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The observation of Doppler-shifts of subionospheric LF signal in possible association with earthquakes

M. Hayakawa[1,2,3,4)], Y. Kasahara[5)], T. Endoh[5)], Y. Hobara[5,2,6)], and S. Asai[7)]

1) *The University of Electro-Communications (UEC), Advanced Wireless Communications Research Center, 1-5-1 Chofugaoka, Chofu Tokyo 182-8585, JAPAN*
2) *UEC, Research Station on Seismo Electromagnetics, Chofu Tokyo, JAPAN*
3) *Hayakawa Institute of Seismo-Electromagnetics, Co., Ltd., UEC Incubation Center, Chofu Tokyo, JAPAN*
4) *Earthquake Analysis Laboratory, Information Systems Inc., Kita-aoyama 2-12-42- 305, Minato-ku Tokyo 107-0061, JAPAN*
5) *UEC, Graduate School of Informatics and Engineering, Chofu Tokyo, JAPAN*
6) *UEC, Research Center of Space Physics and Radio Engineering, JAPAN*
7) *Unipac Co., Ltd., Research Laboratory, 203FIRM 1-1-1 Kuriki Asao-ku, Kawasaki, Kanagawa 215-0033, JAPAN*

The Doppler-shift observation of LF (f = 60kHz) subionospheric signal from Saga (Kyushu) (with call sign of JJY) as observed at Chofu (CHF), has been used to investigate the properties of ionospheric perturbations possibly associated with earthquakes(EQs). The period of analysis is seismo-active half a year from January 1, 2009 to June 30, 2009, and six EQs with magnitude greater than 5.0 (in a range from 5.1 to 5.8, which took place within the wave sensitive area of the JJY-CHF path) are dealt with. It is found from the Doppler-shift observation at CHF that the Doppler-shifts are really observed and the components in the frequency ranges of AGW (atmospheric gravity wave) and AW (acoustic wave) in the Doppler-shifts are clearly enhanced, at least, before each EQ. This observational fact would lend a strong support to the important role of atmospheric oscillation channel in the lithosphere-atmosphere-ionosphere coupling mechanism.