

R005-P07

ポスター 2 : 11/25 PM1 (13:45-15:45)

#Anggarani Sefria^{1,3}), Hadi Tri Wahyu²), Perwitasari Septi⁴), 塩川 和夫 ³)

(¹BRIN, Indonesia, (²Institut Teknologi Bandung, Indonesia, (³Nagoya University, (⁴NICT

Statistical study of atmospheric gravity waves using OI 557.7 nm airglow images over Tomohon, Indonesia

#Sefria ANGGARANI^{1,3}), Tri Wahyu HADI²), Septi PERWITASARI⁴), Kazuo SHIOKAWA³)

(¹BRIN, Indonesia, (²Institut Teknologi Bandung, Indonesia, (³Nagoya University, (⁴NICT

Atmospheric gravity waves (AGWs) are intriguing due to their widespread occurrence throughout the atmosphere and their capability in transporting energy and momentum across different altitudes. In Indonesia, despite their importance, optical observations of AGWs remain limited in both number and spatial coverage, with most studies conducted only in the western region. To address this gap, we carried out optical observations in eastern Indonesia to characterize equatorial AGWs and evaluate the influence of local atmospheric conditions on their propagation. This study presents an analysis of AGWs in the mesopause region over Tomohon (1.34° N; 124.82° E; dip lat. 7.75°) using OI 557.7 nm airglow images (altitude ~96 km) collected from January 2017 to July 2019. A total of 143 AGW events were identified. The observed horizontal wavelengths ranged from 5 km to 80 km with typical periods of 6 to 20 minutes. The prevailing propagation direction of AGWs was eastward (45° to 135°), with phase speeds ranging from 20 m/s to over 70 m/s. A comparison with the Modern-Era Retrospective analysis for Research and Applications, Version 2 (MERRA-2) background wind data indicates that 82.5% of the observed AGWs were able to avoid filtering by background winds. To investigate the possible source, precipitation data from the Tropical Rainfall Measuring Mission (TRMM) were examined. These results suggest that strong convective activity associated with intense tropospheric precipitation over eastern Indonesia is a likely source mechanism for the observed AGWs, influencing their generation and upward propagation into the mesopause region.