

PEM025-P12

Room: Convention Hall

Time: May 26 17:15-18:45

FM radio wave reflected by the ionosphere observed at Hiroshima and Aso

Koichi Shin^{1*}, Masakazu Murakami¹, Masahiro Nishi¹, Teruaki, Yoshida¹

¹Hiroshima City University

We have been observing electromagnetic waves in FM broadcasting frequency band from 76 MHz to 90 MHz using PLL type synthesized digital FM tuners at our thirteen electromagnetic observatories in Japan. In these observations, we have observed the FM radio waves reflected by the sporadic E layer of the ionosphere. Reflection waves of the VHF band electromagnetic waves by sporadic E layer are known to cause interference problem in the TV and radio broadcasts. Thus, to understand characteristics of these anomalous radio propagation is important. In the present paper, we propose a method to identify the FM radio waves reflected by the sporadic E layer, and show the characteristics of the reflected waves observed from 2003 to 2008. For our observations of the reflected waves, we chose Hiroshima and Aso observatories from our electromagnetic observatories, and the FM broadcasting frequency of 89.1MHz (AFN Okinawa) in VHF band. From the results of identification of the reflected waves using these observation data, identification errors have been less than 1%. Further, we discuss the relations between occurrences of the reflected waves and the solar activities and geomagnetic disturbances.

Keywords: sporadic E layer, ionosphere, FM radio wave, VHF