

**RADIO OBSERVATION DATA  
AT SYOWA STATION, ANTARCTICA DURING 2005**

**Mitsuhisa IKEDA and Kenro NOZAKI**  
(National Institute of Information and Communications Technology,  
Koganei-shi, Tokyo 184-8795, Japan)

**1. Introduction**

The National Institute of Information and Communications Technology has been observing the absorption of cosmic radio noise with a standard relative ionospheric opacity meter (riometer) at 30 MHz at Syowa Station, Antarctica since February 1966. This report presents combined data plots of the riometer and three component geomagnetic field variations in the period from January 1 to December 31, 2005. The geomagnetic field data were provided by the National Institute of Polar Research.

Comments on this report and requests for additional copies are welcome and should be sent to the following address:

Antarctic Research Office  
Applied Electromagnetic Research Center  
National Institute of Information and Communications Technology (NICT)  
2-1, Nukui-Kitamachi 4-chome, Koganei-shi  
Tokyo 184-8795, Japan

TEL: +81-42-327-6911, FAX: +81-42-327-7618, E-mail address: nozaki@nict.go.jp

**2. Location**

Syowa Station			
Geographic		Geomagnetic	
Latitude (Deg.)	Longitude (Deg.)	Latitude (Deg.)	Longitude (Deg.)
69.00 S	39.58 E	-70.0	80.2

**3. Observer**

**Mitsuhisa IKEDA**  
(National Institute of Information and Communications Technology)

**4. Instrumentation**

The riometer receiver has a center frequency of 30 MHz and a band width of 7.5 kHz, and is

connected to a vertically directed five-element Yagi antenna whose elements are oriented in the east-west direction. The antenna is designed to match a 50-ohm coaxial cable (10D-2E), which is 100 m long. A calibration signals from a reference noise diode, with power levels of 4000, 8000, 12000, 16000, and 20000 K, is inserted each day at 0800 of 45° eastern meridian time (EMT: UT + 3 hours). The output signal of the riometer is converted to a digital value at every second and stored into a mass storage system.

The cosmic noise intensity shows a diurnal variation caused by the rotation of the radio galaxy around the zenith. The variation shows approximately four minutes of sidereal time shift every day.

The ionospheric absorption A (dB) is calculated from the following equation:

$$A = -10 \times \log \left( \frac{T_1}{T_0} \right)$$

where  $T_1$  is the cosmic noise intensity in temperature K and  $T_0$  is the reference cosmic noise intensity in K extrapolated from quiet (no absorption) day data.









































































































































































































