

EGU22-4192

<https://doi.org/10.5194/egusphere-egu22-4192>

EGU General Assembly 2022

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Spectral variations of the cancellation factor for temperature investigation in the mesospheric nightglow layer

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The infrared emission lines observed between 80 and 100 km known as nightglow allow the investigation of dynamic phenomena such as gravity waves. These perturbations act on local temperature and density. However, the observation of the local perturbations in the nightglow layer is mainly performed by spectrally broad cameras. Swenson and Gardner (1998) introduced the cancellation factor linking relative variations of intensity with relative variations of temperature. The cancellation factor is a function of the perturbation vertical wavelength estimated from simulation that do not include spectral variations. In this study, we intend to estimate the spectral variability of the cancellation factor, in particular within the range 0.9-1.7 μm corresponding to infrared InGaAs camera, used during measurement campaigns. We describe briefly the model that resolves the vibrational states of the nightglow main source (OH). Then vertically propagating gravity waves are applied on a 1D scheme and the cancellation factor is computed based on the impact on both temperature and intensity. Spectral variations of the cancellation factor are observed and compared along the variation of the vertical wavelength.