



Perspectives of gravity wave measurements by future ESA satellite mission PREMIER

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Gravity waves are an important coupling mechanism between the different layers of the atmosphere. In the frame of an ESA study we demonstrate the potential of an infrared limb imager as an instrument for middle atmosphere gravity wave research. An infrared limb imager observes a large part of the gravity wave spectrum and measures the three dimensional wave structure. Propagation direction and momentum flux can be observed. We will assess in detail an infrared limb imager as proposed for the PREMIER ESA Earth Explorer mission. Temperature measurements are simulated by sampling ECMWF and several mesoscale models by the PREMIER observational grid. The observational filter and instrument effects are taken into account. Global distributions of momentum flux and its direction inferred from these measurements are shown. Typical wave source regions are identified and wave characteristics due to the sources and the modulation by the background winds discussed. The results are compared to momentum flux values directly inferred from the model winds.