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Coherency of infrasound studied with a Large Aperture Infrasound Array in the Netherlands

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A Large Aperture Infrasound Array (LAIA) is being constructed in the Netherlands as geophysical part of an astronomical low frequency array, i.e. the LOFAR project. This array extends the detection capabilities of infrasound up to the mHz range, including acoustic-gravity and gravity waves as well. Owing to its large aperture (80 km) and number of interstation distances, this 30 element microbarometer array is ideally suited to study the coherency of infrasound as function of frequency under various atmospheric conditions. Based on conventional and modern correlation techniques, the ultimate aim is to experimentally determine and quantify infrasound propagation characteristics. As a result, we gain understanding in the physical mechanisms responsible for decoherence, which in turn will be used to develop infrasound as a passive atmospheric probe. Knowledge on the coherency length as function of the state of the atmosphere also has direct implications for the design of optimal infrasound arrays. This study will outline the characteristics of LAIA and present the first results of the coherency studies.