

## The relation between VHF band broadcasting waves from overseas and plasma bubbles

# Ikuo Nagashima[1], Hiroyuki Nakata[2], Yuichi Otsuka[3], Toshiaki Takano[1], Kurt Sakai[4], Kazuo Shiokawa[5], Tadahiko Ogawa[6]

[1] Graduate School of Sci. and Tech., Chiba Univ., [2] Chiba Univ., [3] STEL, Nagoya Univ., [4] Graduate School of Sci. and Tech., Chiba Univ., [5] STE Lab., Nagoya Univ., [6] STE Lab., Nagoya Univ

We have made continuous observations of VHF electromagnetic waves at Tateyama observatory in Chiba prefecture. A wide-band LPDA (Log-Periodic Dipole Array) antenna, with which 47.5-76 MHz band is observed, is settled in this observatory. It is obtained that TV broadcasting waves can propagate from eastern and south-eastern Asia to Tateyama [Sakai et al., URSI, 2002]. The channel systems of these waves are U.S.A. channel system (used in Philippine, Taiwan), C.C.I.R channel system (Thailand, Malaysia, and Singapore) and CHINA channel system (China). In the present study, we focus that the broadcasting waves of U.S.A. channel system and that of C.C.I.R. channel system are usually observed before midnight (20:00-24:00) in equinox seasons. Since plasma bubbles were simultaneously observed by All-sky imager at Sata, we examined the relation between these broadcasting waves observed at Tateyama and plasma bubbles observed at Sata.

It is found that the broadcasting waves of U.S.A and C.C.I.R channel systems are always detected at Tateyama when plasma bubbles are observed at Sata. Especially, there is a good correlation between the broadcasting waves of U.S.A channel system and plasma bubbles. The amplitudes of the broadcasting waves of U.S.A channel system vary as plasma bubbles move eastward. Moreover, the amplitudes of the broadcasting waves of U.S.A channel system reach their maximum when plasma bubbles are located at 2-3 degree west longitude from Sata. On the contrary, there is no clear relation between the amplitudes of C.C.I.R. broadcasting waves and the positions of plasma bubbles. Noting that Field-aligned irregularities within plasma bubbles reflect VHF band waves, locating plasma bubbles at the west of Sata is a most suitable condition for the detection of VHF waves at Tateyama.