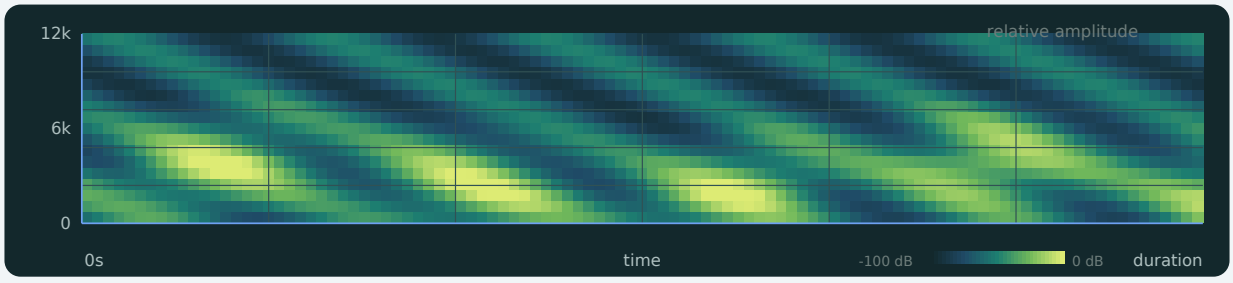
USER GUIDE AND LEARNING APPLICATION NOTE

APSE

Soundscapes

Analyzer

Explore environmental soundscapes through listening, visual analysis and creative interpretation.
Open online on a smartphone, tablet or computer. No download or installation required.



CAPTURE ANALYSE INTERPRET CREATE

01 Record or load — 02 Visualise — 03 Listen and inspect — 04 Export and reflect

Developed within APSE - Archive of Ecological Soundscapes

Erasmus+ KA210-YOU | Project no. 2024-1-IT03-KA210-YOU-000257244

Public web application

https://apseprojecteu.github.io/apse-soundscapes-analyzer-server/

Guide prepared for the SALTO-YOUTH Toolbox

01 | PURPOSE

What the tool is for

APSE Soundscapes Analyzer turns an audio recording into a shared object for listening, observation, discussion and creative work.

WHAT IT DOES

- Record audio with a microphone or load a local recording.
- Generate an interactive spectrogram showing time, frequency and relative amplitude.
- Listen back with a playback cursor synchronised to the graph.
- Zoom into details, change the analytical view and export the spectrogram as a PNG image.

APSE APPROACH

The analyzer connects field recording, ecological observation and artistic practice. A sound can be explored as evidence of an environment, interpreted together by a group, and transformed into a visual score or a starting point for sound-based creation.

It is an open-source online tool that opens directly in a modern web browser on smartphones, tablets and computers. No download or installation is required. The public interface requires no user account and offers four interface languages - English, Italian, Spanish and Greek.

WHO IT SUPPORTS

Sound ecology

Notice biological, geological and human-made sounds in a place.

Digital literacy

Build confidence with audio, visual data and digital tools.

Collaborative listening

Compare how different people hear and interpret the same place.

For creative interpretation

Spectral patterns can become visual material, scores, maps, writing prompts or starting points for sound-based creation.

Scope of the measurement

The dB values shown by the interface are relative digital amplitudes derived from the signal. They support comparison within a recording, but they are not calibrated sound-pressure measurements.

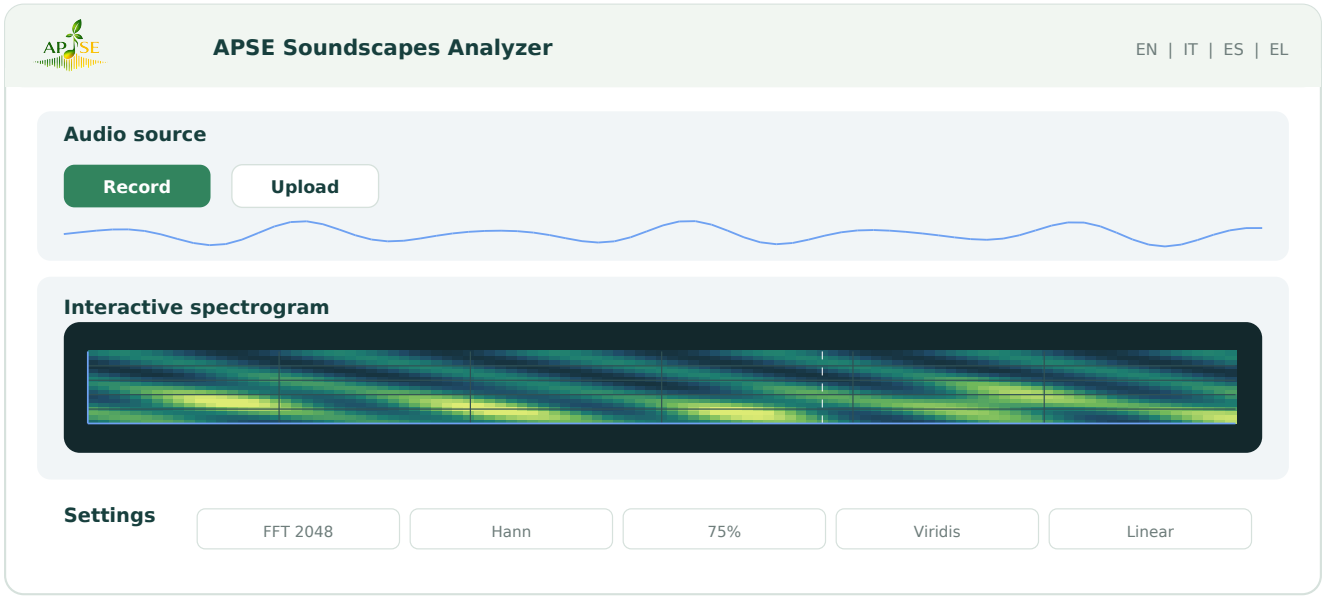
DESCRIPTION FOR THE SALTO TOOLBOX

APSE Soundscapes Analyzer is an open-source online tool that opens directly in a modern web browser on smartphones, tablets and computers, with no download or installation required. It supports environmental soundscape exploration through listening, visual analysis, spectrograms, data sonification and creative interpretation.

02 | WORKFLOW

How to use the app

The interface follows a short cycle: choose a source, visualise the sound, listen with the graph, adjust the view, then share or reflect.



A FIRST SESSION IN SIX STEPS

1 Choose the audio source

Select Record to request microphone access, or Upload to load a local file by picker or drag and drop.

2 Capture or load the sound

Press Record and Stop, or select a local WAV, MP3, OGG, FLAC, M4A, AAC or WebM file when supported by the browser.

3 Wait for the spectrogram

The app decodes the audio and computes the view in the browser. A progress overlay shows the generation stage.

4 Listen and inspect

Use Play/Pause, the progress bar and volume control. Hover for time, frequency and relative amplitude; click the graph to seek.

5 Adjust and regenerate

Change one setting at a time - for example frequency scale or colour map - and press Regenerate Spectrogram to compare the result.

6 Export and reflect

Use Export as PNG to save the visual result. Discuss what the pattern reveals about the place, the recording conditions and the listener's interpretation.

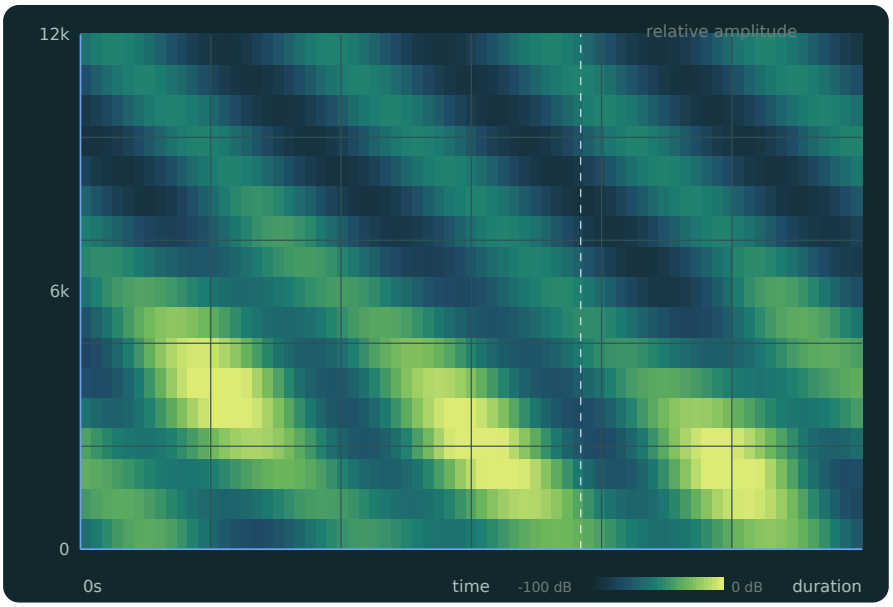
ACCESS

The public tool opens directly online in a modern web browser on a smartphone, tablet or computer. No download or installation is required. Microphone access requires HTTPS and the browser's permission.

03 | READING THE VIEW

How the spectrogram works

The graph is a visual translation of the recording. It helps learners move between an audible experience and a time-frequency representation.



AT THE CURSOR

Time

Horizontal axis: when a sound occurs. The playback cursor follows the audio and the graph can scroll with it.

Frequency

Vertical axis: frequency in Hz. Linear, Mel and logarithmic views highlight different listening questions.

Amplitude

Colour: relative magnitude on the selected dB range. Brighter areas indicate stronger energy.

WHAT PARTICIPANTS CAN DO

Hover

Move over a point to read its time, frequency and dB value.

Click

Click the graph to jump the audio player to that time position.

Zoom and export

Zoom in for detail, reset the view and export the graph as a PNG image.

Facilitator prompts

Which sounds form a continuous layer? Which appear briefly? What might be biological, geological or human-made? Does changing the scale or colour map change what you notice?

Interpretation note

Relative dB values are useful for comparing patterns within a recording, but they should not be read as calibrated environmental sound levels.

04 | CONTROLS

Settings and technical behaviour

The defaults are suitable for a first exploration. Advanced settings let a group ask how the same recording changes when the analytical lens changes.

Control	Default	Available choices / range
FFT size	2048	256, 512, 1024, 2048, 4096 or 8192
Window function	Hann	Hann, Hamming, Blackman, Bartlett or Rectangular
Overlap	75%	0-95% in 5% steps
Colour map	Viridis	Viridis, Magma, Inferno, Plasma, Grayscale or Jet
Frequency scale	Linear	Linear, Mel or Logarithmic
Minimum dB	-100 dB	-120 to -20 dB in 5 dB steps
Maximum frequency	12,000 Hz	1,000-24,000 Hz in 500 Hz steps
Pixels / second	100	50, 100, 200 or 400

A GOOD BASELINE

Keep FFT 2048, Hann window, 75% overlap, Viridis, Linear scale, -100 dB minimum, 12 kHz maximum frequency and 100 pixels / second. Then change one variable and ask what becomes easier or harder to see.

IF PROCESSING IS SLOW

Use a shorter clip, lower Pixels / second or a smaller FFT size. Very short audio may not contain enough samples for a large FFT size.

WHAT HAPPENS IN THE BROWSER

The current implementation mixes multi-channel audio to mono, applies the selected window function, divides the signal into overlapping frames, computes an FFT, converts magnitudes into relative dB values and maps them to the selected colour scale.

BASIC REQUIREMENTS

- A modern web browser on a smartphone, tablet or computer with Web Audio API support; HTTPS is needed for microphone access. No download or installation is required.
- A microphone for live recording, or a local audio file for upload; headphones or speakers for playback.
- An internet connection to open the public web app. No user account is required by the current interface.

A suggested learning activity

Use the analyzer as a shared listening laboratory. The sequence below is a flexible 60-minute starting point, adaptable to the group and the local environment.

SUGGESTED 60-MINUTE SESSION

1. **0-10 min**
   ### Listen and locate
   Choose a place and discuss what can be heard before analysing.
2. **10-20 min**
   ### Record or upload
   Use a microphone recording or a prepared local audio clip.
3. **20-35 min**
   ### Explore
   Read time, frequency and relative amplitude; listen with the cursor.
4. **35-50 min**
   ### Compare and create
   Change one setting, compare views, or turn patterns into a visual score.
5. **50-60 min**
   ### Reflect and share
   Connect sounds to biodiversity, human activity, place and responsibility.

FOR A FIRST SESSION

- One computer or smartphone per small group, with microphone or prepared audio.
- Headphones or speakers; projector optional for group comparison.
- A quiet listening space and consent guidance for recordings involving people.
- Optional notebooks, drawing materials or a shared board for mapping observations.

POSSIBLE OUTCOMES

Observe
Identify layers, events and contrasts in an environmental recording.

Explain
Use simple time-frequency language to describe what is heard and seen.

Translate
Move from sound to visual, written or performative forms of expression.

OPEN THE TOOL

https://apseprojecteu.github.io/apse-soundscapes-analyzer-server/

Note: Clicking this link takes you to an independent third-party site outside of SALTO TC&RC's control.

PROJECT

APSE - Archive of Ecological Soundscapes | Erasmus+ KA210-YOU

Project no. 2024-1-IT03-KA210-YOU-000257244 | info@apseproject.com

Source repository: https://github.com/ApseProjectEU/apse-soundscapes-analyzer-server