
 [JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-TT Technology & Techniques

[M-TT38] Brand-new scope of coupling geophysics being established by infrasound and associated waves

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Infrasound and associated wave studies are recently focused on coupling waves with long-distance and vertical propagation characteristics. Such kinds of waves, having with coupling process between the atmosphere and the surface of ground and ocean, are linked with elastic waves in lithosphere and oceanic sphere, as well as to atmospheric regions up to the upper atmosphere, playing a role of generating many kinds of wavelike turbulences in thermosphere. Moreover, whole on the globe, these waves excited depending on the latitude regions, as well as on the environmental regions, such as snow ice, desert, rainforest, mountain, ocean, etc., have their own characteristics. These waves can be excited by large-scale geophysical events like volcanic eruptions, tsunami, thunderstorms, etc. as well as artificial explosions, propagating with long distance. In this session, we would like to discuss such "coupling geophysics" by using many new or well-known investigated data and simulations of infrasound and associated low frequency waves. It can combine multiple spheres in geophysics and bring a brand-new scope of geophysics. Your contributions from many regions are welcome!

[MTT38-P02] Investigation of sound source detection with dense infrasound observation network in Kochi

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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.