fluvial fans and so on" to "fault scarps, dislocated gullies, fault valleys, pull-apart
basins, pressure ridges, terraces, alluvial or fluvial fans".
AR: We changed "fault scarps, dislocated gullies, fault valleys, pull-apart basins, pressure ridges, terraces,
alluvial or fluvial fans, and so on" to "fault scarps, dislocated gullies, fault valleys, pull-apart basins,
pressure ridges, terraces, alluvial or fluvial fans".

RC: Lines 184-185 change "the fault could be traced along the fault strike" to "the fault could be traced
along its strike".
AR: We changed "the fault could be traced along the fault strike" to "the fault could be traced along its
strike".

RC: Line 193 "separated": "divided" is better.
AR: We changed "separated" to "divided".

RC: Line 197-198 "The ages of dislocated strata are measured by dating methods."
"The ages of dislocated strata and those overlying ruptures are measured by dating methods." Dating of
dislocated strata only provides the maximal age of the rupturing event. To get a more reliable age of the
event we have to date both ruptured and non-ruptured units.
AR: We changed the sentence to "The ages of dislocated strata and those overlying ruptures are
measured by dating methods".

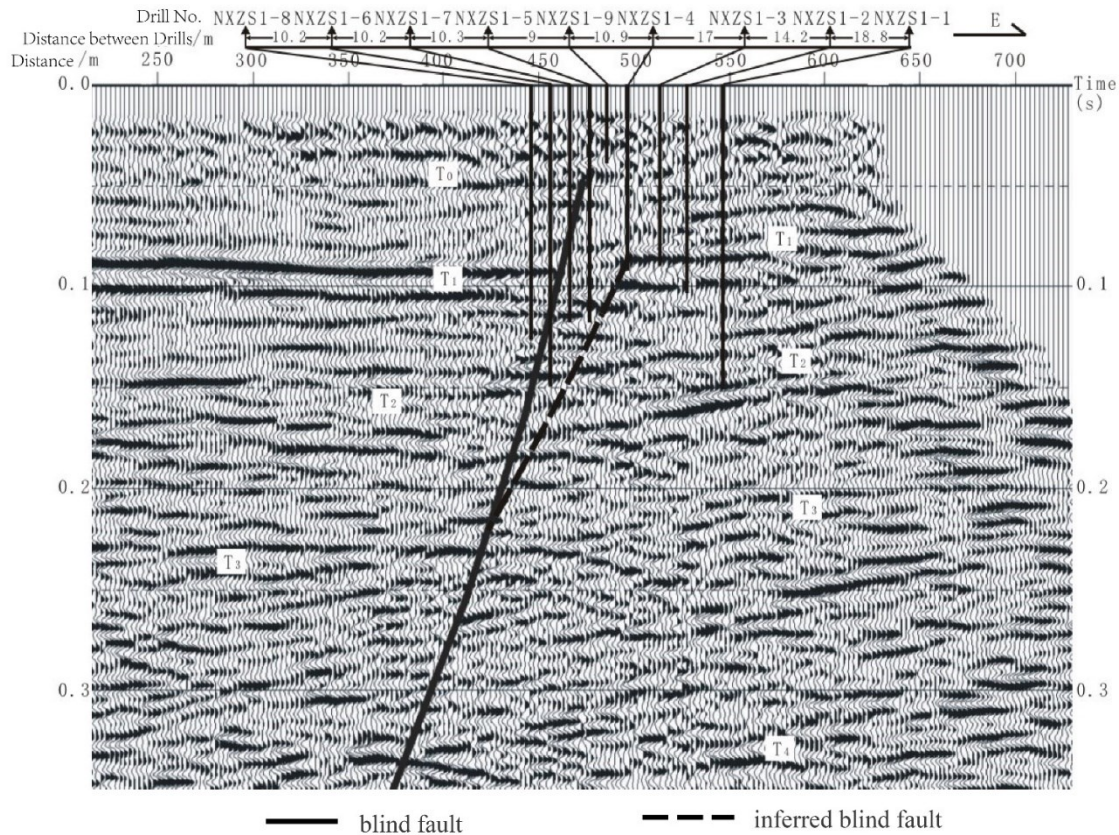
RC: Line 200-201 "It determined the latest active age of the fault, although it may not be the rupture
behavior." Unclear.
AR: We deleted the sentence.

RC: Line 221 "point" may be "level".
AR: We changed "the uppermost displaced point" to "the uppermost breakpoint"

RC: Line 222 change "late Quaternary" to "Late Quaternary".
AR: We changed "late Quaternary" to "Late Quaternary".

RC: Line 224 "detect the blind active faults from deep to shallow or even directly to the surface" if it
ruptures directly to the surface it is not blind.
AR: We delete "surface". "This method encompasses multi-level seismic exploration, joint drilling to
establish fault-across geological sections, trenching, and other technologies aimed at detecting blind active
faults from deep to shallow depths."

RC: Line 246, Figure 5 Add, please, what is a solid bold line and what is a dashed line.
AR: We add a legend in Figure 5.

blind fault   inferred blind fault

RC: Line 264, delete "possibility".
AR: We deleted "possibility".

RC: Line 281, change "Tianshan" to "Tien Shan". Please use the same name "Tien Shan" in Fig. 7.
AR: We change "Tianshan" to "Tien Shan".

RC: Line 238-239, "Each fault line data point belongs to one fault segment." How do you deal with the Yingxiu-Beichuan fault ruptured during the 2008 Wenchuan earthquake, which kinematics changed along its strike?
AR: Now that this sentence is not necessary to describe fault segment and has caused some confuse, we deleted it. In addition, we add some sentences and Figure 8 to describe fault segment.

RC: Line 351-352, "For pre-Quaternary faults, active evidence is not available in the Quaternary." But such faults should not be considered as active.
AR: Such faults should not be considered as active in Quaternary, but they relative to tectonic setting. Therefore, we kept them in the database.

RC: Line 356, change "relative" to "related".
AR: We changed "relative" to "related".

RC: Line 365-366, delete "in China".
AR: We deleted "in China".

RC: Line 367, change "colliding between" to "collision of".
AR: We changed "colliding between" to "collision of".

RC: Line 368-370, change "there exist mega-strike-slip fault systems, such as the Altyn Tagh, east Kunlun and Xianshuihe Faults, the thrust fault systems, e. g. the Himalayan frontal, Hexi Corridor and Longmenshan thrusts, and the North-South striking normal faults in the western Plateau." to "The mega-strike-slip fault systems, such as the Altyn Tagh, east Kunlun and Xianshuihe faults, and the thrust fault systems, e. g. the Himalayan Frontal faul, the Hexi Corridor and the Longmenshan thrusts, as well as the North-South striking normal faults in the western part of the Plateau exist".
AR: We changed "there exist mega-strike-slip fault systems, such as the Altyn Tagh, east Kunlun and Xianshuihe Faults, the thrust fault systems, e. g. the Himalayan frontal, Hexi Corridor and Longmenshan thrusts, and the North-South striking normal faults in the western Plateau." to "In the periphery and interior of the Tibetan Plateau, which was formed during the collision of the Indian and Eurasian Plates, the mega-strike-slip fault systems, such as the Altyn Tagh, east Kunlun and Xianshuihe Faults, the thrust fault systems, e. g. the Himalayan frontal, the Hexi Corridor and the Longmenshan thrusts, as well as the North-South striking normal faults in the western part of the Plateau exist".

RC: Line 371, change "Tianshan" to "Tien Shan". Please use the same name "Tien Shan" in Fig. 7.
AR: We change "Tianshan" to "Tien Shan".

RC: Line 372-373, change "There exist numerous oblique normal faults around the Ordos Block and strike-slip faults, such as the Tanlu fault in Eastern China." to "Numerous oblique normal faults around the Ordos Block and strike-slip faults, such as the Tanlu fault in Eastern China exit too."
AR: We changed "There exist numerous oblique normal faults around the Ordos Block and strike-slip faults, such as the Tanlu fault in Eastern China." to "Numerous oblique normal faults around the Ordos Block and strike-slip faults, such as the Tanlu fault in Eastern China exit too. Those faults are located in regions with dense urban construction and populations or thick Quaternary deposits".

RC: Line 374, change "quaternary" to "Quaternary".
AR: We changed "quaternary" to "Quaternary".

RC: Line 404-405, "The WFS service is stable on the application.".
AR: Now that this sentence is not necessary to describe the WFS service and has caused some confuse, we deleted it.

RC: Line 445-446, "English and Chinese users" It is better to change the clause to "English and Chinese speaking users". French, German, Russian., etc. users are not English, but also can use.
AR: we changed it to "Thus, the system can be used by both English and Chinese-speaking users. Additionally, users proficient in languages such as French, German, Russiancan also use the system".

RC: Line 482 "prevention" May be "prediction". We cannot prevent earthquake, probably we can or will be able in future to predict it.
AR: We changed "prevention" to "prediction".

Response to Giulio G.R. Iovine of the manuscript
"China Active Faults Database (CAFD) and its Web System"

We are very grateful to Giulio G.R. Iovine for his constructive comments that greatly improved the manuscript. Below is a point-by-point reply (C: Giulio G.R. Iovine's comment; AR: author reply)

C: check that the 3 link at the end of the manuscript refer to Chinese websites, without an english translation.
AR: We checked them again and add three figures of the translated English websites.

C: the original references should be mentioned for all the faults.
AR: We added a field to store the data source.

C: all the mentioned data should be provided as shapefiles / ArcGIS coverages.
AR: The CAFD and Earthquake data (HistoryEqT19691231, CSNEq19700101T20081231, and FormalEq20090101T20210630) is now provided as shapefiles.

C: Moreover, authors are encouraged to provide a csv table including the metadata of the faults (linked by the identifier of the ArcGIS coverage) and a technical description of the database structure.
AR: We provided a csv table including the metadata and description of the database structure of CAFD. The CAFD is provided as shapefile.