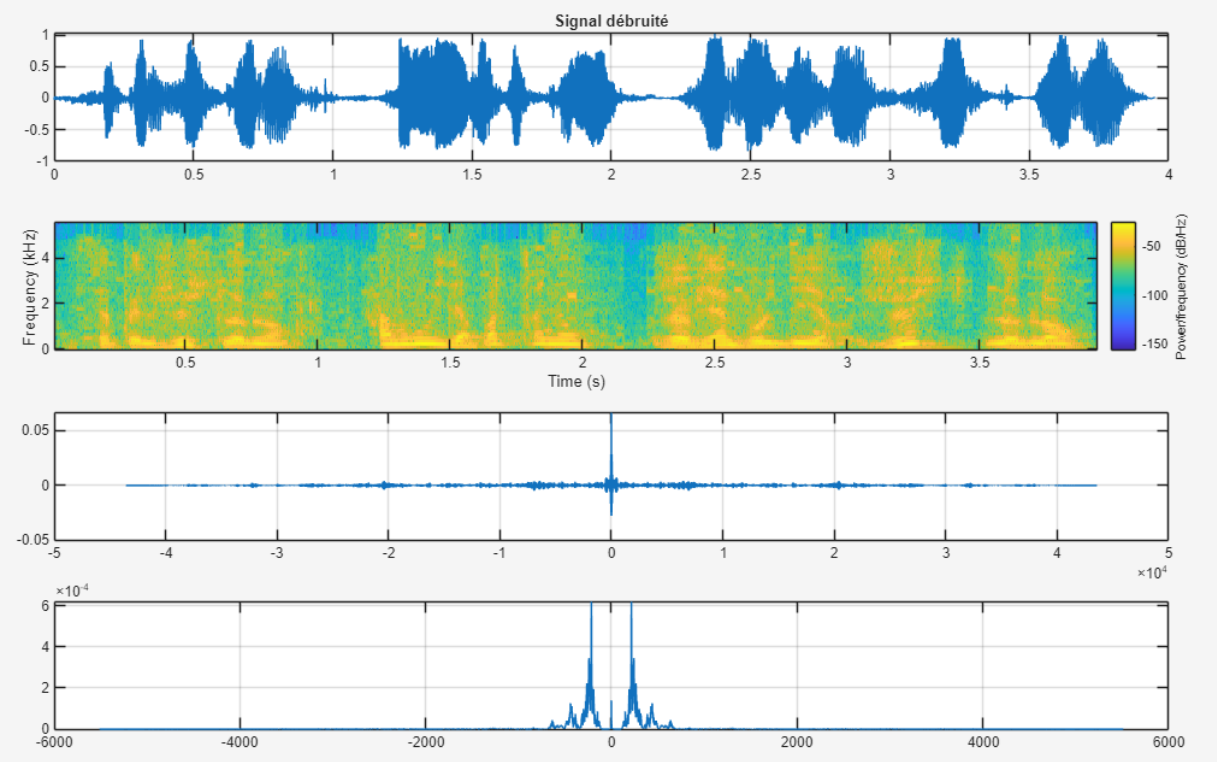
# Wiener filtering for speech

We implemented a first-order Wiener filter in MATLAB and evaluated it first on a synthetic signal, then on recorded audio. We inspected noise and speech in both the time and frequency domains.

## Filtered speech




Original MATLAB output, figure 18. From top to bottom: waveform, spectrogram, autocorrelation and power spectral density after filtering.

## Reading the result

The team observed quieter pauses and better contrast between speech bands and the noise floor in the spectrogram. The autocorrelation also showed clearer periodic structure. The power spectrum retained the main signal peaks while the background level fell.

A short, first-order filter can leave residual noise and smooth fine detail. These observations describe this recording and are qualitative.