

## Local time and seasonal dependence of occurrence rate for the zero-order mode of tweek atmospherics

\*Hiroyo Ohya<sup>1</sup>, Tohru Araki, Kazuo Shiokawa<sup>2</sup>, Yoshizumi Miyoshi<sup>2</sup>, Takashi Kikuchi<sup>2</sup>

1. Graduate School of Engineering, Chiba University, 2. Institute for Space-Earth Environmental Research, Nagoya University

Tweek atmospherics are VLF/ELF electromagnetic waves originated from lightning discharges and propagate in the Earth-ionosphere waveguide for long distances. So far, there are few studies for the zeroth-order mode of the tweeks. The preliminary reverse impulse (PRI) electric field of the geomagnetic sudden commencement (SC) is transmitted by the  $TM_0$  mode waves propagating at the speed of light in the Earth-ionosphere waveguide (Kikuchi et al., 1978; Kikuchi and Araki, 1979). In this study, we investigate the local time and seasonal dependence of the tweek zero-order mode to understand the characteristics of the zero-order mode. For statistical analysis, we developed the automatic detection procedure for the zero-order mode. In this session, we will discuss the results for the tweek zero-order mode in detail.