

A Tropospheric Gravity Wave Climatology using the Equatorial Atmospheric Radar

Simon Alexander[1]

[1] RISH, Kyoto Univ.

Long term measurements of gravity wave wind variance and momentum fluxes in the tropical upper troposphere and lower stratosphere (UTLS) are important for studying the upper atmosphere and as inputs into climate modeling. The Indonesian region in particular is very important for this, given the large scale convection and associated gravity waves generated in this area.

The VHF Equatorial Atmosphere Radar (EAR) has been operational since June 2001 at Koto Tabang, Indonesia. Wind coverage is up to 20km, although significant data dropouts occur in the upper troposphere due to low SNR. The five year dataset of June 2001 to June 2006 was used to determine the gravity wave climatology in the troposphere and UTLS regions. Wind perturbations, variances and momentum fluxes were used to examine gravity wave activity and the seasonal and annual variations. Results from the EAR were combined with satellite measurements of the blackbody temperature (TBB), which indicated the presence and approximate height of cloud.

Results of the changes in gravity wave activity through time and its relation to satellite measurements of convection will be presented.