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A ship-borne radiometer for the analysis of gravity wave activity in the upper mesosphere

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A three channel, near-IR radiometer is being developed for the British Antarctic Survey's research vessel RRS James Clark Ross. The aim of the instrument is to measure the strength and direction of atmospheric gravity waves as they pass through a layer of airglow in the upper mesosphere. By simultaneously recording high temporal, narrow field of view radiometer data together with accurate measurements of the ship's position, pitch and roll angles and bearing, it is shown that it is possible to derive accurate information on a broad spectrum of atmospheric waves. In addition, during typical cruise conditions, it is shown that potential aliasing problems due to small horizontal wavelength gravity waves can be overcome.