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## Data in Brief

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## Data Article

## Collaborative noise data collected from smartphones

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## ABSTRACT

Noise stands for an important human health and environmental issue. Indeed, noise causes annoyance and fatigue, interferes with communication and sleep, damages hearing and entails cardiovascular problems (WHO, 2011) [1]. From an environmental point of view, noise implies a lessening of both the richness and abundance of the animal species, an alteration of the communication, which can threaten the reproduction and predation, etc. (Newport et al., 2014; Shannon et al., 2014) [2,3]. Consequently, effects related to environmental noise result in a huge cost for society, with 2.2 billion euros in France, for example, for the year 2013 (Bourges and Diel, 2015) [4]. In this context, the reduction of noise in the environment is a burning issue, which requires, firstly, carrying out an evaluation of noise in the environment, and secondly, to establish action plans to reduce noise annoyance. With the development of the concept of participatory measurement, and considering the extremely large number of people equipped with a smartphone while being "in mobility", the use of smartphones is potentially a relevant solution to realize a large-scale environmental noise evaluation.

The data presented hereinafter are collected from the Android NoiseCapture application and shared from the OnoMap Spatial Data Infrastructure (SDI). The NoiseCapture approach consists in measuring noise along a path, and then to share data with the community. This approach has been developed within the framework of the European ENERJIC-OD<sup>1</sup> project, which aims at deploying a set of

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<sup>1</sup> <https://www.energic-od.eu/>

Virtual Hubs (VH) to share heterogeneous data with third parties, in respect with the European INSPIRE, and at developing new and original services that can be useful for the community.

The noise data that are acquired by volunteers around the world (citizen observations), are organized in three files, containing the path of measures (a set of points), standardized noise indicators, noise description and other useful variables (GPS accuracy, speed...). These data can be very relevant later to propose an environmental noise evaluation, through simple or complex treatments.

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### Specifications Table

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Subject area	<i>Environmental science</i>
More specific subject area	<i>Environmental Noise, Geography, Acoustics</i>
Type of data	<i>Zipped files including GeoJSON files</i>
How data was acquired	<i>The data are collected from the NoiseCapture [5] application and offered by the OnoMap [6] processing services.</i>
Data format	<i>Raw and computed.</i>
Experimental factors	<i>Noise indicators are calculated from audio recording</i>
Experimental features	<i>Combination of acoustical techniques and spatial analysis methods in a standardized open geospatial framework</i>
Data source location	<i>The data are available all around the world. The spatial coverage depends on the community contributions.</i>
Data accessibility	<i>The data are available as open data license and daily updated on the website <a href="http://data.noise-planet.org/noisecapture/">http://data.noise-planet.org/noisecapture/</a></i>

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### Value of the data

- Noise data are computed according to standardized procedures in order to propose classical noise indicators, such as the equivalent sound level LAeq [5]. Such data are consistent with the European Directive 2002/49/EC (noise regulation), and can be used to produced useful analysis of the noise environment.
  - With the concept of participatory measurements, and considering the extremely large number of people equipped with a smartphone, the propose approach potentially provides access to an extremely large amount of data, which is otherwise homogeneous throughout the world.
  - Data can be used by scientists, acousticians or experts, in order to build new data analysis methods (spatio-temporal, geostatistics) and data visualization tools (real time filtering, dashboard, map styling), in order to evaluate and represent the environmental noise.
  - Because additional information can be provided by the user to describe its own perception of the noise environment, through “tags” and a personal evaluation of the pleasant or unpleasant nature of noise, these data offers the opportunity to better correlate noise perception and physical noise indicators.
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