

火球に起因する微気圧振動波形 The Infrasound signals produced by a bolide on 20th January, 2013

岩國 真紀子^{1*}, 新井 伸夫¹, 平松 良浩², 石原 吉明³, 山本 真行⁴, 柿並 義宏⁴, 村山 貴彦¹, 野上麻美¹
Makiko Iwakuni^{1*}, Nobuo Arai¹, Yoshihiro Hiramatsu², Yoshiaki Ishihara³, Masa-yuki Yamamoto⁴, Yoshihiro Kakinami⁴,
Takahiko Murayama¹, Mami Nogami¹

¹ 日本気象協会, ² 金沢大学理工研究域自然システム学系, ³ 産業技術総合研究所情報技術研究部門ジオインフォマティクス研究グループ, ⁴ 高知工科大学 システム工学群

¹Japan Weather Association, ²School of Natural System, College of Science and Engineering, Kanazawa University, ³Geoinformatics Research Group, Information Technology Research Institute, AIST, ⁴Department of systems engineering, Kochi University of Technology

The infrasound observation system has been installed in Isumi, Chiba-prefecture (approximately 60 km SE of Tokyo) as a component of the International Monitoring System for the CTBT's verification regime. It is an array observation site and is comprised of six elements with an aperture of about 2km. It had been deployed on November 2004. Some interesting infrasound signals are observed, which was generated by the volcanic explosions, large earthquakes, artificial explosions and so on.

A bolide was flying over Kanto region around 02:42 on 20th of January 2013 (JST). Optical observation data gave the information that the explosion area of this bolide was over Mt. Tsukuba. Distance between Mt. Tsukuba and Isumi is about 100km, back azimuth of Mt. Tsukuba is 350 degrees. The infrasound sensors detected some pulsed waves around 02:48. A back azimuth of signals was estimated 356 degrees from north. It is consistent with the area of its explosion. From observed apparent velocity of signals, the elevation angle of these signals was estimated 20 degrees. According to both this elevation angle and the distance, the altitude which the bolide explosion happened is estimated approximately 30km and travel time of atmospheric wave is calculated about 5 minutes. Arrival time of signals at Isumi is around 02:48, it is also consistent with evaluation results.

In this presentaion, some remarkable optical observation, seismic records and TEC are introduced and discussed.

キーワード: インフラサウンド, 火球, 爆発, 圧力波, 微気圧計

Keywords: infrasound, bolide, explosion, perssure wave, microbarometer