Athens, 25 of June 2023

In response to Reviewer's #A comments:

Thank you for your useful and constructive comments that improved this manuscript considerably.

This revised manuscript has been extensively modified following suggestion from both reviewers. We addressed all your comments and questions from the marked up review file. For simplicity we transfer all of them below. We respond to the comments in the following manner: Text in Italics contains your comments, followed by normal text in greater font size that includes our response. All changes in text are given in line numbers (NL: New line). We also submit a highlighted manuscript file with the changes that were made according to the reviewers comments in yellow.

We have added one more figure for the Frequency Magnitude Distribution and Mc of all catalogs. We also provide one more additional figure in the supplement to show any potential migration for earthquake epicenters.

All your corrections in blue in the marked up review file have been taken into account.

Reviewer A (Tiegan Hobbs)

Thank you for the opportunity to review this interesting work. I have included a marked up review file with some revisions and questions. The only major concern is about the SW-NE oriented "fault plane" that the authors observe in figs 2a and 2c. I don't find that the seismic events align on a single strand, such that the formation can be referred to as a fault plane. Therefore, I suggest that the authors scale back on this conclusion and the tectonic implications of "conjugate" faulting in this region. This change should be made in the main text as well as the abstract. Otherwise, I find this paper to be concise, relevant, and timely.

We scale back on the argument of a SW-NE fault. Although we are suggesting the possibility of a conjugate SW-NE fault structure, we follow the suggestion from both Reviewers and abandon the argument of conjugate faults that are activated concurrently for the South Evia island area. These structures may not exhibit similar seismic activity in terms of temporal occurrence and density. Instead, they serve as indicators of the transition between dextral and sinistral strike-slip motions. We explain this in the main text (NL 126-133). The Abstract has been changed accordingly.

L22 Make summary less technical
We think that the summary is now less technical (NL 23-33)

L33 Add references or links to earthquake monitoring agency websites
Unfortunately there is no doi for the NOA routine catalog and MTs yet. We now provide the links to the NOA FDSN event webservice for the catalog and the link for the NOA MTs in the Data and resources section (NL 179, NL183-184)

L37 the mainshocks?
Yes. It is now changed (NL 38).

L39 New paragraph
Done

L41 Reference

e.g. Barbot and Weiss, 2021 (NL 42)

L45 What is the database
The Greek Database of Seismogenic Sources (GreDaSS) (Caputo and Pavlides, 2013). It is added in text (NL 46-47).

L62 Could you add a sentence to describe how EQTransformer/REAL work?
Two sentences have been added to describe EQTransformer and REAL (NL 65-70).

Figure 1: Could you use another inset to show where this study area is in reference to all Greece/more of Europe
This inset has been added on the top right corner of Figure 1 and the caption has been changed accordingly.

Figure 1: What are the orange arrows? Could you add any mapped faults?
Fault traces from the GEM Global Active Faults Database have been added. The subjective orange arrows have been removed.

Figure 1 caption: Reference of red tensors?
References have been added.

Figure 1 caption: What are HL and HA?
These are the FDSN network names of the seismic networks with permanent stations on operation from HL (National Observatory of Athens, Institute of Geodynamics, Athens , 1975) and HA (University of Athens , 2008). We have added to the word seismic to avoid confusion.

L74: Is this based on the assumption that pairs with high CC are co-located? This has been challenged somewhat, see Kao et al paper.
We are not sure on which Kao et. al paper you are referring. Pairs with high WCC are located close by and form clusters of events that fall on the same fault plane. The fact that most WCC relocated events are located in linear clusters and not in spherical ones ensures that events are mostly not co-located but are parts of a linear ruptured area. This ruptured area is definitely there and events not relocated with WCC may be originated from this or neighboring faults of similar or different orientation. Thus, in this manuscript, our deliberate focus is primarily on discussing events and phenomena that portray linear realistic structures.

L77 Could you elaborate on what you mean?
We have added more details on the bootstrap approach to make this clearer (NL 83-85).

L84 Why not use this on all events
We choose NonNinLoc for the three largest events that do not correlate well with other events in the aftershock sequence. In this way we succeed to have a better location with lower uncertainties than the simple HYPOINVERSE solutions. A future step in our approach would be to NonLinLoc all events that do not have a WCC solution. We clarify this now in text (NL 89-90).

L90 Could you include a figure of your mag-freq distribution, and state what the NOA Mc was? Reducing Mc is an important result on your methodology
In section 2, the magnitude characteristics of the catalog are further analyzed through the Frequency-Magnitude distribution (FMD). Additionally, Table S2 in the supplement provides Mc and b details. To emphasize the significance of our approach, we include an additional figure that illustrates the FMD for all catalogs (Fig.3). This figure highlights the substantial reduction in Mc achieved compared to the

manually compiled institutional NOA catalog. This underscores the importance and effectiveness of our methodology. The text in the manuscript is mentioning now this Mc reduction (NL 96-99).

L94-99 Shouldn't this be between 270 and 360 for a NW trend?
You are right! By mistake we took the SW-NE fault plane from MTs (dextral). We now use the other fault plane (~130 degrees SE-NW, sinistral). It is almost vertical and deeping southwestwards. The MT table in supplement has been altered. We are now using the average angle of 130 degrees in text (NL 105 and NL 114).

L99 I do not think this is evident in your figure
We agree that it is not so clear. We rephrase the text (NL 114-118).

L101 There is only one event identified as April 2023 (red). Label the other earthquake if you are going to make this claim, although I don't think it is critical to your argument
We agree and remove the argument from the text

L115 I don't think your fig 2 shows a 'fault zone' because the events don't collapse onto a line. I suggest you dial back this conclusion
Yes we did. Please see our initial comment.

L132 The entire paragraph needs a figure with labeled faults and possibly an accompanying schematic to show this 'broken slat" model.
A "broken slat" illustration has been added to the lower right corner of Figure 1 and its caption has been changed accordingly. The general and inset map show now all faults and areas described in the manuscript.

L141 The evidence for a conjugate fault set is not strong enough to support this conclusion
Please see our previous comment. We rephrase (NL 126-133).

L143 This is an over-reach. Why assume the faults continue that far?
Yes it is an over-reach because there are no recorded MTs to show a similar sense of motion. Since the geodynamical sense shows a similarity we rephrase the argument to emphasize that (NL 158-159).

Figure 2 Label cross sections (X-X') and add those labales to (b)/(c) so it is easier to understand
The cross-section are now labeled

Figure 2 Write numbers instead of No
Fixed

Figure 2 Add a legend showing magnitude/size
Added

Figure 2 caption Could non-CC events be colored something other than grey so they show up on (a)?
Non CC events are now colored in light red

Yours sincerely,
Christos Evangelidis

Athens, 25 of June 2023

In response to Reviewer's #B comments:

Thank you for your useful and constructive comments that improved this manuscript considerably.

This revised manuscript has been extensively modified following suggestion from both reviewers. We respond to the comments in the following manner: Text in Italics contains your comments, followed by normal text in greater font size that includes our response. All changes in text are given in line numbers (NL: New line). We also submit a highlighted manuscript file with the changes that were made according to the reviewers comments in yellow.

We have added one more figure for the Frequency Magnitude Distribution and Mc of all catalogs. We also provide one more additional figure in the supplement to show any potential migration for earthquake epicenters.

Reviewer B (Ryo Okuwaki):

The submitted manuscript is presenting the seismic sequence in South Evia island, Greece, from November 2022 to April 2023. The authors locate and relocate the events and obtain moment tensor solutions for the major events. The authors show that their relocated events are dominant in the NW-SE orienting zone. The authors then discuss that the NW-SE fault zone is activated, where it was previously recognised as a low seismicity region. The manuscript is focused and concise, clearly highlighting the intriguing seismic activity in the Aegean Sea region, which should stimulate further research on the details of source processes of the major events (beyond the moment tensor analysis) and provide critical inputs into the assessment of earthquake hazard in the relevant region. I only have the modest-to-minor requests, which I hope might be helpful to improve the manuscript.

 # Could you please comment on how much the authors' strategy improved the routinely made catalogues, and/or how the authors' catalog is different from those routinely made catalogs? I am asking this because, for example, it seems that the events determined by other agencies (e.g., University of Athens) show a rather NE-SW trend (more blurred distribution though) of the relevant sequence, which seems apparently contrary to the authors' funding. Any additional explanations in the main text or additional supplementary figure(s) would be necessary to explain these differences.

http://www.geophysics.geol.uoa.gr/stations/gmapv3_db/index.php

In Figure R1, we are plotting the routine locations from NOA catalog. So, this blurred NE-SW trend is also evident in both routine (manual) NOA catalog and University of Athens automatic catalog. Our detected event catalog without WCC relocation shows a similar trend for offshore events (Fig. 2).

In this manuscript, we explore the possibility of a NE-SW structure, but we also present a novel finding that has not been previously documented in routine catalogs. Specifically, we discuss the existence of a NW-SE zone that originates offshore and extends into the inland parts of South Evia. This discovery is particularly intriguing as it provides new evidence of a transition zone in the Western Aegean region, where dextral strike-slip systems transform into sinistral ones. The abstract and main text emphasizes the improvement and the new finding.

 # One of the interesting findings of the authors' study is that the identified cluster(s) are mainly located deep. Is this deep seismicity also recognized before the 2022–2023 South Evia island sequence? How is this deep seismicity different or distinct from the background seismicity in the corresponding region? Could it be possible

to explain this point somewhere in the main text?

There is no background seismicity in the ruptured area. Seismicity just westwards follows the same pattern in terms of hypocentral depths (Fig. R1). We are not considering seismicity between 10 and 20km as deep, but this is due to the real intermediate depth seismicity in mainland Greece produced from the Hellenic subduction. The attached figure shows that the past seismicity (colored circles) is rather abundant in the study area and most events are located between 5 and 15 km depth. We add a comment in introduction about this (NL 47-49). Prior to September 2023, the low activity area had a limited number of monitoring stations. Consequently, this scarcity of stations led to significant uncertainties in both the horizontal and vertical determination of hypocenters.

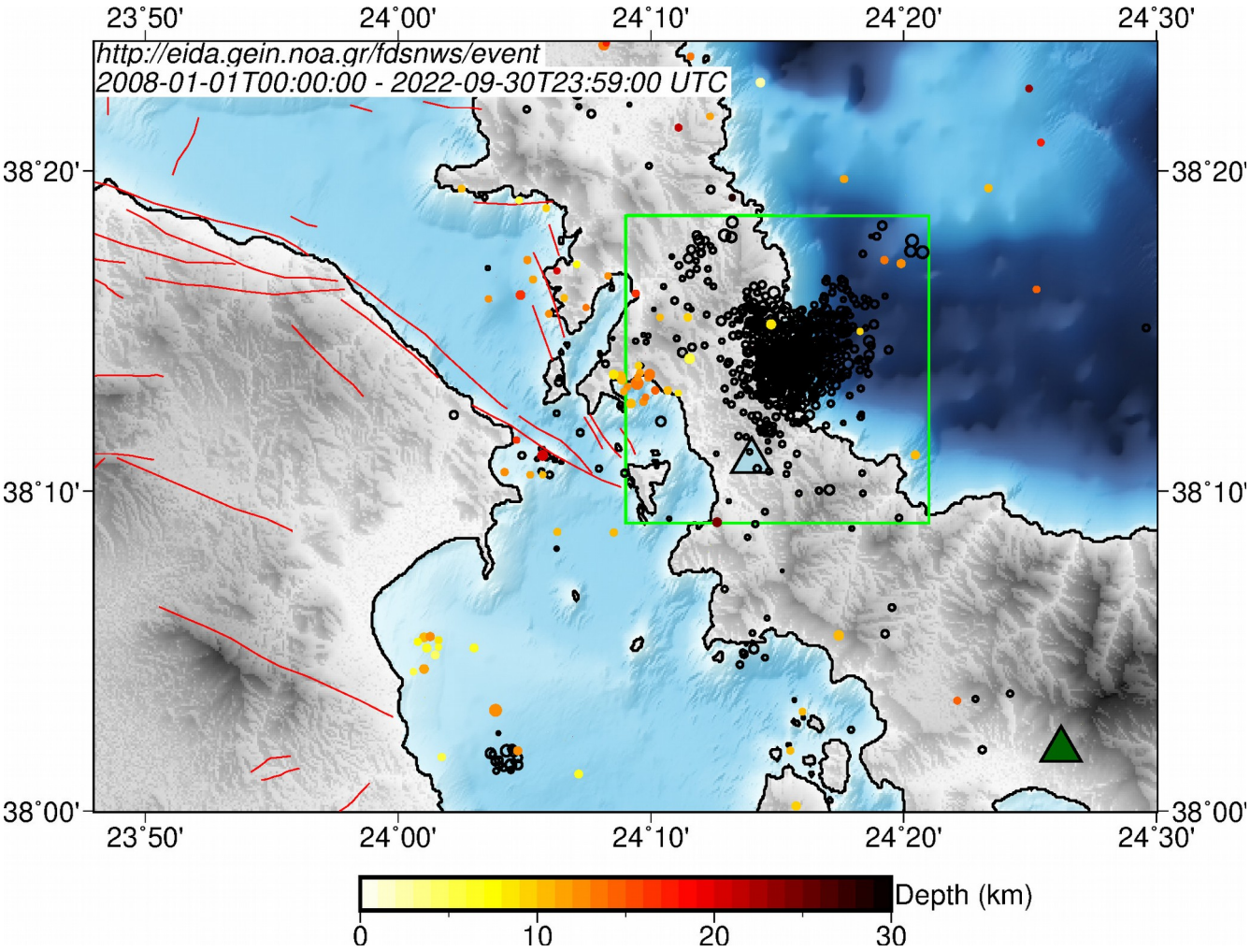


Figure R1: General view of an enlarged area around South Evia. Past events from 2008 onwards are marked in colored circles. Routinely located events of the 2022-2023 seismic sequence from NOA catalog are plotted in black. Fault traces from NOA fault database (Ganas et. al., 2013) are plotted in red.

 # The relationship between the locations of the red and green stars in Figure 2b is interesting. Do the authors see any migration or diffusion of the events from deep to shallow or bilateral directions toward SE and NW from the red star? Or, are these apparent offsets just within the location uncertainty of the events?

Although the location uncertainty is less than the vertical offset of the two main events we can not

observe any vertical diffusion of aftershocks. The only lateral distinguishable migration of events starts from the foreshock area and with a rate of approximately 50m/day progresses souheastwards until the day of the two main events (Fig. R2). We have added new text describing this finding and correlating it with similar studies in neighboring areas (NL 107-112). We also include Figure R2 as an additional figure in the Supplement (Figure S1).

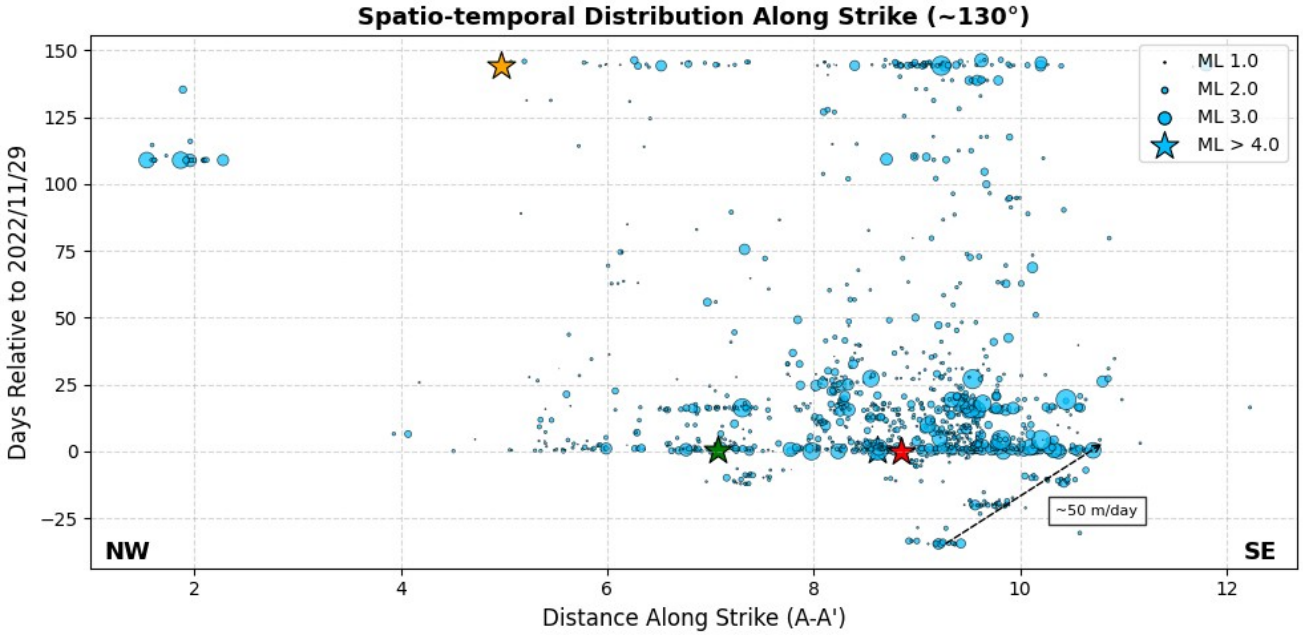


Figure R2: Spatio-temporal distribution of events along strike. Red, Green and orange stars mark the main events.

 # In Figure 2a, I think I can see a possible N-S lineation in the low-quality catalogue (grey dots). Is this a mis-location due to the station coverage, or any chance to indicate a possible branch fault?

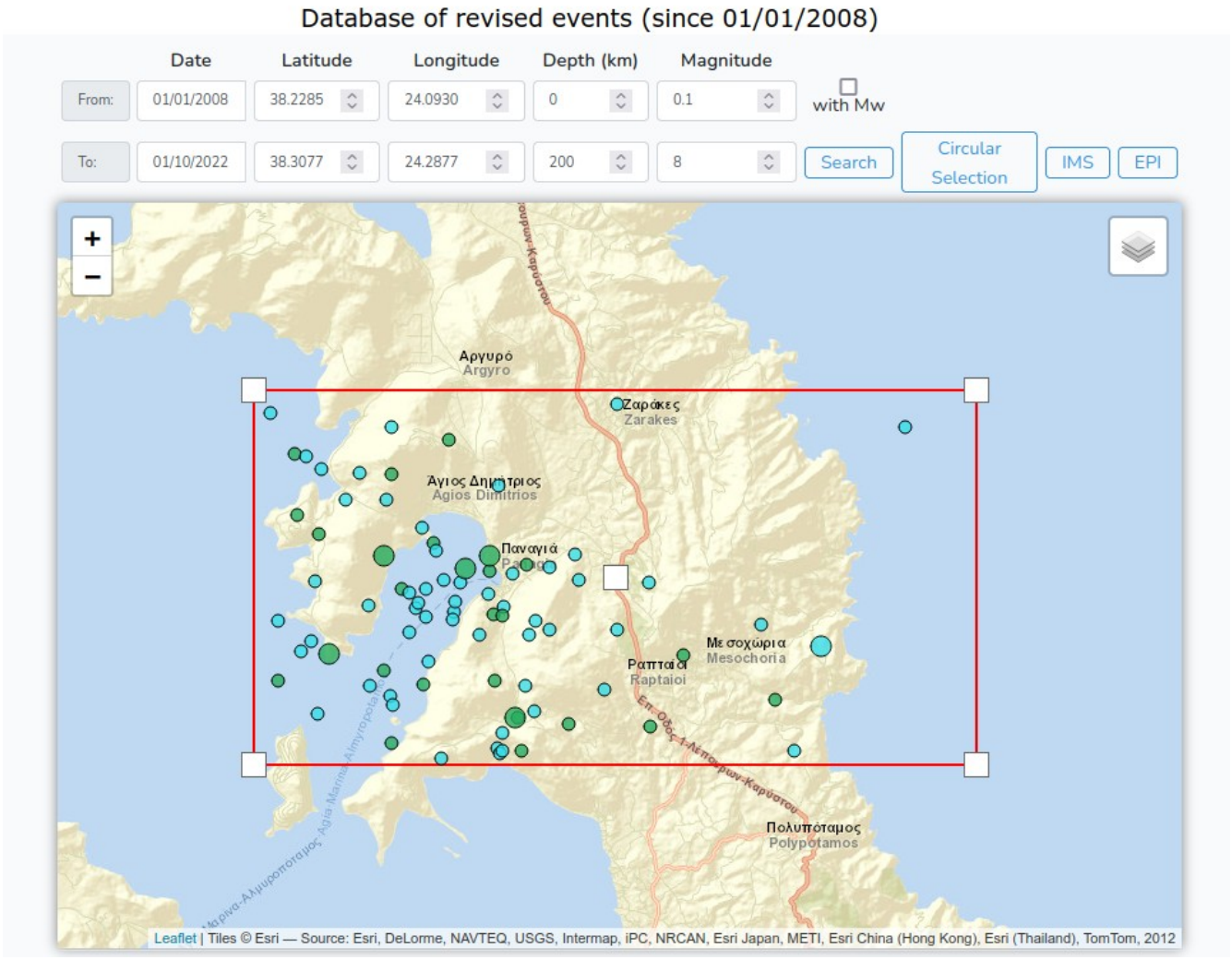
A distinct lineation is possible, although none of these events are included in the WCC catalog. Therefore, we refrain from making inferences regarding potential fault branches. Nevertheless, all event locations are publicly available and can be utilized in future studies.

 # It is also interesting to see, in the NE-SW cross-section (Figure 2c), that the seismicity has an apparent dip inclined toward SW. Is this possible dip consistent with those of the authors' moment tensor solutions? Are there any known (fault) structures that align with the corresponding dip as seen in Figure 2c?

We now plot the MT of the main event on the 29th of November 2022 in the same cross section. The steep SW dip of the fault correlates well with the aftershock cluster. We have altered the text to include this comment in (NL 114-118). Unfortunately, there are no known fault structures in the area.

 # Is abundance of seismic activity in a high topographic zone south of Zarakes also commonly seen in a background seismicity (before the 2022–2023 sequence)?

In general the background seismicity in the area is limited (in comparison with other areas in Greece). The attached map from http://bbnet.gein.noa.gr/HL/databases/database shows that from 1/1/2008 up to October 2022 there is no seismicity in the area under study.



 # I am interested in the apparent curve of the event trend: a counterclockwise curve of trend in the south-eastern section of the main cluster seen in Figure 2a. Is this corresponding to the depth change of the cluster, known fault structure(s), or possibly just due to location error?

Given that the majority of the recording seismic stations are located in the western quadrants, leads to higher absolute location uncertainties, especially for offshore events. As a result, we would prefer refrain from overly interpreting the final WCC locations.

L39–43: Just to note that these sentences are largely duplicated with the ones in Kiratzi (2014, Encyclopedia of Earthquake Engineering, https://doi.org/10.1007/978-3-642-36197-5_299-1).

These sentences are rephrased (NL 43-44)

L94: 220°N

The authors are explaining that this is an orientation for the "sinistral strike-slip fault plane", but based on the moment tensor solutions shown in Figure 2a, is this orientation for a right-lateral plane, if the orientation is measured clockwise from north?

You are right! By mistake we took the SW-NE fault plane from MTs (dextral). We now use the other fault plane (~130 degrees SE-NW, sinistral). It is almost vertical and diping southwestwards. The MT table in supplement has been altered. We are now using the average angle of 130 degrees in text (NL 105).

L99: A vertical cross-section perpendicular to the 220° strike

Please check if this is the correct description of Figure 2c. Perhaps Figure 2c corresponds to a vertical cross-section perpendicular to the ~130°(?) strike.

Exactly! Please see our previous comment. We are now using the average angle of 130 degrees in text (NL 114).

L99: at least two parallel NW-SE faults

May I possibly ask how the authors define those faults (or I would say, the two lineations of the events)? I think I get the authors' point, but it is a bit unclear to define the two parallel faults. Any annotations (e.g., dashed lines to guide those faults) would be helpful for readers.

In Figure 2, we have included the MT of the largest event, which exhibits a fault dip that is parallel to the aftershock lineations observed on one of the faults (specifically, the main fault to the east). Additionally, we have plotted a subjective line indicating the presence of a second fault to the west. This is now briefly described in NL 114-118

L101: two edges of the narrow sinistral strike-slip fault zone

It reads a bit unclear for me. These "two edges" mean that the shallow (~8 km depth) and deep (~12 km depth) edges, which are bounded by the events coloured by purple on Figure 2b?

Following Reviewer A suggestion, that he also considers this unclear but not critical to our argument, we remove this rather vague description

L102: this month -> April 2023?

This sentence has been removed following Reviewer A comment.

L109: general SW-NE direction

These far-offshore events look a bit scattered. Is this due to the station coverage? If so, please clarify the methodological limitation for locating those far-offshore events.

We believe that the methodology used for the analysis is sound. However, one of the main challenges lies in the uneven distribution of seismic stations, particularly in the western quadrants. This one-sided station coverage poses limitations in accurately determining the seismic events in those regions. We briefly discuss this in text and emphasize the need for future seismic stations, east, in the Aegean (NL 135-138).

L109:

Given the more scattered nature of these far-offshore event distribution, "evidence of an SW-NE fault zone" or "asymmetric rupture" might not be well supported. I would suggest the authors could explain a bit about the

uncertainty of these event locations (possibly due to the one-sided station distribution) to discuss if these ideas could still be supported.

Although we are suggesting the possibility of a conjugate SW-NE fault structure, we follow the suggestion from both Reviewers and abandon the argument of conjugate faults that are activated concurrently for the South Evia island area . These structures may not exhibit similar seismic activity in terms of temporal occurrence and density. Instead, they serve as indicators of the transition between dextral and sinistral strike-slip motions. We explain this in the main text (NL 126-133)

L111: 130°

Please check if this is for a right-lateral plane or left-lateral plane.

This is our mistake. We mean 220° *(dextral – right lateral)* We have changed the angle to 220 degrees in text (NL 129)

L116–132:

Is there any chance to illustrate better these regional information of faults and plates on a map? I would feel that some of the readers are not familiar with those information, so any visual explanation should be helpful, somewhere in Figure 1 or an additional panel in Figure 1.

We remove the top right panel of Figure 1, that basically provides the same information as in Figure 2, and we now include as a Top Right Inset a general map view of the Hellenic subduction system that illustrate the general faults and names mentioned in text.

L121–123: This sentence is largely duplicated with the ones in Wallace et al. (2009, G3, https://doi.org/10.1029/2008GC002220). If the authors do not intend to explain the details of these ideas (e.g., "dual indentor" model), I would suggest removing this line.

Rephrased (NL 142-144)

L129: mapped in 2022-2023

Perhaps; "the region focused in this study"?

Rephrased (NL 155)

L137: I am missing this "1965 event" in Figure 1. Can you spot on a map in Figure 1?

Figure 1 now includes the depiction of this event MT, along with those of the 2001 and 2013 events

L138: a small seismic sequence on the western shores of northern Evia

Which sequence are the authors referring to? Could you please spot (or annotate) this sequence on a map (Figure 1)?

Please see the previous comment

Table 1: Could it be possible to show magnitude information?

Are you referring to the type of magnitude that Mc represents? It concerns Local magnitude Ml and it is now included in the Table caption

Figure 1

- *Is it possible to plot the active faults?*
  http://gredass.unife.it/
  https://blogs.openquake.org/hazard/global-active-fault-viewer/
  In fact GEM includes GreDaSS database as part of the European database from SHARE project (https://github.com/GEMScienceTools/gem-global-active-faults). Now, in Figure 1 we are plotting the indicative fault lines from GEM (Styron and Pagani, 2021)

- *I would feel that defining a slip sense by colour (light red beachballs) looks a bit subjective, at least in Figure 1. I would just simply explain in the caption that "The light red beachballs are the moment tensor solutions obtained in this study." or something like that.*
  The light red moment tensors shown in Figure 1 represent those obtained from this study as well as other studies that shown a sinistral NW-SE motion. The caption has been modified to reference the studies that mention this.

- *The orange arrows look a bit subjective. I think those interpretations can be avoided, so that the authors' could allow more room for interpretations by future studies that follow the authors' work.*
  Orange arrows have been removed

- *Please show reference(s) for the background bathymetry/topography*
  Bathymetry and topography sources are included now in the Data and Resources section (NL 185-188)

Figure 2

- *Are there any reasons why the grey dots are missing in Figure 2c?*
  Fixed
- *It should be helpful to plot the widths of the cross-sections (1 km and 2 km) on a map of Figure 2a, so that the authors could clarify how the specific clusters shown in Figure 2b and 2c are selected.*
  The widths of the cross-sections are now plotted in Figure 1
- *Please add labels for X- and Y-axes of Figures 2b and 2c; "Distance (km)" for X-axis and "Depth (km)" for Y-axis?*
  Added
- *A map scale on Figure 2a (5 km scale) is not clearly visible.*
  Fixed
- *Please show reference(s) for the background bathymetry/topography in Figure 2a.*

  Bathymetry and topography sources are included now in the Data and Resources section (NL 185-188)

Acknowledgements

Citation for Obspy is missing (displayed as "?").

Fixed (NL175)

Data and code availability

Availability of datasets of the authors' relocated catalogue and the moment tensor solutions are missing.

The WCC relocated catalog is now available in Zenodo (https://doi.org/10.5281/zenodo.8077688)

MTs are available at https://bbnet.gein.noa.gr/HL/seismicity/mts. This is now referenced in Data and Resources section (NL 179, NL183-184).

References

Provide network DOI if available. For example, for the HL network, they have 10.7914/SN/HL.
https://www.fdsn.org/networks/detail/HL/
National Observatory of Athens, Institute of Geodynamics, Athens. (1975). National Observatory of Athens Seismic Network [Data set]. International Federation of Digital Seismograph Networks. https://doi.org/10.7914/SN/HL
We had an issue with @misc in BibTex. We have included references in FDSN networks as articles (@article in bibtex file and dois are now visible

DOIs or URLs are missing in some of the references. It is appreciated if the authors could thoroughly check.
All DOIs have been added

Yours sincerely,
Christos Evangelidis

Dear Christos,

Thank you very much for submitting the revised version of your manuscript. I have evaluated the revised version along with the responses to the reviewers. I would like to confirm that the manuscript can be accepted, but it may still contain a few issues to be resolved. Please find the following additional comments on the revised manuscript.

Once the manuscript is revised, please upload the following files, so that we can proceed to the next stage of the publication process after the manuscript is accepted. Since Seismica's copyeditors are volunteers, it is good to help them out with their job as early as possible:

*- A 'response-to-reviewers' letter that shows your response to each of the reviewers' points (*this time, the points raised by Handling Editor below), together with a summary of the resulting changes made to the manuscript.*

- A pdf version of the revised manuscript clearly highlighting changes/markup/edits.

- The final, cleaned manuscript using the Seismica template in Microsoft Word, OpenOffice or LaTeX file format (found on the Templates page) with figures included in the text. If using LaTeX, please also include your bibliography .bib file.

- Separate publication-ready figure files in .png or .pdf format at a minimum of 300 dpi resolution

- Supplementary material should be uploaded as a separate file that will not be formatted. Supplementary material should not be included in the main paper.

It is appreciated if you could submit the revised version by 3-July-2023.

Good luck with the final stages, and please don't hesitate to ask if you have any questions.

Kind regards,

Ryo Okuwaki

rokuwaki@geol.tsukuba.ac.jp

Comments by Handling Editor (Ryo Okuwaki)

**Below, I leave my comments mainly on the newly added or revised sections by the authors.*

L27:"anti-clockwise motion"

If the authors are explaining here a possible fault motion together given the event lineations and focal mechanisms, I would suggest writing "left-lateral strike-slip motion". Perhaps the words; "anti-clockwise motion" are not so familiar for readers.

We thought that the left-lateral motion might be to technical for non-experts. We now change it to left-lateral strike-slip motion as you suggest (NL 27).

L29:

Please see my comment above. I might write; "right-lateral strike-slip fault" or "left-lateral strike-slip fault".

We now change it to left-lateral strike-slip motion as you suggest (NL 29).

L36:

4.6 Mw -> moment magnitude (Mw) 4.6

Changed (NL 36).

L36:

4.8 Mw -> Mw 4.8

Changed (NL 36).

L57:

7.0 Mw -> Mw 7.0

Changed (NL 57).

L68: "3D grid around the station"

Perhaps "3D grid around a potential source area"?

The REAL association software deploys a 3D grid around the station with the first recorded P arrival and searches for possible earthquake locations. We rephrase the text to make things clear (NL 68-70).

L89–90: "Since these events are larger do not cross-correlate well with smaller earthquakes of the sequence and have only HYPOINVERSE solutions"

Are the authors saying something like below?

"We do not perform GrowClust relocation because the waveforms from these larger events do not correlate well with those from the other smaller events."

Yes. It was changed to “Here, we do not perform GrowClust relocation because the waveforms from these larger events do not correlate well with those from the other smaller events.” (NL 89-90)

L114: "two parallel faults"

I appreciate the authors have clarified these faults by adding an annotation on Figure 2c. Now I understand which section the authors have mentioned as a second line of the possible "two parallel faults". However, it seems that a possible second fault (annotated by a dashed line with "?" mark on Figure 2c) is not clearly recognised. In order to avoid possible over-interpretation, I would suggest removing the annotated line and "?" mark from Figure 2c and put less weights on a possibility of the second fault in the main text L114–118. Or, if the authors would like to keep the dashed line on Figure 2c, the authors may have to explain thoroughly that this fault structure is not clearly seen only from their relocated catalog in the main text L114–118.

We recognize that the existence of a second fault is not clear. We slightly shift the BB’ crosssection to the south and re-plot it. The cluster to the west is now more visible but still less clear. But, if you

check our 1:1 crosssection BB’ in Figure R1 and see the thin black line to the west with dip 84 it links shallow with deeper events. It is however an over-interpretation. We remove from Figure 2 the hypothetical line (that has wrong dip since the crosssection is not 1:1) and the “?”. We also rephrase the text. The new Figure R1 is now offered in the supplement as Fig S2 without the dashed lines. (NL 114-117).

L114:

I also appreciate the authors have plotted the beachball on Figure 2c. However, I would feel that, because the aspect ratio of Figure 2c is not 1:1, perhaps it might be a bit tricky to discuss a possible dip angle, by visually comparing with the aftershock distribution and focal mechanism in this figure layout? I would delete the beachball from Figure 2c, and instead discuss in the main text the possible dip angle roughly estimated from the aftershock cluster(s) and the dip angle from the focal mechanism.

You are totally right about the aspect ratio! The beachball has been removed from the crosssection in Fig2c. For your reference (see above) we plot this crosssection in 1:1 aspect ratio (Fig. R1). In this it is evident that the main cluster dips to the west at steep angles. This new figure is now offered in the supplement as Fig S2 without the dashed lines. We also rephrase the text (NL 114-117).

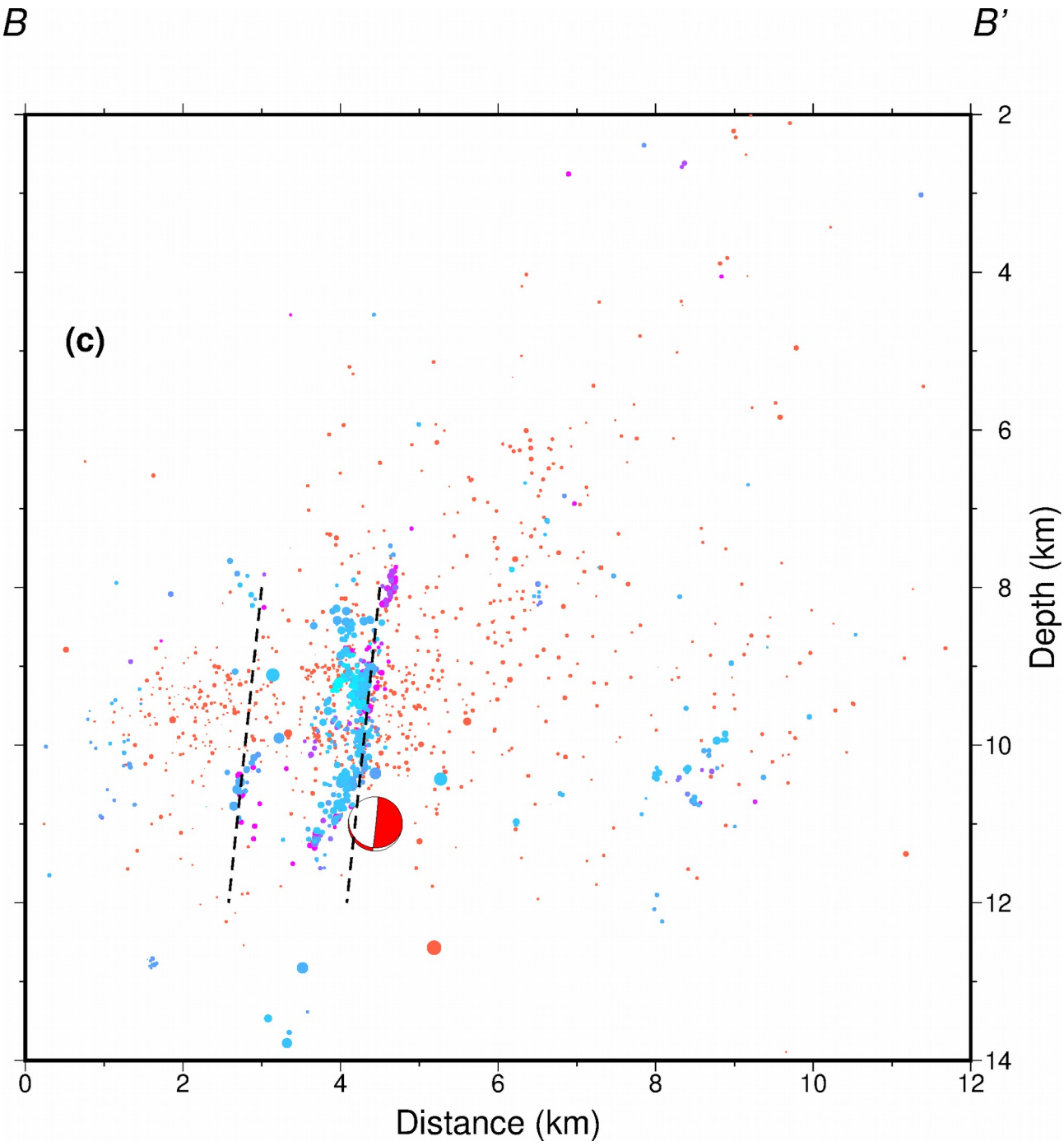


Figure R1

L114:

The authors replied to Reviewer B's comment as "The steep SW dip of the fault correlates well with the aftershock cluster", but may I ask how the authors compare the focal mechanism (dip) with the aftershock cluster. Did the authors calculate (or roughly estimate) a dip angle solely from their relocated events, and then compare the dip angle with the one from the focal mechanism?

Yes we roughly estimate the dip angle from their relocated events, and then compare the dip angle with the one from the focal mechanism. Please see our previous comment and the crossection in Figure R1 with aspect ratio 1:1

I would rather see the aftershock clusters show a bit shallower dip. Please see the attached screenshot below, where I added the brown lines to emphasize the possible dips I could see on Figure 2c. Perhaps I am missing the authors' point, so I would appreciate it if the authors could clarify how the authors compare the aftershock cluster(s) with the focal mechanism in the corresponding line (L114–118).

We apologize for not explaining well the visual way we compare clusters with MTs. Initially this is done in 1:1 figures but then we didn't pass this info in Figure 2. Observing Figure R1 we can see that the aftershock clusters are rather steep. We could see a change in dip with depth but we think this might be an over-interpretation. To make things clear we now add FigR1 in the supplement as Fig S2 without the dashed lines. You are also totally right that the dashed line in Figure 2 does not have 84 deg dip but much larger. Lines with 84 deg dip are shown in Figure R2.

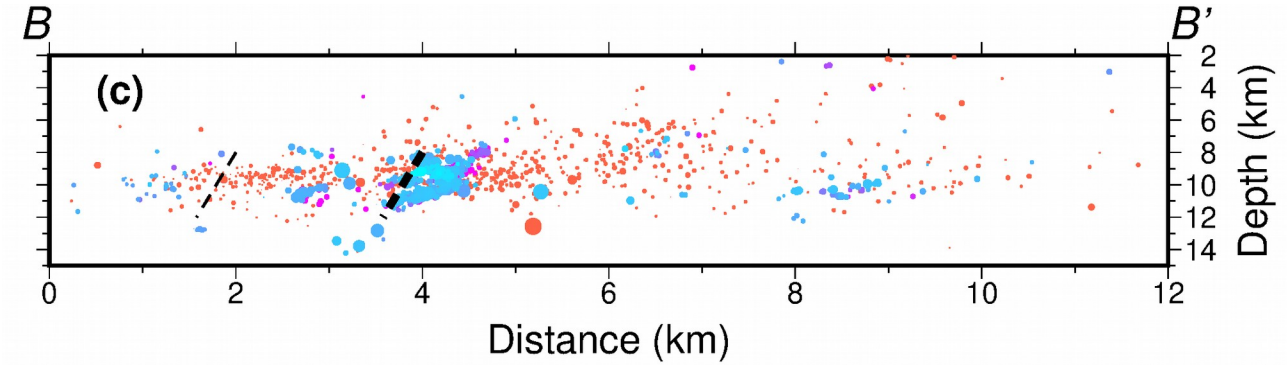


Figure R2

L132: "In addition, the existence of a conjugate structure with a SW-NE orientation may not be excluded."

I agree with the authors that such a possibility is not excluded, but at the same time, the authors already declare that at L130: "there is no conclusive evidence of any significant event occurring along a right-lateral offshore fault" in the preceding line. I would suggest deleting the line of "In addition, the existence of a conjugate structure with a SW-NE orientation may not be excluded.".

We acknowledge the contradictory nature of the text. We removed this sentence.

L135: "a more balanced distribution"

Do the authors mean; "a better coverage"?

Actually we mean azimuthal balance in seismic network coverage. We changed the text according to your suggestion (NL131-133)

L158: "lack" -> "lacks"?

Changed (NL 154).

L182: "(EIDA@NOA) ()"

Please fix this blank parenthesis.

Fixed by making visible the url of EIDA@NOA (NL 178).

L185:

If the authors are using the GEBCO bathymetry, please cite and acknowledge:

GEBCO Compilation Group (2023) GEBCO 2023 Grid (doi:10.5285/f98b053b-0cbc-6c23-e053-6c86abc0af7b)

We now cite GEBCO also (NL 183).

Figure 1 caption:

"sinistral NW- SE motion"

This may read an over-interpretation. I think the authors thoroughly discuss this point in the Discussion section, so I would write at least in the caption; "The light red symbols show focal mechanisms obtained by this study and others (Roumelioti et al., 2003; Ganas et al., 2005; Kiratzi, 2014)."

Changed according to your suggestion.

"extensional" -> "normal"?

Changed

"dextral strike-slip"

Do the authors mean that there are no sinistral strike-slip faults registered in the GEM database for the corresponding region? Or, the authors are intendedly showing only the dextral strike-slip faults? Please clarify in the caption.

GEM database shows only limited sinistral strike-slip faults in the area near Skyros island that we somehow missed due to a GMT plotting script bug. We added this in the caption and updated the picture.

Figure 3

Please clarify a bin width of magnitude to calculate frequency in the caption. Is that 0.1?

The bin width is 0.1. We added this clarification in the caption.

"approximately 130°"

I assume the authors need to define an exact azimuth (strike angle) to project these events on a projection line, so I am a bit confused with the meaning of "approximately" here. Is it exactly 130°? Or, have the authors used the several projection lines with different azimuths to project the events and shown them on a single figure?

No you are right! It is 130°! We delete the word approximately.

A label on a X-axis: Could you please add a unit of distance, for example; "Distance along A-A' (km)"

Label fixed

Table 1 -> Table S1

Table 2 -> Table S2

Table 3 -> Table S3

Figure 1 -> Figure S1

The numbering of Tables and Figures in the supplement has been corrected