



## **Empirical Models of Atmospheric Pressure Fluctuations at the Ground Surface from 1-day period to 8 Hz**

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The infrasound component of the International Monitoring System (IMS) is composed of sixty stations, among which fifty are already certified and continuously transmit data to the International Data Centre. Each infrasound station is composed of an array of infrasound measurement systems capable of measuring the pressure fluctuations produced at ground surface. These pressure fluctuations are produced by a combination of atmospheric phenomena such as meteorological processes, atmospheric tides, gravity waves, wind turbulence and acoustic sources. The objective of this presentation is to define reliable low- and high-noise empirical models for pressure fluctuations measured at the ground surface from 1-day period to 8 Hz. These models support several IMS applications such as sensor testing, sensor self-calibration, data quality control and wind-noise reduction system design. While several models were proposed in the past, they were band-limited and included several limitations such as the use of non-calibrated or erroneous data or the non-correction of system responses. The progress recently made with system response modelling and calibration together with the use of advanced signal processing techniques now allow to propose reliable and extremely large-band models. In addition the obtained results allow characterizing processes such as gravity wave saturation or fluctuation in the buoyancy frequency. They also allow distinguishing between the different types of wind turbulence responsible for background pressure fluctuations.