

## Dayside proton auroral tongue

# Yusuke Ebihara[1]; Ryuho Kataoka[2]; A. T. Weatherwax[3]

[1] Nagoua Univ., IAR; [2] RIKEN; [3] Univ. of Maryland

We present a newly found tongue-like structure of the dayside proton aurora observed at the South Pole Station (-74.3 AACGM LAT) on 12 June 2005. The tongue-like auroral structure, termed dayside proton auroral tongue (DPAT), appeared in the closed field line where I (557.7 nm) is larger than I (630.0 nm). Magnetometer data from the South Pole Station show that the DPAT was coincident with a magnetic impulsive event and a Pc 1 burst. These observational facts may favor either or both the following explanations: (1) A localized pressure pulse in the magnetosheath compresses the dayside magnetosphere in part, which is observed as the MIE. The compressed magnetic field results in the temperature anisotropy of trapped protons in the magnetosphere, which excites the electromagnetic ion cyclotron (EMIC) waves that were observed as the Pc 1 burst. Then, the EMIC waves scatter the trapped protons in the magnetosphere, resulting in the precipitation of the protons. (2) The other explanation is that the protons originating from the solar wind penetrate the magnetopause, spreading out along a field line in the magnetosphere. Both mechanisms involve the localized pressure pulse in the magnetosheath. If the former is the case, the DPAT would reflect the region where the magnetosphere is compressed (a manifestation of the precipitating magnetospheric protons). If the latter is the case, the DPAT would reflect the region where the solar wind protons are penetrated (a manifestation of the penetrating magnetosheath protons). Proton auroral forms found at high latitudes on the dayside may be much more complicated than at subauroral latitudes.