

# **Investigating short-period mesospheric gravity wave propagation and momentum flux at low-latitudes using simultaneous Na lidar and temperature mapper measurements**

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The US Maui-MALT program is designed to investigate the properties and dynamics of the low-latitude mesosphere and lower thermosphere region (MLT) in exceptional detail. A key component of this study is the investigation of short-period gravity waves and their propagation and dissipation characteristics at MLT height. High-resolution measurements of the background wind, temperature field using the University of Illinois Na wind/temperature lidar have been combined with simultaneous image measurements of the NIR OH and O<sub>2</sub> airglow intensity and rotational temperature obtained by the Utah State University Mesospheric Temperature Mapper (MTM) to perform an in-depth investigation of five selected short-period (less than 20 min) gravity wave events. In each case, the waves were observed under differing background conditions and we have determined their intrinsic properties, and nature of propagation (i.e. freely propagating or ducted). This has allowed us to quantify their associated horizontal momentum fluxes at two different altitudes (87 and 94 km) within MLT and hence investigate their impact on this region at low-latitudes.