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Processing of volcano infrasound using film sound audio post production techniques to improve signal detection via array processing

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A multidisciplinary collaboration between earth scientists and a sound designer/composer was established to explore the possibilities of audification analysis of infrasound array data. Through the process of audification of the infrasound we began to experiment with techniques and processes borrowed from film sound post production to reduce the noise content of the signal. The results of this posed the question: “Would the accuracy of infrasound data array processing be enhanced by employing these techniques?”. Using a reference event database, infrasound data was processed using these new techniques and the results were compared with existing techniques to assess if there was any improvement to detection capability for the array. Initial results suggest that audio processing of the signal prior to the Progressive Multi-Channel Correlation (PMCC) array processing improves signal detection and this combined technique represents a new direction of research. The processing was tested on the Sangeang Api May 30th 2014 eruption, while this event was not detected on I06AU using usual filters, it was clearly identified after using the proposed technique.