Development of new measurement technique about infrasonic waves

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Infrasonic waves (low-frequency sound below 20 Hz) are recognized as atmospheric pressure waves that can be detected by present infrasonic sensors developed with special microphones. In order to detect signals of nuclear tests in the world, these infrasonic sensors have been established in some contries. According to recent scientific reports, infrasonic sensors can detect useful information on geoscience, for example, large-amplitude seismicwaves could generate atmospheric pressure waves through the coupling process between ground and atmosphere on surface. Network observation of infrasonic waves like a seismicwave station network in Japan should be established in future, however, the present microphone-type sensor is expensive.

In this talk, we will report the development of an new detection technique on infrasonic sensor using piezoelectric element as a cheap infrasonic sensor. Basic experiment of the new infrasonic sensor has been carried out since 2005 at Kochi University of Technology with a cooporation of Research Center for Prediction of Earthquakes and Volcanic Eruptions, Tohoku University. In order to realize calibration experiments of new sensors and comparisons between present sensors and new ones, a test package for infrasonic experiment was also built.

At present, we could detect infrasonic waves by new sensors within the 20% costs of microphone-type sensors. We conclude the new infrasonic sensors can make new observation network in future and make new science fields not only of the geoscience but also the desaster prevention.