Paola Montone
Annals of Geophysics - Editor in Chief

Rebuttal letter for submission of the manuscript

AdriaArray – a Passive Seismic Experiment
to Study Structure, Geodynamics and Geohazards of the Adriatic Plate
by Petr Kolínský, Thomas Meier et al.

submitted to the Special Issue of Annals of Geophysics
"Recent large-scale temporary passive seismic experiments in Europe: deployment and data quality"
replies to reviewers' comments and suggestions

Editor's and reviewers' text is in normal black font, authors' replies are in blue and **bold** are **keywords** emphasized by the authors to point to the **main topics** of the reviewers' comments.

Dear Paola, the editor in chief,
on behalf of all our coauthors, we are submitting this rebuttal letter, and also the revised manuscript. We have considered all reviewers' comments and implemented most of them. Here we provide detailed responses to both reviewers and explain what we have changed. We also submit a manuscript with tracked changes as well as a clean copy of the manuscript with the changes incorporated. We also submit all figures in high resolution as separate files.

Line numbers, section numbers and Appendix labels used in this letter refer to the original submitted manuscript, so that it corresponds to the reviewers' numbering. In the revised manuscript, numbers of lines differ as the text has been modified, and labels of Appendices have been modified too, as Appendices were reshuffled.

All figures were updated to reflect the latest development of the AdriaArray Seismic Network and the reviewers' comments. New figures are included only in the clean version of the manuscript, as it is technically not possible to place them properly in the file with so many tracked changes.

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the letter from the editor:

Dear Dr. Petr Kolínský and Co-Authors,
the reviewers have read the paper "AdriaArray – a Passive Seismic Experiment to Study Structure, Geodynamics and Geohazards of the Adriatic Plate". Their comments are **favorable**, even though there are in their opinion some **minor issues** to address in order to make the paper suitable for publication. We recommend you to read the reviewers comments carefully and address them. When you are ready to provide us with a revised version of your manuscript, please upload it together with a document indicating the applied changes to the original manuscript and detailed replies to the points raised by reviewers. The revised version of your manuscript will be considered for publication on the next available issue of Annals of Geophysics.

Best Regards,
Sector Editor

Reviewer 1:
Recommendation: Revisions Required

Scientific Quality scores (SQ): 2. potentially good, if revised

Give a brief comment to justify

This paper presents an insightful and comprehensive overview of the AdriaArray project, a multi-national endeavor comprising a seismic network spanning the Adria Plate. The network, comprising 1508 stations, provides real-time data to European Integrated Data Analysis (EIDA) nodes, enabling research on active tectonics and seismic hazards. The framework for collaboration is extensive and potentially far-reaching, encompassing both scientific objectives and fostering collaboration among various European countries.

The paper provides a detailed historical background, technical objectives, and design of the seismic network. It also outlines data archiving procedures, station inventories, and maps. Given its purpose, the paper does not actually present the results of primary scientific research, but rather serves as a preliminary description of a remarkable ongoing large-scale collaborative experiment. While this content may conflict with the editorial policies of a scientific journal devoted to publishing results of scholarly research, the paper's publication is deemed highly worthwhile as it would contribute to the scientific community and be widely read. The decision of acceptance is hence left to the Editor. Otherwise, the manuscript is well-written and potentially suitable for publication, although minor revisions and additions are highly recommended to enhance its quality.

The manuscript primarily focuses on the technical and practical aspects of the instrumental network, which is understandable given its technical nature. However, it would be beneficial to include a comprehensive **science plan** that outlines the scientific objectives and methodology of the project. Additionally, information on the **performance of the stations, including noise levels and data availability**, would be very valuable. These aspects are discussed in greater detail below.

Data and metadata quality, availability, retrievability, noise levels and several other quality checks are described in a separate paper of the special issue, as mentioned at the reference in lines 686-687 and repeated in line 873. Moreover, all the other papers prepared for the special issue include basic quality checks of the particular sub-networks and regions. We added a sentence after line 687 to explicitly mention what is included in the referenced data-quality paper.

While the manuscript provides a concise introduction to open scientific questions, it lacks a comprehensive and scientifically sound plan that certainly is behind it. Specifically, the manuscript should **outline the expected knowledge gain and the methodology** (reasoning) behind the use of new data, as well as the underlying scientific projects in progress. Only a brief summary of potential general topics is provided (lines 230-260), but these are abstract and lack detailed information on how such topics can be pursued. A scientific plan would be valuable and undoubtedly appreciated by the scientific community. For a description of such a large initiative, a science plan or explanation of projects should perhaps deserve a **dedicated section in the main text** (and possibly even figures).

Lines 230-260 indeed generally describes the open questions. Then, chapter 4.7 "Collaborative Research Groups" (CRGs) describes the organization of the research and Appendix G gives a two-page detailed explanation of all eight CRGs working in the framework of the initiative, listing their goals and also methods. We added a reference after line 260 to point to this detailed explanation given later in the text and in the Appendix G.

Presentation Quality scores (PQ): 2. potentially good, if revised

Give a brief comment to justify

The current approximately 10 station maps are excessive, confusing, and redundant. They occupy unnecessary space and repeat similar information. Station **maps could be effectively reduced to approximately half their current number** for clarity and space optimization. However, these maps and the total number of stations do not provide information about **actual performance**. For instance, **each station operation timeline** is not clearly displayed, and it is unclear how the complete **network has grown over time**. Additionally, the graph of data growth in Figure 12 only presents an aggregated view. The authors may find the most appropriate way to convey information on station operation in time and performance (such as installation schedule, noise level, data gaps), but an effort should be made to include such data, as it would be highly relevant to the subject matter and to potential users.

We moved three maps to Appendix – former Fig. 5 (all stations in the region), former Fig. 10 (temporary network codes) and former Fig. 11 (relation of the backbone to the virtual network). We also moved former Fig. 8 (logo) and former Fig. 12 (history plot) to Appendix. Note, that our maps and figures are inspired by the paper by Hetényi et al. (2018) about the AlpArray experiment, where similar maps and figures (1] tectonics, 2] former experiments, 3] topography, 4] coverage, 5] history plot, 6] corner periods. 7] deployed stations, 8] examples of earthquake records) are presented all in the main body of their paper. In this sense, our manuscript includes only the seismic hazard map in addition and hence we do not think the number of figures was excessive. See also our reply to similar comment by reviewer #2 below.

Technical note: Appendices were reordered. A lot of text was moved to Appendices. This is not tracked in the changes. It would make the file illegible, as all the text would look like deleted and pasted elsewhere. We, however, keep tracked changes wherever the text was modified.

reference: Hetényi, G., the AlpArray Seismic Network Team, the AlpArray OBS Cruise Crew, the AlpArray Working Group et al. (2018a). The AlpArray Seismic network: a large-scale European experiment to image the Alpine Orogen, Surv Geophys, 39, 1009–1033, https://doi.org/10.1007/s10712-018-9472-4.

The Introduction provides a comprehensive overview of the regional framework and open questions. However, the brief history of global seismic networks appears to lack motivation, given the different geographic focus (regional scale) of this paper. Similarly, the seismic antennas (Yellowknife, LASA, Graefenberg, NORSAR) were planned with different objectives in mind. More compelling forerunners are perhaps **NARS and, predominantly, USArray**, which may warrant further description of results and outcomes. Other notable cases may refer to **Australia and China**. Additionally, to build expectations for the potential contributions that AdriaArray may make to the general questions above, it would be beneficial to read about the **main contributions that arose from the numerous previous experiments** in the region listed in the manuscript (and how they were linked to the availability of fresh data).

Global networks are mentioned for completeness of the overview. The scale of each array/network is mentioned. We added two sentences about the NARS experiment. The objectives of the older arrays (Yellowknife, LASA, …) are clearly pointed out in the manuscript. We modified the sentence about the outcomes of the USArray. We added sentences and references about AusArray and NECESSArray. We did not extend the text with listing the outcomes of the previous experiment as the size of the text is already excessive now, and both reviewers also point to that it is already too long.

Section 3 offers substantial technical and practical information, which is indeed valuable. However, the inclusion of nine sub-sections may be excessive, and a significant portion of the **information could be more effectively and clearly summarized in tables**. For instance, **sub-section 3.4** provides a lot of detail on the patterns chosen to select station names; **sub-section 3.5** lists nodes of the EIDA federated infrastructure. Some of this information is probably more appropriate for the GitHub repository, that — by the way — holds some very interesting additional material, such as the **station noise maps** (that, by providing information on site quality, could perhaps be also appropriate for this paper as noted above).

We moved subsections 3.1 till 3.6 to the Appendix, as suggested by reviewer #2, see below. We also moved all corresponding figures referenced in these subsections to the Appendix. We rather keep the details in a text form, as it is not easy to summarize all the details in tables. The details now don't obscure the main body of the text, when moved to the Appendix.

Noise maps are part of a GitHub repository of Felix Eckel, who is a co-author of a separate paper prepared for the same special issue, devoted to AdriaArray data and metadata quality. We added a sentence to the text where we reference the "Data quality" paper to explain what details are given in the other paper, including the noise maps. AdriaArray GitHub repository does not contain any noise maps.

The historical timeline appears to be divided into two distinct sections. While the evolution of the network is briefly outlined in Section 3.6, the narrative of the collaboration is presented in Section 4.1. It would perhaps be more effective to provide a **single comprehensive description of the entire timeline**, incorporating all milestones, outputs, and anticipated deliverables.

True, yes. Section 3.6 was moved to the Appendix, so the main body of the manuscript now contains only the section 4.1 with the history of the Initiative.

The paper in the opinion of the Reviewer requires minor revisions

Additional comments

English proficiency is acceptable, but would greatly benefit from revision by a **native speaker**.

L 98: "is complemented by locally densified broadband and short-period large-N deployments in the western Carpathians, along the Dubrovnik fault, in the Vrancea region and in **Albania" ANTICS** is elsewhere mentioned as an independent experiment with different data policy

We removed Albania from the sentence as indeed, a slightly modified data policy applies to ANTICS. We corrected also another similar sentences elsewhere in the manuscript.

L 117: is **volcanic activity** relevant as a geohazard for the Adria plate?

We think so, remember Etna, Vesuvius, Stromboli ...

L 156: "As shown in Fig. 1 AdriaArray covers": the network map is **actually in Fig 3**, rephrase

We added "… by the black outline" to emphasize, that we point to the outline of the network. We need to refer to Fig. 1 here because of the tectonics.

L 192: **overreach = reach too far**: is this what the authors actually meant?

This was a mistake, replaced by “comprehensive”.

L 529ff: The index of the **GitHub repository is unnecessary** as it can easily be accessed with the link provided (and, presumably, will be subject to continual updates)

The whole section 3.2 (together with 3.1 to 3.6) was moved to the Appendix, as it – indeed – contains more technical details.

L 555: Figure 8 (**the logo) is totally unnecessary**. Also, the **small AA logo plotted near all maps** has no function and should be removed

Logo is a part of the community and communication outreach of the AdriaArray initiative. We moved Fig. 8 with the logo to Appendix (together with subsection 3.2 and other subsections). Small logos in all figures were inspired by the paper by Hetényi et al. (2018) describing the AlpArray experiment, where every figure also has such a small logo. The figures from our current manuscript are also stored on the AdriaArray GitHub repository and available for the community. We assume that the figures will be reproduced at various presentations and posters. Hence inclusion of the logo clearly assigns the maps to the AdA initiative.

L 565: perhaps add reference to **explain what PACASE is** (it had been introduced pages before, here it is mentioned for a naming convention)

We added short explanation and reference. The whole subsection is now in Appendix, meaning appears even later than before.

L 619: provide definition or **reference to SeedLink**

We added a short explanation and a reference to Appendix, where we added a link to the FDSN webpage where the SeedLink protocol is explained. We added the explanation to the first occurrence of the SeedLink in the text, which is former subsection 4.5, which was merged to 3.8, which become 3.2. The subsection 3.5 containing line 619 is now in the Appendix.

L 650: "the SEED convention" provide **reference to SEED and channel naming convention**

We added a reference to (FDSN et al., 2012), plus the corresponding entry in the reference list, pointing to the SEED manual.

L 716, Figure 13: red, dark red and purple are very difficult to distinguish, please **use different colors**

We made the dark red and purple colors a bit darker, so that the contrast to the red is clearer.

L 727: "In the acknowledgments, the AdriaArray Seismology Group is to be mentioned" it would be useful to provide a direct **https link as a preferred reference** to the collaboration (a list is apparently present on GitHub)

We added a reference to Appendix F, where all the participants are listed. We also have a list of participants on the AdA webpage, which, however, only includes those who agreed with their names to be there. So that list is not complete.

L 818-828: This **information is superfluous** here and should be omitted. It is appropriate for inclusion in a table on the web repository. Also consider **other similar** information.

Here, the list of institutions involved in the “group members” is referred. As we moved pages of other text to the Appendix, we decided to keep this short paragraph in the main text, as the organization of the paper would suffer from being broken to small pieces if also this is moved. One piece of information would be split between the main body and Appendix. Hence we keep it as it was.

L 830: "participants are individuals affiliated with member institutions" presumably who have **expressed interest in AdriaArray data, not every individual** affiliated with the institutions?

Yes, true. We reformulated the sentence.

L 672 & L 908: "stations built in Ukraine" stations **installed or actually built**?

We exchanged the term “built” to “installed” everywhere in the text with regard to Ukraine. This was a new equipment installed at places of former existing short-period stations.

L 855: Seismograms of Figure 14 could be easier to see if plotted on **white background**

We decided to keep the figure as it was. First, the lighter colors are better visible on a black background, second, this layout also matches other figures of similar content showing examples of earthquake records in other papers of this special issue.

L 908: " station density varies between 20 km" km is not a unit of density, maybe **inter-station spacing** is meant?

Corrected as suggested.

L 924: **"in Albania": is this ANTICS**? Elsewhere it is written that it is independent from AdriaArray (in fact, it is listed with quite a different data policy)

We corrected all mentions of ANTICS throughout the text. Yes, it is an associated experiment with slightly different data policy.

Reviewer 2:
Recommendation: Revisions Required

Scientific Quality scores (SQ): 2. potentially good, if revised

Give a brief comment to justify

Very large and regularly, densely spaced seismic station arrays like the AdriaArray are of utmost importance to obtain high-quality data that suits the modern requirements for top-quality research. Their establishing and operation though are by no means straight forward and require international collaboration among many institutions - and great dedication by a group of scientist leading the experiment. Though the manuscript presented does not report on geodynamic-seismic research results it nevertheless will become an important (and often referenced) paper as it explains the establishing and operation of AdriaArray and thus exemplifies and motivates further such experiments. The text does need though restructuring by making the main text more concise and **moving** some AdriaArray specific **details to the Appendix**.

We moved a lot of text to Appendix, as suggested also by reviewer #1 (above) and reviewer #2 here below.

Presentation Quality scores (PQ): 2. potentially good, if revised

Give a brief comment to justify

Review of manuscript “AdriaArray – a Passive Seismic Experiment to Study Structure, Geodynamics and Geohazards of the Adriatic Plate” by Kolinsky et al. submitted to Annals of Geophysics.

First and foremost are my congratulations to the large group of scientists joining forces and interest in this great collaborative initiative. The manuscript by Kolinsky et al. is of importance and timely. The main text, however, is much **too long** with many organizational and administrative details useful only for AdriaArray-internal purposes yet unnecessary for the regular Journal readership. If left in the current structure and length, as a regular reader I would just skip the text and after looking at the also **too many Figures** with station maps I would stop reading the paper altogether – and this would be a pity since a number of topics addressed and points made would make it a worthwhile publication. Hence the main messages of the paper should be presented in concise form with the bulk of the **current text and figures being moved to the Appendix**. There are a few missing information and/or points that need clarification but in most parts the revised main text could just be a summary extract of the current lengthy text. In conclusion I suggest publication after minor revision.

We shortened the text significantly by moving large parts to Appendices.

I append a **doc-file with the annotated manuscript**. To clarify my main points of criticism I would like to direct the attention of the authors to the following topics:

We addressed all points from the annotated manuscript. Thanks for these, it helped to clarify the text.

(1) For recognition and advertising the project name AdriaArray is certainly a good choice and it adequately directs the focus on the geological center of interest. Furthermore, for seismic imaging reasons as well as for geodynamic reasoning a wide area around the Adria plate must be included in the experiment and in the research of plate tectonic processes in and around Adria.

Thank you.

To call, f.e., the Massif Central, the Moesian platform, western Ukrainia or the westernmost part of Anatolia “**active margins** of the Adriatic Plate” (line 155), however, to me seems **unnecessarily too far-fetched**. The implications of an “active margin” in relation to the Adria plate in some of the outer regions covered by the AdriaArray seem rather speculative and are at least not common knowledge. Already the “deformed Adria” region in your Fig. 1 includes the largely extrapolated region

of Adria "active margin" since in much of this region the lithosphere is currently a complex amalgamation of Adria units with units from various other provenance. I suggest you consider **rephrasing and/or explaining** in more detail your reasoning **to include or exclude** some more distant regions around Adria within the borders of AdriaArray. There are good reasons for such an extended seismic experiment even if they are not directly related to geodynamics of Adria plate. Why not openly address them?

Yes, we agree. We reformulated the first paragraph of Section 1.2 adding several sentences addressing the point raised by the reviewer. Also, we added an explanation to the Section 2.2 about the design of the network, see the comment #3 by the reviewer and our reply below.

(2) The list of "overarching topics (that) will be addressed by AdriaArray" at the end of chapter 1.2 is of prime interest as it defines the required characteristics of the experimental design. While it is obvious that many findings of Adria plate processes and interactions with its surrounding plates will also impact our understanding of geodynamic processes of other plates, they nevertheless primarily are specific to the history, current status and evolution of Adria. Furthermore, one of the prime advantage of the comparably small Adria plate is its contemporary involvement of a few significantly different types of plate interactions. Hence, rather than begin with general terms, I would **formulate the main research topics of AdriaArray more specific with regards to the Adria** plate boundaries interactions:

Yes, we agree and we formulated the research topics more specifically with regards to Adria.

First topic: continental collision – along the Alps, Adria being upper plate (from southern tip of Western Alpine arc to at least 13E longitude). **What about the SDinarides and NHellenides** where Adria denotes the lower plate?

We added several sentences to the first topic to account for the reviewer's comment.

Third topic: plate evolution through time. "At active margins, the lower part of the Adriatic lithosphere is subducting into the mantle, whereas crustal nappes got delaminated and are now moving with the Eurasian plate." This is certainly correct for some (unmentioned) locations along the Adriatic "active margins" but also **certainly incorrect with respect to the Alps** (using the term Eurasian plate is to general). On the other hand **it is also incomplete as the rollback subduction of Adria plate** (and in parts this is continental lithosphere subducting!) beneath the Apennines in the past and in NApennines today **is not mentioned**. The opening of back arc basins (mentioned in your paragraph) is obviously linked to the subduction processes but under the topic plate evolution through time **you must keep a focus on Adria the is or has been (obliquely) subducting** on its western and eastern sides.

We added more precisions to this paragraph (we specified the locations mentioned rollback subduction, and separate disintegration of Adria from reformation of Eurasia) to answer the reviewer's constructive comments. We also complemented Fig. 1 (tectonic map) with several more unit labels.

Second topic: What process drive plate deformation. Well posed – slabs and asthenospheric flow. However, in the case of Adria **what about its special location between the two big plates**, there motions and the slabs attached to them?

We added a sentence about the central location of Adria between the two big converging plates to the second topic.

(3) Apparently, the "AdriaArray region" is **outlined** in Figs. 1 (black line), 2 (green line), 3 and 5 (yellow line), 4 (red line) **but not mentioned in any of the Figure captions**. Why? The line in most parts is a **solid line and in other parts is dotted**. What does this change reflect? How do you **define the AdriaArray** region?

The outline was mentioned in the captions of Figs 1 and 3. We added the mention also to all the other figures (2, 4, 5 [A1 now], 7 and 9) with that outline. Dotted line in the sea only means that it is arbitrarily set up there, as there are no stations. The explanation of how the AdriaArray region was outlined is given in section 2.2. The outline was not defined, it is a result of negotiation with mobile pool providers and number of stations available, as noted by the reviewer in the next comment.

Then in lines 422-425 you write: Before planning the temporary stations, we did not set any a priori station spacing nor did we introduce any strict decision on the region to be covered. We also did not apply any strict rule for the corner periods of the backbone stations. All these parameters (spacing, region, corner period) were obtained as a result of negotiations with mobile pool operators willing to join the project.
This corresponds with my first question/impression when I saw the (black, green, yellow, red) outlines of the AdriaArray in relation with the tectonic map (Fig.1) and the research topics. It is OK to cover other very distant regions beyond the Adria plate (f.e. NE of the Carpathians or in the eastern Aegean) but then you either **should include the geodynamic targets and interests specific to those regions** in your list of research topics or you **define those array parts to be included for the**

purpose of completeness and consistency of seismicity assessment (and seismic data exchange) of South-Central-and-Eastern Europe that is a very valid objective. However, it **should be made clear**.

We added three sentences to 2.2 to explain how the final outline of the region was achieved. We mention the seismicity, and also that the imaging methods provide better resolution of the targeted area when the ray coverage exceeds the target laterally.

(4) In my view, **Figures 4,5,6** (topography, all stations, deployed stations) should all be **moved to the Appendix** as they are in parts repetitive and contain to much logistic details for the main paper.

We moved former Fig. 5 to Appendix, together with five other figures, see our reply to similar comment by reviewer #1 above. Also note, that all the figures mentioned here (4,5,6) were inspired by figures of the same content describing the AlpArray experiment in the paper by Hetényi et al. (2018), where all these figures are also in the main body of the paper.

A **paragraph/figure/table with important information about the AdriaArray though is missing**: In the end, what **stations were operational** during the full (what) **period** and **what local temporary arrays/deployments were operational when**. Figure 7 shows the station coverage. The caption states that all stations provided data after May 2022. Is this **correct that all those stations were operative in May 2022** (note in Fig. 12 you list "start of AdriaArray deployment for June 22)? It would be great if all stations were operational at the same time and if so, it should be more prominently noted while **most of chapter 2 about the logistics should be moved to Appendix** (chapter 2 includes Figs. 4, 5, 6 and 7). By the way **until when** (today) are they **operational**?

We moved almost all the Chapter 3 to the Appendix, as well as parts of other text was moved. Chapter 2 is crucial for explanation about the background of the experiment, and we decided to keep it in the main body of the text. The reviewer suggests to move chapters 2, 3 and 4 to Appendix and delete Chapter 5 (Summary, see below), which would mean that nothing is left in the main body – the paper would then only consist of Introduction (Chapter 1).

The operational time is difficult to show in figures. Fig. 3 now at least shows, which temporary stations are closed already. We completed the information about the dates of operation in the table of temporary stations available on GitHub - it was there already when submitting the manuscript, but some entries were missing. The proper way of obtaining information on operational time of a given station is StationXML archived in EIDA. With a simple one-line command, one gets a list of times for required stations. Moreover, most of the temporary stations are operational still at the moment of writing this manuscript, and hence printing their times of operation in the paper would be anyway subject of change later, as we do not know the closing dates yet.

(5) **Figures** 8,9,10,11 (logo, institutions, networks, backbone/virtual) together with most **text** of sub-chapters 3.1 to 3.6 (webpage, GitHub, inventories, names, EIDA, virtual network) should be **moved to the Appendix**. The main text chapter 3 should just contain a summary of these subchapters. Subchapters 3.7 to 3.9 (metadata, download, citing) **should be kept in the main text** as these are information for all readers, yet related important points from **subchapter 4.5** (data access) **should be integrated with subchapter 3.8** (download).

We moved Figs. 8, 9, 10 and 11 to the Appendix, together with corresponding subsections 3.1 to 3.6 as suggested. We also merged part of subsection 3.6 about the history plot with former Appendix E, where details about that plot were given, and moved also the corresponding Fig. 12 to that Appendix. Subchapter 4.5 was merged with 3.8 as suggested.

(6) **Chapter 4** primarily contains information of possible internal interest only to AdriaArray Seismology Group and in its entity (or in a modified version) should be **moved to an Appendix**. A maximum two-page summary should be integrated in revised Chapter 3 of just the main organizational points (AdriaArray SG, SC, Memorandum oC -include main text points of it or **MoC in full in Appendix** rather than just to provide a link, Working Groups and Collaborative Research Groups).

As we moved pages of other text to the Appendix, see above, we decided to keep Chapter 4 as it was. The paper not only describes the seismic network, but also the experiment and the initiative, and Chapter 4 is important for understanding the whole concept. We also remind, that the term "interest only to AdriaArray Seismology Group" means interest of at least 450+ people. Moreover, we believe, the description of the organization efforts could be helpful also for the audience beyond the current AdriaArray participants.

(7) The Summary (Chapter 5) and the Abstract in their contents are largely identical though some points are more nicely and comprehensive presented in one or the other. I suggest to **delete the Summary** and **complement** where useful the **Abstract** with some points.

We believe there should be a paragraph summarizing the main points of the paper, as usually papers do have such a section. We renamed the paragraph to "Concluding remarks and Perspectives". See our reply to a comment #17 below.

The paper in the opinion of the Reviewer… requires minor revisions

Additional comments

I tick the box MINOR revision because content wise there will only be minor adjustments required. In terms of main text extent (and number of Figures) reduction and the increase of the Appendix, however, it will be significant. I also upload a file with the **annotated manuscript**.

We applied the suggestions from the annotated manuscript as mentioned already above. See here detailed list of the comments from the manuscript with our replies. We also considered all the suggested changes of the text which were made by the reviewer in the tracked-changes mode.

Kommentiert [EK1]: the array obviously (Figs. 1-4) encompasses much more than "the Adria plate and its active margins" - which is a great advantage.

Corrected, see our other replies.

Kommentiert [EK2]: I did not count but assume the number of names listed in Appendix F is indeed 442

It was indeed 442 and it is 451 now, as the list is gradually getting longer.

Kommentiert [EK3]: Odd sentence, difficult to understand. Consider rephrasing, f.e.; The AdriaArray initiative has made accessible through EIDA (Strollo et al., 2021), the European Integrated Data Archive, managed by ORFEUS (Cauzzi et al., 2024) nearly 100 permanent stations, established and operated for years and sometimes decades.

Corrected as suggested.

Kommentiert [EK4]: And much more, see comment 1 in review summary.

We reformulated the sentence and added some more sentences to account for this comment, see our replies to comment #1 above.

Kommentiert [EK5]: If it was subducted how do you call todays SE part of the Ligurian Ocean (the ocean floor SSE of the mid-ocean ridge)?

Probably, there was a confusion with the name "Ligurian" that is used for both the old Piemont-Ligurian Ocean (or Alpine Tethys) as well as the present-day Ligurian Sea. We therefore tried to differentiate in the text the old "Piemont-Ligurian Ocean" that was subducted and the recent "Liguro-Provençal Basin" (between Gulf of Lion and Corsica-Sardinia).

Kommentiert [EK6]: How did it shrink by "continental collision"?

We included the explanation in our added sentences at the beginning of Section 1.2.

Kommentiert [EK7]: please check the several more recent publications (post 2011) that in summary provide a somewhat different image.

We added several references and reformulated the sentence.

Kommentiert [EK8]: please check the more recent publications by D'Agostino et al. 2022 and by Serpelloni et al. 2022.

We added three references to the corresponding sentences:

D'Agostino, N., M. Métois, R. Koci, L. Duni, N. Kuka, A. Ganas, I. Georgiev, F. Jouanne, N. Kaludjerovic, R. Kandić (2020). Active crustal deformation and rotations in the southwestern Balkans from continuous GPS measurements, Earth and Planetary Science Letters, Volume 539, 116246, ISSN 0012-821X, https://doi.org/10.1016/j.epsl.2020.116246.

D'Agostino, N., A. Copley, J. Jackson, R. Koçi, A. Hajrullai, L. Duni, N. Kuka (2022). Active tectonics and fault evolution in the Western Balkans, Geophysical Journal International, 231, 3, 2102-2126, https://doi.org/10.1093/gji/ggac316.

Serpelloni, E., A. Cavaliere, L. Martelli, F. Pintori, L. Anderlini, A. Borghi, D. Randazzo, S. Bruni, R. Devoti, P. Perfetti and S. Cacciaguerra (2022). Surface Velocities and Strain-Rates in the Euro-Mediterranean Region From Massive GPS Data Processing, Front. Earth Sci. 10:907897, https://doi.org/10.3389/feart.2022.907897.

Kommentiert [EK9]: Would be nice to cut this monster sentence into at least two separate sentences.

We cut it into three sentences.

Kommentiert [EK10]: please add references

We added references in the additional text of the section.

Kommentiert [EK11]: please see comment 2 in review summary

In the text added, we took this comment into account.

Kommentiert [EK12]: The “AdriaArray region” is outlined by the green line in Fig. 2, and by the black line in Fig.1, by the yellow line in Fig. 3, by the red line in Fig.4 -and again a yellow line in Fig. 5 - BUT NEVER MENTIONED IN THE FIGURE CAPTIONS! Why? see also comment 3 review summary

We added the requested mention of the outline to all the figures where this outline is shown. See our reply to the comment #3 in the review summary above.

Kommentiert [EK13]: This paragraph regards an obvious and long-known technical point regarding seismic catalogs. You may shorten this by 80%.

We shortened it, not really by 80%, but a bit. Although the matter itself could seem to be obvious, we want to point out how AdriaArray contributes to these efforts.

Kommentiert [EK14]: The way the first sentence is written it is nonsense. You must do for AdriaArray region as everybody before has mastered when establishing an experimental seismic network. EMSC was doing this for Europe several decades ago. Solarino et al. 1997 with its “master station list” for 12 permanent networks provided a crude way to establish a correct and complete station list for an experimental region. By the way - many errors in the then ISC and EMSC station lists as well as in individual network station lists were detected. Same is true for AlpArray (see Bagagli et al. 2022).

We removed the part of the sentence about that this was specific for AdriaArray.

Kommentiert [EK15]: As it was purely for planing reasons (apparently correct since it is only shown in Fig. 5 but hardly discernable and unspecified what purpose) please delete this paragraph as it is not providing any useful information to the reader.

We moved this paragraph to Appendix.

Kommentiert [EK16]: I find this unlogic considering your outline of the AdriaArray region allready in Figs. 2,3,4.

We modified this sentence a bit. The figures do not necessarily show the development of the AdriaArray Seismic Network as it was modified over the time, and hence, indeed, already the first figures show the final outline, as the paper describes the situation as it is now.

Kommentiert [EK17]: Why do you need an Abstract AND a Summary? Delete the Summary and complement the Abstract where necessary/usefull with statements from the Summary.

Usually, scientific papers conclude with “Conclusion”. Our paper does not have conclusion in a scientific sense, but should summarize what has been said. See, for example, the paper by Hetényi et al. (2018) about AlpArray, where the same summarizing paragraph is titled “Conclusions and Perspectives”. We renamed the paragraph to “Concluding remarks and Perspectives”, as the paragraph gives a vision of what we plan to achieve using the AdA data. We rephrased some sentences of that paragraph too.

Kommentiert [EK18]: What exactly does that mean? Has the data from all stations of the AdriaArray been collected for these years - meaning until February 2025?

Apart of technical issues with telemetry gaps, the data has been collected, yes. Some data needs to be backfilled to EIDA. Details are given in a separate paper of the special issue.

Kommentiert [EK19]: Obviously it covers a significantly larger region, see comments above.

We rephrased the sentence to make it clear that it goes beyond the active margins.

Petr Kolínský, Thomas Meier and Eline Le Breton

on behalf of all coauthors, August 2025