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JISFA2#2 - Short term annoyance due to aircraft flyovers

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Noise annoyance can be defined in two different ways, depending on whether the sound is listened actively or whether this noise is heard passively. In the first case, the noise can produce an immediate reaction of unpleasantness, linked to its sound signature. In the second case, the noise is not listened to, but suffered. The noise annoyance can then correspond to the short-term disturbance of an activity and, on a longer term, to the feeling of annoyance towards the sound environment.

In this first lecture, the researches which focus on unpleasantness will be presented, as well as those which focus on activity disturbances. These researches are generally based on laboratory experiments. Five important perceptual dimensions can be observed concerning the sound characterization an aircraft flyover, and a sixth one which is less important. The first corresponds to the loudness, and the second is linked to the tonalities which emerge between 3 and 5 kHz and on which the Doppler effect is clearly heard. The third corresponds to the duration of the flyover and the fourth to the fluctuations heard on the sound rise of the flyover. As for the fifth, it corresponds to the very close harmonics often heard when the aircraft takes off. This effect, called "buzz saw" gives a very rough aspect at the beginning of the sound. The sixth factor, perceptually less important than the others, is the low pitch broadband noise, often associated with jet noise and engine combustion sources. When the flyovers are repeated and participants no longer actively listen to the aircraft, the previous perceptual dimensions lose their importance. Some people build their annoyance feeling on the number of flyovers, others on the maximum noise level, finally others integrate these two elements to focus on the equivalent noise level.

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