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Interactions of planetary waves and gravity waves observed by SABER and investigated by global ray tracing modeling

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Planetary waves (PW) change the global background wind fields and thus modify global gravity wave (GW) distributions by critical level filtering and modulation of the GW spectrum by refraction. On the other hand, forcing by breaking GWs has a longitudinal structure which can amplify or suppress PWs. We will analyze global GW distributions inferred from the SABER instrument for signatures of PWs and compare the results to PW fields inferred from the SABER temperature measurements. These experimental results will be compared to global ray tracing modeling with the GROGRAT ray tracer. The influence of assumptions generally made in GW parameterization schemes, such as vertical propagation, on the longitudinal asymmetries in the GW induced acceleration will be quantified and the GW forcing of PWs will be discussed.