



## Preface: “Improving seismic networks performances: from site selection to data integration (EGU2019 SM5.2 session)”

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**Abstract.** The number and quality of seismic stations and networks in Europe continually improves, nevertheless there is always scope to optimize their performance. In this EGU2019 SM5.2/GI4.13 session we welcomed contributions from all aspects of seismic network installation, operation and management. This includes site selection; equipment testing and installation; planning and implementing communication paths; policies for redundancy in data acquisition, processing and archiving; and integration of different data sets including GPS and OBS.

### 1 Introduction

The history of seismic networks sessions at European Geosciences Union (EGU) general assemblies started in 2010 with the SM1.3 “Seismic Centres Data Acquisition” session (Pesaresi, 2011), where the convener Damiano Pesaresi supported by the Orfeus Data Centre (ODC) Director co-convenor Reinoud Sleeman chaired a session of 7 oral and 16 poster presentations. Later in the same year a similar session was held at the XXXII European Seismological Commission (ESC) General Assembly: “SD1, 3 Seismic centres data acquisition”, conveners Damiano Pesaresi and Reinoud Sleeman, with 15 oral presentations.

The history of these sessions continued in 2011 with the EGU2011 SM1.3/G3.8/GD3.7/GI-19/TS8.7 “Improving seismic networks performances: from site selection to data integration” session (EGU2011, 2011), where the convener Damiano Pesaresi supported by the co-conveners John Clinton and Robert Busby chaired a session of 9 oral and 20 poster presentations; in 2012 with the EGU2012

SM1.3/GI1.7 “Improving seismic networks performances: from site selection to data integration” session (Pesaresi and Vernon, 2013), where the convener Damiano Pesaresi supported by the co-convener Frank Vernon chaired a session of 6 oral and 22 poster presentations; in 2013 with the SM1.4/GI1.6 “Improving seismic networks performances: from site selection to data integration” session (Pesaresi and Busby, 2013), where the convener Damiano Pesaresi supported by the co-convener Robert Busby chaired a session of 6 oral and 13 poster presentations; in 2014 with the EGU2014 SM1.2/GI3.7 “Improving seismic networks performances: from site selection to data integration” session (Pesaresi et al., 2015), where the convener Damiano Pesaresi supported by the co-conveners John Clinton and Helle Pedersen chaired a session of 12 oral and 27 poster presentations; in 2015 with the EGU2015 SM1.2/GI1.5 “Improving seismic networks performances: from site selection to data integration” session (EGU2015, 2015), where the convener Damiano Pesaresi supported by the co-conveners Helle Pedersen and Yuri Starovoi chaired a session of 20 poster presentations; in 2016 with the EGU2016 SM7.3 “Improving seismic networks performances: from site selection to data integration” session (EGU2016, 2016), where the convener Damiano Pesaresi supported by the co-conveners Helle Pedersen and John Clinton chaired a session of 6 oral and 16 poster presentations; in 2017 with the EGU2017 SM5.3 “Improving seismic networks performances: from site selection to data integration” session (EGU2017, 2017), where the convener Damiano Pesaresi supported by the co-conveners Helle Pedersen and Christos Evangelidis chaired a session of 15 poster presentations; and in 2018 with the EGU2018 SM5.01/NH4.16 “Ground translation, strain and rotation:

SM5.2

**Improving seismic networks performances: from site selection to data integration**

Co-organized as GI4.13

Convener: Damiano Pesaresi  | Co-conveners: Helle Pedersen , Angelo Strollo 
 Orals | Wed, 10 Apr, 08:30–10:15  Room -2.91

 Posters | Attendance Wed, 10 Apr, 16:15–18:00  Hall X2

The number and quality of seismic stations and networks in Europe continually improves, nevertheless there is always scope to optimize their performance. In this session we welcome contributions from all aspects of seismic network installation, operation and management. This includes site selection; equipment testing and installation; planning and implementing communication paths; policies for redundancy in data acquisition, processing and archiving; and integration of different datasets including GPS and OBS.

**Figure 1.** The EGU2019 SM5.2/GI4.13 “Seismic Networks” session.

**Table 1.** Oral programme for the EGU2019 SM5.2/GI4.13 session.

EGU Abstract ref.	Title	Authors
EGU2019-1807	The new progress of China Array project	Songyong Yuan and Weiwei Xu
EGU2019-3034	An Investigation of KOERI Seismic Network and Earthquake Catalog	Didem Cambaz, Fatih Turhan, Mehmet Yılmaz, Kıvanç Kekovalı, Öcal Necmioğlu, and Doğan Kalafat
EGU2019-3205	The Namche Barwa Temporary Seismic Network (NBTSN) and its performance in monitoring the 18 November 2017 M 6.9 Mainling, Tibet, China, earthquake	Chaoyong Peng and Jiansi Yang
EGU2019-3879	Telsite: a geophysical instrumentation system	Stephane Denis and Serge Olivier
EGU2019-5779	Quality control with component ratios: 20 years of GEOSCOPE data	Helle Pedersen, Dimitri Zigone, Nicolas Leroy, and Martin Vallée
EGU2019-13374	ORFEUS Strong-Motion services and products for engineering seismology	Lucia Luzi, Sleeman Reinoud, Puglia Rodolfo, Koymans Mathijs and the ORFEUS Strong-Motion Service management Committee
EGU2019-13810	New federated seismological services within EIDA	Javier Quinteros, Daniel Armbruster, Massimo Fares, Stefan Heimers, Andres Heinloo, Mathias Hoffmann, Philippe Kaestli, Mathijs Koymans, Erich O. Muhire, Cristian Neagoe, Mehmet Ozer, Catherine Pequegnat, Jonathan Schaeffer, Luca Trani, and Nikolaos Triantafyllis

New and improved instrumentation and applications” session (EGU2018, 2018), where the convener André Gebauer supported by the co-conveners Helle Pedersen, Angelo Strollo, Damiano Pesaresi, Christian Schubert, Stephanie Durand, and Stefanie Donner chaired a session of 12 oral and 27 poster presentations.

## 2 The EGU2019 SM5.2/GI4.13 “Seismic Networks” session

In the EGU2019 SM5.2/GI4.13 “Improving seismic networks performances: from site selection to data integration” session (EGU2019, 2019) the convener Damiano Pesaresi supported by the co-conveners Helle Pedersen and Angelo Strollo chaired a session (Fig. 1) of 7 orals (Table 1) and 17 posters (Table 2) presentations.

The 24 presentations came from 15 countries (China, Turkey, France, The Netherlands, Taiwan, Russia, USA,

**Table 2.** Poster programme for the EGU2019 SM5.2/GI4.13 session.

EGU Abstract ref.	Title	Authors
EGU2019-281	Seismic Arrays in the Taipei Metropolis of Northern Taiwan	Win Gee Huang
EGU2019-1177	Optimal time windows length to study frequency content of a record after a big earthquake: case study of KHZ (Geonet network)	Aleksei Muryskin and Anna Skorkina
EGU2019-1805	Comparisons between different installations of broadband seismometers at soft soil site	Weiwei Xu and Songyong Yuan
EGU2019-2417	Recent Advances to PASSCAL Software for Managing and Archiving Seismic Data	Derick Hess, Lloyd Carothers, Bruce Beaudoin, and Nick Falco
EGU2019-2499	Performance of a Low-Cost Earthquake Early Warning System (P-Alert) and shake map production during the 2018 Mw 6.4 Hualien (Taiwan) Earthquake	Yih-Min Wu
EGU2019-5723	Preliminary seismological monitoring for geothermal development in Vienna, Austria	Maria-Theresia Apoloner, Fee-Alexandra Rodler, Stefan Weginger, Yan Jia, and Wolfgang Lenhardt
EGU2019-6702	2016 Central Italy Earthquakes Recorded by Low-Cost MEMS-Distributed Arrays	Jacopo Boaga, Filippo Casarin, Giancarlo De Marchi, Maria Rosa Valluzzi, Nicola Cenni, and Giorgio Casiani
EGU2019-7691	Quality Improvement of the French Permanent Broadband Stations with Shallow Posthole Installations	Jérôme Vergne, H�el�ene Pauchet, Micka�el Bonnin and the RESIF-CLB Team
EGU2019-10829	Initial Test Results for Trillium Slim Borehole 120, A New Small-Diameter High-Performance Seismometer	Geoffrey Bainbridge, Peter Devanney, and Bruce Townsend
EGU2019-13102	Testing the readiness of strong motion sensors for Earthquake Early Warning	Frederick Massin, John Clinton, Roman Racine, and Yara Rossi
EGU2019-13330	Seismic monitoring of the Laa a. d. Thaya – Pasohl�avky border region of Austria and Czech Republic	Fee-Alexandra Rodler, Stefan Weginger, Maria-Theresia Apoloner, Yan Jia, and Wolfgang Lenhardt
EGU2019-13460	Advances in active integrated sensor systems	Sally Mohr, Phil Hill, and Stuart Allardice
EGU2019-14427	A Review of Seismic Monitoring in Romania: improved earthquake detection network capabilities	Cristian Neagoe, Liviu Marius Manea, Alexandru Marmureanu, and Constantin Ionescu
EGU2019-16607	A complete characterization of 27 OSOP RaspberryShakes performed at EOST Seismic Instrumentation Facility	Maxime B�es de Berc, Romain Pestourie, H�el�ene Jund, and C�eleste Broucke
EGU2019-17905	Reliability quantification of the intensities predicted by the Seismic Automatic Determination (DAS) system of the Catalan seismic network	Nuria Romeu, Josep Batll�o, Tanit Frontera, Janira Irizarry, Jose Antonio Jara, and Sara Figueras
EGU2019-18334	A GIS model for seismic station sites selection. Case of study Chiapas State, Mexico	Antonio Noe Aguilar, Arturo Montalvo, Luis Manuel Garc�ia, and Juan Antonio Vargas
EGU2019-18695	Long-term self-noise estimates of broadband seismic sensors from a high-noise vault	Shawn Goessen and Stephen Hicks

Austria, Italy, Canada, Switzerland, United Kingdom, Romania, Spain, Mexico), in 3 continents (Asia, Europe, North America), which fits well to the goals of the European Geosciences Union.

The solicited presentations in this session were the following:

- i. “New federated seismological services within EIDA”, by Javier Quinteros, Daniel Armbruster, Massimo Fares, Stefan Heimers, Andres Heinloo, Mathias Hoffmann, Philippe Kaestli, Mathijs Koymans, Erich O. Muhire, Cristian Neagoe, Mehmet Ozer, Catherine Pequegnat, Jonathan Schaeffer, Luca Trani, and Nikolaos Triantafyllis (Quinteros et al., 2019);
- ii. “Quality Improvement of the French Permanent Broadband Stations with Shallow Posthole Installations”, by Jérôme Vergne, Hélène Pauchet, Mickaël Bonnin and the RESIF-CLB Team (Vergne et al., 2019).

### 3 Conclusions

The quality and quantity of presentations made at the EGU2019 SM5.2/GI4.13 session satisfied the expectations of the convener and co-conveners and fit the goals of the European Geosciences Union.

This year the number of presentations at the seismic networks session increased: therefore the conveners after so many years are still confident that the path they followed in organizing such sessions at the yearly EGU General Assembly is a valid one, since there is a clear benefit in the seismological community worldwide to present and discuss different solutions to common problems in running seismic networks.

*Special issue statement.* This article is part of the special issue “Improving seismic networks performances: from site selection to data integration (EGU2019 SM5.2 session)”. It is a result of the EGU General Assembly 2019, Vienna, Austria, 7–12 April 2019.

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