A new census for legacy seismological data

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ESC Working Group 02-12 "Preservation, valorisation and analysis of seismological legacy data"

Abstract: The new ESC Working Group 02-12 "Preservation, valorisation and analysis of seismological legacy data" is carrying on the work achieved by the former ESC Working Group "History of Seismometry". This transition translated into a new census for legacy seismological data to generate an updated inventory of such data worldwide. This new census now takes the form of an online form of which we present the main elements and preliminary results.

Keywords: Inventory, analog data, legacy seismograms, historical seismology

1. Introduction

Since the foundations of instrumental seismology were laid in 1857, a large variety of instruments were used to record ground motion worldwide. Historical instrumental records are no match for modern digital recordings, as they have superior technological characteristics, and were planned within different scientific paradigms. Nevertheless, old records remain of great importance as they contain unique scientific resources from the last century that are useful for theoretical and applied studies. The scientific potential of legacy seismic data is balanced by the challenges of their preservation, availability, and accessibility.

In the last decades, these challenges motivated initiatives to coordinate the preservation of the old legacy seismograms. In 1992, a working group named "History of Seismometry" was created inside the ESC. This group has been active within the ESC since then under different names. Shortly after its creation, in the early nineties, the working group launched a survey to learn about the state of collections of legacy seismograms all over Europe

(Ferrari, 1997). Another key initiative of the working group was the project EuroSeismos (2005). The project aimed to assemble a collection of scanned analog seismograms for key earthquakes in Europe, but it also helped to discover and secure more collections of seismograms. Thirty years after the first survey, the new ESC Working Group 02-12 "**Preservation, valorisation and analysis of seismological legacy data**" is perpetuating these initiatives. This new effort stems from the need for an updated vision of the situation of the collections of legacy seismograms preserved at different institutions and observatories, following changes in the institutions in charge of the seismograms. This initiative also follows the opportunity to capitalize on the increasing momentum behind bringing legacy seismic data to the digital age and treating them with modern seismic analysis. The updated survey is presented now as an online form structured in two parts: the first part is dedicated to the original stations, instruments, and seismograms, and the second to the current state of the collection and the institution currently in charge of it. The collected answers are automatically stored in the cloud and can easily be converted and distributed as a classical spreadsheet. Here we describe the main elements of the survey and present the preliminary results.

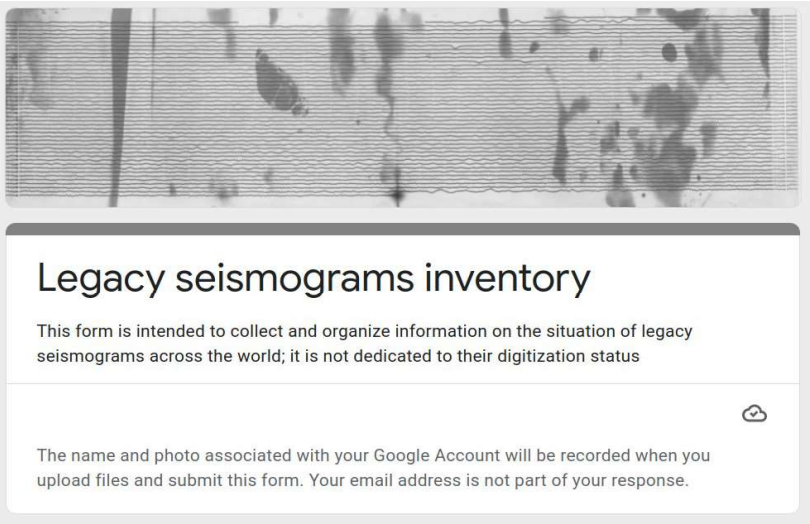

Figure 1. Welcoming page of the new online survey to create a legacy seismograms inventory

2. Part 1 - Instrument location / Recording instrument information

This for part focuses on the Station information, the instrument, and its seismic records. Because instrumental seismology only reached a satisfactory level of global standardization in the last 40 years, the questions fit a diverse range of instruments and recording supports. Nevertheless, some key answers are strictly required.

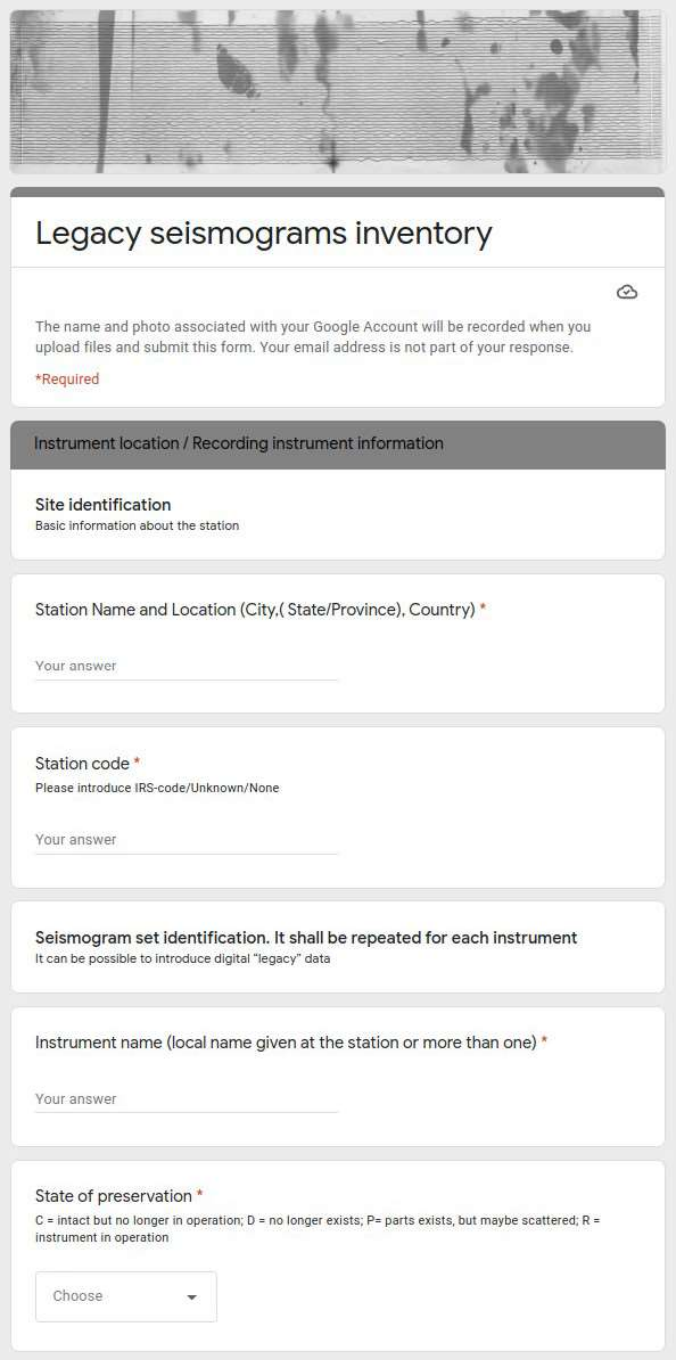

Figure 2. The first part of the form is dedicated to the instrument location / Recording instrument information, with some answers required, multiple choices, and the option for users to upload files.

For example, while information on the mass and free period may have been lost, the instrument used should still be provided. In other cases, multiple choices are provided, but the form offers the possibility for the user to fill an alternative answer that potentially only matches its situation. This is the case for the "Physical format" question which offers the following options: Smoked Paper, Photo, Ink, Analog Reel, Digital Tape. Although these

options likely cover most possible cases, the user is free to provide a less common alternative that corresponds to their collection. Another benefit of transitioning from a paper to a digital survey is the possibility for users to upload lists of the seismograms they already scanned directly in the form. This will significantly facilitate future potential coordinated digitization efforts and research.

3. Part 2 - General description of the collection

This part clearly identifies the institution and the person in charge of the collection of seismograms. This information is key as it creates a contact point that allows for better tracking of changes in the condition of the collection, and improved coordination of future collective initiatives. This section of the survey also helps establish whether the institution has the resources to scan seismograms, and allows them to share any other information/files the user fields relevant.

4. Conclusions

In an effort to facilitate the future coordinated management of legacy seismic data across the world, we updated the survey to compile an inventory of preserved legacy seismograms originally distributed by ESC Working Group “History of Seismometry” in the nineties. The now-online form aims to more easily compile information on preserved legacy seismograms and their corresponding instruments, metadata, and responsible institutions. With renewed interest in legacy seismic data, this future inventory is hoped to become a catalyst for future collaboration on digitization and research using historic seismograms.
The survey is being launched at the moment this extended abstract is presented. By the meeting time, we will present its preliminary results.

Acknowledgments

This survey is the result of the collaboration of all members of the working group who, due to the format of the extended abstract, could not be acknowledged individually.

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