

AASN data sharing and research collaboration

Zurich, May 14th 2016

Dear AA colleagues

With pleasure with see the AA-Seismic Network AASN land station array reaching 500 stations and wave form data becoming available through EIDA and it will certainly stir interests and eagerness to begin with our research. This is precisely the reason for this email that I send to all AA representatives for dissemination among the researchers in their institutions they represent. Those institutions that currently belong to the core group of AASN as they documented by data available through EIDA to operate at least 10 AA seismic stations, will receive in separate emails from John Clinton their specific password allowing them to download AASN data from EIDA.

We all agreed to and each representative signed the AA memorandum of collaboration that I do not need to copy here. Institutions collaborating and making the AASN become reality have all signed an additional agreement that within the frame of AA memo defines the rules for usage and collaboration of the seismic data obtained by AASN (see appended document). At the February 2016 meeting in Zurich we began discussions about form and topics of research within AA and within AASN (see distributed minutes). In the mean time I also obtained a few questions that I thankfully acknowledge and that let me conclude it would be best to summarize the main reasons and goals for the current set of rules agreed upon. In the memo's AA and AASN we also defined the procedure to subsequently update them to cover more specific situations, should this be seen as needed by the members.

The **memo AASN** particularly addresses in three separate paragraphs RESEARCH, DATA SHARING, and AUTHORSHIP as follows:

Research

Each institution, through their responsible representative, provides a list of their intended research, in particular PhD theses and post-docs, together with the list of colleagues to work on the topic. The combined list of research topics is discussed and decided upon by the Core Group. It can be updated during the AlpArray Seismic Network following the above decision rule. No researcher is allowed to undertake research without informing his/her institution representative who must obtain approval from the Core Group.

Data sharing

*For **registered seismological observatories with monitoring and alerting duties** there is immediate real-time access to the collected data. The thus collected data may be*

reported on as picks in their catalogues. Waveforms may not be published. Additional research beyond routine duties needs to be a priori approved by the Core Group as any other research (see above).

Within AlpArray Seismic Network the collected data is available with password protection to registered members of institutions part of the Core Group to carry out research along the approved topics.

At latest one year after operation of the AlpArray Seismic Network has ended (by decision of the Core Group) the waveform data will be freely shared among the entire AlpArray Working Group. ***Three years*** after operation of the AlpArray Seismic Network has ended (by decision of the Core Group) the waveform data will be freely available to the public.

Authorship

*Publications will include as authors the **active participants** (those who contributed substantially to the research) followed by “and the AlpArray Working Group” (see list on website). The **AlpArray Seismic Network Team** (full list maintained by the Core Group) will be fully listed in the acknowledgements of each publication.*

While we more than welcome but hope for increased collaborative research among the AA member institutions, we are all fully aware that the interests of those investing their time and means into the AASN operation need to be preserved should the full data set really become available rather than just parts of it at different times. Therefore, let me begin with

DATA SHARING.

At present (see third paragraph in AASN memo Data Sharing for timing) seismic data of the AASN is exclusively available to the researchers and PhD students presently being officially hired by one of the core group institution and research that includes seismic data handling of any kind may exclusively be executed at one of these institutions. Transfer of any kind of AASN data from one core group institution to any other place or researcher outside this institution is not allowed.

Among the core group members there exist two kind of institutions, seismological observatories with specific and predefined survey duties and all other research institutions. Seismological observatories may use the AASN data freely for their monitoring and alerting duty work as they did before AASN became operational. For any non-monitoring/alerting research, however, they must follow the same rules as all other research institutions. Data from permanent stations operated by Seismological Observatories listed or not listed in AASN obviously remains their own and may be available directly from the observatory as they decide. However, no data from any AASN station other than explicitly their own may be made available. Some observatories do not meet the requirement of 10 BB stations in AASN and they have no access through EIDA to the AASN data set. To improve the monitoring and alerting capabilities within their region of jurisdiction, on bilateral agreements they may obtain real time data from

AASN stations operated in their region. This data they will obtain directly from those institutions who operate these stations. The AASN core group and its coordinator must be informed about and approve those bilateral agreements for limited data transfer. Again, this data may exclusively be used for monitoring/altering duties and it may not be transferred further in any case.

An institution that documents to fulfill the requirements of data available on EIDA system from at least 10 operating AASN stations will automatically become member of the core group. Other institutions wanting to join the AASN core group must place a formal request with the AASN coordinator and core group who will proceed along the memo AASN. No researcher from a non-core group institution is presently allowed to use the AASN data.

RESEARCH with the shared AASN data might be performed in various ways. In all cases, research has to be executed along the rules of AA and AASN memo respecting other groups (in particular PhD and postdoc projects) interests and only after having been listed in the institutions research list and formally accepted by the AASN core group. Each institutions representative compiles such research list containing name(s) of researchers (specifically listing PhDs and postdocs), topic, method, and envisioned time frame. The list may be updated over time and must then again be approved by the AASN core group.

Among researchers from institutions of AASN core group, research can be executed either

- (1) separately by groups or single researchers from individual core group institutions and thus in scientific competition with other research from core group institutions or
- (2) by newly formed collaborative groups of researchers from different AASN core group member institutions with common topical interests (each member keeps their individual rights to the data according to AASN rules).

In addition, (3) collaborative research with AASN data may also be performed between researchers from one or several institutions that are members of the AASN core group and researchers from other AA institutions. Any researcher no more or not an official member of an AASN core member institution is regarded and should regard her/himself as external and third party with currently no rights to the shared AASN data. Note that when researchers leave a member institution, while they may finish writing their papers and remain explicit co-author to the publication or presentation, they may not take with them parts or all of the shared data. Should they need again access to the data, they will either have to return to their previous host institution or ask a colleague remaining at

the member institution to there do all the data handling part of the research.

From a AASN data handling point of view, there exist two significantly different kinds of research collaboration with a scientist not from an AASN core group institution. While the first option outlined below is well possible within the current and original rules, the second option is a possible extension proposed now for discussion and needs to be made legally possible by vote of the core group. Note that either kind of research collaboration with a scientist not from an AASN core group institution needs explicit acceptance by AASN core group of a specific proposal by the involved core group institution representative before work may begin. Further note that no research collaboration accepted by the AASN core group does change anything about the original data usage allowance. Researchers from AASN core group institutions may use the shared data along the rules outlined above, no other researchers should be given access to and are allowed to use the AASN data.

(3a) research collaboration without access to shared AASN data.

(Regularly, I collaborate with young researchers from abroad where I do not obtain and do not want to keep a copy of the data on any computer facility in our institute. The researchers compile, select and keep their data on their computer that they bring with them. I might provide software and help them with processing and interpretation in various ways and we will jointly write and publish a paper but in the end, they take the data back with them. I find this type of collaboration often beneficial as it might actually provide the only way for collaboration.) In the case of AASN this would mean that all data handling parts of research are exclusively executed at the AASN core group member institution on one of their computers by one of their members. At no point and time should the shared data be copied to the external researchers computer. This would most likely also be the preferred option for a geodynamic modeller or a geologists from an AA institution to join collaborative research with researchers from core group institution(s) as they would be interested in interpretation of the seismic results but not take part in the seismic data processing and calculations.

A second possibility (3b) that may be foreseen is a research collaboration between a core group institution and an (external) AA scientist (collaborative research on AASN data with scientists outside AA are not possible) where the latter would be allowed limited access to a specified part of the shared AASN data to perform a very specific task only. It would mean that for their research, the AASN core group scientist(s) would prepare a specific data set (selected, resampled and preprocessed from original shared EASI data) that would then be used also by the external researcher for the specific purpose in close collaboration with his/her

partner researchers from core group institution. The (external) AA researcher would have to agree not to further distribute the data set or any other parts of AASN data set she/he might get in contact with and not to use the data for any other purpose than proposed in the collaboration agreement.

As stated above, currently collaboration option (3b) is not available just as institutions contributing with fewer than 10 stations to AASN are not allowed access to the shared AASN data. In my understanding, fairness would require to discuss both cases simultaneously in the core group when the time seems appropriate. Until then, we –the core group and its coordinator G. Hetenyi and myself as AA PC- are looking forward to receive many collaborative research proposals and proposals to establish research working groups within AA analogue to what Helle Pedersen proposed for surface wave seismology, a proposal that is thankfully acknowledged.

I hope you forgive me sending such long email on this topic and I hope you might find it useful to orient yourself about the current options for collaboration. Please do not hesitate to comment and propose further options addressing them to the Steering Committee as a whole or directly to me as AA Principal Coordinator.

With best wishes for your research and kind regards,

Edi Kissling