



# Coordinating Access to Seismic Waveform Data in Europe: Overview of ORFEUS Activities, Services and Products

## Other Conference Item

### Author(s):

Cauzzi, Carlo Virgilio ; Bieńkowski, Jarek; Crawford, Wayne; Custódio, Susana; D'Amico, Sebastiano; Evangelidis, Christos; Guéguen, Philippe; Haberland, Christian; Haslinger, Florian ; Lanzano, Giovanni; Ottemöller, Lars; Rondenay, Stéphane; Sleeman, Reinoud; Strollo, Angelo

### Publication date:

2022

### Permanent link:

<https://doi.org/10.3929/ethz-b-000590105>

### Rights / license:

[Creative Commons Attribution 4.0 International](#)

### Originally published in:

EGUsphere, <https://doi.org/10.5194/egusphere-egu22-3954>

EGU22-3954

<https://doi.org/10.5194/egusphere-egu22-3954>

EGU General Assembly 2022

© Author(s) 2023. This work is distributed under the Creative Commons Attribution 4.0 License.



## Coordinating Access to Seismic Waveform Data in Europe: Overview of ORFEUS Activities, Services and Products

**Carlo Cauzzi**<sup>1</sup>, Jarek Bieńkowski<sup>2</sup>, Wayne Crawford<sup>3</sup>, Susana Custódio<sup>4</sup>, Sebastiano D'Amico<sup>5</sup>, Christos Evangelidis<sup>6</sup>, Philippe Guéguen<sup>7</sup>, Christian Haberland<sup>8</sup>, Florian Haslinger<sup>9</sup>, Giovanni Lanzano<sup>10</sup>, Lars Ottemöller<sup>11</sup>, Stéphane Rondenay<sup>11</sup>, Reinoud Sleeman<sup>2</sup>, and Angelo Strollo<sup>8</sup>

<sup>1</sup>ETH Zürich & ORFEUS, Swiss Seismological Service, Department of Earth Sciences, Zürich, Switzerland

(carlo.cauzzi@sed.ethz.ch)

<sup>2</sup>ORFEUS Data Center (ODC) and Royal Netherlands Meteorological Institute (KNMI), De Bilt

<sup>3</sup>Marine Geosciences, Institut de physique du globe de Paris (IPGP)

<sup>4</sup>Instituto Dom Luiz (IDL), Faculty of Sciences of the University of Lisbon (FCUL), Portugal

<sup>5</sup>Faculty of Science, Department of Geosciences, University of Malta

<sup>6</sup>Institute of Geodynamics, National Observatory of Athens (NOA-IG), Greece

<sup>7</sup>Institut des Sciences de la Terre (ISTerre), Université Grenoble Alpes (UGA), France

<sup>8</sup>GFZ German Research Centre for Geosciences, Potsdam

<sup>9</sup>EPOS Seismology and Swiss Seismological Service (SED) at ETH Zürich, Switzerland

<sup>10</sup>Istituto Nazionale di Geofisica e Vulcanologia (INGV), Milan, Italy

<sup>11</sup>Department of Earth Science, University of Bergen (UiB), Norway

ORFEUS (Observatories and Research Facilities for European Seismology, <http://orfeus-eu.org/>) is a non-profit organization founded in 1986 with the chief goal to promote seismology in the Euro-Mediterranean area through the collection, archival and distribution of seismic waveform data, metadata, and closely related services and products. ORFEUS also supports the coordination and implementation of large scale community initiatives and experiments in observational seismology, and provides community support through software and travel grants, editorial initiatives and training activities. ORFEUS data and services are collected or developed at national level by more than 60 contributing Institutions (see [https://orfeus-eu.org/organization/corporate\\_founders/](https://orfeus-eu.org/organization/corporate_founders/) and <https://orfeus-eu.org/organization/participation/>) in the greater European region, and further developed, integrated, standardized, homogenized and promoted through ORFEUS. Within EPOS, ORFEUS represents the seismological waveform services as one of three sub-domains of EPOS Seismology. ORFEUS data and services are open, FAIR, and accompanied by clear policies and licensing information. Two Service Management Committees (SMCs) are established within ORFEUS, devoted to managing, operating and developing (with the support of one or more Infrastructure Development Groups): (i) the European Integrated waveform Data Archive (EIDA; <https://www.orfeus-eu.org/data/eida/>); and (ii) the European Strong-Motion databases (SM; <https://www.orfeus-eu.org/data/strong/>). A new SMC is being formed to represent the community of European mobile instrument pools, including also amphibian instrumentation. Products and services for computational seismologists are also possible candidates for integration in the

ORFEUS domain. Overall, ORFEUS services currently provide access to waveforms acquired by ~ 16,000 stations, including dense temporary experiments, with strong emphasis on open, high-quality data. Contributing to ORFEUS data archives means benefitting from long-term archival, state-of-the-art quality control, improved access, increased usage, and community participation. Access to data and products is ensured through state-of-the-art information and communication technologies, with strong emphasis on web services that allow automated user access to data gathered and/or distributed by the various ORFEUS institutions (see <https://orfeus-eu.org/data/eida/webservices/> and [https://esm-db.eu/#/data\\_and\\_services/web\\_services](https://esm-db.eu/#/data_and_services/web_services)). Particular attention is paid to acknowledging the crucial role played by data providers, who are part of the ORFEUS community. ORFEUS strongly encourages the use of international network codes, seismic network digital object identifiers, and full network citations. All ORFEUS services are developed in coordination with EPOS and are largely integrated in the EPOS Data Access Portal (<https://www.ics-c.epos-eu.org/>). Documentation on ORFEUS data and services is provided on the ORFEUS website and is complemented by a large archive of ORFEUS community workshops and seminars / webinars (<https://orfeus-eu.org/other/workshops/>). ORFEUS data and services are assessed and improved with the help of technical and scientific feedback from a User Advisory Group (UAG), which comprises European Earth scientists with expertise on a broad range of observational seismology topics. ORFEUS is a key participant in EC-funded projects and collaborates with global and international organizations with similar scope, like the FDSN (<https://fdsn.org/>), IRIS (<https://www.iris.edu/>), and COSMOS (<https://strongmotion.org/>).