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Gravity wave studies using OH airglow and Rayleigh lidar instruments at Maïdo Observatory

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In the frame of the EC-H2020 project ARISE, two short wave infrared (SWIR) InGaAs camera have been operated at Maïdo Observatory, Reunion Island, from June to November 2016. These cameras allow a continuous observation during clear-sky nighttime of the OH airglow layer centred at 87 km. The propagation of atmospheric gravity wave packets is clearly identified in the images. A monthly climatology of the phase speed and direction of propagation of gravity waves has been established. The collocated Rayleigh lidar provides vertical profiles of the temperature from the lower stratosphere to the altitude of the OH layer around the mesopause. Using these profiles is it possible to estimate the potential energy of gravity waves and to determine in which altitude range their energy is dissipated. The combination of Rayleigh lidar and OH airglow observations allows a better characterization of gravity wave parameters and propagation conditions from the lower atmosphere to the mesopause.