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Comparison of gravity wave momentum flux observed by meteor radar and airglow imager

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A new 30 kW Skiymet meteor radar has been operational at Trondheim, Norway (63°N, 10°E) during the winter of 2012-13. The transmitter array is designed to direct the majority of the radar power into eight beams at 45° azimuth increments with peak power around 35° off zenith. Meteor count rates up to 15000 per day are observed with this system. Co-located with the radar is an all sky camera filtered to observe perturbations in the hydroxyl airglow layer due to gravity waves. High temporal resolution observations reveal the horizontal wavelength, amplitude and propagation speed and direction of gravity waves as they pass through the airglow layer. During clear-sky conditions clearly-defined gravity wave structure is frequently observed in the hydroxyl airglow. We compare the strength and direction of gravity wave activity imaged in the airglow with estimates of the vertical flux of horizontal momentum derived from the line of sight meteor drift perturbation velocities observed in the radar.