

# Comparison between observed and estimated CNA using CRL Imaging Riometer and NOAA satellite

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As a part of the international cooperative research project with Geophysical Institute of University of Alaska (Alaska project), we have observed the cosmic noise absorption (CNA) using a 256-element imaging riometer at Poker Flat, Alaska (geogra. lat.: 65.1N, geogra. lon.: 212.6E); CNA is mainly associated with an enhancement of the electron density in the D region of the ionosphere, produced by high-energy precipitating electrons (several tens of keV).

We have compared CNA observed by the imaging riometer with the high-energy electron flux (30keV-1MeV) detected simultaneously by NOAA14 satellite passing over Poker Flat. We chose several events during the period from 1996 to 1998 and found that the increase of high-energy electron flux corresponds to the enhancement of CNA intensity [Yamamoto et al., SGEPS fall meeting, 2002].

We further estimate CNA using the electron flux data from NOAA14 and compare it with observed CNA. Both the low-energy (300eV-20keV) and high-energy (30keV-1MeV) electron flux are utilized for the calculation. First, the electron energy spectrum is fitted with a Kappa distribution function. Then, CNA is calculated assuming an isotropic pitch angle distribution. The MSIS-90 is used as the atmospheric model.

The preliminary results show that the calculated and observed CNA intensities are comparable in some events, but there are some exceptions. By improving this study, CNA mechanism will be clarified quantitatively.