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PEM06-P10 Room:Convention Hall Time:May 26 18:15-19:30

Evaluation of EEJ variation due to Ultra Fast Kelvin Waves using the Kyushu-GCM and the Quasi-3D dynamo model

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The quasi-3dimensional dynamo-model using the neutral wind data of the Kyushu-GCM(Yoshikawa and Miyahara 2003, 2005) proves that Sq current system and Equatorial Electro Jet (EEJ) can be almost consistent with their day to day variations of the observation values (Kawano-Sasaki and Miyahara 2008, Aramaki 2012:Master Degree thesis).

And then analysis of Kelvin Waves in the Kyushu-GCM (Chen and Miyahara 2012) shows that Ultra Fast Kelvin (UFK) waves (zonal wavenumber =1, Period 2.5-4 days) originated in the troposphere are dominant in the MLT region above the equator (at around 100 km height) and contribute to the dynamical field of atmosphere. And the amplitudes of UFK waves fluctuate periodically at almost 10 days time scale.

Therefore this research shows that the contribution to EEJ variation due to UFK wind fluctuation has been quantitatively evaluated using the quasi-3dimensional dynamo-model that can express Sq current system and EEJ in asymmetric about the equator (Aramaki 2012 : Master Degree thesis) with UFK neutral wind data derived from the Kyushu-GCM (Yoshikawa and Miyahara 2003, 2005). This evaluation proves that UFK winds fluctuation contribute to EEJ day to day variation. Particularly it is evaluated that UFK winds day to day fluctuation contributes to about 25 percent of the strong Eastward EEJ current values day to day variation above around the Equator comparing the standard deviations of the simulated EEJ current values between the case of the UFK winds data at one month and the case of the Kyushu-GCM original neutral winds data at the same month. More comprehensive analysis and its evaluations in detail will be shown at the conference hall.

(Acknowledgement)
The Quasi-3D Dynamo equatorially symmetric model (2008) that Dr.Keiko Kawano-Sasaki (Kyushu University) had developed and M.Sc. Yui Aramaki (Kyushu University) had extended it to the asymmetric model (2012). We used the model for this research. We gratefully acknowledge for them.

Keywords: Equatorial Electro Jet, Ultra Fast Kelvin wave, the Kyushu-GCM, the quasi-3D dynamo model