Station characteristics of the Singapore Infrasound Array

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Singapore, located in Southeast Asia, presents an ideal location for an additional regional infrasound array, with diverse persistent natural and anthropogenic regional infrasound sources, including ∼750 active or potentially active volcanoes within 4,000 kilometers. Previous studies have focused on theoretical and calculated regional signal detection capability improvement with the addition of a Singapore array. The Earth Observatory of Singapore installed a five element infrasound array in northcentral Singapore in late 2014, and this station began consistent real-time data transmission mid-2015. The Singapore array uses MB2005s microbarometers and Nanometrics Taurus digitizers. Automated array processing is carried out with the INFrasonic EneRgy Nth Octave (INFERNO) energy estimation suite, and PMCC (Progressive MultiChannel Correlation). The addition of the Singapore infrasound array to the existing International Monitoring System (IMS) infrasound stations in the region has increased regional infrasound detection capability, which is illustrated with the preliminary work on three observed meteor events of various sizes in late 2015. A meteor observed in Bangkok, Thailand in early September, 2015 was picked up by the CTBTO, however, another meteor observed in Bangkok in November was only recorded on the Singapore array. Additionally, another meteor observed over Sumatra was only recorded by one IMS station and the Singapore array. This study uses array processing and Power Spectral Density results for both the Singapore and publicly available regional IMS stations to examine station characteristics and detection capability of the Singapore array in the context of the regional IMS network.