# Investigation of sound source detection with dense infrasound observation network in Kochi

*Masa-yuki Yamamoto[1]

1. Department of systems engineering, Kochi University of Technology

Infrasound is known as pressure waves in atmosphere with its frequency lower than the human audible limit of 20 Hz. Due to its distant propagation characteristics without large attenuation, the infrasound can be used as a remote-sensing tool for the huge scale geophysical events closely coupled with atmospheric environment. Tsunami is one of the most dangerous geophysical phenomena for human life and the Japanese originated word of TSUNAMI shows Japan is one of the most dangerous regions for tsunami disasters in the world. Kochi prefecture is located in Shikoku island and, at along the southern coast of Kochi, we have many dangerous sites of tsunami invasion once a huge earthquake happens in Nankai Trough in the pacific ocean, just near the southern coast of Japan.

Infrasound observation network has been installed in Kochi region since 2016 for disaster prevention, taking account mainly for tsunami disasters. As for the pilot arrangement, we installed 5 sensors in Kuroshio Town in western district in Kochi pref. with a separation of about 2 and 8 km, making two-sized triangle arrays there. Then in 2017, 10 more sensors were installed on wider area in whole Kochi pref., constructing 25 km scale arrayed deployment in 2 cape areas of Muroto and Ashizuri.

The infrasound sensor arrays reveal us some important feature of the detected signals coming from Typhoons, volcanic eruption of Mt. Aso, thunders, fireball (large meteor) events. As the network is one of the densest infrasound observation schemes in such specific small area in a nation, we need another analyzing method than that applied for usual arrayed infrasound sensors. In this talk, we will introduce our observation design of the network as a model case and the obtained datasets for consideration of tsunami and the other disaster preventions.

Keywords: Infrasound, Disaster prevention, Sensor network